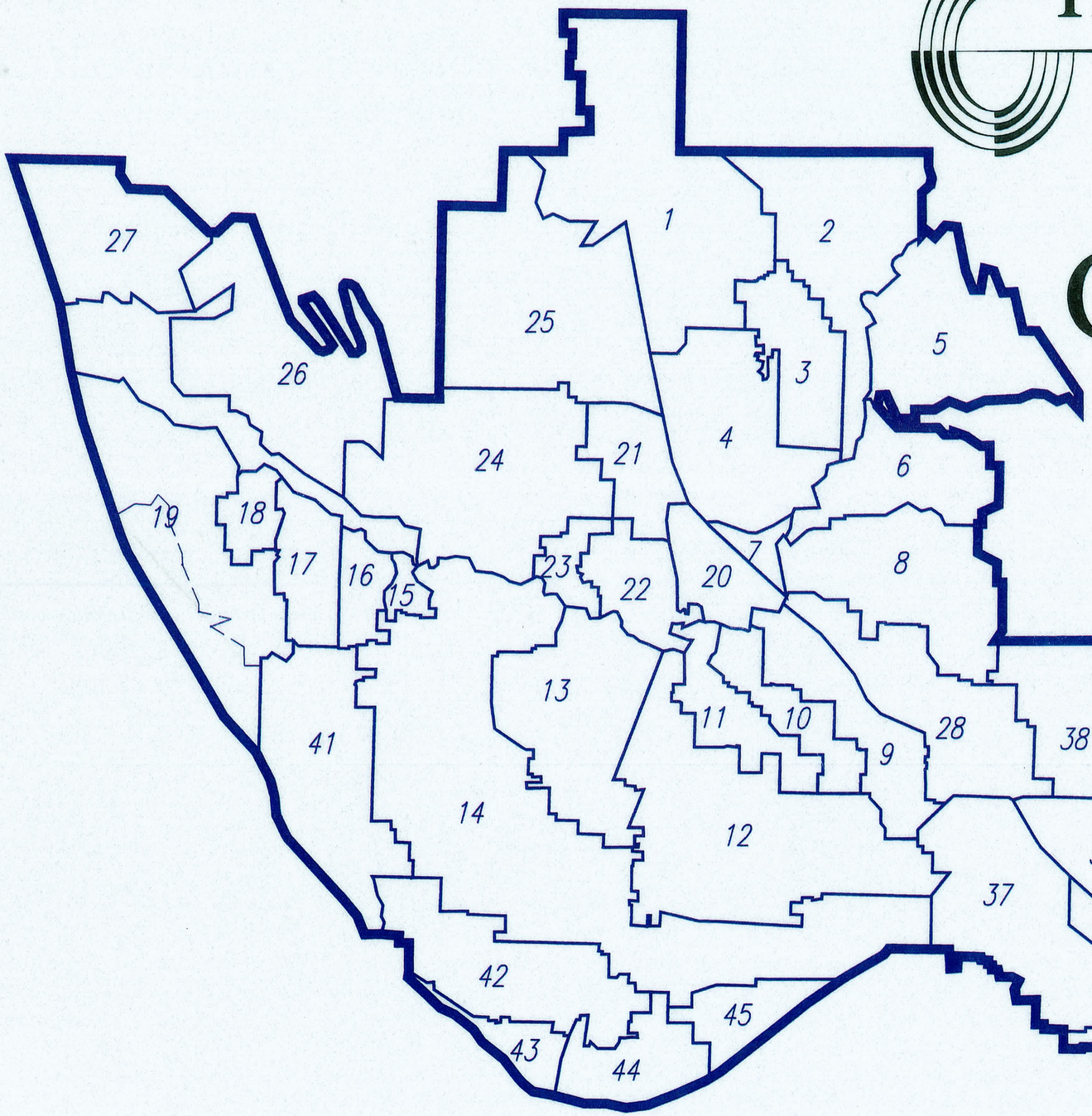
Hazel Dell Sewer District

Clark County, Washington



Capital Facilities Plan

Prepared by:

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HAZEL DELL SEWER DISTRICT

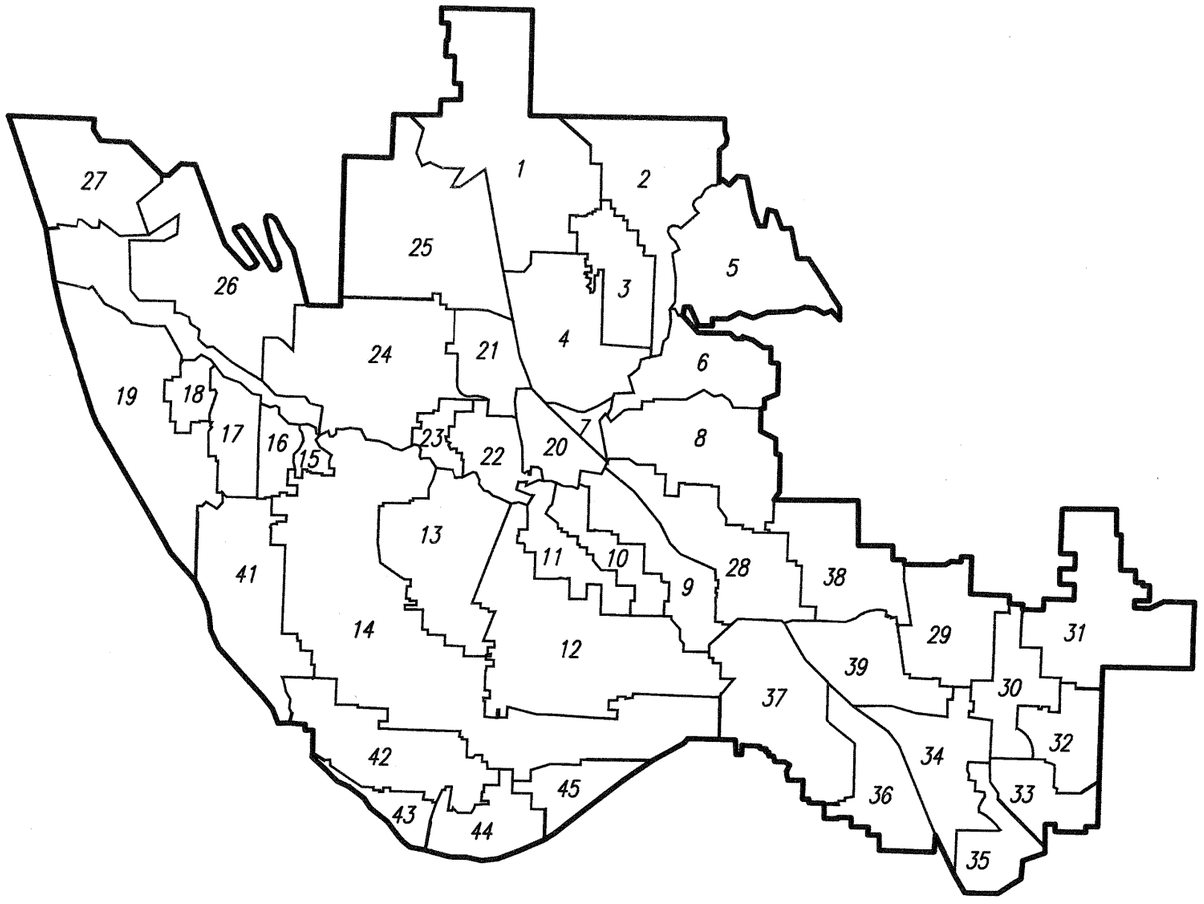
FINAL

March 2001

Hazel Dell Sewer District

Clark County, Washington

Capital Facilities Plan



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HAZEL DELL SEWER DISTRICT
CAPITAL FACILITIES PLAN

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CFP	Capital Facilities Plan
CPU	Clark Public Utilities
CUP	Conditional Use Permit
cy	cubic yards
d	day
District	Hazel Dell Sewer District
DNS	Determination of Nonsignificance
DOE	Department of Ecology
DOH	Department of Health
DWADF	dry weather average daily flow
Ecology	Department of Ecology (Washington State)
EPA	U.S. Environmental Protection Agency
ERU	equivalent residential unit
ERUs	equivalent residential units
Ex.	Existing
F.M.	Force Main
FOG	fats, oils, and grease
Ft^2	square feet (feet)
Ft^3	cubic feet
gal	gallon
GFC	General Facility Charge
GMA	Growth Management Act
gpad	gallons per acre per day
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
HDSD	Hazel Dell Sewer District
hr	hour(s)
I/I	infiltration and inflow
LOS	level of service
MG	million gallons
mgd	million gallons per day
MMF	maximum month flow
MOVS	Mechanically Operated Valve Station
MPWRF	Marine Park Water Reclamation Facility
NGVD	national geodetic vertical datum
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
OFM	Office of Financial Management
P.S.	Pump Station
PF	peak flow
POTW	publicly owned treatment works
Prop.	Proposed
PWTF	Public Works Trust Fund
RCW	Revised Code of Washington
S.T.E.G.	Septic Tank Effluent Gravity
S.T.E.P.	Septic Tank Effluent Pump
scfm	standard cubic feet per minute
SCWWTP	Salmon Creek Wastewater Treatment Plant
SDC	system development charge
sec	second(s)
SEPA	State Environmental Policy Act
SIU	Significant Industrial Users
SPR	site plan review
SWD	side water depth
TAZ	Transportation Analysis Zone
TDH	total dynamic head
TMDLs	total maximum daily loads
TYP	typical
UGA	Urban Growth Area
UGB	Urban Growth Boundary
ULID	Utility Local Improvement District
USGS	U.S. Geological Survey
VWWTP	Vancouver Westside Wastewater Treatment Plant
WAC	Washington Administrative Code
WWTP	Wastewater Treatment Plant
YR	year

HAZEL DELL SEWER DISTRICT
CAPITAL FACILITIES PLAN

I. INTRODUCTION

The Capital Facilities Plan is divided into two parts. Volume 1 is the executive summary of all the data produced and the Financial Plan. Volume 2 is the detailed data in charts and spreadsheets that are not necessary except for detailed analyses.

Hazel Dell Sewer District (District) was created in 1958, under the provisions of RCW Title 57 SEWER DISTRICTS. The District is a Special Purpose District – Municipal Corporation that operates under strict compliance of its enabling statutes. The District was also known as the Clark County Public Sewer District No. 1 during the 1970's and 1980's, and was renamed Hazel Dell Sewer District in 1988.

The District currently has an adopted and approved General Comprehensive Sewer Plan (General Sewer Plan) with a capital facilities element included. The General Sewer Plan was approved by all agencies as required by the Revised Code of Washington and the Washington Administrative Code (WAC) 173-240. The Washington State Department of Ecology (Ecology) approved the General Sewer Plan, with amendments, in 1992. A new Hazel Dell Sewer District Capital Facilities Plan (Capital Facilities Plan), incorporating the Clark County Comprehensive Plan (the Comprehensive Plan) was adopted by the District on December 20, 1994, and distributed to Ecology in February 1995. The Western Washington Regional Growth Management Hearings Board review of the Comprehensive Plan caused delays in its adoption, and revisions to projected growth patterns. New Transportation Analysis Zone (TAZ) population projections were produced in 1997, which requires the revision of the 1994 General Sewer Plan.

The District serves approximately 23,647 Equivalent Residential Units (ERU), with nearly 325 miles of sewer mains (5/31/99). The District contracts with Clark County and the City of Vancouver for treatment of sewage; it has not operated its own treatment facility since 1975. The majority of the sewage flow from the District's service area is tributary to Clark County's Salmon Creek Wastewater Treatment Plant (SCWWTP). The remaining District flow is tributary to the Vancouver Westside Wastewater Treatment Plant (VWWTP). Both Clark County and the City of Vancouver are operating their respective treatment facilities under current National Pollution Discharge Elimination System (NPDES) permits approved by Ecology.

Areas referred to as Orchards, Hockinson, and Meadow Glade are communities within the unincorporated area of Clark County that are served by the District. The sanitary sewer facilities in these areas were previously operated and maintained by Clark County. Through an agreement effective April 1, 1993, and affirmed by the Clark County Superior Court on June 11, 1993, the areas were transferred to the District for sanitary sewer facility operation and maintenance. A subsequent joint agreement among Clark County, the City of Battle Ground, and the District was signed by all parties, effective March 28, 1995. This agreement is a contract for sewage transport, treatment, and disposal.

The Orchards area is within the City of Vancouver urban growth area.

The District currently employs 32 persons who are responsible for operation and maintenance of the sanitary sewer mains, trunks, interceptors, and pump stations; and manage the administrative functions of the District. A board of three elected Commissioners directs District staff through the District Manager.

II. GROWTH MANAGEMENT ACT (GMA)

A. CAPITAL FACILITIES

The Growth Management Act (as adopted in 1990 and amended in 1991) RCW 36.70A.110 lists public facilities as one of thirteen goals. The capital facilities plan is one of six mandatory elements for a comprehensive plan. It is described as follows:

"A capital facilities plan element consisting of (a) an inventory of existing capital facilities owned by public entities, showing the locations and capacities of the capital facilities; (b) a forecast of the future needs for each such capital facility; (c) the proposed locations and capacities of expanded or new capital facilities; (d) at least a six year plan that will finance such capital facilities within projected funding capacity and clearly identifies sources of public money for such purposes; and (e) a requirement to reassess the land use element if probable funding falls short of meeting existing needs to ensure that the land use element, capital facilities plan element, and financing plan within the capital facilities plan element are coordinated and consistent."

Sanitary sewer facilities are among the public facilities defined by GMA.

B. PLAN CONCEPTS

Based on adopted Clark County policies, the area served by Hazel Dell Sewer District is within the City of Vancouver urban area and the capital facilities included in this plan will become a part of the capital facilities element for the Vancouver Urban Area Plan.

Five overall concepts were adopted in the countywide planning policy for the Vancouver Urban Area Capital Facilities Element:

a. Capital facility investment should be made in a manner that is cost effective and supportive of containing urban growth.

b. Two tiers of public facilities are defined based on the degree to which they are essential to serve immediately adjacent private development. (Sanitary sewers are Tier 1 capital facilities. Only Tier 1 facilities will be subject to direct concurrency requirements).

c. Concurrency is the requirement allowing local government to permit new development only if adequate public facilities and services are or can be made available to support new development within six years.

d. Adequacy of public facilities for concurrency requires setting minimum public facilities and services standards that will accommodate growth and various forms of development (residential, commercial, industrial, etc.).

e. All of the Vancouver urban area is anticipated to receive urban levels of service to support urban levels of development; however, different portions of the urban area may receive different levels of service depending upon the intensity of use.

The GMA and the five concepts outlined above for the capital facilities element indicate a change from a demand-driven approach to a supply-driven approach.

Development will need to follow where facilities are, or can cost effectively be constructed in accordance with the Capital Facilities Plan. However, it is imperative that the District be sensitive to market conditions or trends that may lead development in contrast to the adopted capital facility element. These trends or conditions should be relayed to the local agency responsible for land use decisions.

C. POLICIES

- The policies of the Hazel Dell Sewer District relative to the capital facilities element are intended to be consistent with those policies adopted in the Vancouver Urban Area Capital Facilities Plan Element. Differences in some policies may occur due to State Law differences and contractual requirements with Clark County, and/or the City of Battleground.

- Sanitary sewer facilities (Tier 1) are to be provided concurrent with development; development projects will not be approved unless facilities adequate to meet minimum level of service (LOS) thresholds can be funded and implemented within a six year time period.

- Adequacy shall be determined through a case-by-case evaluation of the impacts of a proposed development on the sanitary sewer facilities: first to determine the minimum amount of facilities necessary to support the development, and second to determine a proportionate share on the sewer facilities to be provided before the development is conditionally approved by the local agency with land-use authority.

- Extensions of capital facilities to serve new areas of development will only be recommended by HDSD if it is determined that adequate fiscal capacity exists (with the District) to support the extension and it is identified within the six-year period. Where extensions to serve new areas of development require no capital investment by the District, long-term maintenance will be considered as part of their decision.

- This capital facilities plan will be updated at least once every two years. The recommended update, however, is annual. Updates will take into account and respond to changing development conditions consistent with the urban area comprehensive plan. More immediate updates may be accomplished if there is an urgent need to do so.

- Hazel Dell Sewer District will establish and maintain administrative procedures which are user-friendly and predictable for prospective applicants, and which assure regular monitoring of capital facilities planning and implementation activities.

D. LEVEL OF SERVICE (LOS)

Establishing minimum levels of service aids in linking land use elements (Clark County/City of Vancouver) with the sanitary sewer capital facilities element.

Unlike transportation LOS, sanitary sewer capacity must be available prior to connection. Failure of adequate capacity can result in serious health and safety concerns for humans as well as other organisms within the sanitary sewer service area.

E. CONCURRENCY

The requirement by the Growth Management Act permitting new development only if adequate public facilities are or can be made available to support the new development at the minimum levels of service (LOS) is known as concurrency. Therefore, concurrency means that public facilities and infrastructure must either be in place or committed before new development can be approved. Committed projects, according to GMA, are those that are funded and will be completed within a six-year period. County policy dictates that all Tier 1 facilities shall comply with direct concurrency requirements within the Vancouver Urban Area, even though GMA only requires transportation facilities to comply. Sanitary sewers are Tier 1 facilities.

Development projects must meet minimum LOS thresholds for sewer service. Projects that do not meet minimum LOS will be recommended for denial by the District to the agency with land-use authority.

Satisfaction of concurrency can be demonstrated in the following ways:

a. LOS for sanitary sewer facilities will meet or exceed minimum LOS thresholds upon project completion (full build-out).

b. By negotiating a binding plan, assure public/private funding of facilities required to meet minimum LOS thresholds within the six-year period.

c. Build the development in phases. The first phase will be completed within current minimum LOS thresholds, and subsequent phases will be approved after negotiating a binding plan that funds additional capital facilities needed to maintain minimum LOS standards.

Hazel Dell Sewer District has several mechanisms available to fund capital facilities including but not limited to the following:

- Revenue Bonds
- Utility Local Improvement Districts
- Connection Charges (System Development Charges)
- Developer contributions/extensions
- Grants
- Loans

F. EXTENSION POLICY

The District's policy regarding extensions or installation of capital facilities is consistent with other special service districts within the State of Washington that provide sanitary sewer service.

The District will fund the installation of capital facilities that are within public rights-of-way that have no development potential on either side (e.g., parks, public open space). The District will participate in oversizing and extra-depth expenses for capital facilities that extend to and through a development in conformance with this Comprehensive General Sewer Plan, and the District's latest adopted Capital Facilities Plan.

In addition, the District will allow a developer that is required to extend a capital facility the opportunity for reimbursement (i.e., a latecomer reimbursement contract).

III. EXECUTIVE SUMMARY

A. POPULATION GROWTH

1. SUMMARY

The population growth and its distribution throughout the Hazel Dell Sewer District's service area are based upon information provided to the District by Clark County. The latest information used in this Capital Facilities Plan element was January 1997. Population projections were presented based on data supplied by the Office of Financial Management (OFM). The Clark County Community Development Department, Long Range Planning Division, supplied the data for the Vancouver Urban Area, and the data for the rural areas such as Hockinson and Meadow Glade.

The data presented to the District was in the form of households within a Transportation Analysis Zone (TAZ). The TAZ data was integrated within the District's sewer basins limits with vacant land data, District connection records, and proposed land use scenarios were taken into account to determine residential population growth within the District's service area.

In order to determine service growth within the District, unserved population as well as commercial and industrial growth was considered. Commercial and Industrial growth was determined by projecting that development would occur in areas that were proposed for those respective land uses and included on the County's Vacant Land Inventory Map.

B. PROJECTED SANITARY SEWER FLOW

1. SUMMARY

The wastewater flow calculated for the District was based on the service population growth, residential, commercial and industrial lands as well as including an estimate for existing unserved population. The design criteria used to calculate wastewater flows is detailed in Section b.

The City of Vancouver has monitored the interceptor that flows to the VWWTP and has indicated that it is at near capacity and that increasing flows by HDSD may require participation in a parallel line in the Burnt Creek interceptor and potential capacity increases at the VWWTP. This is particularly expensive and could be unnecessary. Please refer to the discussion in the "Treatment and Pretreatment" section of the Comprehensive General Sewer Plan. Hazel Dell Sewer District will continually monitor and periodically review the flow to Vancouver to ensure that the flow is within the agreed limits (3.0 MGD peak flow, 1.0 MGD average daily flow) as long as possible. Redevelopment along the Hwy 99

Table 1. Projected Sanitary Sewer Flows

Year	Date	ERUs	Population	Peak Flow gal/day	Average Flow gal/day
0	1/1/1997	21,267	39,971	12,525,189	5,316,815
1	1/1/1998	22,257	42,044	13,116,092	5,564,155
2	1/1/1999	23,328	44,288	13,755,931	5,832,001
3	1/1/2000	24,201	45,835	14,238,822	6,050,136
4	1/1/2001	25,026	47,433	14,719,463	6,256,609
5	1/1/2002	25,890	49,086	15,219,873	6,472,433
6	1/1/2003	26,795	50,800	15,742,123	6,698,697
7	1/1/2004	27,747	52,580	16,288,737	6,936,733
8	1/1/2005	28,753	54,433	16,862,821	7,188,201
9	1/1/2006	29,814	56,351	17,464,195	7,453,567
10	1/1/2007	30,947	58,356	18,100,736	7,736,693
11	1/1/2008	32,166	60,463	18,779,660	8,041,412
12	1/1/2009	33,472	62,647	19,498,417	8,367,992
13	1/1/2010	34,891	64,927	20,268,238	8,722,693
14	1/1/2011	36,469	67,366	21,112,440	9,117,304
15	1/1/2012	38,251	69,992	22,049,781	9,562,806
16	1/1/2013	40,279	72,799	23,094,139	10,069,709
17	1/1/2014	42,589	75,715	24,250,529	10,647,164
18	1/1/2015	45,355	78,945	25,601,690	11,338,659
19	1/1/2016	48,747	82,578	27,216,053	12,186,792
20	1/1/2017	53,008	86,720	29,188,239	13,251,876
	Ultimate	96,679	131,331	54,905,940	24,169,765

corridor could require a future major improvement.

This plan includes provisions to construct a pump station within the Lakeshore basin (basin #41) that would divert 78% of that basin to the Salmon Creek Treatment Plant. This would allow the projected growth to occur within this area without exceeding the contractual flow amount tributary to the VWWTP.

2. DESIGN CRITERIA/METHODOLOGY

The Hazel Dell Sewer District (District) does not currently own or operate a treatment facility; therefore, system components of concern to the District include: interceptor sewers, trunk sewers, 8" and smaller service lines, pump stations, monitoring wells, and related appurtenances. These facilities are primarily affected by peak flows, rather than total flow volume throughout the average day. An analysis of the major system components was completed to determine the adequacy of the existing facilities during peak flows. The methodology for the anticipated flows is outlined below.

The District does not have continuous monitoring within the existing gravity

sanitary sewer system. Flow within the service area is based upon household (HH) projections provided by the Washington State Office of Financial Management; household distribution within Transportation Analysis Zones (TAZ) and estimated capita per household provided by Clark County Long Range Planning; actual connections permitted by Hazel Dell Sewer District; and per capita flows and peaking factors from Washington State Department of Ecology's, *Criteria for Sewage Works Design*, December 1998.

Previously, the following four distinct types of flow were analyzed in the General Sewer Plan:

1. Residential
2. Commercial
3. Industrial
4. Infiltration and Inflow

In the previous plan, the residential flows were added to the commercial flow, and multiplied by a peaking factor that was dependent on the quantity of flow. Industrial users were peaked by a factor of three (maximum of three shifts per day), and infiltration and inflow (I/I) were added to the peak flows for a total flow.

The December 1998, *Criteria for Sewage Works Design*, changed the prescribed methodology for calculating flows within a basin. The new criteria increases the per capita flow to 100 gpcd, to account for I/I, and bases the peaking factor on population within the basin. This Comprehensive Plan uses the revised criteria to calculate anticipated flows within the District's boundary.

Flow Model

A model for projecting growth was created that made updating by actual connections possible throughout the duration of the Comprehensive Plan. Current connection data was gathered for the beginning of the Comprehensive Plan (Year 0, Beginning of 1997), future connections (households) were provided by Clark County Long Range Planning for the end of the Comprehensive Plan (Year 20, 2017). Connections for intermediate years were provided at year-end for years 1997 and 1998. This provided three points on a graph for use in projecting flows rather than the two that would be considered if only using the beginning and end points.

If the basin was nearly 100% developed, and the rate of growth indicated by actual connections was less than that projected by TAZ, then flow projections would be based on the actual growth rate rather than the projected growth rate. If the actual growth rate were consistent with the projected growth rate, then the growth rate would be based on the projected number of households, or an average of the actual and projected rates. In a basin showing a rapid rate of growth, and a limited area available for development, the rate of growth necessary to achieve actual projected households might be used, and this might be less than the growth rate projected using a geometric growth rate.

Residential Flows

Clark County Long Range Planning provided current Household (HH) population by Transportation Analysis Zone (TAZ), and capita per dwelling unit as currently indicated by census. In discussions with the Long Range Planners, they anticipate the population distribution to change with the year 2000 census. Currently, Clark County calculates single-family population at 2.3 persons per dwelling unit; after the 2000 census, it is anticipated that the single-family persons per dwelling unit will be increased to approximately 2.5.

The density change increases the overall flow anticipated by 8.7%; however, the peaking factor is decreased (using the new DOE criteria) with the additional population added to the basin. The effect of the change in density is negligible for this analysis, since most capital facilities serve large areas where the peaking factor is approaching the minimum of 2.5. The calculations for the Comprehensive Sewer Plan analysis assume 2.5 persons per dwelling unit for single family, and 1.9 persons per dwelling unit for Multi-family.

The Department of Ecology (DOE) now recommends a per capita flow of 100, which includes normal I/I within a residential or commercial area. This analysis uses the 100 gallons per capita per day (gpcd) to calculate flow projections.

The dwelling units per acre in various residential zones were calculated by averaging the densities shown in the Clark County Code, and multiplying this by a typical cover factor. The cover factor accounts for non-lot areas such as streets, storm water facilities, and undevelopable areas.

The flow from a typical residence determines what an Equivalent Residential Unit (ERU), and in this plan 250 gallons per day represent an ERU. Peak flow times for residential users are in the early morning from 7 – 9 am, and in the evening from 6 – 8 pm.

Flow projections for the 6, 10, 15, and 20-year horizons were calculated based on existing development patterns, household projections provided by Clark County, and connections permitted by the District.

Commercial Flows

Commercial flows within the district were assumed the equivalent to the assumptions in the previous comprehensive plan. In the previous plan, commercial flows were assumed 4.8 ERUs per acre. Using this value and 250 gallons per ERU, commercial development is anticipated to contribute 1200 gallons per acre per day. The cover percentage for the commercial zone was assumed 80% (slightly higher than single family due to greater intensity of use).

High intensity commercial uses are not anticipated within the 20-year horizon, therefore realistic flow projections, rather than worst case flow projections, were used to determine needed infrastructure improvements. Commercial flows tend to peak in the evening, and can add to the peak residential flows during the 6 – 8 pm peak flow times.

Industrial Flows

Most industrial users within the District are "dry" users. The cost of process wastewater treatment, and pre-treatment requirements within the district do not encourage high volume water users; therefore, industrial flows are generally low within the district, and those users that require a large volume of water and wastewater treatment are calculated on a case-by-case basis. For large contractual water users, each basin within the District has an allowance for a fixed contract flow in gallons per day. This quantity is not peaked, it is added to the flow subtotal which includes standard industrial flow in gallons per acre per day.

Industrial flows are considered more intense than commercial flows. In the previous Comprehensive Plan, industrial flow was considered equivalent to 7.0 residential customers per acre, or ERUs. Using this value, the anticipated flow from industrial areas is 1750 gallons per acre per day. Comparing the predicted flow from the flow model, and the actual flow at the Salmon Creek Wastewater Treatment Plant, the industrial flows were increased to 1800 gallons per acre day. The cover percentage for the industrial zone was assumed at 80% (slightly higher than single family due to greater intensity of use). These assumptions yield a flow of 1430 gpad.

Infiltration/Inflow

Infiltration and Inflow is now included in the gallons per capita per day used in the flow model. Industrial areas have I/I included within the determined flow per acre.

C. CAPITAL FACILITIES IMPROVEMENTS

1. SUMMARY

After completing the population study, identifying where growth should occur in accordance with the GMA process, and flows are projected from the anticipated growth, then the analysis was completed indicating the impact growth has on the existing infrastructure. In addition, an analysis was completed identifying the new improvements necessary to accommodate growth.

Improvements within the District are shown with the individual basin summaries in Section V.

Estimated costs were prepared for improvements within each basin. The unit costs for all estimates in this plan are based on 1999 estimated prices for the projected improvements. No factor for inflation has been added.

Total capital improvement costs over the 20-year planning period are shown in Table 2, on the following page.

Table 2. Total Capital Improvement Costs Over the 20-Year Period

Basin	3	4	5	6	7	8	9	10	15	20	Possible Future Improvements
	Jan-2000	Jan-2001	Jan-2002	Jan-2003	Jan-2004	Jan-2005	Jan-2006	Jan-2007	Jan-2012	Jan-2017	
1 WHIPPLE CREEK EAST	$261,142										
2 MILL CREEK								$1,235,383	$56,420	$126,541	
3 MT. VISTA											
4 I-5 NORTH	$22,138	$746,531		$62,668							
5 PLEASANT VALLEY NORTH								$286,339			
6 PLEASANT VALLEY SOUTH								$294,501			
7 NE 134TH STREET											
8 BARBERTON		$177,808	$100,030					$231,125			
9 SHERWOOD											
10 BLUEBERRY HILL											
11 SYLVAN CREEK											
12 HIGHWAY 99 EAST	$332,411	$25,000				$313,868					
13 HAZEL DELL NORTH		$19,561									
14 COUGAR CANYON	$299,717	$359,733	$270,373					$1,729,825	$446,986	$239,224	
15 CERRERO ESTATES											
16 MUIRWOOD											
17 MTN. VIEW GARDEN											
18 SEWARD BRIDGE SOUTH											
19 FELIDA	$110,000							$628,393	$321,980		
20 HIGHWAY 99 NORTH		$13,687								$160,962	
21 NE 16TH AVE				$22,950							
22 KNOLLRIDGE											
23 WOODCREEK											
24 ORO-VEGA											
25 WHIPPLE CREEK WEST	$304,000								$597,828		
26 SEWARD BRIDGE NORTH	$67,000										
27 GREEN LAKE											
28 ST. JOHNS											
29 GLENWOOD CREEK	$446,000								$347,910		
30 NE 86TH ST		$236,756								$370,794	
31 COUNTRY MEADOWS	$116,500		$40,000					$100,193	$643,903		
32 ORCHARD CREST NORTH											
33 ORCHARD CREST SOUTH											
34 COVINGTON NORTH			$40,000								
35 COVINGTON SOUTH											
36 GREEN MEADOWS EAST											
37 GREEN MEADOWS WEST								$237,243			
38 CURTIN CREEK								$816,651			
39 CEDAR 49											
40 LAKE RIVER											
41 LAKESHORE											$1,263,914
42 CHICKEN CREEK											
43 OVERLOOK											
44 HIGHWAY 99 SOUTH											
45 MINNEHAHA						$88,453					
46 HOCKINSON											
47 MEADOW GLADE											
I&I Program	$100,000	$75,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$100,000	$100,000	
TOTAL	**$2,058,907**	**$1,654,076**	**$500,403**	**$135,618**	**$50,000**	**$452,322**	**$50,000**	**$5,609,652**	**$2,515,027**	**$997,521**	**$1,263,914**
CUMMULATIVE	$2,058,907	$3,712,983	$4,213,386	$4,349,004	$4,399,004	$4,851,326	$4,901,326	$10,510,978	$13,026,006	$14,023,527	$15,287,441

IV. Financial Rate Analysis

DRAFT

I. CAPITAL PROGRAM FINANCING

A. INTRODUCTION AND BACKGROUND

This section of the Capital Facilities Plan addresses the capital financing requirements for Hazel Dell Sewer District (HDSD). The financial forecasts and rate revenue requirement projections are presented at a general, planning level of detail based on: 1) historical costs, 2) the 1999 and 2000 (preliminary) operating budget, and 3) planned capital expenditures. This analysis limited to describing the projected revenue requirement impacts of the District's capital program.

The engineering elements of the capital facilities plan address the physical status and needs of the Hazel Dell Sewer District which is primarily involved in providing sewer collection services. The financial element contained in this section focuses on the utility's ability to fund capital improvements and ongoing operations. This section reviews historical utility performance and evaluates future capital needs and funding options to develop projected utility revenue requirements.

The general, planning level at which the impacts are shown is particularly important when evaluating the potential rate impacts shown in the summary tables (contained at the end of this section). The figures have been developed using similar assumptions as those used in the District's budget scenario, assuming new customer growth of 750 ERUs per year. The other scenarios under consideration by the District (600 and 500 ERUs per year) would result in higher rate increases and/or significant delays in completing the capital improvements reflected in this plan.

Clark County has completed a significant expansion program at the Salmon Creek Wastewater Treatment Plant; Hazel Dell Sewer District is the single, direct wholesale treatment customer of the County and is directly responsible for the costs of the expansion. Hazel Dell recovers a portion of its costs from the City of Battle Ground, WA under a separate agreement. The rate impacts include the debt service associated with this treatment expansion which is expected to be funded by a combination of rates and the County's regional facilities charges (separate and distinct from the District's connection charge). The impacts reflect only the HDSD share of the debt service (82%), since the portion paid by Battle Ground (18%) is offset in its entirety by revenues from the City. The impact of any future treatment plant expansion program is not reflected in these projections as the potential costs and financing structure are not known at this point in time.

The financial planning analysis uses the current financial position of the utility and the projected Capital Improvements Program to develop a financing strategy from which utility financial performance is projected for the 1999 to 2007 financial planning period.

B. HISTORICAL FINANCIAL OVERVIEW

1. Debt Service Obligations and Reserve Funding

Hazel Dell Sewer District has issued Utility Local Improvement District (ULID) bonds to pay for many capital improvement projects in the past. The outstanding principal has been defeased, and the remaining assessment charges are used to repay the interfund loans used for the defeasement. Hazel Dell currently has no outstanding revenue bonds. The minimum 1.25 debt service coverage requirement (1.25 times annual principal plus interest) is based on total utility revenues. It is anticipated the District will borrow approximately $395,000 in 2000 to meet capital improvement costs as planned. The District may also choose to defer selected growth-related projects if insufficient funds are available or growth does not occur in the scheduled timeframe, or to use interfund loans from reserves as short-term financing, to be repaid with interest on a set schedule.

As indicated in the previous section, the District is also responsible for repayment of the entire debt associated with Clark County's Salmon Creek Wastewater Treatment Plant. This debt obligation is met through a combination of revenues from user charges, regional facilities charges collected from new development, and contract revenues from the City of Battle Ground.

The District maintains reserves for a variety of purposes, including system replacement and restoration. This is a prudent financial planning approach which recognizes that future capital needs will include replacement and/or restoration of existing system components, many of which were originally donated to the District by new development. The District maintains a minimum Maintenance/Operations fund balance based on 30 days M&O expenses as a working capital reserve, plus required current portions of the treatment plant debt service payments. The 1999 minimum M/O fund balance is set at $968,000.

2. Rates and Charges

Table IV-1 provides a summary of utility operating results for 1996 through 1998. The major operating expense categories are purchased treatment, salaries/wages, and various operating expenses. The utility relies on sewer rate revenues along with permit fees, tap & inspection fees, and other miscellaneous revenue to cover these expenses. The utility has generated a positive net income over the period and is in good financial health.

The current sewer rates in place for HDSD were implemented in January 1999. The existing single family residential (SFR) rate, and rate per equivalent residential unit, is $21.25 per month. Based on the assumptions described in the following section, this rate is projected to increase by 0.8% in 2000 and 13.7% in 2001, with cumulative increases through 2007 totaling 37.3%. The small increase in 2000 is associated with the debt service on the $395,000 in new debt assumed. While the District is considering managing the budget to postpone an increase to 2001, an alternative approach would be to consider a more level schedule of increases at 7% per year beginning in 2000, dropping to a more moderate 2-3% per year after 2003. In addition, the potential limitations on future increases given the passage of I-695 may argue for a more aggressive increase up front to cover a period of years while the implications of the initiative are sorted out.

The planned capital projects in 2000 ($3.7 million) are expected to be funded using reserves, connection charge revenues, a revenue bond issue of $395,000, and the final draw of an approved Public Works Trust Fund loan.

The existing local collection system connection charge was set in 1995 at $1,830. An update of the connection charge is under consideration, which would increase the charge to $2,300 per ERU for all new connections. This increase is driven by the significant investment in plant by the District since the last calculation, the majority of which was funded by cash reserves. The District is considering a change in policy that would require developer construction of selected facilities defined in the capital facilities plan (approximately one third of the growth-related projects). If this policy is implemented, the updated charge per ERU, excluding those projects, is $1,990. In both cases, the updated charges increase from the current level due to the significant level of capital investment made by the District since 1995, funded with District cash reserves.

The District has been responsive in setting the fees and charges needed to meet the changing needs of the utility. Prudent fiscal policies have been implemented to ensure that adequate funds are available to meet utility requirements, with funds set aside in anticipation of the need for on-going replacement and restoration of the system.

C. SIGNIFICANT MODEL ASSUMPTIONS

This financial analysis models the impact of the proposed capital program for HDSD. To perform this analysis, several assumptions have been made which could have a material impact on the financial projections, including:

- In other sections of this plan, customer population is estimated and escalated in terms of Equivalent Residential Units (ERUs) based on the engineering estimates. The financial impacts are calculated using a slightly different basis for service area growth, consistent with assumptions used by the District for budgeting purposes. Beginning in 2000, growth is assumed at 750 ERUs per year, of which 725 connect to the Salmon Creek Treatment Plant expansion. Over the projection period, this assumption results in somewhat less growth in ERUs than that reflected in the engineering analysis.

- The growth rate for 1999 is assumed to be 3.9%, resulting in 900 new connections, consistent with year to date experience.

- The capital projects may be funded by: Grants; Contributions-in-Aid-of-Construction (CIAC); PWTF loans; the Capital Fund (including connection charge revenues); Revenue Bonds; and direct rate funding. The order of financing assumed to occur is that all costs not funded first by known Grants/CIAC or PWTF loans are to be funded by the Capital Fund. If funds are not sufficient in the Capital Fund, then Revenue Bond funding and/or rates are calculated and then applied to the remaining requirement.

- The projections summarized in the following sections are based on the District's current connection charge and current policy regarding developer extensions. Changes in these assumptions might change the amount of projected borrowing but would not materially alter the projected near-term rate increases projected.

D. STRATEGY FOR FINANCING CAPITAL IMPROVEMENTS

1. Projected Capital Improvements Program

Table IV-2 provides a summary of the capital improvement program (CIP) and the associated costs for the period from 1999 to 2007. The projected costs of the capital improvements are escalated at an annual inflation rate of 3.5% with a total estimated cost of $12.9 million in 1999 dollars through 2007, including $1.8 million in budgeted projects for 1999. The total program in inflated dollars is $15.1 million through 2007.

2. Funding Strategy

The capital improvement program will require substantial funding from the Capital Fund. **Table IV-3** shows the summary of the Capital Improvements Program financing. This table shows the total capital funding required, the sources used to fund these requirements (grants/CIAC, PWTF, capital fund reserves, revenue bonds, and direct rate funding). The upper table reflects the capital project funding sources assuming the District's current policy. If the policy is changed, developers would be required to construct certain projects identified in the CIP. The lower table shows the funding sources under the changed policy, with the costs to be constructed by developers shown as contributions-in-aid-of-construction (CIAC). The results discussed in the remainder of this section relate to the first scenario, assuming the District's current policy remains in place.

The projects designated as replacement & restoration (R&R), which benefit existing ratepayers, are assumed to be paid from the R&R reserve balance. The majority of the other capital projects are assumed to be funded using the capital fund and connection charge revenues (if available) to minimize rate impacts.

As indicated earlier, the projected ending 1999 capital fund balance is not adequate to fund the projects planned for 2000. A $395,000 revenue bond is assumed to be issued to fund the shortfall. Alternative approaches include delaying selected projects until connection charge revenues are sufficient, or using an interfund loan (perhaps from the R&R reserve) to provide a short-term financing source to be repaid, with interest.

Grant and CIAC funding would reduce the burden on the funds, however, none has been identified at this point in time. Since a large portion of the CIP is expected to serve growth, grants may not be available as a source of funding. The analysis does not assume a further need for Public Works Trust Fund loans beyond those already received. However, the District should continue to actively pursue this low cost source of funding for qualifying projects.

The revenue bond assumptions used in this analysis are a 6.25% interest rate with a 20 year term and a coverage factor of 1.3 times annual revenue bond debt service. In addition, a 1.5% issuance cost and a one year reserve funding are included in the loan principal amount. Revenue bonds are assumed to be used if other sources are not sufficient unless rate funding ("pay as you go") is chosen. It is important to note that if the model shows that revenue bonds are issued, the amounts are shown in each year the funds are needed. In reality, the costs to issue bonds may make it more cost effective to consolidate borrowing into a few larger issues. The actual timing and size of bond issues

would be determined by the District in consultation with their Financial Advisor and Bond Counsel. A new revenue bond of approximately $395,000 is assumed in the year 2000.

Note from **Table IV-3** that the projects are predominantly funded from capital improvement fund reserves, which are generated by annual connection charges collected from new development. If development does not occur as planned, the District would expect to evaluate the possibility of delaying or avoiding projects which are intended to serve growth which has not materialized. This evaluation process, which would be applied each year in determining the need for projects, should protect against severe rate impacts driven by District capital improvement needs. The process must also consider the lag factor between commitments and actual expenditures, which may impact reserves depending on the timing of such a downturn.

3. Impacts on Cash-Basis Financial Performance

Table IV-4 shows the projected financial performance for HDSD that includes required increases over existing rates.

Sources of Cash: Service Charges are projected for the period from 1999 to 2007. These revenues are based on current rates and are escalated at the rate of customer growth. No future rate increase is included in these figures, since the purpose of the projection is to estimate the increase required over current rates. Non-Rate Revenues include permit fees, tap & inspection fees, and other miscellaneous revenue. Battle Ground contract revenues are projected based on the Agreement. Reserves over the minimum operating balance are also made available, as needed.

Uses of Cash: Purchased Treatment is the largest single expense item for the utility. Salaries/Wages are the largest component under direct District control. Most of the expenses are projected to increase at a rate of 5.0% per year. Debt service associated with the Salmon Creek Treatment Plant is paid through a combination of rates and regional facilities charge revenues and related reserves. The projection reflects completion of the phase-in of R&R reserve funding, with contributions based on the annual depreciation expense beginning in 2000. In addition, rate-funded additions to the rate stabilization reserve are projected to increase by $0.50 per ERU per month in 2001 and an additional $1.00 in 2002, in recognition of potential shortfalls in RFC revenues due to reduced growth.

Total Uses of Cash are compared to projected Sources of Cash resulting in the Net Additional Rate Revenue Requirement (a net revenue surplus is designated by parenthesis). The net rate revenue requirement surplus or shortfall is then compared to the rate revenues projected under existing rates to determine the rate revenue increase required to cover all cash requirements.

Based on the capital and operating projections, the projected rate revenue requirement increase required for 2000 is 0.8% and 2001 is 13.7% above the existing rate-generated revenues. The cumulative increase is projected at 37.3% by 2007.

The item in **Table IV-4** labeled *Capital Improvement Fund Activity* summarizes the projected cash flow through the fund. The cash in this fund consists of accumulated connection charge revenues that are deposited as new charges are collected. These funds,

along with transfers from related reserve funds, are available for capital project funding and debt service payments. Based on the 2000 projected beginning capital fund balance of $1.6 million, there will be a cash shortfall of approximately $360,000 to fund the 2000 capital program, necessitating issuance of $395,000 in new bonds. In later years, to the extent that money is available, this fund will continue to contribute cash to cover capital program costs as shown.

The Regional Facilities Charge Reserve is restricted to use for debt service and/or capital projects at the Clark County Salmon Creek Treatment Plant. The 82% HDSD share of the treatment revenue bonds debt service is intended to be 18% funded by rates and 82% by the Regional Facilities Charge. If the Regional Facilities Charge fund is insufficient to pay 82% of the debt service, then the rate funding increases as necessary. Existing treatment plant PWTF loans related to capacity expansion are paid from this fund as well to the extent that new growth benefited from the improvements.

The balance in the Replacement & Restoration reserve grows to over $15 million by 2007. Some of this accumulation is driven by the assumption that R&R expenditures, including those associated with replacing assets originally donated by developers, will increase over time as the system ages. However, given the magnitude of the reserve growth (which is driven by assumed increases in the annual depreciation expense), we recommend that the District evaluate both the reasonableness of the assumed depreciation lives (currently 50 years) and replacement requirements based on need. If such an evaluation indicates that assets are expected to last longer than the depreciation life or that needs will not increase in proportion to reserve growth, the reserve funding should be adjusted accordingly.

Finally, the balance that accumulates in the rate stabilization reserve should be monitored over time to ensure that the rate-funded portion does not grow beyond expected needs. As the current capacity at the treatment plant is reached, accumulation of a fund balance is appropriate, on the assumption that the balance could then be used to defease outstanding debt or to fund future capital expansion at the treatment plant.

Note: The figures shown in **Table IV-4** reflect the portion of the treatment plant debt service (82%) to be paid by HDSD customers and new connections. Battle Ground's share is expected to be paid entirely by revenues from the City.

E. FINDINGS AND RECOMMENDATIONS

This financing program assumes that the majority of project costs will be paid from Capital Improvement and R&R Fund reserves and connection charges, with revenue bonds and other sources used as necessary. This is consistent with the past practice of the District. Many of the projects included in the CIP program are intended to serve new growth. If this growth does not occur, it is likely that programs related to serving that growth would be postponed or eliminated and thus may not have a significant impact on user rates.

The rate projections for HDSD are primarily driven by increases in the rate funding of the rate stabilization reserve and the completion of the phased-in increases to the annual R&R reserve contribution. While the impacts of the recent expansion of Clark County's Salmon Creek Treatment Plant are fully reflected, no provision is made for a future expansion of that plant. The projected increases of 0.8% in 2000 and 13.7% in 2001, accumulating to 37.3% by 2007, are not directly driven by the District's capital improvement projects

except for a minor portion attributable to the new debt service. The bulk of the District CIP is funded using connection charges and capital reserves, which is appropriate given much of the program is intended to serve new development. Those elements related to replacement and restoration, which serve existing customers, are funded using R&R reserves as intended.

The District should evaluate the level of R&R funding in future years to ensure that reserves do not accumulate in excess of anticipated future needs and that the depreciation life assumed reasonably reflects the expected life of the assets. In addition, the balance in the rate stabilization reserve should be monitored to ensure that the rate funded element is sized to meet expected needs.

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Table IV-1

Hazel Dell Sewer District

INCOME STATEMENT RECAP 1996-1998

UTILITY OPERATING INCOME	1996	1997	1998
Operating Revenues:			
Charges for Services	$ 5,293,795	$ 6,513,969	$ 6,907,814
Permits	68,155	69,510	61,466
Connection Charges	973,225	3,341,739	3,341,740
Miscellaneous	193,571	345,787	236,786
TOTAL OPERATING REVENUE	$ 6,528,746	$10,271,005	$ 10,547,806
Operating Expenses:			
Salaries and Wages	$ 861,893	$ 924,614	$ 1,117,484
Personnel Benefits	296,948	306,400	401,556
Supplies	101,845	314,391	141,660
Professional Services	69,176	76,560	81,580
Insurance	46,609	63,564	48,229
Treatment Contracts	3,069,121	7,205,971	7,255,493
Taxes	151,363	54,963	262,888
Miscellaneous	162,782	218,467	204,709
Depreciation	980,922	931,138	916,786
TOTAL OPERATING EXPENSES	$ 5,740,659	$10,096,068	$ 10,430,385
OPERATING INCOME (LOSS)	$ 788,087	$ 174,937	$ 117,421
Non-Operating Revenues (Expenses):			
Interest Earnings	$ 444,159	$ 509,165	$ 625,173
Miscellaneous Revenues (Expenses)	1,691	673,400	41,779
Interest on Long Term Debt	(23,170)	(32,354)	(68,946)
Amortization Debt Discount	(23,441)	(23,441)	(23,441)
TOTAL NON-OPERATING REVENUE (EXPENSE)	$ 399,239	$ 1,126,770	$ 574,565
NET INCOME (LOSS)	$ 1,187,326	$ 1,301,707	$ 691,986

Hazel Dell Sewer District
Capital Facilities Plan

Edit: 16-Nov-99

Table IV-2

Capital Improvement Program

Growth- District Share

Basin		Total	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
1	1-Whipple Creek North	$ 237,150		$237,150								$ 237,150
2	2-Mill Creek North	155,588									$155,588	155,588
3	2-Mill Creek East	-										-
4	4-I-5 North	663,335	$75,000	$543,985			$44,350					663,335
5	5-Pleasant Valley North	31,307									$31,307	31,307
6	6-Pleasant Valley South	222,629									$222,629	222,629
7	8-Barberton	144,716			$57,202	$32,154					$55,360	144,716
8	12-Hwy99 East	398,781	$4,000	$80,913					$313,868			398,781
9	14-Cougar Canyon	838,727		$94,517	$113,443	$85,263					$545,504	838,727
10	19-Felida & Lake River	738,392		$110,000							$628,392	738,392
11	20-Hwy 99 North	9,686		$9,686								9,686
12	21-NE 16th Avenue	13,167					$13,167					13,167
13	25-Whipple Creek West	638,515	$51,000	$587,515								638,515
14	26-Seward North	98,317		$98,317								98,317
15	29-Glenwood	618,218	$540,000	$78,218								618,218
16	30-NE 86th Street	151,393						$151,393				151,393
17	31-Country Meadows	466,278	$135,000	$331,278								466,278
18	34-Covington North	29,314				$29,314						29,314
19	35-Covington South	-										-
20	37-Green Meadows West	906,070	$740,000								$166,070	906,070
21	38-Curtin Creek	472,581	$14,000	$300,000							$158,581	472,581
22	45-Minnehaha	28,150							$28,150			28,150
23	Salmon Creek Paralleling	-										-
24	I&I Program	118,750		$25,000	$18,750	$12,500	$12,500	$12,500	$12,500	$12,500	$12,500	118,750
25	46-Hockinson Force Main	100,000	$100,000									100,000
26	Comprehensive Plan	190,000	$190,000									190,000
27		-										-
28		-										-
29		-										-
30		-										-
31		-										-
32		-										-
33		-										-
34		-										-
35		-										-
36		-										-
	Total Growth Oversize	$ 7,271,064	$ 1,849,000	$ 2,496,578	$ 189,395	$ 159,231	$ 70,017	$ 163,893	$ 354,518	$ 12,500	$ 1,975,931	$ 7,271,064

R&R- District Share

Basin		Total	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
1	1-Whipple Creek North	$ 23,992		$23,992								$ 23,992
2	2-Mill Creek North	152,014									$152,014	152,014
3	2-Mill Creek East	-										-
4	4-I-5 North	243,002		$224,684			$18,318					243,002
5	5-Pleasant Valley North	2,348									$2,348	2,348
6	6-Pleasant Valley South	71,872									$71,872	71,872
7	8-Barberton	-										-
8	12-Hwy99 East	-										-
9	14-Cougar Canyon	1,820,924		$205,201	$246,291	$185,111					$1,184,321	1,820,924
10	19-Felida & Lake River	-										-
11	20-Hwy 99 North	4,001		$4,001								4,001
12	21-NE 16th Avenue	9,783					$9,783					9,783
13	25-Whipple Creek West	-										-
14	26-Seward North	-										-
15	29-Glenwood	36,754		$36,754								36,754
16	30-NE 86th Street	85,363						$85,363				85,363
17	31-Country Meadows	10,696		$10,696								10,696
18	34-Covington North	10,686				$10,686						10,686
19	35-Covington South	-										-
20	37-Green Meadows West	71,173									$71,173	71,173
21	38-Curtin Creek	-										-
22	45-Minnehaha	-										-
23	Salmon Creek Paralleling	-										-
24	I&I Program	356,250		$75,000	$56,250	$37,500	$37,500	$37,500	$37,500	$37,500	$37,500	356,250
25												-
26												-
27												-
28												-
29												-
30												-
31												-
32		-										-
	Total R&R Oversized	$ 2,898,858	$ -	$ 580,328	$ 302,541	$ 233,297	$ 65,601	$ 122,863	$ 37,500	$ 37,500	$ 1,519,228	$ 2,898,858

Hazel Dell Sewer District
Capital Facilities Plan

Edit: 16-Nov-99

Growth: Developer Share

Basin		Total	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
1	1-Whipple Creek North	$0										$ -
2	2-Mill Creek North	$927,780									$927,780	927,780
3	2-Mill Creek East	$0										-
4	4-I-5 North	$0										-
5	5-Pleasant Valley North	$252,684									$252,684	252,684
6	6-Pleasant Valley South	$0										-
7	8-Barberton	$364,247			$120,606	$67,876						364,247
8	12-Hwy99 East	$251,498		$251,498							$175,765	251,498
9	14-Cougar Canyon	$0										-
10	19-Felida & Lake River	$0										-
11	20-Hwy 99 North	$0										-
12	21-NE 16th Avenue	$0										-
13	25-Whipple Creek West	$0										-
14	26-Seward North	$0										-
15	29-Glenwood	$75,009		$75,009								75,009
16	30-NE 86th Street	$0										-
17	31-Country Meadows	$155,459		$155,459								155,459
18	34-Covington North	$0										-
19	35-Covington South	$0										-
20	37-Green Meadows West	$0										-
21	38-Curtin Creek	$658,070									$658,070	658,070
22	45-Minnehaha	$60,303							$60,303			60,303
23	Salmon Creek Paralleling	$0										-
24	I&I Program	$0										-
25		$0										-
26		$0										-
27		$0										-
28		$0										-
29		$0										-
30		$0										-
	Total Growth-Developer	$2,745,050	$ -	$ 481,967	$ 120,606	$ 67,876	$ -	$ -	$ 60,303	$ -	$ 2,014,299	$ 2,745,050

Financing

TOTAL CAPITAL IMPROVEMENT PROGRAM	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Total Growth (District & Developer)	$1,849,000	$2,978,545	$310,001	$227,107	$70,017	$163,893	$414,821	$12,500	$3,990,230	$ 10,016,114
Escalated Growth Cost	1,849,000	3,082,794	332,081	251,798	80,346	194,653	509,921	15,903	5,254,371	11,570,868
Total R&R	-	580,328	302,541	233,297	65,601	122,863	37,500	37,500	1,519,228	2,898,858
Escalated R&R Cost	-	600,639	324,089	258,661	75,279	145,923	46,097	47,710	2,000,533	3,498,932
Total Program	$ 1,849,000	$ 3,558,873	$ 612,542	$ 460,404	$ 135,618	$ 286,756	$ 452,321	$ 50,000	$ 5,509,458	$ 12,914,972
Total Escalated Costs	$ 1,849,000	$ 3,683,434	$ 656,170	$ 510,458	$ 155,625	$ 340,576	$ 556,018	$ 63,614	$ 7,254,904	$ 15,069,799
Developer Share	$ -	$ 481,967	$ 120,606	$ 67,876	$ -	$ -	$ 60,303	$ -	$ 2,014,299	$ 2,745,050
Developer Share Escalated Cost	-	498,836	129,196	75,256	-	-	74,128	-	2,652,447	3,429,861
HDSD Share	1,849,000	3,076,906	491,936	392,528	135,618	286,756	392,018	50,000	3,495,159	10,169,922
HDSD Escalated Cost	$ 1,849,000	$ 3,184,598	$ 526,975	$ 435,203	$ 155,625	$ 340,576	$ 481,890	$ 63,614	$ 4,602,458	$ 11,639,938
Total Escalated Costs	$ 1,849,000	$ 3,683,434	$ 656,170	$ 510,458	$ 155,625	$ 340,576	$ 556,018	$ 63,614	$ 7,254,904	$ 15,069,799

Hazel Dell Sewer District
Summary of Debt Service Revenue Requirements
Edit: 11/15/99

Table IV-3

Capital Improvement Program Summary with Developer Donations(from Capital sheet)

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total Capital Expenditures (adjusted for inflation)	$1,849,000	$3,683,434	$ 656,170	$ 510,458	$ 155,625	$ 340,576	$ 556,018	$ 63,614	$ 7,254,904
Financing									
Grants/CIAC	$0	$0	$0	$0	$0	$0	$0	$0	$0
PWTF	$50,267	$0	$0	$0	$0	$0	$0	$0	$0
R&R Fund	$0	$600,639	$324,089	$258,661	$75,279	$145,923	$46,097	$47,710	$2,000,533
Capital Fund Cash Balance	$1,798,733	$2,725,084	$332,081	$251,798	$80,346	$194,653	$509,921	$15,903	$5,254,371
Revenue Bond Proceeds	$0	$357,710	$0	$0	$0	$0	$0	$0	$0
Rate Funded	$0	$0	$0	$0	$0	$0	$0	$0	$0
ULID	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL FINANCING	$1,849,000	$3,683,434	$656,170	$510,458	$155,625	$340,576	$556,018	$63,614	$7,254,904
Total New Revenue Bonds Issued (including issuance costs and reserve if funded from proceeds)	$ -	$ 395,376	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Capital Improvement Program Summary without Developer Donations(from Capital sheet)

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total Capital Expenditures (adjusted for inflation)	$1,849,000	$3,683,434	$ 656,170	$ 510,458	$ 155,625	$ 340,576	$ 556,018	$ 63,614	$ 7,254,904
Financing									
Grants/CIAC	$0	$481,967	$120,606	$67,876	$0	$0	$60,303	$0	$2,014,299
PWTF	$50,267	$0	$0	$0	$0	$0	$0	$0	$0
R&R Fund	$0	$600,639	$324,089	$258,661	$75,279	$145,923	$46,097	$47,710	$2,000,533
Capital Fund Cash Balance	$1,798,733	$2,255,167	$211,475	$183,921	$80,346	$194,653	$449,618	$15,903	$3,240,072
Revenue Bond Proceeds	$0	$345,661	$0	$0	$0	$0	$0	$0	$0
Rate Funded	$0	$0	$0	$0	$0	$0	$0	$0	$0
ULID	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL FINANCING	$1,849,000	$3,683,434	$656,170	$510,458	$155,625	$340,576	$556,018	$63,614	$7,254,904
Total New Revenue Bonds Issued (including issuance costs and reserve if funded from proceeds)	$ -	$ 382,058	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Table IV-4
SUMMARY OF FINANCIAL PROJECTIONS
Hazel Dell Sewer District

16-Nov-99

Projection of Operations	1999	2000	2001	2002	2003	2004	2005	2006	2007
Service Charges (w/o rate increases)	$6,132,240	$6,323,490	$6,514,740	$6,705,990	$6,897,240	$7,088,490	$7,279,740	$7,470,990	$7,662,240
Non-Rate Revenues	1,656,018	1,861,482	2,474,480	2,365,122	2,281,262	2,155,912	2,053,082	1,951,008	1,966,400
Revenues from BattleGround	1,221,711	1,226,955	1,201,969	1,219,129	1,245,366	1,264,516	1,285,099	1,307,963	1,328,530
Use of Operating Funds for Rate Levelization	20,499	299,917	0	57,554	0	0	0	0	0
Total Sources of Cash	***$9,030,468***	***$9,711,844***	***$10,191,189***	***$10,347,795***	***$10,423,868***	***$10,508,917***	***$10,617,922***	***$10,729,960***	***$10,957,170***
Salaries & Benefits	$1,854,522	$1,967,112	$2,065,468	$2,168,741	$2,277,178	$2,391,037	$2,510,589	$2,636,118	$2,767,924
Other Services & Charges	781,979	833,283	855,997	909,804	957,070	1,004,532	1,053,689	1,105,220	1,156,919
Treatment (excluding Debt Service)	2,470,389	2,564,092	2,692,296	2,826,911	2,968,257	3,116,670	3,272,503	3,436,128	3,607,935
Hazel District Share of Debt Service/Reserves/Coverage (from Rates)	1,871,690	2,129,745	2,905,470	3,098,375	3,023,136	2,895,568	2,789,897	2,684,841	2,695,387
BattleGround Share of Treatment	1,221,711	1,226,955	1,201,969	1,219,129	1,245,366	1,264,516	1,285,099	1,307,963	1,328,530
Repair & Repl Fund Contribution	700,177	962,475	1,241,902	1,535,000	1,651,000	1,771,000	1,891,000	2,011,000	2,131,000
Adjustment to Levelize	0	0	78,461	9,327	0	0	0	0	0
Capital Outlays/Rate Funded Capital	130,000	80,100	82,904	85,805	88,808	91,917	95,134	98,463	101,910
Additions to Operating Reserve	0	0	17,108	0	16,495	23,290	24,706	26,584	26,209
Total Uses of Cash	***$9,030,468***	***$9,763,761***	***$11,141,574***	***$11,853,093***	***$12,227,310***	***$12,558,529***	***$12,922,618***	***$13,306,317***	***$13,815,813***
Net Add'l Rate Revenue Requirement	***$0***	***$51,917***	***$950,386***	***$1,505,298***	***$1,803,442***	***$2,049,611***	***$2,304,696***	***$2,576,357***	***$2,858,643***
Increase Needed over Current Rates	***0.0%***	***0.8%***	***14.6%***	***22.4%***	***26.1%***	***28.9%***	***31.7%***	***34.5%***	***37.3%***
Increase Needed over Prior Max Rate	***0.0%***	***0.8%***	***13.7%***	***6.9%***	***3.0%***	***2.2%***	***2.1%***	***2.1%***	***2.1%***
Estimated Rate per ERU	$21.25	$21.42	$24.35	$26.02	$26.81	$27.39	$27.98	$28.58	$29.18
Ending Fund Balances									
General Maintenance/Operation	***$1,287,618***	***$987,701***	***$1,083,270***	***$1,035,043***	***$1,051,538***	***$1,074,828***	***$1,099,534***	***$1,126,118***	***$1,152,328***
System Replacement & Restoration	***$3,140,496***	***$3,682,091***	***$4,796,654***	***$6,297,743***	***$8,139,005***	***$10,074,582***	***$12,276,348***	***$14,650,179***	***$15,249,025***
Revenue Bond Fund (Non-ULID)	***$0***	***$36,053***	***$36,954***	***$37,878***	***$38,825***	***$39,796***	***$40,790***	***$41,810***	***$42,856***
ULID-Related Funds	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***	***$0***
Capital Improvement Fund (Non-ULID) Activity									
Beginning Balance	$2,021,529	$1,620,104	$0	$698,949	$1,497,728	$2,489,110	$3,391,333	$4,002,953	$5,279,514
plus: Connection Charges	$1,647,000	$1,372,500	$1,372,500	$1,372,500	$1,372,500	$1,372,500	$1,372,500	$1,372,500	$1,372,500
plus: Transfer from SR&R Fund	$0	$0	$0	$0	$0	$0	$0	$0	$0
plus: Investment Interest	$91,713	$74,815	$34,312	$51,786	$71,756	$96,540	$119,096	$134,386	$166,300
plus: PWTF Loan Proceeds	$50,267	$0	$0	$0	$0	$0	$0	$0	$0
plus: Revenue Bonds	$0	$357,710	$0	$0	$0	$0	$0	$0	$0
plus: Grants/CIAC	$0	$0	$0	$0	$0	$0	$0	$0	$0
plus: Interfund Repayment (ULID defeased)	$0	$0	$0	$0	$0	$0	$0	$0	$0
less: Administrative Fee to M&O	$24,705	$20,588	$20,588	$20,588	$20,588	$20,588	$20,587	$20,588	$20,588
less: Applicable PWTF & Non-ULID Debt Service	$316,197	$318,626	$316,926	$314,881	$313,724	$313,386	$311,305	$155,698	$154,285
less: Payback to SR&R Fund	$0	$0	$0	$0	$0	$0	$0	$0	$0
less: New PWTF	$503	$3,122	$3,095	$3,069	$3,042	$3,016	$2,990	$2,963	$2,937
less: New Revenue Bond Debt Service	$0	$0	$35,174	$35,174	$35,174	$35,174	$35,174	$35,174	$35,174
less: Capital Improvement Funding	$1,849,000	$3,082,794	$332,081	$251,798	$80,346	$194,653	$509,921	$15,903	$5,254,371
Ending Capital Fund Balance	***$1,620,104***	***$0***	***$698,949***	***$1,497,728***	***$2,489,110***	***$3,391,333***	***$4,002,953***	***$5,279,514***	***$1,350,960***
Rate Stabilization Reserve									
Beginning Balance	$2,646,066	$2,360,720	$1,750,689	$1,411,219	$1,524,688	$1,776,118	$2,207,864	$2,804,898	$3,574,422
plus: Regional Facilities Charges	$2,737,020	$2,402,650	$2,530,975	$2,665,100	$2,806,475	$2,955,825	$3,085,600	$3,221,900	$3,221,900
plus: Budgeted Transfer from Rates	$283,596	$297,576	$459,864	$788,940	$811,440	$833,940	$856,440	$878,940	$901,440
plus: Investment Interest	$88,202	$78,691	$58,356	$47,041	$50,823	$59,204	$73,595	$93,497	$119,147
less: Administrative fee to M&O	$41,055	$36,040	$37,965	$39,976	$42,097	$44,337	$46,284	$48,329	$48,329
less: PWTF Loan Payments	$246,466	$244,338	$241,787	$239,235	$236,684	$234,132	$231,581	$229,028	$226,477
less: Budgeted Use of Rate funded Rate Stab.	$0	$208,507	$857,691	$722,511	$610,834	$461,397	$333,001	$202,913	$194,537
less: Clark County Debt Service from Rate Stab. (remainder rate funded)	$3,106,643	$2,900,062	$2,251,223	$2,385,888	$2,527,694	$2,677,356	$2,807,735	$2,944,543	$2,947,094
Ending Rate Stabilization Fund Balance	***$2,360,720***	***$1,750,689***	***$1,411,219***	***$1,524,688***	***$1,776,118***	***$2,207,864***	***$2,804,898***	***$3,574,422***	***$4,400,473***

backup

Hazel Dell Sewer District
Input of Assumptions
Edit: 16-Nov-99

Financing Assumptions	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Current Monthly Rate per ERU		$21.25								
Fund/Investment Earnings:		5.00%								
Cost Escalation Rates										
General			5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
County Sewer Treatment			5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
City Sewer Treatment			5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Capital Improvement Program		3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
Growth Rate:		3.18%	3.12%	3.01%	2.94%	2.85%	2.77%	2.70%	2.63%	2.56%
Average ERUs:	23,148	24,048	24,798	25,548	26,298	27,048	27,798	28,548	29,298	30,048
State Tax Rates										
Collection Related Revenue	3.852%	on collection rate revenue								
Collection Related Revenue % of Rate		50%	50%	50%	50%	50%	50%	50%	50%	50%
Connection Charge Rate (B&O Tax)	1.50%	on local conn. chg. revenues and RFC revenues (treatment operating costs not subject to tax)								

Future Long-Term Debt Assumptions:

	Rev. Bond*	PWTF*	ULID
Type of Debt			
Life of Debt (years)	20	20	20
Interest Rate	6.25%	1.00%	6.00%
Coverage Factor Require **	1.30	#N/A	1.25
Fund Reserve from Proceeds (1 = Y, 0 = N)	1	#N/A	1
Issuance Cost	1.50%	0.00%	1.50%
Pay new debt service from Capital Fund (0 = Yes, 1 = No, fund from rates)	0	0	#N/A

*Interest only, first year
**see below: Coverage Input for Clark County Revenue Bond Debt and Other Existing Revenue Bond Debt (new collection debt) located in the "Existing Debt Service" section

Selection of Financial Policies/Alternatives	1999	2000	2001	2002	2003	2004	2005	2006	2007
Repair & Replacement Funding									
Percentage of Depreciation	76%	100%	100%	100%	100%	100%	100%	100%	100%
Repair & Replacement Funding	$700,177	$962,475	$1,241,902	$1,535,000	$1,651,000	$1,771,000	$1,891,000	$2,011,000	$2,131,000
Include Developer Share of Capital in Calculations	Yes								
Minimum Operating (Maintenance Fund) Balance									
Number of Days Cash in Operating Reserve	30	30	30	30	30	30	30	30	30
Percentage of Next Year's PWTF Payment	50%	50%	50%	50%	50%	50%	50%	50%	50%
Percentage of Next Year's Revenue Bond Interest Payment	8%	8%	8%	8%	8%	8%	8%	8%	8%
Percentage of Next Year's Revenue Bond Principal Payment	8%	8%	8%	8%	8%	8%	8%	8%	8%

Fund Balances and Tramfers

Fund Balances

	Estimated Ending 1998
General Maintenance/Operation	$1,308,137
ULID Debt Service	$0
ULID Construction	$0
System Replacement and Restoration	$2,459,847
Capital Improvement (Non-ULID)	$2,071,529
Rate Stabilization Reserve (RFC Funded)	$1,364,366
Rate Stabilization Reserve (Rate Funded)	$1,281,700
Revenue Bond Fund (new)	$0

Note: Unemployment Reserve Account not shown due to limited activity.

Budgeted Annual Tramfers

	1999		Budgeted
From Reg. Facilities Charge Reserve to MVO (admin fee)	$41,055	Calculated amount replaces budgeted	$38,441
From Capital Impr. Fund to MVO	$24,705	Calculated amount replaces budgeted	$24,019
Budgeted Expenditures paid from R&R fund	$251,200		
Transfer from System R&R to Capital Fund	$0		
Annual Budgeted Minor Capital Outlays/Expenses*	$130,000	$40,100	

Hazel Dell Sewer District
Input of Existing Debt Service
Edit: 16-Nov-99

TREATMENT RELATED DEBT SERVICE

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
PWTF Loan: Phase IA County WWTP Expansion, #88596204											
	Principal	46,827	46,827	46,827	46,827	46,827	46,827	46,827	46,827	46,827	46,827
	Interest	10,302	9,365	8,429	7,492	6,556	5,619	4,683	3,746	2,810	1,873
	Total Payment	57,129	$56,192	$55,256	$54,319	$53,383	$52,446	$51,510	$50,573	$49,637	$48,700
HDSD Rate Share	16%	$10,115	$9,946	$9,777	$9,609	$9,440	$9,272	$9,103	$8,935	$8,766	$8,598
HDSD RFC Share	82%	$46,078	$45,310	$44,542	$43,774	$43,006	$42,239	$41,470	$40,703	$39,934	$39,167
City of Battle Ground Share	0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PWTF Loan: Phase 1B (two loans) County WWTP Expansion, #89015 and #92016											
	Principal	207,632	210,579	210,579	210,579	210,579	210,579	210,579	210,579	210,579	210,579
	Interest	28,539	26,804	24,770	22,664	20,558	18,453	16,347	14,241	12,135	10,029
	Total Payment	$236,171	$237,383	$235,349	$233,243	$231,138	$229,032	$226,926	$224,820	$222,714	$220,609
County Share	1.99%	$4,700	$4,724	$4,683	$4,642	$4,600	$4,558	$4,516	$4,474	$4,432	$4,390
City of Battle Ground Share	6.19%	$14,619	$14,402	$14,278	$14,150	$14,023	$13,895	$13,767	$13,639	$13,512	$13,384
HDSD Total Share	91.82%	216,852	217,965	216,098	214,164	212,230	210,297	208,363	206,430	204,496	202,563
HDSD Rate Share	18.00%	$39,033	$39,234	$38,898	$38,550	$38,201	$37,853	$37,505	$37,157	$36,809	$36,461
HDSD RFC Share	82.00%	$177,818	$178,731	$177,200	$175,615	$174,029	$172,444	$170,858	$169,273	$167,687	$166,102
PWTF Loan: Effluent Pump Station, #93012											
	Principal	$6,572	$29,479	$29,479	$29,479	$29,479	$29,479	$29,479	$29,479	$29,479	$29,479
	Interest	$1,364	$3,872	$3,127	$3,832	$3,537	$3,243	$2,948	$2,653	$2,358	$2,064
	Total Payment	$9,886	$33,350	$33,606	$33,311	$33,016	$32,721	$32,427	$32,132	$31,837	$31,542
City of Battle Ground Share	18.00%	$1,780	$6,003	$6,049	$5,996	$5,943	$5,890	$5,837	$5,784	$5,731	$5,678
HDSD Rate Share of remainder	18.00%	$1,459	$4,923	$4,960	$4,917	$4,873	$4,830	$4,786	$4,743	$4,699	$4,656
HDSD RFC Share of remainder	82.00%	$6,648	$22,425	$22,596	$22,398	$22,200	$22,002	$21,804	$21,605	$21,407	$21,209
Clark County Revenue Bond Debt											
	Principal	$1,705,000	$1,775,000	$1,860,000	$1,950,000	$2,045,000	$1,825,000	$1,925,000	$2,035,000	$2,160,000	$2,275,000
Coverage	Interest	$2,921,020	$2,845,230	$2,763,095	$2,673,608	$2,577,843	$2,842,650	$2,742,985	$2,635,935	$2,520,928	$2,397,265
1.10	Total Debt Service	$4,626,020	$4,620,230	$4,623,095	$4,623,608	$4,622,843	$4,667,650	$4,667,985	$4,670,935	$4,680,928	$4,672,265
City of Battle Ground Share	18.00%	$832,684	$831,641	$832,157	$832,249	$832,112	$840,177	$840,237	$840,768	$842,567	$841,008
HDSD Rate Share or Post-BG Bal.	18.00%	$682,801	$681,946	$682,369	$682,445	$682,332	$688,945	$688,995	$689,430	$690,905	$689,626
HDSD RFC Share	82.00%	$3,110,536	$3,106,643	$3,108,569	$3,108,914	$3,108,400	$3,138,528	$3,138,753	$3,140,737	$3,147,456	$3,141,631

Non-rate share of Clark County Debt Service is Paid out of the Regional Facilities Charge Reserve (when funds are available)

COLLECTION RELATED DEBT SERVICE

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
PWTF Loan: Other Existing Collection related loans											
95010 - Glenwood	Principal	$107,514	$141,317	$141,317	$141,317	$141,317	$141,317	$141,317	$141,317	$141,317	$141,317
96018 - Hocklnson	Interest	$23,361	$23,080	$22,860	$21,447	$20,034	$18,620	$17,207	$15,794	$14,381	$12,968
	Total Payment	$130,875	$164,397	$164,177	$162,764	$161,351	$159,937	$158,524	$157,111	$155,698	$154,285
HDSD Rate Share	0.00%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
HDSD Cap. Fund (if avail, else rates)	100.00%	$130,875	$164,397	$164,177	$162,764	$161,351	$159,937	$158,524	$157,111	$155,698	$154,285
LTGO Debt: St. John's Interceptor											
	Principal	$104,538	$109,516	$116,983	$121,961	$126,939	$133,162	$140,629	$146,851		0
	Interest	$48,914	$42,284	$37,466	$32,291	$26,591	$20,625	$14,395	$7,343		0
	Total Debt Service	$153,452	$151,800	$154,449	$154,162	$153,530	$153,787	$154,862	$154,194	$0	$0
HDSD Rate Share	0.00%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
HDSD Cap. Fund (if avail, else rates)	100.00%	$153,452	$151,800	$154,449	$154,162	$153,530	$153,787	$154,862	$154,194	$0	$0
Other Existing Revenue Bond Debt											
Coverage 1.25	Principal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Interest	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Total Debt Service	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
HDSD Rate Share	100.00%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
HDSD Capital Fund	0.00%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Existing ULID Debt Service Schedules

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
19xx Sewer Revenue											
	Principal	0	0	0	0	0	0	0	0	0	0
	Interest	0	0	0	0	0	0	0	0	0	0
19xx Sewer Revenue											
	Principal	0	0	0	0	0	0	0	0	0	0
	Interest	0	0	0	0	0	0	0	0	0	0
Total ULID Debt Service											
	Principal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Interest	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Subject to Coverag	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

ULID Assessment Receipts

Projected Assessment Receipts on new ULIDs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Reserve Funding on Existing Revenue Bond Debt											
	ULID	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Non-ULID	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Projected ULID Assessment Receipts (ULIDs 17-43)		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
	ULID 32	2,319	2,143	2,048	512	1,976	1,454	1,334	1,217		
	ULID 33	697	638	620	581	543	691	634	646	532	
	ULID 34	1,526	1,442	1,358	1,273	1,189	1,362	1,165	1,070	973	
	ULID 35	1,077	1,045	973	941	891	1,107	1,039	1,070	901	832
	ULID 36	1,233	1,161	1,068	1,037	1,005	1,269	1,234	1,199	1,114	1,029
	ULID 37	647	626	594	572	571	559	508	476	446	413
	ULID 39	6,615	6,358	6,101	5,844	5,598	5,977	5,689	5,401	5,113	4,826
	ULID 42	8,327	8,004	7,686	7,357	7,034	6,724	6,400	6,076	5,752	5,429
	ULID 43	53,998	51,892	49,797	47,702	45,606	43,511	41,415	39,320	37,225	35,129
	ULID 17-31	22,898	15,102	4,503	4,155	297	2,553	1,742	0	0	0
	Total Receipts (for ULIDs 17-43)	$104,897	$89,000	$75,303	$71,854	$64,838	$65,193	$61,219	$56,315	$52,057	$47,658
Existing ULID Assessment Receipts (non-defeased)											
	Project 1	0	0	0	0	0	0	0	0	0	0
	Project 2	0	0	0	0	0	0	0	0	0	0
	Project 3	0	0	0	0	0	0	0	0	0	0
	Project 4	0	0	0	0	0	0	0	0	0	0
	Project 5	0	0	0	0	0	0	0	0	0	0
	Total Receipts (for existing ULIDs non-defeas	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rate Contribution to Fund ULID Debt		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Connection Charge Information

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Connection Charges:											
	Current Charge	$1,830									
	New Charge	$2,300									
	0 = Use Current Charge 1 = Use New Charge										
	Selection:	0									
Equivalent Residential Units			Projected Growth	Projected Growth	Projected Growth	Projected Growth	Projected Growth	Projected Growth	Projected Growth	Projected Growth	Projected Growth
	Total Service Area 23,148		900	750	750	750	750	750	750	750	750
Connection Charge Revenue:			Budgeted $1,647,000	Projected $1,372,500	Projected $1,372,500	Projected $1,372,500	Projected $1,372,500	Projected $1,372,500	Projected $1,372,500	Projected $1,372,500	Projected $1,372,500
Regional Facilities Charge											
	Projected Charge:		$3,146	$3,314	$3,491	$3,676	$3,871	$4,077	$4,296	$4,444	$4,444
	Salmon Crk Growth = 96.7% of Total Service Area Growth										
			Budgeted	Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected
	Salmon Creek Growth:		870	725	725	725	725	725	725	725	725
Total Regional Facilities Charge Revenue:			$2,737,020	$2,402,650	$2,530,975	$2,665,100	$2,806,475	$2,955,825	$3,085,600	$3,221,900	$3,221,900

Utility Plant-in-Service

	Estimated Asset Balance
Utility Plant-in-Service	12/31/98
Land and Land Rights	$570,854
Donated Mains	$20,180,920
Collection and Transmission	
Mains	$21,316,272
Other	$118,728
Maintenance & Collection	$239,698
General Plant	
Office Equip/Furniture	$701,691
Transportation Equipment	$572,427
Office and Shop	$343,167
Communications Equipment	$21,841
Construction Work in Progress	$5,657,341
Total Fixed Assets	$49,722,939
Contribution in Aid of Construction	
Donated Mains	($20,180,920)
Grants	($1,978,823)
Non-CIAC Utility Plant	$27,563,196
Net Plant Allocable	$27,563,196

Accumulated Interest Calculation

Asset Aging:		Average Age
% of Plant > 10 years	40.8%	10.0 years
% of Plant < 10 years	59.2%	4.6 years
Interest Rate	6.5%	
Average Depreciable Life	50	Years

Hazel Dell Sewer District
Input of Assumptions
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Operating Budget Inputs	Estimated 1998	Budget 1999	Projected 2000	Projected 2001	Projected 2002	Projected 2003	Projected 2004	Projected 2005	Projected 2006	Projected 2007	Escalation Basis
Operating Revenues											
Service Charges (before increase)	$5,573,558	$ 6,124,240	$ 6,323,490	$ 6,514,740	$ 6,705,990	$ 6,897,240	$ 7,088,490	$ 7,279,740	$ 7,470,990	$7,662,240	Growth
Revenues from Battle Ground	$1,196,735	$1,221,211	$1,246,858	$1,201,969	$1,219,129	$1,245,366	$1,264,516	$1,283,099	$1,307,963	$1,328,530	Calculated
SDC/Connection Charges (1)		1,647,000	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	Calculated
Use of Rate Funded Rate Stabil. Balance		0	$208,527	$452,691	$722,511	$610,834	$461,952	$333,061	$202,313	$194,325	
Permit Fees	58,250	60,000	61,871	63,743	65,614	67,485	69,356	71,228	73,099	74,970	Growth
Tap & Inspection Fees	50,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	Calculated
Penalties	39,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	Calculated
Total Operating Revenues	$6,894,555	$9,167,951	$9,320,323	$10,117,642	$10,192,744	$10,300,425	$10,363,259	$10,448,568	$10,534,464	$10,739,777	
Operating Expenses											
Salaries and Wages											
Collection	$341,577	$416,159	$38,221	563,085	591,239	620,801	651,841	684,433	718,654	754,587	General
Customer Accounts	99,444	126,965	137,844	160,719	168,755	177,193	186,053	195,355	205,123	215,379	General
Engineering	319,744	377,210	407,617	422,748	443,885	466,080	489,383	513,853	539,545	566,523	General
Pretreatment	40,601	43,567	49,724	52,214	54,825	57,566	60,445	63,467	66,640	69,972	General
General Administration	305,012	294,959	343,968	319,166	335,125	351,881	369,475	387,949	407,346	427,714	General
Commissioners	12,345	23,383	20,000	21,000	22,050	23,153	24,310	25,526	26,802	28,142	Calculated
Employee Benefits (4)	370,458	468,222	501,842	526,535	552,862	580,505	609,530	640,007	672,007	705,607	General
Uniforms	11,974	14,231	14,231	14,231	14,231	13,710	13,744	14,431	15,152	15,910	General
Materials/Supplies - Collect.	61,929	73,703	33,935	41,924	44,020	46,221	48,544	51,071	53,519	56,195	General
M/S - Pumping - Pumping	19,119	37,500	38,000	31,500	33,075	34,729	36,465	38,288	40,203	42,213	General
M/S - Pumping - County	17,605	11,548			0	0	0	0	0	0	General
Office Supplies - General	42,444	49,110	51,104	43,159	45,317	47,583	49,962	52,460	55,083	57,837	General
Maintenance General Plant	24,031	31,451	10,900	10,900	11,025	11,576	12,155	12,763	13,401	14,071	General
Transportation Expense - Fuel	13,120	20,000	20,800	21,840	22,932	24,079	25,283	26,547	27,874	29,268	General
Transportation Exp. - Repair/Maint.	3,596	6,622	7,000	7,350	7,718	8,103	8,509	8,934	9,381	9,850	General
Safety Training/Supplies	2,500	5,000	5,199	5,458	5,731	5,995	6,295	6,610	6,940	7,287	General
Education Expense/Travel	23,201	35,000	36,750	38,588	40,517	42,735	34,272	36,091	37,895	39,790	General
Education Exp. - Commissioners	10,441	11,700	11,700	11,700	11,700	11,700	12,810	13,451	14,123	14,829	General
District Pump Stations	38,451	41,000	43,050	45,203	47,463	49,836	52,328	54,944	57,691	60,576	General
County Pump Stations	14,157	17,000	17,850	18,743	19,680	20,664	21,697	22,782	23,921	25,117	Calculated
Power - General Admin.	16,687	21,000	22,050	23,153	24,310	25,526	26,802	28,142	29,549	31,027	General
Contract Service - Engineer		5,000	10,000	11,000	12,100	13,310	14,641	16,105	17,716	19,487	General
Contract Service - Auditor	6,561	6,944	10,000	10,500	11,025	11,576	12,155	12,763	13,401	14,071	General
Contract Service - Legal	44,000	35,000	80,000	84,000	88,200	92,610	97,241	102,103	107,208	112,568	General
Contract Service - Computer	9,680	17,000	17,850	17,850	18,743	19,680	20,664	21,697	22,782	23,921	General
Rate Study/Consultation	5,000	5,000	5,250	5,250	5,730	5,730	5,730	5,730	5,730	5,730	No Escalation
Insurance: Vehicle & General Liability	72,210	69,455	72,928	76,574	80,403	84,423	88,644	93,076	97,730	102,616	General
Advertising	4,438	5,000	5,044	5,311	5,577	5,804	5,804	5,804	5,804	5,804	No Escalation
Public Relations	3,453	5,000	10,000	10,000							
Postage - Customer Accounts	32,529	34,000	36,465	38,834	40,776	42,815					
Telephone	18,224	23,431	20,421	27,742	29,129	30,586					
Misc. General Administration	35,000	35,000	22,247	54,839	57,602	60,482					
Damage Claims	13	3,000	3,000	3,150	3,308	3,473					
Dues & Memberships	14,798	15,000	17,850	18,743	19,680	20,664					
B&O Taxes (2)	177,697	185,000	201,963	184,535	193,232	196,038					
Sewage Treatment - County (3)	1,777,931	1,772,183	1,861,792	1,954,881	2,052,625	2,141,134					
Sewage Treatment - City	670,000	664,563	697,800	732,690	769,444	805,866					
Sewage Treatment - Battle Ground	16,260	17,500	17,500	18,375	19,294	20,238					
Total Operating Expenses	$4,620,360	$5,106,890	$5,363,135	$5,591,058	$5,866,505	$6,155,548	$6,458,872	$6,776,772	$7,110,384	$7,458,345	
Depreciation Expense	1,000,000	810,736	958,425	1,241,902	1,535,000	1,651,000	1,771,000	1,891,000	2,011,000	2,131,000	
Total Operating Expenses Incl. Depr.	$5,620,360	$6,023,676	$6,323,610	$6,832,960	$7,401,505	$7,806,548	$8,229,872	$8,667,772	$9,121,384	$9,589,345	
Non-Operating Expenses											
Transfer to Rate Stabilization from Rates	253,526	297,576	359,144	268,840	317,841	493,405					
Non-Operating Revenues											
Transfer from Cap Fund (B&O Exp.)	24,705	20,588	20,588	20,588	20,588	20,588	20,588	20,588	20,588	20,588	Transfer from Capital
Transfer from R&R fund (B&O Exp.)	41,055	36,040	37,965	39,976	42,097	44,337	46,284	48,329	136,141	136,141	Misc. other Nonoper
Other Misc. Revenue (excl. Inv. Interest)	136,141	136,141	136,141	136,141	136,141	136,141	136,141	136,141	136,141	136,141	

(1) Connection charge revenues are calculated on the previous page. Est. yr. revenue recognized in CIP ending balance; Budget yr. revenue per budget.
(2) Est. yr based on budget; projected years calculated based on Service Charge revenue, percentage of collection retained revenue (see pg. 1).
connection charges, and Reg. Fac. charges.
(3) Estimated and Budget figure adjusted to exclude county debt; projections exclude County debts which is input separately as existing debt service on page 2.
(4) Escalated by inflation only.

Hazel Dell Sewer District
Capital Facilities Plan

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Table IV-2

Capital Improvement Program

Growth- District Share

Basin		Total	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
1	1-Whipple Creek North	$ 237,150		$237,150								$ 237,150
2	2-Mill Creek North	155,588									$155,588	155,588
3	2-Mill Creek East	-										-
4	4-I-5 North	663,335	$75,000	$543,985			$44,350					663,335
5	5-Pleasant Valley North	31,307									$31,307	31,307
6	6-Pleasant Valley South	222,629									$222,629	222,629
7	8-Barberton	144,716			$57,202	$32,154					$55,360	144,716
8	12-Hwy99 East	398,781	$4,000	$80,913					$313,868			398,781
9	14-Cougar Canyon	838,727		$94,517	$118,443	$85,263					$540,504	838,727
10	19-Felida & Lake River	738,392		$110,000							$628,392	738,392
11	20-Hwy 99 North	9,686		$9,686								9,686
12	21-NE 16th Avenue	13,167					$13,167					13,167
13	25-Whipple Creek West	638,515	$31,000	$587,515								638,515
14	26-Seward North	98,317		$98,317								98,317
15	29-Glenwood	618,218	$540,000	$78,218								618,218
16	30-NE 86th Street	151,393						$151,393				151,393
17	31-Country Meadows	466,278	$135,000	$331,278								466,278
18	34-Covington North	29,314				$29,314						29,314
19	35-Covington South	-										-
20	37-Green Meadows West	906,070	$740,000								$166,070	906,070
21	38-Curtin Creek	472,581	$14,000	$300,000							$158,581	472,581
22	45-Minnehaha	28,150							$28,150			28,150
23	Salmon Creek Parallel ing	-										-
24	I&I Program	118,750		$25,000	$18,750	$12,500	$12,500	$12,500	$12,500	$12,500	$12,500	118,750
25	46-Hockinson Force Main	100,000	$100,000									100,000
26	Comprehensive Plan	190,000	$190,000									190,000
27		-										-
28		-										-
29		-										-
30		-										-
31		-										-
32		-										-
33		-										-
34		-										-
35		-										-
36		-										-
	Total Growth Oversize	$ 7,271,064	$ 1,849,000	$ 2,496,578	$ 189,395	$ 159,231	$ 70,017	$ 163,893	$ 354,518	$ 12,500	$ 1,975,931	$ 7,271,064

R&R- District Share

Basin		Total	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
1	1-Whipple Creek North	$ 23,992		$23,992								$ 23,992
2	2-Mill Creek North	152,014									$152,014	152,014
3	2-Mill Creek East	-										-
4	4-I-5 North	243,002		$224,684			$18,318					243,002
5	5-Pleasant Valley North	2,348									$2,348	2,348
6	6-Pleasant Valley South	71,872									$71,872	71,872
7	8-Barberton	-										-
8	12-Hwy99 East	-										-
9	14-Cougar Canyon	1,820,924		$205,201	$246,291	$185,731					$1,184,321	1,820,924
10	19-Felida & Lake River	-										-
11	20-Hwy 99 North	4,001		$4,001								4,001
12	21-NE 16th Avenue	9,783					$9,783					9,783
13	25-Whipple Creek West	-										-
14	26-Seward North	-										-
15	29-Glenwood	36,754		$36,754								36,754
16	30-NE 86th Street	85,363						$85,363				85,363
17	31-Country Meadows	10,696		$10,696								10,696
18	34-Covington North	10,686				$10,686						10,686
19	35-Covington South	-										-
20	37-Green Meadows West	71,173									$71,173	71,173
21	38-Curtin Creek	-										-
22	45-Minnehaha	-										-
23	Salmon Creek Parallelinga	-										-
24	I&I Program	356,250		$75,000	$56,250	$37,500	$37,500	$37,500	$37,500	$37,500	$37,500	356,250
25												-
26												-
27												-
28												-
29												-
30												-
31												-
32												-
	Total R&R Oversized	$ 2,898,858	$ -	$ 580,328	$ 302,541	$ 233,297	$ 65,601	$ 122,863	$ 37,500	$ 37,500	$ 1,519,228	$ 2,898,858

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Growth: Developer Share

Basin		Total	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
1	1-Whipple Creek North	$0										$ -
2	2-Mill Creek North	$927,780									$927,780	927,780
3	2-Mill Creek East	$0										-
4	4-I-5 North	$0										-
5	5-Pleasant Valley North	$252,684									$252,684	252,684
6	6-Pleasant Valley South	$0										-
7	8-Barberton	$364,247			$120,606	$67,876					$175,765	364,247
8	12-Hwy99 East	$251,498		$251,498								251,498
9	14-Cougar Canyon	$0										-
10	19-Felida & Lake River	$0										-
11	20-Hwy 99 North	$0										-
12	21-NE 16th Avenue	$0										-
13	25-Whipple Creek West	$0										-
14	26-Seward North	$0										-
15	29-Glenwood	$75,009		$75,009								75,009
16	30-NE 86th Street	$0										-
17	31-Country Meadows	$155,459		$155,459								155,459
18	34-Covington North	$0										-
19	35-Covington South	$0										-
20	37-Green Meadows West	$0										-
21	38-Curtin Creek	$658,070									$658,070	658,070
22	45-Minnehaha	$60,303							$60,303			60,303
23	Salmon Creek Paralleling	$0										-
24	I&I Program	$0										-
25		$0										-
26		$0										-
27		$0										-
28		$0										-
29		$0										-
30		$0										-
	Total Growth-Developer	$2,745,050	$ -	$ 481,967	$ 120,606	$ 67,876	$ -	$ -	$ 60,303	$ -	$ 2,014,299	$ 2,745,050

Financing

TOTAL CAPITAL IMPROVEMENT PROGRAM	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Total Growth (District & Developer)	$1,849,000	$2,978,545	$310,001	$227,107	$70,017	$163,893	$414,821	$12,500	$3,990,230	$ 10,016,114
Escalated Growth Cost	1,849,000	3,082,794	332,081	251,798	80,346	194,653	509,921	15,903	5,254,371	11,570,868
Total R&R	-	580,328	302,541	233,297	65,601	122,863	37,500	37,500	1,519,228	2,898,858
Escalated R&R Cost	-	600,639	324,089	258,661	75,279	145,923	46,097	47,710	2,000,533	3,498,932
Total Program	$ 1,849,000	$ 3,558,873	$ 612,542	$ 460,404	$ 135,618	$ 286,756	$ 452,321	$ 50,000	$ 5,509,458	$ 12,914,972
Total Escalated Costs	$ 1,849,000	$ 3,683,434	$ 656,170	$ 510,458	$ 155,625	$ 340,576	$ 556,018	$ 63,614	$ 7,254,904	$ 15,069,799
Developer Share	$ -	$ 481,967	$ 120,606	$ 67,876	$ -	$ -	$ 60,303	$ -	$ 2,014,299	$ 2,745,050
Developer Share Escalated Cost	-	498,836	129,196	75,256	-	-	74,128	-	2,652,447	3,429,861
HDSD Share	1,849,000	3,076,906	491,936	392,528	135,618	286,756	392,018	50,000	3,495,159	10,169,922
HDSD Escalated Cost	$ 1,849,000	$ 3,184,598	$ 526,975	$ 435,203	$ 155,625	$ 340,576	$ 481,890	$ 63,614	$ 4,602,458	$ 11,639,938
Total Escalated Costs	$ 1,849,000	$ 3,683,434	$ 656,170	$ 510,458	$ 155,625	$ 340,576	$ 556,018	$ 63,614	$ 7,254,904	$ 15,069,799

Financing Type:										
	Grants/CIAC	$0	$0	$0	$0	$0	$0	$0	$0	$0
	PWTF	$50,267	$0	$0	$0	$0	$0	$0	$0	$0
	R&R Fund	$0	$600,639	$324,089	$258,661	$75,279	$145,923	$46,097	$47,710	$2,000,533
If necessary,	Capital Fund	$1,798,733	$2,725,084	$332,081	$251,798	$80,346	$194,653	$509,921	$15,903	$5,254,371
fund wit 0 = Bonds, 1 = Rates	e Bond Proceeds	$0	$357,710	$0	$0	$0	$0	$0	$0	$0
or Rates 0	Rate Funded	$0	$0	$0	$0	$0	$0	$0	$0	$0
If rates are chosen, a fixed amount may be assigned to BO		$0	$0	$0	$0	$0	$0	$0	$0	$0
If bonds are chosen, a fixed amount may be assigned to R		$0	$0	$0	$0	$0	$0	$0	$0	$0
	Amount Underfunded:	$0	$0	$0	$0	$0	$0	$0	$0	$0

ULID Projects

	Project	Total	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
1	Project 1	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2	Project 2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	Project 3	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	Project 4	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
5	Project 5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Total ULID Projects	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

ULID Projects: Escalated Cost

	Project	Total	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
1	Project 1	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2	Project 2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	Project 3	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	Project 4	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
5	Project 5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Total ULID Projects	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Hazel Dell Sewer District
Capital Facilities Plan - ULID Projects
Edit: 16-Nov-99

HDSD Capital Financing and New ULID Summary

		1999	2000	2001	2002	2003	2004	2005	2006	2007
	Total Constructi	$1,849,000	$3,076,906	$491,936	$392,528	$135,618	$286,756	$392,018	$50,000	$3,495,159
	Total Const. (esc	$1,849,000	$3,683,434	$656,170	$510,458	$155,625	$340,576	$556,018	$63,614	$7,254,904
Financing Type:	Grants/CIAC	$0	$0	$0	$0	$0	$0	$0	$0	$0
	PWTF	$50,267	$0	$0	$0	$0	$0	$0	$0	$0
	R&R Constructi	$0	$600,639	$324,089	$258,661	$75,279	$145,923	$46,097	$47,710	$2,000,533
	Capital Fund	$1,798,733	$2,725,084	$332,081	$251,798	$80,346	$194,653	$509,921	$15,903	$5,254,371
	Revenue Bond P	$0	$357,710	$0	$0	$0	$0	$0	$0	$0
	Rate funded	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Total Constructi	$1,849,000	$3,683,434	$656,170	$510,458	$155,625	$340,576	$556,018	$63,614	$7,254,904
	Total New ULID	$0	$0	$0	$0	$0	$0	$0	$0	$0

Total New Revenue Bonds Issued (including issuance costs and reserve if funded from proceeds)	$0	$395,376	$0	$0	$0	$0	$0	0	0

Calculation of General Facilities Charge
Edit: 16-Nov-99

1. General Facilities Charge Basis			Overall System
Original Cost of Plant-in-Service Proforma As of	*12/31/98*		
Land and Land Rights			$570,854
Donated Mains			$20,180,920
Collection and Transmission			21,435,000
Maintenance & Collection			239,698
General Plant			1,639,126
Total Utility Plant			$44,065,598
Less:Contributions in Aid of Construction			
Donated Mains			($20,180,920)
Grants			($1,978,823)
Subtotal CIAC			($22,159,743)
Non-CIAC Utility Plant			$21,905,855

Net Plant Allocable			$21,905,855
		Avg. Age	
Portion of Plant > 10 years of age	40.8%	10.0	
Portion of Plant < 10 years of age	59.2%	4.6	
Interest Rate			6.5%
Accumulated Interest on Existing Plant			$9,703,803
Plus:Construction Work in Progress			5,657,341
Total Allocable Plant (including interest)			$37,266,999
less: Outstanding Existing Non-ULID Coll. Sys. Rev. Bond Debt paid by rates			$0
Total Net Existing Plant			**$37,266,999**

2. System Development Charge Basis	
Future Capital Projects based on Capital Facilities Plan (through 2007)	
Growth-related District Share	$7,271,064
Growth-related Developer Share	3,429,861
Total Growth Related	$10,700,925
Non-donated share of Growth	$10,016,114

3. Total Allocable Cost	
Existing Facilities	$37,266,999
Future Facilities	10,016,114
Total	$47,283,113

Calculation of General Facilities Charge
Edit: 16-Nov-99

4. Customer Base for Allocation	Overall System
Existing Equiv. Residential Units	23,148
Projected Add'l ERUs Next Ten Years See Note 1	8,838
Total Projected ERUs in Ten Years	31,986

5. Connection Charge	
Total Existing Plant/Total Projected ERUs	$1,165
Growth-Rel. Future Facilities/New ERUs	$1,133
Total Charge per ERU (rounded to nearest $5)	$2,300

Note (1): The projected additional ERU's are from Mackay & Spositos ERU Projections through 2007

Hazel Dell Sewer District
Summary of Debt Service Revenue Requirements
Edit: 16-Nov-99

Table IV-3

Capital Improvement Program Summary (from Capital sheet)

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total Capital Expenditures (adjusted for inflation)	$1,849,000	$3,683,434	$656,170	$510,458	$155,625	$340,576	$556,018	$63,614	$7,254,904
Financing									
Grants/CIAC	$0	$0	$0	$0	$0	$0	$0	$0	$0
PWTF	$50,267	$0	$0	$0	$0	$0	$0	$0	$0
R&R Fund	$0	$600,639	$324,089	$258,661	$75,279	$145,923	$46,097	$47,710	$2,000,533
Capital Fund Cash Balance	$1,798,733	$2,725,084	$332,081	$251,798	$80,346	$194,653	$509,921	$15,903	$5,254,371
Revenue Bond Proceeds	$0	$357,710	$0	$0	$0	$0	$0	$0	$0
Rate Funded	$0	$0	$0	$0	$0	$0	$0	$0	$0
ULID	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL FINANCING	$1,849,000	$3,683,434	$656,170	$510,458	$155,625	$340,576	$556,018	$63,614	$7,254,904
Total New Revenue Bonds Issued (including issuance costs and reserve if funded from proceeds)	$0	$395,376	$0	$0	$0	$0	$0	$0	$0

Debt Service Summary

Collection								
Existing Debt Service:								
LTGO Debt: St. John's Interceptor*	$151,800	$154,449	$154,162	$153,530	$153,787	$154,862	$154,194	$0	$0
Revenue Bond:	$0	$0	$0	$0	$0	$0	$0	$0	$0
PWTF:	$164,397	$164,177	$162,764	$161,351	$159,937	$158,524	$157,111	$155,698	$154,285
ULID:	$0	$0	$0	$0	$0	$0	$0	$0	$0
New Debt Service:								
Revenue Bond:*	$0	$35,174	$35,174	$35,174	$35,174	$35,174	$35,174	$35,174	$35,174
PWTF :*	$503	$3,122	$3,095	$3,069	$3,042	$3,016	$2,990	$2,963	$2,937
ULID:	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Collection Related Debt Service	*$316,700*	*$356,921*	*$355,195*	*$353,123*	*$351,940*	*$351,576*	*$349,468*	*$193,835*	*$192,395*
Treatment								
Existing Debt Service:								
Revenue Bond: Clark County	$4,620,230	$4,623,095	$4,623,608	$4,622,843	$4,667,650	$4,667,985	$4,670,935	$4,680,928	$4,672,265
PWTF: Phase 1A	$55,256	$54,319	$53,383	$52,446	$51,510	$50,573	$49,637	$48,700	$47,764
PWTF: Phase 1B (two loans)	$237,383	$235,349	$233,243	$231,138	$229,032	$226,926	$224,820	$222,714	$220,609
PWTF: Effluent Pump Station	$37,350	$33,606	$33,311	$33,016	$32,721	$32,427	$32,132	$31,837	$31,542
Total Treatment Related Debt Service	*$4,946,220*	*$4,946,369*	*$4,943,546*	*$4,939,443*	*$4,980,913*	*$4,977,911*	*$4,977,524*	*$4,984,179*	*$4,972,180*
TOTAL DEBT SERVICE: FUNDING	*$5,262,920*	*$5,303,290*	*$5,298,740*	*$5,292,566*	*$5,332,853*	*$5,329,486*	*$5,326,992*	*$5,178,014*	*$5,164,575*

*Paid from Capital Fund, if available.

Debt Service Summary: Sources of Funding

Collection								
Capital Fund Cash Balance	$316,700	$321,748	$355,195	$353,123	$351,940	$351,576	$349,468	$193,835	$192,395
Hazel Dell Rates	$0	$35,174	$0	$0	$0	$0	$0	$0	$0
Assessment Receipts (excluding defeased)	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Collection Debt Service - Sources of Funding	*$316,700*	*$356,921*	*$355,195*	*$353,123*	*$351,940*	*$351,576*	*$349,468*	*$193,835*	*$192,395*
Treatment								
City of Battle Ground	$852,046	$852,484	$852,396	$852,077	$859,962	$859,841	$860,191	$861,809	$860,069
Hazel Dell - Service Charges (PWTF)	$54,102	$53,635	$53,075	$52,515	$51,955	$51,395	$50,835	$50,275	$49,715
Hazel Dell - Service Charges (Rev. Bond)	$681,946	$890,875	$1,540,135	$1,404,843	$1,299,779	$1,150,392	$1,022,431	$893,818	$884,163
Hazel Dell - Regional Facilities Charges (PWTF)	$246,466	$244,338	$241,787	$239,235	$236,684	$234,132	$231,581	$229,028	$226,477
Hazel Dell - Regional Facilities Charges (Rev. Bond)	$3,106,643	$2,900,062	$2,251,223	$2,385,888	$2,527,694	$2,677,356	$2,807,735	$2,944,543	$2,947,094
Hazel Dell - Interest Earned from Revenue Bond Fund	$0	$0	$879	$901	$924	$947	$971	$995	$1,020
Clark County	$4,724	$4,683	$4,642	$4,600	$4,558	$4,516	$4,474	$4,432	$4,390
Total Treatment Debt Service - Sources of Funding	*$4,945,927*	*$4,946,079*	*$4,944,138*	*$4,940,060*	*$4,981,555*	*$4,978,578*	*$4,978,218*	*$4,984,900*	*$4,972,928*
TOTAL DEBT SERVICE: SOURCES OF FUNDING	*$5,262,627*	*$5,303,001*	*$5,299,332*	*$5,293,183*	*$5,333,495*	*$5,330,154*	*$5,327,686*	*$5,178,734*	*$5,165,323*

Hazel Dell Sewer District
Estimated Fund Activity
Edit: 16-Nov-99

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
General Maintenance/Operation										
Beginning Balance		$1,308,117	$1,287,618	$987,701	$1,083,270	$1,035,043	$1,051,538	$1,074,828	$1,099,534	$1,126,118
plus: Cash Flow After Rate Increase		0	0	95,569	9,327	16,495	23,290	24,706	26,584	26,209
less: Use of Surplus Cash		20,499	299,917	0	57,554	0	0	0	0	0
Ending Balance	$1,308,117	$1,287,618	$987,701	$1,083,270	$1,035,043	$1,051,538	$1,074,828	$1,099,534	$1,126,118	$1,152,328
Minimum Operating Balance		$967,758	$987,701	$1,004,808	$1,025,715	$1,051,538	$1,074,828	$1,099,534	$1,126,118	$1,152,328
System Replacement and Restoration										
Beginning Balance		$2,459,847	$3,140,496	$3,682,091	$4,796,654	$6,297,743	$8,139,005	$10,074,582	$12,276,348	$14,650,179
plus: Contribution from Rates		700,177	962,475	1,241,902	1,535,000	1,651,000	1,771,000	1,891,000	2,011,000	2,131,000
plus: Payback from Capital Improvement		0	0	0	0	0	0	0	0	0
plus: Interfund Repayment (ULID defeased)		91,225	77,185	73,650	66,459	66,822	62,750	57,723	53,358	48,850
plus: Investment Earnings		140,497	102,574	123,100	158,291	198,719	247,750	299,140	357,184	419,529
less: Payment for R&R Projects		251,250	600,639	324,089	258,661	75,279	145,923	46,097	47,710	2,000,533
less: Transfer to Capital Improvement Fund		0	0	0	0	0	0	0	0	0
Ending Balance	$2,459,847	$3,140,496	$3,682,091	$4,796,654	$6,297,743	$8,139,005	$10,074,582	$12,276,348	$14,650,179	$15,249,025
Capital Improvement Fund (non-ULID)										
Beginning Balance		$2,021,529	$1,620,104	$0	$698,949	$1,497,728	$2,489,110	$3,391,333	$4,002,953	$5,279,514
plus: Connection Charges		1,647,000	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500
plus: Transfer from SR&R Fund		0	0	0	0	0	0	0	0	0
plus: Investment Interest		91,713	74,815	34,312	51,786	71,756	96,540	119,096	134,386	166,300
plus: PWTF Loan Proceeds		50,267	0	0	0	0	0	0	0	0
plus: Revenue Bond Proceeds		0	357,710	0	0	0	0	0	0	0
plus: Grants/CIAC		0	0	0	0	0	0	0	0	0
plus: Interfund Repayment (ULID defeased)		0	0	0	0	0	0	0	0	0
less: Administrative Fee to M&O (calculated)		24,705	20,588	20,588	20,588	20,588	20,588	20,587	20,588	20,588
less: Existing PWTF & Applicable Non-ULID Debt Service (St. John's Debt)		316,197	318,626	316,926	314,881	313,724	313,386	311,305	155,698	154,285
less: Payback to System Replacement & Restoration Fund		0	0	0	0	0	0	0	0	0
less: Existing Revenue Bond Debt		0	0	0	0	0	0	0	0	0
less: New PWTF		503	3,122	3,095	3,069	3,042	3,016	2,990	2,963	2,937
less: New Rev. Bond Debt Service		0	0	35,174	35,174	35,174	35,174	35,174	35,174	35,174
less: Capital Improvement Funding		$ 1,849,000	$ 3,082,794	$ 332,081	$ 251,798	$ 80,346	$ 194,653	$ 509,921	$ 15,903	$ 5,254,371
Ending Balance	$2,021,529	$1,620,104	$0	$698,949	$1,497,728	$2,489,110	$3,391,333	$4,002,953	$5,279,514	$1,350,960

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Rate Stabilization Reserve										
Beginning Balance (RFC funded)		$1,364,366	$752,700	$0	$0	$0	$0	$0	$0	$0
plus: Regional Facilities Charges		$2,737,020	$2,402,650	$2,530,975	$2,665,100	$2,806,475	$2,955,825	$3,085,600	$3,221,900	$3,221,900
plus: Investment Interest		$45,479	$25,090	$0	$0	$0	$0	$0	$0	$0
less: Administrative Fee to M&O (calculated)		$41,055	$36,040	$37,965	$39,976	$42,097	$44,337	$46,284	$48,329	$48,329
less: PWTF Loan Payments		$246,466	$244,338	$241,787	$239,235	$236,684	$234,132	$231,581	$229,028	$226,477
less: Clark County Debt Serv. from Rate Stab. (remainder rate funded)		$3,106,643	$2,900,062	$2,251,223	$2,385,888	$2,527,694	$2,677,356	$2,807,735	$2,944,543	$2,947,094
Ending Balance (RFC funded)	$1,364,366	$752,700	$0	$0	$0	$0	$0	$0	$0	$0
Beginning Balance (Rate funded)		$1,281,700	$1,608,019	$1,750,689	$1,411,219	$1,524,688	$1,776,118	$2,207,864	$2,804,898	$3,574,422
plus: Budgeted Transfer from Rates		$283,596	$297,576	$459,864	$788,940	$811,440	$833,940	$856,440	$878,940	$901,440
plus: Investment Interest		$42,723	$53,601	$58,356	$47,041	$50,823	$59,204	$73,595	$93,497	$119,147
less: Budgeted Use of Rate funded Rate Stab.		$0	$208,507	$857,691	$722,511	$610,834	$461,397	$333,001	$202,913	$194,537
Ending Balance (Rate funded)	$1,281,700	$1,608,019	$1,750,689	$1,411,219	$1,524,688	$1,776,118	$2,207,864	$2,804,898	$3,574,422	$4,400,473
ULID Construction										
Beginning Balance		$0	$0	$0	$0	$0	$0	$0	$0	$0
plus: Debt Proceeds		0	0	0	0	0	0	0	0	0
plus: Investment Interest		0	0	0	0	0	0	0	0	0
less: Capital Improvements		0	0	0	0	0	0	0	0	0
Ending Balance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New and Existing ULID Debt Service										
Beginning Balance		$0	$0	$0	$0	$0	$0	$0	$0	$0
plus: ULID New Assessment Receipts		0	0	0	0	0	0	0	0	0
plus: ULID Existing Assessment Receipts (non-defeased)		0	0	0	0	0	0	0	0	0
plus: Rate Contribution		0	0	0	0	0	0	0	0	0
plus: Investment Interest		0	0	0	0	0	0	0	0	0
less: ULID Debt Service		0	0	0	0	0	0	0	0	0
Ending Balance	$0	0	0	0	0	0	0	0	0	0
Defeased Debt Service (ULIDs 17-43)										
Beginning Balance		$0	$0	$0	$0	$0	$0	$0	$0	$0
plus: ULID Assessment Receipts (ULIDs 17-43)		89,000	75,303	71,854	64,838	65,193	61,219	56,315	52,057	47,658
plus: Investment Interest		2,225	1,883	1,796	1,621	1,630	1,530	1,408	1,301	1,191
less: Interfund Loan Repayment to System R&R Fund*	100%	91,225	77,185	73,650	66,459	66,822	62,750	57,723	53,358	48,850
less: Interfund Loan Repayment to Capital Fund	0%	0	0	0	0	0	0	0	0	0
Ending Balance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

*The user may choose by percentage the amount of assessment receipts allocated to the System R&R Fund and the Capital Fund.

Revenue Bond Fund (non-ULID Collection System)									
Beginning Balance	$0	$0	$36,053	$36,954	$37,878	$38,825	$39,796	$40,790	$41,810
plus: Reserve Funding	0	35,174	0	0	0	0	0	0	0
plus: Interest Earned	0	879	901	924	947	971	995	1,020	1,045
plus: Debt Service Transfer from Capital Fund	0	0	35,174	35,174	35,174	35,174	35,174	35,174	35,174
plus: Rate Portion of Debt Service	0	35,174	0	0	0	0	0	0	0
less: Debt Service Payment	0	35,174	35,174	35,174	35,174	35,174	35,174	35,174	35,174
Ending Balance	$0	0	36,053	36,954	37,878	38,825	39,796	40,790	41,810	42,856
Minimum Balance Required		$0	$35,174	$35,174	$35,174	$35,174	$35,174	$35,174	$35,174	$35,174

Hazel Dell Sewer District
Revenue Sufficiency Tests
16-Nov-99

	1999	2000	2001	2002	2003	2004	2005	2006	2007
SUFFICIENCY TEST 1: CASH FLOW									
Cash Operating Expenses	$5,106,890	$5,363,135	$5,591,058	$5,866,505	$6,155,548	$6,458,872	$6,776,772	$7,110,384	$7,458,345
Rate Contribution to Debt Service & Reserve Funding									
Treatment System									
Tmnt Rev. Bonds - Existing Customer Benefit	681,946	682,369	682,445	682,332	688,945	688,995	689,430	690,905	689,626
Tmnt. Rev. Bonds Growth Portion not covered by RFC's	0	208,507	857,691	722,511	610,834	461,397	333,001	202,913	194,537
Tmnt. Rev. Bonds per City of Battle Ground	852,046	852,484	852,396	852,077	859,962	859,841	860,191	861,809	860,069
Tmnt. PWTF Loans from Rates	54,102	53,635	53,075	52,515	51,955	51,395	50,835	50,275	49,715
Collection System									
St. John's LTGO Debt not covered by Capital Fund	0	0	0	0	0	0	0	0	0
HDSD NEW Revenue Bonds Debt Service paid by rates	0	35,174	0	0	0	0	0	0	0
HDSD Other Existing Revenue Bond Debt Service	0	0	0	0	0	0	0	0	0
New PWTF Loans paid by Rates	0	0	0	0	0	0	0	0	0
Collection System ULIDs	0	0	0	0	0	0	0	0	0
Revenue Bond Reserve Funding from Rates	0	0	0	0	0	0	0	0	0
Budgeted Rate Contribution to Rate Stabilization Account	283,596	297,576	459,864	788,940	811,440	833,940	856,440	878,940	901,440
Contrib. to Repair & Replacement Fund	700,177	962,475	1,241,902	1,535,000	1,651,000	1,771,000	1,891,000	2,011,000	2,131,000
Direct Rate Contribution to Capital Projects	0	0	0	0	0	0	0	0	0
Minor Annual Capital Outlays/Expenses	130,000	80,100	82,904	85,805	88,808	91,917	95,134	98,463	101,910
Add'n to Operating Reserve	0	0	17,108	0	16,495	23,290	24,706	26,584	26,209
Total Expenses	$7,808,757	$8,535,454	$9,838,442	$10,585,685	$10,934,987	$11,240,646	$11,577,510	$11,931,273	$12,412,851
Service Charges	$6,132,240	$6,323,490	$6,514,740	$6,705,990	$6,897,240	$7,088,490	$7,279,740	$7,470,990	$7,662,240
Revenues from City of Battle Ground	$1,221,711	$1,226,955	$1,201,969	$1,219,129	$1,245,366	$1,264,516	$1,285,099	$1,307,963	$1,328,530
Permit/Tap/Inspectn/Misc Revenues	167,000	168,871	170,743	172,614	174,485	176,356	178,228	180,099	181,970
Transfers from Rate Stab./Capital (B&O Tax)	65,760	56,627	58,552	60,564	62,685	64,925	66,871	68,916	68,916
Budgeted Use of RFC Rate Funded Rate Stab. Balance	0	208,507	857,691	722,511	610,834	461,397	333,001	202,913	194,537
Maint. Interest/Misc. Non-Op Rev.	201,547	200,522	185,526	190,304	187,893	188,718	189,882	191,118	192,447
Total Revenues	$7,788,258	$8,184,972	$8,989,220	$9,071,112	$9,178,502	$9,244,402	$9,332,822	$9,421,998	$9,628,640
Net Cash Flow:	($20,499)	($350,482)	($849,222)	($1,514,573)	($1,756,484)	($1,996,244)	($2,244,687)	($2,509,275)	($2,784,211)
Revenue Deficiency (Surplus):	$20,499	$350,482	$849,222	$1,514,573	$1,756,484	$1,996,244	$2,244,687	$2,509,275	$2,784,211
Use of Surplus Operating Fund Cash	20,499	299,917	0	57,554	0	0	0	0	0
Revenue Deficiency (Surplus):	$0	$50,565	$849,222	$1,457,019	$1,756,484	$1,996,244	$2,244,687	$2,509,275	$2,784,211
SUFFICIENCY TEST 2: COVERAGE									
Cash Operating Expenses	$5,106,890	$5,363,135	$5,591,058	$5,866,505	$6,155,548	$6,458,872	$6,776,772	$7,110,384	$7,458,345
Collection Rev. Bond Debt Service - incl. new & existing ULID	0	35,174	35,174	35,174	35,174	35,174	35,174	35,174	35,174
Coverage at 1.25	0	8,793	8,793	8,793	8,793	8,793	8,793	8,793	8,793
Treatment Revenue Bond Debt Service	4,620,230	4,623,095	4,623,608	4,622,843	4,667,650	4,667,985	4,670,935	4,680,928	4,672,265
Coverage at 1.10	462,023	462,310	462,361	462,284	466,765	466,799	467,094	468,093	467,227
Total Revenue Req. with Coverage	$10,189,143	$10,492,506	$10,720,994	$10,995,599	$11,333,929	$11,637,622	$11,958,768	$12,303,371	$12,641,803
Service Charges	$6,132,240	$6,323,490	$6,514,740	$6,705,990	$6,897,240	$7,088,490	$7,279,740	$7,470,990	$7,662,240
Revenues from City of Battle Ground	$1,221,711	$1,226,955	$1,201,969	$1,219,129	$1,245,366	$1,264,516	$1,285,099	$1,307,963	$1,328,530
Cash Test Other Revenues	368,547	369,393	356,269	362,918	362,378	365,074	368,110	371,217	374,417
ULID Assessment Collections	89,000	75,303	71,854	64,838	65,193	61,219	56,315	52,057	47,658
Regional Facilities Charges Use of Rate Stabilization	3,353,109	3,144,401	2,493,010	2,625,124	2,764,378	2,911,488	3,039,316	3,173,572	3,173,572
Budgeted Use of Rate Funded Rate Stabilization	0	208,507	857,691	722,511	610,834	461,397	333,001	202,913	194,537
Connection Charges	1,647,000	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500	1,372,500
Total Revenues	$12,811,607	$12,720,548	$12,868,032	$13,073,009	$13,317,888	$13,524,684	$13,734,082	$13,951,210	$14,153,454
Net Revenue Req. Incl. Coverage	$10,189,143	$10,492,506	$10,720,994	$10,995,599	$11,333,929	$11,637,622	$11,958,768	$12,303,371	$12,641,803
Coverage Realized Before Rate Increase:	1.67	1.58	1.56	1.55	1.52	1.50	1.48	1.45	1.42
Revenue Deficiency (Surplus):	($2,622,464)	($2,228,042)	($2,147,039)	($2,077,411)	($1,983,959)	($1,887,062)	($1,775,314)	($1,647,839)	($1,511,650)

RATE INCREASE REQUIRED									
Maximum Revenue Deficiency	$0	$50,565	$849,222	$1,457,019	$1,756,484	$1,996,244	$2,244,687	$2,509,275	$2,784,211
plus: Adjustment to Levelize		$0	$78,461	$9,327	$0	$0	$0	$0	$0
plus: Increase in Excise Taxes	0	1,352	22,703	38,952	46,957	53,367	60,009	67,082	74,432
Total Revenue Deficiency	$0	$51,917	$950,386	$1,505,298	$1,803,442	$2,049,611	$2,304,696	$2,576,357	$2,858,643
Net Revenue Requirement From Service Charges	$6,132,240	$6,375,407	$7,465,126	$8,211,288	$8,700,682	$9,138,101	$9,584,436	$10,047,347	$10,520,883
Increase over Current Rates (%)	0.0%	0.8%	14.6%	22.4%	26.1%	28.9%	31.7%	34.5%	37.3%
Annual Rate Increase (%)	0.0%	0.8%	13.7%	6.9%	3.0%	2.2%	2.1%	2.1%	2.1%
Rate Revenue after Increase	6,132,240	6,375,407	7,465,126	8,211,288	8,700,682	9,138,101	9,584,436	10,047,347	10,520,883
Net Cash Flow After Rate Increase (to General M/O Fund balance)	$ 0	$ 0	$ 95,569	$ 9,327	$ 16,495	$ 23,290	$ 24,706	$ 26,584	$ 26,209
Coverage after Rate Increase	1.67	1.59	1.76	1.86	1.90	1.93	1.96	1.98	2.01
Rate per ERU	$21.25	$21.42	$24.35	$26.02	$26.81	$27.39	$27.98	$28.58	$29.18

V. Individual Basin Improvements

BASIN 1
WHIPPLE CREEK EAST

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **1155 AC**

BASIN DESCRIPTION:

Whipple Creek East basin is located between NE 199th Street and NE 159th Street, from Interstate-5 to NE 29th Avenue; and includes the Clark County Fairgrounds area from NE 184th Street to NE 174th Street and from NW 2nd Avenue to Interstate-5.

GENERAL BASIN INFORMATION:

The Whipple Creek East basin has the potential to be a fast growing basin with a large undeveloped area around the NE 179th Street interchange as well as large undeveloped residential areas east of the freeway. The basin is currently at a 17.6% build out of the 20-year projection, which is primarily attributable to the existing Clark County Fairgrounds and commercial development near NE 179th Street. There is potential for this basin to grow more rapidly than indicated by the growth projections prepared by Clark County, which predict a moderate rate of 11.8%. The actual growth rate indicated by new sanitary sewer hook-ups exceeds 27%. This basin should be carefully monitored on an annual basis to predict growth trends and update Capital Facility improvement needs.

BASIN GROWTH TABLE:

Item	*Year 1997*	*Year 2003*	*Year 2007*	*Year 2012*	*Year 2017*	*Ultimate*	*Total*
Population	289	877	1346	2150	3324	4909	
E.R.U.s	478	811	1094	1606	2392	3751	
Peak Flow (MGD)	0.306	0.610	0.856	1.279	1.894	2.917	
Total Capital Imp. Cost		$261,142	$0	$0	$0		$261,142
District Cost (Growth/Oversize)		$237,150	$0	$0	$0		$237,150
District Cost (R & R)		$23,992	$0	$0	$0		$23,992
Development Cost (Growth)*		$0	$0	$0	$0		$0

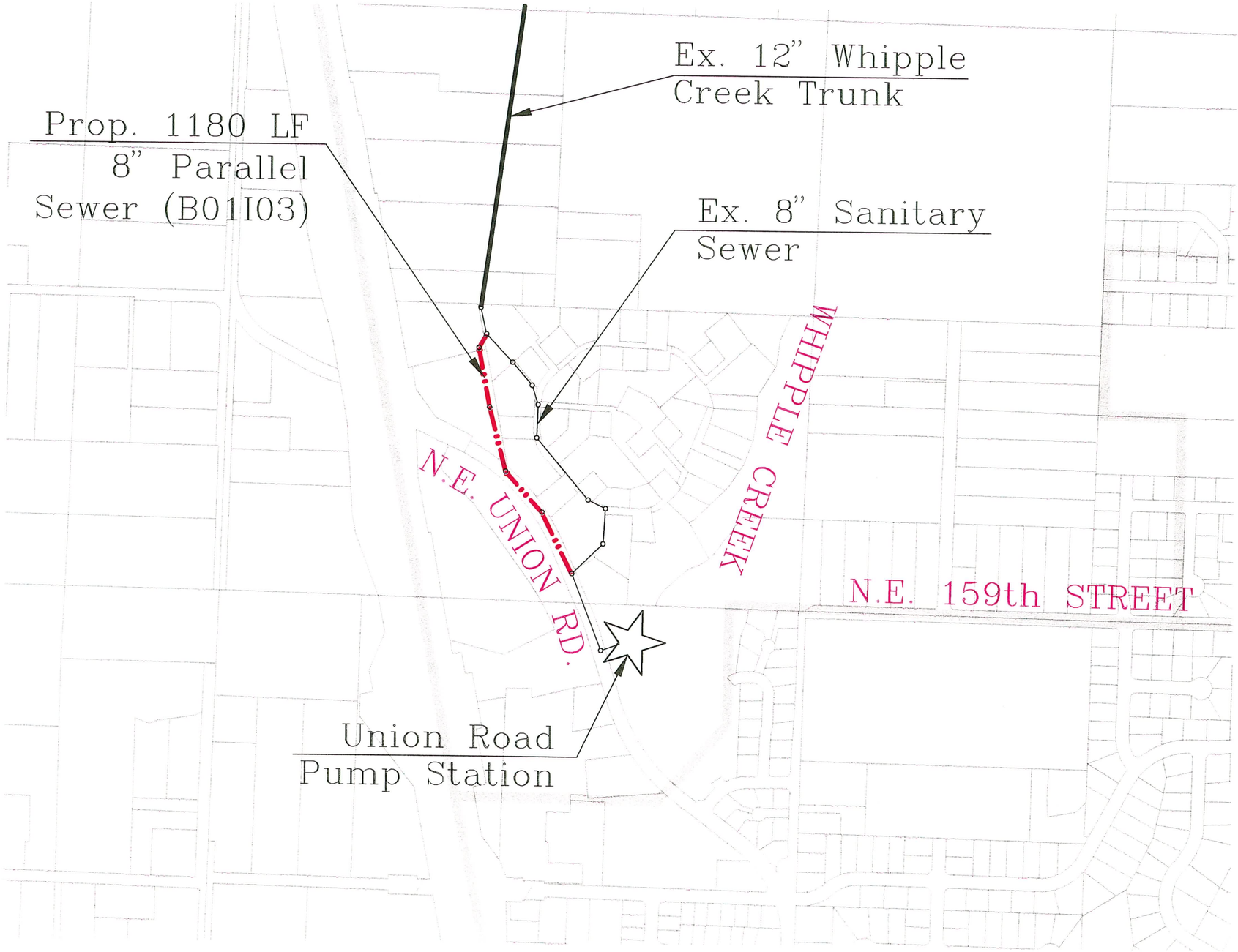
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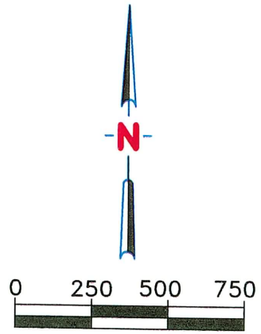
PROPOSED IMPROVEMENTS

1. Upgrade the existing Union Road Pump Station ($50,000 – Year 2000)
2. Upgrade the existing Clark County Fairgrounds Pump Station ($70,000 – Year 2000)
3. Parallel the existing 8" sanitary sewer from manhole 4N 33E to manhole 25N 23E, referencing *Clark County Public Sewer District No. 1* service map 14-3. This construction may occur adjacent to the existing sanitary sewer located in the multi-family development, or in a future street alignment west of the multi-family development. The combined capacity of the parallel lines should be a minimum of 1.29 million gallons daily (1.99 cfs) ($141,142 – Year 2000).

Basin # / Improvement	*Item*	*Description*	*Quan.*	*Unit*	*Total Construction*	*Contingencies, Eng., & Admin. 33%*	*Total Project Cost*
B01I01	1	Pump Station Upgrade	1	EA	$37,594	$12,406	
							$50,000
B01I02	1	Pump Station Upgrade	1	EA	$52,632	$17,368	
							$70,000
B01I03	1	8" Gravity Sanitary Sewer	1180	LF	$69,557	$22,954	
B01I03	2	48" Dia Manhole	4	EA	$11,052	$3,647	
B01I03	3	Asphalt Restoration	600	LF	$18,242	$6,020	
B01I03	4	15' Easement	600	LF	$7,270	$2,399	
							$141,142

COST ESTIMATE BREAKDOWN





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HAZEL DELL SEWER DISTRICT

BASIN 1 IMPROVEMENT #3

BASIN 2
MILL CREEK

TRIBUTARY TREATMENT PLANT:
SALMON CREEK (SCWWTP)

TOTAL AREA: **669 AC**

BASIN DESCRIPTION:

Mill Creek basin is the most northeastern basin within the Hazel Dell Sewer District service area boundary. The basin is bounded on the north by NE 179th Street, the west by approximately NE 29th Avenue, the east by approximately NE 50th Avenue, and the south by NE Salmon Creek Avenue.

GENERAL BASIN IMPROVEMENT INFORMATION:

Of the 669 acres within the Mill Creek basin, 363 acres are outside the Urban Growth Area (UGA), designated by Clark County Long Range Planning as "Urban Reserve". Residential development exists in the northwesterly area of the basin where sewer service is provided by a temporary pump station along the west fork of Mill Creek. The flow from this pump station is currently pumped into the Mt. Vista basin (#3). Completion of the Mill Creek trunk will connect the currently served area with the balance of the Mill Creek basin.

The southerly portion of the basin is narrow, and parallel with Mill Creek. This portion of the basin is within the UGA, and is zoned Office Commercial and University (Washington State University). The proposed 12" Mill Creek trunk line will be constructed as the southern basin develops. The development of the northerly area outside the UGA is uncertain and will depend on the future expansion of the UGA.

BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	143	213	262	330	408	902	
E.R.U.s	57	86	106	135	172	581	
Peak Flow (MGD)	0.060	0.089	0.109	0.137	0.172	0.556	
Total Capital Imp. Cost		$0	$1,235,383	$56,420	$126,541		$1,418,344
District Cost (Growth/Oversize)		$0	$155,589	$5,705	$20,252		$181,545
District Cost (R & R)		$0	$0	$18,815	$0		$18,815
Development Cost (Growth) *		$0	$1,079,794	$31,900	$106,290		$1,217,984

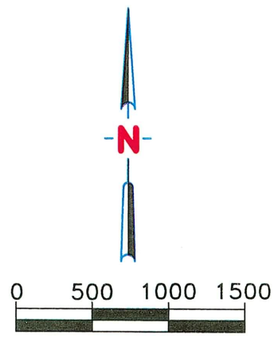
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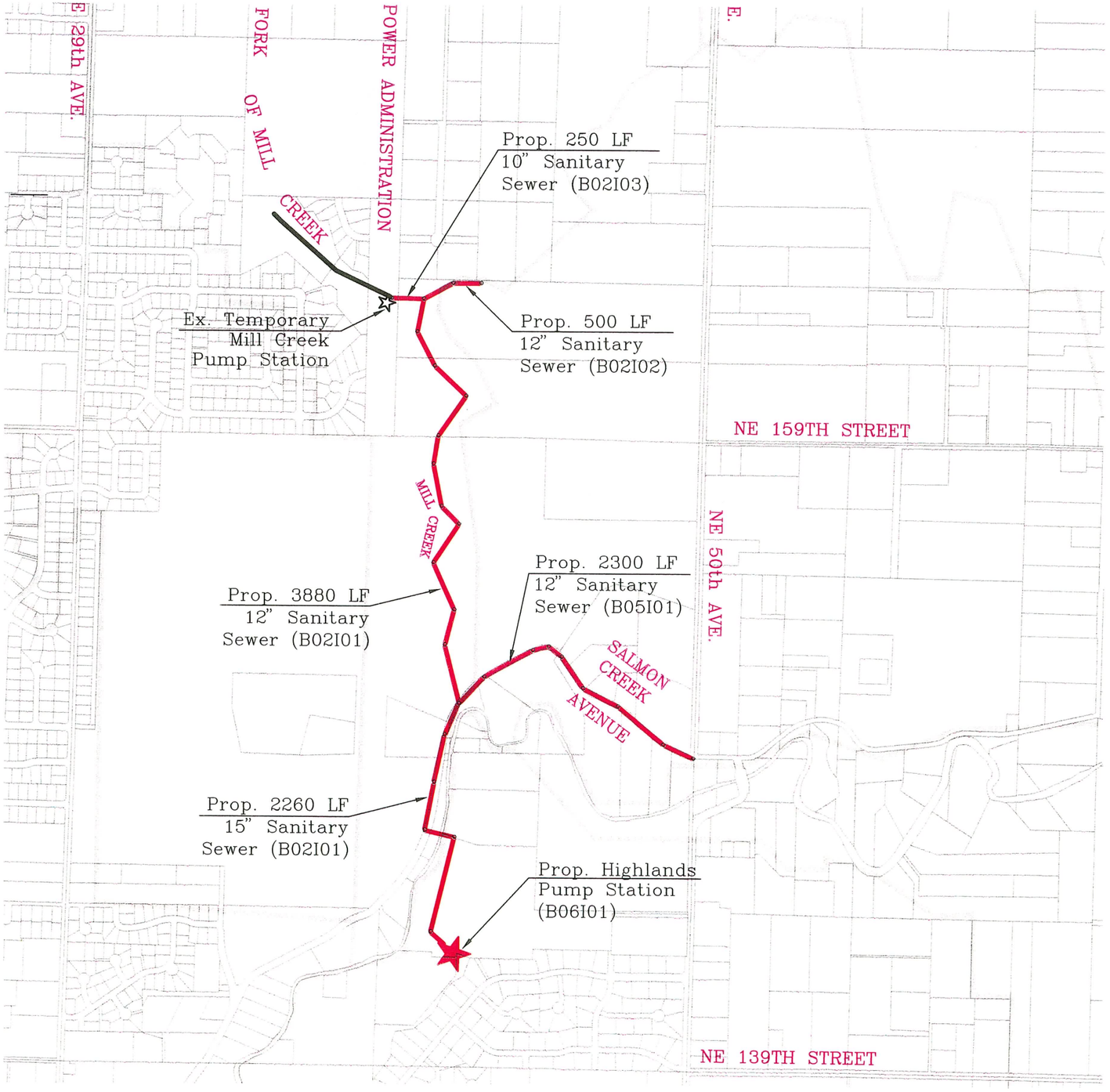
PROPOSED IMPROVEMENTS

1. Construct a new 15" trunk sewer from the proposed location of the Highlands pump station to the intersection of Salmon Creek Street and Mill Creek. Construct a new 12" trunk sewer from this intersection to the approximate location of the future NE 163rd Street and NE 45th Avenue. At this location, the Mill Creek trunk sewer splits into the west fork trunk and the east fork trunk. ($1,235,383 – Year 2007)
2. Construct a new 12" east fork trunk from the end of the 12" Mill Creek trunk approximately 500' east along Mill Creek. ($126,541 – Year 2017)
3. Construct a new 10" west fork trunk from the end of the 12" Mill Creek trunk along the west fork tributary of Mill Creek approximately 250' to the temporary Mill Creek pump station. Connect the proposed 10" trunk to the existing 10" trunk sewer constructed with the Mill Creek Forest subdivision. The pump station should be abandoned with the completion of the Mill Creek trunk sewer. ($56,420– Year 2012)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B02I01	1	12" Gravity Sanitary Sewer	3880	LF	$213,636	$70,500	
B02I01	2	15" Gravity Sanitary Sewer	2260	LF	$170,155	$56,151	
B02I01	3	48" Dia Manhole	18	EA	$41,310	$13,632	
B02I01	4	Asphalt Restoration	1200	LF	$38,628	$12,747	
B02I01	5	15' Easement	3900	LF	$47,253	$15,594	
B02I01	6	Wetland Mitigation	77600	SF	$417,876	$137,899	
							$1,235,383
B02I02	1	12" Gravity Sanitary Sewer	500	LF	$35,767	$11,803	
B02I02	2	48" Dia Manhole	2	EA	$5,526	$1,824	
B02I02	3	Wetland Mitigation	10000	SF	$53,850	$17,771	
							$126,541
B02I03	1	10" Gravity Sanitary Sewer	250	LF	$15,496	$5,114	
B02I03	2	Wetland Mitigation	5000	SF	$26,925	$8,885	
							$56,420





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HAZEL DELL SEWER DISTRICT

BASIN 2 IMPROVEMENTS 1-3

BASIN 4
I-5 NORTH

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA: **619 AC**

BASIN DESCRIPTION:

The Interstate-5 North basin is bounded by Interstate-5 on the west, NE 29th Avenue on the east, NE 159th Street on the north, and NE 134th Street on the south.

GENERAL BASIN IMPROVEMENT INFORMATION:

The capital improvements required in the Interstate-5 North basin will be needed within the six-year planning period. A larger pump station and force main will be required to accommodate the flow from this basin as well as the flow tributary to the station from the Whipple Creek East basin (#1) to the north.

Previous planning indicated a trunk line to be constructed southeasterly through a canyon to NE 134th Street. This proposed trunk would connect to the Salmon Creek Interceptor north of the Salmon Creek crossing with Salmon Creek Avenue. Recognizing the environmental significance of this canyon and the extent of the mitigation that would be required, an analysis was prepared to assess the alternative routes. Based on this analysis, constructing a higher capacity pump station near the location of the existing Campground pump station on NE 139th Street has proved to be the least costly and environmentally sound alternative. ($768,669 – Year 2000) Force main crossing of I-205. ($62,668 – Year 2003)

There are no other capital improvements anticipated within the Interstate-5 North Basin. The improvements remaining will be 8" or smaller line extensions required of development or Utility Local Improvement Districts.

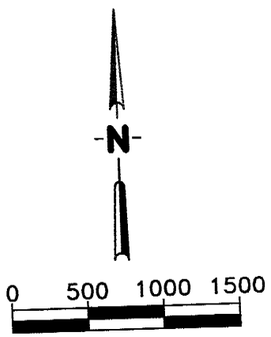
BASIN GROWTH TABLE:

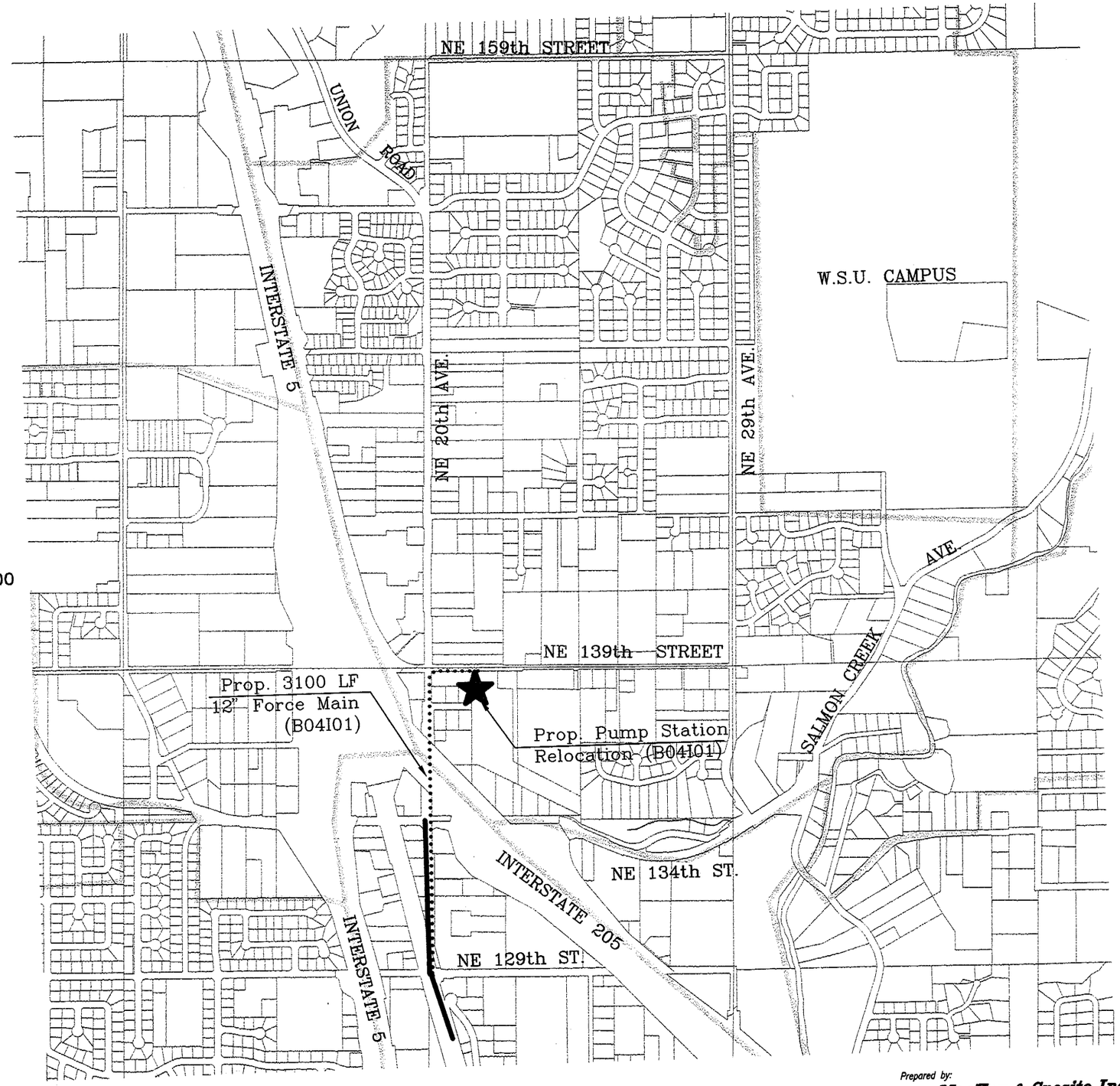
Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	1704	2244	2634	2932	3192	4447	
E.R.U.s	800	1073	1282	1489	1716	2705	
Peak Flow (MGD)	0.728	0.951	1.118	1.285	1.467	2.226	
Total Capital Imp. Cost		$831,337	$0	$0	$0		$831,337
District Cost (Growth/Oversize)		$588,335	$0	$0	$0		$588,335
District Cost (R & R)		$243,002	$0	$0	$0		$243,002
Development Cost (Growth)*		$0	$0	$0	$0		$0

*Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B04I01	1	Pump Station Upgrade	1	EA	$323,100	$106,623	
B04I01	2	12" Force Main	3100	LF	$111,192	$36,693	
B04I01	3	Asphalt Restoration	2500	LF	$80,476	$26,557	
B04I01	4	60" Dia Manhole	2	EA	$10,569	$3,488	
B04I01	5	18" Gravity Sanitary Sewer	500	LF	$44,156	$14,571	
B04I01	6	15' Easement	200	LF	$2,423	$800	
B04I01	7	40' Const. Easement	200	LF	$3,877	$1,279	
B04I01	8	Trench Dewatering	500	LF	$2,154	$711	
							$768,669
B04I02	1	Force Main Crossing	175	LF	$47,119	$15,549	
							$62,668





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HAZEL DELL SEWER DISTRICT

BASIN 4 IMPROVEMENT #1

BASIN 5
PLEASANT VALLEY NORTH

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **653 AC**

BASIN DESCRIPTION:

Pleasant Valley North basin is located in the northeast corner of the District's service area. The basin is from NE 170th Street to Salmon Creek Street between NE 44th Avenue and NE 64th Avenue.

GENERAL BASIN IMPROVEMENT INFORMATION:

There are currently no sanitary sewer facilities within the Pleasant Valley North basin, except for the 16" Battle Ground force main in Salmon Creek Street. Trunk line extension into the basin requires capital improvements in the Pleasant Valley South and Mill Creek basins. (The aforementioned capital improvement construction is planned for 2012.) The area east of NE 50th Avenue from NE 159th Street to Salmon Creek Street is outside of the Urban Growth Area (UGA).

Growth within this basin is dependent on Office Commercial zone development, and Washington State University expansion.

BASIN GROWTH TABLE:

Item	*Year 1997*	*Year 2003*	*Year 2007*	*Year 2012*	*Year 2017*	*Ultimate*	
Population	*5*	*28*	*54*	*93*	*146*	*213*	
E.R.U.s	*2*	*13*	*28*	*74*	*267*	*1001*	
Peak Flow (MGD)	*0.002*	*0.014*	*0.030*	*0.078*	*0.280*	*1.035*	
							Total
Total Capital Imp. Cost		*$0*	*$286,339*	*$0*	*$0*		*$286,339*
District Cost (Growth/Oversize)		*$0*	*$31,307*	*$0*	*$0*		*$31,307*
District Cost (R & R)		*$0*	*$0*	*$0*	*$0*		*$0*
*Development Cost (Growth)**		*$0*	*$255,032*	*$0*	*$0*		*$255,032*

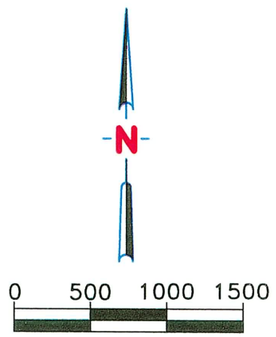
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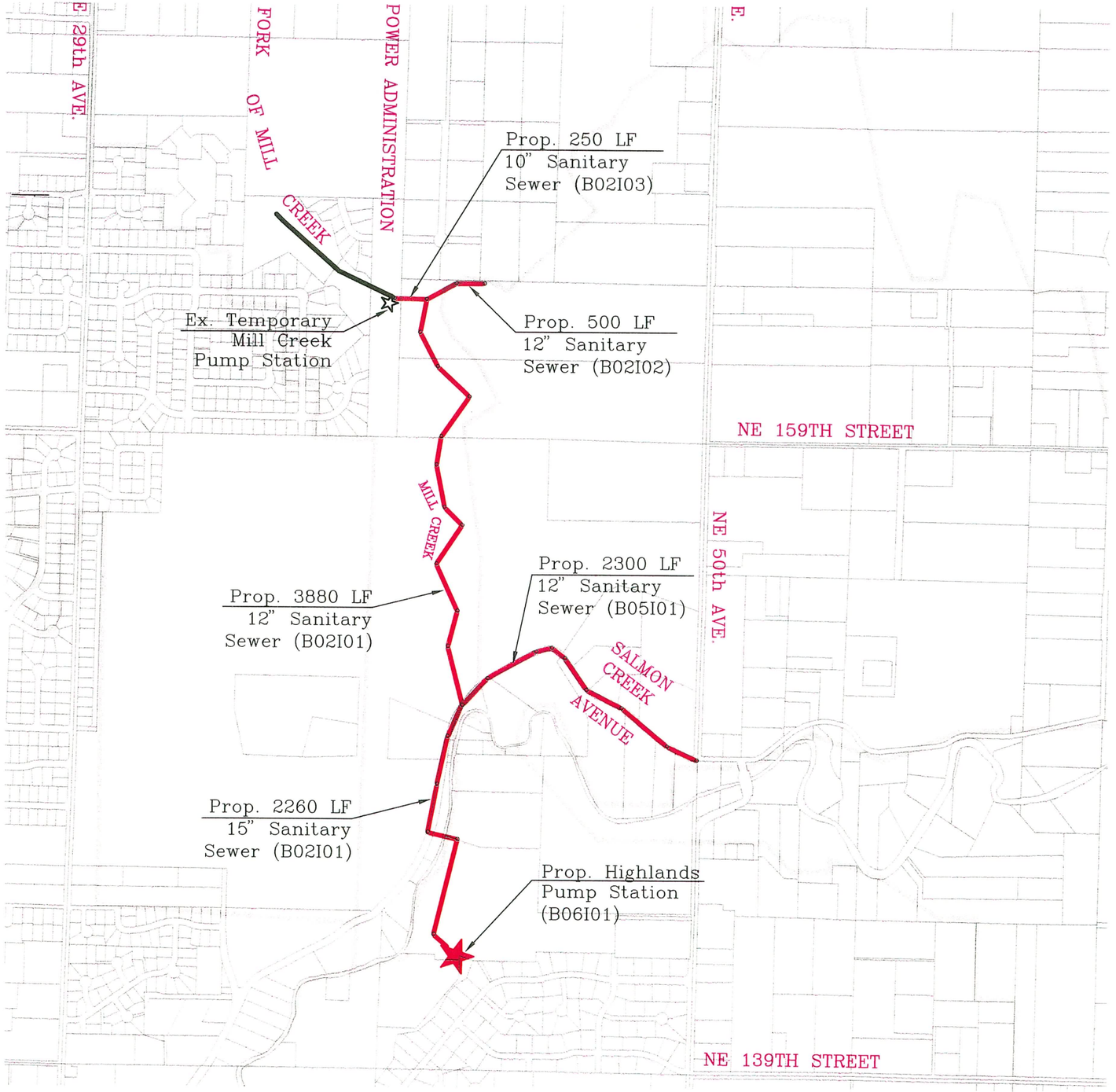
PROPOSED IMPROVEMENTS

Construct approximately 2300′ of 12″ sanitary sewer trunk line from the intersection of the Mill Creek trunk and Salmon Creek Avenue, to the east along Salmon Creek Avenue. ($286,339 – Year 2007)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	*Item*	*Description*	*Quan.*	*Unit*	*Total Construction*	*Contingencies, Eng., & Admin. 33%*	*Total Project Cost*
B05I01	*1*	*12" Gravity Sanitary Sewer*	*2300*	*LF*	*$126,640*	*$41,791*	
B05I01	*2*	*48" Dia Manhole*	*8*	*EA*	*$14,615*	*$4,823*	
B05I01	*3*	*Asphalt Restoration*	*2300*	*LF*	*$74,038*	*$24,432*	
							$286,339





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HAZEL DELL SEWER DISTRICT

BASIN 5 IMPROVEMENT #1

BASIN 6
PLEASANT VALLEY SOUTH

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **405 AC**

BASIN DESCRIPTION:

Pleasant Valley South basin is located along the east boundary of the Urban Growth Area (UGA). The north and west boundaries follow Salmon Creek, the basin is bounded approximately on the south by NE 134th Street, and is bounded on the east by NE 60th Avenue.

GENERAL BASIN IMPROVEMENT INFORMATION:

Pleasant Valley South basin development is critical to Pleasant Valley North and Mill Creek basins' development. The proposed 15" trunk line crossing Salmon Creek, and the proposed permanent pump station within the Pleasant Valley Park must be constructed before permanent gravity sanitary sewer service can be provided to these northerly basins. A temporary pump station just north of the Highlands development and west of the Pleasant Valley Schools currently serves Pleasant Valley South basin. The temporary pump station will be eliminated when the lower elevation, higher capacity Highlands pump station is constructed. There are no other capital improvements proposed within this basin, the remaining improvements will be 8" extensions to serve developing properties or failed septic/drain-field systems.

BASIN GROWTH TABLE:

Item	*Year 1997*	*Year 2003*	*Year 2007*	*Year 2012*	*Year 2017*	*Ultimate*	
Population	*275*	*368*	*473*	*628*	*815*	*1004*	
E.R.U.s	*142*	*180*	*223*	*286*	*361*	*629*	
Peak Flow (MGD)	*0.145*	*0.182*	*0.222*	*0.280*	*0.348*	*0.598*	
Total Capital Imp. Cost		*$0*	*$294,501*	*$0*	*$0*		*$294,501*
District Cost (Growth/Oversize)		*$0*	*$222,629*	*$0*	*$0*		*$222,629*
District Cost (R & R)		*$0*	*$71,872*	*$0*	*$0*		*$71,872*
*Development Cost (Growth)**		*$0*	*$0*	*$0*	*$0*		*$0*

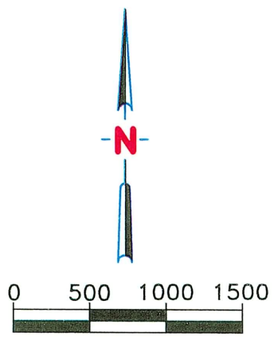
**Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change.* *See Extension Policy on page 7.*

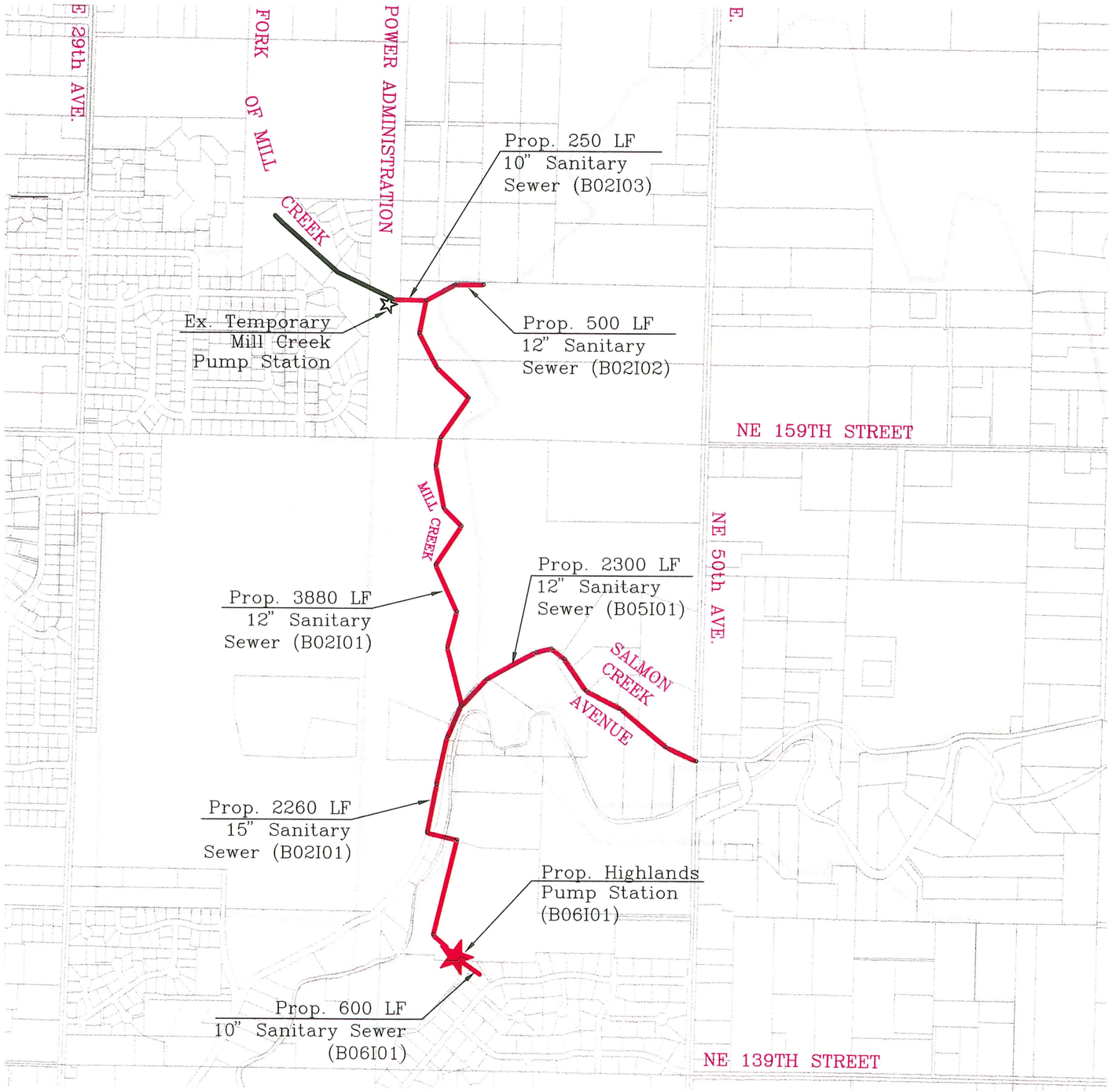
PROPOSED IMPROVEMENTS:

Construct the Highlands pump station as proposed for the Mill Creek trunk. This pump station should be placed near Salmon Creek at the lowest possible elevation in order to serve the greatest number of customers. The pump station will probably be located approximately 600' west of the temporary Highlands pump station. Construct 600' of 10" trunk line from the temporary pump station to the proposed Highlands pump station. ($294,501 – Year 2007)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	*Item*	*Description*	*Quan.*	*Unit*	*Total Construction*	*Contingencies, Eng., & Admin. 33%*	*Total Project Cost*
B06I01	*1*	*10" Gravity Sanitary Sewer*	*600*	*LF*	*$32,954*	*$10,875*	
B06I01	*2*	*Pump Station Relocation*	*1*	*EA*	*$188,475*	*$62,197*	
							$294,501





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HAZEL DELL SEWER DISTRICT

BASIN 6 IMPROVEMENT #1

BASIN 8
BARBERTON

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **651 AC**

BASIN DESCRIPTION:

Barberton basin is located along the east boundary of the UGA. The basin is bounded by Salmon Creek Avenue on the west, NE 60th Avenue to the east, NE 134th Street to the north, and NE 114th Street to the south.

GENERAL BASIN IMPROVEMENT INFORMATION:

Capital improvements projected for the Barberton basin include the easterly extension of 12" and 10" trunk sewers from the terminus of the existing 12" trunk sewer, located on the west edge of a Bonneville Power Administration easement. It is anticipated that this trunk line will need to be constructed by the year 2003.

This basin includes a large number of mini-farms on one to five acre parcels. The mini-farm parcels were identified by the County GMA staff as "underutilized lands" and included in the vacant land inventory. It is unlikely that these mini-farms will re-develop to achieve higher densities reasonably soon.

Sanitary sewer service to these one to five acre farms is not cost effective at this time. The decision to serve the majority of this area will likely be by failing septic/drain-field systems rather than by development pressure.

BASIN GROWTH TABLE:

PROPOSED IMPROVEMENTS:

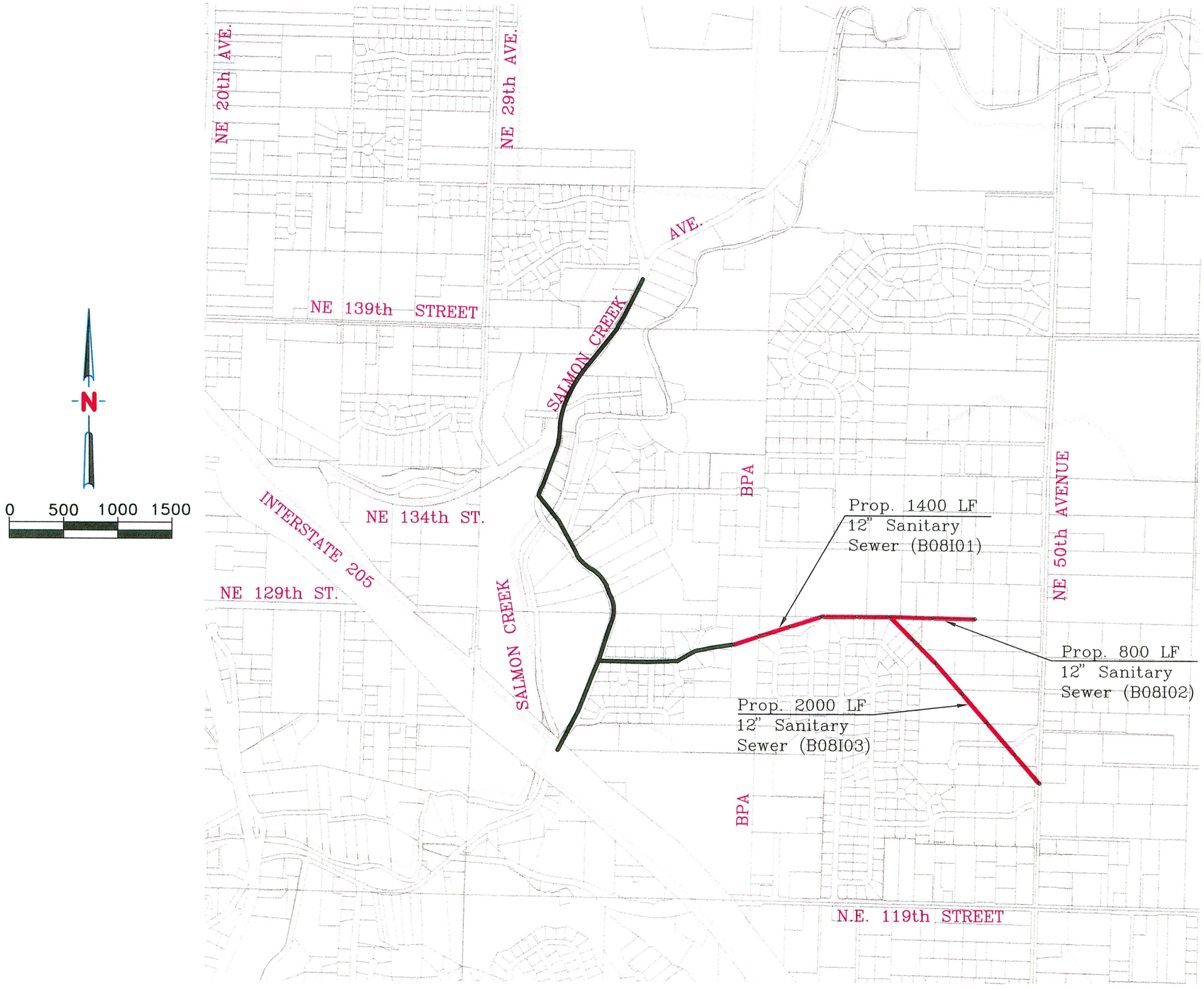
Item	*Year 1997*	*Year 2003*	*Year 2007*	*Year 2012*	*Year 2017*	*Ultimate*	
Population	*537*	*738*	*905*	*1145*	*1426*	*2399*	
E.R.U.s	*215*	*295*	*363*	*459*	*571*	*1290*	
Peak Flow (MGD)	*0.213*	*0.287*	*0.347*	*0.431*	*0.528*	*1.136*	
Total Capital Imp. Cost		*$277,838*	*$231,125*	*$0*	*$0*		*$508,963*
District Cost (Growth/Oversize)		*$89,356*	*$55,360*	*$0*	*$0*		*$144,716*
District Cost (R & R)		*$0*	*$0*	*$0*	*$0*		*$0*
*Development Cost (Growth)**		*$188,482*	*$175,765*	*$0*	*$0*		*$364,247*

**Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.*

1. Extend a 12" trunk sewer approximately 1400' from manhole 48N 48E, referencing *Clark County Public Sewer District No. 1* service map 25-3 (the west edge of the BPA easement) to the future intersection of NE 44th Avenue and NE 128th Street. At this location, the trunk sewer splits into the north fork trunk and the south fork trunk. ($177,808 – Year 2001)
2. Construct a new 12" north fork trunk from the end of the 12" Barberton trunk sewer easterly along the north line of the SE ¼, Section 25, Township 3 North, Range 1 East of the Willamette Meridian, for a distance of approximately 800'. ($100,030 – Year 2002)
3. Construct a new 12" south fork trunk from the end of the 12" Barberton trunk sewer for approximately 2000', parallel with a Salmon Creek tributary, and serving the SE Barberton sub-basin. ($231,125 – Year 2007)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	*Item*	*Description*	*Quan.*	*Unit*	*Total Construction*	*Contingencies, Eng., & Admin. 33%*	*Total Project Cost*
B08I01	*1*	*12" Gravity Sanitary Sewer*	*1400*	*LF*	*$100,149*	*$33,049*	
B08I01	*2*	*48" Dia Manhole*	*6*	*EA*	*$16,579*	*$5,471*	
B08I01	*3*	*15' Easement*	*1400*	*LF*	*$16,963*	*$5,598*	
							$177,808
B08I02	*1*	*12" Gravity Sanitary Sewer*	*800*	*LF*	*$57,228*	*$18,885*	
B08I02	*2*	*48" Dia Manhole*	*3*	*EA*	*$8,289*	*$2,735*	
B08I02	*3*	*15' Easement*	*800*	*LF*	*$9,693*	*$3,199*	
							$100,030
B08I03	*1*	*12" Gravity Sanitary Sewer*	*2000*	*LF*	*$126,596*	*$41,777*	
B08I03	*2*	*48" Dia Manhole*	*10*	*EA*	*$22,950*	*$7,574*	
B08I03	*3*	*15' Easement*	*2000*	*LF*	*$24,233*	*$7,997*	
							$231,125



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HAZEL DELL SEWER DISTRICT

BASIN 8 IMPROVEMENTS #1-3

BASIN 12
HWY 99 EAST

TRIBUTARY TREATMENT PLANT:
SALMON CREEK (SCWWTP)

TOTAL AREA **1136 AC**

BASIN DESCRIPTION:

Highway 99 East basin is centrally located in the District. It runs along Hwy 99 from Salmon Creek to NE 99th Street; and from NE 99th Street to NE 82nd Street, between NE 55th Avenue and NE 14th Avenue.

GENERAL BASIN INFORMATION:

Existing trunk lines will accommodate the anticipated flow; however, should redevelopment occur at the maximum allowable density in the current Clark County Comprehensive Plan (GMA), improvements may be required that are not included in the Hazel Dell Sewer District Comprehensive Plan. A Redevelopment District may be considered to help finance required improvements within the basin, and downstream improvements to the Salmon Creek Interceptor. It is not economically feasible to plan for the most intense use when present trends indicate development occurring at average, or minimum, densities allowed within the individual zones.

The existing trunk lines within this basin drain directly to the Salmon Creek interceptor. The District should monitor this basin, and development of the Highway 99 corridor, to review growth trends and update the capital facility improvement needs.

BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	3350	4080	4749	5713	6856	12464	
E.R.U.s	1954	2278	2576	3006	3518	7264	
Peak Flow (MGD)	1.584	1.819	2.029	2.327	2.671	5.132	
Total Capital Imp. Cost		$357,411	$313,868	$0	$0		$671,279
District Cost (Growth/Oversize)		$80,913	$313,868	$0	$0		$394,781
District Cost (R & R)		$25,000	$0	$0	$0		$25,000
Development Cost (Growth)*		$251,498	$0	$0	$0		$251,498

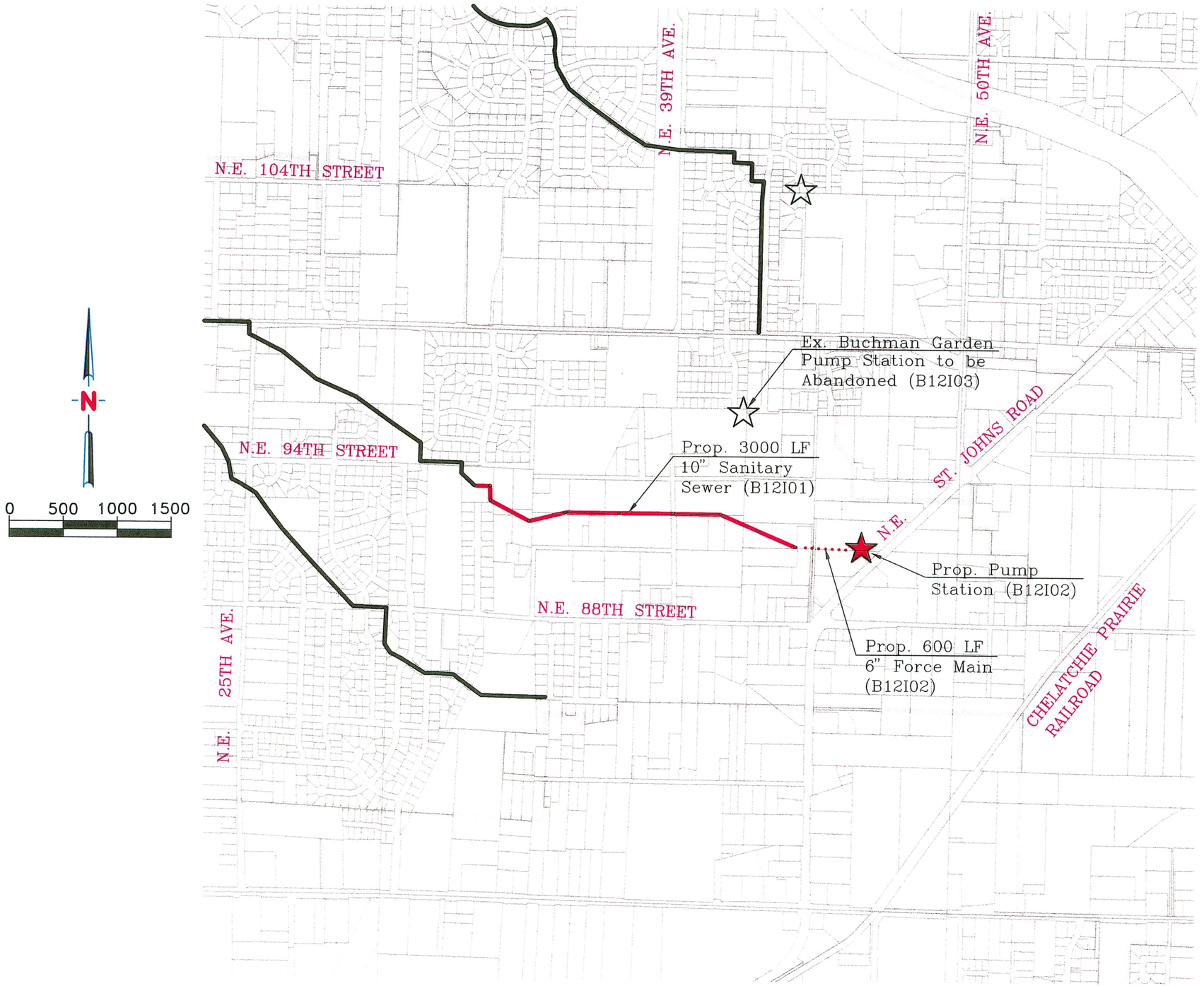
*Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.

PROPOSED IMPROVEMENTS:

1. Construct a new 10" sewer trunk line from the NE 32nd Avenue and future NE 93rd Street intersection, east toward the NE 45th Avenue and future NE 91st Street intersection. The alignment of the trunk sewer will follow NE 91st, NE 92nd, or NE 94th Street depending on right-of-way and easement acquisition. ($322,411 – Year 2000)
2. Construct a new pump station at the NE 91st Street and St. Johns intersection; and construct a force main from the proposed pump station to the terminus of the trunk sewer at the intersection of NE 45th Avenue and the future NE 91st Street. ($313,868 – Year 2005)
3. Abandon existing Buchman Garden Pump Station ($25,000 – 2001)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B12I01	1	10" Gravity Sanitary Sewer	3000	LF	$185,953	$61,365	
B12I01	2	48" Dia Manhole	10	EA	$27,631	$9,118	
B12I01	3	15' Easement	3000	LF	$36,349	$11,995	
							$332,411
B12I02	1	Pump Station	1	EA	$215,400	$71,082	
B12I02	2	6" Force Main	600	LF	$13,321	$4,396	
B12I02	3	15' Easement	600	LF	$7,270	$2,399	
							$313,868
B12I03	1	Pump Station	1	EA	$18,797	$6,203	
							$25,000



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HAZEL DELL SEWER DISTRICT

BASIN 12
IMPROVEMENTS 1-2

BASIN 13
HAZEL DELL NORTH

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **663 AC**

BASIN DESCRIPTION:

Hazel Dell North basin is bounded by Interstate 5 and Highway 99 on the east, NW 7th Avenue on the west, and extends from Salmon Creek to NE 90th Street.

GENERAL BASIN IMPROVEMENT INFORMATION:

The Hazel Dell North basin requires no additional capital facilities. The existing 10" and 12" trunk lines carry the sewage volumes from the anticipated growth; however, should re-development occur at the maximum allowable density in the current Clark County Comprehensive Plan (GMA), improvements may be required that are not included in the Hazel Dell Sewer District Comprehensive Plan. A Redevelopment District may be considered to help finance required improvements within the basin, and downstream improvements to the Salmon Creek Interceptor. It is not economically feasible to plan for the most intense use when present trends indicate development occurring at average, or minimum, densities allowed within the individual zones.

The existing trunk lines within this basin drain directly to the Salmon Creek interceptor. The District should monitor this basin, and development of the Highway 99 corridor, to review growth trends and update the capital facility improvement needs.

BASIN GROWTH TABLE:

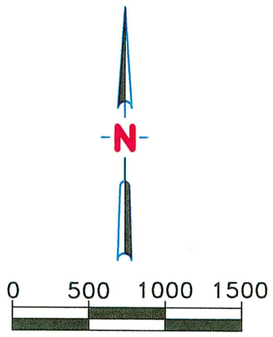
Item	*Year 1997*	*Year 2003*	*Year 2007*	*Year 2012*	*Year 2017*	*Ultimate*	
Population	*2373*	*2692*	*2939*	*3369*	*4270*	*6140*	
E.R.U.s	*1283*	*1469*	*1614*	*1851*	*2288*	*3874*	
Peak Flow (MGD)	*1.122*	*1.270*	*1.383*	*1.565*	*1.884*	*3.054*	*Total*
Total Capital Imp. Cost		*$19,561*	*$0*	*$0*	*$0*		*$19,561*
District Cost (Growth/Oversize)		*$0*	*$0*	*$0*	*$0*		*$0*
District Cost (R & R)		*$19,561*	*$0*	*$0*	*$0*		*$19,561*
*Development Cost (Growth)**		*$0*	*$0*	*$0*	*$0*		*$0*

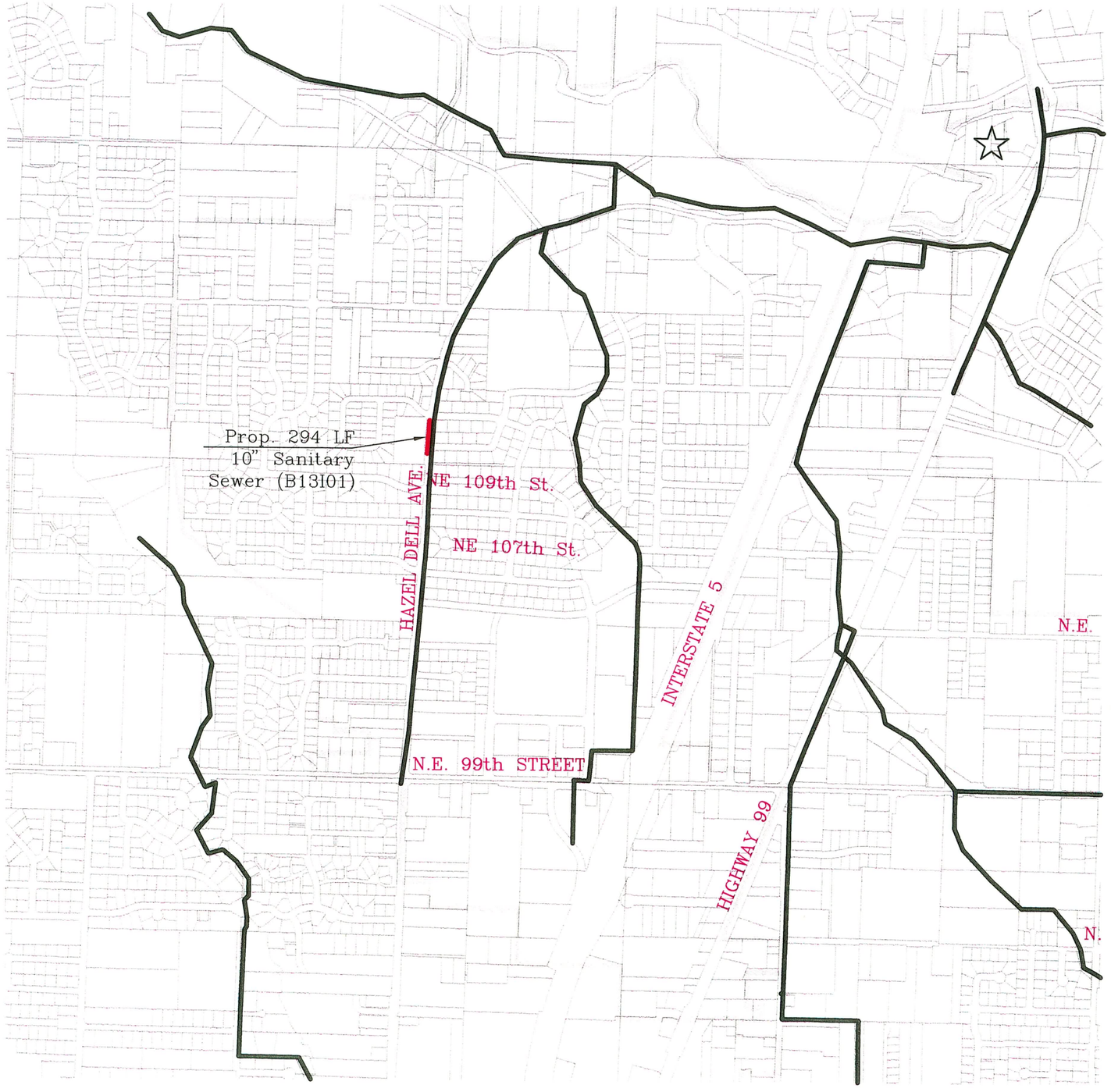
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PROPOSED IMPROVEMENT:

Replace 294' of 10" sanitary sewer pipe in Hazel Dell Avenue with new 10" sewer pipe from manhole 2N 17E to manhole 7N 17E (approximately NE 110th Street to NE 111th Street), referencing *Clark County Public Sewer District No. 1* service map 34-1. ($19,561 – Year 2000)

Basin # / Improvement	*Item*	*Description*	*Quan.*	*Unit*	*Total Construction*	*Contingencies, Eng., & Admin. 33%*	*Total Project Cost*
B13I01	*1*	*10" Gravity Sanitary Sewer*	*294*	*LF*	*$5,769*	*$1,904*	
B13I01	*2*	*Asphalt Restoration*	*294*	*LF*	*$8,939*	*$2,950*	
							$19,561





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HAZEL DELL SEWER DISTRICT

BASIN 13 IMPROVEMENT #1

BASIN 14
COUGAR CANYON

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **2152 AC**

BASIN DESCRIPTION:

Cougar Canyon basin is the largest basin within the District's service area. The basin is generally bounded by Salmon Creek on the north, NW 21st Avenue on the west, NE 73rd Street on the south, and NE 50th Avenue on the east.

GENERAL BASIN INFORMATION:

Cougar Canyon basin is the most complicated basin within the Hazel Dell Sewer District's service area to predict growth and future sewage flows. The land area west of Highway 99 is at nearly 75% built-out and comprises approximately 65% of the land area. Land area east of Highway 99 is at approximately 25% built-out and comprises 35% of the land area. The west area, however, is subject to redevelopment because of increased land use densities identified in the Clark County Comprehensive Plan.

Cougar Canyon trunk line was designed and installed in the 1970's with no consideration for flows generated by the area east of Highway 99; additionally, the trunk line was not designed to accommodate the potential flow from a redevelopment area parallel with the Interstate-5/Highway 99 corridor. The potential redevelopment area is approximately located between Hazel Dell Avenue and NE 21st Avenue; and from NE 78th Street to NE 88th Street.

The flows calculated and included in the District's comprehensive plan include the area east of Highway 99 developed at typical zone densities, but not maximum zone densities allowed. Maximum density redevelopment could potentially require the establishment of a Redevelopment District to help finance required basin improvements, and downstream Salmon Creek interceptor improvements. Industrial flows and potential redevelopment flows are difficult to predict; therefore, the industrial flows from the east basin area, and the potential redevelopment area flows are approximate. These flows should be monitored regularly to determine the accuracy of the predicted flows.

Required parallel trunk sewers are identified along the Cougar Canyon trunk west of Hazel Dell Avenue. (See the *Proposed Improvements.*) The construction timing is based on some surcharging of the Cougar Canyon trunk sewer and the anticipated industrial and redevelopment flows.

The difficult terrain and wetland permitting that would be required for parallel construction along Cougar Creek may require alternative designs and/or methods of construction. Alternate design or construction methods that should be explored include: directional drilling, pipe bursting, or pumping of sewage.

The District should monitor this basin, and development of the Highway 99 corridor, to review growth trends and update the capital facility improvement needs.

PROPOSED IMPROVEMENTS:

1. Make the following improvements:
   a. Replace 2114′ of 8″ sanitary sewer with 15″ trunk sewer from the Highway 99 and NE 78th Street intersection, following the alignment of NE 78th Street, to manhole 52N 49E (approximately NE 20th Street), referencing *Clark County Public Sewer District No.1* service map 11-4. (The beginning of ULID #43.) ($359,733 – Year 2001)
   b. Replace 502′ of 12″ sanitary sewer with 18″ trunk sewer from manhole 32N 14E to manhole 42N 12E, referencing *Clark County Public Sewer District No.1* service map 3-2. ($92,103 – Year 2002)
2. Replace 234′ of 12″ trunk sewer with 18″ trunk sewer from manhole 36N 40E to manhole 38N 35E, referencing *Clark County Public Sewer District No.1* service map 3-4. ($82,104 – Year 2000)
3. Replace 438′ of 12″ trunk sewer with 18″ trunk sewer from manhole 38N 35E to manhole 44N 35E, referencing *Clark County Public Sewer District No.1* service map 3-4. ($154,140 – Year 2000)
4. Replace 330′ of 12″ trunk sewer with 18″ trunk sewer from manhole 42N 12E to manhole 46N 7E, referencing *Clark County Public Sewer District No.1* service map 3-2. ($114,000 – Year 2002)
5. Replace 6231′ of 8″ & 10″ sanitary sewer with 5252′ of 15″ trunk sewer, and 979′ of 18″ trunk sewer from manhole 52N 49E (service map 11-4) to manhole 42N 53E (service map 12-4), referencing *Clark County Public Sewer District No.1* service maps. ($1,729,825 – Year 2007)
6. Make the following improvements:
   a. Replace 231′ of 12″ trunk sewer with 18″ trunk sewer from manhole 44N 35E to manhole 49N 36E, referencing *Clark County Public Sewer District No.1* service map 3-4. ($47,730 – Year 2000)
   b. Replace 365′ of 12″ trunk sewer with 18″ trunk sewer from manhole 52N 2E to manhole 46N 7E, referencing *Clark County Public Sewer District No.1* service map 3-2. ($64,271 – Year 2002)
   c. Replace 400′ of 12″ trunk sewer with 18″ trunk sewer from manhole 52N 31E to the manhole immediately east (approximately 52N 39E), referencing *Clark County Public Sewer District No.1* service map 10-1. ($74,309 – Year 2012)
   d. Replace 350′ of 10″ trunk sewer with 15″ trunk sewer from manhole 53N 45E to the manhole immediately east (located at the 78th Street and Highway 99 intersection), referencing *Clark County Public Sewer District No.1* service map 10-1. Replace the 7′ of 10″ trunk sewer with 15″ trunk sewer connecting the two manholes located in the same intersection. ($64,603 – Year 2012)

7. Make the following improvements:
   a. Replace 516′ of 8″ sanitary sewer with 10″ trunk sewer from manhole 42N 53E to manhole 52N 53E, referencing *Clark County Public Sewer District No.1* service map 12-4. ($61,530 – Year 2017)
   b. Replace 358′ of 12″ trunk sewer with 18″ trunk sewer from the manhole described in item #6c (approximately 52N 39E) to manhole 53N 45E, referencing *Clark County Public Sewer District No. 1* service map 10-1. ($67,278 – Year 2012)
   c. Replace 1239′ of 12″ trunk sewer with 18″ trunk sewer from manhole 52N 31E (sheet 10-1) to the manhole 297′ north of manhole 4N 17E (approximately 11N 16E, sheet 3-2), referencing *Clark County Public Sewer District No. 1* service maps. ($240,796 – Year 2012)
   d. Replace 544′ of 15″ trunk sewer with 18″ trunk sewer from manhole 14N 33E to manhole 24N 31E, referencing *Clark County Public Sewer District No.1* service map 34-3. ($177,694 – Year 2017)
   e. Replace 36′ of 12″ trunk sewer with 15″ trunk sewer from manhole 49N 36E to the immediately downstream manhole, referencing *Clark County Public Sewer District No. 1* service map 3-4. ($15,742 – Year 2000)

BASIN GROWTH TABLE:

Item	*Year 1997*	*Year 2003*	*Year 2007*	*Year 2012*	*Year 2017*	*Ultimate*	*Total*
Population	6118	6865	7274	7836	8514	16567	
E.R.U.s	3939	4452	4776	5226	5753	11544	
Peak Flow (MGD)	2.795	3.118	3.319	3.596	3.916	7.480	
Total Capital Imp. Cost		$929,823	$1,729,825	$446,986	$239,224		$3,345,859
District Cost (Growth/Oversize)		$293,222	$545,504	$140,958	$70,302		$1,049,986
District Cost (R & R)		$636,602	$1,184,321	$306,028	$163,784		$2,290,735
*Development Cost (Growth)**		$0	$0	$0	$5,138		$5,138

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COST ESTIMATE BREAKDOWN

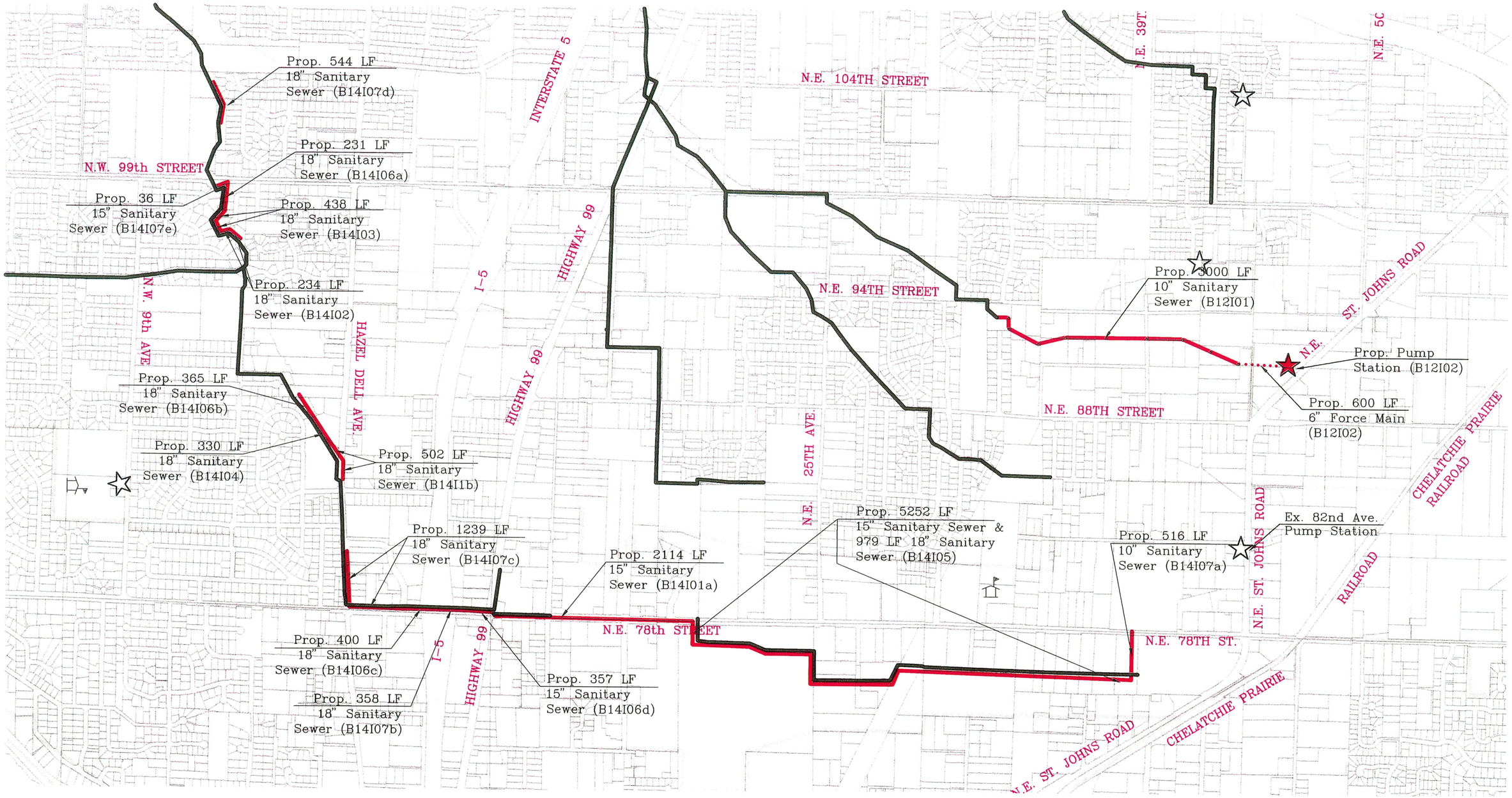
Basin # / Improvement	*Item*	*Description*	*Quan.*	*Unit*	*Total Construction*	*Contingencies, Eng., & Admin. 33%*	*Total Project Cost*
B14I01a	1	15" Gravity Sanitary Sewer	2114	LF	$176,576	$58,270	
B14I01a	2	48" Dia Manhole	8	EA	$25,850	$8,530	
B14I01a	3	Asphalt Restoration	2114	LF	$68,050	$22,457	
							$359,733
B14I01b	1	18" Gravity Sanitary Sewer	502	LF	$49,058	$16,189	
B14I01b	2	48" Dia Manhole	3	EA	$9,694	$3,199	
B14I01b	3	Asphalt Restoration	202	LF	$6,863	$2,265	
B14I01b	4	15' Easement	300	LF	$3,635	$1,200	
							$92,103
B14I02	1	18" Gravity Sanitary Sewer	234	LF	$22,868	$7,546	
B14I02	2	48" Dia Manhole	3	EA	$9,694	$3,199	
B14I02	3	15' Easement	234	LF	$2,835	$936	
B14I02	4	10' Const. Easement	234	LF	$1,134	$374	
B14I02	5	Wetland Mitigation	4680	SF	$25,202	$8,317	
							$82,104
B14I03	1	18" Gravity Sanitary Sewer	438	LF	$42,804	$14,125	
B14I03	2	60" Dia Manhole	3	EA	$18,489	$6,101	
B14I03	3	15' Easement	438	LF	$5,307	$1,751	
B14I03	4	10' Const. Easement	438	LF	$2,123	$701	
B14I03	5	Wetland Mitigation	8760	SF	$47,173	$15,567	
							$154,140
B14I04	1	18" Gravity Sanitary Sewer	330	LF	$32,250	$10,642	
B14I04	2	60" Dia Manhole	2	EA	$12,326	$4,068	
B14I04	3	15' Easement	330	LF	$3,998	$1,319	
B14I04	4	10' Const. Easement	330	LF	$1,599	$528	
B14I04	5	Wetland Mitigation	6600	SF	$35,541	$11,729	
							$114,000

COST ESTIMATE BREAKDOWN CONTINUED

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B14I05	1	15" Gravity Sanitary Sewer	5252	LF	$784,772	$258,975	
B14I05	2	18" Gravity Sanitary Sewer	979	LF	$169,402	$55,903	
B14I05	3	48" Dia Manhole	21	EA	$146,496	$48,344	
B14I05	4	60" Dia Manhole	6	EA	$79,156	$26,121	
B14I05	5	40' Const. Easement	6231	LF	$120,794	$39,862	
							$1,729,825
B14I06a	1	18" Gravity Sanitary Sewer	231	LF	$22,575	$7,450	
B14I06a	2	48" Dia Manhole	1	EA	$3,231	$1,066	
B14I06a	3	60" Dia Manhole	1	EA	$6,163	$2,034	
B14I06a	4	15' Easement	231	LF	$2,799	$924	
B14I06a	5	10' Const. Easement	231	LF	$1,120	$369	
							$47,730
B14I06b	1	18" Gravity Sanitary Sewer	365	LF	$35,670	$11,771	
B14I06b	2	48" Dia Manhole	2	EA	$6,462	$2,133	
B14I06b	3	15' Easement	365	LF	$4,422	$1,459	
B14I06b	4	10' Const. Easement	365	LF	$1,769	$584	
							$64,271
B14I06c	1	18" Gravity Sanitary Sewer	400	LF	$35,325	$11,657	
B14I06c	2	48" Dia Manhole	2	EA	$5,526	$1,824	
B14I06c	3	Asphalt Restoration	400	LF	$15,021	$4,957	
							$74,309
B14I06d	1	15" Gravity Sanitary Sewer	357	LF	$26,879	$8,870	
B14I06d	2	48" Dia Manhole	3	EA	$8,289	$2,735	
B14I06d	3	Asphalt Restoration	357	LF	$13,406	$4,424	
							$64,603

COST ESTIMATE BREAKDOWN CONTINUED

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B14I07a	1	10" Gravity Sanitary Sewer	516	LF	$31,984	$10,555	
B14I07a	2	48" Dia Manhole	2	EA	$5,526	$1,824	
B14I07a	3	15' Easement	516	LF	$6,252	$2,063	
B14I07a	4	10' Const. Easement	516	LF	$2,501	$825	
							$61,530
B14I07b	1	18" Gravity Sanitary Sewer	358	LF	$31,616	$10,433	
B14I07b	2	48" Dia Manhole	2	EA	$5,526	$1,824	
B14I07b	3	Asphalt Restoration	358	LF	$13,443	$4,436	
							$67,278
B14I07c	1	18" Gravity Sanitary Sewer	1239	LF	$109,419	$36,108	
B14I07c	2	48" Dia Manhole	5	EA	$13,816	$4,559	
B14I07c	3	60" Dia Manhole	1	EA	$5,284	$1,744	
B14I07c	4	Asphalt Restoration	1239	LF	$46,526	$15,354	
B14I07c	5	10' Const. Easement	1239	LF	$6,005	$1,982	
							$240,796
B14I07d	1	18" Gravity Sanitary Sewer	544	LF	$53,163	$17,544	
B14I07d	2	48" Dia Manhole	2	EA	$6,462	$2,133	
B14I07d	3	60" Dia Manhole	1	EA	$6,163	$2,034	
B14I07d	4	15' Easement	544	LF	$6,591	$2,175	
B14I07d	5	10' Const. Easement	544	LF	$2,636	$870	
B14I07d	6	Wetland Mitigation	10880	SF	$58,589	$19,334	
							$177,694
B14I07e	1	15" Gravity Sanitary Sewer	36	LF	$3,304	$1,090	
B14I07e	2	48" Dia Manhole	2	EA	$7,399	$2,442	
B14I07e	3	15' Easement	36	LF	$436	$144	
B14I07e	4	40' Const. Easement	36	LF	$698	$230	
							$15,742



HAZEL DELL SEWER DISTRICT

BASIN 14 IMPROVEMENTS #1-7

Prepared by:
MacKay & Sposito Inc.
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1703 MAIN STREET
VANCOUVER, WA. 98660

BASIN 19
FELIDA

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **918 AC**

BASIN DESCRIPTION:

Felida basin is located along the westerly boundary of the UGA. The basin is bounded by Salmon Creek on the north, Burlington Northern Railroad and Lake River on the west and south, and Seward Bridge South and Mtn. View Gardens basins on the east.

GENERAL BASIN INFORMATION:

Felida basin flows directly to the Salmon Creek Wastewater Treatment Plant. The Felida basin trunk line Preliminary Design Report was prepared for the District in 1992. Phase 1 of this trunk line was constructed in 1993 to serve the Ashley Heights subdivision establishing the 15" trunk connection to the treatment plant. Extensions of the trunk southerly will progress with the development of single-family homes within the basin.

Two existing pump stations are currently pumping from the Felida Basin into the Seward Bridge South Basin. These two stations, the Felida Meadows and Ashley Heights – Phase 2 station will probably remain indefinitely. The NW 36th Avenue pump station will be eliminated when the Felida trunk line is extended to reach them.

This basin has the potential to grow at a fast rate. The District will need to monitor connections in the area and may need to accelerate required capital improvements.

Older studies included the Lake River basin (Basin #40 – Now a sub-basin of Felida). A special study report on this basin was completed (Lake River / Felida Basin Study, MacKay & Sposito, Inc., November 1996) and showed that the best alternative was to have three areas pumping into the Felida basin. This made the proposed basin a part of Felida Basin and eliminated the concept of having a separate study basin. The future flows and projections have become a function of Felida Basin. Lake River basin is too low to drain by gravity to any adjacent basin.

PROPOSED IMPROVEMENTS:

1. Extend a 10" trunk line from cleanout 25N 29E, referencing Clark County Public Sewer District No. 1 service map 29-3, easterly to NW 44th Avenue, southerly to 122nd Street, easterly to the future NW 42nd Avenue, southerly approximately 250', and southeasterly approximately 600' to a point within Tax Lot 76, Auditor's File No. 188267. ($321,980 – Year 2012)
2. Make the following improvements ($628,392 – Year 2007)
   a. Construct a new pump station at the westerly end of NW 127th Street. Construct a 6" force main from the pump station to the existing 10" trunk sewer in NW 127th Street.
   b. Construct a new pump station at the westerly end of NW 122nd Street. Construct a 6" force main from the pump station to the proposed 10" trunk sewer in NW 122nd Street.
3. Horizon West – Phase 2 pump station in progress. ($110,000 – Year 2000)

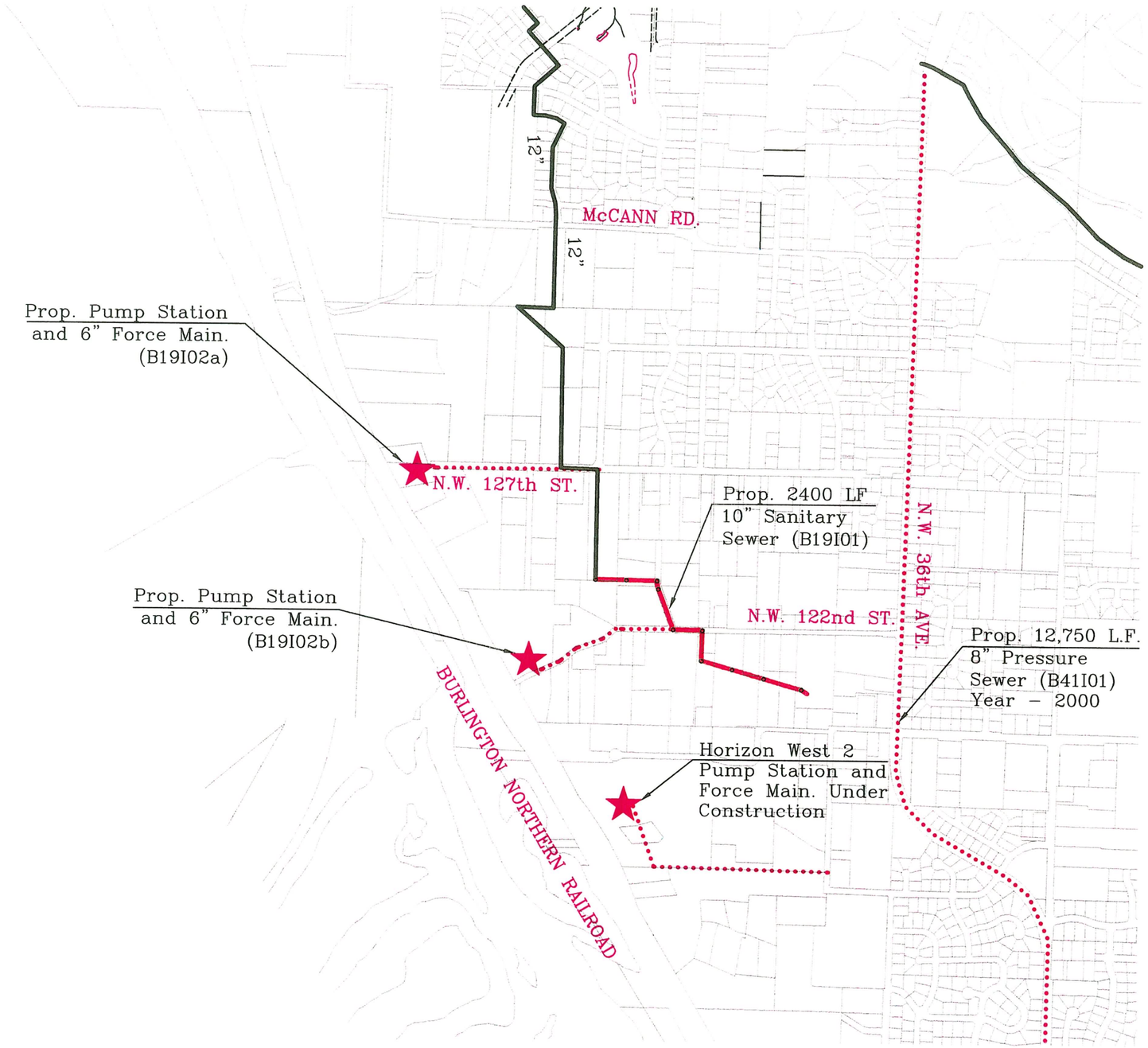
BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	435	1021	1542	2439	3875	4721	
E.R.U.s	182	425	644	1035	1707	2492	
Peak Flow (MGD)	0.182	0.402	0.588	0.895	1.370	1.975	
Total Capital Imp. Cost		$110,000	$628,393	$321,980	$0		$1,060,373
District Cost (Growth/Oversize)		$110,000	$628,393	$95,983	$0		$834,375
District Cost (R & R)		$0	$0	$28,779	$0		$28,779
Development Cost (Growth) *		$0	$0	$197,218	$0		$197,218

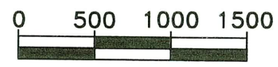
*Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B19I01	1	10" Gravity Sanitary Sewer	2400	LF	$165,707	$54,683	
B19I01	2	48" Dia Manhole	10	EA	$32,312	$10,663	
B19I01	3	15' Easement	2150	LF	$26,050	$8,596	
B19I01	4	Asphalt Restoration	250	LF	$7,601	$2,508	
B19I01	5	10' Const. Easement	2150	LF	$10,420	$3,439	
							$321,980
B19I02a	1	Pump Station	1	EA	$161,550	$53,312	
B19I02a	2	6" Force Main	1300	LF	$28,863	$9,525	
B19I02a	3	Asphalt Restoration	1300	LF	$39,524	$13,043	
B19I02a	4	10' Const. Easement	1300	LF	$6,300	$2,079	
							$314,196
B19I02b	1	Pump Station	1	EA	$161,550	$53,312	
B19I02b	2	6" Force Main	1300	LF	$28,863	$9,525	
B19I02b	3	Asphalt Restoration	1300	LF	$39,524	$13,043	
B19I02b	4	10' Const. Easement	1300	LF	$6,300	$2,079	
							$314,196
B19IMisc	1	Pump Station (remaining)	1	EA	$82,707	$27,293	
							$110,000







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HAZEL DELL SEWER DISTRICT

BASIN 19 IMPROVEMENTS #1-2

BASIN 20
HWY. 99 NORTH

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **215 AC**

BASIN DESCRIPTION:

The Highway 99 North basin is located between Interstate-5 and Interstate-205, and from NE 134th Street to Salmon Creek on the south.

GENERAL BASIN IMPROVEMENT INFORMATION:

New development is occurring within this basin because of its proximity to two major interstate highways. At this time, most of the new development has been commercial with little residential growth. However, the residential areas in the southern portion of the basin near Salmon Creek are older homes on larger lots and may see some increase in development pressures in the future possibly as redevelopment.

The Hwy 99 North basin receives pumped flow from the I-5 North basin and the NE 16th Avenue basin. Analysis performed as part of the I-5 North basin shows the least cost alternative is continuing to pump flow from I-5 North (Campground pump station) into the Highway 99 North basin. Only minor capital facility improvements are required during the 20-year horizon. Future proposals to rebuild the Highway 99 and NE 20th Avenue intersections with NE 134th Street will necessitate the reconstruction of the NE 20th Avenue gravity sewer and pressure main at NE 129th Street. The reconstruction will improve the hydraulics of the pressure main.

BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	13	63	128	262	481	846	
E.R.U.s	184	259	331	457	632	959	
Peak Flow (MGD)	0.202	0.278	0.348	0.469	0.629	0.922	
Total Capital Imp. Cost		$13,687	$0	$0	$160,962		$174,649
District Cost (Growth/Oversize)		$9,686	$0	$0	$109,267		$118,953
District Cost (R & R)		$4,001	$0	$0	$51,695		$55,696
Development Cost (Growth)*		$0	$0	$0	$0		$0

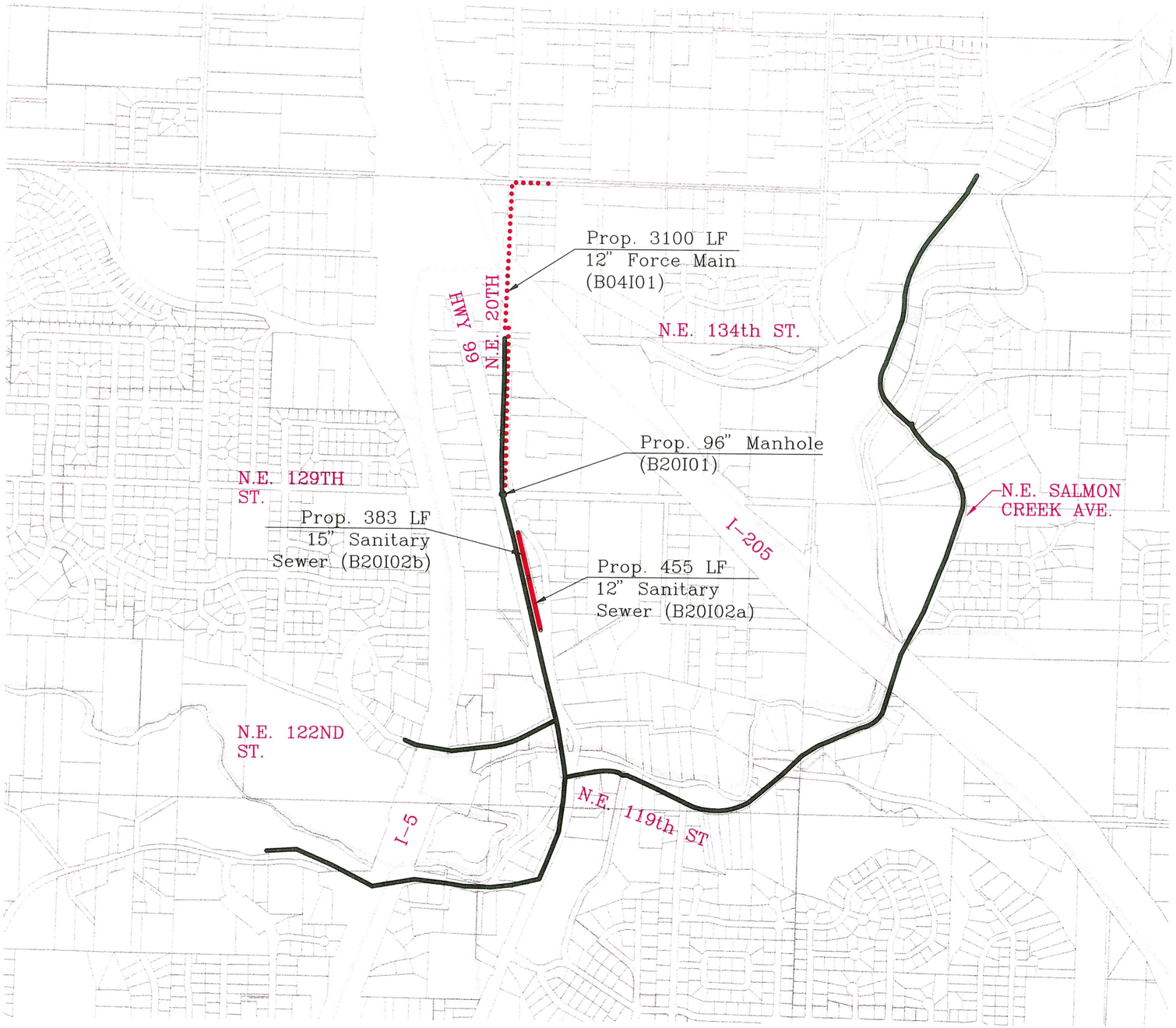
**Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.*

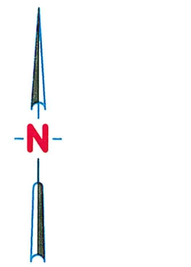
PROPOSED IMPROVEMENTS:

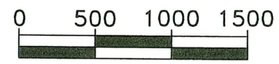
1. Manhole upgrade at NE 129th Street and Highway 99 where the Campground pressure main enters the gravity sewers. ($13,687 – Year 2001)
2. Make the following improvements ($160,962 – Year 2017)
   a. Replace 455' of 10" sanitary sewer with 12" trunk sewer from manhole 7E 29N to manhole 4E 38N, referencing *Clark County Public Sewer District No. 1* service map 26-2.
   b. Replace 383' of 10" sanitary sewer with 15" trunk sewer from manhole 4E 38N to manhole 2E 46N, referencing *Clark County Public Sewer District No. 1* service map 26-2.

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B20I01	1	96" Dia Manhole	1	EA	$10,291	$3,396	
							$13,687
B20I02a	1	12" Gravity Sanitary Sewer	455	LF	$40,044	$13,215	
B20I02a	2	48" Dia Manhole	2	EA	$7,399	$2,442	
B20I02a	3	Asphalt Restoration	455	LF	$14,647	$4,833	
B20I02a	4	10' Const. Easement	455	LF	$2,205	$728	
							$85,512
B20I02b	1	15" Gravity Sanitary Sewer	383	LF	$35,146	$11,598	
B20I02b	2	48" Dia Manhole	2	EA	$7,399	$2,442	
B20I02b	3	Asphalt Restoration	383	LF	$12,329	$4,069	
B20I02b	4	10' Const. Easement	383	LF	$1,856	$613	
							$75,450







HAZEL DELL SEWER DISTRICT

BASIN 20 IMPROVEMENTS #1-2

Prepared by:
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VANCOUVER, WA. 98660

BASIN 21
N.E. 16TH AVENUE

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **242 AC**

BASIN DESCRIPTION:

The NE 16th Avenue basin is bounded by Interstate-5 to the east, approximately NE 134th Street to the south, NE 148th Street to the north, and approximately NE 5th Street block to the west.

GENERAL BASIN IMPROVEMENT INFORMATION:

Most of the existing development is currently on public sewer and new development is expected to require only minor sewer extension. Additional improvements may be needed in the future to increase the capacity of the existing pump station. The only proposed improvement to the basin is an upgrade to the pump station. ($22,950 – Year 2003)

This basin pumps its flow southerly from the NE 16th Avenue pump station to NE 134th Street, east across Interstate-5, and to the Highway 99 North basin trunk in NE 20th Avenue.

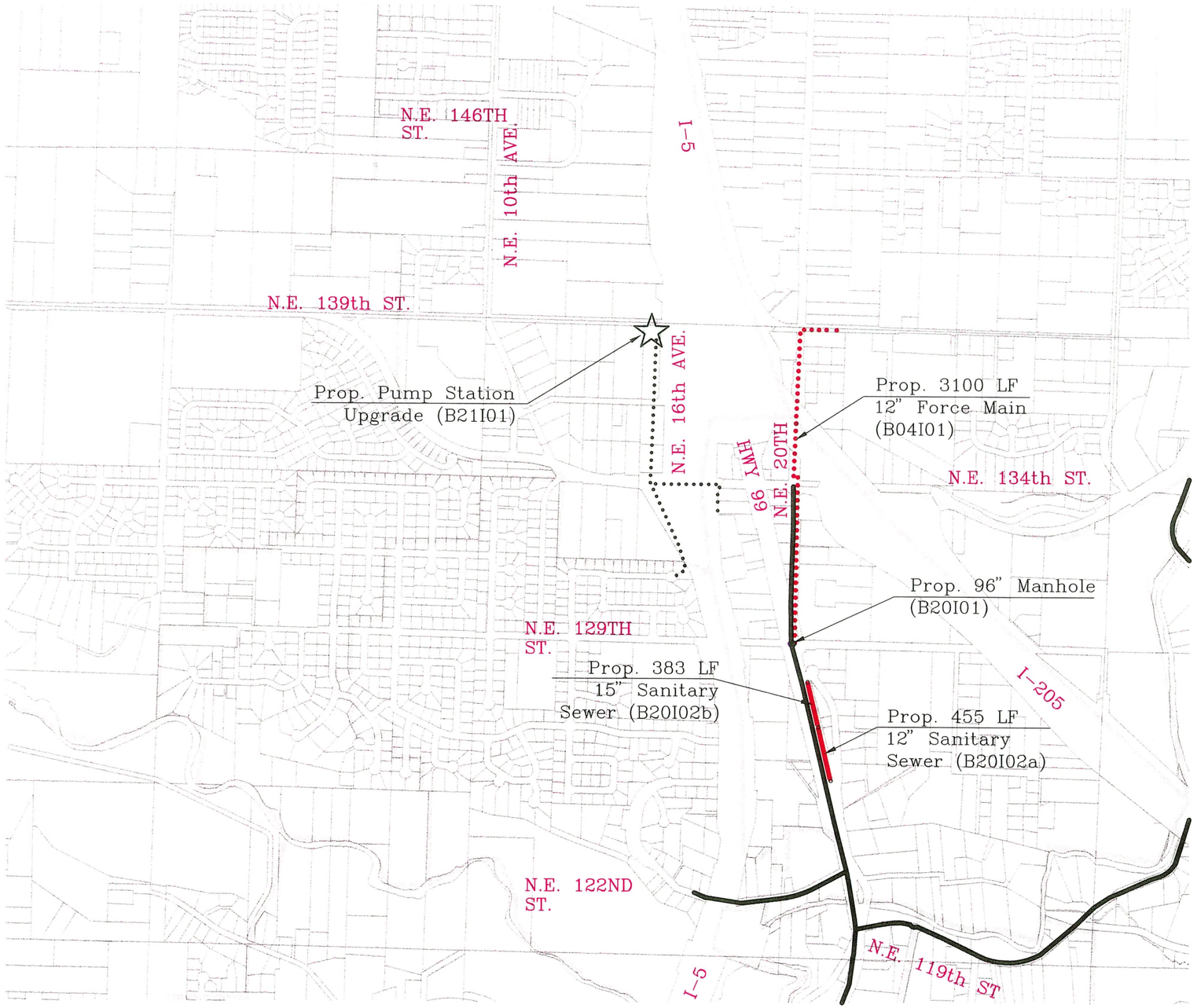
BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	100	180	244	354	474	902	
E.R.U.s	480	623	738	916	1126	1680	
Peak Flow (MGD)	0.229	0.309	0.374	0.475	0.592	1.017	
Total Capital Imp. Cost		$22,950	$0	$0	$0		$22,950
District Cost (Growth/Oversize)		$13,167	$0	$0	$0		$13,167
District Cost (R & R)		$9,783	$0	$0	$0		$9,783
Development Cost (Growth)*		$0	$0	$0	$0		$0

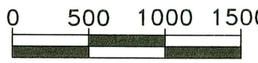
*Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B21I01	1	Pump Station Upgrade	1	EA	$17,256	$5,694	
							$22,950







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HAZEL DELL SEWER DISTRICT

BASIN 21 IMPROVEMENT #1

BASIN 25
WHIPPLE CREEK WEST

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **989 AC**

BASIN DESCRIPTION:

Whipple Creek West basin is located west of Interstate-5, generally south of NE 179th Street, north of NE 149th Street, and east of a line drawn parallel with and 750' west of NW 11th Avenue.

GENERAL BASIN IMPROVEMENT INFORMATION:

The Whipple Creek West basin is primarily undeveloped. There are a few businesses, homes, and farms within the basin, but none are served by public sewer. Since the predominant development will be industrial/commercial and public facilities oriented, the Equivalent Residential Unit (ERU) count shown on the Basin Growth Table will be higher than the actual population.

The capital improvement anticipated for this basin is the construction of a permanent pump station near the NW 11th Avenue crossing of Whipple Creek, and a pressure main constructed westerly to connect to the existing Bliss Road trunk line.

Alternative methods of serving this basin have been explored because of steep and rolling terrain (e.g., S.T.E.P. and S.T.E.G. systems), but until development patterns are proposed, it is difficult to seriously consider alternatives other than gravity sewers and a permanent pump station.

BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	7	80	166	309	535	952	
E.R.U.s	3	38	90	281	1292	2856	
Peak Flow (MGD)	0.004	0.038	0.083	0.210	0.762	1.740	
Total Capital Imp. Cost		$304,000	$0	$597,828	$0		$901,828
District Cost (Growth/Oversize)		$304,000	$0	$597,828	$0		$901,828
District Cost (R & R)		$0	$0	$0	$0		$0
Development Cost (Growth)*		$0	$0	$0	$0		$0

*Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.

PROPOSED IMPROVEMENTS:

1. Construct the 149th Street pump station at the NW 11th Avenue and 149th Street intersection. ($236,000 – Year 2000)
2. Construct an 6" pressure main from the pump station, along NW 149th Street, to NW 21st Avenue, and south to the existing 10" gravity sewer. ($68,000 – Year 2000)
3. Construct the 10th Avenue "A" and 10th Avenue "B" pump stations near the intersection of 10th Avenue and NE 154th Street. Connect both pump stations with a 6" pressure main. ($597,828 – Year 2008)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B25I01	1	Pump Station	1	EA	$177,444	$58,556	
							$236,000
B25I02	1	8" Force Main	2800	LF	$51,128	$16,872	
							$68,000
B25I03	1	Pump Station	2	EA	$323,100	$106,623	
B25I03	2	6" Force Main	2200	LF	$48,845	$16,119	
B25I03	3	Asphalt Restoration	2200	LF	$66,887	$22,073	
B25I03	4	10' Const. Easement	2200	LF	$10,662	$3,519	
							$597,828

N.W. 164th STREET

N.W. 11TH AVE.

I–5

N.E. 10th AVE.

Prop. 10th Ave. "A"
Pump Station (B25I03)

WHIPPLE CREEK

SEWARD RD

N.E. 154TH ST.

Prop. 2800 LF
8" Force Main
(B25I02)

Prop. 2200 LF
6" Force Main
(B25I03)

N.W. 151st STREET

WHIPPLE CREEK

I–5

Prop. 10th Ave. "B"
Pump Station (B25I03)

Prop. 675 LF
10" Sanitary
Sewer (B26I01)

N.W. 149th STREET

Prop. 149th St.
Pump Station (B25I01)

N.W. BLISS ROAD

EX. 10"

N.W. 21st AVE.

N.W. 11th AVE.

N.E. 146TH ST.

N.E. 10th AVE.

I–5

N.W. 139th ST.

N.E. 139th ST.

AVE.

0 500 1000 1500

N

HAZEL DELL SEWER DISTRICT

BASIN 25
IMPROVEMENTS #1-3

Prepared by:
MacKay & Sposito Inc.
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VANCOUVER, WA. 98660

BASIN 26
SEWARD BRIDGE NORTH

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **853 AC**

BASIN DESCRIPTION:

Seward Bridge North basin is located north of Salmon Creek, west of NW 21st Avenue, southerly of NW 169th Street, and east of the NW 46th Avenue block.

GENERAL BASIN IMPROVEMENT INFORMATION:

This basin is served by a Mechanically Operated Valve Station (MOVS), on the north side of Salmon Creek, that discharges to a 12" inverted siphon crossing Salmon Creek at the NW 36th Avenue Bridge. This flows directly into Clark County's NW 36th Avenue pump station. The NW 36th Avenue pump station pumps flow from the Salmon Creek Interceptor into a 24" pressure main to the Salmon Creek Wastewater Treatment Plant (SCWWTP).

The existing 10" Seward Bridge North trunk runs east along Bliss Road. This trunk will serve the proposed developments within the area, plus the proposed flow from the NW 149th Street pump station and pressure main in the Whipple Creek West basin. The Bliss Road trunk line was installed before construction of the NW Bliss Road improvements from NW 36th Avenue to NW 21st Avenue. The only capital facility funding necessary for this basin will be the oversize payment on the 10" NW 21st Avenue trunk line. ($67,000 – Year 2000)

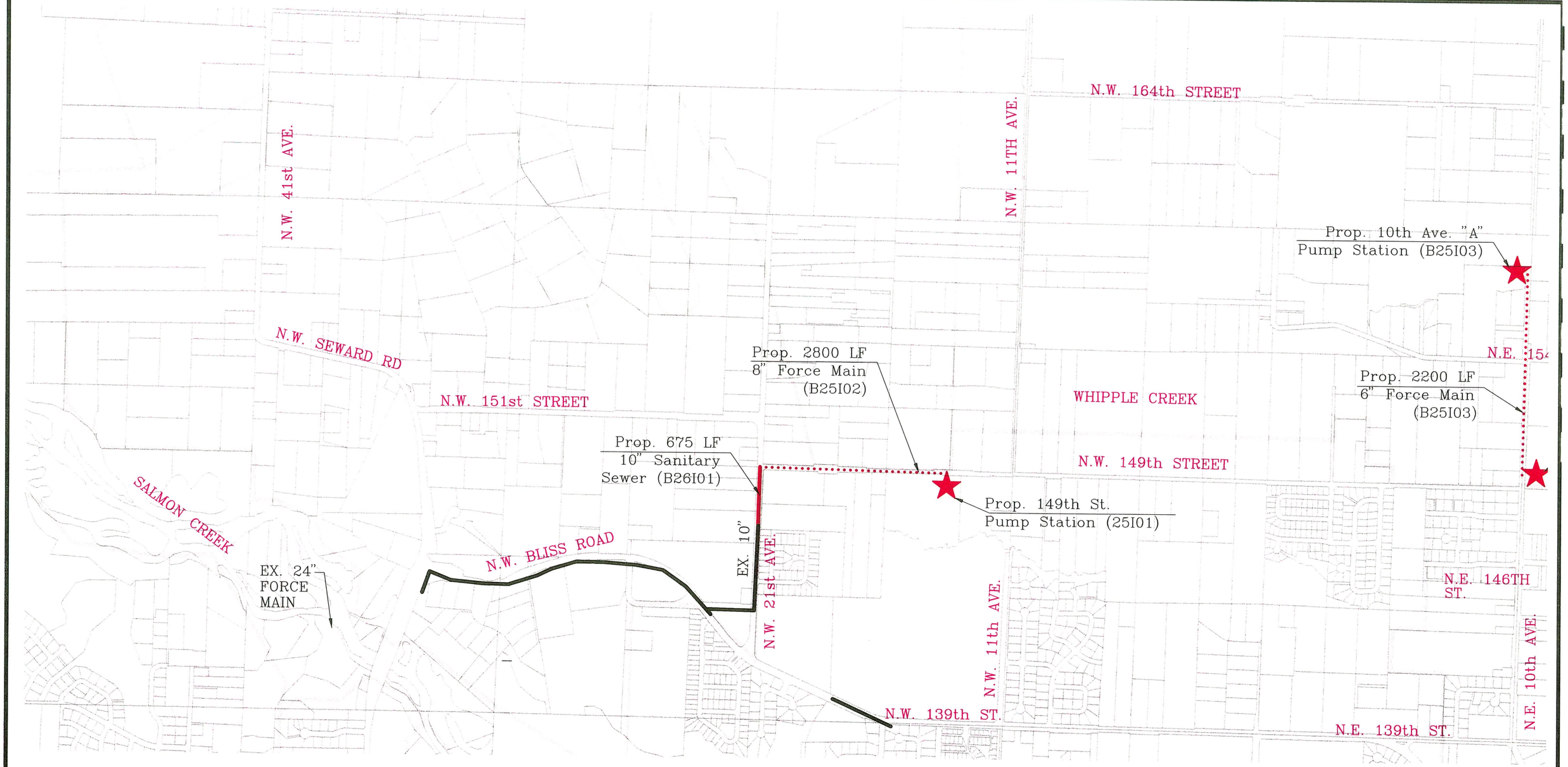
BASIN GROWTH TABLE:

Item	*Year 1997*	*Year 2003*	*Year 2007*	*Year 2012*	*Year 2017*	*Ultimate*	
Population	*8*	*196*	*283*	*407*	*554*	*880*	
E.R.U.s	*3*	*78*	*113*	*163*	*222*	*746*	
Peak Flow (MGD)	*0.003*	*0.081*	*0.116*	*0.164*	*0.219*	*0.715*	
Total Capital Imp. Cost		*$67,000*	*$0*	*$0*	*$0*		*$67,000*
District Cost (Growth/Oversize)		*$67,000*	*$0*	*$0*	*$0*		*$67,000*
District Cost (R & R)		*$0*	*$0*	*$0*	*$0*		*$0*
*Development Cost (Growth)**		*$0*	*$0*	*$0*	*$0*		*$0*

**Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.*

COST ESTIMATE BREAKDOWN

Basin # / Improvement	*Item*	*Description*	*Quan.*	*Unit*	*Total Construction*	*Contingencies, Eng., & Admin. 33%*	*Total Project Cost*
B26I01	*1*	*10" Gravity Sanitary Sewer*	*675*	*LF*	*$42,087*	*$13,889*	
B26I01	*2*	*48" Dia Manhole*	*3*	*EA*	*$8,289*	*$2,735*	
							$67,000



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HAZEL DELL SEWER DISTRICT

BASIN 26 IMPROVEMENT #1

BASIN 29
GLENWOOD CREEK

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **442 AC**

BASIN DESCRIPTION:

Glenwood Creek basin is between NE 83rd Avenue and NE 99th Avenue, from NE 88th Street to NE 109th Street

GENERAL BASIN IMPROVEMENT INFORMATION:

Glenwood Creek basin has 442 acres; all served by a regional pump station. There are seven tributary basins flowing or pumping into the Glenwood Creek basin. These basins total approximately 2,693 acres of medium density residential, commercial, and industrial users. These seven basins are located adjacent to and east of Interstate-205, between Fourth Plain Boulevard and NE 119th Street. There is an additional 1,140 acres, north of NE 99th Street, that is outside the Urban Growth Area, flowing into basin #31. This will also pump into the Glenwood Creek basin in the future.

BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	
Population	110	461	772	1353	2651	2666	
E.R.U.s	45	188	323	621	1509	2293	
Peak Flow (MGD)	0.047	0.186	0.306	0.534	1.085	1.669	
Total Capital Imp. Cost		$446,000	$0	$347,910	$0		$793,910
District Cost (Growth/Oversize)		$359,800	$0	$158,322	$0		$518,122
District Cost (R & R)		$86,200	$0	$67,308	$0		$153,508
Development Cost (Growth)*		$0	$0	$122,280	$0		$122,280

*Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.

PROPOSED IMPROVEMENTS:

1. Construct 1700' of 18" trunk sewer from the NE 94th Avenue and NE 99th Street intersection; east along NE 99th Street to the easterly basin boundary. ($347,910 – Year 2012)

2. Replace 2400' of existing NE 94th Avenue trunk sewer with 18" C-905 from NE 90th Street to NE 99th Street. ($446,000 – Year 2000)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B29I01	1	18" Gravity Sanitary Sewer	1700	LF	$182,137	$60,105	
B29I01	2	48" Dia Manhole	7	EA	$25,895	$8,545	
B29I01	3	15' Easement	1700	LF	$20,598	$6,797	
B29I01	4	40' Const. Easement	1700	LF	$32,956	$10,876	
							$347,910

NE 105th STREET

Prop. 1700 LF
18" Sanitary
Sewer (B29I01)

NE 99th STREET

NE 99th STREET

NE 72nd AVE.

NE 82nd AVE.

CURTIN CREEK

NE 95th STREET

NE 94th AVE.

I-205

NE 88th STREET

PADDEN EXPRESSWAY

0 500 1000 1500

N

Prepared by:

MacKay & Sposito Inc.

ENGINEERS SURVEYORS
PLANNERS

1703 MAIN STREET
VANCOUVER, WA. 98660

HAZEL DELL SEWER DISTRICT

BASIN 29
IMPROVEMENT #1

BASIN 30
N.E. 86TH STREET

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA 307 AC

BASIN DESCRIPTION:

The NE 86th Street basin is located between NE 94th Street to the west and NE 110th Avenue to the east; and between NE 107th Avenue to the north and NE 76th Street to the south.

GENERAL BASIN IMPROVEMENT INFORMATION:

The NE 86th Street basin has a large number of older developments that are not connected to public sewer. Excluding an 80 acre industrial area, this basin is approximately 78% developed. Service growth will occur from failing septic tank/drain field systems.

The only capital improvement proposed in this basin is the construction of a 15" trunk sewer that will eliminate the need for the temporary Orchards Crest pump station.

BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	
Population	448	716	790	926	1204	1642	
E.R.U.s	203	314	351	450	811	1516	
Peak Flow (MGD)	0.203	0.304	0.333	0.393	0.553	0.984	
Total Capital Imp. Cost		$236,756	$0	$0	$370,794		$607,550
District Cost (Growth/Oversize)		$151,393	$0	$0	$171,056		$322,448
District Cost (R & R)		$85,363	$0	$0	$71,735		$157,098
Development Cost (Growth)*		$0	$0	$0	$128,004		$128,004

*Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.

PROPOSED IMPROVEMENTS:

1. Construct 1200' of 15" trunk sewer from the existing cleanout in NE 104th Avenue and 78th Circle, south to 76th Street, and east to the existing Orchards Crest pump station. ($236,756 – Year 2001)
2. Construct 1800' of 18" trunk sewer from the intersection of NE 94th Avenue and NE 89th Street, east approximately 900', and south 900' to the NE 86th Street trunk line. ($370,794 - Year 2017)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B30I01	1	15" Gravity Sanitary Sewer	1200	LF	$110,117	$36,339	
B30I01	2	48" Dia Manhole	5	EA	$18,497	$6,104	
B30I01	3	Asphalt Restoration	1200	LF	$38,628	$12,747	
B30I01	4	Pump Station Abandon	1	EA	$10,770	$3,554	
							$236,756
B30I02	1	18" Gravity Sanitary Sewer	1800	LF	$192,851	$63,641	
B30I02	2	48" Dia Manhole	6	EA	$22,196	$7,325	
B30I02	3	60" Dia Manhole	1	EA	$7,042	$2,324	
B30I02	4	15' Easement	1800	LF	$21,809	$7,197	
B30I02	5	40' Const. Easement	1800	LF	$34,895	$11,515	
							$370,794

NE 105th STREET

Prop. 1700 LF
18" Sanitary
Sewer (B29I01)

Prop. 2000 LF
18" Sanitary Sewer
(B31I03)

NE 99th STREET

NE 99th STREET

NE 82nd AVE.

CURTIN CREEK

NE 95th STREET

NE 94th AVE.

STREET

Prop. 1800 LF
18" Sanitary Sewer
(B30I02)

NE 86th ST.

PADDEN EXPRESSWAY

NE 117th AVE. (S.R. 503)

Prop. 1200 LF
15" Sanitary Sewer
(B30I01)

NE 107th AVE

NE 76th ST.

COVING

0 500 1000 1500

N

Prepared by:

MacKay & Sposito Inc.

ENGINEERS SURVEYORS
PLANNERS

1703 MAIN STREET
VANCOUVER, WA. 98660

HAZEL DELL SEWER DISTRICT

BASIN 30
IMPROVEMENTS #1 & 2

BASIN 31
COUNTRY MEADOWS

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **775 AC**

BASIN DESCRIPTION:

The Country Meadows basin is located generally east of NE 102nd Avenue, south of NE 119th Street, west of NE 132nd Avenue, and north of NE 87th Street.

GENERAL BASIN IMPROVEMENT INFORMATION:

The Country Meadows basin has undeveloped parcels, infill parcels, and existing subdivisions that are not connected to public sewer. Through the County Comprehensive Plan Process, the area north along NE 117th Avenue was added to this basin. There are currently two subdivisions proposed or under construction within the new area and as the sewer is extended to the north, there will probably be additional development.

The Country Meadows basin has two existing pump stations, Norwegian Meadows on the eastern boundary, and Country Meadows; both stations are considered permanent. Country Meadows pump station could be eliminated by constructing a gravity line to the north of the Liechner landfill site. The expansion of the Urban Growth Area to the north will ultimately necessitate additional pump station capacity, or the construction of the gravity trunk line.

BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	917	1541	2203	3224	3971	3467	
E.R.U.s	569	1025	1431	2130	2944	5500	
Peak Flow (MGD)	0.408	0.684	0.949	1.371	1.795	3.588	
Total Capital Imp. Cost		$156,500	$100,193	$643,903	$0		$900,596
District Cost (Growth/Oversize)		$145,804	$51,170	$247,377	$0		$444,351
District Cost (R & R)		$10,696	$0	$79,091	$0		$89,787
Development Cost (Growth)*		$0	$49,023	$317,435	$0		$366,458

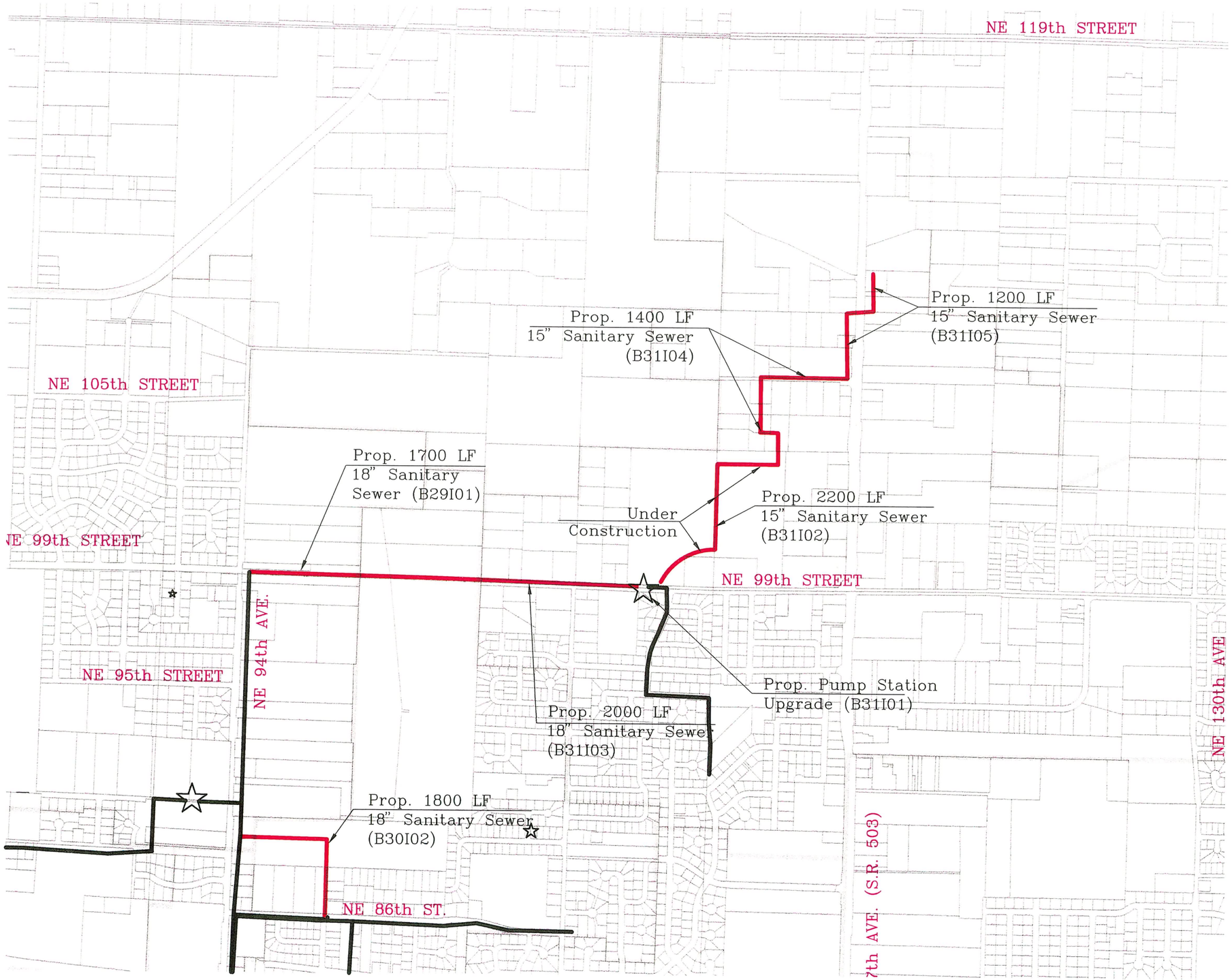
**Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.*

PROPOSED IMPROVEMENTS:

1. Upgrade the Country Meadows pump station. ($40,000 – Year 2002)
2. Construct 2200' of 15" trunk line from the NE 99th Street and NE 110th Avenue intersection, through the proposed Wolf Creek subdivision, and terminating at the northeast corner of the subdivision; approximately NE 115th Avenue. ($116,500 – Year 1999)
3. Construct 2000' of 18" trunk line from the easterly terminus of the proposed 18" trunk in the Glenwood Creek basin; continue east along NE 99th Street to the existing Country Meadows pump station. ($408,816 – Year 2012)
4. Construct approximately 700' of 15" trunk line from the north terminus of the Wolf Creek Subdivision extension. ($100,193 – Year 2007)
5. Construct 1200' of 15" trunk line from the terminus of improvement #4 trunk line, north to 107th Street, east to 117th Avenue, and north to 110th Street. ($235,087 – Year 2012).

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B31I01	1	Pump Station Upgrade	1	EA	$30,075	$9,925	
							$40,000
B31I02	1	15" Gravity Sanitary Sewer	2200	LF	$59,963	$19,788	
B31I02	2	48" Dia Manhole	10	EA	$27,631	$9,118	
							$116,500
B31I03	1	18" Gravity Sanitary Sewer	2000	LF	$195,452	$64,499	
B31I03	2	48" Dia Manhole	9	EA	$29,081	$9,597	
B31I03	3	15' Easement	500	LF	$6,058	$1,999	
B31I03	4	40' Const. Easement	500	LF	$9,693	$3,199	
B31I03	5	Asphalt Restoration	1500	LF	$56,327	$18,588	
B31I03	6	Pump Station Abandon	1	EA	$10,770	$3,554	
							$408,816
B31I04	1	15" Gravity Sanitary Sewer	700	LF	$64,235	$21,198	
B31I04	2	48" Dia Manhole	3	EA	$11,098	$3,662	
							$100,193
B31I05	1	15" Gravity Sanitary Sewer	1200	LF	$110,117	$36,339	
B31I05	2	48" Dia Manhole	6	EA	$22,196	$7,325	
B31I05	3	Asphalt Restoration	1200	LF	$38,628	$12,747	
B31I05	4	10' Const. Easement	1200	LF	$5,816	$1,919	
							$235,087



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N

HAZEL DELL SEWER DISTRICT

BASIN 31 IMPROVEMENTS #1-5

Prepared by:

MacKay & Sposito Inc.

ENGINEERS SURVEYORS PLANNERS

1703 MAIN STREET
VANCOUVER, WA. 98660

BASIN 34
COVINGTON NORTH

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **448 AC**

BASIN DESCRIPTION:

Covington North basin is located east of Interstate-205, north of NE 59th Street, west of NE 100th Avenue and south of Padden Expressway.

GENERAL BASIN INFORMATION:

The majority of Covington North basin is developed, but quite a few developments are not connected to public sewer. The business commercial and higher density zones around the Five Corners area will require some re-development to achieve the projected zoning intensity.

This basin has two temporary pump stations within its boundary, the Sierra Vista, and the Sierra Vista III.

BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	540	666	799	1078	1811	3491	
E.R.U.s	258	335	417	584	966	2182	
Peak Flow (MGD)	0.255	0.327	0.402	0.550	0.870	1.842	
Total Capital Imp. Cost		$40,000	$0	$0	$0		$40,000
District Cost (Growth/Oversize)		$0	$0	$0	$0		$0
District Cost (R & R)		$40,000	$0	$0	$0		$40,000
Development Cost (Growth) *		$0	$0	$0	$0		$0

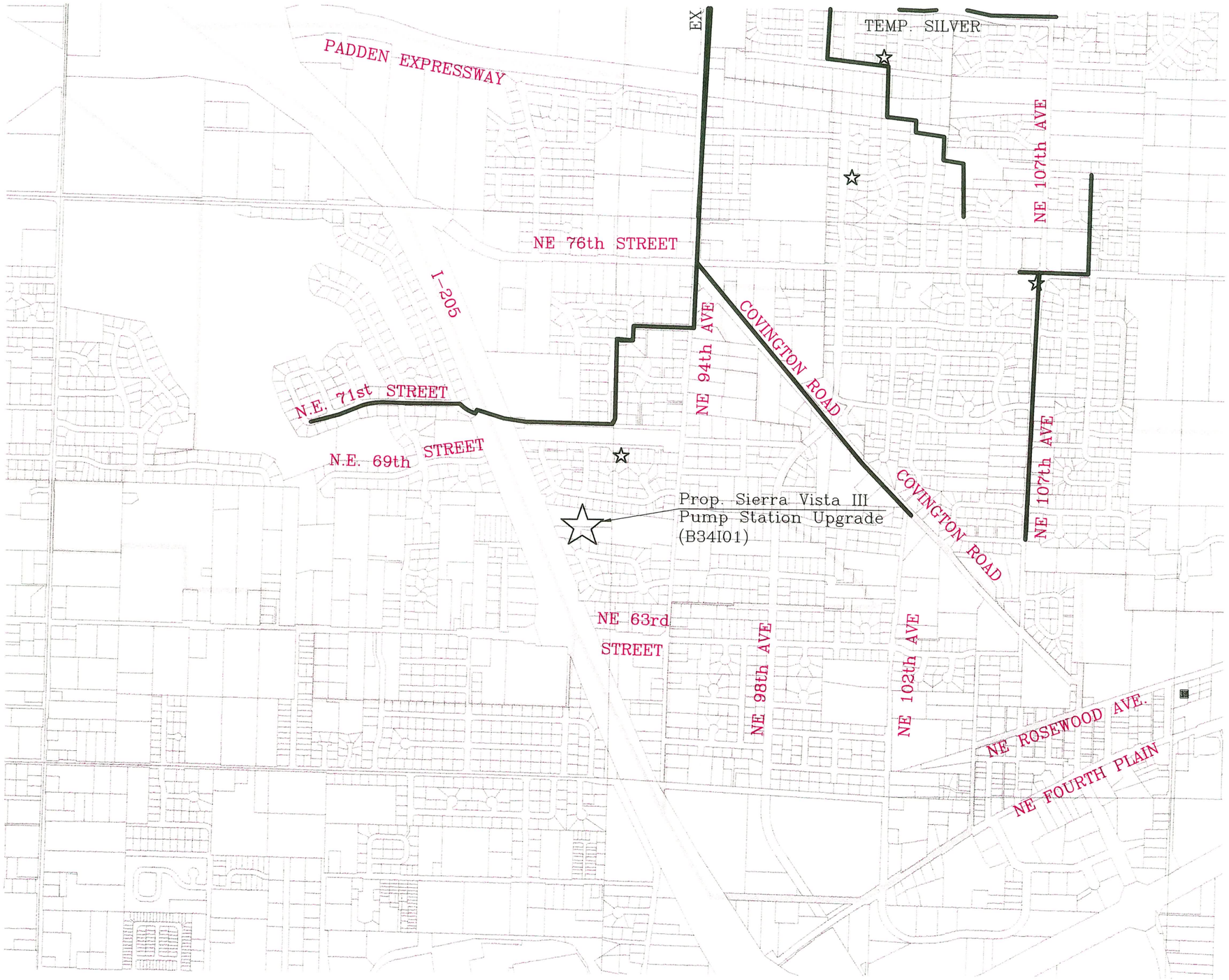
*Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.

PROPOSED IMPROVEMENT:

Upgrade the Sierra Vista III pump station. ($40,000 – Year 2002)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B34I01	1	Pump Station Upgrade	1	EA	$30,075	$9,925	
							$40,000



0 500 1000 1500

N

Prepared by:

MacKay & Sposito Inc.

ENGINEERS SURVEYORS PLANNERS

1703 MAIN STREET
VANCOUVER, WA. 98660

HAZEL DELL SEWER DISTRICT

BASIN 34 IMPROVEMENT #1

BASIN 37
GREEN MEADOW'S WEST

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **704 AC**

BASIN DESCRIPTION:

The Green Meadows West basin is bounded on the northeast by Interstate-205 and is located between NE 99th Street to the north and NE 68th Street to the south, NE 52nd Avenue to the west, and NE Fairway Drive to the east.

GENERAL BASIN IMPROVEMENT INFORMATION:

This basin has close to 60% of the single-family zones constructed and close to 60% of that connected to public sewer; however, wetlands in the single-family area north of NE 78th Street may preclude some development because of regulatory issues with wetlands and buffers. This basin may never see 100% build-out.

The Green Meadows pump station north of NE 78th Street on NE 72nd Avenue will eventually eliminate the need for any of the temporary pump stations. The NE 72nd Avenue trunk constructed from the Green Meadows pump station approximately 1200' south eliminated the need for the Brentwood pump station. The construction of the Green Meadows trunk from the NE 78th Street intersection with NE 72nd Avenue will eliminate the need for the temporary Meadows Terrace pump station. The Meadows Terrace pump station currently pumps southerly into the City of Vancouver system.

BASIN GROWTH TABLE:

Item	*Year 1997*	*Year 2003*	*Year 2007*	*Year 2012*	*Year 2017*	*Ultimate*	
Population	*928*	*1132*	*1287*	*1528*	*1882*	*3395*	
E.R.U.s	*441*	*611*	*810*	*1309*	*2602*	*4187*	
Peak Flow (MGD)	*0.391*	*0.489*	*0.584*	*0.799*	*1.400*	*2.312*	
Total Capital Imp. Cost		*$0*	*$237,243*	*$0*	*$0*		*$237,243*
District Cost (Growth/Oversize)		*$0*	*$166,070*	*$0*	*$0*		*$166,070*
District Cost (R & R)		*$0*	*$71,173*	*$0*	*$0*		*$71,173*
*Development Cost (Growth)**		*$0*	*$0*	*$0*	*$0*		*$0*

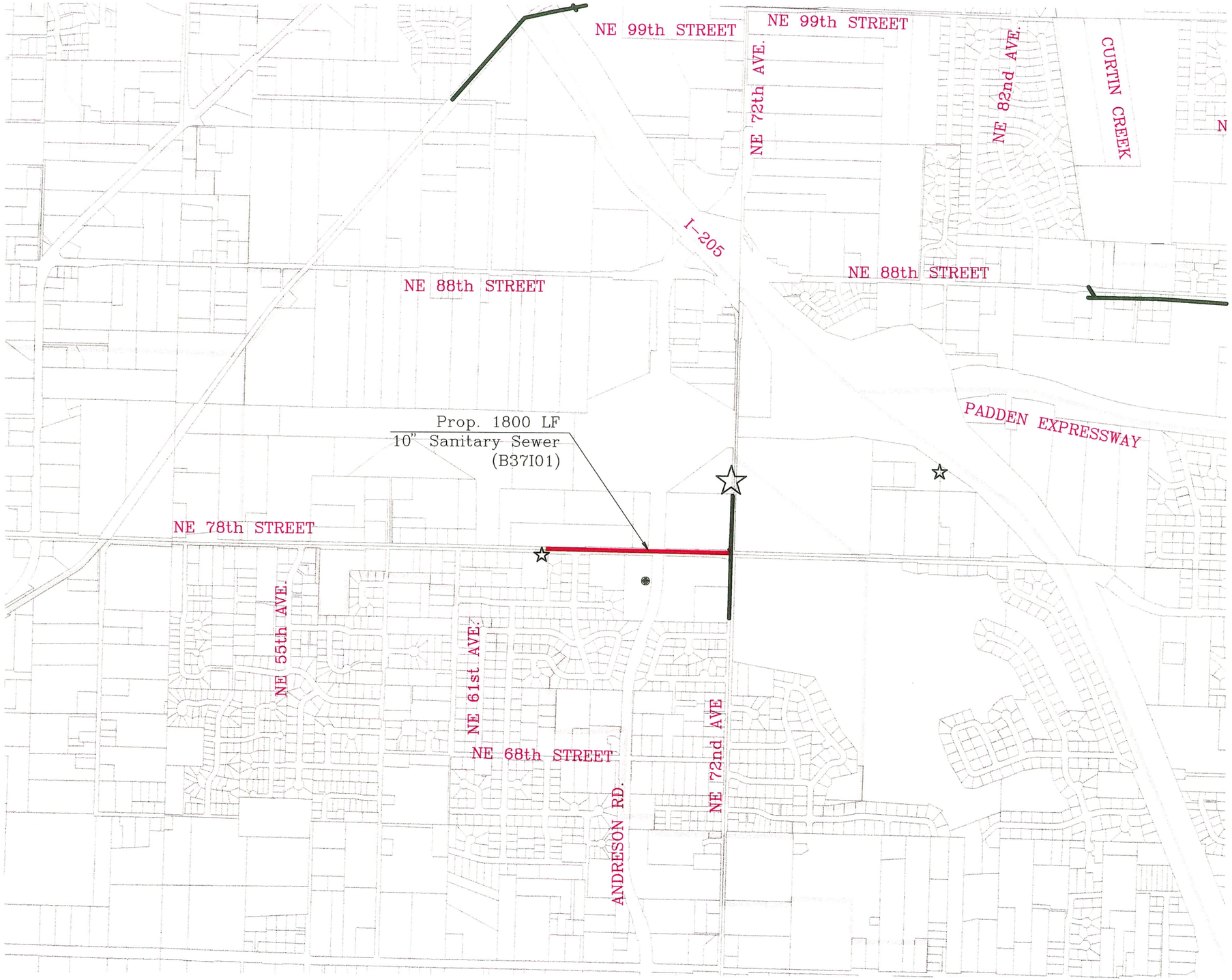
**Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.*

PROPOSED IMPROVEMENTS:

Construct 1800' of 10" trunk sewer from the intersection of NE 78th Street and NE 72nd Avenue west to the temporary Meadows Terrace pump station. Abandon the existing pump station. ($237,243 – Year 2007)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	*Item*	*Description*	*Quan.*	*Unit*	*Total Construction*	*Contingencies, Eng., & Admin. 33%*	*Total Project Cost*
B37I01	*1*	*10" Gravity Sanitary Sewer*	*1800*	*LF*	*$98,863*	*$32,625*	
B37I01	*2*	*48" Dia Manhole*	*7*	*EA*	*$16,065*	*$5,301*	
B37I01	*3*	*Asphalt Restoration*	*1800*	*LF*	*$54,726*	*$18,060*	
B37I01	*4*	*10' Const. Easement*	*1800*	*LF*	*$8,724*	*$2,879*	
							$237,243



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HAZEL DELL SEWER DISTRICT

BASIN 37
IMPROVEMENT #1

Prepared by:

MacKay & Sposito Inc.

M&S

ENGINEERS SURVEYORS PLANNERS

1703 MAIN STREET
VANCOUVER, WA. 98660

BASIN 38
CURTIN CREEEK

TRIBUTARY TREATMENT PLANT:

SALMON CREEK (SCWWTP)

TOTAL AREA **280 AC**

BASIN DESCRIPTION:

The Curtin Creek basin is bounded on the South by NE 99th Street, on the North by NE 119th Street, and is between approximately NE 62nd Avenue and NE 82nd Avenue.

GENERAL BASIN INFORMATION:

The basin is mostly undeveloped except for larger lot subdivisions, and has large undeveloped land tracts. Much of the undeveloped areas will have wetland issues and may develop at a slower rate.

BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	
Population	10	92	184	365	766	1175	
E.R.U.s	4	43	105	405	2519	3052	
Peak Flow (MGD)	0.005	0.042	0.090	0.248	1.063	1.476	
							Total
Total Capital Imp. Cost		$0	$816,651	$0	$0		$816,651
District Cost (Growth/Oversize)		$0	$158,581	$0	$0		$158,581
District Cost (R & R)		$0	$0	$0	$0		$0
Development Cost (Growth)*		$0	$658,070	$0	$0		$658,070

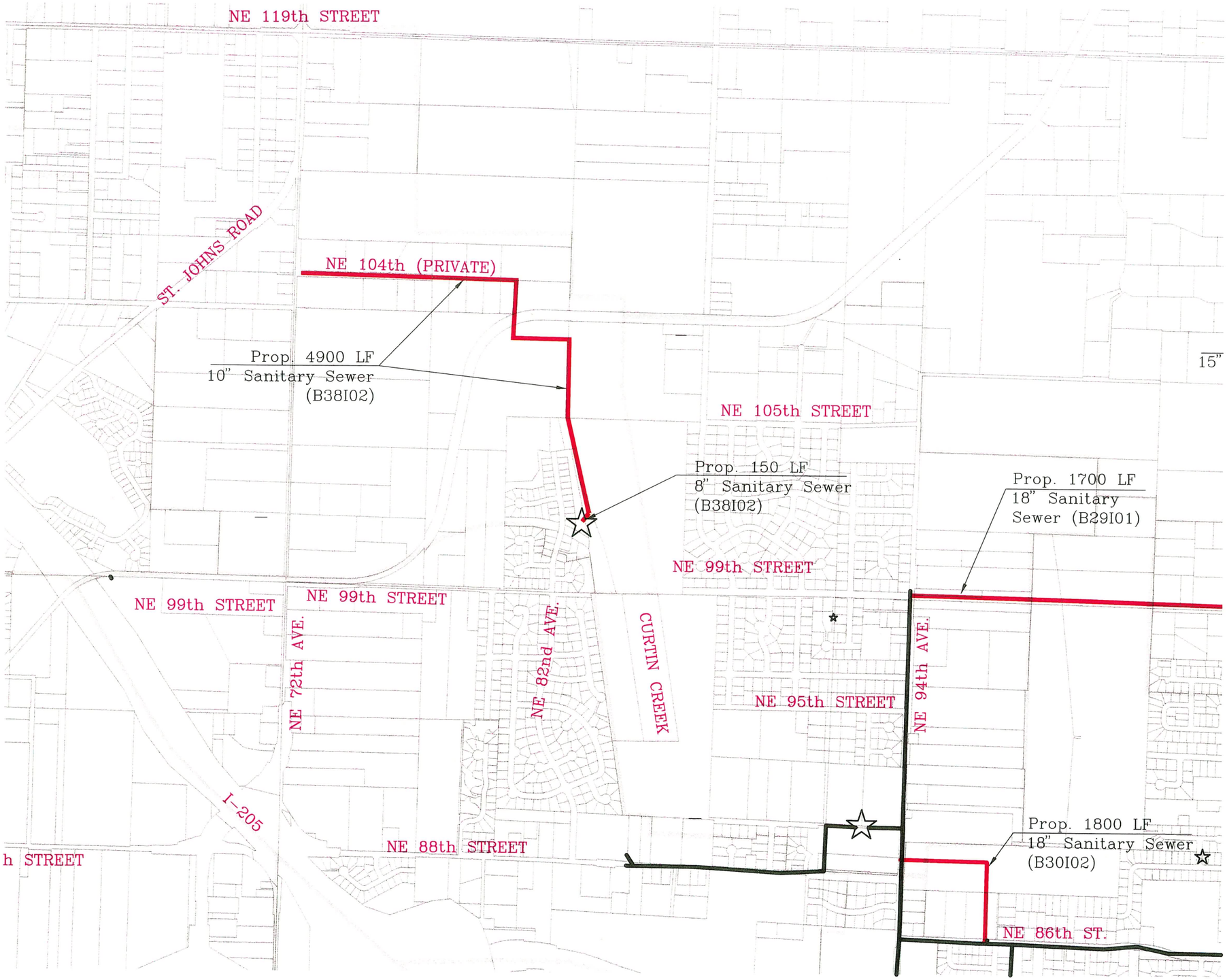
**Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.*

PROPOSED IMPROVEMENTS:

1. Construct 4900' of 10" sewer trunk from the existing Mountain View pump station north on NE 82nd Avenue to NE 104th Street, and west on 104th Street to NE 72nd Avenue. ($816,651 – Year 2007)

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B38I01	1	10" Gravity Sanitary Sewer	4900	LF	$321,022	$105,937	
B38I01	2	8" Gravity Sanitary Sewer	150	LF	$9,372	$3,093	
B38I01	3	48" Dia Manhole	13	EA	$38,963	$12,858	
B38I01	4	Pump Station Upgrade	1	EA	$161,550	$53,312	
B38I01	5	15' Easement	4900	LF	$59,370	$19,592	
B38I01	6	10' Const. Easement	4900	LF	$23,748	$7,837	
							$816,651



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N

HAZEL DELL SEWER DISTRICT

BASIN 38 IMPROVEMENT #2

Prepared by:

MacKay & Sposito Inc.

ENGINEERS SURVEYORS PLANNERS

1703 MAIN STREET
VANCOUVER, WA. 98660

BASIN 41 LAKESHORE

TRIBUTARY TREATMENT PLANT:

CITY OF VANCOUVER (VWWTP)

TOTAL AREA **672 AC**

BASIN DESCRIPTION:

The Lakeshore basin is located east of, and adjacent to, Vancouver Lake and Burlington Northern Railroad, generally west of NW 21st Avenue, and south of NW 114th Street.

GENERAL BASIN IMPROVEMENT INFORMATION:

The Lakeshore Basin is shown to be at 47% build-out. Most of the vacant parcels within this basin are difficult properties to develop because of topography, and are unlikely to develop at the proposed densities of the Clark County Comprehensive Plan, and achieve 100% build-out. This basin has only a few of developments that are not connected to public sewer.

The existing capital facilities within this basin include the 10" to 15" North Lakeshore trunk line in NW Lakeshore Avenue. There is one permanent pump station on NW 95th Place west of NW Lakeshore Avenue.

BASIN GROWTH TABLE:

Item	*Year 1997*	*Year 2003*	*Year 2007*	*Year 2012*	*Year 2017*	*Ultimate*	*Total*
Population	*3161*	*3399*	*3568*	*3790*	*4028*	*5230*	
E.R.U.s	*1272*	*1368*	*1438*	*1534*	*1652*	*2163*	
Peak Flow (MGD)	*1.088*	*1.161*	*1.214*	*1.286*	*1.376*	*1.745*	
Total Capital Imp. Cost		*$0*	*$0*	*$0*	*$0*	*$1,263,914*	*$1,263,914*
District Cost (Growth/Oversize)		*$0*	*$0*	*$0*	*$0*	*$1,263,914*	*$1,263,914*
District Cost (R & R)		*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
*Development Cost (Growth)**		*$0*	*$0*	*$0*	*$0*	*$0*	*$0*

**Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.*

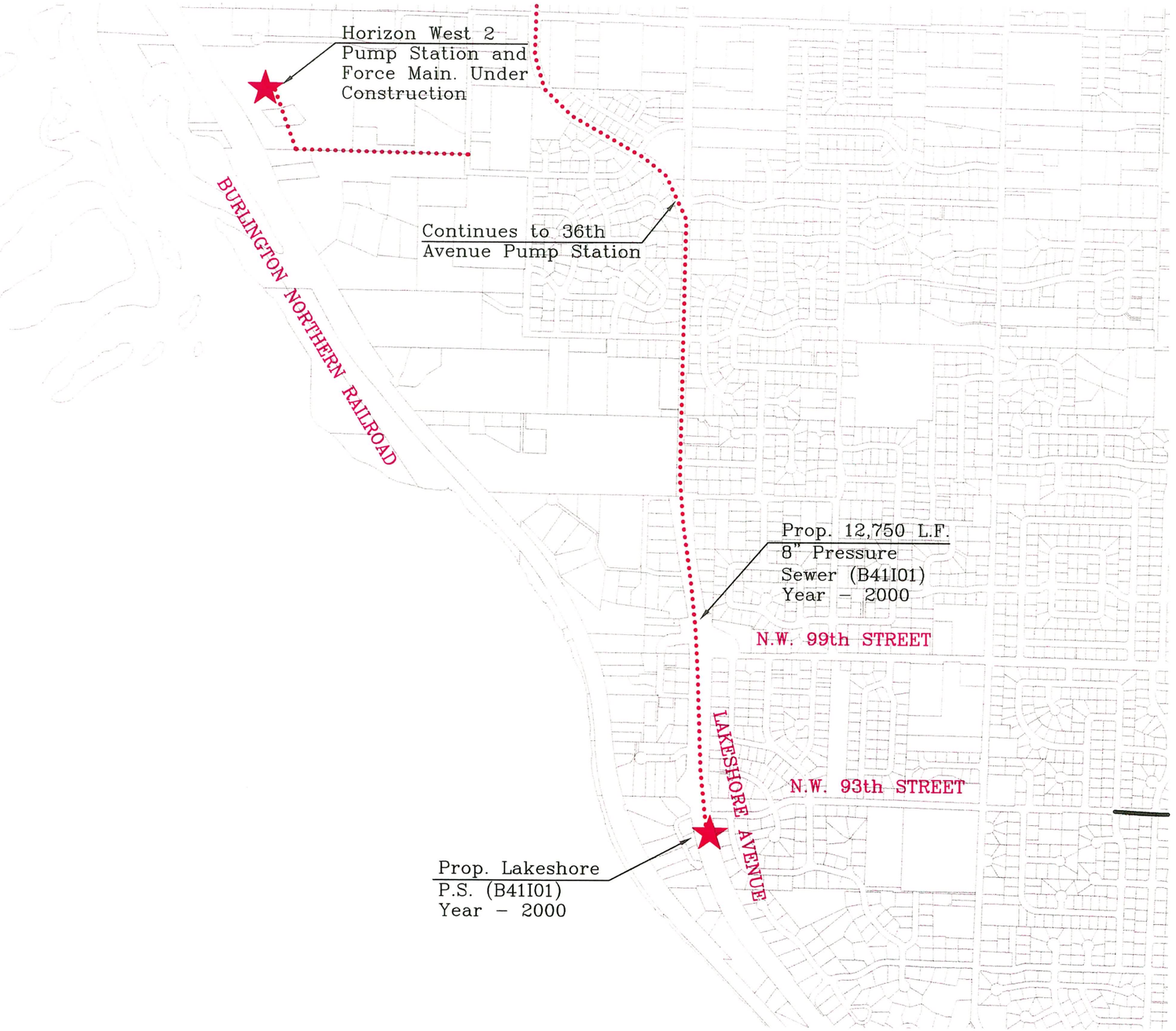
IMPROVEMENTS

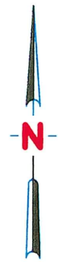
The only capital facility required for this basin is the construction of a pump station and associated force main south of the Lakeshore/NW 93rd Street intersection. This pump station will discharge into approximately 12,750 feet of 8" force main that conveys sewage to the NW 36th Avenue pump station, owned by Clark County. (B41I01 – Year 2018+)

This improvement is required to avoid exceeding the maximum contract amount of sewage discharged to the Vancouver Westside Wastewater Treatment Plant. This basin does not have inadequate conveyance facilities; however, treatment capacity at the Vancouver plant is a concern. The actual timing of the sub-basin study will be triggered by the monitored flow discharging to the city system. When 85% of the contractual amount is reached, the study will begin.

COST ESTIMATE BREAKDOWN

Basin # / Improvement	*Item*	*Description*	*Quan.*	*Unit*	*Total Construction*	*Contingencies, Eng., & Admin. 33%*	*Total Project Cost*
B41I01	*1*	*Pump Station*	*1*	*EA*	*$242,325*	*$79,967*	
B41I01	*2*	*8" Force Main*	*12750*	*LF*	*$314,528*	*$103,794*	
B41I01	*3*	*Asphalt Restoration*	*12750*	*LF*	*$387,642*	*$127,922*	
B41I01	*4*	*10' Const. Easement*	*1200*	*LF*	*$5,816*	*$1,919*	
							$1,263,914





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Prepared by:
MacKay & Sposito Inc.
ENGINEERS SURVEYORS PLANNERS
1703 MAIN STREET
VANCOUVER, WA 98660

HAZEL DELL SEWER DISTRICT

BASIN 41 IMPROVEMENT #1

BASIN 45
MINNEHAHA

TRIBUTARY TREATMENT PLANT:

CITY OF VANCOUVER (VWWTP)

TOTAL AREA 214 AC

BASIN DESCRIPTION:

Minnehaha basin is located northwest of the Burlington Northern Railroad, south of NE 75th Street, and between NE 20th Avenue and NE 40th Avenue.

GENERAL BASIN IMPROVEMENT INFORMATION:

This is a small basin with a diverse land use mix. It is difficult to predict the growth in this basin. Most residential areas are not vacant, however, they are under-utilized.

The existing capital improvements within this basin include a permanent pump station (Minnehaha) and the 10" and 12" Minnehaha trunk traversing from NE Minnehaha Street north through a multi-family development to NE 68th Street. Hazel Dell Sewer District constructed the permanent Minnehaha pump station that discharges to the Highway 99 South trunk when connection to the City of Vancouver Burnt Bridge Creek interceptor became infeasible.

Proposed capital facilities include the extension of the 10" Minnehaha trunk east in NE 68th Street approximately 700 feet from NE 26th Avenue to NE 28th Avenue. ($88,453 – Year 2005)

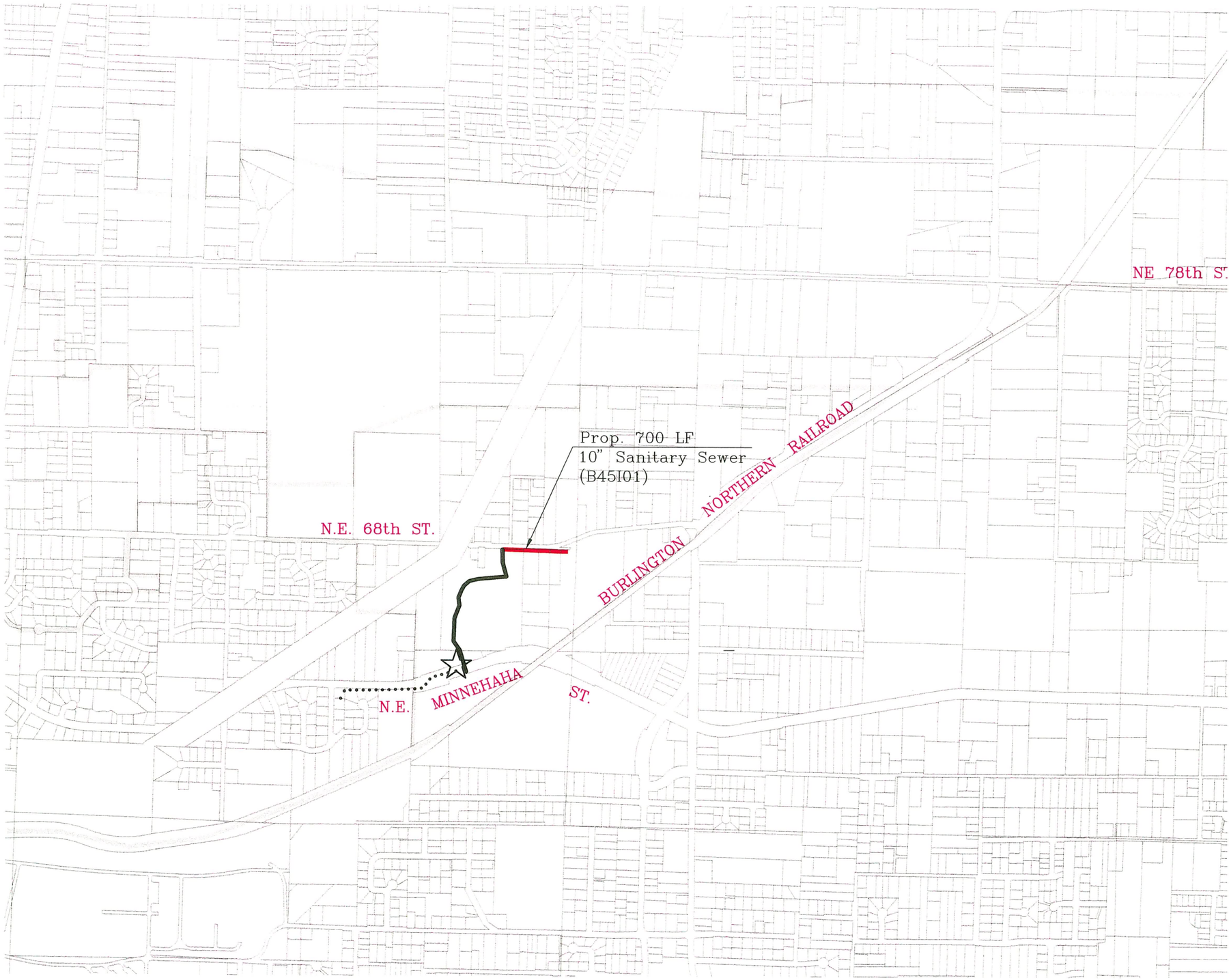
BASIN GROWTH TABLE:

Item	Year 1997	Year 2003	Year 2007	Year 2012	Year 2017	Ultimate	Total
Population	7	94	186	351	635	1642	
E.R.U.s	3	41	85	177	392	1328	
Peak Flow (MGD)	0.003	0.043	0.083	0.160	0.305	0.973	
Total Capital Imp. Cost		$0	$88,453	$0	$0		$88,453
District Cost (Growth/Oversize)		$0	$28,151	$0	$0		$28,151
District Cost (R & R)		$0	$0	$0	$0		$0
Development Cost (Growth)*		$0	$60,303	$0	$0		$60,303

*Hazel Dell Sewer District is proposing a policy change regarding reimbursement of capital facilities. Some Capital Improvements in 2003 are not affected by the proposed change. See Extension Policy on page 7.

COST ESTIMATE BREAKDOWN

Basin # / Improvement	Item	Description	Quan.	Unit	Total Construction	Contingencies, Eng., & Admin. 33%	Total Project Cost
B45I01	1	10" Gravity Sanitary Sewer	700	LF	$48,331	$15,949	
B45I01	2	48" Dia Manhole	3	EA	$9,694	$3,199	
B45I01	3	15' Easement	700	LF	$8,481	$2,799	
							$88,453



0 500 1000 1500

N

HAZEL DELL SEWER DISTRICT

BASIN 45
IMPROVEMENT #1

Prepared by:

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VANCOUVER, WA. 98660

VI. Subarea Studies

APPENDEX: COUGAR CANYON SUBAREA

I. Subarea Map

II. Hydraulic Grade Analysis

A. Existing Calculations – Benchmark Years

1. 1997 – Year 0
2. 2003 – Year 6
3. 2007 – Year 10
4. 2012 – Year 15
5. 2017 – Year 20

B. Proposed Cougar Canyon Improvements – Years 1998-2007

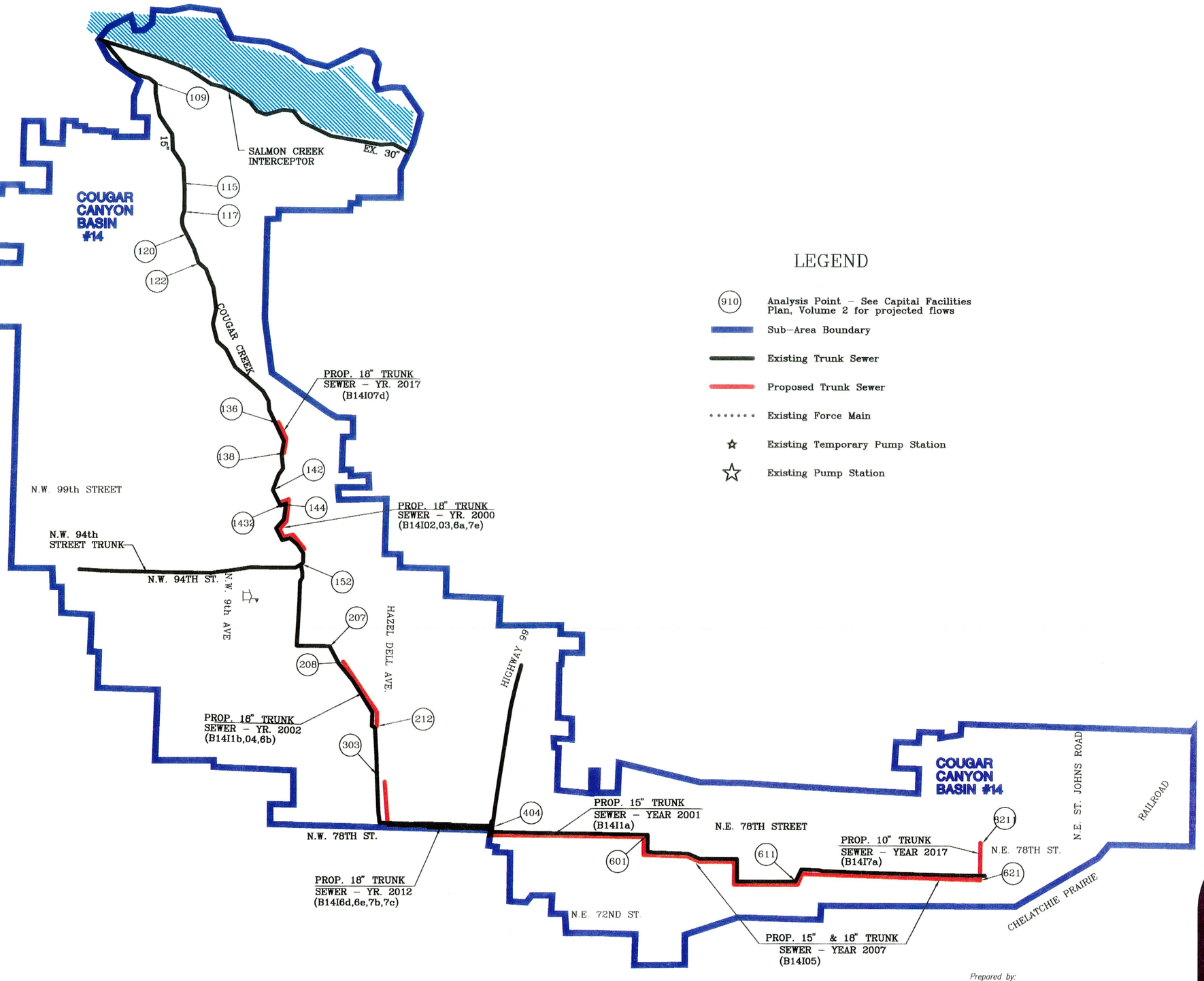
1. 1998 – Year 1
2. 1999 – Year 2
3. 2000 – Year 3
4. 2001 – Year 4
5. 2002 – Year 5
6. 2003 – Year 6
7. 2004 – Year 7
8. 2005 – Year 8
9. 2006 – Year 9
10. 2007 – Year 10

C. Proposed Cougar Canyon Improvements – Benchmark Years

1. 1997 – Year 0
2. 2003 – Year 6
3. 2007 – Year 10
4. 2012 – Year 15
5. 2017 – Year 20

D. Flow Calculation Worksheets

1. Cougar Canyon – Years 1998-2007
2. Cougar Canyon – Benchmark Years



LEGEND

- (910) Analysis Point – See Capital Facilities Plan, Volume 2 for projected flows
- Sub–Area Boundary
- Existing Trunk Sewer
- Proposed Trunk Sewer
- Existing Force Main
- Existing Temporary Pump Station
- Existing Pump Station

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HAZEL DELL SEWER DISTRICT

COUGAR CANYON SUBAREA

Mapping Point Data on Cougar Canyon Trunk												Hydraulic Grade Line for Downstream Pipe													Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.02	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17		28																									
101		4.02	MH 1		01+03.00	01+03.00	23.02	23.02	y	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	15.8%	1.23	20.70	14.49	3.259'	0.313'	9.18' *	0.80'	23.33'	0.815'	1.08'	0.68'		1.291'	2.088'	24.623'	o.k.		no	
102		4.02	MH 2		02+04.00	02+04.00	36.38	36.38	y		0.00'	101.00'	15"	0.1323	0.1323	23.56	17.1%	1.23	19.20	14.11	3.091'	0.338'	24.62'	0.72'	36.72'	0.773'	1.34'			1.055'	1.780'	37.773'	o.k.		no	
103		4.02	MH 3		02+82.00	02+82.00	51.74	51.74	y	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	14.0%	1.23	23.42	15.69	3.824'	0.286'	37.77'	0.66'	52.03'	0.956'	0.10'	1.09'		1.071'	1.734'	53.098'	o.k.		no	
104		4.02	MH 4		04+59.00	04+59.00	52.82	52.62	y	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	88.0%	1.23	3.72	4.21	0.275'	0.906'	53.10'	0.54'	53.63'	0.069'	0.10'	0.04'		0.103'	0.639'	53.737'	o.k.		no	
105		4.02	MH 5		06+35.00	06+35.00	53.69	53.69	y	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	88.3%	1.23	3.71	4.19	0.273'	0.906'	53.74'	0.53'	54.60'	0.068'	0.21'	0.02'		0.151'	0.684'	54.747'	o.k.		no	
106		4.02	MH 6		07+89.00	07+89.00	56.00	55.80	y	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	53.0%	1.23	6.18	6.24	0.605'	0.638'	54.75'	0.58'	56.44'	0.151'	0.40'	0.08'		0.316'	0.895'	56.753'	o.k.		no	
107		4.02	MH 7		08+99.00	08+99.00	59.76	59.56	y	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	34.5%	1.23	9.49	8.59	1.147'	0.500'	56.75'	0.52'	60.06'	0.287'	0.10'	0.15'		0.266'	0.782'	60.326'	o.k.		no	
108		4.02	MH 8		10+56.00	10+56.00	60.75	60.55	y	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	87.5%	1.23	3.74	4.21	0.275'	0.894'	60.65'	0.48'	61.44'	0.069'	0.10'	0.04'		0.103'	0.581'	61.547'	o.k.		no	
109	0.08	4.02	MH 9		12+37.00	12+37.00	61.86	61.66	y	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	87.5%	1.23	3.74	4.21	0.275'	0.894'	61.64'	0.55'	62.55'	0.069'	0.16'	0.16'	0.005'	0.197'	0.748'	62.751'	o.k.		no	
110		3.94	MH 10		14+98.00	14+98.00	64.66	64.46	y	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	61.0%	1.23	5.27	5.50	0.471'	0.694'	62.75'	0.88'	65.15'	0.118'	0.16'	0.13'		0.208'	1.088'	65.361'	o.k.		no	
111		3.94	MH 11		17+79.00	17+79.00	68.19	67.44	y		0.75'	281.00'	15"	0.0099	0.0099	6.44	61.2%	1.23	5.25	5.49	0.467'	0.694'	65.36'	0.95'	68.13'	0.117'	0.13'			0.124'	1.072'	68.258'	o.k.		no	
112		3.94	MH 12		21+39.00	21+39.00	71.06	70.86	y	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	70.7%	1.23	4.55	4.91	0.374'	0.769'	68.96'	1.13'	71.63'	0.094'	0.16'	0.06'		0.156'	1.285'	71.785'	o.k.		no	
113		3.94	MH 13		23+85.00	23+85.00	73.60	73.39	y	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	62.6%	1.23	5.14	5.39	0.452'	0.713'	71.78'	0.82'	74.10'	0.113'	0.16'	0.10'		0.186'	1.006'	74.289'	o.k.		no	
114		3.94	MH 14		26+38.00	26+38.00	78.65	76.00	y		2.65'	253.00'	15"	0.0095	0.0095	6.31	62.5%	1.23	5.14	5.40	0.452'	0.713'	74.31'	0.84'	76.71'	0.113'	0.09'			0.099'	0.942'	76.812'	o.k.		no	
115	0.19	3.94	MH 15		28+19.00	28+19.00	79.48	79.44	y		0.04'	181.00'	15"	0.0060	0.0044	4.28	92.1%	1.23	3.49	3.96	0.243'	0.938'	79.59'	0.52'	80.38'	0.061'	0.10'		0.010'	0.087'	0.608'	80.464'	o.k.		no	
116		3.75	MH 16		30+68.00	30+68.00	81.07	80.87	y		0.20'	249.00'	15"	0.0058	0.0056	4.84	77.5%	1.23	3.94	4.34	0.292'	0.813'	80.46'	0.69'	81.68'	0.073'	0.03'			0.054'	0.740'	81.736'	o.k.		no	
117	0.04	3.75	MH 17		33+39.50	33+39.50	81.89	81.69	y	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	121.1%	1.23	2.52	2.52	0.099'	1.250'	82.32'	0.91'	83.23'	0.025'	0.04'	0.01'	0.001'	0.037'	0.943'	83.263'	CRITICAL		Yes by 0.65 cfs	0.3
118		3.71	MH 18		34+27.50	34+27.50	82.31	82.11	y		0.20'	88.00'	15"	0.0025	0.0025	3.24	114.6%	1.23	2.64	2.64	0.108'	1.250'	83.26'	0.29'	83.55'	0.027'	0.16'			0.093'	0.380'	83.643'	CRITICAL		Yes by 0.47 cfs	0.2
119		3.71	MH 19		37+44.50	37+44.50	85.67	85.47	y		0.20'	317.00'	15"	0.0100	0.0100	6.47	57.4%	1.23	5.27	5.40	0.453'	0.669'	83.64'	0.98'	86.14'	0.113'	0.11'			0.113'	1.096'	86.251'	o.k.		no	
120	0.08	3.71	MH 20		38+47.50	38+47.50	86.51	86.31	y		0.20'	103.00'	15"	0.0062	0.0062	5.11	72.7%	1.23	4.16	4.53	0.319'	0.781'	86.45'	0.28'	87.09'	0.080'	0.11'		0.006'	0.097'	0.380'	87.189'	o.k.		no	
121		3.63	MH 21		40+92.00	40+92.00	88.90	88.02	y		0.88'	244.50'	15"	0.0062	0.0062	5.09	71.4%	1.23	4.15	4.48	0.312'	0.769'	87.28'	0.65'	88.79'	0.078'	0.11'			0.093'	0.744'	88.882'	o.k.		no	
122	0.04	3.63	MH 22		43+53.00	43+53.00	90.68	90.48	y	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	72.1%	1.23	4.11	4.48	0.311'	0.781'	89.68'	0.69'	91.26'	0.078'	0.12'	0.04'	0.003'	0.121'	0.808'	91.382'	o.k.		no	
123		3.59	MH 23		45+35.00	45+35.00	92.17	91.97	y		0.20'	182.00'	15"	0.0071	0.0071	5.45	65.9%	1.23	4.44	4.71	0.344'	0.725'	91.41'	0.49'	92.70'	0.086'	0.12'			0.104'	0.598'	92.799'	o.k.		no	
124		3.59	MH 24		46+91.00	46+91.00	93.46	93.26	y		0.20'	156.00'	15"	0.0070	0.0070	5.41	66.4%	1.23	4.41	4.72	0.346'	0.738'	92.91'	0.42'	94.00'	0.087'	0.12'			0.103'	0.519'	94.101'	o.k.		no	
125		3.59	MH 25		48+04.00	48+04.00	94.44	94.24	y	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	66.8%	1.23	4.38	4.69	0.342'	0.738'	94.20'	0.30'	94.98'	0.085'	0.12'	0.05'		0.129'	0.431'	95.107'	o.k.		no	
126		3.59	MH 26		51+86.50	51+86.50	97.32	97.12	y	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	66.3%	1.23	4.42	4.73	0.347'	0.738'	95.18'	1.02'	97.86'	0.087'	0.16'	0.03'		0.136'	1.157'	97.994'	o.k.		no	
127		3.59	MH 27		54+44.50	54+44.50	100.10	99.90	y	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	55.5%	1.23	5.28	5.38	0.450'	0.656'	97.99'	0.76'	100.56'	0.113'	0.17'	0.06'		0.172'	0.932'	100.728'	o.k.		no	
128		3.59	MH 28		57+04.50	57+04.50	104.00	103.01	y	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	52.4%	1.23	5.58	5.64	0.494'	0.638'	100.74'	0.78'	103.65'	0.123'	0.04'	0.15'		0.156'	0.938'	103.804'	o.k.		no	
129		3.59	MH 29		59+03.00	59+03.00	104.67	104.47	y	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	114.0%	1.23	2.57	2.57	0.102'	1.250'	105.25'	0.61'	105.86'	0.026'	0.11'	0.03'		0.081'	0.689'	105.939'	CRITICAL		Yes by 0.44 cfs	0.1
130		3.59	MH 30		62+18.50	62+18.50	106.77	106.57	y		0.20'	315.50'	15"	0.0060	0.0060	5.03	71.5%	1.23	4.10	4.42	0.304'	0.769'	105.94'	0.82'	107.34'	0.076'	0.10'			0.090'	0.912'	107.428'	o.k.		no	
131		3.59	MH 31		63+63.00	63+63.00	112.75	107.60	y		5.15'	144.50'	15"	0.0060	0.0057	4.91	73.2%	1.23	4.00	4.36	0.295'	0.781'	107.55'	0.37'	108.38'	0.074'	0.08'			0.075'	0.447'	108.456'	o.k.		no	
132		3.59	MH 32		66+71.00	66+71.00	114.18	113.98	y		0.20'	308.00'	15"	0.0040	0.0040	4.09	87.8%	1.23	3.34	3.75	0.219'	0.894'	113.64'	0.75'	114.87'	0.055'	0.08'			0.066'	0.815'	114.940'	o.k.		no	
133		3.59	MH 33		68+39.00	68+39.00	115.06	114.86	y		0.20'	168.00'	15"	0.0040	0.0040	4.12	87.2%	1.23	3.36	3.78	0.222'	0.894'	115.07'	0.41'	115.75'	0.055'	0.08'			0.066'	0.475'	115.820'	o.k.		no	
134		3.59	MH 34		70+07.00	70+07.00	115.94	115.74	y		0.20'	168.00'	15"	0.0040	0.0040	4.12	87.2%	1.23	3.36	3.78	0.222'	0.894'	115.95'	0.41'	116.63'	0.055'	0.08'			0.066'	0.475'	116.700'	o.k.		no	
135		3.59	MH 35		71+75.00	71+75.00	116.82	116.62	y		0.20'	168.00'	15"	0.0040	0.0040	4.12	87.2%	1.23	3.36	3.78	0.222'	0.894'	116.83'	0.41'	117.51'	0.055'	0.08'			0.065'	0.474'	117.579'	o.k.		no	
136		3.59	MH 36		74+68.50	74+68.50	119.19	117.95	y		1.23'	293.50'	15"		0.0039	4.04	89.0%	1.23	3.29	3.72	0.215'	0.906'	117.73'	0.71'	118.87'	0.054'	0.04'			0.045'	0.755'	118.911'	o.k.		no	
137		3.59	MH 37		77+91.50	77+91.50	120.17	119.97	y		0.20'	323.00'	15"	0.0024	0.0024	3.18	112.9%	1.23	2.59	2.59	0.104'	1.250'	120.44'	0.99'	121.43'	0.026'	0.03'			0.030'	1.020'	121.460'	CRITICAL		Yes by 0.41 cfs	0.2
138	0.52	3.59	MH 38		80+12.50	80+12.50	120.69	120.66	y	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	117.8%	1.23	2.49	2.49	0.096'	1.250'	121.46'	0.68'	122.14'	0.024'	0.04'	0.01'	0.012'	0.045'	0.722'	122.182'	CRITICAL		Yes by 0.54 cfs	0.2
139		3.08	MH 39		81+62.00	81+62.00	121.22	121.02	y	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	101.1%	1.23	2.48	2.83	0.124'	1.025'	122.18'	0.26'	122.44'	0.031'	0.14'	0.01'		0.094'	0.352'	122.534'	CRITICAL		Yes by 0.03 cfs	0.2
140		3.08	MH 40		82+89.50	82+89.50	122.66	122.46	y	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	48.2%	1.23	5.20	5.15	0.412'	0.613'	122.53'	0.29'	123.07'	0.103'	0.12'	0.26'		0.243'	0.535'	123.315'	o.k.		no	
141		3.08	MH 41		84+89.50	84+89.50	124.26	124.16	y	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	54.9%	1.23	4.57	4.66	0.338'	0.656'	123.32'	0.43'	124.82'	0.084'	0.11'	0.05'		0.123'	0.555'	124.939'	o.k.		no	
142		3.08	MH 42		85+98.50	85+98.50	126.22	125.02	y	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	56.9%	1.23	4.41	4.52	0.317'	0.669'	124.94'	0.23'	125.69'	0.079'	0.12'	0.08'		0.137'	0.370'	125.826'	o.k.		no	
143		3.08	MH 43		87+94.50	87+94.50	127.99	127.79	y	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	96.3%	0.79	4.07	4.64	0.334'	0.785'	127.01'	1.12'	128.58'	0.084'	0.22'	0.08'		0.190'	1.308'	128.765'	o.k.		no	
1431		3.08	43A		88+39.50	88+39.50	128.88	128.78	y	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	65.0%	0.79	6.03	6.39	0.634'	0.580'	128.77'	0.29'	129.36'	0.158'	0.05'	0.21'		0.209'	0.504'	129.569'	o.k.		no	
1432		3.08	43B		89+25.50	89+25.50	129.32	129.27	y		0.05'	86.00'	12"	0.0087	0.0045	2.41	127.9%	0.79	3.06	3.06	0.146'	1.000'	129.88'	0.64'	130.52'	0.036'	0.08'			0.058'	0.693'	130.573'	CRITICAL		Yes by 0.67 cfs	0.2
144		3.08	MH 44		89+79.50	89+79.50	129.02	129.02	y	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	70.8%	1.23	3.54	3.82	0.227'	0.769'	130.57'	0.10'	130.68'	0.057'	0.12'	0.14'		0.158'	0.261'	130.834'	CRITICAL		no	0.4
145		3.08	MH 45		92+10.50	92+10.50	130.87	130.87	y	36	0.00'	231.00'	12"	0.0080	0.0080	3.20	96.3%	0.79	4.07	4.64	0.334'	0.785'	130.83'	1.32'	132.15'	0.084'	0.12'	0.07'		0.139'	1.456'	132.291'	CRITICAL		no	0.3
146		3.08	MH 46		94+12.50	94+12.50	132.60	132.60	y	74	0.20'	202.00'	12"	0.0080	0.0086	3.31	93.1%	0.79	4.21	4.78	0.354'	0.750'	132.29'	1.16'	133.46'	0.089'	0.10'	0.23'		0.207'	1.371'	133.662'	o.k.		no	
147		3.08	MH 47		96+48.50	96+48.50	134.40	134.40	y	64	0.00'	236.00'	12"	0.0080	0.0068	2.94	104.6%	0.79	3.75	4.25	0.281'	0.865'	133.67'	1.35'	135.27'	0.070'	0.11'	0.15'		0.165'	1.518'	135.430'	o.k.		Yes by 0.14 cfs	
148		3.08	MH 48		97+53.50	97+53.50	135.16	135.16	y	43	0.00'	105.00'	12"	0.0080	0.0072	3.04	101.3%	0.79	3.87	4.41	0.302'	0.820'	135.43'	0.60'	136.03'	0.076'	0.03'	0.08'		0.094'	0.689'	136.120'	o.k.		Yes by 0.04 cfs	
149		3.08	MH 49		98+82.50	98+82.50	135.53	135.53	y	24	0.00'	129.00'	12"	0.0080	0.0029	1.91	160.9%	0.79	2.44	2.44	0.092'	1.000'	136.16'	0.95'	137.11'	0.023'	0.12'	0.01'		0.075'	1.028'	137.188'	CRITICAL		Yes by 1.16 cfs	0.6
150		3.08	MH 50		101+13.50	101+13.50	137.58	137.38	y	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	96.3%	0.79	4.07	4.64	0.334'	0.785'	137.19'	1.32'	138.51'	0.084'	0.15'	0.05'		0.142'	1.460'	138.648'	CRITICAL		no	0.1
151		3.08	MH 51		102+18.50	102+18.50	138.85	138.68	y	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	84.2%	0.79	4.66	5.21	0.422'	0.700'	138.65'	0.62'	139.38'	0.106'	1.20'	0.16'		0.733'	1.352'	140.113'	o.k.		no	
152	0.61	3.08	MH 52		103+09.00	00+00.00	156.00	155.80	y	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	19.9%	0.79	19.68	14.86	3.429'	0.285'	140.11'	1.17'	156.09'	0.857'	0.06'	2.19'	0.639'	1.878'	3.052'	157.963'	o.k.		no	
201		2.46	MH 1		00+87.00	00+87.00	156.43	156.34	y	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	60.9%	1.23	3.30	3.45	0.185'	0.694'	157.96'	0.11'	158.08'	0.046'	0.14'	0.06'		0.124'	0.239'	158.201'	CRITICAL		no	0.5
202		2.46	MH 2		02+10.00	02+10.00	158.03	157.83	y	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	35.7%	1.23	5.63	5.10	0.403'	0.500'	158.20'	0.22'	158.42'	0.101'	0.26'	0.05'		0.205'	0.422'	158.623'	o.k.		no	
203		2.46	MH 3		02+78.00	02+78.00	159.89	159.79	y		0.10'	68.00'	15"	0.0259	0.0259	10.42	23.7%	1.23	8.49	6.88	0.735'	0.400'	158.62'	0.15'	160.19'	0.184'	0.07'			0.125'	0.277'	160.315'	o.k.		no	
204		2.46	MH 4		06+00.00	06+00.00	161.28	161.18	y		0.10'	322.00'	15"	0.0040	0.0040	4.10	60.1%	1.23	3.34	3.49	0.189'	0.694'	160.58'	0.42'	161.87'	0.047'	0.07'			0.057'	0.481'	161.931'	o.k.		no	
205		2.46	MH 5		09+14.00	09+14.00	162.64	162.54	y		0.10'	314.00'	15"	0.0040	0.0040	4.10	60.1%	1.23	3.34	3.49	0.190'	0.694'	161.97'	0.41'	163.23'	0.047'	0.07'			0.057'	0.471'	163.290'	o.k.		no	
206		2.46	MH 6		12+97.00	12+97.00	164.27	164.17	y	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	60.2%	1.23	3.34	3.49	0.189'	0.694'	163.33'	0.50'	164.86'	0.047'	0.07'	0.12'		0.117'	0.622'	164.981'	o.k.		no	
207	0.21	2.46	MH 7		18+09.00	18+09.00	166.42	166.32	y	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	60.1%	1.23	3.34	3.49	0.189'	0.694'	164.98'	0.67'	167.01'	0.047'	0.06'	0.10'	0.014'	0.111'	0.786'	167.125'	o.k.		no	
208		2.25	MH 8		21+32.00	21+32.00	167.81	167.71	y		0.10'	323.00'	15"	0.0040	0.0040	4.09	55.1%	1.23	3.34	3.40	0.180'	0.656'	167.12'	0.37'	168.37'	0.045'	0.03'			0.036'	0.411'	168.402'	o.k.		no	
209		2.25	MH 9		24+97.00	24+97.00	168.79	168.69	y		0.10'	365.00'	12"	0.0025	0.0024	1.75	128.5%	0.79	2.23	2.23	0.077'	1.000'	168.81'	1.45'	170.26'	0.019'	0.03'			0.023'	1.471'	170.281'	CRITICAL		Yes by 0.50 cfs	0.6
210		2.25	MH 10		28+27.00	28+27.00	169.69	169.59	y		0.10'	330.00'	12"	0.0025	0.0024	1.76	128.2%	0.79	2.24	2.24	0.078'	1.000'	170.28'	1.31'	171.59'	0.019'	0.03'			0.023'	1.332'	171.613'	CRITICAL		Yes by 0.50 cfs	1.0
211		2.25	MH 11		31+27.00	31+27.00	170.51	170.41	y	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	128.8%	0.79	2.23	2.23	0.077'	1.000'	171.61'	1.19'	172.80'	0.019'	0.03'	0.01'		0.031'	1.220'	172.833'	CRITICAL		Yes by 0.50 cfs	1.4
212		2.25	MH 12		33+29.00	00+00.00	171.55	171.00	y		0.55'	202.00'	12"	0.0025	0.0024	1.76	128.2%	0.79	2.24	2.24	0.078'	1.000'	172.83'	0.80'	173.63'	0.019'	0.06'			0.038'	0.839'	173.671'	CRITICAL		Yes by 0.50 cfs	1.6
301		2.25	MH 1		01+97.00	01+97.00	172.50	172.30	y		0.20'	197.00'	12"	0.0035	0.0038	2.20	102.3%	0.79	2.81	3.20	0.159'	0.840'	173.67'	0.60'	174.27'	0.040'	0.05'			0.045'	0.648'	174.319'	CRITICAL		Yes by 0.05 cfs	1.0
302		2.25	MH 2		05+05.00	05+05.00	173.78	173.58	y		0.20'	308.00'	12"	0.0035	0.0035	2.12	106.6%	0.79	2.69	3.04	0.144'	0.885'	174.32'	0.96'	175.28'	0.036'	0.05'			0.043'	1.007'	175.326'	CRITICAL		Yes by 0.14 cfs	0.7
303	0.26	2.25	MH 3		08+13.00	08+13.00	175.06	174.86	y		0.20'	308.00'	12"	0.0035	0.0035	2.12	106.6%	0.79	2.69	3.04	0.144'	0.885'	175.33'	0.96'	176.29'	0.036'	0.08'		0.015'	0.067'	1.030'	176.357'	CRITICAL		Yes by 0.14 cfs	0.4
304		2.00	MH 4		11+18.00	11+18.00	177.19	176.99	y		0.20'	305.00'	12"	0.0063	0.0063	2.84	70.4%	0.79	3.62	3.91	0.237'	0.615'	176.36'	0.81'	177.61'	0.059'	0.05'			0.055'	0.863'	177.660'	o.k.		no	
305		2.00	MH 5		14+15.00	14+15.00	178.43	178.23	y		0.20'	297.00'	12"	0.0035	0.0035	2.11	94.6%	0.79	2.69	3.05	0.145'	0.765'	177.96'	0.72'	179.00'	0.036'	0.05'			0.043'	0.762'	179.038'	o.k.		no	
306		2.00	MH 6		16+50.00	16+50.00	179.45	179.25	y	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	94.7%	0.79	2.69	3.05	0.144'	0.765'	179.20'	0.57'	180.02'	0.036'	0.05'	0.09'		0.090'	0.659'	180.105'	o.k.		no	
307		2.00	MH 7		17+03.00	17+03.00	179.84	179.64	y		0.20'	53.00'	12"	0.0035	0.0036	2.14	93.5%	0.79	2.72	3.09	0.148'	0.750'	180.20'	0.13'	180.39'	0.037'	0.04'			0.041'	0.169'	180.431'	o.k.		no	
308		2.00	MH 8		21+42.00	21+42.00	181.36	181.16	y		0.20'	439.00'	12"	0.0030	0.0030	1.96	102.1%	0.79	2.49	2.84	0.126'	0.840'	180.68'	1.06'	182.00'	0.031'	0.04'			0.037'	1.094'	182.037'	o.k.		Yes by 0.04 cfs	
309		2.00	MH 9		23+57.00	12+72.00	182.20	182.00	y		0.20'	215.00'	12"	0.0030	0.0030	1.95	102.6%	0.79	2.48	2.83	0.124'	0.840'	182.20'	0.52'	182.84'	0.031'	0.04'			0.037'	0.555'	182.877'	o.k.		Yes by 0.05 cfs	
401		2.00	MH 1		16+72.00	16+72.00	187.01	183.40	y		3.61'	400.00'	12"	0.0030	0.0030	1.96	102.2%	0.79	2.49	2.84	0.125'	0.840'	183.04'	0.96'	184.24'	0.031'	0.15'			0.091'	1.053'	184.331'	o.k.		Yes by 0.04 cfs	
402		2.00	MH 2		20+30.00	20+30.00	192.15	192.05	y		0.10'	358.00'	10"	0.0140	0.0141	2.61	76.7%	0.55	4.78	5.26	0.429'	0.542'	187.55'	2.44'	192.59'	0.107'	0.09'			0.097'	2.532'	192.688'	o.k.		no	
403		2.00	MH 3		23+80.00	23+80.00	195.01	194.81	y		0.20'	350.00'	10"	0.0076	0.0076	1.92	104.4%	0.55	3.51	3.99	0.247'	0.721'	192.87'	2.24'	195.53'	0.062'	0.13'			0.094'	2.332'	195.625'	o.k.		Yes by 0.08 cfs	
404		2.00	MH 4		23+87.00	00+00.00	199.43	195.09	y		4.34'	7.00'	10"	0.0076	0.0114	2.35	85.1%	0.55	4.31	4.82	0.361'	0.583'	195.62'	0.05'	195.67'	0.090'	0.03'			0.062'	0.108'	195.735'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk												Hydraulic Grade Line for Downstream Pipe													Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
501	0.48	2.00	MH 1		03+50.00	03+50.00	201.18	201.13	y		0.00'	350.00'	8"	0.0076	0.0050	0.86	233.4%	0.35	2.45	2.45	0.094'	0.667'	200.10'	9.47'	209.57'	0.023'	0.03'		0.022'	0.038'	9.511'	209.607'	CRITICAL		Yes by 1.14 cfs	7.7
502		1.52	MH 2		07+10.00	07+10.00	209.28	202.94	y		6.34'	360.00'	8"	0.0050	0.0049	0.85	179.2%	0.35	2.43	2.43	0.091'	0.667'	209.61'	5.62'	215.22'	0.023'	0.13'			0.075'	5.691'	215.298'	CRITICAL		Yes by 0.67 cfs	11.6
503		1.52	MH 3		09+95.00	09+95.00	214.00	213.55	y		0.44'	285.00'	8"	0.0150	0.0150	1.48	102.2%	0.35	4.25	4.85	0.365'	0.560'	215.30'	3.43'	218.73'	0.091'	0.03'			0.059'	3.490'	218.788'	CRITICAL		Yes by 0.03 cfs	4.5
504		1.52	MH 4		13+95.00	13+95.00	215.60	215.60	y		0.00'	400.00'	8"	0.0040	0.0040	0.77	198.1%	0.35	2.20	2.20	0.075'	0.667'	218.79'	6.24'	225.03'	0.019'	0.03'			0.022'	6.262'	225.050'	CRITICAL		Yes by 0.75 cfs	8.8
505		1.52	MH 5		17+95.00	00+00.00	217.20	217.20	y		0.00'	400.00'	8"	0.0040	0.0040	0.77	198.1%	0.35	2.20	2.20	0.075'	0.667'	225.05'	6.24'	231.29'	0.019'	0.04'			0.030'	6.269'	231.319'	CRITICAL		Yes by 0.75 cfs	13.4
601		1.52	MH 1		03+19.00	03+19.00	219.50	219.22	y	90	0.28'	319.00'	8"	0.0050	0.0063	0.96	157.4%	0.35	2.76	2.76	0.118'	0.667'	231.32'	4.98'	236.29'	0.030'	0.02'	0.08'		0.065'	5.041'	236.360'	CRITICAL		Yes by 0.55 cfs	16.4
602		1.52	MH 2		05+83.00	05+83.00	220.34	220.24	y	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	130.5%	0.55	2.13	2.13	0.071'	0.833'	236.36'	1.25'	237.61'	0.018'	0.02'	0.05'		0.044'	1.297'	237.657'	CRITICAL		Yes by 0.35 cfs	16.5
603		1.52	MH 3		08+93.00	08+93.00	221.31	221.21	y		0.10'	310.00'	10"	0.0028	0.0028	1.16	130.4%	0.55	2.13	2.13	0.071'	0.833'	237.66'	1.47'	239.13'	0.018'	0.02'			0.021'	1.493'	239.150'	CRITICAL		Yes by 0.35 cfs	17.1
604		1.52	MH 4		12+62.00	12+62.00	222.44	222.34	y		0.10'	369.00'	10"	0.0028	0.0028	1.16	130.8%	0.55	2.13	2.13	0.070'	0.833'	239.15'	1.75'	240.90'	0.018'	0.02'			0.021'	1.773'	240.923'	CRITICAL		Yes by 0.36 cfs	17.7
605		1.52	MH 5		14+75.00	14+75.00	223.14	223.04	y		0.10'	213.00'	10"	0.0028	0.0028	1.17	130.2%	0.55	2.14	2.14	0.071'	0.833'	240.92'	1.01'	241.93'	0.018'	0.02'			0.021'	1.033'	241.956'	CRITICAL		Yes by 0.35 cfs	18.1
606		1.52	MH 6		18+00.00	18+00.00	224.15	224.05	y		0.10'	325.00'	10"	0.0028	0.0028	1.16	130.6%	0.55	2.13	2.13	0.071'	0.833'	241.96'	1.54'	243.50'	0.018'	0.02'			0.021'	1.564'	243.520'	CRITICAL		Yes by 0.36 cfs	18.6
607		1.52	MH 7		20+89.00	20+89.00	225.06	224.96	y	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	130.5%	0.55	2.13	2.13	0.071'	0.833'	243.52'	1.37'	244.89'	0.018'	0.02'	0.05'		0.044'	1.416'	244.936'	CRITICAL		Yes by 0.35 cfs	19.1
608		1.52	MH 8		24+65.00	24+65.00	226.21	226.11	y	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	130.7%	0.55	2.13	2.13	0.070'	0.833'	244.94'	1.79'	246.72'	0.018'	0.02'	0.05'		0.044'	1.829'	246.765'	CRITICAL		Yes by 0.36 cfs	19.8
609		1.52	MH 9		27+50.00	27+50.00	227.11	227.01	y		0.10'	285.00'	10"	0.0028	0.0028	1.16	130.4%	0.55	2.13	2.13	0.071'	0.833'	246.77'	1.35'	248.12'	0.018'	0.02'			0.021'	1.374'	248.140'	CRITICAL		Yes by 0.35 cfs	20.3
610		1.52	MH 10		30+18.00	30+18.00	227.96	227.86	y		0.10'	268.00'	10"	0.0028	0.0028	1.16	130.6%	0.55	2.13	2.13	0.070'	0.833'	248.14'	1.27'	249.41'	0.018'	0.02'			0.021'	1.294'	249.434'	CRITICAL		Yes by 0.36 cfs	20.7
611	0.23	1.52	MH 11		34+08.00	34+08.00	229.15	229.05	y	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	130.7%	0.55	2.13	2.13	0.070'	0.833'	249.43'	1.85'	251.29'	0.018'	0.04'	0.04'	0.010'	0.052'	1.903'	251.337'	CRITICAL		Yes by 0.36 cfs	21.4
612		1.29	MH 12		36+26.00	36+26.00	230.03	229.86	y	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	103.1%	0.55	2.30	2.62	0.107'	0.700'	251.34'	0.58'	251.92'	0.027'	0.02'	0.06'		0.053'	0.632'	251.969'	CRITICAL		Yes by 0.04 cfs	21.2
613		1.29	MH 13		39+50.00	39+50.00	230.87	230.77	y		0.10'	324.00'	10"	0.0028	0.0023	1.05	123.1%	0.55	1.92	1.92	0.058'	0.833'	251.97'	1.12'	253.08'	0.014'	0.02'			0.020'	1.135'	253.104'	CRITICAL		Yes by 0.24 cfs	21.5
614		1.29	MH 14		42+20.00	42+20.00	231.73	231.63	y		0.10'	270.00'	10"	0.0028	0.0028	1.17	110.9%	0.55	2.14	2.14	0.071'	0.833'	253.10'	0.93'	254.03'	0.018'	0.02'			0.021'	0.951'	254.054'	CRITICAL		Yes by 0.13 cfs	21.6
615		1.29	MH 15		45+42.00	45+42.00	232.73	232.63	y		0.10'	322.00'	10"	0.0028	0.0028	1.16	111.3%	0.55	2.13	2.13	0.070'	0.833'	254.05'	1.11'	255.16'	0.018'	0.02'			0.021'	1.130'	255.184'	CRITICAL		Yes by 0.13 cfs	21.7
616		1.29	MH 16		49+20.00	49+20.00	234.06	233.79	y		0.27'	378.00'	10"	0.0028	0.0028	1.16	111.1%	0.55	2.13	2.13	0.071'	0.833'	255.18'	1.30'	256.49'	0.016'	0.03'			0.022'	1.323'	256.507'	CRITICAL		Yes by 0.13 cfs	21.9
617		1.29	MH 17		52+40.00	52+40.00	235.44	235.34	y		0.10'	320.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	2.20	2.20	0.075'	0.667'	256.51'	3.62'	260.13'	0.019'	0.14'			0.081'	3.700'	260.207'	CRITICAL		Yes by 0.53 cfs	24.1
618		1.29	MH 18		55+70.00	55+70.00	241.50	241.38	y		0.12'	330.00'	8"	0.0180	0.0180	1.63	79.5%	0.35	4.66	5.15	0.411'	0.443'	260.21'	3.05'	263.25'	0.103'	0.03'			0.064'	3.110'	263.317'	CRITICAL		no	21.2
619		1.29	MH 19		58+70.00	58+70.00	242.80	242.70	y		0.10'	300.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	2.20	2.20	0.075'	0.667'	263.32'	3.39'	266.71'	0.019'	0.03'			0.022'	3.415'	266.732'	CRITICAL		Yes by 0.53 cfs	23.3
620		1.29	MH 20		62+25.00	62+25.00	244.32	244.22	y		0.10'	355.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	2.20	2.20	0.075'	0.667'	266.73'	4.01'	270.75'	0.019'	0.03'			0.022'	4.037'	270.769'	CRITICAL		Yes by 0.53 cfs	25.9
621	0.78	1.29	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	y	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	2.20	2.20	0.075'	0.667'	270.77'	3.68'	274.44'	0.019'	0.00'	0.05'	0.053'	0.060'	3.735'	274.503'	CRITICAL	CRITICAL	Yes by 0.53 cfs	28.2
622		0.78	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	y	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	91.7%	0.35	2.43	2.74	0.117'	0.490'	274.50'	0.62'	275.13'	0.029'	1.00'	0.07'		0.552'	1.175'	275.678'	CRITICAL	CRITICAL	no	27.8
623		0.78	MH 23	262.5	70+78.00	70+78.00	248.51	248.41	y		0.10'	334.00'	8"	0.0049	0.0049	0.85	91.5%	0.35	2.43	2.75	0.117'	0.490'	275.68'	1.07'	276.75'	0.029'	2.00'			1.015'	2.087'	277.764'	CRITICAL	CRITICAL	no	27.7
624		0.78	MH 24	257.5	73+28.00	73+28.00	249.83	249.73	y		0.10'	250.00'	8"	0.0049	0.0049	0.85	91.8%	0.35	2.42	2.74	0.117'	0.490'	277.76'	0.80'	278.57'	0.029'	3.00'			1.515'	2.317'	280.081'	CRITICAL	CRITICAL	no	28.2
624		0.78	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	y	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	91.6%	0.35	2.43	2.75	0.117'	0.490'	280.08'	0.79'	280.87'	0.029'	4.00'	0.03'		2.028'	2.820'	282.902'	CRITICAL	CRITICAL	no	29.2
625		0.78	MH 25	263.0	78+60.00	78+60.00	253.09	252.53	y		0.56'	285.00'	8"	0.0049	0.0049	0.85	91.8%	0.35	2.42	2.74	0.117'	0.490'	282.90'	0.91'	283.82'	0.029'	5.00'			2.515'	3.429'	286.331'	CRITICAL	CRITICAL	no	30.6
626		0.78	MH 26	264.0	79+50.00	79+50.00	257.50	253.45	y		4.05'	90.00'	8"	0.0040	0.0040	0.77	101.4%	0.35	2.20	2.50	0.097'	0.547'	286.33'	0.28'	286.61'	0.024'	6.00'			3.012'	3.295'	289.626'	CRITICAL	CRITICAL	Yes by 0.01 cfs	32.5
627		0.78	MH 27	267.0	82+10.00	82+10.00	261.50	261.40	y		0.10'	260.00'	8"	0.0150	0.0150	1.48	52.4%	0.35	4.25	4.29	0.286'	0.340'	289.63'	1.04'	290.67'	0.072'	7.00'			3.536'	4.578'	294.204'	CRITICAL	CRITICAL	no	28.6
628		0.78	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	y	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	41.9%	0.35	5.31	5.02	0.391'	0.293'	294.20'	1.30'	295.51'	0.098'	8.00'	0.25'		4.174'	5.476'	299.680'	CRITICAL	CRITICAL	no	26.7
629		0.78	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	y	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	101.4%	0.35	2.20	2.50	0.097'	0.547'	299.68'	0.47'	300.15'	0.024'	9.00'	0.06'		4.543'	5.014'	304.694'	CRITICAL	CRITICAL	Yes by 0.01 cfs	30.6
630		0.78	MH 30	279.0	87+83.00	87+83.00	271.07	270.97	y		0.10'	138.00'	8"	0.0145	0.0145	1.46	53.3%	0.35	4.18	4.22	0.277'	0.340'	304.69'	0.55'	305.25'	0.069'	10.00'			5.035'	5.588'	310.282'	CRITICAL	CRITICAL	no	33.6
631		0.78	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	y	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	54.7%	0.35	4.07	4.15	0.268'	0.350'	310.28'	0.25'	310.53'	0.067'	11.00'	0.17'		5.619'	5.871'	316.153'	CRITICAL	CRITICAL	no	37.9
632		0.78	MH 32	282.5	90+85.00	90+85.00	273.00	273.00	y		0.00'	238.00'	8"	0.0040	0.0040	0.77	101.5%	0.35	2.19	2.50	0.097'	0.547'	316.15'	0.75'	316.90'	0.024'	12.00'			6.012'	6.759'	322.912'	CRITICAL	CRITICAL	Yes by 0.01 cfs	43.2
																						#N/A				13.00'			6.500'						
Pump Station Line																																			
620		1.29	MH 20		62+25.00	62+25.00	244.32	244.22	y		0.10'	6225.00'	8"																						
621	0.78	1.29	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	y	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	2.20	2.20	0.075'	0.667'	244.99'	3.68'	248.66'	0.019'	12.00'	0.05'	0.053'	6.060'	9.735'	254.721'	CRITICAL	o.k.	Yes by 0.53 cfs	2.4
7211		0.78	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92	y		0.10'	300.00'	8"	0.0040	0.0040	0.77	101.4%	0.35	2.20	2.50	0.097'	0.547'	254.72'	0.94'	255.66'	0.024'	12.00'			6.012'	6.954'	261.675'	CRITICAL	CRITICAL	Yes by 0.01 cfs	8.1
7212		0.78	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	y	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	101.7%	0.35	2.19	2.50	0.097'	0.547'	261.68'	0.68'	262.35'	0.024'	12.00'	0.06'		6.043'	6.721'	268.397'	CRITICAL	CRITICAL	Yes by 0.01 cfs	13.8
7213		0.78	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48	y		0.54'	234.00'	8"	0.0040	0.0021	0.56	138.8%	0.35	1.60	1.60	0.040'	0.667'	268.40'	0.96'	269.35'	0.010'	12.00'			6.005'	6.962'	275.359'	CRITICAL	CRITICAL	Yes by 0.22 cfs	20.2
7214		0.78	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	y	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	101.5%	0.35	2.19	2.50	0.097'	0.547'	275.36'	0.81'	276.17'	0.024'	12.00'	0.06'		6.043'	6.853'	282.212'	CRITICAL	CRITICAL	Yes by 0.01 cfs	25.5
7215		0.78	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73	y		0.10'	70.00'	8"	0.0079	0.0079	1.07	72.4%	0.35	3.08	3.35	0.175'	0.417'	282.21'	0.24'	282.45'	0.044'	12.00'			6.022'	6.262'	288.474'	CRITICAL	CRITICAL	no	31.1
7216		0.78	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	y	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	101.4%	0.35	2.20	2.50	0.097'	0.547'	288.47'	1.30'	289.78'	0.024'	12.00'	0.06'		6.043'	7.346'	295.820'	CRITICAL	CRITICAL	Yes by 0.01 cfs	36.6
7217		0.78	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00	y		0.00'	75.00'	8"	0.0072	0.0721	3.25	23.9%	0.35	9.32	7.55	0.885'	0.213'	295.82'	0.47'	296.29'	0.221'	12.00'			6.111'	6.585'	302.406'	CRITICAL	CRITICAL	no	37.6
* Information referenced from the Salmon Creek Interceptor Analysis																																			
94th Street Trunk																																			
152		3.08	MH 52		00+00.00	00+00.00	156.06	155.80	y	22																									
719		0.78	MH 19		00+83.50	00+83.50	162.00	161.90	y	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	13.4%	0.55	10.65	7.14	0.791'	0.192'	157.96'	0.23'	162.09'	0.198'	0.25'	0.12'		0.283'	0.514'	162.375'	o.k.		no	
720		0.78	MH 20		04+22.00	04+22.00	181.70	181.63	y		0.07'	338.50'	10"	0.0580	0.0580	5.29	14.7%	0.55	9.70	6.79	0.716'	0.208'	162.38'	0.85'	181.84'	0.179'	0.11'			0.144'	0.994'	181.982'	o.k.		no	
721		0.78	MH 21		07+51.00	07+51.00	187.42	187.42	y		0.00'	329.00'	10"	0.0174	0.0174	2.90	26.8%	0.55	5.31	4.46	0.309'	0.288'	181.99'	0.58'	187.71'	0.077'	0.03'			0.055'	0.635'	187.763'	o.k.		no	
722		0.78	MH 22		10+33.00	10+33.00	188.45	188.45	y		0.00'	282.00'	12"	0.0022	0.0037	2.16	36.0%	0.79	2.75	2.49	0.096'	0.400'	187.82'	0.16'	188.85'	0.024'	0.02'			0.024'	0.186'	188.874'	o.k.		no	
723		0.78	MH 23		14+62.00	14+62.00	189.40	189.40	y		0.00'	429.00'	12"	0.0022	0.0022	1.68	46.2%	0.79	2.14	2.10	0.068'	0.475'	188.93'	0.21'	189.86'	0.017'	0.02'			0.020'	0.231'	189.895'	o.k.		no	
724		0.78	MH 24		17+36.00	17+36.00	190.00	190.00	y		0.00'	274.00'	12"	0.0022	0.0022	1.67	46.5%	0.79	2.13	2.09	0.068'	0.475'	189.90'	0.13'	190.48'	0.017'	0.03'			0.022'	0.157'	190.497'	o.k.		no	
724A		0.78	MH 24		18+97.30	18+97.30	190.45	190.45	y		0.00'	161.30'	12"	0.0028	0.0028	1.89	41.2%	0.79	2.40	2.27	0.080'	0.440'	190.50'	0.08'	190.89'	0.020'	0.03'			0.024'	0.109'	190.914'	o.k.		no	
725		0.78	MH 25		22+15.30	22+15.30	191.34	191.34	y		0.00'	318.00'	10"	0.0028	0.0028	1.16	66.9%	0.55	2.13	2.28	0.081'	0.492'	190.94'	0.34'	191.83'	0.020'	0.03'			0.024'	0.369'	191.856'	o.k.		no	
726		0.78	MH 26		25+37.70	25+37.70	192.24	192.24	y		0.00'	322.40'	10"	0.0028	0.0028	1.16	67.0%	0.55	2.13	2.28	0.081'	0.492'	191.86'	0.35'	192.73'	0.020'	0.03'			0.023'	0.373'	192.755'	o.k.		no	
727		0.78	MH 27		29+42.50	29+42.50	193.29	193.29	y		0.00'	404.80'	10"	0.0028	0.0026	1.12	69.5%	0.55	2.05	2.21	0.076'	0.504'	192.75'	0.43'	193.79'	0.019'	0.03'			0.025'	0.458'	193.819'	o.k.		no	
728		0.78	MH 28		32+21.10	32+21.10	194.16	194.16	y		0.00'	278.60'	10"	0.0028	0.0031	1.23	63.3%	0.55	2.25	2.36	0.087'	0.475'	193.82'	0.31'	194.64'	0.022'	0.03'			0.025'	0.338'	194.660'	o.k.		no	
729		0.78	MH 29		35+56.20	35+56.20	195.19	195.09	y		0.10'	335.10'	10"	0.0028	0.0028	1.16	67.2%	0.55	2.12	2.27	0.080'	0.492'	194.66'	0.36'	195.58'	0.020'	0.00'			0.010'	0.373'	195.592'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe										Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.49	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.49	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	17.7%	1.23	3.594'	0.338'	9.59'*	0.92'	23.36'	0.898'	1.14'	0.75'		1.397'	2.317'	24.755'	o.k.		no	
102		4.49	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	19.0%	1.23	3.261'	0.356'	24.75'	0.85'	36.74'	0.815'	1.46'			1.138'	1.985'	37.874'	o.k.		no	
103		4.49	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	15.6%	1.23	4.174'	0.313'	37.87'	0.75'	52.05'	1.043'	0.10'	1.19'		1.165'	1.917'	53.218'	o.k.		no	
104		4.49	MH 4		04+59.00	04+59.00	52.92	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	98.2%	1.23	0.279'	1.000'	53.22'	0.65'	53.87'	0.070'	0.10'	0.04'		0.105'	0.754'	53.971'	o.k.		no	
105		4.49	MH 5		06+35.00	06+35.00	53.59	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	98.5%	1.23	0.278'	1.000'	53.97'	0.65'	54.69'	0.069'	0.22'	0.02'		0.157'	0.802'	54.847'	o.k.		no	
106		4.49	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	59.2%	1.23	0.635'	0.681'	54.85'	0.69'	56.48'	0.159'	0.43'	0.08'		0.335'	1.020'	56.816'	o.k.		no	
107		4.49	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	38.5%	1.23	1.224'	0.531'	56.82'	0.60'	60.09'	0.306'	0.10'	0.16'		0.282'	0.887'	60.373'	o.k.		no	
108		4.49	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	97.6%	1.23	0.283'	0.981'	60.74'	0.58'	61.53'	0.071'	0.10'	0.04'		0.106'	0.685'	61.637'	o.k.		no	
109	0.09	4.49	MH 9		12+37.00	12+37.00	61.96	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	97.7%	1.23	0.283'	0.981'	61.73'	0.67'	62.64'	0.071'	0.17'	0.16'	0.005'	0.205'	0.873'	62.847'	o.k.		no	
110		4.40	MH 10		14+98.00	14+98.00	64.56	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	68.1%	1.23	0.498'	0.756'	62.85'	1.03'	65.22'	0.124'	0.17'	0.14'		0.220'	1.252'	65.436'	o.k.		no	
111		4.40	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	68.3%	1.23	0.495'	0.756'	65.44'	1.11'	68.20'	0.124'	0.14'			0.130'	1.241'	68.327'	o.k.		no	
112		4.40	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	78.9%	1.23	0.392'	0.831'	69.02'	1.35'	71.69'	0.098'	0.17'	0.06'		0.163'	1.514'	71.854'	o.k.		no	
113		4.40	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	69.8%	1.23	0.473'	0.756'	71.85'	0.97'	74.15'	0.118'	0.17'	0.11'		0.195'	1.168'	74.342'	o.k.		no	
114		4.40	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	69.8%	1.23	0.474'	0.756'	74.36'	1.00'	76.76'	0.119'	0.09'			0.102'	1.103'	76.858'	o.k.		no	
115	0.22	4.40	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	102.8%	1.23	0.245'	1.050'	79.70'	0.64'	80.49'	0.061'	0.11'		0.010'	0.089'	0.732'	80.579'	o.k.		Yes by 0.12 cfs	
116		4.19	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	86.5%	1.23	0.306'	0.894'	80.58'	0.82'	81.76'	0.076'	0.03'			0.055'	0.877'	81.819'	o.k.		no	
117	0.04	4.19	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	135.2%	1.23	0.099'	1.250'	82.32'	1.13'	83.45'	0.025'	0.04'	0.01'	0.001'	0.037'	1.166'	83.486'	CRITICAL		Yes by 1.09 cfs	0.5
118		4.14	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	127.9%	1.23	0.108'	1.250'	83.49'	0.36'	83.94'	0.027'	0.17'			0.098'	0.457'	83.942'	CRITICAL		Yes by 0.90 cfs	0.5
119		4.14	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	64.0%	1.23	0.484'	0.725'	83.94'	1.14'	86.20'	0.121'	0.12'			0.119'	1.263'	86.314'	o.k.		no	
120	0.09	4.14	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	81.1%	1.23	0.331'	0.844'	86.51'	0.34'	87.15'	0.083'	0.11'		0.006'	0.101'	0.440'	87.255'	o.k.		no	
121		4.06	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	79.7%	1.23	0.326'	0.831'	87.34'	0.78'	88.85'	0.082'	0.11'			0.097'	0.876'	88.948'	o.k.		no	
122	0.04	4.06	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	80.5%	1.23	0.323'	0.844'	89.74'	0.82'	91.32'	0.081'	0.13'	0.04'	0.003'	0.127'	0.949'	91.450'	o.k.		no	
123		4.01	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	73.6%	1.23	0.364'	0.781'	91.46'	0.58'	92.75'	0.091'	0.13'			0.109'	0.693'	92.860'	o.k.		no	
124		4.01	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	74.1%	1.23	0.362'	0.800'	92.97'	0.49'	94.06'	0.091'	0.13'			0.108'	0.603'	94.168'	o.k.		no	
125		4.01	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	74.5%	1.23	0.358'	0.800'	94.26'	0.36'	95.04'	0.089'	0.13'	0.05'		0.135'	0.493'	95.175'	o.k.		no	
126		4.01	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	74.0%	1.23	0.360'	0.781'	95.22'	1.23'	97.90'	0.090'	0.17'	0.03'		0.142'	1.370'	98.043'	o.k.		no	
127		4.01	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	61.9%	1.23	0.472'	0.694'	98.04'	0.90'	100.59'	0.118'	0.18'	0.06'		0.180'	1.081'	100.774'	o.k.		no	
128		4.01	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	58.5%	1.23	0.519'	0.681'	100.78'	0.93'	103.69'	0.130'	0.04'	0.16'		0.163'	1.088'	103.854'	o.k.		no	
129		4.01	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	127.3%	1.23	0.102'	1.250'	105.25'	0.76'	106.01'	0.026'	0.11'	0.03'		0.083'	0.842'	106.092'	CRITICAL		Yes by 0.86 cfs	0.3
130		4.01	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	79.8%	1.23	0.318'	0.831'	106.09'	0.98'	107.40'	0.080'	0.11'			0.093'	1.077'	107.495'	o.k.		no	
131		4.01	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	81.7%	1.23	0.306'	0.844'	107.61'	0.45'	108.44'	0.077'	0.08'			0.078'	0.523'	108.521'	o.k.		no	
132		4.01	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	98.0%	1.23	0.224'	1.000'	113.75'	0.90'	114.98'	0.056'	0.08'			0.068'	0.971'	115.048'	o.k.		no	
133		4.01	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	97.4%	1.23	0.228'	0.981'	115.16'	0.50'	115.84'	0.057'	0.08'			0.068'	0.564'	115.910'	o.k.		no	
134		4.01	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	97.4%	1.23	0.228'	0.981'	116.04'	0.50'	116.72'	0.057'	0.08'			0.068'	0.564'	116.790'	o.k.		no	
135		4.01	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	97.4%	1.23	0.228'	0.981'	116.92'	0.50'	117.60'	0.057'	0.08'			0.067'	0.562'	117.668'	o.k.		no	
136		4.01	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	99.4%	1.23	0.218'	1.000'	117.82'	0.86'	118.96'	0.055'	0.04'			0.046'	0.906'	119.006'	o.k.		no	
137		4.01	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	126.0%	1.23	0.104'	1.250'	120.44'	1.23'	121.67'	0.026'	0.03'			0.030'	1.264'	121.704'	CRITICAL		Yes by 0.83 cfs	0.5
138	0.57	4.01	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	131.5%	1.23	0.096'	1.250'	121.70'	0.84'	122.55'	0.024'	0.03'	0.01'	0.012'	0.040'	0.884'	122.588'	CRITICAL		Yes by 0.96 cfs	0.6
139		3.44	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	113.0%	1.23	0.095'	1.250'	122.59'	0.42'	123.01'	0.024'	0.15'	0.01'		0.092'	0.511'	123.100'	CRITICAL		Yes by 0.40 cfs	0.7
140		3.44	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	53.8%	1.23	0.429'	0.638'	123.10'	0.35'	123.45'	0.107'	0.12'	0.27'		0.253'	0.604'	123.703'	o.k.		no	
141		3.44	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	61.3%	1.23	0.354'	0.694'	123.70'	0.51'	124.85'	0.089'	0.12'	0.05'		0.129'	0.642'	124.983'	o.k.		no	
142		3.44	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	63.6%	1.23	0.332'	0.713'	124.98'	0.28'	125.73'	0.083'	0.11'	0.08'		0.140'	0.416'	125.872'	o.k.		no	
143		3.44	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	107.5%	0.79	0.329'	0.885'	127.11'	1.43'	128.68'	0.082'	0.23'	0.07'		0.195'	1.621'	128.870'	o.k.		Yes by 0.24 cfs	
1431		3.44	43A		88+39.50	88+39.50	126.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	72.6%	0.79	0.670'	0.625'	128.67'	0.35'	129.41'	0.168'	0.05'	0.22'		0.220'	0.568'	129.625'	o.k.		no	
1432		3.44	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	142.9%	0.79	0.146'	1.000'	129.88'	0.79'	130.67'	0.036'	0.08'			0.060'	0.853'	130.733'	CRITICAL		Yes by 1.03 cfs	0.4
144		3.44	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	79.1%	1.23	0.238'	0.831'	130.73'	0.12'	130.86'	0.059'	0.11'	0.15'		0.161'	0.285'	131.018'	CRITICAL		no	0.6
145		3.44	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	12"	0.0080	0.0080	3.20	107.5%	0.79	0.328'	0.885'	131.02'	1.68'	132.70'	0.082'	0.12'	0.07'		0.138'	1.818'	132.836'	CRITICAL		Yes by 0.24 cfs	0.8
146		3.44	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	12"	0.0080	0.0086	3.31	104.0%	0.79	0.354'	0.865'	132.64'	1.45'	134.28'	0.089'	0.08'	0.23'		0.196'	1.641'	134.477'	CRITICAL		Yes by 0.13 cfs	0.7
147		3.44	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	12"	0.0080	0.0068	2.94	116.9%	0.79	0.218'	1.000'	134.48'	2.18'	136.65'	0.054'	0.08'	0.12'		0.128'	2.304'	136.781'	CRITICAL		Yes by 0.50 cfs	1.3
148		3.44	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	12"	0.0080	0.0072	3.04	113.1%	0.79	0.233'	1.000'	136.78'	0.97'	137.75'	0.058'	0.03'	0.06'		0.076'	1.044'	137.825'	CRITICAL		Yes by 0.40 cfs	1.6
149		3.44	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	12"	0.0080	0.0029	1.91	179.7%	0.79	0.092'	1.000'	137.83'	1.19'	139.01'	0.023'	0.11'	0.01'		0.074'	1.263'	139.089'	CRITICAL		Yes by 1.52 cfs	2.5
150		3.44	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	107.5%	0.79	0.328'	0.885'	139.09'	1.68'	140.77'	0.082'	0.15'	0.05'		0.143'	1.824'	140.912'	CRITICAL		Yes by 0.24 cfs	2.4
151		3.44	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	94.0%	0.79	0.434'	0.765'	140.91'	0.75'	141.66'	0.108'	1.38'	0.16'		0.827'	1.579'	142.491'	CRITICAL		no	2.0
152	0.68	3.44	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	22.2%	0.79	3.947'	0.320'	142.49'	1.29'	156.12'	0.987'	0.07'	2.53'	0.732'	2.157'	3.448'	158.277'	o.k.		no	
201		2.76	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	68.1%	1.23	0.195'	0.756'	158.28'	0.13'	158.41'	0.049'	0.15'	0.06'		0.132'	0.267'	158.544'	CRITICAL		no	0.8
202		2.76	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	39.9%	1.23	0.430'	0.531'	158.54'	0.26'	158.80'	0.108'	0.28'	0.06'		0.220'	0.475'	159.019'	o.k.		no	
203		2.76	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	26.4%	1.23	0.790'	0.431'	159.02'	0.17'	160.22'	0.197'	0.07'			0.133'	0.307'	160.355'	o.k.		no	
204		2.76	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	67.2%	1.23	0.198'	0.738'	160.63'	0.51'	161.92'	0.050'	0.07'			0.060'	0.565'	161.977'	o.k.		no	
205		2.76	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	67.2%	1.23	0.199'	0.738'	162.02'	0.49'	163.28'	0.050'	0.07'			0.059'	0.552'	163.337'	o.k.		no	
206		2.76	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	67.3%	1.23	0.198'	0.738'	163.38'	0.60'	164.91'	0.049'	0.07'	0.13'		0.123'	0.724'	165.030'	o.k.		no	
207	0.23	2.76	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	67.2%	1.23	0.198'	0.738'	165.03'	0.80'	167.06'	0.050'	0.07'	0.10'	0.015'	0.116'	0.920'	167.174'	o.k.		no	
208		2.52	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	61.6%	1.23	0.189'	0.694'	167.17'	0.45'	168.40'	0.047'	0.03'			0.037'	0.483'	168.441'	o.k.		no	
209		2.52	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	12"	0.0025	0.0024	1.75	143.8%	0.79	0.077'	1.000'	168.81'	1.81'	170.62'	0.019'	0.03'			0.023'	1.834'	170.644'	CRITICAL		Yes by 0.77 cfs	0.9
210		2.52	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	12"	0.0025	0.0024	1.76	143.4%	0.79	0.078'	1.000'	170.64'	1.64'	172.28'	0.019'	0.03'			0.023'	1.660'	172.304'	CRITICAL		Yes by 0.76 cfs	1.7
211		2.52	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	144.1%	0.79	0.077'	1.000'	172.30'	1.49'	173.79'	0.019'	0.03'	0.01'		0.031'	1.519'	173.823'	CRITICAL		Yes by 0.77 cfs	2.4
212		2.52	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	12"	0.0025	0.0024	1.76	143.3%	0.79	0.078'	1.000'	173.82'	1.00'	174.83'	0.019'	0.04'			0.031'	1.033'	174.857'	CRITICAL		Yes by 0.76 cfs	2.8
301		2.52	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	114.4%	0.79	0.122'	1.000'	174.86'	0.98'	175.83'	0.031'	0.04'			0.035'	1.012'	175.869'	CRITICAL		Yes by 0.32 cfs	2.5
302		2.52	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	119.2%	0.79	0.113'	1.000'	175.87'	1.53'	177.40'	0.028'	0.04'			0.034'	1.562'	177.431'	CRITICAL		Yes by 0.41 cfs	2.8
303	0.28	2.52	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	119.2%	0.79	0.113'	1.000'	177.43'	1.53'	178.96'	0.028'	0.09'		0.011'	0.063'	1.591'	179.022'	CRITICAL		Yes by 0.41 cfs	3.1
304		2.24	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	78.7%	0.79	0.248'	0.665'	179.02'	0.97'	179.99'	0.062'	0.05'			0.056'	1.028'	180.050'	CRITICAL		no	2.0
305		2.24	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	105.8%	0.79	0.145'	0.865'	180.05'	0.90'	180.95'	0.036'	0.05'			0.043'	0.943'	180.993'	CRITICAL		Yes by 0.12 cfs	1.7
306		2.24	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	106.0%	0.79	0.143'	0.885'	180.99'	0.72'	181.72'	0.036'	0.05'	0.09'		0.090'	0.814'	181.807'	CRITICAL		Yes by 0.13 cfs	1.5
307		2.24	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	104.6%	0.79	0.148'	0.865'	181.81'	0.16'	181.97'	0.037'	0.03'			0.035'	0.196'	182.003'	CRITICAL		Yes by 0.10 cfs	1.3
308		2.24	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	114.2%	0.79	0.097'	1.000'	182.00'	1.71'	183.72'	0.024'	0.03'			0.029'	1.743'	183.745'	CRITICAL		Yes by 0.28 cfs	1.6
309		2.24	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	114.8%	0.79	0.096'	1.000'	183.75'	0.84'	184.58'	0.024'	0.03'			0.029'	0.868'	184.613'	CRITICAL		Yes by 0.29 cfs	1.6
401		2.24	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	114.3%	0.79	0.096'	1.000'	184.61'	1.56'	186.17'	0.024'	0.16'			0.090'	1.651'	186.265'	CRITICAL		Yes by 0.28 cfs	1.8
402		2.24	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	85.8%	0.55	0.445'	0.583'	187.59'	2.95'	192.63'	0.111'	0.07'			0.089'	3.036'	192.722'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.24	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	116.8%	0.55	0.191'	0.833'	192.98'	3.61'	196.59'	0.048'	0.13'			0.089'	3.700'	196.683'	CRITICAL		Yes by 0.32 cfs	1.0
404		2.24	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	95.3%	0.55	0.371'	0.638'	196.68'	0.06'	196.74'	0.093'	0.03'			0.063'	0.119'	196.802'	CRITICAL		no	0.8
501	0.54	2.24	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	8"	0.0076	0.0050	0.86	261.1%	0.35	0.094'	0.667'	200.10'	11.86'	211.96'	0.023'	0.03'		0.021'	0.038'	11.900'	211.997'	CRITICAL		Yes by 1.33 cfs	10.1
502		1.70	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	8"	0.0050	0.0049	0.85	200.7%	0.35	0.091'	0.667'	212.00'	7.05'	219.04'	0.023'	0.10'			0.061'	7.107'	219.104'	CRITICAL		Yes by 0.85 cfs	15.4
503		1.70	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	8"	0.0150	0.0150	1.48	114.5%	0.35	0.281'	0.667'	219.10'	5.58'	224.68'	0.070'	0.03'			0.048'	5.627'	224.731'	CRITICAL		Yes by 0.22 cfs	10.5
504		1.70	MH 4		13+95.00	13+95.00	215.50	215.60		0.00'	400.00'	8"	0.0040	0.0040	0.77	221.9%	0.35	0.075'	0.667'	224.73'	7.83'	232.56'	0.019'	0.03'			0.022'	7.852'	232.583'	CRITICAL		Yes by 0.93 cfs	16.3
505		1.70	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	8"	0.0040	0.0040	0.77	221.9%	0.35	0.075'	0.667'	232.58'	7.83'	240.41'	0.019'	0.04'			0.030'	7.860'	240.443'	CRITICAL		Yes by 0.93 cfs	22.5
601		1.70	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	8"	0.0050	0.0063	0.96	176.3%	0.35	0.118'	0.667'	240.44'	6.24'	246.69'	0.030'	0.02'	0.08'		0.065'	6.309'	246.752'	CRITICAL		Yes by 0.74 cfs	26.8
602		1.70	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	146.2%	0.55	0.071'	0.833'	246.75'	1.57'	248.33'	0.018'	0.02'	0.05'		0.044'	1.617'	248.369'	CRITICAL		Yes by 0.54 cfs	27.3
603		1.70	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	146.1%	0.55	0.071'	0.833'	248.37'	1.85'	250.22'	0.018'	0.02'			0.021'	1.868'	250.237'	CRITICAL		Yes by 0.54 cfs	28.2
604		1.70	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	146.5%	0.55	0.070'	0.833'	250.24'	2.20'	252.44'	0.018'	0.02'			0.021'	2.220'	252.457'	CRITICAL		Yes by 0.54 cfs	29.3
605		1.70	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	145.8%	0.55	0.071'	0.833'	252.46'	1.27'	253.73'	0.018'	0.02'			0.021'	1.290'	253.748'	CRITICAL		Yes by 0.53 cfs	29.9
606		1.70	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	146.3%	0.55	0.071'	0.833'	253.75'	1.94'	255.68'	0.018'	0.02'			0.021'	1.958'	255.705'	CRITICAL		Yes by 0.54 cfs	30.8
607		1.70	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	146.2%	0.55	0.071'	0.833'	255.71'	1.72'	257.43'	0.018'	0.02'	0.05'		0.044'	1.766'	257.471'	CRITICAL		Yes by 0.54 cfs	31.6
608		1.70	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	146.5%	0.55	0.070'	0.833'	257.47'	2.24'	259.71'	0.018'	0.02'	0.05'		0.044'	2.284'	259.755'	CRITICAL		Yes by 0.54 cfs	32.8
609		1.70	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	146.1%	0.55	0.071'	0.833'	259.76'	1.70'	261.45'	0.018'	0.02'			0.021'	1.719'	261.475'	CRITICAL		Yes by 0.54 cfs	33.6
610		1.70	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	258.00'	10"	0.0028	0.0028	1.16	146.3%	0.55	0.070'	0.833'	261.47'	1.60'	263.07'	0.018'	0.02'			0.021'	1.618'	263.093'	CRITICAL		Yes by 0.54 cfs	34.4
611	0.25	1.70	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	146.4%	0.55	0.070'	0.833'	263.09'	2.32'	265.42'	0.018'	0.03'	0.04'	0.009'	0.047'	2.371'	265.464'	CRITICAL		Yes by 0.54 cfs	35.5
612		1.45	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	115.5%	0.55	0.082'	0.833'	265.46'	0.94'	266.41'	0.021'	0.02'	0.05'		0.043'	0.986'	266.450'	CRITICAL		Yes by 0.19 cfs	35.7
613		1.45	MH 13		39+50.00	39+50.00	230.97	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	138.0%	0.55	0.058'	0.833'	266.45'	1.40'	267.85'	0.014'	0.02'			0.020'	1.421'	267.871'	CRITICAL		Yes by 0.40 cfs	36.2
614		1.45	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	124.3%	0.55	0.071'	0.833'	267.87'	1.17'	269.04'	0.018'	0.02'			0.021'	1.189'	269.059'	CRITICAL		Yes by 0.29 cfs	36.6
615		1.45	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	124.7%	0.55	0.070'	0.833'	269.06'	1.39'	270.45'	0.018'	0.02'			0.021'	1.414'	270.473'	CRITICAL		Yes by 0.29 cfs	37.0
616		1.45	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	124.5%	0.55	0.071'	0.833'	270.47'	1.63'	272.11'	0.018'	0.03'			0.022'	1.657'	272.130'	CRITICAL		Yes by 0.29 cfs	37.5
617		1.45	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	272.13'	4.55'	276.68'	0.019'	0.15'			0.085'	4.631'	276.761'	CRITICAL		Yes by 0.68 cfs	40.7
618		1.45	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	89.1%	0.35	0.430'	0.483'	276.76'	3.70'	280.46'	0.107'	0.03'			0.067'	3.766'	280.527'	CRITICAL		no	38.4
619		1.45	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	280.53'	4.26'	284.79'	0.019'	0.03'			0.022'	4.285'	284.812'	CRITICAL		Yes by 0.68 cfs	41.4
620		1.45	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	284.81'	5.04'	289.86'	0.019'	#REF!			#REF!	#REF!	#REF!				
621	0.87	1.45	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	#REF!	#VALUE!			0.00'	0.05'	0.053'	0.051'			CRITICAL		
622		0.87	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	102.9%	0.35	0.119'	0.560'	246.28'	0.77'	247.23'	0.030'	1.00'	0.08'		0.553'	1.325'	247.783'	o.k.	o.k.	Yes by 0.02 cfs	
623		0.87	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	102.8%	0.35	0.119'	0.560'	247.78'	1.33'	249.11'	0.030'	2.00'			1.015'	2.344'	250.127'	CRITICAL	o.k.	Yes by 0.02 cfs	0.0
624		0.87	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	103.1%	0.35	0.119'	0.560'	250.13'	0.99'	251.12'	0.030'	3.00'			1.515'	2.510'	252.637'	CRITICAL	o.k.	Yes by 0.03 cfs	0.7
624		0.87	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	102.9%	0.35	0.119'	0.560'	252.64'	0.98'	253.62'	0.030'	4.00'	0.03'		2.028'	3.011'	255.648'	CRITICAL	o.k.	Yes by 0.02 cfs	1.9
625		0.87	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	103.1%	0.35	0.119'	0.560'	255.65'	1.13'	256.78'	0.030'	5.00'			2.515'	3.649'	259.297'	CRITICAL	o.k.	Yes by 0.03 cfs	3.6
626		0.87	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	113.9%	0.35	0.075'	0.667'	259.30'	0.46'	259.76'	0.019'	6.00'			3.009'	3.473'	262.771'	CRITICAL	o.k.	Yes by 0.11 cfs	5.6
627		0.87	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	58.8%	0.35	0.301'	0.363'	262.77'	1.25'	264.02'	0.075'	7.00'			3.538'	4.786'	267.557'	CRITICAL	CRITICAL		
628		0.87	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	47.1%	0.35	0.420'	0.317'	267.56'	1.53'	269.09'	0.105'	8.00'	0.27'		4.187'	5.718'	273.275'	CRITICAL	o.k.	no	0.3
629		0.87	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	113.9%	0.35	0.075'	0.667'	273.27'	0.77'	274.05'	0.019'	9.00'	0.05'		4.533'	5.307'	278.581'	CRITICAL	CRITICAL	Yes by 0.11 cfs	4.5
630		0.87	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	59.8%	0.35	0.290'	0.363'	278.58'	0.66'	279.24'	0.073'	10.00'			5.036'	5.699'	284.280'	CRITICAL	CRITICAL	no	7.6
631		0.87	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	61.4%	0.35	0.281'	0.370'	284.28'	0.30'	284.58'	0.070'	11.00'	0.18'		5.625'	5.927'	290.207'	CRITICAL	CRITICAL	no	12.0
632		0.87	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	114.0%	0.35	0.075'	0.667'	290.21'	1.23'	291.43'	0.019'	12.00'			6.009'	7.237'	297.444'	CRITICAL	CRITICAL	Yes by 0.11 cfs	17.8
																			#N/A				13.00'			6.500'						
Pump Station Line																																	
620		1.45	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	6225.00'	8"																					
621	0.87	1.45	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	244.99'	4.62'	249.60'	0.019'	12.00'	0.05'	0.053'	6.060'	10.677'	255.664'	CRITICAL	o.k.	Yes by 0.68 cfs	3.3
7211		0.87	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	113.9%	0.35	0.075'	0.667'	255.66'	1.55'	257.21'	0.019'	12.00'			6.009'	7.556'	263.220'	CRITICAL	CRITICAL	Yes by 0.11 cfs	9.6
7212		0.87	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	114.1%	0.35	0.074'	0.667'	263.22'	1.11'	264.33'	0.019'	12.00'	0.05'		6.033'	7.147'	270.367'	CRITICAL	CRITICAL	Yes by 0.11 cfs	15.8
7213		0.87	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	155.8%	0.35	0.040'	0.667'	270.37'	1.21'	271.57'	0.010'	12.00'			6.005'	7.212'	277.579'	CRITICAL	CRITICAL	Yes by 0.31 cfs	22.4
7214		0.87	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	114.0%	0.35	0.075'	0.667'	277.58'	1.33'	278.91'	0.019'	12.00'	0.05'		6.033'	7.364'	284.942'	CRITICAL	CRITICAL	Yes by 0.11 cfs	28.2
7215		0.87	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	81.3%	0.35	0.181'	0.450'	284.94'	0.29'	285.23'	0.045'	12.00'			6.023'	6.314'	291.256'	CRITICAL	CRITICAL	no	33.8
7216		0.87	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	113.9%	0.35	0.075'	0.667'	291.26'	2.14'	293.40'	0.019'	12.00'	0.05'		6.033'	8.173'	299.430'	CRITICAL	CRITICAL	Yes by 0.11 cfs	40.2
7217		0.87	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	26.8%	0.35	0.952'	0.230'	299.43'	0.55'	299.98'	0.238'	12.00'			6.119'	6.667'	306.096'	CRITICAL	CRITICAL	no	41.3
* Information referenced from the Salmon Creek Interceptor Analysis																																	
94th Street Trunk																																	
152		3.44	MH 52		00+00.00	00+00.00	156.06	155.80	22																								
719		0.87	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0599	5.81	15.0%	0.55	0.863'	0.208'	158.28'	0.26'	162.11'	0.216'	0.28'	0.13'		0.311'	0.575'	162.419'	o.k.		no	
720		0.87	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	16.5%	0.55	0.789'	0.225'	162.42'	0.99'	181.86'	0.197'	0.12'			0.157'	1.150'	182.012'	o.k.		no	
721		0.87	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	30.1%	0.55	0.335'	0.313'	182.01'	0.68'	187.73'	0.084'	0.04'			0.060'	0.738'	187.793'	o.k.		no	
722		0.87	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	262.00'	12"	0.0022	0.0037	2.16	40.4%	0.79	0.105'	0.440'	187.86'	0.19'	188.89'	0.026'	0.02'			0.026'	0.213'	188.916'	o.k.		no	
723		0.87	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	51.9%	0.79	0.071'	0.500'	188.95'	0.25'	189.90'	0.018'	0.03'			0.021'	0.276'	189.921'	o.k.		no	
724		0.87	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	52.2%	0.79	0.072'	0.510'	189.92'	0.16'	190.51'	0.018'	0.03'			0.024'	0.184'	190.534'	o.k.		no	
724A		0.87	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	46.3%	0.79	0.086'	0.475'	190.53'	0.10'	190.93'	0.022'	0.03'			0.026'	0.125'	190.951'	o.k.		no	
725		0.87	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	75.1%	0.55	0.085'	0.533'	190.98'	0.41'	191.87'	0.021'	0.03'			0.025'	0.440'	191.899'	o.k.		no	
726		0.87	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	75.2%	0.55	0.084'	0.533'	191.90'	0.42'	192.77'	0.021'	0.03'			0.024'	0.445'	192.798'	o.k.		no	
727		0.87	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	78.0%	0.55	0.079'	0.542'	192.80'	0.52'	193.83'	0.020'	0.03'			0.026'	0.551'	193.858'	o.k.		no	
728		0.87	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	71.1%	0.55	0.092'	0.513'	193.86'	0.37'	194.67'	0.023'	0.03'			0.026'	0.398'	194.699'	o.k.		no	
729		0.87	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	75.4%	0.55	0.084'	0.533'	194.70'	0.44'	195.62'	0.021'	0.00'			0.010'	0.447'	195.634'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. in	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.78	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.78	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	18.8%	1.23	3.792'	0.356'	10.33' *	0.98'	23.38'	0.948'	1.22'	0.80'		1.481'	2.460'	24.858'	o.k.		no	
102		4.78	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	20.3%	1.23	3.481'	0.375'	24.86'	0.90'	36.76'	0.870'	1.61'			1.240'	2.136'	37.995'	o.k.		no	
103		4.78	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	16.6%	1.23	4.601'	0.338'	38.00'	0.79'	52.08'	1.150'	0.10'	1.31'		1.279'	2.069'	53.357'	o.k.		no	
104		4.78	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	104.6%	1.23	0.277'	1.081'	53.36'	0.74'	54.10'	0.069'	0.10'	0.04'		0.104'	0.847'	54.204'	CRITICAL		Yes by 0.21 cfs	0.2
105		4.78	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	104.9%	1.23	0.275'	1.081'	54.20'	0.74'	54.94'	0.069'	0.23'	0.02'		0.160'	0.899'	55.104'	CRITICAL		Yes by 0.22 cfs	0.0
106		4.78	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	63.0%	1.23	0.653'	0.713'	55.10'	0.75'	56.51'	0.163'	0.44'	0.08'		0.343'	1.096'	56.855'	o.k.		no	
107		4.78	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	41.0%	1.23	1.250'	0.550'	56.86'	0.67'	60.11'	0.313'	0.10'	0.16'		0.287'	0.952'	60.397'	o.k.		no	
108		4.78	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	103.9%	1.23	0.283'	1.050'	60.81'	0.66'	61.60'	0.071'	0.10'	0.04'		0.106'	0.762'	61.706'	o.k.		Yes by 0.18 cfs	
109	0.09	4.78	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	104.0%	1.23	0.283'	1.050'	61.80'	0.76'	62.71'	0.071'	0.18'	0.16'	0.005'	0.208'	0.964'	62.918'	o.k.		Yes by 0.18 cfs	
110		4.68	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	72.5%	1.23	0.512'	0.781'	62.92'	1.14'	65.24'	0.128'	0.18'	0.15'		0.226'	1.368'	65.467'	o.k.		no	
111		4.68	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	72.7%	1.23	0.508'	0.781'	65.47'	1.23'	68.22'	0.127'	0.14'			0.133'	1.363'	68.355'	o.k.		no	
112		4.68	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	84.0%	1.23	0.399'	0.863'	69.05'	1.51'	71.72'	0.100'	0.17'	0.06'		0.168'	1.673'	71.890'	o.k.		no	
113		4.68	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	74.3%	1.23	0.491'	0.800'	71.89'	1.06'	74.19'	0.123'	0.17'	0.11'		0.203'	1.267'	74.393'	o.k.		no	
114		4.68	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	74.3%	1.23	0.492'	0.800'	74.40'	1.09'	76.80'	0.123'	0.07'			0.095'	1.189'	76.895'	o.k.		no	
115	0.23	4.68	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	109.5%	1.23	0.189'	1.250'	79.90'	0.94'	80.84'	0.047'	0.11'		0.008'	0.082'	1.025'	80.925'	CRITICAL		Yes by 0.41 cfs	0.2
116		4.46	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	92.1%	1.23	0.311'	0.938'	80.93'	0.92'	81.84'	0.078'	0.03'			0.056'	0.972'	81.897'	o.k.		no	
117	0.05	4.46	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	144.0%	1.23	0.099'	1.250'	82.32'	1.28'	83.60'	0.025'	0.04'	0.01'	0.001'	0.037'	1.317'	83.637'	CRITICAL		Yes by 1.35 cfs	0.7
118		4.41	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	136.2%	1.23	0.108'	1.250'	83.64'	0.41'	84.04'	0.027'	0.17'			0.101'	0.507'	84.144'	CRITICAL		Yes by 1.17 cfs	0.7
119		4.41	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	68.2%	1.23	0.498'	0.756'	84.14'	1.26'	86.23'	0.125'	0.12'			0.122'	1.381'	86.348'	o.k.		no	
120	0.09	4.41	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	86.4%	1.23	0.340'	0.894'	86.56'	0.38'	87.20'	0.085'	0.12'		0.006'	0.104'	0.482'	87.308'	o.k.		no	
121		4.32	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	84.8%	1.23	0.335'	0.875'	87.39'	0.86'	88.90'	0.084'	0.11'			0.099'	0.963'	88.994'	o.k.		no	
122	0.05	4.32	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	85.7%	1.23	0.328'	0.875'	89.78'	0.92'	91.36'	0.082'	0.13'	0.04'	0.003'	0.129'	1.051'	91.484'	o.k.		no	
123		4.27	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	78.3%	1.23	0.374'	0.831'	91.51'	0.64'	92.80'	0.094'	0.13'			0.111'	0.755'	92.913'	o.k.		no	
124		4.27	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	78.9%	1.23	0.369'	0.831'	93.00'	0.55'	94.09'	0.092'	0.13'			0.110'	0.662'	94.201'	o.k.		no	
125		4.27	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	79.4%	1.23	0.365'	0.831'	94.29'	0.40'	95.07'	0.091'	0.13'	0.05'		0.138'	0.537'	95.209'	o.k.		no	
126		4.27	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	78.8%	1.23	0.370'	0.831'	95.27'	1.35'	97.95'	0.093'	0.17'	0.03'		0.146'	1.499'	98.097'	o.k.		no	
127		4.27	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	66.0%	1.23	0.486'	0.725'	98.10'	0.99'	100.63'	0.122'	0.19'	0.06'		0.186'	1.176'	100.811'	o.k.		no	
128		4.27	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	62.3%	1.23	0.534'	0.713'	100.81'	1.02'	103.72'	0.133'	0.04'	0.17'		0.167'	1.184'	103.890'	o.k.		no	
129		4.27	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	135.5%	1.23	0.102'	1.250'	105.25'	0.86'	106.11'	0.026'	0.11'	0.03'		0.085'	0.945'	106.195'	CRITICAL		Yes by 1.12 cfs	0.4
130		4.27	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	85.0%	1.23	0.327'	0.875'	106.19'	1.09'	107.45'	0.082'	0.11'			0.096'	1.187'	107.541'	o.k.		no	
131		4.27	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	87.0%	1.23	0.314'	0.894'	107.66'	0.50'	108.49'	0.079'	0.08'			0.078'	0.575'	108.572'	o.k.		no	
132		4.27	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	104.4%	1.23	0.223'	1.081'	113.83'	1.04'	115.06'	0.056'	0.08'			0.068'	1.103'	115.129'	o.k.		Yes by 0.19 cfs	
133		4.27	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	103.7%	1.23	0.228'	1.050'	115.23'	0.56'	115.91'	0.057'	0.08'			0.068'	0.630'	115.978'	o.k.		Yes by 0.15 cfs	
134		4.27	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	103.7%	1.23	0.228'	1.050'	116.11'	0.56'	116.79'	0.057'	0.08'			0.068'	0.630'	116.858'	o.k.		Yes by 0.15 cfs	
135		4.27	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	103.7%	1.23	0.228'	1.050'	116.99'	0.56'	117.67'	0.057'	0.08'			0.066'	0.628'	117.736'	o.k.		Yes by 0.15 cfs	
136		4.27	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	105.8%	1.23	0.216'	1.081'	117.90'	0.99'	119.04'	0.054'	0.04'			0.045'	1.032'	119.087'	o.k.		Yes by 0.24 cfs	
137		4.27	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	134.2%	1.23	0.104'	1.250'	120.44'	1.40'	121.84'	0.026'	0.03'			0.030'	1.429'	121.869'	CRITICAL		Yes by 1.09 cfs	0.6
138	0.61	4.27	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	140.1%	1.23	0.096'	1.250'	121.87'	0.96'	122.83'	0.024'	0.03'	0.01'	0.012'	0.040'	0.997'	122.866'	CRITICAL		Yes by 1.22 cfs	0.9
139		3.66	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	120.3%	1.23	0.095'	1.250'	122.87'	0.48'	123.34'	0.024'	0.15'	0.01'		0.094'	0.570'	123.437'	CRITICAL		Yes by 0.62 cfs	1.1
140		3.66	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	57.3%	1.23	0.442'	0.669'	123.44'	0.39'	123.82'	0.110'	0.13'	0.28'		0.260'	0.646'	124.082'	CRITICAL		no	0.1
141		3.66	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	65.3%	1.23	0.365'	0.725'	124.08'	0.56'	124.89'	0.091'	0.12'	0.05'		0.133'	0.698'	125.018'	o.k.		no	
142		3.66	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	67.7%	1.23	0.345'	0.738'	125.02'	0.30'	125.76'	0.086'	0.09'	0.08'		0.130'	0.433'	125.888'	o.k.		no	
143		3.66	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	114.5%	0.79	0.257'	1.000'	127.22'	2.05'	129.27'	0.064'	0.24'	0.06'		0.181'	2.231'	129.451'	CRITICAL		Yes by 0.47 cfs	0.5
1431		3.66	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	77.4%	0.79	0.682'	0.650'	129.45'	0.39'	129.84'	0.171'	0.05'	0.23'		0.223'	0.612'	130.063'	CRITICAL		no	0.1
1432		3.66	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	152.2%	0.79	0.146'	1.000'	130.06'	0.90'	130.96'	0.036'	0.09'			0.061'	0.961'	131.023'	CRITICAL		Yes by 1.26 cfs	0.7
144		3.66	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	84.3%	1.23	0.244'	0.875'	131.02'	0.14'	131.16'	0.061'	0.09'	0.15'		0.152'	0.289'	131.312'	CRITICAL		no	0.9
145		3.66	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	12"	0.0080	0.0080	3.20	114.6%	0.79	0.257'	1.000'	131.31'	2.42'	133.73'	0.064'	0.10'	0.05'		0.107'	2.524'	133.836'	CRITICAL		Yes by 0.47 cfs	1.9
146		3.66	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	12"	0.0080	0.0086	3.31	110.8%	0.79	0.275'	1.000'	133.84'	2.11'	135.95'	0.069'	0.08'	0.18'		0.161'	2.274'	136.110'	CRITICAL		Yes by 0.36 cfs	2.3
147		3.66	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	12"	0.0080	0.0068	2.94	124.5%	0.79	0.218'	1.000'	136.11'	2.47'	138.58'	0.054'	0.08'	0.12'		0.128'	2.597'	138.706'	CRITICAL		Yes by 0.72 cfs	3.2
148		3.66	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	12"	0.0080	0.0072	3.04	120.5%	0.79	0.233'	1.000'	138.71'	1.10'	139.80'	0.058'	0.03'	0.06'		0.076'	1.174'	139.881'	CRITICAL		Yes by 0.62 cfs	3.6
149		3.66	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	12"	0.0080	0.0029	1.91	191.4%	0.79	0.092'	1.000'	139.88'	1.35'	141.23'	0.023'	0.09'	0.01'		0.062'	1.411'	141.292'	CRITICAL		Yes by 1.75 cfs	4.7
150		3.66	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	114.6%	0.79	0.257'	1.000'	141.29'	2.42'	143.71'	0.064'	0.15'	0.04'		0.129'	2.546'	143.838'	CRITICAL		Yes by 0.47 cfs	5.3
151		3.66	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	100.2%	0.79	0.437'	0.820'	143.84'	0.84'	144.68'	0.109'	1.38'	0.17'		0.829'	1.672'	145.509'	CRITICAL		Yes by 0.01 cfs	5.0
152	0.73	3.66	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	23.7%	0.79	3.947'	0.320'	145.51'	1.47'	156.12'	0.987'	0.07'	2.53'	0.731'	2.157'	3.622'	158.277'	o.k.		no	
201		2.94	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	72.5%	1.23	0.201'	0.781'	158.28'	0.15'	158.43'	0.050'	0.16'	0.07'		0.138'	0.287'	158.564'	CRITICAL		no	0.8
202		2.94	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	42.5%	1.23	0.454'	0.563'	158.56'	0.27'	158.84'	0.113'	0.29'	0.06'		0.231'	0.505'	159.069'	o.k.		no	
203		2.94	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	28.2%	1.23	0.828'	0.450'	159.07'	0.19'	160.24'	0.207'	0.07'			0.139'	0.328'	160.379'	o.k.		no	
204		2.94	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	71.6%	1.23	0.202'	0.769'	160.66'	0.56'	161.95'	0.051'	0.07'			0.061'	0.621'	162.009'	o.k.		no	
205		2.94	MH 5		09+14.00	09+14.00	162.54	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	71.6%	1.23	0.202'	0.769'	162.05'	0.55'	163.31'	0.051'	0.07'			0.061'	0.607'	163.369'	o.k.		no	
206		2.94	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	71.7%	1.23	0.202'	0.769'	163.41'	0.67'	164.94'	0.050'	0.07'	0.13'		0.125'	0.791'	165.064'	o.k.		no	
207	0.25	2.94	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	71.6%	1.23	0.202'	0.769'	165.06'	0.89'	167.09'	0.051'	0.07'	0.10'	0.015'	0.119'	1.010'	167.208'	o.k.		no	
208		2.69	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	65.7%	1.23	0.194'	0.725'	167.21'	0.49'	168.44'	0.049'	0.03'			0.038'	0.529'	168.473'	o.k.		no	
209		2.69	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	12"	0.0025	0.0024	1.75	153.2%	0.79	0.077'	1.000'	168.81'	2.06'	170.87'	0.019'	0.03'			0.023'	2.080'	170.890'	CRITICAL		Yes by 0.93 cfs	1.2
210		2.69	MH 10		28+27.00	28+27.00	169.59	169.59		0.10'	330.00'	12"	0.0025	0.0024	1.76	152.8%	0.79	0.078'	1.000'	170.89'	1.86'	172.75'	0.019'	0.03'			0.023'	1.883'	172.773'	CRITICAL		Yes by 0.93 cfs	2.2
211		2.69	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	153.6%	0.79	0.077'	1.000'	172.77'	1.69'	174.46'	0.019'	0.03'	0.01'		0.031'	1.721'	174.494'	CRITICAL		Yes by 0.94 cfs	3.1
212		2.69	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	12"	0.0025	0.0024	1.76	152.8%	0.79	0.078'	1.000'	174.49'	1.14'	175.63'	0.019'	0.04'			0.031'	1.169'	175.664'	CRITICAL		Yes by 0.93 cfs	3.6
301		2.69	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	121.9%	0.79	0.122'	1.000'	175.66'	1.11'	176.77'	0.031'	0.04'			0.035'	1.145'	176.809'	CRITICAL		Yes by 0.48 cfs	3.5
302		2.69	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	127.1%	0.79	0.113'	1.000'	176.81'	1.74'	178.54'	0.028'	0.04'			0.034'	1.769'	178.578'	CRITICAL		Yes by 0.57 cfs	4.0
303	0.30	2.69	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	127.1%	0.79	0.113'	1.000'	178.58'	1.74'	180.31'	0.028'	0.09'		0.011'	0.064'	1.800'	180.378'	CRITICAL		Yes by 0.57 cfs	4.5
304		2.39	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	83.9%	0.79	0.253'	0.690'	180.38'	1.09'	181.46'	0.063'	0.04'			0.051'	1.137'	181.515'	CRITICAL		no	3.5
305		2.39	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	112.8%	0.79	0.112'	1.000'	181.52'	1.32'	182.83'	0.028'	0.04'			0.034'	1.351'	182.867'	CRITICAL		Yes by 0.27 cfs	3.6
306		2.39	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	113.0%	0.79	0.112'	1.000'	182.87'	1.04'	183.91'	0.028'	0.04'	0.07'		0.070'	1.113'	183.979'	CRITICAL		Yes by 0.27 cfs	3.7
307		2.39	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	111.5%	0.79	0.115'	1.000'	183.98'	0.24'	184.21'	0.029'	0.03'			0.031'	0.266'	184.246'	CRITICAL		Yes by 0.25 cfs	3.6
308		2.39	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	121.8%	0.79	0.097'	1.000'	184.25'	1.95'	186.19'	0.024'	0.03'			0.029'	1.977'	186.222'	CRITICAL		Yes by 0.43 cfs	4.0
309		2.39	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	122.4%	0.79	0.096'	1.000'	186.22'	0.95'	187.18'	0.024'	0.03'			0.029'	0.983'	187.205'	CRITICAL		Yes by 0.44 cfs	4.2
401		2.39	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	121.9%	0.79	0.096'	1.000'	187.21'	1.77'	188.98'	0.024'	0.16'			0.091'	1.866'	189.071'	CRITICAL		Yes by 0.43 cfs	4.6
402		2.39	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	91.5%	0.55	0.453'	0.613'	189.07'	3.29'	192.66'	0.113'	0.07'			0.090'	3.384'	192.753'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. in	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.39	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	124.5%	0.55	0.191'	0.833'	192.98'	4.10'	197.09'	0.048'	0.13'			0.089'	4.193'	197.176'	CRITICAL		Yes by 0.47 cfs	1.4
404		2.39	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	101.6%	0.55	0.374'	0.683'	197.18'	0.06'	197.24'	0.094'	0.03'			0.063'	0.126'	197.303'	CRITICAL		Yes by 0.04 cfs	1.3
501	0.57	2.39	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	8"	0.0076	0.0050	0.86	278.4%	0.35	0.094'	0.667'	200.10'	13.48'	213.58'	0.023'	0.03'		0.021'	0.038'	13.519'	213.616'	CRITICAL		Yes by 1.53 cfs	11.7
502		1.81	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	8"	0.0050	0.0049	0.85	214.1%	0.35	0.091'	0.667'	213.62'	8.02'	221.63'	0.023'	0.10'			0.061'	8.077'	221.693'	CRITICAL		Yes by 0.97 cfs	18.0
503		1.81	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	8"	0.0150	0.0150	1.48	122.1%	0.35	0.281'	0.667'	221.69'	6.35'	228.04'	0.070'	0.03'			0.048'	6.395'	228.088'	CRITICAL		Yes by 0.33 cfs	13.8
504		1.81	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	8"	0.0040	0.0040	0.77	236.7%	0.35	0.075'	0.667'	228.09'	8.91'	237.00'	0.019'	0.03'			0.022'	8.930'	237.018'	CRITICAL		Yes by 1.05 cfs	20.7
505		1.81	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	8"	0.0040	0.0040	0.77	236.7%	0.35	0.075'	0.667'	237.02'	8.91'	245.93'	0.019'	0.04'			0.030'	8.938'	245.956'	CRITICAL		Yes by 1.05 cfs	28.1
601		1.81	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	8"	0.0050	0.0063	0.96	188.1%	0.35	0.118'	0.667'	245.96'	7.10'	253.06'	0.030'	0.02'	0.08'		0.065'	7.169'	253.125'	CRITICAL		Yes by 0.85 cfs	33.2
602		1.81	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	155.9%	0.55	0.071'	0.833'	253.12'	1.79'	254.91'	0.018'	0.02'	0.05'		0.044'	1.833'	254.958'	CRITICAL		Yes by 0.65 cfs	33.8
603		1.81	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	155.8%	0.55	0.071'	0.833'	254.96'	2.10'	257.06'	0.018'	0.02'			0.021'	2.123'	257.081'	CRITICAL		Yes by 0.65 cfs	35.0
604		1.81	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	156.3%	0.55	0.070'	0.833'	257.08'	2.50'	259.58'	0.018'	0.02'			0.021'	2.523'	259.603'	CRITICAL		Yes by 0.65 cfs	36.4
605		1.81	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	155.5%	0.55	0.071'	0.833'	259.60'	1.44'	261.05'	0.018'	0.02'			0.021'	1.465'	261.068'	CRITICAL		Yes by 0.65 cfs	37.2
606		1.81	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	156.0%	0.55	0.071'	0.833'	261.07'	2.20'	263.27'	0.018'	0.02'			0.021'	2.224'	263.293'	CRITICAL		Yes by 0.65 cfs	38.4
607		1.81	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	155.9%	0.55	0.071'	0.833'	263.29'	1.96'	265.25'	0.018'	0.02'	0.05'		0.044'	2.003'	265.296'	CRITICAL		Yes by 0.65 cfs	39.5
608		1.81	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	156.2%	0.55	0.070'	0.833'	265.30'	2.55'	267.84'	0.018'	0.02'	0.05'		0.044'	2.593'	267.888'	CRITICAL		Yes by 0.65 cfs	40.9
609		1.81	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	155.8%	0.55	0.071'	0.833'	267.89'	1.93'	269.82'	0.018'	0.02'			0.021'	1.953'	269.842'	CRITICAL		Yes by 0.65 cfs	42.0
610		1.81	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	156.1%	0.55	0.070'	0.833'	269.84'	1.82'	271.66'	0.018'	0.02'			0.021'	1.838'	271.680'	CRITICAL		Yes by 0.65 cfs	43.0
611	0.27	1.81	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	156.2%	0.55	0.070'	0.833'	271.68'	2.64'	274.32'	0.018'	0.03'	0.04'	0.009'	0.047'	2.691'	274.371'	CRITICAL		Yes by 0.65 cfs	44.4
612		1.55	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	123.3%	0.55	0.082'	0.833'	274.37'	1.07'	275.44'	0.021'	0.02'	0.05'		0.043'	1.116'	275.487'	CRITICAL		Yes by 0.29 cfs	44.8
613		1.55	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	147.2%	0.55	0.058'	0.833'	275.49'	1.60'	277.08'	0.014'	0.02'			0.020'	1.615'	277.102'	CRITICAL		Yes by 0.50 cfs	45.5
614		1.55	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	132.6%	0.55	0.071'	0.833'	277.10'	1.33'	278.43'	0.018'	0.02'			0.021'	1.350'	278.452'	CRITICAL		Yes by 0.38 cfs	46.0
615		1.55	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	133.1%	0.55	0.070'	0.833'	278.45'	1.59'	280.04'	0.018'	0.02'			0.021'	1.606'	280.058'	CRITICAL		Yes by 0.38 cfs	46.6
616		1.55	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	132.9%	0.55	0.071'	0.833'	280.06'	1.86'	281.92'	0.018'	0.03'			0.022'	1.883'	281.941'	CRITICAL		Yes by 0.38 cfs	47.3
617		1.55	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	201.7%	0.35	0.075'	0.667'	281.94'	5.18'	287.12'	0.019'	0.15'			0.085'	5.261'	287.202'	CRITICAL		Yes by 0.78 cfs	51.1
618		1.55	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	95.1%	0.35	0.434'	0.510'	287.20'	4.14'	291.34'	0.108'	0.03'			0.067'	4.209'	291.411'	CRITICAL		no	49.3
619		1.55	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	201.7%	0.35	0.075'	0.667'	291.41'	4.85'	296.26'	0.019'	0.03'			0.022'	4.874'	296.286'	CRITICAL		Yes by 0.78 cfs	52.9
620		1.55	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	201.7%	0.35	0.075'	0.667'	296.29'	5.74'	302.03'	0.019'	#REF!			#REF!	#REF!	#REF!				
621	0.93	1.55	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	201.7%	0.35	0.075'	0.667'	#REF!	#VALUE!			0.00'	0.05'	0.053'	0.051'			CRITICAL		
622		0.93	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	109.9%	0.35	0.092'	0.667'	246.35'	1.14'	247.53'	0.023'	1.00'	0.06'		0.541'	1.682'	248.068'	CRITICAL	o.k.	Yes by 0.08 cfs	0.2
623		0.93	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	109.8%	0.35	0.092'	0.667'	248.07'	1.96'	250.03'	0.023'	2.00'			1.011'	2.976'	251.044'	CRITICAL	o.k.	Yes by 0.08 cfs	1.0
624		0.93	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	110.1%	0.35	0.091'	0.667'	251.04'	1.47'	252.51'	0.023'	3.00'			1.511'	2.981'	254.025'	CRITICAL	o.k.	Yes by 0.09 cfs	2.1
624		0.93	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	109.9%	0.35	0.092'	0.667'	254.03'	1.45'	255.48'	0.023'	4.00'	0.02'		2.022'	3.474'	257.499'	CRITICAL	o.k.	Yes by 0.08 cfs	3.8
625		0.93	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	110.1%	0.35	0.091'	0.667'	257.50'	1.68'	259.18'	0.023'	5.00'			2.511'	4.187'	261.687'	CRITICAL	o.k.	Yes by 0.09 cfs	6.0
626		0.93	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	121.6%	0.35	0.075'	0.667'	261.69'	0.53'	262.22'	0.019'	6.00'			3.009'	3.539'	265.225'	CRITICAL	CRITICAL	Yes by 0.17 cfs	8.1
627		0.93	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	62.8%	0.35	0.309'	0.380'	265.23'	1.38'	266.61'	0.077'	7.00'			3.539'	4.919'	270.144'	CRITICAL	CRITICAL	no	4.5
628		0.93	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	50.3%	0.35	0.438'	0.333'	270.14'	1.68'	271.82'	0.109'	8.00'	0.28'		4.195'	5.871'	276.015'	CRITICAL	CRITICAL	no	3.0
629		0.93	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	121.6%	0.35	0.075'	0.667'	276.01'	0.88'	276.90'	0.019'	9.00'	0.05'		4.533'	5.415'	281.430'	CRITICAL	CRITICAL	Yes by 0.17 cfs	7.4
630		0.93	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	63.9%	0.35	0.299'	0.380'	281.43'	0.73'	282.16'	0.075'	10.00'			5.037'	5.770'	287.200'	CRITICAL	CRITICAL	no	10.5
631		0.93	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	65.6%	0.35	0.289'	0.387'	287.20'	0.33'	287.53'	0.072'	11.00'	0.18'		5.629'	5.962'	293.162'	CRITICAL	CRITICAL	no	14.9
632		0.93	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	121.7%	0.35	0.075'	0.667'	293.16'	1.40'	294.56'	0.019'	12.00'			6.009'	7.409'	300.571'	CRITICAL	CRITICAL	Yes by 0.17 cfs	20.9
																			#N/A				13.00'			6.500'						
Pump Station Line																																	
620		1.55	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	6225.00'	8"																					
621	0.93	1.55	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	201.7%	0.35	0.075'	0.667'	244.99'	5.26'	250.24'	0.019'	12.00'	0.05'	0.053'	6.060'	11.316'	256.303'	CRITICAL	o.k.	Yes by 0.78 cfs	4.0
7211		0.93	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	121.6%	0.35	0.075'	0.667'	256.30'	1.76'	258.07'	0.019'	12.00'			6.009'	7.773'	264.076'	CRITICAL	CRITICAL	Yes by 0.17 cfs	10.5
7212		0.93	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	121.9%	0.35	0.074'	0.667'	264.08'	1.27'	265.35'	0.019'	12.00'	0.05'		6.033'	7.303'	271.380'	CRITICAL	CRITICAL	Yes by 0.17 cfs	16.8
7213		0.93	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	166.4%	0.35	0.040'	0.667'	271.38'	1.38'	272.76'	0.010'	12.00'			6.005'	7.381'	278.761'	CRITICAL	CRITICAL	Yes by 0.37 cfs	23.6
7214		0.93	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	121.7%	0.35	0.075'	0.667'	278.76'	1.52'	280.28'	0.019'	12.00'	0.05'		6.033'	7.550'	286.311'	CRITICAL	CRITICAL	Yes by 0.17 cfs	29.6
7215		0.93	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	86.8%	0.35	0.186'	0.477'	286.31'	0.33'	286.64'	0.047'	12.00'			6.023'	6.350'	292.661'	CRITICAL	CRITICAL	no	35.2
7216		0.93	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	121.6%	0.35	0.075'	0.667'	292.66'	2.44'	295.10'	0.019'	12.00'	0.05'		6.033'	8.474'	301.134'	CRITICAL	CRITICAL	Yes by 0.17 cfs	41.9
7217		0.93	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	28.6%	0.35	0.998'	0.240'	301.13'	0.60'	301.73'	0.250'	12.00'			6.125'	6.723'	307.858'	CRITICAL	CRITICAL	no	43.1
* Information referenced from the Salmon Creek Interceptor Analysis																																	
94th Street Trunk																																	
152		3.66	MH 52		00+00.00	00+00.00	156.06	155.80	22																								
719		0.93	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	16.0%	0.55	0.952'	0.225'	158.26'	0.28'	162.13'	0.238'	0.28'	0.14'		0.328'	0.608'	162.453'	o.k.			no
720		0.93	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	17.6%	0.55	0.789'	0.225'	162.45'	1.13'	181.86'	0.197'	0.12'			0.159'	1.292'	182.014'	o.k.			no
721		0.93	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	32.2%	0.55	0.347'	0.321'	182.02'	0.75'	187.74'	0.087'	0.04'			0.062'	0.811'	187.803'	o.k.			no
722		0.93	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	43.2%	0.79	0.108'	0.450'	187.87'	0.21'	188.90'	0.027'	0.03'			0.026'	0.234'	188.926'	o.k.			no
723		0.93	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	55.4%	0.79	0.074'	0.525'	188.98'	0.28'	189.93'	0.019'	0.03'			0.022'	0.301'	189.947'	o.k.			no
724		0.93	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	55.7%	0.79	0.073'	0.525'	189.95'	0.18'	190.53'	0.018'	0.03'			0.025'	0.203'	190.550'	o.k.			no
724A		0.93	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	49.4%	0.79	0.088'	0.490'	190.55'	0.11'	190.94'	0.022'	0.03'			0.026'	0.138'	190.966'	o.k.			no
725		0.93	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	80.2%	0.55	0.087'	0.563'	191.01'	0.46'	191.90'	0.022'	0.03'			0.026'	0.485'	191.929'	o.k.			no
726		0.93	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	80.3%	0.55	0.087'	0.563'	191.93'	0.47'	192.80'	0.022'	0.03'			0.025'	0.491'	192.828'	o.k.			no
727		0.93	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	83.3%	0.55	0.081'	0.575'	192.83'	0.58'	193.87'	0.020'	0.03'			0.027'	0.608'	193.892'	o.k.			no
728		0.93	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	75.9%	0.55	0.094'	0.533'	193.89'	0.41'	194.69'	0.024'	0.03'			0.027'	0.441'	194.720'	o.k.			no
729		0.93	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	80.5%	0.55	0.086'	0.563'	194.72'	0.48'	195.65'	0.022'	0.00'			0.011'	0.495'	195.663'	o.k.			no

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		5.17	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		5.17	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	20.4%	1.23	4.047'	0.375'	14.48' *	1.07'	23.40'	1.012'	1.22'	0.85'		1.540'	2.613'	24.935'	o.k.		no	
102		5.17	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	22.0%	1.23	3.481'	0.375'	24.93'	1.05'	36.76'	0.870'	1.70'			1.285'	2.336'	38.040'	o.k.		no	
103		5.17	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	18.0%	1.23	4.855'	0.356'	38.04'	0.87'	52.10'	1.214'	0.08'	1.38'		1.336'	2.207'	53.433'	o.k.		no	
104		5.17	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	113.3%	1.23	0.215'	1.250'	53.43'	1.13'	54.56'	0.054'	0.07'	0.03'		0.080'	1.206'	54.638'	CRITICAL		Yes by 0.61 cfs	0.7
105		5.17	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	113.6%	1.23	0.214'	1.250'	54.64'	1.12'	55.76'	0.053'	0.24'	0.02'		0.155'	1.274'	55.912'	CRITICAL		Yes by 0.62 cfs	0.8
106		5.17	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	68.2%	1.23	0.685'	0.756'	55.91'	0.84'	56.75'	0.171'	0.46'	0.09'		0.361'	1.203'	57.115'	o.k.		no	
107		5.17	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	44.4%	1.23	1.317'	0.581'	57.11'	0.74'	60.14'	0.329'	0.08'	0.17'		0.288'	1.032'	60.430'	o.k.		no	
108		5.17	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	112.6%	1.23	0.218'	1.250'	61.01'	1.00'	62.01'	0.054'	0.08'	0.03'		0.082'	1.080'	62.090'	CRITICAL		Yes by 0.58 cfs	0.2
109	0.10	5.17	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	112.7%	1.23	0.217'	1.250'	62.09'	1.15'	63.24'	0.054'	0.18'	0.12'	0.004'	0.183'	1.334'	63.423'	CRITICAL		Yes by 0.58 cfs	0.3
110		5.08	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	78.5%	1.23	0.526'	0.831'	63.42'	1.30'	65.29'	0.132'	0.18'	0.15'		0.232'	1.535'	65.523'	o.k.		no	
111		5.08	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	78.8%	1.23	0.523'	0.831'	65.52'	1.40'	68.27'	0.131'	0.14'			0.137'	1.540'	68.408'	o.k.		no	
112		5.08	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	91.0%	1.23	0.410'	0.919'	69.11'	1.73'	71.78'	0.102'	0.18'	0.07'		0.172'	1.900'	71.951'	o.k.		no	
113		5.08	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	80.5%	1.23	0.505'	0.844'	71.95'	1.21'	74.23'	0.126'	0.18'	0.11'		0.208'	1.423'	74.442'	o.k.		no	
114		5.08	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	80.5%	1.23	0.506'	0.844'	74.44'	1.25'	76.84'	0.126'	0.07'			0.096'	1.345'	76.940'	o.k.		no	
115	0.25	5.08	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	118.6%	1.23	0.189'	1.250'	79.90'	1.11'	81.01'	0.047'	0.11'		0.008'	0.082'	1.190'	81.090'	CRITICAL		Yes by 0.80 cfs	0.3
116		4.83	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	99.8%	1.23	0.314'	1.000'	81.09'	1.06'	82.15'	0.078'	0.03'			0.057'	1.115'	82.205'	CRITICAL		no	0.0
117	0.05	4.83	MH 17		33+39.50	33+39.50	81.69	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	156.0%	1.23	0.099'	1.250'	82.32'	1.50'	83.82'	0.025'	0.04'	0.01'	0.001'	0.037'	1.540'	83.860'	CRITICAL		Yes by 1.73 cfs	0.9
118		4.78	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	147.6%	1.23	0.108'	1.250'	83.86'	0.48'	84.34'	0.027'	0.18'			0.103'	0.580'	84.440'	CRITICAL		Yes by 1.54 cfs	1.0
119		4.78	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	73.9%	1.23	0.512'	0.781'	84.44'	1.44'	86.25'	0.128'	0.12'			0.125'	1.569'	86.376'	o.k.		no	
120	0.10	4.78	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	93.6%	1.23	0.346'	0.938'	86.61'	0.44'	87.25'	0.087'	0.12'		0.006'	0.106'	0.542'	87.354'	o.k.		no	
121		4.68	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	91.9%	1.23	0.341'	0.919'	87.43'	1.00'	88.94'	0.085'	0.12'			0.102'	1.099'	89.040'	o.k.		no	
122	0.05	4.68	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	92.9%	1.23	0.337'	0.938'	89.84'	1.06'	91.42'	0.084'	0.13'	0.04'	0.003'	0.133'	1.192'	91.550'	o.k.		no	
123		4.63	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	84.9%	1.23	0.385'	0.875'	91.56'	0.74'	92.85'	0.096'	0.13'			0.114'	0.853'	92.959'	o.k.		no	
124		4.63	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	85.5%	1.23	0.379'	0.875'	93.05'	0.63'	94.14'	0.095'	0.13'			0.114'	0.747'	94.249'	o.k.		no	
125		4.63	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	86.0%	1.23	0.378'	0.894'	94.35'	0.46'	95.13'	0.094'	0.13'	0.06'		0.142'	0.598'	95.276'	o.k.		no	
126		4.63	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	85.4%	1.23	0.380'	0.875'	95.32'	1.55'	98.00'	0.095'	0.18'	0.03'		0.151'	1.704'	98.146'	o.k.		no	
127		4.63	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	71.5%	1.23	0.505'	0.769'	98.15'	1.12'	100.67'	0.126'	0.19'	0.07'		0.193'	1.309'	100.862'	o.k.		no	
128		4.63	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	67.6%	1.23	0.554'	0.738'	100.86'	1.15'	103.75'	0.139'	0.04'	0.17'		0.173'	1.325'	103.921'	o.k.		no	
129		4.63	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	146.9%	1.23	0.102'	1.250'	105.25'	1.01'	106.26'	0.026'	0.12'	0.03'		0.086'	1.096'	106.346'	CRITICAL		Yes by 1.48 cfs	0.5
130		4.63	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	92.1%	1.23	0.336'	0.938'	106.35'	1.25'	107.60'	0.084'	0.11'			0.098'	1.351'	107.697'	o.k.		no	
131		4.63	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	94.3%	1.23	0.320'	0.956'	107.73'	0.57'	108.56'	0.080'	0.06'			0.070'	0.641'	108.626'	o.k.		no	
132		4.63	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	113.1%	1.23	0.173'	1.250'	114.00'	1.57'	115.57'	0.043'	0.06'			0.052'	1.620'	115.620'	CRITICAL		Yes by 0.54 cfs	0.3
133		4.63	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	112.4%	1.23	0.175'	1.250'	115.62'	0.85'	116.47'	0.044'	0.06'			0.053'	0.908'	116.527'	CRITICAL		Yes by 0.51 cfs	0.4
134		4.63	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	112.4%	1.23	0.175'	1.250'	116.53'	0.85'	117.38'	0.044'	0.06'			0.053'	0.908'	117.435'	CRITICAL		Yes by 0.51 cfs	0.4
135		4.63	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	112.4%	1.23	0.175'	1.250'	117.43'	0.85'	118.29'	0.044'	0.06'			0.051'	0.906'	118.341'	CRITICAL		Yes by 0.51 cfs	0.4
136		4.63	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	114.7%	1.23	0.168'	1.250'	118.34'	1.49'	119.83'	0.042'	0.04'			0.039'	1.533'	119.874'	CRITICAL		Yes by 0.59 cfs	0.6
137		4.63	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	145.5%	1.23	0.104'	1.250'	120.44'	1.64'	122.08'	0.026'	0.03'			0.030'	1.674'	122.114'	CRITICAL		Yes by 1.45 cfs	0.9
138	0.66	4.63	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	151.8%	1.23	0.096'	1.250'	122.11'	1.12'	123.24'	0.024'	0.03'	0.01'	0.012'	0.040'	1.164'	123.278'	CRITICAL		Yes by 1.58 cfs	1.3
139		3.97	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	130.5%	1.23	0.095'	1.250'	123.26'	0.56'	123.84'	0.024'	0.16'	0.01'		0.098'	0.658'	123.936'	CRITICAL		Yes by 0.93 cfs	1.6
140		3.97	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	62.2%	1.23	0.464'	0.713'	123.94'	0.43'	124.37'	0.116'	0.13'	0.30'		0.273'	0.703'	124.639'	CRITICAL		no	0.7
141		3.97	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	70.8%	1.23	0.378'	0.769'	124.64'	0.64'	125.28'	0.095'	0.13'	0.06'		0.138'	0.775'	125.414'	o.k.		no	
142		3.97	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	73.4%	1.23	0.358'	0.781'	125.41'	0.34'	125.80'	0.090'	0.09'	0.09'		0.134'	0.476'	125.935'	o.k.		no	
143		3.97	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	124.2%	0.79	0.257'	1.000'	127.22'	2.41'	129.63'	0.064'	0.25'	0.06'		0.184'	2.594'	129.814'	CRITICAL		Yes by 0.77 cfs	0.8
1431		3.97	43A		88+39.50	88+39.50	128.38	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	83.9%	0.79	0.701'	0.690'	129.81'	0.44'	130.26'	0.175'	0.05'	0.23'		0.229'	0.673'	130.487'	CRITICAL		no	0.5
1432		3.97	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	165.1%	0.79	0.146'	1.000'	130.45'	1.06'	131.54'	0.036'	0.09'			0.062'	1.119'	131.606'	CRITICAL		Yes by 1.57 cfs	1.3
144		3.97	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	91.4%	1.23	0.249'	0.919'	131.61'	0.16'	131.76'	0.062'	0.09'	0.16'		0.154'	0.312'	131.919'	CRITICAL		no	1.5
145		3.97	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	12"	0.0080	0.0080	3.20	124.2%	0.79	0.257'	1.000'	131.92'	2.84'	134.76'	0.064'	0.10'	0.05'		0.107'	2.948'	134.867'	CRITICAL		Yes by 0.77 cfs	2.9
146		3.97	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	12"	0.0080	0.0086	3.31	120.1%	0.79	0.275'	1.000'	134.87'	2.48'	137.35'	0.069'	0.08'	0.18'		0.161'	2.645'	137.511'	CRITICAL		Yes by 0.66 cfs	3.8
147		3.97	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	12"	0.0080	0.0068	2.94	135.0%	0.79	0.218'	1.000'	137.51'	2.90'	140.41'	0.054'	0.08'	0.12'		0.128'	3.030'	140.541'	CRITICAL		Yes by 1.03 cfs	5.0
148		3.97	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	12"	0.0080	0.0072	3.04	130.6%	0.79	0.233'	1.000'	140.54'	1.29'	141.83'	0.058'	0.03'	0.06'		0.076'	1.367'	141.908'	CRITICAL		Yes by 0.93 cfs	5.7
149		3.97	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	12"	0.0080	0.0029	1.91	207.5%	0.79	0.092'	1.000'	141.91'	1.59'	143.49'	0.023'	0.09'	0.01'		0.062'	1.648'	143.556'	CRITICAL		Yes by 2.06 cfs	7.0
150		3.97	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	124.2%	0.79	0.257'	1.000'	143.56'	2.84'	146.40'	0.064'	0.12'	0.04'		0.112'	2.952'	146.508'	CRITICAL		Yes by 0.77 cfs	8.0
151		3.97	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	108.6%	0.79	0.337'	1.000'	146.51'	1.29'	147.80'	0.084'	1.43'	0.13'		0.823'	2.114'	148.622'	CRITICAL		Yes by 0.31 cfs	8.1
152	0.79	3.97	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	25.7%	0.79	4.095'	0.330'	148.62'	1.65'	156.13'	1.024'	0.07'	2.62'	0.756'	2.236'	3.883'	158.366'	o.k.		no	
201		3.19	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	78.7%	1.23	0.206'	0.831'	158.37'	0.17'	158.54'	0.052'	0.17'	0.07'		0.143'	0.314'	158.680'	CRITICAL		no	0.9
202		3.19	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	46.1%	1.23	0.473'	0.594'	158.68'	0.31'	158.99'	0.118'	0.30'	0.06'		0.240'	0.548'	159.228'	o.k.		no	
203		3.19	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	30.6%	1.23	0.857'	0.469'	159.23'	0.22'	160.26'	0.214'	0.07'			0.144'	0.359'	160.403'	o.k.		no	
204		3.19	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	77.7%	1.23	0.210'	0.813'	160.70'	0.64'	161.99'	0.052'	0.07'			0.063'	0.703'	162.055'	o.k.		no	
205		3.19	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	77.6%	1.23	0.210'	0.813'	162.09'	0.62'	163.35'	0.053'	0.07'			0.063'	0.687'	163.415'	o.k.		no	
206		3.19	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	77.8%	1.23	0.209'	0.813'	163.45'	0.76'	164.98'	0.052'	0.07'	0.13'		0.130'	0.892'	165.112'	o.k.		no	
207	0.27	3.19	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	77.7%	1.23	0.210'	0.813'	165.11'	1.02'	167.13'	0.052'	0.07'	0.11'	0.016'	0.123'	1.142'	167.256'	o.k.		no	
208		2.92	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	71.3%	1.23	0.201'	0.769'	167.26'	0.55'	168.48'	0.050'	0.03'			0.039'	0.593'	168.517'	o.k.		no	
209		2.92	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	12"	0.0025	0.0024	1.75	166.3%	0.79	0.077'	1.000'	168.81'	2.42'	171.23'	0.019'	0.03'			0.023'	2.445'	171.255'	CRITICAL		Yes by 1.16 cfs	1.5
210		2.92	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	12"	0.0025	0.0024	1.76	165.8%	0.79	0.078'	1.000'	171.26'	2.19'	173.44'	0.019'	0.03'			0.023'	2.213'	173.468'	CRITICAL		Yes by 1.16 cfs	2.9
211		2.92	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	166.7%	0.79	0.077'	1.000'	173.47'	1.99'	175.46'	0.019'	0.03'	0.01'		0.031'	2.021'	175.489'	CRITICAL		Yes by 1.17 cfs	4.0
212		2.92	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	12"	0.0025	0.0024	1.76	165.8%	0.79	0.078'	1.000'	175.49'	1.34'	176.83'	0.019'	0.04'			0.031'	1.371'	176.861'	CRITICAL		Yes by 1.16 cfs	4.8
301		2.92	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	132.3%	0.79	0.122'	1.000'	176.86'	1.31'	178.17'	0.031'	0.04'			0.035'	1.342'	178.203'	CRITICAL		Yes by 0.71 cfs	4.9
302		2.92	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	137.9%	0.79	0.113'	1.000'	178.20'	2.04'	180.25'	0.028'	0.04'			0.034'	2.077'	180.280'	CRITICAL		Yes by 0.80 cfs	5.7
303	0.33	2.92	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	137.9%	0.79	0.113'	1.000'	180.28'	2.04'	182.32'	0.028'	0.09'		0.011'	0.065'	2.109'	182.389'	CRITICAL		Yes by 0.80 cfs	6.5
304		2.59	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	91.1%	0.79	0.260'	0.735'	182.39'	1.25'	183.64'	0.065'	0.04'			0.052'	1.303'	183.692'	CRITICAL		no	5.6
305		2.59	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	122.5%	0.79	0.112'	1.000'	183.69'	1.55'	185.24'	0.028'	0.04'			0.034'	1.586'	185.278'	CRITICAL		Yes by 0.47 cfs	6.0
306		2.59	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	122.7%	0.79	0.112'	1.000'	185.28'	1.23'	186.51'	0.028'	0.04'	0.07'		0.070'	1.298'	186.576'	CRITICAL		Yes by 0.48 cfs	6.3
307		2.59	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	121.0%	0.79	0.115'	1.000'	186.58'	0.28'	186.85'	0.029'	0.03'			0.031'	0.308'	186.885'	CRITICAL		Yes by 0.45 cfs	6.2
308		2.59	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	132.2%	0.79	0.097'	1.000'	186.88'	2.29'	189.18'	0.024'	0.03'			0.029'	2.324'	189.208'	CRITICAL		Yes by 0.63 cfs	7.0
309		2.59	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	132.8%	0.79	0.096'	1.000'	189.21'	1.12'	190.33'	0.024'	0.03'			0.029'	1.153'	190.361'	CRITICAL		Yes by 0.64 cfs	7.3
401		2.59	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	132.3%	0.79	0.096'	1.000'	190.36'	2.09'	192.45'	0.024'	0.16'			0.093'	2.184'	192.544'	CRITICAL		Yes by 0.63 cfs	8.1
402		2.59	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	99.3%	0.55	0.461'	0.667'	192.54'	3.80'	196.34'	0.115'	0.07'			0.091'	3.887'	196.432'	CRITICAL		no	3.5

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.59	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	135.2%	0.55	0.191'	0.833'	196.43'	4.83'	201.27'	0.048'	0.10'			0.074'	4.909'	201.341'	CRITICAL		Yes by 0.67 cfs	5.6
404		2.59	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	110.2%	0.55	0.288'	0.833'	201.34'	0.10'	201.44'	0.072'	0.03'			0.052'	0.149'	201.490'	CRITICAL		Yes by 0.24 cfs	5.5
501	0.62	2.59	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	8"	0.0076	0.0050	0.86	302.2%	0.35	0.094'	0.667'	201.49'	15.88'	217.37'	0.023'	0.03'		0.021'	0.038'	15.920'	217.410'	CRITICAL		Yes by 1.73 cfs	15.5
502		1.97	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	8"	0.0050	0.0049	0.85	232.5%	0.35	0.091'	0.667'	217.41'	9.46'	226.87'	0.023'	0.10'			0.061'	9.518'	226.928'	CRITICAL		Yes by 1.12 cfs	23.3
503		1.97	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	8"	0.0150	0.0150	1.48	132.7%	0.35	0.281'	0.667'	226.93'	7.49'	234.42'	0.070'	0.03'			0.048'	7.536'	234.464'	CRITICAL		Yes by 0.48 cfs	20.2
504		1.97	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	8"	0.0040	0.0040	0.77	257.1%	0.35	0.075'	0.667'	234.46'	10.51'	244.97'	0.019'	0.03'			0.022'	10.531'	244.995'	CRITICAL		Yes by 1.20 cfs	28.7
505		1.97	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	8"	0.0040	0.0040	0.77	257.1%	0.35	0.075'	0.667'	244.99'	10.51'	255.50'	0.019'	0.04'			0.030'	10.539'	255.533'	CRITICAL		Yes by 1.20 cfs	37.6
601		1.97	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	8"	0.0050	0.0063	0.96	204.3%	0.35	0.118'	0.667'	255.53'	8.38'	263.91'	0.030'	0.02'	0.08'		0.065'	8.446'	263.979'	CRITICAL		Yes by 1.01 cfs	44.0
602		1.97	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	169.4%	0.55	0.071'	0.833'	263.98'	2.11'	266.09'	0.018'	0.02'	0.05'		0.044'	2.155'	266.134'	CRITICAL		Yes by 0.81 cfs	45.0
603		1.97	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	169.3%	0.55	0.071'	0.833'	266.13'	2.48'	268.61'	0.018'	0.02'			0.021'	2.500'	268.634'	CRITICAL		Yes by 0.81 cfs	46.6
604		1.97	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	169.7%	0.55	0.070'	0.833'	268.63'	2.95'	271.59'	0.018'	0.02'			0.021'	2.972'	271.607'	CRITICAL		Yes by 0.81 cfs	48.4
605		1.97	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	168.9%	0.55	0.071'	0.833'	271.61'	1.70'	273.31'	0.018'	0.02'			0.021'	1.725'	273.331'	CRITICAL		Yes by 0.80 cfs	49.4
606		1.97	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	169.5%	0.55	0.071'	0.833'	273.33'	2.60'	275.93'	0.018'	0.02'			0.021'	2.620'	275.952'	CRITICAL		Yes by 0.81 cfs	51.0
607		1.97	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	169.4%	0.55	0.071'	0.833'	275.95'	2.31'	278.26'	0.018'	0.02'	0.05'		0.044'	2.355'	278.307'	CRITICAL		Yes by 0.81 cfs	52.5
608		1.97	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	169.7%	0.55	0.070'	0.833'	278.31'	3.01'	281.31'	0.018'	0.02'	0.05'		0.044'	3.051'	281.357'	CRITICAL		Yes by 0.81 cfs	54.4
609		1.97	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	169.2%	0.55	0.071'	0.833'	281.36'	2.28'	283.64'	0.018'	0.02'			0.021'	2.300'	283.658'	CRITICAL		Yes by 0.81 cfs	55.8
610		1.97	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	169.5%	0.55	0.070'	0.833'	283.66'	2.14'	285.80'	0.018'	0.02'			0.021'	2.164'	285.822'	CRITICAL		Yes by 0.81 cfs	57.1
611	0.29	1.97	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	169.6%	0.55	0.070'	0.833'	285.82'	3.12'	288.94'	0.018'	0.03'	0.04'	0.009'	0.047'	3.166'	288.989'	CRITICAL		Yes by 0.81 cfs	59.1
612		1.68	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	133.9%	0.55	0.082'	0.833'	288.99'	1.27'	290.26'	0.021'	0.02'	0.05'		0.043'	1.310'	290.299'	CRITICAL		Yes by 0.43 cfs	59.6
613		1.68	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	160.0%	0.55	0.058'	0.833'	290.30'	1.88'	292.18'	0.014'	0.02'			0.020'	1.903'	292.201'	CRITICAL		Yes by 0.63 cfs	60.6
614		1.68	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	144.1%	0.55	0.071'	0.833'	292.20'	1.57'	293.77'	0.018'	0.02'			0.021'	1.591'	293.792'	CRITICAL		Yes by 0.51 cfs	61.3
615		1.68	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	144.6%	0.55	0.070'	0.833'	293.79'	1.87'	295.66'	0.018'	0.02'			0.021'	1.893'	295.685'	CRITICAL		Yes by 0.52 cfs	62.2
616		1.68	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	144.4%	0.55	0.071'	0.833'	295.68'	2.20'	297.88'	0.018'	0.03'			0.022'	2.219'	297.904'	CRITICAL		Yes by 0.52 cfs	63.3
617		1.68	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	219.1%	0.35	0.075'	0.667'	297.90'	6.11'	304.01'	0.019'	0.15'			0.086'	6.196'	304.100'	CRITICAL		Yes by 0.91 cfs	68.0
618		1.68	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	103.3%	0.35	0.438'	0.560'	304.10'	4.86'	308.96'	0.109'	0.03'			0.068'	4.931'	309.031'	CRITICAL		Yes by 0.05 cfs	66.9
619		1.68	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	219.1%	0.35	0.075'	0.667'	309.03'	5.73'	314.76'	0.019'	0.03'			0.022'	5.751'	314.782'	CRITICAL		Yes by 0.91 cfs	71.4
620		1.68	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	219.1%	0.35	0.075'	0.667'	314.78'	6.78'	321.56'	0.019'	#REF!			#REF!	#REF!	#REF!				
621	1.01	1.68	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	219.1%	0.35	0.075'	0.667'	#REF!	#VALUE!			0.00'	0.05'	0.053'	0.051'			CRITICAL		
622		1.01	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	119.6%	0.35	0.092'	0.667'	246.39'	1.35'	247.74'	0.023'	1.00'	0.06'		0.541'	1.891'	248.277'	CRITICAL	o.k.	Yes by 0.17 cfs	0.4
623		1.01	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	119.4%	0.35	0.092'	0.667'	248.28'	2.32'	250.60'	0.023'	2.00'			1.011'	3.336'	251.613'	CRITICAL	o.k.	Yes by 0.16 cfs	1.5
624		1.01	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	119.8%	0.35	0.091'	0.667'	251.61'	1.74'	253.35'	0.023'	3.00'			1.511'	3.251'	254.864'	CRITICAL	o.k.	Yes by 0.17 cfs	3.0
624		1.01	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	119.5%	0.35	0.092'	0.667'	254.86'	1.72'	256.58'	0.023'	4.00'	0.02'		2.022'	3.741'	258.605'	CRITICAL	o.k.	Yes by 0.17 cfs	4.9
625		1.01	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	119.8%	0.35	0.091'	0.667'	258.60'	1.98'	260.59'	0.023'	5.00'			2.511'	4.495'	263.099'	CRITICAL	CRITICAL	Yes by 0.17 cfs	7.4
626		1.01	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	132.3%	0.35	0.075'	0.667'	263.10'	0.63'	263.73'	0.019'	6.00'			3.009'	3.636'	266.735'	CRITICAL	CRITICAL	Yes by 0.25 cfs	9.6
627		1.01	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	68.3%	0.35	0.324'	0.403'	266.73'	1.56'	268.29'	0.081'	7.00'			3.541'	5.097'	271.831'	CRITICAL	CRITICAL	no	6.2
628		1.01	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	54.7%	0.35	0.456'	0.350'	271.83'	1.91'	273.74'	0.114'	8.00'	0.29'		4.203'	6.109'	277.941'	CRITICAL	CRITICAL	no	4.9
629		1.01	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	132.3%	0.35	0.075'	0.667'	277.94'	1.04'	278.98'	0.019'	9.00'	0.05'		4.533'	5.577'	283.518'	CRITICAL	CRITICAL	Yes by 0.25 cfs	9.4
630		1.01	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	69.5%	0.35	0.313'	0.403'	283.52'	0.83'	284.34'	0.078'	10.00'			5.039'	5.865'	289.383'	CRITICAL	CRITICAL	no	12.7
631		1.01	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	71.4%	0.35	0.300'	0.410'	289.38'	0.38'	289.76'	0.075'	11.00'	0.19'		5.634'	6.012'	295.395'	CRITICAL	CRITICAL	no	17.1
632		1.01	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	132.4%	0.35	0.075'	0.667'	295.40'	1.66'	297.05'	0.019'	12.00'			6.009'	7.665'	303.061'	CRITICAL	CRITICAL	Yes by 0.25 cfs	23.4
																			#N/A					13.00'			6.500'						
Pump Station Line																																	
620		1.68	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	6225.00'	8"																					
621	1.01	1.68	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	219.1%	0.35	0.075'	0.667'	244.99'	6.21'	251.19'	0.019'	12.00'	0.05'	0.053'	6.060'	12.266'	257.252'	CRITICAL	o.k.	Yes by 0.91 cfs	4.9
7211		1.01	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	132.3%	0.35	0.075'	0.667'	257.25'	2.09'	259.34'	0.019'	12.00'			6.009'	8.097'	265.349'	CRITICAL	CRITICAL	Yes by 0.25 cfs	11.8
7212		1.01	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	132.6%	0.35	0.074'	0.667'	265.35'	1.50'	266.85'	0.019'	12.00'	0.05'		6.033'	7.536'	272.885'	CRITICAL	CRITICAL	Yes by 0.25 cfs	18.3
7213		1.01	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	181.0%	0.35	0.040'	0.667'	272.89'	1.63'	274.51'	0.010'	12.00'			6.005'	7.633'	280.519'	CRITICAL	CRITICAL	Yes by 0.45 cfs	25.4
7214		1.01	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	132.4%	0.35	0.075'	0.667'	280.52'	1.80'	282.31'	0.019'	12.00'	0.05'		6.033'	7.829'	288.347'	CRITICAL	CRITICAL	Yes by 0.25 cfs	31.6
7215		1.01	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	94.4%	0.35	0.189'	0.510'	288.35'	0.38'	288.73'	0.047'	12.00'			6.024'	6.402'	294.749'	CRITICAL	CRITICAL	no	37.3
7216		1.01	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	132.3%	0.35	0.075'	0.667'	294.75'	2.89'	297.64'	0.019'	12.00'	0.05'		6.033'	8.921'	303.670'	CRITICAL	CRITICAL	Yes by 0.25 cfs	44.5
7217		1.01	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	31.2%	0.35	1.033'	0.250'	303.67'	0.69'	304.36'	0.258'	12.00'			6.129'	6.814'	310.484'	CRITICAL	CRITICAL	no	45.7
* Information referenced from the Salmon Creek Interceptor Analysis																																	
94th Street Trunk																																	
152		3.97	MH 52		00+00.00	00+00.00	156.06	155.80	22																								
719		1.01	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	17.4%	0.55	0.952'	0.225'	158.37'	0.33'	162.13'	0.238'	0.29'	0.14'		0.336'	0.667'	162.461'	o.k.		no	
720		1.01	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	19.2%	0.55	0.833'	0.238'	162.46'	1.26'	181.87'	0.208'	0.13'			0.167'	1.426'	182.034'	o.k.		no	
721		1.01	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	35.0%	0.55	0.359'	0.333'	182.03'	0.85'	187.75'	0.090'	0.04'			0.065'	0.916'	187.818'	o.k.		no	
722		1.01	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	47.0%	0.79	0.113'	0.475'	187.90'	0.24'	188.93'	0.028'	0.03'			0.028'	0.263'	188.953'	o.k.		no	
723		1.01	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	60.3%	0.79	0.078'	0.555'	189.01'	0.31'	189.96'	0.019'	0.03'			0.023'	0.337'	189.978'	o.k.		no	
724		1.01	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	60.6%	0.79	0.077'	0.555'	189.98'	0.20'	190.56'	0.019'	0.03'			0.026'	0.226'	190.581'	o.k.		no	
724A		1.01	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	53.7%	0.79	0.091'	0.510'	190.58'	0.13'	190.96'	0.023'	0.03'			0.027'	0.154'	190.987'	o.k.		no	
725		1.01	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	87.2%	0.55	0.089'	0.596'	191.05'	0.53'	191.94'	0.022'	0.03'			0.027'	0.561'	191.963'	o.k.		no	
726		1.01	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	87.3%	0.55	0.089'	0.596'	191.96'	0.54'	192.84'	0.022'	0.03'			0.026'	0.568'	192.862'	o.k.		no	
727		1.01	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	90.6%	0.55	0.083'	0.613'	192.86'	0.67'	193.90'	0.021'	0.03'			0.028'	0.700'	193.930'	o.k.		no	
728		1.01	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	82.6%	0.55	0.098'	0.575'	193.93'	0.47'	194.74'	0.024'	0.03'			0.028'	0.501'	194.763'	o.k.		no	
729		1.01	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	87.6%	0.55	0.088'	0.596'	194.76'	0.56'	195.69'	0.022'	0.00'			0.011'	0.574'	195.697'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		5.64	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		5.64	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	22.2%	1.23	4.364'	0.400'	15.20' *	1.20'	23.42'	1.091'	1.31'	0.92'		1.661'	2.864'	25.081'	o.k.		no	
102		5.64	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	23.9%	1.23	3.754'	0.400'	25.08'	1.18'	36.78'	0.938'	1.70'			1.319'	2.498'	38.099'	o.k.		no	
103		5.64	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	19.6%	1.23	4.855'	0.356'	38.10'	1.03'	52.10'	1.214'	0.08'	1.38'		1.336'	2.369'	53.433'	o.k.		no	
104		5.64	MH 4		04+59.00	04+59.00	52.92	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	123.4%	1.23	0.215'	1.250'	53.43'	1.34'	54.77'	0.054'	0.07'	0.03'		0.080'	1.416'	54.848'	CRITICAL		Yes by 1.07 cfs	0.9
105		5.64	MH 5		06+35.00	06+35.00	53.59	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	123.8%	1.23	0.214'	1.250'	54.85'	1.33'	56.18'	0.053'	0.25'	0.02'		0.160'	1.487'	56.336'	CRITICAL		Yes by 1.08 cfs	1.2
106		5.64	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	74.3%	1.23	0.711'	0.800'	56.34'	0.96'	57.30'	0.178'	0.48'	0.09'		0.375'	1.340'	57.676'	CRITICAL		no	0.3
107		5.64	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	48.4%	1.23	1.372'	0.613'	57.68'	0.85'	60.17'	0.343'	0.08'	0.18'		0.299'	1.145'	60.471'	o.k.		no	
108		5.64	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	122.7%	1.23	0.218'	1.250'	61.01'	1.18'	62.19'	0.054'	0.08'	0.03'		0.082'	1.266'	62.276'	CRITICAL		Yes by 1.04 cfs	0.4
109	0.11	5.64	MH 9		12+37.00	12+37.00	61.96	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	122.7%	1.23	0.217'	1.250'	62.28'	1.37'	63.64'	0.054'	0.19'	0.12'	0.004'	0.186'	1.551'	63.827'	CRITICAL		Yes by 1.04 cfs	0.7
110		5.53	MH 10		14+98.00	14+98.00	64.56	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	85.5%	1.23	0.540'	0.875'	63.83'	1.51'	65.34'	0.135'	0.19'	0.15'		0.239'	1.751'	65.578'	o.k.		no	
111		5.53	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	85.8%	1.23	0.537'	0.875'	65.58'	1.63'	68.32'	0.134'	0.15'			0.140'	1.768'	68.455'	o.k.		no	
112		5.53	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	99.1%	1.23	0.417'	1.000'	69.19'	2.01'	71.86'	0.104'	0.18'	0.07'		0.176'	2.183'	72.036'	o.k.		no	
113		5.53	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	87.7%	1.23	0.519'	0.894'	72.04'	1.42'	74.28'	0.130'	0.18'	0.12'		0.214'	1.631'	74.498'	o.k.		no	
114		5.53	MH 14		26+38.00	26+38.00	78.55	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	87.7%	1.23	0.519'	0.894'	74.50'	1.46'	76.89'	0.130'	0.07'			0.098'	1.556'	76.992'	o.k.		no	
115	0.27	5.53	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	129.2%	1.23	0.189'	1.250'	79.90'	1.31'	81.21'	0.047'	0.08'		0.008'	0.070'	1.384'	81.284'	CRITICAL		Yes by 1.25 cfs	0.5
116		5.26	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	108.7%	1.23	0.241'	1.250'	81.28'	1.64'	82.92'	0.060'	0.03'			0.047'	1.684'	82.968'	CRITICAL		Yes by 0.42 cfs	0.8
117	0.05	5.26	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	170.0%	1.23	0.099'	1.250'	82.97'	1.78'	84.75'	0.025'	0.04'	0.01'	0.001'	0.037'	1.821'	84.790'	CRITICAL		Yes by 2.17 cfs	1.8
118		5.21	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	160.8%	1.23	0.108'	1.250'	84.79'	0.57'	85.36'	0.027'	0.19'			0.106'	0.673'	85.463'	CRITICAL		Yes by 1.97 cfs	2.0
119		5.21	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	80.5%	1.23	0.531'	0.844'	85.46'	1.65'	87.11'	0.133'	0.12'			0.128'	1.775'	87.238'	CRITICAL		no	0.4
120	0.11	5.21	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	102.0%	1.23	0.349'	1.050'	87.24'	0.51'	87.75'	0.087'	0.12'		0.006'	0.108'	0.619'	87.857'	CRITICAL		Yes by 0.10 cfs	0.2
121		5.10	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	100.2%	1.23	0.347'	1.025'	87.86'	1.16'	89.05'	0.087'	0.12'			0.103'	1.262'	89.148'	o.k.		Yes by 0.01 cfs	
122	0.05	5.10	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	101.2%	1.23	0.340'	1.025'	89.93'	1.24'	91.51'	0.085'	0.14'	0.04'	0.003'	0.135'	1.372'	91.640'	o.k.		Yes by 0.06 cfs	
123		5.05	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	92.5%	1.23	0.395'	0.938'	91.64'	0.86'	92.91'	0.099'	0.14'			0.118'	0.976'	93.025'	o.k.		no	
124		5.05	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	93.2%	1.23	0.389'	0.938'	93.11'	0.74'	94.20'	0.097'	0.13'			0.116'	0.852'	94.313'	o.k.		no	
125		5.05	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	93.8%	1.23	0.385'	0.938'	94.40'	0.53'	95.18'	0.096'	0.14'	0.06'		0.145'	0.678'	95.323'	o.k.		no	
126		5.05	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	93.1%	1.23	0.390'	0.938'	95.38'	1.80'	98.06'	0.098'	0.18'	0.03'		0.156'	1.960'	98.214'	o.k.		no	
127		5.05	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	77.9%	1.23	0.523'	0.813'	98.21'	1.29'	100.71'	0.131'	0.20'	0.07'		0.200'	1.487'	100.913'	o.k.		no	
128		5.05	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	73.6%	1.23	0.575'	0.781'	100.91'	1.32'	103.79'	0.144'	0.04'	0.18'		0.179'	1.499'	103.970'	o.k.		no	
129		5.05	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	160.1%	1.23	0.102'	1.250'	105.25'	1.20'	106.45'	0.026'	0.12'	0.03'		0.087'	1.286'	106.536'	CRITICAL		Yes by 1.89 cfs	0.7
130		5.05	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	100.4%	1.23	0.339'	1.025'	106.54'	1.46'	108.00'	0.085'	0.11'			0.099'	1.562'	108.099'	CRITICAL		Yes by 0.02 cfs	0.2
131		5.05	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	102.8%	1.23	0.323'	1.050'	108.10'	0.67'	108.77'	0.081'	0.06'			0.071'	0.745'	108.843'	o.k.		Yes by 0.14 cfs	
132		5.05	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	123.3%	1.23	0.173'	1.250'	114.00'	1.86'	115.86'	0.043'	0.06'			0.052'	1.914'	115.914'	CRITICAL		Yes by 0.95 cfs	0.6
133		5.05	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	122.4%	1.23	0.175'	1.250'	115.91'	1.02'	116.93'	0.044'	0.06'			0.053'	1.068'	116.981'	CRITICAL		Yes by 0.92 cfs	0.8
134		5.05	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	122.4%	1.23	0.175'	1.250'	116.98'	1.02'	118.00'	0.044'	0.06'			0.053'	1.068'	118.049'	CRITICAL		Yes by 0.92 cfs	1.0
135		5.05	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	122.4%	1.23	0.175'	1.250'	118.05'	1.02'	119.06'	0.044'	0.06'			0.051'	1.067'	119.116'	CRITICAL		Yes by 0.92 cfs	1.2
136		5.05	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	125.0%	1.23	0.168'	1.250'	119.12'	1.77'	120.89'	0.042'	0.04'			0.039'	1.813'	120.929'	CRITICAL		Yes by 1.01 cfs	1.7
137		5.05	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	158.5%	1.23	0.104'	1.250'	120.93'	1.95'	122.88'	0.026'	0.03'			0.030'	1.982'	122.911'	CRITICAL		Yes by 1.86 cfs	1.7
138	0.72	5.05	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	165.4%	1.23	0.096'	1.250'	122.91'	1.34'	124.25'	0.024'	0.03'	0.01'	0.012'	0.040'	1.375'	124.286'	CRITICAL		Yes by 2.00 cfs	2.3
139		4.33	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	142.3%	1.23	0.095'	1.250'	124.29'	0.67'	124.95'	0.024'	0.17'	0.01'		0.101'	0.766'	125.052'	CRITICAL		Yes by 1.29 cfs	2.7
140		4.33	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	67.8%	1.23	0.482'	0.738'	125.05'	0.49'	125.55'	0.120'	0.14'	0.31'		0.283'	0.777'	125.829'	CRITICAL		no	1.8
141		4.33	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	77.2%	1.23	0.393'	0.813'	125.83'	0.73'	126.56'	0.098'	0.13'	0.06'		0.144'	0.878'	126.707'	CRITICAL		no	1.2
142		4.33	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	80.0%	1.23	0.372'	0.844'	126.71'	0.39'	127.10'	0.093'	0.09'	0.09'		0.137'	0.528'	127.236'	CRITICAL		no	0.8
143		4.33	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	135.4%	0.79	0.257'	1.000'	127.24'	2.86'	130.10'	0.064'	0.25'	0.06'		0.187'	3.052'	130.288'	CRITICAL		Yes by 1.13 cfs	1.3
1431		4.33	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	91.5%	0.79	0.720'	0.735'	130.29'	0.52'	130.80'	0.180'	0.05'	0.24'		0.234'	0.750'	131.038'	CRITICAL		no	1.0
1432		4.33	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	179.9%	0.79	0.146'	1.000'	131.04'	1.26'	132.29'	0.036'	0.09'			0.062'	1.319'	132.357'	CRITICAL		Yes by 1.92 cfs	2.0
144		4.33	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	99.6%	1.23	0.253'	1.000'	132.36'	0.18'	132.54'	0.063'	0.09'	0.16'		0.156'	0.340'	132.698'	CRITICAL		no	2.3
145		4.33	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	12"	0.0080	0.0080	3.20	135.4%	0.79	0.257'	1.000'	132.70'	3.38'	136.07'	0.064'	0.10'	0.05'		0.107'	3.484'	136.181'	CRITICAL		Yes by 1.13 cfs	4.2
146		4.33	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	12"	0.0080	0.0086	3.31	130.9%	0.79	0.275'	1.000'	136.18'	2.95'	139.13'	0.069'	0.08'	0.18'		0.161'	3.113'	139.294'	CRITICAL		Yes by 1.02 cfs	5.5
147		4.33	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	12"	0.0080	0.0068	2.94	147.2%	0.79	0.218'	1.000'	139.29'	3.45'	142.74'	0.054'	0.08'	0.12'		0.128'	3.577'	142.871'	CRITICAL		Yes by 1.39 cfs	7.3
148		4.33	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	12"	0.0080	0.0072	3.04	142.4%	0.79	0.233'	1.000'	142.67'	1.53'	144.41'	0.058'	0.03'	0.06'		0.076'	1.611'	144.482'	CRITICAL		Yes by 1.29 cfs	8.2
149		4.33	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	12"	0.0080	0.0029	1.91	226.3%	0.79	0.092'	1.000'	144.48'	1.89'	146.37'	0.023'	0.09'	0.01'		0.062'	1.947'	146.429'	CRITICAL		Yes by 2.42 cfs	9.8
150		4.33	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	135.4%	0.79	0.257'	1.000'	146.43'	3.38'	149.81'	0.064'	0.12'	0.04'		0.112'	3.488'	149.917'	CRITICAL		Yes by 1.13 cfs	11.4
151		4.33	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	118.4%	0.79	0.337'	1.000'	149.92'	1.53'	151.45'	0.084'	1.56'	0.13'		0.885'	2.419'	152.336'	CRITICAL		Yes by 0.57 cfs	11.8
152	1.11	4.33	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	28.0%	0.79	4.450'	0.360'	152.34'	1.79'	156.16'	1.112'	0.07'	2.85'	1.097'	2.566'	4.361'	158.726'	o.k.		no	
201		3.47	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	85.8%	1.23	0.212'	0.875'	158.73'	0.20'	158.93'	0.053'	0.17'	0.07'		0.148'	0.347'	159.073'	CRITICAL		no	1.3
202		3.47	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	50.3%	1.23	0.492'	0.625'	159.07'	0.35'	159.43'	0.123'	0.31'	0.06'		0.249'	0.601'	159.674'	CRITICAL		no	0.3
203		3.47	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	33.3%	1.23	0.887'	0.481'	159.67'	0.25'	160.27'	0.222'	0.08'			0.149'	0.397'	160.420'	o.k.		no	
204		3.47	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	84.8%	1.23	0.217'	0.875'	160.77'	0.74'	162.06'	0.054'	0.08'			0.065'	0.802'	162.120'	o.k.		no	
205		3.47	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	84.7%	1.23	0.218'	0.875'	162.16'	0.72'	163.42'	0.054'	0.08'			0.065'	0.783'	163.480'	o.k.		no	
206		3.47	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	84.9%	1.23	0.217'	0.875'	163.52'	0.88'	165.05'	0.054'	0.08'	0.14'		0.134'	1.011'	165.179'	o.k.		no	
207	0.29	3.47	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	84.8%	1.23	0.217'	0.875'	165.18'	1.17'	167.20'	0.054'	0.07'	0.11'	0.016'	0.128'	1.299'	167.323'	o.k.		no	
208		3.18	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	77.8%	1.23	0.209'	0.813'	167.32'	0.64'	168.52'	0.052'	0.03'			0.040'	0.681'	168.562'	o.k.		no	
209		3.18	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	12"	0.0025	0.0024	1.75	181.4%	0.79	0.077'	1.000'	168.81'	2.88'	171.69'	0.019'	0.03'			0.023'	2.907'	171.717'	CRITICAL		Yes by 1.43 cfs	2.0
210		3.18	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	12"	0.0025	0.0024	1.76	180.9%	0.79	0.078'	1.000'	171.72'	2.61'	174.32'	0.019'	0.03'			0.023'	2.630'	174.347'	CRITICAL		Yes by 1.42 cfs	3.7
211		3.18	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	181.9%	0.79	0.077'	1.000'	174.35'	2.37'	176.72'	0.019'	0.03'	0.01'		0.031'	2.401'	176.748'	CRITICAL		Yes by 1.43 cfs	5.3
212		3.18	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	12"	0.0025	0.0024	1.76	180.9%	0.79	0.078'	1.000'	176.75'	1.60'	178.34'	0.019'	0.04'			0.031'	1.627'	178.375'	CRITICAL		Yes by 1.42 cfs	6.3
301		3.18	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	144.4%	0.79	0.122'	1.000'	178.37'	1.56'	179.93'	0.031'	0.04'			0.035'	1.591'	179.966'	CRITICAL		Yes by 0.98 cfs	6.6
302		3.18	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	150.5%	0.79	0.113'	1.000'	179.97'	2.43'	182.40'	0.028'	0.04'			0.034'	2.467'	182.433'	CRITICAL		Yes by 1.07 cfs	7.8
303	0.36	3.18	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	150.5%	0.79	0.113'	1.000'	182.43'	2.43'	184.87'	0.028'	0.09'		0.011'	0.066'	2.499'	184.933'	CRITICAL		Yes by 1.37 cfs	9.0
304		2.83	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	99.4%	0.79	0.264'	0.800'	184.93'	1.46'	186.39'	0.066'	0.04'			0.053'	1.511'	186.443'	CRITICAL		no	8.4
305		2.83	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	133.7%	0.79	0.112'	1.000'	186.44'	1.85'	188.29'	0.028'	0.04'			0.034'	1.883'	188.327'	CRITICAL		Yes by 0.71 cfs	9.1
306		2.83	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	133.9%	0.79	0.112'	1.000'	188.33'	1.46'	189.79'	0.028'	0.04'	0.07'		0.070'	1.534'	189.861'	CRITICAL		Yes by 0.72 cfs	9.5
307		2.83	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	132.1%	0.79	0.115'	1.000'	189.66'	0.33'	190.19'	0.029'	0.03'			0.031'	0.361'	190.222'	CRITICAL		Yes by 0.59 cfs	9.6
308		2.83	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	144.3%	0.79	0.097'	1.000'	190.22'	2.73'	192.96'	0.024'	0.03'			0.029'	2.763'	192.985'	CRITICAL		Yes by 0.97 cfs	10.8
309		2.83	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	145.0%	0.79	0.096'	1.000'	192.98'	1.34'	194.32'	0.024'	0.03'			0.029'	1.368'	194.353'	CRITICAL		Yes by 0.98 cfs	11.3
401		2.83	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	144.4%	0.79	0.096'	1.000'	194.35'	2.49'	196.84'	0.024'	0.12'			0.074'	2.565'	196.918'	CRITICAL		Yes by 0.97 cfs	12.4
402		2.83	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	108.4%	0.55	0.355'	0.833'	196.92'	5.89'	202.81'	0.089'	0.07'			0.078'	5.970'	202.888'	CRITICAL		Yes by 0.22 cfs	9.9

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.83	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	147.5%	0.55	0.191'	0.833'	202.89'	5.76'	208.65'	0.048'	0.10'			0.074'	5.835'	208.723'	CRITICAL		Yes by 0.91 cfs	13.0
404		2.83	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	120.3%	0.55	0.288'	0.833'	208.72'	0.12'	208.84'	0.072'	0.03'			0.052'	0.168'	208.891'	CRITICAL		Yes by 0.48 cfs	12.9
501	0.67	2.83	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	8"	0.0076	0.0050	0.86	329.8%	0.35	0.094'	0.667'	208.89'	18.92'	227.81'	0.023'	0.03'		0.021'	0.038'	18.961'	227.852'	CRITICAL		Yes by 1.97 cfs	26.0
502		2.15	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	8"	0.0050	0.0049	0.85	254.0%	0.35	0.091'	0.667'	227.85'	11.29'	239.14'	0.023'	0.10'			0.061'	11.347'	239.199'	CRITICAL		Yes by 1.30 cfs	35.5
503		2.15	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	8"	0.0150	0.0150	1.48	144.9%	0.35	0.281'	0.667'	239.20'	8.94'	248.13'	0.070'	0.03'			0.048'	8.983'	248.182'	CRITICAL		Yes by 0.67 cfs	33.9
504		2.15	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	8"	0.0040	0.0040	0.77	280.8%	0.35	0.075'	0.667'	248.18'	12.54'	260.72'	0.019'	0.03'			0.022'	12.563'	260.745'	CRITICAL		Yes by 1.39 cfs	44.5
505		2.15	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	8"	0.0040	0.0040	0.77	280.8%	0.35	0.075'	0.667'	260.74'	12.54'	273.29'	0.019'	0.04'			0.030'	12.570'	273.315'	CRITICAL		Yes by 1.39 cfs	55.4
601		2.15	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	8"	0.0050	0.0063	0.96	223.2%	0.35	0.118'	0.667'	273.32'	10.00'	283.32'	0.030'	0.02'	0.08'		0.065'	10.066'	283.381'	CRITICAL		Yes by 1.19 cfs	63.4
602		2.15	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	185.0%	0.55	0.071'	0.833'	283.38'	2.52'	285.90'	0.018'	0.02'	0.05'		0.044'	2.563'	285.945'	CRITICAL		Yes by 0.99 cfs	64.8
603		2.15	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	184.9%	0.55	0.071'	0.833'	285.94'	2.96'	288.90'	0.018'	0.02'			0.021'	2.980'	288.925'	CRITICAL		Yes by 0.99 cfs	66.9
604		2.15	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	185.4%	0.55	0.070'	0.833'	288.92'	3.52'	292.45'	0.018'	0.02'			0.021'	3.543'	292.467'	CRITICAL		Yes by 0.99 cfs	69.3
605		2.15	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	184.6%	0.55	0.071'	0.833'	292.47'	2.03'	294.50'	0.018'	0.02'			0.021'	2.054'	294.521'	CRITICAL		Yes by 0.99 cfs	70.6
606		2.15	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	185.1%	0.55	0.071'	0.833'	294.52'	3.10'	297.62'	0.018'	0.02'			0.021'	3.123'	297.644'	CRITICAL		Yes by 0.99 cfs	72.7
607		2.15	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	185.0%	0.55	0.071'	0.833'	297.64'	2.76'	300.40'	0.018'	0.02'	0.05'		0.044'	2.802'	300.446'	CRITICAL		Yes by 0.99 cfs	74.6
608		2.15	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	185.4%	0.55	0.070'	0.833'	300.45'	3.59'	304.03'	0.018'	0.02'	0.05'		0.044'	3.632'	304.078'	CRITICAL		Yes by 0.99 cfs	77.1
609		2.15	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	184.9%	0.55	0.071'	0.833'	304.08'	2.72'	306.80'	0.018'	0.02'			0.021'	2.741'	306.820'	CRITICAL		Yes by 0.99 cfs	79.0
610		2.15	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	185.2%	0.55	0.070'	0.833'	306.82'	2.56'	309.38'	0.018'	0.02'			0.021'	2.579'	309.398'	CRITICAL		Yes by 0.99 cfs	80.7
611	0.32	2.15	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	185.3%	0.55	0.070'	0.833'	309.40'	3.72'	313.12'	0.018'	0.03'	0.04'	0.009'	0.047'	3.769'	313.168'	CRITICAL		Yes by 0.99 cfs	83.2
612		1.84	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	146.4%	0.55	0.082'	0.833'	313.17'	1.51'	314.68'	0.021'	0.02'	0.05'		0.043'	1.556'	314.724'	CRITICAL		Yes by 0.58 cfs	84.0
613		1.84	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	174.8%	0.55	0.058'	0.833'	314.72'	2.25'	316.97'	0.014'	0.02'			0.020'	2.269'	316.993'	CRITICAL		Yes by 0.79 cfs	85.4
614		1.84	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	157.5%	0.55	0.071'	0.833'	316.99'	1.87'	318.87'	0.018'	0.02'			0.021'	1.896'	318.889'	CRITICAL		Yes by 0.67 cfs	86.4
615		1.84	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	158.0%	0.55	0.070'	0.833'	318.89'	2.24'	321.12'	0.018'	0.02'			0.021'	2.257'	321.146'	CRITICAL		Yes by 0.67 cfs	87.7
616		1.84	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	157.8%	0.55	0.071'	0.833'	321.15'	2.62'	323.77'	0.018'	0.03'			0.022'	2.646'	323.792'	CRITICAL		Yes by 0.67 cfs	89.1
617		1.84	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	239.5%	0.35	0.075'	0.667'	323.79'	7.30'	331.09'	0.019'	0.12'			0.068'	7.366'	331.158'	CRITICAL		Yes by 1.07 cfs	95.1
618		1.84	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	112.9%	0.35	0.337'	0.667'	331.16'	7.53'	338.68'	0.084'	0.03'			0.055'	7.581'	338.740'	CRITICAL		Yes by 0.21 cfs	96.6
619		1.84	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	239.5%	0.35	0.075'	0.667'	338.74'	6.84'	345.58'	0.019'	0.03'			0.022'	6.864'	345.604'	CRITICAL		Yes by 1.07 cfs	102.2
620		1.84	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	239.5%	0.35	0.075'	0.667'	345.60'	8.10'	353.70'	0.019'	0.03'			0.022'	8.119'	353.723'	CRITICAL		Yes by 1.07 cfs	108.8
621	1.11	1.84	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	239.5%	0.35	0.075'	0.667'	353.72'	7.41'	361.13'	0.019'	0.03'	0.05'	0.053'	0.076'	7.488'	361.211'	CRITICAL	CRITICAL	Yes by 1.07 cfs	114.8
622		1.11	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	130.8%	0.35	0.092'	0.667'	361.21'	1.62'	362.83'	0.023'	0.03'	0.06'		0.057'	1.673'	362.884'	CRITICAL	CRITICAL	Yes by 0.26 cfs	115.5
623		1.11	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	130.7%	0.35	0.092'	0.667'	362.88'	2.78'	365.67'	0.023'	0.03'			0.027'	2.811'	365.695'	CRITICAL	CRITICAL	Yes by 0.26 cfs	116.6
624		1.11	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	131.1%	0.35	0.091'	0.667'	365.70'	2.08'	367.78'	0.023'	0.03'			0.027'	2.111'	367.806'	CRITICAL	CRITICAL	Yes by 0.26 cfs	117.4
624		1.11	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	130.8%	0.35	0.092'	0.667'	367.81'	2.06'	369.86'	0.023'	0.03'	0.02'		0.038'	2.096'	369.902'	CRITICAL	CRITICAL	Yes by 0.26 cfs	118.2
625		1.11	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	131.1%	0.35	0.091'	0.667'	369.90'	2.37'	372.28'	0.023'	0.03'			0.025'	2.399'	372.301'	CRITICAL	CRITICAL	Yes by 0.26 cfs	119.1
626		1.11	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	144.8%	0.35	0.075'	0.667'	372.30'	0.75'	373.05'	0.019'	0.12'			0.068'	0.818'	373.119'	CRITICAL	CRITICAL	Yes by 0.34 cfs	118.9
627		1.11	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	74.8%	0.35	0.336'	0.427'	373.12'	1.80'	374.92'	0.084'	0.16'			0.124'	1.923'	375.043'	CRITICAL	CRITICAL	no	112.9
628		1.11	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	59.9%	0.35	0.469'	0.363'	375.04'	2.21'	377.25'	0.117'	0.03'	0.30'		0.222'	2.434'	377.476'	CRITICAL	CRITICAL	no	108.4
629		1.11	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	144.8%	0.35	0.075'	0.667'	377.48'	1.25'	378.73'	0.019'	0.11'	0.05'		0.091'	1.341'	378.817'	CRITICAL	CRITICAL	Yes by 0.34 cfs	109.2
630		1.11	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	76.1%	0.35	0.328'	0.433'	378.82'	0.95'	379.77'	0.082'	0.11'			0.096'	1.045'	379.862'	CRITICAL	CRITICAL	no	108.1
631		1.11	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	78.1%	0.35	0.314'	0.443'	379.86'	0.44'	380.30'	0.079'	0.03'	0.20'		0.153'	0.588'	380.450'	CRITICAL	CRITICAL	no	107.7
632		1.11	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	144.9%	0.35	0.075'	0.667'	380.45'	1.98'	382.43'	0.019'	0.00'			0.009'	1.993'	382.443'	CRITICAL	CRITICAL	Yes by 0.34 cfs	108.8
Pump Station Line																																
620		1.84	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	6225.00'	8"																					
621	1.11	1.84	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	239.5%	0.35	0.075'	0.667'	244.99'	7.41'	252.40'	0.019'	0.03'	0.05'	0.053'	0.073'	7.485'	252.472'	CRITICAL	o.k.	Yes by 1.07 cfs	6.1
7211		1.11	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	144.8%	0.35	0.075'	0.667'	252.47'	2.50'	254.97'	0.019'	0.03'			0.022'	2.522'	254.994'	CRITICAL	o.k.	Yes by 0.34 cfs	7.4
7212		1.11	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	145.1%	0.35	0.074'	0.667'	254.99'	1.80'	256.79'	0.019'	0.01'	0.05'		0.040'	1.840'	256.834'	CRITICAL	o.k.	Yes by 0.34 cfs	8.2
7213		1.11	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	198.1%	0.35	0.040'	0.667'	256.83'	1.95'	258.78'	0.010'	0.03'			0.018'	1.968'	258.802'	CRITICAL	o.k.	Yes by 0.55 cfs	9.6
7214		1.11	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	144.9%	0.35	0.075'	0.667'	258.80'	2.15'	260.95'	0.019'	0.07'	0.05'		0.067'	2.217'	261.019'	CRITICAL	CRITICAL	Yes by 0.34 cfs	10.2
7215		1.11	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	103.3%	0.35	0.191'	0.560'	261.02'	0.45'	261.47'	0.048'	0.03'			0.037'	0.487'	261.506'	CRITICAL	CRITICAL	Yes by 0.04 cfs	10.1
7216		1.11	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	144.8%	0.35	0.075'	0.667'	261.51'	3.46'	264.96'	0.019'	0.39'	0.05'		0.227'	3.685'	265.191'	CRITICAL	CRITICAL	Yes by 0.34 cfs	11.8
7217		1.11	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	34.1%	0.35	1.105'	0.267'	265.19'	0.76'	265.95'	0.276'	0.00'			0.138'	0.902'	266.093'	CRITICAL	CRITICAL	no	7.3
* Information referenced from the Salmon Creek Interceptor Analysis																																
94th Street Trunk																																
152		4.33	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		1.11	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	19.1%	0.55	1.004'	0.238'	158.73'	0.37'	162.14'	0.251'	0.31'	0.15'		0.356'	0.728'	162.494'	o.k.		no	
720		1.11	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	21.0%	0.55	0.889'	0.250'	162.49'	1.41'	181.88'	0.222'	0.13'			0.178'	1.585'	182.058'	o.k.		no	
721		1.11	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	38.3%	0.55	0.383'	0.354'	182.06'	0.96'	187.77'	0.096'	0.04'			0.068'	1.029'	187.843'	o.k.		no	
722		1.11	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	51.4%	0.79	0.117'	0.500'	187.92'	0.27'	188.95'	0.029'	0.03'			0.029'	0.299'	188.979'	o.k.		no	
723		1.11	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	66.0%	0.79	0.080'	0.580'	189.03'	0.36'	189.98'	0.020'	0.03'			0.024'	0.389'	190.004'	o.k.		no	
724		1.11	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	66.4%	0.79	0.081'	0.590'	190.00'	0.23'	190.59'	0.020'	0.03'			0.027'	0.256'	190.617'	o.k.		no	
724A		1.11	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	58.8%	0.79	0.096'	0.545'	190.62'	0.14'	191.00'	0.024'	0.03'			0.028'	0.172'	191.023'	o.k.		no	
725		1.11	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	95.5%	0.55	0.091'	0.638'	191.09'	0.63'	191.98'	0.023'	0.03'			0.027'	0.653'	192.005'	o.k.		no	
726		1.11	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	95.6%	0.55	0.091'	0.638'	192.00'	0.63'	192.88'	0.023'	0.03'			0.026'	0.661'	192.904'	o.k.		no	
727		1.11	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	99.2%	0.55	0.085'	0.667'	192.91'	0.79'	193.96'	0.021'	0.04'			0.028'	0.816'	193.985'	o.k.		no	
728		1.11	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	90.4%	0.55	0.100'	0.613'	193.98'	0.55'	194.77'	0.025'	0.03'			0.028'	0.583'	194.801'	o.k.		no	
729		1.11	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	95.9%	0.55	0.090'	0.638'	194.80'	0.66'	195.73'	0.023'	0.00'			0.011'	0.671'	195.739'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.12	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.12	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	16.2%	1.23	3.594'	0.338'	9.18' *	0.77'	23.36'	0.898'	1.08'	0.75'		1.367'	2.142'	24.725'	o.k.		no	
102		4.12	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	17.5%	1.23	3.091'	0.338'	24.72'	0.76'	36.72'	0.773'	1.46'			1.117'	1.876'	37.834'	o.k.		no	
103		4.12	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	14.3%	1.23	4.174'	0.313'	37.83'	0.63'	52.05'	1.043'	0.10'	1.19'		1.165'	1.798'	53.217'	o.k.		no	
104		4.12	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	90.1%	1.23	0.275'	0.919'	53.22'	0.56'	53.78'	0.069'	0.10'	0.04'		0.103'	0.662'	53.879'	o.k.		no	
105		4.12	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	90.4%	1.23	0.273'	0.919'	53.88'	0.56'	54.61'	0.068'	0.22'	0.02'		0.153'	0.709'	54.762'	o.k.		no	
106		4.12	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	54.3%	1.23	0.617'	0.656'	54.76'	0.60'	56.46'	0.154'	0.40'	0.08'		0.318'	0.914'	56.774'	o.k.		no	
107		4.12	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	35.3%	1.23	1.147'	0.500'	56.77'	0.54'	60.06'	0.287'	0.10'	0.15'		0.266'	0.807'	60.326'	o.k.		no	
108		4.12	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	89.6%	1.23	0.278'	0.906'	60.67'	0.50'	61.46'	0.069'	0.10'	0.04'		0.104'	0.603'	61.560'	o.k.		no	
109	0.08	4.12	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	89.6%	1.23	0.278'	0.906'	61.66'	0.57'	62.57'	0.069'	0.17'	0.16'	0.005'	0.199'	0.774'	62.766'	o.k.		no	
110		4.04	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	62.5%	1.23	0.475'	0.713'	62.77'	0.91'	65.17'	0.119'	0.17'	0.14'		0.210'	1.122'	65.382'	o.k.		no	
111		4.04	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	62.7%	1.23	0.472'	0.713'	65.38'	0.98'	68.15'	0.118'	0.13'			0.126'	1.108'	68.278'	o.k.		no	
112		4.04	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	72.4%	1.23	0.381'	0.781'	68.97'	1.17'	71.64'	0.095'	0.16'	0.06'		0.159'	1.330'	71.800'	o.k.		no	
113		4.04	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	64.1%	1.23	0.460'	0.725'	71.80'	0.84'	74.12'	0.115'	0.16'	0.10'		0.190'	1.034'	74.305'	o.k.		no	
114		4.04	MH 14		26+38.00	26+38.00	76.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	64.0%	1.23	0.461'	0.725'	74.33'	0.87'	76.73'	0.115'	0.09'			0.100'	0.968'	76.825'	o.k.		no	
115	0.20	4.04	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	94.4%	1.23	0.243'	0.956'	79.61'	0.54'	80.40'	0.061'	0.10'		0.010'	0.087'	0.631'	80.483'	o.k.		no	
116		3.84	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	79.4%	1.23	0.295'	0.831'	80.48'	0.71'	81.70'	0.074'	0.03'			0.054'	0.766'	81.755'	o.k.		no	
117	0.04	3.84	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	124.1%	1.23	0.099'	1.250'	82.32'	0.95'	83.27'	0.025'	0.04'	0.01'	0.001'	0.037'	0.987'	83.307'	CRITICAL		Yes by 0.75 cfs	0.3
118		3.80	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	117.4%	1.23	0.108'	1.250'	83.31'	0.30'	83.61'	0.027'	0.16'			0.094'	0.396'	83.703'	CRITICAL		Yes by 0.56 cfs	0.2
119		3.80	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	58.8%	1.23	0.462'	0.681'	83.70'	1.01'	86.15'	0.115'	0.11'			0.114'	1.127'	86.265'	o.k.		no	
120	0.08	3.80	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	74.4%	1.23	0.322'	0.800'	86.47'	0.29'	87.11'	0.081'	0.11'		0.006'	0.099'	0.392'	87.209'	o.k.		no	
121		3.72	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	73.1%	1.23	0.317'	0.781'	87.29'	0.68'	88.80'	0.079'	0.11'			0.094'	0.769'	88.895'	o.k.		no	
122	0.04	3.72	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	73.8%	1.23	0.311'	0.781'	89.68'	0.72'	91.26'	0.078'	0.12'	0.04'	0.003'	0.122'	0.843'	91.383'	o.k.		no	
123		3.68	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	67.5%	1.23	0.351'	0.738'	91.42'	0.51'	92.71'	0.088'	0.12'			0.104'	0.614'	92.812'	o.k.		no	
124		3.68	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	68.0%	1.23	0.346'	0.738'	92.91'	0.44'	94.00'	0.087'	0.12'			0.104'	0.540'	94.101'	o.k.		no	
125		3.68	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	68.4%	1.23	0.345'	0.756'	94.22'	0.31'	95.00'	0.086'	0.12'	0.05'		0.130'	0.442'	95.126'	o.k.		no	
126		3.68	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	67.9%	1.23	0.347'	0.738'	95.18'	1.07'	97.86'	0.087'	0.16'	0.03'		0.137'	1.208'	97.994'	o.k.		no	
127		3.68	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	56.8%	1.23	0.454'	0.669'	97.99'	0.79'	100.57'	0.114'	0.17'	0.06'		0.173'	0.960'	100.742'	o.k.		no	
128		3.68	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	53.7%	1.23	0.494'	0.638'	100.74'	0.82'	103.65'	0.123'	0.04'	0.15'		0.156'	0.976'	103.804'	o.k.		no	
129		3.68	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	116.8%	1.23	0.102'	1.250'	105.25'	0.64'	105.89'	0.026'	0.11'	0.03'		0.082'	0.720'	105.970'	CRITICAL		Yes by 0.53 cfs	0.2
130		3.68	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	73.2%	1.23	0.309'	0.781'	105.97'	0.85'	107.35'	0.077'	0.10'			0.091'	0.943'	107.442'	o.k.		no	
131		3.68	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	75.0%	1.23	0.298'	0.800'	107.57'	0.39'	108.40'	0.074'	0.08'			0.076'	0.462'	108.476'	o.k.		no	
132		3.68	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	89.9%	1.23	0.221'	0.906'	113.66'	0.78'	114.89'	0.055'	0.08'			0.067'	0.848'	114.953'	o.k.		no	
133		3.68	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	89.3%	1.23	0.224'	0.906'	115.09'	0.43'	115.77'	0.056'	0.08'			0.067'	0.493'	115.833'	o.k.		no	
134		3.68	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	89.3%	1.23	0.224'	0.906'	115.97'	0.43'	116.65'	0.056'	0.08'			0.067'	0.493'	116.713'	o.k.		no	
135		3.68	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	89.3%	1.23	0.224'	0.906'	116.85'	0.43'	117.53'	0.056'	0.08'			0.065'	0.492'	117.592'	o.k.		no	
136		3.68	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	91.2%	1.23	0.215'	0.919'	117.74'	0.74'	118.88'	0.054'	0.04'			0.045'	0.786'	118.924'	o.k.		no	
137		3.68	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	115.6%	1.23	0.104'	1.250'	120.44'	1.04'	121.48'	0.026'	0.03'			0.030'	1.069'	121.509'	CRITICAL		Yes by 0.50 cfs	0.3
138	0.53	3.68	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	120.7%	1.23	0.096'	1.250'	121.51'	0.71'	122.22'	0.024'	0.04'	0.01'	0.012'	0.045'	0.756'	122.264'	CRITICAL		Yes by 0.63 cfs	0.3
139		3.15	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	103.6%	1.23	0.124'	1.050'	122.26'	0.27'	122.54'	0.031'	0.14'	0.01'		0.094'	0.366'	122.631'	CRITICAL		Yes by 0.11 cfs	0.3
140		3.15	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	49.4%	1.23	0.412'	0.613'	122.63'	0.31'	123.07'	0.103'	0.12'	0.26'		0.243'	0.550'	123.316'	o.k.		no	
141		3.15	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	56.2%	1.23	0.341'	0.669'	123.33'	0.45'	124.83'	0.085'	0.11'	0.05'		0.125'	0.573'	124.953'	o.k.		no	
142		3.15	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	58.3%	1.23	0.323'	0.681'	124.95'	0.24'	125.70'	0.081'	0.12'	0.08'		0.138'	0.378'	125.840'	o.k.		no	
143		3.15	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	98.6%	0.79	0.334'	0.800'	127.02'	1.17'	128.59'	0.084'	0.23'	0.08'		0.192'	1.359'	128.782'	o.k.		no	
1431		3.15	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	66.6%	0.79	0.646'	0.590'	128.78'	0.30'	129.37'	0.161'	0.05'	0.21'		0.213'	0.516'	129.583'	o.k.		no	
1432		3.15	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	131.1%	0.79	0.146'	1.000'	129.88'	0.67'	130.55'	0.036'	0.08'			0.059'	0.726'	130.606'	CRITICAL		Yes by 0.75 cfs	0.3
144		3.15	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	72.6%	1.23	0.231'	0.781'	130.61'	0.11'	130.71'	0.058'	0.12'	0.14'		0.160'	0.267'	130.872'	CRITICAL		no	0.4
145		3.15	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	12"	0.0080	0.0080	3.20	98.6%	0.79	0.334'	0.800'	130.87'	1.37'	132.25'	0.084'	0.12'	0.07'		0.139'	1.514'	132.386'	CRITICAL		no	0.4
146		3.15	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	12"	0.0080	0.0086	3.31	95.4%	0.79	0.354'	0.765'	132.39'	1.22'	133.60'	0.089'	0.10'	0.23'		0.206'	1.422'	133.808'	CRITICAL		no	0.0
147		3.15	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	12"	0.0080	0.0068	2.94	107.2%	0.79	0.278'	0.885'	133.81'	1.44'	135.29'	0.070'	0.11'	0.15'		0.164'	1.608'	135.449'	o.k.		Yes by 0.21 cfs		
148		3.15	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	12"	0.0080	0.0072	3.04	103.7%	0.79	0.302'	0.840'	135.45'	0.63'	136.08'	0.076'	0.03'	0.08'		0.094'	0.722'	136.171'	o.k.		Yes by 0.11 cfs		
149		3.15	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	12"	0.0080	0.0029	1.91	164.8%	0.79	0.092'	1.000'	136.17'	1.00'	137.17'	0.023'	0.12'	0.01'		0.075'	1.075'	137.247'	CRITICAL		Yes by 1.24 cfs	0.6
150		3.15	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	98.6%	0.79	0.334'	0.800'	137.25'	1.37'	138.62'	0.084'	0.15'	0.05'		0.143'	1.518'	138.765'	CRITICAL		no	0.2
151		3.15	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	86.2%	0.79	0.426'	0.715'	138.76'	0.65'	139.41'	0.106'	1.28'	0.16'		0.775'	1.421'	140.186'	o.k.		no		
152	0.63	3.15	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	20.4%	0.79	3.660'	0.300'	140.19'	1.15'	156.10'	0.915'	0.07'	2.34'	0.681'	2.002'	3.151'	158.102'	o.k.		no		
201		2.53	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	62.4%	1.23	0.186'	0.713'	158.10'	0.12'	158.22'	0.047'	0.15'	0.06'		0.127'	0.246'	158.348'	CRITICAL		no	0.6
202		2.53	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	36.5%	1.23	0.417'	0.519'	158.35'	0.22'	158.57'	0.104'	0.27'	0.05'		0.213'	0.433'	158.781'	o.k.		no		
203		2.53	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	24.2%	1.23	0.762'	0.413'	158.78'	0.15'	160.20'	0.190'	0.07'			0.128'	0.281'	160.331'	o.k.		no		
204		2.53	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	61.6%	1.23	0.189'	0.694'	160.58'	0.45'	161.87'	0.047'	0.07'			0.057'	0.502'	161.931'	o.k.		no		
205		2.53	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	61.5%	1.23	0.190'	0.694'	161.97'	0.43'	163.23'	0.047'	0.07'			0.057'	0.491'	163.290'	o.k.		no		
206		2.53	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	61.7%	1.23	0.189'	0.694'	163.33'	0.53'	164.86'	0.047'	0.07'	0.12'		0.117'	0.647'	164.981'	o.k.		no		
207	0.21	2.53	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	61.6%	1.23	0.189'	0.694'	164.98'	0.71'	167.01'	0.047'	0.06'	0.10'	0.014'	0.111'	0.820'	167.125'	o.k.		no		
208		2.31	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	56.5%	1.23	0.181'	0.669'	167.12'	0.39'	168.38'	0.045'	0.03'			0.036'	0.425'	168.415'	o.k.		no		
209		2.31	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	12"	0.0025	0.0024	1.75	131.7%	0.79	0.077'	1.000'	168.81'	1.52'	170.33'	0.019'	0.03'			0.023'	1.543'	170.353'	CRITICAL		Yes by 0.56 cfs	0.6
210		2.31	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	12"	0.0025	0.0024	1.76	131.4%	0.79	0.078'	1.000'	170.35'	1.37'	171.73'	0.019'	0.03'			0.023'	1.397'	171.751'	CRITICAL		Yes by 0.55 cfs	1.1
211		2.31	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	132.0%	0.79	0.077'	1.000'	171.75'	1.25'	173.00'	0.019'	0.03'	0.01'		0.031'	1.280'	173.031'	CRITICAL		Yes by 0.56 cfs	1.6
212		2.31	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	12"	0.0025	0.0024	1.76	131.3%	0.79	0.078'	1.000'	173.03'	0.84'	173.87'	0.019'	0.06'			0.037'	0.879'	173.909'	CRITICAL		Yes by 0.55 cfs	1.9
301		2.31	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	104.8%	0.79	0.158'	0.865'	173.91'	0.64'	174.55'	0.039'	0.04'			0.039'	0.676'	174.585'	CRITICAL		Yes by 0.11 cfs	1.2
302		2.31	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	109.2%	0.79	0.113'	1.000'	174.59'	1.28'	175.87'	0.028'	0.04'			0.034'	1.316'	175.902'	CRITICAL		Yes by 0.20 cfs	1.3
303	0.26	2.31	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	109.2%	0.79	0.113'	1.000'	175.90'	1.28'	177.18'	0.028'	0.08'		0.011'	0.062'	1.345'	177.246'	CRITICAL		Yes by 0.20 cfs	1.3
304		2.05	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	72.1%	0.79	0.242'	0.625'	177.25'	0.84'	178.09'	0.060'	0.05'			0.056'	0.895'	178.141'	CRITICAL		no	0.1
305		2.05	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	96.9%	0.79	0.146'	0.785'	178.14'	0.75'	179.02'	0.037'	0.05'			0.044'	0.794'	179.059'	o.k.		no		
306		2.05	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	97.1%	0.79	0.146'	0.785'	179.22'	0.59'	180.04'	0.036'	0.05'	0.09'		0.091'	0.685'	180.126'	o.k.		no		
307		2.05	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	95.8%	0.79	0.148'	0.765'	180.22'	0.13'	180.41'	0.037'	0.04'			0.040'	0.175'	180.445'	o.k.		no		
308		2.05	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	104.6%	0.79	0.124'	0.865'	180.71'	1.12'	182.03'	0.031'	0.04'			0.037'	1.153'	182.062'	o.k.		Yes by 0.09 cfs		
309		2.05	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	105.1%	0.79	0.123'	0.865'	182.23'	0.55'	182.87'	0.031'	0.04'			0.037'	0.584'	182.902'	o.k.		Yes by 0.10 cfs		
401		2.05	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	104.7%	0.79	0.124'	0.865'	183.07'	1.02'	184.27'	0.031'	0.15'			0.091'	1.108'	184.356'	o.k.		Yes by 0.09 cfs		
402		2.05	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	78.6%	0.55	0.433'	0.554'	187.56'	2.53'	192.60'	0.108'	0.09'			0.097'	2.626'	192.701'	o.k.		no		

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.05	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	107.0%	0.55	0.244'	0.738'	192.89'	2.39'	195.55'	0.061'	0.13'			0.094'	2.484'	195.642'	o.k.		Yes by 0.13 cfs	
404		2.05	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	87.2%	0.55	0.364'	0.596'	195.64'	0.05'	195.69'	0.091'	0.03'			0.062'	0.110'	195.752'	o.k.		no	
501	0.49	2.05	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	8"	0.0076	0.0050	0.86	239.2%	0.35	0.094'	0.667'	200.10'	9.95'	210.05'	0.023'	0.03'		0.021'	0.038'	9.988'	210.085'	CRITICAL		Yes by 1.19 cfs	8.2
502		1.56	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	8"	0.0050	0.0049	0.85	183.7%	0.35	0.091'	0.667'	210.09'	5.90'	215.99'	0.023'	0.13'			0.075'	5.976'	216.061'	CRITICAL		Yes by 0.71 cfs	12.4
503		1.56	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	8"	0.0150	0.0150	1.48	104.8%	0.35	0.362'	0.577'	216.06'	3.63'	219.69'	0.090'	0.03'			0.056'	3.684'	219.746'	CRITICAL		Yes by 0.07 cfs	5.5
504		1.56	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	8"	0.0040	0.0040	0.77	203.1%	0.35	0.075'	0.667'	219.75'	6.56'	226.30'	0.019'	0.03'			0.022'	6.580'	226.326'	CRITICAL		Yes by 0.79 cfs	10.0
505		1.56	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	8"	0.0040	0.0040	0.77	203.1%	0.35	0.075'	0.667'	226.33'	6.56'	232.88'	0.019'	0.04'			0.030'	6.587'	232.913'	CRITICAL		Yes by 0.79 cfs	15.0
601		1.56	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	8"	0.0050	0.0063	0.96	161.4%	0.35	0.118'	0.667'	232.91'	5.23'	238.14'	0.030'	0.02'	0.08'		0.065'	5.295'	238.208'	CRITICAL		Yes by 0.59 cfs	18.3
602		1.56	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	133.8%	0.55	0.071'	0.833'	238.21'	1.32'	239.53'	0.018'	0.02'	0.05'		0.044'	1.361'	239.569'	CRITICAL		Yes by 0.39 cfs	18.5
603		1.56	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	133.7%	0.55	0.071'	0.833'	239.57'	1.55'	241.12'	0.018'	0.02'			0.021'	1.568'	241.137'	CRITICAL		Yes by 0.39 cfs	19.1
604		1.56	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	134.1%	0.55	0.070'	0.833'	241.14'	1.84'	242.98'	0.018'	0.02'			0.021'	1.863'	243.000'	CRITICAL		Yes by 0.40 cfs	19.8
605		1.56	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	133.5%	0.55	0.071'	0.833'	243.00'	1.06'	244.06'	0.018'	0.02'			0.021'	1.084'	244.084'	CRITICAL		Yes by 0.39 cfs	20.2
606		1.56	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	133.9%	0.55	0.071'	0.833'	244.08'	1.62'	245.71'	0.018'	0.02'			0.021'	1.643'	245.727'	CRITICAL		Yes by 0.39 cfs	20.8
607		1.56	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	133.8%	0.55	0.071'	0.833'	245.73'	1.44'	247.17'	0.018'	0.02'	0.05'		0.044'	1.486'	247.213'	CRITICAL		Yes by 0.39 cfs	21.4
608		1.56	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	134.0%	0.55	0.070'	0.833'	247.21'	1.88'	249.09'	0.018'	0.02'	0.05'		0.044'	1.920'	249.133'	CRITICAL		Yes by 0.40 cfs	22.1
609		1.56	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	133.7%	0.55	0.071'	0.833'	249.13'	1.42'	250.56'	0.018'	0.02'			0.021'	1.443'	250.576'	CRITICAL		Yes by 0.39 cfs	22.7
610		1.56	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	133.9%	0.55	0.070'	0.833'	250.58'	1.34'	251.91'	0.018'	0.02'			0.021'	1.359'	251.935'	CRITICAL		Yes by 0.39 cfs	23.2
611	0.23	1.56	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	134.0%	0.55	0.070'	0.833'	251.94'	1.95'	253.88'	0.018'	0.04'	0.04'	0.010'	0.051'	1.998'	253.933'	CRITICAL		Yes by 0.39 cfs	24.0
612		1.33	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	105.7%	0.55	0.106'	0.721'	253.93'	0.61'	254.54'	0.026'	0.02'	0.06'		0.052'	0.665'	254.597'	CRITICAL		Yes by 0.07 cfs	23.9
613		1.33	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	126.2%	0.55	0.058'	0.833'	254.60'	1.17'	255.77'	0.014'	0.02'			0.020'	1.192'	255.789'	CRITICAL		Yes by 0.28 cfs	24.2
614		1.33	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	113.7%	0.55	0.071'	0.833'	255.79'	0.98'	256.77'	0.018'	0.02'			0.021'	0.998'	256.788'	CRITICAL		Yes by 0.16 cfs	24.3
615		1.33	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	114.1%	0.55	0.070'	0.833'	256.79'	1.17'	257.95'	0.018'	0.02'			0.021'	1.186'	257.974'	CRITICAL		Yes by 0.16 cfs	24.5
616		1.33	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	113.9%	0.55	0.071'	0.833'	257.97'	1.37'	259.34'	0.018'	0.03'			0.022'	1.390'	259.364'	CRITICAL		Yes by 0.16 cfs	24.7
617		1.33	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	172.9%	0.35	0.075'	0.667'	259.36'	3.80'	263.17'	0.019'	0.15'			0.082'	3.886'	263.250'	CRITICAL		Yes by 0.56 cfs	27.2
618		1.33	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	81.5%	0.35	0.415'	0.450'	263.25'	3.17'	266.42'	0.104'	0.03'			0.065'	3.231'	266.481'	CRITICAL		no	24.4
619		1.33	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	172.9%	0.35	0.075'	0.667'	266.48'	3.57'	270.05'	0.019'	0.03'			0.022'	3.589'	270.070'	CRITICAL		Yes by 0.56 cfs	26.7
620		1.33	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	6"	0.0040	0.0040	0.77	172.9%	0.35	0.075'	0.667'	270.07'	4.22'	274.29'	0.019'	0.03'			0.022'	4.243'	274.313'	CRITICAL		Yes by 0.56 cfs	29.4
621	0.70	1.33	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	172.9%	0.35	0.075'	0.667'	274.31'	3.86'	278.18'	0.019'	0.04'	0.05'	0.044'	0.075'	3.939'	278.252'	CRITICAL	CRITICAL	Yes by 0.56 cfs	31.9
622		0.70	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	82.3%	0.35	0.114'	0.460'	278.25'	0.51'	278.76'	0.028'	0.04'	0.07'		0.071'	0.584'	278.835'	CRITICAL	CRITICAL	no	31.4
623		0.70	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	82.2%	0.35	0.114'	0.460'	278.84'	0.88'	279.72'	0.029'	0.04'			0.034'	0.917'	279.752'	CRITICAL	CRITICAL	no	30.6
624		0.70	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	82.4%	0.35	0.113'	0.460'	279.75'	0.66'	280.41'	0.028'	0.04'			0.034'	0.695'	280.447'	CRITICAL	CRITICAL	no	30.0
624		0.70	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	82.3%	0.35	0.114'	0.460'	280.45'	0.65'	281.10'	0.028'	0.04'	0.03'		0.047'	0.700'	281.147'	CRITICAL	CRITICAL	no	29.4
625		0.70	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	82.4%	0.35	0.113'	0.460'	281.15'	0.75'	281.90'	0.028'	0.03'			0.031'	0.784'	281.932'	CRITICAL	CRITICAL	no	28.7
626		0.70	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	91.0%	0.35	0.096'	0.490'	281.93'	0.23'	282.16'	0.024'	0.09'			0.059'	0.292'	282.224'	CRITICAL	CRITICAL	no	28.0
627		0.70	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	47.0%	0.35	0.270'	0.317'	282.22'	0.89'	283.12'	0.067'	0.13'			0.099'	0.991'	283.214'	CRITICAL	CRITICAL	no	21.0
628		0.70	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	265.00'	8"	0.0234	0.0234	1.85	37.6%	0.35	0.371'	0.277'	283.21'	1.11'	284.33'	0.093'	0.03'	0.24'		0.182'	1.295'	284.509'	CRITICAL	CRITICAL	no	15.5
629		0.70	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	91.0%	0.35	0.096'	0.490'	284.51'	0.39'	284.90'	0.024'	0.09'	0.06'		0.088'	0.476'	284.985'	CRITICAL	CRITICAL	no	15.4
630		0.70	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	47.8%	0.35	0.260'	0.317'	284.99'	0.47'	285.46'	0.065'	0.09'			0.077'	0.550'	285.535'	CRITICAL	CRITICAL	no	13.8
631		0.70	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	49.1%	0.35	0.252'	0.327'	285.54'	0.22'	285.75'	0.063'	0.03'	0.16'		0.129'	0.344'	285.879'	CRITICAL	CRITICAL	no	13.1
632		0.70	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	91.1%	0.35	0.095'	0.490'	285.88'	0.62'	286.49'	0.024'	0.00'			0.012'	0.627'	286.507'	CRITICAL	CRITICAL	no	12.8
Pump Station Line																																	
620		1.33	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																							
621	0.70	1.33	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	172.9%	0.35	0.075'	0.667'	244.99'	3.86'	248.85'	0.019'	0.03'	0.05'	0.044'	0.072'	3.936'	248.922'	CRITICAL	o.k.	Yes by 0.56 cfs	2.6
8211		0.70	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	91.0%	0.35	0.096'	0.490'	248.92'	0.78'	249.70'	0.024'	0.03'			0.029'	0.804'	249.727'	CRITICAL	o.k.	no	2.1
8212		0.70	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	91.2%	0.35	0.095'	0.490'	249.73'	0.56'	250.29'	0.024'	0.01'	0.06'		0.049'	0.608'	250.334'	CRITICAL	o.k.	no	1.7
8213		0.70	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	124.6%	0.35	0.040'	0.667'	250.33'	0.77'	251.11'	0.010'	0.03'			0.022'	0.793'	251.127'	CRITICAL	o.k.	Yes by 0.14 cfs	2.0
8214		0.70	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	91.1%	0.35	0.095'	0.490'	251.13'	0.67'	251.79'	0.024'	0.06'	0.06'		0.071'	0.738'	251.866'	CRITICAL	o.k.	no	1.1
8215		0.70	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	65.0%	0.35	0.165'	0.387'	251.87'	0.20'	252.07'	0.041'	0.03'			0.037'	0.242'	252.107'	CRITICAL	o.k.	no	0.7
8216		0.70	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	91.0%	0.35	0.096'	0.490'	252.11'	1.07'	253.18'	0.024'	0.29'	0.06'		0.186'	1.259'	253.367'	CRITICAL	o.k.	no	0.0
8217		0.70	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	21.4%	0.35	0.821'	0.200'	253.37'	0.40'	258.20'	0.205'	0.00'			0.103'	0.507'	258.303'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																	
94th Street Trunk																																	
152		3.15	MH 52		00+00.00	00+00.00	156.06	155.80	22																								
719		0.80	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	13.7%	0.55	0.791'	0.192'	158.10'	0.24'	162.09'	0.198'	0.25'	0.12'		0.283'	0.526'	162.375'	o.k.		no	
720		0.80	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	15.1%	0.55	0.716'	0.208'	162.38'	0.89'	181.84'	0.179'	0.11'			0.144'	1.038'	181.982'	o.k.		no	
721		0.80	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	27.5%	0.55	0.309'	0.288'	181.99'	0.61'	187.71'	0.077'	0.03'			0.056'	0.666'	187.764'	o.k.		no	
722		0.80	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	36.9%	0.79	0.099'	0.415'	187.84'	0.17'	188.87'	0.025'	0.02'			0.024'	0.190'	188.889'	o.k.		no	
723		0.80	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	47.4%	0.79	0.068'	0.475'	188.93'	0.22'	189.88'	0.017'	0.02'			0.020'	0.242'	189.895'	o.k.		no	
724		0.80	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	47.7%	0.79	0.068'	0.475'	189.90'	0.14'	190.48'	0.017'	0.03'			0.023'	0.164'	190.498'	o.k.		no	
724A		0.80	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	42.3%	0.79	0.083'	0.450'	190.50'	0.09'	190.90'	0.021'	0.03'			0.025'	0.111'	190.925'	o.k.		no	
725		0.80	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	68.6%	0.55	0.081'	0.504'	190.95'	0.36'	191.84'	0.020'	0.03'			0.024'	0.383'	191.869'	o.k.		no	
726		0.80	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	68.7%	0.55	0.081'	0.504'	191.87'	0.36'	192.74'	0.020'	0.03'			0.023'	0.387'	192.768'	o.k.		no	
727		0.80	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	71.3%	0.55	0.076'	0.513'	192.77'	0.45'	193.80'	0.019'	0.03'			0.025'	0.476'	193.827'	o.k.		no	
728		0.80	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	64.9%	0.55	0.088'	0.483'	193.83'	0.32'	194.64'	0.022'	0.03'			0.025'	0.349'	194.669'	o.k.		no	
729		0.80	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	68.9%	0.55	0.081'	0.504'	194.67'	0.38'	195.59'	0.020'	0.00'			0.010'	0.388'	195.604'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.22	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.22	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	16.6%	1.23	3.594'	0.338'	9.59' *	0.81'	23.36'	0.898'	1.08'	0.75'		1.367'	2.179'	24.725'	o.k.		no	
102		4.22	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	17.9%	1.23	3.091'	0.338'	24.72'	0.80'	36.72'	0.773'	1.46'			1.117'	1.913'	37.834'	o.k.		no	
103		4.22	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	14.7%	1.23	4.174'	0.313'	37.83'	0.66'	52.05'	1.043'	0.10'	1.19'		1.165'	1.829'	53.217'	o.k.		no	
104		4.22	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	92.3%	1.23	0.277'	0.938'	53.22'	0.58'	53.80'	0.069'	0.10'	0.04'		0.104'	0.686'	53.904'	o.k.		no	
105		4.22	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	92.6%	1.23	0.275'	0.938'	53.90'	0.58'	54.63'	0.069'	0.22'	0.02'		0.153'	0.733'	54.781'	o.k.		no	
106		4.22	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	55.6%	1.23	0.617'	0.656'	54.78'	0.62'	56.46'	0.154'	0.41'	0.08'		0.324'	0.949'	56.781'	o.k.		no	
107		4.22	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	36.2%	1.23	1.185'	0.519'	56.78'	0.55'	60.08'	0.296'	0.10'	0.15'		0.274'	0.824'	60.353'	o.k.		no	
108		4.22	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	91.8%	1.23	0.278'	0.919'	60.68'	0.52'	61.47'	0.069'	0.10'	0.04'		0.104'	0.624'	61.573'	o.k.		no	
109	0.08	4.22	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	91.8%	1.23	0.278'	0.919'	61.67'	0.60'	62.58'	0.069'	0.17'	0.16'	0.005'	0.199'	0.799'	62.778'	o.k.		no	
110		4.14	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	64.0%	1.23	0.475'	0.713'	62.78'	0.96'	65.17'	0.119'	0.17'	0.14'		0.211'	1.168'	65.384'	o.k.		no	
111		4.14	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	64.2%	1.23	0.481'	0.725'	65.39'	1.01'	68.17'	0.120'	0.13'			0.127'	1.139'	68.292'	o.k.		no	
112		4.14	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	74.1%	1.23	0.385'	0.800'	68.99'	1.21'	71.66'	0.096'	0.16'	0.06'		0.159'	1.373'	71.819'	o.k.		no	
113		4.14	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	65.6%	1.23	0.460'	0.725'	71.82'	0.89'	74.12'	0.115'	0.16'	0.10'		0.190'	1.075'	74.305'	o.k.		no	
114		4.14	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	65.6%	1.23	0.461'	0.725'	74.33'	0.91'	76.73'	0.115'	0.09'			0.101'	1.011'	76.826'	o.k.		no	
115	0.20	4.14	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	96.6%	1.23	0.245'	0.981'	79.63'	0.57'	80.42'	0.061'	0.10'		0.010'	0.088'	0.655'	80.509'	o.k.		no	
116		3.93	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	81.3%	1.23	0.298'	0.844'	80.51'	0.74'	81.71'	0.074'	0.03'			0.054'	0.792'	81.768'	o.k.		no	
117	0.04	3.93	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	127.1%	1.23	0.099'	1.250'	82.32'	1.00'	83.32'	0.025'	0.04'	0.01'	0.001'	0.037'	1.034'	83.354'	CRITICAL		Yes by 0.84 cfs	0.4
118		3.89	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	120.2%	1.23	0.108'	1.250'	83.35'	0.32'	83.67'	0.027'	0.16'			0.096'	0.412'	83.766'	CRITICAL		Yes by 0.65 cfs	0.3
119		3.89	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	60.2%	1.23	0.471'	0.694'	83.77'	1.04'	86.16'	0.118'	0.11'			0.116'	1.158'	86.280'	o.k.		no	
120	0.08	3.89	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	76.2%	1.23	0.325'	0.813'	86.48'	0.31'	87.12'	0.081'	0.11'		0.006'	0.100'	0.405'	87.222'	o.k.		no	
121		3.81	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	74.9%	1.23	0.320'	0.800'	87.31'	0.70'	88.82'	0.080'	0.11'			0.095'	0.795'	88.915'	o.k.		no	
122	0.04	3.81	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0051	5.04	75.6%	1.23	0.314'	0.800'	89.70'	0.75'	91.28'	0.078'	0.12'	0.04'	0.003'	0.123'	0.870'	91.403'	o.k.		no	
123		3.77	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	69.1%	1.23	0.354'	0.756'	91.44'	0.53'	92.73'	0.089'	0.12'			0.105'	0.633'	92.832'	o.k.		no	
124		3.77	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	69.6%	1.23	0.349'	0.756'	92.93'	0.45'	94.02'	0.087'	0.12'			0.105'	0.557'	94.121'	o.k.		no	
125		3.77	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	70.0%	1.23	0.348'	0.769'	94.23'	0.32'	95.01'	0.087'	0.12'	0.05'		0.131'	0.455'	95.140'	o.k.		no	
126		3.77	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	69.5%	1.23	0.350'	0.756'	95.20'	1.11'	97.88'	0.088'	0.16'	0.03'		0.139'	1.249'	98.015'	o.k.		no	
127		3.77	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	58.2%	1.23	0.463'	0.681'	98.02'	0.81'	100.58'	0.116'	0.18'	0.06'		0.176'	0.987'	100.757'	o.k.		no	
128		3.77	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	55.0%	1.23	0.504'	0.656'	100.76'	0.84'	103.67'	0.126'	0.04'	0.16'		0.159'	1.002'	103.825'	o.k.		no	
129		3.77	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	119.6%	1.23	0.102'	1.250'	105.25'	0.67'	105.92'	0.026'	0.11'	0.03'		0.082'	0.752'	106.002'	CRITICAL		Yes by 0.62 cfs	0.2
130		3.77	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	75.0%	1.23	0.312'	0.800'	106.00'	0.88'	107.37'	0.078'	0.11'			0.092'	0.975'	107.462'	o.k.		no	
131		3.77	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	76.8%	1.23	0.301'	0.813'	107.58'	0.40'	108.41'	0.075'	0.08'			0.077'	0.479'	108.489'	o.k.		no	
132		3.77	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	92.1%	1.23	0.223'	0.938'	113.69'	0.81'	114.92'	0.056'	0.08'			0.067'	0.878'	114.984'	o.k.		no	
133		3.77	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	91.5%	1.23	0.224'	0.919'	115.10'	0.44'	115.78'	0.056'	0.08'			0.067'	0.512'	115.846'	o.k.		no	
134		3.77	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	91.5%	1.23	0.224'	0.919'	115.98'	0.44'	116.66'	0.056'	0.08'			0.067'	0.512'	116.726'	o.k.		no	
135		3.77	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	91.5%	1.23	0.224'	0.919'	116.86'	0.44'	117.54'	0.056'	0.08'			0.066'	0.511'	117.605'	o.k.		no	
136		3.77	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	93.4%	1.23	0.216'	0.938'	117.76'	0.77'	118.90'	0.054'	0.04'			0.045'	0.818'	118.943'	o.k.		no	
137		3.77	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	118.4%	1.23	0.104'	1.250'	120.44'	1.09'	121.53'	0.026'	0.03'			0.030'	1.119'	121.559'	CRITICAL		Yes by 0.59 cfs	0.3
138	0.54	3.77	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	123.6%	1.23	0.096'	1.250'	121.56'	0.75'	122.31'	0.024'	0.04'	0.01'	0.012'	0.044'	0.790'	122.349'	CRITICAL		Yes by 0.72 cfs	0.4
139		3.23	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	106.1%	1.23	0.122'	1.106'	122.35'	0.29'	122.64'	0.030'	0.15'	0.01'		0.095'	0.387'	122.736'	CRITICAL		Yes by 0.19 cfs	0.4
140		3.23	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	50.6%	1.23	0.421'	0.625'	122.74'	0.32'	123.09'	0.105'	0.12'	0.27'		0.247'	0.563'	123.332'	o.k.		no	
141		3.23	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	57.6%	1.23	0.341'	0.669'	123.33'	0.47'	124.83'	0.085'	0.11'	0.05'		0.125'	0.595'	124.953'	o.k.		no	
142		3.23	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	59.7%	1.23	0.323'	0.681'	124.95'	0.25'	125.70'	0.081'	0.12'	0.08'		0.138'	0.390'	125.840'	o.k.		no	
143		3.23	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	101.0%	0.79	0.334'	0.820'	127.04'	1.22'	128.61'	0.084'	0.23'	0.08'		0.193'	1.417'	128.803'	o.k.		Yes by 0.03 cfs	
1431		3.23	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	68.2%	0.79	0.652'	0.605'	128.80'	0.31'	129.39'	0.163'	0.05'	0.22'		0.214'	0.529'	129.599'	o.k.		no	
1432		3.23	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	134.3%	0.79	0.146'	1.000'	129.88'	0.70'	130.58'	0.036'	0.08'			0.059'	0.759'	130.639'	CRITICAL		Yes by 0.82 cfs	0.3
144		3.23	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	74.3%	1.23	0.233'	0.800'	130.64'	0.11'	130.75'	0.058'	0.12'	0.15'		0.161'	0.272'	130.910'	CRITICAL		no	0.5
145		3.23	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	12"	0.0080	0.0080	3.20	101.0%	0.79	0.334'	0.820'	130.91'	1.44'	132.35'	0.084'	0.13'	0.07'		0.139'	1.582'	132.492'	CRITICAL		Yes by 0.03 cfs	0.5
146		3.23	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	12"	0.0080	0.0086	3.31	97.7%	0.79	0.358'	0.785'	132.49'	1.27'	133.76'	0.089'	0.08'	0.23'		0.197'	1.466'	133.958'	CRITICAL		no	0.2
147		3.23	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	12"	0.0080	0.0068	2.94	109.8%	0.79	0.218'	1.000'	133.96'	1.92'	135.88'	0.054'	0.10'	0.12'		0.139'	2.059'	136.017'	CRITICAL		Yes by 0.29 cfs	0.5
148		3.23	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	12"	0.0080	0.0072	3.04	106.3%	0.79	0.297'	0.885'	136.02'	0.67'	136.69'	0.074'	0.03'	0.08'		0.093'	0.767'	136.783'	CRITICAL		Yes by 0.19 cfs	0.5
149		3.23	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	12"	0.0080	0.0029	1.91	168.8%	0.79	0.092'	1.000'	136.78'	1.05'	137.83'	0.023'	0.12'	0.01'		0.075'	1.125'	137.908'	CRITICAL		Yes by 1.32 cfs	1.3
150		3.23	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	101.0%	0.79	0.334'	0.820'	137.91'	1.44'	139.35'	0.084'	0.15'	0.05'		0.144'	1.586'	139.494'	CRITICAL		Yes by 0.03 cfs	1.0
151		3.23	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	88.3%	0.79	0.430'	0.725'	139.49'	0.67'	140.17'	0.107'	1.28'	0.16'		0.776'	1.450'	140.944'	CRITICAL		no	0.5
152	0.64	3.23	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	20.9%	0.79	3.660'	0.300'	140.94'	1.21'	156.10'	0.915'	0.07'	2.34'	0.680'	2.002'	3.208'	158.102'	o.k.		no	
201		2.59	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	63.9%	1.23	0.186'	0.713'	158.10'	0.12'	158.23'	0.047'	0.15'	0.06'		0.127'	0.252'	158.353'	CRITICAL		no	0.6
202		2.59	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	37.4%	1.23	0.417'	0.519'	158.35'	0.23'	158.59'	0.104'	0.27'	0.05'		0.213'	0.444'	158.798'	o.k.		no	
203		2.59	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	24.8%	1.23	0.762'	0.413'	158.80'	0.16'	160.20'	0.190'	0.07'			0.129'	0.289'	160.331'	o.k.		no	
204		2.59	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	63.1%	1.23	0.191'	0.713'	160.60'	0.46'	161.89'	0.048'	0.07'			0.057'	0.519'	161.950'	o.k.		no	
205		2.59	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	63.1%	1.23	0.191'	0.713'	161.99'	0.45'	163.25'	0.048'	0.07'			0.057'	0.508'	163.310'	o.k.		no	
206		2.59	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	63.2%	1.23	0.191'	0.713'	163.35'	0.55'	164.88'	0.048'	0.07'	0.12'		0.118'	0.668'	165.001'	o.k.		no	
207	0.22	2.59	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	63.1%	1.23	0.191'	0.713'	165.00'	0.73'	167.03'	0.048'	0.06'	0.10'	0.014'	0.112'	0.846'	167.144'	o.k.		no	
208		2.37	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	57.8%	1.23	0.181'	0.669'	167.14'	0.41'	168.38'	0.045'	0.03'			0.036'	0.444'	168.415'	o.k.		no	
209		2.37	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	12"	0.0025	0.0024	1.75	135.0%	0.79	0.077'	1.000'	168.81'	1.60'	170.41'	0.019'	0.03'			0.023'	1.619'	170.429'	CRITICAL		Yes by 0.61 cfs	0.7
210		2.37	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	12"	0.0025	0.0024	1.76	134.6%	0.79	0.078'	1.000'	170.43'	1.44'	171.87'	0.019'	0.03'			0.023'	1.466'	171.895'	CRITICAL		Yes by 0.61 cfs	1.3
211		2.37	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	135.3%	0.79	0.077'	1.000'	171.89'	1.31'	173.21'	0.019'	0.03'	0.01'		0.031'	1.342'	173.237'	CRITICAL		Yes by 0.62 cfs	1.8
212		2.37	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	12"	0.0025	0.0024	1.76	134.6%	0.79	0.078'	1.000'	173.24'	0.88'	174.12'	0.019'	0.05'			0.037'	0.920'	174.157'	CRITICAL		Yes by 0.61 cfs	2.1
301		2.37	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	107.4%	0.79	0.156'	0.885'	174.16'	0.68'	174.84'	0.039'	0.04'			0.039'	0.719'	174.876'	CRITICAL		Yes by 0.16 cfs	1.5
302		2.37	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	111.9%	0.79	0.113'	1.000'	174.88	1.35'	176.22'	0.028'	0.04'			0.034'	1.380'	176.256'	CRITICAL		Yes by 0.25 cfs	1.6
303	0.27	2.37	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	111.9%	0.79	0.113'	1.000'	176.26'	1.35'	177.60'	0.028'	0.08'		0.011'	0.062'	1.409'	177.665'	CRITICAL		Yes by 0.25 cfs	1.7
304		2.10	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	73.9%	0.79	0.242'	0.625'	177.66	0.88'	178.55'	0.060'	0.05'			0.056'	0.937'	178.602'	CRITICAL		no	0.6
305		2.10	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	99.3%	0.79	0.146'	0.800'	178.60'	0.78'	179.39'	0.037'	0.05'			0.044'	0.828'	179.430'	CRITICAL		no	0.2
306		2.10	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	99.5%	0.79	0.146'	0.800'	179.43'	0.62'	180.05'	0.036'	0.05'	0.09'		0.091'	0.711'	180.141'	o.k.		no	
307		2.10	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	98.2%	0.79	0.150'	0.800'	180.25'	0.14'	180.44'	0.037'	0.04'			0.040'	0.180'	180.480'	o.k.		no	
308		2.10	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	107.2%	0.79	0.123'	0.885'	180.73'	1.19'	182.05'	0.031'	0.04'			0.037'	1.228'	182.082'	o.k.		Yes by 0.14 cfs	
309		2.10	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	107.7%	0.79	0.122'	0.885'	182.25'	0.58'	182.89'	0.031'	0.04'			0.037'	0.620'	182.922'	o.k.		Yes by 0.15 cfs	
401		2.10	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	107.3%	0.79	0.123'	0.885'	183.09'	1.09'	184.29'	0.031'	0.15'			0.092'	1.177'	184.377'	o.k.		Yes by 0.14 cfs	
402		2.10	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	80.6%	0.55	0.437'	0.563'	187.57'	2.63'	192.61'	0.109'	0.07'			0.088'	2.713'	192.701'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.10	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	109.6%	0.55	0.191'	0.833'	192.98'	3.18'	196.16'	0.048'	0.13'			0.088'	3.269'	196.252'	CRITICAL		Yes by 0.18 cfs	0.5
404		2.10	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	89.4%	0.55	0.368'	0.604'	196.25'	0.05'	196.30'	0.092'	0.03'			0.062'	0.113'	196.365'	CRITICAL		no	0.4
501	0.50	2.10	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	8"	0.0076	0.0050	0.86	245.1%	0.35	0.094'	0.667'	200.10'	10.45'	210.54'	0.023'	0.03'		0.021'	0.038'	10.487'	210.583'	CRITICAL		Yes by 1.24 cfs	8.7
502		1.59	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	8"	0.0050	0.0049	0.85	188.3%	0.35	0.091'	0.667'	210.58'	6.20'	216.78'	0.023'	0.13'			0.074'	6.275'	216.858'	CRITICAL		Yes by 0.75 cfs	13.2
503		1.59	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	8"	0.0150	0.0150	1.48	107.4%	0.35	0.359'	0.590'	216.86'	3.87'	220.73'	0.090'	0.03'			0.058'	3.931'	220.789'	CRITICAL		Yes by 0.11 cfs	6.5
504		1.59	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	8"	0.0040	0.0040	0.77	208.1%	0.35	0.075'	0.667'	220.79'	6.89'	227.68'	0.019'	0.03'			0.022'	6.912'	227.701'	CRITICAL		Yes by 0.83 cfs	11.4
505		1.59	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	8"	0.0040	0.0040	0.77	208.1%	0.35	0.075'	0.667'	227.70'	6.89'	234.59'	0.019'	0.04'			0.030'	6.920'	234.621'	CRITICAL		Yes by 0.83 cfs	16.7
601		1.59	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	8"	0.0050	0.0063	0.96	165.4%	0.35	0.118'	0.667'	234.62'	5.49'	240.11'	0.030'	0.02'	0.08'		0.065'	5.559'	240.180'	CRITICAL		Yes by 0.63 cfs	20.2
602		1.59	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	137.1%	0.55	0.071'	0.833'	240.18'	1.38'	241.56'	0.018'	0.02'	0.05'		0.044'	1.428'	241.608'	CRITICAL		Yes by 0.43 cfs	20.5
603		1.59	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	137.0%	0.55	0.071'	0.833'	241.61'	1.63'	243.23'	0.018'	0.02'			0.021'	1.647'	243.254'	CRITICAL		Yes by 0.43 cfs	21.2
604		1.59	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	137.4%	0.55	0.070'	0.833'	243.25'	1.93'	245.19'	0.018'	0.02'			0.021'	1.956'	245.210'	CRITICAL		Yes by 0.43 cfs	22.0
605		1.59	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	136.8%	0.55	0.071'	0.833'	245.21'	1.12'	246.33'	0.018'	0.02'			0.021'	1.138'	246.348'	CRITICAL		Yes by 0.43 cfs	22.5
606		1.59	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	137.2%	0.55	0.071'	0.833'	246.35'	1.70'	248.05'	0.018'	0.02'			0.021'	1.725'	248.074'	CRITICAL		Yes by 0.43 cfs	23.2
607		1.59	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	137.1%	0.55	0.071'	0.833'	248.07'	1.52'	249.59'	0.018'	0.02'	0.05'		0.044'	1.559'	249.633'	CRITICAL		Yes by 0.43 cfs	23.8
608		1.59	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	137.4%	0.55	0.070'	0.833'	249.63'	1.97'	251.60'	0.018'	0.02'	0.05'		0.044'	2.015'	251.648'	CRITICAL		Yes by 0.43 cfs	24.7
609		1.59	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	137.0%	0.55	0.071'	0.833'	251.65'	1.49'	253.14'	0.018'	0.02'			0.021'	1.515'	253.163'	CRITICAL		Yes by 0.43 cfs	25.3
610		1.59	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	137.2%	0.55	0.070'	0.833'	253.16'	1.41'	254.57'	0.018'	0.02'			0.021'	1.426'	254.589'	CRITICAL		Yes by 0.43 cfs	25.9
611	0.24	1.59	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	137.3%	0.55	0.070'	0.833'	254.59'	2.04'	256.63'	0.018'	0.03'	0.04'	0.010'	0.047'	2.092'	256.682'	CRITICAL		Yes by 0.43 cfs	26.8
612		1.36	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	108.3%	0.55	0.082'	0.833'	256.68'	0.83'	257.51'	0.021'	0.02'	0.05'		0.043'	0.872'	257.554'	CRITICAL		Yes by 0.10 cfs	26.8
613		1.36	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	129.4%	0.55	0.058'	0.833'	257.55'	1.23'	258.79'	0.014'	0.02'			0.020'	1.252'	258.806'	CRITICAL		Yes by 0.31 cfs	27.2
614		1.36	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	116.5%	0.55	0.071'	0.833'	258.81'	1.03'	259.83'	0.018'	0.02'			0.021'	1.048'	259.854'	CRITICAL		Yes by 0.19 cfs	27.4
615		1.36	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	117.0%	0.55	0.070'	0.833'	259.85'	1.22'	261.08'	0.018'	0.02'			0.021'	1.246'	261.099'	CRITICAL		Yes by 0.20 cfs	27.6
616		1.36	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	116.8%	0.55	0.071'	0.833'	261.10'	1.44'	262.54'	0.018'	0.03'			0.022'	1.460'	262.559'	CRITICAL		Yes by 0.20 cfs	27.9
617		1.36	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	177.3%	0.35	0.075'	0.667'	262.56'	4.00'	266.56'	0.019'	0.15'			0.083'	4.081'	266.640'	CRITICAL		Yes by 0.59 cfs	30.6
618		1.36	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	83.6%	0.35	0.419'	0.460'	266.64'	3.31'	269.95'	0.105'	0.03'			0.065'	3.374'	270.013'	CRITICAL		no	27.9
619		1.36	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	177.3%	0.35	0.075'	0.667'	270.01'	3.75'	273.76'	0.019'	0.03'			0.022'	3.771'	273.784'	CRITICAL		Yes by 0.59 cfs	30.4
620		1.36	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	177.3%	0.35	0.075'	0.667'	273.78'	4.44'	278.22'	0.019'	0.03'			0.022'	4.458'	278.242'	CRITICAL		Yes by 0.59 cfs	33.3
621	0.72	1.36	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	177.3%	0.35	0.075'	0.667'	278.24'	4.06'	282.30'	0.019'	0.04'	0.05'	0.044'	0.076'	4.136'	282.378'	CRITICAL	CRITICAL	Yes by 0.59 cfs	36.0
622		0.72	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	84.4%	0.35	0.115'	0.467'	282.38'	0.54'	282.91'	0.029'	0.04'	0.07'		0.071'	0.608'	282.986'	CRITICAL	CRITICAL	no	35.6
623		0.72	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	84.3%	0.35	0.115'	0.467'	282.99'	0.92'	283.91'	0.029'	0.04'			0.034'	0.958'	283.944'	CRITICAL	CRITICAL	no	34.8
624		0.72	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	84.5%	0.35	0.115'	0.467'	283.94'	0.69'	284.64'	0.029'	0.04'			0.034'	0.726'	284.670'	CRITICAL	CRITICAL	no	34.2
624		0.72	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	84.4%	0.35	0.115'	0.467'	284.67'	0.68'	285.35'	0.029'	0.04'	0.03'		0.047'	0.731'	285.401'	CRITICAL	CRITICAL	no	33.6
625		0.72	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	84.6%	0.35	0.114'	0.467'	285.40'	0.79'	286.19'	0.029'	0.03'			0.031'	0.820'	286.220'	CRITICAL	CRITICAL	no	33.0
626		0.72	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	93.4%	0.35	0.096'	0.500'	286.22'	0.24'	286.46'	0.024'	0.10'			0.060'	0.304'	286.524'	CRITICAL	CRITICAL	no	32.3
627		0.72	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	48.2%	0.35	0.275'	0.327'	286.52'	0.92'	287.44'	0.069'	0.13'			0.101'	1.021'	287.545'	CRITICAL	CRITICAL	no	25.4
628		0.72	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	38.6%	0.35	0.383'	0.283'	287.55'	1.14'	288.68'	0.096'	0.03'	0.24'		0.187'	1.324'	288.869'	CRITICAL	CRITICAL	no	19.8
629		0.72	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	93.4%	0.35	0.096'	0.500'	288.87'	0.41'	289.27'	0.024'	0.09'	0.06'		0.089'	0.495'	289.364'	CRITICAL	CRITICAL	no	19.7
630		0.72	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	49.1%	0.35	0.266'	0.327'	289.36'	0.49'	289.85'	0.066'	0.09'			0.078'	0.566'	289.931'	CRITICAL	CRITICAL	no	18.2
631		0.72	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	50.4%	0.35	0.257'	0.333'	289.93'	0.22'	290.15'	0.064'	0.03'	0.16'		0.131'	0.353'	290.284'	CRITICAL	CRITICAL	no	17.5
632		0.72	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	93.5%	0.35	0.096'	0.500'	290.28'	0.64'	290.93'	0.024'	0.00'			0.012'	0.656'	290.940'	CRITICAL	CRITICAL	no	17.3
Pump Station Line																																
620		1.36	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.72	1.36	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	177.3%	0.35	0.075'	0.667'	244.99'	4.06'	249.05'	0.019'	0.03'	0.05'	0.044'	0.072'	4.133'	249.119'	CRITICAL	o.k.	Yes by 0.59 cfs	2.8
8211		0.72	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	93.4%	0.35	0.096'	0.500'	249.12'	0.81'	249.93'	0.024'	0.03'			0.029'	0.840'	249.960'	CRITICAL	o.k.	no	2.3
8212		0.72	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	93.6%	0.35	0.096'	0.500'	249.96'	0.58'	250.54'	0.024'	0.01'	0.06'		0.050'	0.634'	250.594'	CRITICAL	o.k.	no	2.0
8213		0.72	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	127.8%	0.35	0.040'	0.667'	250.59'	0.81'	251.41'	0.010'	0.03'			0.022'	0.833'	251.427'	CRITICAL	o.k.	Yes by 0.16 cfs	2.3
8214		0.72	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	93.5%	0.35	0.096'	0.500'	251.43'	0.70'	252.13'	0.024'	0.06'	0.06'		0.072'	0.770'	252.197'	CRITICAL	o.k.	no	1.4
8215		0.72	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	66.6%	0.35	0.168'	0.393'	252.20'	0.21'	252.41'	0.042'	0.03'			0.038'	0.249'	252.446'	CRITICAL	o.k.	no	1.0
8216		0.72	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	93.4%	0.35	0.096'	0.500'	252.45'	1.12'	253.57'	0.024'	0.29'	0.06'		0.187'	1.309'	253.756'	CRITICAL	o.k.	no	0.4
8217		0.72	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	22.0%	0.35	0.821'	0.200'	253.76'	0.43'	258.20'	0.205'	0.00'			0.103'	0.529'	258.303'	o.k.	o.k.	no	
** Information referenced from the Salmon Creek Interceptor Analysis*																																
94th Street Trunk																																
152		3.23	MH 52		00+00.00	00+00.00	156.05	155.80	22																							
719		0.82	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	14.1%	0.55	0.863'	0.208'	158.10'	0.23'	162.11'	0.216'	0.25'	0.13'		0.298'	0.530'	162.406'	o.k.		no	
720		0.82	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	15.5%	0.55	0.716'	0.208'	162.41'	0.94'	181.84'	0.179'	0.11'			0.146'	1.087'	181.984'	o.k.		no	
721		0.82	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	28.2%	0.55	0.324'	0.300'	182.00'	0.62'	187.72'	0.081'	0.03'			0.058'	0.673'	187.778'	o.k.		no	
722		0.82	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	37.9%	0.79	0.099'	0.415'	187.84'	0.17'	188.87'	0.025'	0.02'			0.025'	0.199'	188.890'	o.k.		no	
723		0.82	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	48.6%	0.79	0.070'	0.490'	188.94'	0.23'	189.89'	0.017'	0.02'			0.021'	0.249'	189.911'	o.k.		no	
724		0.82	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	48.9%	0.79	0.069'	0.490'	189.91'	0.15'	190.49'	0.017'	0.03'			0.023'	0.169'	190.513'	o.k.		no	
724A		0.82	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	43.3%	0.79	0.083'	0.450'	190.51'	0.09'	190.90'	0.021'	0.03'			0.025'	0.116'	190.925'	o.k.		no	
725		0.82	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	70.4%	0.55	0.082'	0.513'	190.96'	0.37'	191.85'	0.021'	0.03'			0.025'	0.397'	191.877'	o.k.		no	
726		0.82	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	70.4%	0.55	0.082'	0.513'	191.88'	0.38'	192.75'	0.021'	0.03'			0.024'	0.401'	192.776'	o.k.		no	
727		0.82	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	73.1%	0.55	0.078'	0.521'	192.78'	0.47'	193.81'	0.019'	0.03'			0.025'	0.494'	193.836'	o.k.		no	
728		0.82	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	66.6%	0.55	0.090'	0.492'	193.84'	0.33'	194.65'	0.023'	0.03'			0.026'	0.360'	194.677'	o.k.		no	
729		0.82	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	70.7%	0.55	0.082'	0.513'	194.68'	0.39'	195.60'	0.020'	0.00'			0.010'	0.403'	195.613'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.28	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																								
101		4.28	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	16.9%	1.23	3.594'	0.338'	10.33' *	0.84'	23.36'	0.898'	1.14'	0.75'		1.397'	2.235'	24.755'	o.k.		no	
102		4.28	MH 2		02+04.00	02+04.00	35.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	18.2%	1.23	3.261'	0.356'	24.75'	0.77'	36.74'	0.815'	1.46'			1.138'	1.910'	37.874'	o.k.		no	
103		4.28	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	14.9%	1.23	4.174'	0.313'	37.87'	0.68'	52.05'	1.043'	0.10'	1.19'		1.165'	1.850'	53.217'	o.k.		no	
104		4.28	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	93.8%	1.23	0.277'	0.938'	53.22'	0.60'	53.82'	0.069'	0.10'	0.04'		0.104'	0.705'	53.922'	o.k.		no	
105		4.28	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	94.0%	1.23	0.275'	0.956'	53.92'	0.59'	54.65'	0.069'	0.22'	0.02'		0.154'	0.749'	54.801'	o.k.		no	
106		4.28	MH 6		07+89.00	07+89.00	55.80	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	56.5%	1.23	0.623'	0.669'	54.80'	0.64'	56.47'	0.156'	0.41'	0.08'		0.326'	0.962'	56.794'	o.k.		no	
107		4.28	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	36.7%	1.23	1.185'	0.519'	56.79'	0.57'	60.08'	0.296'	0.10'	0.15'		0.274'	0.842'	60.353'	o.k.		no	
108		4.28	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	93.2%	1.23	0.280'	0.938'	60.70'	0.53'	61.49'	0.070'	0.10'	0.04'		0.105'	0.638'	61.593'	o.k.		no	
109	0.08	4.28	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	93.2%	1.23	0.280'	0.938'	61.69'	0.61'	62.60'	0.070'	0.17'	0.16'	0.005'	0.202'	0.817'	62.799'	o.k.		no	
110		4.20	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	65.0%	1.23	0.484'	0.725'	62.80'	0.97'	65.19'	0.121'	0.17'	0.14'		0.214'	1.182'	65.399'	o.k.		no	
111		4.20	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	65.2%	1.23	0.481'	0.725'	65.40'	1.04'	68.17'	0.120'	0.13'			0.127'	1.170'	68.292'	o.k.		no	
112		4.20	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	75.3%	1.23	0.385'	0.800'	68.99'	1.25'	71.66'	0.096'	0.16'	0.06'		0.161'	1.413'	71.821'	o.k.		no	
113		4.20	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	66.6%	1.23	0.469'	0.738'	71.82'	0.90'	74.13'	0.117'	0.16'	0.11'		0.194'	1.090'	74.321'	o.k.		no	
114		4.20	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	66.6%	1.23	0.470'	0.738'	74.34'	0.92'	76.74'	0.117'	0.09'			0.102'	1.024'	76.839'	o.k.		no	
115	0.21	4.20	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	98.1%	1.23	0.245'	1.000'	79.65'	0.58'	80.44'	0.061'	0.11'		0.010'	0.088'	0.670'	80.528'	o.k.		no	
116		3.99	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	82.5%	1.23	0.300'	0.863'	80.53'	0.76'	81.73'	0.075'	0.03'			0.055'	0.812'	81.787'	o.k.		no	
117	0.04	3.99	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	129.0%	1.23	0.099'	1.250'	82.32'	1.03'	83.35'	0.025'	0.04'	0.01'	0.001'	0.037'	1.065'	83.385'	CRITICAL		Yes by 0.90 cfs	0.4
118		3.95	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	122.1%	1.23	0.108'	1.250'	83.39'	0.33'	83.71'	0.027'	0.16'			0.096'	0.422'	83.808'	CRITICAL		Yes by 0.71 cfs	0.4
119		3.95	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	61.1%	1.23	0.471'	0.694'	83.81'	1.07'	86.16'	0.118'	0.11'			0.116'	1.191'	86.280'	o.k.		no	
120	0.08	3.95	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	77.4%	1.23	0.325'	0.813'	86.48'	0.32'	87.12'	0.081'	0.11'		0.006'	0.100'	0.416'	87.223'	o.k.		no	
121		3.87	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	76.0%	1.23	0.323'	0.813'	87.32'	0.72'	88.83'	0.081'	0.11'			0.096'	0.814'	88.928'	o.k.		no	
122	0.04	3.87	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	76.8%	1.23	0.317'	0.813'	89.71'	0.77'	91.29'	0.079'	0.13'	0.04'	0.003'	0.124'	0.890'	91.417'	o.k.		no	
123		3.83	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	70.2%	1.23	0.358'	0.769'	91.45'	0.54'	92.74'	0.089'	0.12'			0.106'	0.645'	92.845'	o.k.		no	
124		3.83	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	70.7%	1.23	0.353'	0.769'	92.94'	0.46'	94.03'	0.088'	0.12'			0.105'	0.566'	94.134'	o.k.		no	
125		3.83	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	71.1%	1.23	0.348'	0.769'	94.23'	0.33'	95.01'	0.087'	0.12'	0.05'		0.132'	0.466'	95.140'	o.k.		no	
126		3.83	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	70.6%	1.23	0.353'	0.769'	95.21'	1.13'	97.89'	0.088'	0.16'	0.03'		0.139'	1.271'	98.028'	o.k.		no	
127		3.83	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	59.1%	1.23	0.463'	0.681'	98.03'	0.84'	100.58'	0.116'	0.18'	0.06'		0.176'	1.012'	100.757'	o.k.		no	
128		3.83	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	55.9%	1.23	0.504'	0.656'	100.76'	0.87'	103.67'	0.126'	0.04'	0.16'		0.159'	1.029'	103.825'	o.k.		no	
129		3.83	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	121.5%	1.23	0.102'	1.250'	105.25'	0.69'	105.94'	0.026'	0.11'	0.03'		0.083'	0.773'	106.023'	CRITICAL		Yes by 0.68 cfs	0.2
130		3.83	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	76.2%	1.23	0.315'	0.813'	106.02'	0.91'	107.38'	0.079'	0.11'			0.092'	0.998'	107.475'	o.k.		no	
131		3.83	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	78.0%	1.23	0.301'	0.813'	107.58'	0.42'	108.41'	0.075'	0.08'			0.077'	0.492'	108.489'	o.k.		no	
132		3.83	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	93.5%	1.23	0.223'	0.938'	113.69'	0.84'	114.92'	0.056'	0.08'			0.067'	0.904'	114.985'	o.k.		no	
133		3.83	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	92.9%	1.23	0.226'	0.938'	115.12'	0.46'	115.80'	0.056'	0.08'			0.068'	0.524'	115.865'	o.k.		no	
134		3.83	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	92.9%	1.23	0.226'	0.938'	116.00'	0.46'	116.68'	0.056'	0.08'			0.068'	0.524'	116.745'	o.k.		no	
135		3.83	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	92.9%	1.23	0.226'	0.938'	116.88'	0.46'	117.56'	0.056'	0.08'			0.066'	0.522'	117.624'	o.k.		no	
136		3.83	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	94.8%	1.23	0.216'	0.956'	117.78'	0.79'	118.92'	0.054'	0.04'			0.045'	0.838'	118.962'	o.k.		no	
137		3.83	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	120.3%	1.23	0.104'	1.250'	120.44'	1.12'	121.56'	0.026'	0.03'			0.030'	1.154'	121.594'	CRITICAL		Yes by 0.65 cfs	0.3
138	0.55	3.83	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	125.5%	1.23	0.096'	1.250'	121.59'	0.77'	122.36'	0.024'	0.04'	0.01'	0.012'	0.044'	0.813'	122.407'	CRITICAL		Yes by 0.78 cfs	0.5
139		3.28	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	107.8%	1.23	0.122'	1.106'	122.41'	0.30'	122.71'	0.030'	0.15'	0.01'		0.095'	0.396'	122.804'	CRITICAL		Yes by 0.24 cfs	0.4
140		3.28	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	51.4%	1.23	0.421'	0.625'	122.80'	0.33'	123.13'	0.105'	0.12'	0.27'		0.248'	0.574'	123.378'	o.k.		no	
141		3.28	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	58.5%	1.23	0.348'	0.681'	123.38'	0.48'	124.84'	0.087'	0.12'	0.05'		0.127'	0.603'	124.968'	o.k.		no	
142		3.28	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	60.7%	1.23	0.329'	0.694'	124.97'	0.25'	125.71'	0.082'	0.12'	0.08'		0.140'	0.395'	125.854'	o.k.		no	
143		3.28	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	102.6%	0.79	0.334'	0.840'	127.06'	1.27'	128.63'	0.084'	0.23'	0.08'		0.193'	1.463'	128.823'	o.k.		Yes by 0.08 cfs	
1431		3.28	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	69.3%	0.79	0.652'	0.605'	128.82'	0.32'	129.39'	0.163'	0.05'	0.22'		0.214'	0.539'	129.599'	o.k.		no	
1432		3.28	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	136.4%	0.79	0.146'	1.000'	129.88'	0.72'	130.60'	0.036'	0.08'			0.059'	0.781'	130.661'	CRITICAL		Yes by 0.87 cfs	0.3
144		3.28	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	75.5%	1.23	0.233'	0.800'	130.66'	0.11'	130.78'	0.058'	0.13'	0.15'		0.165'	0.280'	130.941'	CRITICAL		no	0.5
145		3.28	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	34.8%	1.77	0.362'	0.600'	130.94'	0.27'	131.47'	0.090'	0.13'	0.08'		0.149'	0.422'	131.619'	o.k.		no	
146		3.28	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	33.7%	1.77	0.374'	0.578'	131.62'	0.25'	133.18'	0.094'	0.11'	0.24'		0.222'	0.470'	133.399'	o.k.		no	
147		3.28	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	37.8%	1.77	0.317'	0.623'	133.42'	0.27'	135.02'	0.079'	0.12'	0.17'		0.186'	0.456'	135.208'	o.k.		no	
148		3.28	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	36.6%	1.77	0.338'	0.623'	135.21'	0.12'	135.78'	0.084'	0.06'	0.09'		0.117'	0.237'	135.899'	o.k.		no	
149		3.28	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	58.2%	1.77	0.169'	0.818'	135.98'	0.12'	136.35'	0.042'	0.12'	0.02'		0.089'	0.205'	136.437'	o.k.		no	
150		3.28	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	102.6%	0.79	0.334'	0.840'	136.44'	1.50'	138.22'	0.084'	0.15'	0.05'		0.144'	1.640'	138.364'	o.k.		Yes by 0.08 cfs	
151		3.28	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	89.7%	0.79	0.430'	0.725'	138.36'	0.70'	139.41'	0.107'	1.28'	0.16'		0.776'	1.471'	140.181'	o.k.		no	
152	0.65	3.28	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	21.2%	0.79	3.660'	0.300'	140.18'	1.24'	156.10'	0.915'	0.07'	2.34'	0.680'	2.002'	3.246'	158.102'	o.k.		no	
201		2.63	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	64.9%	1.23	0.190'	0.725'	158.10'	0.13'	158.23'	0.047'	0.15'	0.06'		0.130'	0.257'	158.359'	CRITICAL		no	0.6
202		2.63	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	38.0%	1.23	0.430'	0.531'	158.36'	0.23'	158.59'	0.108'	0.27'	0.06'		0.215'	0.447'	158.806'	o.k.		no	
203		2.63	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	25.2%	1.23	0.762'	0.413'	158.81'	0.16'	160.20'	0.190'	0.07'			0.129'	0.294'	160.332'	o.k.		no	
204		2.63	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	64.1%	1.23	0.195'	0.725'	160.62'	0.47'	161.91'	0.049'	0.07'			0.058'	0.527'	161.963'	o.k.		no	
205		2.63	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	64.1%	1.23	0.195'	0.725'	162.01'	0.46'	163.27'	0.049'	0.07'			0.058'	0.515'	163.323'	o.k.		no	
206		2.63	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	64.2%	1.23	0.194'	0.725'	163.37'	0.56'	164.90'	0.049'	0.07'	0.12'		0.120'	0.677'	165.015'	o.k.		no	
207	0.22	2.63	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	64.1%	1.23	0.195'	0.725'	165.02'	0.74'	167.05'	0.049'	0.06'	0.10'	0.015'	0.114'	0.858'	167.159'	o.k.		no	
208		2.41	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	58.8%	1.23	0.185'	0.681'	167.16'	0.41'	168.39'	0.046'	0.03'			0.037'	0.450'	168.428'	o.k.		no	
209		2.41	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	12"	0.0025	0.0024	1.75	137.1%	0.79	0.077'	1.000'	168.81'	1.65'	170.46'	0.019'	0.03'			0.023'	1.670'	170.480'	CRITICAL		Yes by 0.65 cfs	0.8
210		2.41	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	12"	0.0025	0.0024	1.76	136.7%	0.79	0.078'	1.000'	170.48'	1.49'	171.97'	0.019'	0.03'			0.023'	1.512'	171.992'	CRITICAL		Yes by 0.65 cfs	1.4
211		2.41	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	137.4%	0.79	0.077'	1.000'	171.99'	1.35'	173.35'	0.019'	0.03'	0.01'		0.031'	1.384'	173.377'	CRITICAL		Yes by 0.66 cfs	1.9
212		2.41	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	12"	0.0025	0.0024	1.76	136.7%	0.79	0.078'	1.000'	173.38'	0.91'	174.29'	0.019'	0.04'			0.031'	0.943'	174.319'	CRITICAL		Yes by 0.65 cfs	2.3
301		2.41	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	109.1%	0.79	0.122'	1.000'	174.32'	0.89'	175.21'	0.031'	0.04'			0.035'	0.924'	175.243'	CRITICAL		Yes by 0.20 cfs	1.9
302		2.41	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	113.7%	0.79	0.113'	1.000'	175.24'	1.39'	176.63'	0.028'	0.04'			0.034'	1.424'	176.667'	CRITICAL		Yes by 0.29 cfs	2.1
303	0.27	2.41	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	113.7%	0.79	0.113'	1.000'	176.67'	1.39'	178.06'	0.028'	0.09'		0.011'	0.062'	1.452'	178.119'	CRITICAL		Yes by 0.29 cfs	2.2
304		2.13	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	75.1%	0.79	0.244'	0.640'	178.12'	0.90'	179.02'	0.061'	0.05'			0.056'	0.955'	179.074'	CRITICAL		no	1.0
305		2.13	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	100.9%	0.79	0.146'	0.820'	179.07'	0.81'	179.88'	0.037'	0.05'			0.044'	0.853'	179.927'	CRITICAL		Yes by 0.02 cfs	0.7
306		2.13	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	101.1%	0.79	0.146'	0.820'	179.93'	0.64'	180.57'	0.036'	0.05'	0.09'		0.091'	0.731'	180.658'	CRITICAL		Yes by 0.02 cfs	0.3
307		2.13	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	99.7%	0.79	0.150'	0.800'	180.66'	0.14'	180.80'	0.037'	0.03'			0.036'	0.180'	180.838'	CRITICAL		no	0.2
308		2.13	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	108.9%	0.79	0.097'	1.000'	180.84'	1.56'	182.40'	0.024'	0.03'			0.029'	1.587'	182.427'	CRITICAL		Yes by 0.17 cfs	0.2
309		2.13	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	109.5%	0.79	0.096'	1.000'	182.43'	0.76'	183.19'	0.024'	0.03'			0.029'	0.792'	183.219'	CRITICAL		Yes by 0.18 cfs	0.2
401		2.13	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	109.0%	0.79	0.096'	1.000'	183.22'	1.42'	184.64'	0.024'	0.15'			0.089'	1.508'	184.727'	CRITICAL		Yes by 0.18 cfs	0.2
402		2.13	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	81.8%	0.55	0.437'	0.563'	187.57'	2.71'	192.61'	0.109'	0.07'			0.088'	2.798'	192.701'	o.k.		no	
403		2.13	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	111.4%	0.55	0.191'	0.833'	192.98'	3.28'	196.27'	0.048'	0.13'			0.088'	3.371'	196.355'	CRITICAL		Yes by 0.22 cfs	0.6
404		2.13	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	90.8%	0.55	0.368'	0.613'	196.35'	0.05'	196.41'	0.092'	0.03'			0.062'	0.114'	196.468'	CRITICAL		no	0.5

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
501	0.51	2.13	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	8"	0.0076	0.0050	0.86	249.0%	0.35	0.094'	0.667'	200.10'	10.78'	210.88'	0.023'	0.03'		0.021'	0.038'	10.823'	210.920'	CRITICAL		Yes by 1.28 cfs	9.0
502		1.62	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	8"	0.0050	0.0049	0.85	191.3%	0.35	0.091'	0.667'	210.92'	6.40'	217.32'	0.023'	0.10'			0.061'	6.462'	217.382'	CRITICAL		Yes by 0.77 cfs	13.7
503		1.62	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	8"	0.0150	0.0150	1.48	109.1%	0.35	0.281'	0.667'	217.38'	5.07'	222.45'	0.070'	0.03'			0.048'	5.116'	222.498'	CRITICAL		Yes by 0.14 cfs	8.2
504		1.62	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	8"	0.0040	0.0040	0.77	211.5%	0.35	0.075'	0.667'	222.50'	7.11'	229.61'	0.019'	0.03'			0.022'	7.136'	229.634'	CRITICAL		Yes by 0.85 cfs	13.3
505		1.62	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	8"	0.0040	0.0040	0.77	211.5%	0.35	0.075'	0.667'	229.63'	7.11'	236.75'	0.019'	0.04'			0.030'	7.143'	236.777'	CRITICAL		Yes by 0.85 cfs	18.9
601		1.62	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	8"	0.0050	0.0063	0.96	168.1%	0.35	0.118'	0.667'	236.78'	5.67'	242.45'	0.030'	0.02'	0.08'		0.065'	5.736'	242.515'	CRITICAL		Yes by 0.66 cfs	22.6
602		1.62	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	139.3%	0.55	0.071'	0.833'	242.51'	1.43'	243.94'	0.018'	0.02'	0.05'		0.044'	1.473'	243.988'	CRITICAL		Yes by 0.46 cfs	22.9
603		1.62	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	139.3%	0.55	0.071'	0.833'	243.99'	1.68'	245.67'	0.018'	0.02'			0.021'	1.699'	245.687'	CRITICAL		Yes by 0.46 cfs	23.6
604		1.62	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	139.6%	0.55	0.070'	0.833'	245.69'	2.00'	247.68'	0.018'	0.02'			0.021'	2.019'	247.706'	CRITICAL		Yes by 0.46 cfs	24.5
605		1.62	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	139.0%	0.55	0.071'	0.833'	247.71'	1.15'	248.86'	0.018'	0.02'			0.021'	1.174'	248.880'	CRITICAL		Yes by 0.45 cfs	25.0
606		1.62	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	139.4%	0.55	0.071'	0.833'	248.88'	1.76'	250.64'	0.018'	0.02'			0.021'	1.781'	250.661'	CRITICAL		Yes by 0.46 cfs	25.8
607		1.62	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	139.3%	0.55	0.071'	0.833'	250.66'	1.56'	252.23'	0.018'	0.02'	0.05'		0.044'	1.608'	252.269'	CRITICAL		Yes by 0.46 cfs	26.4
608		1.62	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	139.6%	0.55	0.070'	0.833'	252.27'	2.04'	254.30'	0.018'	0.02'	0.05'		0.044'	2.079'	254.348'	CRITICAL		Yes by 0.46 cfs	27.4
609		1.62	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	139.2%	0.55	0.071'	0.833'	254.35'	1.54'	255.89'	0.018'	0.02'			0.021'	1.564'	255.912'	CRITICAL		Yes by 0.46 cfs	28.0
610		1.62	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	139.4%	0.55	0.070'	0.833'	255.21'	1.45'	257.35'	0.018'	0.02'			0.021'	1.472'	257.384'	CRITICAL		Yes by 0.46 cfs	28.7
611	0.24	1.62	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	139.5%	0.55	0.070'	0.833'	257.38'	2.11'	259.50'	0.018'	0.03'	0.04'	0.010'	0.047'	2.158'	259.542'	CRITICAL		Yes by 0.46 cfs	29.6
612		1.38	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	110.1%	0.55	0.082'	0.833'	259.54'	0.86'	260.40'	0.021'	0.02'	0.05'		0.043'	0.899'	260.442'	CRITICAL		Yes by 0.13 cfs	29.7
613		1.38	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	131.5%	0.55	0.058'	0.833'	260.44'	1.27'	261.71'	0.014'	0.02'			0.020'	1.292'	261.734'	CRITICAL		Yes by 0.33 cfs	30.1
614		1.38	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	118.4%	0.55	0.071'	0.833'	261.73'	1.06'	262.79'	0.018'	0.02'			0.021'	1.082'	262.815'	CRITICAL		Yes by 0.21 cfs	30.3
615		1.38	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	118.9%	0.55	0.070'	0.833'	262.82'	1.26'	264.08'	0.018'	0.02'			0.021'	1.286'	264.101'	CRITICAL		Yes by 0.22 cfs	30.6
616		1.38	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	118.7%	0.55	0.071'	0.833'	264.10'	1.48'	265.59'	0.018'	0.03'			0.022'	1.506'	265.608'	CRITICAL		Yes by 0.22 cfs	31.0
617		1.38	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	180.1%	0.35	0.075'	0.667'	265.61'	4.13'	269.74'	0.019'	0.15'			0.083'	4.212'	269.819'	CRITICAL		Yes by 0.61 cfs	33.7
618		1.38	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	84.9%	0.35	0.422'	0.467'	269.82'	3.40'	273.22'	0.106'	0.03'			0.066'	3.463'	273.282'	CRITICAL		no	31.2
619		1.38	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	180.1%	0.35	0.075'	0.667'	273.28'	3.87'	277.15'	0.019'	0.03'			0.022'	3.893'	277.175'	CRITICAL		Yes by 0.61 cfs	33.8
620		1.38	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	180.1%	0.35	0.075'	0.667'	277.18'	4.58'	281.76'	0.019'	0.03'			0.022'	4.602'	281.778'	CRITICAL		Yes by 0.61 cfs	36.9
621	0.73	1.38	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	180.1%	0.35	0.075'	0.667'	281.78'	4.19'	285.97'	0.019'	0.04'	0.05'	0.044'	0.076'	4.269'	286.046'	CRITICAL	CRITICAL	Yes by 0.61 cfs	39.7
622		0.73	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	85.8%	0.35	0.115'	0.467'	286.05'	0.55'	286.60'	0.029'	0.04'	0.07'		0.071'	0.626'	286.672'	CRITICAL	CRITICAL	no	39.3
623		0.73	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	85.7%	0.35	0.115'	0.467'	286.67'	0.95'	287.63'	0.029'	0.04'			0.034'	0.989'	287.661'	CRITICAL	CRITICAL	no	38.5
624		0.73	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	85.9%	0.35	0.115'	0.467'	287.66'	0.71'	288.38'	0.029'	0.04'			0.034'	0.749'	288.410'	CRITICAL	CRITICAL	no	38.0
624		0.73	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	85.8%	0.35	0.115'	0.467'	288.41'	0.71'	289.12'	0.029'	0.04'	0.03'		0.047'	0.753'	289.163'	CRITICAL	CRITICAL	no	37.4
625		0.73	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	86.0%	0.35	0.114'	0.467'	289.16'	0.81'	289.98'	0.029'	0.03'			0.031'	0.846'	290.009'	CRITICAL	CRITICAL	no	36.8
626		0.73	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	94.9%	0.35	0.096'	0.510'	290.01'	0.25'	290.26'	0.024'	0.10'			0.060'	0.310'	290.319'	CRITICAL	CRITICAL	no	36.1
627		0.73	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	49.0%	0.35	0.275'	0.327'	290.32'	0.95'	291.27'	0.069'	0.13'			0.101'	1.052'	291.371'	CRITICAL	CRITICAL	no	29.2
628		0.73	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	39.2%	0.35	0.383'	0.283'	291.37'	1.17'	292.55'	0.096'	0.03'	0.24'		0.187'	1.362'	292.732'	CRITICAL	CRITICAL	no	23.7
629		0.73	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	94.9%	0.35	0.096'	0.510'	292.73'	0.42'	293.15'	0.024'	0.09'	0.06'		0.089'	0.506'	293.239'	CRITICAL	CRITICAL	no	23.6
630		0.73	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	49.9%	0.35	0.266'	0.327'	293.24'	0.50'	293.74'	0.066'	0.09'			0.078'	0.583'	293.821'	CRITICAL	CRITICAL	no	22.1
631		0.73	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	51.2%	0.35	0.257'	0.333'	293.82'	0.23'	294.05'	0.064'	0.03'	0.16'		0.131'	0.361'	294.182'	CRITICAL	CRITICAL	no	21.4
632		0.73	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	95.0%	0.35	0.096'	0.510'	294.18'	0.66'	294.84'	0.024'	0.00'			0.012'	0.674'	294.855'	CRITICAL	CRITICAL	no	21.2
Pump Station Line																																
620		1.38	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.73	1.38	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	180.1%	0.35	0.075'	0.667'	244.99'	4.19'	249.18'	0.019'	0.03'	0.05'	0.044'	0.072'	4.265'	249.252'	CRITICAL	o.k.	Yes by 0.61 cfs	2.9
8211		0.73	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	94.9%	0.35	0.096'	0.510'	249.25'	0.83'	250.09'	0.024'	0.03'			0.029'	0.863'	250.115'	CRITICAL	o.k.	no	2.5
8212		0.73	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	95.1%	0.35	0.096'	0.510'	250.11'	0.60'	250.72'	0.024'	0.01'	0.06'		0.050'	0.650'	250.765'	CRITICAL	o.k.	no	2.2
8213		0.73	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	129.9%	0.35	0.040'	0.667'	250.76'	0.84'	251.60'	0.010'	0.03'			0.022'	0.860'	251.625'	CRITICAL	o.k.	Yes by 0.17 cfs	2.5
8214		0.73	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	95.0%	0.35	0.096'	0.510'	251.62'	0.72'	252.34'	0.024'	0.06'	0.06'		0.072'	0.789'	252.414'	CRITICAL	o.k.	no	1.6
8215		0.73	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	67.7%	0.35	0.168'	0.393'	252.41'	0.22'	252.63'	0.042'	0.03'			0.038'	0.256'	252.670'	CRITICAL	o.k.	no	1.2
8216		0.73	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	94.9%	0.35	0.096'	0.510'	252.67'	1.15'	253.82'	0.024'	0.31'	0.06'		0.198'	1.351'	254.022'	CRITICAL	o.k.	no	0.7
8217		0.73	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	22.4%	0.35	0.885'	0.213'	254.02'	0.42'	258.21'	0.221'	0.00'			0.111'	0.527'	258.324'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																
94th Street Trunk																																
152		3.28	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		0.83	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	14.3%	0.55	0.863'	0.208'	158.10'	0.24'	162.11'	0.216'	0.25'	0.13'		0.298'	0.538'	162.406'	o.k.		no	
720		0.83	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	15.7%	0.55	0.716'	0.208'	162.41'	0.97'	181.84'	0.179'	0.11'			0.146'	1.118'	181.984'	o.k.		no	
721		0.83	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	28.7%	0.55	0.324'	0.300'	182.00'	0.64'	187.72'	0.081'	0.04'			0.058'	0.694'	187.778'	o.k.		no	
722		0.83	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	38.5%	0.79	0.103'	0.425'	187.85'	0.17'	188.88'	0.026'	0.02'			0.025'	0.200'	188.900'	o.k.		no	
723		0.83	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	49.4%	0.79	0.070'	0.490'	188.94'	0.24'	189.89'	0.017'	0.02'			0.021'	0.257'	189.911'	o.k.		no	
724		0.83	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	49.7%	0.79	0.069'	0.490'	189.91'	0.15'	190.49'	0.017'	0.03'			0.023'	0.174'	190.513'	o.k.		no	
724A		0.83	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	44.0%	0.79	0.084'	0.465'	190.51'	0.09'	190.92'	0.021'	0.03'			0.025'	0.117'	190.940'	o.k.		no	
725		0.83	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	71.5%	0.55	0.082'	0.513'	190.96'	0.38'	191.85'	0.021'	0.03'			0.025'	0.409'	191.877'	o.k.		no	
726		0.83	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	71.6%	0.55	0.082'	0.513'	191.88'	0.39'	192.75'	0.021'	0.03'			0.024'	0.414'	192.776'	o.k.		no	
727		0.83	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	74.3%	0.55	0.078'	0.533'	192.78'	0.48'	193.82'	0.020'	0.03'			0.026'	0.504'	193.849'	o.k.		no	
728		0.83	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	67.7%	0.55	0.090'	0.492'	193.85'	0.35'	194.65'	0.023'	0.03'			0.026'	0.371'	194.677'	o.k.		no	
729		0.83	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	71.8%	0.55	0.082'	0.513'	194.68'	0.41'	195.60'	0.020'	0.00'			0.010'	0.416'	195.613'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.35	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.35	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	17.1%	1.23	3.594'	0.338'	14.48' *	0.86'	36.36'	0.898'	1.14'	0.75'		1.397'	2.261'	24.755'	o.k.		no	
102		4.35	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	18.5%	1.23	3.261'	0.356'	24.75'	0.80'	36.74'	0.815'	1.46'			1.138'	1.934'	37.874'	o.k.		no	
103		4.35	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	15.1%	1.23	4.174'	0.313'	37.87'	0.71'	52.05'	1.043'	0.10'	1.19'		1.165'	1.871'	53.217'	o.k.		no	
104		4.35	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	95.2%	1.23	0.277'	0.956'	53.22'	0.62'	53.83'	0.069'	0.10'	0.04'		0.104'	0.720'	53.938'	o.k.		no	
105		4.35	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	95.5%	1.23	0.275'	0.956'	53.94'	0.61'	54.65'	0.069'	0.22'	0.02'		0.154'	0.768'	54.801'	o.k.		no	
106		4.35	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	57.4%	1.23	0.623'	0.669'	54.80'	0.66'	56.47'	0.156'	0.41'	0.08'		0.326'	0.982'	56.794'	o.k.		no	
107		4.35	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	37.3%	1.23	1.185'	0.519'	56.79'	0.59'	60.08'	0.296'	0.10'	0.15'		0.274'	0.860'	60.353'	o.k.		no	
108		4.35	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	94.6%	1.23	0.280'	0.956'	60.72'	0.55'	61.51'	0.070'	0.10'	0.04'		0.105'	0.652'	61.611'	o.k.		no	
109	0.08	4.35	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	94.7%	1.23	0.280'	0.956'	61.71'	0.63'	62.62'	0.070'	0.17'	0.16'	0.005'	0.202'	0.833'	62.818'	o.k.		no	
110		4.27	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	66.0%	1.23	0.484'	0.725'	62.82'	1.00'	65.19'	0.121'	0.17'	0.14'		0.215'	1.215'	65.400'	o.k.		no	
111		4.27	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	66.2%	1.23	0.490'	0.738'	65.40'	1.06'	68.18'	0.122'	0.14'			0.129'	1.186'	68.307'	o.k.		no	
112		4.27	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	76.5%	1.23	0.388'	0.813'	69.00'	1.28'	71.67'	0.097'	0.16'	0.06'		0.162'	1.446'	71.834'	o.k.		no	
113		4.27	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	67.7%	1.23	0.469'	0.738'	71.83'	0.92'	74.13'	0.117'	0.16'	0.11'		0.194'	1.119'	74.321'	o.k.		no	
114		4.27	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	67.6%	1.23	0.470'	0.738'	74.34'	0.95'	76.74'	0.117'	0.09'			0.102'	1.053'	76.839'	o.k.		no	
115	0.21	4.27	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	99.7%	1.23	0.245'	1.000'	79.65'	0.60'	80.44'	0.061'	0.11'		0.010'	0.088'	0.689'	80.528'	o.k.		no	
116		4.06	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	83.8%	1.23	0.300'	0.863'	80.53'	0.78'	81.73'	0.075'	0.03'			0.055'	0.836'	81.787'	o.k.		no	
117	0.04	4.06	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	131.1%	1.23	0.099'	1.250'	82.32'	1.06'	83.38'	0.025'	0.04'	0.01'	0.001'	0.037'	1.098'	83.418'	CRITICAL		Yes by 0.96 cfs	0.4
118		4.01	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	124.0%	1.23	0.108'	1.250'	83.42'	0.34'	83.75'	0.027'	0.17'			0.097'	0.434'	83.851'	CRITICAL		Yes by 0.78 cfs	0.4
119		4.01	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	62.1%	1.23	0.475'	0.713'	83.85'	1.10'	86.18'	0.119'	0.11'			0.117'	1.212'	86.299'	o.k.		no	
120	0.08	4.01	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	78.6%	1.23	0.328'	0.831'	86.50'	0.32'	87.14'	0.082'	0.11'		0.006'	0.101'	0.422'	87.242'	o.k.		no	
121		3.93	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	77.2%	1.23	0.323'	0.813'	87.32'	0.74'	88.83'	0.081'	0.11'			0.096'	0.836'	88.928'	o.k.		no	
122	0.04	3.93	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	78.0%	1.23	0.317'	0.813'	89.71'	0.79'	91.29'	0.079'	0.13'	0.04'	0.003'	0.124'	0.915'	91.417'	o.k.		no	
123		3.89	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	71.3%	1.23	0.358'	0.769'	91.45'	0.56'	92.74'	0.089'	0.12'			0.106'	0.662'	92.845'	o.k.		no	
124		3.89	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	71.8%	1.23	0.353'	0.769'	92.94'	0.48'	94.03'	0.088'	0.12'			0.106'	0.582'	94.135'	o.k.		no	
125		3.89	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	72.3%	1.23	0.355'	0.781'	94.24'	0.34'	95.02'	0.089'	0.12'	0.05'		0.133'	0.474'	95.154'	o.k.		no	
126		3.89	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	71.7%	1.23	0.353'	0.769'	95.21'	1.17'	97.89'	0.088'	0.17'	0.03'		0.141'	1.308'	98.030'	o.k.		no	
127		3.89	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	60.0%	1.23	0.472'	0.694'	98.03'	0.85'	100.59'	0.118'	0.18'	0.06'		0.179'	1.025'	100.773'	o.k.		no	
128		3.89	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	56.7%	1.23	0.509'	0.669'	100.77'	0.89'	103.68'	0.127'	0.04'	0.16'		0.160'	1.046'	103.839'	o.k.		no	
129		3.89	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	123.4%	1.23	0.102'	1.250'	105.25'	0.71'	105.96'	0.026'	0.11'	0.03'		0.083'	0.795'	106.045'	CRITICAL		Yes by 0.74 cfs	0.2
130		3.89	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	77.4%	1.23	0.315'	0.813'	106.05'	0.94'	107.38'	0.079'	0.11'			0.092'	1.028'	107.475'	o.k.		no	
131		3.89	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	79.2%	1.23	0.303'	0.831'	107.60'	0.42'	108.43'	0.076'	0.08'			0.077'	0.500'	108.508'	o.k.		no	
132		3.89	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	95.0%	1.23	0.223'	0.956'	113.71'	0.86'	114.94'	0.056'	0.08'			0.067'	0.925'	115.004'	o.k.		no	
133		3.89	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	94.4%	1.23	0.226'	0.956'	115.14'	0.47'	115.82'	0.056'	0.08'			0.068'	0.536'	115.884'	o.k.		no	
134		3.89	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	94.4%	1.23	0.226'	0.956'	116.02'	0.47'	116.70'	0.056'	0.08'			0.068'	0.536'	116.764'	o.k.		no	
135		3.89	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	94.4%	1.23	0.226'	0.956'	116.90'	0.47'	117.58'	0.056'	0.08'			0.066'	0.534'	117.643'	o.k.		no	
136		3.89	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	96.3%	1.23	0.218'	0.981'	117.80'	0.81'	118.94'	0.055'	0.04'			0.046'	0.859'	118.987'	o.k.		no	
137		3.89	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	122.2%	1.23	0.104'	1.250'	120.44'	1.16'	121.60'	0.026'	0.03'			0.030'	1.189'	121.629'	CRITICAL		Yes by 0.71 cfs	0.4
138	0.56	3.89	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	127.5%	1.23	0.096'	1.250'	121.63'	0.79'	122.42'	0.024'	0.03'	0.01'	0.012'	0.040'	0.833'	122.463'	CRITICAL		Yes by 0.84 cfs	0.5
139		3.33	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	109.5%	1.23	0.095'	1.250'	122.46'	0.39'	122.86'	0.024'	0.15'	0.01'		0.092'	0.486'	122.948'	CRITICAL		Yes by 0.29 cfs	0.6
140		3.33	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	52.2%	1.23	0.429'	0.638'	122.95'	0.33'	123.28'	0.107'	0.12'	0.27'		0.252'	0.581'	123.530'	o.k.		no	
141		3.33	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	59.4%	1.23	0.348'	0.681'	123.53'	0.49'	124.84'	0.087'	0.12'	0.05'		0.127'	0.618'	124.968'	o.k.		no	
142		3.33	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	61.6%	1.23	0.329'	0.694'	124.97'	0.26'	125.71'	0.082'	0.12'	0.08'		0.140'	0.402'	125.853'	o.k.		no	
143		3.33	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	104.2%	0.79	0.331'	0.865'	127.09'	1.32'	128.66'	0.083'	0.23'	0.07'		0.194'	1.511'	128.849'	o.k.		Yes by 0.13 cfs	
1431		3.33	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	70.4%	0.79	0.658'	0.615'	128.85'	0.33'	129.40'	0.164'	0.05'	0.22'		0.216'	0.547'	129.611'	o.k.		no	
1432		3.33	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	138.5%	0.79	0.146'	1.000'	129.88'	0.74'	130.62'	0.036'	0.08'			0.059'	0.804'	130.684'	CRITICAL		Yes by 0.93 cfs	0.4
144		3.33	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	76.7%	1.23	0.236'	0.813'	130.68'	0.12'	130.80'	0.059'	0.13'	0.15'		0.166'	0.284'	130.968'	CRITICAL		no	0.5
145		3.33	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	35.4%	1.77	0.362'	0.600'	130.97'	0.28'	131.47'	0.090'	0.14'	0.08'		0.151'	0.433'	131.621'	o.k.		no	
146		3.33	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	34.2%	1.77	0.387'	0.600'	131.62'	0.25'	133.20'	0.097'	0.11'	0.25'		0.229'	0.476'	133.429'	o.k.		no	
147		3.33	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	38.4%	1.77	0.327'	0.638'	133.44'	0.27'	135.04'	0.082'	0.12'	0.18'		0.190'	0.461'	135.227'	o.k.		no	
148		3.33	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	37.2%	1.77	0.338'	0.623'	135.23'	0.12'	135.78'	0.084'	0.06'	0.09'		0.117'	0.241'	135.899'	o.k.		no	
149		3.33	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	59.1%	1.77	0.169'	0.818'	135.98'	0.12'	136.35'	0.042'	0.12'	0.02'		0.089'	0.208'	136.436'	o.k.		no	
150		3.33	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	104.2%	0.79	0.331'	0.865'	136.44'	1.55'	138.25'	0.083'	0.15'	0.05'		0.143'	1.696'	138.388'	o.k.		Yes by 0.14 cfs	
151		3.33	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	91.1%	0.79	0.430'	0.735'	138.39'	0.71'	139.42'	0.107'	1.28'	0.16'		0.776'	1.489'	140.191'	o.k.		no	
152	0.66	3.33	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	21.6%	0.79	3.660'	0.300'	140.19'	1.28'	156.10'	0.915'	0.07'	2.34'	0.679'	2.002'	3.286'	158.102'	o.k.		no	
201		2.67	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	65.9%	1.23	0.190'	0.725'	158.10'	0.13'	158.23'	0.047'	0.15'	0.06'		0.130'	0.261'	158.363'	CRITICAL		no	0.6
202		2.67	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	38.6%	1.23	0.430'	0.531'	158.36'	0.24'	158.60'	0.108'	0.27'	0.06'		0.215'	0.455'	158.817'	o.k.		no	
203		2.67	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	25.6%	1.23	0.762'	0.413'	158.82'	0.17'	160.20'	0.190'	0.07'			0.129'	0.300'	160.332'	o.k.		no	
204		2.67	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	65.1%	1.23	0.195'	0.725'	160.62'	0.48'	161.91'	0.049'	0.07'			0.058'	0.541'	161.963'	o.k.		no	
205		2.67	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	65.1%	1.23	0.195'	0.725'	162.01'	0.47'	163.27'	0.049'	0.07'			0.058'	0.529'	163.323'	o.k.		no	
206		2.67	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	65.2%	1.23	0.194'	0.725'	163.37'	0.57'	164.90'	0.049'	0.07'	0.12'		0.120'	0.695'	165.015'	o.k.		no	
207	0.23	2.67	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	65.1%	1.23	0.195'	0.725'	165.02'	0.77'	167.05'	0.049'	0.06'	0.10'	0.015'	0.114'	0.882'	167.159'	o.k.		no	
208		2.44	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	59.7%	1.23	0.185'	0.681'	167.16'	0.43'	168.39'	0.046'	0.03'			0.037'	0.463'	168.428'	o.k.		no	
209		2.44	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	12"	0.0025	0.0024	1.75	139.3%	0.79	0.077'	1.000'	168.81'	1.70'	170.51'	0.019'	0.03'			0.023'	1.723'	170.533'	CRITICAL		Yes by 0.69 cfs	0.8
210		2.44	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	12"	0.0025	0.0024	1.76	138.9%	0.79	0.078'	1.000'	170.53'	1.54'	172.07'	0.019'	0.03'			0.023'	1.560'	172.093'	CRITICAL		Yes by 0.68 cfs	1.5
211		2.44	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	139.6%	0.79	0.077'	1.000'	172.09'	1.40'	173.49'	0.019'	0.03'	0.01'		0.031'	1.428'	173.521'	CRITICAL		Yes by 0.69 cfs	2.1
212		2.44	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	12"	0.0025	0.0024	1.76	138.9%	0.79	0.078'	1.000'	173.52'	0.94'	174.46'	0.019'	0.04'			0.031'	0.972'	174.492'	CRITICAL		Yes by 0.68 cfs	2.5
301		2.44	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	110.9%	0.79	0.122'	1.000'	174.49'	0.92'	175.41'	0.031'	0.04'			0.035'	0.952'	175.445'	CRITICAL		Yes by 0.24 cfs	2.1
302		2.44	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	115.5%	0.79	0.113'	1.000'	175.44'	1.43'	176.88'	0.028'	0.04'			0.034'	1.468'	176.913'	CRITICAL		Yes by 0.33 cfs	2.3
303	0.28	2.44	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	115.5%	0.79	0.113'	1.000'	176.91'	1.43'	178.35'	0.028'	0.09'		0.011'	0.063'	1.497'	178.410'	CRITICAL		Yes by 0.33 cfs	2.5
304		2.17	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	76.3%	0.79	0.246'	0.650'	178.41'	0.92'	179.33'	0.061'	0.05'			0.056'	0.979'	179.389'	CRITICAL		no	1.3
305		2.17	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	102.5%	0.79	0.146'	0.840'	179.39'	0.84'	180.23'	0.037'	0.05'			0.044'	0.884'	180.273'	CRITICAL		Yes by 0.05 cfs	1.0
306		2.17	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	102.7%	0.79	0.146'	0.840'	180.27'	0.66'	180.94'	0.036'	0.05'	0.09'		0.091'	0.756'	181.028'	CRITICAL		Yes by 0.06 cfs	0.7
307		2.17	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	101.3%	0.79	0.150'	0.820'	181.03'	0.15'	181.18'	0.037'	0.03'			0.036'	0.185'	181.213'	CRITICAL		Yes by 0.03 cfs	0.5
308		2.17	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	110.6%	0.79	0.097'	1.000'	181.21'	1.61'	182.82'	0.024'	0.03'			0.029'	1.637'	182.850'	CRITICAL		Yes by 0.21 cfs	0.7
309		2.17	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	111.2%	0.79	0.096'	1.000'	182.85'	0.79'	183.64'	0.024'	0.03'			0.029'	0.817'	183.666'	CRITICAL		Yes by 0.22 cfs	0.6
401		2.17	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	110.8%	0.79	0.096'	1.000'	183.67'	1.47'	185.13'	0.024'	0.15'			0.089'	1.555'	185.221'	CRITICAL		Yes by 0.21 cfs	0.7
402		2.17	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	83.1%	0.55	0.441'	0.575'	187.59'	2.78'	192.63'	0.110'	0.07'			0.089'	2.870'	192.714'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.17	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	113.2%	0.55	0.191'	0.833'	192.98'	3.39'	196.37'	0.048'	0.13'			0.089'	3.478'	196.461'	CRITICAL		Yes by 0.25 cfs	0.7
404		2.17	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	92.3%	0.55	0.371'	0.625'	196.46'	0.05'	196.51'	0.093'	0.07'			0.083'	0.136'	196.596'	CRITICAL		no	0.6
501	0.52	2.17	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	47.3%	1.23	0.208'	0.594'	200.02'	0.41'	201.77'	0.052'	0.06'		0.048'	0.081'	0.488'	201.855'	o.k.		no	
502		1.65	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	36.4%	1.23	0.179'	0.519'	201.85'	0.27'	203.46'	0.045'	0.14'			0.092'	0.366'	203.550'	o.k.		no	
503		1.65	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	20.7%	1.23	0.395'	0.375'	209.66'	0.30'	213.94'	0.099'	0.05'			0.076'	0.377'	214.011'	o.k.		no	
504		1.65	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	40.2%	1.23	0.155'	0.550'	214.55'	0.29'	216.15'	0.039'	0.05'			0.046'	0.334'	216.196'	o.k.		no	
505		1.65	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	40.2%	1.23	0.155'	0.550'	216.20'	0.29'	217.75'	0.039'	0.07'			0.056'	0.344'	217.806'	o.k.		no	
601		1.65	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.26'	319.00'	15"	0.0050	0.0063	5.15	31.9%	1.23	0.210'	0.469'	217.81'	0.27'	219.69'	0.052'	0.02'	0.13'		0.106'	0.375'	219.794'	o.k.		no	
602		1.65	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	141.6%	0.55	0.071'	0.833'	220.33'	1.48'	221.81'	0.018'	0.02'	0.05'		0.044'	1.519'	221.853'	CRITICAL		Yes by 0.48 cfs	0.7
603		1.65	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	141.5%	0.55	0.071'	0.833'	221.85'	1.73'	223.59'	0.018'	0.02'			0.021'	1.754'	223.606'	CRITICAL		Yes by 0.48 cfs	1.5
604		1.65	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	141.9%	0.55	0.070'	0.833'	223.61'	2.06'	225.67'	0.018'	0.02'			0.021'	2.084'	225.690'	CRITICAL		Yes by 0.49 cfs	2.5
605		1.65	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	141.2%	0.55	0.071'	0.833'	225.69'	1.19'	226.88'	0.018'	0.02'			0.021'	1.212'	226.902'	CRITICAL		Yes by 0.48 cfs	3.0
606		1.65	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	141.7%	0.55	0.071'	0.833'	226.90'	1.82'	228.72'	0.018'	0.02'			0.021'	1.838'	228.739'	CRITICAL		Yes by 0.48 cfs	3.8
607		1.65	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	141.6%	0.55	0.071'	0.833'	228.74'	1.62'	230.35'	0.018'	0.02'	0.05'		0.044'	1.659'	230.398'	CRITICAL		Yes by 0.48 cfs	4.6
608		1.65	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	141.8%	0.55	0.070'	0.833'	230.40'	2.10'	232.50'	0.018'	0.02'	0.05'		0.044'	2.145'	232.544'	CRITICAL		Yes by 0.49 cfs	5.6
609		1.65	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	141.5%	0.55	0.071'	0.833'	232.54'	1.59'	234.14'	0.018'	0.02'			0.021'	1.614'	234.158'	CRITICAL		Yes by 0.48 cfs	6.3
610		1.65	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	141.7%	0.55	0.070'	0.833'	234.16'	1.50'	235.66'	0.018'	0.02'			0.021'	1.519'	235.677'	CRITICAL		Yes by 0.48 cfs	7.0
611	0.24	1.65	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	141.8%	0.55	0.070'	0.833'	235.68'	2.18'	237.86'	0.018'	0.03'	0.04'	0.009'	0.047'	2.227'	237.904'	CRITICAL		Yes by 0.49 cfs	8.0
612		1.40	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	111.9%	0.55	0.082'	0.833'	237.90'	0.88'	238.79'	0.021'	0.02'	0.05'		0.043'	0.927'	238.831'	CRITICAL		Yes by 0.15 cfs	8.1
613		1.40	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	133.6%	0.55	0.058'	0.833'	238.83'	1.31'	240.14'	0.014'	0.02'			0.020'	1.334'	240.164'	CRITICAL		Yes by 0.35 cfs	8.5
614		1.40	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	120.3%	0.55	0.071'	0.833'	240.16'	1.09'	241.26'	0.018'	0.02'			0.021'	1.116'	241.281'	CRITICAL		Yes by 0.24 cfs	8.8
615		1.40	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	120.8%	0.55	0.070'	0.833'	241.28'	1.31'	242.59'	0.018'	0.02'			0.021'	1.327'	242.608'	CRITICAL		Yes by 0.24 cfs	9.1
616		1.40	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	120.6%	0.55	0.071'	0.833'	242.61'	1.53'	244.14'	0.018'	0.03'			0.022'	1.555'	244.163'	CRITICAL		Yes by 0.24 cfs	9.5
617		1.40	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	183.0%	0.35	0.075'	0.667'	244.16'	4.26'	248.43'	0.019'	0.15'			0.084'	4.347'	248.510'	CRITICAL		Yes by 0.64 cfs	12.4
618		1.40	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	86.3%	0.35	0.426'	0.477'	248.51'	3.49'	252.00'	0.107'	0.03'			0.066'	3.555'	252.064'	CRITICAL		no	10.0
619		1.40	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	183.0%	0.35	0.075'	0.667'	252.06'	4.00'	256.06'	0.019'	0.03'			0.022'	4.019'	256.083'	CRITICAL		Yes by 0.64 cfs	12.7
620		1.40	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	183.0%	0.35	0.075'	0.667'	256.08'	4.73'	260.81'	0.019'	0.03'			0.022'	4.752'	260.835'	CRITICAL		Yes by 0.64 cfs	15.9
621	0.74	1.40	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	183.0%	0.35	0.075'	0.667'	260.84'	4.33'	265.17'	0.019'	0.04'	0.05'	0.044'	0.076'	4.405'	265.241'	CRITICAL	CRITICAL	Yes by 0.64 cfs	18.9
622		0.74	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	87.2%	0.35	0.116'	0.477'	265.24'	0.57'	265.81'	0.029'	0.04'	0.07'		0.072'	0.642'	265.882'	CRITICAL	o.k.	no	18.5
623		0.74	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	87.1%	0.35	0.116'	0.477'	265.88'	0.98'	266.86'	0.029'	0.04'			0.035'	1.015'	266.898'	CRITICAL	CRITICAL	no	17.8
624		0.74	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	87.3%	0.35	0.116'	0.477'	266.90'	0.73'	267.63'	0.029'	0.04'			0.035'	0.769'	267.667'	CRITICAL	CRITICAL	no	17.2
624		0.74	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	87.2%	0.35	0.116'	0.477'	267.67'	0.73'	268.39'	0.029'	0.04'	0.03'		0.048'	0.773'	268.440'	CRITICAL	CRITICAL	no	16.7
625		0.74	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	87.4%	0.35	0.115'	0.477'	268.44'	0.84'	269.28'	0.029'	0.03'			0.031'	0.868'	269.308'	CRITICAL	CRITICAL	no	16.1
626		0.74	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	96.5%	0.35	0.097'	0.523'	269.31'	0.26'	269.57'	0.024'	0.10'			0.060'	0.317'	269.625'	CRITICAL	CRITICAL	no	15.4
627		0.74	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	49.8%	0.35	0.275'	0.327'	269.63'	0.98'	270.61'	0.069'	0.13'			0.101'	1.083'	270.708'	CRITICAL	CRITICAL	no	8.5
628		0.74	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	39.9%	0.35	0.383'	0.283'	270.71'	1.21'	271.92'	0.096'	0.03'	0.24'		0.167'	1.401'	272.109'	CRITICAL	o.k.	no	3.1
629		0.74	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	96.5%	0.35	0.097'	0.523'	272.11'	0.43'	272.54'	0.024'	0.09'	0.06'		0.091'	0.519'	272.628'	CRITICAL	o.k.	no	3.0
630		0.74	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	50.7%	0.35	0.271'	0.333'	272.63'	0.51'	273.14'	0.068'	0.09'			0.080'	0.591'	273.219'	CRITICAL	o.k.	no	1.5
631		0.74	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	52.0%	0.35	0.262'	0.340'	273.22'	0.23'	273.45'	0.066'	0.03'	0.17'		0.134'	0.366'	273.585'	CRITICAL	o.k.	no	0.8
632		0.74	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	96.6%	0.35	0.097'	0.523'	273.58'	0.68'	274.26'	0.024'	0.00'			0.012'	0.692'	274.277'	CRITICAL	o.k.	no	0.6
Pump Station Line																																	
620		1.40	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																							
621	0.74	1.40	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	183.0%	0.35	0.075'	0.667'	244.99'	4.33'	249.32'	0.019'	0.03'	0.05'	0.044'	0.072'	4.402'	249.389'	CRITICAL	o.k.	Yes by 0.64 cfs	3.0
8211		0.74	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	96.5%	0.35	0.097'	0.523'	249.39'	0.86'	250.25'	0.024'	0.03'			0.029'	0.886'	250.275'	CRITICAL	o.k.	no	2.7
8212		0.74	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	96.7%	0.35	0.097'	0.523'	250.27'	0.62'	250.89'	0.024'	0.01'	0.06'		0.050'	0.667'	250.942'	CRITICAL	o.k.	no	2.3
8213		0.74	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	132.0%	0.35	0.040'	0.667'	250.94'	0.87'	251.81'	0.010'	0.03'			0.022'	0.888'	251.830'	CRITICAL	o.k.	Yes by 0.18 cfs	2.7
8214		0.74	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	96.6%	0.35	0.097'	0.523'	251.83'	0.74'	252.57'	0.024'	0.06'	0.06'		0.073'	0.810'	252.640'	CRITICAL	o.k.	no	1.9
8215		0.74	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	68.8%	0.35	0.170'	0.403'	252.64'	0.22'	252.86'	0.042'	0.03'			0.038'	0.261'	252.901'	CRITICAL	o.k.	no	1.5
8216		0.74	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	96.5%	0.35	0.097'	0.523'	252.90'	1.19'	254.09'	0.024'	0.31'	0.06'		0.198'	1.384'	254.284'	CRITICAL	o.k.	no	0.9
8217		0.74	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	22.7%	0.35	0.885'	0.213'	254.28'	0.43'	258.21'	0.221'	0.00'			0.111'	0.540'	258.324'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																	
94th Street Trunk																																	
152		3.33	MH 52		00+00.00	00+00.00	156.06	155.80	22																								
719		0.84	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	14.5%	0.55	0.863'	0.208'	158.10'	0.25'	162.11'	0.216'	0.25'	0.13'		0.298'	0.546'	162.406'	o.k.		no	
720		0.84	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	16.0%	0.55	0.716'	0.208'	162.41'	1.00'	181.84'	0.179'	0.11'			0.146'	1.150'	181.984'	o.k.		no	
721		0.84	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	29.2%	0.55	0.324'	0.300'	182.00'	0.66'	187.72'	0.081'	0.04'			0.058'	0.715'	187.778'	o.k.		no	
722		0.84	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	39.1%	0.79	0.103'	0.425'	187.85'	0.18'	188.88'	0.026'	0.02'			0.025'	0.206'	188.900'	o.k.		no	
723		0.84	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	50.2%	0.79	0.071'	0.500'	188.95'	0.24'	189.90'	0.018'	0.02'			0.021'	0.260'	189.921'	o.k.		no	
724		0.84	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	50.5%	0.79	0.070'	0.500'	189.92'	0.15'	190.50'	0.018'	0.03'			0.024'	0.176'	190.524'	o.k.		no	
724A		0.84	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	44.8%	0.79	0.084'	0.465'	190.52'	0.10'	190.92'	0.021'	0.03'			0.025'	0.121'	190.940'	o.k.		no	
725		0.84	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	72.7%	0.55	0.084'	0.521'	190.97'	0.39'	191.86'	0.021'	0.03'			0.025'	0.418'	191.886'	o.k.		no	
726		0.84	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	72.8%	0.55	0.084'	0.521'	191.89'	0.40'	192.76'	0.021'	0.03'			0.024'	0.422'	192.785'	o.k.		no	
727		0.84	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	75.5%	0.55	0.078'	0.533'	192.78'	0.49'	193.82'	0.020'	0.03'			0.026'	0.520'	193.849'	o.k.		no	
728		0.84	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	68.8%	0.55	0.091'	0.504'	193.85'	0.35'	194.66'	0.023'	0.03'			0.026'	0.378'	194.690'	o.k.		no	
729		0.84	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	73.0%	0.55	0.083'	0.521'	194.69'	0.41'	195.61'	0.021'	0.00'			0.010'	0.424'	195.621'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.42	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.42	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	17.4%	1.23	3.594'	0.338'	15.20' *	0.89'	23.36'	0.898'	1.14'	0.75'		1.397'	2.289'	24.755'	o.k.		no	
102		4.42	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	18.7%	1.23	3.261'	0.356'	24.75'	0.82'	36.74'	0.815'	1.46'			1.138'	1.959'	37.874'	o.k.		no	
103		4.42	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	15.4%	1.23	4.174'	0.313'	37.87'	0.73'	52.05'	1.043'	0.10'	1.19'		1.165'	1.894'	53.218'	o.k.		no	
104		4.42	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	96.7%	1.23	0.279'	0.981'	53.22'	0.63'	53.85'	0.070'	0.10'	0.04'		0.105'	0.737'	53.955'	o.k.		no	
105		4.42	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	97.0%	1.23	0.278'	0.981'	53.96'	0.63'	54.67'	0.069'	0.22'	0.02'		0.157'	0.786'	54.828'	o.k.		no	
106		4.42	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	58.3%	1.23	0.635'	0.681'	54.83'	0.66'	56.48'	0.159'	0.41'	0.08'		0.328'	0.992'	56.809'	o.k.		no	
107		4.42	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	37.9%	1.23	1.185'	0.519'	56.81'	0.60'	60.08'	0.296'	0.10'	0.15'		0.275'	0.878'	60.353'	o.k.		no	
108		4.42	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	96.1%	1.23	0.283'	0.981'	60.74'	0.56'	61.53'	0.071'	0.10'	0.04'		0.106'	0.667'	61.637'	o.k.		no	
109	0.08	4.42	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	96.2%	1.23	0.283'	0.981'	61.73'	0.65'	62.64'	0.071'	0.17'	0.16'	0.005'	0.205'	0.851'	62.846'	o.k.		no	
110		4.33	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	67.0%	1.23	0.493'	0.738'	62.85'	1.01'	65.20'	0.123'	0.17'	0.14'		0.218'	1.230'	65.415'	o.k.		no	
111		4.33	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	67.2%	1.23	0.490'	0.738'	65.42'	1.09'	68.18'	0.122'	0.14'			0.129'	1.219'	68.307'	o.k.		no	
112		4.33	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	77.7%	1.23	0.388'	0.813'	69.00'	1.32'	71.67'	0.097'	0.17'	0.06'		0.162'	1.487'	71.835'	o.k.		no	
113		4.33	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	68.7%	1.23	0.473'	0.756'	71.83'	0.94'	74.15'	0.118'	0.17'	0.11'		0.195'	1.138'	74.342'	o.k.		no	
114		4.33	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	68.7%	1.23	0.474'	0.756'	74.36'	0.97'	76.76'	0.119'	0.09'			0.102'	1.072'	76.858'	o.k.		no	
115	0.21	4.33	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	101.2%	1.23	0.245'	1.025'	79.68'	0.62'	80.47'	0.061'	0.11'		0.010'	0.089'	0.708'	80.554'	o.k.		Yes by 0.05 cfs	
116		4.12	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	85.1%	1.23	0.303'	0.875'	80.55'	0.80'	81.75'	0.076'	0.03'			0.055'	0.856'	81.800'	o.k.		no	
117	0.04	4.12	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	133.1%	1.23	0.099'	1.250'	82.32'	1.09'	83.41'	0.025'	0.04'	0.01'	0.001'	0.037'	1.131'	83.451'	CRITICAL		Yes by 1.03 cfs	0.5
118		4.08	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	125.9%	1.23	0.108'	1.250'	83.45'	0.35'	83.80'	0.027'	0.17'			0.097'	0.444'	83.895'	CRITICAL		Yes by 0.84 cfs	0.4
119		4.0[illegible]	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	63.1%	1.23	0.475'	0.713'	83.90'	[illegible]3	86.18'	0.119'	0.11'			0.117'	1.247'	86.299'	[illegible]		no	
120	0.09	4.08	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	79.9%	1.23	0.328'	0.831'	86.50'	0.33'	87.14'	0.082'	0.11'		0.006'	0.101'	0.433'	87.242'	o.k.		no	
121		3.99	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	78.4%	1.23	0.326'	0.831'	87.34'	0.76'	88.85'	0.082'	0.11'			0.097'	0.852'	88.948'	o.k.		no	
122	0.04	3.99	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	79.2%	1.23	0.320'	0.831'	89.73'	0.81'	91.31'	0.080'	0.13'	0.04'	0.003'	0.126'	0.932'	91.437'	o.k.		no	
123		3.95	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	72.4%	1.23	0.364'	0.781'	91.46'	0.57'	92.75'	0.091'	0.13'			0.108'	0.675'	92.860'	o.k.		no	
124		3.95	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	72.9%	1.23	0.359'	0.781'	92.95'	0.49'	94.04'	0.090'	0.12'			0.107'	0.592'	94.148'	o.k.		no	
125		3.95	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	73.4%	1.23	0.355'	0.781'	94.24'	0.35'	95.02'	0.089'	0.13'	0.05'		0.134'	0.486'	95.155'	o.k.		no	
126		3.95	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	72.8%	1.23	0.360'	0.781'	95.22'	1.19'	97.90'	0.090'	0.17'	0.03'		0.142'	1.332'	98.043'	o.k.		no	
127		3.95	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	61.0%	1.23	0.472'	0.694'	98.04'	0.87'	100.59'	0.118'	0.18'	0.06'		0.179'	1.052'	100.773'	o.k.		no	
128		3.95	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	57.6%	1.23	0.509'	0.669'	100.77'	0.91'	103.68'	0.127'	0.04'	0.16'		0.160'	1.074'	103.839'	o.k.		no	
129		3.95	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	125.3%	1.23	0.102'	1.250'	105.25'	0.74'	105.99'	0.026'	0.11'	0.03'		0.083'	0.818'	106.068'	CRITICAL		Yes by 0.80 cfs	0.3
130		3.95	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	78.6%	1.23	0.318'	0.831'	106.07'	0.95'	107.40'	0.080'	0.11'			0.093'	1.047'	107.495'	o.k.		no	
131		3.95	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	80.5%	1.23	0.306'	0.844'	107.61'	0.43'	108.44'	0.077'	0.08'			0.078'	0.509'	108.521'	o.k.		no	
132		3.95	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	96.5%	1.23	0.224'	0.981'	113.73'	0.88'	114.96'	0.056'	0.08'			0.068'	0.948'	115.029'	o.k.		no	
133		3.95	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	95.8%	1.23	0.226'	0.956'	115.14'	0.48'	115.82'	0.056'	0.08'			0.068'	0.551'	115.884'	o.k.		no	
134		3.95	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	95.8%	1.23	0.226'	0.956'	116.02'	0.48'	116.70'	0.056'	0.08'			0.068'	0.551'	116.764'	o.k.		no	
135		3.95	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	95.8%	1.23	0.226'	0.956'	116.90'	0.48'	117.58'	0.056'	0.08'			0.066'	0.549'	117.643'	o.k.		no	
136		3.95	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	97.8%	1.23	0.218'	0.981'	117.80'	0.84'	118.94'	0.055'	0.04'			0.046'	0.865'	118.987'	o.k.		no	
137		3.95	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	124.1%	1.23	0.104'	1.250'	120.44'	1.20'	121.64'	0.026'	0.03'			0.030'	1.226'	121.666'	CRITICAL		Yes by 0.77 cfs	0.4
138	0.56	3.95	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	129.5%	1.23	0.096'	1.250'	121.67'	0.82'	122.48'	0.024'	0.03'	0.01'	0.012'	0.040'	0.858'	122.524'	CRITICAL		Yes by 0.90 cfs	0.6
139		3.38	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	111.2%	1.23	0.095'	1.250'	122.52'	0.41'	122.93'	0.024'	0.15'	0.01'		0.092'	0.498'	123.023'	CRITICAL		Yes by 0.34 cfs	0.7
140		3.38	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	53.0%	1.23	0.429'	0.638'	123.02'	0.34'	123.36'	0.107'	0.12'	0.27'		0.253'	0.593'	123.616'	o.k.		no	
141		3.38	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	60.3%	1.23	0.354'	0.694'	123.62'	0.50'	124.85'	0.089'	0.12'	0.05'		0.129'	0.626'	124.983'	o.k.		no	
142		3.38	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	62.6%	1.23	0.332'	0.713'	124.98'	0.27'	125.73'	0.083'	0.12'	0.08'		0.140'	0.408'	125.873'	o.k.		no	
143		3.38	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	105.9%	0.79	0.331'	0.865'	127.09'	1.36'	128.66'	0.083'	0.23'	0.07'		0.194'	1.553'	128.849'	o.k.		Yes by 0.19 cfs	
1431		3.38	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	71.5%	0.79	0.658'	0.615'	128.85'	0.34'	129.40'	0.164'	0.05'	0.22'		0.216'	0.558'	129.611'	o.k.		no	
1432		3.38	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	140.7%	0.79	0.146'	1.000'	129.88'	0.77'	130.65'	0.036'	0.08'			0.059'	0.828'	130.708'	CRITICAL		Yes by 0.98 cfs	0.4
144		3.38	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	77.9%	1.23	0.236'	0.813'	130.71'	0.12'	130.83'	0.059'	0.13'	0.15'		0.166'	0.288'	130.996'	CRITICAL		no	0.6
145		3.38	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	35.9%	1.77	0.362'	0.600'	131.00'	0.29'	131.47'	0.090'	0.14'	0.08'		0.151'	0.442'	131.621'	o.k.		no	
146		3.38	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	34.7%	1.77	0.387'	0.600'	131.62'	0.25'	133.20'	0.097'	0.11'	0.25'		0.229'	0.483'	133.429'	o.k.		no	
147		3.38	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	39.0%	1.77	0.327'	0.638'	133.44'	0.28'	135.04'	0.082'	0.12'	0.18'		0.190'	0.469'	135.227'	o.k.		no	
148		3.38	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	37.8%	1.77	0.338'	0.623'	135.23'	0.13'	135.78'	0.084'	0.06'	0.09'		0.117'	0.245'	135.900'	o.k.		no	
149		3.38	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	60.0%	1.77	0.173'	0.833'	135.99'	0.12'	136.36'	0.043'	0.12'	0.02'		0.089'	0.210'	136.452'	o.k.		no	
150		3.38	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	105.9%	0.79	0.331'	0.865'	136.45'	1.60'	138.25'	0.083'	0.15'	0.05'		0.144'	1.746'	138.389'	o.k.		Yes by 0.19 cfs	
151		3.38	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	92.6%	0.79	0.434'	0.750'	138.39'	0.73'	139.43'	0.108'	1.28'	0.16'		0.777'	1.509'	140.207'	o.k.		no	
152	0.86	3.38	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	21.9%	0.79	3.660'	0.300'	140.21'	1.32'	156.10'	0.915'	0.07'	2.34'	0.892'	2.109'	3.434'	158.209'	o.k.		no	
201		2.71	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	67.0%	1.23	0.194'	0.738'	158.21'	0.13'	158.34'	0.048'	0.15'	0.06'		0.131'	0.264'	158.473'	CRITICAL		no	0.8
202		2.71	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	39.3%	1.23	0.430'	0.531'	158.47'	0.25'	158.72'	0.108'	0.28'	0.06'		0.220'	0.467'	158.940'	o.k.		no	
203		2.71	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	26.0%	1.23	0.790'	0.431'	158.94'	0.17'	160.22'	0.197'	0.07'			0.133'	0.302'	160.355'	o.k.		no	
204		2.71	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	66.2%	1.23	0.198'	0.738'	160.63'	0.49'	161.92'	0.050'	0.07'			0.060'	0.549'	161.977'	o.k.		no	
205		2.71	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	66.1%	1.23	0.199'	0.738'	162.02'	0.48'	163.28'	0.050'	0.07'			0.059'	0.537'	163.337'	o.k.		no	
206		2.71	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	66.3%	1.23	0.198'	0.738'	163.38'	0.58'	164.91'	0.049'	0.07'	0.13'		0.123'	0.705'	165.030'	o.k.		no	
207	0.23	2.71	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	66.2%	1.23	0.198'	0.738'	165.03'	0.78'	167.06'	0.050'	0.07'	0.10'	0.015'	0.116'	0.895'	167.174'	o.k.		no	
208		2.48	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	60.6%	1.23	0.189'	0.694'	167.17'	0.43'	168.40'	0.047'	0.05'			0.046'	0.478'	168.450'	o.k.		no	
209		2.48	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	48.0%	1.77	0.130'	0.735'	168.55'	0.21'	169.43'	0.033'	0.04'			0.039'	0.245'	169.464'	o.k.		no	
210		2.48	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	47.9%	1.77	0.128'	0.713'	169.50'	0.19'	170.30'	0.032'	0.05'			0.039'	0.229'	170.341'	o.k.		no	
211		2.48	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	48.1%	1.77	0.130'	0.735'	170.43'	0.17'	171.15'	0.032'	0.04'	0.02'		0.051'	0.221'	171.196'	o.k.		no	
212		2.48	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	47.9%	1.77	0.128'	0.713'	171.22'	0.12'	171.71'	0.032'	0.04'			0.037'	0.154'	171.750'	o.k.		no	
301		2.48	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	112.6%	0.79	0.122'	1.000'	172.55'	0.95'	173.50'	0.031'	0.04'			0.035'	0.982'	173.532'	CRITICAL		Yes by 0.28 cfs	0.2
302		2.48	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	117.4%	0.79	0.113'	1.000'	173.53'	1.48'	175.01'	0.028'	0.04'			0.034'	1.514'	175.046'	CRITICAL		Yes by 0.37 cfs	0.4
303	0.28	2.48	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	117.4%	0.79	0.113'	1.000'	175.05'	1.48'	176.53'	0.028'	0.09'		0.011'	0.063'	1.543'	176.589'	CRITICAL		Yes by 0.37 cfs	0.7
304		2.20	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	77.5%	0.79	0.246'	0.650'	176.59'	0.95'	177.64'	0.061'	0.05'			0.056'	1.008'	177.696'	o.k.		no	
305		2.20	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	104.2%	0.79	0.145'	0.865'	178.06'	0.87'	179.10'	0.036'	0.05'			0.043'	0.915'	179.138'	o.k.		Yes by 0.09 cfs	
306		2.20	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	104.4%	0.79	0.144'	0.865'	179.30'	0.69'	180.12'	0.036'	0.05'	0.09'		0.090'	0.760'	180.205'	o.k.		Yes by 0.09 cfs	
307		2.20	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	103.0%	0.79	0.150'	0.840'	180.29'	0.15'	180.48'	0.037'	0.03'			0.036'	0.190'	180.516'	o.k.		Yes by 0.06 cfs	
308		2.20	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	112.4%	0.79	0.097'	1.000'	180.84'	1.66'	182.50'	0.024'	0.03'			0.029'	1.689'	182.529'	CRITICAL		Yes by 0.24 cfs	0.3
309		2.20	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	113.0%	0.79	0.096'	1.000'	182.53'	0.81'	183.34'	0.024'	0.03'			0.029'	0.842'	183.371'	CRITICAL		Yes by 0.25 cfs	0.3
401		2.20	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	112.5%	0.79	0.096'	1.000'	183.37'	1.51'	184.88'	0.024'	0.16'			0.090'	1.603'	184.974'	CRITICAL		Yes by 0.25 cfs	0.5
402		2.20	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	84.5%	0.55	0.445'	0.583'	187.59'	2.85'	192.63'	0.111'	0.07'			0.089'	2.944'	192.722'	o.k.		no	
403		2.20	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	115.0%	0.55	0.191'	0.833'	192.98'	3.50'	196.48'	0.048'	0.13'			0.089'	3.587'	196.570'	CRITICAL		Yes by 0.29 cfs	0.8
404		2.20	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	93.8%	0.55	0.371'	0.625'	196.57'	0.05'	196.62'	0.093'	0.07'			0.083'	0.138'	196.708'	CRITICAL		no	0.7

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
501	0.53	2.20	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	48.1%	1.23	0.212'	0.613'	200.04'	0.41'	201.79'	0.053'	0.06'		0.049'	0.082'	0.493'	201.875'	o.k.		no	
502		1.67	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	36.9%	1.23	0.179'	0.519'	201.67'	0.28'	203.46'	0.045'	0.14'			0.092'	0.375'	203.550'	o.k.		no	
503		1.67	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	21.1%	1.23	0.395'	0.375'	209.66'	0.31'	213.94'	0.099'	0.05'			0.076'	0.387'	214.011'	o.k.		no	
504		1.67	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	40.6%	1.23	0.155'	0.550'	214.55'	0.30'	216.15'	0.039'	0.05'			0.046'	0.343'	216.196'	o.k.		no	
505		1.67	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	40.6%	1.23	0.155'	0.550'	216.20'	0.30'	217.75'	0.039'	0.08'			0.057'	0.354'	217.807'	o.k.		no	
601		1.67	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0063	5.15	32.5%	1.23	0.217'	0.481'	217.81'	0.27'	219.70'	0.054'	0.02'	0.14'		0.109'	0.378'	219.810'	o.k.		no	
602		1.67	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	143.9%	0.55	0.071'	0.833'	220.33'	1.52'	221.86'	0.018'	0.02'	0.05'		0.044'	1.567'	221.901'	CRITICAL		Yes by 0.51 cfs	0.8
603		1.67	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	143.8%	0.55	0.071'	0.833'	221.90'	1.79'	223.69'	0.018'	0.02'			0.021'	1.810'	223.711'	CRITICAL		Yes by 0.51 cfs	1.6
604		1.67	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	144.2%	0.55	0.070'	0.833'	223.71'	2.13'	225.84'	0.018'	0.02'			0.021'	2.151'	225.861'	CRITICAL		Yes by 0.51 cfs	2.7
605		1.67	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	143.5%	0.55	0.071'	0.833'	225.86'	1.23'	227.09'	0.018'	0.02'			0.021'	1.250'	227.112'	CRITICAL		Yes by 0.51 cfs	3.2
606		1.67	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	143.9%	0.55	0.071'	0.833'	227.11'	1.88'	228.99'	0.018'	0.02'			0.021'	1.897'	229.008'	CRITICAL		Yes by 0.51 cfs	4.1
607		1.67	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	143.9%	0.55	0.071'	0.833'	229.01'	1.67'	230.68'	0.018'	0.02'	0.05'		0.044'	1.712'	230.720'	CRITICAL		Yes by 0.51 cfs	4.9
608		1.67	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	144.1%	0.55	0.070'	0.833'	230.72'	2.17'	232.89'	0.018'	0.02'	0.05'		0.044'	2.214'	232.933'	CRITICAL		Yes by 0.51 cfs	5.9
609		1.67	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	143.8%	0.55	0.071'	0.833'	232.93'	1.64'	234.58'	0.018'	0.02'			0.021'	1.666'	234.599'	CRITICAL		Yes by 0.51 cfs	6.7
610		1.67	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	144.0%	0.55	0.070'	0.833'	234.60'	1.55'	236.15'	0.016'	0.02'			0.021'	1.568'	236.167'	CRITICAL		Yes by 0.51 cfs	7.5
611	0.25	1.67	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	144.1%	0.55	0.070'	0.833'	236.17'	2.25'	238.42'	0.016'	0.03'	0.04'	0.009'	0.047'	2.298'	238.465'	CRITICAL		Yes by 0.51 cfs	8.5
612		1.43	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	216.00'	10"	0.0028	0.0033	1.25	113.7%	0.55	0.082'	0.833'	238.46'	0.91'	239.38'	0.021'	0.02'	0.05'		0.043'	0.956'	239.421'	CRITICAL		Yes by 0.17 cfs	8.7
613		1.43	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	135.8%	0.55	0.058'	0.833'	239.42'	1.36'	240.78'	0.014'	0.02'			0.020'	1.377'	240.797'	CRITICAL		Yes by 0.38 cfs	9.2
614		1.43	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	122.3%	0.55	0.071'	0.833'	240.80'	1.13'	241.93'	0.018'	0.02'			0.021'	1.152'	241.949'	CRITICAL		Yes by 0.26 cfs	9.5
615		1.43	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	122.7%	0.55	0.070'	0.833'	241.95'	1.35'	243.30'	0.018'	0.02'			0.021'	1.370'	243.319'	CRITICAL		Yes by 0.26 cfs	9.8
616		1.43	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	122.5%	0.55	0.071'	0.833'	243.32'	1.58'	244.90'	0.018'	0.03'			0.022'	1.605'	244.924'	CRITICAL		Yes by 0.26 cfs	10.3
617		1.43	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	186.0%	0.35	0.075'	0.667'	244.92'	4.40'	249.33'	0.019'	0.15'			0.084'	4.486'	249.410'	CRITICAL		Yes by 0.66 cfs	13.3
618		1.43	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	87.7%	0.35	0.426'	0.477'	249.41'	3.60'	253.01'	0.107'	0.03'			0.066'	3.669'	253.079'	CRITICAL		no	11.0
619		1.43	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	186.0%	0.35	0.075'	0.667'	253.08'	4.13'	257.21'	0.019'	0.03'			0.022'	4.150'	257.229'	CRITICAL		Yes by 0.66 cfs	13.8
620		1.43	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	186.0%	0.35	0.075'	0.667'	257.23'	4.68'	262.11'	0.019'	0.03'			0.022'	4.906'	262.135'	CRITICAL		Yes by 0.66 cfs	17.2
621	0.75	1.43	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	186.0%	0.35	0.075'	0.667'	262.13'	4.47'	266.61'	0.019'	0.04'	0.05'	0.044'	0.076'	4.547'	266.682'	CRITICAL	CRITICAL	Yes by 0.66 cfs	20.3
622		0.75	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	88.6%	0.35	0.117'	0.483'	266.68'	0.59'	267.27'	0.029'	0.04'	0.07'		0.073'	0.658'	267.340'	CRITICAL	o.k.	no	19.9
623		0.75	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	88.5%	0.35	0.117'	0.483'	267.34'	1.01'	268.35'	0.029'	0.04'			0.035'	1.043'	268.383'	CRITICAL	CRITICAL	no	19.3
624		0.75	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	88.8%	0.35	0.117'	0.483'	268.38'	0.75'	269.14'	0.029'	0.04'			0.035'	0.789'	269.172'	CRITICAL	CRITICAL	no	18.7
624		0.75	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	88.6%	0.35	0.117'	0.483'	269.17'	0.75'	269.92'	0.029'	0.04'	0.03'		0.048'	0.793'	269.965'	CRITICAL	CRITICAL	no	18.2
625		0.75	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	88.8%	0.35	0.117'	0.483'	269.97'	0.86'	270.83'	0.029'	0.03'			0.032'	0.891'	270.857'	CRITICAL	CRITICAL	no	17.6
626		0.75	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	98.1%	0.35	0.097'	0.533'	270.86'	0.26'	271.12'	0.024'	0.10'			0.061'	0.325'	271.182'	CRITICAL	CRITICAL	no	17.0
627		0.75	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	50.6%	0.35	0.281'	0.333'	271.18'	0.99'	272.18'	0.070'	0.14'			0.104'	1.098'	272.280'	CRITICAL	CRITICAL	no	10.1
628		0.75	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	40.5%	0.35	0.391'	0.293'	272.28'	1.22'	273.50'	0.098'	0.03'	0.25'		0.191'	1.409'	273.688'	CRITICAL	o.k.	no	4.7
629		0.75	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	98.1%	0.35	0.097'	0.533'	273.69'	0.44'	274.13'	0.024'	0.09'	0.06'		0.091'	0.531'	274.219'	CRITICAL	o.k.	no	4.6
630		0.75	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	51.5%	0.35	0.271'	0.333'	274.22'	0.53'	274.75'	0.068'	0.09'			0.080'	0.607'	274.827'	CRITICAL	o.k.	no	3.1
631		0.75	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	52.9%	0.35	0.262'	0.340'	274.83'	0.24'	275.07'	0.066'	0.03'	0.17'		0.134'	0.374'	275.200'	CRITICAL	o.k.	no	2.4
632		0.75	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	98.2%	0.35	0.097'	0.533'	275.20'	0.70'	275.90'	0.024'	0.00'			0.012'	0.711'	275.911'	CRITICAL	o.k.	no	2.2
Pump Station Line																																
620		1.43	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.75	1.43	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	186.0%	0.35	0.075'	0.667'	244.99'	4.47'	249.46'	0.019'	0.03'	0.05'	0.044'	0.072'	4.544'	249.530'	CRITICAL	o.k.	Yes by 0.66 cfs	3.2
8211		0.75	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	98.1%	0.35	0.097'	0.533'	249.53'	0.88'	250.41'	0.024'	0.03'			0.029'	0.910'	250.440'	CRITICAL	o.k.	no	2.8
8212		0.75	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	98.3%	0.35	0.097'	0.533'	250.44'	0.63'	251.07'	0.024'	0.01'	0.06'		0.050'	0.684'	251.124'	CRITICAL	o.k.	no	2.5
8213		0.75	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	134.2%	0.35	0.040'	0.667'	251.12'	0.89'	252.02'	0.010'	0.03'			0.022'	0.917'	252.041'	CRITICAL	o.k.	Yes by 0.19 cfs	2.9
8214		0.75	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	98.2%	0.35	0.097'	0.533'	252.04'	0.76'	252.80'	0.024'	0.06'	0.06'		0.073'	0.830'	252.871'	CRITICAL	o.k.	no	2.1
8215		0.75	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	70.0%	0.35	0.170'	0.403'	252.87'	0.23'	253.10'	0.042'	0.03'			0.038'	0.268'	253.139'	CRITICAL	o.k.	no	1.7
8216		0.75	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	98.1%	0.35	0.097'	0.533'	253.14'	1.22'	254.36'	0.024'	0.31'	0.06'		0.198'	1.416'	254.556'	CRITICAL	o.k.	no	1.2
8217		0.75	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	23.1%	0.35	0.885'	0.213'	254.56'	0.44'	258.21'	0.221'	0.00'			0.111'	0.555'	258.324'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																
94th Street Trunk																																
152		3.38	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		0.86	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	14.8%	0.55	0.863'	0.208'	158.21'	0.26'	162.11'	0.216'	0.28'	0.13'		0.311'	0.567'	162.419'	o.k.		no	
720		0.86	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	16.2%	0.55	0.789'	0.225'	162.42'	0.96'	181.86'	0.197'	0.11'			0.155'	1.116'	182.010'	o.k.		no	
721		0.86	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	29.6%	0.55	0.324'	0.300'	182.01'	0.68'	187.72'	0.081'	0.04'			0.058'	0.737'	187.778'	o.k.		no	
722		0.86	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	39.8%	0.79	0.103'	0.425'	187.85'	0.19'	188.88'	0.026'	0.02'			0.025'	0.212'	188.900'	o.k.		no	
723		0.86	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	51.1%	0.79	0.071'	0.500'	188.95'	0.25'	189.90'	0.018'	0.02'			0.021'	0.268'	189.921'	o.k.		no	
724		0.86	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	51.4%	0.79	0.070'	0.500'	189.92'	0.16'	190.50'	0.018'	0.03'			0.024'	0.181'	190.524'	o.k.		no	
724A		0.86	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	45.5%	0.79	0.084'	0.465'	190.52'	0.10'	190.92'	0.021'	0.03'			0.025'	0.124'	190.940'	o.k.		no	
725		0.86	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	73.9%	0.55	0.084'	0.521'	190.97'	0.41'	191.86'	0.021'	0.03'			0.025'	0.431'	191.886'	o.k.		no	
726		0.86	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	74.0%	0.55	0.084'	0.521'	191.89'	0.41'	192.76'	0.021'	0.03'			0.024'	0.436'	192.785'	o.k.		no	
727		0.86	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	76.7%	0.55	0.079'	0.542'	192.79'	0.51'	193.83'	0.020'	0.03'			0.026'	0.534'	193.857'	o.k.		no	
728		0.86	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	69.9%	0.55	0.091'	0.504'	193.86'	0.36'	194.66'	0.023'	0.03'			0.026'	0.390'	194.690'	o.k.		no	
729		0.86	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	74.2%	0.55	0.084'	0.533'	194.69'	0.42'	195.62'	0.021'	0.00'			0.010'	0.433'	195.634'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.49	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.49	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	17.7%	1.23	3.594'	0.338'	9.18' *	0.92'	23.36'	0.898'	1.14'	0.75'		1.397'	2.317'	24.755'	o.k.		no	
102		4.49	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	19.0%	1.23	3.261'	0.356'	24.75'	0.85'	36.74'	0.815'	1.46'			1.138'	1.985'	37.874'	o.k.		no	
103		4.49	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	15.6%	1.23	4.174'	0.313'	37.87'	0.75'	52.05'	1.043'	0.10'	1.19'		1.165'	1.917'	53.218'	o.k.		no	
104		4.49	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	98.2%	1.23	0.279'	1.000'	53.22'	0.65'	53.87'	0.070'	0.10'	0.04'		0.105'	0.754'	53.971'	o.k.		no	
105		4.49	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	98.5%	1.23	0.278'	1.000'	53.97'	0.65'	54.69'	0.069'	0.22'	0.02'		0.157'	0.802'	54.847'	o.k.		no	
106		4.49	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	59.2%	1.23	0.635'	0.681'	54.85'	0.69'	56.48'	0.159'	0.43'	0.08'		0.335'	1.020'	56.816'	o.k.		no	
107		4.49	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	38.5%	1.23	1.224'	0.531'	56.82'	0.60'	60.09'	0.306'	0.10'	0.16'		0.282'	0.887'	60.373'	o.k.		no	
108		4.49	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	97.6%	1.23	0.283'	0.981'	60.74'	0.58'	61.53'	0.071'	0.10'	0.04'		0.106'	0.685'	61.637'	o.k.		no	
109	0.09	4.49	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	97.7%	1.23	0.283'	0.981'	61.73'	0.67'	62.64'	0.071'	0.17'	0.16'	0.005'	0.205'	0.873'	62.847'	o.k.		no	
110		4.40	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	68.1%	1.23	0.498'	0.756'	62.85'	1.03'	65.22'	0.124'	0.17'	0.14'		0.220'	1.252'	65.436'	o.k.		no	
111		4.40	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	68.3%	1.23	0.495'	0.756'	65.44'	1.11'	68.20'	0.124'	0.14'			0.130'	1.241'	68.327'	o.k.		no	
112		4.40	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	78.9%	1.23	0.392'	0.831'	69.02'	1.35'	71.69'	0.098'	0.17'	0.06'		0.163'	1.514'	71.854'	o.k.		no	
113		4.40	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	69.8%	1.23	0.473'	0.756'	71.85'	0.97'	74.15'	0.116'	0.17'	0.11'		0.195'	1.168'	74.342'	o.k.		no	
114		4.40	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	69.8%	1.23	0.474'	0.756'	74.36'	1.00'	76.76'	0.119'	0.09'			0.102'	1.103'	76.858'	o.k.		no	
115	0.22	4.40	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	102.8%	1.23	0.245'	1.050'	79.70'	0.64'	80.49'	0.061'	0.11'		0.010'	0.089'	0.732'	80.579'	o.k.		Yes by 0.12 cfs	
116		4.19	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	86.5%	1.23	0.306'	0.894'	80.58'	0.82'	81.76'	0.076'	0.03'			0.055'	0.877'	81.819'	o.k.		no	
117	0.04	4.19	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	135.2%	1.23	0.099'	1.250'	82.32'	1.13'	83.45'	0.025'	0.04'	0.01'	0.001'	0.037'	1.166'	83.486'	CRITICAL		Yes by 1.09 cfs	0.5
118		4.14	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	127.9%	1.23	0.108'	1.250'	83.49'	0.36'	83.84'	0.027'	0.17'			0.098'	0.457'	83.942'	CRITICAL		Yes by 0.90 cfs	0.5
119		4.14	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	64.0%	1.23	0.484'	0.725'	83.94'	1.14'	86.20'	0.121'	0.12'			0.119'	1.263'	86.314'	o.k.		no	
120	0.09	4.14	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	81.1%	1.23	0.331'	0.844'	86.51'	0.34'	87.15'	0.083'	0.11'		0.006'	0.101'	0.440'	87.255'	o.k.		no	
121		4.06	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	79.7%	1.23	0.326'	0.831'	87.34'	0.78'	88.85'	0.082'	0.11'			0.097'	0.876'	88.948'	o.k.		no	
122	0.04	4.06	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	80.5%	1.23	0.323'	0.844'	89.74'	0.82'	91.32'	0.081'	0.13'	0.04'	0.003'	0.127'	0.949'	91.450'	o.k.		no	
123		4.01	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	73.6%	1.23	0.364'	0.781'	91.46'	0.58'	92.75'	0.091'	0.13'			0.109'	0.693'	92.860'	o.k.		no	
124		4.01	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	74.1%	1.23	0.362'	0.800'	92.97'	0.49'	94.06'	0.091'	0.13'			0.108'	0.603'	94.168'	o.k.		no	
125		4.01	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	74.5%	1.23	0.358'	0.800'	94.26'	0.36'	95.04'	0.089'	0.13'	0.05'		0.135'	0.493'	95.175'	o.k.		no	
126		4.01	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	74.0%	1.23	0.360'	0.781'	95.22'	1.23'	97.90'	0.090'	0.17'	0.03'		0.142'	1.370'	98.043'	o.k.		no	
127		4.01	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	61.9%	1.23	0.472'	0.694'	98.04'	0.90'	100.59'	0.118'	0.18'	0.06'		0.180'	1.081'	100.774'	o.k.		no	
128		4.01	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	58.5%	1.23	0.519'	0.681'	100.78'	0.93'	103.69'	0.130'	0.04'	0.16'		0.163'	1.088'	103.854'	o.k.		no	
129		4.01	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	127.3%	1.23	0.102'	1.250'	105.25'	0.76'	106.01'	0.026'	0.11'	0.03'		0.083'	0.842'	106.092'	CRITICAL		Yes by 0.86 cfs	0.3
130		4.01	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	79.8%	1.23	0.318'	0.831'	106.09'	0.98'	107.40'	0.080'	0.11'			0.093'	1.077'	107.495'	o.k.		no	
131		4.01	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	81.7%	1.23	0.306'	0.844'	107.61'	0.45'	108.44'	0.077'	0.08'			0.078'	0.523'	108.521'	o.k.		no	
132		4.01	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	98.0%	1.23	0.224'	1.000'	113.75'	0.90'	114.98'	0.056'	0.08'			0.068'	0.971'	115.048'	o.k.		no	
133		4.01	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	97.4%	1.23	0.228'	0.981'	115.16'	0.50'	115.84'	0.057'	0.08'			0.068'	0.564'	115.910'	o.k.		no	
134		4.01	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	97.4%	1.23	0.228'	0.981'	116.04'	0.50'	116.72'	0.057'	0.08'			0.068'	0.564'	116.790'	o.k.		no	
135		4.01	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	97.4%	1.23	0.228'	0.981'	116.92	0.50'	117.60'	0.057'	0.08'			0.067'	0.562'	117.668'	o.k.		no	
136		4.01	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	99.4%	1.23	0.218'	1.000'	117.82'	0.86'	118.96'	0.055'	0.04'			0.046'	0.906'	119.006'	o.k.		no	
137		4.01	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	126.0%	1.23	0.104'	1.250'	120.44'	1.23'	121.67'	0.026'	0.03'			0.030'	1.264'	121.704'	CRITICAL		Yes by 0.83 cfs	0.5
138	0.57	4.01	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	131.5%	1.23	0.096'	1.250'	121.70'	0.84'	122.55'	0.024'	0.03'	0.01'	0.012'	0.040'	0.884'	122.588'	CRITICAL		Yes by 0.96 cfs	0.6
139		3.44	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	113.0%	1.23	0.095'	1.250'	122.59'	0.42'	123.01'	0.024'	0.15'	0.01'		0.092'	0.511'	123.100'	CRITICAL		Yes by 0.40 cfs	0.7
140		3.44	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	53.8%	1.23	0.429'	0.638'	123.10'	0.35'	123.45'	0.107'	0.12'	0.27'		0.253'	0.604'	123.703'	o.k.		no	
141		3.44	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	61.3%	1.23	0.354'	0.694'	123.70'	0.51'	124.85'	0.089'	0.12'	0.05'		0.129'	0.642'	124.983'	o.k.		no	
142		3.44	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	63.6%	1.23	0.332'	0.713'	124.98'	0.28'	125.73'	0.083'	0.11'	0.08'		0.140'	0.416'	125.872'	o.k.		no	
143		3.44	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	107.5%	0.79	0.329'	0.885'	127.11'	1.43'	128.68'	0.082'	0.23'	0.07'		0.195'	1.621'	128.870'	o.k.		Yes by 0.24 cfs	
1431		3.44	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	72.6%	0.79	0.670'	0.625'	128.87'	0.35'	129.41'	0.168'	0.05'	0.22'		0.220'	0.568'	129.625'	o.k.		no	
1432		3.44	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	142.9%	0.79	0.146'	1.000'	129.88'	0.79'	130.67'	0.036'	0.08'			0.060'	0.853'	130.733'	CRITICAL		Yes by 1.03 cfs	0.4
144		3.44	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	79.1%	1.23	0.238'	0.831'	130.73'	0.12'	130.86'	0.059'	0.13'	0.15'		0.169'	0.293'	131.026'	CRITICAL		no	0.6
145		3.44	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	36.5%	1.77	0.374'	0.623'	131.03'	0.29'	131.49'	0.093'	0.14'	0.08'		0.154'	0.445'	131.646'	o.k.		no	
146		3.44	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	35.3%	1.77	0.387'	0.600'	131.65'	0.26'	133.20'	0.097'	0.11'	0.25'		0.229'	0.492'	133.429'	o.k.		no	
147		3.44	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	39.6%	1.77	0.327'	0.638'	133.44'	0.29'	135.04'	0.082'	0.12'	0.18'		0.192'	0.480'	135.229'	o.k.		no	
148		3.44	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	38.4%	1.77	0.349'	0.638'	135.23'	0.13'	135.80'	0.087'	0.06'	0.09'		0.120'	0.248'	135.918'	o.k.		no	
149		3.44	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	61.0%	1.77	0.173'	0.833'	135.99	0.13'	136.36'	0.043'	0.11'	0.02'		0.089'	0.214'	136.451'	o.k.		no	
150		3.44	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	107.5%	0.79	0.328'	0.885'	136.45'	1.68'	138.27'	0.082'	0.15'	0.05'		0.143'	1.824'	138.408'	o.k.		Yes by 0.24 cfs	
151		3.44	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	94.0%	0.79	0.434'	0.765'	138.41'	0.75'	139.45'	0.108'	1.38'	0.16'		0.827'	1.579'	140.272'	o.k.		no	
152	0.68	3.44	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	22.2%	0.79	3.947'	0.320'	140.27'	1.29'	156.12'	0.987'	0.07'	2.53'	0.732'	2.157'	3.448'	158.277'	o.k.		no	
201		2.76	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	68.1%	1.23	0.195'	0.756'	158.28'	0.13'	158.41'	0.049'	0.15'	0.06'		0.132'	0.267'	158.544'	CRITICAL		no	0.8
202		2.76	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	39.9%	1.23	0.430'	0.531'	158.54'	0.26'	158.80'	0.108'	0.28'	0.06'		0.220'	0.475'	159.019'	o.k.		no	
203		2.76	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	26.4%	1.23	0.790'	0.431'	159.02'	0.17'	160.22'	0.197'	0.07'			0.133'	0.307'	160.355'	o.k.		no	
204		2.76	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	67.2%	1.23	0.198'	0.738'	160.63	0.51'	161.92'	0.050'	0.07'			0.060'	0.565'	161.977'	o.k.		no	
205		2.76	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	67.2%	1.23	0.199'	0.738'	162.02'	0.49'	163.28'	0.050'	0.07'			0.059'	0.552'	163.337'	o.k.		no	
206		2.76	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	67.3%	1.23	0.198'	0.738'	163.38'	0.60'	164.91'	0.049'	0.07'	0.13'		0.123'	0.724'	165.030'	o.k.		no	
207	0.23	2.76	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	67.2%	1.23	0.198'	0.738'	165.03'	0.80'	167.06'	0.050'	0.07'	0.10'	0.015'	0.116'	0.920'	167.174'	o.k.		no	
208		2.52	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	61.6%	1.23	0.189'	0.694'	167.17'	0.45'	168.40'	0.047'	0.05'			0.046'	0.492'	168.450'	o.k.		no	
209		2.52	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	48.8%	1.77	0.130'	0.735'	168.55	0.21'	169.43'	0.033'	0.05'			0.039'	0.252'	169.464'	o.k.		no	
210		2.52	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	48.6%	1.77	0.131'	0.735'	169.53'	0.19'	170.33'	0.033'	0.05'			0.039'	0.232'	170.364'	o.k.		no	
211		2.52	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	48.9%	1.77	0.130'	0.735'	170.43'	0.17'	171.15'	0.032'	0.05'	0.02'		0.051'	0.226'	171.196'	o.k.		no	
212		2.52	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	48.6%	1.77	0.131'	0.735'	171.25	0.12'	171.74'	0.033'	0.04'			0.038'	0.156'	171.773'	o.k.		no	
301		2.52	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	114.4%	0.79	0.122'	1.000'	172.55'	0.98'	173.53'	0.031'	0.04'			0.035'	1.012'	173.562'	CRITICAL		Yes by 0.32 cfs	0.2
302		2.52	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	119.2%	0.79	0.113'	1.000'	173.56'	1.53'	175.09'	0.028'	0.04'			0.034'	1.562'	175.124'	CRITICAL		Yes by 0.41 cfs	0.5
303	0.28	2.52	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	119.2%	0.79	0.113'	1.000'	175.12'	1.53'	176.65'	0.028'	0.09'		0.011'	0.063'	1.591'	176.715'	CRITICAL		Yes by 0.41 cfs	0.8
304		2.24	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	78.7%	0.79	0.248'	0.665'	176.72'	0.97'	177.69'	0.062'	0.05'			0.056'	1.028'	177.743'	o.k.		no	
305		2.24	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	105.8%	0.79	0.145'	0.865'	178.06'	0.90'	179.10'	0.036'	0.05'			0.043'	0.943'	179.138'	o.k.		Yes by 0.12 cfs	
306		2.24	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	106.0%	0.79	0.143'	0.885'	179.32'	0.72'	180.14'	0.036'	0.05'	0.09'		0.090'	0.814'	180.225'	o.k.		Yes by 0.13 cfs	
307		2.24	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	104.6%	0.79	0.148'	0.865'	180.32'	0.16'	180.51'	0.037'	0.03'			0.035'	0.196'	180.540'	o.k.		Yes by 0.10 cfs	
308		2.24	MH 8		21+42.00	21+42.00	181.35	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	114.2%	0.79	0.097'	1.000'	180.84'	1.71'	182.55'	0.024'	0.03'			0.029'	1.743'	182.583'	CRITICAL		Yes by 0.28 cfs	0.4
309		2.24	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	114.8%	0.79	0.096'	1.000'	182.58'	0.84'	183.42'	0.024'	0.03'			0.029'	0.868'	183.451'	CRITICAL		Yes by 0.29 cfs	0.4
401		2.24	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	114.3%	0.79	0.096'	1.000'	183.45'	1.56'	185.01'	0.024'	0.16'			0.090'	1.651'	185.102'	CRITICAL		Yes by 0.28 cfs	0.6
402		2.24	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	85.8%	0.55	0.445'	0.583'	187.59'	2.95'	192.63'	0.111'	0.07'			0.089'	3.036'	192.722'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.24	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	116.8%	0.55	0.191'	0.833'	192.98'	3.61'	196.59'	0.048'	0.13'			0.089'	3.700'	196.683'	CRITICAL		Yes by 0.32 cfs	1.0
404		2.24	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	95.3%	0.55	0.371'	0.638'	196.68'	0.06'	196.74'	0.093'	0.07'			0.083'	0.139'	196.823'	CRITICAL		no	0.8
501	0.54	2.24	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	48.8%	1.23	0.212'	0.613'	200.04'	0.42'	201.79'	0.053'	0.06'		0.049'	0.082'	0.506'	201.875'	o.k.		no	
502		1.70	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	37.5%	1.23	0.179'	0.519'	201.87'	0.29'	203.46'	0.045'	0.14'			0.092'	0.384'	203.550'	o.k.		no	
503		1.70	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	21.4%	1.23	0.395'	0.375'	209.66'	0.32'	213.94'	0.099'	0.05'			0.076'	0.397'	214.011'	o.k.		no	
504		1.70	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	41.5%	1.23	0.155'	0.550'	214.55'	0.31'	216.15'	0.039'	0.05'			0.046'	0.353'	216.196'	o.k.		no	
505		1.70	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	41.5%	1.23	0.155'	0.550'	216.20'	0.31'	217.75'	0.039'	0.08'			0.057'	0.364'	217.807'	o.k.		no	
601		1.70	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0063	5.15	33.0%	1.23	0.217'	0.481'	217.81'	0.28'	219.70'	0.054'	0.02'	0.14'		0.109'	0.387'	219.810'	o.k.		no	
602		1.70	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	146.2%	0.55	0.071'	0.833'	220.33'	1.57'	221.91'	0.018'	0.02'	0.05'		0.044'	1.617'	221.950'	CRITICAL		Yes by 0.54 cfs	0.8
603		1.70	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	146.1%	0.55	0.071'	0.833'	221.95'	1.85'	223.80'	0.018'	0.02'			0.021'	1.868'	223.819'	CRITICAL		Yes by 0.54 cfs	1.8
604		1.70	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	146.5%	0.55	0.070'	0.833'	223.82'	2.20'	226.02'	0.018'	0.02'			0.021'	2.220'	226.039'	CRITICAL		Yes by 0.54 cfs	2.8
605		1.70	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	145.8%	0.55	0.071'	0.833'	226.04'	1.27'	227.31'	0.018'	0.02'			0.021'	1.290'	227.329'	CRITICAL		Yes by 0.53 cfs	3.4
606		1.70	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	146.3%	0.55	0.071'	0.833'	227.33'	1.94'	229.27'	0.018'	0.02'			0.021'	1.958'	229.287'	CRITICAL		Yes by 0.54 cfs	4.4
607		1.70	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	146.2%	0.55	0.071'	0.833'	229.29'	1.72'	231.01'	0.018'	0.02'	0.05'		0.044'	1.766'	231.053'	CRITICAL		Yes by 0.54 cfs	5.2
608		1.70	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	146.5%	0.55	0.070'	0.833'	231.05'	2.24'	233.29'	0.018'	0.02'	0.05'		0.044'	2.284'	233.337'	CRITICAL		Yes by 0.54 cfs	6.3
609		1.70	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	146.1%	0.55	0.071'	0.833'	233.34'	1.70'	235.03'	0.018'	0.02'			0.021'	1.719'	235.056'	CRITICAL		Yes by 0.54 cfs	7.2
610		1.70	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	146.3%	0.55	0.070'	0.833'	235.06'	1.60'	236.65'	0.018'	0.02'			0.021'	1.618'	236.674'	CRITICAL		Yes by 0.54 cfs	8.0
611	0.25	1.70	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	146.4%	0.55	0.070'	0.833'	236.67'	2.32'	239.00'	0.018'	0.03'	0.04'	0.009'	0.047'	2.371'	239.045'	CRITICAL		Yes by 0.54 cfs	9.1
612		1.45	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	115.5%	0.55	0.082'	0.833'	239.05'	0.94'	239.99'	0.021'	0.02'	0.05'		0.043'	0.986'	240.031'	CRITICAL		Yes by 0.19 cfs	9.3
613		1.45	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	138.0%	0.55	0.058'	0.833'	240.03'	1.40'	241.43'	0.014'	0.02'			0.020'	1.421'	241.452'	CRITICAL		Yes by 0.40 cfs	9.8
614		1.45	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	124.3%	0.55	0.071'	0.833'	241.45'	1.17'	242.62'	0.018'	0.02'			0.021'	1.189'	242.641'	CRITICAL		Yes by 0.28 cfs	10.2
615		1.45	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	124.7%	0.55	0.070'	0.833'	242.64'	1.39'	244.03'	0.018'	0.02'			0.021'	1.414'	244.055'	CRITICAL		Yes by 0.29 cfs	10.6
616		1.45	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	124.5%	0.55	0.071'	0.833'	244.05'	1.63'	245.69'	0.018'	0.03'			0.022'	1.657'	245.711'	CRITICAL		Yes by 0.29 cfs	11.1
617		1.45	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	245.71'	4.55'	250.26'	0.019'	0.15'			0.085'	4.631'	250.342'	CRITICAL		Yes by 0.68 cfs	14.3
618		1.45	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	89.1%	0.35	0.430'	0.483'	250.34'	3.70'	254.04'	0.107'	0.03'			0.067'	3.766'	254.109'	CRITICAL		no	12.0
619		1.45	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	254.11'	4.26'	258.37'	0.019'	0.03'			0.022'	4.285'	258.393'	CRITICAL		Yes by 0.68 cfs	15.0
620		1.45	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	258.39'	5.04'	263.44'	0.019'	0.03'			0.022'	5.066'	263.459'	CRITICAL		Yes by 0.68 cfs	18.6
621	0.76	1.45	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	263.46'	4.62'	268.08'	0.019'	0.04'	0.05'	0.044'	0.076'	4.693'	268.153'	CRITICAL	CRITICAL	Yes by 0.68 cfs	21.8
622		0.76	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	90.1%	0.35	0.117'	0.490'	268.15'	0.60'	268.75'	0.029'	0.04'	0.07'		0.073'	0.674'	268.827'	CRITICAL	o.k.	no	21.4
623		0.76	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	90.0%	0.35	0.117'	0.483'	268.83'	1.04'	269.87'	0.029'	0.04'			0.035'	1.076'	269.903'	CRITICAL	CRITICAL	no	20.8
624		0.76	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	90.2%	0.35	0.117'	0.490'	269.90'	0.78'	270.68'	0.029'	0.04'			0.035'	0.810'	270.713'	CRITICAL	CRITICAL	no	20.3
624		0.76	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	90.1%	0.35	0.117'	0.490'	270.71'	0.77'	271.48'	0.029'	0.04'	0.03'		0.048'	0.814'	271.527'	CRITICAL	CRITICAL	no	19.8
625		0.76	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	90.3%	0.35	0.117'	0.490'	271.53'	0.88'	272.41'	0.029'	0.03'			0.032'	0.915'	272.442'	CRITICAL	CRITICAL	no	19.2
626		0.76	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	99.7%	0.35	0.097'	0.533'	272.44'	0.27'	272.71'	0.024'	0.10'			0.061'	0.334'	272.776'	CRITICAL	CRITICAL	no	18.6
627		0.76	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	51.5%	0.35	0.281'	0.333'	272.78'	1.03'	273.80'	0.070'	0.14'			0.104'	1.131'	273.907'	CRITICAL	CRITICAL	no	11.7
628		0.76	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	41.2%	0.35	0.391'	0.293'	273.91'	1.26'	275.16'	0.098'	0.03'	0.25'		0.191'	1.449'	275.356'	CRITICAL	CRITICAL	no	6.3
629		0.76	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	99.7%	0.35	0.097'	0.533'	275.36'	0.45'	275.81'	0.024'	0.10'	0.06'		0.092'	0.547'	275.903'	CRITICAL	CRITICAL	no	6.3
630		0.76	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	52.4%	0.35	0.277'	0.340'	275.90'	0.53'	276.44'	0.069'	0.09'			0.080'	0.615'	276.518'	CRITICAL	o.k.	no	4.8
631		0.76	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	53.8%	0.35	0.262'	0.340'	276.52'	0.25'	276.77'	0.066'	0.03'	0.17'		0.134'	0.382'	276.899'	CRITICAL	o.k.	no	4.1
632		0.76	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	99.8%	0.35	0.097'	0.533'	276.90'	0.72'	277.62'	0.024'	0.00'			0.012'	0.734'	277.633'	CRITICAL	o.k.	no	4.0
Pump Station Line																																
620		1.45	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.76	1.45	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	244.99'	4.62'	249.60'	0.019'	0.03'	0.05'	0.044'	0.072'	4.690'	249.677'	CRITICAL	o.k.	Yes by 0.68 cfs	3.3
8211		0.76	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	99.7%	0.35	0.097'	0.533'	249.68'	0.91'	250.59'	0.024'	0.03'			0.029'	0.939'	250.615'	CRITICAL	o.k.	no	3.0
8212		0.76	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	99.9%	0.35	0.097'	0.533'	250.62'	0.66'	251.27'	0.024'	0.01'	0.06'		0.050'	0.705'	251.321'	CRITICAL	o.k.	no	2.7
8213		0.76	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	136.4%	0.35	0.040'	0.667'	251.32'	0.92'	252.25'	0.010'	0.03'			0.022'	0.946'	252.267'	CRITICAL	o.k.	Yes by 0.20 cfs	3.1
8214		0.76	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	99.8%	0.35	0.097'	0.533'	252.27'	0.78'	253.05'	0.024'	0.06'	0.06'		0.073'	0.856'	253.123'	CRITICAL	o.k.	no	2.3
8215		0.76	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	71.1%	0.35	0.171'	0.410'	253.12'	0.24'	253.36'	0.043'	0.03'			0.038'	0.274'	253.396'	CRITICAL	o.k.	no	2.0
8216		0.76	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	99.7%	0.35	0.097'	0.533'	253.40'	1.26'	254.65'	0.024'	0.31'	0.06'		0.198'	1.457'	254.853'	CRITICAL	o.k.	no	1.5
8217		0.76	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	23.5%	0.35	0.885'	0.213'	254.85'	0.46'	258.21'	0.221'	0.00'			0.111'	0.569'	258.324'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																
94th Street Trunk																																
152		3.44	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		0.87	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	15.0%	0.55	0.863'	0.208'	158.28'	0.26'	162.11'	0.216'	0.28'	0.13'		0.311'	0.575'	162.419'	o.k.		no	
720		0.87	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	16.5%	0.55	0.789'	0.225'	162.42'	0.99'	181.86'	0.197'	0.12'			0.157'	1.150'	182.012'	o.k.		no	
721		0.87	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	30.1%	0.55	0.335'	0.313'	182.01'	0.68'	187.73'	0.084'	0.04'			0.060'	0.738'	187.793'	o.k.		no	
722		0.87	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	40.4%	0.79	0.105'	0.440'	187.86'	0.19'	188.89'	0.026'	0.02'			0.026'	0.213'	188.916'	o.k.		no	
723		0.87	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	51.9%	0.79	0.071'	0.500'	188.95'	0.25'	189.90'	0.018'	0.03'			0.021'	0.276'	189.921'	o.k.		no	
724		0.87	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	52.2%	0.79	0.072'	0.510'	189.92'	0.16'	190.51'	0.018'	0.03'			0.024'	0.184'	190.534'	o.k.		no	
724A		0.87	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	46.3%	0.79	0.086'	0.475'	190.53'	0.10'	190.93'	0.022'	0.03'			0.026'	0.125'	190.951'	o.k.		no	
725		0.87	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	75.1%	0.55	0.085'	0.533'	190.98'	0.41'	191.87'	0.021'	0.03'			0.025'	0.440'	191.899'	o.k.		no	
726		0.87	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	75.2%	0.55	0.084'	0.533'	191.90'	0.42'	192.77'	0.021'	0.03'			0.024'	0.445'	192.798'	o.k.		no	
727		0.87	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	78.0%	0.55	0.079'	0.542'	192.80'	0.52'	193.83'	0.020'	0.03'			0.026'	0.551'	193.858'	o.k.		no	
728		0.87	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	71.1%	0.55	0.092'	0.513'	193.86'	0.37'	194.67'	0.023'	0.03'			0.026'	0.398'	194.699'	o.k.		no	
729		0.87	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	75.4%	0.55	0.084'	0.533'	194.70'	0.44'	195.62'	0.021'	0.00'			0.010'	0.447'	195.634'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation In Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.56	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.56	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	17.9%	1.23	3.594'	0.338'	9.59' *	0.95'	23.36'	0.898'	1.14'	0.75'		1.397'	2.346'	24.755'	o.k.		no	
102		4.56	MH 2		02+04.00	02+04.00	36.39	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	19.3%	1.23	3.261'	0.356'	24.75'	0.87'	36.74'	0.815'	1.46'			1.138'	2.012'	37.874'	o.k.		no	
103		4.56	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	15.9%	1.23	4.174'	0.313'	37.87'	0.78'	52.05'	1.043'	0.10'	1.19'		1.165'	1.941'	53.218'	o.k.		no	
104		4.56	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	99.8%	1.23	0.279'	1.000'	53.22'	0.67'	53.89'	0.070'	0.10'	0.04'		0.105'	0.774'	53.992'	CRITICAL		no	0.0
105		4.56	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	100.0%	1.23	0.278'	1.025'	53.99'	0.67'	54.72'	0.069'	0.23'	0.02'		0.159'	0.825'	54.874'	o.k.		Yes by 0.00 cfs	
106		4.56	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	60.1%	1.23	0.647'	0.694'	54.87'	0.69'	56.49'	0.162'	0.43'	0.08'		0.337'	1.031'	56.831'	o.k.		no	
107		4.56	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	39.1%	1.23	1.224'	0.531'	56.83'	0.62'	60.09'	0.306'	0.10'	0.16'		0.282'	0.906'	60.373'	o.k.		no	
108		4.56	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	99.2%	1.23	0.283'	1.000'	60.76'	0.59'	61.55'	0.071'	0.10'	0.04'		0.106'	0.700'	61.656'	o.k.		no	
109	0.09	4.56	MH 9		12+37.00	12+37.00	61.85	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	99.2%	1.23	0.283'	1.000'	61.75'	0.68'	62.66'	0.071'	0.17'	0.16'	0.005'	0.205'	0.890'	62.865'	o.k.		no	
110		4.47	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	69.1%	1.23	0.498'	0.756'	62.87'	1.06'	65.22'	0.124'	0.17'	0.14'		0.220'	1.284'	65.436'	o.k.		no	
111		4.47	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	69.4%	1.23	0.495'	0.756'	65.44'	1.15'	68.20'	0.124'	0.14'			0.131'	1.277'	68.327'	o.k.		no	
112		4.47	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	80.1%	1.23	0.395'	0.844'	69.03'	1.38'	71.70'	0.099'	0.17'	0.06'		0.165'	1.542'	71.868'	o.k.		no	
113		4.47	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	70.9%	1.23	0.478'	0.769'	71.87'	0.99'	74.16'	0.119'	0.17'	0.11'		0.197'	1.189'	74.356'	o.k.		no	
114		4.47	MH 14		26+38.00	26+38.00	76.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	70.8%	1.23	0.479'	0.769'	74.37'	1.02'	76.77'	0.120'	0.09'			0.102'	1.122'	76.871'	o.k.		no	
115	0.22	4.47	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	104.4%	1.23	0.243'	1.081'	79.73'	0.67'	80.52'	0.061'	0.11'		0.010'	0.089'	0.755'	80.610'	o.k.		Yes by 0.19 cfs	
116		4.25	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	87.8%	1.23	0.306'	0.894'	80.61'	0.85'	81.76'	0.076'	0.03'			0.055'	0.903'	81.819'	o.k.		no	
117	0.04	4.25	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	137.3%	1.23	0.099'	1.250'	82.32'	1.16'	83.48'	0.025'	0.04'	0.01'	0.001'	0.037'	1.202'	83.522'	CRITICAL		Yes by 1.16 cfs	0.5
118		4.21	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	129.9%	1.23	0.108'	1.250'	83.52'	0.37'	83.89'	0.027'	0.17'			0.098'	0.465'	83.990'	CRITICAL		Yes by 0.97 cfs	0.5
119		4.21	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	65.1%	1.23	0.484'	0.725'	83.99'	1.18'	86.20'	0.121'	0.12'			0.119'	1.300'	86.314'	o.k.		no	
120	0.09	4.21	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	82.4%	1.23	0.334'	0.863'	86.53'	0.35'	87.17'	0.084'	0.12'		0.006'	0.102'	0.450'	87.275'	o.k.		no	
121		4.12	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	80.9%	1.23	0.329'	0.844'	87.35'	0.79'	88.86'	0.082'	0.11'			0.098'	0.892'	88.961'	o.k.		no	
122	0.04	4.12	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	81.7%	1.23	0.323'	0.844'	89.74'	0.85'	91.32'	0.081'	0.13'	0.04'	0.003'	0.127'	0.976'	91.451'	o.k.		no	
123		4.07	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	74.7%	1.23	0.368'	0.800'	91.48'	0.60'	92.77'	0.092'	0.13'			0.109'	0.705'	92.879'	o.k.		no	
124		4.07	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	75.3%	1.23	0.362'	0.800'	92.97'	0.51'	94.06'	0.091'	0.13'			0.108'	0.619'	94.168'	o.k.		no	
125		4.07	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	75.7%	1.23	0.358'	0.800'	94.26'	0.37'	95.04'	0.089'	0.13'	0.05'		0.135'	0.505'	95.175'	o.k.		no	
126		4.07	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	75.2%	1.23	0.363'	0.800'	95.24'	1.25'	97.92'	0.091'	0.17'	0.03'		0.143'	1.396'	98.063'	o.k.		no	
127		4.07	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	62.9%	1.23	0.477'	0.713'	98.06'	0.92'	100.61'	0.119'	0.18'	0.06'		0.181'	1.100'	100.794'	o.k.		no	
128		4.07	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	59.5%	1.23	0.519'	0.681'	100.79'	0.95'	103.69'	0.130'	0.04'	0.16'		0.163'	1.118'	103.854'	o.k.		no	
129		4.07	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	129.3%	1.23	0.102'	1.250'	105.25'	0.78'	106.03'	0.026'	0.11'	0.03'		0.084'	0.866'	106.116'	CRITICAL		Yes by 0.92 cfs	0.3
130		4.07	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	81.1%	1.23	0.321'	0.844'	106.12'	1.00'	107.41'	0.080'	0.11'			0.094'	1.098'	107.508'	o.k.		no	
131		4.07	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	83.0%	1.23	0.309'	0.863'	107.63'	0.46'	108.46'	0.077'	0.08'			0.078'	0.535'	108.540'	o.k.		no	
132		4.07	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	99.6%	1.23	0.224'	1.000'	113.75'	0.93'	114.98'	0.056'	0.08'			0.068'	1.000'	115.048'	o.k.		no	
133		4.07	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	98.9%	1.23	0.228'	1.000'	115.18'	0.51'	115.86'	0.057'	0.08'			0.068'	0.577'	115.928'	o.k.		no	
134		4.07	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	98.9%	1.23	0.228'	1.000'	116.06'	0.51'	116.74'	0.057'	0.08'			0.068'	0.577'	116.808'	o.k.		no	
135		4.07	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	98.9%	1.23	0.228'	1.000'	116.94'	0.51'	117.62'	0.057'	0.08'			0.067'	0.575'	117.687'	o.k.		no	
136		4.07	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	100.9%	1.23	0.218'	1.025'	117.85'	0.89'	118.99'	0.055'	0.04'			0.046'	0.934'	119.031'	o.k.		Yes by 0.04 cfs	
137		4.07	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	128.0%	1.23	0.104'	1.250'	120.44'	1.27'	121.71'	0.026'	0.03'			0.030'	1.303'	121.743'	CRITICAL		Yes by 0.99 cfs	0.5
138	0.58	4.07	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	133.6%	1.23	0.096'	1.250'	121.74'	0.87'	122.61'	0.024'	0.03'	0.01'	0.012'	0.040'	0.911'	122.654'	CRITICAL		Yes by 1.02 cfs	0.7
139		3.49	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	114.8%	1.23	0.095'	1.250'	122.65'	0.43'	123.09'	0.024'	0.15'	0.01'		0.093'	0.526'	123.181'	CRITICAL		Yes by 0.45 cfs	0.8
140		3.49	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	54.7%	1.23	0.438'	0.656'	123.18'	0.36'	123.54'	0.109'	0.13'	0.28'		0.257'	0.612'	123.793'	o.k.		no	
141		3.49	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	62.3%	1.23	0.358'	0.713'	123.79'	0.52'	124.87'	0.089'	0.12'	0.05'		0.131'	0.654'	125.003'	o.k.		no	
142		3.49	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	64.6%	1.23	0.339'	0.725'	125.00'	0.28'	125.75'	0.085'	0.09'	0.08'		0.129'	0.409'	125.874'	o.k.		no	
143		3.49	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	109.2%	0.79	0.257'	1.000'	127.22'	1.86'	129.08'	0.064'	0.23'	0.06'		0.178'	2.043'	129.263'	CRITICAL		Yes by 0.30 cfs	0.3
1431		3.49	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	73.8%	0.79	0.670'	0.625'	129.26'	0.36'	129.62'	0.168'	0.05'	0.22'		0.220'	0.579'	129.843'	o.k.		no	
1432		3.49	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	145.2%	0.79	0.146'	1.000'	129.88'	0.82'	130.70'	0.036'	0.08'			0.060'	0.878'	130.758'	CRITICAL		Yes by 1.09 cfs	0.4
144		3.49	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	80.4%	1.23	0.240'	0.844'	130.76'	0.13'	130.88'	0.060'	0.13'	0.15'		0.170'	0.297'	131.055'	CRITICAL		no	0.6
145		3.49	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	37.1%	1.77	0.374'	0.623'	131.05'	0.30'	131.49'	0.093'	0.14'	0.08'		0.154'	0.454'	131.646'	o.k.		no	
146		3.49	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	35.8%	1.77	0.387'	0.600'	131.65'	0.27'	133.20'	0.097'	0.12'	0.25'		0.231'	0.501'	133.431'	o.k.		no	
147		3.49	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	40.3%	1.77	0.334'	0.660'	133.46'	0.29'	135.06'	0.083'	0.12'	0.18'		0.195'	0.484'	135.255'	o.k.		no	
148		3.49	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	39.0%	1.77	0.349'	0.638'	135.25'	0.13'	135.80'	0.087'	0.06'	0.09'		0.120'	0.252'	135.918'	o.k.		no	
149		3.49	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	61.9%	1.77	0.173'	0.833'	135.99'	0.13'	136.36'	0.043'	0.09'	0.02'		0.076'	0.205'	136.439'	o.k.		no	
150		3.49	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	109.3%	0.79	0.257'	1.000'	136.53'	2.20'	138.73'	0.064'	0.15'	0.04'		0.129'	2.326'	138.856'	CRITICAL		Yes by 0.30 cfs	0.3
151		3.49	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	95.5%	0.79	0.434'	0.765'	138.86'	0.78'	139.63'	0.108'	1.38'	0.16'		0.827'	1.603'	140.459'	o.k.		no	
152	0.69	3.49	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	22.6%	0.79	3.947'	0.320'	140.46'	1.33'	156.12'	0.987'	0.07'	2.53'	0.732'	2.157'	3.489'	158.277'	o.k.		no	
201		2.80	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	69.1%	1.23	0.195'	0.756'	158.26'	0.14'	158.42'	0.049'	0.15'	0.06'		0.134'	0.273'	158.549'	CRITICAL		no	0.8
202		2.80	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	40.5%	1.23	0.440'	0.550'	158.55'	0.26'	158.81'	0.110'	0.28'	0.06'		0.222'	0.477'	159.027'	o.k.		no	
203		2.80	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	26.9%	1.23	0.790'	0.431'	159.03'	0.18'	160.22'	0.197'	0.07'			0.134'	0.313'	160.355'	o.k.		no	
204		2.80	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	68.3%	1.23	0.200'	0.756'	160.65'	0.52'	161.94'	0.050'	0.07'			0.060'	0.575'	161.996'	o.k.		no	
205		2.80	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	68.2%	1.23	0.201'	0.756'	162.04'	0.50'	163.30'	0.050'	0.07'			0.060'	0.563'	163.356'	o.k.		no	
206		2.80	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	68.4%	1.23	0.200'	0.756'	163.40'	0.61'	164.93'	0.050'	0.07'	0.13'		0.124'	0.737'	165.050'	o.k.		no	
207	0.24	2.80	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	68.3%	1.23	0.200'	0.756'	165.05'	0.82'	167.08'	0.050'	0.07'	0.10'	0.015'	0.117'	0.937'	167.194'	o.k.		no	
208		2.56	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	62.6%	1.23	0.190'	0.713'	167.19'	0.45'	168.42'	0.048'	0.05'			0.047'	0.501'	168.469'	o.k.		no	
209		2.56	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	49.5%	1.77	0.130'	0.735'	168.55'	0.22'	169.43'	0.033'	0.05'			0.039'	0.259'	169.464'	o.k.		no	
210		2.56	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	49.4%	1.77	0.131'	0.735'	169.53'	0.20'	170.33'	0.033'	0.05'			0.039'	0.238'	170.364'	o.k.		no	
211		2.56	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	49.7%	1.77	0.130'	0.735'	170.43'	0.18'	171.15'	0.032'	0.05'	0.02'		0.051'	0.232'	171.196'	o.k.		no	
212		2.56	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	49.4%	1.77	0.131'	0.735'	171.25'	0.12'	171.74'	0.033'	0.04'			0.038'	0.159'	171.773'	o.k.		no	
301		2.56	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	116.2%	0.79	0.122'	1.000'	172.55'	1.01'	173.56'	0.031'	0.04'			0.035'	1.044'	173.594'	CRITICAL		Yes by 0.36 cfs	0.3
302		2.56	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	121.1%	0.79	0.113'	1.000'	173.59'	1.58'	175.17'	0.028'	0.04'			0.034'	1.611'	175.205'	CRITICAL		Yes by 0.45 cfs	0.6
303	0.29	2.56	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	121.1%	0.79	0.113'	1.000'	175.20'	1.58'	176.78'	0.028'	0.09'		0.011'	0.063'	1.640'	176.845'	CRITICAL		Yes by 0.45 cfs	0.9
304		2.27	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	80.0%	0.79	0.248'	0.665'	176.85'	1.00'	177.85'	0.062'	0.05'			0.056'	1.059'	177.905'	o.k.		no	
305		2.27	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	107.5%	0.79	0.144'	0.885'	178.08'	0.94'	179.12'	0.036'	0.05'			0.043'	0.987'	179.158'	o.k.		Yes by 0.16 cfs	
306		2.27	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	107.7%	0.79	0.143'	0.885'	179.32'	0.75'	180.14'	0.036'	0.05'	0.09'		0.089'	0.837'	180.224'	o.k.		Yes by 0.16 cfs	
307		2.27	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	106.3%	0.79	0.147'	0.885'	180.34'	0.17'	180.53'	0.037'	0.03'			0.035'	0.204'	180.560'	o.k.		Yes by 0.13 cfs	
308		2.27	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	116.0%	0.79	0.097'	1.000'	180.84'	1.77'	182.61'	0.024'	0.03'			0.029'	1.798'	182.638'	CRITICAL		Yes by 0.31 cfs	0.4
309		2.27	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	116.6%	0.79	0.096'	1.000'	182.64'	0.87'	183.50'	0.024'	0.03'			0.029'	0.895'	183.533'	CRITICAL		Yes by 0.32 cfs	0.5
401		2.27	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	116.2%	0.79	0.096'	1.000'	183.53'	1.61'	185.15'	0.024'	0.16'			0.091'	1.703'	185.236'	CRITICAL		Yes by 0.32 cfs	0.7
402		2.27	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	87.2%	0.55	0.449'	0.596'	187.61'	3.03'	192.65'	0.112'	0.07'			0.090'	3.115'	192.735'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.27	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	118.7%	0.55	0.191'	0.833'	192.98'	3.73'	196.71'	0.048'	0.13'			0.089'	3.817'	196.800'	CRITICAL		Yes by 0.36 cfs	1.1
404		2.27	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	96.8%	0.55	0.374'	0.654'	196.80'	0.06'	196.86'	0.094'	0.07'			0.084'	0.141'	196.942'	CRITICAL		no	0.9
501	0.55	2.27	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	49.6%	1.23	0.212'	0.613'	200.04'	0.44'	201.79'	0.053'	0.06'		0.049'	0.083'	0.521'	201.876'	o.k.		no	
502		1.73	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	38.2%	1.23	0.185'	0.531'	201.88'	0.29'	203.47'	0.046'	0.14'			0.092'	0.386'	203.564'	o.k.		no	
503		1.73	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	21.8%	1.23	0.395'	0.375'	209.66'	0.33'	213.94'	0.099'	0.06'			0.077'	0.408'	214.012'	o.k.		no	
504		1.73	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	42.2%	1.23	0.159'	0.563'	214.56'	0.31'	216.16'	0.040'	0.06'			0.048'	0.356'	216.210'	o.k.		no	
505		1.73	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	42.2%	1.23	0.159'	0.563'	216.21'	0.31'	217.76'	0.040'	0.08'			0.058'	0.366'	217.820'	o.k.		no	
601		1.73	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0053	5.15	33.5%	1.23	0.217'	0.481'	217.82'	0.29'	219.70'	0.054'	0.02'	0.14'		0.109'	0.396'	219.810'	o.k.		no	
602		1.73	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	148.6%	0.55	0.071'	0.833'	220.33'	1.62'	221.96'	0.018'	0.02'	0.05'		0.044'	1.668'	222.002'	CRITICAL		Yes by 0.56 cfs	0.9
603		1.73	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	148.5%	0.55	0.071'	0.833'	222.00'	1.91'	223.91'	0.018'	0.02'			0.021'	1.929'	223.930'	CRITICAL		Yes by 0.56 cfs	1.9
604		1.73	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	148.9%	0.55	0.070'	0.833'	223.93	2.27'	226.20'	0.018'	0.02'			0.021'	2.292'	226.222'	CRITICAL		Yes by 0.57 cfs	3.0
605		1.73	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	148.2%	0.55	0.071'	0.833'	226.22'	1.31'	227.53'	0.018'	0.02'			0.021'	1.332'	227.554'	CRITICAL		Yes by 0.56 cfs	3.7
606		1.73	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	148.6%	0.55	0.071'	0.833'	227.55	2.00'	229.55'	0.018'	0.02'			0.021'	2.021'	229.575'	CRITICAL		Yes by 0.57 cfs	4.7
607		1.73	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	148.6%	0.55	0.071'	0.833'	229.57	1.78'	231.35'	0.018'	0.02'	0.05'		0.044'	1.822'	231.397'	CRITICAL		Yes by 0.56 cfs	5.6
608		1.73	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	148.8%	0.55	0.070'	0.833'	231.40	2.31'	233.71'	0.018'	0.02'	0.05'		0.044'	2.357'	233.754'	CRITICAL		Yes by 0.57 cfs	6.8
609		1.73	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	148.4%	0.55	0.071'	0.833'	233.75	1.75'	235.51'	0.018'	0.02'			0.021'	1.775'	235.529'	CRITICAL		Yes by 0.56 cfs	7.7
610		1.73	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	148.7%	0.55	0.070'	0.833'	235.53'	1.65'	237.18'	0.018'	0.02'			0.021'	1.670'	237.199'	CRITICAL		Yes by 0.57 cfs	8.5
611	0.26	1.73	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	148.8%	0.55	0.070'	0.833'	237.20'	2.40'	239.60'	0.018'	0.03'	0.04'	0.009'	0.047'	2.447'	239.646'	CRITICAL		Yes by 0.57 cfs	9.7
612		1.47	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	117.4%	0.55	0.082'	0.833'	239.65'	0.97'	240.62'	0.021'	0.02'	0.05'		0.043'	1.017'	240.662'	CRITICAL		Yes by 0.22 cfs	9.9
613		1.47	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	140.2%	0.55	0.058'	0.833'	240.66'	1.45'	242.11'	0.014'	0.02'			0.020'	1.467'	242.129'	CRITICAL		Yes by 0.42 cfs	10.5
614		1.47	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	126.3%	0.55	0.071'	0.833'	242.13'	1.21'	243.34'	0.018'	0.02'			0.021'	1.227'	243.356'	CRITICAL		Yes by 0.31 cfs	10.9
615		1.47	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	126.7%	0.55	0.070'	0.833'	243.36'	1.44'	244.79'	0.018'	0.02'			0.021'	1.459'	244.816'	CRITICAL		Yes by 0.31 cfs	11.3
616		1.47	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	126.5%	0.55	0.071'	0.833'	244.82'	1.69'	246.50'	0.018'	0.03'			0.022'	1.710'	246.526'	CRITICAL		Yes by 0.31 cfs	11.9
617		1.47	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	192.1%	0.35	0.075'	0.667'	246.53'	4.70'	251.22'	0.019'	0.15'			0.085'	4.780'	251.306'	CRITICAL		Yes by 0.71 cfs	15.2
618		1.47	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	90.6%	0.35	0.430'	0.490'	251.31'	3.80'	255.11'	0.107'	0.03'			0.067'	3.866'	255.172'	CRITICAL		no	13.1
619		1.47	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	192.1%	0.35	0.075'	0.667'	255.17'	4.40'	259.57'	0.019'	0.03'			0.022'	4.424'	259.597'	CRITICAL		Yes by 0.71 cfs	16.2
620		1.47	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	192.1%	0.35	0.075'	0.667'	259.60'	5.21'	264.81'	0.019'	0.03'			0.022'	5.231'	264.828'	CRITICAL		Yes by 0.71 cfs	19.9
621	0.78	1.47	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	192.1%	0.35	0.075'	0.667'	264.83'	4.77'	269.60'	0.019'	0.04'	0.05'	0.044'	0.076'	4.845'	269.673'	CRITICAL	CRITICAL	Yes by 0.71 cfs	23.3
622		0.78	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	91.6%	0.35	0.117'	0.490'	269.67'	0.62'	270.29'	0.029'	0.04'	0.07'		0.073'	0.694'	270.367'	CRITICAL	CRITICAL	no	23.0
623		0.78	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	91.5%	0.35	0.117'	0.490'	270.37'	1.07'	271.44'	0.029'	0.04'			0.035'	1.105'	271.472'	CRITICAL	CRITICAL	no	22.4
624		0.78	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	91.7%	0.35	0.117'	0.490'	271.47'	0.80'	272.27'	0.029'	0.04'			0.035'	0.836'	272.308'	CRITICAL	CRITICAL	no	21.9
624		0.78	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	91.6%	0.35	0.117'	0.490'	272.31'	0.79'	273.10'	0.029'	0.04'	0.03'		0.048'	0.839'	273.147'	CRITICAL	CRITICAL	no	21.4
625		0.78	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	91.8%	0.35	0.117'	0.490'	273.15'	0.91'	274.06'	0.029'	0.03'			0.032'	0.945'	274.092'	CRITICAL	CRITICAL	no	20.9
626		0.78	MH 26	264.0	79+50.00	79+50.00	257.50	257.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	101.3%	0.35	0.097'	0.547'	274.09'	0.28'	274.37'	0.024'	0.10'			0.062'	0.344'	274.436'	CRITICAL	CRITICAL	Yes by 0.01 cfs	20.3
627		0.78	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	52.3%	0.35	0.286'	0.340'	274.44'	1.04'	275.48'	0.072'	0.14'			0.104'	1.145'	275.581'	CRITICAL	CRITICAL	no	13.4
628		0.78	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	41.9%	0.35	0.391'	0.293'	275.58'	1.30'	276.88'	0.098'	0.03'	0.25'		0.191'	1.491'	277.072'	CRITICAL	CRITICAL	no	8.0
629		0.78	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	101.3%	0.35	0.097'	0.547'	277.07'	0.47'	277.54'	0.024'	0.10'	0.06'		0.092'	0.562'	277.634'	CRITICAL	CRITICAL	Yes by 0.01 cfs	8.0
630		0.78	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	53.2%	0.35	0.277'	0.340'	277.63'	0.55'	278.19'	0.069'	0.09'			0.081'	0.634'	278.267'	CRITICAL	o.k.	no	6.5
631		0.78	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	54.7%	0.35	0.268'	0.350'	278.27'	0.25'	278.52'	0.067'	0.03'	0.17'		0.136'	0.387'	278.655'	CRITICAL	o.k.	no	5.9
632		0.78	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	101.4%	0.35	0.097'	0.547'	278.65'	0.75'	279.40'	0.024'	0.00'			0.012'	0.758'	279.413'	CRITICAL	o.k.	Yes by 0.01 cfs	5.7
Pump Station Line																																
620		1.47	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.78	1.47	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	192.1%	0.35	0.075'	0.667'	244.99'	4.77'	249.76'	0.019'	0.03'	0.05'	0.044'	0.072'	4.841'	249.828'	CRITICAL	o.k.	Yes by 0.71 cfs	3.5
8211		0.78	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	101.3%	0.35	0.097'	0.547'	249.83'	0.94'	250.77'	0.024'	0.03'			0.029'	0.969'	250.797'	CRITICAL	o.k.	Yes by 0.01 cfs	3.2
8212		0.78	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	101.6%	0.35	0.097'	0.547'	250.80'	0.68'	251.47'	0.024'	0.01'	0.06'		0.050'	0.727'	251.524'	CRITICAL	o.k.	Yes by 0.01 cfs	2.9
8213		0.78	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	138.6%	0.35	0.040'	0.667'	251.52'	0.96'	252.48'	0.010'	0.03'			0.022'	0.977'	252.501'	CRITICAL	o.k.	Yes by 0.22 cfs	3.3
8214		0.78	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	101.4%	0.35	0.097'	0.547'	252.50'	0.81'	253.31'	0.024'	0.06'	0.06'		0.074'	0.882'	253.384'	CRITICAL	o.k.	Yes by 0.01 cfs	2.6
8215		0.78	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	72.3%	0.35	0.175'	0.417'	253.38'	0.24'	253.62'	0.044'	0.03'			0.039'	0.279'	253.663'	CRITICAL	o.k.	no	2.2
8216		0.78	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	101.3%	0.35	0.097'	0.547'	253.66'	1.30'	254.96'	0.024'	0.31'	0.06'		0.198'	1.499'	255.161'	CRITICAL	o.k.	Yes by 0.01 cfs	1.8
8217		0.78	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	23.9%	0.35	0.885'	0.213'	255.16'	0.47'	258.21'	0.221'	0.00'			0.111'	0.585'	258.324'	o.k.	o.k.	no	

* Information referenced from the Salmon Creek Interceptor Analysis

94th Street Trunk																																
152		3.49	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		0.89	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	15.3%	0.55	0.863'	0.208'	158.28'	0.27'	162.11'	0.216'	0.28'	0.13'		0.311'	0.584'	162.419'	o.k.		no	
720		0.89	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	16.8%	0.55	0.789'	0.225'	162.42'	1.03'	181.86'	0.197'	0.12'			0.157'	1.183'	182.012'	o.k.		no	
721		0.89	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	30.6%	0.55	0.335'	0.313'	182.01'	0.70'	187.73'	0.084'	0.04'			0.060'	0.761'	187.793'	o.k.		no	
722		0.89	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	41.1%	0.79	0.105'	0.440'	187.86'	0.19'	188.89'	0.026'	0.03'			0.026'	0.219'	188.916'	o.k.		no	
723		0.89	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	52.8%	0.79	0.073'	0.510'	188.96'	0.26'	189.91'	0.018'	0.03'			0.022'	0.280'	189.932'	o.k.		no	
724		0.89	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	53.1%	0.79	0.072'	0.510'	189.93'	0.16'	190.51'	0.018'	0.03'			0.024'	0.189'	190.534'	o.k.		no	
724A		0.89	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	47.0%	0.79	0.086'	0.475'	190.53'	0.10'	190.93'	0.022'	0.03'			0.026'	0.129'	190.951'	o.k.		no	
725		0.89	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	76.3%	0.55	0.085'	0.542'	190.99'	0.43'	191.88'	0.021'	0.03'			0.026'	0.451'	191.907'	o.k.		no	
726		0.89	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	76.4%	0.55	0.085'	0.542'	191.91'	0.43'	192.78'	0.021'	0.03'			0.025'	0.456'	192.806'	o.k.		no	
727		0.89	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	79.3%	0.55	0.080'	0.554'	192.81'	0.54'	193.84'	0.020'	0.03'			0.026'	0.562'	193.870'	o.k.		no	
728		0.89	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	72.3%	0.55	0.093'	0.521'	193.87'	0.38'	194.68'	0.023'	0.03'			0.026'	0.406'	194.707'	o.k.		no	
729		0.89	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	76.6%	0.55	0.085'	0.542'	194.71'	0.45'	195.63'	0.021'	0.00'			0.011'	0.459'	195.642'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.63	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.63	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	18.2%	1.23	3.792'	0.356'	10.33'*	0.92'	23.38'	0.948'	1.14'	0.80'		1.443'	2.362'	24.819'	o.k.		no	
102		4.63	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	19.6%	1.23	3.261'	0.356'	24.82'	0.90'	36.74'	0.815'	1.61'			1.213'	2.115'	37.949'	o.k.		no	
103		4.63	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	16.1%	1.23	4.601'	0.338'	37.95'	0.74'	52.08'	1.150'	0.10'	1.31'		1.280'	2.021'	53.357'	o.k.		no	
104		4.63	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	101.3%	1.23	0.279'	1.025'	53.36'	0.69'	54.05'	0.070'	0.10'	0.04'		0.105'	0.795'	54.153'	CRITICAL		Yes by 0.06 cfs	0.2
105		4.63	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	101.6%	1.23	0.278'	1.025'	54.15'	0.69'	54.84'	0.069'	0.23'	0.02'		0.159'	0.846'	54.999'	o.k.		Yes by 0.07 cfs	
106		4.63	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	61.0%	1.23	0.647'	0.694'	55.00'	0.72'	56.49'	0.162'	0.43'	0.08'		0.337'	1.053'	56.831'	o.k.		no	
107		4.63	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	39.7%	1.23	1.224'	0.531'	56.83'	0.64'	60.09'	0.306'	0.10'	0.16'		0.282'	0.926'	60.373'	o.k.		no	
108		4.63	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	100.7%	1.23	0.283'	1.025'	60.79'	0.61'	61.58'	0.071'	0.10'	0.04'		0.106'	0.719'	61.681'	o.k.		Yes by 0.03 cfs	
109	0.09	4.63	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	100.8%	1.23	0.283'	1.025'	61.78'	0.71'	62.69'	0.071'	0.18'	0.16'	0.005'	0.206'	0.913'	62.891'	o.k.		Yes by 0.04 cfs	
110		4.54	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	70.2%	1.23	0.503'	0.769'	62.89'	1.09'	65.23'	0.126'	0.17'	0.14'		0.222'	1.307'	65.451'	o.k.		no	
111		4.54	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	70.5%	1.23	0.499'	0.769'	65.45'	1.17'	68.21'	0.125'	0.14'			0.132'	1.300'	68.340'	o.k.		no	
112		4.54	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	81.4%	1.23	0.395'	0.844'	69.03'	1.42'	71.70'	0.099'	0.17'	0.06'		0.166'	1.588'	71.870'	o.k.		no	
113		4.54	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	72.0%	1.23	0.487'	0.781'	71.87'	1.01'	74.17'	0.122'	0.17'	0.11'		0.199'	1.211'	74.371'	o.k.		no	
114		4.54	MH 14		26+38.00	26+38.00	76.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	72.0%	1.23	0.479'	0.769'	74.37'	1.05'	76.77'	0.120'	0.08'			0.102'	1.154'	76.871'	o.k.		no	
115	0.22	4.54	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	106.1%	1.23	0.241'	1.106'	79.76'	0.70'	80.55'	0.060'	0.11'		0.010'	0.089'	0.788'	80.635'	o.k.		Yes by 0.26 cfs	
116		4.32	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	89.2%	1.23	0.308'	0.906'	80.64'	0.87'	81.78'	0.077'	0.03'			0.056'	0.926'	81.832'	o.k.		no	
117	0.04	4.32	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	139.5%	1.23	0.099'	1.250'	82.32'	1.20'	83.52'	0.025'	0.04'	0.01'	0.001'	0.037'	1.239'	83.559'	CRITICAL		Yes by 1.22 cfs	0.6
118		4.27	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	132.0%	1.23	0.108'	1.250'	83.56'	0.38'	83.9[illegible]	0.027'	0.17'			0.100'	0.481'	84.040'	CRITICAL		Yes by 1.03 cfs	0.6
119		4.27	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	66.1%	1.23	0.494'	0.738'	84.04'	1.20'	86.21'	0.123'	0.12'			0.120'	1.317'	86.328'	o.k.		no	
120	0.09	4.27	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	83.7%	1.23	0.334'	0.863'	86.53'	0.36'	87.17'	0.084'	0.12'		0.006'	0.103'	0.461'	87.275'	o.k.		no	
121		4.18	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	82.2%	1.23	0.332'	0.863'	87.37'	0.82'	88.88'	0.083'	0.11'			0.098'	0.914'	88.981'	o.k.		no	
122	0.04	4.18	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	83.0%	1.23	0.326'	0.863'	89.76'	0.87'	91.34'	0.081'	0.13'	0.04'	0.003'	0.128'	0.998'	91.470'	o.k.		no	
123		4.14	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	75.9%	1.23	0.368'	0.800'	91.48'	0.61'	92.77'	0.092'	0.13'			0.110'	0.725'	92.880'	o.k.		no	
124		4.14	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	76.5%	1.23	0.366'	0.813'	92.98'	0.52'	94.07'	0.091'	0.13'			0.109'	0.633'	94.181'	o.k.		no	
125		4.14	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	76.9%	1.23	0.361'	0.813'	94.27'	0.38'	95.05'	0.090'	0.13'	0.05'		0.136'	0.516'	95.189'	o.k.		no	
126		4.14	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	76.3%	1.23	0.367'	0.813'	95.25'	1.28'	97.93'	0.092'	0.17'	0.03'		0.144'	1.429'	98.076'	o.k.		no	
127		4.14	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	63.9%	1.23	0.477'	0.713'	98.08'	0.95'	100.61'	0.119'	0.19'	0.06'		0.183'	1.131'	100.796'	o.k.		no	
128		4.14	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	60.4%	1.23	0.529'	0.694'	100.80'	0.97'	103.70'	0.132'	0.04'	0.16'		0.166'	1.133'	103.870'	o.k.		no	
129		4.14	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	131.3%	1.23	0.102'	1.250'	105.25'	0.81'	106.06'	0.026'	0.11'	0.03'		0.084'	0.892'	106.142'	CRITICAL		Yes by 0.99 cfs	0.3
130		4.14	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	82.4%	1.23	0.324'	0.863'	106.14'	1.03'	107.43'	0.081'	0.11'			0.095'	1.125'	107.528'	o.k.		no	
131		4.14	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	84.3%	1.23	0.312'	0.875'	107.65'	0.47'	108.48'	0.078'	0.08'			0.078'	0.547'	108.553'	o.k.		no	
132		4.14	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	101.1%	1.23	0.224'	1.025'	113.78'	0.96'	115.01'	0.056'	0.08'			0.068'	1.030'	115.073'	o.k.		Yes by 0.05 cfs	
133		4.14	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	100.4%	1.23	0.228'	1.025'	115.21'	0.52'	115.89'	0.057'	0.08'			0.068'	0.593'	115.953'	o.k.		Yes by 0.02 cfs	
134		4.14	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	100.4%	1.23	0.228'	1.025'	116.09'	0.52'	116.77'	0.057'	0.08'			0.068'	0.593'	116.833'	o.k.		Yes by 0.02 cfs	
135		4.14	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	100.4%	1.23	0.228'	1.025'	116.97'	0.52'	117.65'	0.057'	0.08'			0.067'	0.591'	117.712'	o.k.		Yes by 0.02 cfs	
136		4.14	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	102.5%	1.23	0.218'	1.050'	117.87'	0.92'	119.01'	0.055'	0.04'			0.046'	0.967'	119.056'	o.k.		Yes by 0.10 cfs	
137		4.14	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	130.0%	1.23	0.104'	1.250'	120.44'	1.31'	121.75'	0.026'	0.03'			0.030'	1.344'	121.784'	CRITICAL		Yes by 0.95 cfs	0.5
138	0.59	4.14	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	135.7%	1.23	0.096'	1.250'	121.78'	0.90'	122.68'	0.024'	0.03'	0.01'	0.012'	0.040'	0.939'	122.723'	CRITICAL		Yes by 1.09 cfs	0.8
139		3.55	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	116.6%	1.23	0.095'	1.250'	122.72'	0.45'	123.17'	0.024'	0.15'	0.01'		0.093'	0.540'	123.263'	CRITICAL		Yes by 0.51 cfs	0.9
140		3.55	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	55.5%	1.23	0.438'	0.656'	123.26'	0.37'	123.63'	0.109'	0.13'	0.28'		0.257'	0.624'	123.886'	o.k.		no	
141		3.55	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	63.3%	1.23	0.358'	0.713'	123.89'	0.54'	124.87'	0.089'	0.12'	0.05'		0.131'	0.670'	125.003'	o.k.		no	
142		3.55	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	65.6%	1.23	0.339'	0.725'	125.00'	0.29'	125.75'	0.085'	0.09'	0.08'		0.129'	0.418'	125.874'	o.k.		no	
143		3.55	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	111.0%	0.79	0.257'	1.000'	127.22'	1.92'	129.14'	0.064'	0.24'	0.06'		0.179'	2.104'	129.324'	CRITICAL		Yes by 0.35 cfs	0.4
1431		3.55	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	75.0%	0.79	0.676'	0.640'	129.32'	0.37'	129.69'	0.169'	0.05'	0.22'		0.222'	0.588'	129.912'	o.k.		no	
1432		3.55	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	147.5%	0.79	0.146'	1.000'	129.91'	0.84'	130.76'	0.036'	0.08'			0.060'	0.905'	130.817'	CRITICAL		Yes by 1.14 cfs	0.5
144		3.55	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	81.7%	1.23	0.240'	0.844'	130.82'	0.13'	130.95'	0.060'	0.13'	0.15'		0.170'	0.301'	131.118'	CRITICAL		no	0.7
145		3.55	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	37.6%	1.77	0.374'	0.623'	131.12'	0.31'	131.49'	0.093'	0.14'	0.08'		0.156'	0.466'	131.648'	o.k.		no	
146		3.55	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	36.4%	1.77	0.400'	0.623'	131.65'	0.27'	133.22'	0.100'	0.12'	0.26'		0.236'	0.507'	133.459'	o.k.		no	
147		3.55	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	40.9%	1.77	0.334'	0.660'	133.46'	0.30'	135.06'	0.083'	0.12'	0.18'		0.195'	0.493'	135.255'	o.k.		no	
148		3.55	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	39.6%	1.77	0.349'	0.638'	135.25'	0.14'	135.80'	0.087'	0.06'	0.09'		0.120'	0.257'	135.918'	o.k.		no	
149		3.55	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	62.9%	1.77	0.174'	0.855'	136.02'	0.13'	136.39'	0.044'	0.09'	0.02'		0.076'	0.208'	136.461'	o.k.		no	
150		3.55	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	111.0%	0.79	0.257'	1.000'	136.53'	2.27'	138.80'	0.064'	0.15'	0.04'		0.129'	2.397'	138.927'	CRITICAL		Yes by 0.35 cfs	0.4
151		3.55	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	97.0%	0.79	0.437'	0.785'	138.93'	0.80'	139.72'	0.109'	1.38'	0.17'		0.829'	1.624'	140.552'	CRITICAL		no	0.0
152	0.70	3.55	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	23.0%	0.79	3.947'	0.320'	140.55'	1.38'	156.12'	0.987'	0.07'	2.53'	0.731'	2.157'	3.532'	158.277'	o.k.		no	
201		2.84	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	70.2%	1.23	0.197'	0.769'	158.28'	0.14'	158.42'	0.049'	0.15'	0.07'		0.134'	0.276'	158.553'	CRITICAL		no	0.8
202		2.84	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	41.2%	1.23	0.440'	0.550'	158.55'	0.26'	158.82'	0.110'	0.28'	0.06'		0.222'	0.486'	159.039'	o.k.		no	
203		2.84	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	27.3%	1.23	0.790'	0.431'	159.04'	0.18'	160.22'	0.197'	0.07'			0.134'	0.319'	160.355'	o.k.		no	
204		2.84	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	69.4%	1.23	0.200'	0.756'	160.65'	0.53'	161.94'	0.050'	0.07'			0.060'	0.592'	161.996'	o.k.		no	
205		2.84	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	69.3%	1.23	0.201'	0.756'	162.04'	0.52'	163.30'	0.050'	0.07'			0.060'	0.579'	163.356'	o.k.		no	
206		2.84	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	69.5%	1.23	0.200'	0.756'	163.40'	0.63'	164.93'	0.050'	0.07'	0.13'		0.124'	0.757'	165.050'	o.k.		no	
207	0.24	2.84	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	69.4%	1.23	0.200'	0.756'	165.05'	0.85'	167.08'	0.050'	0.07'	0.10'	0.015'	0.117'	0.963'	167.194'	o.k.		no	
208		2.60	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	63.6%	1.23	0.190'	0.713'	167.19'	0.47'	168.42'	0.048'	0.05'			0.047'	0.516'	168.470'	o.k.		no	
209		2.60	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	50.3%	1.77	0.133'	0.750'	168.56'	0.22'	169.44'	0.033'	0.05'			0.040'	0.262'	169.480'	o.k.		no	
210		2.60	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	50.2%	1.77	0.134'	0.750'	169.54'	0.20'	170.34'	0.033'	0.05'			0.040'	0.241'	170.380'	o.k.		no	
211		2.60	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	50.5%	1.77	0.132'	0.750'	170.44'	0.18'	171.16'	0.033'	0.05'	0.03'		0.053'	0.235'	171.213'	o.k.		no	
212		2.60	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	50.2%	1.77	0.134'	0.750'	171.26'	0.12'	171.75'	0.033'	0.04'			0.038'	0.161'	171.788'	o.k.		no	
301		2.60	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	118.1%	0.79	0.122'	1.000'	172.55'	1.04'	173.59'	0.031'	0.04'			0.035'	1.076'	173.626'	CRITICAL		Yes by 0.40 cfs	0.3
302		2.60	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	123.1%	0.79	0.113'	1.000'	173.63'	1.63'	175.25'	0.028'	0.04'			0.034'	1.662'	175.288'	CRITICAL		Yes by 0.49 cfs	0.7
303	0.29	2.60	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	123.1%	0.79	0.113'	1.000'	175.29'	1.63'	176.92'	0.028'	0.09'		0.011'	0.064'	1.692'	176.980'	CRITICAL		Yes by 0.49 cfs	1.1
304		2.31	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	81.3%	0.79	0.250'	0.675'	176.98'	1.02'	178.00'	0.063'	0.04'			0.051'	1.075'	178.055'	CRITICAL		no	0.0
305		2.31	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	109.3%	0.79	0.112'	1.000'	178.19'	1.24'	179.43'	0.028'	0.04'			0.034'	1.270'	179.460'	CRITICAL		Yes by 0.20 cfs	0.2
306		2.31	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	109.5%	0.79	0.112'	1.000'	179.46'	0.98'	180.44'	0.028'	0.05'	0.07'		0.076'	1.053'	180.513'	CRITICAL		Yes by 0.20 cfs	0.2
307		2.31	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	108.0%	0.79	0.147'	0.885'	180.51'	0.17'	180.69'	0.037'	0.03'			0.035'	0.209'	180.722'	CRITICAL		Yes by 0.17 cfs	0.0
308		2.31	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	117.9%	0.79	0.097'	1.000'	180.84'	1.83'	182.67'	0.024'	0.03'			0.029'	1.856'	182.696'	CRITICAL		Yes by 0.35 cfs	0.5
309		2.31	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	118.5%	0.79	0.096'	1.000'	182.70'	0.89'	183.59'	0.024'	0.03'			0.029'	0.923'	183.619'	CRITICAL		Yes by 0.35 cfs	0.6
401		2.31	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	118.0%	0.79	0.096'	1.000'	183.62'	1.66'	185.28'	0.024'	0.16'			0.091'	1.756'	185.375'	CRITICAL		Yes by 0.35 cfs	0.9
402		2.31	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	88.6%	0.55	0.453'	0.604'	187.61'	3.11'	192.65'	0.113'	0.07'			0.090'	3.196'	192.744'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. in	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.31	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	120.6%	0.55	0.191'	0.833'	192.98'	3.85'	196.83'	0.048'	0.13'			0.089'	3.938'	196.921'	CRITICAL		Yes by 0.39 cfs	1.2
404		2.31	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	98.3%	0.55	0.374'	0.667'	196.92'	0.06'	196.98'	0.094'	0.08'			0.085'	0.144'	197.065'	CRITICAL		no	1.1
501	0.55	2.31	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	50.4%	1.23	0.216'	0.625'	200.06'	0.44'	201.81'	0.054'	0.06'		0.049'	0.084'	0.527'	201.889'	o.k.		no	
502		1.76	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	38.8%	1.23	0.185'	0.531'	201.89'	0.30'	203.47'	0.046'	0.15'			0.098'	0.401'	203.569'	o.k.		no	
503		1.76	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	22.1%	1.23	0.426'	0.400'	209.68'	0.32'	213.96'	0.107'	0.06'			0.081'	0.404'	214.041'	o.k.		no	
504		1.76	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	42.9%	1.23	0.159'	0.563'	214.56'	0.32'	216.16'	0.040'	0.06'			0.048'	0.366'	216.210'	o.k.		no	
505		1.76	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	42.9%	1.23	0.159'	0.563'	216.21'	0.32'	217.76'	0.040'	0.08'			0.059'	0.377'	217.822'	o.k.		no	
601		1.76	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0063	5.15	34.1%	1.23	0.224'	0.500'	217.82'	0.29'	219.72'	0.056'	0.02'	0.14'		0.112'	0.398'	219.832'	o.k.		no	
602		1.76	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	151.0%	0.55	0.071'	0.833'	220.33'	1.68'	222.01'	0.018'	0.02'	0.05'		0.044'	1.721'	222.055'	CRITICAL		Yes by 0.59 cfs	0.9
603		1.76	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	150.9%	0.55	0.071'	0.833'	222.05'	1.97'	224.02'	0.018'	0.02'			0.021'	1.991'	224.046'	CRITICAL		Yes by 0.59 cfs	2.0
604		1.76	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	151.3%	0.55	0.070'	0.833'	224.05'	2.34'	226.39'	0.018'	0.02'			0.021'	2.366'	226.412'	CRITICAL		Yes by 0.60 cfs	3.2
605		1.76	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	150.6%	0.55	0.071'	0.833'	226.41'	1.35'	227.77'	0.018'	0.02'			0.021'	1.375'	227.786'	CRITICAL		Yes by 0.59 cfs	3.9
606		1.76	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	151.0%	0.55	0.071'	0.833'	227.79'	2.07'	229.85'	0.018'	0.02'			0.021'	2.086'	229.873'	CRITICAL		Yes by 0.59 cfs	5.0
607		1.76	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	151.0%	0.55	0.071'	0.833'	229.87'	1.84'	231.71'	0.018'	0.02'	0.05'		0.044'	1.880'	231.753'	CRITICAL		Yes by 0.59 cfs	5.9
608		1.76	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	151.2%	0.55	0.070'	0.833'	231.75'	2.39'	234.14'	0.018'	0.02'	0.05'		0.044'	2.433'	234.186'	CRITICAL		Yes by 0.59 cfs	7.2
609		1.76	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	150.9%	0.55	0.071'	0.833'	234.39'	1.81'	236.00'	0.018'	0.02'			0.021'	1.832'	236.018'	CRITICAL		Yes by 0.59 cfs	8.2
610		1.76	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	151.1%	0.55	0.070'	0.833'	236.02'	1.70'	237.72'	0.018'	0.02'			0.021'	1.724'	237.742'	CRITICAL		Yes by 0.59 cfs	9.0
611	0.26	1.76	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	151.2%	0.55	0.070'	0.833'	237.74'	2.48'	240.22'	0.018'	0.03'	0.04'	0.009'	0.047'	2.525'	240.267'	CRITICAL		Yes by 0.59 cfs	10.3
612		1.50	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	119.3%	0.55	0.082'	0.833'	240.27'	1.01'	241.27'	0.021'	0.02'	0.05'		0.043'	1.049'	241.316'	CRITICAL		Yes by 0.24 cfs	10.6
613		1.50	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	142.5%	0.55	0.058'	0.833'	241.32'	1.49'	242.81'	0.014'	0.02'			0.020'	1.514'	242.830'	CRITICAL		Yes by 0.45 cfs	11.2
614		1.50	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	128.4%	0.55	0.071'	0.833'	242.83'	1.25'	244.08'	0.018'	0.02'			0.021'	1.267'	244.097'	CRITICAL		Yes by 0.33 cfs	11.6
615		1.50	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	128.8%	0.55	0.070'	0.833'	244.10'	1.49'	245.58'	0.018'	0.02'			0.021'	1.507'	245.604'	CRITICAL		Yes by 0.33 cfs	12.1
616		1.50	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	128.6%	0.55	0.071'	0.833'	245.60'	1.74'	247.35'	0.018'	0.03'			0.022'	1.766'	247.370'	CRITICAL		Yes by 0.33 cfs	12.7
617		1.50	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	195.2%	0.35	0.075'	0.667'	247.37'	4.85'	252.22'	0.019'	0.15'			0.085'	4.935'	252.305'	CRITICAL		Yes by 0.73 cfs	16.2
618		1.50	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	92.0%	0.35	0.434'	0.500'	252.30'	3.90'	256.21'	0.108'	0.03'			0.067'	3.970'	256.275'	CRITICAL		no	14.2
619		1.50	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	195.2%	0.35	0.075'	0.667'	256.27'	4.55'	260.82'	0.019'	0.03'			0.022'	4.569'	260.844'	CRITICAL		Yes by 0.73 cfs	17.5
620		1.50	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	195.2%	0.35	0.075'	0.667'	260.84'	5.38'	266.22'	0.019'	0.03'			0.022'	5.403'	266.246'	CRITICAL		Yes by 0.73 cfs	21.3
621	0.79	1.50	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	195.2%	0.35	0.075'	0.667'	266.25'	4.93'	271.17'	0.019'	0.04'	0.05'	0.044'	0.076'	5.002'	271.248'	CRITICAL	CRITICAL	Yes by 0.73 cfs	24.9
622		0.79	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	93.1%	0.35	0.118'	0.500'	271.25'	0.64'	271.89'	0.030'	0.04'	0.08'		0.073'	0.712'	271.960'	CRITICAL	CRITICAL	no	24.5
623		0.79	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	93.0%	0.35	0.118'	0.500'	271.96'	1.10'	273.06'	0.030'	0.04'			0.035'	1.135'	273.095'	CRITICAL	CRITICAL	no	24.0
624		0.79	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	93.3%	0.35	0.118'	0.500'	273.09'	0.82'	273.92'	0.029'	0.04'			0.035'	0.858'	273.953'	CRITICAL	CRITICAL	no	23.5
624		0.79	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	93.1%	0.35	0.118'	0.500'	273.95'	0.81'	274.77'	0.030'	0.04'	0.03'		0.049'	0.862'	274.815'	CRITICAL	CRITICAL	no	23.1
625		0.79	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	93.3%	0.35	0.118'	0.500'	274.81'	0.94'	275.75'	0.029'	0.03'			0.032'	0.970'	275.785'	CRITICAL	CRITICAL	no	22.6
626		0.79	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	103.0%	0.35	0.097'	0.560'	275.78'	0.29'	276.08'	0.024'	0.10'			0.062'	0.355'	276.140'	CRITICAL	CRITICAL	Yes by 0.02 cfs	22.0
627		0.79	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	53.2%	0.35	0.286'	0.340'	276.14'	1.08'	277.22'	0.072'	0.14'			0.106'	1.182'	277.322'	CRITICAL	CRITICAL	no	15.1
628		0.79	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	42.6%	0.35	0.404'	0.300'	277.32'	1.31'	278.63'	0.101'	0.03'	0.26'		0.197'	1.502'	278.824'	CRITICAL	CRITICAL	no	9.8
629		0.79	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	103.0%	0.35	0.097'	0.560'	278.82'	0.49'	279.31'	0.024'	0.10'	0.06'		0.093'	0.581'	279.405'	CRITICAL	CRITICAL	Yes by 0.02 cfs	9.8
630		0.79	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	54.1%	0.35	0.282'	0.350'	279.41'	0.56'	279.97'	0.071'	0.09'			0.082'	0.642'	280.047'	CRITICAL	CRITICAL	no	8.3
631		0.79	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	55.6%	0.35	0.268'	0.350'	280.05'	0.26'	280.31'	0.067'	0.03'	0.17'		0.136'	0.396'	280.443'	CRITICAL	CRITICAL	no	7.7
632		0.79	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	103.1%	0.35	0.097'	0.560'	280.44'	0.77'	281.22'	0.024'	0.00'			0.012'	0.787'	281.230'	CRITICAL	o.k.	Yes by 0.02 cfs	7.6
Pump Station Line																																	
620		1.50	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																							
621	0.79	1.50	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	195.2%	0.35	0.075'	0.667'	244.99'	4.93'	249.91'	0.019'	0.03'	0.05'	0.044'	0.073'	4.998'	249.985'	CRITICAL	o.k.	Yes by 0.73 cfs	3.6
8211		0.79	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	103.0%	0.35	0.097'	0.560'	249.98'	0.98'	250.96'	0.024'	0.03'			0.029'	1.006'	250.991'	CRITICAL	o.k.	Yes by 0.02 cfs	3.4
8212		0.79	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	103.2%	0.35	0.097'	0.560'	250.99'	0.70'	251.69'	0.024'	0.01'	0.06'		0.050'	0.753'	251.744'	CRITICAL	o.k.	Yes by 0.02 cfs	3.1
8213		0.79	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	140.9%	0.35	0.040'	0.667'	251.74'	0.99'	252.73'	0.010'	0.03'			0.022'	1.009'	252.753'	CRITICAL	o.k.	Yes by 0.23 cfs	3.6
8214		0.79	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	103.1%	0.35	0.097'	0.560'	252.75'	0.84'	253.59'	0.024'	0.06'	0.06'		0.074'	0.914'	253.667'	CRITICAL	o.k.	Yes by 0.02 cfs	2.9
8215		0.79	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	73.5%	0.35	0.175'	0.417'	253.67'	0.25'	253.92'	0.044'	0.03'			0.039'	0.287'	253.954'	CRITICAL	o.k.	no	2.5
8216		0.79	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	103.0%	0.35	0.097'	0.560'	253.95'	1.35'	255.31'	0.024'	0.32'	0.06'		0.204'	1.555'	255.509'	CRITICAL	o.k.	Yes by 0.02 cfs	2.1
8217		0.79	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	24.3%	0.35	0.918'	0.220'	255.51'	0.47'	258.22'	0.230'	0.00'			0.115'	0.583'	258.335'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																	
94th Street Trunk																																	
152		3.55	MH 52		00+00.00	00+00.00	156.06	155.80	22																								
719		0.90	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	15.5%	0.55	0.863'	0.208'	158.28'	0.28'	162.11'	0.216'	0.28'	0.13'		0.311'	0.593'	162.419'	o.k.		no	
720		0.90	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	17.0%	0.55	0.789'	0.225'	162.42'	1.06'	181.86'	0.197'	0.12'			0.157'	1.217'	182.012'	o.k.		no	
721		0.90	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	31.1%	0.55	0.335'	0.313'	182.01'	0.72'	187.73'	0.084'	0.04'			0.060'	0.784'	187.793'	o.k.		no	
722		0.90	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	41.8%	0.79	0.105'	0.440'	187.86'	0.20'	188.89'	0.026'	0.03'			0.026'	0.226'	188.916'	o.k.		no	
723		0.90	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	53.6%	0.79	0.073'	0.510'	188.96'	0.27'	189.91'	0.018'	0.03'			0.022'	0.288'	189.932'	o.k.		no	
724		0.90	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	53.9%	0.79	0.072'	0.510'	189.93'	0.17'	190.51'	0.018'	0.03'			0.024'	0.194'	190.534'	o.k.		no	
724A		0.90	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	47.8%	0.79	0.086'	0.475'	190.53'	0.11'	190.93'	0.022'	0.03'			0.026'	0.132'	190.951'	o.k.		no	
725		0.90	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	77.6%	0.55	0.085'	0.542'	190.99'	0.44'	191.88'	0.021'	0.03'			0.026'	0.466'	191.907'	o.k.		no	
726		0.90	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	77.7%	0.55	0.085'	0.542'	191.91'	0.45'	192.78'	0.021'	0.03'			0.025'	0.471'	192.806'	o.k.		no	
727		0.90	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	80.6%	0.55	0.081'	0.563'	192.81'	0.55'	193.85'	0.020'	0.03'			0.026'	0.574'	193.879'	o.k.		no	
728		0.90	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	73.5%	0.55	0.093'	0.521'	193.88'	0.39'	194.68'	0.023'	0.03'			0.026'	0.419'	194.707'	o.k.		no	
729		0.90	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	77.9%	0.55	0.085'	0.542'	194.71'	0.46'	195.63'	0.021'	0.00'			0.011'	0.474'	195.642'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.70	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.70	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	18.5%	1.23	3.792'	0.356'	14.48' *	0.95'	23.38'	0.948'	1.14'	0.80'		1.443'	2.392'	24.819'	o.k.		no	
102		4.70	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	20.0%	1.23	3.261'	0.356'	24.82'	0.93'	36.74'	0.815'	1.61'			1.213'	2.143'	37.949'	o.k.		no	
103		4.70	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1959	28.74	16.4%	1.23	4.601'	0.338'	37.95'	0.76'	52.08'	1.150'	0.10'	1.31'		1.280'	2.044'	53.357'	o.k.		no	
104		4.70	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	102.9%	1.23	0.279'	1.050'	53.36'	0.72'	54.07'	0.070'	0.10'	0.04'		0.105'	0.821'	54.179'	CRITICAL		Yes by 0.13 cfs	0.2
105		4.70	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	103.2%	1.23	0.278'	1.050'	54.18'	0.71'	54.89'	0.069'	0.23'	0.02'		0.160'	0.873'	55.052'	o.k.		Yes by 0.15 cfs	
106		4.70	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	62.0%	1.23	0.653'	0.713'	55.05'	0.73'	56.51'	0.163'	0.44'	0.08'		0.343'	1.072'	56.855'	o.k.		no	
107		4.70	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	40.3%	1.23	1.250'	0.550'	56.86'	0.64'	60.11'	0.313'	0.10'	0.16'		0.287'	0.932'	60.397'	o.k.		no	
108		4.70	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	102.3%	1.23	0.283'	1.050'	60.81'	0.64'	61.60'	0.071'	0.10'	0.04'		0.106'	0.742'	61.706'	o.k.		Yes by 0.11 cfs	
109	0.09	4.70	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	102.4%	1.23	0.283'	1.050'	61.80'	0.73'	62.71'	0.071'	0.18'	0.16'	0.005'	0.206'	0.939'	62.916'	o.k.		Yes by 0.11 cfs	
110		4.61	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	71.3%	1.23	0.503'	0.769'	62.92'	1.12'	65.23'	0.126'	0.17'	0.14'		0.222'	1.342'	65.451'	o.k.		no	
111		4.61	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	71.6%	1.23	0.499'	0.769'	65.45'	1.21'	68.21'	0.125'	0.14'			0.132'	1.338'	68.341'	o.k.		no	
112		4.61	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	82.7%	1.23	0.399'	0.863'	69.05'	1.46'	71.72'	0.100'	0.17'	0.06'		0.167'	1.625'	71.889'	o.k.		no	
113		4.61	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	73.2%	1.23	0.487'	0.781'	71.89'	1.04'	74.17'	0.122'	0.17'	0.11'		0.201'	1.244'	74.372'	o.k.		no	
114		4.61	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	73.1%	1.23	0.487'	0.781'	74.38'	1.07'	76.78'	0.122'	0.08'			0.103'	1.176'	76.884'	o.k.		no	
115	0.23	4.61	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	107.8%	1.23	0.241'	1.106'	79.76'	0.72'	80.55'	0.060'	0.11'		0.010'	0.089'	0.810'	80.635'	o.k.		Yes by 0.33 cfs	
116		4.39	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	90.6%	1.23	0.308'	0.919'	80.64'	0.89'	81.79'	0.077'	0.03'			0.056'	0.948'	81.845'	o.k.		no	
117	0.05	4.39	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	141.7%	1.23	0.099'	1.250'	82.32'	1.24'	83.56'	0.025'	0.04'	0.01'	0.001'	0.037'	1.277'	83.597'	CRITICAL		Yes by 1.29 cfs	0.6
118		4.34	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	134.0%	1.23	0.108'	1.250'	83.60'	0.39'	83.99'	0.027'	0.17'			0.100'	0.494'	84.091'	CRITICAL		Yes by 1.16 cfs	0.6
119		4.34	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	67.1%	1.23	0.494'	0.738'	84.09'	1.23'	86.21'	0.123'	0.12'			0.121'	1.355'	86.328'	o.k.		no	
120	0.09	4.34	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	85.0%	1.23	0.337'	0.875'	86.55'	0.37'	87.19'	0.084'	0.12'		0.006'	0.103'	0.471'	87.288'	o.k.		no	
121		4.25	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	83.5%	1.23	0.332'	0.863'	87.37'	0.84'	88.88'	0.083'	0.11'			0.099'	0.941'	88.981'	o.k.		no	
122	0.05	4.25	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	84.3%	1.23	0.328'	0.875'	89.78'	0.89'	91.36'	0.082'	0.13'	0.04'	0.003'	0.129'	1.022'	91.484'	o.k.		no	
123		4.20	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	77.1%	1.23	0.371'	0.813'	91.49'	0.63'	92.78'	0.093'	0.13'			0.110'	0.741'	92.893'	o.k.		no	
124		4.20	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	77.7%	1.23	0.366'	0.813'	92.98'	0.54'	94.07'	0.091'	0.13'			0.110'	0.650'	94.182'	o.k.		no	
125		4.20	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	78.1%	1.23	0.365'	0.831'	94.29'	0.39'	95.07'	0.091'	0.13'	0.05'		0.137'	0.524'	95.208'	o.k.		no	
126		4.20	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	77.6%	1.23	0.367'	0.813'	95.25'	1.33'	97.93'	0.092'	0.17'	0.03'		0.146'	1.471'	98.078'	o.k.		no	
127		4.20	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	64.9%	1.23	0.486'	0.725'	98.08'	0.96'	100.63'	0.122'	0.19'	0.06'		0.185'	1.145'	100.810'	o.k.		no	
128		4.20	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	61.4%	1.23	0.529'	0.694'	100.81'	1.00'	103.70'	0.132'	0.04'	0.16'		0.166'	1.163'	103.870'	o.k.		no	
129		4.20	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	133.4%	1.23	0.102'	1.250'	105.25'	0.83'	106.08'	0.026'	0.11'	0.03'		0.084'	0.917'	106.167'	CRITICAL		Yes by 1.05 cfs	0.4
130		4.20	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	83.7%	1.23	0.324'	0.863'	106.17'	1.06'	107.43'	0.081'	0.11'			0.095'	1.158'	107.528'	o.k.		no	
131		4.20	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	85.7%	1.23	0.312'	0.875'	107.65'	0.48'	108.48'	0.078'	0.08'			0.078'	0.562'	108.553'	o.k.		no	
132		4.20	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	102.7%	1.23	0.224'	1.050'	113.80'	1.00'	115.03'	0.056'	0.08'			0.068'	1.066'	115.098'	o.k.		Yes by 0.11 cfs	
133		4.20	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	102.0%	1.23	0.228'	1.050'	115.23'	0.54'	115.91'	0.057'	0.08'			0.068'	0.613'	115.978'	o.k.		Yes by 0.08 cfs	
134		4.20	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	102.0%	1.23	0.228'	1.050'	116.11'	0.54'	116.79'	0.057'	0.08'			0.068'	0.613'	116.858'	o.k.		Yes by 0.08 cfs	
135		4.20	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	102.0%	1.23	0.228'	1.050'	116.99'	0.54'	117.67'	0.057'	0.08'			0.066'	0.611'	117.736'	o.k.		Yes by 0.08 cfs	
136		4.20	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	104.2%	1.23	0.216'	1.081'	117.90'	0.96'	119.04'	0.054'	0.04'			0.045'	1.002'	119.087'	o.k.		Yes by 0.17 cfs	
137		4.20	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	132.1%	1.23	0.104'	1.250'	120.44'	1.36'	121.80'	0.026'	0.03'			0.030'	1.386'	121.826'	CRITICAL		Yes by 1.02 cfs	0.6
138	0.60	4.20	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	137.9%	1.23	0.096'	1.250'	121.83'	0.93'	122.75'	0.024'	0.03'	0.01'	0.012'	0.040'	0.967'	122.793'	CRITICAL		Yes by 1.15 cfs	0.8
139		3.60	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	118.5%	1.23	0.095'	1.250'	122.79'	0.46'	123.25'	0.024'	0.15'	0.01'		0.094'	0.555'	123.348'	CRITICAL		Yes by 0.56 cfs	1.0
140		3.60	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	56.4%	1.23	0.442'	0.669'	123.35'	0.37'	123.72'	0.110'	0.13'	0.28'		0.260'	0.634'	123.982'	CRITICAL		no	0.0
141		3.60	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	64.3%	1.23	0.365'	0.725'	123.98'	0.55'	124.89'	0.091'	0.12'	0.05'		0.133'	0.680'	125.018'	o.k.		no	
142		3.60	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	66.6%	1.23	0.345'	0.738'	125.02'	0.29'	125.76'	0.086'	0.09'	0.08'		0.130'	0.423'	125.888'	o.k.		no	
143		3.60	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	112.7%	0.79	0.257'	1.000'	127.22'	1.99'	129.21'	0.064'	0.24'	0.06'		0.181'	2.167'	129.387'	CRITICAL		Yes by 0.41 cfs	0.4
1431		3.60	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	76.2%	0.79	0.682'	0.650'	129.39'	0.38'	129.76'	0.171'	0.05'	0.23'		0.223'	0.600'	129.987'	o.k.		no	
1432		3.60	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	149.8%	0.79	0.146'	1.000'	129.99'	0.87'	130.86'	0.036'	0.08'			0.061'	0.932'	130.919'	CRITICAL		Yes by 1.20 cfs	0.6
144		3.60	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	83.0%	1.23	0.242'	0.863'	130.92'	0.13'	131.05'	0.060'	0.14'	0.15'		0.173'	0.307'	131.226'	CRITICAL		no	0.8
145		3.60	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	38.2%	1.77	0.386'	0.638'	131.23'	0.31'	131.54'	0.097'	0.14'	0.08'		0.159'	0.469'	131.695'	o.k.		no	
146		3.60	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	37.0%	1.77	0.400'	0.623'	131.69'	0.28'	133.22'	0.100'	0.12'	0.26'		0.236'	0.516'	133.459'	o.k.		no	
147		3.60	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	41.6%	1.77	0.334'	0.660'	133.46'	0.31'	135.06'	0.083'	0.12'	0.18'		0.196'	0.504'	135.256'	o.k.		no	
148		3.60	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	40.2%	1.77	0.357'	0.660'	135.26'	0.14'	135.82'	0.089'	0.06'	0.09'		0.122'	0.259'	135.942'	o.k.		no	
149		3.60	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	63.9%	1.77	0.174'	0.855'	136.02'	0.14'	136.39'	0.044'	0.09'	0.02'		0.076'	0.212'	136.461'	o.k.		no	
150		3.60	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	112.8%	0.79	0.257'	1.000'	136.53'	2.34'	138.87'	0.064'	0.15'	0.04'		0.129'	2.470'	139.000'	CRITICAL		Yes by 0.41 cfs	0.5
151		3.60	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	98.6%	0.79	0.437'	0.800'	139.00'	0.82'	139.82'	0.109'	1.38'	0.17'		0.829'	1.645'	140.646'	CRITICAL		no	0.1
152	0.71	3.60	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	23.3%	0.79	3.947'	0.320'	140.65'	1.42'	156.12'	0.987'	0.07'	2.53'	0.731'	2.157'	3.576'	158.277'	o.k.		no	
201		2.89	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	71.4%	1.23	0.197'	0.769'	158.28'	0.15'	158.42'	0.049'	0.15'	0.07'		0.134'	0.281'	158.557'	CRITICAL		no	0.8
202		2.89	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	41.8%	1.23	0.440'	0.550'	158.56'	0.27'	158.83'	0.110'	0.28'	0.06'		0.222'	0.494'	159.052'	o.k.		no	
203		2.89	MH 3		02+78.00	02+78.00	159.69	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	27.7%	1.23	0.790'	0.431'	159.05'	0.19'	160.22'	0.197'	0.07'			0.134'	0.325'	160.355'	o.k.		no	
204		2.89	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	70.5%	1.23	0.202'	0.769'	160.66'	0.54'	161.95'	0.051'	0.07'			0.061'	0.603'	162.009'	o.k.		no	
205		2.89	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	70.4%	1.23	0.202'	0.769'	162.05'	0.53'	163.31'	0.051'	0.07'			0.061'	0.590'	163.369'	o.k.		no	
206		2.89	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	70.6%	1.23	0.202'	0.769'	163.41'	0.65'	164.94'	0.050'	0.07'	0.13'		0.125'	0.771'	165.064'	o.k.		no	
207	0.24	2.89	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	70.5%	1.23	0.202'	0.769'	165.06'	0.86'	167.09'	0.051'	0.07'	0.10'	0.015'	0.119'	0.982'	167.208'	o.k.		no	
208		2.65	MH 8		21+32.00	21+32.00	167.61	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	64.6%	1.23	0.194'	0.725'	167.21'	0.48'	168.44'	0.049'	0.05'			0.048'	0.523'	168.483'	o.k.		no	
209		2.65	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	51.2%	1.77	0.133'	0.750'	168.56'	0.23'	169.44'	0.033'	0.05'			0.040'	0.269'	169.480'	o.k.		no	
210		2.65	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	51.0%	1.77	0.134'	0.750'	169.54'	0.21'	170.34'	0.033'	0.05'			0.040'	0.247'	170.380'	o.k.		no	
211		2.65	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	51.3%	1.77	0.132'	0.750'	170.44'	0.19'	171.16'	0.033'	0.05'	0.03'		0.053'	0.241'	171.213'	o.k.		no	
212		2.65	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	51.0%	1.77	0.134'	0.750'	171.26'	0.13'	171.75'	0.033'	0.04'			0.038'	0.165'	171.788'	o.k.		no	
301		2.65	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	120.0%	0.79	0.122'	1.000'	172.55'	1.08'	173.63'	0.031'	0.04'			0.035'	1.110'	173.660'	CRITICAL		Yes by 0.44 cfs	0.3
302		2.65	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	125.0%	0.79	0.113'	1.000'	173.66'	1.68'	175.34'	0.028'	0.04'			0.034'	1.715'	175.375'	CRITICAL		Yes by 0.53 cfs	0.8
303	0.30	2.65	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	125.0%	0.79	0.113'	1.000'	175.37'	1.68'	177.06'	0.028'	0.09'		0.011'	0.064'	1.745'	177.120'	CRITICAL		Yes by 0.53 cfs	1.2
304		2.35	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	82.6%	0.79	0.253'	0.690'	177.12'	1.05'	178.17'	0.063'	0.04'			0.051'	1.103'	178.223'	CRITICAL		no	0.2
305		2.35	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	111.0%	0.79	0.112'	1.000'	178.22'	1.28'	179.50'	0.028'	0.04'			0.034'	1.310'	179.532'	CRITICAL		Yes by 0.23 cfs	0.3
306		2.35	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	111.2%	0.79	0.112'	1.000'	179.53'	1.01'	180.54'	0.028'	0.04'	0.07'		0.070'	1.080'	180.612'	CRITICAL		Yes by 0.24 cfs	0.3
307		2.35	MH 7		17+03.00	17+03.00	179.64	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	109.7%	0.79	0.115'	1.000'	180.61'	0.23'	180.84'	0.029'	0.03'			0.031'	0.259'	180.871'	CRITICAL		Yes by 0.21 cfs	0.2
308		2.35	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	119.8%	0.79	0.097'	1.000'	180.87'	1.89'	182.76'	0.024'	0.03'			0.029'	1.915'	182.786'	CRITICAL		Yes by 0.35 cfs	0.6
309		2.35	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	120.4%	0.79	0.096'	1.000'	182.79'	0.92'	183.71'	0.024'	0.03'			0.029'	0.953'	183.739'	CRITICAL		Yes by 0.46 cfs	0.7
401		2.35	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	120.0%	0.79	0.096'	1.000'	183.74'	1.72'	185.46'	0.024'	0.16'			0.091'	1.810'	185.548'	CRITICAL		Yes by 0.39 cfs	1.1
402		2.35	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	90.0%	0.55	0.453'	0.613'	187.62'	3.19'	192.66'	0.113'	0.07'			0.090'	3.280'	192.753'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.35	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	122.5%	0.55	0.191'	0.833'	192.98'	3.97'	196.96'	0.048'	0.13'			0.089'	4.063'	197.047'	CRITICAL		Yes by 0.43 cfs	1.3
404		2.35	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	99.9%	0.55	0.374'	0.667'	197.05'	0.06'	197.11'	0.094'	0.08'			0.085'	0.146'	197.192'	CRITICAL		no	1.2
501	0.56	2.35	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	51.2%	1.23	0.216'	0.625'	200.06'	0.46'	201.81'	0.054'	0.06'		0.049'	0.084'	0.542'	201.889'	o.k.		no	
502		1.78	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	39.4%	1.23	0.185'	0.531'	201.89'	0.31'	203.47'	0.046'	0.15'			0.098'	0.411'	203.569'	o.k.		no	
503		1.78	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	22.5%	1.23	0.426'	0.400'	209.68'	0.33'	213.96'	0.107'	0.06'			0.081'	0.415'	214.041'	o.k.		no	
504		1.78	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	43.6%	1.23	0.159'	0.563'	214.56'	0.33'	216.16'	0.040'	0.06'			0.048'	0.376'	216.210'	o.k.		no	
505		1.78	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	43.6%	1.23	0.159'	0.563'	216.21'	0.33'	217.76'	0.040'	0.08'			0.059'	0.388'	217.822'	o.k.		no	
601		1.78	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0063	5.15	34.6%	1.23	0.224'	0.500'	217.82'	0.29'	219.72'	0.056'	0.02'	0.14'		0.112'	0.407'	219.832'	o.k.		no	
602		1.78	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	153.4%	0.55	0.071'	0.833'	220.33'	1.73'	222.07'	0.018'	0.02'	0.05'		0.044'	1.776'	222.110'	CRITICAL		Yes by 0.62 cfs	1.0
603		1.78	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	153.3%	0.55	0.071'	0.833'	222.11'	2.03'	224.14'	0.018'	0.02'			0.021'	2.056'	224.165'	CRITICAL		Yes by 0.62 cfs	2.1
604		1.78	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	153.7%	0.55	0.070'	0.833'	224.17'	2.42'	226.59'	0.018'	0.02'			0.021'	2.443'	226.608'	CRITICAL		Yes by 0.62 cfs	3.4
605		1.78	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	153.0%	0.55	0.071'	0.833'	226.61'	1.40'	228.01'	0.018'	0.02'			0.021'	1.419'	228.027'	CRITICAL		Yes by 0.62 cfs	4.1
606		1.78	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	153.5%	0.55	0.071'	0.833'	228.03'	2.13'	230.16'	0.018'	0.02'			0.021'	2.154'	230.181'	CRITICAL		Yes by 0.62 cfs	5.3
607		1.78	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	153.4%	0.55	0.071'	0.833'	230.18'	1.90'	232.08'	0.018'	0.02'	0.05'		0.044'	1.940'	232.122'	CRITICAL		Yes by 0.62 cfs	6.3
608		1.78	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	153.7%	0.55	0.070'	0.833'	232.12'	2.47'	234.59'	0.018'	0.02'	0.05'		0.044'	2.511'	234.633'	CRITICAL		Yes by 0.62 cfs	7.6
609		1.78	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	153.3%	0.55	0.071'	0.833'	234.63'	1.87'	236.50'	0.018'	0.02'			0.021'	1.892'	236.525'	CRITICAL		Yes by 0.62 cfs	8.7
610		1.78	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	153.5%	0.55	0.070'	0.833'	236.52'	1.76'	238.28'	0.018'	0.02'			0.021'	1.780'	238.305'	CRITICAL		Yes by 0.62 cfs	9.6
611	0.26	1.78	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	153.6%	0.55	0.070'	0.833'	238.30'	2.56'	240.86'	0.018'	0.03'	0.04'	0.009'	0.047'	2.607'	240.911'	CRITICAL		Yes by 0.62 cfs	11.0
612		1.52	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	121.3%	0.55	0.082'	0.833'	240.91'	1.04'	241.95'	0.021'	0.02'	0.05'		0.043'	1.082'	241.993'	CRITICAL		Yes by 0.27 cfs	11.3
613		1.52	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	144.8%	0.55	0.058'	0.833'	241.99'	1.54'	243.54'	0.014'	0.02'			0.020'	1.564'	243.557'	CRITICAL		Yes by 0.47 cfs	11.9
614		1.52	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	130.5%	0.55	0.071'	0.833'	243.56'	1.29'	244.84'	0.018'	0.02'			0.021'	1.308'	244.865'	CRITICAL		Yes by 0.36 cfs	12.4
615		1.52	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	130.9%	0.55	0.070'	0.833'	244.86'	1.53'	246.40'	0.018'	0.02'			0.021'	1.556'	246.421'	CRITICAL		Yes by 0.36 cfs	12.9
616		1.52	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	130.7%	0.55	0.071'	0.833'	246.42'	1.80'	248.22'	0.018'	0.03'			0.022'	1.823'	248.244'	CRITICAL		Yes by 0.36 cfs	13.6
617		1.52	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	198.4%	0.35	0.075'	0.667'	248.24'	5.01'	253.25'	0.019'	0.15'			0.085'	5.095'	253.339'	CRITICAL		Yes by 0.75 cfs	17.2
618		1.52	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	93.5%	0.35	0.434'	0.500'	253.34'	4.03'	257.37'	0.108'	0.03'			0.067'	4.099'	257.437'	CRITICAL		no	15.3
619		1.52	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	198.4%	0.35	0.075'	0.667'	257.44'	4.70'	262.13'	0.019'	0.03'			0.022'	4.719'	262.156'	CRITICAL		Yes by 0.75 cfs	18.8
620		1.52	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	198.4%	0.35	0.075'	0.667'	262.16'	5.56'	267.71'	0.019'	0.03'			0.022'	5.580'	267.736'	CRITICAL		Yes by 0.75 cfs	22.8
621	0.80	1.52	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	198.4%	0.35	0.075'	0.667'	267.74'	5.09'	272.82'	0.019'	0.04'	0.05'	0.044'	0.076'	5.164'	272.900'	CRITICAL	CRITICAL	Yes by 0.75 cfs	26.5
622		0.80	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	94.6%	0.35	0.118'	0.510'	272.90'	0.66'	273.56'	0.030'	0.04'	0.08'		0.073'	0.730'	273.630'	CRITICAL	CRITICAL	no	26.2
623		0.80	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	94.5%	0.35	0.118'	0.510'	273.63'	1.13'	274.76'	0.030'	0.04'			0.035'	1.166'	274.795'	CRITICAL	CRITICAL	no	25.7
624		0.80	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	94.8%	0.35	0.118'	0.510'	274.80'	0.85'	275.64'	0.029'	0.04'			0.035'	0.881'	275.677'	CRITICAL	CRITICAL	no	25.2
624		0.80	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	94.6%	0.35	0.118'	0.510'	275.68'	0.84'	276.51'	0.030'	0.04'	0.03'		0.049'	0.884'	276.561'	CRITICAL	CRITICAL	no	24.8
625		0.80	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	94.8%	0.35	0.118'	0.510'	276.56'	0.96'	277.53'	0.029'	0.03'			0.032'	0.996'	277.557'	CRITICAL	CRITICAL	no	24.3
626		0.80	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	104.7%	0.35	0.096'	0.577'	277.56'	0.30'	277.86'	0.024'	0.10'			0.063'	0.368'	277.925'	CRITICAL	CRITICAL	Yes by 0.04 cfs	23.7
627		0.80	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	54.1%	0.35	0.292'	0.350'	277.92'	1.09'	279.01'	0.073'	0.14'			0.107'	1.197'	279.122'	CRITICAL	CRITICAL	no	16.9
628		0.80	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	43.3%	0.35	0.404'	0.300'	279.12'	1.35'	280.47'	0.101'	0.03'	0.26'		0.196'	1.546'	280.668'	CRITICAL	CRITICAL	no	11.6
629		0.80	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	104.7%	0.35	0.096'	0.577'	280.67'	0.51'	281.18'	0.024'	0.10'	0.06'		0.092'	0.600'	281.268'	CRITICAL	CRITICAL	Yes by 0.04 cfs	11.6
630		0.80	MH 30	279.0	87+83.00	87+83.00	271.67	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	55.0%	0.35	0.282'	0.350'	281.27'	0.58'	281.85'	0.071'	0.09'			0.083'	0.661'	281.929'	CRITICAL	CRITICAL	no	10.2
631		0.80	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	56.5%	0.35	0.270'	0.357'	281.93'	0.26'	282.19'	0.068'	0.03'	0.17'		0.137'	0.402'	282.331'	CRITICAL	CRITICAL	no	9.6
632		0.80	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	104.8%	0.35	0.096'	0.577'	282.33'	0.81'	283.14'	0.024'	0.00'			0.012'	0.817'	283.148'	CRITICAL	CRITICAL	Yes by 0.04 cfs	9.5
Pump Station Line																																	
620		1.52	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																							
621	0.80	1.52	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	198.4%	0.35	0.075'	0.667'	244.99'	5.09'	250.07'	0.019'	0.03'	0.05'	0.044'	0.072'	5.160'	250.147'	CRITICAL	o.k.	Yes by 0.75 cfs	3.8
8211		0.80	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	104.7%	0.35	0.096'	0.577'	250.15'	1.02'	251.16'	0.024'	0.03'			0.029'	1.044'	251.191'	CRITICAL	o.k.	Yes by 0.04 cfs	3.6
8212		0.80	MH 21-2	264.0	70+66.00	70+66.00	247.58	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	105.0%	0.35	0.096'	0.577'	251.19'	0.73'	251.92'	0.024'	0.01'	0.06'		0.050'	0.781'	251.971'	CRITICAL	o.k.	Yes by 0.04 cfs	3.4
8213		0.80	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	143.3%	0.35	0.040'	0.667'	251.97'	1.02'	252.99'	0.010'	0.03'			0.022'	1.042'	253.014'	CRITICAL	o.k.	Yes by 0.24 cfs	3.8
8214		0.80	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	104.8%	0.35	0.096'	0.577'	253.01'	0.87'	253.89'	0.024'	0.06'	0.06'		0.074'	0.947'	253.960'	CRITICAL	o.k.	Yes by 0.04 cfs	3.2
8215		0.80	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	74.7%	0.35	0.176'	0.427'	253.96'	0.25'	254.21'	0.044'	0.03'			0.039'	0.292'	254.253'	CRITICAL	o.k.	no	2.8
8216		0.80	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	104.7%	0.35	0.096'	0.577'	254.25'	1.40'	255.66'	0.024'	0.32'	0.06'		0.204'	1.608'	255.861'	CRITICAL	o.k.	Yes by 0.04 cfs	2.5
8217		0.80	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	24.7%	0.35	0.918'	0.220'	255.86'	0.48'	258.22'	0.230'	0.00'			0.115'	0.599'	258.335'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																	
94th Street Trunk																																	
152		3.60	MH 52		00+00.00	00+00.00	156.06	155.80	22																								
719		0.92	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	15.8%	0.55	0.863'	0.208'	158.28'	0.29'	162.11'	0.216'	0.28'	0.13'		0.311'	0.603'	162.419'	o.k.		no	
720		0.92	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	17.3%	0.55	0.789'	0.225'	162.42'	1.10'	181.86'	0.197'	0.12'			0.157'	1.253'	182.012'	o.k.		no	
721		0.92	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	31.6%	0.55	0.335'	0.313'	182.01'	0.75'	187.73'	0.084'	0.04'			0.061'	0.809'	187.793'	o.k.		no	
722		0.92	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	42.5%	0.79	0.108'	0.450'	187.87'	0.20'	188.90'	0.027'	0.03'			0.026'	0.227'	188.926'	o.k.		no	
723		0.92	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	54.5%	0.79	0.074'	0.525'	188.98'	0.27'	189.93'	0.019'	0.03'			0.022'	0.292'	189.947'	o.k.		no	
724		0.92	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	54.8%	0.79	0.073'	0.525'	189.95'	0.17'	190.53'	0.018'	0.03'			0.025'	0.197'	190.550'	o.k.		no	
724A		0.92	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	48.6%	0.79	0.088'	0.490'	190.55'	0.11'	190.94'	0.022'	0.03'			0.026'	0.134'	190.966'	o.k.		no	
725		0.92	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	78.9%	0.55	0.086'	0.554'	191.00'	0.45'	191.89'	0.022'	0.03'			0.026'	0.475'	191.920'	o.k.		no	
726		0.92	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	79.0%	0.55	0.086'	0.554'	191.92'	0.46'	192.79'	0.021'	0.03'			0.025'	0.481'	192.819'	o.k.		no	
727		0.92	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	81.9%	0.55	0.081'	0.563'	192.82'	0.57'	193.85'	0.020'	0.03'			0.027'	0.592'	193.879'	o.k.		no	
728		0.92	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	74.7%	0.55	0.094'	0.533'	193.88'	0.40'	194.69'	0.024'	0.03'			0.027'	0.427'	194.720'	o.k.		no	
729		0.92	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	79.2%	0.55	0.085'	0.554'	194.72'	0.47'	195.64'	0.021'	0.00'			0.011'	0.484'	195.655'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont Capacity	Height Above Crown (ft)
131*		4.78	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.78	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	18.8%	1.23	3.792'	0.356'	15.20' *	0.98'	23.38'	0.948'	1.22'	0.80'		1.481'	2.460'	24.858'	o.k.		no	
102		4.78	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	20.3%	1.23	3.481'	0.375'	24.86'	0.90'	36.76'	0.870'	1.61'			1.240'	2.136'	37.995'	o.k.		no	
103		4.78	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	16.6%	1.23	4.601'	0.338'	38.00'	0.79'	52.08'	1.150'	0.10'	1.31'		1.279'	2.069'	53.357'	o.k.		no	
104		4.78	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	104.6%	1.23	0.277'	1.081'	53.36'	0.74'	54.10'	0.069'	0.10'	0.04'		0.104'	0.847'	54.204'	CRITICAL		Yes by 0.21 cfs	0.2
105		4.78	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	104.9%	1.23	0.275'	1.081'	54.20'	0.74'	54.94'	0.069'	0.23'	0.02'		0.160'	0.899'	55.104'	CRITICAL		Yes by 0.22 cfs	0.0
106		4.78	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	63.0%	1.23	0.653'	0.713'	55.10'	0.75'	56.51'	0.163'	0.44'	0.08'		0.343'	1.096'	56.855'	o.k.		no	
107		4.78	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	41.0%	1.23	1.250'	0.550'	56.86'	0.67'	60.11'	0.313'	0.10'	0.16'		0.287'	0.952'	60.397'	o.k.		no	
108		4.78	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	103.9%	1.23	0.283'	1.050'	60.81'	0.66'	61.60'	0.071'	0.10'	0.04'		0.106'	0.762'	61.706'	o.k.		Yes by 0.18 cfs	
109	0.09	4.78	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	104.0%	1.23	0.283'	1.050'	61.80'	0.76'	62.71'	0.071'	0.18'	0.16'	0.005'	0.208'	0.964'	62.918'	o.k.		Yes by 0.18 cfs	
110		4.68	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	72.5%	1.23	0.512'	0.781'	62.92'	1.14'	65.24'	0.128'	0.18'	0.15'		0.226'	1.368'	65.467'	o.k.		no	
111		4.68	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	72.7%	1.23	0.508'	0.781'	65.47'	1.23'	68.22'	0.127'	0.14'			0.133'	1.363'	68.355'	o.k.		no	
112		4.68	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	84.0%	1.23	0.399'	0.863'	69.05'	1.51'	71.72'	0.100'	0.17'	0.06'		0.168'	1.673'	71.890'	o.k.		no	
113		4.68	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	74.3%	1.23	0.491'	0.800'	71.89'	1.06'	74.19'	0.123'	0.17'	0.11'		0.203'	1.267'	74.393'	o.k.		no	
114		4.68	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	74.3%	1.23	0.492'	0.800'	74.40'	1.09'	76.80'	0.123'	0.07'			0.095'	1.189'	76.895'	o.k.		no	
115	0.23	4.68	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	109.5%	1.23	0.189'	1.250'	79.90'	0.94'	80.84'	0.047'	0.11'		0.008'	0.082'	1.025'	80.925'	CRITICAL		Yes by 0.41 cfs	0.2
116		4.46	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	92.1%	1.23	0.311'	0.938'	80.93'	0.92'	81.84'	0.078'	0.03'			0.056'	0.972'	81.897'	o.k.		no	
117	0.05	4.46	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	144.0%	1.23	0.099'	1.250'	82.32'	1.28'	83.60'	0.025'	0.04'	0.01'	0.001'	0.037'	1.317'	83.637'	CRITICAL		Yes by 1.36 cfs	0.7
118		4.41	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	136.2%	1.23	0.108'	1.250'	83.64'	0.41'	84.04'	0.027'	0.17'			0.101'	0.507'	84.144'	CRITICAL		Yes by 1.17 cfs	0.7
119		4.41	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	68.2%	1.23	0.498'	0.756'	84.14'	1.23'	86.23'	0.125'	0.12'			0.122'	1.381'	86.348'	o.k.		no	
120	0.09	4.41	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	86.4%	1.23	0.340'	0.894'	86.56'	0.38'	87.20'	0.085'	0.12'		0.006'	0.104'	0.482'	87.308'	o.k.		no	
121		4.32	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	84.8%	1.23	0.335'	0.875'	87.39'	0.86'	88.90'	0.084'	0.11'			0.099'	0.963'	88.994'	o.k.		no	
122	0.05	4.32	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	85.7%	1.23	0.328'	0.875'	89.76'	0.92'	91.36'	0.082'	0.13'	0.04'	0.003'	0.129'	1.051'	91.484'	o.k.		no	
123		4.27	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	78.3%	1.23	0.374'	0.831'	91.51'	0.64'	92.80'	0.094'	0.13'			0.111'	0.755'	92.913'	o.k.		no	
124		4.27	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	78.9%	1.23	0.369'	0.831'	93.00'	0.55'	94.09'	0.092'	0.13'			0.110'	0.662'	94.201'	o.k.		no	
125		4.27	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	79.4%	1.23	0.365'	0.831'	94.29'	0.40'	95.07'	0.091'	0.13'	0.05'		0.138'	0.537'	95.209'	o.k.		no	
126		4.27	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	78.8%	1.23	0.370'	0.831'	95.27'	1.35'	97.95'	0.093'	0.17'	0.03'		0.146'	1.499'	98.097'	o.k.		no	
127		4.27	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	66.0%	1.23	0.486'	0.725'	98.10'	0.99'	100.63'	0.122'	0.19'	0.06'		0.186'	1.176'	100.811'	o.k.		no	
128		4.27	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	62.3%	1.23	0.534'	0.713'	100.81'	1.02'	103.72'	0.133'	0.04'	0.17'		0.167'	1.184'	103.890'	o.k.		no	
129		4.27	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	135.5%	1.23	0.102'	1.250'	105.25'	0.86'	106.11'	0.026'	0.11'	0.03'		0.085'	0.945'	106.195'	CRITICAL		Yes by 1.12 cfs	0.4
130		4.27	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	85.0%	1.23	0.327'	0.875'	106.19'	1.09'	107.45'	0.082'	0.11'			0.096'	1.187'	107.541'	o.k.		no	
131		4.27	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	87.0%	1.23	0.314'	0.894'	107.66'	0.50'	108.49'	0.079'	0.08'			0.078'	0.575'	108.572'	o.k.		no	
132		4.27	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	104.4%	1.23	0.223'	1.081'	113.83'	1.04'	115.06'	0.056'	0.08'			0.068'	1.103'	115.129'	o.k.		Yes by 0.18 cfs	
133		4.27	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	103.7%	1.23	0.228'	1.050'	115.23'	0.56'	115.91'	0.057'	0.08'			0.068'	0.630'	115.978'	o.k.		Yes by 0.15 cfs	
134		4.27	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	103.7%	1.23	0.228'	1.050'	116.11'	0.56'	116.79'	0.057'	0.08'			0.068'	0.630'	116.858'	o.k.		Yes by 0.15 cfs	
135		4.27	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	103.7%	1.23	0.228'	1.050'	116.99'	0.56'	117.67'	0.057'	0.08'			0.066'	0.628'	117.736'	o.k.		Yes by 0.15 cfs	
136		4.27	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	105.8%	1.23	0.216'	1.081'	117.90'	0.99'	119.04'	0.054'	0.04'			0.045'	1.032'	119.087'	o.k.		Yes by 0.24 cfs	
137		4.27	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	134.2%	1.23	0.104'	1.250'	120.44'	1.40'	121.84'	0.026'	0.03'			0.030'	1.429'	121.869'	CRITICAL		Yes by 1.09 cfs	0.6
138	0.61	4.27	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	140.1%	1.23	0.096'	1.250'	121.87'	0.96'	122.83'	0.024'	0.03'	0.01'	0.012'	0.040'	0.997'	122.866'	CRITICAL		Yes by 1.22 cfs	0.9
139		3.66	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	120.3%	1.23	0.095'	1.250'	122.87'	0.48'	123.34'	0.024'	0.15'	0.01'		0.094'	0.570'	123.437'	CRITICAL		Yes by 0.62 cfs	1.1
140		3.66	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	57.3%	1.23	0.442'	0.669'	123.44'	0.39'	123.82'	0.110'	0.13'	0.28'		0.260'	0.646'	124.082'	CRITICAL		no	0.1
141		3.66	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	65.3%	1.23	0.365'	0.725'	124.08'	0.56'	124.89'	0.091'	0.12'	0.05'		0.133'	0.698'	125.018'	o.k.		no	
142		3.66	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	67.7%	1.23	0.345'	0.738'	125.02'	0.30'	125.76'	0.086'	0.09'	0.08'		0.130'	0.433'	125.888'	o.k.		no	
143		3.66	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	114.5%	0.79	0.257'	1.000'	127.22'	2.05'	129.27'	0.064'	0.24'	0.06'		0.181'	2.231'	129.451'	CRITICAL		Yes by 0.47 cfs	0.5
143'		3.66	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	77.4%	0.79	0.682'	0.650'	129.45'	0.39'	129.84'	0.171'	0.05'	0.23'		0.223'	0.612'	130.063'	CRITICAL		no	0.1
1432		3.66	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	152.2%	0.79	0.146'	1.000'	130.06'	0.90'	130.96'	0.036'	0.09'			0.061'	0.961'	131.023'	CRITICAL		Yes by 1.26 cfs	0.7
144		3.66	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	54.00'	15"	0.0045	0.0045	4.34	84.3%	1.23	0.244'	0.875'	131.02'	0.14'	131.16'	0.061'	0.14'	0.15'		0.174'	0.312'	131.335'	CRITICAL		no	0.9
145		3.66	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	38.9%	1.77	0.386'	0.638'	131.34'	0.32'	131.66'	0.097'	0.14'	0.08'		0.159'	0.479'	131.814'	o.k.		no	
146		3.66	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	37.6%	1.77	0.400'	0.623'	131.81'	0.29'	133.22'	0.100'	0.12'	0.26'		0.238'	0.527'	133.461'	o.k.		no	
147		3.66	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	42.2%	1.77	0.345'	0.675'	133.46'	0.31'	135.08'	0.086'	0.12'	0.19'		0.200'	0.509'	135.275'	o.k.		no	
148		3.66	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	40.9%	1.77	0.357'	0.660'	135.26'	0.14'	135.82'	0.089'	0.06'	0.09'		0.123'	0.264'	135.943'	o.k.		no	
149		3.66	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	64.9%	1.77	0.178'	0.870'	136.03'	0.14'	136.40'	0.044'	0.09'	0.02'		0.077'	0.215'	136.477'	o.k.		no	
150		3.66	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	114.6%	0.79	0.257'	1.000'	136.53'	2.42'	138.95'	0.064'	0.15'	0.04'		0.129'	2.546'	139.076'	CRITICAL		Yes by 0.47 cfs	0.6
151		3.66	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	100.2%	0.79	0.437'	0.820'	139.08'	0.84'	139.92'	0.109'	1.38'	0.17'		0.829'	1.672'	140.747'	CRITICAL		Yes by 0.01 cfs	0.2
152	0.93	3.66	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	23.7%	0.79	3.947'	0.320'	140.75'	1.47'	156.12'	0.987'	0.07'	2.53'	0.966'	2.275'	3.740'	158.395'	o.k.		no	
201		2.94	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	72.5%	1.23	0.201'	0.781'	158.39'	0.15'	158.54'	0.050'	0.16'	0.07'		0.138'	0.287'	158.682'	CRITICAL		no	1.0
202		2.94	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	42.5%	1.23	0.454'	0.563'	158.66'	0.27'	158.96'	0.113'	0.29'	0.06'		0.231'	0.505'	159.186'	o.k.		no	
203		2.94	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	28.2%	1.23	0.828'	0.450'	159.19'	0.19'	160.24'	0.207'	0.07'			0.139'	0.328'	160.379'	o.k.		no	
204		2.94	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	71.6%	1.23	0.202'	0.769'	160.66'	0.56'	161.95'	0.051'	0.07'			0.061'	0.621'	162.009'	o.k.		no	
205		2.94	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	71.6%	1.23	0.202'	0.769'	162.05'	0.55'	163.31'	0.051'	0.07'			0.061'	0.607'	163.369'	o.k.		no	
206		2.94	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	71.7%	1.23	0.202'	0.769'	163.41'	0.67'	164.94'	0.050'	0.07'	0.13'		0.125'	0.791'	165.064'	o.k.		no	
207	0.25	2.94	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	71.6%	1.23	0.202'	0.769'	165.06'	0.89'	167.09'	0.051'	0.07'	0.10'	0.015'	0.119'	1.010'	167.208'	o.k.		no	
208		2.69	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	65.7%	1.23	0.194'	0.725'	167.21'	0.49'	168.44'	0.049'	0.05'			0.048'	0.539'	168.483'	o.k.		no	
209		2.69	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	52.0%	1.77	0.133'	0.750'	168.56'	0.24'	169.44'	0.033'	0.05'			0.040'	0.277'	169.480'	o.k.		no	
210		2.69	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	51.8%	1.77	0.134'	0.750'	169.54'	0.21'	170.34'	0.033'	0.05'			0.040'	0.255'	170.380'	o.k.		no	
211		2.69	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	52.1%	1.77	0.135'	0.765'	170.46'	0.19'	171.18'	0.034'	0.05'	0.03'		0.053'	0.244'	171.228'	o.k.		no	
212		2.69	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	51.8%	1.77	0.134'	0.750'	171.26'	0.13'	171.75'	0.033'	0.04'			0.038'	0.169'	171.788'	o.k.		no	
301		2.69	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	121.9%	0.79	0.122'	1.000'	172.55'	1.11'	173.66'	0.031'	0.04'			0.035'	1.145'	173.695'	CRITICAL		Yes by 0.48 cfs	0.4
302		2.69	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	127.1%	0.79	0.113'	1.000'	173.70'	1.74'	175.43'	0.028'	0.04'			0.034'	1.769'	175.465'	CRITICAL		Yes by 0.57 cfs	0.9
303	0.30	2.69	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	127.1%	0.79	0.113'	1.000'	175.46'	1.74'	177.20'	0.028'	0.09'		0.011'	0.064'	1.800'	177.264'	CRITICAL		Yes by 0.57 cfs	1.3
304		2.39	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	83.9%	0.79	0.253'	0.690'	177.26'	1.09'	178.35'	0.063'	0.04'			0.051'	1.137'	178.401'	CRITICAL		no	0.4
305		2.39	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	112.8%	0.79	0.112'	1.000'	178.40'	1.32'	179.72'	0.028'	0.04'			0.034'	1.351'	179.753'	CRITICAL		Yes by 0.27 cfs	0.5
306		2.39	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	113.0%	0.79	0.112'	1.000'	179.75'	1.04'	180.80'	0.028'	0.04'	0.07'		0.070'	1.113'	180.866'	CRITICAL		Yes by 0.27 cfs	0.5
307		2.39	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	111.5%	0.79	0.115'	1.000'	180.87'	0.24'	181.10'	0.029'	0.03'			0.031'	0.266'	181.132'	CRITICAL		Yes by 0.25 cfs	0.5
308		2.39	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	121.8%	0.79	0.097'	1.000'	181.13'	1.95'	183.08'	0.024'	0.03'			0.029'	1.977'	183.109'	CRITICAL		Yes by 0.43 cfs	0.9
309		2.39	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	122.4%	0.79	0.096'	1.000'	183.11'	0.95'	184.06'	0.024'	0.03'			0.029'	0.983'	184.091'	CRITICAL		Yes by 0.44 cfs	1.1
401		2.39	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	121.9%	0.79	0.096'	1.000'	184.09'	1.77'	185.87'	0.024'	0.16'			0.091'	1.866'	185.957'	CRITICAL		Yes by 0.43 cfs	1.5
402		2.39	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	91.5%	0.55	0.453'	0.613'	187.62'	3.29'	192.66'	0.113'	0.07'			0.090'	3.384'	192.753'	o.k.		no	
403		2.39	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	124.5%	0.55	0.191'	0.833'	192.96'	4.10'	197.09'	0.048'	0.13'			0.089'	4.193'	197.176'	CRITICAL		Yes by 0.47 cfs	1.4
404		2.39	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	101.6%	0.55	0.374'	0.683'	197.16'	0.06'	197.24'	0.094'	0.08'			0.085'	0.148'	197.325'	CRITICAL		Yes by 0.04 cfs	1.3

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
501	0.57	2.39	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	52.1%	1.23	0.221'	0.638'	200.07'	0.46'	201.82'	0.055'	0.07'		0.050'	0.086'	0.549'	201.903'	o.k.		no	
502		1.81	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	40.0%	1.23	0.189'	0.550'	201.90'	0.31'	203.49'	0.047'	0.15'			0.098'	0.412'	203.588'	o.k.		no	
503		1.81	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	22.8%	1.23	0.426'	0.400'	209.68'	0.34'	213.96'	0.107'	0.06'			0.082'	0.426'	214.042'	o.k.		no	
504		1.81	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	44.3%	1.23	0.163'	0.581'	214.58'	0.33'	216.18'	0.041'	0.06'			0.049'	0.381'	216.230'	o.k.		no	
505		1.81	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	44.3%	1.23	0.163'	0.581'	216.23'	0.33'	217.78'	0.041'	0.08'			0.060'	0.392'	217.841'	o.k.		no	
601		1.81	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0063	5.15	35.2%	1.23	0.224'	0.500'	217.84'	0.30'	219.72'	0.056'	0.04'	0.14'		0.121'	0.426'	219.841'	o.k.		no	
602		1.81	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.124'	0.638'	220.14'	0.20'	220.88'	0.031'	0.04'	0.08'		0.077'	0.279'	220.954'	o.k.		no	
603		1.81	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.124'	0.638'	220.98'	0.24'	221.85'	0.031'	0.04'			0.037'	0.274'	221.885'	o.k.		no	
604		1.81	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	15"	0.0028	0.0028	3.42	53.0%	1.23	0.123'	0.638'	221.95'	0.28'	222.98'	0.031'	0.04'			0.037'	0.319'	223.014'	o.k.		no	
605		1.81	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	18"	0.0028	0.0028	5.59	32.4%	1.77	0.123'	0.578'	223.02'	0.08'	223.62'	0.031'	0.04'			0.037'	0.117'	223.655'	o.k.		no	
606		1.81	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.124'	0.638'	223.78'	0.25'	224.69'	0.031'	0.04'			0.037'	0.286'	224.725'	o.k.		no	
607		1.81	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.124'	0.638'	224.79'	0.22'	225.60'	0.031'	0.04'	0.08'		0.076'	0.298'	225.674'	o.k.		no	
608		1.81	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	18"	0.0028	0.0028	5.57	32.6%	1.77	0.122'	0.578'	225.67'	0.14'	226.69'	0.031'	0.04'	0.08'		0.076'	0.217'	226.763'	o.k.		no	
609		1.81	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	15"	0.0028	0.0028	3.43	52.8%	1.23	0.124'	0.638'	226.85'	0.22'	227.65'	0.031'	0.04'			0.037'	0.255'	227.685'	o.k.		no	
610		1.81	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.123'	0.638'	227.75'	0.21'	228.50'	0.031'	0.04'			0.037'	0.242'	228.534'	o.k.		no	
611	0.27	1.81	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	18"	0.0028	0.0028	5.57	32.6%	1.77	0.122'	0.578'	228.54'	0.15'	229.63'	0.031'	0.04'	0.07'	0.016'	0.079'	0.226'	229.707'	o.k.		no	
612		1.55	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	15"	0.0028	0.0033	3.70	41.8%	1.23	0.126'	0.550'	229.71'	0.14'	230.41'	0.031'	0.03'	0.07'		0.067'	0.205'	230.477'	o.k.		no	
613		1.55	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	15"	0.0028	0.0023	3.10	49.9%	1.23	0.097'	0.613'	230.64'	0.19'	231.38'	0.024'	0.04'			0.032'	0.220'	231.415'	o.k.		no	
614		1.55	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	15"	0.0028	0.0028	3.44	45.0%	1.23	0.115'	0.581'	231.45'	0.16'	232.21'	0.029'	0.04'			0.034'	0.197'	232.245'	o.k.		no	
615		1.55	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	15"	0.0028	0.0028	3.42	45.1%	1.23	0.114'	0.581'	232.31'	0.19'	233.21'	0.028'	0.04'			0.034'	0.228'	233.245'	o.k.		no	
616		1.55	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	15"	0.0028	0.0028	3.43	45.1%	1.23	0.114'	0.581'	233.31'	0.23'	234.37'	0.029'	0.05'			0.040'	0.268'	234.411'	o.k.		no	
617		1.55	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	234.58'	0.22'	235.66'	0.037'	0.15'			0.092'	0.307'	235.951'	o.k.		no	
618		1.55	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	15"	0.0180	0.0180	8.69	17.8%	1.23	0.421'	0.338'	235.95'	0.35'	241.72'	0.105'	0.05'			0.078'	0.428'	241.796'	o.k.		no	
619		1.55	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	242.02'	0.20'	243.22'	0.037'	0.05'			0.044'	0.246'	243.263'	o.k.		no	
620		1.55	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	243.32'	0.24'	244.74'	0.037'	0.05'			0.044'	0.263'	244.783'	o.k.		no	
621	0.82	1.55	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	244.84'	0.22'	246.14'	0.037'	0.04'	0.09'	0.087'	0.129'	0.348'	246.268'	o.k.	o.k.	no	
622		0.82	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	96.2%	0.35	0.119'	0.523'	246.27'	0.67'	247.19'	0.030'	0.04'	0.08'		0.074'	0.749'	247.267'	o.k.	o.k.	no	
623		0.82	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	96.1%	0.35	0.119'	0.523'	247.29'	1.16'	248.93'	0.030'	0.04'			0.036'	1.198'	248.969'	o.k.	o.k.	no	
624		0.82	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	96.4%	0.35	0.119'	0.523'	249.03'	0.87'	250.25'	0.030'	0.04'			0.036'	0.905'	250.289'	o.k.	o.k.	no	
624		0.82	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	96.2%	0.35	0.119'	0.523'	250.35'	0.86'	251.56'	0.030'	0.04'	0.03'		0.049'	0.908'	251.612'	o.k.	o.k.	no	
625		0.82	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	96.4%	0.35	0.119'	0.523'	251.66'	0.99'	253.05'	0.030'	0.03'			0.032'	1.023'	253.085'	o.k.	o.k.	no	
626		0.82	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	106.5%	0.35	0.096'	0.590'	253.68'	0.32'	254.04'	0.024'	0.10'			0.063'	0.383'	254.103'	o.k.	o.k.	Yes by 0.05 cfs	
627		0.82	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	55.0%	0.35	0.292'	0.350'	257.85'	1.13'	261.75'	0.073'	0.14'			0.109'	1.235'	261.859'	o.k.	o.k.	no	
628		0.82	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	44.0%	0.35	0.412'	0.310'	261.86'	1.37'	268.48'	0.103'	0.03'	0.26'		0.200'	1.566'	268.680'	o.k.	o.k.	no	
629		0.82	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	106.5%	0.35	0.096'	0.590'	268.86'	0.53'	269.46'	0.024'	0.10'	0.06'		0.092'	0.625'	269.552'	o.k.	o.k.	Yes by 0.05 cfs	
630		0.82	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	55.9%	0.35	0.282'	0.350'	269.55'	0.60'	271.32'	0.071'	0.09'			0.083'	0.681'	271.403'	o.k.	o.k.	no	
631		0.82	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	57.4%	0.35	0.270'	0.357'	271.43'	0.27'	272.31'	0.068'	0.03'	0.17'		0.137'	0.411'	272.444'	o.k.	o.k.	no	
632		0.82	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	106.6%	0.35	0.095'	0.590'	272.64'	0.85'	273.59'	0.024'	0.00'			0.012'	0.858'	273.602'	o.k.	o.k.	Yes by 0.05 cfs	
Pump Station Line																																
620		1.55	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.82	1.55	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	244.84'	0.22'	246.14'	0.037'	0.03'	0.09'	0.087'	0.125'	0.344'	246.264'	o.k.	o.k.	no	
8211		0.82	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	106.5%	0.35	0.096'	0.590'	246.31'	1.07'	247.51'	0.024'	0.03'			0.029'	1.096'	247.539'	o.k.	o.k.	Yes by 0.05 cfs	
8212		0.82	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	106.7%	0.35	0.095'	0.590'	247.61'	0.77'	248.47'	0.024'	0.01'	0.06'		0.049'	0.818'	248.519'	o.k.	o.k.	Yes by 0.05 cfs	
8213		0.82	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	145.7%	0.35	0.040'	0.667'	248.65'	1.05'	249.70'	0.010'	0.03'			0.022'	1.076'	249.723'	CRITICAL	o.k.	Yes by 0.26 cfs	0.6
8214		0.82	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	106.6%	0.35	0.095'	0.590'	249.72'	0.92'	250.64'	0.024'	0.06'	0.06'		0.073'	0.991'	250.714'	o.k.	o.k.	Yes by 0.05 cfs	
8215		0.82	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	76.0%	0.35	0.176'	0.427'	250.71'	0.26'	251.16'	0.044'	0.03'			0.039'	0.301'	251.195'	o.k.	o.k.	no	
8216		0.82	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	106.5%	0.35	0.096'	0.590'	251.42'	1.48'	253.08'	0.024'	0.32'	0.06'		0.203'	1.679'	253.283'	o.k.	o.k.	Yes by 0.05 cfs	
8217		0.82	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	25.1%	0.35	0.918'	0.220'	253.28'	0.50'	258.22'	0.230'	0.00'			0.115'	0.615'	258.335'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																
94th Street Trunk																																
152		3.66	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		0.93	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	16.0%	0.55	0.952'	0.225'	158.39'	0.28'	162.13'	0.238'	0.28'	0.14'		0.326'	0.608'	162.453'	o.k.		no	
720		0.93	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	17.6%	0.55	0.789'	0.225'	162.45'	1.13'	181.86'	0.197'	0.12'			0.159'	1.292'	182.014'	o.k.		no	
721		0.93	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	32.2%	0.55	0.347'	0.321'	182.02'	0.75'	187.74'	0.087'	0.04'			0.062'	0.811'	187.803'	o.k.		no	
722		0.93	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	43.2%	0.79	0.108'	0.450'	187.87'	0.21'	188.90'	0.027'	0.03'			0.026'	0.234'	188.926'	o.k.		no	
723		0.93	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	55.4%	0.79	0.074'	0.525'	188.98'	0.28'	189.93'	0.019'	0.03'			0.022'	0.301'	189.947'	o.k.		no	
724		0.93	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	55.7%	0.79	0.073'	0.525'	189.95'	0.18'	190.53'	0.018'	0.03'			0.025'	0.203'	190.550'	o.k.		no	
724A		0.93	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	49.4%	0.79	0.088'	0.490'	190.55'	0.11'	190.94'	0.022'	0.03'			0.026'	0.138'	190.966'	o.k.		no	
725		0.93	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	80.2%	0.55	0.087'	0.563'	191.01'	0.46'	191.90'	0.022'	0.03'			0.026'	0.485'	191.929'	o.k.		no	
726		0.93	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	80.3%	0.55	0.087'	0.563'	191.93'	0.47'	192.80'	0.022'	0.03'			0.025'	0.491'	192.828'	o.k.		no	
727		0.93	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	83.3%	0.55	0.081'	0.575'	192.83'	0.58'	193.87'	0.020'	0.03'			0.027'	0.608'	193.892'	o.k.		no	
728		0.93	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	75.9%	0.55	0.094'	0.533'	193.69'	0.41'	194.69'	0.024'	0.03'			0.027'	0.441'	194.720'	o.k.		no	
729		0.93	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	80.5%	0.55	0.086'	0.563'	194.72'	0.48'	195.65'	0.022'	0.00'			0.011'	0.495'	195.663'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.02	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.02	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	15.8%	1.23	3.259'	0.313'	9.18' *	0.80'	23.33'	0.815'	1.08'	0.68'		1.291'	2.088'	24.623'	o.k.		no	
102		4.02	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	17.1%	1.23	3.091'	0.338'	24.62'	0.72'	36.72'	0.773'	1.34'			1.055'	1.780'	37.773'	o.k.		no	
103		4.02	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	14.0%	1.23	3.824'	0.288'	37.77'	0.66'	52.03'	0.956'	0.10'	1.09'		1.071'	1.734'	53.098'	o.k.		no	
104		4.02	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	88.0%	1.23	0.275'	0.906'	53.10'	0.54'	53.63'	0.069'	0.10'	0.04'		0.103'	0.639'	53.737'	o.k.		no	
105		4.02	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	88.3%	1.23	0.273'	0.906'	53.74'	0.53'	54.60'	0.068'	0.21'	0.02'		0.151'	0.684'	54.747'	o.k.		no	
106		4.02	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	53.0%	1.23	0.605'	0.638'	54.75'	0.58'	56.44'	0.151'	0.40'	0.08'		0.316'	0.895'	56.753'	o.k.		no	
107		4.02	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	34.5%	1.23	1.147'	0.500'	56.75'	0.52'	60.06'	0.287'	0.10'	0.15'		0.266'	0.782'	60.326'	o.k.		no	
108		4.02	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	87.5%	1.23	0.275'	0.894'	60.65'	0.48'	61.44'	0.069'	0.10'	0.04'		0.103'	0.581'	61.547'	o.k.		no	
109	0.08	4.02	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	87.5%	1.23	0.275'	0.894'	61.64'	0.55'	62.55'	0.069'	0.16'	0.16'	0.005'	0.197'	0.748'	62.751'	o.k.		no	
110		3.94	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	61.0%	1.23	0.471'	0.694'	62.75'	0.88'	65.15'	0.118'	0.16'	0.13'		0.208'	1.088'	65.361'	o.k.		no	
111		3.94	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	61.2%	1.23	0.467'	0.694'	65.36'	0.95'	68.13'	0.117'	0.13'			0.124'	1.072'	68.258'	o.k.		no	
112		3.94	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	70.7%	1.23	0.374'	0.769'	68.96'	1.13'	71.63'	0.094'	0.16'	0.06'		0.156'	1.285'	71.785'	o.k.		no	
113		3.94	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	62.6%	1.23	0.452'	0.713'	71.78'	0.82'	74.10'	0.113'	0.16'	0.10'		0.186'	1.006'	74.289'	o.k.		no	
114		3.94	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	62.5%	1.23	0.452'	0.713'	74.31'	0.84'	76.71'	0.113'	0.09'			0.099'	0.942'	76.812'	o.k.		no	
115	0.19	3.94	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	92.1%	1.23	0.243'	0.938'	79.59'	0.52'	80.38'	0.061'	0.10'		0.010'	0.087'	0.608'	80.464'	o.k.		no	
116		3.75	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	77.5%	1.23	0.292'	0.813'	80.46'	0.69'	81.68'	0.073'	0.03'			0.054'	0.740'	81.736'	o.k.		no	
117	0.04	3.75	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	121.1%	1.23	0.099'	1.250'	82.32'	0.91'	83.23'	0.025'	0.04'	0.01'	0.001'	0.037'	0.943'	83.263'	CRITICAL		Yes by 0.55 cfs	0.3
118		3.71	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	114.6%	1.23	0.108'	1.250'	83.26'	0.29'	83.55'	0.027'	0.16'			0.093'	0.380'	83.643'	CRITICAL		Yes by 0.47 cfs	0.2
119		3.71	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	57.4%	1.23	0.453'	0.669'	83.64'	0.98'	86.14'	0.113'	0.11'			0.113'	1.096'	86.251'	o.k.		no	
120	0.08	3.71	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	72.7%	1.23	0.319'	0.781'	86.45'	0.28'	87.09'	0.080'	0.11'		0.006'	0.097'	0.380'	87.189'	o.k.		no	
121		3.63	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	71.4%	1.23	0.312'	0.769'	87.28'	0.65'	88.79'	0.078'	0.11'			0.093'	0.744'	88.882'	o.k.		no	
122	0.04	3.63	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	72.1%	1.23	0.311'	0.781'	89.68'	0.69'	91.26'	0.078'	0.12'	0.04'	0.003'	0.121'	0.808'	91.382'	o.k.		no	
123		3.59	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	65.9%	1.23	0.344'	0.725'	91.41'	0.49'	92.70'	0.086'	0.12'			0.104'	0.598'	92.799'	o.k.		no	
124		3.59	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	66.4%	1.23	0.346'	0.738'	92.91'	0.42'	94.00'	0.087'	0.12'			0.103'	0.519'	94.101'	o.k.		no	
125		3.59	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	66.8%	1.23	0.342'	0.738'	94.20'	0.30'	94.98'	0.085'	0.12'	0.05'		0.129'	0.431'	95.107'	o.k.		no	
126		3.59	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	66.3%	1.23	0.347'	0.738'	95.18'	1.02'	97.86'	0.087'	0.16'	0.03'		0.136'	1.157'	97.994'	o.k.		no	
127		3.59	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	55.5%	1.23	0.450'	0.656'	97.99'	0.76'	100.56'	0.113'	0.17'	0.06'		0.172'	0.932'	100.728'	o.k.		no	
128		3.59	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	52.4%	1.23	0.494'	0.638'	100.74'	0.78'	103.65'	0.123'	0.04'	0.15'		0.156'	0.938'	103.804'	o.k.		no	
129		3.59	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	114.0%	1.23	0.102'	1.250'	105.25'	0.61'	105.86'	0.026'	0.11'	0.03'		0.081'	0.689'	105.939'	CRITICAL		Yes by 0.44 cfs	0.1
130		3.59	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	71.5%	1.23	0.304'	0.769'	105.94'	0.82'	107.34'	0.076'	0.10'			0.090'	0.912'	107.428'	o.k.		no	
131		3.59	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	73.2%	1.23	0.295'	0.781'	107.55'	0.37'	108.38'	0.074'	0.08'			0.075'	0.447'	108.456'	o.k.		no	
132		3.59	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	87.8%	1.23	0.219'	0.894'	113.64'	0.75'	114.87'	0.055'	0.08'			0.066'	0.815'	114.940'	o.k.		no	
133		3.59	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	87.2%	1.23	0.222'	0.894'	115.07'	0.41'	115.75'	0.055'	0.08'			0.066'	0.475'	115.820'	o.k.		no	
134		3.59	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	87.2%	1.23	0.222'	0.894'	115.95'	0.41'	116.63'	0.055'	0.08'			0.066'	0.475'	116.700'	o.k.		no	
135		3.59	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	87.2%	1.23	0.222'	0.894'	116.83'	0.41'	117.51'	0.055'	0.08'			0.065'	0.474'	117.579'	o.k.		no	
136		3.59	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	89.0%	1.23	0.215'	0.906'	117.73'	0.71'	118.87'	0.054'	0.04'			0.045'	0.755'	118.911'	o.k.		no	
137		3.59	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	112.9%	1.23	0.104'	1.250'	120.44'	0.99'	121.43'	0.026'	0.03'			0.030'	1.020'	121.460'	CRITICAL		Yes by 0.41 cfs	0.2
138	0.52	3.59	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	117.8%	1.23	0.096'	1.250'	121.46'	0.68'	122.14'	0.024'	0.04'	0.01'	0.012'	0.045'	0.722'	122.182'	CRITICAL		Yes by 0.54 cfs	0.2
139		3.08	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	101.1%	1.23	0.124'	1.025'	122.18'	0.26'	122.44'	0.031'	0.14'	0.01'		0.094'	0.352'	122.534'	CRITICAL		Yes by 0.03 cfs	0.2
140		3.08	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	48.2%	1.23	0.412'	0.613'	122.53'	0.29'	123.07'	0.103'	0.12'	0.26'		0.243'	0.535'	123.315'	o.k.		no	
141		3.08	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	54.9%	1.23	0.338'	0.656'	123.32'	0.43'	124.82'	0.084'	0.11'	0.05'		0.123'	0.555'	124.939'	o.k.		no	
142		3.08	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	56.9%	1.23	0.317'	0.669'	124.94'	0.23'	125.69'	0.079'	0.12'	0.08'		0.137'	0.370'	125.826'	o.k.		no	
143		3.08	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	96.3%	0.79	0.334'	0.785'	127.01'	1.12'	128.58'	0.084'	0.22'	0.08'		0.190'	1.308'	128.765'	o.k.		no	
1431		3.08	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	65.0%	0.79	0.634'	0.580'	128.77'	0.29'	129.36'	0.158'	0.05'	0.21'		0.209'	0.504'	129.569'	o.k.		no	
1432		3.08	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	127.9%	0.79	0.146'	1.000'	129.88'	0.64'	130.52'	0.036'	0.12'			0.078'	0.713'	130.593'	CRITICAL		Yes by 0.67 cfs	0.2
144		3.08	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	36.00'	15"	0.0076	0.0076	5.65	54.5%	1.23	0.342'	0.656'	130.59'	0.08'	130.67'	0.086'	0.12'	0.21'		0.208'	0.286'	130.879'	CRITICAL		no	0.4
145		3.08	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	12"	0.0080	0.0080	3.20	96.3%	0.79	0.334'	0.785'	130.88'	1.32'	132.20'	0.084'	0.12'	0.07'		0.139'	1.456'	132.336'	CRITICAL		no	0.3
146		3.08	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	12"	0.0080	0.0086	3.31	93.1%	0.79	0.354'	0.750'	132.34'	1.16'	133.50'	0.089'	0.10'	0.23'		0.207'	1.371'	133.707'	o.k.		no	
147		3.08	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	12"	0.0080	0.0068	2.94	104.6%	0.79	0.281'	0.865'	133.71'	1.35'	135.27'	0.070'	0.11'	0.15'		0.165'	1.518'	135.430'	o.k.		Yes by 0.14 cfs	
148		3.08	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	12"	0.0080	0.0072	3.04	101.3%	0.79	0.302'	0.820'	135.43'	0.60'	136.03'	0.076'	0.03'	0.08'		0.094'	0.689'	136.120'	o.k.		Yes by 0.04 cfs	
149		3.08	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	12"	0.0080	0.0029	1.91	160.9%	0.79	0.092'	1.000'	136.16'	0.95'	137.11'	0.023'	0.12'	0.01'		0.075'	1.028'	137.188'	CRITICAL		Yes by 1.16 cfs	0.6
150		3.08	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	96.3%	0.79	0.334'	0.785'	137.19'	1.32'	138.51'	0.084'	0.15'	0.05'		0.142'	1.460'	138.648'	CRITICAL		no	0.1
151		3.08	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	84.2%	0.79	0.422'	0.700'	138.65'	0.62'	139.38'	0.106'	1.20'	0.16'		0.733'	1.352'	140.113'	o.k.		no	
152	0.61	3.08	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1973	15.46	19.9%	0.79	3.429'	0.285'	140.11'	1.17'	156.09'	0.857'	0.06'	2.19'	0.639'	1.878'	3.052'	157.963'	o.k.		no	
201		2.46	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	60.9%	1.23	0.185'	0.694'	157.96'	0.11'	158.08'	0.046'	0.14'	0.06'		0.124'	0.239'	158.201'	CRITICAL		no	0.5
202		2.46	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	35.7%	1.23	0.403'	0.500'	158.20'	0.22'	158.42'	0.101'	0.26'	0.05'		0.205'	0.422'	158.623'	o.k.		no	
203		2.46	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	23.7%	1.23	0.735'	0.400'	158.62'	0.15'	160.19'	0.184'	0.07'			0.125'	0.277'	160.315'	o.k.		no	
204		2.46	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	60.1%	1.23	0.189'	0.694'	160.58'	0.42'	161.87'	0.047'	0.07'			0.057'	0.481'	161.931'	o.k.		no	
205		2.46	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	60.1%	1.23	0.190'	0.694'	161.97'	0.41'	163.23'	0.047'	0.07'			0.057'	0.471'	163.290'	o.k.		no	
206		2.46	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	60.2%	1.23	0.189'	0.694'	163.33'	0.50'	164.86'	0.047'	0.07'	0.12'		0.117'	0.622'	164.981'	o.k.		no	
207	0.21	2.46	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	60.1%	1.23	0.189'	0.694'	164.98'	0.67'	167.01'	0.047'	0.06'	0.10'	0.014'	0.111'	0.786'	167.125'	o.k.		no	
208		2.25	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	55.1%	1.23	0.180'	0.656'	167.12'	0.37'	168.37'	0.045'	0.03'			0.036'	0.411'	168.402'	o.k.		no	
209		2.25	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	12"	0.0025	0.0024	1.75	128.5%	0.79	0.077'	1.000'	168.81'	1.45'	170.26'	0.019'	0.03'			0.023'	1.471'	170.281'	CRITICAL		Yes by 0.50 cfs	0.6
210		2.25	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	12"	0.0025	0.0024	1.76	128.2%	0.79	0.078'	1.000'	170.28'	1.31'	171.59'	0.019'	0.03'			0.023'	1.332'	171.613'	CRITICAL		Yes by 0.50 cfs	1.0
211		2.25	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	12"	0.0025	0.0024	1.75	128.8%	0.79	0.077'	1.000'	171.61'	1.19'	172.80'	0.019'	0.03'	0.01'		0.031'	1.220'	172.833'	CRITICAL		Yes by 0.50 cfs	1.4
212		2.25	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	12"	0.0025	0.0024	1.76	128.2%	0.79	0.078'	1.000'	172.83'	0.80'	173.63'	0.019'	0.06'			0.038'	0.839'	173.671'	CRITICAL		Yes by 0.50 cfs	1.6
301		2.25	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	102.3%	0.79	0.159'	0.840'	173.67'	0.60'	174.27'	0.040'	0.05'			0.045'	0.648'	174.319'	CRITICAL		Yes by 0.05 cfs	1.0
302		2.25	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	106.6%	0.79	0.144'	0.885'	174.32'	0.96'	175.28'	0.036'	0.05'			0.043'	1.007'	175.326'	CRITICAL		Yes by 0.14 cfs	0.7
303	0.26	2.25	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	106.6%	0.79	0.144'	0.885'	175.33'	0.96'	176.29'	0.036'	0.08'		0.015'	0.067'	1.030'	176.357'	CRITICAL		Yes by 0.14 cfs	0.4
304		2.00	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	70.4%	0.79	0.237'	0.615'	176.36'	0.81'	177.61'	0.059'	0.05'			0.055'	0.863'	177.660'	o.k.		no	
305		2.00	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	94.6%	0.79	0.145'	0.765'	177.96'	0.72'	179.00'	0.036'	0.05'			0.043'	0.762'	179.038'	o.k.		no	
306		2.00	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	94.7%	0.79	0.144'	0.765'	179.20'	0.57'	180.02'	0.036'	0.05'	0.09'		0.090'	0.659'	180.105'	o.k.		no	
307		2.00	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	93.5%	0.79	0.148'	0.750'	180.20'	0.13'	180.39'	0.037'	0.04'			0.041'	0.169'	180.431'	o.k.		no	
308		2.00	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	102.1%	0.79	0.126'	0.840'	180.68'	1.06'	182.00'	0.031'	0.04'			0.037'	1.094'	182.037'	o.k.		Yes by 0.04 cfs	
309		2.00	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	102.6%	0.79	0.124'	0.840'	182.20'	0.52'	182.84'	0.031'	0.04'			0.037'	0.555'	182.877'	o.k.		Yes by 0.05 cfs	
401		2.00	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	102.2%	0.79	0.125'	0.840'	183.04'	0.96'	184.24'	0.031'	0.15'			0.091'	1.053'	184.331'	o.k.		Yes by 0.04 cfs	
402		2.00	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	76.7%	0.55	0.429'	0.542'	187.55'	2.44'	192.59'	0.107'	0.09'			0.097'	2.532'	192.688'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
403		2.00	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	104.4%	0.55	0.247'	0.721'	192.87'	2.24'	195.53'	0.062'	0.13'			0.094'	2.332'	195.625'	o.k.		Yes by 0.08 cfs	
404		2.00	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	85.1%	0.55	0.361'	0.583'	195.62'	0.05'	195.67'	0.090'	0.03'			0.062'	0.108'	195.735'	o.k.		no	
501	0.48	2.00	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	8"	0.0076	0.0050	0.86	233.4%	0.35	0.094'	0.667'	200.10'	9.47'	209.57'	0.023'	0.03'		0.022'	0.038'	9.511'	209.607'	CRITICAL		Yes by 1.14 cfs	7.7
502		1.52	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	8"	0.0050	0.0049	0.85	179.2%	0.35	0.091'	0.667'	209.61'	5.62'	215.22'	0.023'	0.13'			0.075'	5.691'	215.298'	CRITICAL		Yes by 0.67 cfs	11.6
503		1.52	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	8"	0.0150	0.0150	1.48	102.2%	0.35	0.365'	0.560'	215.30'	3.43'	218.73'	0.091'	0.03'			0.059'	3.490'	218.788'	CRITICAL		Yes by 0.03 cfs	4.5
504		1.52	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	8"	0.0040	0.0040	0.77	198.1%	0.35	0.075'	0.667'	218.79'	6.24'	225.03'	0.019'	0.03'			0.022'	6.262'	225.050'	CRITICAL		Yes by 0.75 cfs	8.8
505		1.52	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	8"	0.0040	0.0040	0.77	198.1%	0.35	0.075'	0.667'	225.05'	6.24'	231.29'	0.019'	0.04'			0.030'	6.269'	231.319'	CRITICAL		Yes by 0.75 cfs	13.4
601		1.52	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	8"	0.0050	0.0063	0.96	157.4%	0.35	0.118'	0.667'	231.32'	4.98'	236.29'	0.030'	0.02'	0.08'		0.065'	5.041'	236.360'	CRITICAL		Yes by 0.55 cfs	16.4
602		1.52	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	130.5%	0.55	0.071'	0.833'	236.36'	1.25'	237.61'	0.018'	0.02'	0.05'		0.044'	1.297'	237.657'	CRITICAL		Yes by 0.35 cfs	16.5
603		1.52	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	130.4%	0.55	0.071'	0.833'	237.66'	1.47'	239.13'	0.018'	0.02'			0.021'	1.493'	239.150'	CRITICAL		Yes by 0.35 cfs	17.1
604		1.52	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	130.8%	0.55	0.070'	0.833'	239.15'	1.75'	240.90'	0.018'	0.02'			0.021'	1.773'	240.923'	CRITICAL		Yes by 0.36 cfs	17.7
605		1.52	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	130.2%	0.55	0.071'	0.833'	240.92'	1.01'	241.93'	0.018'	0.02'			0.021'	1.033'	241.956'	CRITICAL		Yes by 0.35 cfs	18.1
606		1.52	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	130.6%	0.55	0.071'	0.833'	241.96'	1.54'	243.50'	0.018'	0.02'			0.021'	1.564'	243.520'	CRITICAL		Yes by 0.36 cfs	18.6
607		1.52	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	130.5%	0.55	0.071'	0.833'	243.52'	1.37'	244.89'	0.018'	0.02'	0.05'		0.044'	1.416'	244.936'	CRITICAL		Yes by 0.35 cfs	19.1
608		1.52	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	130.7%	0.55	0.070'	0.833'	244.94'	1.79'	246.72'	0.018'	0.02'	0.05'		0.044'	1.829'	246.765'	CRITICAL		Yes by 0.36 cfs	19.8
609		1.52	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	130.4%	0.55	0.071'	0.833'	246.77'	1.35'	248.12'	0.018'	0.02'			0.021'	1.374'	248.140'	CRITICAL		Yes by 0.35 cfs	20.3
610		1.52	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	130.6%	0.55	0.070'	0.833'	248.14'	1.27'	249.41'	0.018'	0.02'			0.021'	1.294'	249.434'	CRITICAL		Yes by 0.36 cfs	20.7
611	0.23	1.52	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	130.7%	0.55	0.070'	0.833'	249.43'	1.85'	251.29'	0.018'	0.04'	0.04'	0.010'	0.052'	1.903'	251.337'	CRITICAL		Yes by 0.36 cfs	21.4
612		1.29	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	103.1%	0.55	0.107'	0.700'	251.34'	0.58'	251.92'	0.027'	0.02'	0.06'		0.053'	0.632'	251.969'	CRITICAL		Yes by 0.04 cfs	21.2
613		1.29	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	123.1%	0.55	0.058'	0.833'	251.97'	1.12'	253.08'	0.014'	0.02'			0.020'	1.135'	253.104'	CRITICAL		Yes by 0.24 cfs	21.5
614		1.29	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	110.9%	0.55	0.071'	0.833'	253.10'	0.93'	254.03'	0.018'	0.02'			0.021'	0.951'	254.054'	CRITICAL		Yes by 0.13 cfs	21.6
615		1.29	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	111.3%	0.55	0.070'	0.833'	254.05'	1.11'	255.16'	0.018'	0.02'			0.021'	1.130'	255.184'	CRITICAL		Yes by 0.13 cfs	21.7
616		1.29	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	111.1%	0.55	0.071'	0.833'	255.18'	1.30'	256.49'	0.018'	0.03'			0.022'	1.323'	256.507'	CRITICAL		Yes by 0.13 cfs	21.9
617		1.29	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	0.075'	0.667'	256.51'	3.62'	260.13'	0.019'	0.14'			0.081'	3.700'	260.207'	CRITICAL		Yes by 0.53 cfs	24.1
618		1.29	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	79.5%	0.35	0.411'	0.443'	260.21'	3.05'	263.25'	0.103'	0.03'			0.064'	3.110'	263.317'	CRITICAL		no	21.2
619		1.29	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	0.075'	0.667'	263.32'	3.39'	266.71'	0.019'	0.03'			0.022'	3.415'	266.732'	CRITICAL		Yes by 0.53 cfs	23.3
620		1.29	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	0.075'	0.667'	266.73'	4.01'	270.75'	0.019'	0.03'			0.022'	4.037'	270.769'	CRITICAL		Yes by 0.53 cfs	25.9
621	0.68	1.29	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	0.075'	0.667'	270.77'	3.68'	274.44'	0.019'	0.04'	0.05'	0.044'	0.075'	3.750'	274.519'	CRITICAL	CRITICAL	Yes by 0.53 cfs	28.2
622		0.68	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	80.2%	0.35	0.113'	0.450'	274.52'	0.49'	275.01'	0.028'	0.04'	0.07'		0.070'	0.560'	275.079'	CRITICAL	CRITICAL	no	27.7
623		0.68	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	80.1%	0.35	0.113'	0.450'	275.08'	0.84'	275.92'	0.028'	0.04'			0.034'	0.878'	275.957'	CRITICAL	CRITICAL	no	26.8
624		0.68	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	80.3%	0.35	0.112'	0.450'	275.96'	0.63'	276.59'	0.028'	0.04'			0.034'	0.665'	276.622'	CRITICAL	CRITICAL	no	26.2
624		0.68	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	80.2%	0.35	0.113'	0.450'	276.62'	0.62'	277.25'	0.028'	0.04'	0.03'		0.046'	0.671'	277.292'	CRITICAL	CRITICAL	no	25.5
625		0.68	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	80.4%	0.35	0.112'	0.450'	277.29'	0.72'	278.01'	0.028'	0.03'			0.031'	0.751'	278.043'	CRITICAL	CRITICAL	no	24.8
626		0.68	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	88.7%	0.35	0.096'	0.483'	278.04'	0.22'	278.27'	0.024'	0.09'			0.058'	0.280'	278.324'	CRITICAL	CRITICAL	no	24.1
627		0.68	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	45.8%	0.35	0.264'	0.310'	278.32'	0.87'	279.19'	0.066'	0.13'			0.098'	0.963'	279.287'	CRITICAL	CRITICAL	no	17.1
628		0.68	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	36.7%	0.35	0.371'	0.277'	279.29'	1.06'	280.34'	0.093'	0.03'	0.24'		0.182'	1.239'	280.526'	CRITICAL	CRITICAL	no	11.5
629		0.68	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	88.7%	0.35	0.096'	0.483'	280.53'	0.37'	280.90'	0.024'	0.09'	0.06'		0.088'	0.459'	280.985'	CRITICAL	CRITICAL	no	11.4
630		0.68	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	46.6%	0.35	0.260'	0.317'	280.98'	0.45'	281.43'	0.065'	0.09'			0.076'	0.526'	281.511'	CRITICAL	CRITICAL	no	9.8
631		0.68	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	47.9%	0.35	0.247'	0.317'	281.51'	0.21'	281.72'	0.062'	0.03'	0.16'		0.127'	0.335'	281.846'	CRITICAL	CRITICAL	no	9.1
632		0.68	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	88.8%	0.35	0.095'	0.483'	281.85'	0.59'	282.43'	0.024'	0.00'			0.012'	0.600'	282.446'	CRITICAL	o.k.	no	8.8
Pump Station Line																																	
620		1.29	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'		8"																					
621	0.68	1.29	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	168.6%	0.35	0.075'	0.667'	244.99'	3.68'	248.66'	0.019'	0.03'	0.05'	0.044'	0.072'	3.747'	248.734'	CRITICAL	o.k.	Yes by 0.53 cfs	2.4
8211		0.68	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	88.7%	0.35	0.096'	0.483'	248.73'	0.74'	249.47'	0.024'	0.03'			0.029'	0.770'	249.504'	CRITICAL	o.k.	no	1.9
8212		0.68	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	88.9%	0.35	0.095'	0.483'	249.50'	0.53'	250.04'	0.024'	0.01'	0.06'		0.049'	0.583'	250.086'	CRITICAL	o.k.	no	1.5
8213		0.68	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	121.4%	0.35	0.040'	0.667'	250.09'	0.73'	250.82'	0.010'	0.03'			0.022'	0.754'	250.841'	CRITICAL	o.k.	Yes by 0.12 cfs	1.7
8214		0.68	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	88.8%	0.35	0.095'	0.483'	250.84'	0.64'	251.48'	0.024'	0.06'	0.06'		0.071'	0.708'	251.549'	CRITICAL	o.k.	no	0.8
8215		0.68	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	63.3%	0.35	0.162'	0.380'	251.55'	0.20'	251.75'	0.041'	0.03'			0.037'	0.235'	251.784'	CRITICAL	o.k.	no	0.4
8216		0.68	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	88.7%	0.35	0.096'	0.483'	251.78'	1.03'	252.97'	0.024'	0.29'	0.06'		0.186'	1.211'	253.160'	o.k.	o.k.	no	
8217		0.68	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	20.9%	0.35	0.821'	0.200'	253.16'	0.38'	258.20'	0.205'	0.00'			0.103'	0.487'	258.303'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																	
94th Street Trunk																																	
152		3.08	MH 52		00+00.00	00+00.00	156.06	155.80	22																								
719		0.78	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	13.4%	0.55	0.791'	0.192'	157.96'	0.23'	162.09'	0.198'	0.25'	0.12'		0.283'	0.514'	162.375'	o.k.		no	
720		0.78	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	14.7%	0.55	0.716'	0.208'	162.38'	0.85'	181.84'	0.179'	0.11'			0.144'	0.994'	181.982'	o.k.		no	
721		0.78	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	26.8%	0.55	0.309'	0.288'	181.99'	0.58'	187.71'	0.077'	0.03'			0.055'	0.635'	187.763'	o.k.		no	
722		0.78	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	36.0%	0.79	0.096'	0.400'	187.82'	0.16'	188.85'	0.024'	0.02'			0.024'	0.186'	188.874'	o.k.		no	
723		0.78	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	46.2%	0.79	0.068'	0.475'	188.93'	0.21'	189.88'	0.017'	0.02'			0.020'	0.231'	189.895'	o.k.		no	
724		0.78	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	46.5%	0.79	0.068'	0.475'	189.90'	0.13'	190.48'	0.017'	0.03'			0.022'	0.157'	190.497'	o.k.		no	
724A		0.78	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	41.2%	0.79	0.080'	0.440'	190.50'	0.08'	190.89'	0.020'	0.03'			0.024'	0.109'	190.914'	o.k.		no	
725		0.78	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	66.9%	0.55	0.081'	0.492'	190.94'	0.34'	191.83'	0.020'	0.03'			0.024'	0.369'	191.856'	o.k.		no	
726		0.78	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	67.0%	0.55	0.081'	0.492'	191.86'	0.35'	192.73'	0.020'	0.03'			0.023'	0.373'	192.755'	o.k.		no	
727		0.78	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	69.5%	0.55	0.076'	0.504'	192.75'	0.43'	193.79'	0.019'	0.03'			0.025'	0.458'	193.819'	o.k.		no	
728		0.78	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	63.3%	0.55	0.087'	0.475'	193.82'	0.31'	194.64'	0.022'	0.03'			0.025'	0.338'	194.660'	o.k.		no	
729		0.78	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	67.2%	0.55	0.080'	0.492'	194.66'	0.36'	195.58'	0.020'	0.00'			0.010'	0.373'	195.592'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.49	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																								
101		4.49	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	17.7%	1.23	3.594'	0.338'	9.59' *	0.92'	23.36'	0.898'	1.14'	0.75'		1.397'	2.317'	24.755'	o.k.		no	
102		4.49	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	19.0%	1.23	3.261'	0.356'	24.75'	0.85'	36.74'	0.815'	1.46'			1.138'	1.985'	37.874'	o.k.		no	
103		4.49	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	15.6%	1.23	4.174'	0.313'	37.87'	0.75'	52.05'	1.043'	0.10'	1.19'		1.165'	1.917'	53.218'	o.k.		no	
104		4.49	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	98.2%	1.23	0.279'	1.000'	53.22'	0.65'	53.87'	0.070'	0.10'	0.04'		0.105'	0.754'	53.971'	o.k.		no	
105		4.49	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	98.5%	1.23	0.278'	1.000'	53.97'	0.65'	54.69'	0.069'	0.22'	0.02'		0.157'	0.802'	54.847'	o.k.		no	
106		4.49	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	59.2%	1.23	0.635'	0.681'	54.85'	0.69'	56.48'	0.159'	0.43'	0.08'		0.335'	1.020'	56.816'	o.k.		no	
107		4.49	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	38.5%	1.23	1.224'	0.531'	56.82'	0.60'	60.09'	0.306'	0.10'	0.16'		0.282'	0.887'	60.373'	o.k.		no	
108		4.49	MH 8		10+56.00	10+56.00	50.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	97.6%	1.23	0.283'	0.981'	60.74'	0.58'	61.53'	0.071'	0.10'	0.04'		0.106'	0.685'	61.637'	o.k.		no	
109	0.09	4.49	MH 9		12+37.00	12+37.00	51.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	97.7%	1.23	0.283'	0.981'	61.73'	0.67'	62.64'	0.071'	0.17'	0.16'	0.005'	0.205'	0.873'	62.847'	o.k.		no	
110		4.40	MH 10		14+98.00	14+98.00	54.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	68.1%	1.23	0.498'	0.756'	62.85'	1.03'	65.22'	0.124'	0.17'	0.14'		0.220'	1.252'	65.436'	o.k.		no	
111		4.40	MH 11		17+79.00	17+79.00	58.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	68.3%	1.23	0.495'	0.756'	65.44'	1.11'	68.20'	0.124'	0.14'			0.130'	1.241'	68.327'	o.k.		no	
112		4.40	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	78.9%	1.23	0.392'	0.831'	69.02'	1.35'	71.69'	0.098'	0.17'	0.06'		0.163'	1.514'	71.854'	o.k.		no	
113		4.40	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	69.8%	1.23	0.473'	0.756'	71.85'	0.97'	74.15'	0.118'	0.17'	0.11'		0.195'	1.168'	74.342'	o.k.		no	
114		4.40	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	69.8%	1.23	0.474'	0.756'	74.36'	1.00'	76.76'	0.119'	0.09'			0.102'	1.103'	76.858'	o.k.		no	
115	0.22	4.40	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	102.8%	1.23	0.245'	1.050'	79.70'	0.64'	80.49'	0.061'	0.11'		0.010'	0.089'	0.732'	80.579'	o.k.		Yes by 0.12 cfs	
116		4.19	MH 16		30+68.00	30+68.00	91.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	86.5%	1.23	0.306'	0.894'	80.58'	0.82'	81.76'	0.076'	0.03'			0.055'	0.877'	81.819'	o.k.		no	
117	0.04	4.19	MH 17		33+39.50	33+39.50	91.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	135.2%	1.23	0.099'	1.250'	82.32'	1.13'	83.45'	0.025'	0.04'	0.01'	0.001'	0.037'	1.166'	83.486'	CRITICAL		Yes by 1.09 cfs	0.5
118		4.14	MH 18		34+27.50	34+27.50	92.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	127.9%	1.23	0.108'	1.250'	83.49'	0.36'	83.84'	0.027'	0.17'			0.098'	0.457'	83.942'	CRITICAL		Yes by 0.90 cfs	0.5
119		4.14	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	64.0%	1.23	0.484'	0.725'	83.94'	1.14'	86.20'	0.121'	0.12'			0.119'	1.263'	86.314'	o.k.		no	
120	0.09	4.14	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	81.1%	1.23	0.331'	0.844'	86.51'	0.34'	87.15'	0.083'	0.11'		0.006'	0.101'	0.440'	87.255'	o.k.		no	
121		4.06	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	79.7%	1.23	0.326'	0.831'	87.34'	0.78'	88.85'	0.082'	0.11'			0.097'	0.876'	88.948'	o.k.		no	
122	0.04	4.06	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	80.5%	1.23	0.323'	0.844'	89.74'	0.82'	91.32'	0.081'	0.13'	0.04'	0.003'	0.127'	0.949'	91.450'	o.k.		no	
123		4.01	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	73.6%	1.23	0.364'	0.781'	91.46'	0.58'	92.75'	0.091'	0.13'			0.109'	0.693'	92.860'	o.k.		no	
124		4.01	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	74.1%	1.23	0.362'	0.800'	92.97'	0.49'	94.06'	0.091'	0.13'			0.108'	0.603'	94.168'	o.k.		no	
125		4.01	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	74.5%	1.23	0.358'	0.800'	94.26'	0.36'	95.04'	0.089'	0.13'	0.05'		0.135'	0.493'	95.175'	o.k.		no	
126		4.01	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	74.0%	1.23	0.360'	0.781'	95.22'	1.23'	97.90'	0.090'	0.17'	0.03'		0.142'	1.370'	98.043'	o.k.		no	
127		4.01	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	61.9%	1.23	0.472'	0.694'	98.04'	0.90'	100.59'	0.118'	0.18'	0.06'		0.180'	1.081'	100.774'	o.k.		no	
128		4.01	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	58.5%	1.23	0.519'	0.681'	100.78'	0.93'	103.69'	0.130'	0.04'	0.16'		0.163'	1.088'	103.854'	o.k.		no	
129		4.01	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	127.3%	1.23	0.102'	1.250'	105.25'	0.76'	106.01'	0.026'	0.11'	0.03'		0.083'	0.842'	106.092'	CRITICAL		Yes by 0.86 cfs	0.3
130		4.01	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	79.8%	1.23	0.318'	0.831'	106.09'	0.98'	107.40'	0.080'	0.11'			0.093'	1.077'	107.495'	o.k.		no	
131		4.01	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	81.7%	1.23	0.306'	0.844'	107.61'	0.45'	108.44'	0.077'	0.08'			0.078'	0.523'	108.521'	o.k.		no	
132		4.01	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	98.0%	1.23	0.224'	1.000'	113.75'	0.90'	114.98'	0.056'	0.08'			0.068'	0.971'	115.048'	o.k.		no	
133		4.01	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	97.4%	1.23	0.228'	0.981'	115.16'	0.50'	115.84'	0.057'	0.08'			0.068'	0.564'	115.910'	o.k.		no	
134		4.01	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	97.4%	1.23	0.228'	0.981'	116.04'	0.50'	116.72'	0.057'	0.08'			0.068'	0.564'	116.790'	o.k.		no	
135		4.01	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	97.4%	1.23	0.228'	0.981'	116.92'	0.50'	117.60'	0.057'	0.08'			0.067'	0.562'	117.668'	o.k.		no	
136		4.01	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	99.4%	1.23	0.218'	1.000'	117.82'	0.86'	118.96'	0.055'	0.04'			0.046'	0.906'	119.006'	o.k.		no	
137		4.01	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	126.0%	1.23	0.104'	1.250'	120.44'	1.23'	121.67'	0.026'	0.03'			0.030'	1.264'	121.704'	CRITICAL		Yes by 0.83 cfs	0.5
138	0.57	4.01	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	131.5%	1.23	0.096'	1.250'	121.70'	0.84'	122.55'	0.024'	0.03'	0.01'	0.012'	0.040'	0.884'	122.588'	CRITICAL		Yes by 0.96 cfs	0.6
139		3.44	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	113.0%	1.23	0.095'	1.250'	122.59'	0.42'	123.01'	0.024'	0.15'	0.01'		0.092'	0.511'	123.100'	CRITICAL		Yes by 0.40 cfs	0.7
140		3.44	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	53.8%	1.23	0.429'	0.638'	123.10'	0.35'	123.45'	0.107'	0.12'	0.27'		0.253'	0.604'	123.703'	o.k.		no	
141		3.44	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	61.3%	1.23	0.354'	0.694'	123.70'	0.51'	124.85'	0.089'	0.12'	0.05'		0.129'	0.642'	124.983'	o.k.		no	
142		3.44	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	63.6%	1.23	0.332'	0.713'	124.98'	0.28'	125.73'	0.083'	0.11'	0.08'		0.140'	0.416'	125.872'	o.k.		no	
143		3.44	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	107.5%	0.79	0.329'	0.885'	127.11'	1.43'	128.68'	0.082'	0.23'	0.07'		0.195'	1.621'	128.870'	o.k.		Yes by 0.24 cfs	
1431		3.44	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	72.6%	0.79	0.670'	0.625'	128.87'	0.35'	129.41'	0.168'	0.05'	0.22'		0.220'	0.568'	129.625'	o.k.		no	
1432		3.44	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	142.9%	0.79	0.146'	1.000'	129.88'	0.79'	130.67'	0.036'	0.13'			0.081'	0.874'	130.754'	CRITICAL		Yes by 1.03 cfs	0.4
144		3.44	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	36.00'	15"	0.0076	0.0076	5.65	60.9%	1.23	0.359'	0.694'	130.75'	0.09'	130.85'	0.090'	0.13'	0.22'		0.222'	0.315'	131.069'	CRITICAL		no	0.6
145		3.44	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	36.5%	1.77	0.374'	0.623'	131.07'	0.29'	131.49'	0.093'	0.14'	0.08'		0.154'	0.445'	131.646'	o.k.		no	
146		3.44	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	35.3%	1.77	0.387'	0.600'	131.65'	0.26'	133.20'	0.097'	0.11'	0.25'		0.229'	0.492'	133.429'	o.k.		no	
147		3.44	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	39.6%	1.77	0.327'	0.638'	133.44'	0.29'	135.04'	0.082'	0.12'	0.18'		0.192'	0.480'	135.229'	o.k.		no	
148		3.44	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	38.4%	1.77	0.349'	0.638'	135.23'	0.13'	135.80'	0.087'	0.06'	0.09'		0.120'	0.248'	135.918'	o.k.		no	
149		3.44	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	61.0%	1.77	0.173'	0.833'	135.99'	0.13'	136.36'	0.043'	0.11'	0.02'		0.089'	0.214'	136.451'	o.k.		no	
150		3.44	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	107.5%	0.79	0.328'	0.885'	136.45'	1.68'	138.27'	0.082'	0.15'	0.05'		0.143'	1.824'	138.408'	o.k.		Yes by 0.24 cfs	
151		3.44	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	94.0%	0.79	0.434'	0.765'	138.41'	0.75'	139.45'	0.108'	1.38'	0.16'		0.827'	1.579'	140.272'	o.k.		no	
152	0.68	3.44	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	22.2%	0.79	3.947'	0.320'	140.27'	1.29'	156.12'	0.987'	0.07'	2.53'	0.732'	2.157'	3.448'	158.277'	o.k.		no	
201		2.76	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	68.1%	1.23	0.195'	0.756'	158.28'	0.13'	158.41'	0.049'	0.15'	0.06'		0.132'	0.267'	158.544'	CRITICAL		no	0.8
202		2.76	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	39.9%	1.23	0.430'	0.531'	158.54'	0.26'	158.80'	0.108'	0.28'	0.06'		0.220'	0.475'	159.019'	o.k.		no	
203		2.76	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	26.4%	1.23	0.790'	0.431'	159.02'	0.17'	160.22'	0.197'	0.07'			0.133'	0.307'	160.355'	o.k.		no	
204		2.76	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	67.2%	1.23	0.198'	0.738'	160.63'	0.51'	161.92'	0.050'	0.07'			0.060'	0.565'	161.977'	o.k.		no	
205		2.76	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	67.2%	1.23	0.199'	0.738'	162.02'	0.49'	163.28'	0.050'	0.07'			0.059'	0.552'	163.337'	o.k.		no	
206		2.76	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	67.3%	1.23	0.198'	0.738'	163.38'	0.60'	164.91'	0.049'	0.07'	0.13'		0.123'	0.724'	165.030'	o.k.		no	
207	0.23	2.76	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	67.2%	1.23	0.198'	0.738'	165.03'	0.80'	167.06'	0.050'	0.07'	0.10'	0.015'	0.116'	0.920'	167.174'	o.k.		no	
208		2.52	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	61.6%	1.23	0.189'	0.694'	167.17'	0.45'	168.40'	0.047'	0.05'			0.046'	0.492'	168.450'	o.k.		no	
209		2.52	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	48.8%	1.77	0.130'	0.735'	168.55'	0.21'	169.43'	0.033'	0.05'			0.039'	0.252'	169.464'	o.k.		no	
210		2.52	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	48.6%	1.77	0.131'	0.735'	169.53'	0.19'	170.33'	0.033'	0.05'			0.039'	0.232'	170.364'	o.k.		no	
211		2.52	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	48.9%	1.77	0.130'	0.735'	170.43'	0.17'	171.15'	0.032'	0.05'	0.02'		0.051'	0.226'	171.196'	o.k.		no	
212		2.52	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	48.6%	1.77	0.131'	0.735'	171.25'	0.12'	171.74'	0.033'	0.04'			0.038'	0.156'	171.773'	o.k.		no	
301		2.52	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	114.4%	0.79	0.122'	1.000'	172.55'	0.98'	173.53'	0.031'	0.04'			0.035'	1.012'	173.562'	CRITICAL		Yes by 0.32 cfs	0.2
302		2.52	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	119.2%	0.79	0.113'	1.000'	173.56'	1.53'	175.09'	0.028'	0.04'			0.034'	1.562'	175.124'	CRITICAL		Yes by 0.41 cfs	0.5
303	0.28	2.52	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	119.2%	0.79	0.113'	1.000'	175.12'	1.53'	176.65'	0.028'	0.09'		0.011'	0.063'	1.591'	176.715'	CRITICAL		Yes by 0.41 cfs	0.8
304		2.24	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	78.7%	0.79	0.248'	0.665'	176.72'	0.97'	177.69'	0.062'	0.05'			0.056'	1.028'	177.743'	o.k.		no	
305		2.24	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	105.8%	0.79	0.145'	0.865'	178.06'	0.90'	179.10'	0.036'	0.05'			0.043'	0.943'	179.138'	o.k.		Yes by 0.12 cfs	
306		2.24	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	106.0%	0.79	0.143'	0.885'	179.32'	0.72'	180.14'	0.036'	0.05'	0.09'		0.090'	0.814'	180.225'	o.k.		Yes by 0.13 cfs	
307		2.24	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	104.6%	0.79	0.148'	0.865'	180.32'	0.16'	180.51'	0.037'	0.03'			0.035'	0.196'	180.540'	o.k.		Yes by 0.10 cfs	
308		2.24	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	114.2%	0.79	0.097'	1.000'	180.84'	1.71'	182.55'	0.024'	0.03'			0.029'	1.743'	182.583'	CRITICAL		Yes by 0.28 cfs	0.4
309		2.24	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	114.8%	0.79	0.096'	1.000'	182.58'	0.84'	183.42'	0.024'	0.03'			0.029'	0.868'	183.451'	CRITICAL		Yes by 0.29 cfs	0.4
401		2.24	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	114.3%	0.79	0.096'	1.000'	183.45'	1.56'	185.01'	0.024'	0.16'			0.090'	1.651'	185.102'	CRITICAL		Yes by 0.28 cfs	0.6
402		2.24	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	85.8%	0.55	0.445'	0.583'	187.59'	2.95'	192.63'	0.111'	0.07'			0.089'	3.036'	192.722'	o.k.		no	
403		2.24	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	116.8%	0.55	0.191'	0.833'	192.98'	3.61'	196.59'	0.048'	0.13'			0.089'	3.700'	196.683'	CRITICAL		Yes by 0.32 cfs	1.0
404		2.24	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	95.3%	0.55	0.371'	0.638'	196.66'	0.06'	196.74'	0.093'	0.07'			0.083'	0.139'	196.823'	CRITICAL		no	0.8

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
501	0.54	2.24	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	48.8%	1.23	0.212'	0.613'	200.04'	0.42'	201.79'	0.053'	0.06'		0.049'	0.082'	0.506'	201.875'	o.k.		no	
502		1.70	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	37.5%	1.23	0.179'	0.519'	201.87'	0.29'	203.46'	0.045'	0.14'			0.092'	0.384'	203.550'	o.k.		no	
503		1.70	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	21.4%	1.23	0.395'	0.375'	209.66'	0.32'	213.94'	0.099'	0.05'			0.076'	0.397'	214.011'	o.k.		no	
504		1.70	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	41.5%	1.23	0.155'	0.550'	214.55'	0.31'	216.15'	0.039'	0.05'			0.046'	0.353'	216.196'	o.k.		no	
505		1.70	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	41.5%	1.23	0.155'	0.550'	216.20'	0.31'	217.75'	0.039'	0.08'			0.057'	0.364'	217.807'	o.k.		no	
601		1.70	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0063	5.15	33.0%	1.23	0.217'	0.481'	217.81'	0.28'	219.70'	0.054'	0.02'	0.14'		0.109'	0.387'	219.810'	o.k.		no	
602		1.70	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	10"	0.0028	0.0028	1.16	146.2%	0.55	0.071'	0.833'	220.33'	1.57'	221.91'	0.018'	0.02'	0.05'		0.044'	1.617'	221.950'	CRITICAL		Yes by 0.54 cfs	0.8
603		1.70	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	10"	0.0028	0.0028	1.16	146.1%	0.55	0.071'	0.833'	221.95'	1.85'	223.80'	0.018'	0.02'			0.021'	1.868'	223.819'	CRITICAL		Yes by 0.54 cfs	1.8
604		1.70	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	10"	0.0028	0.0028	1.16	146.5%	0.55	0.070'	0.833'	223.82'	2.20'	226.02'	0.018'	0.02'			0.021'	2.220'	226.039'	CRITICAL		Yes by 0.54 cfs	2.8
605		1.70	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	10"	0.0028	0.0028	1.17	145.8%	0.55	0.071'	0.833'	226.04'	1.27'	227.31'	0.018'	0.02'			0.021'	1.290'	227.329'	CRITICAL		Yes by 0.53 cfs	3.4
606		1.70	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	10"	0.0028	0.0028	1.16	146.3%	0.55	0.071'	0.833'	227.33'	1.94'	229.27'	0.018'	0.02'			0.021'	1.958'	229.287'	CRITICAL		Yes by 0.54 cfs	4.4
607		1.70	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	10"	0.0028	0.0028	1.16	146.2%	0.55	0.071'	0.833'	229.29'	1.72'	231.01'	0.018'	0.02'	0.05'		0.044'	1.766'	231.053'	CRITICAL		Yes by 0.54 cfs	5.2
608		1.70	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	10"	0.0028	0.0028	1.16	146.5%	0.55	0.070'	0.833'	231.05'	2.24'	233.29'	0.018'	0.02'	0.05'		0.044'	2.284'	233.337'	CRITICAL		Yes by 0.54 cfs	6.3
609		1.70	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	10"	0.0028	0.0028	1.16	146.1%	0.55	0.071'	0.833'	233.34'	1.70'	235.03'	0.018'	0.02'			0.021'	1.719'	235.056'	CRITICAL		Yes by 0.54 cfs	7.2
610		1.70	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	10"	0.0028	0.0028	1.16	146.3%	0.55	0.070'	0.833'	235.06'	1.60'	236.65'	0.018'	0.02'			0.021'	1.618'	236.674'	CRITICAL		Yes by 0.54 cfs	8.0
611	0.25	1.70	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	10"	0.0028	0.0028	1.16	146.4%	0.55	0.070'	0.833'	236.67'	2.32'	239.00'	0.018'	0.03'	0.04'	0.009'	0.047'	2.371'	239.045'	CRITICAL		Yes by 0.54 cfs	9.1
612		1.45	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	10"	0.0028	0.0033	1.25	115.5%	0.55	0.082'	0.833'	239.05'	0.94'	239.99'	0.021'	0.02'	0.05'		0.043'	0.986'	240.031'	CRITICAL		Yes by 0.19 cfs	9.3
613		1.45	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	10"	0.0028	0.0023	1.05	138.0%	0.55	0.058'	0.833'	240.03'	1.40'	241.43'	0.014'	0.02'			0.020'	1.421'	241.452'	CRITICAL		Yes by 0.40 cfs	9.8
614		1.45	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	10"	0.0028	0.0028	1.17	124.3%	0.55	0.071'	0.833'	241.45'	1.17'	242.62'	0.018'	0.02'			0.021'	1.189'	242.641'	CRITICAL		Yes by 0.28 cfs	10.2
615		1.45	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	10"	0.0028	0.0028	1.16	124.7%	0.55	0.070'	0.833'	242.64'	1.39'	244.03'	0.018'	0.02'			0.021'	1.414'	244.055'	CRITICAL		Yes by 0.29 cfs	10.6
616		1.45	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	10"	0.0028	0.0028	1.16	124.5%	0.55	0.071'	0.833'	244.05'	1.63'	245.69'	0.018'	0.03'			0.022'	1.657'	245.711'	CRITICAL		Yes by 0.29 cfs	11.1
617		1.45	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	245.71'	4.55'	250.26'	0.019'	0.15'			0.085'	4.631'	250.342'	CRITICAL		Yes by 0.68 cfs	14.3
618		1.45	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	8"	0.0180	0.0180	1.63	89.1%	0.35	0.430'	0.483'	250.34'	3.70'	254.04'	0.107'	0.03'			0.067'	3.766'	254.109'	CRITICAL		no	12.0
619		1.45	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	254.11'	4.26'	258.37'	0.019'	0.03'			0.022'	4.285'	258.393'	CRITICAL		Yes by 0.68 cfs	15.0
620		1.45	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	258.39'	5.04'	263.44'	0.019'	0.03'			0.022'	5.066'	263.459'	CRITICAL		Yes by 0.68 cfs	18.6
621	0.76	1.45	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	263.46'	4.62'	268.08'	0.019'	0.04'	0.05'	0.044'	0.076'	4.693'	268.153'	CRITICAL	CRITICAL	Yes by 0.68 cfs	21.8
622		0.76	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	90.1%	0.35	0.117'	0.490'	268.15'	0.60'	268.75'	0.029'	0.04'	0.07'		0.073'	0.674'	268.827'	CRITICAL	o.k.	no	21.4
623		0.76	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	90.0%	0.35	0.117'	0.483'	268.83'	1.04'	269.87'	0.029'	0.04'			0.035'	1.076'	269.903'	CRITICAL	CRITICAL	no	20.8
624		0.76	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	90.2%	0.35	0.117'	0.490'	269.90'	0.78'	270.68'	0.029'	0.04'			0.035'	0.810'	270.713'	CRITICAL	CRITICAL	no	20.3
624		0.76	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	90.1%	0.35	0.117'	0.490'	270.71'	0.77'	271.48'	0.029'	0.04'	0.03'		0.048'	0.814'	271.527'	CRITICAL	CRITICAL	no	19.8
625		0.76	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	90.3%	0.35	0.117'	0.490'	271.53'	0.88'	272.41'	0.029'	0.03'			0.032'	0.915'	272.442'	CRITICAL	CRITICAL	no	19.2
626		0.76	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	99.7%	0.35	0.097'	0.533'	272.44'	0.27'	272.71'	0.024'	0.10'			0.061'	0.334'	272.776'	CRITICAL	CRITICAL	no	18.6
627		0.76	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	51.5%	0.35	0.281'	0.333'	272.78'	1.03'	273.80'	0.070'	0.14'			0.104'	1.131'	273.907'	CRITICAL	CRITICAL	no	11.7
628		0.76	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	41.2%	0.35	0.391'	0.293'	273.91'	1.26'	275.16'	0.098'	0.03'	0.25'		0.191'	1.449'	275.356'	CRITICAL	CRITICAL	no	6.3
629		0.76	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	99.7%	0.35	0.097'	0.533'	275.36'	0.45'	275.81'	0.024'	0.10'	0.06'		0.092'	0.547'	275.903'	CRITICAL	CRITICAL	no	6.3
630		0.76	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	52.4%	0.35	0.277'	0.340'	275.90'	0.53'	276.44'	0.069'	0.09'			0.080'	0.615'	276.518'	CRITICAL	o.k.	no	4.8
631		0.76	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	53.8%	0.35	0.262'	0.340'	276.52'	0.25'	276.77'	0.066'	0.03'	0.17'		0.134'	0.382'	276.899'	CRITICAL	o.k.	no	4.1
632		0.76	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	99.8%	0.35	0.097'	0.533'	276.90'	0.72'	277.62'	0.024'	0.00'			0.012'	0.734'	277.633'	CRITICAL	o.k.	no	4.0
Pump Station Line																																
620		1.45	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.76	1.45	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	8"	0.0040	0.0040	0.77	189.0%	0.35	0.075'	0.667'	244.99'	4.62'	249.60'	0.019'	0.03'	0.05'	0.044'	0.072'	4.690'	249.677'	CRITICAL	o.k.	Yes by 0.68 cfs	3.3
6211		0.76	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	99.7%	0.35	0.097'	0.533'	249.68'	0.91'	250.59'	0.024'	0.03'			0.029'	0.939'	250.615'	CRITICAL	o.k.	no	3.0
6212		0.76	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	99.9%	0.35	0.097'	0.533'	250.62'	0.66'	251.27'	0.024'	0.01'	0.06'		0.050'	0.705'	251.321'	CRITICAL	o.k.	no	2.7
6213		0.76	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	136.4%	0.35	0.040'	0.667'	251.32'	0.92'	252.25'	0.010'	0.03'			0.022'	0.946'	252.267'	CRITICAL	o.k.	Yes by 0.20 cfs	3.1
6214		0.76	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	99.8%	0.35	0.097'	0.533'	252.27'	0.78'	253.05'	0.024'	0.06'	0.06'		0.073'	0.856'	253.123'	CRITICAL	o.k.	no	2.3
6215		0.76	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	71.1%	0.35	0.171'	0.410'	253.12'	0.24'	253.36'	0.043'	0.03'			0.038'	0.274'	253.396'	CRITICAL	o.k.	no	2.0
6216		0.76	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	99.7%	0.35	0.097'	0.533'	253.40'	1.26'	254.65'	0.024'	0.31'	0.06'		0.198'	1.457'	254.853'	CRITICAL	o.k.	no	1.5
6217		0.76	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	23.5%	0.35	0.885'	0.213'	254.85'	0.46'	258.21'	0.221'	0.00'			0.111'	0.569'	258.324'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																
94th Street Trunk																																
152		3.44	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		0.87	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	15.0%	0.55	0.863'	0.208'	158.28'	0.26'	162.11'	0.216'	0.28'	0.13'		0.311'	0.575'	162.419'	o.k.		no	
720		0.87	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	16.5%	0.55	0.789'	0.225'	162.42'	0.99'	181.86'	0.197'	0.12'			0.157'	1.150'	182.012'	o.k.		no	
721		0.87	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	30.1%	0.55	0.335'	0.313'	182.01'	0.68'	187.73'	0.084'	0.04'			0.060'	0.738'	187.793'	o.k.		no	
722		0.87	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	40.4%	0.79	0.105'	0.440'	187.86'	0.19'	188.89'	0.026'	0.02'			0.026'	0.213'	188.916'	o.k.		no	
723		0.87	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	51.9%	0.79	0.071'	0.500'	188.95'	0.25'	189.90'	0.018'	0.03'			0.021'	0.276'	189.921'	o.k.		no	
724		0.87	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	52.2%	0.79	0.072'	0.510'	189.92'	0.16'	190.51'	0.018'	0.03'			0.024'	0.184'	190.534'	o.k.		no	
724A		0.87	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	46.3%	0.79	0.086'	0.475'	190.53'	0.10'	190.93'	0.022'	0.03'			0.026'	0.125'	190.951'	o.k.		no	
725		0.87	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	75.1%	0.55	0.085'	0.533'	190.98'	0.41'	191.87'	0.021'	0.03'			0.025'	0.440'	191.899'	o.k.		no	
726		0.87	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	75.2%	0.55	0.084'	0.533'	191.90'	0.42'	192.77'	0.021'	0.03'			0.024'	0.445'	192.798'	o.k.		no	
727		0.87	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	78.0%	0.55	0.079'	0.542'	192.80'	0.52'	193.83'	0.020'	0.03'			0.026'	0.551'	193.858'	o.k.		no	
728		0.87	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	71.1%	0.55	0.092'	0.513'	193.86'	0.37'	194.67'	0.023'	0.03'			0.026'	0.398'	194.699'	o.k.		no	
729		0.87	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	75.4%	0.55	0.084'	0.533'	194.70'	0.44'	195.62'	0.021'	0.00'			0.010'	0.447'	195.634'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		4.78	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		4.78	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	18.8%	1.23	3.792'	0.356'	10.33' *	0.98'	23.38'	0.948'	1.22'	0.80'		1.481'	2.460'	24.858'	o.k.		no	
102		4.78	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	20.3%	1.23	3.481'	0.375'	24.86'	0.90'	36.76'	0.870'	1.61'			1.240'	2.136'	37.995'	o.k.		no	
103		4.78	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	16.6%	1.23	4.601'	0.338'	38.00'	0.79'	52.08'	1.150'	0.10'	1.31'		1.279'	2.069'	53.357'	o.k.		no	
104		4.78	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	104.6%	1.23	0.277'	1.081'	53.36'	0.74'	54.10'	0.069'	0.10'	0.04'		0.104'	0.847'	54.204'	CRITICAL		Yes by 0.21 cfs	0.2
105		4.78	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	104.9%	1.23	0.275'	1.081'	54.20'	0.74'	54.94'	0.069'	0.23'	0.02'		0.160'	0.899'	55.104'	CRITICAL		Yes by 0.22 cfs	0.0
106		4.78	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	63.0%	1.23	0.653'	0.713'	55.10'	0.75'	56.51'	0.163'	0.44'	0.08'		0.343'	1.096'	56.855'	o.k.		no	
107		4.78	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	41.0%	1.23	1.250'	0.550'	56.86'	0.67'	60.11'	0.313'	0.10'	0.16'		0.287'	0.952'	60.397'	o.k.		no	
108		4.78	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	103.9%	1.23	0.283'	1.050'	60.81'	0.66'	61.60'	0.071'	0.10'	0.04'		0.106'	0.762'	61.706'	o.k.		Yes by 0.18 cfs	
109	0.09	4.78	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	104.0%	1.23	0.283'	1.050'	61.80'	0.76'	62.71'	0.071'	0.18'	0.16'	0.005'	0.208'	0.964'	62.918'	o.k.		Yes by 0.18 cfs	
110		4.68	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	72.5%	1.23	0.512'	0.781'	62.92'	1.14'	65.24'	0.128'	0.18'	0.15'		0.226'	1.368'	65.467'	o.k.		no	
111		4.68	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	72.7%	1.23	0.508'	0.781'	65.47'	1.23'	68.22'	0.127'	0.14'			0.133'	1.363'	68.355'	o.k.		no	
112		4.68	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	84.0%	1.23	0.399'	0.863'	69.05'	1.51'	71.72'	0.100'	0.17'	0.06'		0.168'	1.673'	71.890'	o.k.		no	
113		4.68	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	74.3%	1.23	0.491'	0.800'	71.89'	1.06'	74.19'	0.123'	0.17'	0.11'		0.203'	1.267'	74.393'	o.k.		no	
114		4.68	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	74.3%	1.23	0.492'	0.800'	74.40'	1.09'	76.80'	0.123'	0.07'			0.095'	1.189'	76.895'	o.k.		no	
115	0.23	4.68	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	109.5%	1.23	0.189'	1.250'	79.90'	0.94'	80.84'	0.047'	0.11'		0.008'	0.082'	1.025'	80.925'	CRITICAL		Yes by 0.41 cfs	0.2
116		4.46	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	92.1%	1.23	0.311'	0.938'	80.93'	0.92'	81.84'	0.078'	0.03'			0.056'	0.972'	81.897'	o.k.		no	
117	0.05	4.46	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	144.0%	1.23	0.099'	1.250'	82.32'	1.28'	83.60'	0.025'	0.04'	0.01'	0.001'	0.037'	1.317'	83.637'	CRITICAL		Yes by 1.36 cfs	0.7
118		4.41	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	136.2%	1.23	0.108'	1.250'	83.64'	0.41'	84.04'	0.027'	0.17'			0.101'	0.507'	84.144'	CRITICAL		Yes by 1.17 cfs	0.7
119		4.41	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	68.2%	1.23	0.498'	0.756'	84.14'	1.26'	86.23'	0.125'	0.12'			0.122'	1.381'	86.348'	o.k.		no	
120	0.09	4.41	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	86.4%	1.23	0.340'	0.894'	86.56'	0.38'	87.20'	0.085'	0.12'		0.006'	0.104'	0.482'	87.308'	o.k.		no	
121		4.32	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	84.8%	1.23	0.335'	0.875'	87.39'	0.86'	88.90'	0.084'	0.11'			0.099'	0.963'	88.994'	o.k.		no	
122	0.05	4.32	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	85.7%	1.23	0.328'	0.875'	89.78'	0.92'	91.36'	0.082'	0.13'	0.04'	0.003'	0.129'	1.051'	91.484'	o.k.		no	
123		4.27	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	78.3%	1.23	0.374'	0.831'	91.51'	0.64'	92.80'	0.094'	0.13'			0.111'	0.755'	92.913'	o.k.		no	
124		4.27	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	78.9%	1.23	0.369'	0.831'	93.00'	0.55'	94.09'	0.092'	0.13'			0.110'	0.662'	94.201'	o.k.		no	
125		4.27	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	79.4%	1.23	0.365'	0.831'	94.29'	0.40'	95.07'	0.091'	0.13'	0.05'		0.138'	0.537'	95.209'	o.k.		no	
126		4.27	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	78.8%	1.23	0.370'	0.831'	95.27'	1.35'	97.95'	0.093'	0.17'	0.03'		0.146'	1.499'	98.097'	o.k.		no	
127		4.27	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	66.0%	1.23	0.486'	0.725'	98.10'	0.99'	100.63'	0.122'	0.19'	0.06'		0.186'	1.176'	100.811'	o.k.		no	
128		4.27	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	62.3%	1.23	0.534'	0.713'	100.81'	1.02'	103.72'	0.133'	0.04'	0.17'		0.167'	1.184'	103.890'	o.k.		no	
129		4.27	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	135.5%	1.23	0.102'	1.250'	105.25'	0.86'	106.11'	0.026'	0.11'	0.03'		0.085'	0.945'	106.195'	CRITICAL		Yes by 1.12 cfs	0.4
130		4.27	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	85.0%	1.23	0.327'	0.875'	106.19'	1.09'	107.45'	0.082'	0.11'			0.096'	1.187'	107.541'	o.k.		no	
131		4.27	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	87.0%	1.23	0.314'	0.894'	107.66'	0.50'	108.49'	0.079'	0.08'			0.078'	0.575'	108.572'	o.k.		no	
132		4.27	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	104.4%	1.23	0.223'	1.081'	113.83'	1.04'	115.06'	0.056'	0.08'			0.068'	1.103'	115.129'	o.k.		Yes by 0.18 cfs	
133		4.27	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	103.7%	1.23	0.228'	1.050'	115.23'	0.56'	115.91'	0.057'	0.08'			0.068'	0.630'	115.978'	o.k.		Yes by 0.15 cfs	
134		4.27	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	103.7%	1.23	0.228'	1.050'	116.11'	0.56'	116.79'	0.057'	0.08'			0.068'	0.630'	116.858'	o.k.		Yes by 0.15 cfs	
135		4.27	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	103.7%	1.23	0.228'	1.050'	116.99'	0.56'	117.67'	0.057'	0.08'			0.066'	0.628'	117.736'	o.k.		Yes by 0.15 cfs	
136		4.27	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	105.8%	1.23	0.216'	1.081'	117.90'	0.99'	119.04'	0.054'	0.04'			0.045'	1.032'	119.087'	o.k.		Yes by 0.24 cfs	
137		4.27	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	134.2%	1.23	0.104'	1.250'	120.44'	1.40'	121.84'	0.026'	0.03'			0.030'	1.429'	121.869'	CRITICAL		Yes by 1.09 cfs	0.6
138	0.61	4.27	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	140.1%	1.23	0.096'	1.250'	121.87'	0.96'	122.83'	0.024'	0.03'	0.01'	0.012'	0.040'	0.997'	122.866'	CRITICAL		Yes by 1.22 cfs	0.9
139		3.66	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	120.3%	1.23	0.095'	1.250'	122.87'	0.48'	123.34'	0.024'	0.15'	0.01'		0.094'	0.570'	123.437'	CRITICAL		Yes by 0.62 cfs	1.1
140		3.66	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	57.3%	1.23	0.442'	0.669'	123.44'	0.39'	123.82'	0.110'	0.13'	0.28'		0.260'	0.646'	124.082'	CRITICAL		no	0.1
141		3.66	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	65.3%	1.23	0.365'	0.725'	124.08'	0.56'	124.89'	0.091'	0.12'	0.05'		0.133'	0.698'	125.018'	o.k.		no	
142		3.66	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	67.7%	1.23	0.345'	0.738'	125.02'	0.30'	125.76'	0.086'	0.09'	0.08'		0.130'	0.433'	125.888'	o.k.		no	
143		3.66	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	114.5%	0.79	0.257'	1.000'	127.22'	2.05'	129.27'	0.064'	0.24'	0.06'		0.181'	2.231'	129.451'	CRITICAL		Yes by 0.47 cfs	0.5
1431		3.66	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	77.4%	0.79	0.682'	0.650'	129.45'	0.39'	129.84'	0.171'	0.05'	0.23'		0.223'	0.612'	130.063'	CRITICAL		no	0.1
1432		3.66	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	152.2%	0.79	0.146'	1.000'	130.06'	0.90'	130.96'	0.036'	0.13'			0.083'	0.982'	131.045'	CRITICAL		Yes by 1.26 cfs	0.7
144		3.66	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	36.00'	15"	0.0076	0.0076	5.65	64.9%	1.23	0.369'	0.725'	131.05'	0.10'	131.15'	0.092'	0.14'	0.23'		0.229'	0.331'	131.376'	CRITICAL		no	0.9
145		3.66	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	38.9%	1.77	0.386'	0.638'	131.38'	0.32'	131.70'	0.097'	0.14'	0.08'		0.159'	0.479'	131.855'	o.k.		no	
146		3.66	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	37.6%	1.77	0.400'	0.623'	131.86'	0.29'	133.22'	0.100'	0.12'	0.26'		0.238'	0.527'	133.461'	o.k.		no	
147		3.66	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	42.2%	1.77	0.345'	0.675'	133.48'	0.31'	135.08'	0.086'	0.12'	0.19'		0.200'	0.509'	135.275'	o.k.		no	
148		3.66	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	40.9%	1.77	0.357'	0.680'	135.28'	0.14'	135.82'	0.089'	0.06'	0.09'		0.123'	0.264'	135.943'	o.k.		no	
149		3.66	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	64.9%	1.77	0.178'	0.870'	136.03'	0.14'	136.40'	0.044'	0.09'	0.02'		0.077'	0.215'	136.477'	o.k.		no	
150		3.66	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	114.6%	0.79	0.257'	1.000'	136.53'	2.42'	138.95'	0.064'	0.15'	0.04'		0.129'	2.546'	139.076'	CRITICAL		Yes by 0.47 cfs	0.6
151		3.66	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	100.2%	0.79	0.437'	0.820'	139.08'	0.84'	139.92'	0.109'	1.38'	0.17'		0.829'	1.672'	140.747'	CRITICAL		Yes by 0.01 cfs	0.2
152	0.73	3.66	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	23.7%	0.79	3.947'	0.320'	140.75'	1.47'	156.12'	0.987'	0.07'	2.53'	0.731'	2.157'	3.622'	158.277'	o.k.		no	
201		2.94	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	72.5%	1.23	0.201'	0.781'	158.28'	0.15'	158.43'	0.050'	0.16'	0.07'		0.138'	0.287'	158.564'	CRITICAL		no	0.8
202		2.94	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	42.5%	1.23	0.454'	0.563'	158.56'	0.27'	158.84'	0.113'	0.29'	0.06'		0.231'	0.505'	159.069'	o.k.		no	
203		2.94	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	28.2%	1.23	0.828'	0.450'	159.07'	0.19'	160.24'	0.207'	0.07'			0.139'	0.328'	160.379'	o.k.		no	
204		2.94	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	71.6%	1.23	0.202'	0.769'	160.66'	0.56'	161.95'	0.051'	0.07'			0.061'	0.621'	162.009'	o.k.		no	
205		2.94	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	71.6%	1.23	0.202'	0.769'	162.05'	0.55'	163.31'	0.051'	0.07'			0.061'	0.607'	163.369'	o.k.		no	
206		2.94	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	71.7%	1.23	0.202'	0.769'	163.41'	0.67'	164.94'	0.050'	0.07'	0.13'		0.125'	0.791'	165.064'	o.k.		no	
207	0.25	2.94	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	71.6%	1.23	0.202'	0.769'	165.06'	0.89'	167.09'	0.051'	0.07'	0.10'	0.015'	0.119'	1.010'	167.208'	o.k.		no	
208		2.69	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	65.7%	1.23	0.194'	0.725'	167.21'	0.49'	168.44'	0.049'	0.05'			0.048'	0.539'	168.483'	o.k.		no	
209		2.69	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	52.0%	1.77	0.133'	0.750'	168.56'	0.24'	169.44'	0.033'	0.05'			0.040'	0.277'	169.480'	o.k.		no	
210		2.69	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	51.8%	1.77	0.134'	0.750'	169.54'	0.21'	170.34'	0.033'	0.05'			0.040'	0.255'	170.380'	o.k.		no	
211		2.69	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	52.1%	1.77	0.135'	0.765'	170.46'	0.19'	171.18'	0.034'	0.05'	0.03'		0.053'	0.244'	171.228'	o.k.		no	
212		2.69	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	51.8%	1.77	0.134'	0.750'	171.26'	0.13'	171.75'	0.033'	0.04'			0.038'	0.169'	171.788'	o.k.		no	
301		2.69	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	121.9%	0.79	0.122'	1.000'	172.55'	1.11'	173.66'	0.031'	0.04'			0.035'	1.145'	173.695'	CRITICAL		Yes by 0.48 cfs	0.4
302		2.69	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	127.1%	0.79	0.113'	1.000'	173.70'	1.74'	175.43'	0.028'	0.04'			0.034'	1.769'	175.465'	CRITICAL		Yes by 0.57 cfs	0.9
303	0.30	2.69	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	127.1%	0.79	0.113'	1.000'	175.46'	1.74'	177.20'	0.028'	0.09'		0.011'	0.064'	1.800'	177.264'	CRITICAL		Yes by 0.57 cfs	1.3
304		2.39	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	83.9%	0.79	0.253'	0.690'	177.26'	1.09'	178.35'	0.063'	0.04'			0.051'	1.137'	178.401'	CRITICAL		no	0.4
305		2.39	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	12"	0.0035	0.0035	2.11	112.8%	0.79	0.112'	1.000'	178.40'	1.32'	179.72'	0.028'	0.04'			0.034'	1.351'	179.753'	CRITICAL		Yes by 0.27 cfs	0.5
306		2.39	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	12"	0.0035	0.0035	2.11	113.0%	0.79	0.112'	1.000'	179.75'	1.04'	180.80'	0.028'	0.04'	0.07'		0.070'	1.113'	180.866'	CRITICAL		Yes by 0.27 cfs	0.5
307		2.39	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	12"	0.0035	0.0036	2.14	111.5%	0.79	0.115'	1.000'	180.87'	0.24'	181.10'	0.029'	0.03'			0.031'	0.266'	181.132'	CRITICAL		Yes by 0.25 cfs	0.5
308		2.39	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	12"	0.0030	0.0030	1.96	121.8%	0.79	0.097'	1.000'	181.13'	1.95'	183.08'	0.024'	0.03'			0.029'	1.977'	183.109'	CRITICAL		Yes by 0.43 cfs	0.9
309		2.39	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	12"	0.0030	0.0030	1.95	122.4%	0.79	0.096'	1.000'	183.11'	0.95'	184.06'	0.024'	0.03'			0.029'	0.983'	184.091'	CRITICAL		Yes by 0.44 cfs	1.1
401		2.39	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	12"	0.0030	0.0030	1.96	121.9%	0.79	0.096'	1.000'	184.09'	1.77'	185.87'	0.024'	0.16'			0.091'	1.866'	185.957'	CRITICAL		Yes by 0.43 cfs	1.5
402		2.39	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	10"	0.0140	0.0141	2.61	91.5%	0.55	0.453'	0.613'	187.62'	3.29'	192.66'	0.113'	0.07'			0.090'	3.384'	192.753'	o.k.		no	
403		2.39	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	10"	0.0076	0.0076	1.92	124.5%	0.55	0.191'	0.833'	192.98'	4.10'	197.09'	0.048'	0.13'			0.089'	4.193'	197.176'	CRITICAL		Yes by 0.47 cfs	1.4
404		2.39	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	10"	0.0076	0.0114	2.35	101.6%	0.55	0.374'	0.683'	197.18'	0.06'	197.24'	0.094'	0.08'			0.085'	0.148'	197.325'	CRITICAL		Yes by 0.04 cfs	1.3

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intc. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
501	0.57	2.39	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	52.1%	1.23	0.221'	0.638'	200.07'	0.46'	201.82'	0.055'	0.07'		0.050'	0.086'	0.549'	201.903'	o.k.		no	
502		1.81	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	40.0%	1.23	0.189'	0.550'	201.90'	0.31'	203.49'	0.047'	0.15'			0.098'	0.412'	203.588'	o.k.		no	
503		1.81	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	22.8%	1.23	0.426'	0.400'	209.68'	0.34'	213.96'	0.107'	0.06'			0.082'	0.426'	214.042'	o.k.		no	
504		1.81	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	44.3%	1.23	0.163'	0.581'	214.58'	0.33'	216.18'	0.041'	0.06'			0.049'	0.381'	216.230'	o.k.		no	
505		1.81	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	44.3%	1.23	0.163'	0.581'	216.23'	0.33'	217.78'	0.041'	0.08'			0.060'	0.392'	217.841'	o.k.		no	
601		1.81	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0063	5.15	35.2%	1.23	0.224'	0.500'	217.84'	0.30'	219.72'	0.056'	0.04'	0.14'		0.121'	0.426'	219.841'	o.k.		no	
602		1.81	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.124'	0.638'	220.14'	0.20'	220.88'	0.031'	0.04'	0.08'		0.077'	0.279'	220.954'	o.k.		no	
603		1.81	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.124'	0.638'	220.98'	0.24'	221.85'	0.031'	0.04'			0.037'	0.274'	221.885'	o.k.		no	
604		1.81	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	15"	0.0028	0.0028	3.42	53.0%	1.23	0.123'	0.638'	221.95'	0.28'	222.98'	0.031'	0.04'			0.037'	0.319'	223.014'	o.k.		no	
605		1.81	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	18"	0.0028	0.0028	5.59	32.4%	1.77	0.123'	0.578'	223.02'	0.08'	223.62'	0.031'	0.04'			0.037'	0.117'	223.655'	o.k.		no	
606		1.81	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.124'	0.638'	223.78'	0.25'	224.69'	0.031'	0.04'			0.037'	0.286'	224.725'	o.k.		no	
607		1.81	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.124'	0.638'	224.79'	0.22'	225.60'	0.031'	0.04'	0.08'		0.076'	0.298'	225.674'	o.k.		no	
608		1.81	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	18"	0.0028	0.0028	5.57	32.6%	1.77	0.122'	0.578'	225.67'	0.14'	226.69'	0.031'	0.04'	0.08'		0.076'	0.217'	226.763'	o.k.		no	
609		1.81	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	15"	0.0028	0.0028	3.43	52.8%	1.23	0.124'	0.638'	226.65'	0.22'	227.65'	0.031'	0.04'			0.037'	0.255'	227.685'	o.k.		no	
610		1.81	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	15"	0.0028	0.0028	3.43	52.9%	1.23	0.123'	0.638'	227.75'	0.21'	228.50'	0.031'	0.04'			0.037'	0.242'	228.534'	o.k.		no	
611	0.27	1.81	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	18"	0.0028	0.0028	5.57	32.6%	1.77	0.122'	0.578'	228.54'	0.15'	229.63'	0.031'	0.04'	0.07'	0.016'	0.079'	0.226'	229.707'	o.k.		no	
612		1.55	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	15"	0.0028	0.0033	3.70	41.8%	1.23	0.126'	0.550'	229.71'	0.14'	230.41'	0.031'	0.03'	0.07'		0.067'	0.205'	230.477'	o.k.		no	
613		1.55	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	15"	0.0028	0.0023	3.10	49.9%	1.23	0.097'	0.613'	230.64'	0.19'	231.38'	0.024'	0.04'			0.032'	0.220'	231.415'	o.k.		no	
614		1.55	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	15"	0.0028	0.0028	3.44	45.0%	1.23	0.115'	0.581'	231.45'	0.16'	232.21'	0.029'	0.04'			0.034'	0.197'	232.245'	o.k.		no	
615		1.55	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	15"	0.0028	0.0028	3.42	45.1%	1.23	0.114'	0.581'	232.31'	0.19'	233.21'	0.028'	0.04'			0.034'	0.228'	233.245'	o.k.		no	
616		1.55	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	15"	0.0028	0.0028	3.43	45.1%	1.23	0.114'	0.581'	233.31'	0.23'	234.37'	0.029'	0.05'			0.040'	0.268'	234.411'	o.k.		no	
617		1.55	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	234.58'	0.22'	235.86'	0.037'	0.15'			0.092'	0.307'	235.951'	o.k.		no	
618		1.55	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	15"	0.0180	0.0180	8.69	17.8%	1.23	0.421'	0.338'	235.93'	0.35'	241.72'	0.105'	0.05'			0.078'	0.428'	241.796'	o.k.		no	
619		1.55	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	242.02'	0.20'	243.22'	0.037'	0.05'			0.044'	0.246'	243.263'	o.k.		no	
620		1.55	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	243.32'	0.24'	244.74'	0.037'	0.05'			0.044'	0.283'	244.783'	o.k.		no	
621	0.82	1.55	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	244.84'	0.22'	246.14'	0.037'	0.04'	0.09'	0.087'	0.129'	0.348'	246.268'	o.k.	o.k.	no	
622		0.82	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	96.2%	0.35	0.119'	0.523'	246.27'	0.67'	247.19'	0.030'	0.04'	0.08'		0.074'	0.749'	247.267'	o.k.	o.k.	no	
623		0.82	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	96.1%	0.35	0.119'	0.523'	247.29'	1.16'	248.93'	0.030'	0.04'			0.036'	1.198'	248.969'	o.k.	o.k.	no	
624		0.82	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	96.4%	0.35	0.119'	0.523'	249.03'	0.87'	250.25'	0.030'	0.04'			0.036'	0.905'	250.289'	o.k.	o.k.	no	
624		0.82	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	96.2%	0.35	0.119'	0.523'	250.35'	0.86'	251.56'	0.030'	0.04'	0.03'		0.049'	0.908'	251.612'	o.k.	o.k.	no	
625		0.82	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	96.4%	0.35	0.119'	0.523'	251.66'	0.99'	253.05'	0.030'	0.03'			0.032'	1.023'	253.085'	o.k.	o.k.	no	
626		0.82	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	106.5%	0.35	0.096'	0.590'	253.68'	0.32'	254.04'	0.024'	0.10'			0.063'	0.383'	254.103'	o.k.	o.k.	Yes by 0.05 cfs	
627		0.82	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	55.0%	0.35	0.292'	0.350'	257.85'	1.13'	261.75'	0.073'	0.14'			0.109'	1.235'	261.859'	o.k.	o.k.	no	
628		0.82	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	44.0%	0.35	0.412'	0.310'	261.86'	1.37'	268.48'	0.103'	0.03'	0.26'		0.200'	1.566'	268.680'	o.k.	o.k.	no	
629		0.82	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	106.5%	0.35	0.096'	0.590'	268.86'	0.53'	269.46'	0.024'	0.10'	0.06'		0.092'	0.625'	269.552'	o.k.	o.k.	Yes by 0.05 cfs	
630		0.82	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	55.9%	0.35	0.282'	0.350'	269.55'	0.60'	271.32'	0.071'	0.09'			0.083'	0.681'	271.403'	o.k.	o.k.	no	
631		0.82	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	57.4%	0.35	0.270'	0.357'	271.43'	0.27'	272.31'	0.068'	0.03'	0.17'		0.137'	0.411'	272.444'	o.k.	o.k.	no	
632		0.82	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	106.6%	0.35	0.095'	0.590'	272.64'	0.85'	273.59'	0.024'	0.00'			0.012'	0.858'	273.602'	o.k.	o.k.	Yes by 0.05 cfs	
Pump Station Line																																
620		1.55	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.82	1.55	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	15"	0.0040	0.0040	4.10	37.7%	1.23	0.146'	0.519'	244.84'	0.22'	246.14'	0.037'	0.03'	0.09'	0.087'	0.125'	0.344'	246.264'	o.k.	o.k.	no	
8211		0.82	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	106.5%	0.35	0.096'	0.590'	246.31'	1.07'	247.51'	0.024'	0.03'			0.029'	1.096'	247.539'	o.k.	o.k.	Yes by 0.05 cfs	
8212		0.82	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	106.7%	0.35	0.095'	0.590'	247.61'	0.77'	248.47'	0.024'	0.01'	0.06'		0.049'	0.818'	248.519'	o.k.	o.k.	Yes by 0.05 cfs	
8213		0.82	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	145.7%	0.35	0.040'	0.667'	248.65'	1.05'	249.70'	0.010'	0.03'			0.022'	1.076'	249.723'	CRITICAL	o.k.	Yes by 0.26 cfs	0.6
8214		0.82	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	106.6%	0.35	0.095'	0.590'	249.72'	0.92'	250.64'	0.024'	0.06'	0.06'		0.073'	0.991'	250.714'	o.k.	o.k.	Yes by 0.05 cfs	
8215		0.82	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	76.0%	0.35	0.176'	0.427'	250.71'	0.26'	251.16'	0.044'	0.03'			0.039'	0.301'	251.195'	o.k.	o.k.	no	
8216		0.82	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	106.5%	0.35	0.096'	0.590'	251.42'	1.48'	253.08'	0.024'	0.32'	0.06'		0.203'	1.679'	253.283'	o.k.	o.k.	Yes by 0.05 cfs	
8217		0.82	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	25.1%	0.35	0.918'	0.220'	253.28'	0.50'	258.22'	0.230'	0.00'			0.115'	0.615'	258.335'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																
94th Street Trunk																																
152		3.66	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		0.93	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	16.0%	0.55	0.952'	0.225'	158.28'	0.28'	162.13'	0.238'	0.28'	0.14'		0.328'	0.608'	162.453'	o.k.		no	
720		0.93	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	17.6%	0.55	0.789'	0.225'	162.45'	1.13'	181.86'	0.197'	0.12'			0.159'	1.292'	182.014'	o.k.		no	
721		0.93	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	32.2%	0.55	0.347'	0.321'	182.02'	0.75'	187.74'	0.087'	0.04'			0.062'	0.811'	187.803'	o.k.		no	
722		0.93	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	43.2%	0.79	0.108'	0.450'	187.87'	0.21'	188.90'	0.027'	0.03'			0.026'	0.234'	188.926'	o.k.		no	
723		0.93	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	55.4%	0.79	0.074'	0.525'	188.98'	0.28'	189.93'	0.019'	0.03'			0.022'	0.301'	189.947'	o.k.		no	
724		0.93	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	55.7%	0.79	0.073'	0.525'	189.95'	0.18'	190.53'	0.018'	0.03'			0.025'	0.203'	190.550'	o.k.		no	
724A		0.93	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	49.4%	0.79	0.088'	0.490'	190.55'	0.11'	190.94'	0.022'	0.03'			0.026'	0.138'	190.966'	o.k.		no	
725		0.93	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	80.2%	0.55	0.087'	0.563'	191.01'	0.46'	191.90'	0.022'	0.03'			0.026'	0.485'	191.929'	o.k.		no	
726		0.93	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	80.3%	0.55	0.087'	0.563'	191.93'	0.47'	192.80'	0.022'	0.03'			0.025'	0.491'	192.828'	o.k.		no	
727		0.93	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	83.3%	0.55	0.081'	0.575'	192.83'	0.58'	193.87'	0.020'	0.03'			0.027'	0.608'	193.892'	o.k.		no	
728		0.93	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	75.9%	0.55	0.094'	0.533'	193.89'	0.41'	194.69'	0.024'	0.03'			0.027'	0.441'	194.720'	o.k.		no	
729		0.93	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	80.5%	0.55	0.086'	0.563'	194.72'	0.48'	195.65'	0.022'	0.00'			0.011'	0.495'	195.663'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		5.17	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																							
101		5.17	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	20.4%	1.23	4.047'	0.375'	14.48' *	1.07'	23.40'	1.012'	1.22'	0.85'		1.540'	2.613'	24.935'	o.k.		no	
102		5.17	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	22.0%	1.23	3.481'	0.375'	24.93'	1.05'	36.76'	0.870'	1.70'			1.285'	2.336'	38.040'	o.k.		no	
103		5.17	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	18.0%	1.23	4.855'	0.356'	38.04'	0.87'	52.10'	1.214'	0.08'	1.38'		1.336'	2.207'	53.433'	o.k.		no	
104		5.17	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	113.3%	1.23	0.215'	1.250'	53.43'	1.13'	54.56'	0.054'	0.07'	0.03'		0.080'	1.206'	54.638'	CRITICAL		Yes by 0.61 cfs	0.7
105		5.17	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	113.6%	1.23	0.214'	1.250'	54.64'	1.12'	55.76'	0.053'	0.24'	0.02'		0.155'	1.274'	55.912'	CRITICAL		Yes by 0.62 cfs	0.8
106		5.17	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	68.2%	1.23	0.685'	0.756'	55.91'	0.84'	56.75'	0.171'	0.46'	0.09'		0.361'	1.203'	57.115'	o.k.		no	
107		5.17	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	44.4%	1.23	1.317'	0.581'	57.11'	0.74'	60.14'	0.329'	0.08'	0.17'		0.288'	1.032'	60.430'	o.k.		no	
108		5.17	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	112.6%	1.23	0.218'	1.250'	61.01'	1.00'	62.01'	0.054'	0.08'	0.03'		0.082'	1.080'	62.090'	CRITICAL		Yes by 0.58 cfs	0.2
109	0.10	5.17	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	112.7%	1.23	0.217'	1.250'	62.09'	1.15'	63.24'	0.054'	0.18'	0.12'	0.004'	0.183'	1.334'	63.423'	CRITICAL		Yes by 0.58 cfs	0.3
110		5.08	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	78.5%	1.23	0.526'	0.831'	63.42'	1.30'	65.29'	0.132'	0.18'	0.15'		0.232'	1.535'	65.523'	o.k.		no	
111		5.08	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	78.8%	1.23	0.523'	0.831'	65.52'	1.40'	68.27'	0.131'	0.14'			0.137'	1.540'	68.408'	o.k.		no	
112		5.08	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	91.0%	1.23	0.410'	0.919'	69.11'	1.73'	71.78'	0.102'	0.18'	0.07'		0.172'	1.900'	71.951'	o.k.		no	
113		5.08	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	80.5%	1.23	0.505'	0.844'	71.95'	1.21'	74.23'	0.126'	0.18'	0.11'		0.208'	1.423'	74.442'	o.k.		no	
114		5.08	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	80.5%	1.23	0.506'	0.844'	74.44'	1.25'	76.84'	0.126'	0.07'			0.096'	1.345'	76.940'	o.k.		no	
115	0.25	5.08	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	118.6%	1.23	0.189'	1.250'	79.90'	1.11'	81.01'	0.047'	0.11'		0.008'	0.082'	1.190'	81.090'	CRITICAL		Yes by 0.80 cfs	0.3
116		4.83	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	99.8%	1.23	0.314'	1.000'	81.09'	1.06'	82.15'	0.078'	0.03'			0.057'	1.115'	82.205'	CRITICAL		no	0.0
117	0.05	4.83	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	156.0%	1.23	0.099'	1.250'	82.32'	1.50'	83.82'	0.025'	0.04'	0.01'	0.001'	0.037'	1.540'	83.860'	CRITICAL		Yes by 1.73 cfs	0.9
118		4.78	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	147.6%	1.23	0.108'	1.250'	83.86'	0.48'	84.34'	0.027'	0.18'			0.103'	0.580'	84.440'	CRITICAL		Yes by 1.54 cfs	1.0
119		4.78	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	73.9%	1.23	0.512'	0.781'	84.44'	1.14'	86.25'	0.128'	0.12'			0.125'	1.569'	86.376'	o.k.		no	
120	0.10	4.78	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	93.6%	1.23	0.346'	0.938'	86.61'	0.44'	87.25'	0.087'	0.12'		0.006'	0.106'	0.542'	87.354'	o.k.		no	
121		4.68	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	91.9%	1.23	0.341'	0.919'	87.43'	1.00'	88.94'	0.085'	0.12'			0.102'	1.099'	89.040'	o.k.		no	
122	0.05	4.68	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	92.9%	1.23	0.337'	0.938'	89.84'	1.06'	91.42'	0.084'	0.13'	0.04'	0.003'	0.133'	1.192'	91.550'	o.k.		no	
123		4.63	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	84.9%	1.23	0.385'	0.875'	91.56'	0.74'	92.85'	0.096'	0.13'			0.114'	0.853'	92.959'	o.k.		no	
124		4.63	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	85.5%	1.23	0.379'	0.875'	93.05'	0.63'	94.14'	0.095'	0.13'			0.114'	0.747'	94.249'	o.k.		no	
125		4.63	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	86.0%	1.23	0.378'	0.894'	94.35'	0.46'	95.13'	0.094'	0.13'	0.06'		0.142'	0.598'	95.276'	o.k.		no	
126		4.63	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	85.4%	1.23	0.380'	0.875'	95.32'	1.55'	98.00'	0.095'	0.18'	0.03'		0.151'	1.704'	98.146'	o.k.		no	
127		4.63	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	71.5%	1.23	0.505'	0.769'	98.15'	1.12'	100.67'	0.126'	0.19'	0.07'		0.193'	1.309'	100.862'	o.k.		no	
128		4.63	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	67.6%	1.23	0.554'	0.738'	100.86'	1.15'	103.75'	0.139'	0.04'	0.17'		0.173'	1.325'	103.921'	o.k.		no	
129		4.63	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	146.9%	1.23	0.102'	1.250'	105.25'	1.01'	106.26'	0.026'	0.12'	0.03'		0.086'	1.096'	106.346'	CRITICAL		Yes by 1.48 cfs	0.5
130		4.63	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	92.1%	1.23	0.336'	0.938'	106.35'	1.25'	107.60'	0.084'	0.11'			0.098'	1.351'	107.697'	o.k.		no	
131		4.63	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	94.3%	1.23	0.320'	0.956'	107.73'	0.57'	108.56'	0.080'	0.06'			0.070'	0.641'	108.626'	o.k.		no	
132		4.63	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	113.1%	1.23	0.173'	1.250'	114.00'	1.57'	115.57'	0.043'	0.06'			0.052'	1.620'	115.620'	CRITICAL		Yes by 0.54 cfs	0.3
133		4.63	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	112.4%	1.23	0.175'	1.250'	115.62'	0.85'	116.47'	0.044'	0.06'			0.053'	0.908'	116.527'	CRITICAL		Yes by 0.51 cfs	0.4
134		4.63	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	112.4%	1.23	0.175'	1.250'	116.53'	0.85'	117.38'	0.044'	0.06'			0.053'	0.908'	117.435'	CRITICAL		Yes by 0.51 cfs	0.4
135		4.63	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	112.4%	1.23	0.175'	1.250'	117.43'	0.85'	118.29'	0.044'	0.06'			0.051'	0.906'	118.341'	CRITICAL		Yes by 0.51 cfs	0.4
136		4.63	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	114.7%	1.23	0.168'	1.250'	118.34'	1.49'	119.83'	0.042'	0.04'			0.039'	1.533'	119.874'	CRITICAL		Yes by 0.59 cfs	0.6
137		4.63	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	15"	0.0024	0.0024	3.18	145.5%	1.23	0.104'	1.250'	120.44'	1.64'	122.08'	0.026'	0.03'			0.030'	1.674'	122.114'	CRITICAL		Yes by 1.45 cfs	0.9
138	0.66	4.63	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	15"	0.0024	0.0022	3.05	151.8%	1.23	0.096'	1.250'	122.11'	1.12'	123.24'	0.024'	0.03'	0.01'	0.012'	0.040'	1.164'	123.278'	CRITICAL		Yes by 1.58 cfs	1.3
139		3.97	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	130.5%	1.23	0.095'	1.250'	123.28'	0.56'	123.84'	0.024'	0.16'	0.01'		0.098'	0.658'	123.936'	CRITICAL		Yes by 0.93 cfs	1.6
140		3.97	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	62.2%	1.23	0.464'	0.713'	123.94'	0.43'	124.37'	0.116'	0.13'	0.30'		0.273'	0.703'	124.639'	CRITICAL		no	0.7
141		3.97	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	70.8%	1.23	0.378'	0.769'	124.64'	0.64'	125.28'	0.095'	0.13'	0.06'		0.138'	0.775'	125.414'	o.k.		no	
142		3.97	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	73.4%	1.23	0.358'	0.781'	125.41'	0.34'	125.80'	0.090'	0.09'	0.09'		0.134'	0.476'	125.935'	o.k.		no	
143		3.97	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	124.2%	0.79	0.257'	1.000'	127.22'	2.41'	129.63'	0.064'	0.25'	0.06'		0.184'	2.594'	129.814'	CRITICAL		Yes by 0.77 cfs	0.8
1431		3.97	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	83.9%	0.79	0.701'	0.690'	129.81'	0.44'	130.26'	0.175'	0.05'	0.23'		0.229'	0.673'	130.487'	CRITICAL		no	0.5
1432		3.97	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	165.1%	0.79	0.146'	1.000'	130.49'	1.06'	131.54'	0.036'	0.13'			0.085'	1.143'	131.630'	CRITICAL		Yes by 1.57 cfs	1.3
144		3.97	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	36.00'	15"	0.0076	0.0076	5.65	70.3%	1.23	0.383'	0.769'	131.63'	0.11'	131.74'	0.096'	0.14'	0.24'		0.239'	0.354'	131.983'	CRITICAL		no	1.5
145		3.97	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	42.1%	1.77	0.407'	0.675'	131.98'	0.36'	132.34'	0.102'	0.15'	0.09'		0.167'	0.523'	132.506'	o.k.		no	
146		3.97	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	40.7%	1.77	0.422'	0.660'	132.51'	0.32'	133.26'	0.105'	0.12'	0.27'		0.249'	0.569'	133.509'	o.k.		no	
147		3.97	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0058	8.67	45.8%	1.77	0.352'	0.698'	133.51'	0.36'	135.10'	0.088'	0.13'	0.19'		0.206'	0.562'	135.304'	o.k.		no	
148		3.97	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	44.3%	1.77	0.376'	0.698'	135.30'	0.16'	135.86'	0.094'	0.06'	0.10'		0.129'	0.287'	135.987'	o.k.		no	
149		3.97	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	70.4%	1.77	0.185'	0.923'	136.08'	0.16'	136.45'	0.046'	0.09'	0.02'		0.078'	0.234'	136.531'	o.k.		no	
150		3.97	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	124.2%	0.79	0.257'	1.000'	136.53'	2.84'	139.37'	0.064'	0.12'	0.04'		0.112'	2.952'	139.483'	CRITICAL		Yes by 0.77 cfs	1.0
151		3.97	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	108.6%	0.79	0.337'	1.000'	139.48'	1.29'	140.77'	0.084'	1.43'	0.13'		0.823'	2.114'	141.597'	CRITICAL		Yes by 0.31 cfs	1.1
152	0.79	3.97	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	25.7%	0.79	4.095'	0.330'	141.60'	1.65'	156.13'	1.024'	0.07'	2.62'	0.756'	2.236'	3.883'	158.366'	o.k.		no	
201		3.19	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	78.7%	1.23	0.206'	0.831'	158.37'	0.17'	158.54'	0.052'	0.17'	0.07'		0.143'	0.314'	158.680'	CRITICAL		no	0.9
202		3.19	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	46.1%	1.23	0.473'	0.594'	158.68'	0.31'	158.99'	0.118'	0.30'	0.06'		0.240'	0.548'	159.228'	o.k.		no	
203		3.19	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	30.6%	1.23	0.857'	0.469'	159.23'	0.22'	160.26'	0.214'	0.07'			0.144'	0.359'	160.403'	o.k.		no	
204		3.19	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	77.7%	1.23	0.210'	0.813'	160.70'	0.64'	161.99'	0.052'	0.07'			0.063'	0.703'	162.055'	o.k.		no	
205		3.19	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	77.6%	1.23	0.210'	0.813'	162.09'	0.62'	163.35'	0.053'	0.07'			0.063'	0.687'	163.415'	o.k.		no	
206		3.19	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	77.8%	1.23	0.209'	0.813'	163.45'	0.76'	164.98'	0.052'	0.07'	0.13'		0.130'	0.892'	165.112'	o.k.		no	
207	0.27	3.19	MH 7		18+09.00	18+09.00	156.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	77.7%	1.23	0.210'	0.813'	165.11'	1.02'	167.13'	0.052'	0.07'	0.11'	0.016'	0.123'	1.142'	167.256'	o.k.		no	
208		2.92	MH 8		21+32.00	21+32.00	157.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	71.3%	1.23	0.201'	0.769'	167.26'	0.55'	168.48'	0.050'	0.05'			0.050'	0.604'	168.528'	o.k.		no	
209		2.92	MH 9		24+97.00	24+97.00	158.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	56.4%	1.77	0.140'	0.803'	168.61'	0.26'	169.49'	0.035'	0.05'			0.042'	0.307'	169.535'	o.k.		no	
210		2.92	MH 10		28+27.00	28+27.00	159.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	56.2%	1.77	0.140'	0.803'	169.59'	0.24'	170.39'	0.035'	0.05'			0.042'	0.281'	170.434'	o.k.		no	
211		2.92	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	56.5%	1.77	0.139'	0.803'	170.49'	0.22'	171.21'	0.035'	0.05'	0.03'		0.055'	0.273'	171.268'	o.k.		no	
212		2.92	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	56.2%	1.77	0.141'	0.803'	171.31'	0.15'	171.80'	0.035'	0.04'			0.039'	0.186'	171.841'	o.k.		no	
301		2.92	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	132.3%	0.79	0.122'	1.000'	172.55'	1.31'	173.86'	0.031'	0.04'			0.035'	1.342'	173.892'	CRITICAL		Yes by 0.71 cfs	0.6
302		2.92	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	137.9%	0.79	0.113'	1.000'	173.89'	2.04'	175.94'	0.028'	0.04'			0.034'	2.077'	175.970'	CRITICAL		Yes by 0.80 cfs	1.4
303	0.33	2.92	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	137.9%	0.79	0.113'	1.000'	175.97'	2.04'	178.01'	0.028'	0.09'		0.011'	0.065'	2.109'	178.078'	CRITICAL		Yes by 0.80 cfs	2.2
304		2.59	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	91.1%	0.79	0.260'	0.735'	178.08'	1.25'	179.33'	0.065'	0.06'			0.063'	1.314'	179.392'	CRITICAL		no	1.3
305		2.59	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	18"	0.0035	0.0035	6.23	41.5%	1.77	0.172'	0.660'	179.39'	0.20'	179.59'	0.043'	0.06'			0.052'	0.251'	179.643'	o.k.		no	
306		2.59	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	18"	0.0035	0.0035	6.22	41.6%	1.77	0.172'	0.660'	179.64'	0.16'	179.91'	0.043'	0.06'	0.11'		0.107'	0.265'	180.017'	o.k.		no	
307		2.59	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	18"	0.0035	0.0036	6.31	41.1%	1.77	0.177'	0.660'	180.11'	0.04'	180.30'	0.044'	0.05'			0.049'	0.085'	180.349'	o.k.		no	
308		2.59	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	18"	0.0030	0.0030	5.78	44.8%	1.77	0.156'	0.698'	180.54'	0.28'	181.66'	0.039'	0.05'			0.047'	0.328'	181.904'	o.k.		no	
309		2.59	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	18"	0.0030	0.0030	5.75	45.1%	1.77	0.154'	0.698'	182.06'	0.14'	182.70'	0.039'	0.05'			0.047'	0.184'	182.744'	o.k.		no	
401		2.59	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	18"	0.0030	0.0030	5.77	44.9%	1.77	0.156'	0.698'	182.90'	0.26'	184.10'	0.039'	0.17'			0.102'	0.358'	184.200'	o.k.		no	
402		2.59	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	18"	0.0140	0.0141	12.50	20.7%	1.77	0.472'	0.450'	187.46'	0.35'	192.50'	0.118'	0.11'			0.113'	0.466'	192.613'	o.k.		no	
403		2.59	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	15"	0.0076	0.0076	5.65	45.8%	1.23	0.309'	0.581'	192.73'	0.59'	195.39'	0.077'	0.15'			0.112'	0.704'	195.503'	o.k.		no	
404		2.59	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	15"	0.0076	0.0114	6.92	37.4%	1.23	0.418'	0.519'	195.53'	0.01'	195.61'	0.105'	0.08'			0.092'	0.105'	195.701'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
501	0.62	2.59	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	56.5%	1.23	0.227'	0.669'	200.10'	0.53'	201.85'	0.057'	0.07'		0.052'	0.088'	0.617'	201.937'	o.k.		no	
502		1.97	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	43.5%	1.23	0.195'	0.563'	201.94'	0.36'	203.50'	0.049'	0.15'			0.102'	0.462'	203.604'	o.k.		no	
503		1.97	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	24.8%	1.23	0.442'	0.413'	209.69'	0.39'	213.97'	0.111'	0.06'			0.085'	0.473'	214.057'	o.k.		no	
504		1.97	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	48.1%	1.23	0.170'	0.613'	214.61'	0.38'	216.21'	0.042'	0.06'			0.051'	0.427'	216.263'	o.k.		no	
505		1.97	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	48.1%	1.23	0.170'	0.613'	216.26'	0.38'	217.81'	0.042'	0.08'			0.063'	0.439'	217.876'	o.k.		no	
601		1.97	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0063	5.15	38.2%	1.23	0.239'	0.531'	217.88'	0.34'	219.75'	0.060'	0.04'	0.15'		0.129'	0.467'	219.880'	o.k.		no	
602		1.97	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	15"	0.0028	0.0028	3.43	57.4%	1.23	0.127'	0.669'	220.17'	0.23'	220.91'	0.032'	0.04'	0.08'		0.079'	0.310'	220.988'	o.k.		no	
603		1.97	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	15"	0.0028	0.0028	3.43	57.4%	1.23	0.128'	0.669'	221.01'	0.27'	221.88'	0.032'	0.04'			0.038'	0.309'	221.917'	o.k.		no	
604		1.97	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	15"	0.0028	0.0028	3.42	57.6%	1.23	0.127'	0.669'	221.98'	0.32'	223.01'	0.032'	0.04'			0.038'	0.361'	223.047'	o.k.		no	
605		1.97	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	18"	0.0028	0.0028	5.59	35.2%	1.77	0.127'	0.600'	223.05'	0.09'	223.64'	0.032'	0.04'			0.038'	0.129'	223.678'	o.k.		no	
606		1.97	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	15"	0.0028	0.0028	3.43	57.5%	1.23	0.127'	0.669'	223.81'	0.28'	224.72'	0.032'	0.04'			0.038'	0.322'	224.757'	o.k.		no	
607		1.97	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	15"	0.0028	0.0028	3.43	57.4%	1.23	0.127'	0.669'	224.82'	0.25'	225.63'	0.032'	0.04'	0.08'		0.079'	0.331'	225.708'	o.k.		no	
608		1.97	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	18"	0.0028	0.0028	5.57	35.4%	1.77	0.126'	0.600'	225.71'	0.16'	226.71'	0.032'	0.04'	0.08'		0.078'	0.239'	226.788'	o.k.		no	
609		1.97	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	15"	0.0028	0.0028	3.43	57.4%	1.23	0.128'	0.669'	226.88'	0.25'	227.68'	0.032'	0.04'			0.038'	0.287'	227.717'	o.k.		no	
610		1.97	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	15"	0.0028	0.0028	3.43	57.5%	1.23	0.127'	0.669'	227.78'	0.23'	228.53'	0.032'	0.04'			0.038'	0.272'	228.567'	o.k.		no	
611	0.29	1.97	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	18"	0.0028	0.0028	5.57	35.4%	1.77	0.126'	0.600'	228.57'	0.17'	229.65'	0.032'	0.05'	0.07'	0.017'	0.082'	0.248'	229.732'	o.k.		no	
612		1.68	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	15"	0.0028	0.0033	3.70	45.4%	1.23	0.133'	0.581'	229.73'	0.16'	230.44'	0.033'	0.04'	0.07'		0.071'	0.226'	230.512'	o.k.		no	
613		1.68	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	15"	0.0028	0.0023	3.10	54.3%	1.23	0.103'	0.656'	230.69'	0.21'	231.43'	0.026'	0.04'			0.034'	0.242'	231.460'	o.k.		no	
614		1.68	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	15"	0.0028	0.0028	3.44	48.9%	1.23	0.119'	0.613'	231.48'	0.18'	232.24'	0.030'	0.04'			0.036'	0.220'	232.278'	o.k.		no	
615		1.68	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	15"	0.0028	0.0028	3.42	49.0%	1.23	0.118'	0.613'	232.34'	0.22'	233.24'	0.030'	0.04'			0.036'	0.256'	233.278'	o.k.		no	
616		1.68	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	15"	0.0028	0.0028	3.43	49.0%	1.23	0.119'	0.613'	233.34'	0.26'	234.40'	0.030'	0.05'			0.042'	0.300'	234.444'	o.k.		no	
617		1.68	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	15"	0.0040	0.0040	4.10	41.0%	1.23	0.155'	0.550'	234.61'	0.24'	235.89'	0.039'	0.16'			0.097'	0.336'	235.987'	o.k.		no	
618		1.68	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	15"	0.0180	0.0180	8.69	19.3%	1.23	0.444'	0.356'	235.99'	0.39'	241.74'	0.111'	0.05'			0.083'	0.470'	241.819'	o.k.		no	
619		1.68	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	15"	0.0040	0.0040	4.10	41.0%	1.23	0.155'	0.550'	242.05'	0.22'	243.25'	0.039'	0.05'			0.046'	0.271'	243.296'	o.k.		no	
620		1.68	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	15"	0.0040	0.0040	4.10	41.0%	1.23	0.155'	0.550'	243.35'	0.27'	244.77'	0.039'	0.05'			0.046'	0.312'	244.816'	o.k.		no	
621	0.89	1.68	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	15"	0.0040	0.0040	4.10	41.0%	1.23	0.155'	0.550'	244.87'	0.24'	246.17'	0.039'	0.04'	0.10'	0.092'	0.135'	0.378'	246.305'	o.k.	o.k.	no	
622		0.89	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	104.7%	0.35	0.118'	0.577'	246.31'	0.80'	247.25'	0.030'	0.04'	0.08'		0.073'	0.877'	247.320'	o.k.	o.k.	Yes by 0.04 cfs	
623		0.89	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	104.6%	0.35	0.118'	0.577'	247.35'	1.38'	248.99'	0.030'	0.04'			0.035'	1.419'	249.022'	o.k.	o.k.	Yes by 0.04 cfs	
624		0.89	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	104.9%	0.35	0.118'	0.577'	249.09'	1.04'	250.31'	0.029'	0.04'			0.035'	1.071'	250.342'	o.k.	o.k.	Yes by 0.04 cfs	
624		0.89	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	104.7%	0.35	0.118'	0.577'	250.41'	1.02'	251.62'	0.030'	0.04'	0.03'		0.049'	1.072'	251.665'	o.k.	o.k.	Yes by 0.04 cfs	
625		0.89	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	104.9%	0.35	0.118'	0.577'	251.72'	1.18'	253.11'	0.029'	0.03'			0.028'	1.208'	253.134'	o.k.	o.k.	Yes by 0.04 cfs	
626		0.89	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	115.9%	0.35	0.075'	0.667'	253.76'	0.48'	254.24'	0.019'	0.11'			0.062'	0.542'	254.299'	CRITICAL	o.k.	Yes by 0.12 cfs	0.1
627		0.89	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	59.8%	0.35	0.301'	0.363'	257.86'	1.29'	261.76'	0.075'	0.15'			0.111'	1.403'	261.874'	o.k.	o.k.	no	
628		0.89	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	47.9%	0.35	0.420'	0.317'	261.87'	1.58'	268.49'	0.105'	0.03'	0.27'		0.200'	1.784'	268.687'	o.k.	o.k.	no	
629		0.89	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	115.9%	0.35	0.075'	0.667'	268.94'	0.80'	269.74'	0.019'	0.10'	0.05'		0.085'	0.886'	269.822'	CRITICAL	o.k.	Yes by 0.12 cfs	0.2
630		0.89	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	60.9%	0.35	0.296'	0.370'	269.82'	0.67'	271.34'	0.074'	0.10'			0.087'	0.760'	271.427'	o.k.	o.k.	no	
631		0.89	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	62.5%	0.35	0.284'	0.380'	271.45'	0.31'	272.33'	0.071'	0.03'	0.18'		0.139'	0.448'	272.469'	o.k.	o.k.	no	
632		0.89	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	116.0%	0.35	0.075'	0.667'	272.72'	1.27'	273.99'	0.019'	0.00'			0.009'	1.279'	273.996'	CRITICAL	o.k.	Yes by 0.12 cfs	0.3
Pump Station Line																																
620		1.68	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.89	1.68	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	15"	0.0040	0.0040	4.10	41.0%	1.23	0.155'	0.550'	244.87'	0.24'	246.17'	0.039'	0.03'	0.10'	0.092'	0.128'	0.371'	246.298'	o.k.	o.k.	no	
8211		0.89	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	8"	0.0040	0.0040	0.77	115.9%	0.35	0.075'	0.667'	246.39'	1.60'	247.99'	0.019'	0.03'			0.022'	1.623'	248.010'	CRITICAL	o.k.	Yes by 0.12 cfs	0.4
8212		0.89	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	8"	0.0040	0.0040	0.76	116.1%	0.35	0.074'	0.667'	248.01'	1.15'	249.16'	0.019'	0.01'	0.05'		0.040'	1.193'	249.203'	CRITICAL	o.k.	Yes by 0.12 cfs	0.6
8213		0.89	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	158.5%	0.35	0.040'	0.667'	249.20'	1.25'	250.45'	0.010'	0.03'			0.018'	1.267'	250.470'	CRITICAL	o.k.	Yes by 0.33 cfs	1.3
8214		0.89	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	116.0%	0.35	0.075'	0.667'	250.47'	1.38'	251.85'	0.019'	0.06'	0.05'		0.065'	1.442'	251.912'	CRITICAL	o.k.	Yes by 0.12 cfs	1.1
8215		0.89	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	82.7%	0.35	0.183'	0.460'	251.91'	0.30'	252.21'	0.046'	0.03'			0.036'	0.336'	252.248'	CRITICAL	o.k.	no	0.8
8216		0.89	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	115.9%	0.35	0.075'	0.667'	252.25'	2.21'	254.46'	0.019'	0.33'	0.05'		0.200'	2.415'	254.662'	CRITICAL	o.k.	Yes by 0.12 cfs	1.3
8217		0.89	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	27.3%	0.35	0.952'	0.230'	254.66'	0.57'	258.23'	0.238'	0.00'			0.119'	0.686'	258.349'	o.k.	o.k.	no	
* Information referenced from the Salmon Creek Interceptor Analysis																																
94th Street Trunk																																
152		3.97	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		1.01	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	17.4%	0.55	0.952'	0.225'	158.37'	0.33'	162.13'	0.238'	0.29'	0.14'		0.336'	0.667'	162.461'	o.k.		no	
720		1.01	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	19.2%	0.55	0.833'	0.238'	162.46'	1.26'	181.87'	0.208'	0.13'			0.167'	1.426'	182.034'	o.k.		no	
721		1.01	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	35.0%	0.55	0.359'	0.333'	182.03'	0.85'	187.75'	0.090'	0.04'			0.065'	0.916'	187.818'	o.k.		no	
722		1.01	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	47.0%	0.79	0.113'	0.475'	187.90'	0.24'	188.93'	0.028'	0.03'			0.028'	0.263'	188.953'	o.k.		no	
723		1.01	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	60.3%	0.79	0.078'	0.555'	189.01'	0.31'	189.96'	0.019'	0.03'			0.023'	0.337'	189.978'	o.k.		no	
724		1.01	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	60.6%	0.79	0.077'	0.555'	189.98'	0.20'	190.56'	0.019'	0.03'			0.026'	0.226'	190.581'	o.k.		no	
724A		1.01	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	53.7%	0.79	0.091'	0.510'	190.58'	0.13'	190.96'	0.023'	0.03'			0.027'	0.154'	190.987'	o.k.		no	
725		1.01	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	87.2%	0.55	0.089'	0.596'	191.05'	0.53'	191.94'	0.022'	0.03'			0.027'	0.561'	191.963'	o.k.		no	
726		1.01	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	87.3%	0.55	0.089'	0.596'	191.96'	0.54'	192.84'	0.022'	0.03'			0.026'	0.568'	192.862'	o.k.		no	
727		1.01	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	90.6%	0.55	0.083'	0.613'	192.86'	0.67'	193.90'	0.021'	0.03'			0.028'	0.700'	193.930'	o.k.		no	
728		1.01	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	82.6%	0.55	0.098'	0.575'	193.93'	0.47'	194.74'	0.024'	0.03'			0.028'	0.501'	194.763'	o.k.		no	
729		1.01	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	87.6%	0.55	0.088'	0.596'	194.76'	0.56'	195.69'	0.022'	0.00'			0.011'	0.574'	195.697'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
131*		5.64	Ex. MH 31	15.1	00+00.00	00+00.00	7.18	7.17	28																								
101		5.64	MH 1		01+03.00	01+03.00	23.02	23.02	37	0.00'	103.00'	15"	0.1594	0.1538	25.40	22.2%	1.23	4.364'	0.400'	25.20' *	1.20'	23.42'	1.091'	1.31'	0.92'		1.661'	2.864'	25.081'	o.k.		no	
102		5.64	MH 2		02+04.00	02+04.00	36.38	36.38		0.00'	101.00'	15"	0.1323	0.1323	23.56	23.9%	1.23	3.754'	0.400'	25.08'	1.18'	36.78'	0.938'	1.70'			1.319'	2.498'	38.099'	o.k.		no	
103		5.64	MH 3		02+82.00	02+82.00	51.74	51.74	44	0.00'	78.00'	15"	0.1969	0.1969	28.74	19.6%	1.23	4.855'	0.356'	38.10'	1.03'	52.10'	1.214'	0.08'	1.38'		1.336'	2.369'	53.433'	o.k.		no	
104		5.64	MH 4		04+59.00	04+59.00	52.82	52.62	28	0.20'	177.00'	15"	0.0050	0.0050	4.57	123.4%	1.23	0.215'	1.250'	53.43'	1.34'	54.77'	0.054'	0.07'	0.03'		0.080'	1.416'	54.848'	CRITICAL		Yes by 1.07 cfs	0.9
105		5.64	MH 5		06+35.00	06+35.00	53.69	53.69	21	0.00'	176.00'	15"	0.0061	0.0049	4.55	123.8%	1.23	0.214'	1.250'	54.85'	1.33'	56.18'	0.053'	0.25'	0.02'		0.160'	1.487'	56.336'	CRITICAL		Yes by 1.08 cfs	1.2
106		5.64	MH 6		07+89.00	07+89.00	56.00	55.80	26	0.20'	154.00'	15"	0.0137	0.0137	7.58	74.3%	1.23	0.711'	0.800'	56.34'	0.96'	57.30'	0.178'	0.48'	0.09'		0.375'	1.340'	57.676'	CRITICAL		no	0.3
107		5.64	MH 7		08+99.00	08+99.00	59.76	59.56	27	0.20'	110.00'	15"	0.0324	0.0324	11.65	48.4%	1.23	1.372'	0.613'	57.68'	0.85'	60.17'	0.343'	0.08'	0.18'		0.299'	1.145'	60.471'	o.k.		no	
108		5.64	MH 8		10+56.00	10+56.00	60.75	60.55	28	0.20'	157.00'	15"	0.0050	0.0050	4.59	122.7%	1.23	0.218'	1.250'	61.01'	1.18'	62.19'	0.054'	0.08'	0.03'		0.082'	1.266'	62.276'	CRITICAL		Yes by 1.04 cfs	0.4
109	0.11	5.64	MH 9		12+37.00	12+37.00	61.86	61.66	66	0.20'	181.00'	15"	0.0050	0.0050	4.59	122.7%	1.23	0.217'	1.250'	62.28'	1.37'	63.64'	0.054'	0.19'	0.12'	0.004'	0.186'	1.551'	63.827'	CRITICAL		Yes by 1.04 cfs	0.7
110		5.53	MH 10		14+98.00	14+98.00	64.66	64.46	44	0.20'	261.00'	15"	0.0099	0.0100	6.46	85.5%	1.23	0.540'	0.875'	63.63'	1.51'	65.34'	0.135'	0.19'	0.15'		0.239'	1.751'	65.578'	o.k.		no	
111		5.53	MH 11		17+79.00	17+79.00	68.19	67.44		0.75'	281.00'	15"	0.0099	0.0099	6.44	85.8%	1.23	0.537'	0.875'	65.58'	1.63'	68.32'	0.134'	0.15'			0.140'	1.768'	68.455'	o.k.		no	
112		5.53	MH 12		21+39.00	21+39.00	71.06	70.86	30	0.20'	360.00'	15"	0.0095	0.0074	5.58	99.1%	1.23	0.417'	1.000'	69.19'	2.01'	71.86'	0.104'	0.18'	0.07'		0.176'	2.183'	72.036'	o.k.		no	
113		5.53	MH 13		23+85.00	23+85.00	73.60	73.39	39	0.21'	246.00'	15"	0.0095	0.0095	6.30	87.7%	1.23	0.519'	0.894'	72.04'	1.42'	74.28'	0.130'	0.18'	0.12'		0.214'	1.631'	74.498'	o.k.		no	
114		5.53	MH 14		26+38.00	26+38.00	78.65	76.00		2.65'	253.00'	15"	0.0095	0.0095	6.31	87.7%	1.23	0.519'	0.894'	74.50'	1.46'	76.89'	0.130'	0.07'			0.098'	1.556'	76.992'	o.k.		no	
115	0.27	5.53	MH 15		28+19.00	28+19.00	79.48	79.44		0.04'	181.00'	15"	0.0060	0.0044	4.28	129.2%	1.23	0.189'	1.250'	79.50'	1.31'	81.21'	0.047'	0.08'		0.008'	0.070'	1.384'	81.284'	CRITICAL		Yes by 1.25 cfs	0.5
116		5.26	MH 16		30+68.00	30+68.00	81.07	80.87		0.20'	249.00'	15"	0.0058	0.0056	4.84	108.7%	1.23	0.241'	1.250'	81.28'	1.64'	82.92'	0.060'	0.03'			0.047'	1.684'	82.968'	CRITICAL		Yes by 0.42 cfs	0.8
117	0.05	5.26	MH 17		33+39.50	33+39.50	81.89	81.69	22	0.20'	271.50'	15"	0.0023	0.0023	3.10	170.0%	1.23	0.099'	1.250'	82.97'	1.78'	84.75'	0.025'	0.04'	0.01'	0.001'	0.037'	1.821'	84.790'	CRITICAL		Yes by 2.17 cfs	1.8
118		5.21	MH 18		34+27.50	34+27.50	82.31	82.11		0.20'	88.00'	15"	0.0025	0.0025	3.24	160.8%	1.23	0.108'	1.250'	84.79'	0.57'	85.36'	0.027'	0.19'			0.106'	0.673'	85.463'	CRITICAL		Yes by 1.97 cfs	2.0
119		5.21	MH 19		37+44.50	37+44.50	85.67	85.47		0.20'	317.00'	15"	0.0100	0.0100	6.47	80.5%	1.23	0.531'	0.844'	85.46'	1.65'	87.11'	0.133'	0.12'			0.128'	1.775'	87.238'	CRITICAL		no	0.4
120	0.11	5.21	MH 20		38+47.50	38+47.50	86.51	86.31		0.20'	103.00'	15"	0.0062	0.0062	5.11	102.0%	1.23	0.349'	1.050'	87.24'	0.51'	87.75'	0.087'	0.12'		0.006'	0.108'	0.619'	87.857'	CRITICAL		Yes by 0.10 cfs	0.2
121		5.10	MH 21		40+92.00	40+92.00	88.90	88.02		0.88'	244.50'	15"	0.0062	0.0062	5.09	100.2%	1.23	0.347'	1.025'	87.86'	1.16'	89.05'	0.087'	0.12'			0.103'	1.262'	89.148'	o.k.		Yes by 0.01 cfs	
122	0.05	5.10	MH 22		43+53.00	43+53.00	90.68	90.48	27	0.20'	261.00'	15"	0.0070	0.0061	5.04	101.2%	1.23	0.340'	1.025'	89.93'	1.24'	91.51'	0.085'	0.14'	0.04'	0.003'	0.135'	1.372'	91.640'	o.k.		Yes by 0.06 cfs	
123		5.05	MH 23		45+35.00	45+35.00	92.17	91.97		0.20'	182.00'	15"	0.0071	0.0071	5.45	92.5%	1.23	0.395'	0.938'	91.64'	0.86'	92.91'	0.099'	0.14'			0.118'	0.976'	93.025'	o.k.		no	
124		5.05	MH 24		46+91.00	46+91.00	93.46	93.26		0.20'	156.00'	15"	0.0070	0.0070	5.41	93.2%	1.23	0.389'	0.938'	93.11'	0.74'	94.20'	0.097'	0.13'			0.116'	0.852'	94.313'	o.k.		no	
125		5.05	MH 25		48+04.00	48+04.00	94.44	94.24	29	0.20'	113.00'	15"	0.0069	0.0069	5.38	93.8%	1.23	0.385'	0.938'	94.40'	0.53'	95.18'	0.096'	0.14'	0.06'		0.145'	0.678'	95.323'	o.k.		no	
126		5.05	MH 26		51+86.50	51+86.50	97.32	97.12	21	0.20'	382.50'	15"	0.0070	0.0070	5.42	93.1%	1.23	0.390'	0.938'	95.38'	1.80'	98.06'	0.098'	0.18'	0.03'		0.156'	1.960'	98.214'	o.k.		no	
127		5.05	MH 27		54+44.50	54+44.50	100.10	99.90	27	0.20'	258.00'	15"	0.0100	0.0100	6.48	77.9%	1.23	0.523'	0.813'	98.21'	1.29'	100.71'	0.131'	0.20'	0.07'		0.200'	1.487'	100.913'	o.k.		no	
128		5.05	MH 28		57+04.50	57+04.50	104.00	103.01	46	0.99'	260.00'	15"	0.0098	0.0112	6.85	73.6%	1.23	0.575'	0.781'	100.91'	1.32'	103.79'	0.144'	0.04'	0.18'		0.179'	1.499'	103.970'	o.k.		no	
129		5.05	MH 29		59+03.00	59+03.00	104.67	104.47	45	0.20'	198.50'	15"	0.0059	0.0024	3.15	160.1%	1.23	0.102'	1.250'	105.25'	1.20'	106.45'	0.026'	0.12'	0.03'		0.087'	1.286'	106.536'	CRITICAL		Yes by 1.89 cfs	0.7
130		5.05	MH 30		62+18.50	62+18.50	106.77	106.57		0.20'	315.50'	15"	0.0060	0.0060	5.03	100.4%	1.23	0.339'	1.025'	106.54'	1.46'	108.00'	0.085'	0.11'			0.099'	1.562'	108.099'	CRITICAL		Yes by 0.02 cfs	0.2
131		5.05	MH 31		63+63.00	63+63.00	112.75	107.60		5.15'	144.50'	15"	0.0060	0.0057	4.91	102.8%	1.23	0.323'	1.050'	108.10'	0.67'	108.77'	0.081'	0.06'			0.071'	0.745'	108.843'	o.k.		Yes by 0.14 cfs	
132		5.05	MH 32		66+71.00	66+71.00	114.18	113.98		0.20'	308.00'	15"	0.0040	0.0040	4.09	123.3%	1.23	0.173'	1.250'	114.00'	1.86'	115.86'	0.043'	0.06'			0.052'	1.914'	115.914'	CRITICAL		Yes by 0.95 cfs	0.6
133		5.05	MH 33		68+39.00	68+39.00	115.06	114.86		0.20'	168.00'	15"	0.0040	0.0040	4.12	122.4%	1.23	0.175'	1.250'	115.91'	1.02'	116.93'	0.044'	0.06'			0.053'	1.068'	116.981'	CRITICAL		Yes by 0.92 cfs	0.8
134		5.05	MH 34		70+07.00	70+07.00	115.94	115.74		0.20'	168.00'	15"	0.0040	0.0040	4.12	122.4%	1.23	0.175'	1.250'	116.98'	1.02'	118.00'	0.044'	0.06'			0.053'	1.068'	118.049'	CRITICAL		Yes by 0.92 cfs	1.0
135		5.05	MH 35		71+75.00	71+75.00	116.82	116.62		0.20'	168.00'	15"	0.0040	0.0040	4.12	122.4%	1.23	0.175'	1.250'	118.05'	1.02'	119.06'	0.044'	0.06'			0.051'	1.067'	119.116'	CRITICAL		Yes by 0.92 cfs	1.2
136		5.05	MH 36		74+68.50	74+68.50	119.19	117.96		1.23'	293.50'	15"		0.0039	4.04	125.0%	1.23	0.168'	1.250'	119.12'	1.77'	120.89'	0.042'	0.06'			0.051'	1.825'	120.941'	CRITICAL		Yes by 1.01 cfs	1.7
137		5.05	MH 37		77+91.50	77+91.50	120.17	119.97		0.20'	323.00'	18"	0.0024	0.0024	5.18	97.5%	1.77	0.173'	1.178'	120.94'	0.57'	121.51'	0.043'	0.06'			0.049'	0.620'	121.561'	CRITICAL		no	0.0
138	0.72	5.05	MH 38		80+12.50	80+12.50	120.69	120.66	23	0.03'	221.00'	18"	0.0024	0.0022	4.96	101.7%	1.77	0.159'	1.230'	121.56'	0.39'	121.95'	0.040'	0.03'	0.02'	0.020'	0.055'	0.443'	122.003'	o.k.		Yes by 0.09 cfs	
139		4.33	MH 39		81+62.00	81+62.00	121.22	121.02	22	0.20'	149.50'	15"	0.0024	0.0022	3.04	142.3%	1.23	0.095'	1.250'	122.00'	0.67'	122.67'	0.024'	0.17'	0.01'		0.101'	0.766'	122.769'	CRITICAL		Yes by 1.29 cfs	0.4
140		4.33	MH 40		82+89.50	82+89.50	122.66	122.46	70	0.20'	127.50'	15"	0.0080	0.0097	6.39	67.8%	1.23	0.482'	0.738'	122.77'	0.49'	123.26'	0.120'	0.14'	0.31'		0.283'	0.777'	123.546'	o.k.		no	
141		4.33	MH 41		84+89.50	84+89.50	124.26	124.16	29	0.10'	200.00'	15"	0.0080	0.0075	5.61	77.2%	1.23	0.393'	0.813'	123.55'	0.73'	124.97'	0.098'	0.13'	0.06'		0.144'	0.878'	125.116'	o.k.		no	
142		4.33	MH 42		85+98.50	85+98.50	126.22	125.02	41	1.20'	109.00'	15"	0.0080	0.0070	5.41	80.0%	1.23	0.372'	0.844'	125.12'	0.39'	125.86'	0.093'	0.09'	0.09'		0.137'	0.528'	126.001'	o.k.		no	
143		4.33	MH 43		87+94.50	87+94.50	127.99	127.79	38	0.20'	196.00'	12"	0.0090	0.0080	3.20	135.4%	0.79	0.257'	1.000'	127.22'	2.86'	130.08'	0.064'	0.25'	0.06'		0.187'	3.052'	130.272'	CRITICAL		Yes by 1.13 cfs	1.3
1431		4.33	43A		88+39.50	88+39.50	128.88	128.78	48	0.10'	45.00'	12"	0.0080	0.0176	4.73	91.5%	0.79	0.720'	0.735'	130.27'	0.52'	130.79'	0.180'	0.05'	0.24'		0.234'	0.750'	131.022'	CRITICAL		no	1.0
1432		4.33	43B		89+25.50	89+25.50	129.32	129.27		0.05'	86.00'	12"	0.0087	0.0045	2.41	179.9%	0.79	0.146'	1.000'	131.02'	1.26'	132.28'	0.036'	0.14'			0.088'	1.345'	132.367'	CRITICAL		Yes by 1.92 cfs	2.0
144		4.33	MH 44		89+79.50	89+79.50	129.02	129.02	68	0.00'	36.00'	15"	0.0076	0.0076	5.65	76.7%	1.23	0.398'	0.813'	132.37'	0.13'	132.50'	0.099'	0.15'	0.25'		0.247'	0.379'	132.746'	CRITICAL		no	2.2
145		4.33	MH 45		92+10.50	92+10.50	130.87	130.87	36	0.00'	231.00'	18"	0.0080	0.0080	9.43	45.9%	1.77	0.416'	0.698'	132.75'	0.41'	133.16'	0.104'	0.16'	0.09'		0.173'	0.587'	133.333'	CRITICAL		no	0.8
146		4.33	MH 46		94+12.50	94+12.50	132.80	132.60	74	0.20'	202.00'	18"	0.0080	0.0086	9.75	44.4%	1.77	0.444'	0.698'	133.33'	0.36'	133.69'	0.111'	0.13'	0.28'		0.262'	0.624'	133.956'	o.k.		no	
147		4.33	MH 47		96+48.50	96+48.50	134.40	134.40	64	0.00'	236.00'	18"	0.0080	0.0068	8.67	49.9%	1.77	0.367'	0.735'	133.96'	0.41'	135.14'	0.092'	0.14'	0.20'		0.215'	0.620'	135.350'	o.k.		no	
148		4.33	MH 48		97+53.50	97+53.50	135.16	135.16	43	0.00'	105.00'	18"	0.0080	0.0072	8.96	48.3%	1.77	0.391'	0.735'	135.35'	0.18'	135.90'	0.098'	0.07'	0.10'		0.134'	0.315'	136.029'	o.k.		no	
149		4.33	MH 49		98+82.50	98+82.50	135.53	135.53	24	0.00'	129.00'	18"	0.0080	0.0029	5.64	76.7%	1.77	0.191'	0.975'	136.14'	0.18'	136.51'	0.048'	0.09'	0.02'		0.079'	0.259'	136.584'	o.k.		no	
150		4.33	MH 50		101+13.50	101+13.50	137.58	137.38	30	0.20'	231.00'	12"	0.0080	0.0080	3.20	135.4%	0.79	0.257'	1.000'	136.58'	3.38'	139.96'	0.064'	0.12'	0.04'		0.112'	3.488'	140.072'	CRITICAL		Yes by 1.13 cfs	1.6
151		4.33	MH 51		102+18.50	102+18.50	138.85	138.68	52	0.17'	105.00'	12"	0.0080	0.0105	3.66	118.4%	0.79	0.337'	1.000'	140.07'	1.53'	141.61'	0.084'	1.56'	0.13'		0.885'	2.419'	142.492'	CRITICAL		Yes by 0.67 cfs	1.9
152	1.11	4.33	MH 52		103+09.00	00+00.00	156.00	155.80	86	0.20'	90.50'	12"	0.1893	0.1873	15.46	28.0%	0.79	4.450'	0.360'	142.49'	1.79'	156.16'	1.112'	0.07'	2.85'	1.097'	2.566'	4.361'	158.726'	o.k.		no	
201		3.47	MH 1		00+87.00	00+87.00	156.43	156.34	48	0.09'	87.00'	15"	0.0040	0.0039	4.05	85.8%	1.23	0.212'	0.875'	158.73'	0.20'	158.93'	0.053'	0.17'	0.07'		0.148'	0.347'	159.073'	CRITICAL		no	1.3
202		3.47	MH 2		02+10.00	02+10.00	158.03	157.83	27	0.20'	123.00'	15"	0.0113	0.0114	6.91	50.3%	1.23	0.492'	0.625'	159.07'	0.35'	159.43'	0.123'	0.31'	0.06'		0.249'	0.601'	159.674'	CRITICAL		no	0.3
203		3.47	MH 3		02+78.00	02+78.00	159.89	159.79		0.10'	68.00'	15"	0.0259	0.0259	10.42	33.3%	1.23	0.887'	0.481'	159.67'	0.25'	160.27'	0.222'	0.08'			0.149'	0.397'	160.420'	o.k.		no	
204		3.47	MH 4		06+00.00	06+00.00	161.28	161.18		0.10'	322.00'	15"	0.0040	0.0040	4.10	84.8%	1.23	0.217'	0.875'	160.77'	0.74'	162.06'	0.054'	0.08'			0.065'	0.802'	162.120'	o.k.		no	
205		3.47	MH 5		09+14.00	09+14.00	162.64	162.54		0.10'	314.00'	15"	0.0040	0.0040	4.10	84.7%	1.23	0.218'	0.875'	162.16'	0.72'	163.42'	0.054'	0.08'			0.065'	0.783'	163.480'	o.k.		no	
206		3.47	MH 6		12+97.00	12+97.00	164.27	164.17	90	0.10'	383.00'	15"	0.0040	0.0040	4.09	84.9%	1.23	0.217'	0.875'	163.52'	0.88'	165.05'	0.054'	0.08'	0.14'		0.134'	1.011'	165.179'	o.k.		no	
207	0.29	3.47	MH 7		18+09.00	18+09.00	166.42	166.32	63	0.10'	512.00'	15"	0.0040	0.0040	4.10	84.8%	1.23	0.217'	0.875'	165.18'	1.17'	167.20'	0.054'	0.07'	0.11'	0.016'	0.128'	1.299'	167.323'	o.k.		no	
208		3.18	MH 8		21+32.00	21+32.00	167.81	167.71		0.10'	323.00'	15"	0.0040	0.0040	4.09	77.8%	1.23	0.209'	0.813'	167.32'	0.64'	168.52'	0.052'	0.05'			0.052'	0.693'	168.574'	o.k.		no	
209		3.18	MH 9		24+97.00	24+97.00	168.79	168.69		0.10'	365.00'	18"	0.0025	0.0024	5.17	61.5%	1.77	0.145'	0.833'	168.64'	0.30'	169.52'	0.036'	0.05'			0.044'	0.347'	169.566'	o.k.		no	
210		3.18	MH 10		28+27.00	28+27.00	169.69	169.59		0.10'	330.00'	18"	0.0025	0.0024	5.19	61.4%	1.77	0.146'	0.833'	169.52'	0.27'	170.42'	0.037'	0.05'			0.044'	0.318'	170.466'	o.k.		no	
211		3.18	MH 11		31+27.00	31+27.00	170.51	170.41	35	0.10'	300.00'	18"	0.0025	0.0024	5.16	61.7%	1.77	0.145'	0.833'	170.52'	0.25'	171.24'	0.036'	0.05'	0.03'		0.057'	0.307'	171.300'	o.k.		no	
212		3.18	MH 12		33+29.00	00+00.00	171.55	171.00		0.55'	202.00'	18"	0.0025	0.0024	5.19	61.4%	1.77	0.146'	0.833'	171.34'	0.17'	171.83'	0.037'	0.04'			0.040'	0.208'	171.872'	o.k.		no	
301		3.18	MH 1		01+97.00	01+97.00	172.50	172.30		0.20'	197.00'	12"	0.0035	0.0038	2.20	144.4%	0.79	0.122'	1.000'	172.55'	1.56'	174.11'	0.031'	0.04'			0.035'	1.591'	174.141'	CRITICAL		Yes by 0.98 cfs	0.8
302		3.18	MH 2		05+05.00	05+05.00	173.78	173.58		0.20'	308.00'	12"	0.0035	0.0035	2.12	150.5%	0.79	0.113'	1.000'	174.14'	2.43'	176.57'	0.028'	0.04'			0.034'	2.467'	176.608'	CRITICAL		Yes by 1.07 cfs	2.0
303	0.36	3.18	MH 3		08+13.00	08+13.00	175.06	174.86		0.20'	308.00'	12"	0.0035	0.0035	2.12	150.5%	0.79	0.113'	1.000'	176.61'	2.43'	179.04'	0.028'	0.09'		0.011'	0.066'	2.499'	179.108'	CRITICAL		Yes by 1.07 cfs	3.2
304		2.83	MH 4		11+18.00	11+18.00	177.19	176.99		0.20'	305.00'	12"	0.0063	0.0063	2.84	99.4%	0.79	0.264'	0.800'	179.11'	1.46'	180.57'	0.066'	0.06'			0.065'	1.523'	180.631'	CRITICAL		no	2.6
305		2.83	MH 5		14+15.00	14+15.00	178.43	178.23		0.20'	297.00'	18"	0.0035	0.0035	6.23	45.3%	1.77	0.182'	0.698'	180.63'	0.23'	180.86'	0.045'	0.06'			0.054'	0.281'	180.912'	CRITICAL		no	1.1
306		2.83	MH 6		16+50.00	16+50.00	179.45	179.25	78	0.20'	235.00'	18"	0.0035	0.0035	6.22	45.4%	1.77	0.181'	0.698'	180.91'	0.18'	181.09'	0.045'	0.07'	0.12'		0.113'	0.292'	181.204'	CRITICAL		no	0.3
307		2.83	MH 7		17+03.00	17+03.00	179.84	179.64		0.20'	53.00'	18"	0.0035	0.0036	6.31	44.8%	1.77	0.186'	0.698'	181.20'	0.04'	181.24'	0.047'	0.06'			0.052'	0.092'	181.296'	CRITICAL		no	0.1
308		2.83	MH 8		21+42.00	21+42.00	181.36	181.16		0.20'	439.00'	18"	0.0030	0.0030	5.78	48.9%	1.77	0.163'	0.735'	181.30'	0.32'	181.90'	0.041'	0.06'			0.048'	0.370'	181.943'	o.k.		no	-
309		2.83	MH 9		23+57.00	12+72.00	182.20	182.00		0.20'	215.00'	18"	0.0030	0.0030	5.75	49.2%	1.77	0.161'	0.735'	182.10'	0.16'	182.74'	0.040'	0.06'			0.048'	0.206'	182.783'	o.k.		no	
401		2.83	MH 1		16+72.00	16+72.00	187.01	183.40		3.61'	400.00'	18"	0.0030	0.0030	5.77	49.0%	1.77	0.162'	0.735'	182.94'	0.29'	184.14'	0.041'	0.18'			0.109'	0.402'	184.244'	o.k.		no	

Mapping Point Data on the Hwy 99 North Trunk												Hydraulic Grade Line for Downstream Pipe													Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
216*	3.42	9.43	Ex. 16	90.0	45+16.00	45+16.00	80.82	80.72	y	76																									
2161		3.42	MH 16A		45+52.00	45+52.00	81.24	81.15	y		0.09'	36.00'	18"	0.0091	0.0092	10.08	33.9%	1.77	5.71	5.08	0.400'	0.578'	82.40' *	0.05'	82.45'	0.100'	0.00'			0.051'	0.099'	82.502'	o.k.		no	
2162		3.42	Bend 16B		46+87.00	46+87.00	81.25	81.25	y		0.00'	135.00'	18"	0.0000	0.0001	0.91	377.3%	1.77	0.51	0.51	0.004'	1.500'	82.74'	0.14'	82.88'					0.000'	0.142'	82.882'	CRITICAL		Yes by 2.51 cfs	0.1
2163		3.42	Bend 16C		48+23.00	48+23.00	82.53	82.53	y		0.00'	136.00'	18"	0.0091	0.0094	10.22	33.5%	1.77	5.78	5.15	0.411'	0.578'	82.88'	0.18'	83.11'					0.000'	0.182'	83.108'	o.k.		no	
217		3.42	MH 17		48+79.00	48+79.00	84.30	84.10	y		0.20'	56.00'	18"	0.0280	0.0280	17.63	19.4%	1.77	9.98	7.53	0.881'	0.428'	83.11'	0.10'	84.53'	0.220'	0.06'			0.141'	0.244'	84.669'	o.k.		no	
218	0.93	3.42	MH 18		50+40.00	50+40.00	85.00	84.78	y		0.22'	161.00'	18"	0.0030	0.0030	5.75	59.5%	1.77	3.25	3.37	0.176'	0.818'	85.12'	0.16'	85.60'	0.044'	0.66'		0.046'	0.376'	0.533'	85.973'	o.k.		no	
219		2.58	MH 19		54+00.00	54+00.00	115.40	115.20	y		0.20'	360.00'	10"	0.0477	0.0839	6.36	40.6%	0.55	11.67	11.02	1.887'	0.367'	85.97'	5.53'	115.57'	0.472'	0.48'			0.477'	6.009'	116.044'	o.k.		no	
220		2.58	MH 20		57+62.00	57+62.00	135.90	135.63	y		0.27'	362.00'	10"	0.0558	0.0559	5.19	49.7%	0.55	9.52	9.43	1.380'	0.408'	116.04'	5.08'	136.04'	0.345'	0.45'			0.399'	5.478'	136.437'	o.k.		no	
221		2.58	MH 21		62+17.00	62+17.00	159.55	158.83	y		0.72'	455.00'	10"	0.0500	0.0504	4.93	52.4%	0.55	9.04	9.13	1.295'	0.425'	136.44'	6.13'	159.26'	0.324'	0.32'			0.323'	6.457'	159.578'	o.k.		no	
222		2.58	MH 22		66+00.00	66+00.00	172.20	172.00	y		0.20'	383.00'	10"	0.0325	0.0325	3.96	65.2%	0.55	7.26	7.70	0.920'	0.483'	160.03'	4.67'	172.48'	0.230'	0.26'			0.247'	4.915'	172.731'	o.k.		no	
223	0.48	2.58	MH 23		69+59.00	69+59.00	181.38	181.18	y		0.20'	359.00'	12"	0.0250	0.0250	5.65	45.7%	0.79	7.19	6.98	0.756'	0.465'	172.73'	1.99'	181.65'	0.189'	0.19'		0.130'	0.256'	2.242'	181.901'	o.k.		no	
224		2.05	MH 24		72+74.00	72+74.00	187.45	187.25	y		0.20'	315.00'	12"	0.0186	0.0186	4.88	42.0%	0.79	6.21	5.96	0.552'	0.450'	181.90'	1.12'	187.70'	0.138'	0.05'			0.093'	1.214'	187.793'	o.k.		no	
225		2.05	MH 25		76+00.00	76+00.00	188.63	188.43	y		0.20'	326.00'	15"	0.0030	0.0030	3.55	57.7%	1.23	2.89	2.97	0.137'	0.669'	188.12'	0.31'	189.10'	0.034'	0.05'			0.041'	0.350'	189.140'	o.k.		no	
226		2.05	MH 26		79+00.00	79+00.00	189.73	189.53	y		0.20'	300.00'	15"	0.0030	0.0030	3.55	57.8%	1.23	2.89	2.96	0.136'	0.669'	189.30'	0.28'	190.20'	0.034'	0.05'			0.041'	0.325'	190.240'	o.k.		no	
227		2.05	MH 27		82+53.00	82+53.00	190.79	190.79	y		0.00'	353.00'	15"	0.0030	0.0030	3.55	57.8%	1.23	2.89	2.96	0.136'	0.669'	190.40'	0.33'	191.46'	0.034'	0.00'			0.017'	0.351'	191.476'	o.k.		no	
NE 20th Avenue Trunk																																			
100		1.95	Ex. MH 0		00+00.00	00+00.00	164.98	164.78	y																										
101		1.95	MH 1		04+07.00	04+07.00	167.40	167.20	y	90	0.20'	407.00'	15"	0.0050	0.0055	4.78	40.7%	1.23	3.90	3.68	0.211'	0.550'	165.53'	0.41'	167.75'	0.053'	0.07'	0.13'		0.128'	0.537'	167.878'	o.k.		no	
102		1.95	MH 2		07+33.00	07+33.00	169.22	169.02	y		0.20'	326.00'	15"	0.0050	0.0050	4.57	42.6%	1.23	3.72	3.57	0.198'	0.563'	167.96'	0.32'	169.58'	0.050'	0.07'			0.060'	0.378'	169.642'	o.k.		no	
103		1.95	MH 3		09+33.00	09+33.00	170.42	170.22	y		0.20'	200.00'	15"	0.0050	0.0050	4.58	42.5%	1.23	3.73	3.58	0.199'	0.563'	169.78'	0.20'	170.78'	0.050'	0.16'			0.104'	0.299'	170.886'	o.k.		no	
104	0.49	1.95	MH 4		11+80.60	11+80.60	176.42	174.20	y	90	2.22'	247.60'	15"	0.0150	0.0153	8.00	24.3%	1.23	6.52	5.38	0.449'	0.413'	170.89'	0.33'	174.61'	0.112'	0.30'	0.29'	0.108'	0.403'	0.733'	175.016'	o.k.		no	
105		1.56	MH 5		14+90.60	00+00.00	189.34	189.22	y		0.12'	310.00'	10"	0.0400	0.0413	4.46	34.9%	0.55	8.18	7.41	0.852'	0.333'	176.75'	1.90'	189.55'	0.213'	0.17'			0.190'	2.088'	189.743'	o.k.		no	
1051		1.56	MH 5A		02+24.00	02+24.00	195.10	194.90	y		0.20'	224.00'	18"	0.0248	0.0248	16.59	9.4%	1.77	9.39	5.54	0.477'	0.285'	189.74'	0.14'	195.19'	0.119'	0.03'			0.072'	0.210'	195.257'	o.k.		no	
301		1.56	MH 1		06+19.00	06+19.00	195.89	195.69	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	38.3%	1.77	2.30	2.15	0.072'	0.638'	195.74'	0.10'	196.33'	0.018'	0.03'			0.022'	0.121'	196.349'	o.k.		no	
302		1.56	MH 2		10+09.00	10+09.00	196.68	196.48	y		0.20'	390.00'	18"	0.0015	0.0015	4.10	38.1%	1.77	2.32	2.17	0.073'	0.638'	196.53'	0.10'	197.12'	0.018'	0.03'			0.022'	0.120'	197.139'	o.k.		no	
303		1.56	MH 3		14+04.00	14+04.00	197.47	197.27	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	38.3%	1.77	2.30	2.15	0.072'	0.638'	197.32'	0.10'	197.91'	0.018'	0.13'			0.074'	0.173'	197.981'	o.k.		no	
304		1.56	MH 4		17+99.00	17+99.00	203.56	203.36	y		0.20'	395.00'	18"	0.0149	0.0149	12.86	12.1%	1.77	7.28	4.88	0.369'	0.345'	197.98'	0.19'	203.71'	0.092'	0.02'			0.057'	0.248'	203.762'	o.k.		no	
3041		1.56	MH 4A		21+12.00	21+12.00	203.94	203.94	y		0.00'	313.00'	18"	0.0012	0.0012	3.67	42.5%	1.77	2.08	1.99	0.062'	0.675'	204.24'	0.07'	204.62'	0.015'	0.02'			0.018'	0.092'	204.633'	o.k.		no	
3042		1.56	MH 4B		23+07.00	23+07.00	204.87	204.17	y		0.70'	195.00'	18"	0.0012	0.0012	3.62	43.1%	1.77	2.05	1.96	0.060'	0.675'	204.63'	0.05'	204.85'	0.015'	0.00'			0.007'	0.054'	204.852'	o.k.		no	
Knollridge Trunk																																			
218	0.93	3.42	MH 18	0.0	50+40.00	00+00.00	85.00	84.78	y																										
401		0.93	MH 1		01+26.50	01+26.50	85.86	85.86	y		0.00'	126.50'	12"	0.0020	0.0068	2.95	31.6%	0.79	3.75	3.28	0.167'	0.375'	85.97'	0.11'	86.24'	0.042'	0.02'			0.033'	0.145'	86.268'	o.k.		no	
402		0.93	MH 2		03+35.50	03+35.50	86.28	86.28	y		0.00'	209.00'	12"	0.0020	0.0020	1.60	58.1%	0.79	2.04	2.11	0.069'	0.545'	86.41'	0.13'	86.83'	0.017'	0.02'			0.021'	0.152'	86.846'	o.k.		no	
403		0.93	MH 3		06+74.50	06+74.50	86.96	86.96	y		0.00'	339.00'	12"	0.0020	0.0020	1.60	58.1%	0.79	2.04	2.11	0.069'	0.545'	86.85'	0.21'	87.51'	0.017'	0.02'			0.021'	0.234'	87.526'	o.k.		no	
404		0.93	MH 4		09+50.70	09+59.00	87.51	87.51	y		0.00'	276.20'	12"	0.0020	0.0020	1.59	58.3%	0.79	2.03	2.10	0.069'	0.545'	87.53'	0.17'	88.06'	0.017'	0.02'			0.021'	0.194'	88.076'	o.k.		no	
405		0.93	MH 5		12+80.00	12+80.00	88.15	88.15	y		0.00'	321.00'	12"	0.0020	0.0020	1.60	58.3%	0.79	2.03	2.10	0.069'	0.545'	88.08'	0.20'	88.70'	0.017'	0.11'			0.062'	0.263'	88.757'	o.k.		no	
406		0.93	MH 6		14+55.13	14+55.13	90.87	90.87	y		0.00'	175.13'	12"	0.0155	0.0155	4.45	20.9%	0.79	5.67	4.42	0.304'	0.300'	88.76'	0.19'	91.17'	0.076'	0.33'			0.202'	0.396'	91.372'	o.k.		no	
407		0.93	MH 7		18+57.30	18+57.30	124.65	124.65	y		0.00'	402.17'	12"	0.0840	0.0840	10.35	9.0%	0.79	13.18	7.78	0.939'	0.190'	91.37'	0.76'	124.84'	0.235'	0.37'			0.304'	1.066'	125.144'	o.k.		no	
408		0.93	MH 8		19+81.07	19+81.07	140.50	138.26	y		2.24'	123.77'	12"	0.1099	0.1100	11.85	7.9%	0.79	15.08	8.30	1.069'	0.165'	125.14'	0.28'	138.43'	0.267'	0.00'			0.134'	0.411'	138.559'	o.k.		no	
Gee Creek Trunk																																			
104	0.49	1.95	MH 4	0.0	11+80.60	12+47.60	176.42	174.20	y																										
502		0.49	MH 2		14+93.00	14+93.00	178.84	178.64	y		0.20'	245.40'	10"	0.0070	0.0090	2.09	23.4%	0.55	3.83	3.10	0.150'	0.267'	175.02'	0.19'	178.91'	0.037'	0.04'			0.040'	0.227'	178.947'	o.k.		no	
503		0.49	MH 3		18+32.60	18+32.60	181.22	181.22	y		0.00'	339.60'	10"	0.0076	0.0070	1.84	26.6%	0.55	3.37	2.83	0.125'	0.288'	179.13'	0.24'	181.51'	0.031'	0.05'			0.042'	0.278'	181.549'	o.k.		no	
504		0.49	MH 4		21+11.40	21+11.40	183.93	183.73	y		0.20'	278.80'	10"	0.0090	0.0090	2.08	23.4%	0.55	3.82	3.10	0.149'	0.267'	181.55'	0.21'	184.00'	0.037'	0.02'			0.028'	0.241'	184.025'	o.k.		no	
505		0.49	MH 5		23+92.70	23+92.70	184.80	184.60	y		0.20'	281.30'	10"	0.0024	0.0024	1.07	45.6%	0.55	1.97	1.91	0.056'	0.388'	184.32'	0.15'	184.99'	0.014'	0.02'			0.017'	0.164'	185.005'	o.k.		no	
506		0.49	MH 6		27+92.70	27+92.70	186.00	185.80	y		0.20'	400.00'	10"	0.0025	0.0025	1.10	44.5%	0.55	2.01	1.95	0.059'	0.388'	185.19'	0.21'	186.19'	0.015'	0.02'			0.018'	0.227'	186.205'	o.k.		no	
507		0.49	MH 7		31+92.70	31+92.70	191.02	187.00	y		4.02'	400.00'	10"	0.0025	0.0025	1.10	44.5%	0.55	2.01	1.95	0.059'	0.388'	186.39'	0.21'	187.39'	0.015'	0.03'			0.023'	0.232'	187.410'	o.k.		no	
508		0.49	MH 8		35+92.70	35+92.70	193.00	192.80	y		0.20'	400.00'	10"	0.0045	0.0045	1.47	33.3%	0.55	2.69	2.39	0.089'	0.321'	191.34'	0.25'	193.12'	0.022'	0.02'			0.021'	0.271'	193.142'	o.k.		no	
509		0.49	MH 9		39+92.70	39+92.70	195.00	194.00	y		1.00'	400.00'	10"	0.0025	0.0025	1.10	44.5%	0.55	2.01	1.95	0.059'	0.388'	193.39'	0.21'	194.39'	0.015'	0.00'			0.007'	0.216'	194.395'	o.k.		no	
Whipple Creek Trunk																																			
601		0.63	MH 1		00+00.00	00+00.00	251.32	251.30	y		0.02'	0.00'																							
602		0.63	MH 2		01+07.00	01+07.00	252.02	251.81	y		0.21'	107.00'	12"	0.0046	0.0046	2.42	26.0%	0.79	3.08	2.59	0.104'	0.345'	251.67'	0.05'	252.16'	0.026'	0.13'			0.079'	0.126'	252.234'	o.k.		no	
603		0.63	MH 3		04+09.00	04+09.00	260.95	260.78	y		0.17'	302.00'	12"	0.0290	0.0290	6.08	10.3%	0.79	7.75	4.92	0.376'	0.210'	252.23'	0.23'	260.99'	0.094'	0.04'			0.067'	0.296'	261.057'	o.k.		no	
604		0.63	MH 4		08+09.00	08+09.00	263.14	263.05	y		0.09'	400.00'	12"	0.0053	0.0053	2.59	24.3%	0.79	3.30	2.72	0.115'	0.330'	261.28'	0.18'	263.38'	0.029'	0.03'			0.031'	0.214'	263.411'	o.k.		no	
604		0.63	MH 4A		09+84.00	09+84.00	263.85	263.83	y		0.02'	175.00'	12"	0.0039	0.0039	2.24	28.1%	0.79	2.86	2.46	0.094'	0.360'	263.50'	0.07'	264.19'	0.023'	0.03'			0.026'	0.099'	264.216'	o.k.		no	
605		0.63	MH 5		12+07.00	12+07.00	264.76	264.58	y		0.18'	223.00'	12"	0.0033	0.0033	2.04	30.8%	0.79	2.60	2.28	0.081'	0.375'	264.23'	0.09'	264.96'	0.020'	0.03'			0.026'	0.117'	264.981'	o.k.		no	
606		0.63	MH 6		16+05.00	16+05.00	266.65	266.39	y		0.26'	398.00'	12"	0.0041	0.0041	2.29	27.5%	0.79	2.91	2.45	0.093'	0.345'	265.11'	0.17'	266.74'	0.023'	0.00'			0.012'	0.186'	266.747'	o.k.		no	

Mapping Point Data on Cougar Canyon Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
402		2.83	MH 2		20+30.00	20+30.00	192.15	192.05		0.10'	358.00'	18"	0.0140	0.0141	12.50	22.6%	1.77	0.509'	0.480'	187.49'	0.40'	192.53'	0.127'	0.12'			0.121'	0.519'	192.651'	o.k.		no	
403		2.83	MH 3		23+80.00	23+80.00	195.01	194.81		0.20'	350.00'	15"	0.0076	0.0076	5.65	50.0%	1.23	0.329'	0.625'	192.78'	0.66'	195.44'	0.082'	0.15'			0.118'	0.782'	195.553'	o.k.		no	
404		2.83	MH 4		23+87.00	00+00.00	199.43	195.09		4.34'	7.00'	15"	0.0076	0.0114	6.92	40.8%	1.23	0.441'	0.550'	195.56'	0.01'	195.64'	0.110'	0.08'			0.097'	0.111'	195.737'	o.k.		no	
501	0.67	2.83	MH 1		03+50.00	03+50.00	201.18	201.18		0.00'	350.00'	15"	0.0076	0.0050	4.58	61.7%	1.23	0.236'	0.694'	200.12'	0.61'	201.87'	0.059'	0.07'		0.054'	0.092'	0.698'	201.966'	o.k.		no	
502		2.15	MH 2		07+10.00	07+10.00	209.28	202.94		6.34'	360.00'	15"	0.0050	0.0049	4.53	47.5%	1.23	0.203'	0.594'	201.97'	0.41'	203.53'	0.051'	0.16'			0.106'	0.518'	203.639'	o.k.		no	
503		2.15	MH 3		09+95.00	09+95.00	214.00	213.56		0.44'	285.00'	15"	0.0150	0.0150	7.94	27.1%	1.23	0.458'	0.431'	209.71'	0.44'	213.99'	0.115'	0.06'			0.088'	0.532'	214.079'	o.k.		no	
504		2.15	MH 4		13+95.00	13+95.00	215.60	215.60		0.00'	400.00'	15"	0.0040	0.0040	4.10	52.5%	1.23	0.176'	0.638'	214.64'	0.43'	216.24'	0.044'	0.06'			0.053'	0.484'	216.290'	o.k.		no	
505		2.15	MH 5		17+95.00	00+00.00	217.20	217.20		0.00'	400.00'	15"	0.0040	0.0040	4.10	52.5%	1.23	0.176'	0.638'	216.29'	0.43'	217.84'	0.044'	0.09'			0.065'	0.496'	217.902'	o.k.		no	
601		2.15	MH 1		03+19.00	03+19.00	219.50	219.22	90	0.28'	319.00'	15"	0.0050	0.0063	5.15	41.7%	1.23	0.245'	0.550'	217.90'	0.39'	219.77'	0.061'	0.05'	0.16'		0.132'	0.524'	219.902'	o.k.		no	
602		2.15	MH 2		05+83.00	05+83.00	220.34	220.24	90	0.10'	264.00'	15"	0.0028	0.0028	3.43	62.8%	1.23	0.134'	0.713'	220.21'	0.26'	220.95'	0.033'	0.05'	0.09'		0.083'	0.345'	221.035'	o.k.		no	
603		2.15	MH 3		08+93.00	08+93.00	221.31	221.21		0.10'	310.00'	15"	0.0028	0.0028	3.43	62.7%	1.23	0.134'	0.713'	221.05'	0.31'	221.92'	0.033'	0.05'			0.040'	0.348'	221.963'	o.k.		no	
604		2.15	MH 4		12+62.00	12+62.00	222.44	222.34		0.10'	369.00'	15"	0.0028	0.0028	3.42	62.9%	1.23	0.133'	0.713'	222.02'	0.37'	223.05'	0.033'	0.05'			0.040'	0.407'	223.093'	o.k.		no	
605		2.15	MH 5		14+75.00	14+75.00	223.14	223.04		0.10'	213.00'	18"	0.0028	0.0028	5.59	38.5%	1.77	0.136'	0.638'	223.09'	0.10'	223.68'	0.034'	0.05'			0.040'	0.142'	223.718'	o.k.		no	
606		2.15	MH 6		18+00.00	18+00.00	224.15	224.05		0.10'	325.00'	15"	0.0028	0.0028	3.43	62.8%	1.23	0.134'	0.713'	223.85'	0.32'	224.76'	0.033'	0.05'			0.040'	0.363'	224.803'	o.k.		no	
607		2.15	MH 7		20+89.00	20+89.00	225.06	224.96	90	0.10'	289.00'	15"	0.0028	0.0028	3.43	62.8%	1.23	0.134'	0.713'	224.86'	0.29'	225.67'	0.033'	0.05'	0.09'		0.083'	0.370'	225.756'	o.k.		no	
608		2.15	MH 8		24+65.00	24+65.00	226.21	226.11	90	0.10'	376.00'	18"	0.0028	0.0028	5.57	38.7%	1.77	0.135'	0.638'	225.76'	0.18'	226.75'	0.034'	0.05'	0.09'		0.083'	0.263'	226.831'	o.k.		no	
609		2.15	MH 9		27+50.00	27+50.00	227.11	227.01		0.10'	285.00'	15"	0.0028	0.0028	3.43	62.7%	1.23	0.134'	0.713'	226.92'	0.28'	227.72'	0.033'	0.05'			0.040'	0.323'	227.763'	o.k.		no	
610		2.15	MH 10		30+18.00	30+18.00	227.96	227.86		0.10'	268.00'	15"	0.0028	0.0028	3.43	62.8%	1.23	0.133'	0.713'	227.82'	0.27'	228.57'	0.033'	0.05'			0.040'	0.306'	228.613'	o.k.		no	
611	0.32	2.15	MH 11		34+08.00	34+08.00	229.15	229.05	64	0.10'	390.00'	18"	0.0028	0.0028	5.57	38.6%	1.77	0.135'	0.638'	228.61'	0.19'	229.69'	0.034'	0.05'	0.07'	0.016'	0.087'	0.274'	229.775'	o.k.		no	
612		1.84	MH 12		36+26.00	36+26.00	230.03	229.86	65	0.17'	218.00'	15"	0.0028	0.0033	3.70	49.7%	1.23	0.138'	0.613'	229.77'	0.18'	230.47'	0.035'	0.04'	0.08'		0.074'	0.252'	230.546'	o.k.		no	
613		1.84	MH 13		39+50.00	39+50.00	230.87	230.77		0.10'	324.00'	15"	0.0028	0.0023	3.10	59.3%	1.23	0.106'	0.681'	230.71'	0.24'	231.45'	0.026'	0.04'			0.035'	0.276'	231.486'	o.k.		no	
614		1.84	MH 14		42+20.00	42+20.00	231.73	231.63		0.10'	270.00'	15"	0.0028	0.0028	3.44	53.4%	1.23	0.124'	0.638'	231.51'	0.21'	232.27'	0.031'	0.04'			0.037'	0.249'	232.305'	o.k.		no	
615		1.84	MH 15		45+42.00	45+42.00	232.73	232.63		0.10'	322.00'	15"	0.0028	0.0028	3.42	53.6%	1.23	0.123'	0.638'	232.37'	0.25'	233.27'	0.031'	0.04'			0.037'	0.290'	233.305'	o.k.		no	
616		1.84	MH 16		49+20.00	49+20.00	234.06	233.79		0.27'	378.00'	15"	0.0028	0.0028	3.43	53.5%	1.23	0.124'	0.638'	233.37'	0.30'	234.43'	0.031'	0.06'			0.044'	0.340'	234.471'	o.k.		no	
617		1.84	MH 17		52+40.00	52+40.00	235.44	235.34		0.10'	320.00'	15"	0.0040	0.0040	4.10	44.8%	1.23	0.163'	0.581'	234.64'	0.27'	235.92'	0.041'	0.17'			0.103'	0.375'	236.024'	o.k.		no	
618		1.84	MH 18		55+70.00	55+70.00	241.50	241.38		0.12'	330.00'	15"	0.0180	0.0180	8.69	21.1%	1.23	0.474'	0.375'	236.02'	0.43'	241.76'	0.118'	0.06'			0.088'	0.520'	241.843'	o.k.		no	
619		1.84	MH 19		58+70.00	58+70.00	242.80	242.70		0.10'	300.00'	15"	0.0040	0.0040	4.10	44.8%	1.23	0.163'	0.581'	242.08'	0.26'	243.28'	0.041'	0.06'			0.049'	0.304'	243.330'	o.k.		no	
620		1.84	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'	355.00'	15"	0.0040	0.0040	4.10	44.8%	1.23	0.163'	0.581'	243.38'	0.30'	244.80'	0.041'	0.06'			0.049'	0.351'	244.850'	o.k.		no	
621	0.97	1.84	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	15"	0.0040	0.0040	4.10	44.8%	1.23	0.163'	0.581'	244.90'	0.28'	246.20'	0.041'	0.03'	0.10'	0.097'	0.137'	0.413'	246.338'	o.k.	o.k.	no	
622		0.97	MH 22	269.0	67+44.00	67+44.00	246.77	246.67	90	0.10'	194.00'	8"	0.0049	0.0049	0.85	114.6%	0.35	0.092'	0.667'	246.39'	1.24'	247.63'	0.023'	0.03'	0.06'		0.057'	1.297'	247.684'	CRITICAL	o.k.	Yes by 0.12 cfs	0.3
623		0.97	MH 23	262.5	70+78.00	70+78.00	248.51	248.41		0.10'	334.00'	8"	0.0049	0.0049	0.85	114.5%	0.35	0.092'	0.667'	247.68'	2.14'	249.82'	0.023'	0.03'			0.027'	2.163'	249.848'	CRITICAL	o.k.	Yes by 0.12 cfs	0.7
624		0.97	MH 24	257.5	73+28.00	73+28.00	249.83	249.73		0.10'	250.00'	8"	0.0049	0.0049	0.85	114.8%	0.35	0.091'	0.667'	249.85'	1.60'	251.45'	0.023'	0.03'			0.027'	1.626'	251.474'	CRITICAL	o.k.	Yes by 0.13 cfs	1.0
624		0.97	MH 24A	262.0	75+75.00	75+75.00	251.14	251.04	38	0.10'	247.00'	8"	0.0049	0.0049	0.85	114.6%	0.35	0.092'	0.667'	251.47'	1.58'	253.05'	0.023'	0.03'	0.02'		0.038'	1.617'	253.091'	CRITICAL	o.k.	Yes by 0.12 cfs	1.3
625		0.97	MH 25	263.0	78+60.00	78+60.00	253.09	252.53		0.56'	285.00'	8"	0.0049	0.0049	0.85	114.9%	0.35	0.091'	0.667'	253.09'	1.82'	254.91'	0.023'	0.03'			0.025'	1.847'	254.938'	CRITICAL	o.k.	Yes by 0.13 cfs	1.7
626		0.97	MH 26	264.0	79+50.00	79+50.00	257.50	253.45		4.05'	90.00'	8"	0.0040	0.0040	0.77	126.8%	0.35	0.075'	0.667'	254.94'	0.58'	255.51'	0.019'	0.11'			0.065'	0.640'	255.578'	CRITICAL	o.k.	Yes by 0.21 cfs	1.4
627		0.97	MH 27	267.0	82+10.00	82+10.00	261.50	261.40		0.10'	260.00'	8"	0.0150	0.0150	1.48	65.5%	0.35	0.315'	0.387'	257.89'	1.47'	261.79'	0.079'	0.16'			0.118'	1.591'	261.904'	o.k.	o.k.	no	
628		0.97	MH 28	274.0	84+95.00	84+95.00	268.27	268.17	76	0.10'	285.00'	8"	0.0234	0.0234	1.85	52.4%	0.35	0.447'	0.340'	261.90'	1.79'	268.51'	0.112'	0.03'	0.29'		0.212'	1.999'	268.722'	o.k.	o.k.	no	
629		0.97	MH 29	275.0	86+45.00	86+45.00	268.97	268.87	90	0.10'	150.00'	8"	0.0040	0.0040	0.77	126.8%	0.35	0.075'	0.667'	268.94'	0.96'	269.90'	0.019'	0.11'	0.05'		0.088'	1.047'	269.984'	CRITICAL	o.k.	Yes by 0.21 cfs	0.4
630		0.97	MH 30	279.0	87+83.00	87+83.00	271.07	270.97		0.10'	138.00'	8"	0.0145	0.0145	1.46	66.6%	0.35	0.310'	0.393'	269.98'	0.77'	271.36'	0.078'	0.10'			0.091'	0.859'	271.454'	o.k.	o.k.	no	
631		0.97	MH 31	279.0	88+47.00	88+47.00	272.05	271.95	90	0.10'	64.00'	8"	0.0137	0.0137	1.42	68.4%	0.35	0.297'	0.403'	271.47'	0.35'	272.35'	0.074'	0.03'	0.19'		0.145'	0.497'	272.499'	o.k.	o.k.	no	
632		0.97	MH 32	282.5	90+85.00	90+85.00	273.00	273.00		0.00'	238.00'	8"	0.0040	0.0040	0.77	127.0%	0.35	0.075'	0.667'	272.72'	1.52'	274.24'	0.019'	0.00'			0.009'	1.531'	274.248'	CRITICAL	o.k.	Yes by 0.21 cfs	0.6
Pump Station Line																																
620		1.84	MH 20		62+25.00	62+25.00	244.32	244.22		0.10'																						
621	0.97	1.84	MH 21	265.0	65+50.00	65+50.00	245.72	245.62	90	0.10'	325.00'	15"	0.0040	0.0040	4.10	44.8%	1.23	0.163'	0.581'	244.90'	0.28'	246.20'	0.041'	0.04'	0.10'	0.097'	0.141'	0.418'	246.343'	o.k.	o.k.	no	
8211		0.97	MH 21-1	260.0	68+50.00	68+50.00	247.02	246.92		0.10'	300.00'	10"	0.0040	0.0040	1.39	69.9%	0.55	0.116'	0.504'	246.34'	0.50'	247.42'	0.029'	0.04'			0.035'	0.537'	247.459'	o.k.	o.k.	no	
8212		0.97	MH 21-2	264.0	70+66.00	70+66.00	247.98	247.88	90	0.10'	216.00'	10"	0.0040	0.0040	1.39	70.1%	0.55	0.117'	0.513'	247.53'	0.36'	248.39'	0.029'	0.01'	0.07'		0.059'	0.416'	248.452'	o.k.	o.k.	no	
8213		0.97	MH 21-3	262.5	73+00.00	73+00.00	249.02	248.48		0.54'	234.00'	8"	0.0040	0.0021	0.56	173.5%	0.35	0.040'	0.667'	248.65'	1.50'	250.14'	0.010'	0.03'			0.018'	1.515'	250.161'	CRITICAL	o.k.	Yes by 0.41 cfs	1.0
8214		0.97	MH 21-4	261.0	75+58.00	75+58.00	250.18	250.05	90	0.13'	258.00'	8"	0.0040	0.0040	0.77	126.9%	0.35	0.075'	0.667'	250.16'	1.65'	251.81'	0.019'	0.07'	0.05'		0.066'	1.716'	251.877'	CRITICAL	o.k.	Yes by 0.21 cfs	1.1
8215		0.97	MH 21-5	260.5	76+28.00	76+28.00	250.83	250.73		0.10'	70.00'	8"	0.0079	0.0079	1.07	90.5%	0.35	0.188'	0.490'	251.88'	0.35'	252.23'	0.047'	0.03'			0.037'	0.388'	252.265'	CRITICAL	o.k.	no	0.8
8216		0.97	MH 21-6	262.0	80+43.00	80+43.00	252.59	252.49	81	0.10'	415.00'	8"	0.0040	0.0040	0.77	126.8%	0.35	0.075'	0.667'	252.26'	2.65'	254.92'	0.019'	0.35'	0.05'		0.208'	2.862'	255.127'	CRITICAL	o.k.	Yes by 0.21 cfs	1.8
8217		0.97	MH 21-7	265.0	81+18.00	81+18.00	258.00	258.00		0.00'	75.00'	8"	0.0072	0.0721	3.25	29.9%	0.35	0.998'	0.240'	255.13'	0.65'	258.24'	0.250'	0.00'			0.125'	0.776'	258.365'	o.k.	o.k.	no	
*Information referenced from the Salmon Creek Interceptor Analysis																																
94th Street Trunk																																
152		4.33	MH 52		00+00.00	00+00.00	156.06	155.80	22																							
719		1.11	MH 19		00+83.50	00+83.50	162.00	161.90	29	0.10'	83.50'	10"	0.0700	0.0699	5.81	19.1%	0.55	1.004'	0.238'	158.73'	0.37'	162.14'	0.251'	0.31'	0.15'		0.356'	0.728'	162.494'	o.k.		no	
720		1.11	MH 20		04+22.00	04+22.00	181.70	181.63		0.07'	338.50'	10"	0.0580	0.0580	5.29	21.0%	0.55	0.889'	0.250'	162.49'	1.41'	181.88'	0.222'	0.13'			0.178'	1.585'	182.058'	o.k.		no	
721		1.11	MH 21		07+51.00	07+51.00	187.42	187.42		0.00'	329.00'	10"	0.0174	0.0174	2.90	38.3%	0.55	0.383'	0.354'	182.06'	0.96'	187.77'	0.096'	0.04'			0.068'	1.029'	187.843'	o.k.		no	
722		1.11	MH 22		10+33.00	10+33.00	188.45	188.45		0.00'	282.00'	12"	0.0022	0.0037	2.16	51.4%	0.79	0.117'	0.500'	187.92'	0.27'	188.95'	0.029'	0.03'			0.029'	0.299'	188.979'	o.k.		no	
723		1.11	MH 23		14+62.00	14+62.00	189.40	189.40		0.00'	429.00'	12"	0.0022	0.0022	1.68	66.0%	0.79	0.080'	0.580'	189.03'	0.36'	189.98'	0.020'	0.03'			0.024'	0.389'	190.004'	o.k.		no	
724		1.11	MH 24		17+36.00	17+36.00	190.00	190.00		0.00'	274.00'	12"	0.0022	0.0022	1.67	66.4%	0.79	0.081'	0.590'	190.00'	0.23'	190.59'	0.020'	0.03'			0.027'	0.256'	190.617'	o.k.		no	
724A		1.11	MH 24		18+97.30	18+97.30	190.45	190.45		0.00'	161.30'	12"	0.0028	0.0028	1.89	58.8%	0.79	0.096'	0.545'	190.62'	0.14'	191.00'	0.024'	0.03'			0.028'	0.172'	191.023'	o.k.		no	
725		1.11	MH 25		22+15.30	22+15.30	191.34	191.34		0.00'	318.00'	10"	0.0028	0.0028	1.16	95.5%	0.55	0.091'	0.638'	191.09'	0.63'	191.98'	0.023'	0.03'			0.027'	0.653'	192.005'	o.k.		no	
726		1.11	MH 26		25+37.70	25+37.70	192.24	192.24		0.00'	322.40'	10"	0.0028	0.0028	1.16	95.6%	0.55	0.091'	0.638'	192.00'	0.63'	192.88'	0.023'	0.03'			0.026'	0.661'	192.904'	o.k.		no	
727		1.11	MH 27		29+42.50	29+42.50	193.29	193.29		0.00'	404.80'	10"	0.0028	0.0026	1.12	99.2%	0.55	0.085'	0.667'	192.91'	0.79'	193.96'	0.021'	0.04'			0.028'	0.816'	193.985'	o.k.		no	
728		1.11	MH 28		32+21.10	32+21.10	194.16	194.16		0.00'	278.60'	10"	0.0028	0.0031	1.23	90.4%	0.55	0.100'	0.613'	193.98'	0.55'	194.77'	0.025'	0.03'			0.028'	0.583'	194.801'	o.k.		no	
729		1.11	MH 29		35+56.20	35+56.20	195.19	195.09		0.10'	335.10'	10"	0.0028	0.0028	1.16	95.9%	0.55	0.090'	0.638'	194.80'	0.66'	195.73'	0.023'	0.00'			0.011'	0.671'	195.739'	o.k.		no	

			Benchmark Years		1	2	3	4	5	ERU Factor	250 gal				
Plan Year	Calendar Year	Point 101 14	Point 110 14	Point 116 14	Point 118 14	Point 121 14	Point 123 14	Point 139 14	Point 719 14	Point 201 14	Point 208 14	Point 304 14	Point 502 14	Point 612 14	Point 632 14	Point 7217 14
Include in Calculation? (Y/N)		y	y	y	y	y	y	y	y	y	y	y	Y	y	y	y
1	1998	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	5792.6	5666.7	5351.9	5288.9	5163.0	5100.0	4281.5	944.5	3337.1	3022.2	2644.5	1951.9	1637.1	818.5	818.5
	Domestic Flow	791,876	774,662	731,625	723,017	705,803	697,195	585,300	129,110	456,190	413,153	361,509	266,828	223,791	111,896	111,896
	Peak Domestic Flow	2,522,270	2,474,416	2,354,003	2,329,782	2,281,199	2,256,835	1,935,432	492,667	1,552,279	1,421,113	1,261,075	958,976	817,236	431,289	431,289
	Industrial Flow	138,333	135,325	127,807	126,304	123,296	121,793	102,246	22,554	79,692	72,173	63,152	46,612	39,094	19,547	19,547
	Peak Industrial Flow	138,333	135,325	127,807	126,304	123,296	121,793	102,246	22,554	79,692	72,173	63,152	46,612	39,094	19,547	19,547
	Fixed Flow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	2,660,602	2,609,742	2,481,810	2,456,086	2,404,495	2,378,628	2,037,678	515,222	1,631,971	1,493,286	1,324,227	1,005,589	856,330	450,836	450,836
	ERUs	3,721	3,640	3,438	3,397	3,316	3,276	2,750	607	2,144	1,941	1,699	1,254	1,052	526	526
2	1999	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	5959.7	5830.1	5506.2	5441.4	5311.9	5247.1	4405.0	971.7	3433.3	3109.4	2720.7	2008.2	1684.3	842.1	842.1
	Domestic Flow	814,091	796,393	752,149	743,300	725,603	716,754	601,719	132,732	468,987	424,743	371,650	274,313	230,069	115,035	115,035
	Peak Domestic Flow	2,583,511	2,534,548	2,411,336	2,386,552	2,336,837	2,311,906	1,982,985	505,445	1,590,790	1,456,505	1,292,641	983,252	838,053	442,523	442,523
	Industrial Flow	140,921	137,857	130,198	128,667	125,603	124,071	104,159	22,976	81,183	73,524	64,333	47,484	39,825	19,913	19,913
	Peak Industrial Flow	140,921	137,857	130,198	128,667	125,603	124,071	104,159	22,976	81,183	73,524	64,333	47,484	39,825	19,913	19,913
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	2,724,432	2,672,405	2,541,534	2,515,219	2,462,441	2,435,977	2,087,144	528,421	1,671,973	1,530,029	1,356,974	1,030,736	877,878	462,436	462,436
	ERUs	3,820	3,737	3,529	3,488	3,405	3,363	2,824	623	2,201	1,993	1,744	1,287	1,080	540	540
3	2000	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	6047.1	5915.6	5587.0	5521.3	5389.8	5324.1	4469.6	985.9	3483.7	3155.0	2760.6	2037.6	1709.0	854.5	854.5
	Domestic Flow	828,238	810,233	765,220	756,217	738,212	729,210	612,176	135,039	477,137	432,124	378,109	279,080	234,067	117,034	117,034
	Peak Domestic Flow	2,623,435	2,573,742	2,448,691	2,423,537	2,373,079	2,347,775	2,013,920	513,682	1,615,901	1,479,474	1,313,109	998,962	851,511	449,760	449,760
	Industrial Flow	143,557	140,436	132,634	131,074	127,953	126,393	106,107	23,406	82,701	74,899	65,537	48,372	40,570	20,285	20,285
	Peak Industrial Flow	143,557	140,436	132,634	131,074	127,953	126,393	106,107	23,406	82,701	74,899	65,537	48,372	40,570	20,285	20,285
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	2,766,992	2,714,178	2,581,326	2,554,611	2,501,032	2,474,168	2,120,028	537,088	1,698,502	1,554,373	1,378,646	1,047,335	892,081	470,045	470,045
	ERUs	3,887	3,803	3,591	3,549	3,465	3,422	2,873	634	2,239	2,028	1,775	1,310	1,099	549	549
4	2001	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	6135.4	6002.1	5668.6	5601.9	5468.6	5401.9	4534.9	1000.3	3534.6	3201.1	2801.0	2067.4	1733.9	867.0	867.0
	Domestic Flow	842,632	824,314	778,519	769,350	751,042	741,883	622,815	137,386	485,429	439,634	384,680	283,930	238,135	119,068	119,068
	Peak Domestic Flow	2,663,981	2,613,547	2,486,630	2,461,099	2,409,887	2,384,204	2,045,340	522,052	1,641,206	1,502,806	1,333,903	1,014,924	865,185	457,114	457,114
	Industrial Flow	146,243	143,064	135,116	133,526	130,347	128,757	108,093	23,844	84,249	76,301	66,763	49,277	41,330	20,665	20,665
	Peak Industrial Flow	146,243	143,064	135,116	133,526	130,347	128,757	108,093	23,844	84,249	76,301	66,763	49,277	41,330	20,665	20,665
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	2,810,224	2,756,611	2,621,745	2,594,625	2,540,234	2,512,962	2,153,433	545,896	1,725,454	1,579,107	1,400,666	1,064,201	906,515	477,779	477,779
	ERUs	3,955	3,870	3,655	3,612	3,526	3,483	2,924	645	2,279	2,064	1,806	1,333	1,118	559	559
5	2002	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	6224.9	6089.6	5751.3	5683.6	5548.3	5480.6	4601.0	1014.9	3586.1	3247.8	2841.8	2097.5	1759.2	879.6	879.6
	Domestic Flow	857,295	838,658	792,066	782,748	764,111	754,793	633,653	139,776	493,877	447,285	391,374	288,871	242,279	121,140	121,140
	Peak Domestic Flow	2,705,206	2,654,019	2,525,204	2,499,292	2,447,313	2,421,245	2,077,290	530,569	1,667,041	1,526,535	1,355,050	1,031,160	879,095	464,598	464,598
	Industrial Flow	148,979	145,740	137,644	136,024	132,786	131,166	110,115	24,290	85,825	77,728	68,012	50,199	42,103	21,051	21,051
	Peak Industrial Flow	148,979	145,740	137,644	136,024	132,786	131,166	110,115	24,290	85,825	77,728	68,012	50,199	42,103	21,051	21,051
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	2,854,185	2,799,759	2,662,848	2,635,316	2,580,098	2,552,411	2,187,404	554,859	1,752,866	1,604,263	1,423,062	1,081,359	921,198	485,649	485,649
	ERUs	4,025	3,938	3,719	3,675	3,588	3,544	2,975	656	2,319	2,100	1,838	1,356	1,138	569	569
Ultimate		92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	15241.3	14910.0	14081.7	13916.0	13584.7	13419.0	11265.3	2485.0	8780.3	7952.0	6958.0	5135.7	4307.3	2153.7	2153.7
	Domestic Flow	2,436,438	2,383,472	2,251,057	2,224,574	2,171,608	2,145,125	1,800,846	397,245	1,403,600	1,271,185	1,112,287	820,974	688,559	344,279	344,279
	Peak Domestic Flow	6,751,984	6,628,116	6,316,143	6,253,341	6,127,314	6,064,085	5,228,050	1,394,564	4,225,652	3,880,684	3,458,247	2,655,201	2,275,253	1,225,830	1,225,830
	Industrial Flow	218,592	213,840	201,960	199,584	194,832	192,456	161,568	35,640	125,928	114,048	99,792	73,656	61,776	30,888	30,888
	Peak Industrial Flow	218,592	213,840	201,960	199,584	194,832	192,456	161,568	35,640	125,928	114,048	99,792	73,656	61,776	30,888	30,888
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	6,970,576	6,841,956	6,518,103	6,452,925	6,322,146	6,256,541	5,389,618	1,430,204	4,351,580	3,994,732	3,558,039	2,728,857	2,337,029	1,256,718	1,256,718
	ERUs	10,620	10,389	9,812	9,697	9,466	9,350	7,850	1,732	6,118	5,541	4,848	3,579	3,001	1,501	1,501

			Benchmark Years		6	7	8	9	10	ERU Factor	250 gal				
Plan Year	Calendar Year	Point 101 14	Point 110 14	Point 116 14	Point 118 14	Point 121 14	Point 123 14	Point 139 14	Point 719 14	Point 201 14	Point 208 14	Point 304 14	Point 502 14	Point 612 14	Point 632 14	Point 7217 14
Include in Calculation? (Y/N)		y	y	y	y	y	y	y	y	y	y	y	Y	y	y	y
6	2003	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
Population		6315.5	6178.2	5835.0	5766.4	5629.1	5560.4	4668.0	1029.7	3638.3	3295.1	2883.2	2128.1	1784.8	892.4	892.4
Domestic Flow		872,240	853,278	805,874	796,393	777,431	767,950	644,699	142,213	502,486	455,082	398,196	293,907	246,503	123,251	123,251
Peak Domestic Flow		2,747,140	2,695,187	2,564,443	2,538,142	2,485,384	2,458,925	2,109,792	539,239	1,693,326	1,550,678	1,376,567	1,047,682	893,252	472,216	472,216
Industrial Flow		151,766	148,467	140,219	138,569	135,270	133,620	112,175	24,744	87,431	79,182	69,285	51,139	42,890	21,445	21,445
Peak Industrial Flow		151,766	148,467	140,219	138,569	135,270	133,620	112,175	24,744	87,431	79,182	69,285	51,139	42,890	21,445	21,445
Fixed Flow		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Peak Flow		2,898,906	2,843,654	2,704,662	2,676,711	2,620,653	2,592,545	2,221,967	563,983	1,780,756	1,629,860	1,445,852	1,098,820	936,142	493,661	493,661
ERUs		4,096	4,007	3,784	3,740	3,651	3,606	3,027	668	2,360	2,137	1,870	1,380	1,158	579	579
7	2004	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
Population		6407.4	6268.1	5919.9	5850.3	5711.0	5641.3	4735.9	1044.7	3691.2	3343.0	2925.1	2159.0	1810.8	905.4	905.4
Domestic Flow		887,480	868,187	819,954	810,308	791,015	781,368	655,963	144,698	511,265	463,033	405,154	299,042	250,809	125,405	125,405
Peak Domestic Flow		2,789,817	2,737,085	2,604,379	2,577,683	2,524,131	2,497,274	2,142,874	548,069	1,720,082	1,575,255	1,398,473	1,064,504	907,666	479,976	479,976
Industrial Flow		154,606	151,245	142,842	141,162	137,801	136,120	114,274	25,207	89,066	80,664	70,581	52,095	43,693	21,846	21,846
Peak Industrial Flow		154,606	151,245	142,842	141,162	137,801	136,120	114,274	25,207	89,066	80,664	70,581	52,095	43,693	21,846	21,846
Fixed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Peak Flow		2,944,422	2,888,330	2,747,221	2,718,844	2,661,931	2,633,394	2,257,148	573,276	1,809,148	1,655,918	1,469,054	1,116,599	951,359	501,822	501,822
ERUs		4,168	4,078	3,851	3,806	3,715	3,670	3,081	680	2,401	2,175	1,903	1,405	1,178	589	589
8	2005	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
Population		6500.7	6359.4	6006.1	5935.4	5794.1	5723.4	4804.9	1059.9	3745.0	3391.7	2967.7	2190.5	1837.2	918.6	918.6
Domestic Flow		903,031	883,400	834,322	824,507	804,875	795,060	667,458	147,233	520,224	471,147	412,253	304,282	255,204	127,602	127,602
Peak Domestic Flow		2,833,277	2,779,752	2,645,048	2,617,950	2,563,591	2,536,328	2,176,567	557,067	1,747,335	1,600,289	1,420,788	1,081,643	922,353	487,884	487,884
Industrial Flow		157,498	154,074	145,515	143,803	140,379	138,667	116,412	25,679	90,733	82,173	71,901	53,070	44,510	22,255	22,255
Peak Industrial Flow		157,498	154,074	145,515	143,803	140,379	138,667	116,412	25,679	90,733	82,173	71,901	53,070	44,510	22,255	22,255
Fixed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Peak Flow		2,990,775	2,933,827	2,790,563	2,761,752	2,703,969	2,674,995	2,292,979	582,747	1,838,068	1,682,462	1,492,689	1,134,713	966,864	510,139	510,139
ERUs		4,242	4,150	3,919	3,873	3,781	3,735	3,135	692	2,444	2,213	1,937	1,429	1,199	599	599
9	2006	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
Population		6595.5	6452.1	6093.7	6022.0	5878.6	5806.9	4874.9	1075.4	3799.6	3441.1	3011.0	2222.4	1863.9	932.0	932.0
Domestic Flow		918,913	898,936	848,995	839,007	819,031	809,043	679,196	149,823	529,374	479,433	419,504	309,634	259,693	129,846	129,846
Peak Domestic Flow		2,877,567	2,823,234	2,686,495	2,658,987	2,603,805	2,576,130	2,210,907	566,245	1,775,115	1,625,807	1,443,536	1,099,117	937,329	495,950	495,950
Industrial Flow		160,445	156,957	148,237	146,493	143,005	141,261	118,590	26,159	92,430	83,710	73,246	54,063	45,343	22,672	22,672
Peak Industrial Flow		160,445	156,957	148,237	146,493	143,005	141,261	118,590	26,159	92,430	83,710	73,246	54,063	45,343	22,672	22,672
Fixed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Peak Flow		3,038,011	2,980,191	2,834,732	2,805,480	2,746,810	2,717,391	2,329,497	592,405	1,867,545	1,709,518	1,516,782	1,153,179	982,672	518,622	518,622
ERUs		4,317	4,224	3,989	3,942	3,848	3,801	3,191	704	2,487	2,253	1,971	1,455	1,220	610	610
10	2007	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
Population		6692.0	6546.5	6182.8	6110.1	5964.6	5891.9	4946.3	1091.1	3855.2	3491.5	3055.0	2254.9	1891.2	945.6	945.6
Domestic Flow		935,147	914,817	863,994	853,829	833,500	823,336	691,195	152,470	538,726	487,903	426,915	315,104	264,281	132,140	132,140
Peak Domestic Flow		2,922,739	2,867,583	2,728,770	2,700,844	2,644,823	2,616,728	2,245,936	575,614	1,803,455	1,651,842	1,466,745	1,116,947	952,612	504,185	504,185
Industrial Flow		163,446	159,893	151,010	149,234	145,681	143,904	120,808	26,649	94,159	85,276	74,617	55,074	46,191	23,096	23,096
Peak Industrial Flow		163,446	159,893	151,010	149,234	145,681	143,904	120,808	26,649	94,159	85,276	74,617	55,074	46,191	23,096	23,096
Fixed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Peak Flow		3,086,186	3,027,477	2,879,780	2,850,077	2,790,504	2,760,632	2,366,744	602,263	1,897,614	1,737,119	1,541,362	1,172,022	998,803	527,281	527,281
ERUs		4,394	4,299	4,060	4,012	3,917	3,869	3,248	716	2,532	2,293	2,006	1,481	1,242	621	621
Ultimate		92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
Population		15241.3	14910.0	14081.7	13916.0	13584.7	13419.0	11265.3	2485.0	8780.3	7952.0	6958.0	5135.7	4307.3	2153.7	2153.7
Domestic Flow		2,436,438	2,383,472	2,251,057	2,224,574	2,171,608	2,145,125	1,800,846	397,245	1,403,600	1,271,185	1,112,287	820,974	688,559	344,279	344,279
Peak Domestic Flow		6,751,984	6,628,116	6,316,143	6,253,341	6,127,314	6,064,085	5,228,050	1,394,564	4,225,652	3,880,684	3,458,247	2,655,201	2,275,253	1,225,830	1,225,830
Industrial Flow		218,592	213,840	201,960	199,584	194,832	192,456	161,568	35,640	125,928	114,048	99,792	73,656	61,776	30,888	30,888
Peak Industrial Flow		218,592	213,840	201,960	199,584	194,832	192,456	161,568	35,640	125,928	114,048	99,792	73,656	61,776	30,888	30,888
Fixed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Peak Flow		6,970,576	6,841,956	6,518,103	6,452,925	6,322,146	6,256,541	5,389,618	1,430,204	4,351,580	3,994,732	3,558,039	2,728,857	2,337,029	1,256,718	1,256,718
ERUs		10,620	10,389	9,812	9,697	9,466	9,350	7,850	1,732	6,118	5,541	4,848	3,579	3,001	1,501	1,501

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal					
Plan Year	Calendar Year	Point 101 14	Point 110 14	Point 116 14	Point 118 14	Point 121 14	Point 123 14	Point 139 14	Point 719 14	Point 201 14	Point 208 14	Point 304 14	Point 502 14	Point 612 14	Point 632 14	Point 7217 14
Include in Calculation? (Y/N)		y	y	y	y	y	y	y	y	y	y	y	Y	y	y	y
0	1997	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	5628.7	5506.3	5200.4	5139.3	5016.9	4955.7	4160.3	917.7	3242.6	2936.7	2569.6	1896.6	1590.7	795.4	795.4
	Domestic Flow	770,129	753,387	711,532	703,161	686,419	678,048	569,226	125,565	443,661	401,806	351,581	259,500	217,645	108,823	108,823
	Peak Domestic Flow	2,462,059	2,415,298	2,297,638	2,273,972	2,226,502	2,202,697	1,888,690	480,125	1,514,433	1,386,336	1,230,061	935,133	796,793	420,264	420,264
	Industrial Flow	135,792	132,840	125,460	123,984	121,032	119,556	100,368	22,140	78,228	70,848	61,992	45,756	38,376	19,188	19,188
	Peek Industrial Flow	135,792	132,840	125,460	123,984	121,032	119,556	100,368	22,140	78,228	70,848	61,992	45,756	38,376	19,188	19,188
	Fixed Flow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	2,597,851	2,548,138	2,423,098	2,397,956	2,347,534	2,322,253	1,989,058	502,265	1,592,661	1,457,184	1,292,053	980,889	835,169	439,452	439,452
	ERUs	3,624	3,545	3,348	3,309	3,230	3,190	2,678	591	2,088	1,891	1,654	1,221	1,024	512	512
6	2003	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	6315.5	6178.2	5835.0	5766.4	5629.1	5560.4	4668.0	1029.7	3638.3	3295.1	2883.2	2128.1	1784.8	892.4	892.4
	Domestic Flow	872,240	853,278	805,874	796,393	777,431	767,950	644,699	142,213	502,486	455,082	398,196	293,907	246,503	123,251	123,251
	Peak Domestic Flow	2,747,140	2,695,187	2,564,443	2,538,142	2,485,384	2,458,925	2,109,792	539,239	1,693,326	1,550,678	1,376,567	1,047,682	893,252	472,216	472,216
	Industrial Flow	151,766	148,467	140,219	138,569	135,270	133,620	112,175	24,744	87,431	79,182	69,285	51,139	42,890	21,445	21,445
	Peek Industrial Flow	151,766	148,467	140,219	138,569	135,270	133,620	112,175	24,744	87,431	79,182	69,285	51,139	42,890	21,445	21,445
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	2,898,906	2,843,654	2,704,662	2,676,711	2,620,653	2,592,545	2,221,967	563,983	1,780,756	1,629,860	1,445,852	1,098,820	936,142	493,661	493,661
	ERUs	4,096	4,007	3,784	3,740	3,651	3,606	3,027	668	2,360	2,137	1,870	1,380	1,158	579	579
10	2007	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	6692.0	6546.5	6182.8	6110.1	5964.6	5891.9	4946.3	1091.1	3855.2	3491.5	3055.0	2254.9	1891.2	945.6	945.6
	Domestic Flow	935,147	914,817	863,994	853,829	833,500	823,336	691,195	152,470	538,726	487,903	426,915	315,104	264,281	132,140	132,140
	Peak Domestic Flow	2,922,739	2,867,583	2,728,770	2,700,644	2,644,823	2,616,728	2,245,936	575,614	1,803,455	1,651,842	1,466,745	1,116,947	952,612	504,185	504,185
	Industrial Flow	163,446	159,893	151,010	149,234	145,681	143,904	120,808	26,649	94,159	85,276	74,617	55,074	46,191	23,096	23,096
	Peek Industrial Flow	163,446	159,893	151,010	149,234	145,681	143,904	120,808	26,649	94,159	85,276	74,617	55,074	46,191	23,096	23,096
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	3,086,186	3,027,477	2,879,780	2,850,077	2,790,504	2,760,632	2,366,744	602,263	1,897,614	1,737,119	1,541,362	1,172,022	998,803	527,281	527,281
	ERUs	4,394	4,299	4,060	4,012	3,917	3,869	3,248	716	2,532	2,293	2,006	1,481	1,242	621	621
15	2012	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	7209.0	7052.3	6660.5	6582.2	6425.4	6347.1	5328.4	1175.4	4153.0	3761.2	3291.1	2429.1	2037.3	1018.7	1018.7
	Domestic Flow	1,022,727	1,000,494	944,911	933,794	911,561	900,444	755,929	166,749	589,180	533,597	466,897	344,615	289,032	144,516	144,516
	Peak Domestic Flow	3,164,576	3,105,019	2,955,116	2,924,957	2,864,455	2,834,110	2,433,551	625,918	1,955,304	1,791,361	1,591,151	1,212,573	1,034,596	548,410	548,410
	Industrial Flow	179,319	175,421	165,675	163,726	159,828	157,879	132,540	29,237	103,303	93,558	81,863	60,423	50,677	25,339	25,339
	Peak Industrial Flow	179,319	175,421	165,675	163,726	159,828	157,879	132,540	29,237	103,303	93,558	81,863	60,423	50,677	25,339	25,339
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	3,343,895	3,280,440	3,120,791	3,088,683	3,024,282	2,991,989	2,566,091	655,155	2,058,607	1,884,919	1,673,014	1,272,996	1,085,273	573,748	573,748
	ERUs	4,808	4,704	4,442	4,390	4,286	4,233	3,554	784	2,770	2,509	2,195	1,620	1,359	679	679
20	2017	92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	7832.9	7662.6	7236.9	7151.7	6981.5	6896.3	5789.5	1277.1	4512.4	4086.7	3575.9	2639.3	2213.6	1106.8	1106.8
	Domestic Flow	1,126,460	1,101,972	1,040,751	1,028,507	1,004,019	991,774	832,601	183,662	648,939	587,718	514,253	379,568	318,347	159,174	159,174
	Peak Domestic Flow	3,446,077	3,381,418	3,218,658	3,185,910	3,120,210	3,087,257	2,652,170	684,875	2,132,411	1,954,151	1,736,381	1,324,337	1,130,483	600,268	600,268
	Industrial Flow	196,733	192,456	181,764	179,626	175,349	173,210	145,411	32,076	113,335	102,643	89,813	66,290	55,598	27,799	27,799
	Peak Industrial Flow	196,733	192,456	181,764	179,626	175,349	173,210	145,411	32,076	113,335	102,643	89,813	66,290	55,598	27,799	27,799
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	3,642,810	3,573,874	3,400,422	3,365,535	3,295,559	3,260,467	2,797,581	716,951	2,245,746	2,056,794	1,826,194	1,390,628	1,186,082	628,067	628,067
	ERUs	5,293	5,178	4,890	4,833	4,717	4,660	3,912	863	3,049	2,761	2,416	1,783	1,496	748	748
Ultimate		92.0%	90.0%	85.0%	84.0%	82.0%	81.0%	68.0%	15.0%	53.0%	48.0%	42.0%	31.0%	26.0%	13.0%	13.0%
	Population	15241.3	14910.0	14081.7	13916.0	13584.7	13419.0	11265.3	2485.0	8780.3	7952.0	6958.0	5135.7	4307.3	2153.7	2153.7
	Domestic Flow	2,436,438	2,383,472	2,251,057	2,224,574	2,171,608	2,145,125	1,800,846	397,245	1,403,600	1,271,185	1,112,287	820,974	688,559	344,279	344,279
	Peak Domestic Flow	6,751,984	6,628,116	6,316,143	6,253,341	6,127,314	6,064,085	5,228,050	1,394,564	4,225,652	3,880,684	3,458,247	2,655,201	2,275,253	1,225,830	1,225,830
	Industrial Flow	218,592	213,840	201,960	199,584	194,832	192,456	161,568	35,640	125,928	114,048	99,792	73,656	61,776	30,888	30,888
	Peak Industrial Flow	218,592	213,840	201,960	199,584	194,832	192,456	161,568	35,640	125,928	114,048	99,792	73,656	61,776	30,888	30,888
	Fixed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Peak Flow	6,970,576	6,841,956	6,518,103	6,452,925	6,322,146	6,256,541	5,389,618	1,430,204	4,351,580	3,994,732	3,558,039	2,728,857	2,337,029	1,256,718	1,256,718
	ERUs	10,620	10,389	9,812	9,697	9,466	9,350	7,850	1,732	6,118	5,541	4,848	3,579	3,001	1,501	1,501

APPENDEX: INTERSTATE-5 NORTH SUBAREA

I. Subarea Map

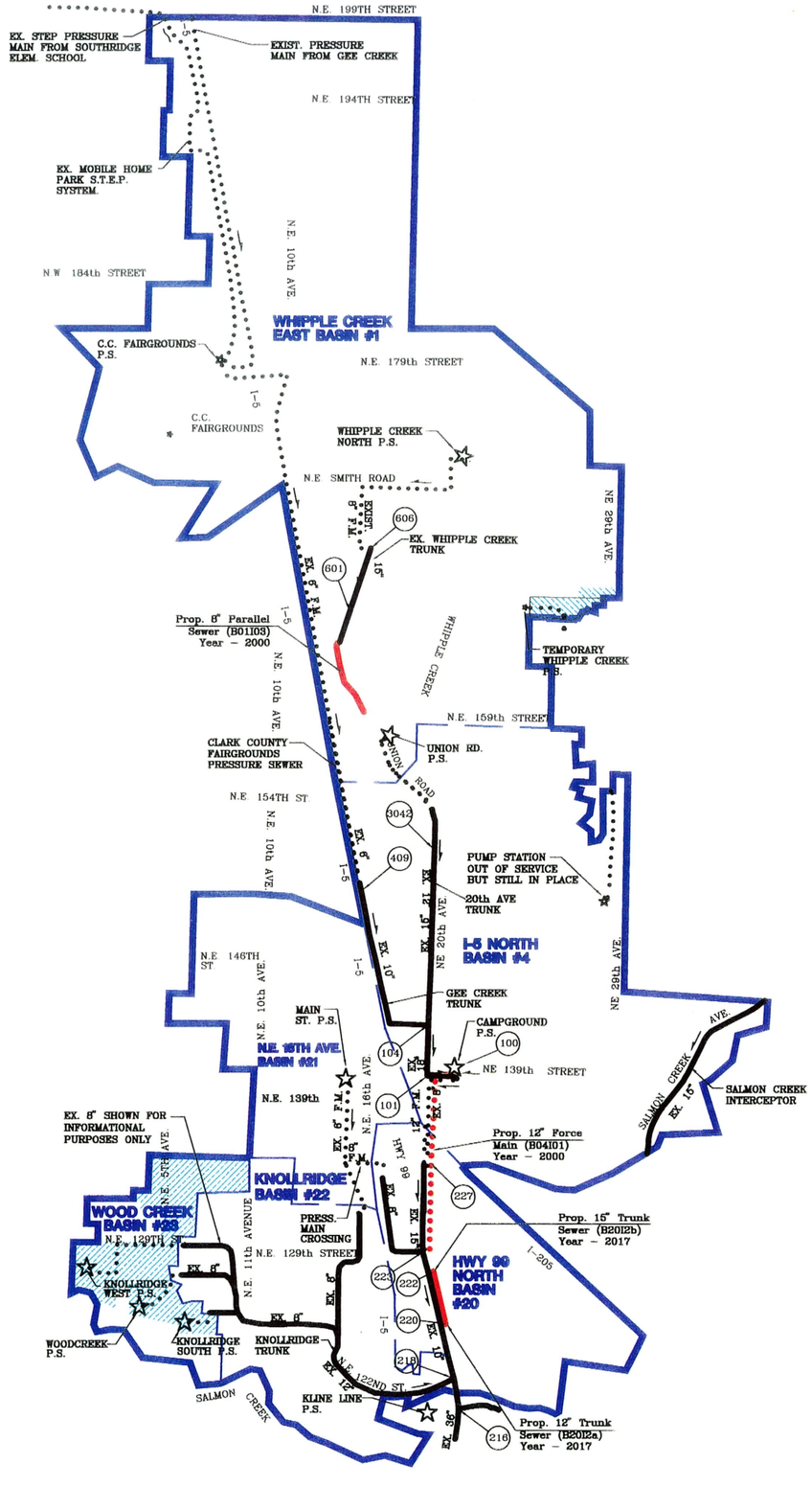
II. Hydraulic Grade Analysis

A. Interstate-5 North – Benchmark Years

1. 1997 – Year 0
2. 2003 – Year 6
3. 2007 – Year 10
4. 2012 – Year 15
5. 2017 – Year 20

B. Flow Calculation Worksheets

1. Interstate-5 North – Benchmark Years



LEGEND

- (910) Analysis Point – See Capital Facilities Plan, Volume 2 for projected flows
- Sub-Area Boundary
- Basin Boundary
- Existing Trunk Sewer
- Proposed Trunk Sewer
- Existing Force Main
- Existing Temporary Pump Station
- Existing Pump Station

Prepared by:
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HAZEL DELL SEWER DISTRICT

INTERSTATE-5 NORTH SUBAREA

Mapping Point Data on the Hwy 99 North Trunk												Hydraulic Grade Line for Downstream Pipe													Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
216*	2.59	7.15	Ex. 16	90.0	45+16.00	45+16.00	80.82	80.72	y	76																									
2161		2.59	MH 16A		45+52.00	45+52.00	81.24	81.15	y		0.09'	36.00'	18"	0.0091	0.0092	10.08	25.7%	1.77	5.71	4.71	0.344'	0.495'	82.12' *	0.03'	82.15'	0.086'	0.00'			0.044'	0.076'	82.196'	o.k.		no	
2162		2.59	Bend 16B		46+87.00	46+87.00	81.25	81.25	y		0.00'	135.00'	18"	0.0000	0.0001	0.91	286.2%	1.77	0.51	0.51	0.004'	1.500'	82.74'	0.08'	82.82'					0.000'	0.082'	82.822'	CRITICAL		Yes by 1.69 cfs	0.1
2163		2.59	Bend 16C		48+23.00	48+23.00	82.53	82.53	y		0.00'	136.00'	18"	0.0091	0.0094	10.22	25.4%	1.77	5.78	4.77	0.353'	0.495'	82.82'	0.12'	83.03'					0.000'	0.122'	83.025'	o.k.		no	
217		2.59	MH 17		48+79.00	48+79.00	84.30	84.10	y		0.20'	56.00'	18"	0.0280	0.0280	17.63	14.7%	1.77	9.98	6.99	0.758'	0.375'	83.03'	0.07'	84.48'	0.189'	0.05'			0.122'	0.190'	84.597'	o.k.		no	
218	0.91	2.59	MH 18		50+40.00	50+40.00	85.00	84.78	y		0.22'	161.00'	18"	0.0030	0.0030	5.75	45.1%	1.77	3.25	3.16	0.155'	0.698'	85.00'	0.10'	85.48'	0.039'	0.52'		0.055'	0.308'	0.411'	85.785'	o.k.		no	
219		1.76	MH 19		54+00.00	54+00.00	115.40	115.20	y		0.20'	360.00'	10"	0.0477	0.0839	6.36	27.7%	0.55	9.52	8.47	1.115'	0.321'	115.87'	2.94'	135.95'	0.279'	0.36'			0.321'	3.259'	136.272'	o.k.		no	
220		1.76	MH 20		57+62.00	57+62.00	135.90	135.63	y		0.27'	362.00'	10"	0.0558	0.0559	5.19	33.9%	0.55	9.52	8.47	1.115'	0.321'	115.87'	2.94'	135.95'	0.279'	0.36'			0.321'	3.259'	136.272'	o.k.		no	
221		1.76	MH 21		62+17.00	62+17.00	159.55	158.83	y		0.72'	455.00'	10"	0.0500	0.0504	4.93	35.7%	0.55	9.04	8.18	1.040'	0.333'	136.27'	3.55'	159.16'	0.260'	0.27'			0.265'	3.815'	159.428'	o.k.		no	
222		1.76	MH 22		66+00.00	66+00.00	172.20	172.00	y		0.20'	383.00'	10"	0.0325	0.0325	3.96	44.4%	0.55	7.26	7.04	0.770'	0.388'	159.94'	2.60'	172.39'	0.193'	0.22'			0.204'	2.804'	172.591'	o.k.		no	
223	0.35	1.76	MH 23		69+59.00	69+59.00	181.38	181.18	y		0.20'	359.00'	12"	0.0250	0.0250	5.65	31.2%	0.79	7.19	6.29	0.615'	0.375'	172.59'	1.14'	181.56'	0.154'	0.15'		0.116'	0.209'	1.347'	181.764'	o.k.		no	
224		1.35	MH 24		72+74.00	72+74.00	187.45	187.25	y		0.20'	315.00'	12"	0.0186	0.0186	4.88	27.8%	0.79	6.21	5.22	0.422'	0.345'	181.76'	0.64'	187.60'	0.106'	0.04'			0.073'	0.710'	187.668'	o.k.		no	
225		1.35	MH 25		76+00.00	76+00.00	188.63	188.43	y		0.20'	326.00'	15"	0.0030	0.0030	3.55	38.1%	1.23	2.89	2.71	0.114'	0.531'	187.98'	0.16'	188.96'	0.028'	0.04'			0.034'	0.197'	188.995'	o.k.		no	
226		1.35	MH 26		79+00.00	79+00.00	189.73	189.53	y		0.20'	300.00'	15"	0.0030	0.0030	3.55	38.2%	1.23	2.89	2.70	0.113'	0.531'	189.16'	0.15'	190.06'	0.028'	0.04'			0.034'	0.184'	190.095'	o.k.		no	
227		1.35	MH 27		82+53.00	82+53.00	190.79	190.79	y		0.00'	353.00'	15"	0.0030	0.0030	3.55	38.1%	1.23	2.89	2.70	0.114'	0.531'	190.26'	0.18'	191.32'	0.028'	0.00'			0.014'	0.191'	191.335'	o.k.		no	
NE 20th Avenue Trunk																																			
100		1.28	Ex. MH 0		00+00.00	00+00.00	164.98	164.78	y																										
101		1.28	MH 1		04+07.00	04+07.00	167.40	167.20	y	90	0.20'	407.00'	15"	0.0050	0.0055	4.78	26.7%	1.23	3.90	3.27	0.166'	0.431'	165.41'	0.22'	167.63'	0.042'	0.05'	0.11'		0.101'	0.323'	167.732'	o.k.		no	
102		1.28	MH 2		07+33.00	07+33.00	169.22	169.02	y		0.20'	326.00'	15"	0.0050	0.0050	4.57	27.9%	1.23	3.72	3.13	0.152'	0.431'	167.83'	0.18'	169.45'	0.038'	0.05'			0.046'	0.224'	169.497'	o.k.		no	
103		1.28	MH 3		09+33.00	09+33.00	170.42	170.22	y		0.20'	200.00'	15"	0.0050	0.0050	4.58	27.9%	1.23	3.73	3.13	0.153'	0.431'	169.65'	0.11'	170.65'	0.038'	0.11'			0.076'	0.185'	170.727'	o.k.		no	
104	0.31	1.28	MH 4		11+80.60	11+80.60	176.42	174.20	y	90	2.22'	247.60'	15"	0.0150	0.0153	8.00	15.9%	1.23	6.52	4.56	0.324'	0.313'	170.73'	0.19'	174.51'	0.081'	0.24'	0.21'	0.074'	0.301'	0.493'	174.813'	o.k.		no	
105		1.03	MH 5		14+90.60	00+00.00	189.34	189.22	y		0.12'	310.00'	10"	0.0400	0.0413	4.46	23.0%	0.55	8.18	6.63	0.682'	0.267'	176.69'	1.04'	189.49'	0.171'	0.14'			0.158'	1.198'	189.644'	o.k.		no	
1051		1.03	MH 5A		02+24.00	02+24.00	195.10	194.90	y		0.20'	224.00'	18"	0.0248	0.0248	16.59	6.2%	1.77	9.39	5.16	0.414'	0.248'	189.64'	0.07'	195.15'	0.104'	0.02'			0.062'	0.132'	195.209'	o.k.		no	
301		1.03	MH 1		06+19.00	06+19.00	195.89	195.69	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	25.2%	1.77	2.30	1.90	0.056'	0.495'	195.60'	0.06'	196.19'	0.014'	0.02'			0.017'	0.072'	196.202'	o.k.		no	
302		1.03	MH 2		10+09.00	10+09.00	196.68	196.48	y		0.20'	390.00'	18"	0.0015	0.0015	4.10	25.0%	1.77	2.32	1.91	0.057'	0.495'	196.39'	0.05'	196.98'	0.014'	0.02'			0.017'	0.071'	196.992'	o.k.		no	
303		1.03	MH 3		14+04.00	14+04.00	197.47	197.27	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	25.2%	1.77	2.30	1.90	0.056'	0.495'	197.18'	0.06'	197.77'	0.014'	0.09'			0.051'	0.106'	197.816'	o.k.		no	
304		1.03	MH 4		17+99.00	17+99.00	203.56	203.36	y		0.20'	395.00'	18"	0.0149	0.0149	12.86	8.0%	1.77	7.28	4.00	0.249'	0.248'	197.82'	0.12'	203.61'	0.062'	0.02'			0.039'	0.164'	203.647'	o.k.		no	
3041		1.03	MH 4A		21+12.00	21+12.00	203.94	203.94	y		0.00'	313.00'	18"	0.0012	0.0012	3.67	27.9%	1.77	2.08	1.74	0.047'	0.518'	204.08'	0.04'	204.46'	0.012'	0.02'			0.014'	0.056'	204.472'	o.k.		no	
3042		1.03	MH 4B		23+07.00	23+07.00	204.87	204.17	y		0.70'	195.00'	18"	0.0012	0.0012	3.62	28.3%	1.77	2.05	1.76	0.048'	0.540'	204.48'	0.02'	204.71'	0.012'	0.00'			0.006'	0.031'	204.716'	o.k.		no	
Knollridge Trunk																																			
218	0.91	2.59	MH 18	0.0	50+40.00	00+00.00	85.00	84.78	y																										
401		0.91	MH 1		01+26.50	01+26.50	85.86	85.86	y		0.00'	126.50'	12"	0.0020	0.0068	2.95	30.8%	0.79	3.75	3.28	0.167'	0.375'	85.79'	0.11'	86.24'	0.042'	0.02'			0.033'	0.140'	86.268'	o.k.		no	
402		0.91	MH 2		03+35.50	03+35.50	86.28	86.28	y		0.00'	209.00'	12"	0.0020	0.0020	1.60	56.7%	0.79	2.04	2.09	0.068'	0.535'	86.40'	0.13'	86.82'	0.017'	0.02'			0.020'	0.148'	86.835'	o.k.		no	
403		0.91	MH 3		06+74.50	06+74.50	86.96	86.96	y		0.00'	339.00'	12"	0.0020	0.0020	1.60	56.8%	0.79	2.04	2.09	0.068'	0.535'	86.84'	0.21'	87.50'	0.017'	0.02'			0.020'	0.227'	87.515'	o.k.		no	
404		0.91	MH 4		09+50.70	09+59.00	87.51	87.51	y		0.00'	276.20'	12"	0.0020	0.0020	1.59	57.0%	0.79	2.03	2.08	0.067'	0.535'	87.52'	0.17'	88.05'	0.017'	0.02'			0.020'	0.189'	88.065'	o.k.		no	
405		0.91	MH 5		12+80.00	12+80.00	88.15	88.15	y		0.00'	321.00'	12"	0.0020	0.0020	1.60	57.0%	0.79	2.03	2.08	0.067'	0.535'	88.07'	0.20'	88.69'	0.017'	0.11'			0.062'	0.258'	88.747'	o.k.		no	
406		0.91	MH 6		14+55.13	14+55.13	90.87	90.87	y		0.00'	175.13'	12"	0.0155	0.0155	4.45	20.4%	0.79	5.67	4.42	0.304'	0.300'	88.75'	0.18'	91.17'	0.076'	0.33'			0.202'	0.387'	91.372'	o.k.		no	
407		0.91	MH 7		18+57.30	18+57.30	124.65	124.65	y		0.00'	402.17'	12"	0.0840	0.0840	10.35	8.8%	0.79	13.18	7.78	0.939'	0.190'	91.37'	0.73'	124.84'	0.235'	0.37'			0.304'	1.032'	125.144'	o.k.		no	
408		0.91	MH 8		19+81.07	19+81.07	140.50	138.26	y		2.24'	123.77'	12"	0.1099	0.1100	11.85	7.7%	0.79	15.08	8.30	1.069'	0.165'	125.14'	0.27'	138.43'	0.267'	0.00'			0.134'	0.399'	138.559'	o.k.		no	
Gee Creek Trunk																																			
104	0.31	1.28	MH 4	0.0	11+80.60	12+47.60	176.42	174.20	y																										
502		0.31	MH 2		14+93.00	14+93.00	178.84	178.64	y		0.20'	245.40'	10"	0.0070	0.0090	2.09	14.7%	0.55	3.83	2.68	0.112'	0.208'	174.81'	0.10'	178.85'	0.028'	0.03'			0.031'	0.127'	178.879'	o.k.		no	
503		0.31	MH 3		18+32.60	18+32.60	181.22	181.22	y		0.00'	339.60'	10"	0.0076	0.0070	1.84	16.7%	0.55	3.37	2.48	0.095'	0.225'	179.07'	0.12'	181.45'	0.024'	0.04'			0.031'	0.154'	181.476'	o.k.		no	
504		0.31	MH 4		21+11.40	21+11.40	183.93	183.73	y		0.20'	278.80'	10"	0.0090	0.0090	2.08	14.7%	0.55	3.82	2.68	0.111'	0.208'	181.48'	0.11'	183.94'	0.028'	0.02'			0.022'	0.131'	183.960'	o.k.		no	
505		0.31	MH 5		23+92.70	23+92.70	184.80	184.60	y		0.20'	281.30'	10"	0.0024	0.0024	1.07	28.6%	0.55	1.97	1.69	0.044'	0.300'	184.23'	0.07'	184.90'	0.011'	0.02'			0.013'	0.087'	184.913'	o.k.		no	
506		0.31	MH 6		27+92.70	27+92.70	186.00	185.80	y		0.20'	400.00'	10"	0.0025	0.0025	1.10	27.9%	0.55	2.01	1.69	0.044'	0.288'	185.09'	0.11'	186.09'	0.011'	0.02'			0.013'	0.123'	186.101'	o.k.		no	
507		0.31	MH 7		31+92.70	31+92.70	191.02	187.00	y		4.02'	400.00'	10"	0.0025	0.0025	1.10	27.9%	0.55	2.01	1.69	0.044'	0.288'	186.29'	0.11'	187.29'	0.011'	0.02'			0.017'	0.127'	187.305'	o.k.		no	
508		0.31	MH 8		35+92.70	35+92.70	193.00	192.80	y		0.20'	400.00'	10"	0.0045	0.0045	1.47	20.9%	0.55	2.69	2.10	0.068'	0.250'	191.27'	0.13'	193.05'	0.017'	0.02'			0.016'	0.143'	193.066'	o.k.		no	
509		0.31	MH 9		39+92.70	39+92.70	195.00	194.00	y		1.00'	400.00'	10"	0.0025	0.0025	1.10	27.9%	0.55	2.01	1.69	0.044'	0.288'	193.29'	0.11'	194.29'	0.011'	0.00'			0.006'	0.115'	194.293'	o.k.		no	
Whipple Creek Trunk																																			
601		0.31	MH 1		00+00.00	00+00.00	251.32	251.30	y		0.02'	0.00'																							
602		0.31	MH 2		01+07.00	01+07.00	252.02	251.81	y		0.21'	107.00'	12"	0.0046	0.0046	2.42	12.9%	0.79	3.08	2.06	0.066'	0.230'	251.55'	0.02'	252.04'	0.017'	0.08'			0.046'	0.064'	252.086'	o.k.		no	
603		0.31	MH 3		04+09.00	04+09.00	260.95	260.78	y		0.17'	302.00'	12"	0.0290	0.0290	6.08	5.1%	0.79	7.75	3.72	0.215'	0.140'	252.16'	0.10'	260.92'	0.054'	0.03'			0.040'	0.137'	260.960'	o.k.		no	
604		0.31	MH 4		08+09.00	08+09.00	263.14	263.05	y		0.09'	400.00'	12"	0.0053	0.0053	2.59	12.1%	0.79	3.30	2.21	0.076'	0.230'	261.18'	0.07'	263.28'	0.019'	0.02'			0.019'	0.087'	263.299'	o.k.		no	
604		0.31	MH 4A		09+84.00	09+84.00	263.85	263.83	y		0.02'	175.00'	12"	0.0039	0.0039	2.24	13.9%	0.79	2.86	1.91	0.057'	0.230'	263.37'	0.03'	264.06'	0.014'	0.02'			0.016'	0.046'	264.076'	o.k.		no	
605		0.31	MH 5		12+07.00	12+07.00	264.76	264.58	y		0.18'	223.00'	12"	0.0033	0.0033	2.04	15.3%	0.79	2.60	1.82	0.052'	0.250'	264.10'	0.03'	264.83'	0.013'	0.02'			0.017'	0.051'	264.847'	o.k.		no	
606		0.31	MH 6		16+05.00	16+05.00	266.65	266.39	y		0.26'	398.00'	12"	0.0041	0.0041	2.29	13.7%	0.79	2.91	1.95	0.059'	0.230'	264.99'	0.07'	266.62'	0.015'	0.00'			0.007'	0.075'	266.627'	o.k.		no	

Mapping Point Data on the Hwy 99 North Trunk												Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL						Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
216*	4.09	11.22	Ex. 16	90.0	45+16.00	45+16.00	80.82	80.72	y	76																									
2161		4.09	MH 16A		45+52.00	45+52.00	81.24	81.15	y		0.09'	36.00'	18"	0.0091	0.0092	10.08	40.5%	1.77	5.71	5.39	0.452'	0.660'	82.59' *	0.06'	82.65'	0.113'	0.00'			0.057'	0.118'	82.712'	CRITICAL		no	0.0
2162		4.09	Bend 16B		46+87.00	46+87.00	81.25	81.25	y		0.00'	135.00'	18"	0.0000	0.0001	0.91	451.0%	1.77	0.51	0.51	0.004'	1.500'	82.74'	0.20'	82.94'					0.000'	0.203'	82.943'	CRITICAL		Yes by 3.18 cfs	0.2
2163		4.09	Bend 16C		48+23.00	48+23.00	82.53	82.53	y		0.00'	136.00'	18"	0.0091	0.0094	10.22	40.0%	1.77	5.78	5.46	0.464'	0.660'	82.94'	0.23'	83.19'					0.000'	0.228'	83.190'	o.k.		no	
217		4.09	MH 17		48+79.00	48+79.00	84.30	84.10	y		0.20'	56.00'	18"	0.0280	0.0280	17.63	23.2%	1.77	9.98	8.08	1.015'	0.480'	83.19'	0.13'	84.58'	0.254'	0.07'			0.160'	0.291'	84.740'	o.k.		no	
218	0.95	4.09	MH 18		50+40.00	50+40.00	85.00	84.78	y		0.22'	161.00'	18"	0.0030	0.0030	5.75	71.1%	1.77	3.25	3.51	0.192'	0.923'	85.22'	0.21'	85.70'	0.048'	0.74'		0.042'	0.415'	0.621'	86.117'	o.k.		no	
219		3.24	MH 19		54+00.00	54+00.00	115.40	115.20	y		0.20'	360.00'	10"	0.0477	0.0839	6.36	50.9%	0.55	11.67	11.67	2.113'	0.417'	86.12'	7.77'	115.62'	0.528'	0.54'			0.536'	8.307'	116.152'	o.k.		no	
220		3.24	MH 20		57+62.00	57+62.00	135.90	135.63	y		0.27'	362.00'	10"	0.0558	0.0559	5.19	62.3%	0.55	9.52	10.00	1.552'	0.475'	116.15'	7.05'	136.11'	0.388'	0.50'			0.444'	7.498'	136.549'	o.k.		no	
221		3.24	MH 21		62+17.00	62+17.00	159.55	158.83	y		0.72'	455.00'	10"	0.0500	0.0504	4.93	65.6%	0.55	9.04	9.58	1.426'	0.483'	136.55'	8.71'	159.31'	0.357'	0.35'			0.355'	9.061'	159.668'	o.k.		no	
222		3.24	MH 22		66+00.00	66+00.00	172.20	172.00	y		0.20'	383.00'	10"	0.0325	0.0325	3.96	81.7%	0.55	7.26	8.06	1.009'	0.563'	160.11'	6.67'	172.56'	0.252'	0.30'			0.274'	6.946'	172.836'	o.k.		no	
223	0.58	3.24	MH 23		69+59.00	69+59.00	181.38	181.18	y		0.20'	359.00'	12"	0.0250	0.0250	5.65	57.3%	0.79	7.19	7.37	0.844'	0.535'	172.84'	2.78'	181.72'	0.211'	0.21'		0.139'	0.282'	3.066'	181.997'	o.k.		no	
224		2.60	MH 24		72+74.00	72+74.00	187.45	187.25	y		0.20'	315.00'	12"	0.0186	0.0186	4.88	53.3%	0.79	6.21	6.27	0.611'	0.510'	182.00'	1.63'	187.76'	0.153'	0.05'			0.103'	1.732'	187.863'	o.k.		no	
225		2.60	MH 25		76+00.00	76+00.00	188.63	188.43	y		0.20'	326.00'	15"	0.0030	0.0030	3.55	73.2%	1.23	2.89	3.15	0.154'	0.781'	188.23'	0.44'	189.21'	0.039'	0.05'			0.046'	0.486'	189.258'	o.k.		no	
226		2.60	MH 26		79+00.00	79+00.00	189.73	189.53	y		0.20'	300.00'	15"	0.0030	0.0030	3.55	73.3%	1.23	2.89	3.15	0.154'	0.781'	189.41'	0.40'	190.31'	0.039'	0.05'			0.046'	0.451'	190.358'	o.k.		no	
227		2.60	MH 27		82+53.00	82+53.00	190.79	190.79	y		0.00'	353.00'	15"	0.0030	0.0030	3.55	73.3%	1.23	2.89	3.15	0.154'	0.781'	190.51'	0.48'	191.57'	0.039'	0.00'			0.019'	0.495'	191.591'	o.k.		no	
NE 20th Avenue Trunk																																			
100		2.47	Ex. MH 0		00+00.00	00+00.00	164.98	164.78	y																										
101		2.47	MH 1		04+07.00	04+07.00	167.40	167.20	y	90	0.20'	407.00'	15"	0.0050	0.0055	4.78	51.7%	1.23	3.90	3.90	0.236'	0.625'	165.61'	0.59'	167.83'	0.059'	0.08'	0.15'		0.144'	0.735'	167.969'	o.k.		no	
102		2.47	MH 2		07+33.00	07+33.00	169.22	169.02	y		0.20'	326.00'	15"	0.0050	0.0050	4.57	54.2%	1.23	3.72	3.79	0.224'	0.656'	168.06'	0.45'	169.68'	0.056'	0.08'			0.067'	0.522'	169.743'	o.k.		no	
103		2.47	MH 3		09+33.00	09+33.00	170.42	170.22	y		0.20'	200.00'	15"	0.0050	0.0050	4.58	54.0%	1.23	3.73	3.77	0.221'	0.638'	169.86'	0.28'	170.86'	0.055'	0.18'			0.116'	0.401'	170.974'	o.k.		no	
104	0.63	2.47	MH 4		11+80.60	11+80.60	176.42	174.20	y	90	2.22'	247.60'	15"	0.0150	0.0153	8.00	30.9%	1.23	6.52	5.71	0.506'	0.469'	170.97'	0.47'	174.67'	0.126'	0.34'	0.32'	0.125'	0.459'	0.930'	175.127'	o.k.		no	
105		1.98	MH 5		14+90.60	00+00.00	189.34	189.22	y		0.12'	310.00'	10"	0.0400	0.0413	4.46	44.3%	0.55	8.18	7.94	0.979'	0.388'	176.81'	2.66'	189.61'	0.245'	0.19'			0.219'	2.879'	189.826'	o.k.		no	
1051		1.98	MH 5A		02+24.00	02+24.00	195.10	194.90	y		0.20'	224.00'	18"	0.0248	0.0248	16.59	11.9%	1.77	9.39	5.96	0.552'	0.315'	189.83'	0.19'	195.22'	0.138'	0.03'			0.083'	0.276'	195.298'	o.k.		no	
301		1.98	MH 1		06+19.00	06+19.00	195.89	195.69	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	48.6%	1.77	2.30	2.28	0.081'	0.735'	195.84'	0.14'	196.43'	0.020'	0.03'			0.024'	0.166'	196.449'	o.k.		no	
302		1.98	MH 2		10+09.00	10+09.00	196.68	196.48	y		0.20'	390.00'	18"	0.0015	0.0015	4.10	48.3%	1.77	2.32	2.29	0.082'	0.735'	196.63'	0.14'	197.22'	0.020'	0.03'			0.024'	0.164'	197.239'	o.k.		no	
303		1.98	MH 3		14+04.00	14+04.00	197.47	197.27	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	48.6%	1.77	2.30	2.28	0.081'	0.735'	197.42'	0.14'	198.01'	0.020'	0.14'			0.081'	0.222'	198.086'	o.k.		no	
304		1.98	MH 4		17+99.00	17+99.00	203.56	203.36	y		0.20'	395.00'	18"	0.0149	0.0149	12.86	15.4%	1.77	7.28	5.09	0.403'	0.375'	198.09'	0.28'	203.74'	0.101'	0.02'			0.062'	0.343'	203.797'	o.k.		no	
3041		1.98	MH 4A		21+12.00	21+12.00	203.94	203.94	y		0.00'	313.00'	18"	0.0012	0.0012	3.67	53.9%	1.77	2.08	2.10	0.068'	0.765'	204.33'	0.11'	204.71'	0.017'	0.02'			0.020'	0.128'	204.725'	o.k.		no	
3042		1.98	MH 4B		23+07.00	23+07.00	204.87	204.17	y		0.70'	195.00'	18"	0.0012	0.0012	3.62	54.7%	1.77	2.05	2.09	0.068'	0.788'	204.73'	0.07'	204.96'	0.017'	0.00'			0.008'	0.074'	204.966'	o.k.		no	
Knollridge Trunk																																			
218	0.95	4.09	MH 18	0.0	50+40.00	00+00.00	85.00	84.78	y																										
401		0.95	MH 1		01+26.50	01+26.50	85.86	85.86	y		0.00'	126.50'	12"	0.0020	0.0068	2.95	32.3%	0.79	3.75	3.34	0.173'	0.385'	86.12'	0.11'	86.25'	0.043'	0.02'			0.034'	0.147'	86.279'	o.k.		no	
402		0.95	MH 2		03+35.50	03+35.50	86.28	86.28	y		0.00'	209.00'	12"	0.0020	0.0020	1.60	59.4%	0.79	2.04	2.11	0.069'	0.545'	86.41'	0.14'	86.83'	0.017'	0.02'			0.021'	0.158'	86.846'	o.k.		no	
403		0.95	MH 3		06+74.50	06+74.50	86.96	86.96	y		0.00'	339.00'	12"	0.0020	0.0020	1.60	59.4%	0.79	2.04	2.11	0.069'	0.545'	86.85'	0.22'	87.51'	0.017'	0.02'			0.021'	0.243'	87.526'	o.k.		no	
404		0.95	MH 4		09+50.70	09+59.00	87.51	87.51	y		0.00'	276.20'	12"	0.0020	0.0020	1.59	59.7%	0.79	2.03	2.10	0.069'	0.545'	87.53'	0.18'	88.06'	0.017'	0.02'			0.021'	0.202'	88.076'	o.k.		no	
405		0.95	MH 5		12+80.00	12+80.00	88.15	88.15	y		0.00'	321.00'	12"	0.0020	0.0020	1.60	59.6%	0.79	2.03	2.10	0.069'	0.545'	88.08'	0.21'	88.70'	0.017'	0.11'			0.062'	0.273'	88.757'	o.k.		no	
406		0.95	MH 6		14+55.13	14+55.13	90.87	90.87	y		0.00'	175.13'	12"	0.0155	0.0155	4.45	21.4%	0.79	5.67	4.42	0.304'	0.300'	88.76'	0.20'	91.17'	0.076'	0.33'			0.202'	0.405'	91.372'	o.k.		no	
407		0.95	MH 7		18+57.30	18+57.30	124.65	124.65	y		0.00'	402.17'	12"	0.0840	0.0840	10.35	9.2%	0.79	13.18	7.78	0.939'	0.190'	91.37'	0.80'	124.84'	0.235'	0.43'			0.333'	1.130'	125.173'	o.k.		no	
408		0.95	MH 8		19+81.07	19+81.07	140.50	138.26	y		2.24'	123.77'	12"	0.1099	0.1100	11.85	8.0%	0.79	15.08	8.90	1.230'	0.190'	125.17'	0.25'	138.45'	0.307'	0.00'			0.154'	0.399'	138.604'	o.k.		no	
Gee Creek Trunk																																			
104	0.63	2.47	MH 4	0.0	11+80.60	12+47.60	176.42	174.20	y																										
502		0.63	MH 2		14+93.00	14+93.00	178.84	178.64	y		0.20'	245.40'	10"	0.0070	0.0090	2.09	30.3%	0.55	3.83	3.35	0.174'	0.313'	175.13'	0.27'	178.95'	0.044'	0.05'			0.047'	0.314'	179.000'	o.k.		no	
503		0.63	MH 3		18+32.60	18+32.60	181.22	181.22	y		0.00'	339.60'	10"	0.0076	0.0070	1.84	34.5%	0.55	3.37	3.05	0.145'	0.333'	179.17'	0.34'	181.55'	0.036'	0.06'			0.048'	0.392'	181.602'	o.k.		no	
504		0.63	MH 4		21+11.40	21+11.40	183.93	183.73	y		0.20'	278.80'	10"	0.0090	0.0090	2.08	30.4%	0.55	3.82	3.34	0.174'	0.313'	181.60'	0.30'	184.04'	0.043'	0.02'			0.033'	0.336'	184.075'	o.k.		no	
505		0.63	MH 5		23+92.70	23+92.70	184.80	184.60	y		0.20'	281.30'	10"	0.0024	0.0024	1.07	59.1%	0.55	1.97	2.03	0.064'	0.454'	184.38'	0.22'	185.05'	0.016'	0.02'			0.020'	0.237'	185.074'	o.k.		no	
506		0.63	MH 6		27+92.70	27+92.70	186.00	185.80	y		0.20'	400.00'	10"	0.0025	0.0025	1.10	57.7%	0.55	2.01	2.06	0.066'	0.446'	185.25'	0.31'	186.25'	0.017'	0.02'			0.020'	0.334'	186.266'	o.k.		no	
507		0.63	MH 7		31+92.70	31+92.70	191.02	187.00	y		4.02'	400.00'	10"	0.0025	0.0025	1.10	57.7%	0.55	2.01	2.06	0.066'	0.446'	186.45'	0.31'	187.45'	0.017'	0.04'			0.026'	0.341'	187.472'	o.k.		no	
508		0.63	MH 8		35+92.70	35+92.70	193.00	192.80	y		0.20'	400.00'	10"	0.0045	0.0045	1.47	43.3%	0.55	2.69	2.58	0.103'	0.375'	191.40'	0.36'	193.18'	0.026'	0.02'			0.024'	0.384'	193.199'	o.k.		no	
509		0.63	MH 9		39+92.70	39+92.70	195.00	194.00	y		1.00'	400.00'	10"	0.0025	0.0025	1.10	57.7%	0.55	2.01	2.06	0.066'	0.446'	193.45'	0.31'	194.45'	0.017'	0.00'			0.008'	0.323'	194.454'	o.k.		no	
Whipple Creek Trunk																																			
601		0.89	MH 1		00+00.00	00+00.00	251.32	251.30	y		0.02'	0.00'																							
602		0.89	MH 2		01+07.00	01+07.00	252.02	251.81	y		0.21'	107.00'	12"	0.0046	0.0046	2.42	36.7%	0.79	3.08	2.83	0.125'	0.415'	251.74'	0.08'	252.23'	0.031'	0.16'			0.095'	0.173'	252.320'	o.k.		no	
603		0.89	MH 3		04+09.00	04+09.00	260.95	260.78	y		0.17'	302.00'	12"	0.0290	0.0290	6.08	14.6%	0.79	7.75	5.42	0.457'	0.250'	252.32'	0.37'	261.03'	0.114'	0.05'			0.081'	0.455'	261.111'	o.k.		no	
604		0.89	MH 4		08+09.00	08+09.00	263.14	263.05	y		0.09'	400.00'	12"	0.0053	0.0053	2.59	34.3%	0.79	3.30	2.98	0.138'	0.400'	261.35'	0.30'	263.45'	0.035'	0.04'			0.037'	0.337'	263.487'	o.k.		no	
604		0.89	MH 4A		09+84.00	09+84.00	263.85	263.83	y		0.02'	175.00'	12"	0.0039	0.0039	2.24	39.6%	0.79	2.86	2.67	0.111'	0.425'	263.57'	0.12'	264.26'	0.028'	0.03'			0.031'	0.154'	264.286'	o.k.		no	
605		0.89	MH 5		12+07.00	12+07.00	264.76	264.58	y		0.18'	223.00'	12"	0.0033	0.0033	2.04	43.4%	0.79	2.60	2.50	0.097'	0.450'	264.30'	0.15'	265.03'	0.024'	0.04'			0.032'	0.181'	265.062'	o.k.		no	
606		0.89	MH 6		16+05.00	16+05.00	266.65	266.39	y		0.26'	398.00'	12"	0.0041	0.0041	2.29	38.8%	0.79	2.91	2.72	0.115'	0.425'	265.19'	0.28'	266.82'	0.029'	0.00'			0.014'	0.295'	266.829'	o.k.		no	

Mapping Point Data on the Hwy 99 North Trunk												Hydraulic Grade Line for Downstream Pipe													Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
216*	5.10	23.68	Ex. 16	90.0	45+16.00	45+16.00	80.82	80.72	y	76																									
2161		5.10	MH 16A		45+52.00	45+52.00	81.24	81.15	y		0.09'	36.00'	18"	0.0091	0.0092	10.08	50.6%	1.77	5.71	5.71	0.506'	0.750'	84.09' *	0.08'	84.18'	0.126'	0.00'			0.064'	0.148'	84.241'	CRITICAL		no	1.5
2162		5.10	Bend 16B		46+87.00	46+87.00	81.25	81.25	y		0.00'	135.00'	18"	0.0000	0.0001	0.91	562.8%	1.77	0.51	0.51	0.004'	1.500'	84.24'	0.32'	84.56'					0.000'	0.316'	84.557'	CRITICAL		Yes by 4.20 cfs	1.8
2163		5.10	Bend 16C		48+23.00	48+23.00	82.53	82.53	y		0.00'	136.00'	18"	0.0091	0.0094	10.22	49.9%	1.77	5.78	5.72	0.509'	0.735'	84.56'	0.32'	84.88'					0.000'	0.325'	84.881'	CRITICAL		no	0.9
217		5.10	MH 17		48+79.00	48+79.00	84.30	84.10	y		0.20'	56.00'	18"	0.0280	0.0280	17.63	28.9%	1.77	9.98	8.58	1.144'	0.540'	84.88'	0.18'	85.06'	0.286'	0.07'			0.180'	0.357'	85.238'	o.k.		no	
218	0.98	5.10	MH 18		50+40.00	50+40.00	85.00	84.78	y		0.22'	161.00'	18"	0.0030	0.0030	5.75	88.7%	1.77	3.25	3.68	0.210'	1.088'	85.39'	0.30'	85.87'	0.052'	0.85'		0.038'	0.468'	0.766'	86.336'	o.k.		no	
219		4.22	MH 19		54+00.00	54+00.00	115.40	115.20	y		0.20'	360.00'	10"	0.0477	0.0839	6.36	66.3%	0.55	11.67	12.48	2.419'	0.492'	86.34'	11.48'	115.69'	0.605'	0.61'			0.606'	12.091'	116.298'	o.k.		no	
220		4.22	MH 20		57+62.00	57+62.00	135.90	135.63	y		0.27'	362.00'	10"	0.0558	0.0559	5.19	81.2%	0.55	9.52	10.57	1.734'	0.563'	116.30'	10.71'	136.19'	0.434'	0.56'			0.495'	11.202'	136.688'	o.k.		no	
221		4.22	MH 21		62+17.00	62+17.00	159.55	158.83	y		0.72'	455.00'	10"	0.0500	0.0504	4.93	85.5%	0.55	9.04	10.13	1.592'	0.583'	136.69'	13.31'	159.41'	0.398'	0.37'			0.382'	13.688'	159.795'	o.k.		no	
222		4.22	MH 22		66+00.00	66+00.00	172.20	172.00	y		0.20'	383.00'	10"	0.0325	0.0325	3.96	105.5%	0.55	7.26	8.21	1.046'	0.738'	160.29'	11.08'	172.74'	0.261'	0.34'			0.299'	11.376'	173.037'	o.k.		Yes by 0.26 cfs	
223	0.73	4.22	MH 23		69+59.00	69+59.00	181.38	181.18	y		0.20'	359.00'	12"	0.0250	0.0250	5.65	74.6%	0.79	7.19	7.88	0.963'	0.640'	173.04'	4.13'	181.82'	0.241'	0.24'		0.155'	0.320'	4.455'	182.140'	o.k.		no	
224		3.42	MH 24		72+74.00	72+74.00	187.45	187.25	y		0.20'	315.00'	12"	0.0186	0.0186	4.88	70.1%	0.79	6.21	6.71	0.698'	0.615'	182.14'	2.44'	187.87'	0.175'	0.06'			0.117'	2.557'	187.982'	o.k.		no	
225		3.42	MH 25		76+00.00	76+00.00	188.63	188.43	y		0.20'	326.00'	15"	0.0030	0.0030	3.55	96.3%	1.23	2.89	3.30	0.169'	0.981'	188.43'	0.70'	189.41'	0.042'	0.06'			0.051'	0.749'	189.462'	o.k.		no	
226		3.42	MH 26		79+00.00	79+00.00	189.73	189.53	y		0.20'	300.00'	15"	0.0030	0.0030	3.55	96.4%	1.23	2.89	3.30	0.169'	0.981'	189.61'	0.64'	190.51'	0.042'	0.06'			0.051'	0.693'	190.562'	o.k.		no	
227		3.42	MH 27		82+53.00	82+53.00	190.79	190.79	y		0.00'	353.00'	15"	0.0030	0.0030	3.55	96.3%	1.23	2.89	3.30	0.169'	0.981'	190.71'	0.76'	191.77'	0.042'	0.00'			0.021'	0.777'	191.792'	o.k.		no	
NE 20th Avenue Trunk																																			
100		3.25	Ex. MH 0		00+00.00	00+00.00	164.98	164.78	y																										
101		3.25	MH 1		04+07.00	04+07.00	167.40	167.20	y	90	0.20'	407.00'	15"	0.0050	0.0055	4.78	67.9%	1.23	3.90	4.17	0.270'	0.738'	165.72'	0.89'	167.94'	0.068'	0.09'	0.17'		0.164'	1.053'	168.102'	o.k.		no	
102		3.25	MH 2		07+33.00	07+33.00	169.22	169.02	y		0.20'	326.00'	15"	0.0050	0.0050	4.57	71.2%	1.23	3.72	4.02	0.251'	0.769'	168.17'	0.70'	169.79'	0.063'	0.09'			0.075'	0.770'	169.864'	o.k.		no	
103		3.25	MH 3		09+33.00	09+33.00	170.42	170.22	y		0.20'	200.00'	15"	0.0050	0.0050	4.58	71.0%	1.23	3.73	4.03	0.252'	0.769'	169.99'	0.43'	170.99'	0.063'	0.21'			0.135'	0.561'	171.123'	o.k.		no	
104	0.86	3.25	MH 4		11+80.60	11+80.60	176.42	174.20	y	90	2.22'	247.60'	15"	0.0150	0.0153	8.00	40.6%	1.23	6.52	6.16	0.590'	0.550'	171.12'	0.69'	174.75'	0.147'	0.39'	0.38'	0.150'	0.532'	1.226'	175.282'	o.k.		no	
105		2.59	MH 5		14+90.60	00+00.00	189.34	189.22	y		0.12'	310.00'	10"	0.0400	0.0413	4.46	58.1%	0.55	8.18	8.47	1.114'	0.454'	176.87'	4.00'	189.67'	0.279'	0.23'			0.257'	4.262'	189.931'	o.k.		no	
1051		2.59	MH 5A		02+24.00	02+24.00	195.10	194.90	y		0.20'	224.00'	18"	0.0248	0.0248	16.59	15.6%	1.77	9.39	6.57	0.671'	0.375'	189.93'	0.27'	195.28'	0.168'	0.03'			0.100'	0.373'	195.375'	o.k.		no	
301		2.59	MH 1		06+19.00	06+19.00	195.89	195.69	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	63.7%	1.77	2.30	2.42	0.091'	0.855'	195.96'	0.22'	196.55'	0.023'	0.03'			0.027'	0.243'	196.572'	o.k.		no	
302		2.59	MH 2		10+09.00	10+09.00	196.68	196.48	y		0.20'	390.00'	18"	0.0015	0.0015	4.10	63.3%	1.77	2.32	2.43	0.092'	0.855'	196.75'	0.21'	197.34'	0.023'	0.03'			0.027'	0.240'	197.362'	o.k.		no	
303		2.59	MH 3		14+04.00	14+04.00	197.47	197.27	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	63.7%	1.77	2.30	2.42	0.091'	0.855'	197.54'	0.22'	198.13'	0.023'	0.18'			0.099'	0.315'	198.224'	o.k.		no	
304		2.59	MH 4		17+99.00	17+99.00	203.56	203.36	y		0.20'	395.00'	18"	0.0149	0.0149	12.86	20.2%	1.77	7.28	5.68	0.500'	0.450'	198.22'	0.39'	203.81'	0.125'	0.03'			0.076'	0.467'	203.886'	o.k.		no	
3041		2.59	MH 4A		21+12.00	21+12.00	203.94	203.94	y		0.00'	313.00'	18"	0.0012	0.0012	3.67	70.7%	1.77	2.08	2.24	0.078'	0.923'	204.48'	0.16'	204.86'	0.020'	0.03'			0.023'	0.184'	204.886'	o.k.		no	
3042		2.59	MH 4B		23+07.00	23+07.00	204.87	204.17	y		0.70'	195.00'	18"	0.0012	0.0012	3.62	71.7%	1.77	2.05	2.21	0.076'	0.923'	204.89'	0.10'	205.09'	0.019'	0.00'			0.009'	0.110'	205.102'	o.k.		no	
Knollridge Trunk																																			
218	0.98	5.10	MH 18	0.0	50+40.00	00+00.00	85.00	84.78	y																										
401		0.98	MH 1		01+26.50	01+26.50	85.86	85.86	y		0.00'	126.50'	12"	0.0020	0.0068	2.95	33.3%	0.79	3.75	3.34	0.173'	0.385'	86.34'	0.12'	86.46'	0.043'	0.02'			0.034'	0.155'	86.491'	o.k.		no	
402		0.98	MH 2		03+35.50	03+35.50	86.28	86.28	y		0.00'	209.00'	12"	0.0020	0.0020	1.60	61.3%	0.79	2.04	2.13	0.070'	0.555'	86.49'	0.14'	86.84'	0.018'	0.02'			0.021'	0.165'	86.856'	o.k.		no	
403		0.98	MH 3		06+74.50	06+74.50	86.96	86.96	y		0.00'	339.00'	12"	0.0020	0.0020	1.60	61.4%	0.79	2.04	2.13	0.070'	0.555'	86.86'	0.23'	87.52'	0.018'	0.02'			0.021'	0.254'	87.536'	o.k.		no	
404		0.98	MH 4		09+50.70	09+59.00	87.51	87.51	y		0.00'	276.20'	12"	0.0020	0.0020	1.59	61.6%	0.79	2.03	2.12	0.070'	0.555'	87.54'	0.19'	88.07'	0.017'	0.02'			0.021'	0.211'	88.086'	o.k.		no	
405		0.98	MH 5		12+80.00	12+80.00	88.15	88.15	y		0.00'	321.00'	12"	0.0020	0.0020	1.60	61.6%	0.79	2.03	2.12	0.070'	0.555'	88.09'	0.22'	88.71'	0.017'	0.11'			0.066'	0.287'	88.771'	o.k.		no	
406		0.98	MH 6		14+55.13	14+55.13	90.87	90.87	y		0.00'	175.13'	12"	0.0155	0.0155	4.45	22.1%	0.79	5.67	4.59	0.327'	0.320'	88.77'	0.20'	91.19'	0.082'	0.33'			0.205'	0.409'	91.395'	o.k.		no	
407		0.98	MH 7		18+57.30	18+57.30	124.65	124.65	y		0.00'	402.17'	12"	0.0840	0.0840	10.35	9.5%	0.79	13.18	7.78	0.939'	0.190'	91.40'	0.85'	124.84'	0.235'	0.43'			0.333'	1.182'	125.173'	o.k.		no	
408		0.98	MH 8		19+81.07	19+81.07	140.50	138.26	y		2.24'	123.77'	12"	0.1099	0.1100	11.85	8.3%	0.79	15.08	8.90	1.230'	0.190'	125.17'	0.26'	138.45'	0.307'	0.00'			0.154'	0.415'	138.604'	o.k.		no	
Gee Creek Trunk																																			
104	0.86	3.25	MH 4	0.0	11+80.60	12+47.60	176.42	174.20	y																										
502		0.86	MH 2		14+93.00	14+93.00	178.84	178.64	y		0.20'	245.40'	10"	0.0070	0.0090	2.09	41.0%	0.55	3.83	3.62	0.204'	0.367'	175.28'	0.41'	179.01'	0.051'	0.06'			0.055'	0.469'	179.062'	o.k.		no	
503		0.86	MH 3		18+32.60	18+32.60	181.22	181.22	y		0.00'	339.60'	10"	0.0076	0.0070	1.84	46.5%	0.55	3.37	3.30	0.170'	0.396'	179.24'	0.53'	181.62'	0.042'	0.07'			0.057'	0.591'	181.672'	o.k.		no	
504		0.86	MH 4		21+11.40	21+11.40	183.93	183.73	y		0.20'	278.80'	10"	0.0090	0.0090	2.08	41.1%	0.55	3.82	3.61	0.203'	0.367'	181.67'	0.47'	184.10'	0.051'	0.03'			0.038'	0.509'	184.135'	o.k.		no	
505		0.86	MH 5		23+92.70	23+92.70	184.80	184.60	y		0.20'	281.30'	10"	0.0024	0.0024	1.07	79.8%	0.55	1.97	2.17	0.073'	0.554'	184.48'	0.35'	185.15'	0.018'	0.03'			0.022'	0.369'	185.177'	o.k.		no	
506		0.86	MH 6		27+92.70	27+92.70	186.00	185.80	y		0.20'	400.00'	10"	0.0025	0.0025	1.10	77.9%	0.55	2.01	2.22	0.076'	0.542'	185.34'	0.50'	186.34'	0.019'	0.03'			0.023'	0.522'	186.365'	o.k.		no	
507		0.86	MH 7		31+92.70	31+92.70	191.02	187.00	y		4.02'	400.00'	10"	0.0025	0.0025	1.10	77.9%	0.55	2.01	2.22	0.076'	0.542'	186.54'	0.50'	187.54'	0.019'	0.04'			0.031'	0.529'	187.572'	o.k.		no	
508		0.86	MH 8		35+92.70	35+92.70	193.00	192.80	y		0.20'	400.00'	10"	0.0045	0.0045	1.47	58.4%	0.55	2.69	2.78	0.120'	0.454'	191.47'	0.56'	193.25'	0.030'	0.03'			0.028'	0.591'	193.283'	o.k.		no	
509		0.86	MH 9		39+92.70	39+92.70	195.00	194.00	y		1.00'	400.00'	10"	0.0025	0.0025	1.10	77.9%	0.55	2.01	2.22	0.076'	0.542'	193.54'	0.50'	194.54'	0.019'	0.00'			0.010'	0.508'	194.551'	o.k.		no	
Whipple Creek Trunk																																			
601		1.33	MH 1		00+00.00	00+00.00	251.32	251.30	y		0.02'	0.00'																							
602		1.33	MH 2		01+07.00	01+07.00	252.02	251.81	y		0.21'	107.00'	12"	0.0046	0.0046	2.42	55.2%	0.79	3.08	3.14	0.153'	0.525'	251.85'	0.14'	252.34'	0.038'	0.20'			0.118'	0.261'	252.453'	o.k.		no	
603		1.33	MH 3		04+09.00	04+09.00	260.95	260.78	y		0.17'	302.00'	12"	0.0290	0.0290	6.08	21.9%	0.79	7.75	6.04	0.567'	0.300'	252.45'	0.69'	261.08'	0.142'	0.06'			0.100'	0.788'	261.180'	o.k.		no	
604		1.33	MH 4		08+09.00	08+09.00	263.14	263.05	y		0.09'	400.00'	12"	0.0053	0.0053	2.59	51.6%	0.79	3.30	3.30	0.169'	0.500'	261.45'	0.56'	263.55'	0.042'	0.05'			0.045'	0.600'	263.595'	o.k.		no	
604		1.33	MH 4A		09+84.00	09+84.00	263.85	263.83	y		0.02'	175.00'	12"	0.0039	0.0039	2.24	59.5%	0.79	2.86	2.96	0.136'	0.545'	263.69'	0.23'	264.38'	0.034'	0.04'			0.038'	0.264'	264.413'	o.k.		no	
605		1.33	MH 5		12+07.00	12+07.00	264.76	264.58	y		0.18'	223.00'	12"	0.0033	0.0033	2.04	65.3%	0.79	2.60	2.76	0.118'	0.580'	264.43'	0.27'	265.16'	0.030'	0.05'			0.039'	0.314'	265.199'	o.k.		no	
606		1.33	MH 6		16+05.00	16+05.00	266.65	266.39	y		0.26'	398.00'	12"	0.0041	0.0041	2.29	58.4%	0.79	2.91	3.01	0.141'	0.545'	265.31'	0.51'	266.94'	0.035'	0.00'			0.018'	0.532'	266.953'	o.k.		no	

Mapping Point Data on the Hwy 99 North Trunk											Hydraulic Grade Line for Downstream Pipe													Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
216*	6.46	41.14	Ex. 16	90.0	45+16.00	45+16.00	80.82	80.72	y	76																									
2161		6.46	MH 16A		45+52.00	45+52.00	81.24	81.15	y		0.09'	36.00'	18"	0.0091	0.0092	10.08	64.1%	1.77	5.71	6.05	0.568'	0.870'	88.18' *	0.12'	88.30'	0.142'	0.00'			0.072'	0.192'	88.367'	CRITICAL		no	5.6
2162		6.46	Bend 16B		46+87.00	46+87.00	81.25	81.25	y		0.00'	135.00'	18"	0.0000	0.0001	0.91	713.2%	1.77	0.51	0.51	0.004'	1.500'	88.37'	0.51'	88.87'					0.000'	0.507'	88.874'	CRITICAL		Yes by 5.56 cfs	6.1
2163		6.46	Bend 16C		48+23.00	48+23.00	82.53	82.53	y		0.00'	136.00'	18"	0.0091	0.0094	10.22	63.3%	1.77	5.78	6.07	0.572'	0.855'	88.87'	0.46'	89.34'					0.000'	0.461'	89.335'	CRITICAL		no	5.3
217		6.46	MH 17		48+79.00	48+79.00	84.30	84.10	y		0.20'	56.00'	18"	0.0280	0.0280	17.63	36.7%	1.77	9.98	9.18	1.309'	0.623'	89.34'	0.25'	89.58'	0.327'	0.06'			0.192'	0.442'	89.777'	CRITICAL		no	4.0
218	1.02	6.46	MH 18		50+40.00	50+40.00	85.00	84.78	y		0.22'	161.00'	18"	0.0030	0.0030	5.75	112.4%	1.77	3.25	3.25	0.164'	1.500'	89.78'	0.60'	90.38'	0.041'	0.94'		0.024'	0.501'	1.105'	90.882'	CRITICAL		Yes by 0.71 cfs	4.1
219		5.53	MH 19		54+00.00	54+00.00	115.40	115.20	y		0.20'	360.00'	10"	0.0477	0.0839	6.36	86.9%	0.55	11.67	13.12	2.675'	0.596'	90.88'	18.01'	115.80'	0.669'	0.63'			0.649'	18.655'	116.445'	o.k.		no	
220		5.53	MH 20		57+62.00	57+62.00	135.90	135.63	y		0.27'	362.00'	10"	0.0558	0.0559	5.19	106.5%	0.55	9.52	10.76	1.798'	0.738'	116.44'	18.01'	136.37'	0.449'	0.65'			0.552'	18.557'	136.920'	o.k.		Yes by 0.34 cfs	
221		5.53	MH 21		62+17.00	62+17.00	159.55	158.83	y		0.72'	455.00'	12"	0.0500	0.0504	8.02	69.0%	0.79	10.21	10.98	1.871'	0.605'	136.92'	9.33'	159.44'	0.468'	0.47'			0.470'	9.805'	159.905'	o.k.		no	
222		5.53	MH 22		66+00.00	66+00.00	172.20	172.00	y		0.20'	383.00'	15"	0.0325	0.0325	11.68	47.4%	1.23	9.52	9.33	1.350'	0.594'	160.14'	2.90'	172.59'	0.338'	0.37'			0.352'	3.248'	172.945'	o.k.		no	
223	0.92	5.53	MH 23		69+59.00	69+59.00	181.38	181.18	y		0.20'	359.00'	12"	0.0250	0.0250	5.65	97.9%	0.79	7.19	8.20	1.044'	0.785'	172.99'	6.61'	181.97'	0.261'	0.27'		0.159'	0.345'	6.954'	182.310'	o.k.		no	
224		4.54	MH 24		72+74.00	72+74.00	187.45	187.25	y		0.20'	315.00'	12"	0.0186	0.0186	4.88	93.1%	0.79	6.21	7.05	0.771'	0.750'	182.31'	3.96'	188.00'	0.193'	0.05'			0.119'	4.075'	188.119'	o.k.		no	
225		4.54	MH 25		76+00.00	76+00.00	188.63	188.43	y		0.20'	326.00'	15"	0.0030	0.0030	3.55	127.9%	1.23	2.89	2.89	0.130'	1.250'	188.70'	1.60'	190.30'	0.033'	0.05'			0.039'	1.636'	190.336'	CRITICAL		Yes by 0.99 cfs	0.6
226		4.54	MH 26		79+00.00	79+00.00	189.73	189.53	y		0.20'	300.00'	15"	0.0030	0.0030	3.55	128.0%	1.23	2.89	2.89	0.130'	1.250'	190.34'	1.47'	191.81'	0.032'	0.05'			0.039'	1.509'	191.845'	CRITICAL		Yes by 0.99 cfs	1.0
227		4.54	MH 27		82+53.00	82+53.00	190.79	190.79	y		0.00'	353.00'	15"	0.0030	0.0030	3.55	128.0%	1.23	2.89	2.89	0.130'	1.250'	191.84'	1.73'	193.57'	0.032'	0.00'			0.016'	1.746'	193.590'	CRITICAL		Yes by 0.99 cfs	1.5
NE 20th Avenue Trunk																																			
100		4.32	Ex. MH 0		00+00.00	00+00.00	164.98	164.78	y																										
101		4.32	MH 1		04+07.00	04+07.00	167.40	167.20	y	90	0.20'	407.00'	15"	0.0050	0.0055	4.78	90.4%	1.23	3.90	4.40	0.301'	0.919'	165.90'	1.42'	168.12'	0.075'	0.10'	0.19'		0.183'	1.599'	168.301'	o.k.		no	
102		4.32	MH 2		07+33.00	07+33.00	169.22	169.02	y		0.20'	326.00'	15"	0.0050	0.0050	4.57	94.7%	1.23	3.72	4.22	0.277'	0.956'	168.36'	1.12'	169.98'	0.069'	0.10'			0.083'	1.206'	170.060'	o.k.		no	
103		4.32	MH 3		09+33.00	09+33.00	170.42	170.22	y		0.20'	200.00'	15"	0.0050	0.0050	4.58	94.4%	1.23	3.73	4.24	0.279'	0.956'	170.18'	0.69'	171.18'	0.070'	0.24'			0.155'	0.844'	171.331'	o.k.		no	
104	1.17	4.32	MH 4		11+80.60	11+80.60	176.42	174.20	y	90	2.22'	247.60'	15"	0.0150	0.0153	8.00	54.0%	1.23	6.52	6.65	0.687'	0.656'	171.33'	1.06'	174.86'	0.172'	0.44'	0.44'	0.180'	0.616'	1.672'	175.472'	o.k.		no	
105		3.44	MH 5		14+90.60	00+00.00	189.34	189.22	y		0.12'	310.00'	10"	0.0400	0.0413	4.46	77.1%	0.55	8.18	9.00	1.259'	0.542'	176.96'	6.25'	189.76'	0.315'	0.29'			0.303'	6.553'	190.065'	o.k.		no	
1051		3.44	MH 5A		02+24.00	02+24.00	195.10	194.90	y		0.20'	224.00'	18"	0.0248	0.0248	16.59	20.7%	1.77	9.39	7.32	0.833'	0.450'	190.06'	0.39'	195.35'	0.208'	0.04'			0.122'	0.513'	195.472'	o.k.		no	
301		3.44	MH 1		06+19.00	06+19.00	195.89	195.69	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	84.6%	1.77	2.30	2.58	0.103'	1.050'	196.15'	0.34'	196.74'	0.026'	0.04'			0.031'	0.367'	196.771'	o.k.		no	
302		3.44	MH 2		10+09.00	10+09.00	196.68	196.48	y		0.20'	390.00'	18"	0.0015	0.0015	4.10	84.0%	1.77	2.32	2.60	0.105'	1.050'	196.94'	0.33'	197.53'	0.026'	0.04'			0.031'	0.362'	197.561'	o.k.		no	
303		3.44	MH 3		14+04.00	14+04.00	197.47	197.27	y		0.20'	395.00'	18"	0.0015	0.0015	4.07	84.6%	1.77	2.30	2.58	0.103'	1.050'	197.73'	0.34'	198.32'	0.026'	0.20'			0.114'	0.450'	198.434'	o.k.		no	
304		3.44	MH 4		17+99.00	17+99.00	203.56	203.36	y		0.20'	395.00'	18"	0.0149	0.0149	12.86	26.8%	1.77	7.28	6.11	0.580'	0.518'	198.43'	0.60'	203.88'	0.145'	0.03'			0.088'	0.683'	203.965'	o.k.		no	
3041		3.44	MH 4A		21+12.00	21+12.00	203.94	203.94	y		0.00'	313.00'	18"	0.0012	0.0012	3.67	93.8%	1.77	2.08	2.36	0.086'	1.125'	204.69'	0.26'	205.07'	0.022'	0.03'			0.025'	0.285'	205.090'	o.k.		no	
3042		3.44	MH 4B		23+07.00	23+07.00	204.87	204.17	y		0.70'	195.00'	18"	0.0012	0.0012	3.62	95.2%	1.77	2.05	2.32	0.084'	1.148'	205.09'	0.16'	205.32'	0.021'	0.00'			0.010'	0.172'	205.328'	o.k.		no	
Knollridge Trunk																																			
218	1.02	6.46	MH 18	0.0	50+40.00	00+00.00	85.00	84.78	y																										
401		1.02	MH 1		01+26.50	01+26.50	85.86	85.86	y		0.00'	126.50'	12"	0.0020	0.0068	2.95	34.8%	0.79	3.75	3.39	0.179'	0.400'	90.88'	0.13'	91.01'	0.045'	0.02'			0.035'	0.161'	91.043'	CRITICAL		no	4.1
402		1.02	MH 2		03+35.50	03+35.50	86.28	86.28	y		0.00'	209.00'	12"	0.0020	0.0020	1.60	63.9%	0.79	2.04	2.14	0.071'	0.570'	91.04'	0.15'	91.20'	0.018'	0.02'			0.021'	0.176'	91.219'	CRITICAL		no	3.9
403		1.02	MH 3		06+74.50	06+74.50	86.96	86.96	y		0.00'	339.00'	12"	0.0020	0.0020	1.60	64.0%	0.79	2.04	2.14	0.071'	0.570'	91.22'	0.25'	91.47'	0.018'	0.03'			0.021'	0.272'	91.491'	CRITICAL		no	3.5
404		1.02	MH 4		09+50.70	09+59.00	87.51	87.51	y		0.00'	276.20'	12"	0.0020	0.0020	1.59	64.2%	0.79	2.03	2.15	0.072'	0.580'	91.49'	0.20'	91.69'	0.018'	0.03'			0.022'	0.222'	91.712'	CRITICAL		no	3.2
405		1.02	MH 5		12+80.00	12+80.00	88.15	88.15	y		0.00'	321.00'	12"	0.0020	0.0020	1.60	64.2%	0.79	2.03	2.15	0.072'	0.580'	91.71'	0.23'	91.95'	0.018'	0.11'			0.066'	0.299'	92.011'	CRITICAL		no	2.8
406		1.02	MH 6		14+55.13	14+55.13	90.87	90.87	y		0.00'	175.13'	12"	0.0155	0.0155	4.45	23.0%	0.79	5.67	4.59	0.327'	0.320'	92.01'	0.22'	92.23'	0.082'	0.33'			0.205'	0.427'	92.438'	CRITICAL		no	0.4
407		1.02	MH 7		18+57.30	18+57.30	124.65	124.65	y		0.00'	402.17'	12"	0.0840	0.0840	10.35	9.9%	0.79	13.18	7.78	0.939'	0.190'	92.44'	0.92'	124.84'	0.235'	0.43'			0.333'	1.256'	125.173'	o.k.		no	
408		1.02	MH 8		19+81.07	19+81.07	140.50	138.26	y		2.24'	123.77'	12"	0.1099	0.1100	11.85	8.6%	0.79	15.08	8.90	1.230'	0.190'	125.17'	0.28'	138.45'	0.307'	0.00'			0.154'	0.438'	138.604'	o.k.		no	
Gee Creek Trunk																																			
104	1.17	4.32	MH 4	0.0	11+80.60	12+47.60	176.42	174.20	y																										
502		1.17	MH 2		14+93.00	14+93.00	178.84	178.64	y		0.20'	245.40'	10"	0.0070	0.0090	2.09	56.0%	0.55	3.83	3.91	0.237'	0.438'	175.47'	0.66'	179.08'	0.059'	0.07'			0.064'	0.729'	179.141'	o.k.		no	
503		1.17	MH 3		18+32.60	18+32.60	181.22	181.22	y		0.00'	339.60'	10"	0.0076	0.0070	1.84	63.6%	0.55	3.37	3.54	0.195'	0.475'	179.32'	0.86'	181.70'	0.049'	0.08'			0.066'	0.930'	181.761'	o.k.		no	
504		1.17	MH 4		21+11.40	21+11.40	183.93	183.73	y		0.20'	278.80'	10"	0.0090	0.0090	2.08	56.1%	0.55	3.82	3.92	0.238'	0.446'	181.76'	0.75'	184.18'	0.060'	0.02'			0.040'	0.786'	184.216'	o.k.		no	
505		1.17	MH 5		23+92.70	23+92.70	184.80	184.60	y		0.20'	281.30'	10"	0.0024	0.0024	1.07	109.1%	0.55	1.97	1.97	0.060'	0.833'	184.76'	0.79'	185.56'	0.015'	0.03'			0.022'	0.814'	185.578'	CRITICAL		Yes by 0.10 cfs	0.1
506		1.17	MH 6		27+92.70	27+92.70	186.00	185.80	y		0.20'	400.00'	10"	0.0025	0.0025	1.10	106.4%	0.55	2.01	2.28	0.080'	0.738'	185.58'	0.89'	186.54'	0.020'	0.03'			0.024'	0.913'	186.562'	o.k.		Yes by 0.07 cfs	
507		1.17	MH 7		31+92.70	31+92.70	191.02	187.00	y		4.02'	400.00'	10"	0.0025	0.0025	1.10	106.4%	0.55	2.01	2.28	0.080'	0.738'	186.74'	0.89'	187.74'	0.020'	0.05'			0.034'	0.923'	187.772'	o.k.		Yes by 0.07 cfs	
508		1.17	MH 8		35+92.70	35+92.70	193.00	192.80	y		0.20'	400.00'	10"	0.0045	0.0045	1.47	79.8%	0.55	2.69	2.97	0.137'	0.554'	191.57'	0.92'	193.35'	0.034'	0.03'			0.031'	0.951'	193.385'	o.k.		no	
509		1.17	MH 9		39+92.70	39+92.70	195.00	194.00	y		1.00'	400.00'	10"	0.0025	0.0025	1.10	106.4%	0.55	2.01	2.28	0.080'	0.738'	193.74'	0.89'	194.74'	0.020'	0.00'			0.010'	0.899'	194.748'	o.k.		Yes by 0.07 cfs	
Whipple Creek Trunk																																			
601		1.99	MH 1		00+00.00	00+00.00	251.32	251.30	y		0.02'	0.00'																							
602		1.99	MH 2		01+07.00	01+07.00	252.02	251.81	y		0.21'	107.00'	12"	0.0046	0.0046	2.42	82.3%	0.79	3.08	3.43	0.183'	0.690'	252.01'	0.26'	252.50'	0.046'	0.26'			0.152'	0.417'	252.652'	o.k.		no	
603		1.99	MH 3		04+09.00	04+09.00	260.95	260.78	y		0.17'	302.00'	12"	0.0290	0.0290	6.08	32.7%	0.79	7.75	6.89	0.738'	0.385'	252.65'	1.18'	261.17'	0.185'	0.07'			0.128'	1.312'	261.293'	o.k.		no	
604		1.99	MH 4		08+09.00	08+09.00	263.14	263.05	y		0.09'	400.00'	12"	0.0053	0.0053	2.59	76.8%	0.79	3.30	3.63	0.204'	0.650'	261.60'	1.02'	263.70'	0.051'	0.06'			0.054'	1.072'	263.754'	o.k.		no	
604		1.99	MH 4A		09+84.00	09+84.00	263.85	263.83	y		0.02'	175.00'	12"	0.0039	0.0039	2.24	88.7%	0.79	2.86	3.23	0.162'	0.725'	263.87'	0.43'	264.56'	0.040'	0.05'			0.044'	0.470'	264.599'	o.k.		no	
605		1.99	MH 5		12+07.00	12+07.00	264.76	264.58	y		0.18'	223.00'	12"	0.0033	0.0033	2.04	97.3%	0.79	2.60	2.97	0.137'	0.785'	264.64'	0.53'	265.37'	0.034'	0.06'			0.046'	0.577'	265.411'	o.k.		no	
606		1.99	MH 6		16+05.00	16+05.00	266.65	266.39	y		0.26'	398.00'	12"	0.0041	0.0041	2.29	87.0%	0.79	2.91	3.27	0.167'	0.715'	265.48'	0.97'	267.11'	0.042'	0.00'			0.021'	0.995'	267.126'	o.k.		no	

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal

Point 216 (N) is the flow to the Salmon Creek Interceptor from the Hwy. 99 North Trunk.

Plan Year	Calendar Year	Basin 1	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 12	Basin 13	Basin 20	Basin 21	Basin 22	Basin 23	Basin 24	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		Y	Y								Y	Y	Y	Y		y	y	
0	1997	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	288.6	1260.7								12.6	100.3	1095.9	448.8		3,207 capita		
	Domestic Flow	60,513	148,046								45,901	33,552	114,989	45,001		448,001 gpd	0.448 mgd	
	Peak Domestic Flow	247,232	552,638								202,166	142,367	433,971	179,908		1,531,105 gpd	1.531 mgd	
	Industrial Flow	59,040	0								0	86,400	0	0		145,440 gpd	0.145 mgd	
	Peak Industrial Flow	59,040	0								0	86,400	0	0		145,440 gpd	0.145 mgd	
	Fixed Flow	0	0								0	0	0	0		0 gpd	0.000 mgd	
	Total Peak Flow	306,272	552,638								202,166	228,767	433,971	179,908		1,676,545 gpd	1.677 mgd	2.59 cfs
	ERUs	478	592								184	480	460	180		2,374 ERU		
6	2003	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	877.3	1660.5								63.1	180.2	1119.9	463.2		4,364 capita		
	Domestic Flow	143,682	198,521								64,653	48,540	117,660	46,440		619,496 gpd	0.619 mgd	
	Peak Domestic Flow	551,158	724,047								277,570	202,126	443,315	185,348		2,043,848 gpd	2.044 mgd	
	Industrial Flow	59,056	0								0	107,219	0	0		166,275 gpd	0.166 mgd	
	Peak Industrial Flow	59,056	0								0	107,219	0	0		166,275 gpd	0.166 mgd	
	Fixed	0	0								0	0	0	0		0 gpd	0.000 mgd	
	Total Peak Flow	610,214	724,047								277,570	309,345	443,315	185,348		2,210,123 gpd	2.210 mgd	3.42 cfs
	ERUs	811	794								259	623	471	186		3,143 ERU		
10	2007	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	1346.0	1949.0								127.5	244.3	1144.5	476.2		5,288 capita		
	Domestic Flow	214,517	237,106								82,646	60,744	120,416	47,746		763,174 gpd	0.763 mgd	
	Peak Domestic Flow	796,521	852,272								348,199	249,966	452,938	190,268		2,459,262 gpd	2.459 mgd	
	Industrial Flow	59,067	0								0	123,816	0	0		182,883 gpd	0.183 mgd	
	Peak Industrial Flow	59,067	0								0	123,816	0	0		182,883 gpd	0.183 mgd	
	Fixed	0	0								0	0	0	0		0 gpd	0.000 mgd	
	Total Peak Flow	855,588	852,272								348,199	373,782	452,938	190,268		2,642,145 gpd	2.642 mgd	4.09 cfs
	ERUs	1,094	948								331	738	482	191		3,784 ERU		
15	2012	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	2150.4	2169.3								262.3	354.4	1175.9	497.3		6,610 capita		
	Domestic Flow	342,490	275,506								114,199	80,682	124,272	49,865		987,013 gpd	0.987 mgd	
	Peak Domestic Flow	1,219,634	980,273								468,529	326,489	466,457	198,233		3,089,944 gpd	3.090 mgd	
	Industrial Flow	59,080	0								0	148,220	0	0		207,300 gpd	0.207 mgd	
	Peak Industrial Flow	59,080	0								0	148,220	0	0		207,300 gpd	0.207 mgd	
	Fixed	0	0								0	0	0	0		0 gpd	0.000 mgd	
	Total Peak Flow	1,278,714	980,273								468,529	474,709	466,457	198,233		3,297,244 gpd	3.297 mgd	5.10 cfs
	ERUs	1,606	1,102								457	916	497	199		4,777 ERU		
20	2017	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	3323.7	2362.1								481.0	473.8	1208.2	528.7		8,378 capita		
	Domestic Flow	538,878	317,514								158,027	103,973	129,152	53,004		1,300,548 gpd	1.301 mgd	
	Peak Domestic Flow	1,834,455	1,120,345								629,389	414,450	483,746	209,984		3,941,486 gpd	3.941 mgd	
	Industrial Flow	59,094	0								0	177,434	0	0		236,528 gpd	0.237 mgd	
	Peak Industrial Flow	59,094	0								0	177,434	0	0		236,528 gpd	0.237 mgd	
	Fixed	0	0								0	0	0	0		0 gpd	0.000 mgd	
	Total Peak Flow	1,893,549	1,120,345								629,389	591,884	483,746	209,984		4,178,014 gpd	4.178 mgd	6.46 cfs
	ERUs	2,392	1,270								632	1,126	517	212		6,148 ERU		
Ultimate		100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	4909.1	3290.9								846.4	902.0	3108.9	866.9		13,924 capita		
	Domestic Flow	878,772	500,471								239,711	211,179	324,816	96,275		2,251,224 gpd	2.251 mgd	
	Peak Domestic Flow	2,858,101	1,705,577								921,814	808,487	1,113,862	369,614		6,327,681 gpd	6.328 mgd	
	Industrial Flow	59,094	0								0	208,746	0	0		267,840 gpd	0.268 mgd	
	Peak Industrial Flow	59,094	0								0	208,746	0	0		267,840 gpd	0.268 mgd	
	Fixed	0	0								0	0	0	0		0 gpd	0.000 mgd	
	Total Peak Flow	2,917,195	1,705,577								921,814	1,017,233	1,113,862	369,614		6,595,521 gpd	6.596 mgd	10.21 cfs
	ERUs	3,751	2,002								959	1,680	1,299	385		10,076 ERU		

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal

Point 216 (N) is the flow to the Salmon Creek Interceptor from the Hwy. 99 North Trunk.

Plan Year	Calendar Year	Basin 1	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 12	Basin 13	Basin 20	Basin 21	Basin 22	Basin 23	Basin 24	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)													Y	Y		y	y	
0	1997	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population												1095.9	448.8		1,545 capita		
	Domestic Flow												114,989	45,001		159,990 gpd	0.160 mgd	
	Peak Domestic Flow												433,971	179,908		587,211 gpd	0.587 mgd	
	Industrial Flow												0	0		0 gpd	0.000 mgd	
	Peak Industrial Flow												0	0		0 gpd	0.000 mgd	
	Fixed Flow												0	0		0 gpd	0.000 mgd	
	Total Peak Flow												433,971	179,908		587,211 gpd	0.587 mgd	0.91 cfs
	ERUs												460	180		640 ERU		
6	2003	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population												1119.9	463.2		1,583 capita		
	Domestic Flow												117,650	46,440		164,101 gpd	0.164 mgd	
	Peak Domestic Flow												443,315	185,348		601,020 gpd	0.601 mgd	
	Industrial Flow												0	0		0 gpd	0.000 mgd	
	Peak Industrial Flow												0	0		0 gpd	0.000 mgd	
	Fixed												0	0		0 gpd	0.000 mgd	
	Total Peak Flow												443,315	185,348		601,020 gpd	0.601 mgd	0.93 cfs
	ERUs												471	186		656 ERU		
10	2007	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population												1144.5	476.2		1,621 capita		
	Domestic Flow												120,416	47,746		168,161 gpd	0.168 mgd	
	Peak Domestic Flow												452,938	190,268		614,632 gpd	0.615 mgd	
	Industrial Flow												0	0		0 gpd	0.000 mgd	
	Peak Industrial Flow												0	0		0 gpd	0.000 mgd	
	Fixed												0	0		0 gpd	0.000 mgd	
	Total Peak Flow												452,938	190,268		614,632 gpd	0.615 mgd	0.95 cfs
	ERUs												482	191		673 ERU		
15	2012	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population												1175.9	497.3		1,673 capita		
	Domestic Flow												124,272	49,865		174,136 gpd	0.174 mgd	
	Peak Domestic Flow												466,457	198,233		634,681 gpd	0.635 mgd	
	Industrial Flow												0	0		0 gpd	0.000 mgd	
	Peak Industrial Flow												0	0		0 gpd	0.000 mgd	
	Fixed												0	0		0 gpd	0.000 mgd	
	Total Peak Flow												466,457	198,233		634,681 gpd	0.635 mgd	0.98 cfs
	ERUs												497	199		697 ERU		
20	2017	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population												1208.2	528.7		1,737 capita		
	Domestic Flow												129,152	53,004		182,157 gpd	0.182 mgd	
	Peak Domestic Flow												483,746	209,984		661,705 gpd	0.662 mgd	
	Industrial Flow												0	0		0 gpd	0.000 mgd	
	Peak Industrial Flow												0	0		0 gpd	0.000 mgd	
	Fixed												0	0		0 gpd	0.000 mgd	
	Total Peak Flow												483,746	209,984		661,705 gpd	0.662 mgd	1.02 cfs
	ERUs												517	212		729 ERU		
Ultimate		100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population												3108.9	866.9		3,976 capita		
	Domestic Flow												324,816	96,275		421,091 gpd	0.421 mgd	
	Peak Domestic Flow												1,113,862	369,614		1,404,634 gpd	1.405 mgd	
	Industrial Flow												0	0		0 gpd	0.000 mgd	
	Peak Industrial Flow												0	0		0 gpd	0.000 mgd	
	Fixed												0	0		0 gpd	0.000 mgd	
	Total Peak Flow												1,113,862	369,614		1,404,634 gpd	1.405 mgd	2.17 cfs
	ERUs												1,299	385		1,684 ERU		

I-5 North Trunk

Point 218 (W)

Point 223 is the flow to the Salmon Creek Interceptor from the Hwy. 99 North Trunk.

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal							
Plan Year	Calendar Year	Basin 1	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 12	Basin 13	Basin 20	Basin 21	Basin 22	Basin 23	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		Y	Y								Y	Y			y	y	
0	1997	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	65.0%	100.0%	100.0%	100.0%			
	Population	288.6	1260.7								8.2	100.3			1,658 capita		
	Domestic Flow	60,513	148,046								29,835	33,552			271,946 gpd	0.272 mgd	
	Peak Domestic Flow	247,232	552,638								131,948	142,367			991,986 gpd	0.992 mgd	
	Industrial Flow	59,040	0								0	86,400			145,440 gpd	0.145 mgd	
	Peak Industrial Flow	59,040	0								0	86,400			145,440 gpd	0.145 mgd	
	Fixed Flow	0	0								0	0			0 gpd	0.000 mgd	
	Total Peak Flow	306,272	552,638								131,948	228,767			1,137,426 gpd	1.137 mgd	1.76 cfs
	ERUs	478	592								119	480			1,670 ERU		
6	2003	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	65.0%	100.0%	100.0%	100.0%			
	Population	877.3	1660.5								41.0	180.2			2,759 capita		
	Domestic Flow	143,682	198,521								42,024	49,540			432,767 gpd	0.433 mgd	
	Peak Domestic Flow	551,158	724,047								182,023	202,126			1,503,024 gpd	1.503 mgd	
	Industrial Flow	59,056	0								0	107,219			166,275 gpd	0.166 mgd	
	Peak Industrial Flow	59,056	0								0	107,219			166,275 gpd	0.166 mgd	
	Fixed	0	0								0	0			0 gpd	0.000 mgd	
	Total Peak Flow	610,214	724,047								182,023	309,345			1,669,299 gpd	1.669 mgd	2.58 cfs
	ERUs	811	794								168	623			2,396 ERU		
10	2007	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	65.0%	100.0%	100.0%	100.0%			
	Population	1346.0	1949.0								82.9	244.3			3,622 capita		
	Domestic Flow	214,517	237,106								53,720	60,744			566,087 gpd	0.566 mgd	
	Peak Domestic Flow	796,521	852,272								229,115	249,966			1,908,611 gpd	1.909 mgd	
	Industrial Flow	59,067	0								0	123,816			182,883 gpd	0.183 mgd	
	Peak Industrial Flow	59,067	0								0	123,816			182,883 gpd	0.183 mgd	
	Fixed	0	0								0	0			0 gpd	0.000 mgd	
	Total Peak Flow	855,588	852,272								229,115	373,782			2,091,494 gpd	2.091 mgd	3.24 cfs
	ERUs	1,094	948								215	738			2,996 ERU		
15	2012	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	65.0%	100.0%	100.0%	100.0%			
	Population	2150.4	2169.3								170.5	354.4			4,845 capita		
	Domestic Flow	342,490	275,506								74,229	80,682			772,907 gpd	0.773 mgd	
	Peak Domestic Flow	1,219,634	980,273								309,723	326,489			2,517,888 gpd	2.518 mgd	
	Industrial Flow	59,080	0								0	148,220			207,300 gpd	0.207 mgd	
	Peak Industrial Flow	59,080	0								0	148,220			207,300 gpd	0.207 mgd	
	Fixed	0	0								0	0			0 gpd	0.000 mgd	
	Total Peak Flow	1,278,714	980,273								309,723	474,709			2,725,188 gpd	2.725 mgd	4.22 cfs
	ERUs	1,606	1,102								297	916			3,921 ERU		
20	2017	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	65.0%	100.0%	100.0%	100.0%			
	Population	3323.7	2362.1								312.7	473.8			6,472 capita		
	Domestic Flow	538,878	317,514								102,717	103,973			1,063,082 gpd	1.063 mgd	
	Peak Domestic Flow	1,834,455	1,120,345								418,135	414,450			3,337,378 gpd	3.337 mgd	
	Industrial Flow	59,094	0								0	177,434			236,528 gpd	0.237 mgd	
	Peak Industrial Flow	59,094	0								0	177,434			236,528 gpd	0.237 mgd	
	Fixed	0	0								0	0			0 gpd	0.000 mgd	
	Total Peak Flow	1,893,549	1,120,345								418,135	591,884			3,573,906 gpd	3.574 mgd	5.53 cfs
	ERUs	2,392	1,270								411	1,126			5,198 ERU		
Ultimate		100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	65.0%	100.0%	100.0%	100.0%			
	Population	4909.1	3290.9								550.2	902.0			9,652 capita		
	Domestic Flow	878,772	500,471								155,812	211,179			1,746,234 gpd	1.746 mgd	
	Peak Domestic Flow	2,858,101	1,705,577								615,848	808,487			5,186,223 gpd	5.186 mgd	
	Industrial Flow	59,094	0								0	208,746			267,840 gpd	0.268 mgd	
	Peak Industrial Flow	59,094	0								0	208,746			267,840 gpd	0.268 mgd	
	Fixed	0	0								0	0			0 gpd	0.000 mgd	
	Total Peak Flow	2,917,195	1,705,577								615,848	1,017,233			5,454,063 gpd	5.454 mgd	8.44 cfs
	ERUs	3,751	2,002								623	1,680			8,056 ERU		

I-5 North Trunk

Point 223

Point 216 (N) is the flow to the Salmon Creek Interceptor from the Hwy. 99 North Trunk.

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal							
Plan Year	Calendar Year	Basin 1	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 12	Basin 13	Basin 20	Basin 21	Basin 22	Basin 23	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		Y	Y								Y				y	y	
0	1997	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	288.6	1260.7								3.8				1,553 capita		
	Domestic Flow	60,513	148,046								13,770				222,329 gpd	0.222 mgd	
	Peak Domestic Flow	247,232	552,638								61,236				815,634 gpd	0.816 mgd	
	Industrial Flow	59,040	0								0				59,040 gpd	0.059 mgd	
	Peak Industrial Flow	59,040	0								0				59,040 gpd	0.059 mgd	
	Fixed Flow	0	0								0				0 gpd	0.000 mgd	
	Total Peak Flow	306,272	552,638								61,236				874,674 gpd	0.875 mgd	1.35 cfs
	ERUs	478	592								55				1,125 ERU		
6	2003	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	877.3	1660.5								18.9				2,557 capita		
	Domestic Flow	143,682	198,521								19,396				361,599 gpd	0.362 mgd	
	Peak Domestic Flow	551,158	724,047								85,024				1,265,766 gpd	1.266 mgd	
	Industrial Flow	59,056	0								0				59,056 gpd	0.059 mgd	
	Peak Industrial Flow	59,056	0								0				59,056 gpd	0.059 mgd	
	Fixed	0	0								0				0 gpd	0.000 mgd	
	Total Peak Flow	610,214	724,047								85,024				1,324,822 gpd	1.325 mgd	2.05 cfs
	ERUs	811	794								78				1,683 ERU		
10	2007	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	1346.0	1949.0								38.3				3,333 capita		
	Domestic Flow	214,517	237,106								24,794				476,417 gpd	0.476 mgd	
	Peak Domestic Flow	796,521	852,272								107,526				1,621,310 gpd	1.621 mgd	
	Industrial Flow	59,067	0								0				59,067 gpd	0.059 mgd	
	Peak Industrial Flow	59,067	0								0				59,067 gpd	0.059 mgd	
	Fixed	0	0								0				0 gpd	0.000 mgd	
	Total Peak Flow	855,588	852,272								107,526				1,680,377 gpd	1.680 mgd	2.60 cfs
	ERUs	1,094	948								99				2,142 ERU		
15	2012	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	2150.4	2169.3								78.7				4,398 capita		
	Domestic Flow	342,490	275,506								34,260				652,256 gpd	0.652 mgd	
	Peak Domestic Flow	1,219,634	980,273								146,310				2,149,912 gpd	2.150 mgd	
	Industrial Flow	59,080	0								0				59,080 gpd	0.059 mgd	
	Peak Industrial Flow	59,080	0								0				59,080 gpd	0.059 mgd	
	Fixed	0	0								0				0 gpd	0.000 mgd	
	Total Peak Flow	1,278,714	980,273								146,310				2,208,992 gpd	2.209 mgd	3.42 cfs
	ERUs	1,606	1,102								137				2,845 ERU		
20	2017	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	3323.7	2362.1								144.3				5,830 capita		
	Domestic Flow	538,878	317,514								47,408				903,800 gpd	0.904 mgd	
	Peak Domestic Flow	1,834,455	1,120,345								198,945				2,876,373 gpd	2.876 mgd	
	Industrial Flow	59,094	0								0				59,094 gpd	0.059 mgd	
	Peak Industrial Flow	59,094	0								0				59,094 gpd	0.059 mgd	
	Fixed	0	0								0				0 gpd	0.000 mgd	
	Total Peak Flow	1,893,549	1,120,345								198,945				2,935,467 gpd	2.935 mgd	4.54 cfs
	ERUs	2,392	1,270								190				3,852 ERU		
Ultimate		100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	4909.1	3290.9								253.9				8,454 capita		
	Domestic Flow	878,772	500,471								71,913				1,451,156 gpd	1.451 mgd	
	Peak Domestic Flow	2,858,101	1,705,577								295,449				4,392,306 gpd	4.392 mgd	
	Industrial Flow	59,094	0								0				59,094 gpd	0.059 mgd	
	Peak Industrial Flow	59,094	0								0				59,094 gpd	0.059 mgd	
	Fixed	0	0								0				0 gpd	0.000 mgd	
	Total Peak Flow	2,917,195	1,705,577								295,449				4,451,400 gpd	4.451 mgd	6.89 cfs
	ERUs	3,751	2,002								288				6,041 ERU		

I-5 North Trunk

Point 227

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal

Point 216 (N) is the flow to the Salmon Creek Interceptor from the Hwy. 99 North Trunk.

Plan Year	Calendar Year	Basin 1	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 12	Basin 13	Basin 20	Basin 21	Basin 22	Basin 23	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		Y	Y												y	y	
0	1997	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	288.6	1260.7												1,549 capita		
	Domestic Flow	60,513	148,046												208,559 gpd	0.209 mgd	
	Peak Domestic Flow	247,232	552,638												765,278 gpd	0.765 mgd	
	Industrial Flow	59,040	0												59,040 gpd	0.059 mgd	
	Peak Industrial Flow	59,040	0												59,040 gpd	0.059 mgd	
	Fixed Flow	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	306,272	552,638												824,318 gpd	0.824 mgd	1.28 cfs
	ERUs	478	592												1,070 ERU		
6	2003	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	877.3	1660.5												2,538 capita		
	Domestic Flow	143,682	198,521												342,203 gpd	0.342 mgd	
	Peak Domestic Flow	551,158	724,047												1,198,778 gpd	1.199 mgd	
	Industrial Flow	59,056	0												59,056 gpd	0.059 mgd	
	Peak Industrial Flow	59,056	0												59,056 gpd	0.059 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	610,214	724,047												1,257,835 gpd	1.258 mgd	1.95 cfs
	ERUs	811	794												1,605 ERU		
10	2007	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	1346.0	1949.0												3,295 capita		
	Domestic Flow	214,517	237,106												451,623 gpd	0.452 mgd	
	Peak Domestic Flow	796,521	852,272												1,538,894 gpd	1.539 mgd	
	Industrial Flow	59,067	0												59,067 gpd	0.059 mgd	
	Peak Industrial Flow	59,067	0												59,067 gpd	0.059 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	855,588	852,272												1,597,961 gpd	1.598 mgd	2.47 cfs
	ERUs	1,094	948												2,043 ERU		
15	2012	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	2150.4	2169.3												4,320 capita		
	Domestic Flow	342,490	275,506												617,996 gpd	0.618 mgd	
	Peak Domestic Flow	1,219,634	980,273												2,041,387 gpd	2.041 mgd	
	Industrial Flow	59,080	0												59,080 gpd	0.059 mgd	
	Peak Industrial Flow	59,080	0												59,080 gpd	0.059 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	1,278,714	980,273												2,100,467 gpd	2.100 mgd	3.25 cfs
	ERUs	1,606	1,102												2,708 ERU		
20	2017	100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	3323.7	2362.1												5,686 capita		
	Domestic Flow	538,878	317,514												856,392 gpd	0.856 mgd	
	Peak Domestic Flow	1,834,455	1,120,345												2,734,299 gpd	2.734 mgd	
	Industrial Flow	59,094	0												59,094 gpd	0.059 mgd	
	Peak Industrial Flow	59,094	0												59,094 gpd	0.059 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	1,893,549	1,120,345												2,793,393 gpd	2.793 mgd	4.32 cfs
	ERUs	2,392	1,270												3,662 ERU		
Ultimate		100.0%	74.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	4909.1	3290.9												8,200 capita		
	Domestic Flow	878,772	500,471												1,379,243 gpd	1.379 mgd	
	Peak Domestic Flow	2,858,101	1,705,577												4,192,562 gpd	4.193 mgd	
	Industrial Flow	59,094	0												59,094 gpd	0.059 mgd	
	Peak Industrial Flow	59,094	0												59,094 gpd	0.059 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	2,917,195	1,705,577												4,251,656 gpd	4.252 mgd	6.58 cfs
	ERUs	3,751	2,002												5,753 ERU		

I-5 North Trunk

Point 100

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal

Point 216 (N) is the flow to the Salmon Creek Interceptor from the Hwy. 99 North Trunk.

Plan Year	Calendar Year	Basin 1	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 12	Basin 13	Basin 20	Basin 21	Basin 22	Basin 23	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		Y	Y												y	y	
0	1997	25.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	72.1	255.5												328 capita		
	Domestic Flow	15,128	30,009												45,138 gpd	0.045 mgd	
	Peak Domestic Flow	64,745	123,257												183,341 gpd	0.183 mgd	
	Industrial Flow	14,760	0												14,760 gpd	0.015 mgd	
	Peak Industrial Flow	14,760	0												14,760 gpd	0.015 mgd	
	Fixed Flow	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	79,505	123,257												198,101 gpd	0.198 mgd	0.31 cfs
	ERUs	120	120												240 ERU		
6	2003	25.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	219.3	336.6												556 capita		
	Domestic Flow	35,921	40,241												76,161 gpd	0.076 mgd	
	Peak Domestic Flow	148,466	163,243												300,846 gpd	0.301 mgd	
	Industrial Flow	14,764	0												14,764 gpd	0.015 mgd	
	Peak Industrial Flow	14,764	0												14,764 gpd	0.015 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	163,230	163,243												315,610 gpd	0.316 mgd	0.49 cfs
	ERUs	203	161												364 ERU		
10	2007	25.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	336.5	395.1												732 capita		
	Domestic Flow	53,629	48,062												101,691 gpd	0.102 mgd	
	Peak Domestic Flow	217,559	193,435												394,911 gpd	0.395 mgd	
	Industrial Flow	14,767	0												14,767 gpd	0.015 mgd	
	Peak Industrial Flow	14,767	0												14,767 gpd	0.015 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	232,325	193,435												409,678 gpd	0.410 mgd	0.63 cfs
	ERUs	274	192												466 ERU		
15	2012	25.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	537.6	439.7												977 capita		
	Domestic Flow	85,622	55,846												141,468 gpd	0.141 mgd	
	Peak Domestic Flow	338,878	223,511												538,485 gpd	0.538 mgd	
	Industrial Flow	14,770	0												14,770 gpd	0.015 mgd	
	Peak Industrial Flow	14,770	0												14,770 gpd	0.015 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	353,648	223,511												553,255 gpd	0.553 mgd	0.86 cfs
	ERUs	402	223												625 ERU		
20	2017	25.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	830.9	478.8												1,310 capita		
	Domestic Flow	134,719	64,361												199,080 gpd	0.199 mgd	
	Peak Domestic Flow	518,726	256,403												740,855 gpd	0.741 mgd	
	Industrial Flow	14,774	0												14,774 gpd	0.015 mgd	
	Peak Industrial Flow	14,774	0												14,774 gpd	0.015 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	533,500	256,403												755,629 gpd	0.756 mgd	1.17 cfs
	ERUs	598	257												855 ERU		
Ultimate		25.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	30.0%	100.0%	100.0%	100.0%			
	Population	1227.3	667.1												1,894 capita		
	Domestic Flow	219,693	101,447												321,140 gpd	0.321 mgd	
	Peak Domestic Flow	821,848	396,305												1,157,386 gpd	1.157 mgd	
	Industrial Flow	14,774	0												14,774 gpd	0.015 mgd	
	Peak Industrial Flow	14,774	0												14,774 gpd	0.015 mgd	
	Fixed	0	0												0 gpd	0.000 mgd	
	Total Peak Flow	836,622	396,305												1,172,160 gpd	1.172 mgd	1.81 cfs
	ERUs	938	406												1,344 ERU		

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal
Plan Year	Calendar Year	Basin 1	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 12	Basin 13
Include in Calculation? (Y/N)		Y	Y							
0	1997	75.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Population		216.4	1022.2							
Domestic Flow		45,385	120,037							
Peak Domestic Flow		187,681	455,402							
Industrial Flow		44,280	0							
Peak Industrial Flow		44,280	0							
Fixed Flow		0	0							
Total Peak Flow		231,961	455,402							
ERUs		359	480							
6	2003	75.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Population		658.0	1346.3							
Domestic Flow		107,762	160,963							
Peak Domestic Flow		421,339	597,657							
Industrial Flow		44,292	0							
Peak Industrial Flow		44,292	0							
Fixed		0	0							
Total Peak Flow		465,631	597,657							
ERUs		608	644							
10	2007	75.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Population		1009.5	1580.3							
Domestic Flow		160,888	192,248							
Peak Domestic Flow		610,947	704,217							
Industrial Flow		44,300	0							
Peak Industrial Flow		44,300	0							
Fixed		0	0							
Total Peak Flow		655,247	704,217							
ERUs		821	769							
15	2012	75.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Population		1612.8	1758.9							
Domestic Flow		256,867	223,384							
Peak Domestic Flow		939,251	810,547							
Industrial Flow		44,310	0							
Peak Industrial Flow		44,310	0							
Fixed		0	0							
Total Peak Flow		983,561	810,547							
ERUs		1,205	894							
20	2017	75.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Population		2492.8	1915.2							
Domestic Flow		404,158	257,444							
Peak Domestic Flow		1,418,383	926,886							
Industrial Flow		44,321	0							
Peak Industrial Flow		44,321	0							
Fixed		0	0							
Total Peak Flow		1,462,703	926,886							
ERUs		1,794	1,030							
Ultimate		75.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Population		3681.8	2668.3							
Domestic Flow		659,079	405,788							
Peak Domestic Flow		2,218,026	1,414,223							
Industrial Flow		44,321	0							
Peak Industrial Flow		44,321	0							
Fixed		0	0							
Total Peak Flow		2,262,347	1,414,223							
ERUs		2,814	1,623							

Basin 20	Basin 21	Basin 22	Basin 23	Summary Gallons / Day	Summary MGD	
30.0%	100.0%	100.0%	100.0%			
				1,239 capita		
				165,422 gpd	0.165 mgd	
				618,373 gpd	0.618 mgd	
				44,280 gpd	0.044 mgd	
				44,280 gpd	0.044 mgd	
				0 gpd	0.000 mgd	
				662,653 gpd	0.663 mgd	1.03 cfs
				839 ERU		
30.0%	100.0%	100.0%	100.0%			
				2,004 capita		
				268,725 gpd	0.269 mgd	
				963,396 gpd	0.963 mgd	
				44,292 gpd	0.044 mgd	
				44,292 gpd	0.044 mgd	
				0 gpd	0.000 mgd	
				1,007,688 gpd	1.008 mgd	1.56 cfs
				1,252 ERU		
30.0%	100.0%	100.0%	100.0%			
				2,590 capita		
				353,136 gpd	0.353 mgd	
				1,234,515 gpd	1.235 mgd	
				44,300 gpd	0.044 mgd	
				44,300 gpd	0.044 mgd	
				0 gpd	0.000 mgd	
				1,278,815 gpd	1.279 mgd	1.98 cfs
				1,590 ERU		
30.0%	100.0%	100.0%	100.0%			
				3,372 capita		
				480,251 gpd	0.480 mgd	
				1,632,281 gpd	1.632 mgd	
				44,310 gpd	0.044 mgd	
				44,310 gpd	0.044 mgd	
				0 gpd	0.000 mgd	
				1,676,591 gpd	1.677 mgd	2.59 cfs
				2,098 ERU		
30.0%	100.0%	100.0%	100.0%			
				4,408 capita		
				661,602 gpd	0.662 mgd	
				2,180,152 gpd	2.180 mgd	
				44,321 gpd	0.044 mgd	
				44,321 gpd	0.044 mgd	
				0 gpd	0.000 mgd	
				2,224,473 gpd	2.224 mgd	3.44 cfs
				2,824 ERU		
30.0%	100.0%	100.0%	100.0%			
				6,350 capita		
				1,064,866 gpd	1.065 mgd	
				3,351,408 gpd	3.351 mgd	
				44,321 gpd	0.044 mgd	
				44,321 gpd	0.044 mgd	
				0 gpd	0.000 mgd	
				3,395,728 gpd	3.396 mgd	5.25 cfs
				4,437 ERU		

Point 216 (N) is the flow to the Salmon Creek Interceptor from the Hwy. 99 North Trunk.

I-5 North Trunk

Point 3042

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal
Plan Year	Calendar Year	Basin 1	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 12	Basin 13
Include in Calculation? (Y/N)		Y								
0	1997	65.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	187.6								
	Domestic Flow	39,333								
	Peak Domestic Flow	163,550								
	Industrial Flow	38,376								
	Peak Industrial Flow	38,376								
	Fixed Flow	0								
	Total Peak Flow	201,926								
	ERUs	311								
6	2003	65.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	570.2								
	Domestic Flow	93,394								
	Peak Domestic Flow	368,362								
	Industrial Flow	38,387								
	Peak Industrial Flow	38,387								
	Fixed	0								
	Total Peak Flow	406,748								
	ERUs	527								
10	2007	65.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	874.9								
	Domestic Flow	139,436								
	Peak Domestic Flow	534,971								
	Industrial Flow	38,394								
	Peak Industrial Flow	38,394								
	Fixed	0								
	Total Peak Flow	573,364								
	ERUs	711								
15	2012	65.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	1397.8								
	Domestic Flow	222,618								
	Peak Domestic Flow	824,025								
	Industrial Flow	38,402								
	Peak Industrial Flow	38,402								
	Fixed	0								
	Total Peak Flow	862,427								
	ERUs	1,044								
20	2017	65.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	2160.4								
	Domestic Flow	350,270								
	Peak Domestic Flow	1,246,785								
	Industrial Flow	38,411								
	Peak Industrial Flow	38,411								
	Fixed	0								
	Total Peak Flow	1,285,196								
	ERUs	1,555								
Ultimate		65.0%	60.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	3190.9								
	Domestic Flow	571,202								
	Peak Domestic Flow	1,953,227								
	Industrial Flow	38,411								
	Peak Industrial Flow	38,411								
	Fixed	0								
	Total Peak Flow	1,991,638								
	ERUs	2,438								

Basin 20	Basin 21	Basin 22	Basin 23	Summary Gallons / Day	Summary MGD	
				y	y	
30.0%	100.0%	100.0%	100.0%			
				188 capita		
				39,333 gpd	0.039 mgd	
				163,550 gpd	0.164 mgd	
				38,376 gpd	0.038 mgd	
				38,376 gpd	0.038 mgd	
				0 gpd	0.000 mgd	
				201,926 gpd	0.202 mgd	0.31 cfs
				311 ERU		
30.0%	100.0%	100.0%	100.0%			
				570 capita		
				93,394 gpd	0.093 mgd	
				368,362 gpd	0.368 mgd	
				38,387 gpd	0.038 mgd	
				38,387 gpd	0.038 mgd	
				0 gpd	0.000 mgd	
				406,748 gpd	0.407 mgd	0.63 cfs
				527 ERU		
30.0%	100.0%	100.0%	100.0%			
				875 capita		
				139,436 gpd	0.139 mgd	
				534,971 gpd	0.535 mgd	
				38,394 gpd	0.038 mgd	
				38,394 gpd	0.038 mgd	
				0 gpd	0.000 mgd	
				573,364 gpd	0.573 mgd	0.89 cfs
				711 ERU		
30.0%	100.0%	100.0%	100.0%			
				1,398 capita		
				222,618 gpd	0.223 mgd	
				824,025 gpd	0.824 mgd	
				38,402 gpd	0.038 mgd	
				38,402 gpd	0.038 mgd	
				0 gpd	0.000 mgd	
				862,427 gpd	0.862 mgd	1.33 cfs
				1,044 ERU		
30.0%	100.0%	100.0%	100.0%			
				2,160 capita		
				350,270 gpd	0.350 mgd	
				1,246,785 gpd	1.247 mgd	
				38,411 gpd	0.038 mgd	
				38,411 gpd	0.038 mgd	
				0 gpd	0.000 mgd	
				1,285,196 gpd	1.285 mgd	1.99 cfs
				1,555 ERU		
30.0%	100.0%	100.0%	100.0%			
				3,191 capita		
				571,202 gpd	0.571 mgd	
				1,953,227 gpd	1.953 mgd	
				38,411 gpd	0.038 mgd	
				38,411 gpd	0.038 mgd	
				0 gpd	0.000 mgd	
				1,991,638 gpd	1.992 mgd	3.08 cfs
				2,438 ERU		

Point 216 (N) is the flow to the Salmon Creek Interceptor from the Hwy. 99 North Trunk.

I-5 North Trunk

Point 601

APPENDEX: PLEASANT VALLEY SUBAREA

I. Subarea Map

II. Hydraulic Grade Analysis

A. Proposed Barberton Improvements – Benchmark Years

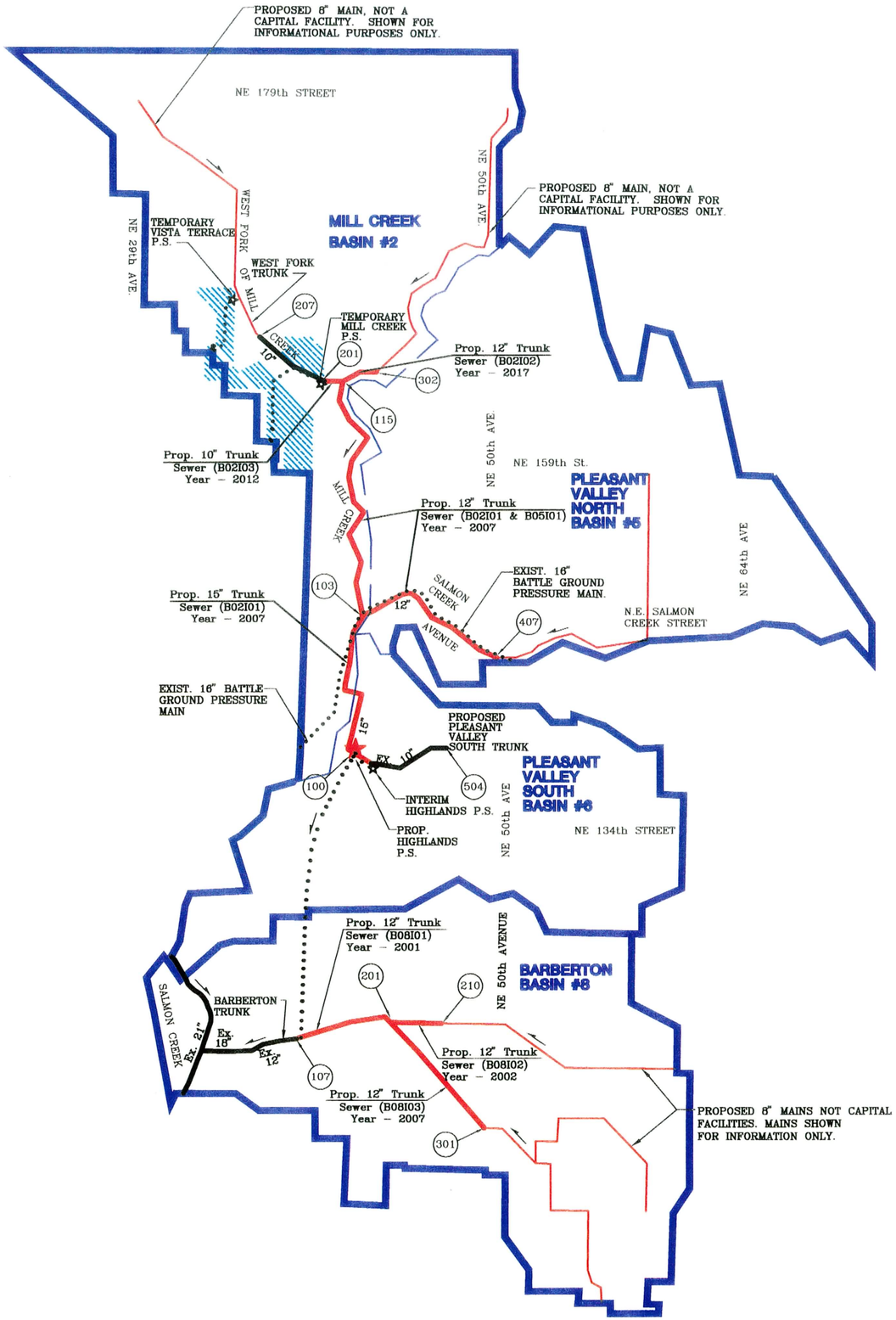
1. **1997 – Year 0**
2. **2003 – Year 6**
3. **2007 – Year 10**
4. **2012 – Year 15**
5. **2017 – Year 20**

B. Proposed Mill Creek Improvements – Benchmark Years

1. **1997 – Year 0**
2. **2003 – Year 6**
3. **2007 – Year 10**
4. **2012 – Year 15**
5. **2017 – Year 20**

C. Flow Calculation Worksheets

1. **Barberton – Benchmark Years**
2. **Mill Creek – Benchmark Years**



LEGEND

- (910) Analysis Point – See Capital Facilities Plan, Volume 2 for projected flows
- Sub–Area Boundary
- Basin Boundary
- Existing Trunk Sewer
- Proposed Trunk Sewer
- Existing Force Main
- ☆ Existing Temporary Pump Station
- ☆ Existing Pump Station

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HAZEL DELL SEWER DISTRICT

PLEASANT VALLEY SUBAREA

Mapping Point Data on Barberton Trunk											Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
314*	0.58	1.41	MH 14	111.0	42+96.00	-01+20.00	97.39	97.19																									
101		0.58	MH 1		00+00.00	00+00.00	99.24	98.99	71	0.25'	120.00'	21"		0.0133	18.34	3.2%	2.41	0.145'	0.175'	97.59' *	0.01'	99.17'	0.036'	0.08'	0.09'		0.104'	0.114'	99.269'	o.k.		no	
102		0.58	MH 2		02+19.00	02+19.00	104.96	104.86		0.10'	219.00'	18"	0.0260	0.0257	16.87	3.4%	1.77	0.226'	0.150'	99.39'	0.04'	105.01'	0.057'	0.08'			0.067'	0.107'	105.077'	o.k.		no	
103		0.58	MH 3		04+74.00	04+74.00	111.32	111.32		0.00'	255.00'	18"	0.0240	0.0249	16.63	3.5%	1.77	0.220'	0.150'	105.11'	0.05'	111.47'	0.055'	0.08'			0.067'	0.113'	111.537'	o.k.		no	
104		0.58	MH 4		07+16.00	07+16.00	116.00	115.59		0.41'	242.00'	18"	0.0180	0.0176	13.99	4.2%	1.77	0.224'	0.210'	111.54'	0.03'	115.80'	0.056'	0.15'			0.103'	0.134'	115.903'	o.k.		no	
105		0.58	MH 5		09+03.00	09+03.00	124.43	124.23		0.20'	187.00'	12"	0.0440	0.0440	7.49	7.7%	0.79	0.428'	0.165'	116.17'	0.16'	124.40'	0.107'	0.09'			0.099'	0.263'	124.494'	o.k.		no	
106		0.58	MH 6		11+21.00	11+21.00	128.57	128.37		0.20'	218.00'	12"	0.1540	0.0181	4.80	12.1%	0.79	0.261'	0.230'	124.66'	0.13'	128.60'	0.065'	0.09'			0.076'	0.203'	128.676'	o.k.		no	
107	0.30	0.58	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'	151.00'	12"	0.0200	0.0192	4.95	11.7%	0.79	0.249'	0.210'	128.78'	0.10'	131.68'	0.062'	0.02'		0.140'	0.110'	0.207'	131.790'	o.k.		no	
Future Barberton Trunk to the East																																	
107	0.30	0.58	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'																							
201	0.07	0.29	Fut. 1		14+00.00	14+00.00	135.79	135.59		0.20'	1400.00'	10"	0.0028	0.0028	1.16	24.6%	0.55	0.048'	0.275'	131.95'	0.35'	135.87'	0.012'	0.02'			0.014'	0.362'	135.879'	o.k.		no	
210		0.22	Fut. 10		22+00.00	22+00.00	138.23	138.03		0.20'	800.00'	10"	0.0028	0.0028	1.16	24.6%	0.55	0.048'	0.275'	136.07'	0.12'	138.31'	0.012'			0.011'	0.011'	0.128'	138.316'	o.k.		no	
Future Barberton Trunk to the Southeast																																	
201	0.20	0.29	Fut. 1		14+00.00	00+00.00	135.79	135.59																									
301		0.09	Fut. 20		20+00.00	20+00.00	141.59	141.39		0.20'	2000.00'	10"	0.0028	0.0028	1.16	24.6%	0.55	0.048'	0.275'	136.07'	0.05'	141.67'	0.012'			0.042'	0.027'	0.074'	141.692'	o.k.		no	

* Information referenced from the Salmon Creek Interceptor Analysis

Mapping Point Data on Barberton Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
314*	0.78	1.75	MH 14	111.0	42+96.00	-01+20.00	97.39	97.19																								
101		0.78	MH 1		00+00.00	00+00.00	99.24	98.99	71	0.25'	120.00'	21"		0.0133	18.34	4.3%	2.41	0.208'	0.245'	97.64' *	0.01'	99.24'	0.052'	0.11'	0.13'		0.150'	0.162'	99.385'	o.k.		no	
102		0.78	MH 2		02+19.00	02+19.00	104.96	104.86		0.10'	219.00'	18"	0.0260	0.0257	16.87	4.6%	1.77	0.326'	0.210'	99.45'	0.05'	105.07'	0.082'	0.11'			0.096'	0.147'	105.166'	o.k.		no	
103		0.78	MH 3		04+74.00	04+74.00	111.32	111.32		0.00'	255.00'	18"	0.0240	0.0249	16.63	4.7%	1.77	0.317'	0.210'	105.17'	0.06'	111.53'	0.079'	0.08'			0.079'	0.138'	111.609'	o.k.		no	
104		0.78	MH 4		07+16.00	07+16.00	116.00	115.59		0.41'	242.00'	18"	0.0180	0.0176	13.99	5.6%	1.77	0.224'	0.210'	111.61'	0.06'	115.80'	0.056'	0.20'			0.128'	0.184'	115.928'	o.k.		no	
105		0.78	MH 5		09+03.00	09+03.00	124.43	124.23		0.20'	187.00'	12"	0.0440	0.0440	7.49	10.4%	0.79	0.570'	0.210'	116.21'	0.22'	124.44'	0.143'	0.11'			0.126'	0.344'	124.566'	o.k.		no	
106		0.78	MH 6		11+21.00	11+21.00	128.57	128.37		0.20'	218.00'	12"	0.1540	0.0181	4.80	16.3%	0.79	0.314'	0.270'	124.70'	0.19'	128.64'	0.078'	0.11'			0.092'	0.286'	128.732'	o.k.		no	
107	0.40	0.78	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'	151.00'	12"	0.0200	0.0192	4.95	15.8%	0.79	0.302'	0.250'	128.82'	0.15'	131.72'	0.076'	0.02'		0.170'	0.132'	0.277'	131.852'	o.k.		no	
Future Barberton Trunk to the East																																
107	0.40	0.78	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'																						
201	0.09	0.39	Fut. 1		14+00.00	14+00.00	135.79	135.59		0.20'	1400.00'	12"	0.0028	0.0028	1.89	20.4%	0.79	0.055'	0.300'	131.97'	0.27'	135.89'	0.014'	0.02'			0.016'	0.282'	135.906'	o.k.		no	
210		0.30	Fut. 10		22+00.00	22+00.00	138.23	138.03		0.20'	800.00'	12"	0.0028	0.0028	1.89	20.4%	0.79	0.055'	0.300'	136.09'	0.09'	138.33'	0.014'			0.012'	0.013'	0.102'	138.343'	o.k.		no	
Future Barberton Trunk to the Southeast																																
201	0.27	0.39	Fut. 1		14+00.00	00+00.00	135.79	135.59																								
301		0.12	Fut. 20		20+00.00	20+00.00	141.59	141.39		0.20'	2000.00'	10"	0.0028	0.0028	1.16	33.1%	0.55	0.056'	0.321'	136.11'	0.07'	141.71'	0.014'			0.048'	0.031'	0.105'	141.742'	o.k.		no	
* Information referenced from the Salmon Creek Interceptor Analysis																																

Mapping Point Data on Barberton Trunk											Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
314*	0.96	2.01	MH 14	111.0	42+96.00	-01+20.00	97.39	97.19																								
101		0.96	MH 1		00+00.00	00+00.00	99.24	98.99	71	0.25'	120.00'	21"		0.0133	18.34	5.2%	2.41	0.208'	0.245'	97.64' *	0.02'	99.24'	0.052'	0.11'	0.13'		0.150'	0.168'	99.385'	o.k.		no	
102		0.96	MH 2		02+19.00	02+19.00	104.96	104.86		0.10'	219.00'	18"	0.0260	0.0257	16.87	5.7%	1.77	0.326'	0.210'	99.45'	0.08'	105.07'	0.082'	0.11'			0.096'	0.173'	105.166'	o.k.		no	
103		0.96	MH 3		04+74.00	04+74.00	111.32	111.32		0.00'	255.00'	18"	0.0240	0.0249	16.63	5.8%	1.77	0.317'	0.210'	105.17'	0.09'	111.53'	0.079'	0.10'			0.091'	0.180'	111.621'	o.k.		no	
104		0.96	MH 4		07+16.00	07+16.00	116.00	115.59		0.41'	242.00'	18"	0.0180	0.0176	13.99	6.9%	1.77	0.294'	0.248'	111.62'	0.07'	115.84'	0.074'	0.22'			0.148'	0.215'	115.985'	o.k.		no	
105		0.96	MH 5		09+03.00	09+03.00	124.43	124.23		0.20'	187.00'	12"	0.0440	0.0440	7.49	12.8%	0.79	0.635'	0.230'	116.23'	0.30'	124.46'	0.159'	0.12'			0.141'	0.440'	124.601'	o.k.		no	
106		0.96	MH 6		11+21.00	11+21.00	128.57	128.37		0.20'	218.00'	12"	0.1540	0.0181	4.80	20.0%	0.79	0.353'	0.300'	124.73'	0.26'	128.67'	0.088'	0.12'			0.106'	0.363'	128.776'	o.k.		no	
107	0.49	0.96	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'	151.00'	12"	0.0200	0.0192	4.95	19.4%	0.79	0.352'	0.285'	128.86'	0.19'	131.76'	0.088'	0.02'		0.202'	0.156'	0.347'	131.911'	o.k.		no	
Future Barberton Trunk to the East																																
107	0.49	0.96	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'																						
201	0.11	0.47	Fut. 1		14+00.00	14+00.00	135.79	135.59		0.20'	1400.00'	12"	0.0028	0.0028	1.89	24.7%	0.79	0.061'	0.330'	132.00'	0.35'	135.92'	0.015'	0.02'			0.018'	0.370'	135.938'	o.k.		no	
210		0.36	Fut. 10		22+00.00	22+00.00	138.23	138.03		0.20'	800.00'	12"	0.0028	0.0028	1.89	24.7%	0.79	0.061'	0.330'	136.12'	0.12'	138.36'	0.015'			0.013'	0.014'	0.133'	138.374'	o.k.		no	
Future Barberton Trunk to the Southeast																																
201	0.32	0.47	Fut. 1		14+00.00	00+00.00	135.79	135.59																								
301		0.14	Fut. 20		20+00.00	20+00.00	141.59	141.39		0.20'	2000.00'	12"	0.0028	0.0028	1.89	24.7%	0.79	0.061'	0.330'	136.12'	0.05'	141.72'	0.015'			0.053'	0.034'	0.082'	141.754'	o.k.		no	
* Information referenced from the Salmon Creek Interceptor Analysis																																

Mapping Point Data on Barberton Trunk											Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
314*	1.26	11.10	MH 14	111.0	42+96.00	-01+20.00	97.39	97.19																								
101		1.26	MH 1		00+00.00	00+00.00	99.24	98.99	71	0.25'	120.00'	21"		0.0133	18.34	6.8%	2.41	0.273'	0.289'	104.33' *	0.02'	104.35'	0.068'	0.15'	0.17'		0.197'	0.221'	104.547'	CRITICAL		no	3.6
102		1.26	MH 2		02+19.00	02+19.00	104.96	104.86		0.10'	219.00'	18"	0.0260	0.0257	16.87	7.4%	1.77	0.428'	0.248'	104.55'	0.10'	105.11'	0.107'	0.15'			0.126'	0.229'	105.234'	o.k.		no	
103		1.26	MH 3		04+74.00	04+74.00	111.32	111.32		0.00'	255.00'	18"	0.0240	0.0249	16.63	7.5%	1.77	0.416'	0.248'	105.23'	0.12'	111.57'	0.104'	0.12'			0.111'	0.231'	111.679'	o.k.		no	
104		1.26	MH 4		07+16.00	07+16.00	116.00	115.59		0.41'	242.00'	18"	0.0180	0.0176	13.99	9.0%	1.77	0.339'	0.285'	111.68'	0.10'	115.88'	0.085'	0.27'			0.176'	0.272'	116.051'	o.k.		no	
105		1.26	MH 5		09+03.00	09+03.00	124.43	124.23		0.20'	187.00'	12"	0.0440	0.0440	7.49	16.7%	0.79	0.764'	0.270'	116.27'	0.43'	124.50'	0.191'	0.14'			0.167'	0.597'	124.667'	o.k.		no	
106		1.26	MH 6		11+21.00	11+21.00	128.57	128.37		0.20'	218.00'	12"	0.1540	0.0181	4.80	26.1%	0.79	0.410'	0.345'	124.78'	0.38'	128.72'	0.102'	0.15'			0.125'	0.504'	128.840'	o.k.		no	
107	0.67	1.26	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'	151.00'	12"	0.0200	0.0192	4.95	25.4%	0.79	0.420'	0.330'	128.90'	0.27'	131.80'	0.105'	0.02'		0.255'	0.192'	0.467'	131.992'	o.k.		no	
Future Barberton Trunk to the East																																
107	0.67	1.26	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'																						
201	0.13	0.58	Fut. 1		14+00.00	14+00.00	135.79	135.59		0.20'	1400.00'	12"	0.0028	0.0028	1.89	30.7%	0.79	0.069'	0.375'	132.05'	0.48'	135.97'	0.017'	0.02'			0.021'	0.504'	135.986'	o.k.		no	
210		0.45	Fut. 10		22+00.00	22+00.00	138.23	138.03		0.20'	800.00'	12"	0.0028	0.0028	1.89	30.7%	0.79	0.069'	0.375'	136.17'	0.16'	138.41'	0.017'			0.015'	0.016'	0.180'	138.421'	o.k.		no	
Future Barberton Trunk to the Southeast																																
201	0.40	0.58	Fut. 1		14+00.00	00+00.00	135.79	135.59																								
301		0.18	Fut. 20		20+00.00	20+00.00	141.59	141.39		0.20'	2000.00'	12"	0.0028	0.0028	1.89	30.7%	0.79	0.069'	0.375'	136.17'	0.07'	141.77'	0.017'			0.059'	0.038'	0.105'	141.803'	o.k.		no	

* Information referenced from the Salmon Creek Interceptor Analysis

Mapping Point Data on Barberton Trunk											Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
314*	1.77	22.18	MH 14	111.0	42+96.00	-01+20.00	97.39	97.19																								
101		1.77	MH 1		00+00.00	00+00.00	99.24	98.99	71	0.25'	120.00'	21"		0.0133	18.34	9.7%	2.41	0.314'	0.333'	110.26' *	0.04'	110.30'	0.079'	0.20'	0.20'		0.240'	0.282'	110.541'	CRITICAL		no	9.6
102		1.77	MH 2		02+19.00	02+19.00	104.96	104.86		0.10'	219.00'	18"	0.0260	0.0257	16.87	10.5%	1.77	0.571'	0.315'	110.54'	0.15'	110.69'	0.143'	0.19'			0.168'	0.320'	110.861'	CRITICAL		no	4.3
103		1.77	MH 3		04+74.00	04+74.00	111.32	111.32		0.00'	255.00'	18"	0.0240	0.0249	16.63	10.7%	1.77	0.555'	0.315'	110.86'	0.18'	111.64'	0.139'	0.15'			0.146'	0.322'	111.781'	o.k.		no	
104		1.77	MH 4		07+16.00	07+16.00	116.00	115.59		0.41'	242.00'	18"	0.0180	0.0176	13.99	12.7%	1.77	0.437'	0.345'	111.78'	0.15'	115.94'	0.109'	0.32'			0.217'	0.369'	116.152'	o.k.		no	
105		1.77	MH 5		09+03.00	09+03.00	124.43	124.23		0.20'	187.00'	12"	0.0440	0.0440	7.49	23.7%	0.79	0.928'	0.320'	116.32'	0.71'	124.55'	0.232'	0.17'			0.202'	0.913'	124.752'	o.k.		no	
106		1.77	MH 6		11+21.00	11+21.00	128.57	128.37		0.20'	218.00'	12"	0.1540	0.0181	4.80	36.9%	0.79	0.491'	0.415'	124.85'	0.63'	128.79'	0.123'	0.18'			0.150'	0.784'	128.935'	o.k.		no	
107	1.06	1.77	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'	151.00'	12"	0.0200	0.0192	4.95	35.8%	0.79	0.505'	0.400'	128.97'	0.45'	131.87'	0.126'	0.03'		0.356'	0.254'	0.708'	132.124'	o.k.		no	
Future Barberton Trunk to the East																																
107	1.06	1.77	MH 7		12+72.00	00+00.00	131.67	131.47		0.20'																						
201	0.16	0.71	Fut. 1		14+00.00	14+00.00	135.79	135.59		0.20'	1400.00'	12"	0.0028	0.0028	1.89	37.6%	0.79	0.076'	0.415'	132.12'	0.65'	136.01'	0.019'	0.03'			0.023'	0.677'	136.028'	o.k.		no	
210		0.55	Fut. 10		22+00.00	22+00.00	138.23	138.03		0.20'	800.00'	12"	0.0028	0.0028	1.89	37.6%	0.79	0.076'	0.415'	136.21'	0.22'	138.45'	0.019'			0.016'	0.018'	0.241'	138.463'	o.k.		no	
Future Barberton Trunk to the Southeast																																
201	0.49	0.71	Fut. 1		14+00.00	00+00.00	135.79	135.59																								
301		0.22	Fut. 20		20+00.00	20+00.00	141.59	141.39		0.20'	2000.00'	12"	0.0028	0.0028	1.89	37.6%	0.79	0.076'	0.415'	136.21'	0.09'	141.81'	0.019'			0.065'	0.042'	0.134'	141.847'	o.k.		no	

* Information referenced from the Salmon Creek Interceptor Analysis

Mapping Point on Future Pleasant Valley South / Mill Creek Trunk												Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100	0.21	0.30	Fut. P.S.		00+00.00	00+00.00	140.00	140.00	y																									
101		0.09	Fut. 1		08+00.00	08+00.00	141.40	141.20	y	90	0.20'	800.00'	15"	0.0015	0.0015	2.51	3.4%	1.23	0.010'	0.125'	141.53'	0.00'	141.95'	0.003'	0.00'	0.01'		0.006'	0.015'	141.331'	o.k.		no	
102		0.09	Fut. 2		10+80.00	10+80.00	142.02	141.82	y	90	0.20'	280.00'	15"	0.0015	0.0015	2.51	3.4%	1.23	0.010'	0.125'	141.53'	0.00'	141.95'	0.003'	0.00'	0.01'		0.006'	0.009'	141.951'	o.k.		no	
103	0.004	0.09	Fut. 3		19+80.00	19+80.00	143.57	143.37	y	20	0.20'	900.00'	15"	0.0015	0.0015	2.51	3.4%	1.23	0.010'	0.125'	142.15'	0.01'	143.50'	0.003'	0.01'	0.00'	0.000'	0.005'	0.014'	143.500'	o.k.		no	
104		0.07	Fut. 4		23+30.00	23+30.00	144.54	144.34	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	143.71'	0.01'	144.48'	0.004'	0.01'			0.005'	0.011'	144.485'	o.k.		no	
105		0.07	Fut. 5		28+30.00	28+30.00	145.84	145.64	y		0.20'	500.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	144.68'	0.01'	145.78'	0.004'	0.01'			0.005'	0.014'	145.785'	o.k.		no	
106		0.07	Fut. 6		31+30.00	31+30.00	146.70	146.50	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	145.98'	0.01'	146.64'	0.004'	0.01'			0.005'	0.010'	146.645'	o.k.		no	
107		0.07	Fut. 7		35+30.00	35+30.00	147.78	147.58	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	146.84'	0.01'	147.72'	0.004'	0.01'			0.005'	0.012'	147.725'	o.k.		no	
108		0.07	Fut. 8		39+30.00	39+30.00	148.86	148.66	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	147.92'	0.01'	148.80'	0.004'	0.01'			0.005'	0.012'	148.805'	o.k.		no	
109		0.07	Fut. 9		41+30.00	41+30.00	149.50	149.30	y		0.20'	200.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	149.00'	0.00'	149.44'	0.004'	0.01'			0.005'	0.009'	149.445'	o.k.		no	
110		0.07	Fut. 10		44+80.00	44+80.00	150.47	150.27	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	149.64'	0.01'	150.41'	0.004'	0.01'			0.005'	0.011'	150.415'	o.k.		no	
111		0.07	Fut. 11		47+30.00	47+30.00	151.22	151.02	y		0.20'	250.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	150.61'	0.00'	151.16'	0.004'	0.01'			0.005'	0.009'	151.165'	o.k.		no	
112		0.07	Fut. 12		51+30.00	51+30.00	152.30	152.10	y	90	0.20'	400.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	151.36'	0.01'	152.24'	0.004'	0.01'	0.01'		0.010'	0.017'	152.250'	o.k.		no	
113		0.07	Fut. 13		55+05.00	55+05.00	153.33	153.13	y		0.20'	375.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	152.44'	0.01'	153.27'	0.004'	0.01'			0.005'	0.012'	153.270'	o.k.		no	
114		0.07	Fut. 14		58+05.00	58+05.00	154.19	153.99	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	153.47'	0.01'	154.13'	0.004'	0.01'			0.005'	0.010'	154.130'	o.k.		no	
115	0.04	0.07	Fut. 15		61+05.00	61+05.00	155.05	154.85	y	90	0.20'	300.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	154.33'	0.01'	154.99'	0.004'	0.01'	0.01'	0.009'	0.015'	0.020'	155.000'	o.k.		no	
201		0.06	MH 1		63+55.00	00+00.00	160.50	160.30	y	90	0.20'	250.00'	10"	0.0028	0.0028	1.16	4.9%	0.55	0.016'	0.117'	155.16'	0.01'	160.42'	0.004'	0.01'	0.01'		0.013'	0.020'	160.430'	o.k.		no	
202		0.06	MH 2		00+58.88	00+58.88	161.10	161.02	y		0.08'	58.88'	10"	0.0071	0.0088	2.06	2.7%	0.55	0.036'	0.083'	160.58'	0.00'	161.10'	0.009'	0.01'			0.010'	0.012'	161.113'	o.k.		no	
203		0.06	MH 3		01+45.03	01+45.03	161.79	161.75	y		0.04'	86.15'	10"	0.0071	0.0075	1.91	3.0%	0.55	0.030'	0.083'	161.18'	0.00'	161.83'	0.008'	0.01'			0.009'	0.012'	161.842'	o.k.		no	
204		0.06	MH 4		03+60.77	03+60.77	163.37	163.30	y		0.07'	215.74'	10"	0.0071	0.0070	1.84	3.1%	0.55	0.028'	0.083'	161.87'	0.01'	163.38'	0.007'	0.01'			0.007'	0.015'	163.390'	o.k.		no	
205		0.06	MH 5		06+15.20	06+15.20	164.65	164.50	y		0.15'	254.43'	10"	0.0045	0.0044	1.46	3.9%	0.55	0.018'	0.083'	163.45'	0.01'	164.58'	0.004'	0.01'			0.009'	0.020'	164.593'	o.k.		no	
206		0.06	MH 6		08+01.03	08+01.03	166.75	166.55	y		0.20'	185.83'	10"	0.0102	0.0102	2.22	2.5%	0.55	0.041'	0.083'	164.73'	0.01'	166.63'	0.010'	0.01'			0.011'	0.018'	166.644'	o.k.		no	
207		0.06	MH 7		09+88.56	09+88.56	168.52	168.32	y		0.20'	187.53'	10"	0.0084	0.0084	2.01	2.8%	0.55	0.034'	0.083'	166.83'	0.01'	168.40'	0.008'	0.00'			0.004'	0.012'	168.408'	o.k.		no	
Future Mill Creek East Trunk																																		
114	0.06	0.04	Fut. 14		58+05.00	00+00.00	154.19	153.99	y	60	0.20'																							
301		0.04	Fut. 1		02+50.00	02+50.00	154.94	154.74	y	20	0.20'	250.00'	12"	0.0022	0.0022	1.68	2.3%	0.79	0.011'	0.100'	154.29'	0.00'	154.84'	0.003'	0.00'	0.00'		0.004'	0.006'	154.839'	o.k.		no	
302		0.04	Fut. 2		05+00.00	05+00.00	155.69	155.49	y	35	0.20'	250.00'	12"	0.0022	0.0022	1.68	2.3%	0.79	0.011'	0.100'	155.04'	0.00'	155.59'	0.003'	0.00'	0.00'		0.002'	0.004'	155.587'	o.k.		no	
Future Pleasant Valley North Trunk																																		
103	0.00	0.09	Fut. 3		19+80.00	00+00.00	143.57	143.37	y	20	0.20'																							
401		0.07	Fut. 1		05+50.00	05+50.00	144.98	144.78	y		0.20'	550.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	143.71'	0.01'	144.92'	0.004'	0.01'			0.005'	0.015'	144.925'	o.k.		no	
402		0.07	Fut. 2		07+50.00	07+50.00	145.62	145.42	y	45	0.20'	200.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	145.12'	0.00'	145.56'	0.004'	0.01'	0.00'		0.007'	0.011'	145.567'	o.k.		no	
403		0.07	Fut. 3		09+00.00	09+00.00	146.15	145.95	y		0.20'	150.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	145.76'	0.00'	146.09'	0.004'	0.01'			0.005'	0.008'	146.095'	o.k.		no	
404		0.07	Fut. 4		12+00.00	12+00.00	147.01	146.81	y	20	0.20'	300.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	146.29'	0.01'	146.95'	0.004'	0.01'	0.00'		0.006'	0.011'	146.956'	o.k.		no	
405		0.07	Fut. 5		15+70.00	15+70.00	148.02	147.82	y		0.20'	370.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	147.15'	0.01'	147.96'	0.004'	0.01'			0.005'	0.012'	147.969'	o.k.		no	
406		0.07	Fut. 6		20+20.00	20+20.00	149.21	149.01	y		0.20'	450.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	148.16'	0.01'	149.15'	0.004'	0.01'			0.005'	0.013'	149.159'	o.k.		no	
407		0.07	Fut. 7		23+20.00	23+20.00	150.07	149.87	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	4.5%	0.79	0.016'	0.140'	149.35'	0.01'	150.01'	0.004'	0.00'			0.002'	0.008'	150.016'	o.k.		no	
Pleasant Valley South Trunk																																		
100	0.21	0.30	Fut. P.S.		-04+00.00	-04+00.00	140.00	140.00	y																									
500		0.06	Ex. P.S.		00+00.00	00+00.00	177.47	177.47	y	45	0.00'	400.00'	10"	0.0028	0.0028	1.16	4.9%	0.55	0.016'	0.117'	140.12'	0.01'	177.59'	0.004'	0.01'	0.00'		0.008'	0.019'	177.595'	o.k.		no	
501		0.06	MH 1		04+00.00	04+00.00	179.27	179.07	y		0.20'	400.00'	10"	0.0040	0.0040	1.39	4.1%	0.55	0.023'	0.117'	177.59'	0.01'	179.19'	0.006'	0.02'			0.013'	0.024'	179.200'	o.k.		no	
502		0.06	MH 2		07+07.44	07+07.44	183.93	183.73	y		0.20'	307.44'	10"	0.0145	0.0145	2.65	2.1%	0.55	0.058'	0.083'	179.35'	0.01'	183.81'	0.015'	0.01'			0.011'	0.024'	183.825'	o.k.		no	
503		0.06	MH 3		09+38.29	09+38.29	185.06	184.86	y		0.20'	230.85'	10"	0.0040	0.0040	1.39	4.1%	0.55	0.023'	0.117'	184.05'	0.01'	184.98'	0.006'	0.01'			0.007'	0.013'	184.984'	o.k.		no	
504		0.06	MH 4		11+64.04	11+64.04	186.16	185.96	y		0.20'	225.75'	10"	0.0040	0.0040	1.39	4.1%	0.55	0.023'	0.117'	185.18'	0.01'	186.08'	0.006'	0.00'			0.003'	0.009'	186.080'	o.k.		no	

Mapping Point on Future Pleasant Valley South / Mill Creek Trunk												Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100	0.27	0.40	Fut. P.S.		00+00.00	00+00.00	140.00	140.00	y																								
101		0.14	Fut. 1		08+00.00	08+00.00	141.40	141.20	y	90	0.20'	800.00'	15"	0.0015	0.0015	2.51	5.6%	1.23	0.015'	0.175'	141.58'	0.01'	142.00'	0.004'	0.01'	0.01'		0.009'	0.025'	141.384'	o.k.		no	
102		0.14	Fut. 2		10+80.00	10+80.00	142.02	141.82	y	90	0.20'	280.00'	15"	0.0015	0.0015	2.51	5.6%	1.23	0.015'	0.175'	141.58'	0.01'	142.00'	0.004'	0.01'	0.01'		0.009'	0.015'	142.004'	o.k.		no	
103	0.022	0.14	Fut. 3		19+80.00	19+80.00	143.57	143.37	y	20	0.20'	900.00'	15"	0.0015	0.0015	2.51	5.6%	1.23	0.015'	0.175'	142.20'	0.02'	143.55'	0.004'	0.01'	0.00'	0.002'	0.007'	0.025'	143.552'	o.k.		no	
104		0.11	Fut. 4		23+30.00	23+30.00	144.54	144.34	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	143.74'	0.01'	144.51'	0.005'	0.01'			0.006'	0.018'	144.511'	o.k.		no	
105		0.11	Fut. 5		28+30.00	28+30.00	145.84	145.64	y		0.20'	500.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	144.71'	0.02'	145.81'	0.005'	0.01'			0.006'	0.022'	145.811'	o.k.		no	
106		0.11	Fut. 6		31+30.00	31+30.00	146.70	146.50	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	146.01'	0.01'	146.67'	0.005'	0.01'			0.006'	0.016'	146.671'	o.k.		no	
107		0.11	Fut. 7		35+30.00	35+30.00	147.78	147.58	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	146.87'	0.01'	147.75'	0.005'	0.01'			0.006'	0.019'	147.751'	o.k.		no	
108		0.11	Fut. 8		39+30.00	39+30.00	148.86	148.66	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	147.95'	0.01'	148.83'	0.005'	0.01'			0.006'	0.019'	148.831'	o.k.		no	
109		0.11	Fut. 9		41+30.00	41+30.00	149.50	149.30	y		0.20'	200.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	149.03'	0.01'	149.47'	0.005'	0.01'			0.006'	0.013'	149.471'	o.k		no	
110		0.11	Fut. 10		44+80.00	44+80.00	150.47	150.27	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	149.67'	0.01'	150.44'	0.005'	0.01'			0.006'	0.018'	150.441'	o.k.		no	
111		0.11	Fut. 11		47+30.00	47+30.00	151.22	151.02	y		0.20'	250.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	150.64'	0.01'	151.19'	0.005'	0.01'			0.006'	0.014'	151.191'	o.k.		no	
112		0.11	Fut. 12		51+30.00	51+30.00	152.30	152.10	y	90	0.20'	400.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	151.39'	0.01'	152.27'	0.005'	0.01'	0.01'		0.013'	0.026'	152.278'	o.k.		no	
113		0.11	Fut. 13		55+05.00	55+05.00	153.33	153.13	y		0.20'	375.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	152.47'	0.01'	153.29'	0.005'	0.01'			0.006'	0.018'	153.296'	o.k.		no	
114		0.11	Fut. 14		58+05.00	58+05.00	154.19	153.99	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	153.49'	0.01'	154.15'	0.005'	0.01'			0.006'	0.016'	154.156'	o.k.		no	
115	0.06	0.11	Fut. 15		61+05.00	61+05.00	155.05	154.85	y	90	0.20'	300.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	154.35'	0.01'	155.01'	0.005'	0.01'	0.01'	0.012'	0.019'	0.029'	155.029'	o.k.		no	
201		0.08	MH 1		63+55.00	00+00.00	160.50	160.30	y	90	0.20'	250.00'	10"	0.0028	0.0028	1.16	7.2%	0.55	0.021'	0.138'	155.18'	0.01'	160.44'	0.005'	0.02'	0.01'		0.018'	0.031'	160.456'	o.k.		no	
202		0.08	MH 2		00+58.88	00+58.88	161.10	161.02	y		0.08'	58.88'	10"	0.0071	0.0088	2.06	4.1%	0.55	0.051'	0.117'	160.62'	0.00'	161.14'	0.013'	0.02'			0.014'	0.018'	161.151'	o.k.		no	
203		0.08	MH 3		01+45.03	01+45.03	161.79	161.75	y		0.04'	86.15'	10"	0.0071	0.0075	1.91	4.4%	0.55	0.044'	0.117'	161.22'	0.01'	161.87'	0.011'	0.01'			0.013'	0.018'	161.879'	o.k.		no	
204		0.08	MH 4		03+60.77	03+60.77	163.37	163.30	y		0.07'	215.74'	10"	0.0071	0.0070	1.84	4.6%	0.55	0.041'	0.117'	161.91'	0.01'	163.42'	0.010'	0.01'			0.010'	0.023'	163.426'	o.k.		no	
205		0.08	MH 5		06+15.20	06+15.20	164.65	164.50	y		0.15'	254.43'	10"	0.0045	0.0044	1.46	5.7%	0.55	0.026'	0.117'	163.49'	0.02'	164.62'	0.006'	0.01'			0.010'	0.026'	164.627'	o.k.		no	
206		0.08	MH 6		08+01.03	08+01.03	166.75	166.55	y		0.20'	185.83'	10"	0.0102	0.0102	2.22	3.8%	0.55	0.041'	0.083'	164.73'	0.02'	166.63'	0.010'	0.02'			0.014'	0.030'	166.647'	o.k.		no	
207		0.08	MH 7		09+88.56	09+88.56	168.52	168.32	y		0.20'	187.53'	10"	0.0084	0.0084	2.01	4.2%	0.55	0.049'	0.117'	166.87'	0.01'	168.44'	0.012'	0.00'			0.006'	0.017'	168.443'	o.k.		no	
Future Mill Creek East Trunk																																	
114	0.08	0.06	Fut. 14		58+05.00	00+00.00	154.19	153.99	y	60	0.20'													0.003'	0.00'	0.00'		0.004'	0.008'	154.839'	o.k.		no	
301		0.06	Fut. 1		02+50.00	02+50.00	154.94	154.74	y	20	0.20'	250.00'	12"	0.0022	0.0022	1.68	3.4%	0.79	0.011'	0.100'	154.29'	0.00'	154.84'	0.003'	0.00'	0.00'		0.002'	0.006'	155.587'	o.k.		no	
302		0.06	Fut. 2		05+00.00	05+00.00	155.69	155.49	y	35	0.20'	250.00'	12"	0.0022	0.0022	1.68	3.4%	0.79	0.011'	0.100'	155.04'	0.00'	155.59'	0.003'	0.00'	0.00'									
Future Pleasant Valley North Trunk																																	
103	0.02	0.14	Fut. 3		19+80.00	00+00.00	143.57	143.37	y	20	0.20'													0.005'	0.01'			0.006'	0.024'	144.951'	o.k.		no	
401		0.11	Fut. 1		05+50.00	05+50.00	144.98	144.78	y		0.20'	550.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	143.74'	0.02'	144.95'	0.005'	0.01'			0.009'	0.016'	145.594'	o.k.		no	
402		0.11	Fut. 2		07+50.00	07+50.00	145.62	145.42	y	45	0.20'	200.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	145.15'	0.01'	145.59'	0.005'	0.01'	0.01'		0.009'	0.016'	145.594'	o.k.		no	
403		0.11	Fut. 3		09+00.00	09+00.00	146.15	145.95	y		0.20'	150.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	145.79'	0.00'	146.12'	0.005'	0.01'			0.006'	0.011'	146.121'	o.k.		no	
404		0.11	Fut. 4		12+00.00	12+00.00	147.01	146.81	y	20	0.20'	300.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	146.32'	0.01'	146.98'	0.005'	0.01'	0.00'		0.007'	0.017'	146.982'	o.k.		no	
405		0.11	Fut. 5		15+70.00	15+70.00	148.02	147.82	y		0.20'	370.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	147.18'	0.01'	147.99'	0.005'	0.01'			0.006'	0.018'	147.995'	o.k.		no	
406		0.11	Fut. 6		20+20.00	20+20.00	149.21	149.01	y		0.20'	450.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	148.19'	0.01'	149.18'	0.005'	0.01'			0.006'	0.021'	149.185'	o.k.		no	
407		0.11	Fut. 7		23+20.00	23+20.00	150.07	149.87	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	149.38'	0.01'	150.04'	0.005'	0.00'			0.003'	0.012'	150.042'	o.k.		no	
Pleasant Valley South Trunk																																	
100	0.27	0.40	Fut. P.S.		-04+00.00	-04+00.00	140.00	140.00	y																								
500		0.08	Ex. P.S.		00+00.00	00+00.00	177.47	177.47	y	45	0.00'	400.00'	10"	0.0028	0.0028	1.16	7.2%	0.55	0.021'	0.138'	140.14'	0.02'	177.61'	0.005'	0.01'	0.01'		0.011'	0.030'	177.619'	o.k.		no	
501		0.08	MH 1		04+00.00	04+00.00	179.27	179.07	y		0.20'	400.00'	10"	0.0040	0.0040	1.39	6.0%	0.55	0.030'	0.138'	177.61'	0.02'	179.21'	0.008'	0.02'			0.014'	0.033'	179.222'	o.k.		no	
502		0.08	MH 2		07+07.44	07+07.44	183.93	183.73	y		0.20'	307.44'	10"	0.0145	0.0145	2.65	3.2%	0.55	0.058'	0.083'	179.35'	0.03'	183.81'	0.015'	0.01'			0.013'	0.039'	183.826'	o.k.		no	
503		0.08	MH 3		09+38.29	09+38.29	185.06	184.86	y		0.20'	230.85'	10"	0.0040	0.0040	1.39	6.0%	0.55	0.031'	0.138'	184.07'	0.01'	185.00'	0.008'	0.01'			0.009'	0.020'	185.007'	o.k.		no	
504		0.08	MH 4		11+64.04	11+64.04	186.16	185.96	y		0.20'	225.75'	10"	0.0040	0.0040	1.39	6.0%	0.55	0.030'	0.138'	185.20'	0.01'	186.10'	0.008'	0.00'			0.004'	0.015'	186.101'	o.k.		no	

Mapping Point on Future Pleasant Valley South / Mill Creek Trunk												Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100	0.32	0.51	Fut. P.S.		00+00.00	00+00.00	140.00	140.00	y																								
101		0.20	Fut. 1		08+00.00	08+00.00	141.40	141.20	y	90	0.20'	800.00'	15"	0.0015	0.0015	2.51	8.0%	1.23	0.020'	0.206'	140.00'	0.03'	141.41'	0.005'	0.01'	0.01'		0.012'	0.037'	141.418'	o.k.		no	
102		0.20	Fut. 2		10+80.00	10+80.00	142.02	141.82	y	90	0.20'	280.00'	15"	0.0015	0.0015	2.51	8.0%	1.23	0.020'	0.206'	141.61'	0.01'	142.03'	0.005'	0.01'	0.01'		0.012'	0.021'	142.038'	o.k.		no	
103	0.046	0.20	Fut. 3		19+80.00	19+80.00	143.57	143.37	y	20	0.20'	900.00'	15"	0.0015	0.0015	2.51	8.0%	1.23	0.020'	0.206'	142.23'	0.03'	143.58'	0.005'	0.01'	0.00'	0.004'	0.010'	0.038'	143.586'	o.k.		no	
104		0.14	Fut. 4		23+30.00	23+30.00	144.54	144.34	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	143.76'	0.01'	144.53'	0.006'	0.01'			0.007'	0.022'	144.537'	o.k.		no	
105		0.14	Fut. 5		28+30.00	28+30.00	145.84	145.64	y		0.20'	500.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	144.73'	0.02'	145.83'	0.006'	0.01'			0.007'	0.028'	145.837'	o.k.		no	
106		0.14	Fut. 6		31+30.00	31+30.00	146.70	146.50	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	146.03'	0.01'	146.69'	0.006'	0.01'			0.007'	0.020'	146.697'	o.k.		no	
107		0.14	Fut. 7		35+30.00	35+30.00	147.78	147.58	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	146.89'	0.02'	147.77'	0.006'	0.01'			0.007'	0.024'	147.777'	o.k.		no	
108		0.14	Fut. 8		39+30.00	39+30.00	148.86	148.66	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	147.97'	0.02'	148.85'	0.006'	0.01'			0.007'	0.024'	148.857'	o.k.		no	
109		0.14	Fut. 9		41+30.00	41+30.00	149.50	149.30	y		0.20'	200.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	149.05'	0.01'	149.49'	0.006'	0.01'			0.007'	0.015'	149.497'	o.k.		no	
110		0.14	Fut. 10		44+80.00	44+80.00	150.47	150.27	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	149.69'	0.01'	150.46'	0.006'	0.01'			0.007'	0.022'	150.467'	o.k.		no	
111		0.14	Fut. 11		47+30.00	47+30.00	151.22	151.02	y		0.20'	250.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	150.66'	0.01'	151.21'	0.006'	0.01'			0.007'	0.017'	151.217'	o.k.		no	
112		0.14	Fut. 12		51+30.00	51+30.00	152.30	152.10	y	90	0.20'	400.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	151.41'	0.02'	152.29'	0.006'	0.01'	0.02'		0.015'	0.031'	152.305'	o.k.		no	
113		0.14	Fut. 13		55+05.00	55+05.00	153.33	153.13	y		0.20'	375.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	152.49'	0.02'	153.32'	0.006'	0.01'			0.007'	0.023'	153.322'	o.k.		no	
114		0.14	Fut. 14		58+05.00	58+05.00	154.19	153.99	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	153.52'	0.01'	154.18'	0.006'	0.01'			0.007'	0.020'	154.182'	o.k.		no	
115	0.07	0.14	Fut. 15		61+05.00	61+05.00	155.05	154.85	y	90	0.20'	300.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	154.38'	0.01'	155.04'	0.006'	0.01'	0.02'	0.014'	0.022'	0.034'	155.057'	o.k.		no	
201		0.10	MH 1		63+55.00	00+00.00	160.50	160.30	y	90	0.20'	250.00'	10"	0.0028	0.0028	1.16	8.9%	0.55	0.025'	0.158'	155.20'	0.02'	160.46'	0.006'	0.02'	0.02'		0.020'	0.035'	160.478'	o.k.		no	
202		0.10	MH 2		00+58.88	00+58.88	161.10	161.02	y		0.08'	58.88'	10"	0.0071	0.0088	2.06	5.0%	0.55	0.051'	0.117'	160.62'	0.01'	161.14'	0.013'	0.02'			0.014'	0.019'	161.151'	o.k.		no	
203		0.10	MH 3		01+45.03	01+45.03	161.79	161.75	y		0.04'	86.15'	10"	0.0071	0.0075	1.91	5.4%	0.55	0.044'	0.117'	161.22'	0.01'	161.87'	0.011'	0.01'			0.013'	0.020'	161.879'	o.k.		no	
204		0.10	MH 4		03+60.77	03+60.77	163.37	163.30	y		0.07'	215.74'	10"	0.0071	0.0070	1.84	5.6%	0.55	0.041'	0.117'	161.91'	0.02'	163.42'	0.010'	0.01'			0.011'	0.031'	163.428'	o.k.		no	
205		0.10	MH 5		06+15.20	06+15.20	164.65	164.50	y		0.15'	254.43'	10"	0.0045	0.0044	1.46	7.0%	0.55	0.034'	0.138'	163.51'	0.02'	164.64'	0.008'	0.02'			0.015'	0.033'	164.652'	o.k.		no	
206		0.10	MH 6		08+01.03	08+01.03	166.75	166.55	y		0.20'	185.83'	10"	0.0102	0.0102	2.22	4.6%	0.55	0.059'	0.117'	164.77'	0.02'	166.67'	0.015'	0.02'			0.016'	0.033'	166.683'	o.k.		no	
207		0.10	MH 7		09+88.56	09+88.56	168.52	168.32	y		0.20'	187.53'	10"	0.0084	0.0084	2.01	5.1%	0.55	0.049'	0.117'	166.87'	0.02'	168.44'	0.012'	0.00'			0.006'	0.023'	168.443'	o.k.		no	
Future Mill Creek East Trunk																																	
114	0.10	0.07	Fut. 14		58+05.00	00+00.00	154.19	153.99	y	60	0.20'																							
301		0.07	Fut. 1		02+50.00	02+50.00	154.94	154.74	y	20	0.20'	250.00'	12"	0.0022	0.0022	1.68	4.2%	0.79	0.016'	0.140'	154.33'	0.00'	154.88'	0.004'	0.01'	0.00'		0.006'	0.009'	154.881'	o.k.		no	
302		0.07	Fut. 2		05+00.00	05+00.00	155.69	155.49	y	35	0.20'	250.00'	12"	0.0022	0.0022	1.68	4.2%	0.79	0.016'	0.140'	155.08'	0.00'	155.63'	0.004'	0.00'	0.00'		0.004'	0.008'	155.629'	o.k.		no	
Future Pleasant Valley North Trunk																																	
103	0.05	0.20	Fut. 3		19+80.00	00+00.00	143.57	143.37	y	20	0.20'																							
401		0.14	Fut. 1		05+50.00	05+50.00	144.98	144.78	y		0.20'	550.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	143.76'	0.02'	144.97'	0.006'	0.01'			0.007'	0.030'	144.977'	o.k.		no	
402		0.14	Fut. 2		07+50.00	07+50.00	145.62	145.42	y	45	0.20'	200.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	145.17'	0.01'	145.61'	0.006'	0.01'	0.01'		0.011'	0.019'	145.621'	o.k.		no	
403		0.14	Fut. 3		09+00.00	09+00.00	146.15	145.95	y		0.20'	150.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	145.81'	0.01'	146.14'	0.006'	0.01'			0.007'	0.013'	146.147'	o.k.		no	
404		0.14	Fut. 4		12+00.00	12+00.00	147.01	146.81	y	20	0.20'	300.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	146.34'	0.01'	147.00'	0.006'	0.01'	0.00'		0.008'	0.021'	147.008'	o.k.		no	
405		0.14	Fut. 5		15+70.00	15+70.00	148.02	147.82	y		0.20'	370.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	147.20'	0.01'	148.01'	0.006'	0.01'			0.007'	0.022'	148.021'	o.k.		no	
406		0.14	Fut. 6		20+20.00	20+20.00	149.21	149.01	y		0.20'	450.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	148.21'	0.02'	149.20'	0.006'	0.01'			0.007'	0.026'	149.211'	o.k.		no	
407		0.14	Fut. 7		23+20.00	23+20.00	150.07	149.87	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	8.1%	0.79	0.025'	0.190'	149.40'	0.01'	150.06'	0.006'	0.00'			0.003'	0.015'	150.067'	o.k.		no	
Pleasant Valley South Trunk																																	
100	0.32	0.51	Fut. P.S.		-04+00.00	-04+00.00	140.00	140.00	y																								
500		0.10	Ex. P.S.		00+00.00	00+00.00	177.47	177.47	y	45	0.00'	400.00'	10"	0.0028	0.0028	1.16	8.9%	0.55	0.025'	0.158'	140.16'	0.02'	177.63'	0.006'	0.01'	0.01'		0.012'	0.036'	177.640'	o.k.		no	
501		0.10	MH 1		04+00.00	04+00.00	179.27	179.07	y		0.20'	400.00'	10"	0.0040	0.0040	1.39	7.4%	0.55	0.030'	0.138'	177.61'	0.03'	179.21'	0.008'	0.02'			0.014'	0.043'	179.222'	o.k.		no	
502		0.10	MH 2		07+07.44	07+07.44	183.93	183.73	y		0.20'	307.44'	10"	0.0145	0.0145	2.65	3.9%	0.55	0.058'	0.083'	179.35'	0.04'	183.81'	0.015'	0.01'			0.013'	0.053'	183.826'	o.k.		no	
503		0.10	MH 3		09+38.29	09+38.29	185.06	184.86	y		0.20'	230.85'	10"	0.0040	0.0040	1.39	7.4%	0.55	0.031'	0.138'	184.07'	0.02'	185.00'	0.008'	0.01'			0.009'	0.026'	185.007'	o.k.		no	
504		0.10	MH 4		11+64.04	11+64.04	186.16	185.96	y		0.20'	225.75'	10"	0.0040	0.0040	1.39	7.4%	0.55	0.030'	0.138'	185.20'	0.02'	186.10'	0.008'	0.00'			0.004'	0.020'	186.101'	o.k.		no	

Mapping Point on Future Pleasant Valley South / Mill Creek Trunk												Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100	0.41	0.70	Fut. P.S.		00+00.00	00+00.00	140.00	140.00	y																								
101		0.31	Fut. 1		08+00.00	08+00.00	141.40	141.20	y	90	0.20'	800.00'	15"	0.0015	0.0015	2.51	12.4%	1.23	0.029'	0.288'	140.00'	0.04'	141.49'	0.007'	0.01'	0.02'		0.018'	0.059'	141.506'	o.k.		no	
102		0.31	Fut. 2		10+80.00	10+80.00	142.02	141.82	y	90	0.20'	280.00'	15"	0.0015	0.0015	2.51	12.4%	1.23	0.029'	0.288'	141.69'	0.01'	142.11'	0.007'	0.01'	0.02'		0.018'	0.032'	142.126'	o.k.		no	
103	0.121	0.31	Fut. 3		19+80.00	19+80.00	143.57	143.37	y	20	0.20'	900.00'	15"	0.0015	0.0015	2.51	12.4%	1.23	0.029'	0.288'	142.31'	0.05'	143.66'	0.007'	0.01'	0.00'	0.012'	0.016'	0.061'	143.673'	o.k.		no	
104		0.17	Fut. 4		23+30.00	23+30.00	144.54	144.34	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	143.78'	0.02'	144.55'	0.007'	0.01'			0.009'	0.028'	144.559'	o.k.		no	
105		0.17	Fut. 5		28+30.00	28+30.00	145.84	145.64	y		0.20'	500.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	144.75'	0.03'	145.85'	0.007'	0.01'			0.009'	0.037'	145.859'	o.k.		no	
106		0.17	Fut. 6		31+30.00	31+30.00	146.70	146.50	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	146.05'	0.02'	146.71'	0.007'	0.01'			0.009'	0.025'	146.719'	o.k.		no	
107		0.17	Fut. 7		35+30.00	35+30.00	147.78	147.58	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	146.91'	0.02'	147.79'	0.007'	0.01'			0.009'	0.031'	147.799'	o.k.		no	
108		0.17	Fut. 8		39+30.00	39+30.00	148.86	148.66	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	147.99'	0.02'	148.87'	0.007'	0.01'			0.009'	0.031'	148.879'	o.k.		no	
109		0.17	Fut. 9		41+30.00	41+30.00	149.50	149.30	y		0.20'	200.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	149.07'	0.01'	149.51'	0.007'	0.01'			0.009'	0.020'	149.519'	o.k.		no	
110		0.17	Fut. 10		44+80.00	44+80.00	150.47	150.27	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	149.71'	0.02'	150.48'	0.007'	0.01'			0.009'	0.028'	150.489'	o.k.		no	
111		0.17	Fut. 11		47+30.00	47+30.00	151.22	151.02	y		0.20'	250.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	150.68'	0.01'	151.23'	0.007'	0.01'			0.009'	0.023'	151.239'	o.k.		no	
112		0.17	Fut. 12		51+30.00	51+30.00	152.30	152.10	y	90	0.20'	400.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	151.43'	0.02'	152.31'	0.007'	0.01'	0.02'		0.018'	0.040'	152.328'	o.k.		no	
113		0.17	Fut. 13		55+05.00	55+05.00	153.33	153.13	y		0.20'	375.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	152.51'	0.02'	153.34'	0.007'	0.01'			0.009'	0.030'	153.344'	o.k.		no	
114		0.17	Fut. 14		58+05.00	58+05.00	154.19	153.99	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	153.54'	0.02'	154.20'	0.007'	0.01'			0.009'	0.025'	154.204'	o.k.		no	
115	0.09	0.17	Fut. 15		61+05.00	61+05.00	155.05	154.85	y	90	0.20'	300.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	154.40'	0.02'	155.06'	0.007'	0.01'	0.02'	0.016'	0.026'	0.043'	155.081'	o.k.		no	
201		0.13	MH 1		63+55.00	00+00.00	160.50	160.30	y	90	0.20'	250.00'	10"	0.0028	0.0028	1.16	11.2%	0.55	0.028'	0.175'	155.22'	0.02'	160.48'	0.007'	0.02'	0.02'		0.024'	0.046'	160.499'	o.k.		no	
202		0.13	MH 2		00+58.88	00+58.88	161.10	161.02	y		0.08'	58.88'	10"	0.0071	0.0088	2.06	6.3%	0.55	0.067'	0.138'	160.64'	0.01'	161.16'	0.017'	0.02'			0.018'	0.025'	161.176'	o.k.		no	
203		0.13	MH 3		01+45.03	01+45.03	161.79	161.75	y		0.04'	86.15'	10"	0.0071	0.0075	1.91	6.8%	0.55	0.057'	0.138'	161.24'	0.01'	161.89'	0.014'	0.02'			0.017'	0.027'	161.904'	o.k.		no	
204		0.13	MH 4		03+60.77	03+60.77	163.37	163.30	y		0.07'	215.74'	10"	0.0071	0.0070	1.84	7.1%	0.55	0.053'	0.138'	161.93'	0.03'	163.44'	0.013'	0.01'			0.013'	0.039'	163.451'	o.k.		no	
205		0.13	MH 5		06+15.20	06+15.20	164.65	164.50	y		0.15'	254.43'	10"	0.0045	0.0044	1.46	8.9%	0.55	0.039'	0.158'	163.53'	0.03'	164.66'	0.010'	0.02'			0.015'	0.040'	164.674'	o.k.		no	
206		0.13	MH 6		08+01.03	08+01.03	166.75	166.55	y		0.20'	185.83'	10"	0.0102	0.0102	2.22	5.9%	0.55	0.059'	0.117'	164.77'	0.03'	166.67'	0.015'	0.02'			0.019'	0.046'	166.685'	o.k.		no	
207		0.13	MH 7		09+88.56	09+88.56	168.52	168.32	y		0.20'	187.53'	10"	0.0084	0.0084	2.01	6.5%	0.55	0.064'	0.138'	166.89'	0.02'	168.46'	0.016'	0.00'			0.008'	0.030'	168.465'	o.k.		no	
Future Mill Creek East Trunk																																	
114	0.13	0.09	Fut. 14		58+05.00	00+00.00	154.19	153.99	y	60	0.20'																							
301		0.09	Fut. 1		02+50.00	02+50.00	154.94	154.74	y	20	0.20'	250.00'	12"	0.0022	0.0022	1.68	5.3%	0.79	0.016'	0.140'	154.33'	0.01'	154.88'	0.004'	0.01'	0.00'		0.006'	0.012'	154.881'	o.k.		no	
302		0.09	Fut. 2		05+00.00	05+00.00	155.69	155.49	y	35	0.20'	250.00'	12"	0.0022	0.0022	1.68	5.3%	0.79	0.016'	0.140'	155.08'	0.01'	155.63'	0.004'	0.00'	0.00'		0.004'	0.010'	155.629'	o.k.		no	
Future Pleasant Valley North Trunk																																	
103	0.12	0.31	Fut. 3		19+80.00	00+00.00	143.57	143.37	y	20	0.20'																							
401		0.17	Fut. 1		05+50.00	05+50.00	144.98	144.78	y		0.20'	550.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	143.78'	0.03'	144.99'	0.007'	0.01'			0.009'	0.040'	144.999'	o.k.		no	
402		0.17	Fut. 2		07+50.00	07+50.00	145.62	145.42	y	45	0.20'	200.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	145.19'	0.01'	145.63'	0.007'	0.01'	0.01'		0.013'	0.024'	145.643'	o.k.		no	
403		0.17	Fut. 3		09+00.00	09+00.00	146.15	145.95	y		0.20'	150.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	145.83'	0.01'	146.16'	0.007'	0.01'			0.009'	0.017'	146.169'	o.k.		no	
404		0.17	Fut. 4		12+00.00	12+00.00	147.01	146.81	y	20	0.20'	300.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	146.36'	0.02'	147.02'	0.007'	0.01'	0.00'		0.010'	0.027'	147.030'	o.k.		no	
405		0.17	Fut. 5		15+70.00	15+70.00	148.02	147.82	y		0.20'	370.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	147.22'	0.02'	148.03'	0.007'	0.01'			0.009'	0.029'	148.043'	o.k.		no	
406		0.17	Fut. 6		20+20.00	20+20.00	149.21	149.01	y		0.20'	450.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	148.23'	0.03'	149.22'	0.007'	0.01'			0.009'	0.034'	149.233'	o.k.		no	
407		0.17	Fut. 7		23+20.00	23+20.00	150.07	149.87	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	10.3%	0.79	0.028'	0.210'	149.42'	0.02'	150.08'	0.007'	0.00'			0.004'	0.020'	150.088'	o.k.		no	
Pleasant Valley South Trunk																																	
100	0.41	0.70	Fut. P.S.		-04+00.00	-04+00.00	140.00	140.00	y																								
500		0.13	Ex. P.S.		00+00.00	00+00.00	177.47	177.47	y	45	0.00'	400.00'	10"	0.0028	0.0028	1.16	11.2%	0.55	0.028'	0.175'	140.18'	0.03'	177.65'	0.007'	0.01'	0.01'		0.014'	0.048'	177.659'	o.k.		no	
501		0.13	MH 1		04+00.00	04+00.00	179.27	179.07	y		0.20'	400.00'	10"	0.0040	0.0040	1.39	9.4%	0.55	0.035'	0.158'	177.63'	0.04'	179.23'	0.009'	0.03'			0.019'	0.058'	179.247'	o.k.		no	
502		0.13	MH 2		07+07.44	07+07.44	183.93	183.73	y		0.20'	307.44'	10"	0.0145	0.0145	2.65	4.9%	0.55	0.084'	0.117'	179.39'	0.05'	183.85'	0.021'	0.01'			0.017'	0.062'	183.863'	o.k.		no	
503		0.13	MH 3		09+38.29	09+38.29	185.06	184.86	y		0.20'	230.85'	10"	0.0040	0.0040	1.39	9.3%	0.55	0.035'	0.158'	184.09'	0.02'	185.02'	0.009'	0.01'			0.011'	0.033'	185.029'	o.k.		no	
504		0.13	MH 4		11+64.04	11+64.04	186.16	185.96	y		0.20'	225.75'	10"	0.0040	0.0040	1.39	9.4%	0.55	0.035'	0.158'	185.22'	0.02'	186.12'	0.009'	0.00'			0.004'	0.027'	186.123'	o.k.		no	

Mapping Point on Future Pleasant Valley South / Mill Creek Trunk												Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100	0.51	1.12	Fut. P.S.		00+00.00	00+00.00	140.00	140.00	y																								
101		0.65	Fut. 1		08+00.00	08+00.00	141.40	141.20	y	90	0.20'	800.00'	15"	0.0015	0.0015	2.51	26.1%	1.23	0.046'	0.431'	140.00'	0.12'	141.63'	0.011'	0.02'	0.03'		0.028'	0.144'	141.660'	o.k.		no	
102		0.65	Fut. 2		10+80.00	10+80.00	142.02	141.82	y	90	0.20'	280.00'	15"	0.0015	0.0015	2.51	26.1%	1.23	0.046'	0.431'	141.83'	0.04'	142.25'	0.011'	0.02'	0.03'		0.028'	0.069'	142.280'	o.k.		no	
103	0.434	0.65	Fut. 3		19+80.00	19+80.00	143.57	143.37	y	20	0.20'	900.00'	15"	0.0015	0.0015	2.51	26.1%	1.23	0.046'	0.431'	142.45'	0.13'	143.80'	0.011'	0.01'	0.00'	0.037'	0.032'	0.161'	143.833'	o.k.		no	
104		0.22	Fut. 4		23+30.00	23+30.00	144.54	144.34	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	143.83'	0.03'	144.57'	0.008'	0.01'			0.010'	0.038'	144.580'	o.k.		no	
105		0.22	Fut. 5		28+30.00	28+30.00	145.84	145.64	y		0.20'	500.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	144.77'	0.04'	145.87'	0.008'	0.01'			0.010'	0.050'	145.880'	o.k.		no	
106		0.22	Fut. 6		31+30.00	31+30.00	146.70	146.50	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	146.07'	0.02'	146.73'	0.008'	0.01'			0.010'	0.034'	146.740'	o.k.		no	
107		0.22	Fut. 7		35+30.00	35+30.00	147.78	147.58	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	146.93'	0.03'	147.81'	0.008'	0.01'			0.010'	0.042'	147.820'	o.k.		no	
108		0.22	Fut. 8		39+30.00	39+30.00	148.86	148.66	y		0.20'	400.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	148.01'	0.03'	148.89'	0.008'	0.01'			0.010'	0.042'	148.900'	o.k.		no	
109		0.22	Fut. 9		41+30.00	41+30.00	149.50	149.30	y		0.20'	200.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	149.09'	0.02'	149.53'	0.008'	0.01'			0.010'	0.026'	149.540'	o.k.		no	
110		0.22	Fut. 10		44+80.00	44+80.00	150.47	150.27	y		0.20'	350.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	149.73'	0.03'	150.50'	0.008'	0.01'			0.010'	0.038'	150.510'	o.k.		no	
111		0.22	Fut. 11		47+30.00	47+30.00	151.22	151.02	y		0.20'	250.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	150.70'	0.02'	151.25'	0.008'	0.01'			0.010'	0.030'	151.260'	o.k.		no	
112		0.22	Fut. 12		51+30.00	51+30.00	152.30	152.10	y	90	0.20'	400.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	151.45'	0.03'	152.33'	0.008'	0.01'	0.02'		0.020'	0.052'	152.350'	o.k.		no	
113		0.22	Fut. 13		55+05.00	55+05.00	153.33	153.13	y		0.20'	375.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	152.53'	0.03'	153.36'	0.008'	0.01'			0.010'	0.040'	153.365'	o.k.		no	
114		0.22	Fut. 14		58+05.00	58+05.00	154.19	153.99	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	153.56'	0.02'	154.22'	0.008'	0.01'			0.010'	0.034'	154.225'	o.k.		no	
115	0.11	0.22	Fut. 15		61+05.00	61+05.00	155.05	154.85	y	90	0.20'	300.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	154.42'	0.02'	155.08'	0.008'	0.01'	0.02'	0.018'	0.029'	0.053'	155.104'	o.k.		no	
201		0.16	MH 1		63+55.00	00+00.00	160.50	160.30	y	90	0.20'	250.00'	10"	0.0028	0.0028	1.16	14.1%	0.55	0.035'	0.208'	155.25'	0.03'	160.51'	0.009'	0.02'	0.02'		0.027'	0.055'	160.535'	o.k.		no	
202		0.16	MH 2		00+58.88	00+58.88	161.10	161.02	y		0.08'	58.88'	10"	0.0071	0.0088	2.06	7.9%	0.55	0.067'	0.138'	160.64'	0.01'	161.16'	0.017'	0.02'			0.020'	0.031'	161.177'	o.k.		no	
203		0.16	MH 3		01+45.03	01+45.03	161.79	161.75	y		0.04'	86.15'	10"	0.0071	0.0075	1.91	8.6%	0.55	0.066'	0.158'	161.26'	0.01'	161.91'	0.017'	0.02'			0.019'	0.032'	161.927'	o.k.		no	
204		0.16	MH 4		03+60.77	03+60.77	163.37	163.30	y		0.07'	215.74'	10"	0.0071	0.0070	1.84	8.9%	0.55	0.061'	0.158'	161.95'	0.03'	163.46'	0.015'	0.02'			0.016'	0.049'	163.474'	o.k.		no	
205		0.16	MH 5		06+15.20	06+15.20	164.65	164.50	y		0.15'	254.43'	10"	0.0045	0.0044	1.46	11.2%	0.55	0.045'	0.175'	163.55'	0.03'	164.68'	0.011'	0.03'			0.019'	0.054'	164.694'	o.k.		no	
206		0.16	MH 6		08+01.03	08+01.03	166.75	166.55	y		0.20'	185.83'	10"	0.0102	0.0102	2.22	7.4%	0.55	0.078'	0.138'	164.79'	0.03'	166.69'	0.019'	0.03'			0.023'	0.057'	166.710'	o.k.		no	
207		0.16	MH 7		09+88.56	09+88.56	168.52	168.32	y		0.20'	187.53'	10"	0.0084	0.0084	2.01	8.1%	0.55	0.073'	0.158'	166.91'	0.03'	168.48'	0.018'	0.00'			0.009'	0.038'	168.488'	o.k.		no	
Future Mill Creek East Trunk																																	
114	0.16	0.11	Fut. 14		58+05.00	00+00.00	154.19	153.99	y	60	0.20'																							
301		0.11	Fut. 1		02+50.00	02+50.00	154.94	154.74	y	20	0.20'	250.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	154.35'	0.01'	154.90'	0.005'	0.01'	0.00'		0.007'	0.015'	154.907'	o.k.		no	
302		0.11	Fut. 2		05+00.00	05+00.00	155.69	155.49	y	35	0.20'	250.00'	12"	0.0022	0.0022	1.68	6.6%	0.79	0.021'	0.165'	155.10'	0.01'	155.65'	0.005'	0.00'	0.00'		0.005'	0.013'	155.655'	o.k.		no	
Future Pleasant Valley North Trunk																																	
103	0.43	0.65	Fut. 3		19+80.00	00+00.00	143.57	143.37	y	20	0.20'																							
401		0.22	Fut. 1		05+50.00	05+50.00	144.98	144.78	y		0.20'	550.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	143.83'	0.04'	145.01'	0.008'	0.01'			0.010'	0.054'	145.020'	o.k.		no	
402		0.22	Fut. 2		07+50.00	07+50.00	145.62	145.42	y	45	0.20'	200.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	145.21'	0.02'	145.65'	0.008'	0.01'	0.01'		0.014'	0.030'	145.664'	o.k.		no	
403		0.22	Fut. 3		09+00.00	09+00.00	146.15	145.95	y		0.20'	150.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	145.85'	0.01'	146.18'	0.008'	0.01'			0.010'	0.022'	146.190'	o.k.		no	
404		0.22	Fut. 4		12+00.00	12+00.00	147.01	146.81	y	20	0.20'	300.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	146.38'	0.02'	147.04'	0.008'	0.01'	0.00'		0.011'	0.035'	147.051'	o.k.		no	
405		0.22	Fut. 5		15+70.00	15+70.00	148.02	147.82	y		0.20'	370.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	147.24'	0.03'	148.05'	0.008'	0.01'			0.010'	0.039'	148.064'	o.k.		no	
406		0.22	Fut. 6		20+20.00	20+20.00	149.21	149.01	y		0.20'	450.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	148.25'	0.04'	149.24'	0.008'	0.01'			0.010'	0.046'	149.254'	o.k.		no	
407		0.22	Fut. 7		23+20.00	23+20.00	150.07	149.87	y		0.20'	300.00'	12"	0.0022	0.0022	1.68	12.9%	0.79	0.032'	0.230'	149.44'	0.02'	150.10'	0.008'	0.00'			0.004'	0.028'	150.108'	o.k.		no	
Pleasant Valley South Trunk																																	
100	0.51	1.12	Fut. P.S.		-04+00.00	-04+00.00	140.00	140.00	y																								
500		0.16	Ex. P.S.		00+00.00	00+00.00	177.47	177.47	y	45	0.00'	400.00'	10"	0.0028	0.0028	1.16	14.1%	0.55	0.035'	0.208'	140.21'	0.04'	177.68'	0.009'	0.01'	0.01'		0.016'	0.061'	177.695'	o.k.		no	
501		0.16	MH 1		04+00.00	04+00.00	179.27	179.07	y		0.20'	400.00'	10"	0.0040	0.0040	1.39	11.8%	0.55	0.041'	0.175'	177.65'	0.05'	179.25'	0.010'	0.04'			0.024'	0.079'	179.269'	o.k.		no	
502		0.16	MH 2		07+07.44	07+07.44	183.93	183.73	y		0.20'	307.44'	10"	0.0145	0.0145	2.65	6.2%	0.55	0.111'	0.138'	179.41'	0.06'	183.87'	0.028'	0.01'			0.021'	0.078'	183.888'	o.k.		no	
503		0.16	MH 3		09+38.29	09+38.29	185.06	184.86	y		0.20'	230.85'	10"	0.0040	0.0040	1.39	11.7%	0.55	0.041'	0.175'	184.11'	0.03'	185.04'	0.010'	0.01'			0.012'	0.043'	185.047'	o.k.		no	
504		0.16	MH 4		11+64.04	11+64.04	186.16	185.96	y		0.20'	225.75'	10"	0.0040	0.0040	1.39	11.8%	0.55	0.040'	0.175'	185.24'	0.03'	186.14'	0.010'	0.00'			0.005'	0.036'	186.140'	o.k.		no	

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal			
Plan Year	Calendar Year	Point 101 2	5	6	8						Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		y	y	y	y						y	y	
0	1997	95.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Population		135.4	5.0	258.5	504.8						904 capita		
Domestic Flow		13,585	548	33,374	50,532						98,038 gpd	0.098 mgd	
Peak Domestic Flow		57,127	2,433	137,008	200,717						375,284 gpd	0.375 mgd	
Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Peak Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Fixed Flow		0	0	0	0						0 gpd	0.000 mgd	
Total Peak Flow		57,127	2,433	137,008	200,717						375,284 gpd	0.375 mgd	0.58 cfs
ERUs		54	2	133	202						392 ERU		
6	2003	95.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Population		202.3	28.4	345.7	693.3						1,270 capita		
Domestic Flow		20,374	3,228	42,331	69,414						135,346 gpd	0.135 mgd	
Peak Domestic Flow		84,474	14,070	171,501	270,502						504,941 gpd	0.505 mgd	
Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Peak Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Fixed		0	0	0	0						0 gpd	0.000 mgd	
Total Peak Flow		84,474	14,070	171,501	270,502						504,941 gpd	0.505 mgd	0.78 cfs
ERUs		81	13	169	278						541 ERU		
10	2007	95.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Population		248.9	53.9	444.9	851.0						1,599 capita		
Domestic Flow		25,193	6,971	52,411	85,211						169,786 gpd	0.170 mgd	
Peak Domestic Flow		103,591	30,033	209,632	327,557						621,311 gpd	0.621 mgd	
Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Peak Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Fixed		0	0	0	0						0 gpd	0.000 mgd	
Total Peak Flow		103,591	30,033	209,632	327,557						621,311 gpd	0.621 mgd	0.96 cfs
ERUs		101	28	210	341						679 ERU		
15	2012	100.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Population		330.2	92.9	590.3	1076.2						2,090 capita		
Domestic Flow		33,838	18,377	67,166	107,781						227,162 gpd	0.227 mgd	
Peak Domestic Flow		137,393	78,142	264,369	407,328						811,174 gpd	0.811 mgd	
Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Peak Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Fixed		0	0	0	0						0 gpd	0.000 mgd	
Total Peak Flow		137,393	78,142	264,369	407,328						811,174 gpd	0.811 mgd	1.26 cfs
ERUs		135	74	269	431						909 ERU		
20	2017	100.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Population		407.8	146.4	765.9	1340.4						2,661 capita		
Domestic Flow		42,881	66,842	84,939	134,278						328,940 gpd	0.329 mgd	
Peak Domestic Flow		172,304	280,362	328,857	498,758						1,146,746 gpd	1.147 mgd	
Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Peak Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Fixed		0	0	0	0						0 gpd	0.000 mgd	
Total Peak Flow		172,304	280,362	328,857	498,758						1,146,746 gpd	1.147 mgd	1.77 cfs
ERUs		172	267	340	537						1,316 ERU		
Ultimate		95.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Population		857.3	212.9	944.1	2254.8						4,269 capita		
Domestic Flow		137,982	250,232	147,858	303,127						839,200 gpd	0.839 mgd	
Peak Domestic Flow		530,143	1,035,458	564,219	1,074,499						2,775,961 gpd	2.776 mgd	
Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Peak Industrial Flow		0	0	0	0						0 gpd	0.000 mgd	
Fixed		0	0	0	0						0 gpd	0.000 mgd	
Total Peak Flow		530,143	1,035,458	564,219	1,074,499						2,775,961 gpd	2.776 mgd	4.30 cfs
ERUs		552	1,001	591	1,213						3,357 ERU		

				Benchmark Years	0	6	10	15	20	ERU Factor	250 gal
Plan Year	Calendar Year	Point 2018	Point 2108	Point 3018							
Include in Calculation? (Y/N)		y	y	y							
0	1997	86.0%	65.0%	25.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	461.8	349.0	134.2							
	Domestic Flow	46,231	34,942	13,439							
	Peak Domestic Flow	184,542	141,501	56,530							
	Industrial Flow	0	0	0							
	Peak Industrial Flow	0	0	0							
	Fixed Flow	0	0	0							
	Total Peak Flow	184,542	141,501	56,530							
	ERUs	185	140	54							
6	2003	86.0%	65.0%	25.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	634.3	479.4	184.4							
	Domestic Flow	63,506	47,999	18,461							
	Peak Domestic Flow	248,870	191,206	76,811							
	Industrial Flow	0	0	0							
	Peak Industrial Flow	0	0	0							
	Fixed	0	0	0							
	Total Peak Flow	248,870	191,206	76,811							
	ERUs	254	192	74							
10	2007	86.0%	65.0%	25.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	778.6	588.4	226.3							
	Domestic Flow	77,959	58,922	22,662							
	Peak Domestic Flow	301,503	231,965	93,550							
	Industrial Flow	0	0	0							
	Peak Industrial Flow	0	0	0							
	Fixed	0	0	0							
	Total Peak Flow	301,503	231,965	93,550							
	ERUs	312	236	91							
15	2012	86.0%	65.0%	25.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	984.6	744.2	286.2							
	Domestic Flow	98,608	74,530	28,665							
	Peak Domestic Flow	375,139	289,107	117,158							
	Industrial Flow	0	0	0							
	Peak Industrial Flow	0	0	0							
	Fixed	0	0	0							
	Total Peak Flow	375,139	289,107	117,158							
	ERUs	394	298	115							
20	2017	86.0%	65.0%	25.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	1226.3	926.9	356.5							
	Domestic Flow	122,850	92,852	35,712							
	Peak Domestic Flow	459,598	354,789	144,471							
	Industrial Flow	0	0	0							
	Peak Industrial Flow	0	0	0							
	Fixed	0	0	0							
	Total Peak Flow	459,598	354,789	144,471							
	ERUs	491	371	143							
Ultimate		86.0%	65.0%	25.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	2062.9	1559.2	599.7							
	Domestic Flow	277,329	209,609	80,619							
	Peak Domestic Flow	991,532	768,709	317,019							
	Industrial Flow	0	0	0							
	Peak Industrial Flow	0	0	0							
	Fixed	0	0	0							
	Total Peak Flow	991,532	768,709	317,019							
	ERUs	1,109	838	322							

Barberton Trunk

Points 201, 210, 301

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal			
Plan Year	Calendar Year	Point 100 2	5	6							Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		y	y	y							y	y	
0	1997	95.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	135.4	5.0	258.5							399 capita		
	Domestic Flow	13,585	548	33,374							47,507 gpd	0.048 mgd	
	Peak Domestic Flow	57,127	2,433	137,008							191,106 gpd	0.191 mgd	
	Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Fixed Flow	0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow	57,127	2,433	137,008							191,106 gpd	0.191 mgd	0.30 cfs
	ERUs	54	2	133							190 ERU		
6	2003	95.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	202.3	28.4	345.7							576 capita		
	Domestic Flow	20,374	3,228	42,331							65,932 gpd	0.066 mgd	
	Peak Domestic Flow	84,474	14,070	171,501							259,884 gpd	0.260 mgd	
	Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Fixed	0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow	84,474	14,070	171,501							259,884 gpd	0.260 mgd	0.40 cfs
	ERUs	81	13	169							264 ERU		
10	2007	95.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	248.9	53.9	444.9							748 capita		
	Domestic Flow	25,193	6,971	52,411							84,575 gpd	0.085 mgd	
	Peak Domestic Flow	103,591	30,033	209,632							327,973 gpd	0.328 mgd	
	Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Fixed	0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow	103,591	30,033	209,632							327,973 gpd	0.328 mgd	0.51 cfs
	ERUs	101	28	210							338 ERU		
15	2012	100.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	330.2	92.9	590.3							1,013 capita		
	Domestic Flow	33,838	18,377	67,166							119,381 gpd	0.119 mgd	
	Peak Domestic Flow	137,393	78,142	264,369							453,200 gpd	0.453 mgd	
	Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Fixed	0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow	137,393	78,142	264,369							453,200 gpd	0.453 mgd	0.70 cfs
	ERUs	135	74	269							478 ERU		
20	2017	100.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	407.8	146.4	765.9							1,320 capita		
	Domestic Flow	42,881	66,842	84,939							194,662 gpd	0.195 mgd	
	Peak Domestic Flow	172,304	280,362	328,857							723,945 gpd	0.724 mgd	
	Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Fixed	0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow	172,304	280,362	328,857							723,945 gpd	0.724 mgd	1.12 cfs
	ERUs	172	267	340							779 ERU		
Ultimate		100.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	902.5	212.9	944.1							2,060 capita		
	Domestic Flow	145,245	250,232	147,858							543,335 gpd	0.543 mgd	
	Peak Domestic Flow	556,039	1,035,458	564,219							1,942,881 gpd	1.943 mgd	
	Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0	0							0 gpd	0.000 mgd	
	Fixed	0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow	556,039	1,035,458	564,219							1,942,881 gpd	1.943 mgd	3.01 cfs
	ERUs	581	1,001	591							2,173 ERU		

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal			
Plan Year	Calendar Year	Point 103 2	Point 103 5								Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		y	y								y	y	
0	1997	88.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	125.4	5.0								130 capita		
	Domestic Flow	12,584	548								13,132 gpd	0.013 mgd	
	Peak Domestic Flow	53,046	2,433								55,288 gpd	0.055 mgd	
	Industrial Flow	0	0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0								0 gpd	0.000 mgd	
	Fixed Flow	0	0								0 gpd	0.000 mgd	
	Total Peak Flow	53,046	2,433								55,288 gpd	0.055 mgd	0.09 cfs
	ERUs	50	2								53 ERU		
6	2003	88.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	187.4	28.4								216 capita		
	Domestic Flow	18,873	3,228								22,101 gpd	0.022 mgd	
	Peak Domestic Flow	78,476	14,070								91,404 gpd	0.091 mgd	
	Industrial Flow	0	0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0								0 gpd	0.000 mgd	
	Fixed	0	0								0 gpd	0.000 mgd	
	Total Peak Flow	78,476	14,070								91,404 gpd	0.091 mgd	0.14 cfs
	ERUs	75	13								88 ERU		
10	2007	93.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	243.7	53.9								298 capita		
	Domestic Flow	24,663	6,971								31,634 gpd	0.032 mgd	
	Peak Domestic Flow	101,500	30,033								129,067 gpd	0.129 mgd	
	Industrial Flow	0	0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0								0 gpd	0.000 mgd	
	Fixed	0	0								0 gpd	0.000 mgd	
	Total Peak Flow	101,500	30,033								129,067 gpd	0.129 mgd	0.20 cfs
	ERUs	99	28								127 ERU		
15	2012	93.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	307.1	92.9								400 capita		
	Domestic Flow	31,469	18,377								49,846 gpd	0.050 mgd	
	Peak Domestic Flow	128,208	78,142								200,488 gpd	0.200 mgd	
	Industrial Flow	0	0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0								0 gpd	0.000 mgd	
	Fixed	0	0								0 gpd	0.000 mgd	
	Total Peak Flow	128,208	78,142								200,488 gpd	0.200 mgd	0.31 cfs
	ERUs	126	74								199 ERU		
20	2017	93.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	379.3	146.4								526 capita		
	Domestic Flow	39,880	66,842								106,721 gpd	0.107 mgd	
	Peak Domestic Flow	160,836	280,362								422,930 gpd	0.423 mgd	
	Industrial Flow	0	0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0								0 gpd	0.000 mgd	
	Fixed	0	0								0 gpd	0.000 mgd	
	Total Peak Flow	160,836	280,362								422,930 gpd	0.423 mgd	0.65 cfs
	ERUs	160	267								427 ERU		
Ultimate		93.0%	100.0%	94.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	Population	839.3	212.9								1,052 capita		
	Domestic Flow	135,078	250,232								385,310 gpd	0.385 mgd	
	Peak Domestic Flow	519,747	1,035,458								1,458,643 gpd	1.459 mgd	
	Industrial Flow	0	0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0	0								0 gpd	0.000 mgd	
	Fixed	0	0								0 gpd	0.000 mgd	
	Total Peak Flow	519,747	1,035,458								1,458,643 gpd	1.459 mgd	2.26 cfs
	ERUs	540	1,001								1,541 ERU		

				Benchmark Years	0	6	10	15	20	ERU Factor	250 gal
Plan Year	Calendar Year	Point 115 2	Point 207 2	Point 302 2	Point 407 5	Point 504 6						
Include in Calculation? (Y/N)		y	y	y	y	y						
0	1997	80.0%	60.0%	40.0%	100.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	114.0	85.5	57.0	5.0	258.5						
	Domestic Flow	11,440	8,580	5,720	548	33,374						
	Peak Domestic Flow	48,363	36,564	24,612	2,433	137,008						
	Industrial Flow	0	0	0	0	0						
	Peak Industrial Flow	0	0	0	0	0						
	Fixed Flow	0	0	0	0	0						
	Total Peak Flow	48,363	36,564	24,612	2,433	137,008						
	ERUs	46	34	23	2	133						
6	2003	80.0%	60.0%	40.0%	100.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	170.4	127.8	85.2	28.4	345.7						
	Domestic Flow	17,157	12,868	8,578	3,228	42,331						
	Peak Domestic Flow	71,589	54,210	36,561	14,070	171,501						
	Industrial Flow	0	0	0	0	0						
	Peak Industrial Flow	0	0	0	0	0						
	Fixed	0	0	0	0	0						
	Total Peak Flow	71,589	54,210	36,561	14,070	171,501						
	ERUs	69	51	34	13	169						
10	2007	80.0%	60.0%	40.0%	100.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	209.6	157.2	104.8	53.9	444.9						
	Domestic Flow	21,215	15,911	10,608	6,971	52,411						
	Peak Domestic Flow	87,843	66,579	44,955	30,033	209,632						
	Industrial Flow	0	0	0	0	0						
	Peak Industrial Flow	0	0	0	0	0						
	Fixed	0	0	0	0	0						
	Total Peak Flow	87,843	66,579	44,955	30,033	209,632						
	ERUs	85	64	42	28	210						
15	2012	80.0%	60.0%	40.0%	100.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	264.2	198.1	132.1	92.9	590.3						
	Domestic Flow	27,070	20,303	13,535	18,377	67,166						
	Peak Domestic Flow	111,028	84,246	56,962	78,142	264,369						
	Industrial Flow	0	0	0	0	0						
	Peak Industrial Flow	0	0	0	0	0						
	Fixed	0	0	0	0	0						
	Total Peak Flow	111,028	84,246	56,962	78,142	264,369						
	ERUs	108	81	54	74	269						
20	2017	80.0%	60.0%	40.0%	100.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	326.3	244.7	163.1	146.4	765.9						
	Domestic Flow	34,305	25,729	17,153	66,842	84,939						
	Peak Domestic Flow	139,370	105,869	71,681	280,362	328,857						
	Industrial Flow	0	0	0	0	0						
	Peak Industrial Flow	0	0	0	0	0						
	Fixed	0	0	0	0	0						
	Total Peak Flow	139,370	105,869	71,681	280,362	328,857						
	ERUs	137	103	69	267	340						
Ultimate		80.0%	60.0%	40.0%	100.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Population	722.0	541.5	361.0	212.9	944.1						
	Domestic Flow	116,196	87,147	58,098	250,232	147,858						
	Peak Domestic Flow	451,628	344,768	234,886	1,035,458	564,219						
	Industrial Flow	0	0	0	0	0						
	Peak Industrial Flow	0	0	0	0	0						
	Fixed	0	0	0	0	0						
	Total Peak Flow	451,628	344,768	234,886	1,035,458	564,219						
	ERUs	465	349	232	1,001	591						

APPENDEX: FORMER COUNTY CONTRACT SUBAREA

I. Subarea Map

II. Hydraulic Grade Analysis

A. Former County Contract Improvements – Benchmark Years

1. 1997 – Year 0
2. 2003 – Year 6
3. 2007 – Year 10
4. 2012 – Year 15
5. 2017 – Year 20

B. Flow Calculation Worksheets

1. Former County Contract – Benchmark Years

FORMER COUNTY CONTRACT SUBAREA

HAZEL DELL SEWER DISTRICT

LEGEND

- (910) Analysis Point – See Capital Facilities Plan, Volume 2 for projected flows
- Sub-Area Boundary
- Basin Boundary
- Existing Trunk Sewer
- Proposed Trunk Sewer
- Existing Force Main
- ☆ Existing Temporary Pump Station
- ☆ Existing Pump Station

ST. JOHN'S BASIN #28

CURTIN CREEK BASIN #38

CEDAR 49 BASIN #39

GLENWOOD CREEK BASIN #29

NE 86th STREET BASIN #30

COUNTRY MEADOWS BASIN #31

ORCHARDS CREST NORTH BASIN #32

ORCHARDS CREST SOUTH BASIN #33

COVINGTON NORTH BASIN #34

COVINGTON SOUTH BASIN #35

GREEN MEADOWS WEST BASIN #37

GREEN MEADOWS EAST BASIN #36

NE 119th STREET

NE 119th ST.

NE 109th ST.

NE 104th (PRIVATE)

NE 105th STREET

NE 99th STREET

NE 95th STREET

NE 88th STREET

NE 86th STREET

NE 78th STREET

NE 76th STREET

NE 74th ST.

NE 71st STREET

NE 68th STREET

63rd STREET

NE 63rd STREET

NE ROSEWOOD AVE.

NE FOURTH PLAIN

ST. JOHNS ROAD

ST. JOHNS INTERCEPTOR

EX 36"

EX 24"

EX 10"

I-205

NE 72nd AVE.

NE 82nd AVE.

NE 94th AVE.

NE 98th AVE

NE 102nd AVE

N.E. 94th AVE.

NE 107th AVE

NE 117th AVE

NE 130th AVE

NE 117th AVE. (S.R. 503)

NE 55th AVE.

NE 61st AVE

N.E. MEADOWS DRIVE

ANDRESON RD.

CURTIN CREEK

CHELATCHIE PRAIRIE RAILROAD

PADDEN EXPRESSWAY

COVINGTON ROAD

INDUSTRIAL AREA TRUNK

Ex. 18" F.M.

EX. F.M.

EX. 8" F.M.

EX. 12"

EX. 15"

EX. 16"

EX. 18"

EX. 24"

12"

10"

15"

16"

Prop. 10" Trunk Sewer (B36102) Year – 2007

Prop. 10" Trunk Sewer (B37101) Year – 2007

Prop. 15" Trunk Sewer (B31105) Year – 2012

Prop. 18" Trunk Sewer (B29102 & B31103) Year – 2012

Prop. 15" Trunk Sewer (B31102,04) Year – 2000

Prop. 18" Trunk Sewer (B30102) Year – 2017

Prop. 15" Trunk Sewer (B30101) Year – 2004

MTN. VIEW P.S.

ORR-LYDA P.S. & DRAIN FIELD

GLENWOOD P.S.

TEMP. LAURELWOOD P.S.

COUNTRY MEADOWS P.S.

NORWEGIAN MEADOWS P.S.

COUNTRY MEADOWS TRUNK

N.E. 86TH ST TRUNK

SILVER STAR P.S.

TEMP. KINGSLAND P.S.

TEMP. ORCHARDS CREST P.S.

EX. ORCHARDS CREST SOUTH TRUNK

WUBBEN INDUST. PARK P.S.

ABANDONED PRESS. MAIN

CEDARS 49 TRUNK

ORCHARDS INTERCEPTOR

ORCHARDS INTERCEPTOR PH. 2

N.E. 94TH AVE. TRUNK

CHELATCHIE PRAIRIE RAILROAD

PROPOSED 6" MAIN NOT A CAPITAL FACILITY. SHOWN FOR INFORMATION ONLY.

GREEN MEADOWS P.S.

CROSSROADS P.S.

TEMP. MEADOWS TERRACE P.S.

(TO VANC. TREATMENT PLANT)

GREEN MEADOWS GOLF COURSE

GREEN MEADOWS EAST TRUNK

COVINGTON NORTH TRUNK

COVINGTON SOUTH TRUNK

TEMP. SIERRA VISTA P.S.

TEMP. SIERRA VISTA III P.S.

HUNTER'S GLENN P.S.

312 114 126 133 136 105 211 603 707 801 910 811 8100 7600 9000 401 7100 501 1109 1116 115 100 1105

Prepared by:

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ENGINEERS SURVEYORS PLANNERS

1703 MAIN STREET VANCOUVER, WA. 98660

Mapping Point Data on Orchards Interceptor											Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		2.76	Exist. P.S.		-00+34.00	-00+34.00	178.80		y																											
101	2.48	2.76	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'	34.00'	30"	0.0100	0.0100	41.13	6.7%	4.91	8.38	8.29	1.068'	1.225'	180.03'	0.625'	0.616'	0.00'	180.37'	0.267'	0.03'	0.68'	1.406'	1.192'	1.193'	181.557'	o.k.		no	
102		2.48	MH 2		02+29.00	02+29.00	179.62	179.52	y		0.10'	229.00'	24"	0.0008	0.0008	6.36	39.0%	3.14	2.02	2.25	0.078'	1.350'	181.56'	0.500'	0.588'	0.02'	181.58'	0.020'	0.03'			0.024'	0.046'	181.603'	CRITICAL		no	0.1
103		2.48	MH 3		04+76.00	04+76.00	179.92	179.82	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	38.5%	3.14	2.05	2.28	0.081'	1.350'	181.60'	0.500'	0.588'	0.02'	181.63'	0.020'	0.03'			0.024'	0.048'	181.651'	o.k.		no	
104		2.48	MH 4		07+23.00	07+23.00	180.22	180.12	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	38.5%	3.14	2.05	2.28	0.081'	1.350'	181.65'	0.500'	0.588'	0.02'	181.67'	0.020'	0.03'			0.024'	0.048'	181.699'	o.k.		no	
105	0.07	2.48	MH 5		08+85.00	08+85.00	180.55	180.35	y	90	0.20'	162.00'	24"	0.0008	0.0008	6.43	38.6%	3.14	2.05	2.27	0.080'	1.350'	181.70'	0.500'	0.588'	0.02'	181.71'	0.020'	0.03'	0.05'	0.002'	0.051'	0.066'	181.765'	o.k.		no	
106		2.43	MH 6		11+95.00	11+95.00	181.20	180.80	y		0.40'	310.00'	24"	0.0008	0.0008	6.44	37.8%	3.14	2.05	2.27	0.080'	1.330'	181.88'	0.500'	0.583'	0.03'	182.13'	0.020'	0.73'			0.376'	0.405'	182.506'	o.k.		no	
107		2.43	MH 7		13+61.00	13+61.00	187.57	187.37	y		0.20'	166.00'	18"	0.0372	0.0372	20.31	12.0%	1.77	11.49	11.61	2.091'	0.765'	182.51'	0.375'	0.381'	0.09'	188.14'	0.523'	0.04'			0.283'	0.369'	188.418'	o.k.		no	
108		2.43	MH 8		16+15.00	16+15.00	188.20	188.00	y		0.20'	254.00'	18"	0.0017	0.0017	4.33	56.1%	1.77	2.45	2.80	0.121'	1.200'	188.77'	0.375'	0.458'	0.10'	189.20'	0.030'	0.04'			0.037'	0.140'	189.237'	o.k.		no	
211	1.68	2.43	MH 11		19+32.00	00+00.00	192.01	188.74	y		3.27'	317.00'	18"	0.0017	0.0017	4.35	56.0%	1.77	2.46	2.80	0.122'	1.178'	189.38'	0.375'	0.456'	0.13'	189.92'	0.031'	0.07'		0.105'	0.104'	0.234'	190.022'	o.k.		no	
210		1.68	MH 10		01+50.00	01+50.00	192.70	192.50	y		0.20'	150.00'	18"	0.0032	0.0033	6.02	27.9%	1.77	3.41	3.66	0.208'	0.908'	192.92'	0.375'	0.420'	0.03'	193.41'	0.052'	0.08'			0.064'	0.097'	193.472'	o.k.		no	
209		1.68	MH 9		05+24.00	05+24.00	194.10	193.98	y		0.12'	374.00'	18"	0.0034	0.0034	6.16	27.2%	1.77	3.49	3.75	0.218'	0.908'	193.61'	0.375'	0.420'	0.08'	194.89'	0.055'	0.07'			0.063'	0.145'	194.951'	o.k.		no	
208		1.68	MH 8		08+69.00	08+69.00	195.40	195.20	y		0.20'	345.00'	18"	0.0032	0.0032	5.95	28.2%	1.77	3.37	3.63	0.205'	0.923'	195.02'	0.375'	0.424'	0.07'	196.12'	0.051'	0.06'			0.057'	0.132'	196.180'	o.k.		no	
207		1.68	MH 7		10+82.00	10+82.00	196.19	195.99	y		0.20'	213.00'	18"	0.0028	0.0028	5.54	30.3%	1.77	3.14	3.42	0.182'	0.938'	196.34'	0.375'	0.428'	0.05'	196.93'	0.045'	0.07'			0.055'	0.101'	196.983'	o.k.		no	
206		1.68	MH 6		11+99.00	11+99.00	196.73	196.53	y		0.20'	117.00'	18"	0.0028	0.0029	5.68	29.6%	1.77	3.21	3.47	0.187'	0.923'	197.11'	0.375'	0.424'	0.03'	197.45'	0.047'	0.06'			0.055'	0.080'	197.507'	o.k.		no	
205		1.68	MH 5		15+00.00	15+00.00	197.76	197.56	y		0.20'	301.00'	18"	0.0028	0.0028	5.53	30.4%	1.77	3.13	3.41	0.181'	0.938'	197.67'	0.375'	0.428'	0.06'	198.50'	0.045'	0.06'			0.055'	0.119'	198.552'	o.k.		no	
204		1.68	MH 4		16+46.00	16+46.00	198.37	198.17	y		0.20'	146.00'	18"	0.0028	0.0028	5.58	30.1%	1.77	3.16	3.44	0.184'	0.938'	198.70'	0.375'	0.428'	0.03'	199.11'	0.046'	0.06'			0.055'	0.086'	199.163'	o.k.		no	
203		1.68	MH 3		18+00.00	18+00.00	199.00	198.80	y		0.20'	154.00'	18"	0.0028	0.0028	5.57	30.2%	1.77	3.15	3.43	0.183'	0.938'	199.31'	0.375'	0.428'	0.03'	199.74'	0.046'	0.06'			0.055'	0.088'	199.793'	o.k.		no	
202		1.68	MH 2		20+13.00	20+13.00	199.80	199.60	y		0.20'	213.00'	18"	0.0028	0.0028	5.59	30.0%	1.77	3.16	3.45	0.185'	0.938'	199.94'	0.375'	0.428'	0.05'	200.54'	0.046'	0.06'			0.055'	0.100'	200.593'	o.k.		no	
201		1.68	MH 1		22+24.00	00+00.00	200.39	200.39	y		0.00'	211.00'	18"	0.0028	0.0028	5.57	30.1%	1.77	3.15	3.44	0.183'	0.938'	200.74'	0.375'	0.428'	0.04'	201.33'	0.046'	0.06'			0.052'	0.096'	201.379'	o.k.		no	
8100	0.76	1.68	MH 8100		04+08.00	04+08.00	201.44	201.41	y		0.03'	408.00'	18"	0.0028	0.0025	5.27	31.9%	1.77	2.98	3.25	0.164'	0.938'	201.38'	0.375'	0.428'	0.09'	202.35'	0.041'	0.05'		0.080'	0.084'	0.170'	202.431'	o.k.		no	
8000		0.71	MH 8000		09+62.23	09+62.23	203.02	202.70	y	85	0.32'	554.23'	18"	0.0024	0.0023	5.02	14.2%	1.77	2.84	2.91	0.132'	0.803'	202.43'	0.375'	0.390'	0.02'	203.50'	0.033'	0.05'	0.08'		0.083'	0.107'	203.585'	o.k.		no	
7900		0.71	MH 7900		12+44.63	12+44.63	203.80	203.70	y		0.10'	282.40'	18"	0.0024	0.0024	5.17	13.8%	1.77	2.92	2.98	0.138'	0.788'	203.81'	0.375'	0.386'	0.01'	204.49'	0.035'	0.05'			0.041'	0.054'	204.529'	o.k.		no	
7800		0.71	MH 7800		15+27.03	15+27.03	204.58	204.48	y	90	0.10'	282.40'	18"	0.0024	0.0024	5.17	13.8%	1.77	2.92	2.98	0.138'	0.788'	204.59'	0.375'	0.386'	0.01'	205.27'	0.035'	0.05'	0.09'		0.086'	0.098'	205.353'	o.k.		no	
7700		0.71	MH 7700		16+68.33	16+68.33	205.02	204.92	y	86	0.10'	141.30'	18"	0.0024	0.0024	5.17	13.8%	1.77	2.92	2.98	0.138'	0.788'	205.37'	0.375'	0.386'	0.01'	205.71'	0.035'	0.05'	0.09'		0.086'	0.092'	205.794'	o.k.		no	
7600		0.71	MH 7600		18+18.83	18+18.83	205.49	205.39	y	88	0.10'	150.50'	18"	0.0024	0.0025	5.22	13.7%	1.77	2.96	3.01	0.141'	0.788'	205.81'	0.375'	0.386'	0.01'	206.18'	0.035'	0.04'	0.09'		0.084'	0.091'	206.261'	o.k.		no	
7400		0.71	MH 7400		21+59.99	21+59.99	206.30	206.20	y		0.10'	341.16'	18"	0.0024	0.0021	4.80	14.9%	1.77	2.72	2.79	0.121'	0.803'	206.29'	0.375'	0.390'	0.01'	207.00'	0.030'	0.05'			0.039'	0.054'	207.042'	o.k.		no	
7300		0.71	MH 7300		24+39.19	24+39.19	207.07	206.97	y		0.10'	279.20'	18"	0.0024	0.0024	5.16	13.9%	1.77	2.92	2.98	0.138'	0.788'	207.09'	0.375'	0.386'	0.01'	207.76'	0.034'	0.05'			0.042'	0.054'	207.799'	o.k.		no	
7200		0.71	MH 7200		26+32.19	26+32.19	207.64	207.54	y		0.10'	193.00'	18"	0.0024	0.0024	5.20	13.7%	1.77	2.94	3.00	0.140'	0.788'	207.86'	0.375'	0.386'	0.01'	208.33'	0.035'	0.05'			0.043'	0.052'	208.371'	o.k.		no	
7100		0.71	MH 7100		26+75.19	26+75.19	207.85	207.75	y		0.10'	43.00'	18"	0.0024	0.0026	5.33	13.4%	1.77	3.01	3.07	0.147'	0.788'	208.43'	0.375'	0.386'	0.00'	208.54'	0.037'	0.05'			0.045'	0.047'	208.583'	o.k.		no	
7000		0.71	MH 7000		29+40.19	29+40.19	208.91	208.56	y		0.35'	265.00'	18"	0.0024	0.0027	5.45	13.1%	1.77	3.08	3.15	0.154'	0.788'	208.64'	0.375'	0.386'	0.01'	209.35'	0.038'	0.17'			0.103'	0.115'	209.451'	o.k.		no	
301		0.71	MH 1		32+51.19	32+51.19	212.08	211.68	y		0.40'	311.00'	18"	0.0090	0.0089	9.94	7.2%	1.77	5.62	5.57	0.481'	0.735'	209.65'	0.375'	0.369'	0.01'	212.42'	0.120'	0.17'			0.144'	0.159'	212.559'	o.k.		no	
302		0.71	MH 2		35+63.19	35+63.19	218.10	214.85	y		3.25'	312.00'	18"	0.0090	0.0089	9.92	7.2%	1.77	5.62	5.56	0.480'	0.735'	212.82'	0.375'	0.369'	0.01'	215.59'	0.120'	0.14'			0.130'	0.144'	215.715'	o.k.		no	
303	0.36	0.71	MH 3		39+68.62	39+68.62	221.80	221.08	y	63	0.72'	405.43'	18"	0.0072	0.0074	9.03	7.9%	1.77	5.11	5.06	0.397'	0.735'	218.84'	0.375'	0.369'	0.02'	221.82'	0.099'	0.28'	0.25'	0.219'	0.426'	0.445'	222.241'	o.k.		no	
304		0.35	MH 4		40+20.62	40+20.62	223.44	223.44	y	67	0.00'	52.00'	10"	0.0342	0.0315	3.90	9.1%	0.55	7.15	7.15	0.794'	0.417'	222.24'	0.208'	0.208'	0.01'	223.86'	0.199'	0.05'	0.51'		0.380'	0.393'	224.237'	o.k.		no	
401		0.35	MH 1		42+15.62	00+07.00	224.50	224.50	y	37	0.00'	195.00'	10"	0.0054	0.0054	1.62	21.9%	0.55	2.97	3.12	0.151'	0.475'	224.24'	0.208'	0.225'	0.05'	224.98'	0.038'	0.11'	0.10'		0.123'	0.168'	225.098'	o.k.		no	
402		0.35	MH 2		05+17.00	05+17.00	230.73	230.63	y		0.10'	510.00'	10"	0.0120	0.0120	2.41	14.7%	0.55	4.42	4.53	0.318'	0.446'	225.10'	0.208'	0.217'	0.13'	231.08'	0.080'	0.05'			0.065'	0.190'	231.140'	o.k.		no	
403		0.35	MH 3		09+05.00	09+05.00	232.77	232.67	y		0.10'	388.00'	10"	0.0050	0.0050	1.55	22.8%	0.55	2.85	3.02	0.142'	0.483'	231.21'	0.208'	0.228'	0.09'	233.15'	0.035'	0.05'			0.042'	0.131'	233.196'	o.k.		no	
404		0.35	MH 4		10+99.00	10+99.00	234.00	233.74	y		0.26'	194.00'	10"	0.0050	0.0050	1.55	22.8%	0.55	2.85	3.02	0.142'	0.483'	233.25'	0.208'	0.228'	0.04'	234.22'	0.035'	0.05'			0.042'	0.087'	234.266'	o.k.		no	
405		0.35	MH 5		13+72.00	13+72.00	235.50	235.36	y		0.14'	273.00'	10"	0.0050	0.0050	1.55	22.9%	0.55	2.84	3.01	0.141'	0.483'	234.48'	0.208'	0.228'	0.06'	235.84'	0.035'	0.06'			0.047'	0.109'	235.890'	o.k.		no	
501		0.35	MH 1		14+97.00	14+97.00	236.25	236.25	y		0.00'	125.00'	10"	0.0060	0.0060	1.70	20.8%	0.55	3.12	3.28	0.167'	0.475'	235.98'	0.208'	0.225'	0.03'	236.73'	0.042'	0.00'			0.021'	0.050'	236.746'	o.k.		no	
Silver Star Estates / NE 86th Street Trunk																																		
211	1.68	2.43	MH 11		19+32.00	00+00.00	189.84	188.74	y		0.00'	250.00'	15"	0.0260	0.0028	3.40	26.6%	1.23	2.77	2.98	0.138'	0.756'	190.60'	0.313'	0.350'	0.04'	191.29'	0.034'	0.05'			0.040'	0.082'	191.327'	o.k.		no	
601		0.91	MH 1		02+50.00	02+50.00	190.53	190.53	y		0.00'	250.00'	15"	0.0230	0.0026	3.33	27.2%	1.23	2.71	2.92	0.132'	0.756'	191.33'	0.313'	0.350'	0.04'	191.95'	0.033'	0.04'			0.039'	0.081'	191.985'	o.k.		no	
602		0.91	MH 2		05+00.00	05+00.00	191.26	191.19	y		0.07'	250.00'	15"	0.0250	0.0025	3.26	27.8%	1.23	2.65	2.85	0.126'	0.756'	192.02'	0.313'	0.350'	0.07'	193.13'	0.032'	0.05'		0.169'	0.125'	0.198'	193.251'	o.k.		no	
603	0.83	0.91	MH 3		09+39.00	-01+54.00	192.45	192.37	y		0.08'	439.00'	15"	0.0250	0.0025	3.26	27.8%	1.23	2.65	2.85	0.126'	0.756'	192.02'	0.313'	0.350'	0.07'	193.13'	0.032'	0.05'			0.125'	0.198'	193.251'	o.k.		no	
700		0.83	MH 0		00+00.00	00+00.00	192.93	192.88	y		0.05'	154.00'	15"	0.0028	0.0028	3.42	24.1%	1.23	2.79	2.98	0.138'	0.738'	193.25'	0.313'	0.347'	0.02'	193.62'	0.035'	0.03'			0.031'	0.053'	193.649'	o.k.		no	
701		0.83	MH 1		03+70.00	03+70.00	193.69	193.49	y		0.20'	370.00'	15"	0.0015	0.0015	2.52	32.8%	1.23	2.05	2.25	0.078'	0.800'	193.73'	0.313'	0.359'	0.05'	194.29'	0.020'	0.03'			0.024'	0.073'	194.314'	o.k.		no	
702		0.83	MH 2		07+41.00	07+41.00	194.45	194.25	y		0.20'	371.00'	15"	0.0500	0.0015	2.52	32.8%	1.23	2.05	2.25	0.078'	0.800'	194.49'	0.313'	0.359'	0.05'	195.05'	0.020'	0.73'			0.373'	0.423'	195.423'	o.k.		no	
703		0.83	MH 3		10+74.00	10+74.00	211.29	211.09	y		0.20'	333.00'	15"	0.0500	0.0500	14.48	5.7%	1.23	11.80	11.56	2.076'	0.594'	195.42'	0.313'	0.303'	0.06'	211.68'	0.519'	0.03'			0.273'	0.329'	211.957'	o.k.		no	
704		0.83	MH 4		13+69.00	13+69.00	211.93	211.73	y		0.20'	295.00'	15"	0.0015	0.0015	2.50	33.0%	1.23	2.04	2.23	0.077'	0.800'	212.09'	0.313'	0.359'	0.04'	212.53'	0.019'	0.03'			0.023'	0.063'	212.553'	o.k.		no	
705		0.83	MH 5		16+04.00	16+04.00	212.48	212.28	y		0.20'	235.00'	15"	0.0015	0.0015	2.50	33.0%	1.23	2.04	2.23	0.077'	0.800'	212.73'	0.313'	0.359'	0.03'	213.08'	0.019'	0.03'			0.023'	0.055'	213.103'	o.k.		no	
706		0.83	MH 6		18+35.00	18+35.00	213.03	212.83	y		0.20'	231.00'	15"	0.0015	0.0015	2.52	32.7%	1.23	2.05	2.25	0.079'	0.800'	213.28'	0.313'	0.359'	0.03'	213.63'	0.020'	0.03'			0.023'	0.054'	213.653'	o.k.		no	
707		0.83	MH 7		21+55.00	21+55.00	213.51	213.51	y		0.00'	320.00'	15"	0.0015	0.0015	2.51	32.9%	1.23	2.04	2.24	0.078'	0.800'	213.83'	0.313'	0.359'	0.04'	214.31'	0.019'	0.00'			0.010'	0.053'	214.320'	o.k.		no	
Silver Star Estates P.S. / Orchards Interceptor - Phase II / Orchard Crest North Trunk																																		
800		0.10	Ex. P.S.		00+00.00	00+00.00	185.67	185.67	y																											
801		0.10	MH 1		00+48.00	00+48.00	185.84	185.74	y		0.10'	48.00'	15"	0.0015	0.0015	2.47	4.0%	1.23	2.02	1.98	0.061'	0.594'	186.26'	0.313'	0.303'	0.00'	186.33'	0.015'	0.01'			0.011'	0.011'	186.345'	o.k.		no	
802		0.10	MH 2		02+98.00	02+98.00	186.02	185.96	y		0.06'	250.00'	15"	0.0015	0.0005	1.42	7.0%	1.23	1.16	1.14	0.020'	0.613'	186.45'	0.313'	0.308'	0.00'	186.57'	0.005'	0.02'			0.013'	0.014'	186.586'	o.k.		no	
803		0.10	MH 3		04+79.00	04+79.00	186.35	186.29	y	95	0.06'	181.00'	15"	0.0015	0.0015	2.50	4.0%	1.23	2.04	1.98	0.061'	0.581'	186.60'	0.313'	0.298'	0.00'	186.87'	0.015'	0.02'	0.04'		0.036'	0.037'	186.908'	o.k.		no	
804		0.10	MH 4		06+89.00	06+89.00	186.67	186.62	y		0.05'	210.00'	15"	0.0013	0.0013	2.32	4.3%	1.23	1.89	1.85	0.053'	0.594'	186.94'	0.313'	0.303'	0.00'	187.21'	0.013'	0.02'			0.017'	0.017'	187.231'	o.k.		no	
805		0.10	MH 5		10+65.00	10+65.00	187.24	187.20	y	64	0.04'	376.00'	15"	0.0015	0.0014	2.43	4.1%	1.23	1.98	1.94	0.059'	0.594'	187.26'	0.313'	0.303'	0.00'	187.79'	0.015'	0.02'	0.04'		0.035'	0.036'	187.829'	o.k.		no	
806		0.10	MH 6		12+27.00	12+27.00	187.55	187.45	y		0.10'	162.00'	15"	0.0015	0.0013	2.33	4.3%	1.23	1.90	1.86	0.054'	0.594'	187.83'	0.313'	0.303'	0.00'	188.04'	0.013'	0.04'			0.025'	0.026'	188.069'	o.k.		no	
807		0.10	MH 7		14+51.00	14+51.00	188.20	188.13	y	80	0.07'	224.00'	15"	0.0026	0.0026	3.30	3.0%	1.23	2.69	2.61	0.105'	0.581'	188.13'	0.313'	0.298'	0.00'	188.71'	0.026'	0.04'	0.07'		0.065'	0.066'	188.776'	o.k.		no	
808		0.10	MH 8		15+92.00	15+92.00	188.76	188.56	y	90	0.20'	141.00'	15"	0.0026	0.0026	3.27	3.0%	1.23	2.67	2.59	0.104'	0.581'	188.78'	0.313'	0.298'	0.00'	189.14'	0.026'	0.03'	0.07'		0.061'	0.061'	189.202'	o.k.		no	
809		0.10	MH 9		16+50.96	16+50.96	189.06	188.88	y	95	0.18'	58.96'	15"	0.0019	0.0020	2.92	3.4%	1.23	2.38	2.31	0.083'	0.581'	189.34'	0.313'	0.298'	0.00'	189.46'	0.021'	0.02'	0.05'		0.047'	0.048'	189.509'	o.k.		no	
810		0.10	MH 10		17+84.90	17+84.90	189.34	189.26	y	86	0.08'	133.94'	15"	0.0015	0.0015	2.50	4.0%	1.23	2.04	1.98	0.061'	0.581'	189.64'	0.313'	0.298'	0.00'	189.84'	0.015'	0.02'	0.04'		0.037'	0.037'	189.878'	o.k.		no	
811		0.10	MH 11		21+51.01	21+51.01	189.84	189.84	y	20	0.00'	366.11'	15"	0.0014	0.0014	2.39	4.1%	1.23	1.95	1.91	0.057'	0.594'	189.93'	0.313'	0.303'	0.00'	190.43'	0.014'	0.03'	0.04'		0.038'	0.039'	190.472'	o.k.		no	
812		0.73	Fut. MH 12		23+01.01	23+01.01	190.17	190.07	y		0.10'	150.00'	15"	0.0015	0.0015	2.51	29.0%	1.23	2.04	2.21	0.076'	0.769'	190.61'	0.313'	0.353'	0.02'	190.84'	0.019'	0.03'			0.023'	0.039'	190.861'	o.k.		no	
813		0.73	Fut. MH 13		26+51.01	26+51.01	190.80	190.70	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	29.0%	1.23	2.04	2.21	0.076'	0.769'	190.94'	0.313'	0.353'	0.04'	191.47'	0.019'	0.03'			0.023'	0.060'	191.491'	o.k.		no	
814		0.73	Fut. MH 14		30+01.01	30+01.01	191.32	191.22	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	29.0%	1.23	2.04	2.21	0.076'	0.769'	191.57'	0.313'	0.353'	0.04'	191.99'	0.019'	0.03'			0.027'	0.064'	192.015'	o.k.		no	
902	0.39	0.73	MH 2		33+51.01	00+46.67	199.38	192.01	y	45	7.37'	350.00'	15"	0.0015	0.0020	2.88	25.3%	1.23	2.34	2.51	0.098'	0.738'	192.06'	0.313'	0.347'	0.04'	192.75'	0.024'	0.04'	0.06'	0.059'	0.093'	0.132'	192.841'	o.k.		no	
903		0.37	MH 3		05+02.69	05+02.69	201.20	201.20	y	90	0.00'	456.02'	10"	0.0040	0.0040	1.39	26.8%	0.55	2.54	2.74	0.116'	0.504'	199.88'	0.208'	0.233'	0.11'	201.70'	0.029'	0.05'	0.07'		0.076'	0.188'	201.780'	o.k.		no	

Former Contract Area Trunks

Year 0 (1997)

Mapping Point Data on Orchards Interceptor												Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
904		0.37	MH 4		09+72.69	09+72.69	203.48	203.48	y		0.00'	470.00'	10"	0.0040	0.0049	1.53	24.4%	0.55	2.81	3.00	0.140'	0.492'	201.78'	0.208'	0.231'	0.12'	203.97'	0.035'	0.04'			0.038'	0.155'	204.009'	o.k.		no	
905		0.37	MH 5		10+88.17	10+88.17	203.94	203.94	y		0.00'	115.48'	10"	0.0040	0.0040	1.39	26.9%	0.55	2.54	2.73	0.116'	0.504'	204.01'	0.208'	0.233'	0.03'	204.44'	0.029'	0.04'			0.035'	0.063'	204.479'	o.k.		no	
906		0.37	MH 6		15+53.06	15+53.06	205.90	205.80	y	90	0.10'	464.89'	10"	0.0040	0.0040	1.39	26.8%	0.55	2.55	2.74	0.116'	0.504'	204.48'	0.208'	0.233'	0.11'	206.30'	0.029'	0.04'	0.07'		0.072'	0.187'	206.376'	o.k.		no	
907		0.37	MH 7		20+36.99	20+36.99	208.00	207.83	y	90	0.17'	483.93'	10"	0.0040	0.0040	1.39	26.9%	0.55	2.54	2.73	0.116'	0.504'	206.40'	0.208'	0.233'	0.12'	208.33'	0.029'	0.09'	0.07'		0.099'	0.218'	208.433'	o.k.		no	
908		0.37	MH 8		22+76.99	22+76.99	210.40	210.40	y		0.00'	240.00'	10"	0.0100	0.0100	2.20	17.0%	0.55	4.03	4.17	0.270'	0.454'	208.45'	0.208'	0.220'	0.06'	210.85'	0.067'	0.33'			0.201'	0.264'	211.055'	o.k.		no	
9081		0.37	MH 8A		25+16.99	25+16.99	219.48	219.48	y		0.00'	240.00'	10"	0.0378	0.0378	4.27	8.7%	0.55	7.83	7.83	0.953'	0.417'	211.05'	0.208'	0.208'	0.07'	219.90'	0.238'	0.35'			0.295'	0.364'	220.192'	o.k.		no	
909		0.37	MH 9		26+97.96	26+97.96	226.72	226.72	y		0.00'	180.97'	10"	0.0400	0.0400	4.39	8.5%	0.55	8.06	8.06	1.008'	0.417'	220.19'	0.208'	0.208'	0.05'	227.14'	0.252'	0.46'			0.357'	0.409'	227.494'	o.k.		no	
910		0.37	MH 10		29+17.96	29+17.96	238.50	238.50	y		0.00'	220.00'	10"	0.0489	0.0535	5.08	7.3%	0.55	9.32	9.23	1.322'	0.408'	227.49'	0.208'	0.205'	0.06'	238.91'	0.330'	0.00'			0.165'	0.229'	239.074'	o.k.		no	
Orchards Crest South Trunk																																					
902	0.39	0.73	MH 2		33+51.01	-00+45.00	192.01	192.01	y	135																													
1000		0.39	Ex. MH 0		05+52.02	05+52.02	193.75	193.63	y		0.12'	597.02'	10"	0.0015	0.0027	1.14	33.9%	0.55	2.10	2.30	0.082'	0.533'	192.54'	0.208'	0.240'	0.15'	194.16'	0.020'	0.06'			0.042'	0.197'	194.206'	o.k.		no	
1005		0.28	MH 5		09+29.38	09+29.38	197.19	196.99	y		0.20'	377.36'	8"	0.0050	0.0086	1.12	24.7%	0.35	3.22	3.44	0.184'	0.393'	194.21'	0.167'	0.185'	0.17'	197.38'	0.046'	0.03'			0.039'	0.210'	197.422'	o.k.		no	
1001		0.28	MH 1A		11+46.38	11+46.38	198.12	198.05	y		0.07'	217.00'	8"	0.0050	0.0040	0.76	36.4%	0.35	2.19	2.41	0.091'	0.443'	197.63'	0.167'	0.194'	0.09'	198.49'	0.023'	0.03'			0.027'	0.119'	198.520'	o.k.		no	
1101		0.28	MH 1		12+56.38	12+56.38	198.77	198.55	y		0.22'	110.00'	8"	0.0040	0.0039	0.76	36.6%	0.35	2.17	2.40	0.089'	0.443'	198.56'	0.167'	0.194'	0.05'	198.99'	0.022'	0.03'			0.028'	0.075'	199.022'	o.k.		no	
1102		0.28	MH 2		16+47.38	16+47.38	200.56	200.46	y		0.10'	391.00'	8"	0.0040	0.0043	0.80	34.8%	0.35	2.28	2.51	0.098'	0.433'	199.20'	0.167'	0.193'	0.17'	200.89'	0.024'	0.03'			0.029'	0.197'	200.922'	o.k.		no	
1103		0.28	MH 3		19+42.38	19+42.38	201.90	201.80	y		0.10'	295.00'	8"	0.0040	0.0042	0.79	35.3%	0.35	2.25	2.48	0.095'	0.433'	200.99'	0.167'	0.193'	0.13'	202.23'	0.024'	0.03'			0.029'	0.156'	202.263'	o.k.		no	
1104		0.28	MH 4		22+18.38	22+18.38	203.26	203.11	y		0.15'	276.00'	8"	0.0040	0.0044	0.80	34.6%	0.35	2.30	2.53	0.099'	0.433'	202.33'	0.167'	0.193'	0.12'	203.54'	0.025'	0.04'			0.034'	0.152'	203.577'	o.k.		no	
1109		0.28	MH 9		25+12.38	25+12.38	204.87	204.87	y		0.00'	294.00'	8"	0.0040	0.0055	0.90	30.9%	0.35	2.57	2.80	0.122'	0.417'	203.68'	0.167'	0.190'	0.13'	205.29'	0.030'	0.00'			0.015'	0.144'	205.302'	o.k.		no	
Orchard Highlands (temp force main discharge)																																					
8100	0.76	1.68	MH 8100		04+08.00	00+00.00	201.79	201.41	y	69	0.38'																												
1211		0.76	MH 11		02+72.00	02+72.00	203.10	203.10	y		0.00'	272.00'	8"	0.0040	0.0048	0.84	90.8%	0.35	2.41	2.75	0.117'	0.533'	202.32'	0.167'	0.203'	0.82'	203.63'	0.029'	0.03'			0.032'	0.856'	203.665'	o.k.		no	
1212		0.76	MH 12		05+14.58	05+14.58	204.08	204.08	y		0.00'	242.58'	8"	0.0040	0.0040	0.77	99.1%	0.35	2.21	2.52	0.098'	0.533'	203.67'	0.167'	0.203'	0.73'	204.61'	0.025'	0.03'			0.029'	0.764'	204.643'	o.k.		no	
1213		0.76	MH 13		10+34.58	10+34.58	206.16	206.16	y		0.00'	520.00'	8"	0.0040	0.0040	0.77	99.6%	0.35	2.20	2.50	0.097'	0.533'	204.64'	0.167'	0.203'	1.58'	206.69'	0.024'	0.00'			0.012'	1.588'	206.705'	o.k.		no	
Covington South Trunk																																					
8100	0.76	1.68	MH 8100		04+08.00	00+00.00	201.90	201.41	y		0.49'																												
1301		0.36	MH 1		01+47.00	01+47.00	202.36	202.34	y		0.02'	147.00'	10"	0.0030	0.0030	1.20	30.2%	0.55	2.20	2.40	0.090'	0.521'	202.42'	0.208'	0.238'	0.03'	202.86'	0.022'	0.03'			0.026'	0.060'	202.887'	o.k		no	
1302		0.36	MH 2		05+47.00	05+47.00	203.54	203.49	y		0.05'	400.00'	10"	0.0028	0.0028	1.17	31.1%	0.55	2.14	2.33	0.085'	0.521'	202.89'	0.208'	0.238'	0.09'	204.01'	0.021'	0.03'			0.026'	0.117'	204.037'	o.k		no	
1303		0.36	MH 3		09+45.00	09+45.00	204.69	204.69	y		0.00'	398.00'	10"	0.0029	0.0029	1.18	30.7%	0.55	2.17	2.36	0.086'	0.521'	204.06'	0.208'	0.238'	0.09'	205.21'	0.022'	0.03'			0.025'	0.116'	205.236'	o.k		no	
1304		0.36	MH 4		13+45.00	13+45.00	205.84	205.81	y		0.03'	400.00'	10"	0.0028	0.0028	1.16	31.2%	0.55	2.13	2.32	0.084'	0.521'	205.24'	0.208'	0.238'	0.09'	206.33'	0.021'	0.03'			0.027'	0.118'	206.358'	o.k		no	
1305		0.36	MH 5		15+95.00	15+95.00	206.65	206.65	y		0.00'	250.00'	10"	0.0032	0.0032	1.25	29.0%	0.55	2.29	2.48	0.095'	0.513'	206.36'	0.208'	0.235'	0.06'	207.16'	0.024'	0.03'			0.027'	0.084'	207.189'	o.k		no	
1306		0.36	MH 6		18+66.00	18+66.00	207.48	207.41	y		0.07'	271.00'	10"	0.0028	0.0028	1.16	31.2%	0.55	2.13	2.32	0.084'	0.521'	207.19'	0.208'	0.238'	0.06'	207.93'	0.021'	0.03'			0.025'	0.087'	207.956'	o.k		no	
1313		0.36	MH 13		22+66.00	22+66.00	208.65	208.60	y		0.05'	400.00'	10"	0.0028	0.0028	1.16	31.2%	0.55	2.13	2.32	0.084'	0.521'	208.00'	0.208'	0.238'	0.09'	209.12'	0.021'	0.03'			0.026'	0.117'	209.146'	o.k		no	
1314		0.36	MH 14		26+66.00	26+66.00	209.86	209.81	y		0.05'	400.00'	10"	0.0029	0.0029	1.18	30.7%	0.55	2.17	2.36	0.087'	0.521'	209.17'	0.208'	0.238'	0.09'	210.33'	0.022'	0.03'			0.026'	0.117'	210.357'	o.k		no	
1315		0.36	MH 15		29+55.00	29+55.00	210.73	210.69	y	55	0.04'	289.00'	10"	0.0029	0.0029	1.18	30.8%	0.55	2.16	2.35	0.086'	0.521'	210.38'	0.208'	0.238'	0.07'	211.21'	0.021'	0.05'	0.06'		0.062'	0.128'	211.273'	o.k		no	
1316		0.36	MH 16		29+91.00	29+91.00	210.90	210.90	y		0.00'	36.00'	10"	0.0047	0.0047	1.51	24.0%	0.55	2.77	2.96	0.136'	0.492'	211.27'	0.208'	0.231'	0.01'	211.39'	0.034'	0.00'			0.017'	0.026'	211.409'	o.k		no	
Cedar 49 Trunkline																																					
101	2.48	2.76	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'																												
109		0.37	MH 9		03+88.00	03+88.00	181.59	181.39	y	90	0.20'	388.00'	12"	0.0027	0.0053	2.60	14.4%	0.79	3.31	3.39	0.178'	0.535'	179.88'	0.250'	0.260'	0.04'	181.93'	0.045'	0.06'	0.11'		0.109'	0.149'	182.034'	o.k		no	
110		0.37	MH 10		06+26.00	06+26.00	182.97	182.77	y		0.20'	238.00'	12"	0.0050	0.0050	2.52	14.8%	0.79	3.20	3.28	0.167'	0.535'	182.13'	0.250'	0.260'	0.02'	183.31'	0.042'	0.03'			0.038'	0.062'	183.343'	o.k		no	
111		0.37	MH 11		08+57.00	08+57.00	183.80	183.60	y	90	0.20'	231.00'	12"	0.0027	0.0027	1.87	20.0%	0.79	2.38	2.48	0.096'	0.555'	183.53'	0.250'	0.268'	0.02'	184.16'	0.024'	0.03'	0.06'		0.059'	0.082'	184.214'	o.k		no	
112		0.37	MH 12		12+34.00	12+34.00	185.02	184.82	y		0.20'	377.00'	12"	0.0027	0.0027	1.86	20.1%	0.79	2.37	2.48	0.096'	0.570'	184.37'	0.250'	0.270'	0.04'	185.39'	0.024'	0.26'			0.144'	0.181'	185.534'	o.k		no	
113		0.37	MH 13		16+01.00	16+01.00	194.06	193.83	y		0.23'	367.00'	12"	0.0240	0.0240	5.53	6.7%	0.79	7.05	6.98	0.756'	0.490'	185.53'	0.250'	0.246'	0.04'	194.32'	0.189'	0.03'			0.111'	0.152'	194.431'	o.k		no	
114		0.37	MH 14		18+66.00	18+66.00	194.98	194.78	y		0.20'	265.00'	12"	0.0027	0.0027	1.86	20.0%	0.79	2.37	2.49	0.096'	0.570'	194.63'	0.250'	0.270'	0.03'	195.35'	0.024'	0.03'			0.029'	0.055'	195.379'	o.k		no	
115		0.37	MH 15		22+66.00	22+66.00	196.26	196.06	y		0.20'	400.00'	12"	0.0027	0.0027	1.86	20.1%	0.79	2.36	2.48	0.096'	0.570'	195.55'	0.250'	0.270'	0.04'	196.63'	0.024'	0.00'			0.012'	0.051'	196.642'	o.k		no	

Mapping Point Data on Orchards Interceptor											Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		3.94	Exist. P.S.		-00+34.00	-00+34.00	178.80		y																											
101	3.58	3.94	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'	34.00'	30"	0.0100	0.0100	41.13	9.6%	4.91	8.38	8.38	1.090'	1.250'	91.83'	0.625'	0.625'	0.00'	180.39'	0.272'	0.03'	0.70'	1.457'	1.228'	1.231'	181.618'	o.k.		no	
102		3.58	MH 2		02+29.00	02+29.00	179.62	179.52	y		0.10'	229.00'	24"	0.0008	0.0008	6.36	56.3%	3.14	2.02	2.31	0.083'	1.600'	181.62'	0.500'	0.610'	0.04'	181.66'	0.021'	0.03'			0.025'	0.069'	181.687'	CRITICAL		no	0.1
103		3.58	MH 3		04+76.00	04+76.00	179.92	179.82	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	55.5%	3.14	2.05	2.34	0.085'	1.570'	181.69'	0.500'	0.608'	0.05'	181.73'	0.021'	0.03'			0.026'	0.073'	181.760'	o.k.		no	
104		3.58	MH 4		07+23.00	07+23.00	180.22	180.12	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	55.5%	3.14	2.05	2.34	0.085'	1.570'	181.76'	0.500'	0.608'	0.05'	181.81'	0.021'	0.03'			0.025'	0.073'	181.833'	o.k.		no	
105	0.29	3.58	MH 5		08+85.00	08+85.00	180.55	180.35	y	90	0.20'	162.00'	24"	0.0008	0.0008	6.43	55.7%	3.14	2.05	2.33	0.084'	1.570'	181.83'	0.500'	0.608'	0.03'	181.92'	0.021'	0.03'	0.05'	0.006'	0.055'	0.086'	181.975'	o.k.		no	
106		3.38	MH 6		11+95.00	11+95.00	181.20	180.80	y		0.40'	310.00'	24"	0.0008	0.0008	6.44	52.5%	3.14	2.05	2.33	0.084'	1.530'	182.08'	0.500'	0.605'	0.05'	182.33'	0.021'	0.77'			0.395'	0.448'	182.725'	o.k.		no	
107		3.38	MH 7		13+61.00	13+61.00	187.57	187.37	y		0.20'	166.00'	18"	0.0372	0.0372	20.31	16.7%	1.77	11.49	11.89	2.196'	0.818'	182.72'	0.375'	0.396'	0.16'	188.19'	0.549'	0.04'			0.296'	0.455'	188.483'	o.k.		no	
108		3.38	MH 8		16+15.00	16+15.00	188.20	188.00	y		0.20'	254.00'	18"	0.0017	0.0017	4.33	78.1%	1.77	2.45	2.80	0.121'	1.200'	188.77'	0.375'	0.458'	0.20'	189.20'	0.030'	0.04'			0.037'	0.237'	189.237'	o.k.		no	
211	2.18	3.38	MH 11		19+32.00	00+00.00	192.01	188.74	y		3.27'	317.00'	18"	0.0017	0.0017	4.35	77.9%	1.77	2.46	2.80	0.122'	1.200'	189.40'	0.375'	0.458'	0.25'	189.94'	0.031'	0.08'		0.095'	0.101'	0.352'	190.041'	o.k.		no	
210		2.18	MH 10		01+50.00	01+50.00	192.70	192.50	y		0.20'	150.00'	18"	0.0032	0.0033	6.02	36.2%	1.77	3.41	3.76	0.220'	0.998'	193.01'	0.375'	0.437'	0.05'	193.50'	0.055'	0.08'			0.067'	0.120'	193.565'	o.k.		no	
209		2.18	MH 9		05+24.00	05+24.00	194.10	193.98	y		0.12'	374.00'	18"	0.0034	0.0034	6.16	35.3%	1.77	3.49	3.84	0.228'	0.975'	193.68'	0.375'	0.433'	0.13'	194.96'	0.057'	0.08'			0.066'	0.198'	195.021'	o.k.		no	
208		2.18	MH 8		08+69.00	08+69.00	195.40	195.20	y		0.20'	345.00'	18"	0.0032	0.0032	5.95	36.6%	1.77	3.37	3.72	0.215'	0.998'	155.10'	0.375'	0.437'	0.12'	196.20'	0.054'	0.07'			0.060'	0.180'	196.257'	o.k.		no	
207		2.18	MH 7		10+82.00	10+82.00	196.19	195.99	y		0.20'	213.00'	18"	0.0028	0.0028	5.54	39.3%	1.77	3.14	3.48	0.188'	1.013'	196.41'	0.375'	0.441'	0.07'	197.00'	0.047'	0.07'			0.058'	0.131'	197.061'	o.k.		no	
206		2.18	MH 6		11+99.00	11+99.00	196.73	196.53	y		0.20'	117.00'	18"	0.0028	0.0029	5.68	38.4%	1.77	3.21	3.57	0.197'	1.013'	197.20'	0.375'	0.441'	0.04'	197.54'	0.049'	0.07'			0.057'	0.098'	197.600'	o.k.		no	
205		2.18	MH 5		15+00.00	15+00.00	197.76	197.56	y		0.20'	301.00'	18"	0.0028	0.0028	5.53	39.4%	1.77	3.13	3.47	0.187'	1.013'	197.74'	0.375'	0.441'	0.10'	198.57'	0.047'	0.07'			0.057'	0.160'	198.629'	o.k.		no	
204		2.18	MH 4		16+46.00	16+46.00	198.37	198.17	y		0.20'	146.00'	18"	0.0028	0.0028	5.58	39.0%	1.77	3.16	3.51	0.191'	1.013'	198.77'	0.375'	0.441'	0.05'	199.18'	0.048'	0.07'			0.057'	0.107'	199.240'	o.k.		no	
203		2.18	MH 3		18+00.00	18+00.00	199.00	198.80	y		0.20'	154.00'	18"	0.0028	0.0028	5.57	39.1%	1.77	3.15	3.50	0.190'	1.013'	199.38'	0.375'	0.441'	0.05'	199.81'	0.047'	0.07'			0.057'	0.110'	199.870'	o.k.		no	
202		2.18	MH 2		20+13.00	20+13.00	199.80	199.60	y		0.20'	213.00'	18"	0.0028	0.0028	5.59	39.0%	1.77	3.16	3.51	0.191'	1.013'	200.01'	0.375'	0.441'	0.07'	200.61'	0.048'	0.07'			0.057'	0.130'	200.670'	o.k.		no	
201		2.18	MH 1		22+24.00	00+00.00	200.39	200.39	y		0.00'	211.00'	18"	0.0028	0.0028	5.57	39.1%	1.77	3.15	3.50	0.190'	1.013'	200.81'	0.375'	0.441'	0.07'	201.40'	0.048'	0.06'			0.054'	0.126'	201.456'	o.k.		no	
8100	1.07	2.18	MH 8100		04+08.00	04+08.00	201.44	201.41	y		0.03'	408.00'	18"	0.0028	0.0025	5.27	41.4%	1.77	2.98	3.32	0.171'	1.035'	201.46'	0.375'	0.443'	0.14'	202.45'	0.043'	0.05'		0.093'	0.091'	0.231'	202.536'	o.k.		no	
8000		0.90	MH 8000		09+62.23	09+62.23	203.02	202.70	y	85	0.32'	554.23'	18"	0.0024	0.0023	5.02	17.9%	1.77	2.84	2.94	0.134'	0.818'	202.54'	0.375'	0.396'	0.04'	203.52'	0.034'	0.05'	0.09'		0.085'	0.122'	203.602'	o.k.		no	
7900		0.90	MH 7900		12+44.63	12+44.63	203.80	203.70	y		0.10'	282.40'	18"	0.0024	0.0024	5.17	17.4%	1.77	2.92	3.03	0.142'	0.818'	203.84'	0.375'	0.396'	0.02'	204.52'	0.036'	0.05'			0.043'	0.062'	204.560'	o.k.		no	
7800		0.90	MH 7800		15+27.03	15+27.03	204.58	204.48	y	90	0.10'	282.40'	18"	0.0024	0.0024	5.17	17.4%	1.77	2.92	3.03	0.142'	0.818'	204.62'	0.375'	0.396'	0.02'	205.30'	0.036'	0.05'	0.09'		0.088'	0.107'	205.386'	o.k.		no	
7700		0.90	MH 7700		16+68.33	16+68.33	205.02	204.92	y	86	0.10'	141.30'	18"	0.0024	0.0024	5.17	17.4%	1.77	2.92	3.03	0.142'	0.818'	205.40'	0.375'	0.396'	0.01'	205.74'	0.036'	0.05'	0.09'		0.089'	0.098'	205.826'	o.k.		no	
7600		0.90	MH 7600		18+18.83	18+18.83	205.49	205.39	y	88	0.10'	150.50'	18"	0.0024	0.0025	5.22	17.3%	1.77	2.96	3.06	0.145'	0.818'	205.84'	0.375'	0.396'	0.01'	206.21'	0.036'	0.04'	0.09'		0.087'	0.097'	206.294'	o.k.		no	
7400		0.90	MH 7400		21+59.99	21+59.99	206.30	206.20	y		0.10'	341.16'	18"	0.0024	0.0021	4.80	18.8%	1.77	2.72	2.84	0.125'	0.833'	206.32'	0.375'	0.401'	0.02'	207.03'	0.031'	0.05'			0.040'	0.063'	207.073'	o.k.		no	
7300		0.90	MH 7300		24+39.19	24+39.19	207.07	206.97	y		0.10'	279.20'	18"	0.0024	0.0024	5.16	17.5%	1.77	2.92	3.02	0.142'	0.818'	207.12'	0.375'	0.396'	0.02'	207.79'	0.035'	0.05'			0.043'	0.062'	207.830'	o.k.		no	
7200		0.90	MH 7200		26+32.19	26+32.19	207.64	207.54	y		0.10'	193.00'	18"	0.0024	0.0024	5.20	17.3%	1.77	2.94	3.04	0.144'	0.818'	207.89'	0.375'	0.396'	0.01'	208.36'	0.036'	0.05'			0.044'	0.058'	208.402'	o.k.		no	
7100		0.90	MH 7100		26+75.19	26+75.19	207.85	207.75	y		0.10'	43.00'	18"	0.0024	0.0026	5.33	16.9%	1.77	3.01	3.12	0.151'	0.818'	208.46'	0.375'	0.396'	0.00'	208.57'	0.038'	0.06'			0.047'	0.050'	208.614'	o.k.		no	
7000		0.90	MH 7000		29+40.19	29+40.19	208.91	208.56	y		0.35'	265.00'	18"	0.0024	0.0027	5.45	16.5%	1.77	3.08	3.19	0.158'	0.818'	208.67'	0.375'	0.396'	0.02'	209.38'	0.040'	0.17'			0.106'	0.124'	209.483'	o.k.		no	
301		0.90	MH 1		32+51.19	32+51.19	212.08	211.68	y		0.40'	311.00'	18"	0.0090	0.0089	9.94	9.1%	1.77	5.62	5.62	0.491'	0.750'	209.66'	0.375'	0.375'	0.02'	212.43'	0.123'	0.17'			0.147'	0.170'	212.577'	o.k.		no	
302		0.90	MH 2		35+63.19	35+63.19	218.10	214.85	y		3.25'	312.00'	18"	0.0090	0.0089	9.92	9.1%	1.77	5.62	5.62	0.490'	0.750'	212.83'	0.375'	0.375'	0.02'	215.60'	0.122'	0.14'			0.132'	0.155'	215.732'	o.k.		no	
303	0.46	0.90	MH 3		39+68.62	39+68.62	221.80	221.08	y	63	0.72'	405.43'	18"	0.0072	0.0074	9.03	10.0%	1.77	5.11	5.11	0.405'	0.750'	218.85'	0.375'	0.375'	0.03'	221.83'	0.101'	0.28'	0.26'	0.229'	0.437'	0.466'	222.267'	o.k.		no	
304		0.44	MH 4		40+20.62	40+20.62	223.44	223.44	y	67	0.00'	52.00'	10"	0.0342	0.0315	3.90	11.4%	0.55	7.15	7.22	0.810'	0.425'	222.27'	0.208'	0.211'	0.02'	223.87'	0.203'	0.06'	0.52'		0.388'	0.409'	224.253'	o.k.		no	
401		0.44	MH 1		42+15.62	00+07.00	224.50	224.50	y	37	0.00'	195.00'	10"	0.0054	0.0054	1.62	27.4%	0.55	2.97	3.19	0.158'	0.504'	224.25'	0.208'	0.233'	0.07'	225.00'	0.040'	0.12'	0.10'		0.128'	0.196'	225.132'	o.k.		no	
402		0.44	MH 2		05+17.00	05+17.00	230.73	230.63	y		0.10'	510.00'	10"	0.0120	0.0120	2.41	18.4%	0.55	4.42	4.61	0.331'	0.463'	225.13'	0.208'	0.223'	0.19'	231.09'	0.083'	0.05'			0.067'	0.256'	231.160'	o.k.		no	
403		0.44	MH 3		09+05.00	09+05.00	232.77	232.67	y		0.10'	388.00'	10"	0.0050	0.0050	1.55	28.6%	0.55	2.85	3.08	0.147'	0.513'	231.24'	0.208'	0.235'	0.13'	233.18'	0.037'	0.05'			0.044'	0.178'	233.227'	o.k.		no	
404		0.44	MH 4		10+99.00	10+99.00	234.00	233.74	y		0.26'	194.00'	10"	0.0050	0.0050	1.55	28.6%	0.55	2.85	3.08	0.147'	0.513'	233.28'	0.208'	0.235'	0.07'	234.25'	0.037'	0.05'			0.044'	0.111'	234.296'	o.k.		no	
405		0.44	MH 5		13+72.00	13+72.00	235.50	235.36	y		0.14'	273.00'	10"	0.0050	0.0050	1.55	28.6%	0.55	2.84	3.07	0.146'	0.513'	234.51'	0.208'	0.235'	0.09'	235.87'	0.037'	0.06'			0.049'	0.143'	235.921'	o.k.		no	
501		0.44	MH 1		14+97.00	14+97.00	236.25	236.25	y		0.00'	125.00'	10"	0.0060	0.0060	1.70	26.1%	0.55	3.12	3.35	0.175'	0.504'	236.00'	0.208'	0.233'	0.04'	236.75'	0.044'	0.00'			0.022'	0.066'	236.776'	o.k.		no	
Silver Star Estates / NE 86th Street Trunk																																				
211	2.18	3.38	MH 11		19+32.00	00+00.00	189.84	188.74	y																											
601		1.46	MH 1		02+50.00	02+50.00	190.53	190.53	y		0.00'	250.00'	15"	0.0260	0.0028	3.40	42.8%	1.23	2.77	3.11	0.150'	0.875'	190.72'	0.313'	0.370'	0.10'	191.41'	0.037'	0.05'			0.044'	0.144'	191.449'	o.k.		no	
602		1.46	MH 2		05+00.00	05+00.00	191.26	191.19	y		0.07'	250.00'	15"	0.0230	0.0026	3.33	43.7%	1.23	2.71	3.04	0.143'	0.875'	191.45'	0.313'	0.370'	0.10'	192.07'	0.036'	0.05'			0.042'	0.142'	192.107'	o.k.		no	
603	1.34	1.46	MH 3		09+39.00	-01+54.00	192.45	192.37	y		0.08'	439.00'	15"	0.0250	0.0025	3.26	44.7%	1.23	2.65	2.99	0.138'	0.894'	192.15'	0.313'	0.372'	0.18'	193.26'	0.035'	0.05'		0.189'	0.138'	0.313'	193.401'	o.k.		no	
700		1.34	MH 0		00+00.00	00+00.00	192.93	192.88	y		0.05'	154.00'	15"	0.0028	0.0028	3.42	39.1%	1.23	2.79	3.10	0.149'	0.844'	193.40'	0.313'	0.367'	0.05'	193.72'	0.037'	0.03'			0.033'	0.086'	193.757'	o.k.		no	
701		1.34	MH 1		03+70.00	03+70.00	193.69	193.49	y		0.20'	370.00'	15"	0.0015	0.0015	2.52	53.1%	1.23	2.05	2.33	0.084'	0.956'	193.89'	0.313'	0.378'	0.12'	194.45'	0.021'	0.03'			0.025'	0.147'	194.472'	o.k.		no	
702		1.34	MH 2		07+41.00	07+41.00	194.45	194.25	y		0.20'	371.00'	15"	0.0500	0.0015	2.52	53.2%	1.23	2.05	2.33	0.084'	0.956'	194.65'	0.313'	0.378'	0.12'	195.21'	0.021'	0.76'			0.389'	0.511'	195.595'	o.k.		no	
703		1.34	MH 3		10+74.00	10+74.00	211.29	211.09	y		0.20'	333.00'	15"	0.0500	0.0500	14.48	9.2%	1.23	11.80	11.80	2.161'	0.625'	195.60'	0.313'	0.313'	0.14'	211.72'	0.540'	0.03'			0.285'	0.426'	212.000'	o.k.		no	
704		1.34	MH 4		13+69.00	13+69.00	211.93	211.73	y		0.20'	295.00'	15"	0.0015	0.0015	2.50	53.5%	1.23	2.04	2.31	0.083'	0.956'	212.25'	0.313'	0.378'	0.10'	212.69'	0.021'	0.03'			0.025'	0.122'	212.711'	o.k.		no	
705		1.34	MH 5		16+04.00	16+04.00	212.48	212.28	y		0.20'	235.00'	15"	0.0015	0.0015	2.50	53.5%	1.23	2.04	2.31	0.083'	0.956'	212.89'	0.313'	0.378'	0.08'	213.24'	0.021'	0.03'			0.025'	0.103'	213.261'	o.k.		no	
706		1.34	MH 6		18+35.00	18+35.00	213.03	212.83	y		0.20'	231.00'	15"	0.0015	0.0015	2.52	53.1%	1.23	2.05	2.33	0.084'	0.956'	213.44'	0.313'	0.378'	0.08'	213.79'	0.021'	0.03'			0.025'	0.101'	213.811'	o.k.		no	
707		1.34	MH 7		21+55.00	21+55.00	213.51	213.51	y		0.00'	320.00'	15"	0.0015	0.0015	2.51	53.3%	1.23	2.04	2.32	0.084'	0.956'	213.99'	0.313'	0.378'	0.11'	214.47'	0.021'	0.00'			0.010'	0.116'	214.477'	o.k.		no	
Silver Star Estates P.S. / Orchards Interceptor - Phase II / Orchard Crest North Trunk																																				
800		0.15	Ex. P.S.		00+00.00	00+00.00	185.67	185.67	y																											
801		0.15	MH 1		00+48.00	00+48.00	185.84	185.74	y		0.10'	48.00'	15"	0.0015	0.0015	2.47	6.1%	1.23	2.02	2.00	0.062'	0.613'	186.28'	0.313'	0.308'	0.00'	186.35'	0.015'	0.01'			0.011'	0.012'	186.364'	o.k.		no	
802		0.15	MH 2		02+98.00	02+98.00	186.02	185.96	y		0.06'	250.00'	15"	0.0015	0.0005	1.42	10.6%	1.23	1.16	1.17	0.021'	0.638'	186.48'	0.313'	0.317'	0.00'	186.60'	0.005'	0.02'			0.013'	0.015'	186.611'	o.k.		no	
803		0.15	MH 3		04+79.00	04+79.00	186.35	186.29	y	95	0.06'	181.00'	15"	0.0015	0.0015	2.50	6.0%	1.23	2.04	2.00	0.062'	0.594'	186.61'	0.313'	0.303'	0.00'	186.88'	0.015'	0.02'	0.04'		0.037'	0.038'	186.921'	o.k.		no	
804		0.15	MH 4		06+89.00	06+89.00	186.67	186.62	y		0.05'	210.00'	15"	0.0013	0.0013	2.32	6.5%	1.23	1.89	1.87	0.055'	0.613'	186.96'	0.313'	0.308'	0.00'	187.23'	0.014'	0.02'			0.017'	0.018'	187.250'	o.k.		no	
805		0.15	MH 5		10+65.00	10+65.00	187.24	187.20	y	64	0.04'	376.00'	15"	0.0015	0.0014	2.43	6.2%	1.23	1.98	1.96	0.060'	0.613'	187.28'	0.313'	0.308'	0.00'	187.81'	0.015'	0.02'	0.04'		0.036'	0.038'	187.849'	o.k.		no	
806		0.15	MH 6		12+27.00	12+27.00	187.55	187.45	y		0.10'	162.00'	15"	0.0015	0.0013	2.33	6.4%	1.23	1.90	1.88	0.055'	0.613'	187.85'	0.313'	0.308'	0.00'	188.06'	0.014'	0.04'			0.026'	0.027'	188.088'	o.k.		no	
807		0.15	MH 7		14+51.00	14+51.00	188.20	188.13	y	80	0.07'	224.00'	15"	0.0026	0.0026	3.30	4.5%	1.23	2.69	2.63	0.108'	0.594'	188.14'	0.313'	0.303'	0.00'	188.72'	0.027'	0.04'	0.07'		0.066'	0.068'	188.790'	o.k.		no	
808		0.15	MH 8		15+92.00	15+92.00	188.76	188.56	y	90	0.20'	141.00'	15"	0.0026	0.0026	3.27	4.6%	1.23	2.67	2.61	0.106'	0.594'	188.79'	0.313'	0.303'	0.00'	189.15'	0.027'	0.03'	0.07'		0.062'	0.063'	189.216'	o.k.		no	
809		0.15	MH 9		16+50.96	16+50.96	189.06	188.88	y	95	0.18'	58.96'	15"	0.0019	0.0020	2.92	5.1%	1.23	2.38	2.33	0.085'	0.594'	189.35'	0.313'	0.303'	0.00'	189.47'	0.021'	0.02'	0.05'		0.048'	0.049'	189.522'	o.k.		no	
810		0.15	MH 10		17+84.90	17+84.90	189.34	189.26	y	86	0.08'	133.94'	15"	0.0015	0.0015	2.50	6.0%	1.23	2.04	2.00	0.062'	0.594'	189.65'	0.313'	0.303'	0.00'	189.85'	0.016'	0.02'	0.04'		0.038'	0.038'	189.891'	o.k.		no	
811		0.15	MH 11		21+51.01	21+51.01	189.84	189.84	y	20	0.00'	366.11'	15"	0.0014	0.0014	2.39	6.3%	1.23	1.95	1.93	0.058'	0.613'	189.95'	0.313'	0.308'	0.00'	190.45'	0.014'	0.03'	0.04'		0.040'	0.042'	190.492'	o.k.		no	
812		1.03	Fut. MH 12		23+01.01	23+01.01	190.17	190.07	y		0.10'	150.00'	15"	0.0015	0.0015	2.51	41.1%	1.23	2.04	2.28	0.081'	0.863'	190.70'	0.313'	0.369'	0.03'	190.93'	0.020'	0.03'			0.024'	0.055'	190.957'	o.k.		no	
813		1.03	Fut. MH 13		26+51.01	26+51.01	190.80	190.70	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	41.1%	1.23	2.04	2.28	0.081'	0.863'	191.03'	0.313'	0.369'	0.07'	191.56'	0.020'	0.03'			0.024'	0.095'	191.587'	o.k.		no	
814		1.03	Fut. MH 14		30+01.01	30+01.01	191.32	191.22	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	41.1%	1.23	2.04	2.28	0.081'	0.863'	191.66'	0.313'	0.369'	0.07'	192.08'	0.020'	0.04'			0.028'	0.099'	192.111'	o.k.		no	
902	0.60	1.03	MH 2		33+51.01	00+46.67	199.38	192.01	y	45	7.37'	350.00'	15"	0.0015	0.0020	2.88	35.8%	1.23	2.34	2.58	0.103'	0.813'	192.13'	0.313'	0.361'	0.07'	192.82'	0.026'	0.04'	0.07'	0.071'	0.103'	0.176'	192.926'	o.k.		no	
903		0.60	MH 3		05+02.69	05+02.69	201.20	201.20	y	90	0.00'	456.02'	10"	0.0040	0.0040	1.39	43.5%	0.55	2.54	2.85	0.126'	0.583'	199.96'	0.208'	0.247'	0.27'	201.78'	0.032'	0.05'	0.08'		0.082'	0.356'	201.866'	o.k.		no	

Mapping Point Data on Orchards Interceptor												Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
904		0.60	MH 4		09+72.69	09+72.69	203.48	203.48	y		0.00'	470.00'	10"	0.0040	0.0049	1.53	39.5%	0.55	2.81	3.11	0.151'	0.563'	201.87'	0.208'	0.245'	0.29'	204.04'	0.038'	0.04'			0.041'	0.326'	204.083'	o.k.		no	
905		0.60	MH 5		10+88.17	10+88.17	203.94	203.94	y		0.00'	115.48'	10"	0.0040	0.0040	1.39	43.6%	0.55	2.54	2.85	0.126'	0.583'	204.08'	0.208'	0.247'	0.07'	204.52'	0.031'	0.04'			0.038'	0.107'	204.561'	o.k.		no	
906		0.60	MH 6		15+53.06	15+53.06	205.90	205.80	y	90	0.10'	464.89'	10"	0.0040	0.0040	1.39	43.5%	0.55	2.55	2.85	0.126'	0.583'	204.56'	0.208'	0.247'	0.28'	206.38'	0.032'	0.04'	0.08'		0.078'	0.357'	206.462'	o.k.		no	
907		0.60	MH 7		20+36.99	20+36.99	208.00	207.83	y	90	0.17'	483.93'	10"	0.0040	0.0040	1.39	43.6%	0.55	2.54	2.85	0.126'	0.583'	205.48'	0.208'	0.247'	0.29'	208.41'	0.032'	0.10'	0.08'		0.107'	0.398'	208.520'	o.k.		no	
908		0.60	MH 8		22+76.99	22+76.99	210.40	210.40	y		0.00'	240.00'	10"	0.0100	0.0100	2.20	27.5%	0.55	4.03	4.33	0.291'	0.504'	208.52'	0.208'	0.233'	0.16'	210.90'	0.073'	0.35'			0.212'	0.367'	211.116'	o.k.		no	
9081		0.60	MH 8A		25+16.99	25+16.99	219.48	219.48	y		0.00'	240.00'	10"	0.0378	0.0378	4.27	14.1%	0.55	7.83	8.03	1.001'	0.446'	211.12'	0.208'	0.217'	0.17'	219.93'	0.250'	0.37'			0.309'	0.480'	220.234'	o.k.		no	
909		0.60	MH 9		26+97.96	26+97.96	226.72	226.72	y		0.00'	180.97'	10"	0.0400	0.0400	4.39	13.8%	0.55	8.06	8.22	1.049'	0.438'	220.23'	0.208'	0.215'	0.13'	227.16'	0.262'	0.48'			0.372'	0.503'	227.529'	o.k.		no	
910		0.60	MH 10		29+17.96	29+17.96	238.50	238.50	y		0.00'	220.00'	10"	0.0489	0.0535	5.08	11.9%	0.55	9.32	9.41	1.376'	0.425'	227.53'	0.208'	0.211'	0.16'	238.93'	0.344'	0.00'			0.172'	0.334'	239.097'	o.k.		no	
Orchards Crest South Trunk																																					
902	0.60	1.03	MH 2		33+51.01	-00+45.00	192.01	192.01	y	135																													
1000		0.48	Ex. MH 0		05+52.02	05+52.02	193.75	193.63	y		0.12'	597.02'	10"	0.0015	0.0027	1.14	41.9%	0.55	2.10	2.34	0.085'	0.575'	192.59'	0.208'	0.246'	0.23'	194.21'	0.021'	0.07'			0.044'	0.271'	194.249'	o.k.		no	
1005		0.34	MH 5		09+29.38	09+29.38	197.19	196.99	y		0.20'	377.36'	8"	0.0050	0.0086	1.12	30.5%	0.35	3.22	3.51	0.191'	0.417'	194.25'	0.167'	0.190'	0.25'	197.41'	0.048'	0.03'			0.040'	0.292'	197.447'	o.k.		no	
1001		0.34	MH 1A		11+46.38	11+46.38	198.12	198.05	y		0.07'	217.00'	8"	0.0050	0.0040	0.76	44.9%	0.35	2.19	2.46	0.094'	0.477'	197.67'	0.167'	0.198'	0.14'	198.53'	0.023'	0.03'			0.028'	0.165'	198.555'	o.k.		no	
1101		0.34	MH 1		12+56.38	12+56.38	198.77	198.55	y		0.22'	110.00'	8"	0.0040	0.0039	0.76	45.2%	0.35	2.17	2.44	0.093'	0.477'	198.60'	0.167'	0.198'	0.07'	199.03'	0.023'	0.04'			0.029'	0.099'	199.056'	o.k.		no	
1102		0.34	MH 2		16+47.38	16+47.38	200.56	200.46	y		0.10'	391.00'	8"	0.0040	0.0043	0.80	43.0%	0.35	2.28	2.56	0.101'	0.467'	199.24'	0.167'	0.198'	0.25'	200.93'	0.025'	0.03'			0.030'	0.278'	200.957'	o.k.		no	
1103		0.34	MH 3		19+42.38	19+42.38	201.90	201.80	y		0.10'	295.00'	8"	0.0040	0.0042	0.79	43.6%	0.35	2.25	2.52	0.099'	0.467'	201.03'	0.167'	0.198'	0.19'	202.27'	0.025'	0.04'			0.030'	0.217'	202.297'	o.k.		no	
1104		0.34	MH 4		22+18.38	22+18.38	203.26	203.11	y		0.15'	276.00'	8"	0.0040	0.0044	0.80	42.7%	0.35	2.30	2.57	0.103'	0.467'	202.37'	0.167'	0.198'	0.18'	203.58'	0.026'	0.04'			0.035'	0.210'	203.612'	o.k.		no	
1109		0.34	MH 9		25+12.38	25+12.38	204.87	204.87	y		0.00'	294.00'	8"	0.0040	0.0055	0.90	38.2%	0.35	2.57	2.85	0.126'	0.450'	203.71'	0.167'	0.196'	0.19'	205.32'	0.032'	0.00'			0.016'	0.204'	205.336'	o.k.		no	
Orchard Highlands (temp force main discharge)																																					
8100	1.07	2.18	MH 8100		04+08.00	00+00.00	201.79	201.41	y	69	0.38'																											
1211		1.07	MH 11		02+72.00	02+72.00	203.10	203.10	y		0.00'	272.00'	8"	0.0040	0.0048	0.84	127.7%	0.35	2.41	2.67	0.111'	0.620'	202.41'	0.167'	0.195'	1.72'	204.13'	0.028'	0.03'			0.030'	1.753'	204.163'	CRITICAL		Yes by 0.23 cfs	0.4
1212		1.07	MH 12		05+14.58	05+14.58	204.08	204.08	y		0.00'	242.58'	8"	0.0040	0.0040	0.77	139.4%	0.35	2.21	2.45	0.093'	0.620'	204.16'	0.167'	0.195'	1.54'	205.70'	0.023'	0.03'			0.028'	1.564'	205.728'	CRITICAL		Yes by 0.30 cfs	1.0
1213		1.07	MH 13		10+34.58	10+34.58	206.16	206.16	y		0.00'	520.00'	8"	0.0040	0.0040	0.77	140.1%	0.35	2.20	2.44	0.092'	0.620'	205.73'	0.167'	0.195'	3.29'	209.02'	0.023'	0.00'			0.012'	3.306'	209.033'	CRITICAL		Yes by 0.31 cfs	2.2
Covington South Trunk																																					
8100	1.07	2.18	MH 8100		04+08.00	00+00.00	201.90	201.41	y		0.49'																											
1301		0.43	MH 1		01+47.00	01+47.00	202.36	202.34	y		0.02'	147.00'	10"	0.0030	0.0030	1.20	35.8%	0.55	2.20	2.42	0.091'	0.542'	202.44'	0.208'	0.241'	0.05'	202.88'	0.023'	0.03'			0.027'	0.073'	202.908'	o.k.		no	
1302		0.43	MH 2		05+47.00	05+47.00	203.54	203.49	y		0.05'	400.00'	10"	0.0028	0.0028	1.17	36.9%	0.55	2.14	2.37	0.087'	0.554'	202.91'	0.208'	0.243'	0.12'	204.04'	0.022'	0.03'			0.026'	0.151'	204.071'	o.k.		no	
1303		0.43	MH 3		09+45.00	09+45.00	204.69	204.69	y		0.00'	398.00'	10"	0.0029	0.0029	1.18	36.4%	0.55	2.17	2.39	0.089'	0.554'	204.09'	0.208'	0.243'	0.12'	205.24'	0.022'	0.03'			0.026'	0.150'	205.270'	o.k.		no	
1304		0.43	MH 4		13+45.00	13+45.00	205.84	205.81	y		0.03'	400.00'	10"	0.0028	0.0028	1.16	37.0%	0.55	2.13	2.36	0.086'	0.554'	205.27'	0.208'	0.243'	0.12'	206.36'	0.022'	0.03'			0.028'	0.153'	206.392'	o.k.		no	
1305		0.43	MH 5		15+95.00	15+95.00	206.65	206.65	y		0.00'	250.00'	10"	0.0032	0.0032	1.25	34.4%	0.55	2.29	2.52	0.099'	0.542'	206.39'	0.208'	0.241'	0.08'	207.19'	0.025'	0.03'			0.027'	0.106'	207.219'	o.k.		no	
1306		0.43	MH 6		18+66.00	18+66.00	207.48	207.41	y		0.07'	271.00'	10"	0.0028	0.0028	1.16	37.0%	0.55	2.13	2.36	0.086'	0.554'	207.22'	0.208'	0.243'	0.08'	207.96'	0.022'	0.03'			0.026'	0.110'	207.990'	o.k.		no	
1313		0.43	MH 13		22+66.00	22+66.00	208.65	208.60	y		0.05'	400.00'	10"	0.0028	0.0028	1.16	37.0%	0.55	2.13	2.36	0.086'	0.554'	208.03'	0.208'	0.243'	0.12'	209.15'	0.022'	0.03'			0.026'	0.151'	209.181'	o.k.		no	
1314		0.43	MH 14		26+66.00	26+66.00	209.86	209.81	y		0.05'	400.00'	10"	0.0029	0.0029	1.18	36.4%	0.55	2.17	2.40	0.089'	0.554'	209.20'	0.208'	0.243'	0.12'	210.36'	0.022'	0.03'			0.027'	0.151'	210.391'	o.k.		no	
1315		0.43	MH 15		29+55.00	29+55.00	210.73	210.69	y	55	0.04'	289.00'	10"	0.0029	0.0029	1.18	36.6%	0.55	2.16	2.39	0.088'	0.554'	210.41'	0.208'	0.243'	0.09'	211.24'	0.022'	0.05'	0.06'		0.064'	0.154'	211.308'	o.k.		no	
1316		0.43	MH 16		29+91.00	29+91.00	210.90	210.90	y		0.00'	36.00'	10"	0.0047	0.0047	1.51	28.5%	0.55	2.77	2.99	0.139'	0.513'	211.31'	0.208'	0.235'	0.01'	211.41'	0.035'	0.00'			0.017'	0.029'	211.430'	o.k.		no	
Cedar 49 Trunkline																																					
101	3.58	3.94	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'																											
109		0.50	MH 9		03+88.00	03+88.00	181.59	181.39	y	90	0.20'	388.00'	12"	0.0027	0.0053	2.60	19.4%	0.79	3.31	3.45	0.185'	0.555'	179.90'	0.250'	0.268'	0.07'	181.95'	0.046'	0.06'	0.12'		0.113'	0.183'	182.058'	o.k.		no	
110		0.50	MH 10		06+26.00	06+26.00	182.97	182.77	y		0.20'	238.00'	12"	0.0050	0.0050	2.52	20.0%	0.79	3.20	3.36	0.176'	0.570'	182.16'	0.250'	0.270'	0.04'	183.34'	0.044'	0.04'			0.040'	0.082'	183.380'	o.k.		no	
111		0.50	MH 11		08+57.00	08+57.00	183.80	183.60	y	90	0.20'	231.00'	12"	0.0027	0.0027	1.87	27.0%	0.79	2.38	2.55	0.101'	0.605'	183.58'	0.250'	0.280'	0.04'	184.21'	0.025'	0.04'	0.06'		0.063'	0.102'	184.268'	o.k.		no	
112		0.50	MH 12		12+34.00	12+34.00	185.02	184.82	y		0.20'	377.00'	12"	0.0027	0.0027	1.86	27.1%	0.79	2.37	2.54	0.100'	0.605'	184.41'	0.250'	0.280'	0.06'	185.43'	0.025'	0.27'			0.148'	0.212'	185.573'	o.k.		no	
113		0.50	MH 13		16+01.00	16+01.00	194.06	193.83	y		0.23'	367.00'	12"	0.0240	0.0240	5.53	9.1%	0.79	7.05	7.05	0.771'	0.500'	185.57'	0.250'	0.250'	0.07'	194.33'	0.193'	0.04'			0.114'	0.187'	194.444'	o.k.		no	
114		0.50	MH 14		18+66.00	18+66.00	194.98	194.78	y		0.20'	265.00'	12"	0.0027	0.0027	1.86	27.1%	0.79	2.37	2.55	0.101'	0.605'	194.67'	0.250'	0.280'	0.05'	195.39'	0.025'	0.04'			0.030'	0.075'	195.415'	o.k.		no	
115		0.50	MH 15		22+66.00	22+66.00	196.26	196.06	y		0.20'	400.00'	12"	0.0027	0.0027	1.86	27.2%	0.79	2.36	2.54	0.100'	0.605'	195.59'	0.250'	0.280'	0.07'	196.67'	0.025'	0.00'			0.013'	0.081'	196.678'	o.k.		no	

Mapping Point Data on Orchards Interceptor												Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		4.86	Exist. P.S.		-00+34.00	-00+34.00	178.80		y																												
101	4.38	4.86	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'	34.00'	30"	0.0100	0.0100	41.13	11.8%	4.91	8.38	8.46	1.112'	1.275'	91.83'	0.625'	0.634'	0.00'	180.42'	0.278'	0.03'	0.71'	1.469'	1.244'	1.249'	181.659'	o.k.		no	
102		4.38	MH 2		02+29.00	02+29.00	179.62	179.52	y		0.10'	229.00'	24"	0.0008	0.0008	6.36	69.0%	3.14	2.02	2.31	0.083'	1.600'	181.66'	0.500'	0.610'	0.07'	181.72'	0.021'	0.03'			0.025'	0.091'	181.750'	CRITICAL		no	0.2
103		4.38	MH 3		04+76.00	04+76.00	179.92	179.82	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	67.9%	3.14	2.05	2.34	0.085'	1.600'	181.75'	0.500'	0.610'	0.07'	181.82'	0.021'	0.03'			0.026'	0.096'	181.846'	CRITICAL		no	0.0
104		4.38	MH 4		07+23.00	07+23.00	180.22	180.12	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	67.9%	3.14	2.05	2.34	0.085'	1.600'	181.85'	0.500'	0.610'	0.07'	181.92'	0.021'	0.03'			0.025'	0.096'	181.942'	o.k.		no	
105	0.47	4.38	MH 5		08+85.00	08+85.00	180.55	180.35	y	90	0.20'	162.00'	24"	0.0008	0.0008	6.43	68.2%	3.14	2.05	2.33	0.084'	1.600'	181.94'	0.500'	0.610'	0.05'	181.99'	0.021'	0.03'	0.05'	0.008'	0.056'	0.103'	182.045'	o.k.		no	
106		4.06	MH 6		11+95.00	11+95.00	181.20	180.80	y		0.40'	310.00'	24"	0.0008	0.0008	6.44	63.1%	3.14	2.05	2.34	0.085'	1.600'	182.15'	0.500'	0.610'	0.08'	182.40'	0.021'	0.79'			0.406'	0.482'	182.806'	o.k.		no	
107		4.06	MH 7		13+61.00	13+61.00	187.57	187.37	y		0.20'	166.00'	18"	0.0372	0.0372	20.31	20.0%	1.77	11.49	12.06	2.260'	0.855'	182.81'	0.375'	0.405'	0.22'	188.23'	0.565'	0.04'			0.304'	0.526'	188.529'	o.k.		no	
108		4.06	MH 8		16+15.00	16+15.00	188.20	188.00	y		0.20'	254.00'	18"	0.0017	0.0017	4.33	93.8%	1.77	2.45	2.80	0.121'	1.200'	188.77'	0.375'	0.458'	0.29'	189.20'	0.030'	0.04'			0.037'	0.326'	189.237'	o.k.		no	
211	2.83	4.06	MH 11		19+32.00	00+00.00	192.01	188.74	y		3.27'	317.00'	18"	0.0017	0.0017	4.35	93.5%	1.77	2.46	2.80	0.122'	1.200'	189.40'	0.375'	0.458'	0.36'	189.94'	0.031'	0.07'		0.107'	0.105'	0.466'	190.045'	o.k.		no	
210		1.55	MH 10		01+50.00	01+50.00	192.70	192.50	y		0.20'	150.00'	18"	0.0032	0.0033	6.02	25.7%	1.77	3.41	3.64	0.206'	0.885'	192.90'	0.375'	0.416'	0.03'	193.39'	0.052'	0.08'			0.064'	0.092'	193.449'	o.k.		no	
209		1.55	MH 9		05+24.00	05+24.00	194.10	193.98	y		0.12'	374.00'	18"	0.0034	0.0034	6.16	25.1%	1.77	3.49	3.73	0.216'	0.885'	193.59'	0.375'	0.416'	0.07'	194.87'	0.054'	0.07'			0.062'	0.132'	194.927'	o.k.		no	
208		1.55	MH 8		08+69.00	08+69.00	195.40	195.20	y		0.20'	345.00'	18"	0.0032	0.0032	5.95	26.0%	1.77	3.37	3.60	0.201'	0.885'	194.99'	0.375'	0.416'	0.06'	196.09'	0.050'	0.06'			0.056'	0.121'	196.141'	o.k.		no	
207		1.55	MH 7		10+82.00	10+82.00	196.19	195.99	y		0.20'	213.00'	18"	0.0028	0.0028	5.54	27.9%	1.77	3.14	3.37	0.177'	0.908'	196.31'	0.375'	0.420'	0.04'	196.90'	0.044'	0.06'			0.054'	0.094'	196.952'	o.k.		no	
206		1.55	MH 6		11+99.00	11+99.00	196.73	196.53	y		0.20'	117.00'	18"	0.0028	0.0029	5.68	27.2%	1.77	3.21	3.45	0.185'	0.908'	197.10'	0.375'	0.420'	0.02'	197.44'	0.046'	0.06'			0.054'	0.076'	197.491'	o.k.		no	
205		1.55	MH 5		15+00.00	15+00.00	197.76	197.56	y		0.20'	301.00'	18"	0.0028	0.0028	5.53	28.0%	1.77	3.13	3.36	0.176'	0.908'	197.64'	0.375'	0.420'	0.06'	198.47'	0.044'	0.06'			0.053'	0.109'	198.521'	o.k.		no	
204		1.55	MH 4		16+46.00	16+46.00	198.37	198.17	y		0.20'	146.00'	18"	0.0028	0.0028	5.58	27.7%	1.77	3.16	3.40	0.179'	0.908'	198.67'	0.375'	0.420'	0.03'	199.08'	0.045'	0.06'			0.054'	0.080'	199.131'	o.k.		no	
203		1.55	MH 3		18+00.00	18+00.00	199.00	198.80	y		0.20'	154.00'	18"	0.0028	0.0028	5.57	27.8%	1.77	3.15	3.39	0.178'	0.908'	199.28'	0.375'	0.420'	0.03'	199.71'	0.044'	0.06'			0.054'	0.082'	199.761'	o.k.		no	
202		1.55	MH 2		20+13.00	20+13.00	199.80	199.60	y		0.20'	213.00'	18"	0.0028	0.0028	5.59	27.7%	1.77	3.16	3.40	0.180'	0.908'	199.91'	0.375'	0.420'	0.04'	200.51'	0.045'	0.06'			0.054'	0.093'	200.561'	o.k.		no	
201		1.55	MH 1		22+24.00	00+00.00	200.39	200.39	y		0.00'	211.00'	18"	0.0028	0.0028	5.57	27.8%	1.77	3.15	3.39	0.178'	0.908'	200.71'	0.375'	0.420'	0.04'	201.30'	0.045'	0.06'			0.050'	0.089'	201.348'	o.k.		no	
8100	1.10	1.55	MH 8100		04+08.00	04+08.00	201.44	201.41	y		0.03'	408.00'	18"	0.0028	0.0025	5.27	29.4%	1.77	2.98	3.22	0.161'	0.923'	201.35'	0.375'	0.424'	0.07'	202.33'	0.040'	0.05'		0.145'	0.117'	0.191'	202.449'	o.k.		no	
8000		1.10	MH 8000		09+62.23	09+62.23	203.02	202.70	y	85	0.32'	554.23'	18"	0.0024	0.0023	5.02	21.8%	1.77	2.84	2.98	0.138'	0.855'	202.45'	0.375'	0.405'	0.05'	203.56'	0.035'	0.05'	0.09'		0.087'	0.141'	203.642'	o.k.		no	
7900		1.10	MH 7900		12+44.63	12+44.63	203.80	203.70	y		0.10'	282.40'	18"	0.0024	0.0024	5.17	21.2%	1.77	2.92	3.07	0.146'	0.855'	203.88'	0.375'	0.405'	0.03'	204.56'	0.037'	0.05'			0.044'	0.071'	204.599'	o.k.		no	
7800		1.10	MH 7800		15+27.03	15+27.03	204.58	204.48	y	90	0.10'	282.40'	18"	0.0024	0.0024	5.17	21.2%	1.77	2.92	3.07	0.146'	0.855'	204.66'	0.375'	0.405'	0.03'	205.34'	0.037'	0.05'	0.09'		0.091'	0.118'	205.426'	o.k.		no	
7700		1.10	MH 7700		16+68.33	16+68.33	205.02	204.92	y	86	0.10'	141.30'	18"	0.0024	0.0024	5.17	21.2%	1.77	2.92	3.07	0.146'	0.855'	205.44'	0.375'	0.405'	0.01'	205.78'	0.037'	0.05'	0.09'		0.091'	0.105'	205.866'	o.k.		no	
7600		1.10	MH 7600		18+18.83	18+18.83	205.49	205.39	y	88	0.10'	150.50'	18"	0.0024	0.0025	5.22	21.0%	1.77	2.96	3.10	0.150'	0.855'	205.88'	0.375'	0.405'	0.01'	206.25'	0.037'	0.05'	0.10'		0.089'	0.104'	206.334'	o.k.		no	
7400		1.10	MH 7400		21+59.99	21+59.99	206.30	206.20	y		0.10'	341.16'	18"	0.0024	0.0021	4.80	22.8%	1.77	2.72	2.88	0.129'	0.870'	206.36'	0.375'	0.411'	0.03'	207.07'	0.032'	0.05'			0.042'	0.074'	207.112'	o.k.		no	
7300		1.10	MH 7300		24+39.19	24+39.19	207.07	206.97	y		0.10'	279.20'	18"	0.0024	0.0024	5.16	21.3%	1.77	2.92	3.07	0.146'	0.855'	207.16'	0.375'	0.405'	0.03'	207.83'	0.036'	0.05'			0.044'	0.071'	207.869'	o.k.		no	
7200		1.10	MH 7200		26+32.19	26+32.19	207.64	207.54	y		0.10'	193.00'	18"	0.0024	0.0024	5.20	21.1%	1.77	2.94	3.09	0.148'	0.855'	207.93'	0.375'	0.405'	0.02'	208.40'	0.037'	0.05'			0.046'	0.065'	208.441'	o.k.		no	
7100		1.10	MH 7100		26+75.19	26+75.19	207.85	207.75	y		0.10'	43.00'	18"	0.0024	0.0026	5.33	20.6%	1.77	3.01	3.17	0.156'	0.855'	208.50'	0.375'	0.405'	0.00'	208.61'	0.039'	0.06'			0.048'	0.052'	208.653'	o.k.		no	
7000		1.10	MH 7000		29+40.19	29+40.19	208.91	208.56	y		0.35'	265.00'	18"	0.0024	0.0027	5.45	20.1%	1.77	3.08	3.24	0.163'	0.855'	208.71'	0.375'	0.405'	0.03'	209.42'	0.041'	0.18'			0.108'	0.134'	209.523'	o.k.		no	
301		1.10	MH 1		32+51.19	32+51.19	212.08	211.68	y		0.40'	311.00'	18"	0.0090	0.0089	9.94	11.0%	1.77	5.62	5.68	0.501'	0.765'	209.68'	0.375'	0.381'	0.03'	212.45'	0.125'	0.17'			0.150'	0.183'	212.595'	o.k.		no	
302		1.10	MH 2		35+63.19	35+63.19	218.10	214.85	y		3.25'	312.00'	18"	0.0090	0.0089	9.92	11.1%	1.77	5.62	5.67	0.500'	0.765'	212.85'	0.375'	0.381'	0.03'	215.62'	0.125'	0.15'			0.136'	0.169'	215.751'	o.k.		no	
303	0.56	1.10	MH 3		39+68.62	39+68.62	221.80	221.08	y	63	0.72'	405.43'	18"	0.0072	0.0074	9.03	12.2%	1.77	5.11	5.21	0.422'	0.788'	218.89'	0.375'	0.386'	0.04'	221.87'	0.105'	0.29'	0.27'	0.241'	0.453'	0.495'	222.321'	o.k.		no	
304		0.54	MH 4		40+20.62	40+20.62	223.44	223.44	y	67	0.00'	52.00'	10"	0.0342	0.0315	3.90	13.8%	0.55	7.15	7.30	0.827'	0.438'	222.32'	0.208'	0.215'	0.03'	223.88'	0.207'	0.06'	0.53'		0.397'	0.427'	224.274'	o.k.		no	
401		0.54	MH 1		42+15.62	00+07.00	224.50	224.50	y	37	0.00'	195.00'	10"	0.0054	0.0054	1.62	33.3%	0.55	2.97	3.25	0.164'	0.533'	224.27'	0.208'	0.240'	0.10'	225.03'	0.041'	0.12'	0.11'		0.133'	0.230'	225.166'	o.k.		no	
402		0.54	MH 2		05+17.00	05+17.00	230.73	230.63	y		0.10'	510.00'	10"	0.0120	0.0120	2.41	22.4%	0.55	4.42	4.68	0.340'	0.483'	225.17'	0.208'	0.228'	0.27'	231.11'	0.085'	0.05'			0.069'	0.340'	231.183'	o.k.		no	
403		0.54	MH 3		09+05.00	09+05.00	232.77	232.67	y		0.10'	388.00'	10"	0.0050	0.0050	1.55	34.7%	0.55	2.85	3.13	0.152'	0.542'	231.27'	0.208'	0.241'	0.19'	233.21'	0.038'	0.05'			0.046'	0.238'	233.257'	o.k.		no	
404		0.54	MH 4		10+99.00	10+99.00	234.00	233.74	y		0.26'	194.00'	10"	0.0050	0.0050	1.55	34.7%	0.55	2.85	3.13	0.152'	0.542'	233.31'	0.208'	0.241'	0.10'	234.28'	0.038'	0.05'			0.046'	0.142'	234.327'	o.k.		no	
405		0.54	MH 5		13+72.00	13+72.00	235.50	235.36	y		0.14'	273.00'	10"	0.0050	0.0050	1.55	34.8%	0.55	2.84	3.13	0.152'	0.542'	234.54'	0.208'	0.241'	0.14'	235.90'	0.038'	0.06'			0.050'	0.186'	235.952'	o.k.		no	
501		0.54	MH 1		14+97.00	14+97.00	236.25	236.25	y		0.00'	125.00'	10"	0.0060	0.0060	1.70	31.7%	0.55	3.12	3.40	0.180'	0.521'	236.02'	0.208'	0.238'	0.06'	236.77'	0.045'	0.00'			0.022'	0.085'	236.793'	o.k.		no	
Silver Star Estates / NE 86th Street Trunk																																			
211	2.83	4.06	MH 11		19+32.00	00+00.00	189.84	188.74	y																												
601		2.83	MH 1		02+50.00	02+50.00	190.53	190.53	y		0.00'	250.00'	15"	0.0260	0.0028	3.40	83.1%	1.23	2.77	3.16	0.155'	1.000'	190.84'	0.313'	0.381'	0.36'	191.53'	0.039'	0.05'			0.045'	0.409'	191.575'	o.k.		no	
602		2.83	MH 2		05+00.00	05+00.00	191.26	191.19	y		0.07'	250.00'	15"	0.0230	0.0026	3.33	84.9%	1.23	2.71	3.09	0.148'	1.000'	191.58'	0.313'	0.381'	0.36'	192.19'	0.037'	0.05'			0.043'	0.408'	192.233'	o.k.		no	
603	1.76	2.83	MH 3		09+39.00	-01+54.00	192.45	192.37	y		0.08'	439.00'	15"	0.0250	0.0025	3.26	86.8%	1.23	2.65	3.03	0.142'	1.000'	192.26'	0.313'	0.381'	0.64'	193.37'	0.036'	0.05'		0.106'	0.098'	0.737'	193.468'	o.k.		no	
700		1.76	MH 0		00+00.00	00+00.00	192.93	192.88	y		0.05'	154.00'	15"	0.0028	0.0028	3.42	51.5%	1.23	2.79	3.17	0.156'	0.938'	193.47'	0.313'	0.377'	0.09'	193.82'	0.039'	0.03'			0.034'	0.123'	193.852'	o.k.		no	
701		1.76	MH 1		03+70.00	03+70.00	193.69	193.49	y		0.20'	370.00'	15"	0.0015	0.0015	2.52	70.0%	1.23	2.05	2.34	0.085'	1.000'	193.93'	0.313'	0.381'	0.21'	194.49'	0.021'	0.03'			0.025'	0.235'	194.515'	o.k.		no	
702		1.76	MH 2		07+41.00	07+41.00	194.45	194.25	y		0.20'	371.00'	15"	0.0500	0.0015	2.52	70.1%	1.23	2.05	2.34	0.085'	1.000'	194.69'	0.313'	0.381'	0.21'	195.25'	0.021'	0.79'			0.404'	0.614'	195.654'	o.k.		no	
703		1.76	MH 3		10+74.00	10+74.00	211.29	211.09	y		0.20'	333.00'	15"	0.0500	0.0500	14.48	12.2%	1.23	11.80	12.03	2.249'	0.656'	195.65'	0.313'	0.322'	0.24'	211.75'	0.562'	0.03'			0.296'	0.532'	212.042'	o.k.		no	
704		1.76	MH 4		13+69.00	13+69.00	211.93	211.73	y		0.20'	295.00'	15"	0.0015	0.0015	2.50	70.5%	1.23	2.04	2.32	0.084'	1.000'	212.29'	0.313'	0.381'	0.17'	212.73'	0.021'	0.03'			0.025'	0.192'	212.755'	o.k.		no	
705		1.76	MH 5		16+04.00	16+04.00	212.48	212.28	y		0.20'	235.00'	15"	0.0015	0.0015	2.50	70.6%	1.23	2.04	2.32	0.084'	1.000'	212.93'	0.313'	0.381'	0.13'	213.28'	0.021'	0.03'			0.025'	0.159'	213.305'	o.k.		no	
706		1.76	MH 6		18+35.00	18+35.00	213.03	212.83	y		0.20'	231.00'	15"	0.0015	0.0015	2.52	70.0%	1.23	2.05	2.34	0.085'	1.000'	213.48'	0.313'	0.381'	0.13'	213.83'	0.021'	0.03'			0.025'	0.156'	213.855'	o.k.		no	
707		1.76	MH 7		21+55.00	21+55.00	213.51	213.51	y		0.00'	320.00'	15"	0.0015	0.0015	2.51	70.3%	1.23	2.04	2.33	0.084'	1.000'	214.03'	0.313'	0.381'	0.18'	214.51'	0.021'	0.00'			0.011'	0.192'	214.521'	o.k.		no	
Silver Star Estates P.S. / Orchards Interceptor - Phase II / Orchard Crest North Trunk																																			
800		1.26	Ex. P.S.		00+00.00	00+00.00	185.67	185.67	y																												
801		1.26	MH 1		00+48.00	00+48.00	185.84	185.74	y		0.10'	48.00'	15"	0.0015	0.0015	2.47	51.1%	1.23	2.02	2.29	0.081'	0.938'	186.61'	0.313'	0.377'	0.01'	186.68'	0.020'	0.01'			0.015'	0.029'	186.692'	o.k.		no	
802		1.26	MH 2		02+98.00	02+98.00	186.02	185.96	y		0.06'	250.00'	15"	0.0015	0.0005	1.42	89.0%	1.23	1.16	1.32	0.027'	1.000'	186.84'	0.313'	0.381'	0.07'	186.96'	0.007'	0.03'			0.018'	0.091'	186.978'	o.k.		no	
803		1.26	MH 3		04+79.00	04+79.00	186.35	186.29	y	95	0.06'	181.00'	15"	0.0015	0.0015	2.50	50.5%	1.23	2.04	2.31	0.083'	0.938'	186.98'	0.313'	0.377'	0.05'	187.23'	0.021'	0.03'	0.05'		0.050'	0.103'	187.277'	o.k.		no	
804		1.26	MH 4		06+89.00	06+89.00	186.67	186.62	y		0.05'	210.00'	15"	0.0013	0.0013	2.32	54.4%	1.23	1.89	2.16	0.072'	0.981'	187.33'	0.313'	0.380'	0.06'	187.60'	0.018'	0.03'			0.023'	0.084'	187.624'	o.k.		no	
805		1.26	MH 5		10+65.00	10+65.00	187.24	187.20	y	64	0.04'	376.00'	15"	0.0015	0.0014	2.43	52.0%	1.23	1.98	2.25	0.079'	0.938'	187.62'	0.313'	0.377'	0.11'	188.14'	0.020'	0.03'	0.05'		0.048'	0.159'	188.185'	o.k.		no	
806		1.26	MH 6		12+27.00	12+27.00	187.55	187.45	y		0.10'	162.00'	15"	0.0015	0.0013	2.33	54.2%	1.23	1.90	2.17	0.073'	0.981'	188.22'	0.313'	0.380'	0.05'	188.43'	0.018'	0.05'			0.033'	0.081'	188.465'	o.k.		no	
807		1.26	MH 7		14+51.00	14+51.00	188.20	188.13	y	80	0.07'	224.00'	15"	0.0026	0.0026	3.30	38.3%	1.23	2.69	2.98	0.138'	0.844'	188.46'	0.313'	0.367'	0.07'	188.97'	0.034'	0.05'	0.09'		0.085'	0.154'	189.059'	o.k.		no	
808		1.26	MH 8		15+92.00	15+92.00	188.76	188.56	y	90	0.20'	141.00'	15"	0.0026	0.0026	3.27	38.6%	1.23	2.67	2.96	0.136'	0.844'	189.06'	0.313'	0.367'	0.04'	189.40'	0.034'	0.04'	0.09'		0.080'	0.123'	189.484'	o.k.		no	
809		1.26	MH 9		16+50.96	16+50.96	189.06	188.88	y	95	0.18'	58.96'	15"	0.0019	0.0020	2.92	43.2%	1.23	2.38	2.67	0.110'	0.875'	189.64'	0.313'	0.370'	0.02'	189.76'	0.028'	0.03'	0.07'		0.064'	0.082'	189.819'	o.k.		no	
810		1.26	MH 10		17+84.90	17+84.90	189.34	189.26	y	86	0.08'	133.94'	15"	0.0015	0.0015	2.50	50.5%	1.23	2.04	2.31	0.083'	0.938'	190.00'	0.313'	0.377'	0.04'	190.20'	0.021'	0.03'	0.05'		0.050'	0.090'	190.248'	o.k.		no	
811		1.26	MH 11		21+51.01	21+51.01	189.84	189.84	y	20	0.00'	366.11'	15"	0.0014	0.0014	2.39	52.8%	1.23	1.95	2.21	0.076'	0.956'	190.30'	0.313'	0.378'	0.11'	190.80'	0.019'	0.03'	0.05'		0.048'	0.156'	190.844'	o.k.		no	
812		1.13	Fut. MH 12		23+01.01	23+01.01	190.17	190.07	y		0.10'	150.00'	15"	0.0015	0.0015	2.51	45.1%	1.23	2.04	2.30	0.082'	0.894'	190.84'	0.313'	0.372'	0.04'	190.96'	0.021'	0.03'			0.025'	0.061'	190.988'	o.k.		no	
813		1.13	Fut. MH 13		26+51.01	26+51.01	190.80	190.70	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	45.1%	1.23	2.04	2.30	0.082'	0.894'	191.06'	0.313'	0.372'	0.08'	191.59'	0.021'	0.03'			0.025'	0.109'	191.618'	o.k.		no	
814		1.13	Fut. MH 14		30+01.01	30+01.01	191.32	191.22	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	45.1%	1.23	2.04	2.30	0.082'	0.894'	191.69'	0.313'	0.372'	0.08'	192.11'	0.021'	0.04'			0.029'	0.113'	192.142'	o.k.		no	
902	0.68	1.13	MH 2		33+51.01	00+46.67	199.38	192.01	y	45	7.37'	350.00'	15"	0.0015	0.0020	2.88	39.4%	1.23	2.34	2.60	0.105'	0.844'	192.16'	0.313'	0.367'	0.09'	192.85'	0.026'	0.04'	0.07'	0.074'	0.106'	0.192'	192.960'	o.k.		no	
903		0.68	MH 3		05+02.69	05+02.69	201.20	201.20	y	90	0.00'	456.02'	10"	0.0040	0.0040	1.39	49.1%	0.55	2.54	2.88	0.128'	0.613'	199.99'	0.208'	0.250'	0.34'	201.81'	0.032'	0.05'	0.08'		0.084'	0.426'	201.897'	o.k.		no	

Mapping Point Data on Orchards Interceptor												Hydraulic Grade Line for Downstream Pipe															Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
904		0.68	MH 4		09+72.69	09+72.69	203.48	203.48	y		0.00'	470.00'	10"	0.0040	0.0049	1.53	44.5%	0.55	2.81	3.16	0.155'	0.596'	201.90'	0.208'	0.248'	0.36'	204.08'	0.039'	0.04'			0.042'	0.398'	204.118'	o.k.		no	
905		0.68	MH 5		10+88.17	10+88.17	203.94	203.94	y		0.00'	115.48'	10"	0.0040	0.0040	1.39	49.1%	0.55	2.54	2.87	0.128'	0.613'	204.12'	0.208'	0.250'	0.09'	204.55'	0.032'	0.05'			0.039'	0.125'	204.591'	o.k.		no	
906		0.68	MH 6		15+53.06	15+53.06	205.90	205.80	y	90	0.10'	464.89'	10"	0.0040	0.0040	1.39	49.0%	0.55	2.55	2.88	0.129'	0.613'	204.59'	0.208'	0.250'	0.35'	206.41'	0.032'	0.04'	0.08'		0.080'	0.428'	206.492'	o.k.		no	
907		0.68	MH 7		20+36.99	20+36.99	208.00	207.83	y	90	0.17'	483.93'	10"	0.0040	0.0040	1.39	49.1%	0.55	2.54	2.87	0.128'	0.613'	206.51'	0.208'	0.250'	0.36'	208.44'	0.032'	0.10'	0.08'		0.109'	0.472'	208.552'	o.k.		no	
908		0.68	MH 8		22+76.99	22+76.99	210.40	210.40	y		0.00'	240.00'	10"	0.0100	0.0100	2.20	31.0%	0.55	4.03	4.39	0.299'	0.521'	208.55'	0.208'	0.238'	0.19'	210.92'	0.075'	0.35'			0.213'	0.405'	211.133'	o.k.		no	
9081		0.68	MH 8A		25+16.99	25+16.99	219.48	219.48	y		0.00'	240.00'	10"	0.0378	0.0378	4.27	15.9%	0.55	7.83	8.03	1.001'	0.446'	211.13'	0.208'	0.217'	0.22'	219.93'	0.250'	0.37'			0.310'	0.528'	220.236'	o.k.		no	
909		0.68	MH 9		26+97.96	26+97.96	226.72	226.72	y		0.00'	180.97'	10"	0.0400	0.0400	4.39	15.5%	0.55	8.06	8.26	1.059'	0.446'	220.24'	0.208'	0.217'	0.16'	227.17'	0.265'	0.49'			0.378'	0.542'	227.544'	o.k.		no	
910		0.68	MH 10		29+17.96	29+17.96	238.50	238.50	y		0.00'	220.00'	10"	0.0489	0.0535	5.08	13.4%	0.55	9.32	9.51	1.403'	0.438'	227.54'	0.208'	0.215'	0.20'	238.94'	0.351'	0.00'			0.175'	0.378'	239.113'	o.k.		no	
Orchards Crest South Trunk																																				
902	0.68	1.13	MH 2		33+51.01	-00+45.00	192.01	192.01	y	135																												
1000		0.51	Ex. MH 0		05+52.02	05+52.02	193.75	193.63	y		0.12'	597.02'	10"	0.0015	0.0027	1.14	44.6%	0.55	2.10	2.36	0.087'	0.596'	192.61'	0.208'	0.248'	0.25'	194.23'	0.022'	0.07'			0.045'	0.299'	194.270'	o.k.		no	
1005		0.37	MH 5		09+29.38	09+29.38	197.19	196.99	y		0.20'	377.36'	8"	0.0050	0.0086	1.12	32.6%	0.35	3.22	3.52	0.193'	0.427'	194.27'	0.167'	0.192'	0.28'	197.42'	0.048'	0.03'			0.041'	0.324'	197.457'	o.k.		no	
1001		0.37	MH 1A		11+46.38	11+46.38	198.12	198.05	y		0.07'	217.00'	8"	0.0050	0.0040	0.76	47.9%	0.35	2.19	2.47	0.095'	0.483'	197.67'	0.167'	0.199'	0.15'	198.53'	0.024'	0.03'			0.028'	0.183'	198.562'	o.k.		no	
1101		0.37	MH 1		12+56.38	12+56.38	198.77	198.55	y		0.22'	110.00'	8"	0.0040	0.0039	0.76	48.3%	0.35	2.17	2.45	0.093'	0.490'	198.61'	0.167'	0.200'	0.08'	199.04'	0.023'	0.04'			0.030'	0.108'	199.070'	o.k.		no	
1102		0.37	MH 2		16+47.38	16+47.38	200.56	200.46	y		0.10'	391.00'	8"	0.0040	0.0043	0.80	45.9%	0.35	2.28	2.57	0.102'	0.477'	199.25'	0.167'	0.198'	0.28'	200.94'	0.026'	0.04'			0.030'	0.311'	200.967'	o.k.		no	
1103		0.37	MH 3		19+42.38	19+42.38	201.90	201.80	y		0.10'	295.00'	8"	0.0040	0.0042	0.79	46.5%	0.35	2.25	2.54	0.100'	0.483'	201.04'	0.167'	0.199'	0.21'	202.28'	0.025'	0.04'			0.031'	0.241'	202.314'	o.k.		no	
1104		0.37	MH 4		22+18.38	22+18.38	203.26	203.11	y		0.15'	276.00'	8"	0.0040	0.0044	0.80	45.6%	0.35	2.30	2.59	0.104'	0.477'	202.38'	0.167'	0.198'	0.20'	203.59'	0.026'	0.04'			0.035'	0.233'	203.622'	o.k.		no	
1109		0.37	MH 9		25+12.38	25+12.38	204.87	204.87	y		0.00'	294.00'	8"	0.0040	0.0055	0.90	40.8%	0.35	2.57	2.86	0.127'	0.460'	203.72'	0.167'	0.197'	0.21'	205.33'	0.032'	0.00'			0.016'	0.229'	205.346'	o.k.		no	
Orchard Highlands (temp force main discharge)																																				
8100	1.10	1.55	MH 8100		04+08.00	00+00.00	201.79	201.41	y	69	0.38'																											
1211		0.07	MH 11		02+72.00	02+72.00	203.10	203.10	y		0.00'	272.00'	8"	0.0040	0.0048	0.84	8.2%	0.35	2.41	2.41	0.090'	0.333'	202.12'	0.167'	0.167'	0.01'	203.43'	0.023'	0.03'			0.024'	0.033'	203.458'	o.k.		no	
1212		0.07	MH 12		05+14.58	05+14.58	204.08	204.08	y		0.00'	242.58'	8"	0.0040	0.0040	0.77	8.9%	0.35	2.21	2.21	0.076'	0.333'	203.46'	0.167'	0.167'	0.01'	204.41'	0.019'	0.03'			0.023'	0.030'	204.436'	o.k.		no	
1213		0.07	MH 13		10+34.58	10+34.58	206.16	206.16	y		0.00'	520.00'	8"	0.0040	0.0040	0.77	9.0%	0.35	2.20	2.20	0.075'	0.333'	204.44'	0.167'	0.167'	0.02'	206.49'	0.019'	0.00'			0.009'	0.026'	206.503'	o.k.		no	
Covington South Trunk																																				
8100	1.10	1.55	MH 8100		04+08.00	00+00.00	201.90	201.41	y		0.49'																											
1301		0.49	MH 1		01+47.00	01+47.00	202.36	202.34	y		0.02'	147.00'	10"	0.0030	0.0030	1.20	40.6%	0.55	2.20	2.46	0.094'	0.575'	202.48'	0.208'	0.246'	0.06'	202.92'	0.023'	0.03'			0.027'	0.085'	202.942'	o.k.		no	
1302		0.49	MH 2		05+47.00	05+47.00	203.54	203.49	y		0.05'	400.00'	10"	0.0028	0.0028	1.17	41.8%	0.55	2.14	2.39	0.088'	0.575'	202.94'	0.208'	0.246'	0.16'	204.07'	0.022'	0.03'			0.027'	0.184'	204.092'	o.k.		no	
1303		0.49	MH 3		09+45.00	09+45.00	204.69	204.69	y		0.00'	398.00'	10"	0.0029	0.0029	1.18	41.3%	0.55	2.17	2.41	0.090'	0.575'	204.12'	0.208'	0.246'	0.16'	205.27'	0.023'	0.03'			0.027'	0.183'	205.292'	o.k.		no	
1304		0.49	MH 4		13+45.00	13+45.00	205.84	205.81	y		0.03'	400.00'	10"	0.0028	0.0028	1.16	42.0%	0.55	2.13	2.38	0.088'	0.575'	205.29'	0.208'	0.246'	0.16'	206.39'	0.022'	0.04'			0.029'	0.186'	206.414'	o.k.		no	
1305		0.49	MH 5		15+95.00	15+95.00	206.65	206.65	y		0.00'	250.00'	10"	0.0032	0.0032	1.25	39.0%	0.55	2.29	2.54	0.101'	0.563'	206.41'	0.208'	0.245'	0.10'	207.21'	0.025'	0.03'			0.028'	0.127'	207.240'	o.k.		no	
1306		0.49	MH 6		18+66.00	18+66.00	207.48	207.41	y		0.07'	271.00'	10"	0.0028	0.0028	1.16	42.0%	0.55	2.13	2.38	0.088'	0.575'	207.24'	0.208'	0.246'	0.11'	207.99'	0.022'	0.03'			0.026'	0.133'	208.011'	o.k.		no	
1313		0.49	MH 13		22+66.00	22+66.00	208.65	208.60	y		0.05'	400.00'	10"	0.0028	0.0028	1.16	42.0%	0.55	2.13	2.38	0.088'	0.575'	208.06'	0.208'	0.246'	0.16'	209.18'	0.022'	0.03'			0.027'	0.184'	209.202'	o.k.		no	
1314		0.49	MH 14		26+66.00	26+66.00	209.86	209.81	y		0.05'	400.00'	10"	0.0029	0.0029	1.18	41.3%	0.55	2.17	2.42	0.091'	0.575'	209.23'	0.208'	0.246'	0.16'	210.39'	0.023'	0.03'			0.027'	0.185'	210.412'	o.k.		no	
1315		0.49	MH 15		29+55.00	29+55.00	210.73	210.69	y	55	0.04'	289.00'	10"	0.0029	0.0029	1.18	41.5%	0.55	2.16	2.41	0.090'	0.575'	210.44'	0.208'	0.246'	0.11'	211.27'	0.022'	0.05'	0.06'		0.065'	0.179'	211.330'	o.k.		no	
1316		0.49	MH 16		29+91.00	29+91.00	210.90	210.90	y		0.00'	36.00'	10"	0.0047	0.0047	1.51	32.3%	0.55	2.77	3.03	0.143'	0.533'	211.33'	0.208'	0.240'	0.01'	211.43'	0.036'	0.00'			0.018'	0.033'	211.451'	o.k.		no	
Cedar 49 Trunkline																																				
101	4.38	4.86	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'																											
109		0.66	MH 9		03+88.00	03+88.00	181.59	181.39	y	90	0.20'	388.00'	12"	0.0027	0.0053	2.60	25.5%	0.79	3.31	3.54	0.194'	0.590'	179.93'	0.250'	0.278'	0.12'	181.98'	0.049'	0.06'	0.12'		0.119'	0.234'	182.099'	o.k.		no	
110		0.66	MH 10		06+26.00	06+26.00	182.97	182.77	y		0.20'	238.00'	12"	0.0050	0.0050	2.52	26.3%	0.79	3.20	3.44	0.184'	0.605'	182.20'	0.250'	0.280'	0.07'	183.38'	0.046'	0.04'			0.042'	0.111'	183.417'	o.k.		no	
111		0.66	MH 11		08+57.00	08+57.00	183.80	183.60	y	90	0.20'	231.00'	12"	0.0027	0.0027	1.87	35.4%	0.79	2.38	2.61	0.106'	0.650'	183.62'	0.250'	0.289'	0.06'	184.25'	0.027'	0.04'	0.07'		0.066'	0.131'	184.316'	o.k.		no	
112		0.66	MH 12		12+34.00	12+34.00	185.02	184.82	y		0.20'	377.00'	12"	0.0027	0.0027	1.86	35.6%	0.79	2.37	2.60	0.105'	0.650'	184.45'	0.250'	0.289'	0.11'	185.47'	0.026'	0.28'			0.151'	0.257'	185.621'	o.k.		no	
113		0.66	MH 13		16+01.00	16+01.00	194.06	193.83	y		0.23'	367.00'	12"	0.0240	0.0240	5.53	11.9%	0.79	7.05	7.12	0.787'	0.510'	185.62'	0.250'	0.254'	0.12'	194.34'	0.197'	0.04'			0.117'	0.239'	194.457'	o.k.		no	
114		0.66	MH 14		18+66.00	18+66.00	194.98	194.78	y		0.20'	265.00'	12"	0.0027	0.0027	1.86	35.5%	0.79	2.37	2.61	0.106'	0.650'	194.71'	0.250'	0.289'	0.07'	195.43'	0.026'	0.04'			0.032'	0.106'	195.462'	o.k.		no	
115		0.66	MH 15		22+66.00	22+66.00	196.26	196.06	y		0.20'	400.00'	12"	0.0027	0.0027	1.86	35.6%	0.79	2.36	2.60	0.105'	0.650'	195.63'	0.250'	0.289'	0.11'	196.71'	0.026'	0.00'			0.013'	0.126'	196.723'	o.k.		no	

Mapping Point Data on Orchards Interceptor												Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		6.60	Exist. P.S.		-00+34.00	-00+34.00	178.80		y																												
101	5.81	6.60	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'	34.00'	30"	0.0100	0.0100	41.13	16.1%	4.91	8.38	8.67	1.168'	1.363'	91.83'	0.625'	0.659'	0.01'	180.50'	0.292'	0.03'	0.75'	1.473'	1.271'	1.279'	181.773'	o.k.		no	
102		5.81	MH 2		02+29.00	02+29.00	179.62	179.52	y		0.10'	229.00'	24"	0.0008	0.0008	6.36	91.3%	3.14	2.02	2.31	0.083'	1.600'	181.77'	0.500'	0.610'	0.11'	181.89'	0.021'	0.03'			0.025'	0.140'	181.913'	CRITICAL		no	0.4
103		5.81	MH 3		04+76.00	04+76.00	179.92	179.82	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	89.9%	3.14	2.05	2.34	0.085'	1.600'	181.91'	0.500'	0.610'	0.12'	182.04'	0.021'	0.03'			0.026'	0.149'	182.063'	CRITICAL		no	0.2
104		5.81	MH 4		07+23.00	07+23.00	180.22	180.12	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	89.9%	3.14	2.05	2.34	0.085'	1.600'	182.06'	0.500'	0.610'	0.12'	182.19'	0.021'	0.03'			0.025'	0.149'	182.212'	CRITICAL		no	0.1
105	0.83	5.81	MH 5		08+85.00	08+85.00	180.55	180.35	y	90	0.20'	162.00'	24"	0.0008	0.0008	6.43	90.3%	3.14	2.05	2.33	0.084'	1.600'	182.21'	0.500'	0.610'	0.08'	182.29'	0.021'	0.03'	0.05'	0.011'	0.058'	0.139'	182.351'	o.k.		no	
106		5.24	MH 6		11+95.00	11+95.00	181.20	180.80	y		0.40'	310.00'	24"	0.0008	0.0008	6.44	81.4%	3.14	2.05	2.34	0.085'	1.600'	182.35'	0.500'	0.610'	0.13'	182.48'	0.021'	0.82'			0.421'	0.548'	182.899'	o.k.		no	
107		5.24	MH 7		13+61.00	13+61.00	187.57	187.37	y		0.20'	166.00'	18"	0.0372	0.0372	20.31	25.8%	1.77	11.49	12.29	2.347'	0.885'	182.90'	0.375'	0.416'	0.36'	188.26'	0.587'	0.04'			0.314'	0.670'	188.569'	o.k.		no	
108		5.24	MH 8		16+15.00	16+15.00	188.20	188.00	y		0.20'	254.00'	18"	0.0017	0.0017	4.33	121.0%	1.77	2.45	2.72	0.115'	1.395'	188.97'	0.375'	0.439'	0.51'	189.47'	0.029'	0.04'			0.035'	0.544'	189.509'	o.k.		Yes by 0.91 cfs	
211	3.66	5.24	MH 11		19+32.00	00+00.00	192.01	188.74	y		3.27'	317.00'	18"	0.0017	0.0017	4.35	120.6%	1.77	2.46	2.73	0.116'	1.395'	189.60'	0.375'	0.439'	0.64'	190.23'	0.029'	0.08'		0.102'	0.103'	0.738'	190.333'	o.k.		Yes by 0.90 cfs	
210		2.00	MH 10		01+50.00	01+50.00	192.70	192.50	y		0.20'	150.00'	18"	0.0032	0.0033	6.02	33.3%	1.77	3.41	3.73	0.216'	0.960'	192.97'	0.375'	0.431'	0.04'	193.46'	0.054'	0.08'			0.067'	0.111'	193.527'	o.k.		no	
209		2.00	MH 9		05+24.00	05+24.00	194.10	193.98	y		0.12'	374.00'	18"	0.0034	0.0034	6.16	32.5%	1.77	3.49	3.82	0.226'	0.960'	193.66'	0.375'	0.431'	0.11'	194.94'	0.057'	0.07'			0.065'	0.177'	195.005'	o.k.		no	
208		2.00	MH 8		08+69.00	08+69.00	195.40	195.20	y		0.20'	345.00'	18"	0.0032	0.0032	5.95	33.7%	1.77	3.37	3.69	0.211'	0.960'	195.06'	0.375'	0.431'	0.10'	196.16'	0.053'	0.07'			0.059'	0.162'	196.219'	o.k.		no	
207		2.00	MH 7		10+82.00	10+82.00	196.19	195.99	y		0.20'	213.00'	18"	0.0028	0.0028	5.54	36.1%	1.77	3.14	3.47	0.187'	0.998'	196.40'	0.375'	0.437'	0.06'	196.99'	0.047'	0.07'			0.057'	0.120'	197.045'	o.k.		no	
206		2.00	MH 6		11+99.00	11+99.00	196.73	196.53	y		0.20'	117.00'	18"	0.0028	0.0029	5.68	35.3%	1.77	3.21	3.53	0.194'	0.975'	197.17'	0.375'	0.433'	0.03'	197.51'	0.048'	0.06'			0.057'	0.092'	197.562'	o.k.		no	
205		2.00	MH 5		15+00.00	15+00.00	197.76	197.56	y		0.20'	301.00'	18"	0.0028	0.0028	5.53	36.2%	1.77	3.13	3.46	0.186'	0.998'	197.73'	0.375'	0.437'	0.09'	198.56'	0.046'	0.07'			0.056'	0.145'	198.614'	o.k.		no	
204		2.00	MH 4		16+46.00	16+46.00	198.37	198.17	y		0.20'	146.00'	18"	0.0028	0.0028	5.58	35.9%	1.77	3.16	3.47	0.187'	0.975'	198.74'	0.375'	0.433'	0.04'	199.15'	0.047'	0.07'			0.056'	0.099'	199.201'	o.k.		no	
203		2.00	MH 3		18+00.00	18+00.00	199.00	198.80	y		0.20'	154.00'	18"	0.0028	0.0028	5.57	36.0%	1.77	3.15	3.46	0.186'	0.975'	199.35'	0.375'	0.433'	0.05'	199.78'	0.047'	0.07'			0.056'	0.102'	199.831'	o.k.		no	
202		2.00	MH 2		20+13.00	20+13.00	199.80	199.60	y		0.20'	213.00'	18"	0.0028	0.0028	5.59	35.8%	1.77	3.16	3.48	0.188'	0.975'	199.98'	0.375'	0.433'	0.06'	200.58'	0.047'	0.07'			0.056'	0.120'	200.631'	o.k.		no	
201		2.00	MH 1		22+24.00	00+00.00	200.39	200.39	y		0.00'	211.00'	18"	0.0028	0.0028	5.57	36.0%	1.77	3.15	3.47	0.187'	0.975'	200.78'	0.375'	0.433'	0.06'	201.37'	0.047'	0.06'			0.053'	0.116'	201.418'	o.k.		no	
8100	1.46	2.00	MH 8100		04+08.00	04+08.00	201.44	201.41	y		0.03'	408.00'	18"	0.0028	0.0025	5.27	38.0%	1.77	2.98	3.31	0.170'	1.013'	201.42'	0.375'	0.441'	0.12'	202.42'	0.042'	0.05'		0.159'	0.126'	0.245'	202.549'	o.k.		no	
8000		1.46	MH 8000		09+62.23	09+62.23	203.02	202.70	y	85	0.32'	554.23'	18"	0.0024	0.0023	5.02	29.1%	1.77	2.84	3.07	0.146'	0.923'	202.55'	0.375'	0.424'	0.09'	203.62'	0.037'	0.05'	0.09'		0.092'	0.183'	203.715'	o.k.		no	
7900		1.46	MH 7900		12+44.63	12+44.63	203.80	203.70	y		0.10'	282.40'	18"	0.0024	0.0024	5.17	28.3%	1.77	2.92	3.16	0.155'	0.923'	203.94'	0.375'	0.424'	0.05'	204.62'	0.039'	0.05'			0.046'	0.093'	204.669'	o.k.		no	
7800		1.46	MH 7800		15+27.03	15+27.03	204.58	204.48	y	90	0.10'	282.40'	18"	0.0024	0.0024	5.17	28.3%	1.77	2.92	3.16	0.155'	0.923'	204.72'	0.375'	0.424'	0.05'	205.40'	0.039'	0.05'	0.10'		0.096'	0.142'	205.499'	o.k.		no	
7700		1.46	MH 7700		16+68.33	16+68.33	205.02	204.92	y	86	0.10'	141.30'	18"	0.0024	0.0024	5.17	28.3%	1.77	2.92	3.16	0.155'	0.923'	205.50'	0.375'	0.424'	0.02'	205.84'	0.039'	0.05'	0.10'		0.096'	0.119'	205.939'	o.k.		no	
7600		1.46	MH 7600		18+18.83	18+18.83	205.49	205.39	y	88	0.10'	150.50'	18"	0.0024	0.0025	5.22	28.0%	1.77	2.96	3.18	0.157'	0.908'	205.94'	0.375'	0.420'	0.02'	206.30'	0.039'	0.05'	0.10'		0.094'	0.118'	206.391'	o.k.		no	
7400		1.46	MH 7400		21+59.99	21+59.99	206.30	206.20	y		0.10'	341.16'	18"	0.0024	0.0021	4.80	30.4%	1.77	2.72	2.96	0.136'	0.938'	206.43'	0.375'	0.428'	0.06'	207.14'	0.034'	0.05'			0.044'	0.099'	207.182'	o.k.		no	
7300		1.46	MH 7300		24+39.19	24+39.19	207.07	206.97	y		0.10'	279.20'	18"	0.0024	0.0024	5.16	28.3%	1.77	2.92	3.15	0.154'	0.923'	207.22'	0.375'	0.424'	0.05'	207.89'	0.039'	0.05'			0.047'	0.092'	207.939'	o.k.		no	
7200		1.46	MH 7200		26+32.19	26+32.19	207.64	207.54	y		0.10'	193.00'	18"	0.0024	0.0024	5.20	28.1%	1.77	2.94	3.18	0.157'	0.923'	207.99'	0.375'	0.424'	0.03'	208.46'	0.039'	0.06'			0.048'	0.080'	208.511'	o.k.		no	
7100		1.46	MH 7100		26+75.19	26+75.19	207.85	207.75	y		0.10'	43.00'	18"	0.0024	0.0026	5.33	27.4%	1.77	3.01	3.24	0.163'	0.908'	208.55'	0.375'	0.420'	0.01'	208.66'	0.041'	0.06'			0.050'	0.057'	208.708'	o.k.		no	
7000		1.46	MH 7000		29+40.19	29+40.19	208.91	208.56	y		0.35'	265.00'	18"	0.0024	0.0027	5.45	26.8%	1.77	3.08	3.32	0.171'	0.908'	208.76'	0.375'	0.420'	0.04'	209.47'	0.043'	0.18'			0.112'	0.155'	209.579'	o.k.		no	
301		1.46	MH 1		32+51.19	32+51.19	212.08	211.68	y		0.40'	311.00'	18"	0.0090	0.0089	9.94	14.7%	1.77	5.62	5.77	0.516'	0.803'	209.71'	0.375'	0.390'	0.06'	212.48'	0.129'	0.18'			0.155'	0.211'	212.637'	o.k.		no	
302		1.46	MH 2		35+63.19	35+63.19	218.10	214.85	y		3.25'	312.00'	18"	0.0090	0.0089	9.92	14.7%	1.77	5.62	5.76	0.514'	0.803'	212.88'	0.375'	0.390'	0.06'	215.65'	0.129'	0.15'			0.140'	0.197'	215.793'	o.k.		no	
303	0.77	1.46	MH 3		39+68.62	39+68.62	221.80	221.08	y	63	0.72'	405.43'	18"	0.0072	0.0074	9.03	16.2%	1.77	5.11	5.29	0.434'	0.818'	218.92'	0.375'	0.396'	0.07'	221.90'	0.109'	0.30'	0.28'	0.258'	0.474'	0.546'	222.371'	o.k.		no	
304		0.71	MH 4		40+20.62	40+20.62	223.44	223.44	y	67	0.00'	52.00'	10"	0.0342	0.0315	3.90	18.2%	0.55	7.15	7.47	0.868'	0.463'	222.37'	0.208'	0.223'	0.05'	223.90'	0.217'	0.06'	0.56'		0.416'	0.465'	224.319'	o.k.		no	
401		0.71	MH 1		42+15.62	00+07.00	224.50	224.50	y	37	0.00'	195.00'	10"	0.0054	0.0054	1.62	43.8%	0.55	2.97	3.33	0.172'	0.583'	224.32'	0.208'	0.247'	0.16'	225.08'	0.043'	0.12'	0.11'		0.138'	0.299'	225.222'	o.k.		no	
402		0.71	MH 2		05+17.00	05+17.00	230.73	230.63	y		0.10'	510.00'	10"	0.0120	0.0120	2.41	29.4%	0.55	4.42	4.77	0.353'	0.513'	225.22'	0.208'	0.235'	0.45'	231.14'	0.088'	0.06'			0.072'	0.521'	231.215'	o.k.		no	
403		0.71	MH 3		09+05.00	09+05.00	232.77	232.67	y		0.10'	388.00'	10"	0.0050	0.0050	1.55	45.6%	0.55	2.85	3.20	0.159'	0.596'	231.33'	0.208'	0.248'	0.32'	233.27'	0.040'	0.06'			0.048'	0.367'	233.314'	o.k.		no	
404		0.71	MH 4		10+99.00	10+99.00	234.00	233.74	y		0.26'	194.00'	10"	0.0050	0.0050	1.55	45.6%	0.55	2.85	3.20	0.159'	0.596'	233.37'	0.208'	0.248'	0.16'	234.34'	0.040'	0.06'			0.048'	0.207'	234.384'	o.k.		no	
405		0.71	MH 5		13+72.00	13+72.00	235.50	235.36	y		0.14'	273.00'	10"	0.0050	0.0050	1.55	45.7%	0.55	2.84	3.20	0.159'	0.596'	234.60'	0.208'	0.248'	0.22'	235.96'	0.040'	0.07'			0.053'	0.277'	236.009'	o.k.		no	
501		0.71	MH 1		14+97.00	14+97.00	236.25	236.25	y		0.00'	125.00'	10"	0.0060	0.0060	1.70	41.7%	0.55	3.12	3.48	0.188'	0.575'	236.08'	0.208'	0.246'	0.10'	236.83'	0.047'	0.00'			0.023'	0.127'	236.848'	o.k.		no	
Silver Star Estates / NE 86th Street Trunk																																			
211	3.66	5.24	MH 11		19+32.00	00+00.00	189.84	188.74	y																												
601		3.66	MH 1		02+50.00	02+50.00	190.53	190.53	y		0.00'	250.00'	15"	0.0260	0.0028	3.40	107.7%	1.23	2.77	3.13	0.152'	1.106'	190.95'	0.313'	0.373'	0.63'	191.64'	0.038'	0.05'			0.044'	0.672'	191.680'	o.k.		Yes by 0.26 cfs	
602		3.66	MH 2		05+00.00	05+00.00	191.26	191.19	y		0.07'	250.00'	15"	0.0230	0.0026	3.33	110.1%	1.23	2.71	3.01	0.141'	1.163'	191.69'	0.313'	0.366'	0.65'	192.35'	0.035'	0.05'			0.041'	0.688'	192.394'	o.k.		Yes by 0.34 cfs	
603	2.46	3.66	MH 3		09+39.00	-01+54.00	192.45	192.37	y		0.08'	439.00'	15"	0.0250	0.0025	3.26	112.5%	1.23	2.65	2.95	0.135'	1.163'	192.42'	0.313'	0.366'	1.14'	193.56'	0.034'	0.05'		0.111'	0.100'	1.235'	193.658'	o.k.		Yes by 0.41 cfs	
700		2.46	MH 0		00+00.00	00+00.00	192.93	192.88	y		0.05'	154.00'	15"	0.0028	0.0028	3.42	71.8%	1.23	2.79	3.18	0.157'	1.000'	193.66'	0.313'	0.381'	0.17'	193.88'	0.039'	0.03'			0.035'	0.204'	193.915'	o.k.		no	
701		2.46	MH 1		03+70.00	03+70.00	193.69	193.49	y		0.20'	370.00'	15"	0.0015	0.0015	2.52	97.5%	1.23	2.05	2.34	0.085'	1.000'	193.93'	0.313'	0.381'	0.41'	194.49'	0.021'	0.03'			0.025'	0.433'	194.515'	o.k.		no	
702		2.46	MH 2		07+41.00	07+41.00	194.45	194.25	y		0.20'	371.00'	15"	0.0500	0.0015	2.52	97.7%	1.23	2.05	2.34	0.085'	1.000'	194.69'	0.313'	0.381'	0.41'	195.25'	0.021'	0.81'			0.416'	0.824'	195.666'	o.k.		no	
703		2.46	MH 3		10+74.00	10+74.00	211.29	211.09	y		0.20'	333.00'	15"	0.0500	0.0500	14.48	17.0%	1.23	11.80	12.21	2.315'	0.681'	195.67'	0.313'	0.330'	0.44'	211.77'	0.579'	0.03'			0.304'	0.749'	212.075'	o.k.		no	
704		2.46	MH 4		13+69.00	13+69.00	211.93	211.73	y		0.20'	295.00'	15"	0.0015	0.0015	2.50	98.3%	1.23	2.04	2.32	0.084'	1.000'	212.29'	0.313'	0.381'	0.32'	212.73'	0.021'	0.03'			0.025'	0.350'	212.755'	o.k.		no	
705		2.46	MH 5		16+04.00	16+04.00	212.48	212.28	y		0.20'	235.00'	15"	0.0015	0.0015	2.50	98.3%	1.23	2.04	2.32	0.084'	1.000'	212.93'	0.313'	0.381'	0.26'	213.28'	0.021'	0.03'			0.025'	0.284'	213.305'	o.k.		no	
706		2.46	MH 6		18+35.00	18+35.00	213.03	212.83	y		0.20'	231.00'	15"	0.0015	0.0015	2.52	97.5%	1.23	2.05	2.34	0.085'	1.000'	213.48'	0.313'	0.381'	0.25'	213.83'	0.021'	0.03'			0.025'	0.280'	213.855'	o.k.		no	
707		2.46	MH 7		21+55.00	21+55.00	213.51	213.51	y		0.00'	320.00'	15"	0.0015	0.0015	2.51	98.0%	1.23	2.04	2.33	0.084'	1.000'	214.03'	0.313'	0.381'	0.35'	214.51'	0.021'	0.00'			0.011'	0.363'	214.521'	o.k.		no	
Silver Star Estates P.S. / Orchards Interceptor - Phase II / Orchard Crest North Trunk																																			
800		1.47	Ex. P.S.		00+00.00	00+00.00	185.67	185.67	y																												
801		1.47	MH 1		00+48.00	00+48.00	185.84	185.74	y		0.10'	48.00'	15"	0.0015	0.0015	2.47	59.5%	1.23	2.02	2.30	0.082'	1.000'	186.67'	0.313'	0.381'	0.02'	186.74'	0.020'	0.01'			0.015'	0.034'	186.755'	o.k.		no	
802		1.47	MH 2		02+98.00	02+98.00	186.02	185.96	y		0.06'	250.00'	15"	0.0015	0.0005	1.42	103.7%	1.23	1.16	1.32	0.027'	1.050'	186.89'	0.313'	0.380'	0.10'	187.01'	0.007'	0.03'			0.018'	0.117'	187.028'	o.k.		Yes by 0.05 cfs	
803		1.47	MH 3		04+79.00	04+79.00	186.35	186.29	y	95	0.06'	181.00'	15"	0.0015	0.0015	2.50	58.8%	1.23	2.04	2.32	0.084'	1.000'	187.03'	0.313'	0.381'	0.07'	187.29'	0.021'	0.03'	0.05'		0.050'	0.121'	187.340'	o.k.		no	
804		1.47	MH 4		06+89.00	06+89.00	186.67	186.62	y		0.05'	210.00'	15"	0.0013	0.0013	2.32	63.3%	1.23	1.89	2.16	0.072'	1.000'	187.35'	0.313'	0.381'	0.08'	187.62'	0.018'	0.03'			0.023'	0.106'	187.643'	o.k.		no	
805		1.47	MH 5		10+65.00	10+65.00	187.24	187.20	y	64	0.04'	376.00'	15"	0.0015	0.0014	2.43	60.5%	1.23	1.98	2.26	0.079'	1.000'	187.67'	0.313'	0.381'	0.15'	188.20'	0.020'	0.03'	0.05'		0.048'	0.196'	188.248'	o.k.		no	
806		1.47	MH 6		12+27.00	12+27.00	187.55	187.45	y		0.10'	162.00'	15"	0.0015	0.0013	2.33	63.1%	1.23	1.90	2.17	0.073'	1.000'	188.25'	0.313'	0.381'	0.06'	188.45'	0.018'	0.05'			0.034'	0.098'	188.484'	o.k.		no	
807		1.47	MH 7		14+51.00	14+51.00	188.20	188.13	y	80	0.07'	224.00'	15"	0.0026	0.0026	3.30	44.6%	1.23	2.69	3.02	0.142'	0.894'	188.48'	0.313'	0.372'	0.09'	189.02'	0.035'	0.05'	0.09'		0.088'	0.179'	189.111'	o.k.		no	
808		1.47	MH 8		15+92.00	15+92.00	188.76	188.56	y	90	0.20'	141.00'	15"	0.0026	0.0026	3.27	44.9%	1.23	2.67	3.00	0.140'	0.894'	189.11'	0.313'	0.372'	0.06'	189.45'	0.035'	0.04'	0.09'		0.082'	0.140'	189.536'	o.k.		no	
809		1.47	MH 9		16+50.96	16+50.96	189.06	188.88	y	95	0.18'	58.96'	15"	0.0019	0.0020	2.92	50.3%	1.23	2.38	2.70	0.113'	0.938'	189.70'	0.313'	0.377'	0.02'	189.82'	0.028'	0.03'	0.07'		0.065'	0.089'	189.883'	o.k.		no	
810		1.47	MH 10		17+84.90	17+84.90	189.34	189.26	y	86	0.08'	133.94'	15"	0.0015	0.0015	2.50	58.8%	1.23	2.04	2.32	0.084'	1.000'	190.06'	0.313'	0.381'	0.05'	190.26'	0.021'	0.03'	0.05'		0.051'	0.104'	190.311'	o.k.		no	
811		1.47	MH 11		21+51.01	21+51.01	189.84	189.84	y	20	0.00'	366.11'	15"	0.0014	0.0014	2.39	61.5%	1.23	1.95	2.22	0.077'	1.000'	190.34'	0.313'	0.381'	0.14'	190.84'	0.019'	0.03'	0.05'		0.049'	0.193'	190.889'	o.k.		no	
812		1.32	Fut. MH 12		23+01.01	23+01.01	190.17	190.07	y		0.10'	150.00'	15"	0.0015	0.0015	2.51	52.5%	1.23	2.04	2.32	0.084'	0.956'	190.89'	0.313'	0.378'	0.05'	191.03'	0.021'	0.03'			0.025'	0.073'	191.051'	o.k.		no	
813		1.32	Fut. MH 13		26+51.01	26+51.01	190.80	190.70	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	52.5%	1.23	2.04	2.32	0.084'	0.956'	191.13'	0.313'	0.378'	0.11'	191.66'	0.021'	0.03'			0.025'	0.137'	191.681'	o.k.		no	
814		1.32	Fut. MH 14		30+01.01	30+01.01	191.32	191.22	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	52.5%	1.23	2.04	2.32	0.084'	0.956'	191.76'	0.313'	0.378'	0.11'	192.18'	0.021'	0.04'			0.029'	0.141'	192.206'	o.k.		no	
902	0.80	1.32	MH 2		33+51.01	00+46.67	199.38	192.01	y	45	7.37'	350.00'	15"	0.0015	0.0020	2.88	45.8%	1.23	2.34	2.64	0.108'	0.894'	192.21'	0.313'	0.372'	0.11'	192.90'	0.027'	0.05'	0.07'	0.078'	0.110'	0.224'	193.014'	o.k.		no	
903		0.80	MH 3		05+02.69	05+02.69	201.20	201.20	y	90	0.00'	456.02'	10"	0.0040	0.0040	1.39	57.9%	0.55	2.54	2.90	0.131'	0.667'	200.05'	0.208'	0.254'	0.47'	201.87'	0.033'	0.06'	0.08'		0.086'	0.551'	201.952'	o.k.		no	

Former Contract Area Trunks

Year 15 (2012)

Mapping Point Data on Orchards Interceptor												Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
904		0.80	MH 4		09+72.69	09+72.69	203.48	203.48	y		0.00'	470.00'	10"	0.0040	0.0049	1.53	52.5%	0.55	2.81	3.18	0.157'	0.638'	201.95'	0.208'	0.252'	0.49'	204.12'	0.039'	0.05'			0.042'	0.528'	204.160'	o.k.		no	
905		0.80	MH 5		10+88.17	10+88.17	203.94	203.94	y		0.00'	115.48'	10"	0.0040	0.0040	1.39	57.9%	0.55	2.54	2.90	0.130'	0.667'	204.16'	0.208'	0.254'	0.12'	204.61'	0.033'	0.05'			0.039'	0.157'	204.646'	o.k.		no	
906		0.80	MH 6		15+53.06	15+53.06	205.90	205.80	y	90	0.10'	464.89'	10"	0.0040	0.0040	1.39	57.8%	0.55	2.55	2.90	0.131'	0.667'	204.65'	0.208'	0.254'	0.47'	206.47'	0.033'	0.05'	0.08'		0.081'	0.556'	206.548'	o.k.		no	
907		0.80	MH 7		20+36.99	20+36.99	208.00	207.83	y	90	0.17'	483.93'	10"	0.0040	0.0040	1.39	57.9%	0.55	2.54	2.90	0.131'	0.667'	206.57'	0.208'	0.254'	0.49'	208.50'	0.033'	0.11'	0.08'		0.112'	0.606'	208.609'	o.k.		no	
908		0.80	MH 8		22+76.99	22+76.99	210.40	210.40	y		0.00'	240.00'	10"	0.0100	0.0100	2.20	36.6%	0.55	4.03	4.45	0.308'	0.554'	208.61'	0.208'	0.243'	0.26'	210.95'	0.077'	0.36'			0.221'	0.481'	211.175'	o.k.		no	
9081		0.80	MH 8A		25+16.99	25+16.99	219.48	219.48	y		0.00'	240.00'	10"	0.0378	0.0378	4.27	18.8%	0.55	7.83	8.19	1.041'	0.463'	211.17'	0.208'	0.223'	0.29'	219.94'	0.260'	0.39'			0.323'	0.614'	220.265'	o.k.		no	
909		0.80	MH 9		26+97.96	26+97.96	226.72	226.72	y		0.00'	180.97'	10"	0.0400	0.0400	4.39	18.3%	0.55	8.06	8.42	1.101'	0.463'	220.27'	0.208'	0.223'	0.22'	227.18'	0.275'	0.50'			0.386'	0.606'	227.568'	o.k.		no	
910		0.80	MH 10		29+17.96	29+17.96	238.50	238.50	y		0.00'	220.00'	10"	0.0489	0.0535	5.06	15.8%	0.55	9.32	9.55	1.417'	0.446'	227.57'	0.208'	0.2?.7'	0.28'	238.95'	0.354'	0.00'			0.177'	0.455'	239.123'	o.k.		no	
Orchards Crest South Trunk																																					
902	0.80	1.32	MH 2		33+51.01	-00+45.00	192.01	192.01	y	135																													
1000		0.58	Ex. MH 0		05+52.02	05+52.02	193.75	193.63	y		0.12'	597.02'	10"	0.0015	0.0027	1.14	51.1%	0.55	2.10	2.38	0.088'	0.625'	192.64'	0.208'	0.251'	0.33'	194.26'	0.022'	0.07'			0.045'	0.373'	194.300'	o.k.		no	
1005		0.42	MH 5		09+29.38	09+29.38	197.19	196.99	y		0.20'	377.36'	8"	0.0050	0.0086	1.12	37.3%	0.35	3.22	3.55	0.196'	0.443'	194.30'	0.167'	0.194'	0.37'	197.43'	0.049'	0.03'			0.041'	0.407'	197.475'	o.k.		no	
1001		0.42	MH 1A		11+46.38	11+46.38	198.12	198.05	y		0.07'	217.00'	8"	0.0050	0.0040	0.76	54.9%	0.35	2.19	2.49	0.096'	0.523'	197.71'	0.167'	0.203'	0.20'	198.57'	0.024'	0.03'			0.029'	0.227'	198.602'	o.k.		no	
1101		0.42	MH 1		12+56.38	12+56.38	198.77	198.55	y		0.22'	110.00'	8"	0.0040	0.0039	0.76	55.3%	0.35	2.17	2.47	0.095'	0.523'	198.64'	0.167'	0.203'	0.10'	199.07'	0.024'	0.04'			0.030'	0.131'	199.103'	o.k.		no	
1102		0.42	MH 2		16+47.38	16+47.38	200.56	200.46	y		0.10'	391.00'	8"	0.0040	0.0043	0.80	52.6%	0.35	2.28	2.59	0.104'	0.510'	199.28'	0.167'	0.202'	0.36'	200.97'	0.026'	0.04'			0.031'	0.391'	201.001'	o.k.		no	
1103		0.42	MH 3		19+42.38	19+42.38	201.90	201.80	y		0.10'	295.00'	8"	0.0040	0.0042	0.79	53.3%	0.35	2.25	2.55	0.101'	0.510'	201.07'	0.167'	0.202'	0.27'	202.31'	0.025'	0.04'			0.031'	0.303'	202.341'	o.k.		no	
1104		0.42	MH 4		22+18.38	22+18.38	203.26	203.11	y		0.15'	276.00'	8"	0.0040	0.0044	0.80	52.2%	0.35	2.30	2.61	0.106'	0.510'	202.41'	0.167'	0.202'	0.25'	203.62'	0.026'	0.05'			0.036'	0.290'	203.656'	o.k.		no	
1109		0.42	MH 9		25+12.38	25+12.38	204.87	204.87	y		0.00'	294.00'	8"	0.0040	0.0055	0.90	46.7%	0.35	2.57	2.90	0.131'	0.483'	203.74'	0.167'	0.199'	0.28'	205.35'	0.033'	0.00'			0.016'	0.292'	205.370'	o.k.		no	
Orchard Highlands (temp force main discharge)																																					
8100	1.46	2.00	MH 8100		04+08.00	00+00.00	201.79	201.41	y	69	0.38'																											
1211		0.10	MH 11		02+72.00	02+72.00	203.10	203.10	y		0.00'	272.00'	8"	0.0040	0.0048	0.84	11.3%	0.35	2.41	2.43	0.092'	0.340'	202.13'	0.167'	0.169'	0.02'	203.44'	0.023'	0.03'			0.025'	0.042'	203.465'	o.k.		no	
1212		0.10	MH 12		05+14.58	05+14.58	204.08	204.08	y		0.00'	242.58'	8"	0.0040	0.0040	0.77	12.4%	0.35	2.21	2.25	0.079'	0.350'	203.47'	0.167'	0.172'	0.01'	204.43'	0.020'	0.03'			0.023'	0.038'	204.453'	o.k.		no	
1213		0.10	MH 13		10+34.58	10+34.58	206.16	206.16	y		0.00'	520.00'	8"	0.0040	0.0040	0.77	12.4%	0.35	2.20	2.24	0.078'	0.350'	204.45'	0.167'	0.172'	0.03'	206.51'	0.019'	0.00'			0.010'	0.040'	206.520'	o.k.		no	
Covington South Trunk																																					
8100	1.46	2.00	MH 8100		04+08.00	00+00.00	201.90	201.41	y		0.49'																											
1301		0.60	MH 1		01+47.00	01+47.00	202.36	202.34	y		0.02'	147.00'	10"	0.0030	0.0030	1.20	49.5%	0.55	2.20	2.49	0.096'	0.613'	202.51'	0.208'	0.250'	0.08'	202.95'	0.024'	0.03'			0.028'	0.112'	202.981'	o.k.		no	
1302		0.60	MH 2		05+47.00	05+47.00	203.54	203.49	y		0.05'	400.00'	10"	0.0028	0.0028	1.17	51.0%	0.55	2.14	2.43	0.092'	0.625'	202.99'	0.208'	0.251'	0.23'	204.12'	0.023'	0.03'			0.028'	0.256'	204.143'	o.k.		no	
1303		0.60	MH 3		09+45.00	09+45.00	204.69	204.69	y		0.00'	398.00'	10"	0.0029	0.0029	1.18	50.4%	0.55	2.17	2.46	0.094'	0.625'	204.17'	0.208'	0.251'	0.23'	205.32'	0.023'	0.03'			0.028'	0.255'	205.343'	o.k.		no	
1304		0.60	MH 4		13+45.00	13+45.00	205.84	205.81	y		0.03'	400.00'	10"	0.0028	0.0028	1.16	51.2%	0.55	2.13	2.42	0.091'	0.625'	205.34'	0.208'	0.251'	0.23'	206.44'	0.023'	0.04'			0.030'	0.258'	206.465'	o.k.		no	
1305		0.60	MH 5		15+95.00	15+95.00	206.65	206.65	y		0.00'	250.00'	10"	0.0032	0.0032	1.25	47.6%	0.55	2.29	2.59	0.104'	0.604'	206.46'	0.208'	0.249'	0.14'	207.25'	0.026'	0.03'			0.029'	0.173'	207.283'	o.k.		no	
1306		0.60	MH 6		18+66.00	18+66.00	207.48	207.41	y		0.07'	271.00'	10"	0.0028	0.0028	1.16	51.2%	0.55	2.13	2.42	0.091'	0.625'	207.28'	0.208'	0.251'	0.15'	208.04'	0.023'	0.03'			0.027'	0.182'	208.062'	o.k.		no	
1313		0.60	MH 13		22+66.00	22+66.00	208.65	208.60	y		0.05'	400.00'	10"	0.0028	0.0028	1.16	51.2%	0.55	2.13	2.42	0.091'	0.625'	208.11'	0.208'	0.251'	0.23'	209.23'	0.023'	0.03'			0.028'	0.256'	209.253'	o.k.		no	
1314		0.60	MH 14		26+66.00	26+66.00	209.86	209.81	y		0.05'	400.00'	10"	0.0029	0.0029	1.18	50.3%	0.55	2.17	2.46	0.094'	0.625'	209.28'	0.208'	0.251'	0.23'	210.44'	0.024'	0.03'			0.028'	0.256'	210.463'	o.k.		no	
1315		0.60	MH 15		29+55.00	29+55.00	210.73	210.69	y	55	0.04'	289.00'	10"	0.0029	0.0029	1.18	50.6%	0.55	2.16	2.45	0.093'	0.625'	210.49'	0.208'	0.251'	0.16'	211.32'	0.023'	0.05'	0.06'		0.067'	0.232'	211.382'	o.k.		no	
1316		0.60	MH 16		29+91.00	29+91.00	210.90	210.90	y		0.00'	36.00'	10"	0.0047	0.0047	1.51	39.4%	0.55	2.77	3.07	0.147'	0.563'	211.38'	0.208'	0.245'	0.02'	211.46'	0.037'	0.00'			0.018'	0.040'	211.481'	o.k.		no	
Cedar 49 Trunkline																																					
101	5.81	6.60	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'																											
109		1.08	MH 9		03+88.00	03+88.00	181.59	181.39	y	90	0.20'	388.00'	12"	0.0027	0.0053	2.60	41.7%	0.79	3.31	3.69	0.211'	0.690'	180.03'	0.250'	0.295'	0.28'	182.08'	0.053'	0.07'	0.14'		0.129'	0.413'	182.209'	o.k.		no	
110		1.08	MH 10		06+26.00	06+26.00	182.97	182.77	y		0.20'	238.00'	12"	0.0050	0.0050	2.52	43.0%	0.79	3.20	3.59	0.200'	0.700'	182.29'	0.250'	0.296'	0.17'	183.47'	0.050'	0.04'			0.045'	0.218'	183.515'	o.k.		no	
111		1.08	MH 11		08+57.00	08+57.00	183.80	183.60	y	90	0.20'	231.00'	12"	0.0027	0.0027	1.87	58.0%	0.79	2.38	2.71	0.114'	0.800'	183.77'	0.250'	0.305'	0.16'	184.40'	0.028'	0.04'	0.07'		0.070'	0.232'	184.470'	o.k.		no	
112		1.08	MH 12		12+34.00	12+34.00	185.02	184.82	y		0.20'	377.00'	12"	0.0027	0.0027	1.86	58.3%	0.79	2.37	2.70	0.113'	0.800'	184.60'	0.250'	0.305'	0.26'	185.62'	0.028'	0.29'			0.161'	0.426'	185.781'	o.k.		no	
113		1.08	MH 13		16+01.00	16+01.00	194.06	193.83	y		0.23'	367.00'	12"	0.0240	0.0240	5.53	19.6%	0.79	7.05	7.36	0.842'	0.555'	185.78'	0.250'	0.268'	0.31'	194.39'	0.211'	0.04'			0.125'	0.432'	194.510'	o.k.		no	
114		1.08	MH 14		18+66.00	18+66.00	194.98	194.78	y		0.20'	265.00'	12"	0.0027	0.0027	1.86	58.1%	0.79	2.37	2.70	0.113'	0.800'	194.86'	0.250'	0.305'	0.19'	195.58'	0.028'	0.04'			0.034'	0.220'	195.614'	o.k.		no	
115		1.08	MH 15		22+66.00	22+66.00	196.26	196.06	y		0.20'	400.00'	12"	0.0027	0.0027	1.86	58.3%	0.79	2.36	2.69	0.113'	0.800'	195.78'	0.250'	0.305'	0.28'	196.86'	0.028'	0.00'			0.014'	0.295'	196.874'	o.k.		no	

Mapping Point Data on Orchards Interceptor											Hydraulic Grade Line for Downstream Pipe															Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		10.51	Exist. P.S.		-00+34.00	-00+34.00	178.80		y																												
101	8.31	10.51	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'	34.00'	30"	0.0100	0.0100	41.13	25.5%	4.91	8.38	8.96	1.248'	1.475'	91.83'	0.625'	0.694'	0.02'	180.62'	0.312'	0.03'	0.80'	1.324'	1.231'	1.250'	181.846'	o.k.		no	
102		8.31	MH 2		02+29.00	02+29.00	179.62	179.52	y		0.10'	229.00'	24"	0.0008	0.0008	6.36	130.6%	3.14	2.02	2.25	0.078'	1.860'	181.85'	0.500'	0.585'	0.25'	182.09'	0.020'	0.03'			0.024'	0.273'	182.118'	CRITICAL		Yes by 1.95 cfs	0.6
103		8.31	MH 3		04+76.00	04+76.00	179.92	179.82	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	128.7%	3.14	2.05	2.28	0.081'	1.860'	182.12'	0.500'	0.585'	0.27'	182.39'	0.020'	0.03'			0.024'	0.292'	182.411'	CRITICAL		Yes by 1.85 cfs	0.6
104		8.31	MH 4		07+23.00	07+23.00	180.22	180.12	y		0.10'	247.00'	24"	0.0008	0.0008	6.45	128.7%	3.14	2.05	2.28	0.081'	1.860'	182.41'	0.500'	0.585'	0.27'	182.68'	0.020'	0.03'			0.024'	0.292'	182.703'	CRITICAL		Yes by 1.85 cfs	0.6
105	1.68	8.31	MH 5		08+85.00	08+85.00	180.55	180.35	y	90	0.20'	162.00'	24"	0.0008	0.0008	6.43	129.3%	3.14	2.05	2.27	0.080'	1.860'	182.70'	0.500'	0.585'	0.18'	182.88'	0.020'	0.03'	0.05'	0.015'	0.057'	0.233'	182.936'	CRITICAL		Yes by 1.88 cfs	0.5
106		7.13	MH 6		11+95.00	11+95.00	181.20	180.80	y		0.40'	310.00'	24"	0.0008	0.0008	6.44	110.7%	3.14	2.05	2.28	0.080'	1.860'	182.94'	0.500'	0.585'	0.25'	183.18'	0.020'	0.87'			0.444'	0.692'	183.628'	CRITICAL		Yes by 0.69 cfs	0.4
107		7.13	MH 7		13+61.00	13+61.00	187.57	187.37	y		0.20'	166.00'	18"	0.0372	0.0372	20.31	35.1%	1.77	11.49	12.64	2.481'	0.975'	183.63'	0.375'	0.433'	0.63'	188.35'	0.620'	0.04'			0.330'	0.956'	188.675'	o.k.		no	
108		7.13	MH 8		16+15.00	16+15.00	188.20	188.00	y		0.20'	254.00'	18"	0.0017	0.0017	4.33	164.5%	1.77	2.45	2.72	0.115'	1.395'	188.97'	0.375'	0.439'	0.94'	189.91'	0.029'	0.04'			0.035'	0.976'	189.941'	CRITICAL		Yes by 2.79 cfs	0.4
211	4.77	7.13	MH 11		19+32.00	00+00.00	192.01	188.74	y		3.27'	317.00'	18"	0.0017	0.0017	4.35	164.0%	1.77	2.46	2.73	0.116'	1.395'	189.94'	0.375'	0.439'	1.17'	191.12'	0.029'	0.09'		0.095'	0.102'	1.277'	191.218'	CRITICAL		Yes by 2.78 cfs	0.9
210		2.98	MH 10		01+50.00	01+50.00	192.70	192.50	y		0.20'	150.00'	18"	0.0032	0.0033	6.02	49.4%	1.77	3.41	3.85	0.230'	1.103'	193.11'	0.375'	0.450'	0.09'	193.60'	0.058'	0.08'			0.071'	0.165'	193.673'	o.k.		no	
209		2.98	MH 9		05+24.00	05+24.00	194.10	193.98	y		0.12'	374.00'	18"	0.0034	0.0034	6.16	48.3%	1.77	3.49	3.94	0.241'	1.103'	193.80'	0.375'	0.450'	0.23'	195.08'	0.060'	0.08'			0.070'	0.303'	195.152'	o.k.		no	
208		2.98	MH 8		08+69.00	08+69.00	195.40	195.20	y		0.20'	345.00'	18"	0.0032	0.0032	5.95	50.0%	1.77	3.37	3.82	0.227'	1.125'	195.23'	0.375'	0.452'	0.21'	196.33'	0.057'	0.07'			0.063'	0.277'	196.388'	o.k.		no	
207		2.98	MH 7		10+82.00	10+82.00	196.19	195.99	y		0.20'	213.00'	18"	0.0028	0.0028	5.54	53.7%	1.77	3.14	3.56	0.197'	1.148'	196.55'	0.375'	0.454'	0.13'	197.14'	0.049'	0.07'			0.061'	0.192'	197.198'	o.k.		no	
206		2.98	MH 6		11+99.00	11+99.00	196.73	196.53	y		0.20'	117.00'	18"	0.0028	0.0029	5.68	52.4%	1.77	3.21	3.65	0.206'	1.148'	197.34'	0.375'	0.454'	0.07'	197.68'	0.052'	0.07'			0.060'	0.132'	197.738'	o.k.		no	
205		2.98	MH 5		15+00.00	15+00.00	197.76	197.56	y		0.20'	301.00'	18"	0.0028	0.0028	5.53	53.8%	1.77	3.13	3.55	0.196'	1.148'	197.88'	0.375'	0.454'	0.19'	198.71'	0.049'	0.07'			0.059'	0.245'	198.767'	o.k.		no	
204		2.98	MH 4		16+46.00	16+46.00	198.37	198.17	y		0.20'	146.00'	18"	0.0028	0.0028	5.58	53.3%	1.77	3.16	3.58	0.200'	1.148'	198.91'	0.375'	0.454'	0.09'	199.32'	0.050'	0.07'			0.060'	0.150'	199.377'	o.k.		no	
203		2.98	MH 3		18+00.00	18+00.00	199.00	198.80	y		0.20'	154.00'	18"	0.0028	0.0028	5.57	53.5%	1.77	3.15	3.57	0.198'	1.148'	199.52'	0.375'	0.454'	0.10'	199.95'	0.050'	0.07'			0.060'	0.155'	200.007'	o.k.		no	
202		2.98	MH 2		20+13.00	20+13.00	199.80	199.60	y		0.20'	213.00'	18"	0.0028	0.0028	5.59	53.2%	1.77	3.16	3.59	0.200'	1.148'	200.15'	0.375'	0.454'	0.13'	200.75'	0.050'	0.07'			0.060'	0.191'	200.807'	o.k.		no	
201		2.98	MH 1		22+24.00	00+00.00	200.39	200.39	y		0.00'	211.00'	18"	0.0028	0.0028	5.57	53.4%	1.77	3.15	3.58	0.199'	1.148'	200.95'	0.375'	0.454'	0.13'	201.54'	0.050'	0.05'			0.056'	0.186'	201.594'	o.k.		no	
8100	2.25	2.98	MH 8100		04+08.00	04+08.00	201.44	201.41	y		0.03'	408.00'	18"	0.0028	0.0025	5.27	56.5%	1.77	2.98	3.40	0.179'	1.200'	201.59'	0.375'	0.458'	0.25'	202.61'	0.045'	0.05'		0.177'	0.139'	0.388'	202.749'	o.k.		no	
8000		2.25	MH 8000		09+62.23	09+62.23	203.02	202.70	y	85	0.32'	554.23'	18"	0.0024	0.0023	5.02	44.8%	1.77	2.84	3.20	0.159'	1.073'	202.75'	0.375'	0.446'	0.20'	203.77'	0.040'	0.05'	0.10'		0.100'	0.300'	203.872'	o.k.		no	
7900		2.25	MH 7900		12+44.63	12+44.63	203.80	203.70	y		0.10'	282.40'	18"	0.0024	0.0024	5.17	43.5%	1.77	2.92	3.28	0.167'	1.050'	204.07'	0.375'	0.444'	0.10'	204.75'	0.042'	0.05'			0.050'	0.152'	204.800'	o.k.		no	
7800		2.25	MH 7800		15+27.03	15+27.03	204.58	204.48	y	90	0.10'	282.40'	18"	0.0024	0.0024	5.17	43.5%	1.77	2.92	3.28	0.167'	1.050'	204.85'	0.375'	0.444'	0.10'	205.53'	0.042'	0.05'	0.11'		0.103'	0.206'	205.633'	o.k.		no	
7700		2.25	MH 7700		16+68.33	16+68.33	205.02	204.92	y	86	0.10'	141.30'	18"	0.0024	0.0024	5.17	43.5%	1.77	2.92	3.27	0.166'	1.050'	205.63'	0.375'	0.444'	0.05'	205.97'	0.042'	0.05'	0.11'		0.104'	0.155'	206.074'	o.k.		no	
7600		2.25	MH 7600		18+18.83	18+18.83	205.49	205.39	y	88	0.10'	150.50'	18"	0.0024	0.0025	5.22	43.1%	1.77	2.96	3.31	0.170'	1.050'	206.07'	0.375'	0.444'	0.05'	206.44'	0.043'	0.05'	0.11'		0.101'	0.156'	206.541'	o.k.		no	
7400		2.25	MH 7400		21+59.99	21+59.99	206.30	206.20	y		0.10'	341.16'	18"	0.0024	0.0021	4.80	46.8%	1.77	2.72	3.07	0.147'	1.088'	206.58'	0.375'	0.448'	0.12'	207.29'	0.037'	0.05'			0.047'	0.170'	207.335'	o.k.		no	
7300		2.25	MH 7300		24+39.19	24+39.19	207.07	206.97	y		0.10'	279.20'	18"	0.0024	0.0024	5.16	43.6%	1.77	2.92	3.27	0.166'	1.050'	207.35'	0.375'	0.444'	0.10'	208.02'	0.042'	0.05'			0.050'	0.152'	208.070'	o.k.		no	
7200		2.25	MH 7200		26+32.19	26+32.19	207.64	207.54	y		0.10'	193.00'	18"	0.0024	0.0024	5.20	43.3%	1.77	2.94	3.29	0.168'	1.050'	208.12'	0.375'	0.444'	0.07'	208.59'	0.042'	0.05'			0.052'	0.122'	208.642'	o.k.		no	
7100		2.25	MH 7100		26+75.19	26+75.19	207.85	207.75	y		0.10'	43.00'	18"	0.0024	0.0026	5.33	42.2%	1.77	3.01	3.38	0.177'	1.050'	208.69'	0.375'	0.444'	0.02'	208.80'	0.044'	0.05'			0.054'	0.070'	208.854'	o.k.		no	
7000		2.25	MH 7000		29+40.19	29+40.19	208.91	208.56	y		0.35'	265.00'	18"	0.0024	0.0027	5.45	41.3%	1.77	3.08	3.44	0.184'	1.035'	208.89'	0.375'	0.443'	0.10'	209.60'	0.046'	0.19'			0.120'	0.216'	209.715'	o.k.		no	
301		2.25	MH 1		32+51.19	32+51.19	212.08	211.68	y		0.40'	311.00'	18"	0.0090	0.0089	9.94	22.6%	1.77	5.62	5.96	0.552'	0.870'	209.78'	0.375'	0.411'	0.13'	212.55'	0.138'	0.19'			0.165'	0.291'	212.715'	o.k.		no	
302		2.25	MH 2		35+63.19	35+63.19	218.10	214.85	y		3.25'	312.00'	18"	0.0090	0.0089	9.92	22.7%	1.77	5.62	5.95	0.550'	0.870'	212.95'	0.375'	0.411'	0.13'	215.72'	0.138'	0.15'			0.150'	0.276'	215.870'	o.k.		no	
303	1.22	2.25	MH 3		39+68.62	39+68.62	221.80	221.08	y	63	0.72'	405.43'	18"	0.0072	0.0074	9.03	24.9%	1.77	5.11	5.47	0.464'	0.885'	216.99'	0.375'	0.416'	0.16'	221.97'	0.116'	0.32'	0.30'	0.286'	0.510'	0.671'	222.475'	o.k.		no	
304		1.08	MH 4		40+20.62	40+20.62	223.44	223.44	y	67	0.00'	52.00'	10"	0.0342	0.0315	3.90	27.6%	0.55	7.15	7.69	0.918'	0.504'	222.48'	0.208'	0.233'	0.11'	223.94'	0.230'	0.05'	0.59'		0.440'	0.547'	224.384'	o.k.		no	
401		1.08	MH 1		42+15.62	00+07.00	224.50	224.50	y	37	0.00'	195.00'	10"	0.0054	0.0054	1.62	66.5%	0.55	2.97	3.39	0.178'	0.667'	224.38'	0.208'	0.254'	0.36'	225.17'	0.044'	0.13'	0.11'		0.146'	0.504'	225.313'	o.k.		no	
402		1.08	MH 2		05+17.00	05+17.00	230.73	230.63	y		0.10'	510.00'	10"	0.0120	0.0120	2.41	44.7%	0.55	4.42	4.97	0.383'	0.596'	225.31'	0.208'	0.248'	0.97'	231.23'	0.096'	0.05'			0.077'	1.044'	231.302'	o.k.		no	
403		1.08	MH 3		09+05.00	09+05.00	232.77	232.67	y		0.10'	388.00'	10"	0.0050	0.0050	1.55	69.3%	0.55	2.85	3.25	0.164'	0.667'	231.40'	0.208'	0.254'	0.71'	233.34'	0.041'	0.05'			0.049'	0.761'	233.386'	o.k.		no	
404		1.08	MH 4		10+99.00	10+99.00	234.00	233.74	y		0.26'	194.00'	10"	0.0050	0.0050	1.55	69.3%	0.55	2.85	3.25	0.164'	0.667'	233.44'	0.208'	0.254'	0.36'	234.41'	0.041'	0.05'			0.049'	0.405'	234.456'	o.k.		no	
405		1.08	MH 5		13+72.00	13+72.00	235.50	235.36	y		0.14'	273.00'	10"	0.0050	0.0050	1.55	69.4%	0.55	2.84	3.24	0.163'	0.667'	234.67'	0.208'	0.254'	0.50'	236.03'	0.041'	0.07'			0.055'	0.556'	236.081'	o.k.		no	
501		1.08	MH 1		14+97.00	14+97.00	236.25	236.25	y		0.00'	125.00'	10"	0.0060	0.0060	1.70	63.3%	0.55	3.12	3.56	0.196'	0.667'	236.17'	0.208'	0.254'	0.23'	236.92'	0.049'	0.00'			0.025'	0.254'	236.941'	o.k.		no	
Silver Star Estates / NE 86th Street Trunk																																					
211	4.77	7.13	MH 11		19+32.00	00+00.00	189.84	188.74	y																												
601		4.77	MH 1		02+50.00	02+50.00	190.53	190.53	y		0.00'	250.00'	15"	0.0260	0.0028	3.40	140.2%	1.23	2.77	3.08	0.147'	1.163'	191.00'	0.313'	0.366'	1.10'	192.10'	0.037'	0.05'			0.043'	1.140'	192.142'	CRITICAL		Yes by 1.37 cfs	0.3
602		4.77	MH 2		05+00.00	05+00.00	191.26	191.19	y		0.07'	250.00'	15"	0.0230	0.0026	3.33	143.4%	1.23	2.71	3.01	0.141'	1.163'	192.14'	0.313'	0.366'	1.10'	193.24'	0.035'	0.05'			0.041'	1.138'	193.281'	CRITICAL		Yes by 1.44 cfs	0.8
603	3.26	4.77	MH 3		09+39.00	-01+54.00	192.45	192.37	y		0.08'	439.00'	15"	0.0250	0.0025	3.26	146.5%	1.23	2.65	2.95	0.135'	1.163'	193.28'	0.313'	0.366'	1.93'	195.21'	0.034'	0.05'		0.114'	0.101'	2.028'	195.308'	CRITICAL		Yes by 1.52 cfs	1.6
700		3.26	MH 0		00+00.00	00+00.00	192.93	192.88	y		0.05'	154.00'	15"	0.0028	0.0028	3.42	95.1%	1.23	2.79	3.18	0.157'	1.000'	195.31'	0.313'	0.381'	0.30'	195.61'	0.039'	0.03'			0.034'	0.331'	195.639'	CRITICAL		no	1.5
701		3.26	MH 1		03+70.00	03+70.00	193.69	193.49	y		0.20'	370.00'	15"	0.0015	0.0015	2.52	129.2%	1.23	2.05	2.28	0.081'	1.163'	195.64'	0.313'	0.366'	0.76'	196.39'	0.020'	0.03'			0.024'	0.780'	196.419'	CRITICAL		Yes by 0.74 cfs	1.7
702		3.26	MH 2		07+41.00	07+41.00	194.45	194.25	y		0.20'	371.00'	15"	0.0500	0.0015	2.52	129.4%	1.23	2.05	2.28	0.080'	1.163'	196.42'	0.313'	0.366'	0.76'	197.18'	0.020'	0.85'			0.435'	1.193'	197.612'	CRITICAL		Yes by 0.74 cfs	1.7
703		3.26	MH 3		10+74.00	10+74.00	211.29	211.09	y		0.20'	333.00'	15"	0.0500	0.0500	14.48	22.5%	1.23	11.80	12.51	2.429'	0.725'	197.61'	0.313'	0.342'	0.74'	211.82'	0.607'	0.03'			0.317'	1.060'	212.132'	o.k.		no	
704		3.26	MH 4		13+69.00	13+69.00	211.93	211.73	y		0.20'	295.00'	15"	0.0015	0.0015	2.50	130.1%	1.23	2.04	2.26	0.079'	1.163'	212.45'	0.313'	0.366'	0.60'	213.05'	0.020'	0.03'			0.024'	0.626'	213.079'	CRITICAL		Yes by 0.75 cfs	0.1
705		3.26	MH 5		16+04.00	16+04.00	212.48	212.28	y		0.20'	235.00'	15"	0.0015	0.0015	2.50	130.2%	1.23	2.04	2.26	0.079'	1.163'	213.09'	0.313'	0.366'	0.48'	213.57'	0.020'	0.03'			0.024'	0.504'	213.596'	CRITICAL		Yes by 0.76 cfs	0.0
706		3.26	MH 6		18+35.00	18+35.00	213.03	212.83	y		0.20'	231.00'	15"	0.0015	0.0015	2.52	129.1%	1.23	2.05	2.28	0.081'	1.163'	213.64'	0.313'	0.366'	0.47'	214.11'	0.020'	0.03'			0.024'	0.496'	214.138'	CRITICAL		Yes by 0.73 cfs	0.0
707		3.26	MH 7		21+55.00	21+55.00	213.51	213.51	y		0.00'	320.00'	15"	0.0015	0.0015	2.51	129.8%	1.23	2.04	2.27	0.080'	1.163'	214.19'	0.313'	0.366'	0.65'	214.85'	0.020'	0.00'			0.010'	0.663'	214.856'	CRITICAL		Yes by 0.75 cfs	0.1
Silver Star Estates P.S. / Orchards Interceptor - Phase II / Orchard Crest North Trunk																																					
800		1.86	Ex. P.S.		00+00.00	00+00.00	185.67	185.67	y																												
801		1.86	MH 1		00+48.00	00+48.00	185.84	185.74	y		0.10'	48.00'	15"	0.0015	0.0015	2.47	75.2%	1.23	2.02	2.30	0.082'	1.000'	186.67'	0.313'	0.381'	0.03'	186.74'	0.020'	0.01'			0.015'	0.045'	186.755'	o.k.		no	
802		1.86	MH 2		02+98.00	02+98.00	186.02	185.96	y		0.06'	250.00'	15"	0.0015	0.0005	1.42	131.1%	1.23	1.16	1.28	0.026'	1.163'	187.00'	0.313'	0.366'	0.17'	187.17'	0.006'	0.03'			0.018'	0.185'	187.187'	o.k.		Yes by 0.44 cfs	
803		1.86	MH 3		04+79.00	04+79.00	186.35	186.29	y	95	0.06'	181.00'	15"	0.0015	0.0015	2.50	74.4%	1.23	2.04	2.32	0.084'	1.000'	187.19'	0.313'	0.381'	0.11'	187.30'	0.021'	0.03'	0.05'		0.050'	0.164'	187.351'	o.k.		no	
804		1.86	MH 4		06+89.00	06+89.00	186.67	186.62	y		0.05'	210.00'	15"	0.0013	0.0013	2.32	80.1%	1.23	1.89	2.16	0.072'	1.000'	187.35'	0.313'	0.381'	0.13'	187.62'	0.018'	0.03'			0.023'	0.155'	187.643'	o.k.		no	
805		1.86	MH 5		10+65.00	10+65.00	187.24	187.20	y	64	0.04'	376.00'	15"	0.0015	0.0014	2.43	76.5%	1.23	1.98	2.26	0.079'	1.000'	187.67'	0.313'	0.381'	0.24'	188.20'	0.020'	0.03'	0.05'		0.048'	0.285'	188.248'	o.k.		no	
806		1.86	MH 6		12+27.00	12+27.00	187.55	187.45	y		0.10'	162.00'	15"	0.0015	0.0013	2.33	79.8%	1.23	1.90	2.17	0.073'	1.000'	188.25'	0.313'	0.381'	0.10'	188.45'	0.018'	0.05'			0.035'	0.137'	188.485'	o.k.		no	
807		1.86	MH 7		14+51.00	14+51.00	188.20	188.13	y	80	0.07'	224.00'	15"	0.0026	0.0026	3.30	56.5%	1.23	2.69	3.06	0.146'	1.000'	188.55'	0.313'	0.381'	0.14'	189.13'	0.036'	0.05'	0.09'		0.090'	0.231'	189.220'	o.k.		no	
808		1.86	MH 8		15+92.00	15+92.00	188.76	188.56	y	90	0.20'	141.00'	15"	0.0026	0.0026	3.27	56.9%	1.23	2.67	3.04	0.144'	1.000'	189.22'	0.313'	0.381'	0.09'	189.56'	0.036'	0.04'	0.09'		0.084'	0.173'	189.644'	o.k.		no	
809		1.86	MH 9		16+50.96	16+50.96	189.06	188.88	y	95	0.18'	58.96'	15"	0.0019	0.0020	2.92	63.7%	1.23	2.38	2.71	0.114'	1.000'	189.76'	0.313'	0.381'	0.04'	189.88'	0.029'	0.03'	0.07'		0.066'	0.103'	189.946'	o.k.		no	
810		1.86	MH 10		17+84.90	17+84.90	189.34	189.26	y	86	0.08'	133.94'	15"	0.0015	0.0015	2.50	74.3%	1.23	2.04	2.32	0.084'	1.000'	190.06'	0.313'	0.381'	0.08'	190.26'	0.021'	0.03'	0.05'		0.051'	0.135'	190.311'	o.k.		no	
811		1.86	MH 11		21+51.01	21+51.01	189.84	189.84	y	20	0.00'	366.11'	15"	0.0014	0.0014	2.39	77.7%	1.23	1.95	2.22	0.077'	1.000'	190.34'	0.313'	0.381'	0.23'	190.84'	0.019'	0.03'	0.05'		0.049'	0.280'	190.889'	o.k.		no	
812		1.64	Fut. MH 12		23+01.01	23+01.01	190.17	190.07	y		0.10'	150.00'	15"	0.0015	0.0015	2.51	65.4%	1.23	2.04	2.33	0.084'	1.000'	190.89'	0.313'	0.381'	0.07'	191.07'	0.021'	0.03'			0.025'	0.099'	191.095'	o.k.		no	
813		1.64	Fut. MH 13		26+51.01	26+51.01	190.80	190.70	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	65.4%	1.23	2.04	2.33	0.084'	1.000'	191.17'	0.313'	0.381'	0.17'	191.70'	0.021'	0.03'			0.025'	0.197'	191.725'	o.k.		no	
814		1.64	Fut. MH 14		30+01.01	30+01.01	191.32	191.22	y		0.10'	350.00'	15"	0.0015	0.0015	2.51	65.4%	1.23	2.04	2.33	0.084'	1.000'	191.80'	0.313'	0.381'	0.17'	192.22'	0.021'	0.04'			0.030'	0.202'	192.250'	o.k.		no	
902	0.95	1.64	MH 2		33+51.01	00+46.67	199.38	192.01	y	45	7.37'	350.00'	15"	0.0015	0.0020	2.88	57.1%	1.23	2.34	2.67	0.111'	1.000'	192.32'	0.313'	0.381'	0.17'	193.01'	0.028'	0.05'	0.07'	0.074'	0.109'	0.281'	193.119'	o.k.		no	
903		0.95	MH 3		05+02.69	05+02.69	201.20	201.20	y	90	0.00'	456.02'	10"	0.0040	0.0040	1.39	68.2%	0.55	2.54	2.90	0.131'	0.667'	200.05'	0.208'	0.254'	0.65'	201.87'	0.033'	0.05'	0.08'		0.086'	0.732'	201.953'	o.k.		no	

Former Contract Area Trunks

Year 20 (2017)

Mapping Point Data on Orchards Interceptor												Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Hydraulic Radius	Prop. Hyd Radius	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
904		0.95	MH 4		09+72.69	09+72.69	203.48	203.48	y		0.00'	470.00'	10"	0.0040	0.0049	1.53	61.9%	0.55	2.81	3.20	0.159'	0.667'	201.95'	0.208'	0.254'	0.67'	204.15'	0.040'	0.05'			0.043'	0.709'	204.189'	o.k.		no	
905		0.95	MH 5		10+88.17	10+88.17	203.94	203.94	y		0.00'	115.48'	10"	0.0040	0.0040	1.39	68.3%	0.55	2.54	2.90	0.130'	0.667'	204.19'	0.208'	0.254'	0.16'	204.61'	0.033'	0.05'			0.039'	0.203'	204.646'	o.k.		no	
906		0.95	MH 6		15+53.06	15+53.06	205.90	205.80	y	90	0.10'	464.89'	10"	0.0040	0.0040	1.39	68.1%	0.55	2.55	2.90	0.131'	0.667'	204.65'	0.208'	0.254'	0.66'	206.47'	0.033'	0.05'	0.08'		0.081'	0.740'	206.548'	o.k.		no	
907		0.95	MH 7		20+36.99	20+36.99	208.00	207.83	y	90	0.17'	483.93'	10"	0.0040	0.0040	1.39	68.2%	0.55	2.54	2.90	0.131'	0.667'	206.57'	0.208'	0.254'	0.69'	208.50'	0.033'	0.11'	0.08'		0.113'	0.799'	208.610'	o.k.		no	
908		0.95	MH 8		22+76.99	22+76.99	210.40	210.40	y		0.00'	240.00'	10"	0.0100	0.0100	2.20	43.1%	0.55	4.03	4.51	0.316'	0.583'	208.61'	0.208'	0.247'	0.35'	210.98'	0.079'	0.37'			0.227'	0.581'	211.210'	o.k.		no	
9081		0.95	MH 8A		25+16.99	25+16.99	219.48	219.48	y		0.00'	240.00'	10"	0.0378	0.0378	4.27	22.2%	0.55	7.83	8.30	1.071'	0.483'	211.21'	0.208'	0.228'	0.39'	219.96'	0.268'	0.39'			0.328'	0.721'	220.292'	o.k.		no	
909		0.95	MH 9		26+97.96	26+97.96	226.72	226.72	y		0.00'	180.97'	10"	0.0400	0.0400	4.39	21.5%	0.55	8.06	8.46	1.111'	0.475'	220.29'	0.208'	0.225'	0.30'	227.20'	0.278'	0.52'			0.397'	0.698'	227.592'	o.k.		no	
910		0.95	MH 10		29+17.96	29+17.96	238.50	238.50	y		0.00'	220.00'	10"	0.0489	0.0535	5.08	18.6%	0.55	9.32	9.74	1.473'	0.463'	227.59'	0.208'	0.223'	0.37'	238.96'	0.368'	0.00'			0.184'	0.555'	239.147'	o.k.		no	
Orchards Crest South Trunk																																					
902	0.95	1.64	MH 2		33+51.01	-00+45.00	192.01	192.01	y	135																												
1000		0.79	Ex. MH 0		05+52.02	05+52.02	193.75	193.63	y		0.12'	597.02'	10"	0.0015	0.0027	1.14	68.6%	0.55	2.10	2.39	0.089'	0.667'	192.68'	0.208'	0.254'	0.58'	194.30'	0.022'	0.07'			0.047'	0.630'	194.344'	o.k.		no	
1005		0.56	MH 5		09+29.38	09+29.38	197.19	196.99	y		0.20'	377.36'	8"	0.0050	0.0086	1.12	50.1%	0.35	3.22	3.65	0.207'	0.500'	194.34'	0.167'	0.201'	0.63'	197.49'	0.052'	0.03'			0.043'	0.674'	197.533'	o.k.		no	
1001		0.56	MH 1A		11+46.38	11+46.38	198.12	198.05	y		0.07'	217.00'	8"	0.0050	0.0040	0.76	73.8%	0.35	2.19	2.49	0.096'	0.533'	197.72'	0.167'	0.203'	0.36'	198.58'	0.024'	0.03'			0.029'	0.386'	198.612'	o.k.		no	
1101		0.56	MH 1		12+56.38	12+56.38	198.77	198.55	y		0.22'	110.00'	8"	0.0040	0.0039	0.76	74.3%	0.35	2.17	2.47	0.095'	0.533'	198.65'	0.167'	0.203'	0.18'	199.08'	0.024'	0.04'			0.030'	0.211'	199.114'	o.k.		no	
1102		0.56	MH 2		16+47.38	16+47.38	200.56	200.46	y		0.10'	391.00'	8"	0.0040	0.0043	0.80	70.7%	0.35	2.28	2.60	0.105'	0.533'	199.30'	0.167'	0.203'	0.64'	200.99'	0.026'	0.04'			0.031'	0.675'	201.024'	o.k.		no	
1103		0.56	MH 3		19+42.38	19+42.38	201.90	201.80	y		0.10'	295.00'	8"	0.0040	0.0042	0.79	71.7%	0.35	2.25	2.57	0.102'	0.533'	201.09'	0.167'	0.203'	0.49'	202.33'	0.026'	0.04'			0.031'	0.517'	202.365'	o.k.		no	
1104		0.56	MH 4		22+18.38	22+18.38	203.26	203.11	y		0.15'	276.00'	8"	0.0040	0.0044	0.80	70.2%	0.35	2.30	2.62	0.107'	0.533'	202.43'	0.167'	0.203'	0.45'	203.64'	0.027'	0.05'			0.037'	0.491'	203.680'	o.k.		no	
1109		0.56	MH 9		25+12.38	25+12.38	204.87	204.87	y		0.00'	294.00'	8"	0.0040	0.0055	0.90	62.8%	0.35	2.57	2.93	0.133'	0.533'	203.79'	0.167'	0.203'	0.48'	205.40'	0.033'	0.00'			0.017'	0.501'	205.420'	o.k.		no	
Orchard Highlands (temp force main discharge)																																					
8100	2.25	2.98	MH 8100		04+08.00	00+00.00	201.79	201.41	y	69	0.38'																											
1211		0.15	MH 11		02+72.00	02+72.00	203.10	203.10	y		0.00'	272.00'	8"	0.0040	0.0048	0.84	18.4%	0.35	2.41	2.52	0.098'	0.370'	202.16'	0.167'	0.178'	0.04'	203.47'	0.025'	0.03'			0.027'	0.067'	203.497'	o.k.		no	
1212		0.15	MH 12		05+14.58	05+14.58	204.08	204.08	y		0.00'	242.58'	8"	0.0040	0.0040	0.77	20.1%	0.35	2.21	2.32	0.083'	0.380'	203.50'	0.167'	0.180'	0.04'	204.46'	0.021'	0.03'			0.025'	0.060'	204.485'	o.k.		no	
1213		0.15	MH 13		10+34.58	10+34.58	206.16	206.16	y		0.00'	520.00'	8"	0.0040	0.0040	0.77	20.2%	0.35	2.20	2.31	0.083'	0.380'	204.48'	0.167'	0.180'	0.08'	206.54'	0.021'	0.00'			0.010'	0.087'	206.550'	o.k.		no	
Covington South Trunk																																					
8100	2.25	2.98	MH 8100		04+08.00	00+00.00	201.90	201.41	y		0.49'																											
1301		0.82	MH 1		01+47.00	01+47.00	202.36	202.34	y		0.02'	147.00'	10"	0.0030	0.0030	1.20	68.1%	0.55	2.20	2.51	0.098'	0.667'	202.57'	0.208'	0.254'	0.16'	203.01'	0.024'	0.03'			0.028'	0.184'	203.035'	o.k.		no	
1302		0.82	MH 2		05+47.00	05+47.00	203.54	203.49	y		0.05'	400.00'	10"	0.0028	0.0028	1.17	70.1%	0.55	2.14	2.44	0.092'	0.667'	203.04'	0.208'	0.254'	0.42'	204.16'	0.023'	0.03'			0.028'	0.453'	204.185'	o.k.		no	
1303		0.82	MH 3		09+45.00	09+45.00	204.69	204.69	y		0.00'	398.00'	10"	0.0029	0.0029	1.18	69.4%	0.55	2.17	2.47	0.095'	0.667'	204.21'	0.208'	0.254'	0.42'	205.36'	0.024'	0.03'			0.028'	0.450'	205.385'	o.k.		no	
1304		0.82	MH 4		13+45.00	13+45.00	205.84	205.81	y		0.03'	400.00'	10"	0.0028	0.0028	1.16	70.5%	0.55	2.13	2.43	0.092'	0.667'	205.38'	0.208'	0.254'	0.42'	206.48'	0.023'	0.04'			0.030'	0.454'	206.507'	o.k.		no	
1305		0.82	MH 5		15+95.00	15+95.00	206.65	206.65	y		0.00'	250.00'	10"	0.0032	0.0032	1.25	65.5%	0.55	2.29	2.61	0.106'	0.667'	206.51'	0.208'	0.254'	0.27'	207.32'	0.027'	0.03'			0.029'	0.295'	207.346'	o.k.		no	
1306		0.82	MH 6		18+66.00	18+66.00	207.48	207.41	y		0.07'	271.00'	10"	0.0028	0.0028	1.16	70.4%	0.55	2.13	2.43	0.092'	0.667'	207.35'	0.208'	0.254'	0.29'	208.08'	0.023'	0.03'			0.028'	0.315'	208.104'	o.k.		no	
1313		0.82	MH 13		22+66.00	22+66.00	208.65	208.60	y		0.05'	400.00'	10"	0.0028	0.0028	1.16	70.5%	0.55	2.13	2.43	0.092'	0.667'	208.15'	0.208'	0.254'	0.42'	209.27'	0.023'	0.03'			0.028'	0.453'	209.295'	o.k.		no	
1314		0.82	MH 14		26+66.00	26+66.00	209.86	209.81	y		0.05'	400.00'	10"	0.0029	0.0029	1.18	69.2%	0.55	2.17	2.47	0.095'	0.667'	209.32'	0.208'	0.254'	0.42'	210.48'	0.024'	0.03'			0.028'	0.453'	210.505'	o.k.		no	
1315		0.82	MH 15		29+55.00	29+55.00	210.73	210.69	y	55	0.04'	289.00'	10"	0.0029	0.0029	1.18	69.6%	0.55	2.16	2.46	0.094'	0.667'	210.53'	0.208'	0.254'	0.31'	211.36'	0.024'	0.05'	0.06'		0.069'	0.376'	211.426'	o.k.		no	
1316		0.82	MH 16		29+91.00	29+91.00	210.90	210.90	y		0.00'	36.00'	10"	0.0047	0.0047	1.51	54.2%	0.55	2.77	3.16	0.155'	0.654'	211.43'	0.208'	0.253'	0.04'	211.55'	0.039'	0.00'			0.019'	0.058'	211.573'	o.k.		no	
Cedar 49 Trunkline																																					
101	8.31	10.51	MH 1		00+00.00	00+00.00	179.34	179.14	y	90	0.20'																											
109		2.73	MH 9		03+88.00	03+88.00	181.59	181.39	y	90	0.20'	388.00'	12"	0.0027	0.0053	2.60	105.3%	0.79	3.31	3.75	0.219'	0.865'	180.21'	0.250'	0.303'	1.76'	182.26'	0.055'	0.07'	0.14'		0.132'	1.888'	182.387'	o.k.		Yes by 0.14 cfs	
110		2.73	MH 10		06+26.00	06+26.00	182.97	182.77	y		0.20'	238.00'	12"	0.0050	0.0050	2.52	108.7%	0.79	3.20	3.55	0.196'	0.930'	182.52'	0.250'	0.293'	1.13'	183.70'	0.049'	0.04'			0.043'	1.170'	183.743'	o.k.		Yes by 0.22 cfs	
111		2.73	MH 11		08+57.00	08+57.00	183.80	183.60	y	90	0.20'	231.00'	12"	0.0027	0.0027	1.87	146.6%	0.79	2.38	2.64	0.108'	0.930'	183.90'	0.250'	0.293'	1.09'	184.99'	0.027'	0.04'	0.07'		0.067'	1.160'	185.060'	CRITICAL		Yes by 0.87 cfs	0.4
112		2.73	MH 12		12+34.00	12+34.00	185.02	184.82	y		0.20'	377.00'	12"	0.0027	0.0027	1.86	147.2%	0.79	2.37	2.63	0.107'	0.930'	185.06'	0.250'	0.293'	1.78'	186.84'	0.027'	0.34'			0.186'	1.970'	187.030'	CRITICAL		Yes by 0.88 cfs	1.0
113		2.73	MH 13		16+01.00	16+01.00	194.06	193.83	y		0.23'	367.00'	12"	0.0240	0.0240	5.53	49.4%	0.79	7.05	7.96	0.985'	0.735'	187.03'	0.250'	0.300'	1.68'	194.57'	0.246'	0.04'			0.142'	1.821'	194.707'	o.k.		no	
114		2.73	MH 14		18+66.00	18+66.00	194.98	194.78	y		0.20'	265.00'	12"	0.0027	0.0027	1.86	146.9%	0.79	2.37	2.63	0.108'	0.930'	194.99'	0.250'	0.293'	1.25'	196.24'	0.027'	0.04'			0.032'	1.286'	196.276'	CRITICAL		Yes by 0.87 cfs	0.5
115		2.73	MH 15		22+66.00	22+66.00	196.26	196.06	y		0.20'	400.00'	12"	0.0027	0.0027	1.86	147.3%	0.79	2.36	2.62	0.107'	0.930'	196.28'	0.250'	0.293'	1.89'	198.17'	0.027'	0.00'			0.013'	1.907'	198.183'	CRITICAL		Yes by 0.88 cfs	1.1

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal		**Point 100 is the flow to the Glenwood Pump Station**			
Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		y	y	y	y	y	y	y	y	y	y			y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	110.0	447.5	917.1	475.3	576.9	539.5	472.7	607.0	10.0	582.5			4,739 capita		
	Domestic Flow	11,062	50,802	94,170	55,452	63,671	64,415	58,854	64,355	1,048	58,301			522,131 gpd	0.522 mgd	
	Peak Domestic Flow	46,814	203,134	360,097	221,001	250,956	254,889	234,629	252,880	4,628	229,658			1,705,552 gpd	1.706 mgd	
	Industrial Flow	72	72	34,200	19,800	72	72	0	0	72	7,200			61,560 gpd	0.062 mgd	
	Peak Industrial Flow	72	72	34,200	19,800	72	72	0	0	72	7,200			61,560 gpd	0.062 mgd	
	Fixed Flow	0	0	14,000	0	0	0	0	0	0	0			14,000 gpd	0.014 mgd	
	Total Peak Flow	46,886	203,206	408,297	240,801	251,028	254,961	234,629	252,880	4,700	236,858			1,781,112 gpd	1.781 mgd	2.76 cfs
	ERUs	45	203	569	301	255	258	235	257	4	262			2,391 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	461.4	715.8	1541.0	816.8	734.2	665.8	567.3	776.7	92.0	686.8			7,058 capita		
	Domestic Flow	46,467	77,908	160,147	93,732	79,597	83,652	70,502	81,848	9,637	69,004			772,493 gpd	0.772 mgd	
	Peak Domestic Flow	185,494	302,979	587,907	361,331	309,036	326,827	278,158	316,592	40,990	269,065			2,397,160 gpd	2.397 mgd	
	Industrial Flow	617	580	62,020	29,165	505	170	0	0	1,010	20,633			114,699 gpd	0.115 mgd	
	Peak Industrial Flow	617	580	62,020	29,165	505	170	0	0	1,010	20,633			114,699 gpd	0.115 mgd	
	Fixed	0	0	34,000	0	0	0	0	0	0	0			34,000 gpd	0.034 mgd	
	Total Peak Flow	186,112	303,559	683,928	390,496	309,541	326,997	278,158	316,592	42,000	289,698			2,545,859 gpd	2.546 mgd	3.94 cfs
	ERUs	188	314	1,025	492	320	335	282	327	43	359			3,685 ERU		
10	2007	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	772.3	789.7	2203.0	899.0	785.3	799.3	651.7	954.1	184.1	782.3			8,821 capita		
	Domestic Flow	78,286	85,489	231,490	105,051	84,932	104,011	80,627	100,857	20,298	79,363			970,405 gpd	0.970 mgd	
	Peak Domestic Flow	302,930	330,311	822,428	402,278	328,279	401,546	315,433	384,575	84,461	306,838			2,919,572 gpd	2.920 mgd	
	Industrial Flow	2,584	2,328	92,230	37,757	1,850	301	0	0	5,872	41,626			184,548 gpd	0.185 mgd	
	Peak Industrial Flow	2,584	2,328	92,230	37,757	1,850	301	0	0	5,872	41,626			184,548 gpd	0.185 mgd	
	Fixed	0	0	34,000	0	0	0	0	0	0	0			34,000 gpd	0.034 mgd	
	Total Peak Flow	305,514	332,638	948,658	440,035	330,129	401,847	315,433	384,575	90,333	348,464			3,138,120 gpd	3.138 mgd	4.86 cfs
	ERUs	323	351	1,431	571	347	417	323	403	105	484			4,756 ERU		
15	2012	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	1353.0	926.0	3223.5	1029.6	891.0	1077.7	819.9	1226.8	364.8	928.3			11,841 capita		
	Domestic Flow	139,815	99,361	346,959	123,155	96,131	145,264	99,861	134,938	48,335	98,352			1,332,172 gpd	1.332 mgd	
	Peak Domestic Flow	518,927	379,686	1,185,110	466,980	368,348	548,925	384,858	504,804	195,314	375,766			3,838,604 gpd	3.839 mgd	
	Industrial Flow	15,480	13,233	151,459	52,139	9,375	616	0	0	53,028	100,089			395,420 gpd	0.395 mgd	
	Peak Industrial Flow	15,480	13,233	151,459	52,139	9,375	616	0	0	53,028	100,089			395,420 gpd	0.395 mgd	
	Fixed	0	0	34,000	0	0	0	0	0	0	0			34,000 gpd	0.034 mgd	
	Total Peak Flow	534,407	392,919	1,370,569	519,120	377,723	549,541	384,858	504,804	248,342	475,855			4,268,024 gpd	4.268 mgd	6.60 cfs
	ERUs	621	450	2,130	701	422	584	399	540	405	794			7,046 ERU		
20	2017	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	2651.2	1204.2	3971.5	1168.0	1136.5	1811.4	1206.3	1619.2	765.6	1129.0			16,663 capita		
	Domestic Flow	284,514	127,440	453,178	143,722	122,262	240,117	141,288	209,620	150,910	139,775			2,012,827 gpd	2.013 mgd	
	Peak Domestic Flow	992,228	477,457	1,511,854	539,750	460,133	868,948	529,267	766,223	584,294	526,312			5,499,535 gpd	5.500 mgd	
	Industrial Flow	92,736	75,240	248,724	72,000	47,520	1,260	0	0	478,886	240,660			1,257,026 gpd	1.257 mgd	
	Peak Industrial Flow	92,736	75,240	248,724	72,000	47,520	1,260	0	0	478,886	240,660			1,257,026 gpd	1.257 mgd	
	Fixed	0	0	34,000	0	0	0	0	0	0	0			34,000 gpd	0.034 mgd	
	Total Peak Flow	1,084,964	552,697	1,794,578	611,750	507,653	870,208	529,267	766,223	1,063,179	766,972			6,790,560 gpd	6.791 mgd	10.51 cfs
	ERUs	1,509	811	2,944	863	679	966	565	838	2,519	1,522			13,215 ERU		
Ultimate		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	2665.8	1642.4	3467.2	1224.9	1861.2	3491.4	2181.9	4013.4	1174.8	1836.5			23,559 capita		
	Domestic Flow	440,708	228,428	926,528	227,516	278,998	543,630	345,372	614,151	258,836	243,537			4,107,704 gpd	4.108 mgd	
	Peak Domestic Flow	1,536,076	833,927	3,139,307	851,245	1,007,147	1,840,518	1,228,172	2,046,372	971,620	880,215			10,602,974 gpd	10.603 mgd	
	Industrial Flow	132,480	150,480	414,540	180,000	59,400	1,800	0	0	504,090	343,800			1,786,590 gpd	1.787 mgd	
	Peak Industrial Flow	132,480	150,480	414,540	180,000	59,400	1,800	0	0	504,090	343,800			1,786,590 gpd	1.787 mgd	
	Fixed	0	0	34,000	0	0	0	0	0	0	0			34,000 gpd	0.034 mgd	
	Total Peak Flow	1,668,556	984,407	3,587,847	1,031,245	1,066,547	1,842,318	1,228,172	2,046,372	1,475,710	1,224,015			12,423,564 gpd	12.424 mgd	19.22 cfs
	ERUs	2,293	1,516	5,500	1,630	1,354	2,182	1,381	2,457	3,052	2,349			23,713 ERU		

Former Contract Area Trunks

Point 100

			Benchmark Years	0	6	10	15	20	ERU Factor	250 gal	**Point 115 is the flow from the west to the Glenwood P.S.**				
Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)										y	y			y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population									10.0	582.5			593 capita		
	Domestic Flow									1,048	58,301			59,349 gpd	0.059 mgd	
	Peak Domestic Flow									4,628	229,658			233,549 gpd	0.234 mgd	
	Industrial Flow									72	7,200			7,272 gpd	0.007 mgd	
	Peak Industrial Flow									72	7,200			7,272 gpd	0.007 mgd	
	Fixed Flow									0	0			0 gpd	0.000 mgd	
	Total Peak Flow									4,700	236,858			240,821 gpd	0.241 mgd	0.37 cfs
	ERUs									4	262			266 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population									92.0	686.8			779 capita		
	Domestic Flow									9,637	69,004			78,641 gpd	0.079 mgd	
	Peak Domestic Flow									40,990	269,065			304,133 gpd	0.304 mgd	
	Industrial Flow									1,010	20,633			21,642 gpd	0.022 mgd	
	Peak Industrial Flow									1,010	20,633			21,642 gpd	0.022 mgd	
	Fixed									0	0			0 gpd	0.000 mgd	
	Total Peak Flow									42,000	289,698			325,775 gpd	0.326 mgd	0.50 cfs
	ERUs									43	359			401 ERU		
10	2007	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population									184.1	782.3			966 capita		
	Domestic Flow									20,298	79,363			99,662 gpd	0.100 mgd	
	Peak Domestic Flow									84,461	306,838			379,665 gpd	0.380 mgd	
	Industrial Flow									5,872	41,626			47,498 gpd	0.047 mgd	
	Peak Industrial Flow									5,872	41,626			47,498 gpd	0.047 mgd	
	Fixed									0	0			0 gpd	0.000 mgd	
	Total Peak Flow									90,333	348,464			427,164 gpd	0.427 mgd	0.66 cfs
	ERUs									105	484			589 ERU		
15	2012	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population									364.8	928.3			1,293 capita		
	Domestic Flow									48,335	98,352			146,688 gpd	0.147 mgd	
	Peak Domestic Flow									195,314	375,766			546,448 gpd	0.546 mgd	
	Indusirial Flow									53,028	100,089			153,117 gpd	0.153 mgd	
	Peak Industrial Flow									53,028	100,089			153,117 gpd	0.153 mgd	
	Fixed									0	0			0 gpd	0.000 mgd	
	Total Peak Flow									248,342	475,855			699,565 gpd	0.700 mgd	1.08 cfs
	ERUs									405	794			1,199 ERU		
20	2017	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population									765.6	1129.0			1,895 capita		
	Domestic Flow									150,910	139,775			290,685 gpd	0.291 mgd	
	Peak Domestic Flow									584,294	526,312			1,047,618 gpd	1.048 mgd	
	Indusirial Flow									478,886	240,660			719,545 gpd	0.720 mgd	
	Peak Industrial Flow									478,886	240,660			719,545 gpd	0.720 mgd	
	Fixed									0	0			0 gpd	0.000 mgd	
	Total Peak Flow									1,063,179	766,972			1,767,163 gpd	1.767 mgd	2.73 cfs
	ERUs									2,519	1,522			4,041 ERU		
Ultimate		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population									1174.8	1836.5			3,011 capita		
	Domestic Flow									258,836	243,537			502,372 gpd	0.502 mgd	
	Peak Domestic Flow									971,620	680,215			1,728,678 gpd	1.729 mgd	
	Industrial Flow									504,090	343,800			847,890 gpd	0.848 mgd	
	Peak Industrial Flow									504,090	343,800			847,890 gpd	0.848 mgd	
	Fixed									0	0			0 gpd	0.000 mgd	
	Total Peak Flow									1,475,710	1,224,015			2,576,568 gpd	2.577 mgd	3.99 cfs
	ERUs									3,052	2,349			5,401 ERU		

Former Contract Area Trunks

Point 115

Point 101 (E) is the flow from the east to the Glenwood P.S.

Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years		0	6	10	15	20	ERU Factor	250 gal								
Include in Calculation? (Y/N)		y	y	y	y	y	y	y	y					y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	110.0	447.5	917.1	475.3	576.9	539.5	472.7	607.0					4,146 capita		
	Domestic Flow	11,062	50,802	94,170	55,452	63,671	64,415	58,854	64,355					462,781 gpd	0.463 mgd	
	Peak Domestic Flow	46,814	203,134	360,097	221,001	250,956	254,889	234,629	252,880					1,536,125 gpd	1.536 mgd	
	Industrial Flow	72	72	34,200	19,800	72	72	0	0					54,288 gpd	0.054 mgd	
	Peak Industrial Flow	72	72	34,200	19,800	72	72	0	0					54,288 gpd	0.054 mgd	
	Fixed Flow	0	0	14,000	0	0	0	0	0					14,000 gpd	0.014 mgd	
	Total Peak Flow	46,886	203,206	408,297	240,801	251,028	254,961	234,629	252,880					1,604,413 gpd	1.604 mgd	2.48 cfs
	ERUs	45	203	569	301	255	258	235	257					2,124 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	461.4	715.8	1541.0	816.8	734.2	665.8	567.3	776.7					6,279 capita		
	Domestic Flow	46,467	77,908	160,147	93,732	79,597	83,652	70,502	81,848					693,852 gpd	0.694 mgd	
	Peak Domestic Flow	185,494	302,979	587,907	361,331	309,036	326,827	278,158	316,592					2,186,966 gpd	2.187 mgd	
	Industrial Flow	617	580	62,020	29,165	505	170	0	0					93,057 gpd	0.093 mgd	
	Peak Industrial Flow	617	580	62,020	29,165	505	170	0	0					93,057 gpd	0.093 mgd	
	Fixed	0	0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow	186,112	303,559	683,928	390,496	309,541	326,997	278,158	316,592					2,314,023 gpd	2.314 mgd	3.58 cfs
	ERUs	188	314	1,025	492	320	335	282	327					3,284 ERU		
10	2007	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	772.3	789.7	2203.0	899.0	785.3	799.3	651.7	954.1					7,854 capita		
	Domestic Flow	78,286	85,489	231,490	105,051	84,932	104,011	80,627	100,857					870,743 gpd	0.871 mgd	
	Peak Domestic Flow	302,930	330,311	822,428	402,278	328,279	401,546	315,433	384,575					2,662,769 gpd	2.663 mgd	
	Industrial Flow	2,584	2,328	92,230	37,757	1,850	301	0	0					137,049 gpd	0.137 mgd	
	Peak Industrial Flow	2,584	2,328	92,230	37,757	1,850	301	0	0					137,049 gpd	0.137 mgd	
	Fixed	0	0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow	305,514	332,638	948,658	440,035	330,129	401,847	315,433	384,575					2,833,819 gpd	2.834 mgd	4.38 cfs
	ERUs	323	351	1,431	571	347	417	323	403					4,167 ERU		
15	2012	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	1353.0	926.0	3223.5	1029.6	891.0	1077.7	819.9	1226.8					10,547 capita		
	Domestic Flow	139,815	99,361	346,959	123,155	96,131	145,264	99,861	134,938					1,185,484 gpd	1.185 mgd	
	Peak Domestic Flow	518,927	379,686	1,185,110	466,980	368,348	548,925	384,858	504,804					3,475,424 gpd	3.475 mgd	
	Industrial Flow	15,480	13,233	151,459	52,139	9,375	616	0	0					242,303 gpd	0.242 mgd	
	Peak Industrial Flow	15,480	13,233	151,459	52,139	9,375	616	0	0					242,303 gpd	0.242 mgd	
	Fixed	0	0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow	534,407	392,919	1,370,569	519,120	377,723	549,541	384,858	504,804					3,751,727 gpd	3.752 mgd	5.81 cfs
	ERUs	621	450	2,130	701	422	584	399	540					5,847 ERU		
20	2017	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	2651.2	1204.2	3971.5	1168.0	1136.5	1811.4	1206.3	1619.2					14,768 capita		
	Domestic Flow	284,514	127,440	453,178	143,722	122,262	240,117	141,288	209,620					1,722,142 gpd	1.722 mgd	
	Peak Domestic Flow	992,228	477,457	1,511,854	539,750	460,133	868,948	529,267	766,223					4,796,242 gpd	4.796 mgd	
	Industrial Flow	92,736	75,240	248,724	72,000	47,520	1,260	0	0					537,480 gpd	0.537 mgd	
	Peak Industrial Flow	92,736	75,240	248,724	72,000	47,520	1,260	0	0					537,480 gpd	0.537 mgd	
	Fixed	0	0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow	1,084,964	552,697	1,794,578	611,750	507,653	870,208	529,267	766,223					5,367,722 gpd	5.368 mgd	8.31 cfs
	ERUs	1,509	811	2,944	863	679	966	565	838					9,174 ERU		
Ultimate		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	2665.8	1642.4	3467.2	1224.9	1861.2	3491.4	2181.9	4013.4					20,548 capita		
	Domestic Flow	440,708	228,428	926,528	227,516	278,998	543,630	345,372	614,151					3,605,331 gpd	3.605 mgd	
	Peak Domestic Flow	1,536,076	833,927	3,139,307	851,245	1,007,147	1,840,518	1,228,172	2,046,372					9,520,551 gpd	9.521 mgd	
	Industrial Flow	132,480	150,480	414,540	180,000	59,400	1,800	0	0					938,700 gpd	0.939 mgd	
	Peak Industrial Flow	132,480	150,480	414,540	180,000	59,400	1,800	0	0					938,700 gpd	0.939 mgd	
	Fixed	0	0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow	1,668,556	984,407	3,587,847	1,031,245	1,066,547	1,842,318	1,228,172	2,046,372					10,493,251 gpd	10.493 mgd	16.24 cfs
	ERUs	2,293	1,516	5,500	1,630	1,354	2,182	1,381	2,457					18,312 ERU		

Former Contract Area Trunks

Point 101 (E)

			Benchmark Years			0	6	10	15	20	ERU Factor	250 gal	**Point 105 (N) is Basin 29 flows at NE 94th Ave & NE 90th St**			
Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		y												y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	110.0												110 capita		
	Domestic Flow	11,062												11,062 gpd	0.011 mgd	
	Peak Domestic Flow	46,814												46,814 gpd	0.047 mgd	
	Industrial Flow	72												72 gpd	0.000 mgd	
	Peak Industrial Flow	72												72 gpd	0.000 mgd	
	Fixed Flow	0												0 gpd	0.000 mgd	
	Total Peak Flow	46,886												46,886 gpd	0.047 mgd	0.07 cfs
	ERUs	45												45 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	461.4												461 capita		
	Domestic Flow	46,467												46,467 gpd	0.046 mgd	
	Peak Domestic Flow	185,494												185,494 gpd	0.185 mgd	
	Industrial Flow	617												617 gpd	0.001 mgd	
	Peak Industrial Flow	617												617 gpd	0.001 mgd	
	Fixed	0												0 gpd	0.000 mgd	
	Total Peak Flow	186,112												186,112 gpd	0.186 mgd	0.29 cfs
	ERUs	188												188 ERU		
10	2007	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	772.3												772 capita		
	Domestic Flow	78,286												78,286 gpd	0.078 mgd	
	Peak Domestic Flow	302,930												302,930 gpd	0.303 mgd	
	Industrial Flow	2,584												2,584 gpd	0.003 mgd	
	Peak Industrial Flow	2,584												2,584 gpd	0.003 mgd	
	Fixed	0												0 gpd	0.000 mgd	
	Total Peak Flow	305,514												305,514 gpd	0.306 mgd	0.47 cfs
	ERUs	323												323 ERU		
15	2012	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	1353.0												1,353 capita		
	Domestic Flow	139,815												139,815 gpd	0.140 mgd	
	Peak Domestic Flow	518,927												518,927 gpd	0.519 mgd	
	Industrial Flow	15,480												15,480 gpd	0.015 mgd	
	Peak Industrial Flow	15,480												15,480 gpd	0.015 mgd	
	Fixed	0												0 gpd	0.000 mgd	
	Total Peak Flow	534,407												534,407 gpd	0.534 mgd	0.83 cfs
	ERUs	621												621 ERU		
20	2017	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	2651.2												2,651 capita		
	Domestic Flow	284,514												284,514 gpd	0.285 mgd	
	Peak Domestic Flow	992,228												992,228 gpd	0.992 mgd	
	Industrial Flow	92,736												92,736 gpd	0.093 mgd	
	Peak Industrial Flow	92,736												92,736 gpd	0.093 mgd	
	Fixed	0												0 gpd	0.000 mgd	
	Total Peak Flow	1,084,964												1,084,964 gpd	1.085 mgd	1.68 cfs
	ERUs	1,509												1,509 ERU		
Ultimate		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	2665.8												2,666 capita		
	Domestic Flow	440,708												440,708 gpd	0.441 mgd	
	Peak Domestic Flow	1,536,076												1,536,076 gpd	1.536 mgd	
	Industrial Flow	132,480												132,480 gpd	0.132 mgd	
	Peak Industrial Flow	132,480												132,480 gpd	0.132 mgd	
	Fixed	0												0 gpd	0.000 mgd	
	Total Peak Flow	1,668,556												1,668,556 gpd	1.669 mgd	2.58 cfs
	ERUs	2,293												2,293 ERU		

Former Contract Area Trunks

Point 105 (N)

			Benchmark Years	0	6	10	15	20	ERU Factor	250 gal	**Point 211 is the Intx. of 86th St. trunk & Orchards Int.**			
Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)			y	y	y	y	y	y	y					y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		447.5	917.1	475.3	576.9	539.5	472.7	607.0					4,036 capita		
	Domestic Flow		50,802	94,170	55,452	63,671	64,415	58,854	64,355					451,719 gpd	0.452 mgd	
	Peak Domestic Flow		203,134	360,097	221,001	250,956	254,889	234,629	252,880					1,504,149 gpd	1.504 mgd	
	Industrial Flow		72	34,200	19,800	72	72	0	0					54,216 gpd	0.054 mgd	
	Peak Industrial Flow		72	34,200	19,800	72	72	0	0					54,216 gpd	0.054 mgd	
	Fixed Flow		0	14,000	0	0	0	0	0					14,000 gpd	0.014 mgd	
	Total Peak Flow		203,206	408,297	240,801	251,028	254,961	234,629	252,880					1,572,365 gpd	1.572 mgd	2.43 cfs
	ERUs		203	569	301	255	258	235	257					2,080 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		715.8	1541.0	816.8	734.2	665.8	567.3	776.7					5,818 capita		
	Domestic Flow		77,908	160,147	93,732	79,597	83,652	70,502	81,848					647,385 gpd	0.647 mgd	
	Peak Domestic Flow		302,979	587,907	361,331	309,036	326,827	278,158	316,592					2,060,888 gpd	2.061 mgd	
	Industrial Flow		580	62,020	29,165	505	170	0	0					92,440 gpd	0.092 mgd	
	Peak Industrial Flow		580	62,020	29,165	505	170	0	0					92,440 gpd	0.092 mgd	
	Fixed		0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow		303,559	683,928	390,496	309,541	326,997	278,158	316,592					2,187,328 gpd	2.187 mgd	3.38 cfs
	ERUs		314	1,025	492	320	335	282	327					3,095 ERU		
10	2007	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		789.7	2203.0	899.0	785.3	799.3	651.7	954.1					7,082 capita		
	Domestic Flow		85,489	231,490	105,051	84,932	104,011	80,627	100,857					792,457 gpd	0.792 mgd	
	Peak Domestic Flow		330,311	822,428	402,278	328,279	401,546	315,433	384,575					2,457,976 gpd	2.458 mgd	
	Industrial Flow		2,328	92,230	37,757	1,850	301	0	0					134,465 gpd	0.134 mgd	
	Peak Industrial Flow		2,328	92,230	37,757	1,850	301	0	0					134,465 gpd	0.134 mgd	
	Fixed		0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow		332,638	948,658	440,035	330,129	401,847	315,433	384,575					2,626,441 gpd	2.626 mgd	4.06 cfs
	ERUs		351	1,431	571	347	417	323	403					3,844 ERU		
15	2012	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		926.0	3223.5	1029.6	891.0	1077.7	819.9	1226.8					9,195 capita		
	Domestic Flow		99,361	346,959	123,155	96,131	145,264	99,861	134,938					1,045,669 gpd	1.046 mgd	
	Peak Domestic Flow		379,686	1,185,110	466,980	368,348	548,925	384,858	504,804					3,127,415 gpd	3.127 mgd	
	Industrial Flow		13,233	151,459	52,139	9,375	616	0	0					226,823 gpd	0.227 mgd	
	Peak Industrial Flow		13,233	151,459	52,139	9,375	616	0	0					226,823 gpd	0.227 mgd	
	Fixed		0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow		392,919	1,370,569	519,120	377,723	549,541	384,858	504,804					3,388,239 gpd	3.388 mgd	5.24 cfs
	ERUs		450	2,130	701	422	584	399	540					5,226 ERU		
20	2017	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		1204.2	3971.5	1168.0	1136.5	1811.4	1206.3	1619.2					12,117 capita		
	Domestic Flow		127,440	453,178	143,722	122,262	240,117	141,288	209,620					1,437,629 gpd	1.438 mgd	
	Peak Domestic Flow		477,457	1,511,854	539,750	460,133	868,948	529,267	766,223					4,128,035 gpd	4.128 mgd	
	Industrial Flow		75,240	248,724	72,000	47,520	1,260	0	0					444,744 gpd	0.445 mgd	
	Peak Industrial Flow		75,240	248,724	72,000	47,520	1,260	0	0					444,744 gpd	0.445 mgd	
	Fixed		0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow		552,697	1,794,578	611,750	507,653	870,208	529,267	766,223					4,606,779 gpd	4.607 mgd	7.13 cfs
	ERUs		811	2,944	863	679	966	565	838					7,665 ERU		
Ultimate		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		1642.4	3467.2	1224.9	1861.2	3491.4	2181.9	4013.4					17,882 capita		
	Domestic Flow		228,428	926,528	227,516	278,998	543,630	345,372	614,151					3,164,623 gpd	3.165 mgd	
	Peak Domestic Flow		833,927	3,139,307	851,245	1,007,147	1,840,518	1,228,172	2,046,372					8,548,757 gpd	8.549 mgd	
	Industrial Flow		150,480	414,540	180,000	59,400	1,800	0	0					806,220 gpd	0.806 mgd	
	Peak Industrial Flow		150,480	414,540	180,000	59,400	1,800	0	0					806,220 gpd	0.806 mgd	
	Fixed		0	34,000	0	0	0	0	0					34,000 gpd	0.034 mgd	
	Total Peak Flow		984,407	3,587,847	1,031,245	1,066,547	1,842,318	1,228,172	2,046,372					9,388,977 gpd	9.389 mgd	14.53 cfs
	ERUs		1,516	5,500	1,630	1,354	2,182	1,381	2,457					16,019 ERU		

Point 8100 is the Orchards Int. flow at 86th Street

Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years		0	6	10	15	20	ERU Factor	250 gal								
Include in Calculation? (Y/N)					y	y	y	y	y					y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				475.3	576.9	528.8	472.7	607.0					2,661 capita		
	Domestic Flow				55,452	63,671	63,127	58,854	64,355					305,459 gpd	0.305 mgd	
	Peak Domestic Flow				221,001	250,956	250,083	234,629	252,880					1,064,879 gpd	1.065 mgd	
	Industrial Flow				19,800	72	71	0	0					19,943 gpd	0.020 mgd	
	Peak Industrial Flow				19,800	72	71	0	0					19,943 gpd	0.020 mgd	
	Fixed Flow				0	0	0	0	0					0 gpd	0.000 mgd	
	Total Peak Flow				240,801	251,028	250,154	234,629	252,880					1,084,822 gpd	1.085 mgd	1.68 cfs
	ERUs				301	255	253	235	257					1,302 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				816.8	734.2	652.5	567.3	776.7					3,548 capita		
	Domestic Flow				93,732	79,597	81,979	70,502	81,848					407,658 gpd	0.408 mgd	
	Peak Domestic Flow				361,331	309,036	320,697	278,158	316,592					1,377,691 gpd	1.378 mgd	
	Industrial Flow				29,165	505	167	0	0					29,837 gpd	0.030 mgd	
	Peak Industrial Flow				29,165	505	167	0	0					29,837 gpd	0.030 mgd	
	Fixed				0	0	0	0	0					0 gpd	0.000 mgd	
	Total Peak Flow				390,496	309,541	320,864	278,158	316,592					1,407,527 gpd	1.408 mgd	2.18 cfs
	ERUs				492	320	329	282	327					1,750 ERU		
10	2007	100.0%	100.0%	100.0%	0.0%	0.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				0.0	0.0	783.3	651.7	954.1					2,389 capita		
	Domestic Flow				0	0	101,931	80,627	100,857					283,415 gpd	0.283 mgd	
	Peak Domestic Flow				0	0	394,052	315,433	384,575					998,893 gpd	0.999 mgd	
	Industrial Flow				0	0	295	0	0					295 gpd	0.000 mgd	
	Peak Industrial Flow				0	0	295	0	0					295 gpd	0.000 mgd	
	Fixed				0	0	0	0	0					0 gpd	0.000 mgd	
	Total Peak Flow						394,347	315,433	384,575					999,188 gpd	0.999 mgd	1.55 cfs
	ERUs						409	323	403					1,135 ERU		
15	2012	100.0%	100.0%	100.0%	0.0%	0.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				0.0	0.0	1056.2	819.9	1226.8					3,103 capita		
	Domestic Flow				0	0	142,359	99,861	134,938					377,157 gpd	0.377 mgd	
	Peak Domestic Flow				0	0	538,768	384,858	504,804					1,293,622 gpd	1.294 mgd	
	Industrial Flow				0	0	604	0	0					604 gpd	0.001 mgd	
	Peak Industrial Flow				0	0	604	0	0					604 gpd	0.001 mgd	
	Fixed				0	0	0	0	0					0 gpd	0.000 mgd	
	Total Peak Flow						539,372	384,858	504,804					1,294,226 gpd	1.294 mgd	2.00 cfs
	ERUs						572	399	540					1,511 ERU		
20	2017	100.0%	100.0%	100.0%	0.0%	0.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				0.0	0.0	1775.1	1206.3	1619.2					4,601 capita		
	Domestic Flow				0	0	235,315	141,288	209,620					586,224 gpd	0.586 mgd	
	Peak Domestic Flow				0	0	853,132	529,267	766,223					1,921,821 gpd	1.922 mgd	
	Industrial Flow				0	0	1,235	0	0					1,235 gpd	0.001 mgd	
	Peak Industrial Flow				0	0	1,235	0	0					1,235 gpd	0.001 mgd	
	Fixed				0	0	0	0	0					0 gpd	0.000 mgd	
	Total Peak Flow						854,367	529,267	766,223					1,923,056 gpd	1.923 mgd	2.98 cfs
	ERUs						946	565	838					2,350 ERU		
Ultimate		100.0%	100.0%	100.0%	0.0%	0.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				0.0	0.0	3421.6	2181.9	4013.4					9,617 capita		
	Domestic Flow				0	0	532,758	345,372	614,151					1,492,280 gpd	1.492 mgd	
	Peak Domestic Flow				0	0	1,807,788	1,228,172	2,046,372					4,434,348 gpd	4.434 mgd	
	Industrial Flow				0	0	1,764	0	0					1,764 gpd	0.002 mgd	
	Peak Industrial Flow				0	0	1,764	0	0					1,764 gpd	0.002 mgd	
	Fixed				0	0	0	0	0					0 gpd	0.000 mgd	
	Total Peak Flow						1,809,552	1,228,172	2,046,372					4,436,112 gpd	4.436 mgd	6.86 cfs
	ERUs						2,138	1,381	2,457					5,976 ERU		

Former Contract Area Trunks

Point 8100

Temp. Flow from Orchard Crest P.S. and part of basin 34.

		Benchmark Years	0	6	10	15	20	ERU Factor	250 gal				
Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)					y	y	y							y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	10.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				475.3	576.9	54.0							1,106 capita		
	Domestic Flow				55,452	53,671	6,441							125,565 gpd	0.126 mgd	
	Peak Domestic Flow				221,001	250,956	27,749							473,543 gpd	0.474 mgd	
	Industrial Flow				19,800	72	7							19,879 gpd	0.020 mgd	
	Peak Industrial Flow				19,800	72	7							19,879 gpd	0.020 mgd	
	Fixed Flow				0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow				240,801	251,028	27,757							493,422 gpd	0.493 mgd	0.76 cfs
	ERUs				301	255	26							582 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	10.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				816.8	734.2	66.6							1,618 capita		
	Domestic Flow				93,732	79,597	8,365							181,694 gpd	0.182 mgd	
	Peak Domestic Flow				361,331	309,036	35,869							664,202 gpd	0.664 mgd	
	Industrial Flow				29,165	505	17							29,687 gpd	0.030 mgd	
	Peak Industrial Flow				29,165	505	17							29,687 gpd	0.030 mgd	
	Fixed				0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow				390,496	309,541	35,886							693,889 gpd	0.694 mgd	1.07 cfs
	ERUs				492	320	34							846 ERU		
10	2007	100.0%	100.0%	100.0%	0.0%	0.0%	10.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				0.0	0.0	79.9							80 capita		
	Domestic Flow				0	0	10,401							10,401 gpd	0.010 mgd	
	Peak Domestic Flow				0	0	44,402							44,402 gpd	0.044 mgd	
	Industrial Flow				0	0	30							30 gpd	0.000 mgd	
	Peak Industrial Flow				0	0	30							30 gpd	0.000 mgd	
	Fixed				0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow						44,432							44,432 gpd	0.044 mgd	0.07 cfs
	ERUs						42							42 ERU		
15	2012	100.0%	100.0%	100.0%	0.0%	0.0%	10.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				0.0	0.0	107.8							108 capita		
	Domestic Flow				0	0	14,526							14,526 gpd	0.015 mgd	
	Peak Domestic Flow				0	0	61,513							61,513 gpd	0.062 mgd	
	Industrial Flow				0	0	62							62 gpd	0.000 mgd	
	Peak Industrial Flow				0	0	62							62 gpd	0.000 mgd	
	Fixed				0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow						61,574							61,574 gpd	0.062 mgd	0.10 cfs
	ERUs						58							58 ERU		
20	2017	100.0%	100.0%	100.0%	0.0%	0.0%	10.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				0.0	0.0	181.1							181 capita		
	Domestic Flow				0	0	24,012							24,012 gpd	0.024 mgd	
	Peak Domestic Flow				0	0	99,971							99,971 gpd	0.100 mgd	
	Industrial Flow				0	0	126							126 gpd	0.000 mgd	
	Peak Industrial Flow				0	0	126							126 gpd	0.000 mgd	
	Fixed				0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow						100,097							100,097 gpd	0.100 mgd	0.15 cfs
	ERUs						97							97 ERU		
Ultimate		100.0%	100.0%	100.0%	0.0%	0.0%	10.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				0.0	0.0	349.1							349 capita		
	Domestic Flow				0	0	54,363							54,363 gpd	0.054 mgd	
	Peak Domestic Flow				0	0	220,144							220,144 gpd	0.220 mgd	
	Industrial Flow				0	0	180							180 gpd	0.000 mgd	
	Peak Industrial Flow				0	0	180							180 gpd	0.000 mgd	
	Fixed				0	0	0							0 gpd	0.000 mgd	
	Total Peak Flow						220,324							220,324 gpd	0.220 mgd	0.34 cfs
	ERUs						218							218 ERU		

Former Contract Area Trunks

Point 8100 (E)

Flow from Covington South, Basin 35

Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years		0	6	10	15	20	ERU Factor	250 gal								
Include in Calculation? (Y/N)								y						y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							472.7						473 capita		
	Domestic Flow							58,854						58,854 gpd	0.059 mgd	
	Peak Domestic Flow							234,629						234,629 gpd	0.235 mgd	
	Industrial Flow							0						0 gpd	0.000 mgd	
	Peak Industrial Flow							0						0 gpd	0.000 mgd	
	Fixed Flow							0						0 gpd	0.000 mgd	
	Total Peak Flow							234,629						234,629 gpd	0.235 mgd	0.36 cfs
	ERUs							235						235 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							567.3						567 capita		
	Domestic Flow							70,502						70,502 gpd	0.071 mgd	
	Peak Domestic Flow							278,158						278,158 gpd	0.278 mgd	
	Industrial Flow							0						0 gpd	0.000 mgd	
	Peak Industrial Flow							0						0 gpd	0.000 mgd	
	Fixed							0						0 gpd	0.000 mgd	
	Total Peak Flow							278,158						278,158 gpd	0.278 mgd	0.43 cfs
	ERUs							282						282 ERU		
10	2007	100.0%	100.0%	100.0%	0.0%	0.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							651.7						652 capita		
	Domestic Flow							80,627						80,627 gpd	0.081 mgd	
	Peak Domestic Flow							315,433						315,433 gpd	0.315 mgd	
	Industrial Flow							0						0 gpd	0.000 mgd	
	Peak Industrial Flow							0						0 gpd	0.000 mgd	
	Fixed							0						0 gpd	0.000 mgd	
	Total Peak Flow							315,433						315,433 gpd	0.315 mgd	0.49 cfs
	ERUs							323						323 ERU		
15	2012	100.0%	100.0%	100.0%	0.0%	0.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							819.9						820 capita		
	Domestic Flow							99,861						99,861 gpd	0.100 mgd	
	Peak Domestic Flow							384,858						384,858 gpd	0.385 mgd	
	Industrial Flow							0						0 gpd	0.000 mgd	
	Peak Industrial Flow							0						0 gpd	0.000 mgd	
	Fixed							0						0 gpd	0.000 mgd	
	Total Peak Flow							384,858						384,858 gpd	0.385 mgd	0.60 cfs
	ERUs							399						399 ERU		
20	2017	100.0%	100.0%	100.0%	0.0%	0.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							1206.3						1,206 capita		
	Domestic Flow							141,288						141,288 gpd	0.141 mgd	
	Peak Domestic Flow							529,267						529,267 gpd	0.529 mgd	
	Industrial Flow							0						0 gpd	0.000 mgd	
	Peak Industrial Flow							0						0 gpd	0.000 mgd	
	Fixed							0						0 gpd	0.000 mgd	
	Total Peak Flow							529,267						529,267 gpd	0.529 mgd	0.82 cfs
	ERUs							565						565 ERU		
Ultimate		100.0%	100.0%	100.0%	0.0%	0.0%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							2181.9						2,182 capita		
	Domestic Flow							345,372						345,372 gpd	0.345 mgd	
	Peak Domestic Flow							1,228,172						1,228,172 gpd	1.228 mgd	
	Industrial Flow							0						0 gpd	0.000 mgd	
	Peak Industrial Flow							0						0 gpd	0.000 mgd	
	Fixed							0						0 gpd	0.000 mgd	
	Total Peak Flow							1,228,172						1,228,172 gpd	1.228 mgd	1.90 cfs
	ERUs							1,381						1,381 ERU		

Former Contract Area Trunks

Point 1316

Flow from Covington North Basin

			Benchmark Years			0	6	10	15	20	ERU Factor	250 gal				
Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)							y		y					y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population						485.6		607.0					1,093 capita		
	Domestic Flow						57,973		64,355					122,329 gpd	0.122 mgd	
	Peak Domestic Flow						230,776		252,880					461,776 gpd	0.462 mgd	
	Industrial Flow						65		0					65 gpd	0.000 mgd	
	Peak Industrial Flow						65		0					65 gpd	0.000 mgd	
	Fixed Flow						0		0					0 gpd	0.000 mgd	
	Total Peak Flow						230,841		252,880					461,841 gpd	0.462 mgd	0.71 cfs
	ERUs						232		257					490 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population						599.3		776.7					1,376 capita		
	Domestic Flow						75,287		81,848					157,134 gpd	0.157 mgd	
	Peak Domestic Flow						296,064		316,592					582,394 gpd	0.582 mgd	
	Industrial Flow						153		0					153 gpd	0.000 mgd	
	Peak Industrial Flow						153		0					153 gpd	0.000 mgd	
	Fixed						0		0					0 gpd	0.000 mgd	
	Total Peak Flow						296,217		316,592					582,547 gpd	0.583 mgd	0.90 cfs
	ERUs						302		327					629 ERU		
10	2007	100.0%	100.0%	100.0%	0.0%	0.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population						719.4		954.1					1,673 capita		
	Domestic Flow						93,610		100,857					194,467 gpd	0.194 mgd	
	Peak Domestic Flow						363,926		384,575					708,772 gpd	0.709 mgd	
	Industrial Flow						271		0					271 gpd	0.000 mgd	
	Peak Industrial Flow						271		0					271 gpd	0.000 mgd	
	Fixed						0		0					0 gpd	0.000 mgd	
	Total Peak Flow						364,197		384,575					709,043 gpd	0.709 mgd	1.10 cfs
	ERUs						376		403					779 ERU		
15	2012	100.0%	100.0%	100.0%	0.0%	0.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population						969.9		1226.8					2,197 capita		
	Domestic Flow						130,738		134,938					265,675 gpd	0.266 mgd	
	Peak Domestic Flow						497,915		504,804					944,145 gpd	0.944 mgd	
	Industrial Flow						554		0					554 gpd	0.001 mgd	
	Peak Industrial Flow						554		0					554 gpd	0.001 mgd	
	Fixed						0		0					0 gpd	0.000 mgd	
	Total Peak Flow						498,470		504,804					944,699 gpd	0.945 mgd	1.46 cfs
	ERUs						525		540					1,065 ERU		
20	2017	100.0%	100.0%	100.0%	0.0%	0.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population						1630.2		1619.2					3,249 capita		
	Domestic Flow						216,106		209,620					425,726 gpd	0.426 mgd	
	Peak Domestic Flow						789,460		766,223					1,452,875 gpd	1.453 mgd	
	Industrial Flow						1,134		0					1,134 gpd	0.001 mgd	
	Peak Industrial Flow						1,134		0					1,134 gpd	0.001 mgd	
	Fixed						0		0					0 gpd	0.000 mgd	
	Total Peak Flow						790,594		766,223					1,454,009 gpd	1.454 mgd	2.25 cfs
	ERUs						869		838					1,707 ERU		
Ultimate		100.0%	100.0%	100.0%	0.0%	0.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population						3142.3		4013.4					7,156 capita		
	Domestic Flow						489,267		614,151					1,103,418 gpd	1.103 mgd	
	Peak Domestic Flow						1,675,854		2,046,372					3,417,702 gpd	3.418 mgd	
	Industrial Flow						1,620		0					1,620 gpd	0.002 mgd	
	Peak Industrial Flow						1,620		0					1,620 gpd	0.002 mgd	
	Fixed						0		0					0 gpd	0.000 mgd	
	Total Peak Flow						1,677,474		2,046,372					3,419,322 gpd	3.419 mgd	5.29 cfs
	ERUs						1,964		2,457					4,420 ERU		

Former Contract Area Trunks

Point 303

Flow from Green Meadows East

Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years		0	6	10	15	20	ERU Factor	250 gal								
Include in Calculation? (Y/N)									y					y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	90.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%			
	Population								546.3					546 capita		
	Domestic Flow								57,920					57,920 gpd	0.058 mgd	
	Peak Domestic Flow								229,023					229,023 gpd	0.229 mgd	
	Industrial Flow								0					0 gpd	0.000 mgd	
	Peak Industrial Flow								0					0 gpd	0.000 mgd	
	Fixed Flow								0					0 gpd	0.000 mgd	
	Total Peak Flow								229,023					229,023 gpd	0.229 mgd	0.35 cfs
	ERUs								232					232 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	90.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%			
	Population								699.1					699 capita		
	Domestic Flow								73,663					73,663 gpd	0.074 mgd	
	Peak Domestic Flow								286,908					286,908 gpd	0.287 mgd	
	Industrial Flow								0					0 gpd	0.000 mgd	
	Peak Industrial Flow								0					0 gpd	0.000 mgd	
	Fixed								0					0 gpd	0.000 mgd	
	Total Peak Flow								286,908					286,908 gpd	0.287 mgd	0.44 cfs
	ERUs								295					295 ERU		
10	2007	100.0%	100.0%	100.0%	0.0%	0.0%	90.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%			
	Population								858.7					859 capita		
	Domestic Flow								90,771					90,771 gpd	0.091 mgd	
	Peak Domestic Flow								348,716					348,716 gpd	0.349 mgd	
	Industrial Flow								0					0 gpd	0.000 mgd	
	Peak Industrial Flow								0					0 gpd	0.000 mgd	
	Fixed								0					0 gpd	0.000 mgd	
	Total Peak Flow								348,716					348,716 gpd	0.349 mgd	0.54 cfs
	ERUs								363					363 ERU		
15	2012	100.0%	100.0%	100.0%	0.0%	0.0%	90.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%			
	Population								1104.1					1,104 capita		
	Domestic Flow								121,444					121,444 gpd	0.121 mgd	
	Peak Domestic Flow								458,070					458,070 gpd	0.458 mgd	
	Industrial Flow								0					0 gpd	0.000 mgd	
	Peak Industrial Flow								0					0 gpd	0.000 mgd	
	Fixed								0					0 gpd	0.000 mgd	
	Total Peak Flow								458,070					458,070 gpd	0.458 mgd	0.71 cfs
	ERUs								486					486 ERU		
20	2017	100.0%	100.0%	100.0%	0.0%	0.0%	90.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%			
	Population								1457.3					1,457 capita		
	Domestic Flow								188,658					188,658 gpd	0.189 mgd	
	Peak Domestic Flow								695,883					695,883 gpd	0.696 mgd	
	Industrial Flow								0					0 gpd	0.000 mgd	
	Peak Industrial Flow								0					0 gpd	0.000 mgd	
	Fixed								0					0 gpd	0.000 mgd	
	Total Peak Flow								695,883					695,883 gpd	0.696 mgd	1.08 cfs
	ERUs								755					755 ERU		
Ultimate		100.0%	100.0%	100.0%	0.0%	0.0%	90.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%			
	Population								3612.0					3,612 capita		
	Domestic Flow								552,736					552,736 gpd	0.553 mgd	
	Peak Domestic Flow								1,864,193					1,864,193 gpd	1.864 mgd	
	Industrial Flow								0					0 gpd	0.000 mgd	
	Peak Industrial Flow								0					0 gpd	0.000 mgd	
	Fixed								0					0 gpd	0.000 mgd	
	Total Peak Flow								1,864,193					1,864,193 gpd	1.864 mgd	2.88 cfs
	ERUs								2,211					2,211 ERU		

Former Contract Area Trunks

Point 501

Point 603 is the intx of the Silver Star force main and the Orch. Int

Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years		0	6	10	15	20	ERU Factor	250 gal								
Include in Calculation? (Y/N)			y	y	y	y								y	y	
0	1997	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		447.5	917.1	0.0	0.0								1,365 capita		
	Domestic Flow		50,802	94,170	0	0								144,972 gpd	0.145 mgd	
	Peak Domestic Flow		203,134	360,097	0	0								537,684 gpd	0.538 mgd	
	Industrial Flow		72	34,200	0	0								34,272 gpd	0.034 mgd	
	Peak Industrial Flow		72	34,200	0	0								34,272 gpd	0.034 mgd	
	Fixed Flow		0	14,000	0	0								14,000 gpd	0.014 mgd	
	Total Peak Flow		203,206	408,297										585,956 gpd	0.586 mgd	0.91 cfs
	ERUs		203	569										773 ERU		
6	2003	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		715.8	1541.0	0.0	0.0								2,257 capita		
	Domestic Flow		77,908	160,147	0	0								238,055 gpd	0.238 mgd	
	Peak Domestic Flow		302,979	587,907	0	0								843,761 gpd	0.844 mgd	
	Industrial Flow		580	62,020	0	0								62,600 gpd	0.063 mgd	
	Peak Industrial Flow		580	62,020	0	0								62,600 gpd	0.063 mgd	
	Fixed		0	34,000	0	0								34,000 gpd	0.034 mgd	
	Total Peak Flow		303,559	683,928										940,361 gpd	0.940 mgd	1.46 cfs
	ERUs		314	1,025										1,339 ERU		
10	2007	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		789.7	2203.0	899.0	785.3								4,677 capita		
	Domestic Flow		85,489	231,490	105,051	84,932								506,962 gpd	0.507 mgd	
	Peak Domestic Flow		330,311	822,428	402,278	328,279								1,658,654 gpd	1.659 mgd	
	Industrial Flow		2,328	92,230	37,757	1,850								134,164 gpd	0.134 mgd	
	Peak Industrial Flow		2,328	92,230	37,757	1,850								134,164 gpd	0.134 mgd	
	Fixed		0	34,000	0	0								34,000 gpd	0.034 mgd	
	Total Peak Flow		332,638	948,658	440,035	330,129								1,826,818 gpd	1.827 mgd	2.83 cfs
	ERUs		351	1,431	571	347								2,701 ERU		
15	2012	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		926.0	3223.5	1029.6	891.0								6,070 capita		
	Domestic Flow		99,361	346,959	123,155	96,131								665,606 gpd	0.666 mgd	
	Peak Domestic Flow		379,686	1,185,110	466,980	368,348								2,107,256 gpd	2.107 mgd	
	Industrial Flow		13,233	151,459	52,139	9,375								226,207 gpd	0.226 mgd	
	Peak Industrial Flow		13,233	151,459	52,139	9,375								226,207 gpd	0.226 mgd	
	Fixed		0	34,000	0	0								34,000 gpd	0.034 mgd	
	Total Peak Flow		392,919	1,370,569	519,120	377,723								2,367,463 gpd	2.367 mgd	3.66 cfs
	ERUs		450	2,130	701	422								3,703 ERU		
20	2017	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		1204.2	3971.5	1168.0	1136.5								7,480 capita		
	Domestic Flow		127,440	453,178	143,722	122,262								846,603 gpd	0.847 mgd	
	Peak Domestic Flow		477,457	1,511,854	539,750	460,133								2,606,434 gpd	2.606 mgd	
	Industrial Flow		75,240	248,724	72,000	47,520								443,484 gpd	0.443 mgd	
	Peak Industrial Flow		75,240	248,724	72,000	47,520								443,484 gpd	0.443 mgd	
	Fixed		0	34,000	0	0								34,000 gpd	0.034 mgd	
	Total Peak Flow		552,697	1,794,578	611,750	507,653								3,083,918 gpd	3.084 mgd	4.77 cfs
	ERUs		811	2,944	863	679								5,296 ERU		
Ultimate		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		1642.4	3467.2	1224.9	1861.2								8,196 capita		
	Domestic Flow		228,428	926,528	227,516	278,998								1,661,470 gpd	1.661 mgd	
	Peak Domestic Flow		833,927	3,139,307	851,245	1,007,147								5,050,835 gpd	5.051 mgd	
	Industrial Flow		150,480	414,540	180,000	59,400								804,420 gpd	0.804 mgd	
	Peak Industrial Flow		150,480	414,540	180,000	59,400								804,420 gpd	0.804 mgd	
	Fixed		0	34,000	0	0								34,000 gpd	0.034 mgd	
	Total Peak Flow		984,407	3,587,847	1,031,245	1,066,547								5,889,255 gpd	5.889 mgd	9.11 cfs
	ERUs		1,516	5,500	1,630	1,354								10,000 ERU		

Former Contract Area Trunks

Point 603

			Benchmark Years	0	6	10	15	20	ERU Factor	250 gal	**Point 811 is where the Prop. Orchards Interceptor - III begins**			
Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Caiculation? (Y/N)			y		y	y								y	y	
0	1997	100.0%	30.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		134.3		0.0	0.0								134 capita		
	Domestic Flow		15,241		0	0								15,241 gpd	0.015 mgd	
	Peak Domestic Flow		64,107		0	0								64,107 gpd	0.064 mgd	
	Industrial Flow		22		0	0								22 gpd	0.000 mgd	
	Peak Industrial Flow		22		0	0								22 gpd	0.000 mgd	
	Fixed Flow		0		0	0								0 gpd	0.000 mgd	
	Total Peak Flow		64,128											64,128 gpd	0.064 mgd	0.10 cfs
	ERUs		61											61 ERU		
6	2003	100.0%	30.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		214.8		0.0	0.0								215 capita		
	Domestic Flow		23,372		0	0								23,372 gpd	0.023 mgd	
	Peak Domestic Flow		96,683		0	0								96,683 gpd	0.097 mgd	
	Industrial Flow		174		0	0								174 gpd	0.000 mgd	
	Peak Industrial Flow		174		0	0								174 gpd	0.000 mgd	
	Fixed		0		0	0								0 gpd	0.000 mgd	
	Total Peak Flow		96,856											96,856 gpd	0.097 mgd	0.15 cfs
	ERUs		94											94 ERU		
10	2007	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		236.9		899.0	785.3								1,921 capita		
	Domestic Flow		25,647		105,051	84,932								215,630 gpd	0.216 mgd	
	Peak Domestic Flow		105,673		402,278	328,279								776,115 gpd	0.776 mgd	
	Industrial Flow		698		37,757	1,850								40,305 gpd	0.040 mgd	
	Peak Industrial Flow		698		37,757	1,850								40,305 gpd	0.040 mgd	
	Fixed		0		0	0								0 gpd	0.000 mgd	
	Total Peak Flow		106,371		440,035	330,129								816,420 gpd	0.816 mgd	1.26 cfs
	ERUs		105		571	347								1,024 ERU		
15	2012	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		277.8		1029.6	891.0								2,198 capita		
	Domestic Flow		29,808		123,155	96,131								249,094 gpd	0.249 mgd	
	Peak Domestic Flow		121,991		466,980	368,348								885,152 gpd	0.885 mgd	
	Industrial Flow		3,970		52,139	9,375								65,485 gpd	0.065 mgd	
	Peak Industrial Flow		3,970		52,139	9,375								65,485 gpd	0.065 mgd	
	Fixed		0		0	0								0 gpd	0.000 mgd	
	Total Peak Flow		125,961		519,120	377,723								950,636 gpd	0.951 mgd	1.47 cfs
	ERUs		135		701	422								1,258 ERU		
20	2017	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		361.3		1168.0	1136.5								2,666 capita		
	Domestic Flow		38,232		143,722	122,262								304,217 gpd	0.304 mgd	
	Peak Domestic Flow		154,564		539,750	460,133								1,060,342 gpd	1.060 mgd	
	Industrial Flow		22,572		72,000	47,520								142,092 gpd	0.142 mgd	
	Peak Industrial Flow		22,572		72,000	47,520								142,092 gpd	0.142 mgd	
	Fixed		0		0	0								0 gpd	0.000 mgd	
	Total Peak Flow		177,136		611,750	507,653								1,202,434 gpd	1.202 mgd	1.86 cfs
	ERUs		243		863	679								1,785 ERU		
Ultimate		100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		492.7		1224.9	1861.2								3,579 capita		
	Domestic Flow		68,528		227,516	278,998								575,043 gpd	0.575 mgd	
	Peak Domestic Flow		272,571		851,245	1,007,147								1,941,455 gpd	1.941 mgd	
	Industrial Flow		45,144		180,000	59,400								284,544 gpd	0.285 mgd	
	Peak Industrial Flow		45,144		180,000	59,400								284,544 gpd	0.285 mgd	
	Fixed		0		0	0								0 gpd	0.000 mgd	
	Total Peak Flow		317,715		1,031,245	1,066,547								2,225,999 gpd	2.226 mgd	3.44 cfs
	ERUs		455		1,630	1,354								3,438 ERU		

Former Contract Area Trunks

Point 811

Point 902 is where Orchard Crst N & S trunks combine

Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years		0	6	10	15	20	ERU Factor	250 gal								
Include in Calculation? (Y/N)					y	y								y	y	
0	1997	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				475.3	576.9								1,052 capita		
	Domestic Flow				55,452	63,671								119,123 gpd	0.119 mgd	
	Peak Domestic Flow				221,001	250,956								450,956 gpd	0.451 mgd	
	Industrial Flow				19,800	72								19,872 gpd	0.020 mgd	
	Peak Industrial Flow				19,800	72								19,872 gpd	0.020 mgd	
	Fixed Flow				0	0								0 gpd	0.000 mgd	
	Total Peak Flow				240,801	251,028								470,828 gpd	0.471 mgd	0.73 cfs
	ERUs				301	255								556 ERU		
6	2003	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				816.8	734.2								1,551 capita		
	Domestic Flow				93,732	79,597								173,329 gpd	0.173 mgd	
	Peak Domestic Flow				361,331	309,036								635,943 gpd	0.636 mgd	
	Industrial Flow				29,165	505								29,670 gpd	0.030 mgd	
	Peak Industrial Flow				29,165	505								29,670 gpd	0.030 mgd	
	Fixed				0	0								0 gpd	0.000 mgd	
	Total Peak Flow				390,496	309,541								665,613 gpd	0.666 mgd	1.03 cfs
	ERUs				492	320								812 ERU		
10	2007	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				899.0	785.3								1,684 capita		
	Domestic Flow				105,051	84,932								189,983 gpd	0.190 mgd	
	Peak Domestic Flow				402,278	328,279								692,033 gpd	0.692 mgd	
	Industrial Flow				37,757	1,850								39,607 gpd	0.040 mgd	
	Peak Industrial Flow				37,757	1,850								39,607 gpd	0.040 mgd	
	Fixed				0	0								0 gpd	0.000 mgd	
	Total Peak Flow				440,035	330,129								731,640 gpd	0.732 mgd	1.13 cfs
	ERUs				571	347								918 ERU		
15	2012	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				1029.6	891.0								1,921 capita		
	Domestic Flow				123,155	96,131								219,286 gpd	0.219 mgd	
	Peak Domestic Flow				466,980	368,348								789,297 gpd	0.789 mgd	
	Industrial Flow				52,139	9,375								61,515 gpd	0.062 mgd	
	Peak Industrial Flow				52,139	9,375								61,515 gpd	0.062 mgd	
	Fixed				0	0								0 gpd	0.000 mgd	
	Total Peak Flow				519,120	377,723								850,811 gpd	0.851 mgd	1.32 cfs
	ERUs				701	422								1,123 ERU		
20	2017	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				1168.0	1136.5								2,304 capita		
	Domestic Flow				143,722	122,262								265,985 gpd	0.266 mgd	
	Peak Domestic Flow				539,750	460,133								940,822 gpd	0.941 mgd	
	Industrial Flow				72,000	47,520								119,520 gpd	0.120 mgd	
	Peak Industrial Flow				72,000	47,520								119,520 gpd	0.120 mgd	
	Fixed				0	0								0 gpd	0.000 mgd	
	Total Peak Flow				611,750	507,653								1,060,342 gpd	1.060 mgd	1.64 cfs
	ERUs				863	679								1,542 ERU		
Ultimate		100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				1224.9	1861.2								3,086 capita		
	Domestic Flow				227,516	278,998								506,515 gpd	0.507 mgd	
	Peak Domestic Flow				851,245	1,007,147								1,738,325 gpd	1.738 mgd	
	Industrial Flow				180,000	59,400								239,400 gpd	0.239 mgd	
	Peak Industrial Flow				180,000	59,400								239,400 gpd	0.239 mgd	
	Fixed				0	0								0 gpd	0.000 mgd	
	Total Peak Flow				1,031,245	1,066,547								1,977,725 gpd	1.978 mgd	3.06 cfs
	ERUs				1,630	1,354								2,984 ERU		

Former Contract Area Trunks

Point 902

Point 910 is the flow in the Orchards Crest North Trunk

Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years		0	6	10	15	20	ERU Factor	250 gal								
Include in Calculation? (Y/N)					y									y	y	
0	1997	100.0%	30.0%	100.0%	100.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				475.3									475 capita		
	Domestic Flow				55,452									55,452 gpd	0.055 mgd	
	Peak Domestic Flow				221,001									221,001 gpd	0.221 mgd	
	Industrial Flow				19,800									19,800 gpd	0.020 mgd	
	Peak Industrial Flow				19,800									19,800 gpd	0.020 mgd	
	Fixed Flow				0									0 gpd	0.000 mgd	
	Total Peak Flow				240,801									240,801 gpd	0.241 mgd	0.37 cfs
	ERUs				301									301 ERU		
6	2003	100.0%	30.0%	100.0%	100.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				816.8									817 capita		
	Domestic Flow				93,732									93,732 gpd	0.094 mgd	
	Peak Domestic Flow				361,331									361,331 gpd	0.361 mgd	
	Industrial Flow				29,165									29,165 gpd	0.029 mgd	
	Peak Industrial Flow				29,165									29,165 gpd	0.029 mgd	
	Fixed				0									0 gpd	0.000 mgd	
	Total Peak Flow				390,496									390,496 gpd	0.390 mgd	0.60 cfs
	ERUs				492									492 ERU		
10	2007	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				899.0									899 capita		
	Domestic Flow				105,051									105,051 gpd	0.105 mgd	
	Peak Domestic Flow				402,278									402,278 gpd	0.402 mgd	
	Industrial Flow				37,757									37,757 gpd	0.038 mgd	
	Peak Industrial Flow				37,757									37,757 gpd	0.038 mgd	
	Fixed				0									0 gpd	0.000 mgd	
	Total Peak Flow				440,035									440,035 gpd	0.440 mgd	0.68 cfs
	ERUs				571									571 ERU		
15	2012	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				1029.6									1,030 capita		
	Domestic Flow				123,155									123,155 gpd	0.123 mgd	
	Peak Domestic Flow				466,980									466,980 gpd	0.467 mgd	
	Industrial Flow				52,139									52,139 gpd	0.052 mgd	
	Peak Industrial Flow				52,139									52,139 gpd	0.052 mgd	
	Fixed				0									0 gpd	0.000 mgd	
	Total Peak Flow				519,120									519,120 gpd	0.519 mgd	0.80 cfs
	ERUs				701									701 ERU		
20	2017	100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				1168.0									1,168 capita		
	Domestic Flow				143,722									143,722 gpd	0.144 mgd	
	Peak Domestic Flow				539,750									539,750 gpd	0.540 mgd	
	Industrial Flow				72,000									72,000 gpd	0.072 mgd	
	Peak Industrial Flow				72,000									72,000 gpd	0.072 mgd	
	Fixed				0									0 gpd	0.000 mgd	
	Total Peak Flow				611,750									611,750 gpd	0.612 mgd	0.95 cfs
	ERUs				863									863 ERU		
Ultimate		100.0%	30.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population				1224.9									1,225 capita		
	Domestic Flow				227,516									227,516 gpd	0.228 mgd	
	Peak Domestic Flow				851,245									851,245 gpd	0.851 mgd	
	Industrial Flow				180,000									180,000 gpd	0.180 mgd	
	Peak Industrial Flow				180,000									180,000 gpd	0.180 mgd	
	Fixed				0									0 gpd	0.000 mgd	
	Total Peak Flow				1,031,245									1,031,245 gpd	1.031 mgd	1.60 cfs
	ERUs				1,630									1,630 ERU		

Former Contract Area Trunks

Point 910

Point 707 is the end of the 86th Street trunk

			Benchmark Years	0	6	10	15	20	ERU Factor	250 gal				
Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)			y	y										y	y	
0	1997	100.0%	70.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		313.3	917.1										1,230 capita		
	Domestic Flow		35,562	94,170										129,731 gpd	0.130 mgd	
	Peak Domestic Flow		144,749	360,097										485,213 gpd	0.485 mgd	
	Industrial Flow		50	34,200										34,250 gpd	0.034 mgd	
	Peak Industrial Flow		50	34,200										34,250 gpd	0.034 mgd	
	Fixed Flow		0	14,000										14,000 gpd	0.014 mgd	
	Total Peak Flow		144,800	408,297										533,464 gpd	0.533 mgd	0.83 cfs
	ERUs		142	569										712 ERU		
6	2003	100.0%	70.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		501.1	1541.0										2,042 capita		
	Domestic Flow		54,536	160,147										214,682 gpd	0.215 mgd	
	Peak Domestic Flow		216,710	587,907										768,291 gpd	0.768 mgd	
	Industrial Flow		406	62,020										62,426 gpd	0.062 mgd	
	Peak Industrial Flow		406	62,020										62,426 gpd	0.062 mgd	
	Fixed		0	34,000										34,000 gpd	0.034 mgd	
	Total Peak Flow		217,116	683,928										864,717 gpd	0.865 mgd	1.34 cfs
	ERUs		220	1,025										1,244 ERU		
10	2007	100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		552.8	2203.0										2,756 capita		
	Domestic Flow		59,843	231,490										291,332 gpd	0.291 mgd	
	Peak Domestic Flow		236,462	822,428										1,011,934 gpd	1.012 mgd	
	Industrial Flow		1,629	92,230										93,859 gpd	0.094 mgd	
	Peak Industrial Flow		1,629	92,230										93,859 gpd	0.094 mgd	
	Fixed		0	34,000										34,000 gpd	0.034 mgd	
	Total Peak Flow		238,091	948,658										1,139,793 gpd	1.140 mgd	1.76 cfs
	ERUs		246	1,431										1,677 ERU		
15	2012	100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		648.2	3223.5										3,872 capita		
	Domestic Flow		69,553	346,959										416,512 gpd	0.417 mgd	
	Peak Domestic Flow		272,199	1,185,110										1,393,639 gpd	1.394 mgd	
	Industrial Flow		9,263	151,459										160,722 gpd	0.161 mgd	
	Peak Industrial Flow		9,263	151,459										160,722 gpd	0.161 mgd	
	Fixed		0	34,000										34,000 gpd	0.034 mgd	
	Total Peak Flow		281,462	1,370,569										1,588,361 gpd	1.588 mgd	2.46 cfs
	ERUs		315	2,130										2,445 ERU		
20	2017	100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		843.0	3971.5										4,814 capita		
	Domestic Flow		89,208	453,178										542,386 gpd	0.542 mgd	
	Peak Domestic Flow		343,150	1,511,854										1,768,280 gpd	1.768 mgd	
	Industrial Flow		52,668	248,724										301,392 gpd	0.301 mgd	
	Peak Industrial Flow		52,668	248,724										301,392 gpd	0.301 mgd	
	Fixed		0	34,000										34,000 gpd	0.034 mgd	
	Total Peak Flow		395,818	1,794,578										2,103,672 gpd	2.104 mgd	3.26 cfs
	ERUs		568	2,944										3,511 ERU		
Ultimate		100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		1149.7	3467.2										4,617 capita		
	Domestic Flow		159,899	926,528										1,086,427 gpd	1.086 mgd	
	Peak Domestic Flow		601,241	3,139,307										3,560,122 gpd	3.560 mgd	
	Industrial Flow		105,336	414,540										519,876 gpd	0.520 mgd	
	Peak Industrial Flow		105,336	414,540										519,876 gpd	0.520 mgd	
	Fixed		0	34,000										34,000 gpd	0.034 mgd	
	Total Peak Flow		706,577	3,587,847										4,113,998 gpd	4.114 mgd	6.37 cfs
	ERUs		1,061	5,500										6,561 ERU		

Former Contract Area Trunks

Point 707

Point 1005 is where the trunk becomes an 8" line

Plan Year	Calendar Year	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 38	Basin 39	Basin	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years						0	6	10	15	20	ERU Factor	250 gal				
Include in Calculation? (Y/N)						y								y	y	
0	1997	100.0%	30.0%	100.0%	100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population					403.9								404 capita		
	Domestic Flow					44,570								44,570 gpd	0.045 mgd	
	Peak Domestic Flow					179,178								179,178 gpd	0.179 mgd	
	Industrial Flow					50								50 gpd	0.000 mgd	
	Peak Industrial Flow					50								50 gpd	0.000 mgd	
	Fixed Flow					0								0 gpd	0.000 mgd	
	Total Peak Flow					179,229								179,229 gpd	0.179 mgd	0.28 cfs
	ERUs					178								178 ERU		
6	2003	100.0%	30.0%	100.0%	100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population					514.0								514 capita		
	Domestic Flow					55,718								55,718 gpd	0.056 mgd	
	Peak Domestic Flow					221,091								221,091 gpd	0.221 mgd	
	Industrial Flow					353								353 gpd	0.000 mgd	
	Peak Industrial Flow					353								353 gpd	0.000 mgd	
	Fixed					0								0 gpd	0.000 mgd	
	Total Peak Flow					221,444								221,444 gpd	0.221 mgd	0.34 cfs
	ERUs					224								224 ERU		
10	2007	100.0%	30.0%	100.0%	100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population					549.7								550 capita		
	Domestic Flow					59,452								59,452 gpd	0.059 mgd	
	Peak Domestic Flow					234,996								234,996 gpd	0.235 mgd	
	Industrial Flow					1,295								1,295 gpd	0.001 mgd	
	Peak Industrial Flow					1,295								1,295 gpd	0.001 mgd	
	Fixed					0								0 gpd	0.000 mgd	
	Total Peak Flow					236,291								236,291 gpd	0.236 mgd	0.37 cfs
	ERUs					243								243 ERU		
15	2012	100.0%	30.0%	100.0%	100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population					623.7								624 capita		
	Domestic Flow					67,291								67,291 gpd	0.067 mgd	
	Peak Domestic Flow					263,977								263,977 gpd	0.264 mgd	
	Industrial Flow					6,563								6,563 gpd	0.007 mgd	
	Peak Industrial Flow					6,563								6,563 gpd	0.007 mgd	
	Fixed					0								0 gpd	0.000 mgd	
	Total Peak Flow					270,540								270,540 gpd	0.271 mgd	0.42 cfs
	ERUs					295								295 ERU		
20	2017	100.0%	30.0%	100.0%	100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population					795.5								796 capita		
	Domestic Flow					85,584								85,584 gpd	0.086 mgd	
	Peak Domestic Flow					330,512								330,512 gpd	0.331 mgd	
	Industrial Flow					33,264								33,264 gpd	0.033 mgd	
	Peak Industrial Flow					33,264								33,264 gpd	0.033 mgd	
	Fixed					0								0 gpd	0.000 mgd	
	Total Peak Flow					363,776								363,776 gpd	0.364 mgd	0.56 cfs
	ERUs					475								475 ERU		
Ultimate		100.0%	30.0%	100.0%	100.0%	70.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population					1302.8								1,303 capita		
	Domestic Flow					195,299								195,299 gpd	0.195 mgd	
	Peak Domestic Flow					727,094								727,094 gpd	0.727 mgd	
	Industrial Flow					41,580								41,580 gpd	0.042 mgd	
	Peak Industrial Flow					41,580								41,580 gpd	0.042 mgd	
	Fixed					0								0 gpd	0.000 mgd	
	Total Peak Flow					768,674								768,674 gpd	0.769 mgd	1.19 cfs
	ERUs					948								948 ERU		

Former Contract Area Trunks

Point 1005

APPENDEX: VWWTP SUBAREA

I. Subarea Map

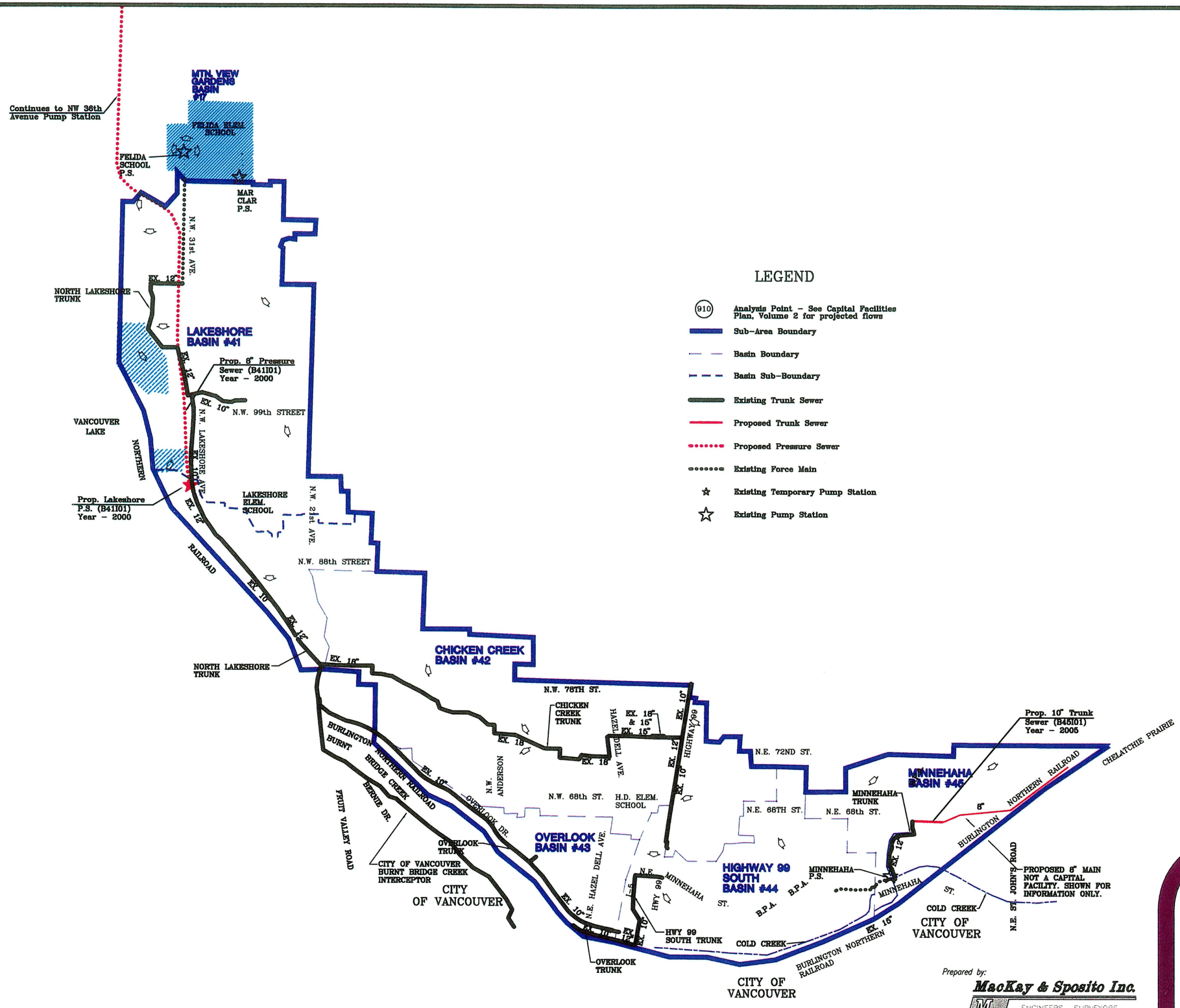
II. Hydraulic Grade Analysis

A. VWWTP Improvements – Benchmark Years

1. **1997 – Year 0**
2. **2003 – Year 6**
3. **2007 – Year 10**
4. **2012 – Year 15**
5. **2017 – Year 20**

B. Flow Calculation Worksheets

1. **VWWTP – Benchmark Years**



LEGEND

- (910) Analysis Point – See Capital Facilities Plan, Volume 2 for projected flows
- Sub-Area Boundary
- Basin Boundary
- Basin Sub-Boundary
- Existing Trunk Sewer
- Proposed Trunk Sewer
- Proposed Pressure Sewer
- Existing Force Main
- Existing Temporary Pump Station
- Existing Pump Station

Prepared by:

MacKay & Sposito Inc.

ENGINEERS SURVEYORS PLANNERS

1703 MAIN STREET VANCOUVER, WA. 98660

HAZEL DELL SEWER DISTRICT

VWWTP TRIBUTARY SUBAREA

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		4.62	Ex. M.H.		00+00.00	00+00.00	27.41	27.41	y																								
101		4.62	MH 1		02+34.37	02+34.37	28.21	28.21	y	62	0.00'	234.37'	24"	0.0034	0.0034	13.25	34.9%	3.14	0.226'	0.800'	28.21'	0.12'	29.01'	0.057'	0.08'	0.12'		0.125'	0.244'	29.135'	o.k.		no	
102		4.62	MH 2		07+35.93	07+35.93	29.87	29.87	y		0.00'	501.56'	24"	0.0033	0.0033	13.05	35.4%	3.14	0.219'	0.800'	29.13'	0.25'	30.67'	0.055'	0.09'			0.074'	0.328'	30.744'	o.k.		no	
103	1.57	4.62	MH 3		12+35.52	12+35.52	32.03	32.03	y		0.00'	499.59'	24"	0.0043	0.0043	14.91	31.0%	3.14	0.268'	0.750'	30.74'	0.27'	32.78'	0.067'	0.07'		0.092'	0.113'	0.385'	32.893'	o.k.		no	
104		3.42	MH 4		14+86.95	14+86.95	32.91	32.91	y	20	0.00'	251.43'	24"	0.0035	0.0035	13.42	25.5%	3.14	0.193'	0.660'	32.89'	0.08'	33.57'	0.048'	0.05'	0.02'		0.059'	0.143'	33.629'	o.k.		no	
105		3.42	MH 5		16+77.90	16+77.90	33.38	33.38	y		0.00'	190.95'	24"	0.0025	0.0025	11.25	30.4%	3.14	0.153'	0.750'	33.66'	0.06'	34.13'	0.038'	0.01'			0.026'	0.083'	34.156'	o.k.		no	
106	2.01	3.42	MH 6		20+71.87	20+71.87	35.56	34.62	y	91	0.94'	393.97'	24"	0.0031	0.0031	12.73	26.9%	3.14	0.041'	0.200'	34.16'	0.54'	34.82'	0.010'	0.21'	0.03'	0.028'	0.135'	0.671'	34.955'	o.k.		no	
107		2.01	MH 7		22+51.14	22+51.14	40.32	40.32	y		0.00'	179.27'	18"	0.0266	0.0266	17.16	11.7%	1.77	0.591'	0.315'	35.86'	0.16'	40.64'	0.148'	0.35'			0.250'	0.409'	40.885'	o.k.		no	
108		2.01	MH 8		24+64.40	24+64.40	53.18	53.18	y	20	0.00'	213.26'	18"	0.0603	0.0603	25.86	7.8%	1.77	1.006'	0.248'	40.86'	0.26'	53.43'	0.252'	0.33'	0.08'		0.333'	0.590'	53.761'	o.k.		no	
109		2.01	MH 9		27+16.54	27+16.54	67.60	67.60	y		0.00'	252.14'	18"	0.0572	0.0572	25.19	8.0%	1.77	0.954'	0.248'	53.76'	0.30'	67.85'	0.239'	0.09'			0.165'	0.468'	68.012'	o.k.		no	
110		2.01	MH 10		30+04.41	30+04.41	69.66	69.66	y	68	0.00'	287.87'	18"	0.0072	0.0072	8.91	22.5%	1.77	0.259'	0.480'	68.06'	0.16'	70.14'	0.065'	0.10'	0.16'		0.165'	0.326'	70.305'	o.k.		no	
111		2.01	MH 11		31+39.47	31+39.47	70.85	70.85	y	70	0.00'	135.06'	18"	0.0088	0.0088	9.89	20.3%	1.77	0.296'	0.450'	70.31'	0.08'	71.30'	0.074'	0.22'	0.19'		0.244'	0.324'	71.544'	o.k.		no	
112		2.01	MH 12		33+61.95	33+61.95	77.28	77.28	y	20	0.00'	222.48'	18"	0.0289	0.0289	17.91	11.2%	1.77	0.643'	0.315'	71.54'	0.20'	77.60'	0.161'	0.21'	0.05'		0.209'	0.406'	77.804'	o.k.		no	
113		2.01	MH 13		35+90.70	35+90.70	82.74	82.74	y		0.00'	228.75'	18"	0.0239	0.0239	16.27	12.3%	1.77	0.591'	0.345'	77.80'	0.18'	83.09'	0.148'	0.17'			0.158'	0.341'	83.243'	o.k.		no	
114		2.01	MH 14		38+65.27	38+65.27	88.07	88.07	y		0.00'	274.57'	18"	0.0194	0.0194	14.67	13.7%	1.77	0.481'	0.345'	83.24'	0.22'	88.42'	0.120'	0.18'			0.148'	0.368'	88.563'	o.k.		no	
115		2.01	MH 15		42+64.92	42+64.92	96.15	96.15	y		0.00'	399.65'	18"	0.0202	0.0202	14.98	13.4%	1.77	0.501'	0.345'	88.56'	0.32'	96.50'	0.125'	0.25'			0.187'	0.507'	96.682'	o.k.		no	
116		2.01	MH 16		46+54.87	46+54.87	108.60	108.60	y	35	0.00'	389.95'	18"	0.0319	0.0319	18.82	10.7%	1.77	0.710'	0.315'	96.68'	0.35'	108.92'	0.178'	0.27'	0.13'		0.291'	0.636'	109.206'	o.k.		no	
117		2.01	MH 17		48+15.31	48+15.31	114.14	114.14	y	40	0.00'	160.44'	18"	0.0345	0.0345	19.57	10.2%	1.77	0.768'	0.315'	109.21'	0.14'	114.46'	0.192'	0.16'	0.19'		0.270'	0.412'	114.725'	o.k.		no	
118		2.01	MH 18		49+30.85	49+30.85	116.09	116.09	y	20	0.00'	115.54'	18"	0.0169	0.0169	13.68	14.7%	1.77	0.456'	0.375'	114.72'	0.08'	116.47'	0.114'	0.17'	0.04'		0.158'	0.242'	116.623'	o.k.		no	
119		2.01	MH 19		50+84.10	50+84.10	119.02	119.02	y	20	0.00'	153.25'	18"	0.0191	0.0191	14.56	13.8%	1.77	0.473'	0.345'	116.62'	0.12'	119.37'	0.118'	0.13'	0.04'		0.144'	0.266'	119.509'	o.k.		no	
120		2.01	MH 20		53+82.92	53+82.92	122.77	122.77	y	24	0.00'	298.82'	18"	0.0125	0.0125	11.80	17.0%	1.77	0.374'	0.405'	119.51'	0.20'	123.18'	0.093'	0.12'	0.04'		0.127'	0.329'	123.302'	o.k.		no	
121		2.01	MH 21		56+30.85	56+30.85	125.47	125.47	y	20	0.00'	247.93'	18"	0.0109	0.0109	10.99	18.3%	1.77	0.342'	0.428'	123.30'	0.16'	125.90'	0.086'	0.11'	0.03'		0.114'	0.271'	126.011'	o.k.		no	
122		2.01	MH 22		58+56.60	58+56.60	127.82	127.82	y	38	0.00'	225.75'	18"	0.0104	0.0104	10.75	18.7%	1.77	0.327'	0.428'	126.01'	0.14'	128.25'	0.082'	0.07'	0.07'		0.110'	0.254'	128.358'	o.k.		no	
123		2.01	MH 23		59+86.10	59+86.10	128.44	128.44	y	90	0.00'	129.50'	18"	0.0048	0.0048	7.29	27.5%	1.77	0.186'	0.518'	128.36'	0.07'	128.96'	0.047'	0.07'	0.12'		0.117'	0.183'	129.074'	o.k.		no	
124		2.01	MH 24		61+62.35	61+62.35	129.32	129.32	y	88	0.00'	176.25'	18"	0.0050	0.0050	7.44	27.0%	1.77	0.194'	0.518'	129.07'	0.09'	129.84'	0.049'	0.11'	0.12'		0.139'	0.229'	129.977'	o.k.		no	
125		2.01	MH 25		65+65.06	65+65.06	132.94	132.94	y	27	0.00'	402.71'	18"	0.0090	0.0090	9.99	20.1%	1.77	0.302'	0.450'	129.98'	0.24'	133.39'	0.075'	0.06'	0.04'		0.089'	0.328'	133.479'	o.k.		no	
126		2.01	MH 26		69+16.11	69+16.11	134.50	134.50	y		0.00'	351.05'	18"	0.0044	0.0044	7.02	28.6%	1.77	0.181'	0.540'	133.43'	0.17'	135.04'	0.045'	0.08'			0.060'	0.233'	135.100'	o.k.		no	
127		2.01	MH 27		72+31.64	72+31.64	136.31	136.31	y	22	0.00'	315.53'	18"	0.0057	0.0057	7.98	25.1%	1.77	0.215'	0.495'	135.10'	0.17'	136.81'	0.054'	0.07'	0.02'		0.071'	0.240'	136.876'	o.k.		no	
128		2.01	MH 28		75+38.35	75+38.35	138.19	137.81	y	90	0.38'	306.71'	18"	0.0049	0.0049	7.37	27.2%	1.77	0.190'	0.518'	136.88'	0.16'	138.33'	0.048'	0.08'	0.12'		0.123'	0.280'	138.450'	o.k.		no	
129		2.01	MH 29		77+15.39	77+15.39	139.22	139.22	y	90	0.00'	177.04'	18"	0.0058	0.0058	8.03	25.0%	1.77	0.218'	0.495'	138.69'	0.09'	139.72'	0.055'	0.28'	0.14'		0.236'	0.330'	139.951'	o.k.		no	
130		2.01	MH 30		81+23.35	81+23.35	153.72	153.72	y	65	0.00'	407.96'	18"	0.0355	0.0355	19.86	10.1%	1.77	0.790'	0.315'	139.95'	0.36'	154.04'	0.198'	0.35'	0.43'		0.489'	0.850'	154.524'	o.k.		no	
131		2.01	MH 31		82+00.48	82+00.48	167.07	157.68	y	71	9.39'	77.13'	18"	0.0513	0.0513	23.86	8.4%	1.77	0.986'	0.285'	154.52'	0.08'	157.97'	0.246'	0.08'	0.63'		0.481'	0.559'	158.446'	o.k.		no	
132		2.01	MH 32		83+90.96	83+90.96	168.34	168.34	y	20	0.00'	190.48'	18"	0.0067	0.0067	8.60	23.3%	1.77	0.241'	0.480'	167.55'	0.11'	168.82'	0.060'	0.08'	0.02'		0.080'	0.187'	168.900'	o.k.		no	
133		2.01	MH 33		87+82.39	87+82.39	170.74	170.74	y	97	0.00'	391.43'	18"	0.0061	0.0061	8.25	24.3%	1.77	0.230'	0.495'	168.90'	0.21'	171.24'	0.058'	0.12'	0.15'		0.161'	0.371'	171.396'	o.k.		no	
134	1.36	2.01	MH 34		91+99.07	-00+31.00	175.20	175.20	y		0.00'	416.68'	18"	0.0107	0.0107	10.90	18.4%	1.77	0.337'	0.428'	171.40'	0.26'	175.63'	0.084'	0.35'		0.283'	0.360'	0.624'	175.987'	o.k.		no	
201		1.36	A-1		00+00.00	00+00.00	177.66	177.66	y	106	0.00'	31.00'	18"	0.0800	0.0794	29.67	4.6%	1.77	1.008'	0.210'	175.99'	0.02'	177.87'	0.252'	0.05'	0.65'		0.474'	0.496'	178.344'	o.k.		no	
202		1.36	A-2		04+25.00	04+25.00	179.53	179.53	y		0.00'	425.00'	15"	0.0044	0.0044	4.30	31.7%	1.23	0.146'	0.469'	178.34'	0.25'	180.00'	0.036'	0.00'			0.018'	0.263'	180.017'	o.k.		no	
203		1.36	A-3		08+50.00	08+50.00	181.30	181.30	y		0.00'	425.00'	15"	0.0040	0.0042	4.18	32.5%	1.23	0.143'	0.481'	180.02'	0.24'	181.78'	0.036'	0.00'			0.018'	0.255'	181.799'	o.k.		no	
204		1.36	A-4		11+00.00	11+00.00	182.30	182.30	y		0.00'	250.00'	15"	0.0040	0.0040	4.10	33.2%	1.23	0.137'	0.481'	181.80'	0.14'	182.78'	0.034'	0.00'			0.017'	0.157'	182.798'	o.k.		no	
205		1.36	A-5		13+97.50	13+97.50	187.50	187.50	y		0.00'	297.50'	15"	0.0175	0.0175	8.56	15.9%	1.23	0.370'	0.313'	182.80'	0.26'	187.81'	0.093'	0.00'			0.046'	0.310'	187.859'	o.k.		no	
206	0.69	1.36	A-6		14+80.50	00+00.00	188.50	188.50	y	86	0.00'	83.00'	15"	0.0120	0.0120	7.11	19.1%	1.23	0.297'	0.356'	187.86'	0.06'	188.86'	0.074'	0.00'	0.19'	0.168'	0.216'	0.280'	189.072'	o.k.		no	
301		0.67	E1		03+10.00	03+10.00	189.65	189.65	y		0.00'	310.00'	10"	0.0180	0.0037	1.34	49.9%	0.55	0.092'	0.408'	189.07'	0.29'	190.06'	0.023'	0.00'			0.011'	0.303'	190.070'	o.k.		no	
302		0.67	E2		07+10.00	07+10.00	193.20	193.20	y		0.00'	400.00'	10"	0.0088	0.0089	2.07	32.3%	0.55	0.177'	0.321'	190.07'	0.47'	193.52'	0.044'	0.00'			0.022'	0.490'	193.543'	o.k.		no	
303		0.67	E3		12+10.00	12+10.00	194.65	194.65	y		0.00'	500.00'	10"	0.0029	0.0029	1.18	56.5%	0.55	0.077'	0.446'	193.65'	0.44'	195.10'	0.019'	0.00'			0.010'	0.446'	195.105'	o.k.		no	
304		0.67	E4		16+24.00	16+24.00	195.85	195.85	y		0.00'	414.00'	10"	0.0029	0.0029	1.18	56.5%	0.55	0.077'	0.446'	195.11'	0.36'	196.30'	0.019'	0.00'			0.010'	0.371'	196.305'	o.k.		no	
305		0.67	E5		21+43.00	21+43.00	199.10	199.10	y		0.00'	519.00'	8"	0.0063	0.0063	0.96	69.7%	0.35	0.135'	0.403'	196.31'	1.35'	199.50'	0.034'	0.00'			0.017'	1.366'	199.520'	o.k.		no	
Highway 99 Trunk South of Chicken Creek																																	
206	0.69	1.36	MH 6	0.0	14+80.50	00+00.00	190.38	188.50	y																								
401		0.77	F1		04+31.00	04+31.00	191.33	191.33	y		0.00'	431.00'	10"	0.0022	0.0022	1.03	74.8%	0.55	0.067'	0.533'	190.91'	0.44'	191.86'	0.017'	0.00'			0.008'	0.447'	191.872'	o.k.		no	
402		0.77	F2		07+43.00	07+43.00	192.28	192.28	y		0.00'	312.00'	10"	0.0028	0.0030	1.21	63.6%	0.55	0.085'	0.475'	191.87'	0.35'	192.76'	0.021'	0.00'			0.011'	0.356'	192.766'	o.k.		no	
403		0.77	F3		10+80.00	10+80.00	193.48	193.48	y		0.00'	337.00'	10"	0.0034	0.0036	1.31	58.8%	0.55	0.096'	0.454'	192.77'	0.38'	193.93'	0.024'	0.00'			0.012'	0.397'	193.946'	o.k.		no	
404		0.77	F4		13+88.00	13+88.00	194.68	194.68	y		0.00'	308.00'	10"	0.0034	0.0039	1.37	56.2%	0.55	0.103'	0.446'	193.95'	0.36'	195.13'	0.026'	0.00'			0.013'	0.371'	195.139'	o.k.		no	
405		0.77	F5		17+95.00	17+95.00	196.18	196.18	y		0.00'	407.00'	10"	0.0034	0.0037	1.33	57.8%	0.55	0.098'	0.446'	195.14'	0.47'	196.63'	0.024'	0.00'			0.012'	0.486'	196.638'	o.k.		no	
406		0.77	F6		21+25.00	21+25.00	197.29	197.29	y		0.00'	330.00'	10"	0.0034	0.0034	1.27	60.5%	0.55	0.093'	0.463'	196.64'	0.37'	197.75'	0.023'	0.00'			0.012'	0.381'	197.764'	o.k.		no	
Overlook Trunk																																	
103	1.57	4.62	MH 3	0.0	12+35.52	00+00.00	34.16	32.03	y		2.13'	1235.52'																					
501		1.57	MH 1		00+08.00	00+08.00	34.59	34.49	y	90	0.10'	8.00'	12"	0.0413	0.0413	7.26	21.7%	0.79	0.806'	0.300'	34.46'	0.03'	34.79'	0.202'	0.00'	0.52'		0.359'	0.384'	35.149'	o.k.		no	
502		1.57	MH 2		01+03.00	01+03.00	35.56	35.46	y	36	0.10'	95.00'	12"	0.0092	0.0092	3.42	46.0%	0.79	0.277'	0.465'	35.15'	0.19'	35.93'	0.069'	0.00'	0.06'		0.064'	0.258'	35.989'	o.k.		no	
503		1.57	MH 3		04+88.00	04+88.00	41.98	41.88	y	21	0.10'	385.00'	12"	0.0164	0.0164	4.58	34.3%	0.79	0.432'	0.400'	35.99'	0.91'	42.28'	0.108'	0.00'	0.03'		0.071'	0.978'	42.351'	o.k.		no	
504		1.57	MH 4		08+88.00	08+88.00	45.96	45.86	y		0.10'	400.00'	12"	0.0097	0.0097	3.52	44.7%	0.79	0.293'	0.465'	42.45'	0.82'	46.33'	0.073'	0.00'			0.037'	0.856'	46.362'	o.k.		no	
505		1.57	MH 5		11+88.00	11+88.00	50.26	50.16	y		0.10'	300.00'	12"	0.0140	0.0140	4.23	37.2%	0.79	0.381'	0.415'	46.38'	0.69'	50.58'	0.095'	0.00'			0.048'	0.733'	50.623'	o.k.		no	
506		1.57	MH 6		15+63.00	15+63.00	54.60	54.50	y		0.10'	375.00'	12"	0.0113	0.0113	3.80	41.4%	0.79	0.324'	0.440'	50.70'	0.81'	54.94'	0.081'	0.00'			0.041'	0.848'	54.981'	o.k.		no	
507		1.57	MH 7		19+13.00	19+13.00	56.10	56.00	y		0.10'	350.00'	12"	0.0040	0.0040	2.26	69.6%	0.79	0.148'	0.605'	55.21'	0.58'	56.61'	0.037'	0.00'			0.019'	0.599'	56.624'	o.k.		no	
508		1.57	MH 8		20+63.00	20+63.00	61.99	61.89	y		0.10'	150.00'	12"	0.0386	0.0386	7.02	22.4%	0.79	0.814'	0.320'	56.62'	0.45'	62.21'	0.203'	0.00'			0.102'	0.549'	62.312'	o.k.		no	
509		1.57	MH 9		23+88.00	23+88.00	66.05	65.95	y		0.10'	325.00'	12"	0.0122	0.0122	3.94	39.9%	0.79	0.342'	0.425'	62.42'	0.72'	66.38'	0.086'	0.00'			0.043'	0.763'	66.418'	o.k.		no	
510		1.57	MH 10		25+88.00	25+88.00	68.59	68.49	y		0.10'	200.00'	12"	0.0122	0.0122	3.95	39.8%	0.79	0.343'	0.425'	66.48'	0.44'	68.92'	0.086'	0.00'			0.043'	0.486'	68.958'	o.k.		no	
511		1.57	MH 11		29+68.00	29+68.00	74.24	74.14	y		0.10'	380.00'	12"	0.0146	0.0146	4.32	36.4%	0.79	0.397'	0.415'	69.01'	0.87'	74.56'	0.099'	0.00'			0.050'	0.918'	74.605'	o.k.		no	
512		1.57	MH 12		33+68.00	33+68.00	77.82	77.72	y		0.10'	400.00'	12"	0.0087	0.0087	3.33	47.2%	0.79	0.268'	0.475'	74.72'	0.80'	78.20'	0.067'	0.00'			0.034'	0.836'	78.229'	o.k.		no	
513		1.57	MH 13		36+38.00	36+38.00	80.69	78.90	y		1.79'	270.00'	12"	0.0040	0.0040	2.26	69.6%	0.79	0.148'	0.605'	78.43'	0.45'	79.51'	0.037'	0.00'			0.019'	0.466'	79.524'	o.k.		no	
514		1.57	MH 14		39+88.00	39+88.00	86.60	86.50	y		0.10'	350.00'	12"	0.0166	0.0166	4.60	34.2%	0.79	0.437'	0.400'	81.09'	0.82'	86.90'	0.109'	0.00'			0.055'	0.879'	86.955'	o.k.		no	
515		1.57	MH 15		43+68.00	43+68.00	90.88	90.78	y		0.10'	380.00'	12"	0.0110	0.0110	3.75	42.0%	0.79	0.316'	0.440'	87.04'	0.82'	91.22'	0.079'	0.00'			0.039'	0.858'	91.259'	o.k.		no	
516		1.57	MH 16		45+38.00	45+38.00	93.70	93.60	y		0.10'	170.00'	12"	0.0160	0.0160	4.52	34.8%	0.79	0.421'	0.400'	91.28'	0.40'	94.00'	0.105'	0.00'			0.053'	0.453'	94.053'	o.k.		no	
517		1.57	MH 17		49+38.00	49+38.00	98.76	98.66	y		0.10'	400.00'	12"	0.0124	0.0124	3.98	39.5%	0.79	0.348'	0.425'	94.13'	0.89'	99.09'	0.087'	0.00'			0.044'	0.930'	99.129'	o.k.		no	
518		1.57	MH 18		52+38.00	52+38.00	102.58	102.48	y		0.10'	300.00'	12"	0.0124	0.0124	3.98	39.5%	0.79	0.348'	0.425'	99.19'	0.67'	102.91'	0.087'	0.00'			0.044'	0.709'	102.949'	o.k.		no	
519		1.57	MH 19		55+14.00	55+14.00	107.00	106.00	y		1.00'	276.00'	12"	0.0124	0.0124	3.98	39.5%	0.79	0.348'	0.425'	103.01'	0.61'	106.43'	0.087'	0.00'			0.043'	0.655'	106.468'	o.k.		no	
520		0.89	MH 20		59+13.00	59+13.00	112.29	112.19	y		0.10'	399.00'	10"	0.0130	0.0130	2.51	35.5%	0.55	0.268'	0.333'	107.33'	0.80'	112.52'	0.067'	0.00'			0.034'	0.829'	112.557'	o.k.		no	
521		0.89	MH 21		63+13.00	63+13.00	117.59	117.49	y		0.10'	400.00'	10"	0.0130	0.0130	2.50	35.5%	0.55	0.268'	0.333'	112.62'	0.80'	117.82'	0.067'	0.00'			0.034'	0.831'	117.857'	o.k.		no	
522		0.89	MH 22		67+23.00	67+23.00	123.66	122.10	y		1.56'	410.00'	10"	0.0110	0.0110	2.30	38.6%	0.55	0.242'	0.354'	117.94'	0.77'	122.45'	0.061'	0.00'			0.030'	0.800'	122.484'	o.k.		no	
523		0.89	MH 23		69+18.00	69+18.00	127.08	126.98	y		0.10'	195.00'	10"	0.0170	0.0170	2.87	31.0%	0.55	0.328'	0.313'	123.97'	0.42'	127.29'	0.082'	0.00'			0.041'	0.459'	127.334'	o.k.		no	
524		0.89	MH 24		71+88.00	71+88.00	130.54	130.44	y		0.10'	270.00'	10"	0.0124	0.0124	2.45	36.3%	0.55	0.265'	0.346'	127.43'	0.52'	130.79'	0.066'	0.00'			0.033'	0.555'	130.819'	o.k.		no	
525		0.89	MH 25		74+38.00	74+38.00	133.64	133.54	y		0.10'	250.00'	10"	0.0120	0.0120	2.41	37.0%	0.55	0.256'	0.346'	130.89'	0.48'	133.89'	0.064'	0.00'			0.032'	0.515'	133.918'	o.k.		no	
526		0.89	MH 26		77+38.00	00+00.00	137.43	137.24	y		0.19'	300.00'	10"	0.0120	0.0120	2.41	37.0%	0.55	0.256'	0.346'	133.99'	0.58'	137.59'	0.064'	0.00'			0.032'	0.612'	137.618'	o.k.		no	

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk												Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
527		0.89	MH 27		03+37.00	03+37.00	143.57	143.47	y		0.10'	337.00'	12"	0.0124	0.0179	4.78	18.6%	0.79	0.328'	0.285'	137.72'	0.37'	143.76'	0.082'	0.00'			0.041'	0.406'	143.796'	o.k.		no	
528		0.89	MH 28		05+00.50	05+06.50	146.07	145.47	y	62	0.60'	163.50'	12"	0.0116	0.0116	3.85	23.1%	0.79	0.245'	0.320'	143.89'	0.16'	145.79'	0.061'	0.00'	0.13'		0.094'	0.250'	145.884'	o.k.		no	
529		0.89	MH 29		05+70.50	05+70.50	169.80	169.70	y	33	0.10'	70.00'	10"	0.3376	0.3376	12.76	7.0%	0.55	2.572'	0.138'	146.21'	0.38'	169.84'	0.643'	0.00'	0.44'		0.540'	0.920'	170.378'	o.k.		no	
530		0.89	MH 30		08+37.50	08+37.50	170.73	170.63	y		0.10'	267.00'	10"	0.0035	0.0031	1.22	72.6%	0.55	0.093'	0.521'	170.38'	0.37'	171.15'	0.023'	0.00'			0.012'	0.378'	171.162'	o.k.		no	
531		0.89	MH 31		10+38.50	10+38.50	173.38	173.28	y	45	0.10'	201.00'	10"	0.0132	0.0127	2.47	36.0%	0.55	0.262'	0.333'	171.16'	0.40'	173.61'	0.065'	0.00'	0.07'		0.070'	0.471'	173.683'	o.k.		no	
532		0.89	MH 32		13+17.50	13+17.50	174.12	174.02	y	40	0.10'	279.00'	10"	0.0027	0.0023	1.05	84.6%	0.55	0.072'	0.583'	173.96'	0.36'	174.60'	0.018'	0.00'	0.02'		0.018'	0.381'	174.621'	o.k.		no	
533		0.80	MH 33		15+09.50	15+09.50	174.71	174.61	y		0.10'	192.00'	10"	0.0031	0.0026	1.11	72.3%	0.55	0.076'	0.521'	174.64'	0.21'	175.13'	0.019'	0.00'			0.010'	0.224'	175.140'	o.k.		no	
534		0.80	MH 34		19+27.50	19+27.50	176.05	175.95	y	20	0.10'	418.00'	10"	0.0032	0.0030	1.20	67.1%	0.55	0.086'	0.492'	175.20'	0.48'	176.44'	0.021'	0.00'	0.01'		0.014'	0.497'	176.456'	o.k.		no	
535		0.80	MH 35		19+85.50	19+85.50	177.04	176.94	y	95	0.10'	58.00'	10"	0.0153	0.0153	2.72	29.5%	0.55	0.286'	0.300'	176.46'	0.10'	177.24'	0.071'	0.00'	0.18'		0.127'	0.232'	177.367'	o.k.		no	
536		0.80	MH 36		24+06.50	24+06.50	178.05	177.95	y	20	0.10'	421.00'	10"	0.0022	0.0022	1.02	78.6%	0.55	0.066'	0.554'	177.59'	0.46'	178.50'	0.017'	0.00'	0.01'		0.011'	0.467'	178.515'	o.k.		no	
537		0.80	MH 37		25+60.50	25+60.50	179.98	179.88	y	20	0.10'	154.00'	10"	0.0120	0.0119	2.39	33.5%	0.55	0.237'	0.321'	178.52'	0.26'	180.20'	0.059'	0.00'	0.02'		0.039'	0.299'	180.240'	o.k.		no	
538		0.80	MH 38		28+76.50	28+76.50	181.37	181.37	y		0.00'	316.00'	10"	0.0044	0.0044	1.46	55.1%	0.55	0.115'	0.438'	180.42'	0.40'	181.81'	0.029'	0.00'			0.014'	0.418'	181.822'	o.k.		no	
					North Overlook Stub																														
519	0.59	1.57	MH 19	0.0	55+11.00	00+00.00	106.25	106.00	y																									
601		0.59	MH 1		00+65.00	00+65.00	142.71	142.61	y		0.10'	65.00'	10"	0.5594	0.5594	16.43	3.6%	0.55	2.255'	0.083'	106.33'	0.28'	142.69'	0.564'	0.00'			0.282'	0.560'	142.975'	o.k.		no	
602		0.59	MH 2		01+85.00	01+85.00	143.07	142.97	y	95	0.10'	120.00'	10"	0.0040	0.0022	1.02	57.5%	0.55	0.057'	0.445'	143.16'	0.08'	143.42'	0.014'	0.00'	0.04'		0.026'	0.107'	143.441'	o.k.		no	
603		0.59	MH 3		05+60.00	05+60.00	144.57	144.57	y		0.00'	375.00'	10"	0.0040	0.0040	1.39	42.3%	0.55	0.093'	0.375'	143.45'	0.29'	144.95'	0.023'	0.00'			0.012'	0.302'	144.957'	o.k.		no	
					Minnehaha Trunk																														
700		0.01	MH 0		00+00.00	00+00.00	224.00	216.25	y																									
7011		0.01	MH 1A		00+03.50	00+03.50	224.43	224.23	y	83	0.20'	3.50'	12"	0.0288	0.0657	9.16	0.1%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
701		0.01	MH 1		01+25.50	01+25.50	224.95	224.75	y	22	0.20'	122.00'	12"	0.0026	0.0026	1.83	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
702		0.01	MH 2		02+24.50	02+24.50	225.41	225.21	y	38	0.20'	99.00'	12"	0.0026	0.0026	1.83	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
703		0.01	MH 3		04+56.50	04+56.50	226.11	226.01	y	20	0.10'	232.00'	12"	0.0026	0.0026	1.82	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
704		0.01	MH 4		05+92.50	05+92.50	226.66	226.46	y	48	0.20'	136.00'	12"	0.0026	0.0026	1.81	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
705		0.01	MH 5		06+71.50	06+71.50	226.98	226.88	y	20	0.10'	79.00'	12"	0.0026	0.0028	1.89	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
706		0.01	MH 6		07+35.50	07+35.50	227.35	227.15	y	36	0.20'	64.00'	12"	0.0026	0.0027	1.84	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
707		0.01	MH 7		07+99.50	07+99.50	227.61	227.51	y	22	0.10'	64.00'	12"	0.0026	0.0025	1.79	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
708		0.01	MH 8		08+72.50	08+72.50	227.90	227.80	y	27	0.10'	73.00'	12"	0.0026	0.0026	1.82	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
709		0.01	MH 9		09+58.50	09+58.50	228.23	228.13	y	20	0.10'	86.00'	12"	0.0026	0.0027	1.85	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
710		0.01	MH 10		12+39.50	12+39.50	229.15	228.96	y	106	0.19'	281.00'	12"	0.0026	0.0026	1.82	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
711		0.01	MH 11		13+78.50	13+78.50	229.62	229.52	y	23	0.10'	139.00'	12"	0.0026	0.0027	1.84	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'	#VALUE!		#VALUE!						
712		0.01	MH 12		15+78.50	15+78.50	230.34	230.14	y		0.20'	200.00'	12"	0.0026	0.0026	1.82	0.3%	0.79		#N/A	#N/A	#VALUE!				0.00'			0.000'						
					Lakeshore Trunk																														
106	2.01	3.42	MH 6		20+71.87	00+00.00	35.56	34.62	y	91																								
801		1.71	G1		00+37.00	00+37.00	41.15	41.05	y	62	0.10'	37.00'	15"		0.1484	24.95	6.9%	1.23	1.941'	0.206'	35.77'	0.09'	41.26'	0.485'	0.00'	1.00'		0.743'	0.828'	41.999'	o.k.		no	
802		1.71	G2		03+45.00	03+45.00	44.91	44.81	y		0.10'	308.00'	12"	0.0120	0.0119	3.89	43.9%	0.79	0.352'	0.450'	42.00	0.76'	45.26'	0.088'	0.00'			0.044'	0.807'	45.304'	o.k.		no	
803		1.71	G3		07+21.00	07+21.00	46.53	46.43	y		0.10'	376.00'	12"	0.0040	0.0040	2.27	75.3%	0.79	0.156'	0.640'	45.55	0.71'	47.07'	0.039'	0.00'			0.019'	0.732'	47.089'	o.k.		no	
804		1.71	G4		11+21.00	11+21.00	48.13	48.13	y		0.00'	400.00'	12"	0.0040	0.0040	2.26	75.7%	0.79	0.154'	0.640'	47.17	0.76'	48.77'	0.039'	0.00'			0.019'	0.777'	48.789'	o.k.		no	
805		1.71	G5		15+21.00	15+21.00	51.33	51.33	y		0.00'	400.00'	12"	0.0080	0.0080	3.20	53.5%	0.79	0.262'	0.510'	48.79	0.89'	51.84'	0.066'	0.00'			0.033'	0.927'	51.873'	o.k.		no	
806		1.71	G6		19+21.00	19+21.00	62.53	62.53	y		0.00'	400.00'	10"	0.0280	0.0280	3.68	46.5%	0.55	0.677'	0.396'	51.87	2.51'	62.93'	0.169'	0.00'			0.085'	2.595'	63.011'	o.k.		no	
807		1.71	G7		23+21.00	23+21.00	70.53	70.53	y		0.00'	400.00'	10"	0.0200	0.0200	3.11	55.0%	0.55	0.524'	0.438'	63.01	2.32'	70.97'	0.131'	0.00'			0.066'	2.384'	71.033'	o.k.		no	
808		1.71	G8		27+21.00	27+21.00	85.73	85.73	y		0.00'	400.00'	10"	0.0380	0.0380	4.28	39.9%	0.55	0.837'	0.354'	71.03	2.77'	86.08'	0.209'	0.00'			0.105'	2.878'	86.189'	o.k.		no	
809		1.71	G9		30+94.00	30+94.00	99.16	99.16	y		0.00'	373.00'	10"	0.0360	0.0360	4.17	41.0%	0.55	0.810'	0.367'	86.19	2.51'	99.53'	0.202'	0.00'			0.101'	2.613'	99.628'	o.k.		no	
810		1.71	G10		34+94.00	34+94.00	111.96	111.96	y		0.00'	400.00'	10"	0.0320	0.0320	3.93	43.5%	0.55	0.743'	0.375'	99.63	2.62'	112.34'	0.186'	0.00'			0.093'	2.711'	112.428'	o.k.		no	
811		1.71	G11		38+94.00	38+94.00	126.36	126.36	y		0.00'	400.00'	10"	0.0360	0.0360	4.17	41.0%	0.55	0.810'	0.367'	112.43'	2.69'	126.73'	0.202'	0.00'			0.101'	2.795'	126.828'	o.k.		no	
812		1.71	G12		42+24.00	42+24.00	138.24	138.24	y		0.00'	330.00'	10"	0.0360	0.0360	4.17	41.0%	0.55	0.810'	0.367'	126.83'	2.22'	138.61'	0.202'	0.00'			0.101'	2.324'	138.708'	o.k.		no	
813		1.71	G13		44+66.00	44+66.00	146.95	146.95	y		0.00'	242.00'	10"	0.0360	0.0360	4.17	41.0%	0.55	0.810'	0.367'	138.71'	1.63'	147.32'	0.202'	0.00'			0.101'	1.731'	147.418'	o.k.		no	
814		1.71	G14		47+06.00	47+06.00	149.40	149.30	y		0.10'	240.00'	10"	0.0099	0.0098	2.17	78.7%	0.55	0.301'	0.554'	147.50'	1.18'	149.85'	0.075'	0.00'			0.038'	1.218'	149.892'	o.k.		no	
901		1.71	MH 1		50+06.00	50+06.00	159.34	159.00	y		0.34'	300.00'	10"	0.0320	0.0320	3.93	43.5%	0.55	0.743'	0.375'	149.89'	1.96'	159.38'	0.186'	0.00'			0.093'	2.056'	159.468'	o.k.		no	
902		1.71	MH 2		53+06.00	53+06.00	174.34	174.34	y		0.00'	300.00'	10"	0.0500	0.0500	4.91	34.8%	0.55	1.032'	0.333'	159.67'	2.21'	174.67'	0.258'	0.00'			0.129'	2.339'	174.802'	o.k.		no	
903		1.71	MH 3		57+06.00	57+06.00	175.94	175.94	y		0.00'	400.00'	10"	0.0040	0.0040	1.39	123.1%	0.55	0.101'	0.833'	175.17'	2.41'	177.58'	0.025'	0.00'			0.013'	2.424'	177.597'	CRITICAL		Yes by 0.32 cfs	0.8
904		1.71	MH 4		61+06.00	61+06.00	177.54	177.54	y		0.00'	400.00'	10"	0.0040	0.0040	1.39	123.1%	0.55	0.101'	0.833'	177.60'	2.41'	180.01'	0.025'	0.00'			0.013'	2.424'	180.021'	CRITICAL		Yes by 0.32 cfs	1.6
905		1.71	MH 5		64+08.00	64+08.00	178.75	178.75	y		0.00'	302.00'	10"	0.0040	0.0040	1.39	123.0%	0.55	0.101'	0.833'	180.02'	1.82'	181.84'	0.025'	0.00'			0.013'	1.833'	181.854'	CRITICAL		Yes by 0.32 cfs	2.3
					Datum Shift																													
905		0.93	MH 5		64+08.00	00+00.00	178.56	178.46	y																									
1001		0.93	MH 1		00+50.00	00+50.00	178.80	178.70	y		0.10'	50.00'	12"	0.0026	0.0028	1.89	49.2%	0.79	0.088'	0.490'	179.05'	0.03'	179.19'	0.022'	0.00'			0.011'	0.045'	179.201'	o.k.		no	
1002		0.93	MH 2		04+53.00	04+53.00	179.78	179.68	y		0.10'	403.00'	12"	0.0022	0.0022	1.67	55.7%	0.79	0.073'	0.525'	179.33'	0.26'	180.21'	0.018'	0.00'			0.009'	0.270'	180.214'	o.k.		no	
1003		0.93	MH 3		08+53.00	08+53.00	180.76	180.66	y		0.10'	400.00'	12"	0.0022	0.0022	1.68	55.5%	0.79	0.074'	0.525'	180.31'	0.26'	181.19'	0.018'	0.00'			0.009'	0.269'	181.194'	o.k.		no	
1004		0.93	MH 4		10+43.00	10+43.00	181.27	181.17	y		0.10'	190.00'	12"	0.0022	0.0022	1.66	56.0%	0.79	0.073'	0.535'	181.30'	0.12'	181.71'	0.018'	0.00'			0.009'	0.131'	181.714'	o.k.		no	
1005		0.93	MH 5		13+42.00	13+42.00	182.03	181.93	y		0.10'	299.00'	12"	0.0022	0.0022	1.68	55.4%	0.79	0.074'	0.525'	181.80'	0.19'	182.46'	0.018'	0.00'			0.009'	0.203'	182.464'	o.k.		no	
1006		0.93	MH 6		17+90.00	17+90.00	183.11	183.01	y		0.10'	448.00'	12"	0.0022	0.0022	1.67	55.7%	0.79	0.073'	0.525'	182.56'	0.29'	183.54'	0.018'	0.00'			0.009'	0.300'	183.544'	o.k.		no	
1007		0.93	MH 7		20+94.00	20+94.00	183.88	183.78	y		0.10'	304.00'	12"	0.0022	0.0022	1.68	55.4%	0.79	0.074'	0.525'	183.64'	0.20'	184.31'	0.018'	0.00'			0.009'	0.206'	184.314'	o.k.		no	
1008		0.93	MH 8		24+61.00	24+61.00	184.79	184.69	y		0.10'	367.00'	12"	0.0022	0.0022	1.68	55.4%	0.79	0.074'	0.525'	184.41'	0.24'	185.22'	0.018'	0.00'			0.009'	0.247'	185.224'	o.k.		no	
1009		0.93	MH 9		25+99.00	25+99.00	185.20	185.10	y		0.10'	138.00'	12"	0.0022	0.0022	1.69	54.9%	0.79	0.075'	0.525'	185.32'	0.09'	185.63'	0.019'	0.00'			0.009'	0.099'	185.634'	o.k.		no	
1010		0.93	MH 10		27+73.00	27+73.00	186.47	185.58	y		0.89'	174.00'	12"	0.0022	0.0022	1.67	55.7%	0.79	0.073'	0.525'	185.73'	0.11'	186.11'	0.018'	0.00'			0.009'	0.122'	186.114'	o.k.		no	
1011		0.93	MH 11		31+15.00	31+15.00	187.72	187.22	y		0.50'	342.00'	12"	0.0022	0.0022	1.67	55.6%	0.79	0.073'	0.525'	187.00'	0.22'	187.75'	0.018'	0.00'			0.009'	0.231'	187.754'	o.k.		no	
1012		0.93	MH 12		34+15.00	34+15.00	187.98	187.98	y		0.00'	300.00'	12"	0.0022	0.0009	1.05	88.4%	0.79	0.036'	0.725'	188.45'	0.16'	188.71'	0.009'	0.00'			0.004'	0.164'	188.709'	o.k.		no	

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk												Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		4.95	Ex. M.H.		00+00.00	00+00.00	27.41	27.41	y																										
101		4.95	MH 1		02+34.37	02+34.37	28.21	28.21	y	62	0.00'	234.37'	24"	0.0034	0.0034	13.25	37.3%	3.14	4.22	3.88	0.234'	0.830'	28.24'	0.13'	29.04'	0.058'	0.08'	0.12'		0.129'	0.261'	29.169'	o.k.		no	
102		4.95	MH 2		07+35.93	07+35.93	29.87	29.87	y		0.00'	501.56'	24"	0.0033	0.0033	13.05	37.9%	3.14	4.15	3.82	0.227'	0.830'	29.17'	0.28'	30.70'	0.057'	0.10'			0.077'	0.359'	30.777'	o.k.		no	
103	1.70	4.95	MH 3		12+35.52	12+35.52	32.03	32.03	y		0.00'	499.59'	24"	0.0043	0.0043	14.91	33.2%	3.14	4.75	4.23	0.277'	0.770'	30.78'	0.30'	32.80'	0.069'	0.07'		0.096'	0.118'	0.419'	32.918'	o.k.		no	
104		3.66	MH 4		14+86.95	14+86.95	32.91	32.91	y	20	0.00'	251.43'	24"	0.0035	0.0035	13.42	27.3%	3.14	4.27	3.59	0.200'	0.690'	32.92'	0.09'	33.60'	0.050'	0.06'	0.02'		0.061'	0.153'	33.661'	o.k.		no	
105		3.66	MH 5		16+77.90	16+77.90	33.38	33.38	y		0.00'	190.95'	24"	0.0025	0.0025	11.25	32.5%	3.14	3.58	3.19	0.158'	0.770'	33.68'	0.06'	34.15'	0.039'	0.01'			0.027'	0.090'	34.177'	o.k.		no	
106	2.15	3.66	MH 6		20+71.87	20+71.87	35.56	34.62	y	91	0.94'	393.97'	24"	0.0031	0.0031	12.73	28.7%	3.14	4.05	1.62	0.041'	0.200'	34.18'	0.61'	34.82'	0.010'	0.23'	0.03'	0.028'	0.147'	0.760'	34.967'	o.k.		no	
107		2.15	MH 7		22+51.14	22+51.14	40.32	40.32	y		0.00'	179.27'	18"	0.0266	0.0266	17.16	12.5%	1.77	9.71	6.51	0.657'	0.345'	35.91'	0.16'	40.67'	0.164'	0.41'			0.285'	0.449'	40.950'	o.k.		no	
108		2.15	MH 8		24+64.40	24+64.40	53.18	53.18	y	20	0.00'	213.26'	18"	0.0603	0.0603	25.86	8.3%	1.77	14.64	8.63	1.158'	0.285'	40.95'	0.25'	53.47'	0.289'	0.38'	0.09'		0.383'	0.631'	53.848'	o.k.		no	
109		2.15	MH 9		27+16.54	27+16.54	67.60	67.60	y		0.00'	252.14'	18"	0.0572	0.0572	25.19	8.5%	1.77	14.25	8.41	1.098'	0.285'	53.85'	0.29'	67.89'	0.275'	0.09'			0.184'	0.478'	68.069'	o.k.		no	
110		2.15	MH 10		30+04.41	30+04.41	69.66	69.66	y	68	0.00'	287.87'	18"	0.0072	0.0072	8.91	24.1%	1.77	5.04	4.16	0.269'	0.495'	68.10'	0.18'	70.16'	0.067'	0.10'	0.17'		0.169'	0.346'	70.324'	o.k.		no	
111		2.15	MH 11		31+39.47	31+39.47	70.85	70.85	y	70	0.00'	135.06'	18"	0.0088	0.0088	9.89	21.7%	1.77	5.59	4.36	0.296'	0.450'	70.32'	0.09'	71.30'	0.074'	0.22'	0.19'		0.244'	0.336'	71.544'	o.k.		no	
112		2.15	MH 12		33+61.95	33+61.95	77.28	77.28	y	20	0.00'	222.48'	18"	0.0289	0.0289	17.91	12.0%	1.77	10.13	6.43	0.643'	0.315'	71.54'	0.23'	77.60'	0.161'	0.21'	0.05'		0.209'	0.435'	77.804'	o.k.		no	
113		2.15	MH 13		35+90.70	35+90.70	82.74	82.74	y		0.00'	228.75'	18"	0.0239	0.0239	16.27	13.2%	1.77	9.21	6.17	0.591'	0.345'	77.80'	0.21'	83.09'	0.148'	0.18'			0.166'	0.376'	83.251'	o.k.		no	
114		2.15	MH 14		38+65.27	38+65.27	88.07	88.07	y		0.00'	274.57'	18"	0.0194	0.0194	14.67	14.6%	1.77	8.30	5.81	0.525'	0.375'	83.25'	0.23'	88.45'	0.131'	0.19'			0.161'	0.391'	88.606'	o.k.		no	
115		2.15	MH 15		42+64.92	42+64.92	96.15	96.15	y		0.00'	399.65'	18"	0.0202	0.0202	14.98	14.3%	1.77	8.47	5.93	0.546'	0.375'	88.61'	0.33'	96.53'	0.137'	0.25'			0.193'	0.527'	96.718'	o.k.		no	
116		2.15	MH 16		46+54.87	46+54.87	108.60	108.60	y	35	0.00'	389.95'	18"	0.0319	0.0319	18.82	11.4%	1.77	10.65	6.76	0.710'	0.315'	96.72'	0.40'	108.92'	0.178'	0.27'	0.13'		0.291'	0.686'	109.206'	o.k.		no	
117		2.15	MH 17		48+15.31	48+15.31	114.14	114.14	y	40	0.00'	160.44'	18"	0.0345	0.0345	19.57	11.0%	1.77	11.07	7.03	0.768'	0.315'	109.21'	0.16'	114.46'	0.192'	0.16'	0.19'		0.270'	0.433'	114.725'	o.k.		no	
118		2.15	MH 18		49+30.85	49+30.85	116.09	116.09	y	20	0.00'	115.54'	18"	0.0169	0.0169	13.68	15.7%	1.77	7.74	5.42	0.456'	0.375'	114.72'	0.10'	116.47'	0.114'	0.18'	0.04'		0.166'	0.262'	116.631'	o.k.		no	
119		2.15	MH 19		50+84.10	50+84.10	119.02	119.02	y	20	0.00'	153.25'	18"	0.0191	0.0191	14.56	14.7%	1.77	8.24	5.77	0.517'	0.375'	116.63'	0.13'	119.40'	0.129'	0.14'	0.04'		0.154'	0.282'	119.549'	o.k.		no	
120		2.15	MH 20		53+82.92	53+82.92	122.77	122.77	y	24	0.00'	298.82'	18"	0.0125	0.0125	11.80	18.2%	1.77	6.68	5.04	0.395'	0.428'	119.55'	0.22'	123.20'	0.099'	0.12'	0.04'		0.131'	0.348'	123.328'	o.k.		no	
121		2.15	MH 21		56+30.85	56+30.85	125.47	125.47	y	20	0.00'	247.93'	18"	0.0109	0.0109	10.99	19.5%	1.77	6.22	4.70	0.342'	0.428'	123.33'	0.18'	125.90'	0.086'	0.11'	0.03'		0.114'	0.294'	126.011'	o.k.		no	
122		2.15	MH 22		58+56.60	58+56.60	127.82	127.82	y	38	0.00'	225.75'	18"	0.0104	0.0104	10.75	20.0%	1.77	6.08	4.59	0.327'	0.428'	126.01'	0.16'	128.25'	0.082'	0.07'	0.07'		0.112'	0.276'	128.359'	o.k.		no	
123		2.15	MH 23		59+86.10	59+86.10	128.44	128.44	y	90	0.00'	129.50'	18"	0.0048	0.0048	7.29	29.5%	1.77	4.12	3.55	0.195'	0.540'	128.36'	0.07'	128.98'	0.049'	0.07'	0.12'		0.123'	0.195'	129.103'	o.k.		no	
124		2.15	MH 24		61+62.35	61+62.35	129.32	129.32	y	88	0.00'	176.25'	18"	0.0050	0.0050	7.44	28.9%	1.77	4.21	3.62	0.204'	0.540'	129.10'	0.10'	129.86'	0.051'	0.11'	0.13'		0.143'	0.243'	130.003'	o.k.		no	
125		2.15	MH 25		65+65.06	65+65.06	132.94	132.94	y	27	0.00'	402.71'	18"	0.0090	0.0090	9.99	21.5%	1.77	5.65	4.41	0.302'	0.450'	130.00'	0.27'	133.39'	0.075'	0.07'	0.04'		0.090'	0.363'	133.480'	o.k.		no	
126		2.15	MH 26		69+16.11	69+16.11	134.50	134.50	y		0.00'	351.05'	18"	0.0044	0.0044	7.02	30.6%	1.77	3.97	3.48	0.188'	0.563'	133.50'	0.19'	135.06'	0.047'	0.08'			0.063'	0.253'	135.125'	o.k.		no	
127		2.15	MH 27		72+31.64	72+31.64	136.31	136.31	y	22	0.00'	315.53'	18"	0.0057	0.0057	7.98	26.9%	1.77	4.51	3.79	0.223'	0.518'	135.13'	0.19'	136.83'	0.056'	0.07'	0.02'		0.074'	0.259'	136.901'	o.k.		no	
128		2.15	MH 28		75+38.35	75+38.35	138.19	137.81	y	90	0.38'	306.71'	18"	0.0049	0.0049	7.37	29.2%	1.77	4.17	3.58	0.200'	0.540'	136.90'	0.17'	138.35'	0.050'	0.08'	0.13'		0.128'	0.301'	138.478'	o.k.		no	
129		2.15	MH 29		77+15.39	77+15.39	139.22	139.22	y	90	0.00'	177.04'	18"	0.0058	0.0058	8.03	26.7%	1.77	4.55	3.82	0.226'	0.518'	138.71'	0.10'	139.74'	0.057'	0.28'	0.14'		0.239'	0.343'	139.977'	o.k.		no	
130		2.15	MH 30		81+23.35	81+23.35	153.72	153.72	y	65	0.00'	407.96'	18"	0.0355	0.0355	19.86	10.8%	1.77	11.24	7.13	0.790'	0.315'	139.98'	0.41'	154.04'	0.198'	0.35'	0.43'		0.489'	0.903'	154.524'	o.k.		no	
131		2.15	MH 31		82+00.48	82+00.48	167.07	157.68	y	71	9.39'	77.13'	18"	0.0513	0.0513	23.86	9.0%	1.77	13.50	7.97	0.986'	0.285'	154.52'	0.09'	157.97'	0.246'	0.09'	0.63'		0.482'	0.572'	158.447'	o.k.		no	
132		2.15	MH 32		83+90.96	83+90.96	168.34	168.34	y	20	0.00'	190.48'	18"	0.0067	0.0067	8.60	25.0%	1.77	4.87	4.01	0.250'	0.495'	167.57'	0.12'	168.84'	0.063'	0.08'	0.02'		0.083'	0.200'	168.918'	o.k.		no	
133		2.15	MH 33		87+82.39	87+82.39	170.74	170.74	y	97	0.00'	391.43'	18"	0.0061	0.0061	8.25	26.0%	1.77	4.67	3.92	0.239'	0.518'	168.92'	0.23'	171.26'	0.060'	0.12'	0.15'		0.165'	0.395'	171.423'	o.k.		no	
134	1.46	2.15	MH 34		91+99.07	-00+31.00	175.20	175.20	y		0.00'	416.68'	18"	0.0107	0.0107	10.90	19.7%	1.77	6.17	4.66	0.337'	0.428'	171.42'	0.30'	175.63'	0.084'	0.35'		0.283'	0.360'	0.663'	175.988'	o.k.		no	
201		1.46	A-1		00+00.00	00+00.00	177.66	177.66	y	106	0.00'	31.00'	18"	0.0800	0.0794	29.67	4.9%	1.77	16.79	8.06	1.008'	0.210'	175.99'	0.02'	177.87'	0.252'	0.05'	0.65'		0.475'	0.500'	178.345'	o.k.		no	
202		1.46	A-2		04+25.00	04+25.00	179.53	179.53	y		0.00'	425.00'	15"	0.0044	0.0044	4.30	33.9%	1.23	3.50	3.12	0.151'	0.481'	178.35'	0.27'	180.01'	0.038'	0.00'			0.019'	0.291'	180.030'	o.k.		no	
203		1.46	A-3		08+50.00	08+50.00	181.30	181.30	y		0.00'	425.00'	15"	0.0040	0.0042	4.18	34.9%	1.23	3.41	3.08	0.148'	0.500'	180.03'	0.26'	181.80'	0.037'	0.00'			0.018'	0.281'	181.818'	o.k.		no	
204		1.46	A-4		11+00.00	11+00.00	182.30	182.30	y		0.00'	250.00'	15"	0.0040	0.0040	4.10	35.6%	1.23	3.34	3.02	0.142'	0.500'	181.82'	0.15'	182.80'	0.035'	0.00'			0.018'	0.172'	182.818'	o.k.		no	
205		1.46	A-5		13+97.50	13+97.50	187.50	187.50	y		0.00'	297.50'	15"	0.0175	0.0175	8.56	17.0%	1.23	6.98	5.13	0.408'	0.338'	182.82'	0.28'	187.84'	0.102'	0.00'			0.051'	0.332'	187.889'	o.k.		no	
206	0.74	1.46	A-6		14+80.50	00+00.00	188.50	188.50	y	86	0.00'	83.00'	15"	0.0120	0.0120	7.11	20.5%	1.23	5.79	4.52	0.317'	0.375'	187.89'	0.07'	188.88'	0.079'	0.00'	0.20'	0.179'	0.231'	0.299'	189.106'	o.k.		no	
301		0.72	E1		03+10.00	03+10.00	189.65	189.65	y		0.00'	310.00'	10"	0.0180	0.0037	1.34	53.6%	0.55	2.45	2.48	0.095'	0.425'	189.11'	0.32'	190.08'	0.024'	0.00'			0.012'	0.334'	190.087'	o.k.		no	
302		0.72	E2		07+10.00	07+10.00	193.20	193.20	y		0.00'	400.00'	10"	0.0088	0.0089	2.07	34.6%	0.55	3.79	3.43	0.183'	0.333'	190.09'	0.52'	193.53'	0.046'	0.00'			0.023'	0.541'	193.556'	o.k.		no	
303		0.72	E3		12+10.00	12+10.00	194.65	194.65	y		0.00'	500.00'	10"	0.0029	0.0029	1.18	60.6%	0.55	2.17	2.27	0.080'	0.463'	193.66'	0.48'	195.11'	0.020'	0.00'			0.010'	0.494'	195.122'	o.k.		no	
304		0.72	E4		16+24.00	16+24.00	195.85	195.85	y		0.00'	414.00'	10"	0.0029	0.0029	1.18	60.6%	0.55	2.17	2.27	0.080'	0.463'	195.12'	0.40'	196.31'	0.020'	0.00'			0.010'	0.411'	196.322'	o.k.		no	
305		0.72	E5		21+43.00	21+43.00	199.10	199.10	y		0.00'	519.00'	8"	0.0063	0.0063	0.96	74.8%	0.35	2.75	3.01	0.140'	0.427'	196.32'	1.50'	199.53'	0.035'	0.00'			0.018'	1.518'	199.544'	o.k.		no	
Highway 99 Trunk South of Chicken Creek																																		
205	0.74	1.46	MH 6	0.0	14+80.50	00+00.00	190.38	188.50	y																									
401		0.83	F1		04+31.00	04+31.00	191.33	191.33	y		0.00'	431.00'	10"	0.0022	0.0022	1.03	80.2%	0.55	1.89	2.10	0.068'	0.563'	190.94'	0.49'	191.89'	0.017'	0.00'			0.009'	0.499'	191.901'	o.k.		no	
402		0.83	F2		07+43.00	07+43.00	192.28	192.28	y		0.00'	312.00'	10"	0.0028	0.0030	1.21	68.2%	0.55	2.22	2.39	0.089'	0.504'	191.90'	0.38'	192.78'	0.022'	0.00'			0.011'	0.389'	192.795'	o.k.		no	
403		0.83	F3		10+80.00	10+80.00	193.48	193.48	y		0.00'	337.00'	10"	0.0034	0.0036	1.31	63.1%	0.55	2.40	2.52	0.099'	0.475'	192.80'	0.43'	193.96'	0.025'	0.00'			0.012'	0.441'	193.967'	o.k.		no	
404		0.83	F4		13+88.00	13+88.00	194.68	194.68	y		0.00'	308.00'	10"	0.0034	0.0039	1.37	60.3%	0.55	2.51	2.63	0.107'	0.463'	193.97'	0.40'	195.14'	0.027'	0.00'			0.013'	0.410'	195.156'	o.k.		no	
405		0.83	F5		17+95.00	17+95.00	196.18	196.18	y		0.00'	407.00'	10"	0.0034	0.0037	1.33	62.0%	0.55	2.45	2.57	0.102'	0.475'	195.16'	0.52'	196.66'	0.026'	0.00'			0.013'	0.531'	196.668'	o.k.		no	
406		0.83	F6		21+25.00	21+25.00	197.29	197.29	y		0.00'	330.00'	10"	0.0034	0.0034	1.27	64.9%	0.55	2.34	2.48	0.095'	0.483'	196.67'	0.41'	197.77'	0.024'	0.00'			0.012'	0.424'	197.785'	o.k.		no	
Overlook Trunk																																		
103	1.70	4.95	MH 3	0.0	12+35.52	00+00.00	34.16	32.03	y		2.13'	1235.52'																						
501		1.70	MH 1		00+08.00	00+08.00	34.59	34.49	y	90	0.10'	8.00'	12"	0.0413	0.0413	7.26	23.4%	0.79	9.24	7.48	0.869'	0.320'	34.48'	0.03'	34.81'	0.217'	0.00'	0.56'		0.387'	0.415'	35.197'	o.k.		no	
502		1.70	MH 2		01+03.00	01+03.00	35.56	35.46	y	36	0.10'	95.00'	12"	0.0092	0.0092	3.42	49.6%	0.79	4.35	4.31	0.288'	0.490'	35.20'	0.22'	35.95'	0.072'	0.00'	0.06'		0.066'	0.284'	36.016'	o.k.		no	
503		1.70	MH 3		04+88.00	04+88.00	41.98	41.88	y	21	0.10'	385.00'	12"	0.0164	0.0164	4.58	37.1%	0.79	5.83	5.36	0.446'	0.415'	36.02'	1.02'	42.30'	0.112'	0.00'	0.04'		0.074'	1.098'	42.369'	o.k.		no	
504		1.70	MH 4		08+88.00	08+88.00	45.96	45.86	y		0.10'	400.00'	12"	0.0097	0.0097	3.52	48.2%	0.79	4.48	4.43	0.305'	0.490'	42.47'	0.92'	46.35'	0.076'	0.00'			0.038'	0.954'	46.388'	o.k.		no	
505		1.70	MH 5		11+88.00	11+88.00	50.26	50.16	y		0.10'	300.00'	12"	0.0140	0.0140	4.23	40.1%	0.79	5.38	5.09	0.402'	0.440'	46.40'	0.75'	50.60'	0.100'	0.00'			0.050'	0.803'	50.650'	o.k.		no	
506		1.70	MH 6		15+63.00	15+63.00	54.60	54.50	y		0.10'	375.00'	12"	0.0113	0.0113	3.80	44.7%	0.79	4.84	4.69	0.342'	0.465'	50.73'	0.90'	54.97'	0.085'	0.00'			0.043'	0.938'	55.008'	o.k.		no	
507		1.70	MH 7		19+13.00	19+13.00	56.10	56.00	y		0.10'	350.00'	12"	0.0040	0.0040	2.26	75.1%	0.79	2.88	3.15	0.154'	0.640'	55.24'	0.65'	56.64'	0.039'	0.00'			0.019'	0.672'	56.659'	o.k.		no	
508		1.70	MH 8		20+63.00	20+63.00	61.99	61.89	y		0.10'	150.00'	12"	0.0386	0.0386	7.02	24.2%	0.79	8.94	7.37	0.844'	0.330'	56.66'	0.50'	62.22'	0.211'	0.00'			0.105'	0.604'	62.325'	o.k.		no	
509		1.70	MH 9		23+88.00	23+88.00	66.05	65.95	y		0.10'	325.00'	12"	0.0122	0.0122	3.94	43.0%	0.79	5.02	4.82	0.361'	0.450'	62.44'	0.79'	66.40'	0.090'	0.00'			0.045'	0.837'	66.445'	o.k.		no	
510		1.70	MH 10		25+88.00	25+88.00	68.59	68.49	y		0.10'	200.00'	12"	0.0122	0.0122	3.95	43.0%	0.79	5.02	4.82	0.361'	0.450'	66.50'	0.49'	68.94'	0.090'	0.00'			0.045'	0.533'	68.985'	o.k.		no	
511		1.70	MH 11		29+68.00	29+68.00	74.24	74.14	y		0.10'	380.00'	12"	0.0146	0.0146	4.32	39.3%	0.79	5.50	5.14	0.410'	0.425'	69.02'	0.98'	74.57'	0.103'	0.00'			0.051'	1.033'	74.616'	o.k.		no	
512		1.70	MH 12		33+68.00	33+68.00	77.82	77.72	y		0.10'	400.00'	12"	0.0087	0.0087	3.33	50.9%	0.79	4.24	4.24	0.279'	0.500'	74.74'	0.90'	78.22'	0.070'	0.00'			0.035'	0.933'	78.255'	o.k.		no	
513		1.70	MH 13		36+38.00	36+38.00	80.69	78.90	y		1.79'	270.00'	12"	0.0040	0.0040	2.26	75.1%	0.79	2.88	3.15	0.154'	0.640'	78.46'	0.50'	79.54'	0.039'	0.00'			0.019'	0.523'	79.559'	o.k.		no	
514		1.70	MH 14		39+88.00	39+88.00	86.60	86.50	y		0.10'	350.00'	12"	0.0166	0.0166	4.60	36.9%	0.79	5.86	5.39	0.451'	0.415'	81.11'	0.93'	86.92'	0.113'	0.00'			0.056'	0.988'	86.971'	o.k.		no	
515		1.70	MH 15		43+68.00	43+68.00	90.88	90.78	y		0.10'	380.00'	12"	0.0110	0.0110	3.75	45.3%	0.79	4.77	4.63	0.332'	0.465'	87.07'	0.91'	91.25'	0.083'	0.00'			0.042'	0.949'	91.287'	o.k.		no	
516		1.70	MH 16		45+38.00	45+38.00	93.70	93.60	y		0.10'	170.00'	12"	0.0160	0.0160	4.52	37.5%	0.79	5.75	5.29	0.435'	0.415'	91.30'	0.45'	94.02'	0.109'	0.00'			0.054'	0.507'	94.069'	o.k.		no	
517		1.70	MH 17		49+38.00	49+38.00	98.76	98.66	y		0.10'	400.00'	12"	0.0124	0.0124	3.98	42.7%	0.79	5.06	4.86	0.367'	0.450'	94.15'	0.98'	99.11'	0.092'	0.00'			0.046'	1.021'	99.156'	o.k.		no	
518		1.70	MH 18		52+38.00	52+38.00	102.58	102.48	y		0.10'	300.00'	12"	0.0124	0.0124	3.98	42.7%	0.79	5.06	4.86	0.367'	0.450'	99.21'	0.73'	102.93'	0.092'	0.00'			0.046'	0.777'	102.976'	o.k.		no	
519		1.70	MH 19		55+14.00	55+14.00	107.00	106.00	y		1.00'	276.00'	12"	0.0124	0.0124	3.98	42.7%	0.79	5.06	4.86	0.367'	0.450'	103.03'	0.67'	106.45'	0.092'	0.00'			0.046'	0.719'	106.496'	o.k.		no	
520		1.01	MH 20		59+13.00	59+13.00	112.29	112.19	y		0.10'	399.00'	10"	0.0130	0.0130	2.51	40.3%	0.55	4.59	4.34	0.293'	0.367'	107.37'	0.94'	112.56'	0.073'	0.00'			0.037'	0.972'	112.593'	o.k.		no	
521		1.01	MH 21		63+13.00	63+13.00	117.59	117.49	y		0.10'	400.00'	10"	0.0130	0.0130	2.50	40.3%	0.55	4.59	4.34	0.292'	0.367'	112.66'	0.94'	117.86'	0.073'	0.00'			0.037'	0.974'	117.893'	o.k.		no	
522		1.01	MH 22		67+23.00	67+23.00	123.66	122.10	y		1.56'	410.00'	10"	0.0110	0.0110	2.30	43.8%	0.55	4.22	4.06	0.255'	0.375'	117.97'	0.93'	122.48'	0.064'	0.00'			0.032'	0.966'	122.507'	o.k.		no	
523		1.01	MH 23		69+18.00	69+18.00	127.08	126.98	y		0.10'	195.00'	10"	0.0170	0.0170	2.87	35.2%	0.55	5.26	4.76	0.351'	0.333'	123.99'	0.50'	127.31'	0.088'	0.00'			0.044'	0.544'	127.357'	o.k.		no	
524		1.01	MH 24		71+88.00	71+88.00	130.54	130.44	y		0.10'	270.00'	10"	0.0124	0.0124	2.45	41.2%	0.55	4.49	4.25	0.280'	0.367'	127.45'	0.63'	130.81'	0.070'	0.00'			0.035'	0.668'	130.842'	o.k.		no	
525		1.01	MH 25		74+38.00	74+38.00	133.64	133.54	y		0.10'	250.00'	10"	0.0120	0.0120	2.41	41.9%	0.55	4.41	4.17	0.270'	0.367'	130.91'	0.59'	133.91'	0.067'	0.00'			0.034'	0.620'	133.940'	o.k.		no	
526		1.01	MH 26		77+38.00	00+00.00	137.43	137.24	y		0.19'	300.00'	10"	0.0120	0.0120	2.41	41.9%	0.55	4.41	4.17	0.270'	0.367'	134.01'	0.70'	137.61'	0.067'	0.00'			0.034'	0.737'	137.640'	o.k.		no	

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk												Hydraulic Grade Line for Downstream Pipe														Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Full Velocity (ft/s)	Prop. Velocity (ft/s)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
527		1.01	MH 27		03+37.00	03+37.00	143.57	143.47	y		0.10'	337.00'	12"	0.0124	0.0179	4.78	21.1%	0.79	6.09	4.75	0.350'	0.300'	137.73'	0.44'	143.77'	0.088'	0.00'			0.044'	0.482'	143.814'	o.k.		no	
528		1.01	MH 28		05+00.50	05+00.50	146.07	145.47	y	62	0.60'	163.50'	12"	0.0116	0.0116	3.85	26.2%	0.79	4.90	4.12	0.263'	0.345'	143.92'	0.18'	145.82'	0.066'	0.00'	0.14'		0.101'	0.284'	145.916'	o.k.		no	
529		1.01	MH 29		05+70.50	05+70.50	169.80	169.70	y	33	0.10'	70.00'	10"	0.3376	0.3376	12.76	7.9%	0.55	23.40	12.87	2.572'	0.138'	146.21'	0.49'	169.84'	0.643'	0.00'	0.44'		0.540'	1.029'	170.378'	o.k.		no	
530		1.01	MH 30		08+37.50	08+37.50	170.73	170.63	y		0.10'	267.00'	10"	0.0035	0.0031	1.22	82.4%	0.55	2.25	2.50	0.097'	0.575'	170.38'	0.45'	171.21'	0.024'	0.00'			0.012'	0.462'	171.217'	o.k.		no	
531		1.01	MH 31		10+38.50	10+38.50	173.38	173.28	y	45	0.10'	201.00'	10"	0.0132	0.0127	2.47	40.8%	0.55	4.54	4.29	0.285'	0.367'	171.22'	0.47'	173.65'	0.071'	0.00'	0.08'		0.076'	0.547'	173.723'	o.k.		no	
532		1.01	MH 32		13+17.50	13+17.50	174.12	174.02	y	40	0.10'	279.00'	10"	0.0027	0.0023	1.05	95.9%	0.55	1.93	2.19	0.074'	0.638'	174.02'	0.45'	174.66'	0.019'	0.00'	0.02'		0.018'	0.473'	174.676'	o.k.		no	
533		0.92	MH 33		15+09.50	15+09.50	174.71	174.61	y		0.10'	192.00'	10"	0.0031	0.0026	1.11	82.7%	0.55	2.03	2.27	0.080'	0.575'	174.70'	0.27'	175.19'	0.020'	0.00'			0.010'	0.277'	175.195'	o.k.		no	
534		0.92	MH 34		19+27.50	19+27.50	176.05	175.95	y	20	0.10'	418.00'	10"	0.0032	0.0030	1.20	76.7%	0.55	2.19	2.41	0.090'	0.542'	175.25'	0.60'	176.49'	0.023'	0.00'	0.01'		0.015'	0.613'	176.507'	o.k.		no	
535		0.92	MH 35		19+85.50	19+85.50	177.04	176.94	y	95	0.10'	58.00'	10"	0.0153	0.0153	2.72	33.7%	0.55	4.99	4.44	0.306'	0.321'	176.51'	0.13'	177.26'	0.077'	0.00'	0.20'		0.136'	0.264'	177.397'	o.k.		no	
536		0.92	MH 36		24+06.50	24+06.50	178.05	177.95	y	20	0.10'	421.00'	10"	0.0022	0.0022	1.02	89.8%	0.55	1.87	2.12	0.070'	0.604'	177.64'	0.58'	178.55'	0.017'	0.00'	0.01'		0.011'	0.588'	178.566'	o.k.		no	
537		0.92	MH 37		25+60.50	25+60.50	179.98	179.88	y	20	0.10'	154.00'	10"	0.0120	0.0119	2.39	38.3%	0.55	4.39	4.11	0.262'	0.354'	178.57'	0.31'	180.23'	0.065'	0.00'	0.02'		0.043'	0.350'	180.277'	o.k.		no	
538		0.92	MH 38		28+76.50	28+76.50	181.37	181.37	y		0.00'	316.00'	10"	0.0044	0.0044	1.46	63.0%	0.55	2.67	2.80	0.122'	0.475'	180.46'	0.49'	181.85'	0.031'	0.00'			0.015'	0.510'	181.860'	o.k.		no	
North Overlook Stub																																			
519	0.59	1.70	MH 19	0.0	55+14.00	00+00.00	106.25	106.00	y																										
601		0.59	MH 1		00+65.00	00+65.00	142.71	142.61	y		0.10'	65.00'	10"	0.5594	0.5594	16.43	3.6%	0.55	30.12	12.05	2.255'	0.083'	106.33'	0.28'	142.69'	0.564'	0.00'			0.282'	0.565'	142.975'	o.k.		no	
602		0.59	MH 2		01+85.00	01+85.00	143.07	142.97	y	95	0.10'	120.00'	10"	0.0040	0.0022	1.02	58.1%	0.55	1.87	1.94	0.058'	0.454'	143.16'	0.08'	143.42'	0.015'	0.00'	0.04'		0.026'	0.107'	143.450'	o.k.		no	
603		0.59	MH 3		05+60.00	05+60.00	144.57	144.57	y		0.00'	375.00'	10"	0.0040	0.0040	1.39	42.8%	0.55	2.55	2.45	0.093'	0.375'	143.45'	0.30'	144.95'	0.023'	0.00'			0.012'	0.308'	144.957'	o.k.		no	
Minnehaha Trunk																																			
700		0.07	MH 0		00+00.00	00+00.00	224.00	216.25	y																										
7011		0.07	MH 1A		00+03.50	00+03.50	224.43	224.23	y	83	0.20'	3.50'	12"	0.0288	0.0657	9.16	2.0%	0.79	11.66	4.66	0.338'	0.100'	224.10'	0.00'	224.33'	0.084'	0.00'	0.22'		0.150'	0.150'	224.480'	o.k.		no	
701		0.07	MH 1		01+25.50	01+25.50	224.95	224.75	y	22	0.20'	122.00'	12"	0.0026	0.0026	1.83	3.6%	0.79	2.33	0.93	0.013'	0.100'	224.53'	0.00'	224.85'	0.003'	0.00'	0.00'		0.002'	0.005'	224.852'	o.k.		no	
702		0.07	MH 2		02+24.50	02+24.50	225.41	225.21	y	38	0.20'	99.00'	12"	0.0026	0.0026	1.83	3.6%	0.79	2.33	0.93	0.013'	0.100'	225.05'	0.00'	225.31'	0.003'	0.00'	0.00'		0.003'	0.005'	225.313'	o.k.		no	
703		0.07	MH 3		04+56.50	04+56.50	226.11	226.01	y	20	0.10'	232.00'	12"	0.0026	0.0026	1.82	3.6%	0.79	2.31	0.93	0.013'	0.100'	225.51'	0.00'	226.11'	0.003'	0.00'	0.00'		0.002'	0.007'	226.112'	o.k.		no	
704		0.07	MH 4		05+92.50	05+92.50	226.66	226.46	y	48	0.20'	136.00'	12"	0.0026	0.0026	1.81	3.6%	0.79	2.31	0.92	0.013'	0.100'	226.21'	0.00'	226.56'	0.003'	0.00'	0.00'		0.004'	0.007'	226.564'	o.k.		no	
705		0.07	MH 5		06+71.50	06+71.50	226.98	226.88	y	20	0.10'	79.00'	12"	0.0026	0.0028	1.89	3.5%	0.79	2.40	0.96	0.014'	0.100'	226.76'	0.00'	226.98'	0.004'	0.00'	0.00'		0.002'	0.004'	226.982'	o.k.		no	
706		0.07	MH 6		07+35.50	07+35.50	227.35	227.15	y	36	0.20'	64.00'	12"	0.0026	0.0027	1.84	3.6%	0.79	2.34	0.94	0.014'	0.100'	227.08'	0.00'	227.25'	0.003'	0.00'	0.00'		0.003'	0.004'	227.253'	o.k.		no	
707		0.07	MH 7		07+99.50	07+99.50	227.61	227.51	y	22	0.10'	64.00'	12"	0.0026	0.0025	1.79	3.7%	0.79	2.27	0.91	0.013'	0.100'	227.45'	0.00'	227.61'	0.003'	0.00'	0.00'		0.002'	0.004'	227.612'	o.k.		no	
708		0.07	MH 8		08+72.50	08+72.50	227.90	227.80	y	27	0.10'	73.00'	12"	0.0026	0.0026	1.82	3.6%	0.79	2.32	0.93	0.013'	0.100'	227.71'	0.00'	227.90'	0.003'	0.00'	0.00'		0.003'	0.004'	227.903'	o.k.		no	
709		0.07	MH 9		09+58.50	09+58.50	228.23	228.13	y	20	0.10'	86.00'	12"	0.0026	0.0027	1.85	3.6%	0.79	2.35	0.94	0.014'	0.100'	228.00'	0.00'	228.23'	0.003'	0.00'	0.00'		0.002'	0.004'	228.232'	o.k.		no	
710		0.07	MH 10		12+39.50	12+39.50	229.15	228.96	y	106	0.19'	281.00'	12"	0.0026	0.0026	1.82	3.6%	0.79	2.32	0.93	0.013'	0.100'	228.33'	0.01'	229.06'	0.003'	0.00'	0.01'		0.006'	0.012'	229.066'	o.k.		no	
711		0.07	MH 11		13+78.50	13+78.50	229.62	229.52	y	23	0.10'	139.00'	12"	0.0026	0.0027	1.84	3.6%	0.79	2.35	0.94	0.014'	0.100'	229.25'	0.00'	229.62'	0.003'	0.00'	0.00'		0.002'	0.005'	229.622'	o.k.		no	
712		0.07	MH 12		15+78.50	15+78.50	230.34	230.14	y		0.20'	200.00'	12"	0.0026	0.0026	1.82	3.6%	0.79	2.32	0.93	0.013'	0.100'	229.72'	0.00'	230.24'	0.003'	0.00'			0.002'	0.006'	230.242'	o.k.		no	
Lakeshore Trunk																																			
105	2.15	3.66	MH 6		20+71.87	00+00.00	35.56	34.62	y	91																									
801		1.83	G1		00+37.00	00+37.00	41.15	41.05	y	62	0.10'	37.00'	15"		0.1484	24.95	7.4%	1.23	20.33	11.18	1.941'	0.206'	35.77'	0.10'	41.26'	0.485'	0.00'	1.00'		0.743'	0.841'	41.999'	o.k.		no	
802		1.83	G2		03+45.00	03+45.00	44.91	44.81	y		0.10'	308.00'	12"	0.0120	0.0119	3.89	47.1%	0.79	4.96	4.86	0.367'	0.475'	42.00'	0.84'	45.29'	0.092'	0.00'			0.046'	0.888'	45.331'	o.k.		no	
803		1.83	G3		07+21.00	07+21.00	46.53	46.43	y		0.10'	376.00'	12"	0.0040	0.0040	2.27	80.8%	0.79	2.89	3.21	0.160'	0.675'	45.59'	0.80'	47.11'	0.040'	0.00'			0.020'	0.816'	47.125'	o.k.		no	
804		1.83	G4		11+21.00	11+21.00	48.13	48.13	y		0.00'	400.00'	12"	0.0040	0.0040	2.26	81.2%	0.79	2.88	3.19	0.158'	0.675'	47.21'	0.85'	48.81'	0.040'	0.00'			0.020'	0.867'	48.825'	o.k.		no	
805		1.83	G5		15+21.00	15+21.00	51.33	51.33	y		0.00'	400.00'	12"	0.0080	0.0080	3.20	57.4%	0.79	4.07	4.17	0.270'	0.535'	48.82'	1.00'	51.87'	0.067'	0.00'			0.034'	1.030'	51.899'	o.k.		no	
806		1.83	G6		19+21.00	19+21.00	62.53	62.53	y		0.00'	400.00'	10"	0.0280	0.0280	3.68	49.9%	0.55	6.74	6.67	0.691'	0.408'	51.90'	2.83'	62.94'	0.173'	0.00'			0.086'	2.917'	63.025'	o.k.		no	
807		1.83	G7		23+21.00	23+21.00	70.53	70.53	y		0.00'	400.00'	10"	0.0200	0.0200	3.11	59.0%	0.55	5.70	5.90	0.540'	0.454'	63.02'	2.58'	70.98'	0.135'	0.00'			0.067'	2.651'	71.052'	o.k.		no	
808		1.83	G8		27+21.00	27+21.00	85.73	85.73	y		0.00'	400.00'	10"	0.0380	0.0380	4.28	42.8%	0.55	7.85	7.54	0.882'	0.375'	71.05'	3.01'	86.11'	0.221'	0.00'			0.110'	3.122'	86.215'	o.k.		no	
809		1.83	G9		30+94.00	30+94.00	99.16	99.16	y		0.00'	373.00'	10"	0.0360	0.0360	4.17	44.0%	0.55	7.64	7.41	0.853'	0.388'	86.22'	2.75'	99.55'	0.213'	0.00'			0.107'	2.857'	99.654'	o.k.		no	
810		1.83	G10		34+94.00	34+94.00	111.96	111.96	y		0.00'	400.00'	10"	0.0320	0.0320	3.93	46.7%	0.55	7.21	7.06	0.774'	0.396'	99.65'	2.89'	112.36'	0.194'	0.00'			0.097'	2.985'	112.453'	o.k.		no	
811		1.83	G11		38+94.00	38+94.00	126.36	126.36	y		0.00'	400.00'	10"	0.0360	0.0360	4.17	44.0%	0.55	7.64	7.41	0.853'	0.388'	112.45'	2.95'	126.75'	0.213'	0.00'			0.107'	3.056'	126.854'	o.k.		no	
812		1.83	G12		42+24.00	42+24.00	138.24	138.24	y		0.00'	330.00'	10"	0.0360	0.0360	4.17	44.0%	0.55	7.64	7.41	0.853'	0.388'	126.85'	2.43'	138.63'	0.213'	0.00'			0.107'	2.540'	138.734'	o.k.		no	
813		1.83	G13		44+66.00	44+66.00	146.95	146.95	y		0.00'	242.00'	10"	0.0360	0.0360	4.17	44.0%	0.55	7.64	7.41	0.853'	0.388'	138.73'	1.78'	147.34'	0.213'	0.00'			0.107'	1.891'	147.444'	o.k.		no	
814		1.83	G14		47+06.00	47+06.00	149.40	149.30	y		0.10'	240.00'	10"	0.0099	0.0098	2.17	84.4%	0.55	3.99	4.46	0.309'	0.583'	147.53'	1.33'	149.88'	0.077'	0.00'			0.039'	1.367'	149.922'	o.k.		no	
901		1.83	MH 1		50+06.00	50+06.00	159.34	159.00	y		0.34'	300.00'	10"	0.0320	0.0320	3.93	46.7%	0.55	7.21	7.06	0.774'	0.396'	149.92'	2.17'	159.40'	0.194'	0.00'			0.097'	2.263'	159.493'	o.k.		no	
902		1.83	MH 2		53+06.00	53+06.00	174.34	174.34	y		0.00'	300.00'	10"	0.0500	0.0500	4.91	37.3%	0.55	9.01	8.29	1.066'	0.346'	159.69'	2.47'	174.69'	0.267'	0.00'			0.133'	2.599'	174.819'	o.k.		no	
903		1.83	MH 3		57+06.00	57+06.00	175.94	175.94	y		0.00'	400.00'	10"	0.0040	0.0040	1.39	132.0%	0.55	2.55	2.55	0.101'	0.833'	175.17'	2.77'	177.95'	0.025'	0.00'			0.013'	2.787'	177.960'	CRITICAL		Yes by 0.44 cfs	1.2
904		1.83	MH 4		61+06.00	61+06.00	177.54	177.54	y		0.00'	400.00'	10"	0.0040	0.0040	1.39	132.0%	0.55	2.55	2.55	0.101'	0.833'	177.96'	2.77'	180.73'	0.025'	0.00'			0.013'	2.787'	180.747'	CRITICAL		Yes by 0.44 cfs	2.4
905		1.83	MH 5		64+08.00	64+08.00	178.75	178.75	y		0.00'	302.00'	10"	0.0040	0.0040	1.39	131.9%	0.55	2.55	2.55	0.101'	0.833'	180.75'	2.09'	182.84'	0.025'	0.00'			0.013'	2.107'	182.854'	CRITICAL		Yes by 0.44 cfs	3.3
Datum Shift																																			
905		1.00	MH 5		64+08.00	00+00.00	178.56	178.46	y																										
1001		1.00	MH 1		00+50.00	00+50.00	178.80	178.70	y		0.10'	50.00'	12"	0.0026	0.0028	1.89	53.1%	0.79	2.41	2.43	0.092'	0.510'	179.07'	0.04'	179.21'	0.023'	0.00'			0.011'	0.050'	179.221'	o.k.		no	
1002		1.00	MH 2		04+53.00	04+53.00	179.78	179.68	y		0.10'	403.00'	12"	0.0022	0.0022	1.67	60.1%	0.79	2.13	2.22	0.077'	0.555'	179.36'	0.29'	180.24'	0.019'	0.00'			0.010'	0.299'	180.245'	o.k.		no	
1003		1.00	MH 3		08+53.00	08+53.00	180.76	180.66	y		0.10'	400.00'	12"	0.0022	0.0022	1.68	59.9%	0.79	2.13	2.21	0.076'	0.545'	180.33'	0.29'	181.21'	0.019'	0.00'			0.009'	0.302'	181.214'	o.k.		no	
1004		1.00	MH 4		10+43.00	10+43.00	181.27	181.17	y		0.10'	190.00'	12"	0.0022	0.0022	1.66	60.5%	0.79	2.11	2.21	0.076'	0.555'	181.32'	0.14'	181.73'	0.019'	0.00'			0.009'	0.146'	181.734'	o.k.		no	
1005		1.00	MH 5		13+42.00	13+42.00	182.03	181.93	y		0.10'	299.00'	12"	0.0022	0.0022	1.68	59.8%	0.79	2.14	2.21	0.076'	0.545'	181.82'	0.22'	182.48'	0.019'	0.00'			0.009'	0.228'	182.484'	o.k.		no	
1006		1.00	MH 6		17+90.00	17+90.00	183.11	183.01	y		0.10'	448.00'	12"	0.0022	0.0022	1.67	60.1%	0.79	2.13	2.22	0.077'	0.555'	182.59'	0.32'	183.57'	0.019'	0.00'			0.010'	0.331'	183.575'	o.k.		no	
1007		1.00	MH 7		20+94.00	20+94.00	183.88	183.78	y		0.10'	304.00'	12"	0.0022	0.0022	1.68	59.9%	0.79	2.14	2.21	0.076'	0.545'	183.66'	0.22'	184.33'	0.019'	0.00'			0.009'	0.232'	184.334'	o.k.		no	
1008		1.00	MH 8		24+61.00	24+61.00	184.79	184.69	y		0.10'	367.00'	12"	0.0022	0.0022	1.68	59.8%	0.79	2.14	2.21	0.076'	0.545'	184.43'	0.27'	185.24'	0.019'	0.00'			0.009'	0.278'	185.244'	o.k.		no	
1009		1.00	MH 9		25+99.00	25+99.00	185.20	185.10	y		0.10'	138.00'	12"	0.0022	0.0022	1.69	59.3%	0.79	2.16	2.23	0.077'	0.545'	185.34'	0.10'	185.65'	0.019'	0.00'			0.010'	0.111'	185.655'	o.k.		no	
1010		1.00	MH 10		27+73.00	27+73.00	186.47	185.58	y		0.89'	174.00'	12"	0.0022	0.0022	1.67	60.1%	0.79	2.13	2.22	0.077'	0.555'	185.76'	0.13'	186.14'	0.019'	0.00'			0.010'	0.135'	186.145'	o.k.		no	
1011		1.00	MH 11		31+15.00	31+15.00	187.72	187.22	y		0.50'	342.00'	12"	0.0022	0.0022	1.67	60.0%	0.79	2.13	2.23	0.077'	0.555'	187.03'	0.25'	187.78'	0.019'	0.00'			0.010'	0.255'	187.785'	o.k.		no	
1012		1.00	MH 12		34+15.00	34+15.00	187.98	187.98	y		0.00'	300.00'	12"	0.0022	0.0009	1.05	95.5%	0.79	1.34	1.52	0.036'	0.765'	188.49'	0.18'	188.75'	0.009'	0.00'			0.004'	0.188'	188.749'	o.k.		no	

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		5.11	Ex. M.H.		00+00.00	00+00.00	27.41	27.41	y																								
101		5.11	MH 1		02+34.37	02+34.37	28.21	28.21	y	62	0.00'	234.37'	24"	0.0034	0.0034	13.25	38.5%	3.14	0.242'	0.850'	28.26'	0.14'	29.06'	0.060'	0.08'	0.12'		0.133'	0.270'	29.193'	o.k.		no	
102		5.11	MH 2		07+35.93	07+35.93	29.87	29.87	y		0.00'	501.56'	24"	0.0033	0.0033	13.05	39.1%	3.14	0.234'	0.850'	29.19'	0.29'	30.72'	0.059'	0.10'			0.079'	0.371'	30.799'	o.k.		no	
103	1.74	5.11	MH 3		12+35.52	12+35.52	32.03	32.03	y		0.00'	499.59'	24"	0.0043	0.0043	14.91	34.2%	3.14	0.287'	0.800'	30.80'	0.31'	32.83'	0.072'	0.07'		0.098'	0.122'	0.430'	32.952'	o.k.		no	
104		3.79	MH 4		14+86.95	14+86.95	32.91	32.91	y	20	0.00'	251.43'	24"	0.0035	0.0035	13.42	28.2%	3.14	0.210'	0.720'	32.95'	0.09'	33.63'	0.052'	0.06'	0.02'		0.062'	0.157'	33.692'	o.k.		no	
105		3.79	MH 5		16+77.90	16+77.90	33.38	33.38	y		0.00'	190.95'	24"	0.0025	0.0025	11.25	33.7%	3.14	0.158'	0.770'	33.69'	0.07'	34.15'	0.039'	0.01'			0.027'	0.094'	34.177'	o.k.		no	
106	2.25	3.79	MH 6		20+71.87	20+71.87	35.56	34.62	y	91	0.94'	393.97'	24"	0.0031	0.0031	12.73	29.8%	3.14	0.041'	0.200'	34.18'	0.66'	34.83'	0.010'	0.23'	0.03'	0.028'	0.147'	0.805'	34.982'	o.k.		no	
107		2.25	MH 7		22+51.14	22+51.14	40.32	40.32	y		0.00'	179.27'	18"	0.0266	0.0266	17.16	13.1%	1.77	0.657'	0.345'	35.91'	0.18'	40.67'	0.164'	0.41'			0.285'	0.465'	40.950'	o.k.		no	
108		2.25	MH 8		24+64.40	24+64.40	53.18	53.18	y	20	0.00'	213.26'	18"	0.0603	0.0603	25.86	8.7%	1.77	1.158'	0.285'	40.95'	0.27'	53.47'	0.289'	0.38'	0.09'		0.383'	0.655'	53.848'	o.k.		no	
109		2.25	MH 9		27+16.54	27+16.54	67.60	67.60	y		0.00'	252.14'	18"	0.0572	0.0572	25.19	8.9%	1.77	1.098'	0.285'	53.85'	0.32'	67.89'	0.275'	0.09'			0.184'	0.506'	68.069'	o.k.		no	
110		2.25	MH 10		30+04.41	30+04.41	69.66	69.66	y	68	0.00'	287.87'	18"	0.0072	0.0072	8.91	25.2%	1.77	0.269'	0.495'	68.10'	0.19'	70.16'	0.067'	0.11'	0.17'		0.173'	0.367'	70.328'	o.k.		no	
111		2.25	MH 11		31+39.47	31+39.47	70.85	70.85	y	70	0.00'	135.06'	18"	0.0088	0.0088	9.89	22.7%	1.77	0.319'	0.480'	70.33'	0.10'	71.33'	0.080'	0.25'	0.20'		0.267'	0.362'	71.597'	o.k.		no	
112		2.25	MH 12		33+61.95	33+61.95	77.28	77.28	y	20	0.00'	222.48'	18"	0.0289	0.0289	17.91	12.6%	1.77	0.716'	0.345'	71.60'	0.22'	77.63'	0.179'	0.21'	0.06'		0.221'	0.445'	77.846'	o.k.		no	
113		2.25	MH 13		35+90.70	35+90.70	82.74	82.74	y		0.00'	228.75'	18"	0.0239	0.0239	16.27	13.8%	1.77	0.591'	0.345'	77.85'	0.23'	83.09'	0.148'	0.18'			0.166'	0.396'	83.251'	o.k.		no	
114		2.25	MH 14		38+65.27	38+65.27	88.07	88.07	y		0.00'	274.57'	18"	0.0194	0.0194	14.67	15.3%	1.77	0.525'	0.375'	83.25'	0.25'	88.45'	0.131'	0.19'			0.161'	0.413'	88.606'	o.k.		no	
115		2.25	MH 15		42+64.92	42+64.92	96.15	96.15	y		0.00'	399.65'	18"	0.0202	0.0202	14.98	15.0%	1.77	0.546'	0.375'	88.61'	0.37'	96.53'	0.137'	0.25'			0.193'	0.559'	96.718'	o.k.		no	
116		2.25	MH 16		46+54.87	46+54.87	108.60	108.60	y	35	0.00'	389.95'	18"	0.0319	0.0319	18.82	12.0%	1.77	0.710'	0.315'	96.72'	0.43'	108.92'	0.178'	0.27'	0.13'		0.291'	0.725'	109.206'	o.k.		no	
117		2.25	MH 17		48+15.31	48+15.31	114.14	114.14	y	40	0.00'	160.44'	18"	0.0345	0.0345	19.57	11.5%	1.77	0.768'	0.315'	109.21'	0.18'	114.46'	0.192'	0.18'	0.19'		0.278'	0.457'	114.733'	o.k.		no	
118		2.25	MH 18		49+30.85	49+30.85	116.09	116.09	y	20	0.00'	115.54'	18"	0.0169	0.0169	13.68	16.4%	1.77	0.503'	0.405'	114.73'	0.10'	116.50'	0.126'	0.18'	0.04'		0.173'	0.272'	116.668'	o.k.		no	
119		2.25	MH 19		50+84.10	50+84.10	119.02	119.02	y	20	0.00'	153.25'	18"	0.0191	0.0191	14.56	15.4%	1.77	0.517'	0.375'	116.67'	0.14'	119.40'	0.129'	0.14'	0.04'		0.154'	0.295'	119.549'	o.k.		no	
120		2.25	MH 20		53+82.92	53+82.92	122.77	122.77	y	24	0.00'	298.82'	18"	0.0125	0.0125	11.80	19.1%	1.77	0.395'	0.428'	119.55'	0.24'	123.20'	0.099'	0.13'	0.04'		0.135'	0.373'	123.332'	o.k.		no	
121		2.25	MH 21		56+30.85	56+30.35	125.47	125.47	y	20	0.00'	247.93'	18"	0.0109	0.0109	10.99	26.5%	1.77	0.365'	0.450'	123.33'	0.18'	125.92'	0.091'	0.12'	0.03'		0.121'	0.306'	126.041'	o.k.		no	
122		2.25	MH 22		58+56.60	58+56.60	127.82	127.82	y	38	0.00'	225.75'	18"	0.0104	0.0104	10.75	20.9%	1.77	0.349'	0.450'	126.04'	0.17'	128.27'	0.087'	0.07'	0.08'		0.118'	0.286'	128.388'	o.k.		no	
123		2.25	MH 23		59+86.10	59+86.10	128.44	128.44	y	90	0.00'	129.50'	18"	0.0048	0.0048	7.29	30.9%	1.77	0.202'	0.563'	128.39'	0.08'	129.00'	0.051'	0.07'	0.13'		0.127'	0.204'	129.129'	o.k.		no	
124		2.25	MH 24		61+62.35	61+62.35	129.32	129.32	y	88	0.00'	176.25'	18"	0.0050	0.0050	7.44	30.2%	1.77	0.211'	0.563'	129.13'	0.11'	129.88'	0.053'	0.11'	0.13'		0.151'	0.256'	130.033'	o.k.		no	
125		2.25	MH 25		65+65.06	65+65.06	132.94	132.94	y	27	0.00'	402.71'	18"	0.0090	0.0090	9.99	22.5%	1.77	0.325'	0.480'	130.03'	0.28'	133.42'	0.081'	0.07'	0.04'		0.096'	0.379'	133.516'	o.k.		no	
126		2.25	MH 26		69+16.11	69+16.11	134.50	134.50	y		0.00'	351.05'	18"	0.0044	0.0044	7.02	32.0%	1.77	0.194'	0.578'	133.52'	0.20'	135.08'	0.049'	0.08'			0.065'	0.268'	135.143'	o.k.		no	
127		2.25	MH 27		72+31.64	72+31.64	136.31	136.31	y	22	0.00'	315.53'	18"	0.0057	0.0057	7.98	28.2%	1.77	0.234'	0.540'	135.14'	0.19'	136.85'	0.059'	0.07'	0.02'		0.077'	0.272'	136.927'	o.k.		no	
128		2.25	MH 28		75+38.35	75+38.35	138.19	137.81	y	90	0.38'	306.71'	18"	0.0049	0.0049	7.37	30.5%	1.77	0.207'	0.563'	136.93'	0.18'	138.37'	0.052'	0.08'	0.13'		0.132'	0.315'	138.504'	o.k.		no	
129		2.25	MH 29		77+15.39	77+15.39	139.22	139.22	y	90	0.00'	177.04'	18"	0.0058	0.0058	8.03	28.0%	1.77	0.226'	0.518'	138.71'	0.11'	139.74'	0.057'	0.28'	0.14'		0.239'	0.353'	139.977'	o.k.		no	
130		2.25	MH 30		81+23.35	81+23.35	153.72	153.72	y	65	0.00'	407.96'	18"	0.0355	0.0355	19.86	11.3%	1.77	0.790'	0.315'	139.98'	0.45'	154.04'	0.198'	0.35'	0.43'		0.489'	0.943'	154.524'	o.k.		no	
131		2.25	MH 31		82+00.48	82+00.48	167.07	157.68	y	71	9.39'	77.13'	18"	0.0513	0.0513	23.86	9.4%	1.77	0.986'	0.285'	154.52'	0.10'	157.97'	0.246'	0.09'	0.63'		0.484'	0.583'	158.449'	o.k.		no	
132		2.25	MH 32		83+90.98	83+90.98	168.34	168.34	y	20	0.00'	190.48'	18"	0.0067	0.0067	8.60	26.2%	1.77	0.259'	0.518'	167.59'	0.12'	168.86'	0.065'	0.08'	0.02'		0.085'	0.207'	168.942'	o.k.		no	
133		2.25	MH 33		87+82.39	87+82.39	170.74	170.74	y	97	0.00'	391.43'	18"	0.0061	0.0061	8.25	27.3%	1.77	0.239'	0.518'	168.94'	0.25'	171.26'	0.060'	0.13'	0.15'		0.169'	0.421'	171.427'	o.k.		no	
134	1.53	2.25	MH 34		91+99.07	-00+31.00	175.20	175.20	y		0.00'	416.68'	18"	0.0107	0.0107	10.90	20.6%	1.77	0.359'	0.450'	171.43'	0.31'	175.65'	0.090'	0.35'		0.303'	0.373'	0.683'	176.023'	o.k.		no	
201		1.53	A-1		00+00.00	00+00.00	177.66	177.66	y	106	0.00'	31.00'	18"	0.0800	0.0794	29.67	5.1%	1.77	1.008'	0.210'	176.02'	0.03'	177.87'	0.252'	0.05'	0.65'		0.476'	0.503'	178.346'	o.k.		no	
202		1.53	A-2		04+25.00	04+25.00	179.53	179.53	y		0.00'	425.00'	15"	0.0044	0.0044	4.30	35.6%	1.23	0.156'	0.500'	178.35'	0.29'	180.03'	0.039'	0.00'			0.019'	0.307'	180.049'	o.k.		no	
203		1.53	A-3		08+50.00	08+50.00	181.30	181.30	y		0.00'	425.00'	15"	0.0040	0.0042	4.18	36.5%	1.23	0.152'	0.519'	180.05'	0.28'	181.82'	0.038'	0.00'			0.019'	0.298'	181.838'	o.k.		no	
204		1.53	A-4		11+00.00	11+00.00	182.30	182.30	y		0.00'	250.00'	15"	0.0040	0.0040	4.10	37.3%	1.23	0.146'	0.519'	181.84'	0.16'	182.82'	0.037'	0.00'			0.018'	0.182'	182.837'	o.k.		no	
205		1.53	A-5		13+97.50	13+97.50	187.50	187.50	y		0.00'	297.50'	15"	0.0175	0.0175	8.56	17.8%	1.23	0.408'	0.338'	182.84'	0.31'	187.84'	0.102'	0.00'			0.051'	0.359'	187.889'	o.k.		no	
206	0.78	1.53	A-6		14+80.50	00+00.00	188.50	188.50	y	86	0.00'	83.00'	15"	0.0120	0.0120	7.11	21.5%	1.23	0.317'	0.375'	187.89'	0.08'	188.88'	0.079'	0.00'	0.20'	0.179'	0.230'	0.306'	189.105'	o.k.		no	
301		0.75	E1		03+10.00	03+10.00	189.65	189.65	y		0.00'	310.00'	10"	0.0180	0.0037	1.34	56.2%	0.55	0.098'	0.446'	189.11'	0.34'	190.10'	0.025'	0.00'			0.012'	0.355'	190.108'	o.k.		no	
302		0.75	E2		07+10.00	07+10.00	193.20	193.20	y		0.00'	400.00'	10"	0.0088	0.0089	2.07	36.3%	0.55	0.189'	0.346'	190.11'	0.55'	193.55'	0.047'	0.00'			0.024'	0.576'	193.569'	o.k.		no	
303		0.75	E3		12+10.00	12+10.00	194.65	194.65	y		0.00'	500.00'	10"	0.0029	0.0029	1.18	63.6%	0.55	0.081'	0.475'	193.69'	0.53'	195.13'	0.020'	0.00'			0.010'	0.536'	195.135'	o.k.		no	
304		0.75	E4		16+24.00	16+24.00	195.85	195.85	y		0.00'	414.00'	10"	0.0029	0.0029	1.18	63.6%	0.55	0.081'	0.475'	195.14'	0.44'	196.33'	0.020'	0.00'			0.010'	0.446'	196.335'	o.k.		no	
305		0.75	E5		21+43.00	21+43.00	199.10	199.10	y		0.00'	519.00'	8"	0.0063	0.0063	0.96	78.4%	0.35	0.143'	0.443'	196.34'	1.62'	199.54'	0.036'	0.00'			0.018'	1.640'	199.561'	o.k.		no	
Highway 99 Trunk South of Chicken Creek																																
206	0.78	1.53	MH 6	0.0	14+80.50	00+00.00	190.38	188.50	y																							
401		0.87	F1		04+31.00	04+31.00	191.33	191.33	y		0.00'	431.00'	10"	0.0022	0.0022	1.03	84.1%	0.55	0.070'	0.583'	190.95'	0.53'	191.91'	0.017'	0.00'			0.009'	0.542'	191.922'	o.k.		no	
402		0.87	F2		07+43.00	07+43.00	192.28	192.28	y		0.00'	312.00'	10"	0.0028	0.0030	1.21	71.6%	0.55	0.089'	0.513'	191.92'	0.41'	192.79'	0.022'	0.00'			0.011'	0.422'	192.804'	o.k.		no	
403		0.87	F3		10+80.00	10+80.00	193.48	193.48	y		0.00'	337.00'	10"	0.0034	0.0036	1.31	66.2%	0.55	0.103'	0.492'	192.80'	0.45'	193.97'	0.026'	0.00'			0.013'	0.468'	193.985'	o.k.		no	
404		0.87	F4		13+88.00	13+88.00	194.68	194.68	y		0.00'	308.00'	10"	0.0034	0.0039	1.37	63.3%	0.55	0.108'	0.475'	193.98'	0.43'	195.16'	0.027'	0.00'			0.014'	0.445'	195.169'	o.k.		no	
405		0.87	F5		17+95.00	17+95.00	196.18	196.18	y		0.00'	407.00'	10"	0.0034	0.0037	1.33	65.0%	0.55	0.104'	0.483'	195.17'	0.56'	196.66'	0.026'	0.00'			0.013'	0.572'	196.676'	o.k.		no	
406		0.87	F6		21+25.00	21+25.00	197.29	197.29	y		0.00'	330.00'	10"	0.0034	0.0034	1.27	68.1%	0.55	0.098'	0.504'	196.68'	0.44'	197.79'	0.024'	0.00'			0.012'	0.452'	197.806'	o.k.		no	
Overlook Trunk																																
103	1.74	5.11	MH 3	0.0	12+35.52	00+00.00	34.16	32.03	y		2.13'	1235.52'																				
501		1.74	MH 1		00+08.00	00+08.00	34.59	34.49	y	90	0.10'	8.00'	12"	0.0413	0.0413	7.26	23.9%	0.79	0.869'	0.320'	34.48'	0.03'	34.81'	0.217'	0.00'	0.56'		0.387'	0.416'	35.197'	o.k.		no	
502		1.74	MH 2		01+03.00	01+03.00	35.56	35.46	y	36	0.10'	95.00'	12"	0.0092	0.0092	3.42	50.8%	0.79	0.294'	0.500'	35.20'	0.22'	35.96'	0.074'	0.00'	0.06'		0.068'	0.291'	36.028'	o.k.		no	
503		1.74	MH 3		04+88.00	04+88.00	41.98	41.88	y	21	0.10'	385.00'	12"	0.0164	0.0164	4.58	37.9%	0.79	0.446'	0.415'	36.03'	1.07'	42.30'	0.112'	0.00'	0.04'		0.074'	1.146'	42.369'	o.k.		no	
504		1.74	MH 4		08+88.00	08+88.00	45.96	45.86	y		0.10'	400.00'	12"	0.0097	0.0097	3.52	49.3%	0.79	0.305'	0.490'	42.47'	0.96'	46.35'	0.076'	0.00'			0.038'	0.998'	46.388'	o.k.		no	
505		1.74	MH 5		11+88.00	11+88.00	50.26	50.16	y		0.10'	300.00'	12"	0.0140	0.0140	4.23	41.1%	0.79	0.402'	0.440'	46.40'	0.79'	50.60'	0.100'	0.00'			0.050'	0.838'	50.650'	o.k.		no	
506		1.74	MH 6		15+63.00	15+63.00	54.60	54.50	y		0.10'	375.00'	12"	0.0113	0.0113	3.80	45.7%	0.79	0.342'	0.465'	50.73'	0.94'	54.97'	0.085'	0.00'			0.043'	0.980'	55.008'	o.k.		no	
507		1.74	MH 7		19+13.00	19+13.00	56.10	56.00	y		0.10'	350.00'	12"	0.0040	0.0040	2.26	76.8%	0.79	0.155'	0.650'	55.25'	0.68'	56.65'	0.039'	0.00'			0.019'	0.699'	56.669'	o.k.		no	
508		1.74	MH 8		20+63.00	20+63.00	61.99	61.89	y		0.10'	150.00'	12"	0.0386	0.0386	7.02	24.7%	0.79	0.844'	0.330'	56.67'	0.52'	62.22'	0.211'	0.00'			0.105'	0.627'	62.325'	o.k.		no	
509		1.74	MH 9		23+88.00	23+88.00	66.05	65.95	y		0.10'	325.00'	12"	0.0122	0.0122	3.94	44.0%	0.79	0.368'	0.465'	62.46'	0.81'	66.42'	0.092'	0.00'			0.046'	0.858'	66.461'	o.k.		no	
510		1.74	MH 10		25+88.00	25+88.00	68.59	68.49	y		0.10'	200.00'	12"	0.0122	0.0122	3.95	44.0%	0.79	0.361'	0.450'	66.50'	0.51'	68.94'	0.090'	0.00'			0.045'	0.556'	68.985'	o.k.		no	
511		1.74	MH 11		29+68.00	29+68.00	74.24	74.14	y		0.10'	380.00'	12"	0.0146	0.0146	4.32	40.2%	0.79	0.419'	0.440'	69.03'	1.00'	74.58'	0.105'	0.00'			0.052'	1.050'	74.632'	o.k.		no	
512		1.74	MH 12		33+68.00	33+68.00	77.82	77.72	y		0.10'	400.00'	12"	0.0087	0.0087	3.33	52.1%	0.79	0.285'	0.510'	74.75'	0.92'	78.23'	0.071'	0.00'			0.036'	0.957'	78.266'	o.k.		no	
513		1.74	MH 13		36+38.00	36+38.00	80.69	78.90	y		1.79'	270.00'	12"	0.0040	0.0040	2.26	76.8%	0.79	0.155'	0.650'	78.47'	0.52'	79.55'	0.039'	0.00'			0.019'	0.543'	79.569'	o.k.		no	
514		1.74	MH 14		39+88.00	39+88.00	86.60	86.50	y		0.10'	350.00'	12"	0.0166	0.0166	4.60	37.7%	0.79	0.451'	0.415'	81.11'	0.98'	86.92'	0.113'	0.00'			0.056'	1.032'	86.971'	o.k.		no	
515		1.74	MH 15		43+68.00	43+68.00	90.88	90.78	y		0.10'	380.00'	12"	0.0110	0.0110	3.75	46.3%	0.79	0.339'	0.475'	87.08'	0.93'	91.26'	0.085'	0.00'			0.042'	0.973'	91.297'	o.k.		no	
516		1.74	MH 16		45+38.00	45+38.00	93.70	93.60	y		0.10'	170.00'	12"	0.0160	0.0160	4.52	38.4%	0.79	0.449'	0.425'	91.31'	0.46'	94.03'	0.112'	0.00'			0.056'	0.516'	94.081'	o.k.		no	
517		1.74	MH 17		49+38.00	49+38.00	98.76	98.66	y		0.10'	400.00'	12"	0.0124	0.0124	3.98	43.6%	0.79	0.367'	0.450'	94.15'	1.02'	99.11'	0.092'	0.00'			0.046'	1.067'	99.156'	o.k.		no	
518		1.74	MH 18		52+38.00	52+38.00	102.58	102.48	y		0.10'	300.00'	12"	0.0124	0.0124	3.98	43.6%	0.79	0.367'	0.450'	99.21'	0.77'	102.93'	0.092'	0.00'			0.046'	0.812'	102.976'	o.k.		no	
519		1.74	MH 19		55+14.00	55+14.00	107.00	106.00	y		1.00'	276.00'	12"	0.0124	0.0124	3.98	43.7%	0.79	0.367'	0.450'	103.03'	0.70'	106.45'	0.092'	0.00'			0.046'	0.750'	106.496'	o.k.		no	
520		1.04	MH 20		59+13.00	59+13.00	112.29	112.19	y		0.10'	399.00'	10"	0.0130	0.0130	2.51	41.4%	0.55	0.293'	0.367'	107.37'	0.99'	112.56'	0.073'	0.00'			0.037'	1.027'	112.593'	o.k.		no	
521		1.04	MH 21		63+13.00	63+13.00	117.59	117.49	y		0.10'	400.00'	10"	0.0130	0.0130	2.50	41.4%	0.55	0.292'	0.367'	112.66'	0.99'	117.86'	0.073'	0.00'			0.037'	1.029'	117.893'	o.k.		no	
522		1.04	MH 22		67+23.00	67+23.00	123.66	122.10	y		1.56'	410.00'	10"	0.0110	0.0110	2.30	45.1%	0.55	0.261'	0.388'	117.98'	0.97'	122.49'	0.065'	0.00'			0.033'	1.001'	122.520'	o.k.		no	
523		1.04	MH 23		69+18.00	69+18.00	127.08	126.98	y		0.10'	195.00'	10"	0.0170	0.0170	2.87	36.2%	0.55	0.363'	0.346'	124.01'	0.51'	127.33'	0.091'	0.00'			0.045'	0.559'	127.371'	o.k.		no	
524		1.04	MH 24		71+88.00	71+88.00	130.54	130.44	y		0.10'	270.00'	10"	0.0124	0.0124	2.45	42.4%	0.55	0.289'	0.375'	127.46'	0.65'	130.82'	0.072'	0.00'			0.036'	0.687'	130.851'	o.k.		no	
525		1.04	MH 25		74+38.00	74+38.00	133.64	133.54	y		0.10'	250.00'	10"	0.0120	0.0120	2.41	43.1%	0.55	0.279'	0.375'	130.92'	0.60'	133.92'	0.070'	0.00'			0.035'	0.638'	133.950'	o.k.		no	
526		1.04	MH 26		77+38.00	00+00.00	137.43	137.24	y		0.19'	300.00'	10"	0.0120	0.0120	2.41	43.1%	0.55	0.279'	0.375'	134.02'	0.72'	137.62'	0.070'	0.00'			0.035'	0.758'	137.650'	o.k.		no	

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk												Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
527		1.04	MH 27		03+37.00	03+37.00	143.57	143.47	y		0.10'	337.00'	12"	0.0124	0.0179	4.78	21.7%	0.79	0.350'	0.300'	137.73'	0.46'	143.77'	0.088'	0.00'			0.044'	0.508'	143.814'	o.k.		no	
528		1.04	MH 28		05+00.50	05+00.50	146.07	145.47	y	62	0.60'	163.50'	12"	0.0116	0.0116	3.85	27.0%	0.79	0.263'	0.345'	143.92'	0.19'	145.82'	0.066'	0.00'	0.14'		0.101'	0.295'	145.916'	o.k.		no	
529		1.04	MH 29		05+70.50	05+70.50	169.80	169.70	y	33	0.10'	70.00'	10"	0.3376	0.3376	12.76	8.1%	0.55	2.960'	0.158'	146.23'	0.44'	169.86'	0.740'	0.00'	0.50'		0.622'	1.058'	170.480'	o.k.		no	
530		1.04	MH 30		08+37.50	08+37.50	170.73	170.63	y		0.10'	267.00'	10"	0.0035	0.0031	1.22	84.7%	0.55	0.098'	0.583'	170.48'	0.47'	171.21'	0.025'	0.00'			0.012'	0.485'	171.226'	o.k.		no	
531		1.04	MH 31		10+38.50	10+38.50	173.38	173.28	y	45	0.10'	201.00'	10"	0.0132	0.0127	2.47	42.0%	0.55	0.285'	0.367'	171.23'	0.50'	173.65'	0.071'	0.00'	0.08'		0.076'	0.575'	173.723'	o.k.		no	
532		1.04	MH 32		13+17.50	13+17.50	174.12	174.02	y	40	0.10'	279.00'	10"	0.0027	0.0023	1.05	98.7%	0.55	0.075'	0.667'	174.05'	0.48'	174.69'	0.019'	0.00'	0.02'		0.019'	0.494'	174.705'	o.k.		no	
533		0.94	MH 33		15+09.50	15+09.50	174.71	174.61	y		0.10'	192.00'	10"	0.0031	0.0026	1.11	84.9%	0.55	0.081'	0.583'	174.71'	0.28'	175.19'	0.020'	0.00'			0.010'	0.291'	175.203'	o.k.		no	
534		0.94	MH 34		19+27.50	19+27.50	176.05	175.95	y	20	0.10'	418.00'	10"	0.0032	0.0030	1.20	78.8%	0.55	0.091'	0.554'	175.25'	0.62'	176.50'	0.023'	0.00'	0.01'		0.015'	0.640'	176.519'	o.k.		no	
535		0.94	MH 35		19+85.50	19+85.50	177.04	176.94	y	95	0.10'	58.00'	10"	0.0153	0.0153	2.72	34.6%	0.55	0.317'	0.333'	176.52'	0.13'	177.27'	0.079'	0.00'	0.20'		0.141'	0.271'	177.414'	o.k.		no	
536		0.94	MH 36		24+06.50	24+06.50	178.05	177.95	y	20	0.10'	421.00'	10"	0.0022	0.0022	1.02	92.3%	0.55	0.070'	0.625'	177.67'	0.60'	178.58'	0.018'	0.00'	0.01'		0.012'	0.613'	178.587'	o.k.		no	
537		0.94	MH 37		25+60.50	25+60.50	179.98	179.88	y	20	0.10'	154.00'	10"	0.0120	0.0119	2.39	39.4%	0.55	0.262'	0.354'	178.59'	0.32'	180.23'	0.065'	0.00'	0.02'		0.043'	0.367'	180.277'	o.k.		no	
538		0.94	MH 38		28+76.50	28+76.50	181.37	181.37	y		0.00'	316.00'	10"	0.0044	0.0044	1.46	64.7%	0.55	0.125'	0.483'	180.45'	0.51'	181.85'	0.031'	0.00'			0.016'	0.528'	181.869'	o.k.		no	
North Overlook Stub																																	
519	0.60	1.74	MH 19	0.0	55+14.00	00+00.00	106.25	106.00	y																								
601		0.60	MH 1		00+65.00	00+65.00	142.71	142.61	y		0.10'	65.00'	10"	0.5594	0.5594	16.43	3.7%	0.55	2.255'	0.083'	106.33'	0.29'	142.60'	0.564'	0.00'			0.282'	0.571'	142.975'	o.k.		no	
602		0.60	MH 2		01+85.00	01+85.00	143.07	142.97	y	95	0.10'	120.00'	10"	0.0040	0.0022	1.02	58.7%	0.55	0.058'	0.454'	143.15'	0.08'	143.42'	0.015'	0.00'	0.04'		0.026'	0.109'	143.450'	o.k.		no	
603		0.60	MH 3		05+60.00	05+60.00	144.57	144.57	y		0.00'	375.00'	10"	0.0040	0.0040	1.39	43.2%	0.55	0.093'	0.375'	143.45'	0.30'	144.95'	0.023'	0.00'			0.012'	0.314'	144.957'	o.k.		no	
Minnehaha Trunk																																	
700		0.13	MH 0		00+00.00	00+00.00	224.00	216.25	y																								
7011		0.13	MH 1A		00+03.50	00+03.50	224.43	224.23	y	83	0.20'	3.50'	12"	0.0288	0.0657	9.16	1.4%	0.79		#N/A	#N/A	#VALUE!		224.92'		0.00'	#VALUE!		#VALUE!						
701		0.13	MH 1		01+25.50	01+25.50	224.95	224.75	y	22	0.20'	122.00'	12"	0.0026	0.0026	1.83	7.1%	0.79	0.025'	0.165'	224.60'	0.01'	224.92'	0.006'	0.00'	0.00'		0.004'	0.010'	224.919'	o.k.		no	
702		0.13	MH 2		02+24.50	02+24.50	225.41	225.21	y	38	0.20'	99.00'	12"	0.0026	0.0026	1.83	7.1%	0.79	0.026'	0.165'	225.12'	0.00'	225.38'	0.006'	0.00'	0.01'		0.006'	0.010'	225.381'	o.k.		no	
703		0.13	MH 3		04+56.50	04+56.50	226.11	226.01	y	20	0.10'	232.00'	12"	0.0026	0.0026	1.82	7.1%	0.79	0.025'	0.165'	225.58'	0.01'	226.18'	0.006'	0.00'	0.00'		0.004'	0.014'	226.179'	o.k.		no	
704		0.13	MH 4		05+92.50	05+92.50	226.66	226.46	y	48	0.20'	136.00'	12"	0.0026	0.0026	1.81	7.1%	0.79	0.025'	0.165'	226.28'	0.01'	226.63'	0.006'	0.00'	0.01'		0.007'	0.013'	226.632'	o.k.		no	
705		0.13	MH 5		06+71.50	06+71.50	226.98	226.88	y	20	0.10'	79.00'	12"	0.0026	0.0028	1.89	6.9%	0.79	0.027'	0.165'	226.83'	0.00'	227.05'	0.007'	0.00'	0.00'		0.004'	0.008'	227.049'	o.k.		no	
706		0.13	MH 6		07+35.50	07+35.50	227.35	227.15	y	36	0.20'	64.00'	12"	0.0026	0.0027	1.84	7.0%	0.79	0.026'	0.165'	227.15'	0.00'	227.32'	0.006'	0.00'	0.01'		0.006'	0.009'	227.321'	o.k.		no	
707		0.13	MH 7		07+99.50	07+99.50	227.61	227.51	y	22	0.10'	64.00'	12"	0.0026	0.0025	1.79	7.2%	0.79	0.024'	0.165'	227.52'	0.00'	227.68'	0.006'	0.00'	0.00'		0.004'	0.007'	227.679'	o.k.		no	
708		0.13	MH 8		08+72.50	08+72.50	227.90	227.80	y	27	0.10'	73.00'	12"	0.0026	0.0026	1.82	7.1%	0.79	0.025'	0.165'	227.79'	0.00'	227.97'	0.006'	0.00'	0.00'		0.005'	0.008'	227.970'	o.k.		no	
709		0.13	MH 9		09+58.50	09+58.50	228.23	228.13	y	20	0.10'	86.00'	12"	0.0026	0.0027	1.85	7.0%	0.79	0.026'	0.165'	228.07'	0.00'	228.30'	0.006'	0.00'	0.00'		0.004'	0.008'	228.299'	o.k.		no	
710		0.13	MH 10		12+39.50	12+39.50	229.15	228.96	y	106	0.19'	281.00'	12"	0.0026	0.0026	1.82	7.1%	0.79	0.025'	0.165'	228.40'	0.01'	229.13'	0.006'	0.00'	0.02'		0.011'	0.023'	229.136'	o.k.		no	
711		0.13	MH 11		13+78.50	13+78.50	229.62	229.52	y	23	0.10'	139.00'	12"	0.0026	0.0027	1.84	7.0%	0.79	0.026'	0.165'	229.32'	0.01'	229.69'	0.006'	0.00'	0.00'		0.005'	0.011'	229.690'	o.k.		no	
712		0.13	MH 12		15+78.50	15+78.50	230.34	230.14	y		0.20'	200.00'	12"	0.0026	0.0026	1.82	7.1%	0.79	0.025'	0.165'	229.79'	0.01'	230.31'	0.006'	0.00'			0.003'	0.012'	230.308'	o.k.		no	
Lakeshore Trunk																																	
106	2.25	3.79	MH 6		20+71.87	00+00.00	35.56	34.62	y	91																							
801		1.88	G1		00+37.00	00+37.00	41.15	41.05	y	62	0.10'	37.00'	15"		0.1484	24.95	7.5%	1.23	1.941'	0.206'	35.77'	0.10'	41.26'	0.485'	0.00'	1.00'		0.743'	0.846'	41.999'	o.k.		no	
802		1.88	G2		03+45.00	03+45.00	44.91	44.81	y		0.10'	308.00'	12"	0.0120	0.0119	3.89	48.2%	0.79	0.374'	0.490'	42.00'	0.86'	45.30'	0.094'	0.00'			0.047'	0.911'	45.347'	o.k.		no	
803		1.88	G3		07+21.00	07+21.00	46.53	46.43	y		0.10'	376.00'	12"	0.0040	0.0040	2.27	82.7%	0.79	0.161'	0.690'	45.60'	0.83'	47.12'	0.040'	0.00'			0.020'	0.850'	47.140'	o.k.		no	
804		1.88	G4		11+21.00	11+21.00	48.13	48.13	y		0.00'	400.00'	12"	0.0040	0.0040	2.26	83.1%	0.79	0.160'	0.690'	47.22'	0.88'	48.82'	0.040'	0.00'			0.020'	0.903'	48.840'	o.k.		no	
805		1.88	G5		15+21.00	15+21.00	51.33	51.33	y		0.00'	400.00'	12"	0.0080	0.0080	3.20	58.8%	0.79	0.275'	0.545'	48.84'	1.02'	51.88'	0.069'	0.00'			0.034'	1.059'	51.909'	o.k.		no	
806		1.88	G6		19+21.00	19+21.00	62.53	62.53	y		0.00'	400.00'	10"	0.0280	0.0280	3.68	51.1%	0.55	0.705'	0.417'	51.91'	2.91'	62.95'	0.176'	0.00'			0.088'	2.997'	63.035'	o.k.		no	
807		1.88	G7		23+21.00	23+21.00	70.53	70.53	y		0.00'	400.00'	10"	0.0200	0.0200	3.11	60.5%	0.55	0.550'	0.463'	63.03'	2.66'	70.99'	0.138'	0.00'			0.069'	2.727'	71.061'	o.k.		no	
808		1.88	G8		27+21.00	27+21.00	85.73	85.73	y		0.00'	400.00'	10"	0.0380	0.0380	4.28	43.9%	0.55	0.882'	0.375'	71.06'	3.16'	86.11'	0.221'	0.00'			0.110'	3.268'	86.215'	o.k.		no	
809		1.88	G9		30+94.00	30+94.00	99.16	99.16	y		0.00'	373.00'	10"	0.0360	0.0360	4.17	45.1%	0.55	0.853'	0.388'	86.22'	2.88'	99.55'	0.213'	0.00'			0.107'	2.990'	99.654'	o.k.		no	
810		1.88	G10		34+94.00	34+94.00	111.96	111.96	y		0.00'	400.00'	10"	0.0320	0.0320	3.93	47.8%	0.55	0.774'	0.396'	99.65'	3.03'	112.36'	0.194'	0.00'			0.097'	3.126'	112.453'	o.k.		no	
811		1.88	G11		38+94.00	38+94.00	126.36	126.36	y		0.00'	400.00'	10"	0.0360	0.0360	4.17	45.1%	0.55	0.853'	0.388'	112.45'	3.09'	126.75'	0.213'	0.00'			0.107'	3.199'	126.854'	o.k.		no	
812		1.88	G12		42+24.00	42+24.00	138.24	138.24	y		0.00'	330.00'	10"	0.0360	0.0360	4.17	45.1%	0.55	0.853'	0.388'	126.85'	2.55'	138.63'	0.213'	0.00'			0.107'	2.658'	138.734'	o.k.		no	
813		1.88	G13		44+66.00	44+66.00	146.95	146.95	y		0.00'	242.00'	10"	0.0360	0.0360	4.17	45.1%	0.55	0.853'	0.388'	138.73'	1.87'	147.34'	0.213'	0.00'			0.107'	1.977'	147.444'	o.k.		no	
814		1.88	G14		47+06.00	47+06.00	149.40	149.30	y		0.10'	240.00'	10"	0.0099	0.0098	2.17	86.4%	0.55	0.312'	0.596'	147.55'	1.38'	149.90'	0.078'	0.00'			0.039'	1.424'	149.935'	o.k.		no	
901		1.88	MH 1		50+06.00	50+06.00	159.34	159.00	y		0.34'	300.00'	10"	0.0320	0.0320	3.93	47.8%	0.55	0.774'	0.396'	149.93'	2.27'	159.40'	0.194'	0.00'			0.097'	2.368'	159.493'	o.k.		no	
902		1.88	MH 2		53+06.00	53+06.00	174.34	174.34	y		0.00'	300.00'	10"	0.0500	0.0500	4.91	38.2%	0.55	1.101'	0.354'	159.69'	2.51'	174.69'	0.275'	0.00'			0.138'	2.647'	174.832'	o.k.		no	
903		1.88	MH 3		57+06.00	57+06.00	175.94	175.94	y		0.00'	400.00'	10"	0.0040	0.0040	1.39	135.2%	0.55	0.101'	0.833'	175.17'	2.91'	178.08'	0.025'	0.00'			0.013'	2.921'	178.094'	CRITICAL		Yes by 0.49 cfs	1.3
904		1.88	MH 4		61+06.00	61+06.00	177.54	177.54	y		0.00'	400.00'	10"	0.0040	0.0040	1.39	135.2%	0.55	0.101'	0.833'	178.09'	2.91'	181.00'	0.025'	0.00'			0.013'	2.921'	181.016'	CRITICAL		Yes by 0.49 cfs	2.6
905		1.88	MH 5		64+08.00	64+08.00	178.75	178.75	y		0.00'	302.00'	10"	0.0040	0.0040	1.39	135.1%	0.55	0.101'	0.833'	181.02'	2.20'	183.21'	0.025'	0.00'			0.013'	2.209'	183.224'	CRITICAL		Yes by 0.49 cfs	3.6
Datum Shift																																	
905		1.01	MH 5		64+08.00	00+00.00	178.56	178.46	y																								
1001		1.01	MH 1		00+50.00	00+50.00	178.80	178.70	y		0.10'	50.00'	12"	0.0026	0.0028	1.89	53.3%	0.79	0.092'	0.510'	179.07'	0.04'	179.21'	0.023'	0.00'			0.011'	0.050'	179.221'	o.k.		no	
1002		1.01	MH 2		04+53.00	04+53.00	179.78	179.68	y		0.10'	403.00'	12"	0.0022	0.0022	1.67	60.4%	0.79	0.077'	0.555'	179.36'	0.29'	180.24'	0.019'	0.00'			0.010'	0.301'	180.245'	o.k.		no	
1003		1.01	MH 3		08+53.00	08+53.00	180.76	180.66	y		0.10'	400.00'	12"	0.0022	0.0022	1.68	60.1%	0.79	0.077'	0.555'	180.34'	0.29'	181.22'	0.019'	0.00'			0.010'	0.299'	181.225'	o.k.		no	
1004		1.01	MH 4		10+43.00	10+43.00	181.27	181.17	y		0.10'	190.00'	12"	0.0022	0.0022	1.66	60.7%	0.79	0.076'	0.555'	181.32'	0.14'	181.73'	0.019'	0.00'			0.009'	0.147'	181.734'	o.k.		no	
1005		1.01	MH 5		13+42.00	13+42.00	182.03	181.93	y		0.10'	299.00'	12"	0.0022	0.0022	1.68	60.0%	0.79	0.077'	0.555'	181.83'	0.22'	182.49'	0.019'	0.00'			0.010'	0.226'	182.495'	o.k.		no	
1006		1.01	MH 6		17+90.00	17+90.00	183.11	183.01	y		0.10'	448.00'	12"	0.0022	0.0022	1.67	60.3%	0.79	0.077'	0.555'	182.59'	0.32'	183.57'	0.019'	0.00'			0.010'	0.334'	183.575'	o.k.		no	
1007		1.01	MH 7		20+94.00	20+94.00	183.88	183.78	y		0.10'	304.00'	12"	0.0022	0.0022	1.68	60.1%	0.79	0.077'	0.555'	183.67'	0.22'	184.34'	0.019'	0.00'			0.010'	0.230'	184.345'	o.k.		no	
1008		1.01	MH 8		24+61.00	24+61.00	184.79	184.69	y		0.10'	367.00'	12"	0.0022	0.0022	1.68	60.0%	0.79	0.077'	0.555'	184.44'	0.27'	185.25'	0.019'	0.00'			0.010'	0.275'	185.255'	o.k.		no	
1009		1.01	MH 9		25+99.00	25+99.00	185.20	185.10	y		0.10'	138.00'	12"	0.0022	0.0022	1.69	59.5%	0.79	0.077'	0.545'	185.34'	0.10'	185.65'	0.019'	0.00'			0.010'	0.111'	185.655'	o.k.		no	
1010		1.01	MH 10		27+73.00	27+73.00	186.47	185.58	y		0.89'	174.00'	12"	0.0022	0.0022	1.67	60.4%	0.79	0.077'	0.555'	185.76'	0.13'	186.14'	0.019'	0.00'			0.010'	0.136'	186.145'	o.k.		no	
1011		1.01	MH 11		31+15.00	31+15.00	187.72	187.22	y		0.50'	342.00'	12"	0.0022	0.0022	1.67	60.2%	0.79	0.077'	0.555'	187.03'	0.25'	187.78'	0.019'	0.00'			0.010'	0.257'	187.785'	o.k.		no	
1012		1.01	MH 12		34+15.00	34+15.00	187.98	187.98	y		0.00'	300.00'	12"	0.0022	0.0009	1.05	95.8%	0.79	0.036'	0.765'	188.49'	0.18'	188.75'	0.009'	0.00'			0.004'	0.189'	188.749'	o.k.		no	

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL						Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		5.43	Ex. M.H.		00+00.00	00+00.00	27.41	27.41	y																								
101		5.43	MH 1		02+34.37	02+34.37	28.21	28.21	y	62	0.00'	234.37'	24"	0.0034	0.0034	13.25	41.0%	3.14	0.247'	0.880'	28.29'	0.15'	29.09'	0.062'	0.08'	0.13'		0.136'	0.286'	29.226'	o.k.		no	
102		5.43	MH 2		07+35.93	07+35.93	29.87	29.87	y		0.00'	501.56'	24"	0.0033	0.0033	13.05	41.6%	3.14	0.239'	0.880'	29.23'	0.32'	30.75'	0.060'	0.10'			0.082'	0.402'	30.832'	o.k.		no	
103	1.87	5.43	MH 3		12+35.52	12+35.52	32.03	32.03	y		0.00'	499.59'	24"	0.0043	0.0043	14.91	36.4%	3.14	0.296'	0.830'	30.83'	0.34'	32.86'	0.074'	0.07'		0.103'	0.125'	0.463'	32.985'	o.k.		no	
104		4.01	MH 4		14+86.95	14+86.95	32.91	32.91	y	20	0.00'	251.43'	24"	0.0035	0.0035	13.42	29.9%	3.14	0.210'	0.720'	32.99'	0.11'	33.63'	0.052'	0.06'	0.02'		0.063'	0.170'	33.693'	o.k.		no	
105		4.01	MH 5		16+77.90	16+77.90	33.38	33.38	y		0.00'	190.95'	24"	0.0025	0.0025	11.25	35.6%	3.14	0.163'	0.800'	33.71'	0.07'	34.18'	0.041'	0.01'			0.028'	0.100'	34.208'	o.k.		no	
106	2.39	4.01	MH 6		20+71.87	20+71.87	35.56	34.62	y	91	0.94'	393.97'	24"	0.0031	0.0031	12.73	31.5%	3.14	0.041'	0.200'	34.21'	0.74'	34.94'	0.010'	0.23'	0.03'	0.028'	0.147'	0.885'	35.092'	o.k.		no	
107		2.39	MH 7		22+51.14	22+51.14	40.32	40.32	y		0.00'	179.27'	18"	0.0266	0.0266	17.16	13.9%	1.77	0.657'	0.345'	35.91'	0.20'	40.67'	0.164'	0.41'			0.285'	0.488'	40.950'	o.k.		no	
108		2.39	MH 8		24+64.40	24+64.40	53.18	53.18	y	20	0.00'	213.26'	18"	0.0603	0.0603	25.86	9.2%	1.77	1.158'	0.285'	40.95'	0.31'	53.47'	0.289'	0.38'	0.09'		0.383'	0.689'	53.848'	o.k.		no	
109		2.39	MH 9		27+16.54	27+16.54	67.60	67.60	y		0.00'	252.14'	18"	0.0572	0.0572	25.19	9.5%	1.77	1.098'	0.285'	53.85'	0.36'	67.89'	0.275'	0.10'			0.186'	0.548'	68.071'	o.k.		no	
110		2.39	MH 10		30+04.41	30+04.41	69.66	69.66	y	68	0.00'	287.87'	18"	0.0072	0.0072	8.91	26.8%	1.77	0.279'	0.518'	68.12'	0.21'	70.18'	0.070'	0.12'	0.17'		0.180'	0.388'	70.357'	o.k.		no	
111		2.39	MH 11		31+39.47	31+39.47	70.85	70.85	y	70	0.00'	135.06'	18"	0.0088	0.0088	9.89	24.1%	1.77	0.331'	0.495'	70.36'	0.10'	71.35'	0.083'	0.25'	0.21'		0.272'	0.375'	71.617'	o.k.		no	
112		2.39	MH 12		33+61.95	33+61.95	77.28	77.28	y	20	0.00'	222.48'	18"	0.0289	0.0289	17.91	13.3%	1.77	0.716'	0.345'	71.62'	0.25'	77.63'	0.179'	0.23'	0.06'		0.231'	0.483'	77.856'	o.k.		no	
113		2.39	MH 13		35+90.70	35+90.70	82.74	82.74	y		0.00'	228.75'	18"	0.0239	0.0239	16.27	14.7%	1.77	0.645'	0.375'	77.86'	0.24'	83.12'	0.161'	0.20'			0.182'	0.418'	83.297'	o.k.		no	
114		2.39	MH 14		38+65.27	38+65.27	88.07	88.07	y		0.00'	274.57'	18"	0.0194	0.0194	14.67	16.3%	1.77	0.578'	0.405'	83.30'	0.26'	88.48'	0.145'	0.19'			0.168'	0.430'	88.643'	o.k.		no	
115		2.39	MH 15		42+64.92	42+64.92	96.15	96.15	y		0.00'	399.65'	18"	0.0202	0.0202	14.98	15.9%	1.77	0.546'	0.375'	88.64'	0.41'	96.53'	0.137'	0.28'			0.207'	0.619'	96.732'	o.k.		no	
116		2.39	MH 16		46+54.87	46+54.87	108.60	108.60	y	35	0.00'	389.95'	18"	0.0319	0.0319	18.82	12.7%	1.77	0.791'	0.345'	96.73'	0.44'	108.95'	0.198'	0.30'	0.15'		0.324'	0.765'	109.269'	o.k.		no	
117		2.39	MH 17		48+15.31	48+15.31	114.14	114.14	y	40	0.00'	160.44'	18"	0.0345	0.0345	19.57	12.2%	1.77	0.855'	0.345'	109.27'	0.18'	114.49'	0.214'	0.18'	0.21'		0.300'	0.481'	114.785'	o.k.		no	
118		2.39	MH 18		49+30.85	49+30.85	116.09	116.09	y	20	0.00'	115.54'	18"	0.0169	0.0169	13.68	17.4%	1.77	0.503'	0.405'	114.76'	0.11'	116.50'	0.126'	0.20'	0.04'		0.183'	0.293'	116.678'	o.k.		no	
119		2.39	MH 19		50+84.10	50+84.10	119.02	119.02	y	20	0.00'	153.25'	18"	0.0191	0.0191	14.56	16.4%	1.77	0.570'	0.405'	116.66'	0.15'	119.43'	0.142'	0.15'	0.05'		0.168'	0.314'	119.593'	o.k.		no	
120		2.39	MH 20		53+82.92	53+82.92	122.77	122.77	y	24	0.00'	298.82'	18"	0.0125	0.0125	11.80	20.2%	1.77	0.421'	0.450'	119.55'	0.25'	123.22'	0.105'	0.13'	0.05'		0.140'	0.390'	123.360'	o.k.		no	
121		2.39	MH 21		56+30.85	56+30.85	125.47	125.47	y	20	0.00'	247.93'	18"	0.0109	0.0109	10.99	21.7%	1.77	0.365'	0.450'	123.36'	0.21'	125.92'	0.091'	0.13'	0.03'		0.126'	0.334'	126.046'	o.k.		no	
122		2.39	MH 22		58+56.60	58+56.60	127.82	127.82	y	38	0.00'	225.75'	18"	0.0104	0.0104	10.75	22.2%	1.77	0.377'	0.480'	126.05'	0.18'	128.30'	0.094'	0.07'	0.08'		0.126'	0.305'	128.426'	o.k.		no	
123		2.39	MH 23		59+86.10	59+86.10	128.44	128.44	y	90	0.00'	129.50'	18"	0.0048	0.0048	7.29	32.7%	1.77	0.209'	0.578'	128.43'	0.08'	129.02'	0.052'	0.08'	0.13'		0.131'	0.215'	129.149'	o.k.		no	
124		2.39	MH 24		61+62.35	61+62.35	129.32	129.32	y	88	0.00'	176.25'	18"	0.0050	0.0050	7.44	32.1%	1.77	0.218'	0.578'	129.15'	0.11'	129.90'	0.055'	0.11'	0.14'		0.154'	0.269'	130.051'	o.k.		no	
125		2.39	MH 25		65+65.06	65+65.06	132.94	132.94	y	27	0.00'	402.71'	18"	0.0090	0.0090	9.99	23.9%	1.77	0.325'	0.480'	130.05'	0.32'	133.42'	0.081'	0.07'	0.04'		0.096'	0.414'	133.516'	o.k.		no	
126		2.39	MH 26		69+16.11	69+16.11	134.50	134.50	y		0.00'	351.05'	18"	0.0044	0.0044	7.02	34.0%	1.77	0.194'	0.578'	133.52'	0.23'	135.08'	0.049'	0.08'			0.065'	0.293'	135.143'	o.k.		no	
127		2.39	MH 27		72+31.64	72+31.64	136.31	136.31	y	22	0.00'	315.53'	18"	0.0057	0.0057	7.98	29.9%	1.77	0.234'	0.540'	135.14'	0.22'	136.85'	0.059'	0.07'	0.02'		0.078'	0.297'	136.928'	o.k.		no	
128		2.39	MH 28		75+38.35	75+38.35	138.19	137.81	y	90	0.38'	306.71'	18"	0.0049	0.0049	7.37	32.4%	1.77	0.214'	0.578'	136.93'	0.20'	138.39'	0.053'	0.08'	0.14'		0.137'	0.336'	138.524'	o.k.		no	
129		2.39	MH 29		77+15.39	77+15.39	139.22	139.22	y	90	0.00'	177.04'	18"	0.0058	0.0058	8.03	29.7%	1.77	0.237'	0.540'	138.73'	0.12'	139.76'	0.059'	0.31'	0.15'		0.260'	0.382'	140.020'	o.k.		no	
130		2.39	MH 30		81+23.35	81+23.35	153.72	153.72	y	65	0.00'	407.96'	18"	0.0355	0.0355	19.86	12.0%	1.77	0.880'	0.345'	140.02'	0.46'	154.07'	0.220'	0.35'	0.48'		0.525'	0.986'	154.590'	o.k.		no	
131		2.39	MH 31		82+00.48	82+00.48	167.07	157.68	y	71	9.39'	77.13'	18"	0.0513	0.0513	23.86	10.0%	1.77	0.986'	0.285'	154.59'	0.11'	157.97'	0.246'	0.09'	0.63'		0.484'	0.595'	158.449'	o.k.		no	
132		2.39	MH 32		83+90.96	83+90.96	168.34	168.34	y	20	0.00'	190.48'	18"	0.0067	0.0067	8.60	27.7%	1.77	0.259'	0.518'	167.55'	0.14'	168.86'	0.065'	0.09'	0.02'		0.087'	0.224'	168.944'	o.k.		no	
133		2.39	MH 33		87+82.39	87+82.39	170.74	170.74	y	97	0.00'	391.43'	18"	0.0061	0.0061	8.25	28.9%	1.77	0.250'	0.540'	168.94'	0.27'	171.28'	0.063'	0.13'	0.16'		0.174'	0.446'	171.454'	o.k.		no	
134	1.62	2.39	MH 34		91+99.07	-00+31.00	175.20	175.20	y		0.00'	416.68'	18"	0.0107	0.0107	10.90	21.9%	1.77	0.359'	0.450'	171.45'	0.35'	175.65'	0.090'	0.35'		0.303'	0.373'	0.722'	176.023'	o.k.		no	
201		1.62	A-1		00+00.00	00+00.00	177.66	177.66	y	106	0.00'	31.00'	18"	0.0800	0.0794	29.67	5.5%	1.77	1.008'	0.210'	176.02'	0.03'	177.87'	0.252'	0.06'	0.65'		0.477'	0.508'	178.347'	o.k.		no	
202		1.62	A-2		04+25.00	04+25.00	179.53	179.53	y		0.00'	425.00'	15"	0.0044	0.0044	4.30	37.7%	1.23	0.161'	0.519'	178.35'	0.31'	180.05'	0.040'	0.00'			0.020'	0.335'	180.069'	o.k.		no	
203		1.62	A-3		08+50.00	08+50.00	181.30	181.30	y		0.00'	425.00'	15"	0.0040	0.0042	4.18	38.8%	1.23	0.157'	0.531'	180.07'	0.31'	181.83'	0.039'	0.00'			0.020'	0.325'	181.851'	o.k.		no	
204		1.62	A-4		11+00.00	11+00.00	182.30	182.30	y		0.00'	250.00'	15"	0.0040	0.0040	4.10	39.6%	1.23	0.151'	0.531'	181.85'	0.18'	182.83'	0.038'	0.00'			0.019'	0.198'	182.850'	o.k.		no	
205		1.62	A-5		13+97.50	13+97.50	187.50	187.50	y		0.00'	297.50'	15"	0.0175	0.0175	8.56	18.9%	1.23	0.431'	0.356'	182.85'	0.33'	187.86'	0.108'	0.00'			0.054'	0.380'	187.910'	o.k.		no	
206	0.82	1.62	A-6		14+80.50	00+00.00	188.50	188.50	y	86	0.00'	83.00'	15"	0.0120	0.0120	7.11	22.8%	1.23	0.342'	0.400'	187.91'	0.08'	188.90'	0.085'	0.00'	0.22'	0.192'	0.248'	0.329'	189.148'	o.k.		no	
301		0.80	E1		03+10.00	03+10.00	189.65	189.65	y		0.00'	310.00'	10"	0.0180	0.0037	1.34	59.7%	0.55	0.100'	0.454'	189.15'	0.38'	190.10'	0.025'	0.00'			0.013'	0.393'	190.117'	o.k.		no	
302		0.80	E2		07+10.00	07+10.00	193.20	193.20	y		0.00'	400.00'	10"	0.0088	0.0089	2.07	38.6%	0.55	0.195'	0.354'	190.12'	0.61'	193.55'	0.049'	0.00'			0.024'	0.630'	193.579'	o.k.		no	
303		0.80	E3		12+10.00	12+10.00	194.65	194.65	y		0.00'	500.00'	10"	0.0029	0.0029	1.18	67.6%	0.55	0.084'	0.492'	193.69'	0.57'	195.14'	0.021'	0.00'			0.010'	0.583'	195.152'	o.k.		no	
304		0.80	E4		16+24.00	16+24.00	195.85	195.85	y		0.00'	414.00'	10"	0.0029	0.0029	1.18	67.6%	0.55	0.084'	0.492'	195.15'	0.47'	196.34'	0.021'	0.00'			0.010'	0.485'	196.352'	o.k.		no	
305		0.80	E5		21+43.00	21+43.00	199.10	199.10	y		0.00'	519.00'	8"	0.0063	0.0063	0.96	83.4%	0.35	0.146'	0.460'	196.35'	1.80'	199.56'	0.036'	0.00'			0.018'	1.819'	199.578'	o.k.		no	
Highway 99 Trunk South of Chicken Creek																																	
206	0.82	1.62	MH 6	0.0	14+80.50	00+00.00	190.38	188.50	y																								
401		0.92	F1		04+31.00	04+31.00	191.33	191.33	y		0.00'	431.00'	10"	0.0022	0.0022	1.03	89.3%	0.55	0.071'	0.604'	190.98'	0.60'	191.93'	0.018'	0.00'			0.009'	0.604'	191.943'	o.k.		no	
402		0.92	F2		07+43.00	07+43.00	192.28	192.28	y		0.00'	312.00'	10"	0.0028	0.0030	1.21	76.0%	0.55	0.093'	0.542'	191.94'	0.45'	192.82'	0.023'	0.00'			0.012'	0.462'	192.833'	o.k.		no	
403		0.92	F3		10+80.00	10+80.00	193.48	193.48	y		0.00'	337.00'	10"	0.0034	0.0036	1.31	70.3%	0.55	0.105'	0.513'	192.83'	0.50'	193.99'	0.026'	0.00'			0.013'	0.514'	194.006'	o.k.		no	
404		0.92	F4		13+88.00	13+88.00	194.68	194.68	y		0.00'	308.00'	10"	0.0034	0.0039	1.37	67.2%	0.55	0.112'	0.492'	194.01'	0.47'	195.17'	0.028'	0.00'			0.014'	0.483'	195.186'	o.k.		no	
405		0.92	F5		17+95.00	17+95.00	196.18	196.18	y		0.00'	407.00'	10"	0.0034	0.0037	1.33	69.1%	0.55	0.107'	0.504'	195.19'	0.61'	196.68'	0.027'	0.00'			0.013'	0.626'	196.698'	o.k.		no	
406		0.92	F6		21+25.00	21+25.00	197.29	197.29	y		0.00'	330.00'	10"	0.0034	0.0034	1.27	72.3%	0.55	0.101'	0.521'	196.70'	0.49'	197.81'	0.025'	0.00'			0.013'	0.498'	197.823'	o.k.		no	
Overlook Trunk																																	
103	1.87	5.43	MH 3	0.0	12+35.52	00+00.00	34.16	32.03	y		2.13'	1235.52'																					
501		1.87	MH 1		00+08.00	00+08.00	34.59	34.49	y	90	0.10'	8.00'	12"	0.0413	0.0413	7.26	25.8%	0.79	0.902'	0.330'	34.49'	0.03'	34.82'	0.225'	0.00'	0.58'		0.401'	0.434'	35.221'	o.k.		no	
502		1.87	MH 2		01+03.00	01+03.00	35.56	35.46	y	36	0.10'	95.00'	12"	0.0092	0.0092	3.42	54.7%	0.79	0.306'	0.525'	35.22'	0.25'	35.99'	0.077'	0.00'	0.06'		0.070'	0.319'	36.055'	o.k.		no	
503		1.87	MH 3		04+88.00	04+88.00	41.98	41.88	y	21	0.10'	385.00'	12"	0.0164	0.0164	4.58	40.8%	0.79	0.471'	0.440'	36.06'	1.17'	42.32'	0.118'	0.00'	0.04'		0.078'	1.250'	42.398'	o.k.		no	
504		1.87	MH 4		08+88.00	08+88.00	45.96	45.86	y		0.10'	400.00'	12"	0.0097	0.0097	3.52	53.1%	0.79	0.318'	0.510'	42.49'	1.07'	46.37'	0.079'	0.00'			0.040'	1.108'	46.410'	o.k.		no	
505		1.87	MH 5		11+88.00	11+88.00	50.26	50.16	y		0.10'	300.00'	12"	0.0140	0.0140	4.23	44.2%	0.79	0.423'	0.465'	46.43'	0.87'	50.63'	0.106'	0.00'			0.053'	0.922'	50.678'	o.k.		no	
506		1.87	MH 6		15+63.00	15+63.00	54.60	54.50	y		0.10'	375.00'	12"	0.0113	0.0113	3.80	49.2%	0.79	0.356'	0.490'	50.75'	1.04'	54.99'	0.089'	0.00'			0.044'	1.087'	55.034'	o.k.		no	
507		1.87	MH 7		19+13.00	19+13.00	56.10	56.00	y		0.10'	350.00'	12"	0.0040	0.0040	2.26	82.7%	0.79	0.160'	0.690'	55.29'	0.77'	56.69'	0.040'	0.00'			0.020'	0.785'	56.710'	o.k.		no	
508		1.87	MH 8		20+63.00	20+63.00	61.99	61.89	y		0.10'	150.00'	12"	0.0386	0.0386	7.02	26.6%	0.79	0.875'	0.345'	56.71'	0.58'	62.24'	0.219'	0.00'			0.109'	0.688'	62.344'	o.k.		no	
509		1.87	MH 9		23+88.00	23+88.00	66.05	65.95	y		0.10'	325.00'	12"	0.0122	0.0122	3.94	47.4%	0.79	0.376'	0.475'	62.47'	0.92'	66.43'	0.094'	0.00'			0.047'	0.969'	66.472'	o.k.		no	
510		1.87	MH 10		25+88.00	25+88.00	68.59	68.49	y		0.10'	200.00'	12"	0.0122	0.0122	3.95	47.4%	0.79	0.376'	0.475'	66.53'	0.57'	68.97'	0.094'	0.00'			0.047'	0.615'	69.012'	o.k.		no	
511		1.87	MH 11		29+68.00	29+68.00	74.24	74.14	y		0.10'	380.00'	12"	0.0146	0.0146	4.32	43.3%	0.79	0.432'	0.450'	69.04'	1.12'	74.59'	0.108'	0.00'			0.054'	1.178'	74.644'	o.k.		no	
512		1.87	MH 12		33+68.00	33+68.00	77.82	77.72	y		0.10'	400.00'	12"	0.0087	0.0087	3.33	56.1%	0.79	0.294'	0.535'	74.78'	1.03'	78.26'	0.073'	0.00'			0.037'	1.071'	78.292'	o.k.		no	
513		1.87	MH 13		36+38.00	36+38.00	80.69	78.90	y		1.79'	270.00'	12"	0.0040	0.0040	2.26	82.7%	0.79	0.160'	0.690'	78.51'	0.59'	79.59'	0.040'	0.00'			0.020'	0.610'	79.610'	o.k.		no	
514		1.87	MH 14		39+88.00	39+88.00	86.60	86.50	y		0.10'	350.00'	12"	0.0166	0.0166	4.60	40.6%	0.79	0.476'	0.440'	81.13'	1.07'	86.94'	0.119'	0.00'			0.060'	1.125'	87.000'	o.k.		no	
515		1.87	MH 15		43+68.00	43+68.00	90.88	90.78	y		0.10'	380.00'	12"	0.0110	0.0110	3.75	49.9%	0.79	0.346'	0.490'	87.09'	1.06'	91.27'	0.087'	0.00'			0.043'	1.100'	91.313'	o.k.		no	
516		1.87	MH 16		45+38.00	45+38.00	93.70	93.60	y		0.10'	170.00'	12"	0.0160	0.0160	4.52	41.4%	0.79	0.459'	0.440'	91.32'	0.52'	94.04'	0.115'	0.00'			0.057'	0.575'	94.097'	o.k.		no	
517		1.87	MH 17		49+38.00	49+38.00	98.76	98.66	y		0.10'	400.00'	12"	0.0124	0.0124	3.98	47.0%	0.79	0.383'	0.475'	94.18'	1.13'	99.14'	0.096'	0.00'			0.048'	1.183'	99.183'	o.k.		no	
518		1.87	MH 18		52+38.00	52+38.00	102.58	102.48	y		0.10'	300.00'	12"	0.0124	0.0124	3.98	47.0%	0.79	0.383'	0.475'	99.24'	0.85'	102.96'	0.096'	0.00'			0.048'	0.899'	103.003'	o.k.		no	
519		1.87	MH 19		55+14.00	55+14.00	107.00	106.00	y		1.00'	276.00'	12"	0.0124	0.0124	3.98	47.0%	0.79	0.382'	0.475'	103.06'	0.78'	106.48'	0.096'	0.00'			0.048'	0.831'	106.523'	o.k.		no	
520		1.16	MH 20		59+13.00	59+13.00	112.29	112.19	y		0.10'	399.00'	10"	0.0130	0.0130	2.51	46.2%	0.55	0.315'	0.396'	107.40'	1.15'	112.59'	0.079'	0.00'			0.039'	1.185'	112.625'	o.k.		no	
521		1.16	MH 21		63+13.00	63+13.00	117.59	117.49	y		0.10'	400.00'	10"	0.0130	0.0130	2.50	46.2%	0.55	0.315'	0.396'	112.69'	1.15'	117.89'	0.079'	0.00'			0.039'	1.188'	117.925'	o.k.		no	
522		1.16	MH 22		67+23.00	67+23.00	123.66	122.10	y		1.56'	410.00'	10"	0.0110	0.0110	2.30	50.2%	0.55	0.277'	0.417'	118.01'	1.13'	122.52'	0.069'	0.00'			0.035'	1.165'	122.551'	o.k.		no	
523		1.16	MH 23		69+18.00	69+18.00	127.08	126.98	y		0.10'	195.00'	10"	0.0170	0.0170	2.87	40.3%	0.55	0.383'	0.367'	124.03'	0.60'	127.35'	0.096'	0.00'			0.048'	0.649'	127.395'	o.k.		no	
524		1.16	MH 24		71+88.00	71+88.00	130.54	130.44	y		0.10'	270.00'	10"	0.0124	0.0124	2.45	47.2%	0.55	0.301'	0.396'	127.48'	0.78'	130.84'	0.075'	0.00'			0.038'	0.813'	130.873'	o.k.		no	
525		1.16	MH 25		74+38.00	74+38.00	133.64	133.54	y		0.10'	250.00'	10"	0.0120	0.0120	2.41	48.1%	0.55	0.296'	0.408'	130.95'	0.70'	133.95'	0.074'	0.00'			0.037'	0.740'	133.985'	o.k.		no	
526		1.16	MH 26		77+38.00	00+00.00	137.43	137.24	y		0.19'	300.00'	10"	0.0120	0.0120	2.41	48.1%	0.55	0.296'	0.408'	134.05'	0.84'	137.65'	0.074'	0.00'			0.037'	0.881'	137.685'	o.k.		no	

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk												Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
527		1.16	MH 27		03+37.00	03+37.00	143.57	143.47	y		0.10'	337.00'	12"	0.0124	0.0179	4.78	24.2%	0.79	0.392'	0.330'	137.76'	0.52'	143.80'	0.098'	0.00'			0.049'	0.569'	143.849'	o.k.		no	
528		1.16	MH 28		05+00.50	05+00.50	146.07	145.47	y	62	0.60'	163.50'	12"	0.0116	0.0116	3.85	30.0%	0.79	0.286'	0.375'	143.95'	0.22'	145.85'	0.071'	0.00'	0.15'		0.109'	0.333'	145.954'	o.k.		no	
529		1.16	MH 29		05+70.50	05+70.50	169.80	169.70	y	33	0.10'	70.00'	10"	0.3376	0.3376	12.76	9.1%	0.55	2.960'	0.158'	146.23'	0.54'	169.86'	0.740'	0.00'	0.50'		0.622'	1.164'	170.480'	o.k.		no	
530		1.16	MH 30		08+37.50	08+37.50	170.73	170.63	y		0.10'	267.00'	10"	0.0035	0.0031	1.22	94.4%	0.55	0.101'	0.638'	170.48'	0.57'	171.27'	0.025'	0.00'			0.013'	0.584'	171.280'	o.k.		no	
531		1.16	MH 31		10+38.50	10+38.50	173.38	173.28	y	45	0.10'	201.00'	10"	0.0132	0.0127	2.47	46.7%	0.55	0.307'	0.396'	171.28'	0.58'	173.68'	0.077'	0.00'	0.09'		0.082'	0.659'	173.758'	o.k.		no	
532		1.16	MH 32		13+17.50	13+17.50	174.12	174.02	y	40	0.10'	279.00'	10"	0.0027	0.0023	1.05	109.9%	0.55	0.058'	0.833'	174.21'	0.77'	174.98'	0.014'	0.00'	0.01'		0.014'	0.784'	174.997'	CRITICAL		Yes by 0.10 cfs	0.1
533		1.06	MH 33		15+09.50	15+09.50	174.71	174.61	y		0.10'	192.00'	10"	0.0031	0.0026	1.11	95.1%	0.55	0.083'	0.638'	175.00'	0.34'	175.34'	0.021'	0.00'			0.010'	0.352'	175.349'	o.k.		no	
534		1.06	MH 34		19+27.50	19+27.50	176.05	175.95	y	20	0.10'	418.00'	10"	0.0032	0.0030	1.20	88.2%	0.55	0.095'	0.604'	175.35'	0.76'	176.55'	0.024'	0.00'	0.01'		0.016'	0.773'	176.570'	o.k.		no	
535		1.06	MH 35		19+85.50	19+85.50	177.04	176.94	y	95	0.10'	58.00'	10"	0.0153	0.0153	2.72	38.8%	0.55	0.338'	0.354'	176.57'	0.15'	177.29'	0.084'	0.00'	0.22'		0.150'	0.304'	177.445'	o.k.		no	
536		1.06	MH 36		24+06.50	24+06.50	178.05	177.95	y	20	0.10'	421.00'	10"	0.0022	0.0022	1.02	103.3%	0.55	0.071'	0.700'	177.74'	0.75'	178.65'	0.018'	0.00'	0.01'		0.012'	0.758'	178.662'	o.k.		Yes by 0.03 cfs	
537		1.06	MH 37		25+60.50	25+60.50	179.98	179.88	y	20	0.10'	154.00'	10"	0.0120	0.0119	2.39	44.1%	0.55	0.282'	0.388'	178.66'	0.38'	180.27'	0.070'	0.00'	0.02'		0.046'	0.422'	180.314'	o.k.		no	
538		1.06	MH 38		28+76.50	28+76.50	181.37	181.37	y		0.00'	316.00'	10"	0.0044	0.0044	1.46	72.4%	0.55	0.132'	0.521'	180.50'	0.61'	181.89'	0.033'	0.00'			0.016'	0.626'	181.907'	o.k.		no	
North Overlook Stub																																		
519	0.61	1.87	MH 19	0.0	55+14.00	00+00.00	106.25	106.00	y																									
601		0.61	MH 1		00+65.00	00+65.00	142.71	142.61	y		0.10'	65.00'	10"	0.5594	0.5594	16.43	3.7%	0.55	2.255'	0.083'	106.33'	0.30'	142.69'	0.564'	0.00'			0.282'	0.584'	142.975'	o.k.		no	
602		0.61	MH 2		01+85.00	01+85.00	143.07	142.97	y	95	0.10'	120.00'	10"	0.0040	0.0022	1.02	59.9%	0.55	0.058'	0.454'	143.16'	0.09'	143.42'	0.015'	0.00'	0.04'		0.026'	0.113'	143.450'	o.k.		no	
603		0.61	MH 3		05+60.00	05+60.00	144.57	144.57	y		0.00'	375.00'	10"	0.0040	0.0040	1.39	44.1%	0.55	0.095'	0.388'	143.46'	0.31'	144.96'	0.024'	0.00'			0.012'	0.321'	144.969'	o.k.		no	
Minnehaha Trunk																																		
700		0.25	MH 0		00+00.00	00+00.00	224.00	216.25	y																									
7011		0.25	MH 1A		00+03.50	00+03.50	224.43	224.23	y	83	0.20'	3.50'	12"	0.0288	0.0657	9.16	2.7%	0.79	0.338'	0.100'	224.10'	0.00'	224.33'	0.084'	0.00'	0.22'		0.150'	0.151'	224.480'	o.k.		no	
701		0.25	MH 1		01+25.50	01+25.50	224.95	224.75	y	22	0.20'	122.00'	12"	0.0026	0.0026	1.83	13.5%	0.79	0.038'	0.230'	224.66'	0.01'	224.98'	0.009'	0.00'	0.00'		0.007'	0.020'	224.987'	o.k.		no	
702		0.25	MH 2		02+24.50	02+24.50	225.41	225.21	y	38	0.20'	99.00'	12"	0.0026	0.0026	1.83	13.5%	0.79	0.038'	0.230'	225.18'	0.01'	225.44'	0.009'	0.00'	0.01'		0.009'	0.019'	225.449'	o.k.		no	
703		0.25	MH 3		04+56.50	04+56.50	226.11	226.01	y	20	0.10'	232.00'	12"	0.0026	0.0026	1.82	13.6%	0.79	0.037'	0.230'	225.64'	0.02'	226.24'	0.009'	0.00'	0.00'		0.006'	0.031'	226.246'	o.k.		no	
704		0.25	MH 4		05+92.50	05+92.50	226.66	226.46	y	48	0.20'	136.00'	12"	0.0026	0.0026	1.81	13.7%	0.79	0.037'	0.230'	226.34'	0.01'	226.69'	0.009'	0.00'	0.01'		0.011'	0.025'	226.701'	o.k.		no	
705		0.25	MH 5		06+71.50	06+71.50	226.98	226.88	y	20	0.10'	79.00'	12"	0.0026	0.0028	1.89	13.1%	0.79	0.040'	0.230'	226.89'	0.01'	227.11'	0.010'	0.00'	0.00'		0.007'	0.015'	227.117'	o.k.		no	
706		0.25	MH 6		07+35.50	07+35.50	227.35	227.15	y	36	0.20'	64.00'	12"	0.0026	0.0027	1.84	13.4%	0.79	0.038'	0.230'	227.21'	0.01'	227.38'	0.010'	0.00'	0.01'		0.009'	0.016'	227.389'	o.k.		no	
707		0.25	MH 7		07+99.50	07+99.50	227.61	227.51	y	22	0.10'	64.00'	12"	0.0026	0.0025	1.79	13.9%	0.79	0.036'	0.230'	227.58'	0.01'	227.74'	0.009'	0.00'	0.00'		0.006'	0.013'	227.746'	o.k.		no	
708		0.25	MH 8		08+72.50	08+72.50	227.90	227.80	y	27	0.10'	73.00'	12"	0.0026	0.0026	1.82	13.6%	0.79	0.038'	0.230'	227.84'	0.01'	228.03'	0.009'	0.00'	0.00'		0.007'	0.015'	228.037'	o.k.		no	
709		0.25	MH 9		09+58.50	09+58.50	228.23	228.13	y	20	0.10'	86.00'	12"	0.0026	0.0027	1.85	13.4%	0.79	0.039'	0.230'	228.13'	0.01'	228.36'	0.010'	0.00'	0.00'		0.006'	0.015'	228.366'	o.k.		no	
710		0.25	MH 10		12+39.50	12+39.50	229.15	228.96	y	106	0.19'	281.00'	12"	0.0026	0.0026	1.82	13.6%	0.79	0.037'	0.230'	228.46'	0.03'	229.19'	0.009'	0.00'	0.02'		0.017'	0.046'	229.207'	o.k.		no	
711		0.25	MH 11		13+78.50	13+78.50	229.62	229.52	y	23	0.10'	139.00'	12"	0.0026	0.0027	1.84	13.4%	0.79	0.038'	0.230'	229.38'	0.01'	229.75'	0.010'	0.00'	0.00'		0.007'	0.021'	229.757'	o.k.		no	
712		0.25	MH 12		15+78.50	15+78.50	230.34	230.14	y		0.20'	200.00'	12"	0.0026	0.0026	1.82	13.6%	0.79	0.037'	0.230'	229.85'	0.02'	230.37'	0.009'	0.00'			0.005'	0.026'	230.375'	o.k.		no	
Lakeshore Trunk																																		
106	2.39	4.01	MH 6		20+71.87	00+00.00	35.56	34.62	y	91																								
801		1.99	G1		00+37.00	00+37.00	41.15	41.05	y	62	0.10'	37.00'	15"		0.1484	24.95	8.0%	1.23	1.941'	0.206'	35.77'	0.12'	41.26'	0.485'	0.00'	1.00'		0.743'	0.858'	41.999'	o.k.		no	
802		1.99	G2		03+45.00	03+45.00	44.91	44.81	y		0.10'	308.00'	12"	0.0120	0.0119	3.89	51.1%	0.79	0.382'	0.500'	42.00'	0.95'	45.31'	0.095'	0.00'			0.048'	0.999'	45.358'	o.k.		no	
803		1.99	G3		07+21.00	07+21.00	46.53	46.43	y		0.10'	376.00'	12"	0.0040	0.0040	2.27	87.6%	0.79	0.164'	0.715'	45.63'	0.92'	47.15'	0.041'	0.00'			0.021'	0.942'	47.166'	o.k.		no	
804		1.99	G4		11+21.00	11+21.00	48.13	48.13	y		0.00'	400.00'	12"	0.0040	0.0040	2.26	88.1%	0.79	0.164'	0.725'	47.26'	0.97'	48.86'	0.041'	0.00'			0.021'	0.995'	48.876'	o.k.		no	
805		1.99	G5		15+21.00	15+21.00	51.33	51.33	y		0.00'	400.00'	12"	0.0080	0.0080	3.20	62.3%	0.79	0.283'	0.570'	48.88'	1.12'	51.90'	0.071'	0.00'			0.035'	1.151'	51.935'	o.k.		no	
806		1.99	G6		19+21.00	19+21.00	62.53	62.53	y		0.00'	400.00'	10"	0.0280	0.0280	3.68	54.1%	0.55	0.734'	0.438'	51.94'	3.14'	62.97'	0.183'	0.00'			0.092'	3.231'	63.059'	o.k.		no	
807		1.99	G7		23+21.00	23+21.00	70.53	70.53	y		0.00'	400.00'	10"	0.0200	0.0200	3.11	64.1%	0.55	0.566'	0.483'	63.06'	2.89'	71.01'	0.142'	0.00'			0.071'	2.965'	71.084'	o.k.		no	
808		1.99	G8		27+21.00	27+21.00	85.73	85.73	y		0.00'	400.00'	10"	0.0380	0.0380	4.28	46.5%	0.55	0.919'	0.396'	71.08'	3.40'	86.13'	0.230'	0.00'			0.115'	3.515'	86.241'	o.k.		no	
809		1.99	G9		30+94.00	30+94.00	99.16	99.16	y		0.00'	373.00'	10"	0.0360	0.0360	4.17	47.7%	0.55	0.871'	0.396'	86.24'	3.17'	99.56'	0.218'	0.00'			0.109'	3.280'	99.665'	o.k.		no	
810		1.99	G10		34+94.00	34+94.00	111.96	111.96	y		0.00'	400.00'	10"	0.0320	0.0320	3.93	50.6%	0.55	0.806'	0.417'	99.66'	3.27'	112.38'	0.202'	0.00'			0.101'	3.366'	112.477'	o.k.		no	
811		1.99	G11		38+94.00	38+94.00	126.36	126.36	y		0.00'	400.00'	10"	0.0360	0.0360	4.17	47.7%	0.55	0.871'	0.396'	112.48'	3.40'	126.76'	0.218'	0.00'			0.109'	3.509'	126.865'	o.k.		no	
812		1.99	G12		42+24.00	42+24.00	138.24	138.24	y		0.00'	330.00'	10"	0.0360	0.0360	4.17	47.7%	0.55	0.871'	0.396'	126.86'	2.81'	138.64'	0.218'	0.00'			0.109'	2.914'	138.745'	o.k.		no	
813		1.99	G13		44+66.00	44+66.00	146.95	146.95	y		0.00'	242.00'	10"	0.0360	0.0360	4.17	47.8%	0.55	0.871'	0.396'	138.74'	2.06'	147.35'	0.218'	0.00'			0.109'	2.166'	147.455'	o.k.		no	
814		1.99	G14		47+06.00	47+06.00	149.40	149.30	y		0.10'	240.00'	10"	0.0099	0.0098	2.17	91.5%	0.55	0.315'	0.613'	147.56'	1.54'	149.91'	0.079'	0.00'			0.039'	1.577'	149.952'	o.k.		no	
901		1.99	MH 1		50+06.00	50+06.00	159.34	159.00	y		0.34'	300.00'	10"	0.0320	0.0320	3.93	50.6%	0.55	0.806'	0.417'	149.95'	2.45'	159.42'	0.202'	0.00'			0.101'	2.550'	159.517'	o.k.		no	
902		1.99	MH 2		53+06.00	53+06.00	174.34	174.34	y		0.00'	300.00'	10"	0.0500	0.0500	4.91	40.5%	0.55	1.125'	0.367'	159.71'	2.74'	174.71'	0.281'	0.00'			0.141'	2.877'	174.847'	o.k.		no	
903		1.99	MH 3		57+06.00	57+06.00	175.94	175.94	y		0.00'	400.00'	12"	0.0040	0.0040	2.26	88.1%	0.79	0.164'	0.725'	175.07'	0.97'	176.67'	0.041'	0.00'			0.021'	0.995'	176.686'	o.k.		no	
904		1.99	MH 4		61+06.00	61+06.00	177.54	177.54	y		0.00'	400.00'	12"	0.0040	0.0040	2.26	88.1%	0.79	0.164'	0.725'	176.65'	0.97'	178.27'	0.041'	0.00'			0.021'	0.995'	178.286'	o.k.		no	
905		1.99	MH 5		64+08.00	64+08.00	178.75	178.75	y		0.00'	302.00'	12"	0.0040	0.0040	2.26	88.0%	0.79	0.164'	0.725'	178.25'	0.74'	179.48'	0.041'	0.00'			0.021'	0.757'	179.496'	o.k.		no	
Datum Shift																																		
905		1.07	MH 5		64+08.00	00+00.00	178.56	178.46	y																									
1001		1.07	MH 1		00+50.00	00+50.00	178.80	178.70	y		0.10'	50.00'	12"	0.0026	0.0028	1.89	56.6%	0.79	0.094'	0.535'	179.10'	0.04'	179.24'	0.024'	0.00'			0.012'	0.054'	179.247'	o.k.		no	
1002		1.07	MH 2		04+53.00	04+53.00	179.78	179.68	y		0.10'	403.00'	12"	0.0022	0.0022	1.67	64.0%	0.79	0.079'	0.580'	179.38'	0.32'	180.26'	0.020'	0.00'			0.010'	0.328'	180.270'	o.k.		no	
1003		1.07	MH 3		08+53.00	08+53.00	180.76	180.66	y		0.10'	400.00'	12"	0.0022	0.0022	1.68	63.8%	0.79	0.078'	0.570'	180.35'	0.32'	181.23'	0.019'	0.00'			0.010'	0.332'	181.240'	o.k.		no	
1004		1.07	MH 4		10+43.00	10+43.00	181.27	181.17	y		0.10'	190.00'	12"	0.0022	0.0022	1.66	64.4%	0.79	0.078'	0.580'	181.34'	0.15'	181.75'	0.019'	0.00'			0.010'	0.160'	181.760'	o.k.		no	
1005		1.07	MH 5		13+42.00	13+42.00	182.03	181.93	y		0.10'	299.00'	12"	0.0022	0.0022	1.68	63.7%	0.79	0.078'	0.570'	181.84'	0.24'	182.50'	0.020'	0.00'			0.010'	0.250'	182.510'	o.k.		no	
1006		1.07	MH 6		17+90.00	17+90.00	183.11	183.01	y		0.10'	448.00'	12"	0.0022	0.0022	1.67	64.0%	0.79	0.077'	0.570'	182.60'	0.36'	183.58'	0.019'	0.00'			0.010'	0.370'	183.590'	o.k.		no	
1007		1.07	MH 7		20+94.00	20+94.00	183.88	183.78	y		0.10'	304.00'	12"	0.0022	0.0022	1.68	63.7%	0.79	0.078'	0.570'	183.66'	0.24'	184.35'	0.020'	0.00'			0.010'	0.254'	184.360'	o.k.		no	
1008		1.07	MH 8		24+61.00	24+61.00	184.79	184.69	y		0.10'	367.00'	12"	0.0022	0.0022	1.68	63.7%	0.79	0.078'	0.570'	184.45'	0.30'	185.26'	0.020'	0.00'			0.010'	0.305'	185.270'	o.k.		no	
1009		1.07	MH 9		25+99.00	25+99.00	185.20	185.10	y		0.10'	138.00'	12"	0.0022	0.0022	1.69	63.1%	0.79	0.080'	0.570'	185.36'	0.11'	185.67'	0.020'	0.00'			0.010'	0.121'	185.680'	o.k.		no	
1010		1.07	MH 10		27+73.00	27+73.00	186.47	185.58	y		0.89'	174.00'	12"	0.0022	0.0022	1.67	64.0%	0.79	0.079'	0.580'	185.76'	0.14'	186.16'	0.020'	0.00'			0.010'	0.147'	186.170'	o.k.		no	
1011		1.07	MH 11		31+15.00	31+15.00	187.72	187.22	y		0.50'	342.00'	12"	0.0022	0.0022	1.67	63.9%	0.79	0.078'	0.570'	187.04'	0.28'	187.79'	0.019'	0.00'			0.010'	0.285'	187.800'	o.k.		no	
1012		1.07	MH 12		34+15.00	34+15.00	187.98	187.98	y		0.00'	300.00'	12"	0.0022	0.0009	1.05	101.7%	0.79	0.036'	0.820'	188.54'	0.21'	188.80'	0.009'	0.00'			0.005'	0.210'	188.805'	o.k.		Yes by 0.02 cfs	

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk											Hydraulic Grade Line for Downstream Pipe											Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
100		5.95	Ex. M.H.		00+00.00	00+00.00	27.41	27.41	y																								
101		5.95	MH 1		02+34.37	02+34.37	28.21	28.21	y	62	0.00'	234.37'	24"	0.0034	0.0034	13.25	44.9%	3.14	0.260'	0.930'	28.34'	0.17'	29.14'	0.065'	0.09'	0.13'		0.144'	0.314'	29.284'	o.k.		no	
102		5.95	MH 2		07+35.93	07+35.93	29.87	29.87	y		0.00'	501.56'	24"	0.0033	0.0033	13.05	45.6%	3.14	0.252'	0.930'	29.28'	0.37'	30.80'	0.063'	0.11'			0.085'	0.451'	30.885'	o.k.		no	
103	2.19	5.95	MH 3		12+35.52	12+35.52	32.03	32.03	y		0.00'	499.59'	24"	0.0043	0.0043	14.91	39.9%	3.14	0.306'	0.850'	30.89'	0.39'	32.88'	0.076'	0.08'		0.115'	0.134'	0.528'	33.014'	o.k.		no	
104		4.27	MH 4		14+86.95	14+86.95	32.91	32.91	y	20	0.00'	251.43'	24"	0.0035	0.0035	13.42	31.8%	3.14	0.217'	0.750'	33.01'	0.12'	33.66'	0.054'	0.06'	0.02'		0.065'	0.182'	33.725'	o.k.		no	
105		4.27	MH 5		16+77.90	16+77.90	33.38	33.38	y		0.00'	190.95'	24"	0.0025	0.0025	11.25	37.9%	3.14	0.169'	0.830'	33.74'	0.08'	34.21'	0.042'	0.01'			0.028'	0.108'	34.236'	o.k.		no	
106	2.54	4.27	MH 6		20+71.87	20+71.87	35.56	34.62	y	91	0.94'	393.97'	24"	0.0031	0.0031	12.73	33.6%	3.14	0.041'	0.200'	34.24'	0.84'	35.07'	0.010'	0.25'	0.03'	0.028'	0.158'	0.994'	35.232'	o.k.		no	
107		2.54	MH 7		22+51.14	22+51.14	40.32	40.32	y		0.00'	179.27'	18"	0.0266	0.0266	17.16	14.8%	1.77	0.718'	0.375'	35.94'	0.21'	40.70'	0.179'	0.41'			0.292'	0.501'	40.987'	o.k.		no	
108		2.54	MH 8		24+64.40	24+64.40	53.18	53.18	y	20	0.00'	213.26'	18"	0.0603	0.0603	25.86	9.8%	1.77	1.158'	0.285'	40.99'	0.35'	53.47'	0.289'	0.45'	0.09'		0.414'	0.760'	53.879'	o.k.		no	
109		2.54	MH 9		27+16.54	27+16.54	67.60	67.60	y		0.00'	252.14'	18"	0.0572	0.0572	25.19	10.1%	1.77	1.272'	0.315'	53.88'	0.36'	67.92'	0.318'	0.10'			0.210'	0.567'	68.125'	o.k.		no	
110		2.54	MH 10		30+04.41	30+04.41	69.66	69.66	y	68	0.00'	287.87'	18"	0.0072	0.0072	8.91	28.5%	1.77	0.292'	0.540'	68.14'	0.23'	70.20'	0.073'	0.12'	0.18'		0.186'	0.411'	70.386'	o.k.		no	
111		2.54	MH 11		31+39.47	31+39.47	70.85	70.85	y	70	0.00'	135.06'	18"	0.0088	0.0088	9.89	25.6%	1.77	0.331'	0.495'	70.39'	0.12'	71.35'	0.083'	0.27'	0.21'		0.284'	0.399'	71.629'	o.k.		no	
112		2.54	MH 12		33+61.95	33+61.95	77.28	77.28	y	20	0.00'	222.48'	18"	0.0289	0.0289	17.91	14.2%	1.77	0.781'	0.375'	71.63'	0.26'	77.66'	0.195'	0.23'	0.06'		0.242'	0.501'	77.897'	o.k.		no	
113		2.54	MH 13		35+90.70	35+90.70	82.74	82.74	y		0.00'	228.75'	18"	0.0239	0.0239	16.27	15.6%	1.77	0.645'	0.375'	77.90'	0.27'	83.12'	0.161'	0.20'			0.182'	0.448'	83.297'	o.k.		no	
114		2.54	MH 14		38+65.27	38+65.27	88.07	88.07	y		0.00'	274.57'	18"	0.0194	0.0194	14.67	17.3%	1.77	0.578'	0.405'	83.30'	0.30'	88.48'	0.145'	0.21'			0.178'	0.474'	88.653'	o.k.		no	
115		2.54	MH 15		42+64.92	42+64.92	96.15	96.15	y		0.00'	399.65'	18"	0.0202	0.0202	14.98	16.9%	1.77	0.602'	0.405'	88.65'	0.43'	96.56'	0.151'	0.28'			0.214'	0.645'	96.769'	o.k.		no	
116		2.54	MH 16		46+54.87	46+54.87	108.60	108.60	y	35	0.00'	389.95'	18"	0.0319	0.0319	18.82	13.5%	1.77	0.791'	0.345'	96.77'	0.50'	108.95'	0.198'	0.30'	0.15'		0.324'	0.822'	109.269'	o.k.		no	
117		2.54	MH 17		48+15.31	48+15.31	114.14	114.14	y	40	0.00'	160.44'	18"	0.0345	0.0345	19.57	13.0%	1.77	0.855'	0.345'	109.27'	0.21'	114.49'	0.214'	0.19'	0.21'		0.304'	0.510'	114.789'	o.k.		no	
118		2.54	MH 18		49+30.85	49+30.85	116.09	116.09	y	20	0.00'	115.54'	18"	0.0169	0.0169	13.68	18.5%	1.77	0.531'	0.426'	114.79'	0.12'	116.52'	0.133'	0.20'	0.04'		0.187'	0.304'	116.705'	o.k.		no	
119		2.54	MH 19		50+84.10	50+84.10	119.02	119.02	y	20	0.00'	153.25'	18"	0.0191	0.0191	14.56	17.4%	1.77	0.570'	0.405'	116.70'	0.17'	119.43'	0.142'	0.15'	0.05'		0.168'	0.333'	119.593'	o.k.		no	
120		2.54	MH 20		53+82.92	53+82.92	122.77	122.77	y	24	0.00'	298.82'	18"	0.0125	0.0125	11.80	21.5%	1.77	0.421'	0.450'	119.59'	0.28'	123.22'	0.105'	0.14'	0.05'		0.145'	0.427'	123.365'	o.k.		no	
121		2.54	MH 21		56+30.85	56+30.85	125.47	125.47	y	20	0.00'	247.93'	18"	0.0109	0.0109	10.99	23.1%	1.77	0.394'	0.480'	123.36'	0.22'	125.95'	0.099'	0.13'	0.03'		0.131'	0.353'	126.081'	o.k.		no	
122		2.54	MH 22		58+56.60	58+56.60	127.82	127.82	y	38	0.00'	225.75'	18"	0.0104	0.0104	10.75	23.6%	1.77	0.377'	0.480'	126.08'	0.20'	128.30'	0.094'	0.08'	0.08'		0.127'	0.329'	128.427'	o.k.		no	
123		2.54	MH 23		59+86.10	59+86.10	128.44	128.44	y	90	0.00'	129.50'	18"	0.0048	0.0048	7.29	34.8%	1.77	0.216'	0.600'	128.43'	0.09'	129.04'	0.054'	0.08'	0.14'		0.136'	0.227'	129.176'	o.k.		no	
124		2.54	MH 24		61+62.35	61+62.35	129.32	129.32	y	88	0.00'	176.25'	18"	0.0050	0.0050	7.44	34.1%	1.77	0.226'	0.600'	129.18'	0.12'	129.92'	0.056'	0.12'	0.14'		0.159'	0.284'	130.079'	o.k.		no	
125		2.54	MH 25		65+65.06	65+65.06	132.94	132.94	y	27	0.00'	402.71'	18"	0.0090	0.0090	9.99	25.4%	1.77	0.337'	0.495'	130.08'	0.34'	133.44'	0.084'	0.07'	0.04'		0.100'	0.444'	133.535'	o.k.		no	
126		2.54	MH 26		69+16.11	69+16.11	134.50	134.50	y		0.00'	351.05'	18"	0.0044	0.0044	7.02	36.1%	1.77	0.207'	0.623'	133.56'	0.24'	135.12'	0.052'	0.08'			0.068'	0.309'	135.191'	o.k.		no	
127		2.54	MH 27		72+31.64	72+31.64	136.31	136.31	y	22	0.00'	315.53'	18"	0.0057	0.0057	7.98	31.8%	1.77	0.242'	0.563'	135.19'	0.24'	136.87'	0.061'	0.08'	0.02'		0.081'	0.320'	136.954'	o.k.		no	
128		2.54	MH 28		75+38.35	75+38.35	138.19	137.81	y	90	0.38'	306.71'	18"	0.0049	0.0049	7.37	34.4%	1.77	0.221'	0.600'	136.95'	0.22'	138.41'	0.055'	0.09'	0.14'		0.141'	0.358'	138.551'	o.k.		no	
129		2.54	MH 29		77+15.39	77+15.39	139.22	139.22	y	90	0.00'	177.04'	18"	0.0058	0.0058	8.03	31.6%	1.77	0.246'	0.563'	138.75'	0.13'	139.78'	0.061'	0.31'	0.16'		0.263'	0.398'	140.046'	o.k.		no	
130		2.54	MH 30		81+23.35	81+23.35	153.72	153.72	y	65	0.00'	407.96'	18"	0.0355	0.0355	19.86	12.8%	1.77	0.880'	0.345'	140.05'	0.52'	154.07'	0.220'	0.40'	0.48'		0.552'	1.074'	154.617'	o.k.		no	
131		2.54	MH 31		82+00.48	82+00.48	167.07	157.68	y	71	9.39'	77.13'	18"	0.0513	0.0513	23.86	10.6%	1.77	1.142'	0.315'	154.62'	0.11'	158.00'	0.285'	0.10'	0.73'		0.556'	0.665'	158.551'	o.k.		no	
132		2.54	MH 32		83+90.96	83+90.96	168.34	168.34	y	20	0.00'	190.48'	18"	0.0067	0.0067	8.60	29.5%	1.77	0.272'	0.540'	167.61'	0.15'	168.88'	0.068'	0.09'	0.02'		0.090'	0.239'	168.970'	o.k.		no	
133		2.54	MH 33		87+82.39	87+82.39	170.74	170.74	y	97	0.00'	391.43'	18"	0.0061	0.0061	8.25	30.7%	1.77	0.259'	0.563'	168.97'	0.30'	171.30'	0.065'	0.14'	0.17'		0.183'	0.480'	171.486'	o.k.		no	
134	1.72	2.54	MH 34		91+99.07	-00+31.00	175.20	175.20	y		0.00'	416.68'	18"	0.0107	0.0107	10.90	23.3%	1.77	0.387'	0.480'	171.49'	0.37'	175.68'	0.097'	0.35'		0.327'	0.388'	0.761'	176.068'	o.k.		no	
201		1.72	A-1		00+00.00	00+00.00	177.66	177.66	y	106	0.00'	31.00'	18"	0.0800	0.0794	29.67	5.8%	1.77	1.008'	0.210'	176.07'	0.03'	177.87'	0.252'	0.06'	0.65'		0.479'	0.513'	178.349'	o.k.		no	
202		1.72	A-2		04+25.00	04+25.00	179.53	179.53	y		0.00'	425.00'	15"	0.0044	0.0044	4.30	40.1%	1.23	0.170'	0.550'	178.35'	0.34'	180.08'	0.042'	0.00'			0.021'	0.357'	180.101'	o.k.		no	
203		1.72	A-3		08+50.00	08+50.00	181.30	181.30	y		0.00'	425.00'	15"	0.0040	0.0042	4.18	41.3%	1.23	0.161'	0.550'	180.10'	0.34'	181.85'	0.040'	0.00'			0.020'	0.355'	181.870'	o.k.		no	
204		1.72	A-4		11+00.00	11+00.00	182.30	182.30	y		0.00'	250.00'	15"	0.0040	0.0040	4.10	42.1%	1.23	0.159'	0.563'	181.67'	0.19'	182.86'	0.040'	0.00'			0.020'	0.212'	182.882'	o.k.		no	
205		1.72	A-5		13+97.50	13+97.50	187.50	187.50	y		0.00'	297.50'	15"	0.0175	0.0175	8.56	20.1%	1.23	0.460'	0.375'	182.88'	0.34'	187.88'	0.115'	0.00'			0.057'	0.402'	187.932'	o.k.		no	
206	0.87	1.72	A-6		14+80.50	00+00.00	188.50	188.50	y	86	0.00'	83.00'	15"	0.0120	0.0120	7.11	24.3%	1.23	0.355'	0.413'	187.93'	0.09'	188.91'	0.089'	0.00'	0.23'	0.199'	0.257'	0.344'	189.170'	o.k.		no	
301		0.85	E1		03+10.00	03+10.00	189.65	189.65	y		0.00'	310.00'	10"	0.0180	0.0037	1.34	63.6%	0.55	0.103'	0.475'	189.17'	0.42'	190.13'	0.026'	0.00'			0.013'	0.431'	190.138'	o.k.		no	
302		0.85	E2		07+10.00	07+10.00	193.20	193.20	y		0.00'	400.00'	10"	0.0088	0.0089	2.07	41.1%	0.55	0.200'	0.367'	190.14'	0.67'	193.57'	0.050'	0.00'			0.025'	0.692'	193.592'	o.k.		no	
303		0.85	E3		12+10.00	12+10.00	194.65	194.65	y		0.00'	500.00'	10"	0.0029	0.0029	1.18	71.9%	0.55	0.085'	0.513'	193.71'	0.63'	195.16'	0.021'	0.00'			0.011'	0.645'	195.173'	o.k.		no	
304		0.85	E4		16+24.00	16+24.00	195.85	195.85	y		0.00'	414.00'	10"	0.0029	0.0029	1.18	72.0%	0.55	0.085'	0.513'	195.17'	0.53'	196.36'	0.021'	0.00'			0.011'	0.536'	196.373'	o.k.		no	
305		0.85	E5		21+43.00	21+43.00	199.10	199.10	y		0.00'	519.00'	8"	0.0063	0.0063	0.96	88.8%	0.35	0.150'	0.483'	196.37'	2.01'	199.58'	0.037'	0.00'			0.019'	2.028'	199.602'	o.k.		no	
Highway 99 Trunk South of Chicken Creek																																	
206	0.87	1.72	MH 6	0.0	14+80.50	00+00.00	190.38	188.50	y																								
401		0.98	F1		04+31.00	04+31.00	191.33	191.33	y		0.00'	431.00'	10"	0.0022	0.0022	1.03	95.1%	0.55	0.072'	0.638'	191.02'	0.66'	191.97'	0.018'	0.00'			0.009'	0.673'	191.976'	o.k.		no	
402		0.98	F2		07+43.00	07+43.00	192.28	192.28	y		0.00'	312.00'	10"	0.0028	0.0030	1.21	80.9%	0.55	0.095'	0.563'	191.98'	0.50'	192.84'	0.024'	0.00'			0.012'	0.511'	192.854'	o.k.		no	
403		0.98	F3		10+80.00	10+80.00	193.48	193.48	y		0.00'	337.00'	10"	0.0034	0.0036	1.31	74.9%	0.55	0.108'	0.533'	192.85'	0.56'	194.01'	0.027'	0.00'			0.013'	0.569'	194.027'	o.k.		no	
404		0.98	F4		13+88.00	13+88.00	194.68	194.68	y		0.00'	308.00'	10"	0.0034	0.0039	1.37	71.6%	0.55	0.114'	0.513'	194.03'	0.52'	195.19'	0.029'	0.00'			0.014'	0.534'	195.207'	o.k.		no	
405		0.98	F5		17+95.00	17+95.00	196.18	196.18	y		0.00'	407.00'	10"	0.0034	0.0037	1.33	73.6%	0.55	0.110'	0.521'	195.21'	0.68'	196.70'	0.028'	0.00'			0.014'	0.692'	196.715'	o.k.		no	
406		0.98	F6		21+25.00	21+25.00	197.29	197.29	y		0.00'	330.00'	10"	0.0034	0.0034	1.27	77.0%	0.55	0.103'	0.542'	196.72'	0.54'	197.83'	0.026'	0.00'			0.013'	0.554'	197.844'	o.k.		no	
Overlook Trunk																																	
103	2.19	5.95	MH 3	0.0	12+35.52	00+00.00	34.16	32.03	y		2.13'	1235.52'																					
501		2.19	MH 1		00+08.00	00+08.00	34.59	34.49	y	90	0.10'	8.00'	12"	0.0413	0.0413	7.26	30.2%	0.79	1.015'	0.375'	34.54'	0.04'	34.87'	0.254'	0.00'	0.65'		0.451'	0.491'	35.316'	o.k.		no	
502		2.19	MH 2		01+03.00	01+03.00	35.56	35.46	y	36	0.10'	95.00'	12"	0.0092	0.0092	3.42	64.1%	0.79	0.331'	0.580'	35.32'	0.32'	36.04'	0.083'	0.00'	0.07'		0.076'	0.391'	36.116'	o.k.		no	
503		2.19	MH 3		04+88.00	04+88.00	41.98	41.88	y	21	0.10'	385.00'	12"	0.0164	0.0164	4.58	47.9%	0.79	0.506'	0.475'	36.12'	1.50'	42.36'	0.127'	0.00'	0.04'		0.084'	1.584'	42.439'	o.k.		no	
504		2.19	MH 4		08+88.00	08+88.00	45.96	45.86	y		0.10'	400.00'	12"	0.0097	0.0097	3.52	62.3%	0.79	0.344'	0.570'	42.55'	1.35'	46.43'	0.086'	0.00'			0.043'	1.394'	46.473'	o.k.		no	
505		2.19	MH 5		11+88.00	11+88.00	50.26	50.16	y		0.10'	300.00'	12"	0.0140	0.0140	4.23	51.8%	0.79	0.450'	0.500'	46.47'	1.12'	50.66'	0.112'	0.00'			0.056'	1.179'	50.716'	o.k.		no	
506		2.19	MH 6		15+63.00	15+63.00	54.60	54.50	y		0.10'	375.00'	12"	0.0113	0.0113	3.80	57.7%	0.79	0.382'	0.535'	50.80'	1.33'	55.04'	0.095'	0.00'			0.048'	1.379'	55.083'	o.k.		no	
507		2.19	MH 7		19+13.00	19+13.00	56.10	56.00	y		0.10'	350.00'	12"	0.0040	0.0040	2.26	96.9%	0.79	0.167'	0.785'	55.39'	1.01'	56.79'	0.042'	0.00'			0.021'	1.032'	56.806'	o.k.		no	
508		2.19	MH 8		20+63.00	20+63.00	61.99	61.89	y		0.10'	150.00'	12"	0.0386	0.0386	7.02	31.2%	0.79	0.949'	0.375'	56.81'	0.74'	62.27'	0.237'	0.00'			0.119'	0.855'	62.384'	o.k.		no	
509		2.19	MH 9		23+88.00	23+88.00	66.05	65.95	y		0.10'	325.00'	12"	0.0122	0.0122	3.94	55.5%	0.79	0.407'	0.525'	62.52'	1.17'	66.48'	0.102'	0.00'			0.051'	1.220'	66.526'	o.k.		no	
510		2.19	MH 10		25+88.00	25+88.00	68.59	68.49	y		0.10'	200.00'	12"	0.0122	0.0122	3.95	55.5%	0.79	0.408'	0.525'	66.58'	0.72'	69.02'	0.102'	0.00'			0.051'	0.770'	69.066'	o.k.		no	
511		2.19	MH 11		29+68.00	29+68.00	74.24	74.14	y		0.10'	380.00'	12"	0.0146	0.0146	4.32	50.7%	0.79	0.469'	0.500'	69.09'	1.42'	74.64'	0.117'	0.00'			0.059'	1.480'	74.699'	o.k.		no	
512		2.19	MH 12		33+68.00	33+68.00	77.82	77.72	y		0.10'	400.00'	12"	0.0087	0.0087	3.33	65.7%	0.79	0.314'	0.580'	74.82'	1.33'	78.30'	0.079'	0.00'			0.039'	1.366'	78.339'	o.k.		no	
513		2.19	MH 13		36+38.00	36+38.00	80.69	78.90	y		1.79'	270.00'	12"	0.0040	0.0040	2.26	96.9%	0.79	0.167'	0.785'	78.61'	0.78'	79.69'	0.042'	0.00'			0.021'	0.801'	79.706'	o.k.		no	
514		2.19	MH 14		39+88.00	39+88.00	86.60	86.50	y		0.10'	350.00'	12"	0.0166	0.0166	4.60	47.6%	0.79	0.512'	0.475'	81.17'	1.36'	86.98'	0.128'	0.00'			0.064'	1.428'	87.039'	o.k.		no	
515		2.19	MH 15		43+68.00	43+68.00	90.88	90.78	y		0.10'	380.00'	12"	0.0110	0.0110	3.75	58.5%	0.79	0.379'	0.545'	87.15'	1.32'	91.33'	0.095'	0.00'			0.047'	1.371'	91.372'	o.k.		no	
516		2.19	MH 16		45+38.00	45+38.00	93.70	93.60	y		0.10'	170.00'	12"	0.0160	0.0160	4.52	48.5%	0.79	0.504'	0.490'	91.37'	0.65'	94.09'	0.126'	0.00'			0.063'	0.712'	94.153'	o.k.		no	
517		2.19	MH 17		49+38.00	49+38.00	98.76	98.66	y		0.10'	400.00'	12"	0.0124	0.0124	3.98	55.1%	0.79	0.414'	0.525'	94.23'	1.44'	99.19'	0.104'	0.00'			0.052'	1.491'	99.237'	o.k.		no	
518		2.19	MH 18		52+38.00	52+38.00	102.58	102.48	y		0.10'	300.00'	12"	0.0124	0.0124	3.98	55.1%	0.79	0.414'	0.525'	99.29'	1.08'	103.01'	0.104'	0.00'			0.052'	1.131'	103.057'	o.k.		no	
519		2.19	MH 19		55+14.00	55+14.00	107.00	106.00	y		1.00'	276.00'	12"	0.0124	0.0124	3.98	55.1%	0.79	0.414'	0.525'	103.11'	0.99'	106.53'	0.104'	0.00'			0.052'	1.045'	106.577'	o.k.		no	
520		1.45	MH 20		59+13.00	59+13.00	112.29	112.19	y		0.10'	399.00'	10"	0.0130	0.0130	2.51	57.9%	0.55	0.344'	0.446'	107.45'	1.64'	112.64'	0.086'	0.00'			0.043'	1.688'	112.679'	o.k.		no	
521		1.45	MH 21		63+13.00	63+13.00	117.59	117.49	y		0.10'	400.00'	10"	0.0130	0.0130	2.50	57.9%	0.55	0.344'	0.446'	112.74'	1.65'	117.94'	0.086'	0.00'			0.043'	1.692'	117.979'	o.k.		no	
522		1.45	MH 22		67+23.00	67+23.00	123.66	122.10	y		1.56'	410.00'	10"	0.0110	0.0110	2.30	63.0%	0.55	0.305'	0.475'	118.07'	1.61'	122.58'	0.076'	0.00'			0.038'	1.645'	122.613'	o.k.		no	
523		1.45	MH 23		69+18.00	69+18.00	127.08	126.98	y		0.10'	195.00'	10"	0.0170	0.0170	2.87	50.6%	0.55	0.429'	0.417'	124.08'	0.85'	127.40'	0.107'	0.00'			0.054'	0.900'	127.450'	o.k.		no	
524		1.45	MH 24		71+88.00	71+88.00	130.54	130.44	y		0.10'	270.00'	10"	0.0124	0.0124	2.45	59.2%	0.55	0.336'	0.454'	127.53'	1.09'	130.89'	0.084'	0.00'			0.042'	1.134'	130.936'	o.k.		no	
525		1.45	MH 25		74+38.00	74+38.00	133.64	133.54	y		0.10'	250.00'	10"	0.0120	0.0120	2.41	60.3%	0.55	0.330'	0.463'	131.00'	0.99'	134.00'	0.083'	0.00'			0.041'	1.033'	134.044'	o.k.		no	
526		1.45	MH 26		77+38.00	00+00.00	137.43	137.24	y		0.19'	300.00'	10"	0.0120	0.0120	2.41	60.3%	0.55	0.330'	0.463'	134.10'	1.19'	137.70'	0.083'	0.00'			0.041'	1.232'	137.744'	o.k.		no	

Mapping Point Data on Burnt Bridge Creek / Chicken Creek Trunk											Hydraulic Grade Line for Downstream Pipe												Junction/Structure Head Losses / HGL							Analysis			Comments
Map Point	Intx. Junction Flow (cfs)	Peak Design Flow (q)	Point / Structure	Lid Elev.	Station Back	Station Ahead	Inv. In	Inv. Out	Cont'? (y/n)	Deflect Angle	Step	Length	Size	Plan Slope (ft/ft)	Calc'd Slope	Capacity (Q) cfs	q/Q	Area (sq ft)	Velocity Head	Prop. Depth	TW Elevation, Downstr'm Discharge	Upstr'm Pipe Friction Loss	Upstr'm Pipe HGL	Cntrct'n Loss @ MH	Exit Loss @ MH	Bend Loss	Side Sewer Head Losses	Total Junction Losses	Total Head Loss	HW Elevation in Manhole	Check Pipe Crown	Check Rim Elev.	Exceeds Cont' Capacity	Height Above Crown (ft)
527		1.45	MH 27		03+37.00	03+37.00	143.57	143.47	y		0.10'	337.00'	12"	0.0124	0.0179	4.78	30.3%	0.79	0.441'	0.375'	137.81'	0.73'	143.85'	0.110'	0.00'			0.055'	0.782'	143.900'	o.k.		no	
528		1.45	MH 28		05+00.50	05+00.50	146.07	145.47	y	62	0.60'	163.50'	12"	0.0116	0.0116	3.85	37.7%	0.79	0.316'	0.415'	143.99'	0.32'	145.89'	0.079'	0.00'	0.16'		0.121'	0.439'	146.006'	o.k.		no	
529		1.45	MH 29		05+70.50	05+70.50	169.80	169.70	y	33	0.10'	70.00'	10"	0.3376	0.3376	12.76	11.4%	0.55	3.429'	0.175'	146.25'	0.74'	169.88'	0.857'	0.00'	0.58'		0.720'	1.464'	170.595'	o.k.		no	
530		1.45	MH 30		08+37.50	08+37.50	170.73	170.63	y		0.10'	267.00'	10"	0.0035	0.0031	1.22	118.5%	0.55	0.078'	0.833'	170.63'	1.16'	171.79'	0.020'	0.00'			0.010'	1.169'	171.803'	CRITICAL		Yes by 0.23 cfs	0.3
531		1.45	MH 31		10+38.50	10+38.50	173.38	173.28	y	45	0.10'	201.00'	10"	0.0132	0.0127	2.47	58.7%	0.55	0.342'	0.454'	171.80'	0.81'	173.73'	0.086'	0.00'	0.10'		0.092'	0.904'	173.826'	o.k.		no	
532		1.45	MH 32		13+17.50	13+17.50	174.12	174.02	y	40	0.10'	279.00'	10"	0.0027	0.0023	1.05	137.9%	0.55	0.058'	0.833'	174.21'	1.21'	175.42'	0.014'	0.00'	0.01'		0.014'	1.226'	175.439'	CRITICAL		Yes by 0.40 cfs	0.6
533		1.34	MH 33		15+09.50	15+09.50	174.71	174.61	y		0.10'	192.00'	10"	0.0031	0.0026	1.11	120.9%	0.55	0.064'	0.833'	175.44'	0.71'	176.15'	0.016'	0.00'			0.008'	0.720'	176.159'	CRITICAL		Yes by 0.23 cfs	0.7
534		1.34	MH 34		19+27.50	19+27.50	176.05	175.95	y	20	0.10'	418.00'	10"	0.0032	0.0030	1.20	112.1%	0.55	0.075'	0.833'	176.16'	1.55'	177.71'	0.019'	0.00'	0.01'		0.012'	1.563'	177.722'	CRITICAL		Yes by 0.14 cfs	0.9
535		1.34	MH 35		19+85.50	19+85.50	177.04	176.94	y	95	0.10'	58.00'	10"	0.0153	0.0153	2.72	49.3%	0.55	0.379'	0.408'	177.72'	0.22'	177.94'	0.095'	0.00'	0.24'		0.169'	0.388'	178.110'	CRITICAL		no	0.2
536		1.34	MH 36		24+06.50	24+06.50	178.05	177.95	y	20	0.10'	421.00'	10"	0.0022	0.0022	1.02	131.3%	0.55	0.054'	0.833'	178.11'	1.56'	179.67'	0.014'	0.00'	0.00'		0.009'	1.571'	179.681'	CRITICAL		Yes by 0.32 cfs	0.9
537		1.34	MH 37		25+60.50	25+60.50	179.98	179.88	y	20	0.10'	154.00'	10"	0.0120	0.0119	2.39	56.0%	0.55	0.314'	0.446'	179.68'	0.54'	180.33'	0.079'	0.00'	0.03'		0.052'	0.594'	180.378'	o.k.		no	
538		1.34	MH 38		28+76.50	28+76.50	181.37	181.37	y		0.00'	316.00'	10"	0.0044	0.0044	1.46	92.1%	0.55	0.143'	0.625'	180.61'	0.91'	182.00'	0.036'	0.00'			0.018'	0.932'	182.013'	o.k.		no	
					North Overlook Stub																													
519	0.0	2.19	MH 19	0.0	55+14.00	00+00.00	106.25	106.00	y																								
601		0.64	MH 1		00+65.00	00+65.00	142.71	142.61	y		0.10'	65.00'	10"	0.5594	0.5594	16.43	3.9%	0.55	2.255'	0.083'	106.33'	0.33'	142.69'	0.564'	0.00'			0.282'	0.611'	142.975'	o.k.		no	
602		0.64	MH 2		01+85.00	01+85.00	143.07	142.97	y	95	0.10'	120.00'	10"	0.0040	0.0022	1.02	62.5%	0.55	0.060'	0.475'	143.19'	0.09'	143.45'	0.015'	0.00'	0.04'		0.027'	0.118'	143.472'	o.k.		no	
603		0.64	MH 3		05+60.00	05+60.00	144.57	144.57	y		0.00'	375.00'	10"	0.0040	0.0040	1.39	46.0%	0.55	0.097'	0.396'	143.47'	0.33'	144.97'	0.024'	0.00'			0.012'	0.341'	144.978'	o.k.		no	
					Minnehaha Trunk																													
700		0.47	MH 0		00+00.00	00+00.00	224.00	216.25	y																								
7011		0.47	MH 1A		00+03.50	00+03.50	224.43	224.23	y	83	0.20'	3.50'	12"	0.0288	0.0657	9.16	5.2%	0.79	0.486'	0.140'	224.14'	0.00'	224.37'	0.122'	0.00'	0.31'		0.216'	0.219'	224.586'	o.k.		no	
701		0.47	MH 1		01+25.50	01+25.50	224.95	224.75	y	22	0.20'	122.00'	12"	0.0026	0.0026	1.83	25.8%	0.79	0.057'	0.330'	224.76'	0.03'	225.08'	0.014'	0.00'	0.01'		0.010'	0.041'	225.090'	o.k.		no	
702		0.47	MH 2		02+24.50	02+24.50	225.41	225.21	y	38	0.20'	99.00'	12"	0.0026	0.0026	1.83	25.8%	0.79	0.057'	0.330'	225.28'	0.03'	225.54'	0.014'	0.00'	0.01'		0.014'	0.039'	225.554'	o.k.		no	
703		0.47	MH 3		04+56.50	04+56.50	226.11	226.01	y	20	0.10'	232.00'	12"	0.0026	0.0026	1.82	26.0%	0.79	0.057'	0.330'	225.74'	0.06'	226.34'	0.014'	0.00'	0.00'		0.009'	0.069'	226.349'	o.k.		no	
704		0.47	MH 4		05+92.50	05+92.50	226.66	226.46	y	48	0.20'	136.00'	12"	0.0026	0.0026	1.81	26.0%	0.79	0.058'	0.345'	226.46'	0.03'	226.81'	0.015'	0.00'	0.02'		0.017'	0.050'	226.822'	o.k.		no	
705		0.47	MH 5		06+71.50	06+71.50	226.98	226.88	y	20	0.10'	79.00'	12"	0.0026	0.0028	1.89	25.0%	0.79	0.061'	0.330'	226.99'	0.02'	227.21'	0.015'	0.00'	0.00'		0.010'	0.030'	227.220'	o.k.		no	
706		0.47	MH 6		07+35.50	07+35.50	227.35	227.15	y	36	0.20'	64.00'	12"	0.0026	0.0027	1.84	25.6%	0.79	0.058'	0.330'	227.31'	0.02'	227.48'	0.015'	0.00'	0.01'		0.013'	0.030'	227.493'	o.k.		no	
707		0.47	MH 7		07+99.50	07+99.50	227.61	227.51	y	22	0.10'	64.00'	12"	0.0026	0.0025	1.79	26.4%	0.79	0.057'	0.345'	227.70'	0.02'	227.86'	0.014'	0.00'	0.01'		0.010'	0.026'	227.865'	o.k.		no	
708		0.47	MH 8		08+72.50	08+72.50	227.90	227.80	y	27	0.10'	73.00'	12"	0.0026	0.0026	1.82	25.9%	0.79	0.057'	0.330'	227.94'	0.02'	228.13'	0.014'	0.00'	0.01'		0.011'	0.030'	228.141'	o.k.		no	
709		0.47	MH 9		09+58.50	09+58.50	228.23	228.13	y	20	0.10'	86.00'	12"	0.0026	0.0027	1.85	25.6%	0.79	0.058'	0.330'	228.23'	0.02'	228.46'	0.015'	0.00'	0.00'		0.010'	0.032'	228.470'	o.k.		no	
710		0.47	MH 10		12+39.50	12+39.50	229.15	228.96	y	106	0.19'	281.00'	12"	0.0026	0.0026	1.82	25.9%	0.79	0.057'	0.330'	228.56'	0.07'	229.29'	0.014'	0.00'	0.04'		0.025'	0.098'	229.315'	o.k.		no	
711		0.47	MH 11		13+78.50	13+78.50	229.62	229.52	y	23	0.10'	139.00'	12"	0.0026	0.0027	1.84	25.6%	0.79	0.058'	0.330'	229.48'	0.04'	229.85'	0.015'	0.00'	0.01'		0.010'	0.046'	229.860'	o.k.		no	
712		0.47	MH 12		15+78.50	15+78.50	230.34	230.14	y		0.20'	200.00'	12"	0.0026	0.0026	1.82	25.9%	0.79	0.057'	0.330'	229.95'	0.05'	230.47'	0.014'	0.00'			0.007'	0.059'	230.477'	o.k.		no	
					Lakeshore Trunk																													
106	2.54	4.27	MH 6		20+71.87	00+00.00	35.56	34.62	y	91																							
801		2.13	G1		00+37.00	00+37.00	41.15	41.05	y	62	0.10'	37.00'	15"		0.1484	24.95	8.5%	1.23	2.234'	0.238'	35.80'	0.11'	41.29'	0.559'	0.00'	1.15'		0.855'	0.966'	42.142'	o.k.		no	
802		2.13	G2		03+45.00	03+45.00	44.91	44.81	y		0.10'	308.00'	12"	0.0120	0.0119	3.89	54.7%	0.79	0.397'	0.525'	42.14'	1.05'	45.34'	0.099'	0.00'			0.050'	1.096'	45.385'	o.k.		no	
803		2.13	G3		07+21.00	07+21.00	46.53	46.43	y		0.10'	376.00'	12"	0.0040	0.0040	2.27	93.7%	0.79	0.167'	0.750'	45.66'	1.04'	47.18'	0.042'	0.00'			0.021'	1.058'	47.201'	o.k.		no	
804		2.13	G4		11+21.00	11+21.00	48.13	48.13	y		0.00'	400.00'	12"	0.0040	0.0040	2.26	94.2%	0.79	0.166'	0.765'	47.30'	1.10'	48.90'	0.041'	0.00'			0.021'	1.118'	48.916'	o.k.		no	
805		2.13	G5		15+21.00	15+21.00	51.33	51.33	y		0.00'	400.00'	12"	0.0080	0.0080	3.20	66.6%	0.79	0.294'	0.590'	48.92'	1.23'	51.92'	0.074'	0.00'			0.037'	1.268'	51.957'	o.k.		no	
806		2.13	G6		19+21.00	19+21.00	62.53	62.53	y		0.00'	400.00'	10"	0.0280	0.0280	3.68	57.9%	0.55	0.741'	0.446'	51.96'	3.55'	62.98'	0.185'	0.00'			0.093'	3.639'	63.068'	o.k.		no	
807		2.13	G7		23+21.00	23+21.00	70.53	70.53	y		0.00'	400.00'	10"	0.0200	0.0200	3.11	68.5%	0.55	0.582'	0.504'	63.07'	3.21'	71.03'	0.146'	0.00'			0.073'	3.287'	71.107'	o.k.		no	
808		2.13	G8		27+21.00	27+21.00	85.73	85.73	y		0.00'	400.00'	10"	0.0380	0.0380	4.28	49.7%	0.55	0.938'	0.408'	71.11'	3.81'	86.14'	0.235'	0.00'			0.117'	3.930'	86.256'	o.k.		no	
809		2.13	G9		30+94.00	30+94.00	99.16	99.16	y		0.00'	373.00'	10"	0.0360	0.0360	4.17	51.1%	0.55	0.907'	0.417'	86.26'	3.48'	99.58'	0.227'	0.00'			0.113'	3.598'	99.690'	o.k.		no	
810		2.13	G10		34+94.00	34+94.00	111.96	111.96	y		0.00'	400.00'	10"	0.0320	0.0320	3.93	54.2%	0.55	0.839'	0.438'	99.69'	3.59'	112.40'	0.210'	0.00'			0.105'	3.698'	112.502'	o.k.		no	
811		2.13	G11		38+94.00	38+94.00	126.36	126.36	y		0.00'	400.00'	10"	0.0360	0.0360	4.17	51.1%	0.55	0.907'	0.417'	112.50'	3.74'	126.78'	0.227'	0.00'			0.113'	3.850'	126.890'	o.k.		no	
812		2.13	G12		42+24.00	42+24.00	138.24	138.24	y		0.00'	330.00'	10"	0.0360	0.0360	4.17	51.1%	0.55	0.907'	0.417'	126.89'	3.08'	138.66'	0.227'	0.00'			0.113'	3.196'	138.770'	o.k.		no	
813		2.13	G13		44+66.00	44+66.00	146.95	146.95	y		0.00'	242.00'	10"	0.0360	0.0360	4.17	51.1%	0.55	0.907'	0.417'	138.77'	2.26'	147.37'	0.227'	0.00'			0.113'	2.374'	147.480'	o.k.		no	
814		2.13	G14		47+06.00	47+06.00	149.40	149.30	y		0.10'	240.00'	10"	0.0099	0.0098	2.17	97.9%	0.55	0.321'	0.654'	147.60'	1.73'	149.95'	0.080'	0.00'			0.040'	1.771'	149.994'	o.k.		no	
901		2.13	MH 1		50+06.00	50+06.00	159.34	159.00	y		0.34'	300.00'	10"	0.0320	0.0320	3.93	54.2%	0.55	0.839'	0.438'	149.99'	2.69'	159.44'	0.210'	0.00'			0.105'	2.799'	159.542'	o.k.		no	
902		2.13	MH 2		53+06.00	53+06.00	174.34	174.34	y		0.00'	300.00'	10"	0.0500	0.0500	4.91	43.3%	0.55	1.161'	0.375'	159.72'	3.04'	174.72'	0.290'	0.00'			0.145'	3.188'	174.860'	o.k.		no	
903		2.13	MH 3		57+06.00	57+06.00	175.94	175.94	y		0.00'	400.00'	12"	0.0040	0.0040	2.26	94.2%	0.79	0.166'	0.765'	175.11'	1.10'	176.71'	0.041'	0.00'			0.021'	1.118'	176.726'	o.k.		no	
904		2.13	MH 4		61+06.00	61+06.00	177.54	177.54	y		0.00'	400.00'	12"	0.0040	0.0040	2.26	94.2%	0.79	0.166'	0.765'	176.73'	1.10'	178.31'	0.041'	0.00'			0.021'	1.118'	178.326'	o.k.		no	
905		2.13	MH 5		64+08.00	64+08.00	178.75	178.75	y		0.00'	302.00'	12"	0.0040	0.0040	2.26	94.2%	0.79	0.166'	0.765'	178.33'	0.83'	179.52'	0.041'	0.00'			0.021'	0.849'	179.536'	o.k.		no	
					Datum Shift																													
905		1.15	MH 5		64+08.00	00+00.00	178.56	178.46	y																								
1001		1.15	MH 1		00+50.00	00+50.00	178.80	178.70	y		0.10'	50.00'	12"	0.0026	0.0028	1.89	60.6%	0.79	0.098'	0.555'	179.12'	0.05'	179.26'	0.025'	0.00'			0.012'	0.059'	179.267'	o.k.		no	
1002		1.15	MH 2		04+53.00	04+53.00	179.78	179.68	y		0.10'	403.00'	12"	0.0022	0.0022	1.67	68.6%	0.79	0.081'	0.605'	179.41'	0.35'	180.29'	0.020'	0.00'			0.010'	0.365'	180.295'	o.k.		no	
1003		1.15	MH 3		08+53.00	08+53.00	180.76	180.66	y		0.10'	400.00'	12"	0.0022	0.0022	1.68	68.4%	0.79	0.082'	0.605'	180.39'	0.35'	181.27'	0.020'	0.00'			0.010'	0.362'	181.275'	o.k.		no	
1004		1.15	MH 4		10+43.00	10+43.00	181.27	181.17	y		0.10'	190.00'	12"	0.0022	0.0022	1.66	69.0%	0.79	0.080'	0.605'	181.37'	0.17'	181.78'	0.020'	0.00'			0.010'	0.177'	181.785'	o.k.		no	
1005		1.15	MH 5		13+42.00	13+42.00	182.03	181.93	y		0.10'	299.00'	12"	0.0022	0.0022	1.68	68.2%	0.79	0.082'	0.605'	181.88'	0.26'	182.54'	0.020'	0.00'			0.010'	0.273'	182.545'	o.k.		no	
1006		1.15	MH 6		17+90.00	17+90.00	183.11	183.01	y		0.10'	448.00'	12"	0.0022	0.0022	1.67	68.5%	0.79	0.081'	0.605'	182.64'	0.39'	183.62'	0.020'	0.00'			0.010'	0.404'	183.625'	o.k.		no	
1007		1.15	MH 7		20+94.00	20+94.00	183.88	183.78	y		0.10'	304.00'	12"	0.0022	0.0022	1.68	68.3%	0.79	0.082'	0.605'	183.72'	0.27'	184.39'	0.020'	0.00'			0.010'	0.278'	184.395'	o.k.		no	
1008		1.15	MH 8		24+61.00	24+61.00	184.79	184.69	y		0.10'	367.00'	12"	0.0022	0.0022	1.68	68.2%	0.79	0.082'	0.605'	184.49'	0.32'	185.30'	0.020'	0.00'			0.010'	0.333'	185.305'	o.k.		no	
1009		1.15	MH 9		25+99.00	25+99.00	185.20	185.10	y		0.10'	138.00'	12"	0.0022	0.0022	1.69	67.6%	0.79	0.083'	0.590'	185.38'	0.12'	185.69'	0.021'	0.00'			0.010'	0.133'	185.700'	o.k.		no	
1010		1.15	MH 10		27+73.00	27+73.00	186.47	185.58	y		0.89'	174.00'	12"	0.0022	0.0022	1.67	68.6%	0.79	0.081'	0.605'	185.81'	0.15'	186.19'	0.020'	0.00'			0.010'	0.163'	186.195'	o.k.		no	
1011		1.15	MH 11		31+15.00	31+15.00	187.72	187.22	y		0.50'	342.00'	12"	0.0022	0.0022	1.67	68.5%	0.79	0.081'	0.605'	187.08'	0.30'	187.83'	0.020'	0.00'			0.010'	0.311'	187.835'	o.k.		no	
1012		1.15	MH 12		34+15.00	34+15.00	187.98	187.98	y		0.00'	300.00'	12"	0.0022	0.0009	1.05	108.9%	0.79	0.028'	1.000'	188.72'	0.31'	189.03'	0.007'	0.00'			0.003'	0.310'	189.030'	CRITICAL		Yes by 0.09 cfs	0.0

Point 100 is the flow to the City of Vancouver in the Burnt Bridge

	Benchmark Years	0	6	10	15	20	ERU Factor	250 gal				
Plan Year / Calendar Year	Basin 17	Basin 37	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)	y	y	y	y	y	y	y				y	y	
0 1997	15.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population	63.9	139.2	3161.1	2859.5	960.5	1194.9	6.9				8,386 capita		
Domestic Flow	5,657	14,933	317,917	374,658	109,953	161,043	750				984,911 gpd	0.985 mgd	
Peak Domestic Flow	24,280	62,741	1,088,230	1,296,325	419,054	603,719	3,323				2,984,482 gpd	2.984 mgd	
Industrial Flow	0	1,620	0	0	0	72	72				1,764 gpd	0.002 mgd	
Peak Industrial Flow	0	1,620	0	0	0	72	72				1,764 gpd	0.002 mgd	
Fixed Flow	0	0	0	0	0	0	0				0 gpd	0.000 mgd	
Total Peak Flow	24,280	64,361	1,088,230	1,296,325	419,054	603,791	3,395				2,986,246 gpd	2.986 mgd	4.62 cfs
ERUs	23	66	1,272	1,499	440	644	3				3,947 ERU		
6 2003	15.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population	87.3	169.8	3399.0	3042.0	971.7	1260.0	94.2				9,024 capita		
Domestic Flow	8,049	18,260	342,031	403,758	111,168	171,525	9,933				1,064,725 gpd	1.065 mgd	
Peak Domestic Flow	34,283	76,202	1,161,456	1,387,826	423,329	640,311	42,223				3,192,960 gpd	3.193 mgd	
Industrial Flow	0	4,650	0	0	0	461	426				5,537 gpd	0.006 mgd	
Peak Industrial Flow	0	4,650	0	0	0	461	426				5,537 gpd	0.006 mgd	
Fixed	0	0	0	0	0	0	0				0 gpd	0.000 mgd	
Total Peak Flow	34,283	80,852	1,161,456	1,387,826	423,329	640,772	42,649				3,198,497 gpd	3.198 mgd	4.95 cfs
ERUs	32	92	1,368	1,615	445	688	41				4,281 ERU		
10 2007	0.0%	5.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population	0.0	64.4	3567.6	3171.5	983.3	1310.4	186.3				9,284 capita		
Domestic Flow	0	6,992	359,401	424,770	112,394	179,488	19,735				1,102,778 gpd	1.103 mgd	
Peak Domestic Flow	0	30,002	1,213,837	1,453,468	427,625	667,917	82,078				3,293,661 gpd	3.294 mgd	
Industrial Flow	0	3,130	0	0	0	1,590	1,394				6,114 gpd	0.006 mgd	
Peak Industrial Flow	0	3,130	0	0	0	1,590	1,394				6,114 gpd	0.006 mgd	
Fixed	0	0	0	0	0	0	0				0 gpd	0.000 mgd	
Total Peak Flow		33,133	1,213,837	1,453,468	427,625	669,507	83,472				3,299,775 gpd	3.300 mgd	5.11 cfs
ERUs		40	1,438	1,699	450	724	85				4,436 ERU		
15 2012	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population	0.0	0.0	3790.5	3344.6	1008.9	1382.2	351.3				9,877 capita		
Domestic Flow	0	0	383,441	453,163	115,029	190,637	37,995				1,180,265 gpd	1.180 mgd	
Peak Domestic Flow	0	0	1,286,123	1,541,598	436,826	706,302	153,814				3,493,590 gpd	3.494 mgd	
Industrial Flow	0	0	0	0	0	7,470	6,136				13,605 gpd	0.014 mgd	
Peak Industrial Flow	0	0	0	0	0	7,470	6,136				13,605 gpd	0.014 mgd	
Fixed	0	0	0	0	0	0	0				0 gpd	0.000 mgd	
Total Peak Flow			1,286,123	1,541,598	436,826	713,772	159,950				3,507,195 gpd	3.507 mgd	5.43 cfs
ERUs			1,534	1,813	460	792	177				4,775 ERU		
20 2017	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population	0.0	0.0	4027.7	3536.2	1062.4	1473.3	635.2				10,735 capita		
Domestic Flow	0	0	413,086	484,654	120,462	204,074	70,958				1,293,233 gpd	1.293 mgd	
Peak Domestic Flow	0	0	1,375,842	1,638,501	455,696	752,049	278,048				3,781,454 gpd	3.781 mgd	
Industrial Flow	0	0	0	0	0	35,100	27,000				62,100 gpd	0.062 mgd	
Peak Industrial Flow	0	0	0	0	0	35,100	27,000				62,100 gpd	0.062 mgd	
Fixed	0	0	0	0	0	0	0				0 gpd	0.000 mgd	
Total Peak Flow			1,375,842	1,638,501	455,696	787,149	305,048				3,843,554 gpd	3.844 mgd	5.95 cfs
ERUs			1,652	1,939	482	957	392				5,421 ERU		
Ultimate	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population	0.0	0.0	5229.8	5601.2	1308.1	2519.9	1642.1				16,301 capita		
Domestic Flow	0	0	540,753	844,980	195,440	457,560	241,990				2,280,723 gpd	2.281 mgd	
Peak Domestic Flow	0	0	1,744,935	2,703,047	727,379	1,604,035	883,453				6,253,380 gpd	6.253 mgd	
Industrial Flow	0	0	0	0	0	70,200	90,000				160,200 gpd	0.160 mgd	
Peak Industrial Flow	0	0	0	0	0	70,200	90,000				160,200 gpd	0.160 mgd	
Fixed	0	0	0	0	0	0	0				0 gpd	0.000 mgd	
Total Peak Flow			1,744,935	2,703,047	727,379	1,674,235	973,453				6,413,580 gpd	6.414 mgd	9.92 cfs
ERUs			2,163	3,380	782	2,111	1,328				9,764 ERU		

Vancouver Tributary Area

Point 100

Point 106 is the intersection of the Lakeshore and Chicken Creek Trunks.

	Benchmark Years	0	6	10	15	20	ERU Factor	250 gal				
Plan Year	Calendar Year	Basin 17	Basin 37	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		y		y	y							y	y	
0	1997	15.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	63.9		3161.1	2859.5							6,084 capita		
	Domestic Flow	5,657		317,917	374,658							698,232 gpd	0.698 mgd	
	Peak Domestic Flow	24,280		1,088,230	1,296,325							2,209,864 gpd	2.210 mgd	
	Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Fixed Flow	0		0	0							0 gpd	0.000 mgd	
	Total Peak Flow	24,280		1,088,230	1,296,325							2,209,864 gpd	2.210 mgd	3.42 cfs
	ERUs	23		1,272	1,499							2,793 ERU		
6	2003	15.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	87.3		3399.0	3042.0							6,528 capita		
	Domestic Flow	8,049		342,031	403,758							753,838 gpd	0.754 mgd	
	Peak Domestic Flow	34,283		1,161,456	1,387,826							2,363,852 gpd	2.364 mgd	
	Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Fixed	0		0	0							0 gpd	0.000 mgd	
	Total Peak Flow	34,283		1,161,456	1,387,826							2,363,852 gpd	2.364 mgd	3.66 cfs
	ERUs	32		1,368	1,615							3,015 ERU		
10	2007	0.0%	5.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		3567.6	3171.5							6,739 capita		
	Domestic Flow	0		359,401	424,770							784,171 gpd	0.784 mgd	
	Peak Domestic Flow	0		1,213,837	1,453,468							2,448,575 gpd	2.449 mgd	
	Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Fixed	0		0	0							0 gpd	0.000 mgd	
	Total Peak Flow			1,213,837	1,453,468							2,448,575 gpd	2.449 mgd	3.79 cfs
	ERUs			1,438	1,699							3,137 ERU		
15	2012	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		3790.5	3344.6							7,135 capita		
	Domestic Flow	0		383,441	453,163							836,605 gpd	0.837 mgd	
	Peak Domestic Flow	0		1,286,123	1,541,598							2,592,292 gpd	2.592 mgd	
	Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Fixed	0		0	0							0 gpd	0.000 mgd	
	Total Peak Flow			1,286,123	1,541,598							2,592,292 gpd	2.592 mgd	4.01 cfs
	ERUs			1,534	1,813							3,346 ERU		
20	2017	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		4027.7	3536.2							7,564 capita		
	Domestic Flow	0		413,086	484,654							897,740 gpd	0.898 mgd	
	Peak Domestic Flow	0		1,375,842	1,638,501							2,759,649 gpd	2.760 mgd	
	Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Fixed	0		0	0							0 gpd	0.000 mgd	
	Total Peak Flow			1,375,842	1,638,501							2,759,649 gpd	2.760 mgd	4.27 cfs
	ERUs			1,652	1,939							3,591 ERU		
Ultimate		0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		5229.8	5601.2							10,831 capita		
	Domestic Flow	0		540,753	844,980							1,385,733 gpd	1.386 mgd	
	Peak Domestic Flow	0		1,744,935	2,703,047							4,046,567 gpd	4.047 mgd	
	Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0	0							0 gpd	0.000 mgd	
	Fixed	0		0	0							0 gpd	0.000 mgd	
	Total Peak Flow			1,744,935	2,703,047							4,046,567 gpd	4.047 mgd	6.26 cfs
	ERUs			2,163	3,380							5,543 ERU		

Vancouver Tributary Area

Point 106

Flows at various locations along the Chicken Creek Trunk.

Plan Year	Calendar Year	Benchmark Years	Basin	Basin	0	6	10	15	20	ERU Factor	250 gal	Basin	Summary Gallons / Day	Summary MGD
						Point 201 42	Point 206 42	Point 406 42	Point 305 42					
Include in Calculation? (Y/N)						y	y	y	y				y	y
0	1997		15.0%	15.0%	100.0%	100.0%	65.0%	35.0%	30.0%	100.0%	100.0%	100.0%		
		Population				2859.5	1858.7	1000.8	857.8				6,577 capita	
		Domestic Flow				374,658	243,527	131,130	112,397				861,713 gpd	0.862 mgd
		Peak Domestic Flow				1,296,325	879,212	498,265	431,825				2,699,466 gpd	2.699 mgd
		Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Peak Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Fixed Flow				0	0	0	0				0 gpd	0.000 mgd
		Total Peak Flow				1,296,325	879,212	498,265	431,825				2,699,466 gpd	2.699 mgd
		ERUs				1,499	974	525	450				3,447 ERU	
6	2003		15.0%	15.0%	100.0%	100.0%	65.0%	35.0%	30.0%	100.0%	100.0%	100.0%		
		Population				3042.0	1977.3	1064.7	912.6				6,997 capita	
		Domestic Flow				403,758	262,443	141,315	121,127				928,644 gpd	0.929 mgd
		Peak Domestic Flow				1,387,826	942,074	534,494	463,344				2,885,123 gpd	2.885 mgd
		Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Peak Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Fixed				0	0	0	0				0 gpd	0.000 mgd
		Total Peak Flow				1,387,826	942,074	534,494	463,344				2,885,123 gpd	2.885 mgd
		ERUs				1,615	1,050	565	485				3,715 ERU	
10	2007		0.0%	5.0%	100.0%	100.0%	65.0%	35.0%	30.0%	100.0%	100.0%	100.0%		
		Population				3171.5	2061.5	1110.0	951.5				7,294 capita	
		Domestic Flow				424,770	276,100	148,669	127,431				976,970 gpd	0.977 mgd
		Peak Domestic Flow				1,453,468	987,203	560,530	486,000				3,018,148 gpd	3.018 mgd
		Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Peak Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Fixed				0	0	0	0				0 gpd	0.000 mgd
		Total Peak Flow				1,453,468	987,203	560,530	486,000				3,018,148 gpd	3.018 mgd
		ERUs				1,699	1,104	595	510				3,908 ERU	
15	2012		0.0%	0.0%	100.0%	100.0%	65.0%	35.0%	30.0%	100.0%	100.0%	100.0%		
		Population				3344.6	2174.0	1170.6	1003.4				7,693 capita	
		Domestic Flow				453,163	294,556	158,607	135,949				1,042,276 gpd	1.042 mgd
		Peak Domestic Flow				1,541,598	1,047,836	595,546	516,478				3,196,520 gpd	3.197 mgd
		Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Peak Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Fixed				0	0	0	0				0 gpd	0.000 mgd
		Total Peak Flow				1,541,598	1,047,836	595,546	516,478				3,196,520 gpd	3.197 mgd
		ERUs				1,813	1,178	634	544				4,169 ERU	
20	2017		0.0%	0.0%	100.0%	100.0%	65.0%	35.0%	30.0%	100.0%	100.0%	100.0%		
		Population				3536.2	2298.5	1237.7	1060.8				8,133 capita	
		Domestic Flow				484,654	315,025	169,629	145,396				1,114,704 gpd	1.115 mgd
		Peak Domestic Flow				1,638,501	1,114,569	634,138	550,080				3,392,310 gpd	3.392 mgd
		Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Peak Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Fixed				0	0	0	0				0 gpd	0.000 mgd
		Total Peak Flow				1,638,501	1,114,569	634,138	550,080				3,392,310 gpd	3.392 mgd
		ERUs				1,939	1,260	679	582				4,459 ERU	
Ultimate			0.0%	0.0%	100.0%	100.0%	65.0%	35.0%	30.0%	100.0%	100.0%	100.0%		
		Population				5601.2	3640.8	1960.4	1680.4				12,883 capita	
		Domestic Flow				844,980	549,237	295,743	253,494				1,943,454 gpd	1.943 mgd
		Peak Domestic Flow				2,703,047	1,850,729	1,062,463	923,571				5,528,572 gpd	5.529 mgd
		Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Peak Industrial Flow				0	0	0	0				0 gpd	0.000 mgd
		Fixed				0	0	0	0				0 gpd	0.000 mgd
		Total Peak Flow				2,703,047	1,850,729	1,062,463	923,571				5,528,572 gpd	5.529 mgd
		ERUs				3,380	2,197	1,183	1,014				7,774 ERU	

Point 519 is midway along the Overlook Trunk.

Plan Year	Calendar Year	Basin 17	Basin 37	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin	Basin	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years		0	6	10	15	20	ERU Factor	250 gal						
Include in Calculation? (Y/N)			y			y	y	y				y	y	
0	1997	15.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		139.2			960.5	1194.9	6.9				2,301 capita		
	Domestic Flow		14,933			109,953	161,043	750				286,680 gpd	0.287 mgd	
	Peak Domestic Flow		62,741			419,054	603,719	3,323				1,014,152 gpd	1.014 mgd	
	Industrial Flow		1,620			0	72	72				1,764 gpd	0.002 mgd	
	Peak Industrial Flow		1,620			0	72	72				1,764 gpd	0.002 mgd	
	Fixed Flow		0			0	0	0				0 gpd	0.000 mgd	
	Total Peak Flow		64,361			419,054	603,791	3,395				1,015,916 gpd	1.016 mgd	1.57 cfs
	ERUs		66			440	644	3				1,154 ERU		
6	2003	15.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		169.8			971.7	1260.0	94.2				2,496 capita		
	Domestic Flow		18,260			111,168	171,525	9,933				310,887 gpd	0.311 mgd	
	Peak Domestic Flow		76,202			423,329	640,311	42,223				1,090,922 gpd	1.091 mgd	
	Industrial Flow		4,650			0	461	426				5,537 gpd	0.006 mgd	
	Peak Industrial Flow		4,650			0	461	426				5,537 gpd	0.006 mgd	
	Fixed		0			0	0	0				0 gpd	0.000 mgd	
	Total Peak Flow		80,852			423,329	640,772	42,649				1,096,459 gpd	1.096 mgd	1.70 cfs
	ERUs		92			445	688	41				1,266 ERU		
10	2007	0.0%	5.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		64.4			983.3	1310.4	186.3				2,544 capita		
	Domestic Flow		6,992			112,394	179,488	19,735				318,608 gpd	0.319 mgd	
	Peak Domestic Flow		30,002			427,625	667,917	82,078				1,115,824 gpd	1.116 mgd	
	Industrial Flow		3,130			0	1,590	1,394				6,114 gpd	0.006 mgd	
	Peak Industrial Flow		3,130			0	1,590	1,394				6,114 gpd	0.006 mgd	
	Fixed		0			0	0	0				0 gpd	0.000 mgd	
	Total Peak Flow		33,133			427,625	669,507	83,472				1,121,938 gpd	1.122 mgd	1.74 cfs
	ERUs		40			450	724	85				1,299 ERU		
15	2012	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		0.0			1008.9	1382.2	351.3				2,742 capita		
	Domestic Flow		0			115,029	190,637	37,995				343,661 gpd	0.344 mgd	
	Peak Domestic Flow		0			436,826	706,302	153,814				1,194,304 gpd	1.194 mgd	
	Industrial Flow		0			0	7,470	6,136				13,605 gpd	0.014 mgd	
	Peak Industrial Flow		0			0	7,470	6,136				13,605 gpd	0.014 mgd	
	Fixed		0			0	0	0				0 gpd	0.000 mgd	
	Total Peak Flow					436,826	713,772	159,950				1,207,910 gpd	1.208 mgd	1.87 cfs
	ERUs					460	792	177				1,429 ERU		
20	2017	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		0.0			1062.4	1473.3	635.2				3,171 capita		
	Domestic Flow		0			120,462	204,074	70,958				395,493 gpd	0.395 mgd	
	Peak Domestic Flow		0			455,696	752,049	278,048				1,353,322 gpd	1.353 mgd	
	Industrial Flow		0			0	35,100	27,000				62,100 gpd	0.062 mgd	
	Peak Industrial Flow		0			0	35,100	27,000				62,100 gpd	0.062 mgd	
	Fixed		0			0	0	0				0 gpd	0.000 mgd	
	Total Peak Flow					455,696	787,149	305,048				1,415,422 gpd	1.415 mgd	2.19 cfs
	ERUs					482	957	392				1,830 ERU		
Ultimate		0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population		0.0			1308.1	2519.9	1642.1				5,470 capita		
	Domestic Flow		0			195,440	457,560	241,990				894,990 gpd	0.895 mgd	
	Peak Domestic Flow		0			727,379	1,604,035	883,453				2,871,668 gpd	2.872 mgd	
	Industrial Flow		0			0	70,200	90,000				160,200 gpd	0.160 mgd	
	Peak Industrial Flow		0			0	70,200	90,000				160,200 gpd	0.160 mgd	
	Fixed		0			0	0	0				0 gpd	0.000 mgd	
	Total Peak Flow					727,379	1,674,235	973,453				3,031,868 gpd	3.032 mgd	4.69 cfs
	ERUs					782	2,111	1,328				4,221 ERU		

Point 532 is half way up the Hwy. 99 south trunk.

	Benchmark Years	0	6	10	15	20	ERU Factor	250 gal				
Plan Year	Calendar Year	Basin 17	Basin 37	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)			y				y	y				y	y	
0	1997	15.0%	15.0%	100.0%	100.0%	100.0%	85.0%	100.0%	100.0%	100.0%	100.0%			
	Population		139.2				1015.7	6.9				1,162 capita		
	Domestic Flow		14,933				136,887	750				152,570 gpd	0.153 mgd	
	Peak Domestic Flow		62,741				519,571	3,323				573,218 gpd	0.573 mgd	
	Industrial Flow		1,620				61	72				1,753 gpd	0.002 mgd	
	Peak Industrial Flow		1,620				61	72				1,753 gpd	0.002 mgd	
	Fixed Flow		0				0	0				0 gpd	0.000 mgd	
	Total Peak Flow		64,361				519,633	3,395				574,971 gpd	0.575 mgd	0.89 cfs
	ERUs		66				548	3				617 ERU		
6	2003	15.0%	15.0%	100.0%	100.0%	100.0%	85.0%	100.0%	100.0%	100.0%	100.0%			
	Population		169.8				1071.0	94.2				1,335 capita		
	Domestic Flow		18,260				145,796	9,933				173,990 gpd	0.174 mgd	
	Peak Domestic Flow		76,202				551,198	42,223				646,476 gpd	0.646 mgd	
	Industrial Flow		4,650				392	426				5,468 gpd	0.005 mgd	
	Peak Industrial Flow		4,650				392	426				5,468 gpd	0.005 mgd	
	Fixed		0				0	0				0 gpd	0.000 mgd	
	Total Peak Flow		80,852				551,589	42,649				651,943 gpd	0.652 mgd	1.01 cfs
	ERUs		92				585	41				718 ERU		
10	2007	0.0%	5.0%	100.0%	100.0%	100.0%	85.0%	100.0%	100.0%	100.0%	100.0%			
	Population		64.4				1113.8	186.3				1,364 capita		
	Domestic Flow		6,992				152,565	19,735				179,291 gpd	0.179 mgd	
	Peak Domestic Flow		30,002				575,066	82,078				664,974 gpd	0.665 mgd	
	Industrial Flow		3,130				1,351	1,394				5,876 gpd	0.006 mgd	
	Peak Industrial Flow		3,130				1,351	1,394				5,876 gpd	0.006 mgd	
	Fixed		0				0	0				0 gpd	0.000 mgd	
	Total Peak Flow		33,133				576,418	83,472				670,850 gpd	0.671 mgd	1.04 cfs
	ERUs		40				616	85				741 ERU		
15	2012	0.0%	0.0%	100.0%	100.0%	100.0%	85.0%	100.0%	100.0%	100.0%	100.0%			
	Population		0.0				1174.9	351.3				1,526 capita		
	Domestic Flow		0				162,042	37,995				200,036 gpd	0.200 mgd	
	Peak Domestic Flow		0				608,268	153,814				734,955 gpd	0.735 mgd	
	Industrial Flow		0				6,349	6,136				12,485 gpd	0.012 mgd	
	Peak Industrial Flow		0				6,349	6,136				12,485 gpd	0.012 mgd	
	Fixed		0				0	0				0 gpd	0.000 mgd	
	Total Peak Flow						614,617	159,950				747,440 gpd	0.747 mgd	1.16 cfs
	ERUs						674	177				850 ERU		
20	2017	0.0%	0.0%	100.0%	100.0%	100.0%	85.0%	100.0%	100.0%	100.0%	100.0%			
	Population		0.0				1252.3	635.2				1,887 capita		
	Domestic Flow		0				173,463	70,958				244,420 gpd	0.244 mgd	
	Peak Domestic Flow		0				647,862	278,048				881,186 gpd	0.881 mgd	
	Industrial Flow		0				29,835	27,000				56,835 gpd	0.057 mgd	
	Peak Industrial Flow		0				29,835	27,000				56,835 gpd	0.057 mgd	
	Fixed		0				0	0				0 gpd	0.000 mgd	
	Total Peak Flow						677,697	305,048				938,021 gpd	0.938 mgd	1.45 cfs
	ERUs						813	392				1,205 ERU		
Ultimate		0.0%	0.0%	100.0%	100.0%	100.0%	85.0%	100.0%	100.0%	100.0%	100.0%			
	Population		0.0				2141.9	1642.1				3,784 capita		
	Domestic Flow		0				388,926	241,990				630,916 gpd	0.631 mgd	
	Peak Domestic Flow		0				1,385,527	883,453				2,116,606 gpd	2.117 mgd	
	Industrial Flow		0				59,670	90,000				149,670 gpd	0.150 mgd	
	Peak Industrial Flow		0				59,670	90,000				149,670 gpd	0.150 mgd	
	Fixed		0				0	0				0 gpd	0.000 mgd	
	Total Peak Flow						1,445,197	973,453				2,266,276 gpd	2.266 mgd	3.51 cfs
	ERUs						1,794	1,328				3,122 ERU		

	Benchmark Years	0	6	10	15	20	ERU Factor	250 gal			

Point 538 is at the end of the Hwy 99 south trunk.

Plan Year	Calendar Year	Basin 17	Basin 37	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin	Basin	Basin	Summary Gallons / Day	Summary MGD	
include in Calculation? (Y/N)			y				y	y				y	y	
0	1997	15.0%	15.0%	100.0%	100.0%	100.0%	75.0%	100.0%	100.0%	100.0%	100.0%			
Population			139.2				896.2	6.9				1,042 capita		
Domestic Flow			14,933				120,782	750				136,466 gpd	0.136 mgd	
Peak Domestic Flow			62,741				462,619	3,323				516,979 gpd	0.517 mgd	
Industrial Flow			1,620				54	72				1,746 gpd	0.002 mgd	
Peak Industrial Flow			1,620				54	72				1,746 gpd	0.002 mgd	
Fixed Flow			0				0	0				0 gpd	0.000 mgd	
Total Peak Flow			64,361				462,673	3,395				518,725 gpd	0.519 mgd	0.80 cfs
ERUs			66				483	3				553 ERU		
6	2003	15.0%	15.0%	100.0%	100.0%	100.0%	75.0%	100.0%	100.0%	100.0%	100.0%			
Population			169.8				945.0	94.2				1,209 capita		
Domestic Flow			18,260				128,644	9,933				156,838 gpd	0.157 mgd	
Peak Domestic Flow			76,202				490,867	42,223				587,411 gpd	0.587 mgd	
Industrial Flow			4,650				346	426				5,422 gpd	0.005 mgd	
Peak Industrial Flow			4,650				346	426				5,422 gpd	0.005 mgd	
Fixed			0				0	0				0 gpd	0.000 mgd	
Total Peak Flow			80,852				491,213	42,649				592,832 gpd	0.593 mgd	0.92 cfs
ERUs			92				516	41				649 ERU		
10	2007	0.0%	5.0%	100.0%	100.0%	100.0%	75.0%	100.0%	100.0%	100.0%	100.0%			
Population			64.4				982.8	186.3				1,233 capita		
Domestic Flow			6,992				134,616	19,735				161,342 gpd	0.161 mgd	
Peak Domestic Flow			30,002				512,193	82,078				603,322 gpd	0.603 mgd	
Industrial Flow			3,130				1,192	1,394				5,717 gpd	0.006 mgd	
Peak Industrial Flow			3,130				1,192	1,394				5,717 gpd	0.006 mgd	
Fixed			0				0	0				0 gpd	0.000 mgd	
Total Peak Flow			33,133				513,386	83,472				609,038 gpd	0.609 mgd	0.94 cfs
ERUs			40				543	85				668 ERU		
15	2012	0.0%	0.0%	100.0%	100.0%	100.0%	75.0%	100.0%	100.0%	100.0%	100.0%			
Population			0.0				1036.7	351.3				1,388 capita		
Domestic Flow			0				142,978	37,995				180,973 gpd	0.181 mgd	
Peak Domestic Flow			0				541,866	153,814				670,265 gpd	0.670 mgd	
Industrial Flow			0				5,602	6,136				11,738 gpd	0.012 mgd	
Peak Industrial Flow			0				5,602	6,136				11,738 gpd	0.012 mgd	
Fixed			0				0	0				0 gpd	0.000 mgd	
Total Peak Flow							547,469	159,950				682,003 gpd	0.682 mgd	1.06 cfs
ERUs							594	177				771 ERU		
20	2017	0.0%	0.0%	100.0%	100.0%	100.0%	75.0%	100.0%	100.0%	100.0%	100.0%			
Population			0.0				1105.0	635.2				1,740 capita		
Domestic Flow			0				153,055	70,958				224,013 gpd	0.224 mgd	
Peak Domestic Flow			0				577,268	278,048				813,616 gpd	0.814 mgd	
Industrial Flow			0				26,325	27,000				53,325 gpd	0.053 mgd	
Peak Industrial Flow			0				26,325	27,000				53,325 gpd	0.053 mgd	
Fixed			0				0	0				0 gpd	0.000 mgd	
Total Peak Flow							603,593	305,048				866,941 gpd	0.867 mgd	1.34 cfs
ERUs							718	392				1,109 ERU		
Ultimate		0.0%	0.0%	100.0%	100.0%	100.0%	75.0%	100.0%	100.0%	100.0%	100.0%			
Population			0.0				1890.0	1642.1				3,532 capita		
Domestic Flow			0				343,170	241,990				585,160 gpd	0.585 mgd	
Peak Domestic Flow			0				1,237,050	883,453				1,978,545 gpd	1.979 mgd	
Industrial Flow			0				52,650	90,000				142,650 gpd	0.143 mgd	
Peak Industrial Flow			0				52,650	90,000				142,650 gpd	0.143 mgd	
Fixed			0				0	0				0 gpd	0.000 mgd	
Total Peak Flow							1,289,700	973,453				2,121,195 gpd	2.121 mgd	3.28 cfs
ERUs							1,583	1,328				2,911 ERU		

Point 603 is the end of the North Overlook stub.

Plan Year	Calendar Year	Basin 17	Basin 37	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	ERU Factor	250 gal	Basin	Summary Gallons / Day	Summary MGD	
Benchmark Years		0	6	10	15	20								
Include in Calculation? (Y/N)						y						y	y	
0	1997	15.0%	15.0%	100.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population						864.4						864 capita		
Domestic Flow						98,957						98,957 gpd	0.099 mgd	
Peak Domestic Flow						379,987						379,987 gpd	0.380 mgd	
Industrial Flow						0						0 gpd	0.000 mgd	
Peak Industrial Flow						0						0 gpd	0.000 mgd	
Fixed Flow						0						0 gpd	0.000 mgd	
Total Peak Flow						379,987						379,987 gpd	0.380 mgd	0.59 cfs
ERUs						396						396 ERU		
6	2003	15.0%	15.0%	100.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population						874.5						875 capita		
Domestic Flow						100,051						100,051 gpd	0.100 mgd	
Peak Domestic Flow						383,876						383,876 gpd	0.384 mgd	
Industrial Flow						0						0 gpd	0.000 mgd	
Peak Industrial Flow						0						0 gpd	0.000 mgd	
Fixed						0						0 gpd	0.000 mgd	
Total Peak Flow						383,876						383,876 gpd	0.384 mgd	0.59 cfs
ERUs						400						400 ERU		
10	2007	0.0%	5.0%	100.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population						885.0						885 capita		
Domestic Flow						101,154						101,154 gpd	0.101 mgd	
Peak Domestic Flow						387,784						387,784 gpd	0.388 mgd	
Industrial Flow						0						0 gpd	0.000 mgd	
Peak Industrial Flow						0						0 gpd	0.000 mgd	
Fixed						0						0 gpd	0.000 mgd	
Total Peak Flow						387,784						387,784 gpd	0.388 mgd	0.60 cfs
ERUs						405						405 ERU		
15	2012	0.0%	0.0%	100.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population						908.0						908 capita		
Domestic Flow						103,526						103,526 gpd	0.104 mgd	
Peak Domestic Flow						396,157						396,157 gpd	0.396 mgd	
Industrial Flow						0						0 gpd	0.000 mgd	
Peak Industrial Flow						0						0 gpd	0.000 mgd	
Fixed						0						0 gpd	0.000 mgd	
Total Peak Flow						396,157						396,157 gpd	0.396 mgd	0.61 cfs
ERUs						414						414 ERU		
20	2017	0.0%	0.0%	100.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population						956.1						956 capita		
Domestic Flow						108,416						108,416 gpd	0.108 mgd	
Peak Domestic Flow						413,332						413,332 gpd	0.413 mgd	
Industrial Flow						0						0 gpd	0.000 mgd	
Peak Industrial Flow						0						0 gpd	0.000 mgd	
Fixed						0						0 gpd	0.000 mgd	
Total Peak Flow						413,332						413,332 gpd	0.413 mgd	0.64 cfs
ERUs						434						434 ERU		
Ultimate		0.0%	0.0%	100.0%	100.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Population						1177.3						1,177 capita		
Domestic Flow						175,896						175,896 gpd	0.176 mgd	
Peak Domestic Flow						660,167						660,167 gpd	0.660 mgd	
Industrial Flow						0						0 gpd	0.000 mgd	
Peak Industrial Flow						0						0 gpd	0.000 mgd	
Fixed						0						0 gpd	0.000 mgd	
Total Peak Flow						660,167						660,167 gpd	0.660 mgd	1.02 cfs
ERUs						704						704 ERU		

Point 712 is the end of the Minnehaha trunk

	Benchmark Years	0	6	10	15	20	ERU Factor	250 gal				
Plan Year	Calendar Year	Basin 17	Basin 37	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)								y				y	y	
0	1997	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							6.9				7 capita		
	Domestic Flow							750				750 gpd	0.001 mgd	
	Peak Domestic Flow							3,323				3,323 gpd	0.003 mgd	
	Industrial Flow							72				72 gpd	0.000 mgd	
	Peak Industrial Flow							72				72 gpd	0.000 mgd	
	Fixed Flow							0				0 gpd	0.000 mgd	
	Total Peak Flow							3,395				3,395 gpd	0.003 mgd	0.01 cfs
	ERUs							3				3 ERU		
6	2003	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							94.2				94 capita		
	Domestic Flow							9,933				9,933 gpd	0.010 mgd	
	Peak Domestic Flow							42,223				42,223 gpd	0.042 mgd	
	Industrial Flow							426				426 gpd	0.000 mgd	
	Peak Industrial Flow							426				426 gpd	0.000 mgd	
	Fixed							0				0 gpd	0.000 mgd	
	Total Peak Flow							42,649				42,649 gpd	0.043 mgd	0.07 cfs
	ERUs							41				41 ERU		
10	2007	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							186.3				186 capita		
	Domestic Flow							19,735				19,735 gpd	0.020 mgd	
	Peak Domestic Flow							82,078				82,078 gpd	0.082 mgd	
	Industrial Flow							1,394				1,394 gpd	0.001 mgd	
	Peak Industrial Flow							1,394				1,394 gpd	0.001 mgd	
	Fixed							0				0 gpd	0.000 mgd	
	Total Peak Flow							83,472				83,472 gpd	0.083 mgd	0.13 cfs
	ERUs							85				85 ERU		
15	2012	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							351.3				351 capita		
	Domestic Flow							37,995				37,995 gpd	0.038 mgd	
	Peak Domestic Flow							153,814				153,814 gpd	0.154 mgd	
	Industrial Flow							6,136				6,136 gpd	0.006 mgd	
	Peak Industrial Flow							6,136				6,136 gpd	0.006 mgd	
	Fixed							0				0 gpd	0.000 mgd	
	Total Peak Flow							159,950				159,950 gpd	0.160 mgd	0.25 cfs
	ERUs							177				177 ERU		
20	2017	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							635.2				635 capita		
	Domestic Flow							70,958				70,958 gpd	0.071 mgd	
	Peak Domestic Flow							278,048				278,048 gpd	0.278 mgd	
	Industrial Flow							27,000				27,000 gpd	0.027 mgd	
	Peak Industrial Flow							27,000				27,000 gpd	0.027 mgd	
	Fixed							0				0 gpd	0.000 mgd	
	Total Peak Flow							305,048				305,048 gpd	0.305 mgd	0.47 cfs
	ERUs							392				392 ERU		
Ultimate		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population							1642.1				1,642 capita		
	Domestic Flow							241,990				241,990 gpd	0.242 mgd	
	Peak Domestic Flow							883,453				883,453 gpd	0.883 mgd	
	Industrial Flow							90,000				90,000 gpd	0.090 mgd	
	Peak Industrial Flow							90,000				90,000 gpd	0.090 mgd	
	Fixed							0				0 gpd	0.000 mgd	
	Total Peak Flow							973,453				973,453 gpd	0.973 mgd	1.51 cfs
	ERUs							1,328				1,328 ERU		

Vancouver Tributary Area

Point 712

Point 905 is midway up the Lakeshore trunk.

	Benchmark Years	0	6	10	15	20	ERU Factor	250 gal				
Plan Year	Calendar Year	Basin 17	Basin 37	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		y		y								y	y	
0	1997	15.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	63.9		3161.1								3,225 capita		
	Domestic Flow	5,657		317,917								323,574 gpd	0.324 mgd	
	Peak Domestic Flow	24,280		1,088,230								1,105,175 gpd	1.105 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed Flow	0		0								0 gpd	0.000 mgd	
	Total Peak Flow	24,280		1,088,230								1,105,175 gpd	1.105 mgd	1.71 cfs
	ERUs	23		1,272								1,294 ERU		
6	2003	15.0%	15.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	87.3		3399.0								3,486 capita		
	Domestic Flow	8,049		342,031								350,080 gpd	0.350 mgd	
	Peak Domestic Flow	34,283		1,161,456								1,185,426 gpd	1.185 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow	34,283		1,161,456								1,185,426 gpd	1.185 mgd	1.83 cfs
	ERUs	32		1,368								1,400 ERU		
10	2007	0.0%	5.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		3567.6								3,568 capita		
	Domestic Flow	0		359,401								359,401 gpd	0.359 mgd	
	Peak Domestic Flow	0		1,213,837								1,213,837 gpd	1.214 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow			1,213,837								1,213,837 gpd	1.214 mgd	1.88 cfs
	ERUs			1,438								1,438 ERU		
15	2012	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		3790.5								3,790 capita		
	Domestic Flow	0		383,441								383,441 gpd	0.383 mgd	
	Peak Domestic Flow	0		1,286,123								1,286,123 gpd	1.286 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow			1,286,123								1,286,123 gpd	1.286 mgd	1.99 cfs
	ERUs			1,534								1,534 ERU		
20	2017	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		4027.7								4,028 capita		
	Domestic Flow	0		413,086								413,086 gpd	0.413 mgd	
	Peak Domestic Flow	0		1,375,842								1,375,842 gpd	1.376 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow			1,375,842								1,375,842 gpd	1.376 mgd	2.13 cfs
	ERUs			1,652								1,652 ERU		
Ultimate		0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		5229.8								5,230 capita		
	Domestic Flow	0		540,753								540,753 gpd	0.541 mgd	
	Peak Domestic Flow	0		1,744,935								1,744,935 gpd	1.745 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow			1,744,935								1,744,935 gpd	1.745 mgd	2.70 cfs
	ERUs			2,163								2,163 ERU		

Point 1012 is the end of the Lakeshore trunk.

	Benchmark Years	0	6	10	15	20	ERU Factor	250 gal				
Plan Year	Calendar Year	Basin 17	Basin 37	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin	Basin	Basin	Summary Gallons / Day	Summary MGD	
Include in Calculation? (Y/N)		y		y								y	y	
0	1997	15.0%	15.0%	50.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	63.9		1580.6								1,644 capita		
	Domestic Flow	5,657		158,958								164,615 gpd	0.165 mgd	
	Peak Domestic Flow	24,280		582,267								600,900 gpd	0.601 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed Flow	0		0								0 gpd	0.000 mgd	
	Total Peak Flow	24,280		582,267								600,900 gpd	0.601 mgd	0.93 cfs
	ERUs	23		636								658 ERU		
6	2003	15.0%	15.0%	50.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	87.3		1699.5								1,787 capita		
	Domestic Flow	8,049		171,015								179,064 gpd	0.179 mgd	
	Peak Domestic Flow	34,283		622,443								648,811 gpd	0.649 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow	34,283		622,443								648,811 gpd	0.649 mgd	1.00 cfs
	ERUs	32		684								716 ERU		
10	2007	0.0%	5.0%	50.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		1783.8								1,784 capita		
	Domestic Flow	0		179,701								179,701 gpd	0.180 mgd	
	Peak Domestic Flow	0		651,214								651,214 gpd	0.651 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow			651,214								651,214 gpd	0.651 mgd	1.01 cfs
	ERUs			719								719 ERU		
15	2012	0.0%	0.0%	50.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		1895.2								1,895 capita		
	Domestic Flow	0		191,721								191,721 gpd	0.192 mgd	
	Peak Domestic Flow	0		690,930								690,930 gpd	0.691 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow			690,930								690,930 gpd	0.691 mgd	1.07 cfs
	ERUs			767								767 ERU		
20	2017	0.0%	0.0%	50.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		2013.9								2,014 capita		
	Domestic Flow	0		206,543								206,543 gpd	0.207 mgd	
	Peak Domestic Flow	0		740,137								740,137 gpd	0.740 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow			740,137								740,137 gpd	0.740 mgd	1.15 cfs
	ERUs			826								826 ERU		
Ultimate		0.0%	0.0%	50.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
	Population	0.0		2614.9								2,615 capita		
	Domestic Flow	0		270,376								270,376 gpd	0.270 mgd	
	Peak Domestic Flow	0		944,264								944,264 gpd	0.944 mgd	
	Industrial Flow	0		0								0 gpd	0.000 mgd	
	Peak Industrial Flow	0		0								0 gpd	0.000 mgd	
	Fixed	0		0								0 gpd	0.000 mgd	
	Total Peak Flow			944,264								944,264 gpd	0.944 mgd	1.46 cfs
	ERUs			1,082								1,082 ERU		

Vancouver Tributary Area

Point 1012

VII. Calculation Criteria & Input Data

Hazel Dell Sewer District Comprehensive Plan Projections

Instructions: This spreadsheet should be used as a data input tool, it is not formated for reporting or for comprehensive plan publishing. This page is used to determine the basic parameters for all subsequent TAZs and Drainage Basins.

Please input the date that the OFM census, and the HDSD hookup information was taken for the drainage basin areas. This should be a representative date approximating a single point in time.

OFM Census Date: 12/31/1996
HDSD Hookup Date: 12/31/1996

Please input the beginning date for the proposed Comprehensive Plan. Please use a date that corresponds with the day/month used for updated Hookups.

Date: 1/1/1997

Please input the desired duration of the Comprehensive Plan from the beginning date shown immediately above in years.

Duration: 20 Years

Please input the date for which information is provided from OFM for the future population.

Date: 12/31/16

If this plan is being updated with more recent (OFM) population statistics, please indicate this by placing a "Y" in the following cell and today's date after that.

Is this an Update (Y/N)? y
Updated Census Date:
Updated Hookup Date: 1/1/1999

Percent of land available for development over the course of the Comp. Plan. 75.0%
Note: This percent affects the # of households in the "Ult. Increase in HHs" worksheet

Zoning Information

Zone	PF*	Flow / Acre	Dwelling Units / Acre	Percent Cover	Capita per Dwelling Unit	Gallons per Capita Day
R1-5			7.45 DU/Ac	75%	2.5 cap/DU	100 gpcd
R1-6			6.20 DU/Ac	75%	2.5 cap/DU	100 gpcd
R1-7.5			4.95 DU/Ac	75%	2.5 cap/DU	100 gpcd
R1-10			3.65 DU/Ac	75%	2.5 cap/DU	100 gpcd
R1-20			1.80 DU/Ac	75%	2.5 cap/DU	100 gpcd
RC-1			1.00 DU/Ac	100%	2.5 cap/DU	100 gpcd
RC-2.5			0.40 DU/Ac	90%	2.5 cap/DU	100 gpcd
R-12			10.0 DU/Ac	90%	1.90 cap/DU	100 gpcd
R-18			12.0 DU/Ac	90%	1.90 cap/DU	100 gpcd
R-22			15.0 DU/Ac	90%	1.90 cap/DU	100 gpcd
R-30			18.0 DU/Ac	90%	1.90 cap/DU	100 gpcd
R-43			20.0 DU/Ac	90%	1.90 cap/DU	100 gpcd
Park/O.S.		450 gpad		100%		
Other		450 gpad		100%		
Commercial		1200 gpad		100%		
Industrial	1.00	1800 gpad		100%		
Schools		600 gpad		100%		10.0 DU/Ac
UR-10			0.1 DU/Ac	98%	2.5 cap/DU	100 gpcd
UR-20			0.1 DU/Ac	98%	2.5 cap/DU	100 gpcd
UH-5			0.2 DU/Ac	98%	2.5 cap/DU	100 gpcd
UH-10			0.1 DU/Ac	98%	2.5 cap/DU	100 gpcd
UH-20			0.10 DU/Ac	98%	2.5 cap/DU	100 gpcd
Inflow / Infiltration		700 gpad				

*Domestic flow now accounts for peaking factors per Ecology criteria

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	BASIN	BASIN	SINGLE-FAMILY RESIDENTIAL (ACRES)								MULTI-FAMILY RESIDENTIAL (ACRES)						COM	IND	SCHOOL	URBAN RESERVE (ACRES)						PARK	OTHER	TOTAL
2	NO.	NAME	R1-5	R1-6	R1-7.5	R1-10	R1-20	RC-1	RC-2.5	TOTAL	R-12	R-18	R-22	R-30	R-43	TOTAL	(AC)	(AC)	(AC)	UR-10	UR-20	UH-5	UH-10	UH-20	TOTAL	(AC)	(AC)	(AC)
3	1	WHIPPLE CREEK EAST				317.85				317.85	19.27	114.68				133.95	259.29	32.83		168.16	194.51				362.67	48.32		1154.91
4	2	MILL CREEK				169				169							7		79	385					385	8	21	669
5	3	MT. VISTA				147				147									190									337
6	4	I-5 NORTH	15.32	16.11	44.5	259.09				335.02		29.45	52.28	26.93		108.66	136.8		23.75							14.49		618.72
7	5	PLEASANT VALLEY NORTH				41				41							145		95	365					365	7		653
8	6	PLEASANT VALLEY SOUTH				182.4				182.4									27.49	103					103	28	64	404.89
9	7	NE 134TH STREET										31				31	34											65
10	8	BARBERTON		24	40	340				404		2				2				203					203		42	651
11	9	SHERWOOD		348						348		4				4										18	14	384
12	10	BLUEBERRY HILL		212						212			0.9			0.9	9									3	6	230.9
13	11	SYLVAN CREEK		197						197		2			1	3	47									4	3	254
14	12	HIGHWAY 99 EAST		685						685		112	20	27	113	272	134	18	9							18		1136
15	13	HAZEL DELL NORTH		25	381					406		3	7	49	53	112	105	2								38		663
16	14	COUGAR CANYON		145	1121	29				1295		82	49	30	114	275	299	132								151		2152
17	15	CERRERO ESTATES				51				51																3		54
18	16	MUIRWOOD		38	19	58				115	15					15										4		134
19	17	MTN. VIEW GARDEN	4	70	3	122				199	22					22										12		233
20	18	SEWARD BRIDGE SOUTH				120				120																		120
21	19	FELIDA			219	460	197			876	13	4				17	9	15								1		918
22	20	HIGHWAY 99 NORTH		63.17		36.44				99.61				4.41		4.41	110.95											214.97
23	21	NE 16TH AVE		2.2	26.29					28.49		43.88				43.88	54.05	115.97										242.39
24	22	KNOLLRIDGE	175							175		11		1		12	2									51		240
25	23	WOODCREEK		80.92						80.92	3.88					3.88										25		109.8
26	24	ORO-VEGA	19	165	266	129	66			645	14	81				95	20	127								71	3	961
27	25	WHIPPLE CREEK WEST		1		165				166		6				6	156	194		321					321	38	108	989
28	26	SEWARD BRIDGE NORTH		25	92		8			125										515					515	30	183	853
29	27	GREEN LAKE								0.5										3					3		528	531.5
30	28	ST. JOHNS		414	62	83				559		1				1	5	10										575
31	29	GLENWOOD CREEK		120	228.8					348.8							14.25	73.6				5.7			5.7			442.35
32	30	NE 86TH ST		2	207.5	13.5				223								83.6						0.5	0.5			307.1
33	31	COUNTRY MEADOWS		175.8	129.3	97.3				402.4			15.84			15.84	39.1	230.3		44					44	2.6	41	775.24
34	32	ORCHARD CREST NORTH		7	106					113		20				20	39	100										272
35	33	ORCHARD CREST SOUTH		20	162					182		27				27	2	33										244
36	34	COVINGTON NORTH		171	191					362		10	16	3		29	55	1								1		448
37	35	COVINGTON SOUTH		74	69					143		51	2	5		58	12									43		256
38	36	GREEN MEADOWS EAST		300						300		6			45	51	39											390
39	37	GREEN MEADOWS WEST		230	75					305		11		8	11	30	81	288										704
40	38	CURTIN CREEK		56.37	97.89					154.26							61.96	280.05									5	501.27
41	39	CEDAR 49		194						194							32	191										417
42																												
43	41	LAKESHORE	1		491	158				650	12					12	7									3		672
44	42	CHICKEN CREEK		20	306	47				373		27	17	33	32	109	93									8		583
45	43	OVERLOOK		0.1	96					95.68		0.5	38			38												133.68
46	44	HIGHWAY 99 SOUTH		169						169		4	3	26		33	50	39										291
47	45	MINNEHAHA		119						119		39				39		50								6		214
48	46	HOCKINSON						108.35	55.66	164.01							26.88		30			122.25		72.08	194.33			415.22
49	47	MEADOW GLADE		17.53			23.05	801.22	257.27	1099.07			38			38	13.08	8.64				114.41		41.21	155.62		48	1362.41
50	SUM	TOTAL OF ALL BASINS	214.32	4187.2	4432.86	3025.58	294.05			13377	99.15	722.51	259.02	213.34	369	1662.52	2098.36	2024.99	454.24	2107.16	194.51	242.36		113.79	2657.82	636.41	1066	23977.4

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	BASIN	BASIN	SINGLE-FAMILY RESIDENTIAL (HHs)								MULTI-FAMILY RESIDENTIAL (HHs)						COM	INC	SCHOO	URBAN RESERVE (HHs)						PARK	OTHER	TOTAL
2	NO.	NAME	R1-5	R1-6	R1-7.5	R1-10	R1-20	RC-1	RC-2.5	TOTAL	R-12	R-18	R-22	R-30	R-43		AC-SER	AC-SER	AC-SER	UR-10	UR-20	UH-5	UH-10	UH-20	TOTAL	(AC)	(AC)	(AC)
3	1	WHIPPLE CREEK EAST				46				46	90					90	15	32.8		33					33			47.8
4	2	MILL CREEK				56				56									24									24
5	3	MT. VISTA				310				310																		
6	4	I-5 NORTH		62	27	505				594		4	81	30		115	19	34										53
7	5	PLEASANT VALLEY NORTH								1																		
8	6	PLEASANT VALLEY SOUTH				109				109									27.49									27.49
9	7	NE 134TH STREET										111				111	8											8
10	8	BARBERTON				213				213						1												
11	9	SHERWOOD		257						257																		
12	10	BLUEBERRY HILL		403						403			2			2	5											5
13	11	SYLVAN CREEK		209						209	11				4	15	26											26
14	12	HIGHWAY 99 EAST		921						921	17	23		125	385	550	56	18										74
15	13	HAZEL DELL NORTH		10	644					654	4		6	377		387	43	2	10									55
16	14	COUGAR CANYON		5	2137	26				2168		19	7	82	258	366	141	82										223
17	15	CERRERO ESTATES				39				39																		
18	16	MUIRWOOD		5		62				67	1					1												
19	17	MTN. VIEW GARDEN	6	34	14	54				108	18					18			27									27
20	18	SEWARD BRIDGE SOUTH				195				195																		
21	19	FELIDA				163				163	13					13	1											1
22	20	HIGHWAY 99 NORTH		1						1	3			1		4	37											37
23	21	NE 16TH AVE			30					30		12				12	19	48										67
24	22	KNOLLRIDGE		430						430	2	9				11			8									8
25	23	WOODCREEK		177						177	2					2												
26	24	ORO-VEGA	65	405	241	97				808		155				155	5	53										58
27	25	WHIPPLE CREEK WEST								1						1												
28	26	SEWARD BRIDGE NORTH		1	1					2																		
29	27	GREEN LAKE								1.0																		
30	28	ST. JOHNS		250		2				252						1												
31	29	GLENWOOD CREEK		22	21					43																		
32	30	NE 86TH ST			178					178									12									12
33	31	COUNTRY MEADOWS		174	165	26				365						1	2	19										21
34	32	ORCHARD CREST NORTH			180					180		12				12	6	11										17
35	33	ORCHARD CREST SOUTH		2	227					229		1				1			10									10
36	34	COVINGTON NORTH		72	139					211	4		1			5	7											7
37	35	COVINGTON SOUTH		34	53					87		133				133	3											3
38	36	GREEN MEADOWS EAST		241						241		1				1			4									4
39	37	GREEN MEADOWS WEST		285						285				112		112		6										6
40	38	CURTIN CREEK		3						3																		
41	39	CEDAR 49		232						232								4										4
42																												
43	41	LAKESHORE	8.33		1042.44	190.4				1241.17		29.25				29.25			10									10
44	42	CHICKEN CREEK		38.08	841.33					879.41	11.25	65.25		6.75	263.25	346.5	53											53
45	43	OVERLOOK			207.06					207.06			231.75			231.75												
46	44	HIGHWAY 99 SOUTH		254.66						254.66	4.5	22.5	2.25	247.5	15.75	292.5	20											20
47	45	MINNEHAHA								1						1												
48	46	HOCKINSON								1							5		30								13	48
49	47	MEADOW GLADE						305		305						1												
50	SUM	TOTAL OF ALL BASINS	79.3	4527.7	6147.8	2093.4				13158.3	180.75	597	331	981.25	926	3022	471	309.8	162.49	33					33		13	956.29

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	BASIN	BASIN	SINGLE-FAMILY RESIDENTIAL (Developed Acres)								MULTI-FAMILY RESIDENTIAL (Developed Acres)						Comm	Ind	Schools	URBAN RESERVE (Acres)						PARK	OTHER	TOTAL
2	NO.	NAME	R1-5	R1-6	R1-7.5	R1-10	R1-20	RC-1	RC-2.5	TOTAL	R-12	R-18	R-22	R-30	R-43		AC-SER	AC-SER	AC-SER	UR-10	UR-20	UH-5	UH-10	UH-20	TOTAL	(AC)	(AC)	(AC)
3	1	WHIPPLE CREEK EAST				16.80				16.80	10.00					10.00	15	32.8		5					5			80
4	2	MILL CREEK				20.46				20.46									24									44
5	3	MT. VISTA				113.24				113.24																		113
6	4	I-5 NORTH		13.33	7.27	184.47				205.08		0.37	6.00	1.85		8.22	19	34										266
7	5	PLEASANT VALLEY NORTH								0.25																		0
8	6	PLEASANT VALLEY SOUTH				39.82				39.82									27.49									67
9	7	NE 134TH STREET										10.28				10.28	8											18
10	8	BARBERTON				77.81				77.81						1.00												79
11	9	SHERWOOD		55.27						55.27						1.00												56
12	10	BLUEBERRY HILL		86.67						86.67			0.15			0.15	5											92
13	11	SYLVAN CREEK		44.95						44.95	1.22				0.22	1.44	26											72
14	12	HIGHWAY 99 EAST		198.06						198.06	1.89	2.13		7.72	21.39	33.12	56	18										305
15	13	HAZEL DELL NORTH		2.15	173.47					175.62	0.44		0.44	23.27		24.16	43	2	10									255
16	14	COUGAR CANYON		1.08	575.62	9.50				586.20		1.76	0.52	5.06	14.33	21.67	141	82										831
17	15	CERRERO ESTATES				14.25				14.25																		14
18	16	MUIRWOOD		1.08		22.65				23.72	0.11					0.11												24
19	17	MTN. VIEW GARDEN	1.07	7.31	3.77	19.73				31.88	2.00					2.00			27									61
20	18	SEWARD BRIDGE SOUTH				71.23				71.23																		71
21	19	FELIDA				59.54				59.54	1.44					1.44	1											62
22	20	HIGHWAY 99 NORTH		0.22						0.22	0.33			0.06		0.40	37											38
23	21	NE 16TH AVE			8.08					8.08		1.11				1.11	19	48										76
24	22	KNOLLRIDGE		92.47						92.47	0.22	0.83				1.06			8									102
25	23	WOODCREEK		38.06						38.06	0.22					0.22												38
26	24	ORO-VEGA	11.63	87.10	64.92	35.43				199.08		14.35				14.35	5	53										271
27	25	WHIPPLE CREEK WEST								0.25						1.00												1
28	26	SEWARD BRIDGE NORTH		0.22	0.27					0.48																		0
29	27	GREEN LAKE								0.25																		0
30	28	ST. JOHNS		53.76		0.73				54.49						1.00												55
31	29	GLENWOOD CREEK		4.73	5.66					10.39																		10
32	30	NE 86TH ST			47.95					47.95									12									60
33	31	COUNTRY MEADOWS		37.42	44.44	9.50				91.36						1.00	2	19										113
34	32	ORCHARD CREST NORTH			48.48					48.48		1.11				1.11	6	11										67
35	33	ORCHARD CREST SOUTH		0.43	61.14					61.57		0.09				0.09			10									72
36	34	COVINGTON NORTH		15.48	37.44					52.92	0.44		0.07			0.52	7											60
37	35	COVINGTON SOUTH		7.31	14.28					21.59		12.31				12.31	3											37
38	36	GREEN MEADOWS EAST		51.83						51.83		0.09				0.09			4									56
39	37	GREEN MEADOWS WEST		61.29						61.29				6.91		6.91		6										74
40	38	CURTIN CREEK		0.65						0.65																		1
41	39	CEDAR 49		49.89						49.89								4										54
42																												
43	41	LAKESHORE	1.49		280.79	69.55				351.84		2.71				2.71			10									365
44	42	CHICKEN CREEK		8.19	226.62					234.81	1.25	6.04		0.42	14.63	22.33	53											310
45	43	OVERLOOK			55.77					55.77			17.17			17.17												73
46	44	HIGHWAY 99 SOUTH		54.77						54.77	0.50	2.08	0.17	15.28	0.88	18.90	20											94
47	45	MINNEHAHA								0.25						1.00												1
48	46	HOCKINSON								0.25							5		30									48
49	47	MEADOW GLADE						305.00		305.00						1.00												306
50	SUM	TOTAL OF ALL BASINS	14.2	973.7	1656.0	764.7				3714.8	20.1	55.3	24.5	60.6	51.4	218.9	471.0	309.8	162.5	5.0					5.0		13.0	4895.0

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	BASIN	BASIN	SINGLE-FAMILY RESIDENTIAL (FLOW)								MULTI-FAMILY RESIDENTIAL (FLOW)						COMMERCIAL	INDUSTRIAL	SCHOOLS	URBAN RESERVE (FLOW)						ARK/O.	OTHER	TOTAL
2	NO.	NAME	R1-5	R1-6	R1-7.5	R1-10	R1-20	RC-1	RC-2.5	TOTAL	R-12	R-18	R-22	R-30	R-43	TOTAL	(FLOW)	(FLOW)	(FLOW)	UR-10	UR-20	UH-5	UH-10	UH-20	TOTAL	(FLOW)	(FLOW)	(FLOW)
3	1	WHIPPLE CREEK EAST				11,500				11,500	17,100					17,100	18,000	59,040		8,250					8,250			113,890
4	2	MILL CREEK				14,000				14,000									14,400									28,400
5	3	MT. VISTA				77,500				77,500																		77,500
6	4	I-5 NORTH		15,500	6,750	126,250				148,500		760	15,390	5,700		21,850	22,800	61,200										254,350
7	5	PLEASANT VALLEY NORTH																										
8	6	PLEASANT VALLEY SOUTH				27,250				27,250									16,494									43,744
9	7	NE 134TH STREET										21,090				21,090	9,600											30,690
10	8	BARBERTON				53,250				53,250																		53,250
11	9	SHERWOOD		64,250						64,250																		64,250
12	10	BLUEBERRY HILL		100,750						100,750			380			380	6,000											107,130
13	11	SYLVAN CREEK		52,250						52,250	2,090				760	2,850	31,200											86,300
14	12	HIGHWAY 99 EAST		230,250						230,250	3,230	4,370		23,750	73,150	104,500	67,200	32,400										434,350
15	13	HAZEL DELL NORTH		2,500	161,000					163,500	760		1,140	71,630		73,530	51,600	3,600	6,000									298,230
16	14	COUGAR CANYON		1,250	534,250	6,500				542,000		3,610	1,330	15,580	49,020	69,540	169,200	147,600										928,340
17	15	CERRERO ESTATES				9,750				9,750																		9,750
18	16	MUIRWOOD		1,250		15,500				16,750	190					190												16,940
19	17	MTN. VIEW GARDEN	1,500	8,500	3,500	13,500				27,000	3,420					3,420			16,200									46,620
20	18	SEWARD BRIDGE SOUTH				48,750				48,750																		48,750
21	19	FELIDA				40,750				40,750	2,470					2,470	1,200											44,420
22	20	HIGHWAY 99 NORTH		250						250	570			190		760	44,400											45,410
23	21	NE 16TH AVE			7,500					7,500		2,280				2,280	22,800	86,400										118,980
24	22	KNOLLRIDGE		107,500						107,500	380	1,710				2,090			4,800									114,390
25	23	WOODCREEK		44,250						44,250	380					380												44,630
26	24	ORO-VEGA	16,250	101,250	60,250	24,250				202,000		29,450				29,450	6,000	95,400										332,850
27	25	WHIPPLE CREEK WEST																										
28	26	SEWARD BRIDGE NORTH		250	250					500																		500
29	27	GREEN LAKE																										
30	28	ST. JOHNS		62,500		500				63,000																		63,000
31	29	GLENWOOD CREEK		5,500	5,250					10,750																		10,750
32	30	NE 86TH ST			44,500					44,500									7,200									51,700
33	31	COUNTRY MEADOWS		43,500	41,250	6,500				91,250							2,400	34,200										127,850
34	32	ORCHARD CREST NORTH			45,000					45,000		2,280				2,280	7,200	19,800										74,280
35	33	ORCHARD CREST SOUTH		500	56,750					57,250		190				190			6,000									63,440
36	34	COVINGTON NORTH		18,000	34,750					52,750	760		190			950	8,400											62,100
37	35	COVINGTON SOUTH		8,500	13,250					21,750		25,270				25,270	3,600											50,620
38	36	GREEN MEADOWS EAST		60,250						60,250		190				190			2,400									62,840
39	37	GREEN MEADOWS WEST		71,250						71,250				21,280		21,280		10,800										103,330
40	38	CURTIN CREEK		750						750																		750
41	39	CEDAR 49		58,000						58,000								7,200										65,200
42																												
43	41	LAKESHORE	2,083		260,610	47,600				310,293		5,558				5,558			6,000									321,850
44	42	CHICKEN CREEK		9,520	210,333					219,853	2,138	12,398		1,283	50,018	65,835	63,600											349,288
45	43	OVERLOOK			51,765					51,765			44,033			38												51,803
46	44	HIGHWAY 99 SOUTH		63,665						63,665	855	4,275	428	47,025	2,993	55,575	24,000											143,240
47	45	MINNEHAHA																										
48	46	HOCKINSON															6,000		18,000								5,850	29,850
49	47	MEADOW GLADE						76,250		76,250																		76,250
50	SUM	TOTAL OF ALL BASINS	19,833	1,131,935	1,536,958	523,350				3,288,325	34,343	113,430	62,890	186,438	175,940	529,046	565,200	557,640	97,494	8,250					8,250		5,850	5,051,805

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
1	BASIN	BASIN	SINGLE-FAMILY RESIDENTIAL (# OF HH)								MULTI-FAMILY RESIDENTIAL (# OF HH)						COMMERCIAL	INDUSTRIAL	SCHOOLS	URBAN RESERVE (HHs)						PARK/O.S.	OTHER	TOTAL	NON-RESIDENTIAL
2	NO.	NAME	R1-5	R1-6	R1-7.5	R1-10	R1-20	RC-1	RC-2.5	TOTAL	R-12	R-18	R-22	R-30	R-43	TOTAL	(ACRES)	(ACRES)	(ACRES)	UR-10	UR-20	UH-5	UH-10	UH-20	TOTAL	(ACRES)	(ACRES)	(HHs)	(ACRES)
3	1	WHIPPLE CREEK EAST				870				870.1	173	1,239				1,412	259	33		16	19				36	48		2,318	340
4	2	MILL CREEK				463				462.6							7		79	38					38	8	21	500	115
5	3	MT. VISTA				402				402.4									190									402	190
6	4	I-5 NORTH	86	75	165	709				1,035.0		318	706	436		1,460	137		24							14		2,495	175
7	5	PLEASANT VALLEY NORTH				112				112.2							145		95	36					36	7		148	247
8	6	PLEASANT VALLEY SOUTH				499				499.3									27	10					10	28	64	509	119
9	7	NE 134TH STREET										335				335	34											335	34
10	8	BARBERTON		112	149	931				1,190.9		22				22				20					20		42	1,232	42
11	9	SHERWOOD		1,618						1,618.2		43				43										18	14	1,661	32
12	10	BLUEBERRY HILL		986						985.8			12			12	9									3	6	998	18
13	11	SYLVAN CREEK		916						916.1		22			18	40	47									4	3	956	54
14	12	HIGHWAY 99 EAST		3,185						3,185.3		1,210	270	437	2,034	3,951	134	18	9							18		7,136	179
15	13	HAZEL DELL NORTH		116	1,414					1,530.7		32	95	794	954	1,875	105	2								38		3,405	145
16	14	COUGAR CANYON		674	4,162	79				4,915.4		886	662	486	2,052	4,085	299	132								151		9,000	582
17	15	CERRERO ESTATES				140				139.6																3		140	3
18	16	MUIRWOOD		177	71	159				406.0	135					135										4		541	4
19	17	MTN. VIEW GARDEN	22	326	11	334				693.0	198					198										12		891	12
20	18	SEWARD BRIDGE SOUTH				329				328.5																		329	
21	19	FELIDA			813	1,259	266			2,338.2	117	43				160	9	15								1		2,498	25
22	20	HIGHWAY 99 NORTH		294		100				393.5				71		71	111											465	111
23	21	NE 16TH AVE		10	98					107.8		474				474	54	116										582	170
24	22	KNOLLRIDGE	978							977.8		119		16		135	2									51		1,113	53
25	23	WOODCREEK		376						376.3	35					35										25		411	25
26	24	ORO-VEGA	106	767	988	353	89			2,303.2	126	875				1,001	20	127								71	3	3,304	221
27	25	WHIPPLE CREEK WEST		5		452				456.3		65				65	156	194								38	108	553	496
28	26	SEWARD BRIDGE NORTH		116	342		11			468.6										31					31	30	183	519	213
29	27	GREEN LAKE								1.0										50					50		528	1	528
30	28	ST. JOHNS		1,925	230	227				2,382.5		11				11	5	10		0					0			2,393	15
31	29	GLENWOOD CREEK		558	849					1,407.4							14	74				1			1			1,409	88
32	30	NE 86TH ST		9	770	37				816.6								84						0	0			817	84
33	31	COUNTRY MEADOWS		817	480	266				1,563.9			214			214	39	230		4					4	3	41	1,782	313
34	32	ORCHARD CREST NORTH		33	394					426.1		216				216	39	100										642	139
35	33	ORCHARD CREST SOUTH		93	601					694.4		292				292	2	33										986	35
36	34	COVINGTON NORTH		795	709					1,504.2		108	216	49		373	55	1								1		1,877	57
37	35	COVINGTON SOUTH		344	256					600.3		551	27	81		659	12									43		1,259	55
38	36	GREEN MEADOWS EAST		1,395						1,395.0		65			810	875	39											2,270	39
39	37	GREEN MEADOWS WEST		1,070	278					1,347.9		119		130	198	446	81	288										1,794	369
40	38	CURTIN CREEK		262	363					625.5							62	280									5	626	347
41	39	CEDAR 49		902						902.1							32	191										902	223
42																													
43	41	LAKESHORE	6		1,823	433				2,261.0	108					108	7									3		2,369	10
44	42	CHICKEN CREEK		93	1,136	129				1,357.7		292	230	535	576	1,632	93									8		2,989	101
45	43	OVERLOOK		0	355					355.3		5	513			518												874	
46	44	HIGHWAY 99 SOUTH		786						785.9		43	41	421		505	50	39										1,291	89
47	45	MINNEHAHA		553						553.4		421				421		50								6		975	56
48	46	HOCKINSON						108	20	128.4							27		30			24		7	31			159	57
49	47	MEADOW GLADE		82			31	801	93	1,006.5			513			513	13	9				22		4	26		48	1,546	70
50	SUM	TOTAL OF ALL BASINS	1,198	19,470	16,457	8,283	397			46,828	892	7,803	3,497	3,456	6,642	22,290	2,098	2,025	454	207	19	48		11	284	636	1,066	69,402	6,280

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	BASIN	BASIN	SINGLE-FAMILY RESIDENTIAL (FLOW)								MULTI-FAMILY RESIDENTIAL (FLOW)						COMMER	INDUSTRI	SCHOOL	URBAN RESERVE (FLOW)						ARK/O.S	OTHER	TOTAL
2	NO.	NAME	R1-5	R1-6	R1-7.5	R1-10	R1-20	RC-1	RC-2.5	TOTAL	R-12	R-18	R-22	R-30	R-43	TOTAL	(FLOW)	(FLOW)	(FLOW)	UR-10	UR-20	UH-5	UH-10	UH-20	TOTAL	(FLOW)	(FLOW)	(FLOW)
3	1	WHIPPLE CREEK EAST				217,529				217,529	32,952	235,323				268,275	311,148	59,094		4,120	4,765				8,885	21,744		886,675
4	2	MILL CREEK				115,659				115,659							8,400		47,400	9,433					9,433	3,600	9,450	193,942
5	3	MT. VISTA				100,503				100,603									114,000									214,603
6	4	I-5 NORTH	21,400	18,728	41,302	177,315				258,744		60,431	134,098	82,891		277,420	164,160		14,250							6,521		721,095
7	5	PLEASANT VALLEY NORTH				28,059				28,059							174,000		57,000	8,943					8,943	3,150		271,152
8	6	PLEASANT VALLEY SOUTH				124,830				124,830									16,494	2,524					2,524	12,600	28,800	185,248
9	7	NE 134TH STREET										63,612				63,612	40,800											104,412
10	8	BARBERTON		27,900	37,125	232,688				297,713		4,104				4,104				4,974					4,974		18,900	325,690
11	9	SHERWOOD		404,550						404,550		8,208				8,208										8,100	6,300	427,158
12	10	BLUEBERRY HILL		246,450						246,450			2,309			2,309	10,800									1,350	2,700	263,609
13	11	SYLVAN CREEK		229,013						229,013		4,104			3,420	7,524	56,400									1,800	1,350	296,087
14	12	HIGHWAY 99 EAST		796,313						796,313		229,824	51,300	83,106	386,460	750,690	160,800	32,400	5,400							8,100		1,753,703
15	13	HAZEL DELL NORTH		29,063	353,616					382,678		6,156	17,955	150,822	181,260	356,193	126,000	3,600								17,100		885,571
16	14	COUGAR CANYON		168,563	1,040,428	19,847				1,228,838		168,264	125,685	92,340	389,880	776,169	358,800	237,600								67,950		2,669,357
17	15	CERRERO ESTATES				34,903				34,903																1,350		36,253
18	16	MUIRWOOD		44,175	17,634	39,694				101,503	25,650					25,650										1,800		128,953
19	17	MTN. VIEW GARDEN	5,588	81,375	2,784	83,494				173,241	37,620					37,620										5,400		216,261
20	18	SEWARD BRIDGE SOUTH				82,125				82,125																		82,125
21	19	FELIDA			203,259	314,813	66,488			584,559	22,230	8,208				30,438	10,800	27,000								450		653,247
22	20	HIGHWAY 99 NORTH		73,435		24,939				98,374				13,574		13,574	133,140											245,088
23	21	NE 16TH AVE		2,558	24,400					26,958		90,042				90,042	64,860	208,746										390,606
24	22	KNOLLRIDGE	244,453							244,453		22,572		3,078		25,650	2,400									22,950		295,453
25	23	WOODCREEK		94,070						94,070	6,635					6,635										11,250		111,954
26	24	ORO-VEGA	26,541	191,813	246,881	88,284	22,275			575,794	23,940	166,212				190,152	24,000	228,600								31,950	1,350	1,051,846
27	25	WHIPPLE CREEK WEST		1,163		112,922				114,084		12,312				12,312	187,200	349,200		7,865					7,865	17,100	48,600	736,361
28	26	SEWARD BRIDGE NORTH		29,063	85,388		2,700			117,150										12,618					12,618	13,500	82,350	225,618
29	27	GREEN LAKE																		74					74		237,600	237,674
30	28	ST. JOHNS		481,275	57,544	56,803				595,622		2,052				2,052	6,000	18,000										621,674
31	29	GLENWOOD CREEK		139,500	212,355					351,855							17,100	132,480				279			279			501,714
32	30	NE 86TH ST		2,325	192,586	9,239				204,150								150,480						12	12			354,642
33	31	COUNTRY MEADOWS		204,368	120,007	66,590				390,964			40,630			40,630	46,920	414,540		1,078					1,078	1,170	18,450	913,751
34	32	ORCHARD CREST NORTH		8,138	98,381					106,519		41,040				41,040	46,800	180,000										374,359
35	33	ORCHARD CREST SOUTH		23,250	150,356					173,606		55,404				55,404	2,400	59,400										290,810
36	34	COVINGTON NORTH		198,788	177,272					376,059		20,520	41,040	9,234		70,794	66,000	1,800								450		515,103
37	35	COVINGTON SOUTH		86,025	64,041					150,066		104,652	5,130	15,390		125,172	14,400									19,350		308,988
38	36	GREEN MEADOWS EAST		348,750						348,750		12,312			153,900	166,212	46,800									-		561,762
39	37	GREEN MEADOWS WEST		267,375	69,609					336,984		22,572		24,624	37,620	84,816	97,200	518,400										1,037,400
40	38	CURTIN CREEK		65,530	90,854					156,384							74,352	504,090									2,250	737,076
41	39	CEDAR 49		225,525						225,525							38,400	343,800										607,725
42																												
43	41	LAKESHORE	1,397		455,709	108,131				565,238	20,520					20,520	8,400									1,350		595,508
44	42	CHICKEN CREEK		23,250	284,006	32,166				339,422		55,404	43,605	101,574	109,440	310,023	111,600									3,600		764,645
45	43	OVERLOOK		116	88,710					88,826		1,026	97,470			38												88,864
46	44	HIGHWAY 99 SOUTH		196,463						196,463		8,208	7,695	80,028		95,931	60,000	70,200										422,594
47	45	MINNEHAHA		138,338						138,338		80,028				80,028		90,000								2,700		311,066
48	46	HOCKINSON						27,088	5,009	32,097							32,256		18,000			5,990		1,766	7,756			90,109
49	47	MEADOW GLADE		20,379			7,779	200,305	23,154	251,617			97,470			97,470	15,696	15,552				5,606		1,010	6,616		21,600	408,551
50	SUM	TOTAL OF ALL BASINS	299,378	4,867,620	4,114,248	2,070,631	99,242			11,706,676	169,547	1,482,591	664,386	656,661	1,261,980	4,136,706	2,518,032	3,644,982	272,544	51,625	4,765	11,876		2,788	71,054	286,385	479,700	23,116,079

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	BASIN	BASIN	Projected Increase in HHs								Projected Increase in HHs						OMMERCIAL	INDUSTRIAL	SCHOOLS	URBAN RESERVE (HHs)						ARK/O.S	OTHER	TOTAL
2	NO.	NAME	R1-5	R1-6	R1-7.5	R1-10	R1-20	RC-1	RC-2.5	Total	R-12	R-18	R-22	R-30	R-43	TOTAL	INCREASE	INCREASE	INCREASE	UR-10	UR-20	UH-5	UH-10	UH-20	TOTAL	(ACRES)	(ACRES)	(ACRES)
3	1	WHIPPLE CREEK EAST				618				618	63	929				991	183	0			14				14	36		219
4	2	MILL CREEK				305				305							5		41	28					28	6	16	68
5	3	MT. VISTA				69				69									143									143
6	4	I-5 NORTH	64	10	104	153				331		236	469	305		1,009	88		18							11		117
7	5	PLEASANT VALLEY NORTH				84				84							109		71	27					27	5		185
8	6	PLEASANT VALLEY SOUTH				293				293										8					8	21	48	69
9	7	NE 134TH STREET										168				168	20											20
10	8	BARBERTON		84	111	538				733		16				16				15					15		32	32
11	9	SHERWOOD		1,021						1,021		32				32										14	11	24
12	10	BLUEBERRY HILL		437						437			8			8	3									2	5	10
13	11	SYLVAN CREEK		530						530		16			11	27	16									3	2	21
14	12	HIGHWAY 99 EAST		1,698						1,698		890	203	234	1,237	2,564	59		7							14		79
15	13	HAZEL DELL NORTH		80	578					658		24	66	313	716	1,119	47									29		75
16	14	COUGAR CANYON		502	1,519	40				2,061		650	491	303	1,346	2,789	119	38								113		269
17	15	CERRERO ESTATES				75				75																2		2
18	16	MUIRWOOD		129	53	73				254	101					101										3		3
19	17	MTN. VIEW GARDEN	12	219		210				441	135					135										9		9
20	18	SEWARD BRIDGE SOUTH				100				100																		
21	19	FELIDA			610	822	199			1,631	78	32				110	6	11								1		18
22	20	HIGHWAY 99 NORTH		220		75				294				53		53	55											55
23	21	NE 16TH AVE		8	51					58		346				346	26	51										77
24	22	KNOLLRIDGE	733							733		82		12		95	2									38		40
25	23	WOODCREEK		149						149	25					25										19		19
26	24	ORO-VEGA	31	272	560	192	67			1,121	95	540				634	11	56								53	2	122
27	25	WHIPPLE CREEK WEST		3		339				342		49				49	117	146		24					24	29	81	372
28	26	SEWARD BRIDGE NORTH		86	255		8			350										38					38	23	137	160
29	27	GREEN LAKE																		0					0		396	396
30	28	ST. JOHNS		1,256	173	169				1,598		8				8	4	8										11
31	29	GLENWOOD CREEK		402	621					1,023							11	55				1			1			66
32	30	NE 86TH ST		7	444	28				479								63						0	0			63
33	31	COUNTRY MEADOWS		483	236	180				899			160			160	28	158		3					3	2	31	219
34	32	ORCHARD CREST NORTH		24	160					185		153				153	25	67										92
35	33	ORCHARD CREST SOUTH		68	281					349		218				218	2	25										26
36	34	COVINGTON NORTH		542	428					970		81	161	36		279	36	1								1		38
37	35	COVINGTON SOUTH		233	152					385		313	20	61		394	7									32		39
38	36	GREEN MEADOWS EAST		866						866		48			608	655	29											29
39	37	GREEN MEADOWS WEST		588	209					797		89		13	149	251	61	212										272
40	38	CURTIN CREEK		194	273					467							46	210									4	260
41	39	CEDAR 49		503						503							24	140										164
42																												
43	41	LAKESHORE			585	182				767	81					81	5									2		8
44	42	CHICKEN CREEK		41	221	96				359		170	172	396	235	972	30									6		36
45	43	OVERLOOK		0	111					111		4	211			38												
46	44	HIGHWAY 99 SOUTH		398						398		16	29	130		174	23	29										52
47	45	MINNEHAHA		415						415		316				316		38								5		42
48	46	HOCKINSON						81	15	96							16					18		5	23			16
49	47	MEADOW GLADE		61			23	372	69	526			385			385	10	6				17		3	20		36	52
50	SUM	TOTAL OF ALL BASINS	841	11,530	7,734	4,642	298			25,582	576	5,427	2,374	1,856	4,299	14,355	1,221	1,312	280	143	14	36		8	201	477	800	4,089
51																												
52																												
53											Total HH	**39,937**																

Population data projected in column "E" adjusted by the updated census information in column "D"? (Y/N) | n
Growth rate to be used from the updated census information to the end of the comp plan term? (H, I, J, or K) | h
Note: If the population data is not updated by column "E", the growth rate in colume "H" will be used to project the population.

Yellow denotes required information

Cyan denotes optional information

Column

A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Provided Information	Calc'd Information	Provided Information	Projected Information	Provided Information	Calc'd Information	Calc'd Information	Calc'd Information	Calc'd Information	Input Information	Calc'd Information	Calc'd Information	Input Information
TAZ	Census Year Dec-96 # of HH	Beg. Of Comp. Plan Jan-97 # of HH	Updated Census Jan-00 # of HH	End of Comp Plan Jan-17 # of HH	(OFM) Proj. Population Dec-16 # of HH	Increase in # of HH (OFM) (Col. B & F)	Predicted Annual Growth (Col. B & F)	Actual Annual Growth (Col. B & D)	Projected Annual Growth (Col. D & F)	Annual Growth Rate	Increse in # of HH Comp Plan (Col. C & E)	Growth Rate in Comp Plan (Col. C & E)	TAZ Area (Acres)
36	660.0	660.00		664.00	664	4	0.030%				4.00	0.61%	122
37	315.0	315.00		330.00	330	15	0.233%				15.00	4.76%	129
38	373.0	373.01		496.02	496	123	1.435%				123.00	32.98%	138
39	158.0	158.01		247.02	247	89	2.259%				89.01	56.33%	59
110	49.0	49.00		56.00	56	7	0.670%				7.00	14.29%	29
119	311.0	311.02		487.03	487	176	2.268%				176.01	56.59%	38
120	902	902.00		923.00	923	21	0.115%				21.00	2.33%	161
121	364	364.01		476.02	476	112	1.350%				112.00	30.77%	185
122	518	518.02		687.03	687	169	1.422%				169.01	32.63%	284
123	70	70.01		140.01	140	70	3.526%				70.01	100.00%	230
125	371	371.02		539.03	539	168	1.885%				168.01	45.28%	52
126	633	633.03		878.04	878	245	1.649%				245.01	38.70%	406
130	190	190.00		190.00	190	0	0.000%				0.00	0.00%	116
131	287	287.04		808.11	808	521	5.312%				521.07	181.53%	237
132	919	919.04		1269.06	1269	350	1.627%				350.02	38.08%	188
133	399	399.02		546.02	546	147	1.581%				147.01	36.84%	318
134	287	287.03		601.06	601	314	3.765%				314.03	109.41%	187
135	197	197.03		553.08	553	356	5.296%				356.05	180.71%	192
136	89	89.01		236.03	236	147	4.997%				147.02	165.17%	96
137	125	125.01		227.02	227	102	3.028%				102.01	81.60%	166
138	5	5.00		16.00	16	11	5.988%				11.00	220.00%	269
139	15	15.00		15.00	15	0	0.000%				0.00	0.00%	120
140	224	224.00		258.00	258	34	0.709%				34.00	15.18%	110
141	68	68.00		105.01	105	37	2.196%				37.00	54.41%	63
142	176	176.00		209.00	209	33	0.863%				33.00	18.75%	85
143	480	480.03		722.04	722	242	2.062%				242.01	50.42%	238
144	408	408.02		569.03	569	161	1.677%				161.01	39.46%	248
145	581	581.03		803.04	803	222	1.631%				222.01	38.21%	427
146	84	84.01		183.02	183	99	3.970%				99.01	117.86%	183
147													87
148	418	418.01		527.02	527	109	1.165%				109.00	26.08%	244
149	343	343.01		423.01	423	80	1.054%				80.00	23.32%	182
150	588	588.00		594.00	594	6	0.051%				6.00	1.02%	200
151	915	915.00		918.00	918	3	0.016%				3.00	0.33%	136
152	530	530.01		587.01	587	57	0.512%				57.00	10.75%	181
153	10	10.00		12.00	12	2	0.916%				2.00	20.00%	38
154	435	435.00		447.00	447	12	0.136%				12.00	2.76%	132
155	251	251.04		909.16	909	658	6.646%				658.12	262.15%	347
156	783	783.02		980.03	980	197	1.128%				197.01	25.16%	315
157	693	693.01		756.01	756	63	0.436%				63.00	9.09%	412
158	634	634.01		725.01	725	91	0.673%				91.00	14.35%	263
159	70	70.02		371.08	371	301	8.696%				301.07	430.00%	50
160	674	674.00		676.00	676	2	0.015%				2.00	0.30%	138
161	122	122.01		178.01	178	56	1.907%				56.00	45.90%	105
162	506	506.07		1461.21	1461	955	5.445%				955.14	188.74%	844
163	209	209.01		256.01	256	47	1.019%				47.00	22.49%	209
164	283	283.03		684.08	684	401	4.511%				401.05	141.70%	320
165	191	191.02		371.03	371	180	3.375%				180.02	94.24%	361
227	172	172.01		216.01	216	44	1.145%				44.00	25.58%	123
228	231	231.01		311.01	311	80	1.498%				80.00	34.63%	54
229	246	246.01		322.01	322	76	1.355%				76.00	30.89%	134
230	232	232.01		276.01	276	44	0.872%				44.00	18.97%	142
231	348	348.01		425.01	425	77	1.004%				77.00	22.13%	124
232	351	351.01		425.01	425	74	0.961%				74.00	21.08%	206
237	142	142.01		203.01	203	61	1.803%				61.00	42.96%	139
238	220	220.01		303.01	303	83	1.613%				83.00	37.73%	126
239	82	82.00		109.00	109	27	1.433%				27.00	32.93%	106
244	525	525.01		641.02	641	116	1.003%				116.00	22.10%	609
245	312	312.00		348.01	348	36	0.547%				36.00	11.54%	119
246	311	311.01		372.01	372	61	0.900%				61.00	19.61%	296
247	541	541.00		569.00	569	28	0.253%				28.00	5.18%	249
248	450	450.00		451.00	451	1	0.011%				1.00	0.22%	127
249	762	762.02		888.02	888	126	0.768%				126.00	16.54%	42
252	62	62.01		205.03	205	143	6.162%				143.02	230.65%	214
253	134	134.01		269.03	269	135	3.546%				135.01	100.75%	123
254	399	399.02		610.04	610	211	2.145%				211.01	52.88%	377
255	35	35.00		35.00	35	0	0.000%				0.00	0.00%	195
256	138	138.03		653.14	653	515	8.082%				515.11	373.19%	106
257	300	300.00		327.00	327	27	0.432%				27.00	9.00%	103
260	288	288.03		547.05	547	259	3.259%				259.02	89.93%	318
261	213	213.00		230.00	230	17	0.385%				17.00	7.98%	329
267	233	233.03		536.06	536	303	4.253%				303.03	130.04%	374
268	79	79.00		93.00	93	14	0.819%				14.00	17.72%	100
272	106	106.00		124.00	124	18	0.787%				18.00	16.98%	50
275	57	57.00		72.00	72	15	1.175%				15.00	26.32%	57
276	148	148.00		187.01	187	39	1.176%				39.00	26.35%	1,021
277	900	900.04		1239.05	1239	339	1.611%				339.01	37.67%	535
278	718	718.01		776.01	776	58	0.389%				58.00	8.08%	371
279	163	163.02		361.04	361	198	4.056%				198.02	121.47%	90

Population data projected in column "E" adjusted by the updated census information in column "D"? (Y/N) n
Growth rate to be used from the updated census information to the end of the comp plan term? (H, I, J, or K) h
Note: If the population data is not updated by column "E", the growth rate in colume "H" will be used to project the population.

Yellow denotes required information

Cyan denotes optional information

Column

A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Provided Information	*Calc'd Information*	*Provided Information*	*Projected Information*	*Provided Information*	*Calc'd Information*	*Calc'd Information*	*Calc'd Information*	*Calc'd Information*	*Input Information*	*Calc'd Information*	*Calc'd Information*	*Input Information*
TAZ	**Census Year Dec-96 # of HH**	**Beg. Of Comp. Plan Jan-97 # of HH**	**Updated Census Jan-00 # of HH**	**End of Comp Plan Jan-17 # of HH**	**(OFM) Proj. Population Dec-16 # of HH**	**Increase in # of HH (OFM) (Col. B & F)**	**Predicted Annual Growth (Col. B & F)**	**Actual Annual Growth (Col. B & D)**	**Projected Annual Growth (Col. D & F)**	**Annual Growth Rate**	**Increse in # of HH Comp Plan (Col. C & E)**	**Growth Rate in Comp Plan (Col. C & E)**	**TAZ Area (Acres)**
280	121	121.02		526.11	526	405	7.624%				405.08	334.71%	300
281	291	291.03		667.08	667	376	4.235%				376.04	129.21%	345
282	72	72.00		72.00	72	0	0.000%				0.00	0.00%	205
283	205	205.02		367.03	367	162	2.955%				162.01	79.02%	591
284	90	90.00		132.01	132	42	1.933%				42.00	46.67%	765
287	170	170.00		188.00	188	18	0.504%				18.00	10.59%	79
289	142	142.02		326.04	326	184	4.243%				184.02	129.58%	92
290	65	65.00		99.01	99	34	2.126%				34.00	52.31%	86
291	161	161.01		302.03	302	141	3.195%				141.01	87.58%	118
292	509	509.03		794.05	794	285	2.248%				285.02	55.99%	336
293	62	62.00		94.01	94	32	2.103%				32.00	51.61%	351
294	121	121.03		798.21	798	677	9.891%				677.17	559.50%	286
295	165	165.04		873.20	873	708	8.687%				708.16	429.09%	339
296	347	347.02		528.03	528	181	2.121%				181.01	52.16%	235
297	58	58.00		90.01	90	32	2.221%				32.00	55.17%	481
298	71	71.00		83.00	83	12	0.784%				12.00	16.90%	267
299	86	86.00		100.00	100	14	0.757%				14.00	16.28%	180
301	67	67.00		82.00	82	15	1.015%				15.00	22.39%	23
302	58	58.00		76.00	76	18	1.361%				18.00	31.03%	83
303	183	183.01		238.01	238	55	1.323%				55.00	30.05%	359
304	161	161.01		301.03	301	140	3.178%				140.01	86.96%	390
305	98	98.00		110.00	110	12	0.579%				12.00	12.24%	86
308	141	141.01		210.01	210	69	2.012%				69.00	48.94%	548
309	143	143.00		153.00	153	10	0.339%				10.00	6.99%	175
316	166	166.03		552.09	552	386	6.192%				386.06	232.53%	114
322	112	112.00		141.00	141	29	1.158%				29.00	25.89%	54
427	203	203.01		258.01	258	55	1.206%				55.00	27.09%	212
428	247	247.01		317.01	317	70	1.255%				70.00	28.34%	13
429	186	186.00		211.00	211	25	0.633%				25.00	13.44%	85
459	4	4.00		4.00	4	0	0.000%				0.00	0.00%	157
Total	30,316	30,317	0	44,926	44,923	14,607					14,609		23,954ac

BASIN NO.	BASIN NAME	Ex. Connections	A					B					C					D					E					F					G				
			TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ
1	WHIPPLE CR. E.	169.05	284	110ac	47%	12.9	6.0	287	98ac	11%	210.4	22.3	291	10ac	88%	13.6	12.0	294	273ac	560%	115.5	646.4	295	276ac	429%	134.4	576.6	304	387ac	87%	159.8	138.9					
2	MILL CR.	56.0	267	16ac	130%	10.0	13.0	293	61ac	52%	10.8	5.6	295	16ac	429%	7.8	33.4	297	299ac	55%	36.1	19.9	298	158ac	17%	42.0	7.1	304	23ac	87%	9.5	8.3	305	86ac	12%	98.0	12.0
3	MT. VISTA	310.0	292	25ac	56%	37.9	21.2	293	198ac	52%	35.0	18.1	295	39ac	429%	19.0	81.5	296	72ac	52%	106.3	55.5														
4	I-5 NORTH	709.0	267	33ac	130%	20.6	26.7	290	84ac	52%	63.5	33.2	291	91ac	88%	124.2	108.7	292	311ac	56%	471.2	263.8	293	89ac	52%	15.7	8.1	295	8ac	429%	3.9	16.7					
5	PLEASNT VLY N	1.0	267	25ac	130%	15.6	20.3	297	177ac	55%	21.3	11.8	298	267ac	17%	71.0	12.0	299	180ac	16%	86.0	14.0														
6	PLEASNT VLY S	109.0	261	72ac	8%	46.6	3.7	267	230ac	130%	143.3	186.4	268	100ac	18%	79.0	14.0																			
7	NE 34TH STREET	111.0	289	60ac	130%	92.6	120.0	267	5ac	130%	3.1	4.1																								
8	BARBERTON	214.0	254	66ac	53%	69.9	36.9	260	243ac	90%	220.1	197.9	261	252ac	8%	163.2	13.0	267	64ac	130%	39.9	51.9	289	21ac	130%	32.4	42.0										
9	SHERWOOD	257.0	135	38ac	181%	39.0	70.5	140	38ac	15%	77.4	11.7	145	294ac	38%	400.1	152.9	146	9ac	118%	4.1	4.9														
10	BLUEBERRY HILL	405.0	143	20ac	50%	40.3	20.3	144	81ac	39%	133.3	52.6	145	122ac	38%	166.0	63.4																			
11	SYLVAN CREEK	224.0	142	19ac	19%	39.3	7.4	143	120ac	50%	242.0	122.0	144	106ac	39%	174.4	68.8	142	4ac	19%	8.3	1.6	146	3ac	118%	1.4	1.6										
12	HWY. 99 E.	1471	131	121ac	182%	146.5	266.0	132	164ac	38%	801.7	305.3	133	169ac	37%	212.1	78.1	134	187ac	109%	287.0	314.0	135	152ac	181%	156.0	281.9	136	42ac	165%	38.9	64.3	137	35ac	82%	26.4	21.5
13	HAZEL DELL N.	1041	130	47ac		77.0		154	47ac	3%	154.9	4.3	158	133ac	14%	320.6	46.0	159	50ac	430%	70.0	301.1	160	138ac	0%	674.0	2.0	161	105ac	46%	122.0	56.0	165	110ac	94%	58.2	54.9
14	COUGAR CANYON	2534	122	137ac	33%	249.9	81.5	123	133ac	100%	40.5	40.5	130	69ac		113.0		131	116ac	182%	140.5	255.0	132	11ac	38%	53.8	20.5	133	149ac	37%	187.0	68.9	136	53ac	165%	49.1	81.2
15	CERRERO EST	39.0	164	53ac	142%	46.9	66.4																													
16	MUIRWOOD	68.0	156	15ac	25%	37.3	9.4	164	115ac	142%	101.7	144.1																								
17	MTN. VIEW GARDN	126.0	156	21ac	25%	52.2	13.1	163	128ac	22%	128.0	28.8	164	79ac	142%	69.9	99.0																			
18	SEWARD BRDG S.	195.0	162	84ac	189%	50.4	95.1	163	36ac	22%	36.0	8.1																								
19	FELIDA	176.0	155	240ac	262%	173.6	455.2	162	636ac	189%	381.4	719.7	163	44ac	22%	44.0	9.9																			
20	HWY. 99 N.	5.0	146	142ac	118%	65.2	76.8	147	66ac				289	9ac	130%	13.9	18.0																			
21	NE 16TH AVE	42.0	278	17ac	8%	32.9	2.7	282	138ac		48.5		281	48ac	129%	40.5	52.3	279	8ac	121%	13.6	16.5	291	33ac	88%	45.0	39.4										
22	KNOLLRIDGE	441.0	146	22ac	118%	10.1	11.9	278	213ac	8%	412.2	33.3																								
23	WOODCREEK	179.0	278	109ac	8%	211.0	17.0																													
24	ORO-VEGA	963.1	277	386ac	38%	649.4	244.6	278	25ac	8%	48.4	3.9	279	83ac	121%	150.3	182.6	283	296ac	79%	102.7	81.1	281	149ac	129%	125.7	162.4	283	6ac	79%	2.1	1.6	165	17ac	94%	9.0	8.5
25	WHIPPLE CR. W	2.0	281	148ac	129%	124.8	161.3	282	67ac		23.5		283	87ac	79%	30.2	23.8	284	655ac	47%	77.1	36.0	287	13ac	11%	28.0	3.0	294	13ac	560%	5.5	30.8	291	5ac	88%	6.8	6.0
26	SEWARD BRDG N	2.0	276	262ac	26%	38.0	10.0	277	88ac	38%	148.0	55.8	283	496ac	79%	172.1	136.0																			
27	GREEN LAKE	1.0	276	529ac	26%	76.7	20.2																													
28	ST. JOHNS	253.0	137	28ac	82%	21.1	17.2	140	72ac	15%	146.6	22.3	252	74ac	231%	21.4	49.5	254	189ac	53%	200.0	105.8	253	123ac	101%	134.0	135.0	260	72ac	90%	65.2	58.6	145	11ac	38%	15.0	5.7
29	GLENWOOD CRK	43.0	244	147ac	22%	126.7	28.0	246	71ac	20%	74.6	14.6	245	119ac	12%	312.0	36.0	256	106ac	373%	137.5	513.2														
30	NE 86TH ST	178.0	238	61ac	38%	106.5	40.2	246	186ac	20%	195.4	38.3	247	35ac	5%	76.0	3.9	256	22ac	373%	28.6	106.9														
31	COUNTRY MEADW	366.1	246	16ac	20%	16.8	3.3	247	143ac	5%	310.7	16.1	248	124ac	0%	439.4	1.0	249	42ac	17%	762.0	126.0	256	242ac	373%	315.1	1176.0	257	210ac	9%	611.7	55.0					
32	ORCHARD CRST N	192.0	232	61ac	21%	103.9	21.9	238	15ac	38%	26.2	9.9	239	106ac	33%	82.0	27.0	247	71ac	5%	154.3	8.0	246	18ac	20%	18.9	3.7										
33	ORCHARD CRST S	230.0	231	97ac	22%	272.2	60.2	232	143ac	21%	243.7	51.4																								
34	COVINGTON N	216.0	227	17ac	26%	23.8	6.1	229	134ac	31%	246.0	76.0	230	69ac	19%	112.7	21.4	237	135ac	43%	137.9	59.2	238	50ac	38%	87.3	32.9	244	16ac	22%	13.8	3.0	246	12ac	20%	12.6	2.5
35	COVINGTON S	220.0	227	106ac	26%	148.2	37.9	228	54ac	35%	231.0	80.0	230	72ac	19%	117.6	22.3	231	17ac	22%	47.7	10.6														
36	GREEN MEADW E	242.0	119	38ac	57%	311.0	176.0	126	269ac	39%	419.4	162.3	459	83ac		2.1																				
37	GREEN MEADW W	397.0	125	52ac	45%	371.0	168.0	126	135ac	39%	210.5	81.5	137	99ac	82%	74.6	60.8	138	233ac	220%	4.3	9.5	139	113ac		14.1		459	66ac		1.7					
38	CURTIN CRK	3.0	252	84ac	231%	24.3	56.1	254	121ac	53%	128.1	67.7	255	195ac		35.0		244	97ac	22%	83.6	18.5														
39	CEDAR 49	232.0	244	349ac	22%	300.9	66.5	252	56ac	231%	16.2	37.4	139	7ac		0.9																				
41	LAKESHORE	1270	148	244ac	26%	418.0	109.0	149	26ac	23%	49.0	11.4	150	35ac	1%	102.9	1.1	155	104ac	262%	75.2	197.2	156	256ac	25%	636.4	160.1										
42	CHICKEN CRK	1226.0	36	15ac	1%	81.1	0.5	38	136ac	33%	367.6	121.2	39	58ac	56%	155.3	87.5	37	108ac	5%	263.7	12.6	120	29ac	2%	162.5	3.8	122	98ac	33%	178.8	58.3	149	113ac	23%	213.0	49.7
43	OVERLOOK	438.8	36	107ac	1%	578.9	3.5	37	22ac	5%	53.7	2.6																								
44	HWY. 99 SOUTH	547.2	110	29ac	14%	49.0	7.0	120	128ac	2%	717.1	16.7	121	111ac	31%	218.4	67.2	122	18ac	33%	32.8	10.7														
45	MINNEHAHA	2.0	121	74ac	31%	145.6	44.8	122	31ac	33%	56.5	18.4	123	98ac	100%	29.8	29.8	110	3ac	14%	5.1	0.7	124	8ac	No TA											
46	HOCKINSON	1.0	272	50ac	17%	106.0	18.0	275	57ac	26%	57.0	15.0	427	212ac	27%	203.0	55.0	428	13ac	28%	247.0	70.0	429	85ac	13%	186.0	25.0										
47	MEADOW GLADE	306.0	301	23ac	22%	67.0	15.0	302	83ac	31%	58.0	18.0	303	359ac	30%	183.0	55.0	308	548ac	49%	141.0	69.0	309	175ac	7%	143.0	10.0	316	114ac	233%	166.0	386.1	322	54ac	26%	112.0	29.0

BASIN NO.	BASIN NAME	H TAZ No.	H Common Area	H Growth Rate	H Existing #HHs by TAZ	H Increase in # HHs by TAZ	I TAZ No.	I Common Area	I Growth Rate	I Existing #HHs by TAZ	I Increase in # HHs by TAZ	J TAZ No.	J Common Area	J Growth Rate	J Existing #HHs by TAZ	J Increase in # HHs by TAZ	K TAZ No.	K Common Area	K Growth Rate	K Existing #HHs by TAZ	K Increase in # HHs by TAZ	L TAZ No.	L Common Area	L Growth Rate	L Existing #HHs by TAZ	L Increase in # HHs by TAZ	M TAZ No.	M Common Area	M Growth Rate	M Existing #HHs by TAZ	M Increase in # HHs by TAZ	N TAZ No.	N Common Area	N Growth Rate	N Existing #HHs by TAZ	N Increase in # HHs by TAZ
1	WHIPPLE CR. E.																																			
2	MILL CR.																																			
3	MT. VISTA																																			
4	I-5 NORTH																																			
5	PLEASNT VLY N																																			
6	PLEASNT VLY S																																			
7	NE 34TH STREET																																			
8	BARBERTON																																			
9	SHERWOOD																																			
10	BLUEBERRY HILL																																			
11	SYLVAN CREEK																																			
12	HWY. 99 E.	141	51ac	54%	55.1	30.0	142	55ac	19%	113.9	21.4	143	99ac	50%	199.7	100.7	144	61ac	39%	100.4	39.6															
13	HAZEL DELL N.	141	16ac	54%	17.3	9.4	132	13ac	38%	63.6	24.2																									
14	COUGAR CANYON	138	33ac	220%	0.6	1.3	149	43ac	23%	81.0	18.9	150	165ac	1%	485.1	5.0	151	111ac	0%	746.8	2.4	153	38ac	20%	10.0	2.0	154	85ac	3%	280.1	7.7	156	23ac	25%	57.2	14.4
15	CERRERO EST																																			
16	MUIRWOOD																																			
17	MTN. VIEW GARDN																																			
18	SEWARD BRDG S.																																			
19	FELIDA																																			
20	HWY. 99 N.																																			
21	NE 16TH AVE																																			
22	KNOLLRIDGE																																			
23	WOODCREEK																																			
24	ORO-VEGA																																			
25	WHIPPLE CR. W.																																			
26	SEWARD BRDG N																																			
27	GREEN LAKE																																			
28	ST. JOHNS	261	5ac	8%	3.2	0.3																														
29	GLENWOOD CRK																																			
30	NE 86TH ST																																			
31	COUNTRY MEADW																																			
32	ORCHARD CRST N																																			
33	ORCHARD CRST S																																			
34	COVINGTON N	459	4ac		0.1		231	7ac	22%	19.6	4.3																									
35	COVINGTON S																																			
36	GREEN MEADW E																																			
37	GREEN MEADW W																																			
38	CURTIN CRK																																			
39	CEDAR 49																																			
41	LAKESHORE																																			
42	CHICKEN CRK	151	24ac	0%	161.5	0.5	34	2ac	No TA																											
43	OVERLOOK																																			
44	HWY. 99 SOUTH																																			
45	MINNEHAHA																																			
46	HOCKINSON																																			
47	MEADOW GLADE																																			

		O					P					Q					R					S					S				
BASIN NO.	BASIN NAME	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ	TAZ No.	Common Area	Growth Rate	Existing #HHs by TAZ	Increase in # HHs by TAZ
1	WHIPPLE CR. E.																														
2	MILL CR.																														
3	MT. VISTA																														
4	I-5 NORTH																														
5	PLEASNT VLY N																														
6	PLEASNT VLY S																														
7	NE 34TH STREET																														
8	BARBERTON																														
9	SHERWOOD																														
10	BLUEBERRY HILL																														
11	SYLVAN CREEK																														
12	HWY. 99 E.																														
13	HAZEL DELL N.																														
14	COUGAR CANYON	157	400ac	9%	672.8	61.2	158	131ac	14%	315.8	45.3	164	31ac	142%	27.4	38.9	152	181ac	11%	530.0	57.0	124	12ac	No TA			165	232ac	94%	122.8	115.7
15	CERRERO EST.																														
16	MUIRWOOD																														
17	MTN. VIEW GARDN																														
18	SEWARD BRDG S.																														
19	FELIDA																														
20	HWY. 99 N.																														
21	NE 16TH AVE																														
22	KNOLLRIDGE																														
23	WOODCREEK																														
24	ORO-VEGA																														
25	WHIPPLE CR. W.																														
26	SEWARD BRDG N																														
27	GREEN LAKE																														
28	ST. JOHNS																														
29	GLENWOOD CRK																														
30	NE 86TH ST.																														
31	COUNTRY MEADW																														
32	ORCHARD CRST N																														
33	ORCHARD CRST S																														
34	COVINGTON N																														
35	COVINGTON S																														
36	GREEN MEADW E																														
37	GREEN MEADW W																														
38	CURTIN CRK																														
39	CEDAR 49																														
41	LAKESHORE																														
42	CHICKEN CRK																														
43	OVERLOOK																														
44	HWY. 99 SOUTH																														
45	MINNEHAHA																														
46	HOCKINSON																														
47	MEADOW GLADE																														

			Analysis								Area Check				
			S	T	U	V	W	X	Y						
			Col. A-R	Col. A-R	75.0%	Col. T & U	Col. S & T	Col. S	Col. T						
BASIN NO.	BASIN NAME	Ex. Connections	Existing #HHs by TAZ	Total New HHs by TAZ / Basin Area	Total New HHs for Ult. Build-out	Percentage of Ult. Growth	Percentage of Growth (New+Ex.)/Ex.	Annual Growth Rate (TAZ)	Average No. of New Houses Per Year		Total Area by TAZ breakdown	Total Area by Basin Map	Difference	Percent Difference	Basin Number
1	WHIPPLE CR. E.	169.1	646.63	1402.15	1,624	86.3%	316.8%	5.9%	70.11		1154ac	1154.91			1
2	MILL CR.	56.0	214.10	99.20	333	29.8%	146.3%	1.9%	4.96		659ac	669	10ac	1%	2
3	MT. VISTA	310.0	310.02	176.19	69	254.2%	156.8%	2.3%	8.81		334ac	337	3ac	1%	3
4	I-5 NORTH	709.0	709.05	457.33	1,340	34.1%	164.5%	2.5%	22.87		616ac	618.72	3ac	0%	4
5	PLEASNT VLY N	1.0	193.92	58.03	111	52.3%	129.9%	1.3%	2.90		649ac	653	4ac	1%	5
6	PLEASNT VLY S	109.0	268.92	204.08	300	68.0%	175.9%	2.9%	10.20		402ac	404.89	3ac	1%	6
7	NE 34TH STREET	111.0	111.01	124.06	168	73.9%	211.8%	3.8%	6.20		65ac	65			7
8	BARBERTON	214.0	525.39	341.76	765	44.7%	165.0%	2.5%	17.09		646ac	651	5ac	1%	8
9	SHERWOOD	257.0	520.56	239.94	1,053	22.8%	146.1%	1.9%	12.00		379ac	384	5ac	1%	9
10	BLUEBERRY HILL	405.0	405.02	136.36	445	30.7%	133.7%	1.5%	6.82		223ac	230.9	8ac	3%	10
11	SYLVAN CREEK	224.0	465.43	201.39	557	36.2%	143.3%	1.8%	10.07		252ac	254	2ac	1%	11
12	HWY. 99 E.	1471	2137.60	1522.81	4,262	35.7%	171.2%	2.7%	76.14		1136ac	1136			12
13	HAZEL DELL N.	1041	1557.54	497.82	1,776	28.0%	132.0%	1.4%	24.89		659ac	663	4ac	1%	13
14	COUGAR CANYON	2534	4163.41	917.37	4,850	18.9%	122.0%	1.0%	45.87		2153ac	2152	-1ac	0%	14
15	CERRERO EST.	39.0	46.88	66.42	75	88.0%	241.7%	4.5%	3.32		53ac	54	1ac	2%	15
16	MUIRWOOD	68.0	139.00	153.51	355	43.3%	210.4%	3.8%	7.68		130ac	134	4ac	3%	16
17	MTN. VIEW GARDN	126.0	250.08	140.93	576	24.5%	156.4%	2.3%	7.05		228ac	233	5ac	2%	17
18	SEWARD BRDG S.	195.0	195.01	103.16	100	103.0%	152.9%	2.1%	5.16		120ac	120			18
19	FELIDA	176.0	598.99	1184.83	1,742	68.0%	297.8%	5.6%	59.24		920ac	918	-2ac	0%	19
20	HWY. 99 N.	5.0	79.08	94.83	347	27.3%	219.9%	4.0%	4.74		217ac	214.97	-2ac	-1%	20
21	NE 16TH AVE	42.0	180.47	110.91	405	27.4%	161.5%	2.4%	5.55		244ac	242.39	-1ac	0%	21
22	KNOLLRIDGE	441.0	441.01	45.20	828	5.5%	110.2%	0.5%	2.26		235ac	240	5ac	2%	22
23	WOODCREEK	179.0	210.95	17.04	174	9.8%	108.1%	0.4%	0.85		109ac	109.8	1ac	1%	23
24	ORO-VEGA	963.1	1087.55	684.80	1,756	39.0%	163.0%	2.5%	34.24		962ac	961	-1ac	0%	24
25	WHIPPLE CR. W.	2.0	295.92	260.85	414	62.9%	188.1%	3.2%	13.04		988ac	989	1ac	0%	25
26	SEWARD BRDG N	2.0	358.08	201.74	388	52.0%	156.3%	2.3%	10.09		846ac	853	7ac	1%	26
27	GREEN LAKE	1.0	76.68	20.21	0	9164.3%	126.4%	1.2%	1.01		529ac	531.5	3ac	0%	27
28	ST. JOHNS	253.0	606.62	394.34	1,606	24.6%	165.0%	2.5%	19.72		574ac	575	1ac	0%	28
29	GLENWOOD CRK	43.0	650.84	591.80	1,024	57.8%	190.9%	3.3%	29.59		443ac	442.35	0ac	0%	29
30	NE 86TH ST	178.0	406.64	189.36	479	39.5%	146.6%	1.9%	9.47		304ac	307.1	3ac	1%	30
31	COUNTRY MEADW	366.1	2455.68	1377.41	1,063	129.6%	156.1%	2.3%	68.87		777ac	775.24	-2ac	0%	31
32	ORCHARD CRST N	192.0	385.31	70.49	338	20.9%	118.3%	0.8%	3.52		271ac	272	1ac	0%	32
33	ORCHARD CRST S	230.0	515.89	111.61	567	19.7%	121.6%	1.0%	5.58		240ac	244	4ac	2%	33
34	COVINGTON N	216.0	653.89	205.52	1,249	16.5%	131.4%	1.4%	10.28		444ac	448	4ac	1%	34
35	COVINGTON S	220.0	544.59	150.79	779	19.3%	127.7%	1.2%	7.54		249ac	256	7ac	3%	35
36	GREEN MEADW E	242.0	732.55	338.35	1,521	22.2%	146.2%	1.9%	16.92		390ac	390			36
37	GREEN MEADW W	397.0	676.20	319.84	1,048	30.5%	147.3%	2.0%	15.99		698ac	704	6ac	1%	37
38	CURTIN CRK	3.0	271.03	142.34	467	30.5%	152.5%	2.1%	7.12		497ac	501.27	4ac	1%	38
39	CEDAR 49	232.0	317.97	103.90	503	20.7%	132.7%	1.4%	5.20		412ac	417	5ac	1%	39
41	LAKESHORE	1270	1281.52	478.83	848	56.5%	137.4%	1.6%	23.94		665ac	672	7ac	1%	41
42	CHICKEN CRK	1226.0	1583.47	334.07	1,331	25.1%	121.1%	1.0%	16.70		583ac	583			42
43	OVERLOOK	438.8	632.57	6.07	149	4.1%	101.0%	0.0%	0.30		129ac	133.68	5ac	4%	43
44	HWY. 99 SOUTH	547.2	1017.36	101.61	573	17.7%	110.0%	0.5%	5.08		286ac	291	5ac	2%	44
45	MINNEHAHA	2.0	237.05	93.80	731	12.8%	139.6%	1.7%	4.69		214ac	214			45
46	HOCKINSON	1.0	799.02	183.01	120	153.1%	122.9%	1.0%	9.15		417ac	415.22	-2ac	0%	46
47	MEADOW GLADE	306.0	870.05	582.07	931	62.5%	166.9%	2.6%	29.10		1356ac	1362.41	6ac	0%	47
		16,214	30,827	15,238	40,138				762			23977.35			

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1			Hookups during the previous 12 month period																									
2																												
3	BASIN	BASIN	1/1/1998	1/1/1999	1/1/2000	1/1/2001	1/1/2002	1/1/2003	1/1/2004	1/1/2005	1/1/2006	1/1/2007	1/1/2008	1/1/2009	1/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015	1/1/2016	1/1/2017	1/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022	1/1/2023
4	NO.	NAME																										
5	1	WHIPPLE CREEK EAST	36	72																								
6	2	MILL CREEK	7	3																								
7	3	MT. VISTA	17	6																								
8	4	I-5 NORTH	72	17																								
9	5	PLEASANT VALLEY NORTH																										
10	6	PLEASANT VALLEY SOUTH																										
11	7	NE 134TH STREET																										
12	8	BARBERTON	7	13																								
13	9	SHERWOOD		1																								
14	10	BLUEBERRY HILL	7	2																								
15	11	SYLVAN CREEK	3	23																								
16	12	HIGHWAY 99 EAST	46	14																								
17	13	HAZEL DELL NORTH	13	32																								
18	14	COUGAR CANYON	69	80																								
19	15	CERRERO ESTATES		1																								
20	16	MUIRWOOD	1	34																								
21	17	MTN. VIEW GARDEN	17	24																								
22	18	SEWARD BRIDGE SOUTH	6	1																								
23	19	FELIDA	39	33																								
24	20	HIGHWAY 99 NORTH	2																									
25	21	NE 16TH AVE	6	6																								
26	22	KNOLLRIDGE																										
27	23	WOODCREEK		1																								
28	24	ORO-VEGA	189	113																								
29	25	WHIPPLE CREEK WEST																										
30	26	SEWARD BRIDGE NORTH	1	42																								
31	27	GREEN LAKE																										
32	28	ST. JOHNS	129	30																								
33	29	GLENWOOD CREEK	1	38																								
34	30	NE 86TH ST	49	33																								
35	31	COUNTRY MEADOWS	7	8																								
36	32	ORCHARD CREST NORTH	91	20																								
37	33	ORCHARD CREST SOUTH	12	35																								
38	34	COVINGTON NORTH	2	5																								
39	35	COVINGTON SOUTH	3	9																								
40	36	GREEN MEADOWS EAST	4	1																								
41	37	GREEN MEADOWS WEST	11	17																								
42	38	CURTIN CREEK	3																									
43	39	CEDAR 49	4	4																								
44																												
45	41	LAKESHORE	22	9																								
46	42	CHICKEN CREEK	23	2																								
47	43	OVERLOOK		1																								
48	44	HIGHWAY 99 SOUTH	6	2																								
49	45	MINNEHAHA	3	3																								
50	46	HOCKINSON	2	1																								
51	47	MEADOW GLADE	47	27																								
52	SUM	TOTAL OF ALL BASINS	957	763																								

	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC
1		Sum of new hookups through this date.																									
2																											
3	BASIN	1/1/1998	1/1/1999	1/1/2000	1/1/2001	1/1/2002	1/1/2003	1/1/2004	1/1/2005	1/1/2006	1/1/2007	1/1/2008	1/1/2009	1/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015	1/1/2016	1/1/2017	1/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022	1/1/2023
4	NO.																										
5	1	36	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108
6	2	7	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
7	3	17	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
8	4	72	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
9	5																										
10	6																										
11	7																										
12	8	7	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
13	9		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	10	7	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
15	11	3	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
16	12	46	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
17	13	13	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
18	14	69	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149
19	15		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	16	1	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
21	17	17	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
22	18	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
23	19	39	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
24	20	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
25	21	6	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
26	22																										
27	23		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28	24	189	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302
29	25																										
30	26	1	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
31	27																										
32	28	129	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159
33	29	1	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
34	30	49	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82
35	31	7	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
36	32	91	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111
37	33	12	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
38	34	2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
39	35	3	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
40	36	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
41	37	11	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
42	38	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
43	39	4	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
44																											
45	41	22	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
46	42	23	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
47	43		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
48	44	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
49	45	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
50	46	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
51	47	47	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
52	SUM	957	1720																								

Population data projected in column "E" adjusted by the updated hookup information in column "D"? (Y/N) **y**

Growth rate to be used from the updated census information to the end of the comp plan term? (H, I, J, or K) **k**

Note: If the population data is not updated by column "E", the growth rate in colume "H" will be used to project the population.

Yellow denotes required information

Cyan denotes optional information

Column

A	B	C	D	E	F	G	H	I	J	K
	Provided Information	Calc'd Information	Provided Information	Projected Information	Calc'd Information	Calc'd Information	Calc'd Information	Calc'd Information	Calc'd Information	Input Information
Basin	Hookup Date Dec-96 # of HH	Beg. Of Comp. Plan Jan-97 # of HH	Updated Connection 01/01/99 # of HH	End of Comp Plan Jan-17 # of HH	TAZ Proj. Households Dec-16 # of HH	Increase in # of HH Comp. Plan (Col. C & E)	Predicted Annual Growth (Col. B & F)	Actual Annual Growth (Col. B & D)	Projected Annual Growth (Col. D & F)	Annual Growth Rate
1	169	169.05	276.60	**1571.57**	1571	1402.51	11.8%	27.911%	10.132%	10.13%
2	56	56.01	66.00	**155.22**	155	99.21	5.2%	8.556%	4.865%	4.87%
3	310	310.02	333.00	**486.22**	486	176.20	2.3%	3.641%	2.125%	2.12%
4	709	709.05	798.04	**1704.19**	1166	995.14	2.5%	6.089%	2.131%	4.30%
5	1	1.00	1.00	**39.27**	59	38.27	22.6%	0.000%	25.430%	22.62%
6	109	109.02	109.00	**313.13**	313	204.11	5.4%	0.000%	6.037%	6.04%
7	111	111.01	111.00	**235.09**	235	124.08	3.8%	0.000%	4.257%	4.26%
8	214	214.03	234.00	**555.83**	556	341.80	4.9%	4.565%	4.923%	4.92%
9	257	257.02	258.00	**569.82**	497	312.80	3.4%	0.194%	3.709%	4.50%
10	405	405.02	414.00	**504.49**	541	99.48	1.5%	1.104%	1.501%	1.10%
11	224	224.02	250.00	**425.63**	425	201.61	3.3%	5.640%	2.997%	3.00%
12	1471	1471.14	1531.00	**2994.11**	2994	1522.97	3.6%	2.018%	3.796%	3.80%
13	1041	1041.06	1086.10	**1538.90**	1539	497.84	2.0%	2.142%	1.955%	1.95%
14	2534	2534.11	2682.81	**3451.51**	3451	917.40	1.6%	2.892%	1.409%	1.41%
15	39	39.01	40.00	**97.90**	105	58.89	5.1%	1.273%	5.532%	5.10%
16	68	68.01	103.49	**221.53**	222	153.52	6.1%	23.348%	4.319%	4.32%
17	126	126.01	167.00	**266.95**	267	140.93	3.8%	15.115%	2.640%	2.64%
18	195	195.01	202.00	**277.41**	298	82.40	2.1%	1.778%	2.187%	1.78%
19	176	176.05	248.00	**1361.18**	1361	1185.13	10.8%	18.691%	9.920%	9.92%
20	5	5.00	7.07	**159.46**	100	154.45	16.1%	18.898%	15.847%	18.90%
21	42	42.01	53.81	**188.11**	153	146.10	6.7%	13.180%	5.974%	7.20%
22	441	441.01	441.00	**486.21**	486	45.20	0.5%	0.000%	0.544%	0.54%
23	179	179.00	180.00	**196.04**	196	17.04	0.5%	0.279%	0.475%	0.48%
24	963	963.07	1264.81	**1972.74**	1648	1009.67	2.7%	14.593%	1.481%	2.50%
25	2	2.00	2.00	**161.43**	263	159.43	27.6%	0.000%	31.133%	27.62%
26	2	2.00	45.08	**203.79**	204	201.79	26.0%	374.258%	8.742%	8.74%
27	1.00000	1.00042	1.00000	**1.00**	21	0.00	16.5%	0.000%	18.495%	0.00%
28	253	253.03	412.00	**647.39**	647	394.35	4.8%	27.590%	2.542%	2.54%
29	43	43.02	82.00	**635.00**	635	591.98	14.4%	38.063%	12.042%	12.04%
30	178	178.02	260.16	**367.38**	367	189.36	3.7%	20.880%	1.936%	1.94%
31	366	366.08	380.90	**1743.81**	1743	1377.74	8.1%	2.014%	8.818%	8.82%
32	192	192.01	302.60	**447.71**	262	255.70	1.6%	25.521%	-0.787%	2.20%
33	230	230.01	276.53	**341.62**	342	111.60	2.0%	9.643%	1.181%	1.18%
34	216	216.02	223.00	**421.56**	422	205.54	3.4%	1.606%	3.601%	3.60%
35	220	220.02	232.00	**374.07**	371	154.05	2.6%	2.689%	2.639%	2.69%
36	242	242.03	247.00	**580.42**	580	338.39	4.5%	1.027%	4.861%	4.86%
37	397	397.03	425.38	**716.90**	717	319.87	3.0%	3.510%	2.942%	2.94%
38	3	3.00	6.00	**145.41**	145	142.41	21.4%	41.388%	19.374%	19.37%
39	232	232.01	240.00	**408.60**	336	176.59	1.9%	1.708%	1.885%	3.00%
		0.00								
41	1270	1270.48	1301.42	**1616.56**	1749	346.08	1.6%	1.212%	1.657%	1.21%
42	1226	1225.95	1250.91	**1499.98**	1560	274.03	1.2%	1.014%	1.234%	1.01%
43	439	438.81	439.81	**448.91**	445	10.10	0.1%	0.114%	0.064%	0.11%
44	547	547.17	555.16	**648.79**	649	101.61	0.9%	0.728%	0.870%	0.87%
45	2	2.00	8.00	**260.33**	96	258.32	21.3%	99.905%	14.791%	21.34%
46	1	1.00	4.20	**82.65**	184	81.65	29.8%	104.838%	23.369%	18.00%
47	306	306.04	380.00	**888.19**	888	582.14	5.5%	11.429%	4.829%	4.83%
SUM	16,213	16,214	17,933	32,414	31,451	16,200				

VIII. Individual Basin Summaries

Updates

Ex. Connection Date 12/31/1996

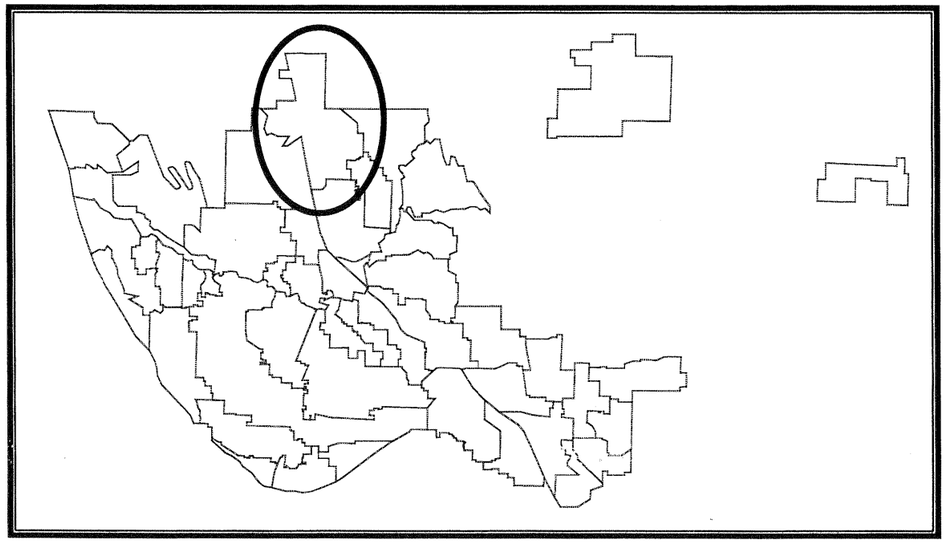
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **1**

WHIPPLE CREEK EAST



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	169.1	(9% of Ultimate)	31.8	(Average Densities)	5.315 DU/Acre
Existing Single Family Served	46.0	(27% of Exist.)	16.8	(53% of Exist.)	2.738 DU/Acre
Existing Multi Family Served	90.0	(53% of Exist.)	10.0	(31% of Exist.)	9.003 DU/Acre
Existing UH/UR Served	33.0	(20% of Exist.)	5.0	(16% of Exist.)	6.602 DU/Acre
New Service thru the updated connections	107.6	(6% of Ultimate Service)	19.8	(4.38% of Ultimate)	5.433 DU/Acre
New/Updated Single Family Served (est.)	36.7	(34% of New HHs)	12.5	(63% of New HHs)	2.938 DU/Acre
New/Updated Multi Family Served (est.)	70.9	(66% of New HHs)	7.3	(37% of New HHs)	9.687 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1792.9		814.5	(Proposed Densities)	2.201 DU/Acre
Ultimate Single Family Served	664.1	(37% of Ultimate)	317.9	(39% of Ultimate)	2.089 DU/Acre
Ultimate Multi Family Served	1081.5	(60% of Ultimate)	134.0	(16% of Ultimate)	8.074 DU/Acre
Ultimate UH/UR Served	47.3	(3% of Ultimate)	362.7	(45% of Ultimate)	0.130 DU/Acre
New Service During the Comp. Plan	1402.5	(80% of Ultimate SF & MF)	475.4	(105% of Ultimate SF & MF)	2.950 DU/Acre
New Single Family Service	521.9	(37% of New HHs)	336.4	(71% of New HHs)	1.552 DU/Acre
New Multi Family Service	880.6	(63% of New HHs)	139.1	(29% of New HHs)	6.333 DU/Acre
Service at the end of HDSD Comp. Plan	1571.6	(88% of Ultimate)	507.2	(Existing & New)	3.098 DU/Acre
Single Family Service - end of Comp. Plan	568.0	(37% of Projected)	353.2	(70% of Projected)	1.608 DU/Acre
Multi Family Service - end of Comp. Plan	970.6	(63% of Projected)	149.1	(30% of Projected)	6.512 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	15.0	32.8		
	Actual Rate	3.44%	33.68%		31.99%	31.59%	Ultimate	477.6	259.3	32.8		
	Projected Rate	3.53%	10.50%		14.84%	12.70%	Buildout %	5%	45%	100%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	169.1	**46.0**	**90.0**	**31.8**	**16.8**	**10.0**	**1997**	**1.00**	**15.00**	**32.80**		
1	217.4	64.0	120.4	40.3	22.2	13.2	1998	1.17	16.62	32.80		
2	276.6	82.7	160.9	51.6	29.3	17.3	1999	1.37	18.42	32.80		
3	313.3	102.4	177.8	58.1	33.6	19.5	2000	1.61	20.40	32.80		
4	352.4	122.9	196.5	65.6	38.6	22.0	2001	1.89	22.61	32.81		
5	394.2	144.1	217.1	74.1	44.3	24.8	2002	2.21	25.05	32.81		
6	**438.9**	**166.0**	**239.9**	**83.9**	**50.9**	**27.9**	**2003**	**2.59**	**27.76**	**32.81**		
7	486.8	188.7	265.1	95.0	58.5	31.5	2004	3.04	30.75	32.81		
8	538.1	212.2	292.9	107.6	67.1	35.5	2005	3.56	34.08	32.81		
9	593.2	236.5	323.7	122.1	77.1	40.0	2006	4.17	37.76	32.81		
10	**652.4**	**261.7**	**357.7**	**138.6**	**88.6**	**45.1**	**2007**	**4.89**	**41.84**	**32.81**		
11	716.0	287.8	395.2	157.5	101.7	50.8	2008	5.73	46.35	32.82		
12	784.5	314.8	436.7	179.0	116.8	57.3	2009	6.71	51.36	32.82		
13	858.3	342.7	482.6	203.6	134.1	64.5	2010	7.87	56.91	32.82		
14	937.9	371.6	533.2	231.7	154.0	72.7	2011	9.22	63.06	32.82		
15	**1,023.8**	**401.6**	**589.2**	**263.8**	**176.8**	**82.0**	**2012**	**10.80**	**69.87**	**32.82**		
16	1,116.7	432.6	651.1	300.5	203.1	92.4	2013	12.66	77.41	32.82		
17	1,217.1	464.7	719.4	342.3	233.2	104.1	2014	14.84	85.78	32.83		
18	1,325.9	497.9	794.9	390.2	267.8	117.3	2015	17.39	95.04	32.83		
19	1,443.7	532.3	878.4	444.8	307.6	132.3	2016	20.38	105.31	32.83		
20	**1,571.6**	**568.0**	**970.6**	**456.8**	**317.9**	**134.0**	**2017**	**23.88**	**116.68**	**32.83**		
Ultimate	*1792.91*	*664.10*	*1081.51*	*814.47*	*317.85*	*133.95*		*477.6*	*259.3*	*32.8*		

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
8,503	**11,504**	**22,507**	**18,000**			**288.6**	**60,513**	**4.09**	**247,232**	**59,040**	**59,040**		**0.306**
8,546	16,007	30,088	19,944			391.7	74,585	4.03	300,314	59,043	59,043		0.359
8,596	20,666	40,222	22,099			515.8	91,582	3.97	363,330	59,045	59,045		0.422
8,655	25,605	44,457	24,485			597.9	103,202	3.93	405,894	59,048	59,048		0.465
8,724	30,719	49,124	27,130			685.3	115,698	3.90	451,206	59,051	59,051		0.510
8,805	36,014	54,281	30,061			778.2	129,161	3.87	499,540	59,053	59,053		0.559
8,900	**41,495**	**59,980**	**33,308**			**877.3**	**143,682**	**3.84**	**551,158**	**59,056**	**59,056**		**0.610**
9,012	47,170	66,276	36,905			983.0	159,363	3.80	606,343	59,059	59,059		0.665
9,142	53,044	73,234	40,892			1095.9	176,312	3.77	665,403	59,062	59,062		0.724
9,295	59,126	80,923	45,309			1216.7	194,652	3.74	728,673	59,064	59,064		0.788
9,474	**65,422**	**89,418**	**50,203**			**1346.0**	**214,517**	**3.71**	**796,521**	**59,067**	**59,067**		**0.856**
9,684	71,941	98,806	55,625			1484.6	236,056	3.68	869,342	59,070	59,070		0.928
9,930	78,689	109,178	61,633			1633.4	259,431	3.65	947,571	59,072	59,072		1.007
10,219	85,676	120,640	68,291			1793.3	284,825	3.62	1,031,680	59,075	59,075		1.091
10,557	92,908	133,305	75,667			1965.2	312,438	3.59	1,122,181	59,078	59,078		1.181
10,953	**100,396**	**147,300**	**83,840**			**2150.4**	**342,490**	**3.56**	**1,219,634**	**59,080**	**59,080**		**1.279**
11,417	108,148	162,764	92,896			2350.1	375,226	3.53	1,324,647	59,083	59,083		1.384
11,961	116,173	179,852	102,930			2565.7	410,917	3.50	1,437,883	59,086	59,086		1.497
12,599	124,482	198,733	114,048			2798.7	449,862	3.47	1,560,062	59,089	59,089		1.619
13,346	133,083	219,597	126,367			3050.7	492,394	3.44	1,691,969	59,091	59,091		1.751
14,222	**141,988**	**242,651**	**140,017**			**3323.7**	**538,878**	**3.40**	**1,834,455**	**59,094**	**59,094**		**1.894**
131,222	*166,025*	*270,377*	*311,148*			*4909.1*	*878,772*	*3.25*	*2,858,101*	*59,094*	*59,094*		*2.917*

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

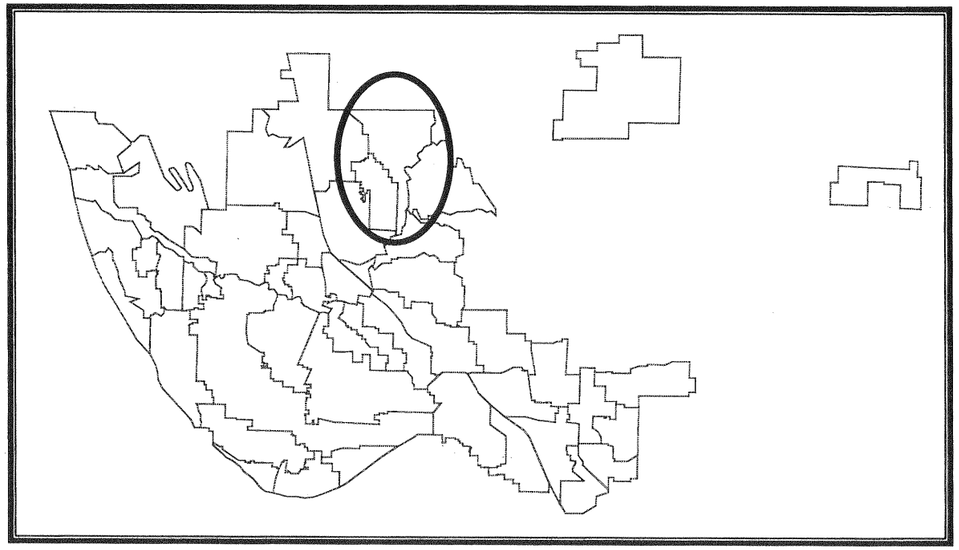
HDSD Basin Summary

Basin Number **2**

MILL CREEK

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	56.0	(14% of Ultimate)	20.5	(Average Densities)	2.738 DU/Acre
Existing Single Family Served	56.0	(100% of Exist.)	20.5	(100% of Exist.)	2.738 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections	10.0	(3% of Ultimate Service)	3.3	(1.96% of Ultimate)	3.019 DU/Acre
New/Updated Single Family Served (est.)	10.0	(100% of New HHs)	3.3	(100% of New HHs)	3.019 DU/Acre
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	389.3		554.0	(Proposed Densities)	0.703 DU/Acre
Ultimate Single Family Served	361.0	(93% of Ultimate)	169.0	(31% of Ultimate)	2.136 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served	28.3	(7% of Ultimate)	385.0	(69% of Ultimate)	0.074 DU/Acre
New Service During the Comp. Plan	99.2	(27% of Ultimate SF & MF)	40.1	(24% of Ultimate SF & MF)	2.474 DU/Acre
New Single Family Service	99.2	(100% of New HHs)	40.1	(100% of New HHs)	2.474 DU/Acre
New Multi Family Service					
Service at the end of HDSD Comp. Plan	155.2	(40% of Ultimate)	60.6	(Existing & New)	2.563 DU/Acre
Single Family Service - end of Comp. Plan	155.2		60.6		2.563 DU/Acre
Multi Family Service - end of Comp. Plan					



	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0			
Actual Rate		2.31%			7.79%		Ultimate	158.1	7.0			
Projected Rate		1.88%			5.33%		Buildout %	5%	25%			
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	56.0	56.0		20.5	20.5		1997	1.00	0.04			
1	60.9	60.9		22.0	22.0		1998	1.11	0.05			
2	66.0	66.0		23.8	23.8		1999	1.23	0.06			
3	70.2	70.2		25.0	25.0		2000	1.36	0.07			
4	74.5	74.5		26.4	26.4		2001	1.51	0.09			
5	78.9	78.9		27.8	27.8		2002	1.68	0.10			
6	83.3	83.3		29.3	29.3		2003	1.86	0.12			
7	87.9	87.9		30.8	30.8		2004	2.06	0.15			
8	92.5	92.5		32.5	32.5		2005	2.29	0.18			
9	97.2	97.2		34.2	34.2		2006	2.54	0.22			
10	102.0	102.0		36.0	36.0		2007	2.81	0.26			
11	106.9	106.9		37.9	37.9		2008	3.12	0.32			
12	111.9	111.9		40.0	40.0		2009	3.46	0.39			
13	116.9	116.9		42.1	42.1		2010	3.83	0.47			
14	122.1	122.1		44.3	44.3		2011	4.25	0.56			
15	127.4	127.4		46.7	46.7		2012	4.71	0.68			
16	132.7	132.7		49.2	49.2		2013	5.23	0.82			
17	138.2	138.2		51.8	51.8		2014	5.80	0.99			
18	143.8	143.8		54.6	54.6		2015	6.43	1.20			
19	149.4	149.4		57.5	57.5		2016	7.13	1.45			
20	155.2	155.2		60.6	60.6		2017	7.90	1.75			
Ultimate	389.28	360.99		554.00	169.00			158.1	7.0			

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
250	14,002		48			142.5	14,300	4.20	60,033				0.060
277	15,237		58			155.1	15,572	4.19	65,188				0.065
307	16,500		70			168.1	16,878	4.17	70,458				0.070
341	17,553		85			178.9	17,979	4.17	74,887				0.075
378	18,626		102			190.0	19,106	4.16	79,406				0.079
419	19,719		123			201.4	20,261	4.15	84,023				0.084
465	20,832		149			213.0	21,446	4.14	88,743				0.089
515	21,966		180			224.8	22,662	4.13	93,573				0.094
572	23,122		218			236.9	23,911	4.12	98,521				0.099
634	24,299		263			249.3	25,196	4.11	103,595				0.104
703	25,499		317			262.0	26,519	4.10	108,806				0.109
779	26,721		384			275.0	27,884	4.09	114,165				0.114
864	27,966		463			288.3	29,293	4.09	119,686				0.120
958	29,234		560			301.9	30,752	4.08	125,384				0.125
1,063	30,526		676			315.9	32,265	4.07	131,279				0.131
1,179	31,843		817			330.2	33,838	4.06	137,393				0.137
1,307	33,184		986			344.9	35,477	4.05	143,750				0.144
1,449	34,550		1,191			360.0	37,191	4.04	150,380				0.150
1,607	35,942		1,439			375.5	38,988	4.04	157,320				0.157
1,782	37,360		1,738			391.4	40,881	4.03	164,612				0.165
1,976	38,805		2,100			407.8	42,881	4.02	172,304				0.172
	46,598		90,246		8,400	902.5	145,245	3.83	556,039				0.556

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

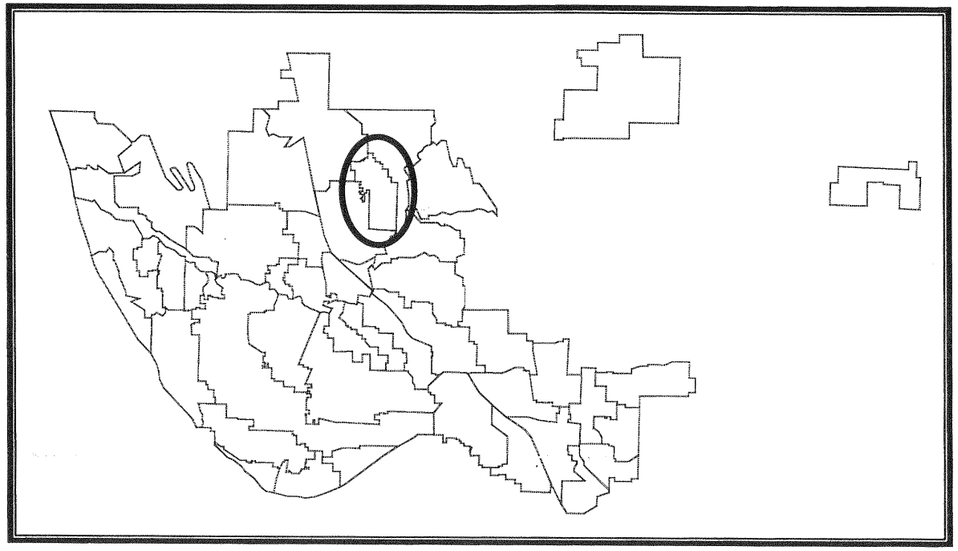
Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

HDSD Basin Summary

Basin Number **3**

MT. VISTA

	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	310.0	(82% of Ultimate)	113.2	(Average Densities)	2.738 DU/Acre
Existing Single Family Served	310.0	(100% of Exist.)	113.2	(100% of Exist.)	2.738 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections	23.0	(6% of Ultimate Service)	6.8	(4.62% of Ultimate)	3.389 DU/Acre
New/Updated Single Family Served (est.)	23.0	(100% of New HHs)	6.8	(100% of New HHs)	3.389 DU/Acre
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	379.3		147.0	(Proposed Densities)	2.580 DU/Acre
Ultimate Single Family Served	379.3	(100% of Ultimate)	147.0	(100% of Ultimate)	2.580 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served					
New Service During the Comp. Plan	176.2	(46% of Ultimate SF & MF)	57.9	(39% of Ultimate SF & MF)	3.041 DU/Acre
New Single Family Service	176.2	(100% of New HHs)	57.9	(100% of New HHs)	3.041 DU/Acre
New Multi Family Service					
Service at the end of HDSD Comp. Plan	486.2	(128% of Ultimate)	171.2	(Existing & New)	2.840 DU/Acre
Single Family Service - end of Comp. Plan	486.2		171.2		2.840 DU/Acre
Multi Family Service - end of Comp. Plan					



	Residential Land Served						Non-Residential Land & Septic Served																	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing					1111.0												
Actual Rate	3.64%			2.95%			Ultimate					3472.0												
Projected Rate	2.12%			1.99%			Buildout %					100%												
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Fixed Flow	Total (mgd)
	310.0	310.0		113.2	113.2		1997				1111.00			77,505			11,110		1886.0	88,615	3.61	319,497				0.319
1	321.3	321.3		116.6	116.6		1998				1176.14			80,326			11,761		1979.4	92,088	3.59	330,529				0.331
2	333.0	333.0		120.0	120.0		1999				1245.09			83,251			12,451		2077.6	95,702	3.57	341,930				0.342
3	340.1	340.1		122.4	122.4		2000				1318.09			85,021			13,181		2168.3	98,202	3.56	349,427				0.349
4	347.3	347.3		124.9	124.9		2001				1395.36			86,828			13,954		2263.6	100,782	3.54	357,105				0.357
5	354.7	354.7		127.3	127.3		2002				1477.17			88,673			14,772		2363.9	103,445	3.53	364,976				0.365
6	362.2	362.2		129.9	129.9		2003				1563.77			90,557			15,638		2469.3	106,195	3.51	373,045				0.373
7	369.9	369.9		132.5	132.5		2004				1655.45			92,482			16,555		2580.3	109,036	3.50	381,319				0.381
8	377.8	377.8		135.1	135.1		2005				1752.51			94,447			17,525		2697.0	111,972	3.48	389,806				0.390
9	379.3	379.3		137.8	137.8		2006				1855.25			94,832			18,553		2803.6	113,385	3.47	393,130				0.393
10	379.3	379.3		140.5	140.5		2007				1964.02			94,832			19,640		2912.3	114,472	3.45	395,309				0.395
11	379.3	379.3		143.3	143.3		2008				2079.17			94,832			20,792		3027.5	115,624	3.44	397,635				0.398
12	379.3	379.3		146.2	146.2		2009				2201.07			94,832			22,011		3149.4	116,843	3.42	400,115				0.400
13	379.3	379.3		147.0	147.0		2010				2330.11			94,832			23,301		3278.4	118,133	3.41	402,760				0.403
14	379.3	379.3		147.0	147.0		2011				2466.72			94,832			24,667		3415.0	119,499	3.39	405,579				0.406
15	379.3	379.3		147.0	147.0		2012				2611.34			94,832			26,113		3559.7	120,946	3.38	408,583				0.409
16	379.3	379.3		147.0	147.0		2013				2764.44			94,832			27,644		3712.8	122,476	3.36	411,782				0.412
17	379.3	379.3		147.0	147.0		2014				2926.51			94,832			29,265		3874.8	124,097	3.35	415,188				0.415
18	379.3	379.3		147.0	147.0		2015				3098.08			94,832			30,981		4046.4	125,813	3.33	418,812				0.419
19	379.3	379.3		147.0	147.0		2016				3279.72			94,832			32,797		4228.0	127,629	3.31	422,667				0.423
20	379.3	379.3		147.0	147.0		2017				3472.00			94,832			34,720		4420.3	129,552	3.29	426,765				0.427
Ultimate	379.33	379.33		147.00	147.00						3472.0			94,832			34,720		948.3	129,552	3.81	494,208				0.494

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

HDSD Basin Summary

Basin Number **4**

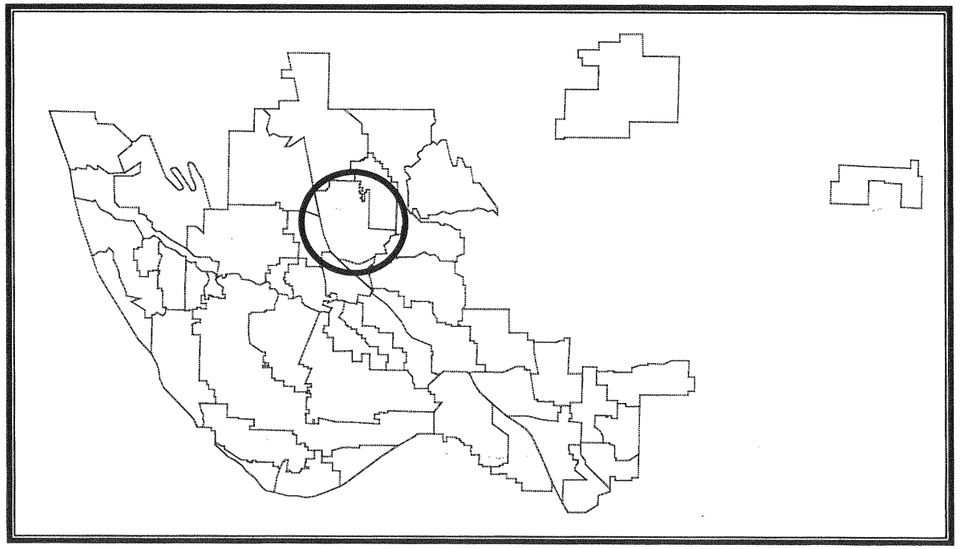
I-5 NORTH

Updates

Ex. Connection Date 12/31/1996

Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	709.0	(35% of Ultimate)	213.3	(Average Densities)	3.324 DU/Acre
Existing Single Family Served	594.0	(84% of Exist.)	205.1	(96% of Exist.)	2.897 DU/Acre
Existing Multi Family Served	115.0	(16% of Exist.)	8.2	(4% of Exist.)	13.987 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	89.0	(4% of Ultimate Service)	32.7	(7.36% of Ultimate)	2.726 DU/Acre
New/Updated Single Family Served (est.)	73.1	(82% of New HHs)	30.9	(95% of New HHs)	2.365 DU/Acre
New/Updated Multi Family Served (est.)	15.9	(18% of New HHs)	1.8	(5% of New HHs)	9.078 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	2048.6		443.7	(Proposed Densities)	4.617 DU/Acre
Ultimate Single Family Served	924.8	(45% of Ultimate)	335.0	(76% of Ultimate)	2.760 DU/Acre
Ultimate Multi Family Served	1123.8	(55% of Ultimate)	108.7	(24% of Ultimate)	10.343 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	995.1	(49% of Ultimate SF & MF)	276.4	(62% of Ultimate SF & MF)	3.600 DU/Acre
New Single Family Service	646.9	(65% of New HHs)	230.2	(83% of New HHs)	2.810 DU/Acre
New Multi Family Service	348.2	(35% of New HHs)	46.2	(17% of New HHs)	7.539 DU/Acre
Service at the end of HDSD Comp. Plan	1704.2	(83% of Ultimate)	489.7	(Existing & New)	3.480 DU/Acre
Single Family Service - end of Comp. Plan	1241.0	(73% of Projected)	435.3	(89% of Projected)	2.851 DU/Acre
Multi Family Service - end of Comp. Plan	463.2	(27% of Projected)	54.4	(11% of Projected)	8.513 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	19.0																		
Actual Rate	5.97%	6.70%		7.27%	10.15%		Ultimate	136.8																		
Projected Rate	3.51%	7.27%		3.46%	9.88%		Buildout %	50%																		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	709.0	594.0	115.0	213.3	205.1	8.2	1997		19.00					148,510	28,752	22,800			1703.6	200,062	3.64	728,007				0.728
1	752.2	629.5	122.7	229.0	220.0	9.1	1998		20.26					157,377	30,678	24,308			1806.9	212,363	3.62	768,680				0.769
2	798.0	667.1	130.9	245.9	236.0	10.0	1999		21.60					166,772	32,733	25,916			1916.5	225,422	3.60	811,544				0.812
3	831.0	690.5	140.5	255.1	244.1	11.0	2000		23.02					172,629	35,113	27,630			1993.2	235,373	3.59	844,269				0.844
4	865.4	714.7	150.7	264.6	252.6	12.0	2001		24.55					178,686	37,667	29,457			2073.1	245,810	3.57	878,429				0.878
5	901.4	739.8	161.6	274.6	261.3	13.2	2002		26.17					184,955	40,406	31,406			2156.6	256,767	3.56	914,114				0.914
6	939.2	765.8	173.4	284.9	270.4	14.5	2003		27.90					191,444	43,344	33,483			2243.9	268,271	3.55	951,398				0.951
7	978.6	792.6	186.0	295.7	279.7	16.0	2004		29.75					198,161	46,496	35,698			2335.0	280,355	3.53	990,362				0.990
8	1,020.0	820.5	199.5	307.0	289.4	17.6	2005		31.72					205,114	49,876	38,059			2430.2	293,049	3.52	1,031,088				1.031
9	1,063.3	849.2	214.0	318.7	299.4	19.3	2006		33.81					212,310	53,503	40,576			2529.7	306,390	3.50	1,073,664				1.074
10	1,108.6	879.0	229.6	331.0	309.8	21.2	2007		36.05					219,759	57,394	43,260			2633.8	320,413	3.49	1,118,184				1.118
11	1,156.1	909.9	246.3	343.8	320.5	23.3	2008		38.43					227,470	61,567	46,121			2742.6	335,158	3.48	1,164,745				1.165
12	1,188.9	924.8	264.2	357.2	331.6	25.6	2009		40.98					231,193	66,044	49,172			2813.9	346,409	3.47	1,200,617				1.201
13	1,208.2	924.8	283.4	363.2	335.0	28.1	2010		43.69					231,193	70,846	52,424			2850.4	354,464	3.46	1,226,867				1.227
14	1,228.8	924.8	304.0	365.9	335.0	30.9	2011		46.58					231,193	75,998	55,892			2889.5	363,083	3.46	1,254,888				1.255
15	1,250.9	924.8	326.1	369.0	335.0	34.0	2012		49.66					231,193	81,524	59,588			2931.5	372,306	3.45	1,284,794				1.285
16	1,274.6	924.8	349.8	372.3	335.0	37.3	2013		52.94					231,193	87,452	63,530			2976.6	382,175	3.45	1,316,708				1.317
17	1,300.0	924.8	375.2	376.0	335.0	41.0	2014		56.44					231,193	93,811	67,732			3024.9	392,736	3.44	1,350,760				1.351
18	1,327.3	924.8	402.5	380.1	335.0	45.1	2015		60.18					231,193	100,633	72,212			3076.7	404,038	3.43	1,387,087				1.387
19	1,356.6	924.8	431.8	384.5	335.0	49.5	2016		64.16					231,193	107,951	76,988			3132.4	416,132	3.43	1,425,837				1.426
20	1,388.0	924.8	463.2	389.4	335.0	54.4	2017		68.40					231,193	115,800	82,080			3192.0	429,073	3.42	1,467,163				1.467
Ultimate	2048.61	924.77	1123.84	443.68	335.02	108.66			136.8					231,193	280,959	164,160			4447.2	676,313	3.29	2,226,258				2.226

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

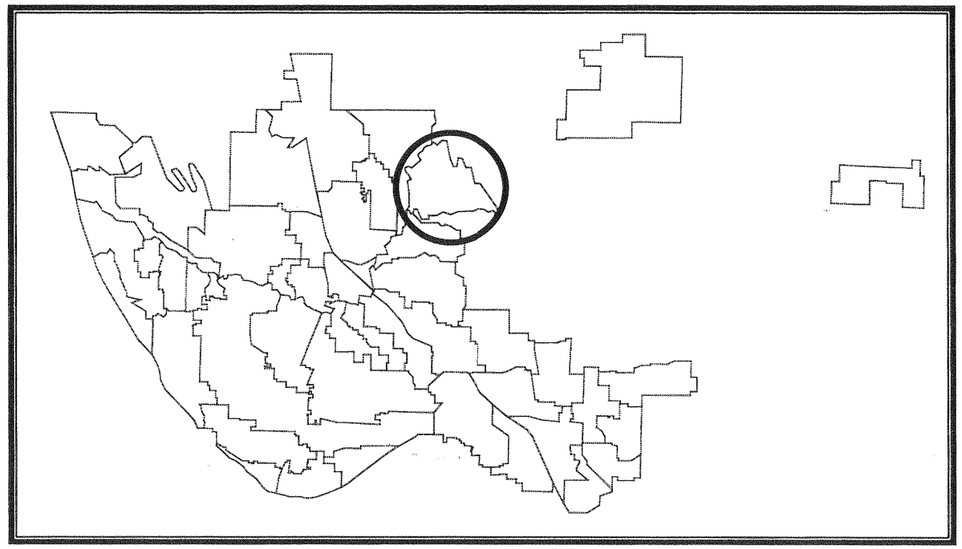
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **5**

PLEASANT VALLEY NORTH



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	1.0	(1% of Ultimate)	0.3	(Average Densities)	4.002 DU/Acre
Existing Single Family Served	1.0	(100% of Exist.)	0.3	(100% of Exist.)	4.002 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections					
New/Updated Single Family Served (est.)					
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	112.0		406.0	(Proposed Densities)	0.276 DU/Acre
Ultimate Single Family Served	85.2	(76% of Ultimate)	41.0	(10% of Ultimate)	2.078 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served	26.8	(24% of Ultimate)	365.0	(90% of Ultimate)	0.074 DU/Acre
New Service During the Comp. Plan	38.3	(45% of Ultimate SF & MF)	13.9	(34% of Ultimate SF & MF)	2.751 DU/Acre
New Single Family Service	38.3	(100% of New HHs)	13.9	(100% of New HHs)	2.751 DU/Acre
New Multi Family Service					
Service at the end of HDSD Comp. Plan	39.3	(35% of Ultimate)	14.2	(Existing & New)	2.773 DU/Acre
Single Family Service - end of Comp. Plan	39.3		14.2		2.773 DU/Acre
Multi Family Service - end of Comp. Plan					

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0			
	Actual Rate						Ultimate	192.9	145.0			
	Projected Rate	1.01%			25.14%		Buildout %	10%	30%			
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	1.0	1.0		0.3	0.3		1997	1.00	0.04			
1	1.0	1.0		0.3	0.3		1998	1.16	0.06			
2	1.0	1.0		0.3	0.3		1999	1.34	0.08			
3	2.9	2.9		0.3	0.3		2000	1.56	0.11			
4	4.9	4.9		0.4	0.4		2001	1.81	0.16			
5	6.9	6.9		0.5	0.5		2002	2.10	0.23			
6	8.9	8.9		0.6	0.6		2003	2.43	0.33			
7	10.9	10.9		0.8	0.8		2004	2.82	0.46			
8	13.0	13.0		1.0	1.0		2005	3.27	0.66			
9	15.1	15.1		1.2	1.2		2006	3.79	0.93			
10	17.2	17.2		1.5	1.5		2007	4.39	1.32			
11	19.3	19.3		1.9	1.9		2008	5.09	1.87			
12	21.4	21.4		2.4	2.4		2009	5.91	2.65			
13	23.6	23.6		2.9	2.9		2010	6.85	3.76			
14	25.7	25.7		3.7	3.7		2011	7.94	5.34			
15	27.9	27.9		4.6	4.6		2012	9.21	7.57			
16	30.2	30.2		5.8	5.8		2013	10.67	10.74			
17	32.4	32.4		7.2	7.2		2014	12.38	15.24			
18	34.7	34.7		9.0	9.0		2015	14.35	21.62			
19	37.0	37.0		11.3	11.3		2016	16.64	30.67			
20	39.3	39.3		14.2	14.2		2017	19.29	43.50			
Ultimate	112.01	85.18		406.00	41.00			192.9	145.0			

	Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
Year	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	250	250		48			5.0	548	4.44	2,433				0.002
1	290	250		68			5.4	608	4.44	2,698				0.003
2	336	250		97			5.9	683	4.43	3,028				0.003
3	390	737		137			11.3	1,264	4.41	5,573				0.006
4	452	1,230		194			16.8	1,876	4.39	8,235				0.008
5	524	1,727		276			22.5	2,527	4.37	11,050				0.011
6	608	2,230		391			28.4	3,228	4.36	14,070				0.014
7	704	2,737		555			34.4	3,996	4.34	17,362				0.017
8	817	3,250		787			40.7	4,853	4.33	21,024				0.021
9	947	3,767		1,116			47.1	5,830	4.32	25,186				0.025
10	1,098	4,290		1,583			53.9	6,971	4.31	30,033				0.030
11	1,273	4,819		2,245			60.9	8,337	4.30	35,822				0.036
12	1,476	5,352		3,185			68.3	10,013	4.29	42,911				0.043
13	1,712	5,891		4,518			76.0	12,121	4.27	51,807				0.052
14	1,985	6,436		6,408			84.2	14,829	4.26	63,218				0.063
15	2,301	6,985		9,090			92.9	18,377	4.25	78,142				0.078
16	2,668	7,541		12,894			102.1	23,103	4.24	97,982				0.098
17	3,094	8,102		18,290			112.0	29,485	4.23	124,718				0.125
18	3,587	8,668		25,943			122.6	38,199	4.22	161,137				0.161
19	4,160	9,241		36,800			134.0	50,200	4.21	211,170				0.211
20	4,823	9,819		52,200			146.4	66,842	4.19	280,362				0.280
Ultimate	54,938	21,295		174,000			212.9	250,232	4.14	1,035,458				1.035

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

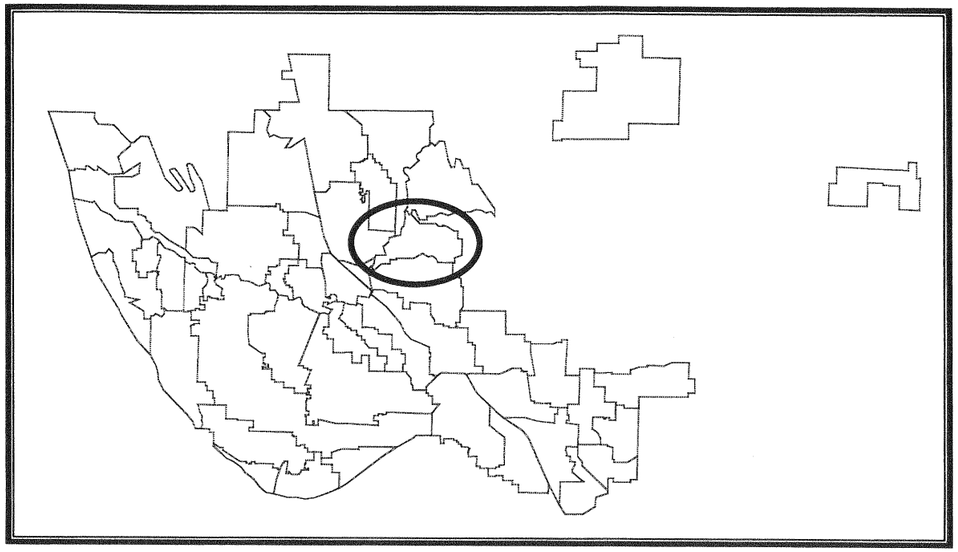
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **6**

PLEASANT VALLEY SOUTH



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	109.0	(25% of Ultimate)	39.8	(Average Densities)	2.738 DU/Acre
Existing Single Family Served	109.0	(100% of Exist.)	39.8	(100% of Exist.)	2.738 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections					
New/Updated Single Family Served (est.)					
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	433.8		285.4	(Proposed Densities)	1.520 DU/Acre
Ultimate Single Family Served	401.8	(93% of Ultimate)	182.4	(64% of Ultimate)	2.203 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served	32.0	(7% of Ultimate)	103.0	(36% of Ultimate)	0.311 DU/Acre
New Service During the Comp. Plan	204.1	(51% of Ultimate SF & MF)	85.7	(47% of Ultimate SF & MF)	2.381 DU/Acre
New Single Family Service	204.1	(100% of New HHs)	85.7	(100% of New HHs)	2.381 DU/Acre
New Multi Family Service					
Service at the end of HDSD Comp. Plan	313.1	(72% of Ultimate)	125.5	(Existing & New)	2.494 DU/Acre
Single Family Service - end of Comp. Plan	313.1		125.5		2.494 DU/Acre
Multi Family Service - end of Comp. Plan					

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0			800.0	
	Actual Rate						Ultimate	159.9			888.0	
	Projected Rate	3.19%			6.59%		Buildout %	8%			100%	
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	109.0	109.0		39.8	39.8		1997	1.00			800.00	
1	109.0	109.0		39.8	39.8		1998	1.14			804.19	
2	109.0	109.0		39.8	39.8		1999	1.29			808.39	
3	117.6	117.6		42.4	42.4		2000	1.47			812.62	
4	126.4	126.4		45.2	45.2		2001	1.66			816.87	
5	135.5	135.5		48.2	48.2		2002	1.89			821.15	
6	145.0	145.0		51.4	51.4		2003	2.15			825.44	
7	154.7	154.7		54.8	54.8		2004	2.44			829.76	
8	164.7	164.7		58.4	58.4		2005	2.77			834.10	
9	175.1	175.1		62.2	62.2		2006	3.15			838.47	
10	185.7	185.7		66.3	66.3		2007	3.58			842.85	
11	196.8	196.8		70.7	70.7		2008	4.06			847.26	
12	208.1	208.1		75.4	75.4		2009	4.62			851.69	
13	219.8	219.8		80.3	80.3		2010	5.24			856.15	
14	232.0	232.0		85.6	85.6		2011	5.95			860.63	
15	244.4	244.4		91.2	91.2		2012	6.76			865.13	
16	257.3	257.3		97.3	97.3		2013	7.68			869.66	
17	270.6	270.6		103.7	103.7		2014	8.73			874.21	
18	284.4	284.4		110.5	110.5		2015	9.91			878.78	
19	298.5	298.5		117.8	117.8		2016	11.26			883.38	
20	313.1	313.1		125.5	125.5		2017	12.79			888.00	
Ultimate	433.76	401.76		285.40	182.40			159.9			888.0	

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
250	27,254			8,000		275.0	35,504	4.09	145,364				0.145
284	27,254			8,042		275.4	35,580	4.09	145,667				0.146
323	27,254			8,084		275.8	35,660	4.09	145,988				0.146
366	29,394			8,126		297.6	37,887	4.08	154,575				0.155
416	31,605			8,169		320.2	40,190	4.07	163,422				0.163
473	33,887			8,211		343.6	42,571	4.05	172,526				0.173
537	36,241			8,254		367.8	45,033	4.04	181,896				0.182
610	38,671			8,298		392.8	47,578	4.03	191,544				0.192
693	41,177			8,341		418.7	50,211	4.01	201,481				0.201
787	43,764			8,385		445.5	52,936	4.00	211,717				0.212
894	46,433			8,429		473.3	55,756	3.99	222,265				0.222
1,016	49,188			8,473		502.0	58,676	3.97	233,138				0.233
1,154	52,030			8,517		531.8	61,700	3.96	244,352				0.244
1,311	54,962			8,562		562.7	64,834	3.95	255,919				0.256
1,489	57,989			8,606		594.8	68,084	3.93	267,859				0.268
1,691	61,111			8,651		628.0	71,454	3.92	280,187				0.280
1,921	64,333			8,697		662.5	74,951	3.91	292,923				0.293
2,182	67,658			8,742		698.4	78,582	3.90	306,088				0.306
2,479	71,089			8,788		735.7	82,355	3.88	319,705				0.320
2,815	74,629			8,834		774.4	86,278	3.87	333,797				0.334
3,198	76,282			8,880		814.8	90,360	3.86	348,393				0.348
	47,976	100,439		8,880		1004.4	157,295	3.80	597,529				0.598

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

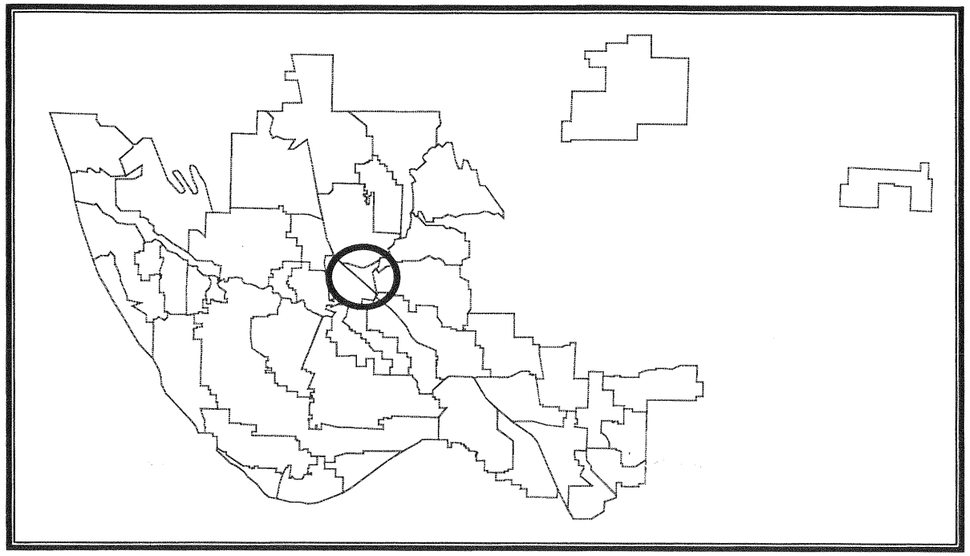
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **7**

NE 134TH STREET



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	111.0	(40% of Ultimate)	10.3	(Average Densities)	10.801 DU/Acre
Existing Single Family Served Existing Multi Family Served Existing UH/UR Served	111.0	(100% of Exist.)	10.3	(100% of Exist.)	10.801 DU/Acre
New Service thru the updated connections					
New/Updated Single Family Served (est.) New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	278.9		31.0	(Proposed Densities)	8.996 DU/Acre
Ultimate Single Family Served Ultimate Multi Family Served Ultimate UH/UR Served	278.9	(100% of Ultimate)	31.0	(100% of Ultimate)	8.996 DU/Acre
New Service During the Comp. Plan	124.1	(44% of Ultimate SF & MF)	11.6	(38% of Ultimate SF & MF)	10.661 DU/Acre
New Single Family Service New Multi Family Service	124.1	(100% of New HHs)	11.6	(100% of New HHs)	10.661 DU/Acre
Service at the end of HDSD Comp. Plan	235.1	(84% of Ultimate)	21.9	(Existing & New)	10.726 DU/Acre
Single Family Service - end of Comp. Plan Multi Family Service - end of Comp. Plan	235.1		21.9		10.726 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	8.0				
	Actual Rate						Ultimate	34.0				
	Projected Rate		4.26%			4.30%	Buildout %	5%	50%			
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	111.0		111.0	10.3		10.3	1997		8.00			
1	111.0		111.0	10.3		10.3	1998		8.31			
2	111.0		111.0	10.3		10.3	1999		8.63			
3	115.7		115.7	10.7		10.7	2000		8.96			
4	120.7		120.7	11.2		11.2	2001		9.30			
5	125.8		125.8	11.7		11.7	2002		9.66			
6	131.1		131.1	12.2		12.2	2003		10.03			
7	136.7		136.7	12.7		12.7	2004		10.42			
8	142.6		142.6	13.2		13.2	2005		10.82			
9	148.6		148.6	13.8		13.8	2006		11.23			
10	154.9		154.9	14.4		14.4	2007		11.66			
11	161.5		161.5	15.0		15.0	2008		12.11			
12	168.4		168.4	15.7		15.7	2009		12.57			
13	175.6		175.6	16.3		16.3	2010		13.06			
14	183.1		183.1	17.0		17.0	2011		13.56			
15	190.9		190.9	17.8		17.8	2012		14.08			
16	199.0		199.0	18.5		18.5	2013		14.62			
17	207.5		207.5	19.3		19.3	2014		15.18			
18	216.3		216.3	20.1		20.1	2015		15.77			
19	225.5		225.5	21.0		21.0	2016		16.37			
20	235.1		235.1	21.9		21.9	2017		17.00			
Ultimate	278.86		278.86	31.00		31.00			34.0			

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		Total (mgd)
		27,753	9,600			210.9	37,353	4.14	154,623				0.155
		27,753	9,969			210.9	37,722	4.14	156,150				0.156
		27,753	10,352			210.9	38,104	4.14	157,735				0.158
		28,933	10,749			219.9	39,682	4.13	163,995				0.164
		30,164	11,162			229.2	41,326	4.13	170,506				0.171
		31,448	11,591			239.0	43,039	4.12	177,270				0.177
		32,787	12,036			249.2	44,823	4.11	184,298				0.184
		34,183	12,498			259.8	46,681	4.10	191,599				0.192
		35,638	12,978			270.8	48,616	4.10	199,183				0.199
		37,155	13,477			282.4	50,632	4.09	207,062				0.207
		38,737	13,994			294.4	52,731	4.08	215,246				0.215
		40,386	14,532			306.9	54,918	4.07	223,746				0.224
		42,105	15,090			320.0	57,195	4.07	232,575				0.233
		43,898	15,669			333.6	59,567	4.06	241,745				0.242
		45,766	16,271			347.8	62,038	4.05	251,269				0.251
		47,715	16,896			362.6	64,611	4.04	261,159				0.261
		49,746	17,545			378.1	67,291	4.03	271,430				0.271
		51,863	18,219			394.2	70,083	4.03	282,095				0.282
		54,071	18,919			410.9	72,990	4.02	293,169				0.293
		56,373	19,645			428.4	76,019	4.01	304,668				0.305
		58,773	20,400			446.7	79,173	4.00	316,607				0.317
		69,715	40,800			529.8	110,515	3.96	437,767				0.438

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

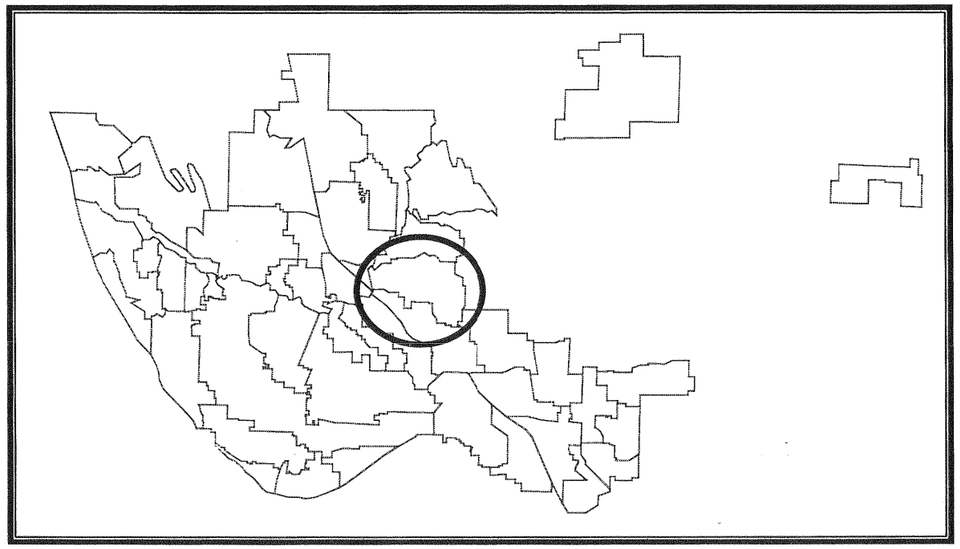
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

HDSD Basin Summary

Basin Number **8**

BARBERTON



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	214.0	(22% of Ultimate)	78.8	(Average Densities)	2.716 DU/Acre
Existing Single Family Served	213.0	(100% of Exist.)	77.8	(99% of Exist.)	2.738 DU/Acre
Existing Multi Family Served	1.0	(0% of Exist.)	1.0	(1% of Exist.)	1.000 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	20.0	(2% of Ultimate Service)	6.7	(1.64% of Ultimate)	2.997 DU/Acre
New/Updated Single Family Served (est.)	19.9	(100% of New HHs)	6.6	(99% of New HHs)	3.020 DU/Acre
New/Updated Multi Family Served (est.)	0.1	(0% of New HHs)	0.1	(1% of New HHs)	1.180 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	978.5		609.0	(Proposed Densities)	1.607 DU/Acre
Ultimate Single Family Served	946.4	(97% of Ultimate)	404.0	(66% of Ultimate)	2.343 DU/Acre
Ultimate Multi Family Served	17.2	(2% of Ultimate)	2.0	(0% of Ultimate)	8.600 DU/Acre
Ultimate UH/UR Served	14.9	(2% of Ultimate)	203.0	(33% of Ultimate)	0.074 DU/Acre
New Service During the Comp. Plan	341.8	(35% of Ultimate SF & MF)	135.1	(33% of Ultimate SF & MF)	2.530 DU/Acre
New Single Family Service	338.6	(99% of New HHs)	133.7	(99% of New HHs)	2.532 DU/Acre
New Multi Family Service	3.2	(1% of New HHs)	1.4	(1% of New HHs)	2.340 DU/Acre
Service at the end of HDSD Comp. Plan	555.8	(57% of Ultimate)	213.9	(Existing & New)	2.599 DU/Acre
Single Family Service - end of Comp. Plan	551.6	(99% of Projected)	211.5	(99% of Projected)	2.608 DU/Acre
Multi Family Service - end of Comp. Plan	4.2	(1% of Projected)	2.4	(1% of Projected)	1.774 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0																		
Actual Rate	1.88%	4.83%		4.15%	4.10%		Ultimate	311.4																		
Projected Rate	2.59%	7.73%		5.24%	4.43%		Buildout %	5%																		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	214.0	213.0	1.0	78.8	77.8	1.0	1997	1.00					250	53,257	250				537.0	53,757	3.96	212,775				0.213
1	223.9	222.9	1.0	82.1	81.0	1.0	1998	1.15					287	55,720	262				562.1	56,269	3.95	222,123				0.222
2	234.0	232.9	1.1	85.5	84.4	1.1	1999	1.32					329	58,229	275				587.7	58,832	3.94	231,630				0.232
3	248.2	247.0	1.2	89.9	88.8	1.1	2000	1.51					377	61,757	296				623.6	62,430	3.92	244,911				0.245
4	262.8	261.5	1.3	94.6	93.5	1.2	2001	1.73					433	65,378	319				660.5	66,130	3.91	258,498				0.258
5	277.7	276.4	1.4	99.6	98.4	1.2	2002	1.99					497	69,093	343				698.5	69,933	3.90	272,397				0.272
6	293.1	291.6	1.5	104.8	103.5	1.3	2003	2.28					570	72,905	370				737.6	73,844	3.88	286,616				0.287
7	308.9	307.3	1.6	110.3	108.9	1.3	2004	2.61					653	76,815	399				777.7	77,867	3.87	301,170				0.301
8	325.0	323.3	1.7	116.0	114.6	1.4	2005	3.00					750	80,827	429				819.0	82,006	3.85	316,068				0.316
9	341.6	339.8	1.9	122.1	120.6	1.5	2006	3.44					860	84,942	463				861.5	86,265	3.84	331,326				0.331
10	358.7	356.7	2.0	128.5	127.0	1.5	2007	3.95					986	89,165	498				905.3	90,650	3.83	346,956				0.347
11	376.1	374.0	2.1	135.2	133.6	1.6	2008	4.53					1,132	93,497	537				950.4	95,165	3.81	362,974				0.363
12	394.1	391.8	2.3	142.3	140.6	1.7	2009	5.19					1,298	97,941	578				996.8	99,818	3.80	379,397				0.379
13	412.5	410.0	2.5	149.7	148.0	1.7	2010	5.96					1,489	102,501	623				1044.6	104,613	3.79	396,242				0.396
14	431.4	428.7	2.7	157.5	155.7	1.8	2011	6.83					1,708	107,179	671				1094.0	109,558	3.77	413,529				0.414
15	450.8	447.9	2.9	165.8	163.9	1.9	2012	7.84					1,959	111,979	723				1144.9	114,661	3.76	431,279				0.431
16	470.7	467.6	3.1	174.4	172.5	2.0	2013	8.99					2,248	116,902	779				1197.4	119,929	3.75	449,516				0.450
17	491.2	487.8	3.4	183.5	181.5	2.0	2014	10.31					2,578	121,954	839				1251.7	125,371	3.74	468,264				0.468
18	512.2	508.5	3.6	193.0	191.0	2.0	2015	11.83					2,958	127,137	904				1307.8	130,998	3.72	487,552				0.488
19	533.7	529.8	3.9	203.0	201.0	2.0	2016	13.57					3,393	132,454	974				1365.9	136,820	3.71	507,412				0.507
20	555.8	551.6	4.2	213.5	211.5	2.0	2017	15.57					3,892	137,909	1,049				1426.0	142,849	3.70	527,877				0.528
Ultimate	978.54	946.42	17.20	609.00	404.00	2.00		311.4					81,572	236,604	4,300				2398.7	322,475	3.52	1,136,106				1.136

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

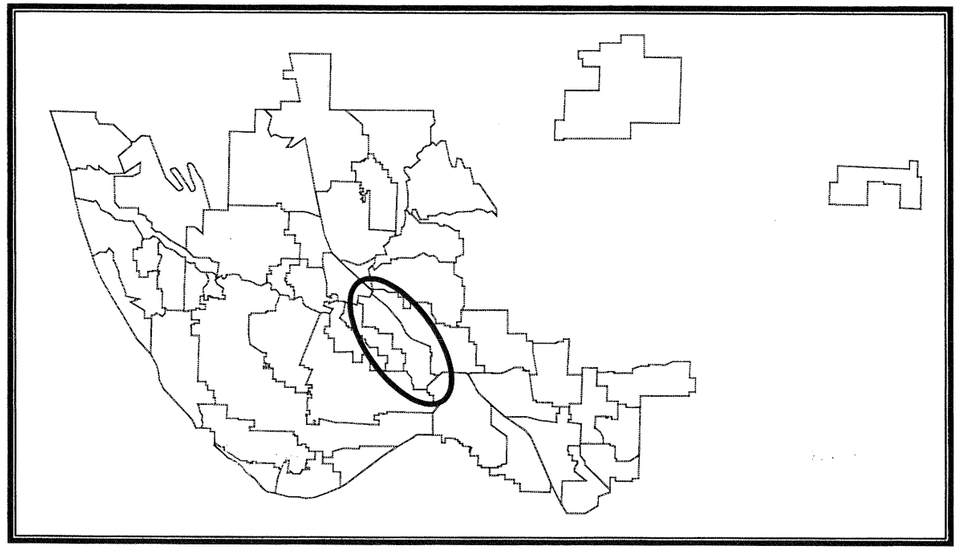
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **9**

SHERWOOD



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	257.0	(20% of Ultimate)	56.3	(Average Densities)	4.568 DU/Acre
Existing Single Family Served	257.0	(100% of Exist.)	55.3	(98% of Exist.)	4.650 DU/Acre
Existing Multi Family Served			1.0	(2% of Exist.)	
Existing UH/UR Served					
New Service thru the updated connections	1.0	(0% of Ultimate Service)	0.2	(0.06% of Ultimate)	4.773 DU/Acre
New/Updated Single Family Served (est.)	1.0	(100% of New HHs)	0.2	(98% of New HHs)	4.859 DU/Acre
New/Updated Multi Family Served (est.)	0.0	(0% of New HHs)	0.0	(2% of New HHs)	0.005 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1310.3		352.0	(Proposed Densities)	3.723 DU/Acre
Ultimate Single Family Served	1277.9	(98% of Ultimate)	348.0	(99% of Ultimate)	3.672 DU/Acre
Ultimate Multi Family Served	32.4	(2% of Ultimate)	4.0	(1% of Ultimate)	8.100 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	312.8	(24% of Ultimate SF & MF)	69.2	(20% of Ultimate SF & MF)	4.523 DU/Acre
New Single Family Service	311.0	(99% of New HHs)	68.0	(98% of New HHs)	4.572 DU/Acre
New Multi Family Service	1.8	(1% of New HHs)	1.1	(2% of New HHs)	1.617 DU/Acre
Service at the end of HDSD Comp. Plan	569.8	(43% of Ultimate)	125.4	(Existing & New)	4.543 DU/Acre
Single Family Service - end of Comp. Plan	568.0	(100% of Projected)	123.3	(98% of Projected)	4.607 DU/Acre
Multi Family Service - end of Comp. Plan	1.8	(0% of Projected)	2.1	(2% of Projected)	0.862 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0				
Actual Rate		0.10%			0.19%	0.19%	Ultimate	263.5				
Projected Rate		2.63%			4.54%	4.30%	Buildout %	20%				
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	257.0	257.0		56.3	55.3	1.0	1997	1.00				
1	257.5	257.5		56.4	55.4	1.0	1998	1.22				
2	258.0	258.0		56.5	55.5	1.0	1999	1.49				
3	271.7	271.7	0.0	59.0	58.0	1.0	2000	1.81				
4	285.7	285.7	0.0	61.7	60.6	1.1	2001	2.21				
5	300.2	300.2	0.0	64.5	63.4	1.1	2002	2.69				
6	315.0	315.0	0.0	67.4	66.2	1.2	2003	3.29				
7	330.2	330.2	0.0	70.5	69.2	1.2	2004	4.01				
8	345.7	345.7	0.0	73.7	72.4	1.3	2005	4.88				
9	361.7	361.7	0.0	77.0	75.7	1.3	2006	5.95				
10	378.2	378.2	0.0	80.5	79.1	1.4	2007	7.26				
11	395.0	395.0	0.0	84.2	82.7	1.5	2008	8.85				
12	412.3	412.3	0.0	88.0	86.4	1.5	2009	10.79				
13	430.0	430.0	0.0	92.0	90.4	1.6	2010	13.16				
14	448.2	448.2	0.0	96.1	94.5	1.7	2011	16.04				
15	466.9	466.9	0.0	100.5	98.8	1.7	2012	19.56				
16	486.1	486.1	0.0	105.0	103.2	1.8	2013	23.85				
17	505.8	505.8	0.0	109.8	107.9	1.9	2014	29.08				
18	526.0	526.0	0.0	114.8	112.8	2.0	2015	35.46				
19	546.7	546.7	0.0	120.0	117.9	2.1	2016	43.23				
20	568.0	568.0	0.0	125.4	123.3	2.1	2017	52.71				
Ultimate	1310.32	1277.92	32.40	352.00	348.00	4.00		263.5	65,884	319,481	8,100	

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
250	64,256					645.1	64,506	3.91	252,524				0.253
305	64,381					646.9	64,685	3.91	253,184				0.253
372	64,506					648.8	64,877	3.91	253,887				0.254
453	67,924	0				683.8	68,377	3.90	266,699				0.267
552	71,437	0				719.9	71,990	3.89	279,860				0.280
674	75,042	0				757.2	75,716	3.87	293,372				0.293
821	78,742	0				795.6	79,563	3.86	307,259				0.307
1,001	82,539	0				835.4	83,540	3.85	321,546				0.322
1,221	86,435	0				876.6	87,656	3.84	336,263				0.336
1,489	90,434	0				919.2	91,923	3.82	351,447				0.351
1,815	94,538	0				963.5	96,353	3.81	367,138				0.367
2,213	98,750	0				1009.6	100,962	3.80	383,386				0.383
2,698	103,072	0				1057.7	105,770	3.78	400,250				0.400
3,290	107,507	0				1108.0	110,797	3.77	417,799				0.418
4,011	112,059	0				1160.7	116,070	3.76	436,115				0.436
4,890	116,731	0				1216.2	121,621	3.74	455,299				0.455
5,963	121,525	0				1274.9	127,488	3.73	475,468				0.475
7,270	126,445	0				1337.2	133,715	3.72	496,764				0.497
8,864	131,494	0				1403.6	140,358	3.70	519,359				0.519
10,807	136,676	0				1474.8	147,483	3.68	543,455				0.543
13,177	141,994	0				1551.7	155,171	3.67	569,301				0.569
	65,884	319,481	8,100			3256.4	393,465	3.41	1,342,466				1.342

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

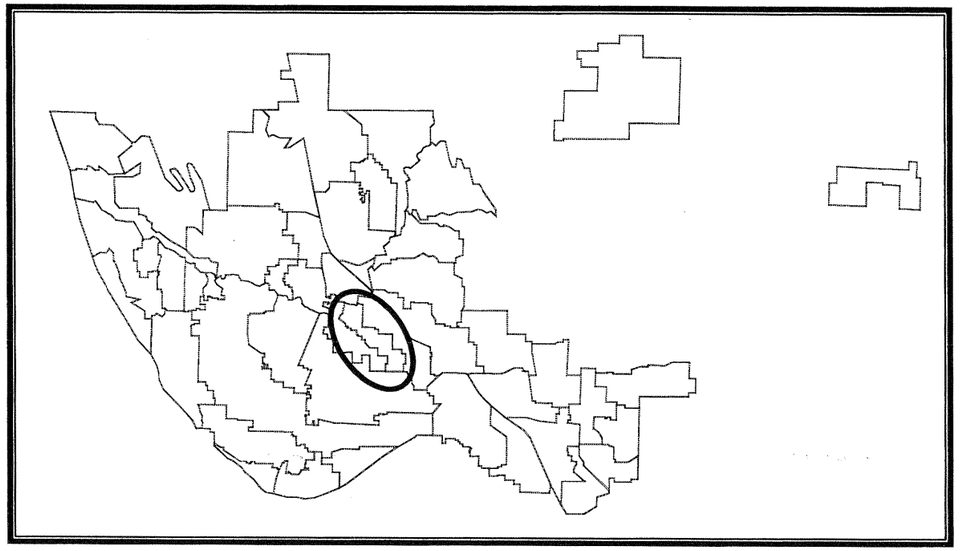
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **10**

BLUEBERRY HILL



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	405.0	(48% of Ultimate)	86.8	(Average Densities)	4.665 DU/Acre
Existing Single Family Served	403.0	(100% of Exist.)	86.7	(100% of Exist.)	4.650 DU/Acre
Existing Multi Family Served	2.0	(0% of Exist.)	0.1	(0% of Exist.)	13.501 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	9.0	(1% of Ultimate Service)	1.7	(0.80% of Ultimate)	5.266 DU/Acre
New/Updated Single Family Served (est.)	9.0	(99% of New HHs)	1.7	(100% of New HHs)	5.248 DU/Acre
New/Updated Multi Family Served (est.)	0.0	(1% of New HHs)	0.0	(0% of New HHs)	15.265 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	849.7		212.9	(Proposed Densities)	3.991 DU/Acre
Ultimate Single Family Served	840.1	(99% of Ultimate)	212.0	(100% of Ultimate)	3.963 DU/Acre
Ultimate Multi Family Served	9.6	(1% of Ultimate)	0.9	(0% of Ultimate)	10.681 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	99.5	(12% of Ultimate SF & MF)	19.4	(9% of Ultimate SF & MF)	5.128 DU/Acre
New Single Family Service	98.9	(99% of New HHs)	19.4	(100% of New HHs)	5.109 DU/Acre
New Multi Family Service	0.6	(1% of New HHs)	0.0	(0% of New HHs)	15.057 DU/Acre
Service at the end of HDSD Comp. Plan	504.5	(59% of Ultimate)	106.2	(Existing & New)	4.750 DU/Acre
Single Family Service - end of Comp. Plan	501.9	(99% of Projected)	106.0	(100% of Projected)	4.734 DU/Acre
Multi Family Service - end of Comp. Plan	2.6	(1% of Projected)	0.2	(0% of Projected)	13.915 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	5.0																		
Actual Rate	1.10%	1.12%		0.98%	0.99%		Ultimate	9.0																		
Projected Rate	1.10%	1.27%		1.02%	1.15%		Buildout %	100%																		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	405.0	403.0	2.0	86.8	86.7	0.1	1997		5.00					100,754	500	6,000			1011.3	107,254	3.80	407,226				0.407
1	409.5	407.5	2.0	87.7	87.5	0.1	1998		5.15					101,866	506	6,179			1022.5	108,551	3.79	411,815				0.412
2	414.0	412.0	2.0	88.5	88.4	0.2	1999		5.30					102,991	511	6,363			1033.8	109,866	3.79	416,462				0.416
3	418.6	416.5	2.1	89.4	89.3	0.2	2000		5.46					104,128	518	6,553			1045.2	111,198	3.79	421,168				0.421
4	423.2	421.1	2.1	90.3	90.2	0.2	2001		5.62					105,276	524	6,748			1056.7	112,549	3.78	425,933				0.426
5	427.9	425.8	2.1	91.3	91.1	0.2	2002		5.79					106,438	531	6,950			1068.4	113,919	3.78	430,760				0.431
6	432.6	430.4	2.2	92.2	92.0	0.2	2003		5.96					107,612	538	7,157			1080.2	115,307	3.78	435,647				0.436
7	437.4	435.2	2.2	93.1	93.0	0.2	2004		6.14					108,800	545	7,370			1092.1	116,715	3.77	440,598				0.441
8	442.2	440.0	2.2	94.1	93.9	0.2	2005		6.33					110,000	551	7,590			1104.2	118,142	3.77	445,612				0.446
9	447.1	444.9	2.2	95.0	94.9	0.2	2006		6.51					111,214	558	7,817			1116.4	119,589	3.77	450,691				0.451
10	452.0	449.8	2.3	96.0	95.8	0.2	2007		6.71					112,441	565	8,050			1128.7	121,056	3.77	455,836				0.456
11	457.0	454.7	2.3	97.0	96.8	0.2	2008		6.91					113,682	573	8,290			1141.2	122,544	3.76	461,048				0.461
12	462.1	459.7	2.3	98.0	97.8	0.2	2009		7.11					114,936	580	8,537			1153.8	124,053	3.76	466,327				0.466
13	467.2	464.8	2.3	98.9	98.8	0.2	2010		7.33					116,204	587	8,792			1166.5	125,583	3.76	471,676				0.472
14	472.3	469.9	2.4	100.0	99.8	0.2	2011		7.55					117,486	595	9,054			1179.4	127,135	3.75	477,095				0.477
15	477.5	475.1	2.4	101.0	100.8	0.2	2012		7.77					118,783	602	9,324			1192.4	128,709	3.75	482,585				0.483
16	482.8	480.4	2.4	102.0	101.8	0.2	2013		8.00					120,093	610	9,602			1205.6	130,305	3.75	488,148				0.488
17	488.1	485.7	2.5	103.0	102.9	0.2	2014		8.24					121,418	618	9,889			1218.9	131,925	3.74	493,785				0.494
18	493.5	491.0	2.5	104.1	103.9	0.2	2015		8.49					122,758	625	10,183			1232.3	133,567	3.74	499,497				0.499
19	499.0	496.5	2.5	105.1	105.0	0.2	2016		8.74					124,113	633	10,487			1245.9	135,233	3.74	505,285				0.505
20	504.5	501.9	2.6	106.2	106.0	0.2	2017		9.00					125,482	641	10,800			1259.7	136,923	3.73	511,151				0.511
Ultimate	849.73	840.12	9.61	212.90	212.00	0.90			9.0					210,029	2,403	10,800			2118.6	223,232	3.57	796,092				0.796

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

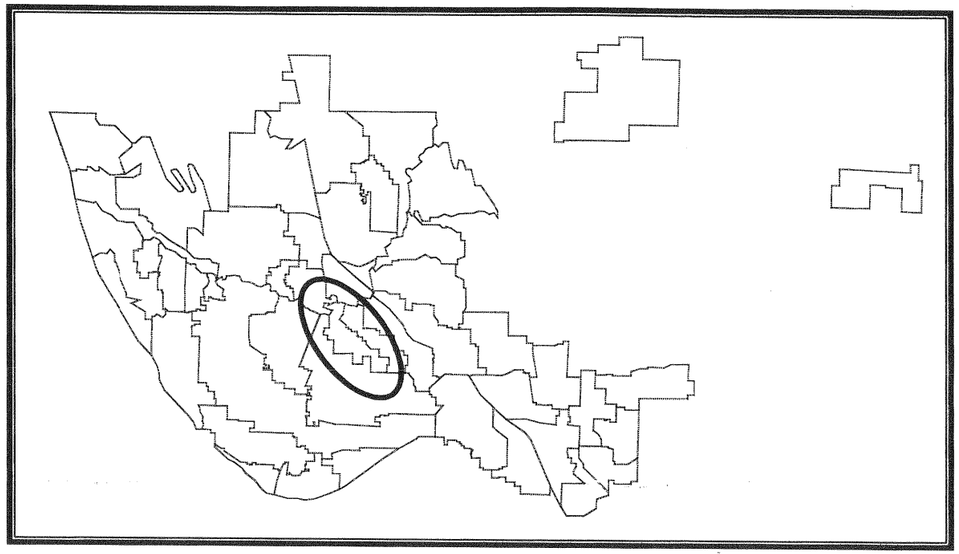
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **11**

SYLVAN CREEK



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	224.0	(29% of Ultimate)	46.4	(Average Densities)	4.829 DU/Acre
Existing Single Family Served	209.0	(93% of Exist.)	44.9	(97% of Exist.)	4.650 DU/Acre
Existing Multi Family Served	15.0	(7% of Exist.)	1.4	(3% of Exist.)	10.386 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	26.0	(3% of Ultimate Service)	5.0	(2.52% of Ultimate)	5.157 DU/Acre
New/Updated Single Family Served (est.)	24.3	(93% of New HHs)	4.9	(97% of New HHs)	4.967 DU/Acre
New/Updated Multi Family Served (est.)	1.7	(7% of New HHs)	0.2	(3% of New HHs)	11.163 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	781.0		200.0	(Proposed Densities)	3.905 DU/Acre
Ultimate Single Family Served	739.3	(95% of Ultimate)	197.0	(99% of Ultimate)	3.753 DU/Acre
Ultimate Multi Family Served	41.7	(5% of Ultimate)	3.0	(2% of Ultimate)	13.900 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	201.6	(26% of Ultimate SF & MF)	41.4	(21% of Ultimate SF & MF)	4.866 DU/Acre
New Single Family Service	188.8	(94% of New HHs)	40.3	(97% of New HHs)	4.688 DU/Acre
New Multi Family Service	12.8	(6% of New HHs)	1.2	(3% of New HHs)	11.111 DU/Acre
Service at the end of HDSD Comp. Plan	425.6	(54% of Ultimate)	87.8	(Existing & New)	4.847 DU/Acre
Single Family Service - end of Comp. Plan	397.8	(93% of Projected)	85.2	(97% of Projected)	4.668 DU/Acre
Multi Family Service - end of Comp. Plan	27.8	(7% of Projected)	2.6	(3% of Projected)	10.707 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	26.0			
	Actual Rate	2.66%	5.60%		5.29%	5.22%	Ultimate	241.4	47.0			
	Projected Rate	1.67%	2.86%		3.03%	2.73%	Buildout %	5%	90%			
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	224.0	209.0	15.0	46.4	44.9	1.4	1997	1.00	26.00			
1	236.8	221.0	15.8	48.8	47.3	1.5	1998	1.13	26.64			
2	250.0	233.3	16.7	51.4	49.8	1.6	1999	1.28	27.30			
3	258.4	241.2	17.2	53.0	51.3	1.6	2000	1.45	27.97			
4	266.9	249.2	17.7	54.6	52.9	1.7	2001	1.65	28.66			
5	275.6	257.4	18.2	56.2	54.5	1.7	2002	1.86	29.36			
6	284.5	265.7	18.7	57.9	56.1	1.8	2003	2.11	30.09			
7	293.5	274.2	19.3	59.7	57.8	1.8	2004	2.39	30.83			
8	302.6	282.8	19.8	61.5	59.6	1.9	2005	2.71	31.59			
9	311.9	291.5	20.4	63.3	61.4	1.9	2006	3.07	32.37			
10	321.4	300.4	21.0	65.2	63.3	2.0	2007	3.47	33.16			
11	331.0	309.4	21.6	67.2	65.2	2.0	2008	3.94	33.98			
12	340.8	318.6	22.2	69.2	67.1	2.1	2009	4.46	34.82			
13	350.8	328.0	22.8	71.3	69.2	2.2	2010	5.05	35.67			
14	360.9	337.5	23.5	73.5	71.3	2.2	2011	5.72	36.55			
15	371.2	347.1	24.1	75.7	73.4	2.3	2012	6.48	37.45			
16	381.7	356.9	24.8	78.0	75.6	2.3	2013	7.33	38.38			
17	392.4	366.9	25.5	80.3	77.9	2.4	2014	8.31	39.32			
18	403.3	377.0	26.3	82.8	80.3	2.5	2015	9.41	40.29			
19	414.4	387.3	27.0	85.2	82.7	2.5	2016	10.66	41.28			
20	425.6	397.8	27.8	87.8	85.2	2.6	2017	12.07	42.30			
Ultimate	781.01	739.31	41.70	200.00	197.00	3.00		241.4	47.0			

Average Domestic Flow (gpd) Without Industrial					
UH/UR*	SF	MF	Comm	Schools	Parks
250	52,255	3,750	31,200		
283	55,247	3,960	31,969		
321	58,318	4,182	32,756		
363	60,298	4,302	33,563		
411	62,310	4,425	34,390		
466	64,355	4,552	35,237		
528	66,434	4,682	36,105		
598	68,547	4,816	36,994		
677	70,696	4,954	37,905		
767	72,881	5,095	38,839		
869	75,103	5,241	39,796		
984	77,361	5,391	40,776		
1,114	79,657	5,545	41,781		
1,262	81,991	5,704	42,810		
1,429	84,364	5,867	43,864		
1,619	86,777	6,035	44,945		
1,834	89,230	6,208	46,052		
2,077	91,724	6,385	47,186		
2,352	94,259	6,568	48,349		
2,664	96,837	6,756	49,540		
3,018	99,457	6,949	50,760		
60,352	184,826	10,425	56,400		

Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
553.5	87,455	3.95	345,542				0.346
585.4	91,459	3.94	360,166				0.360
618.2	95,577	3.93	375,145				0.375
639.3	98,526	3.92	385,921				0.386
660.8	101,536	3.91	396,887				0.397
682.8	104,609	3.90	408,055				0.408
705.2	107,748	3.89	419,432				0.419
728.1	110,955	3.88	431,024				0.431
751.4	114,233	3.88	442,837				0.443
775.2	117,583	3.87	454,879				0.455
799.5	121,008	3.86	467,158				0.467
824.4	124,512	3.85	479,682				0.480
849.9	128,097	3.84	492,462				0.492
875.9	131,767	3.84	505,506				0.506
902.5	135,525	3.83	518,827				0.519
929.8	139,376	3.82	532,436				0.532
957.8	143,323	3.81	546,346				0.546
986.5	147,372	3.80	560,572				0.561
1016.0	151,528	3.80	575,130				0.575
1046.4	155,796	3.79	590,036				0.590
1077.6	160,184	3.78	605,311				0.605
1927.5	312,004	3.60	1,122,652				1.123

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

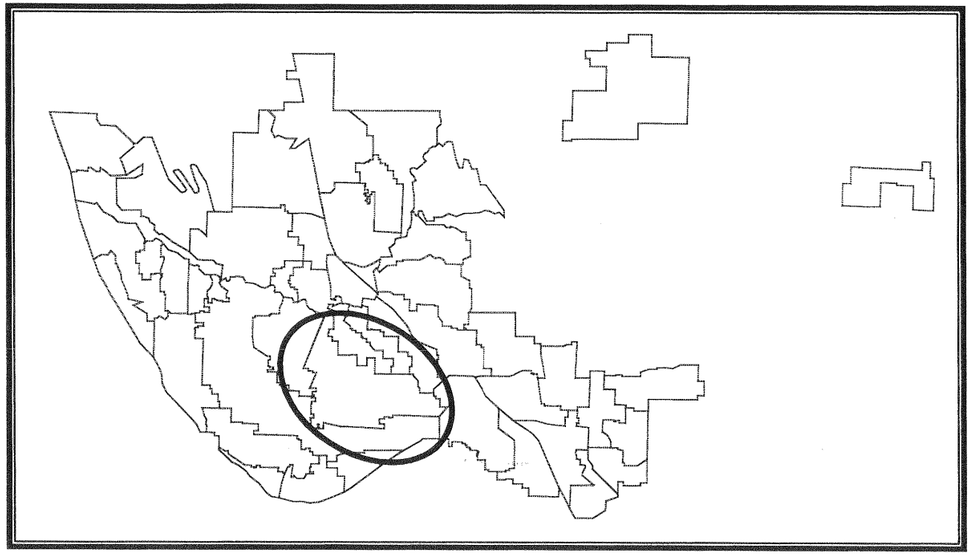
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

HDSD Basin Summary

Basin Number **12**

HIGHWAY 99 EAST



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	1471.1	(26% of Ultimate)	231.2	(Average Densities)	6.363 DU/Acre
Existing Single Family Served	921.1	(63% of Exist.)	198.1	(86% of Exist.)	4.650 DU/Acre
Existing Multi Family Served	550.1	(37% of Exist.)	33.1	(14% of Exist.)	16.606 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	60.0	(1% of Ultimate Service)	9.2	(0.97% of Ultimate)	6.487 DU/Acre
New/Updated Single Family Served (est.)	37.5	(62% of New HHs)	7.9	(86% of New HHs)	4.735 DU/Acre
New/Updated Multi Family Served (est.)	22.5	(38% of New HHs)	1.3	(14% of New HHs)	16.848 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	5732.8		957.0	(Proposed Densities)	5.990 DU/Acre
Ultimate Single Family Served	2619.3	(46% of Ultimate)	685.0	(72% of Ultimate)	3.824 DU/Acre
Ultimate Multi Family Served	3113.6	(54% of Ultimate)	272.0	(28% of Ultimate)	11.447 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	1523.0	(27% of Ultimate SF & MF)	239.5	(25% of Ultimate SF & MF)	6.359 DU/Acre
New Single Family Service	885.1	(58% of New HHs)	196.7	(82% of New HHs)	4.499 DU/Acre
New Multi Family Service	637.9	(42% of New HHs)	42.8	(18% of New HHs)	14.917 DU/Acre
Service at the end of HDSD Comp. Plan	2994.1	(52% of Ultimate)	470.7	(Existing & New)	6.361 DU/Acre
Single Family Service - end of Comp. Plan	1806.2	(60% of Projected)	394.8	(84% of Projected)	4.575 DU/Acre
Multi Family Service - end of Comp. Plan	1187.9	(40% of Projected)	75.9	(16% of Projected)	15.654 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	56.0	18.0	2094 cap															
Actual Rate	1.17%	2.03%		1.98%	2.00%		Ultimate	666.5	134.0	18.0	2302 cap															
Projected Rate	2.36%	4.14%		3.68%	4.48%		Buildout %	5%	25%	100%	100%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	1,471.1	921.1	550.1	231.2	198.1	33.1	1997	1.00	56.00	18.00	2094.00		250	230,272	137,513	67,200	20,940		3350.3	456,176	3.40	1,551,550	32,400	32,400		1.584
1	1,500.9	939.7	561.2	235.8	202.0	33.8	1998	1.19	56.00	18.00	2103.94		298	234,924	140,301	67,200	21,039		3418.5	463,762	3.39	1,573,826	32,400	32,400		1.606
2	1,531.1	958.5	572.6	240.4	206.0	34.5	1999	1.42	56.00	18.00	2113.92		355	239,631	143,144	67,200	21,139		3487.8	471,470	3.39	1,596,397	32,400	32,400		1.629
3	1,593.1	996.8	596.3	249.6	213.5	36.0	2000	1.69	56.00	18.00	2123.96		423	249,210	149,064	67,200	21,240		3629.2	487,136	3.37	1,642,065	32,400	32,400		1.674
4	1,657.0	1,036.1	620.9	259.0	221.4	37.6	2001	2.02	56.00	18.00	2134.04		504	259,022	155,232	67,200	21,340		3775.0	503,299	3.36	1,688,937	32,400	32,400		1.721
5	1,722.9	1,076.3	646.6	268.9	229.6	39.3	2002	2.40	56.00	18.00	2144.17		601	269,065	161,656	67,200	21,442		3925.2	519,964	3.34	1,737,021	32,400	32,400		1.769
6	1,790.8	1,117.4	673.4	279.1	238.0	41.1	2003	2.86	56.00	18.00	2154.35		716	279,346	168,345	67,200	21,543		4080.0	537,150	3.33	1,786,356	32,400	32,400		1.819
7	1,860.7	1,159.5	701.2	289.7	246.8	42.9	2004	3.41	56.00	18.00	2164.57		853	289,869	175,312	67,200	21,646		4239.6	554,879	3.31	1,836,984	32,400	32,400		1.869
8	1,932.8	1,202.6	730.3	300.7	255.9	44.8	2005	4.07	56.00	18.00	2174.84		1,016	300,640	182,566	67,200	21,748		4404.1	573,171	3.30	1,888,951	32,400	32,400		1.921
9	2,007.1	1,246.7	760.5	312.1	265.3	46.8	2006	4.84	56.00	18.00	2185.17		1,211	311,666	190,121	67,200	21,852		4573.7	592,049	3.28	1,942,303	32,400	32,400		1.975
10	2,083.8	1,291.8	792.0	324.0	275.0	48.9	2007	5.77	56.00	18.00	2195.54		1,443	322,951	197,988	67,200	21,955		4748.7	611,538	3.27	1,997,092	32,400	32,400		2.029
11	2,162.7	1,338.0	824.7	336.3	285.2	51.1	2008	6.88	56.00	18.00	2205.96		1,720	334,503	206,181	67,200	22,060		4929.2	631,664	3.25	2,053,374	32,400	32,400		2.086
12	2,244.2	1,385.3	858.9	349.1	295.7	53.4	2009	8.20	56.00	18.00	2216.43		2,049	346,328	214,713	67,200	22,164		5115.6	652,455	3.24	2,111,206	32,400	32,400		2.144
13	2,328.1	1,433.7	894.4	362.4	306.5	55.8	2010	9.77	56.00	18.00	2226.95		2,442	358,431	223,598	67,200	22,269		5308.1	673,941	3.22	2,170,655	32,400	32,400		2.203
14	2,414.7	1,483.3	931.4	376.2	317.8	58.3	2011	11.64	56.00	18.00	2237.52		2,910	370,820	232,851	67,200	22,375		5507.0	696,157	3.21	2,231,789	32,400	32,400		2.264
15	2,504.0	1,534.0	969.9	390.5	329.5	60.9	2012	13.87	56.00	18.00	2248.14		3,467	383,502	242,487	67,200	22,481		5712.6	719,137	3.19	2,294,687	32,400	32,400		2.327
16	2,596.0	1,585.9	1,010.1	405.3	341.7	63.7	2013	16.53	56.00	18.00	2258.81		4,132	396,482	252,521	67,200	22,588		5925.3	742,924	3.18	2,359,432	32,400	32,400		2.392
17	2,691.0	1,639.1	1,051.9	420.8	354.2	66.5	2014	19.69	56.00	18.00	2269.53		4,923	409,769	262,971	67,200	22,695		6145.5	767,559	3.16	2,426,118	32,400	32,400		2.459
18	2,788.9	1,693.5	1,095.4	436.8	367.3	69.5	2015	23.47	56.00	18.00	2280.30		5,867	423,370	273,853	67,200	22,803		6373.7	793,093	3.15	2,494,850	32,400	32,400		2.527
19	2,889.9	1,749.2	1,140.7	453.4	380.8	72.6	2016	27.96	56.00	18.00	2291.13		6,991	437,291	285,185	67,200	22,911		6610.2	819,579	3.13	2,565,742	32,400	32,400		2.598
20	2,994.1	1,806.2	1,187.9	470.7	394.8	75.9	2017	33.32	56.00	18.00	2302.00		8,331	451,541	296,986	67,200	23,020		6855.8	847,078	3.12	2,638,927	32,400	32,400		2.671
Ultimate	5732.83	2619.28	3113.55	957.00	685.00	272.00		666.5	134.0	18.0	2302.0		166,614	654,819	778,388	160,800	23,020		12463.9	1,783,642	2.86	5,099,653	32,400	32,400		5.132

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

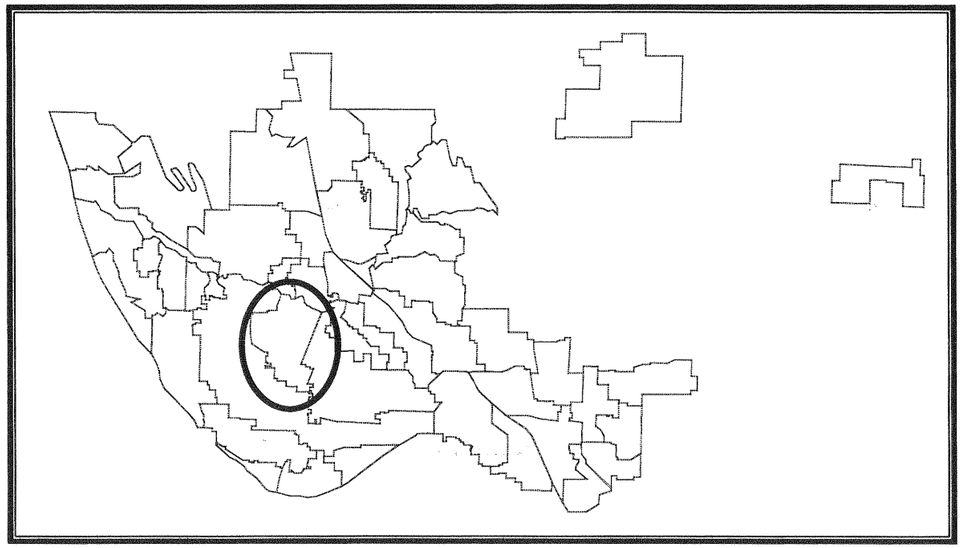
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **13**

HAZEL DELL NORTH



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	1041.1	(37% of Ultimate)	199.8	(Average Densities)	5.211 DU/Acre
Existing Single Family Served	654.0	(63% of Exist.)	175.6	(88% of Exist.)	3.724 DU/Acre
Existing Multi Family Served	387.0	(37% of Exist.)	24.2	(12% of Exist.)	16.019 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	45.1	(2% of Ultimate Service)	8.9	(1.71% of Ultimate)	5.083 DU/Acre
New/Updated Single Family Served (est.)	28.2	(63% of New HHs)	7.8	(88% of New HHs)	3.625 DU/Acre
New/Updated Multi Family Served (est.)	16.9	(37% of New HHs)	1.1	(12% of New HHs)	15.526 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	2817.4		518.0	(Proposed Densities)	5.439 DU/Acre
Ultimate Single Family Served	1311.6	(47% of Ultimate)	406.0	(78% of Ultimate)	3.230 DU/Acre
Ultimate Multi Family Served	1505.8	(53% of Ultimate)	112.0	(22% of Ultimate)	13.445 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	497.8	(18% of Ultimate SF & MF)	96.8	(19% of Ultimate SF & MF)	5.141 DU/Acre
New Single Family Service	298.5	(60% of New HHs)	83.4	(86% of New HHs)	3.579 DU/Acre
New Multi Family Service	199.4	(40% of New HHs)	13.4	(14% of New HHs)	14.841 DU/Acre
Service at the end of HDSD Comp. Plan	1538.9	(55% of Ultimate)	296.6	(Existing & New)	5.188 DU/Acre
Single Family Service - end of Comp. Plan	952.5	(62% of Projected)	259.0	(87% of Projected)	3.677 DU/Acre
Multi Family Service - end of Comp. Plan	586.4	(38% of Projected)	37.6	(13% of Projected)	15.598 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	43.0	2.0	506 cap															
Actual Rate		1.20%	2.16%		2.19%	2.22%	Ultimate	516.5	105.0	2.0	550 cap															
Projected Rate		1.14%	2.09%		1.94%	2.24%	Buildout %	60%	80%	100%	100%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	1,041.1	654.0	387.0	199.8	175.6	24.2	1997	1.00	43.00	2.00	506.00		250	163,509	96,755	51,600	5,060		2372.9	317,174	3.53	1,118,634	3,600	3,600		1.122
1	1,063.4	668.0	395.4	204.2	179.5	24.7	1998	1.33	44.46	2.00	508.11		333	167,012	98,842	53,357	5,081		2424.7	324,625	3.52	1,142,449	3,600	3,600		1.146
2	1,086.1	682.2	403.9	208.6	183.4	25.2	1999	1.77	45.98	2.00	510.24		444	170,558	100,973	55,174	5,102		2477.4	332,251	3.51	1,166,755	3,600	3,600		1.170
3	1,108.2	695.8	412.3	212.8	186.9	25.8	2000	2.36	47.54	2.00	512.37		591	173,962	103,087	57,052	5,124		2529.0	339,816	3.50	1,190,832	3,600	3,600		1.194
4	1,130.6	709.6	421.0	217.0	190.6	26.4	2001	3.15	49.16	2.00	514.51		787	177,405	105,244	58,995	5,145		2581.8	347,576	3.50	1,215,465	3,600	3,600		1.219
5	1,153.3	723.5	429.8	221.2	194.3	27.0	2002	4.20	50.84	2.00	516.66		1,049	180,887	107,447	61,003	5,167		2636.0	355,553	3.49	1,240,711	3,600	3,600		1.244
6	1,176.4	737.6	438.8	225.6	198.0	27.6	2003	5.59	52.57	2.00	518.82		1,397	184,408	109,696	63,080	5,188		2691.7	363,770	3.48	1,266,641	3,600	3,600		1.270
7	1,199.8	751.9	448.0	230.1	201.9	28.2	2004	7.45	54.36	2.00	520.98		1,862	187,970	111,992	65,228	5,210		2749.5	372,261	3.47	1,293,351	3,600	3,600		1.297
8	1,223.6	766.3	457.3	234.6	205.8	28.8	2005	9.92	56.21	2.00	523.16		2,480	191,571	114,337	67,449	5,232		2809.5	381,068	3.47	1,320,959	3,600	3,600		1.325
9	1,247.8	780.9	466.9	239.2	209.7	29.5	2006	13.21	58.12	2.00	525.35		3,304	195,214	116,730	69,745	5,253		2872.3	390,246	3.46	1,349,622	3,600	3,600		1.353
10	1,272.3	795.6	476.7	243.9	213.8	30.1	2007	17.60	60.10	2.00	527.54		4,401	198,898	119,173	72,120	5,275		2938.7	399,868	3.45	1,379,547	3,600	3,600		1.383
11	1,297.2	810.5	486.7	248.8	218.0	30.8	2008	23.45	62.15	2.00	529.75		5,863	202,624	121,667	74,575	5,297		3009.5	410,028	3.44	1,411,001	3,600	3,600		1.415
12	1,322.4	825.6	496.9	253.7	222.2	31.5	2009	31.24	64.26	2.00	531.96		7,810	206,393	124,214	77,115	5,320		3086.1	420,851	3.43	1,444,337	3,600	3,600		1.448
13	1,348.1	840.8	507.3	258.7	226.5	32.2	2010	41.62	66.45	2.00	534.18		10,405	210,204	126,814	79,740	5,342		3169.9	432,504	3.42	1,480,018	3,600	3,600		1.484
14	1,374.1	856.2	517.9	263.8	230.9	32.9	2011	55.44	68.71	2.00	536.41		13,861	214,058	129,468	82,455	5,364		3263.2	445,207	3.41	1,518,655	3,600	3,600		1.522
15	1,400.5	871.8	528.7	269.0	235.3	33.7	2012	73.86	71.05	2.00	538.65		18,465	217,956	132,178	85,262	5,387		3368.8	459,249	3.40	1,561,051	3,600	3,600		1.565
16	1,427.4	887.6	539.8	274.3	239.9	34.4	2013	98.39	73.47	2.00	540.90		24,598	221,899	134,945	88,165	5,409		3490.6	475,017	3.39	1,608,264	3,600	3,600		1.612
17	1,454.6	903.5	551.1	279.7	244.5	35.2	2014	131.08	75.97	2.00	543.16		32,769	225,886	137,770	91,167	5,432		3633.6	493,024	3.37	1,661,683	3,600	3,600		1.665
18	1,482.3	919.7	562.6	285.2	249.3	36.0	2015	174.62	78.56	2.00	545.43		43,654	229,919	140,653	94,271	5,454		3804.7	513,952	3.35	1,723,136	3,600	3,600		1.727
19	1,510.4	936.0	574.4	290.9	254.1	36.8	2016	232.62	81.23	2.00	547.71		58,155	233,997	143,597	97,481	5,477		4012.9	538,708	3.33	1,795,020	3,600	3,600		1.799
20	1,538.9	952.5	586.4	296.6	259.0	37.6	2017	309.89	84.00	2.00	550.00		77,473	238,122	146,603	100,800	5,500		4270.1	568,497	3.31	1,880,466	3,600	3,600		1.884
Ultimate	2817.37	1311.57	1505.80	518.00	406.00	112.00		516.5	105.0	2.0	550.0		129,121	327,892	376,449	126,000	5,500		6139.9	964,962	3.16	3,050,437	3,600	3,600		3.054

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

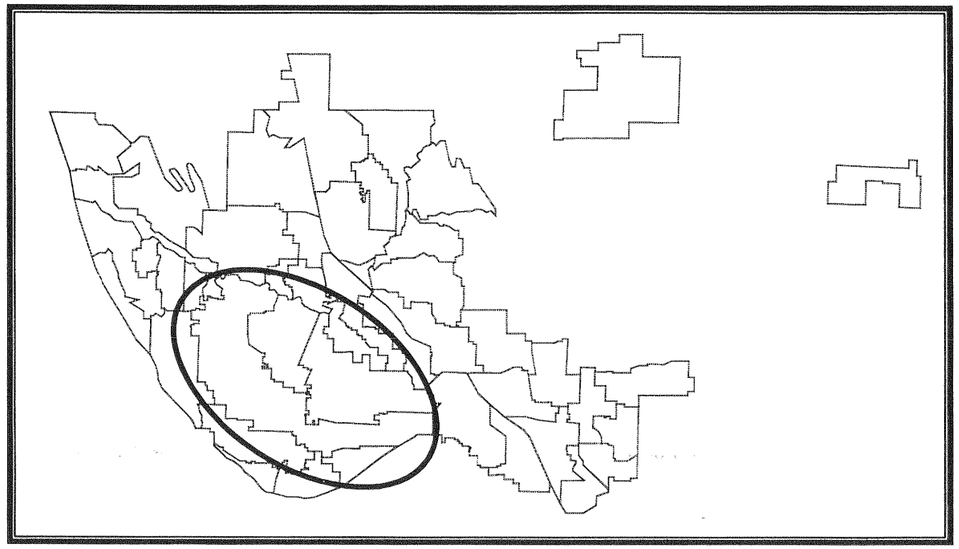
Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

HDSD Basin Summary

Basin Number **14**

COUGAR CANYON

	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	2534.1	(34% of Ultimate)	607.9	(Average Densities)	4.169 DU/Acre
Existing Single Family Served	2168.1	(86% of Exist.)	586.2	(96% of Exist.)	3.699 DU/Acre
Existing Multi Family Served	366.0	(14% of Exist.)	21.7	(4% of Exist.)	16.888 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	148.8	(2% of Ultimate Service)	38.1	(2.43% of Ultimate)	3.906 DU/Acre
New/Updated Single Family Served (est.)	126.5	(85% of New HHs)	36.6	(96% of New HHs)	3.454 DU/Acre
New/Updated Multi Family Served (est.)	22.3	(15% of New HHs)	1.5	(4% of New HHs)	15.022 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	7383.9		1570.0	(Proposed Densities)	4.703 DU/Acre
Ultimate Single Family Served	4228.6	(57% of Ultimate)	1295.0	(82% of Ultimate)	3.265 DU/Acre
Ultimate Multi Family Served	3155.3	(43% of Ultimate)	275.0	(18% of Ultimate)	11.474 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	917.4	(12% of Ultimate SF & MF)	229.9	(15% of Ultimate SF & MF)	3.991 DU/Acre
New Single Family Service	752.7	(82% of New HHs)	217.0	(94% of New HHs)	3.469 DU/Acre
New Multi Family Service	164.7	(18% of New HHs)	12.9	(6% of New HHs)	12.779 DU/Acre
Service at the end of HDSD Comp. Plan	3451.5	(47% of Ultimate)	837.8	(Existing & New)	4.120 DU/Acre
Single Family Service - end of Comp. Plan	2920.7	(85% of Projected)	803.2	(96% of Projected)	3.636 DU/Acre
Multi Family Service - end of Comp. Plan	530.8	(15% of Projected)	34.6	(4% of Projected)	15.356 DU/Acre



	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	141.0	82.0	3412 cap	
Actual Rate		1.65%	3.00%		3.07%	3.37%	Ultimate	1629.3	299.0	132.0	3619 cap	
Projected Rate		0.83%	1.75%		1.42%	2.25%	Buildout %	5%	85%	90%	100%	
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	2,534.1	2,168.1	366.0	607.9	586.2	21.7	1997	1.00	141.00	82.00	3412.00	
1	2,607.8	2,230.8	377.0	626.6	604.2	22.4	1998	1.25	145.22	83.53	3422.06	
2	2,682.8	2,294.5	388.3	645.9	622.8	23.2	1999	1.55	149.56	85.10	3432.16	
3	2,722.1	2,326.9	395.1	655.3	631.7	23.7	2000	1.93	154.03	86.69	3442.28	
4	2,761.7	2,359.6	402.1	664.9	640.6	24.2	2001	2.41	158.63	88.31	3452.43	
5	2,801.7	2,392.6	409.1	674.5	649.8	24.8	2002	3.00	163.38	89.96	3462.61	
6	2,842.0	2,425.8	416.3	684.3	659.0	25.3	2003	3.74	168.26	91.65	3472.82	
7	2,882.8	2,459.3	423.6	694.3	668.4	25.9	2004	4.66	173.29	93.36	3483.07	
8	2,924.0	2,493.0	431.0	704.4	677.9	26.5	2005	5.81	178.47	95.11	3493.34	
9	2,965.6	2,527.1	438.5	714.6	687.6	27.1	2006	7.24	183.81	96.89	3503.64	
10	3,007.6	2,561.4	446.2	725.0	697.3	27.7	2007	9.03	189.30	98.70	3513.98	
11	3,050.0	2,596.0	454.0	735.6	707.3	28.3	2008	11.25	194.96	100.55	3524.34	
12	3,092.9	2,630.9	462.0	746.3	717.3	28.9	2009	14.01	200.79	102.43	3534.73	
13	3,136.2	2,666.1	470.0	757.1	727.5	29.6	2010	17.46	206.79	104.34	3545.16	
14	3,179.9	2,701.6	478.3	768.1	737.9	30.2	2011	21.76	212.98	106.30	3555.61	
15	3,224.0	2,737.4	486.6	779.3	748.4	30.9	2012	27.12	219.34	108.28	3566.10	
16	3,268.6	2,773.5	495.2	790.7	759.0	31.6	2013	33.79	225.90	110.31	3576.62	
17	3,313.7	2,809.8	503.8	802.2	769.8	32.3	2014	42.10	232.65	112.37	3587.17	
18	3,359.2	2,846.5	512.7	813.9	780.8	33.1	2015	52.47	239.61	114.48	3597.75	
19	3,405.1	2,883.5	521.6	825.7	791.9	33.8	2016	65.38	246.77	116.62	3608.36	
20	3,451.5	2,920.7	530.8	837.8	803.2	34.6	2017	81.47	254.15	118.80	3619.00	
Ultimate	7383.94	4228.60	3155.34	1570.00	1295.00	275.00		1629.3	299.0	132.0	3619.0	

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
250	542,023	91,504	169,200	34,120		6116.2	837,097	3.16	2,647,458	147,600	147,600		2.795
312	557,691	94,253	174,258	34,221		6296.4	860,735	3.15	2,711,991	150,361	150,361		2.862
388	573,618	97,085	179,468	34,322		6477.9	884,881	3.14	2,777,625	153,175	153,175		2.931
484	581,732	98,787	184,834	34,423		6572.9	900,259	3.13	2,820,438	156,040	156,040		2.976
603	589,901	100,516	190,360	34,524		6669.0	915,904	3.13	2,863,917	158,960	158,960		3.023
751	598,139	102,276	196,051	34,626		6766.2	931,843	3.12	2,908,122	161,934	161,934		3.070
936	606,444	104,067	201,912	34,728		6864.7	948,087	3.11	2,953,086	164,963	164,963		3.118
1,166	614,818	105,889	207,948	34,831		6964.6	964,652	3.11	2,998,847	168,050	168,050		3.167
1,453	623,261	107,743	214,165	34,933		7066.0	981,555	3.10	3,045,445	171,194	171,194		3.217
1,811	631,774	109,629	220,568	35,036		7169.0	998,818	3.10	3,092,932	174,396	174,396		3.267
2,256	640,357	111,548	227,162	35,140		7273.9	1,016,464	3.09	3,141,363	177,659	177,659		3.319
2,812	649,011	113,501	233,953	35,243		7380.8	1,034,521	3.08	3,190,809	180,983	180,983		3.372
3,504	657,736	115,489	240,948	35,347		7490.1	1,053,024	3.08	3,241,350	184,369	184,369		3.426
4,366	666,534	117,511	248,151	35,452		7602.1	1,072,013	3.07	3,293,083	187,818	187,818		3.481
5,440	675,404	119,568	255,570	35,556		7717.2	1,091,539	3.07	3,346,126	191,332	191,332		3.537
6,779	684,348	121,661	263,211	35,661		7835.9	1,111,660	3.06	3,400,618	194,912	194,912		3.596
8,447	693,365	123,791	271,080	35,766		7958.9	1,132,450	3.05	3,456,732	198,558	198,558		3.655
10,526	702,457	125,959	279,184	35,872		8087.1	1,153,997	3.05	3,514,674	202,273	202,273		3.717
13,116	711,624	128,164	287,531	35,977		8221.4	1,176,412	3.04	3,574,700	206,058	206,058		3.781
16,344	720,867	130,408	296,127	36,084		8363.2	1,199,829	3.03	3,637,119	209,913	209,913		3.847
20,366	730,186	132,691	304,980	36,190		8514.0	1,224,413	3.02	3,702,311	213,840	213,840		3.916
407,326	1,057,151	788,835	358,800	36,190		16566.7	2,648,303	2.73	7,242,509	237,600	237,600		7.480

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

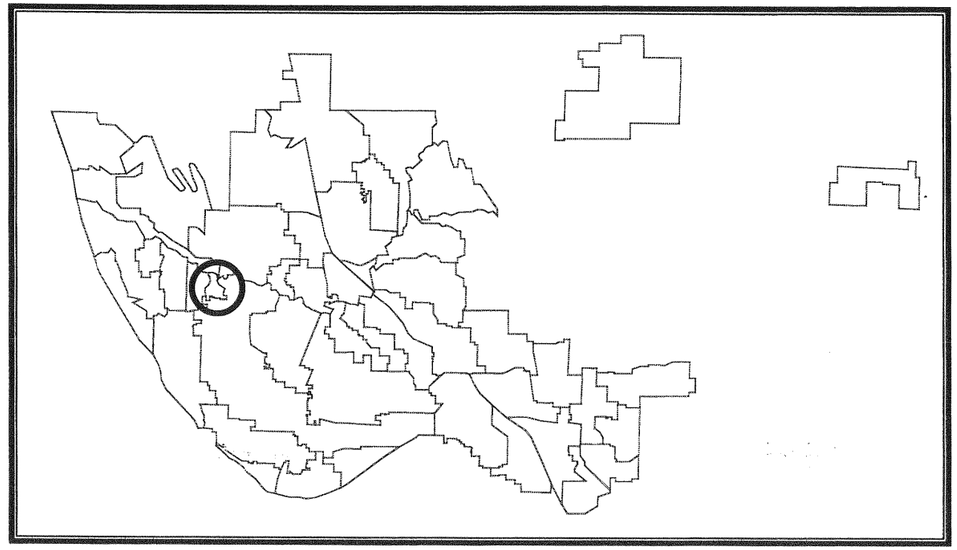
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **15**

CERRERO ESTATES



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	39.0	(34% of Ultimate)	14.2	(Average Densities)	2.738 DU/Acre
Existing Single Family Served Existing Multi Family Served Existing UH/UR Served	39.0	(100% of Exist.)	14.2	(100% of Exist.)	2.738 DU/Acre
New Service thru the updated connections	1.0	(1% of Ultimate Service)	0.3	(0.66% of Ultimate)	2.986 DU/Acre
New/Updated Single Family Served (est.) New/Updated Multi Family Served (est.)	1.0	(100% of New HHs)	0.3	(100% of New HHs)	2.986 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	114.5		51.0	(Proposed Densities)	2.244 DU/Acre
Ultimate Single Family Served Ultimate Multi Family Served Ultimate UH/UR Served	114.5	(100% of Ultimate)	51.0	(100% of Ultimate)	2.244 DU/Acre
New Service During the Comp. Plan	58.9	(51% of Ultimate SF & MF)	22.6	(44% of Ultimate SF & MF)	2.608 DU/Acre
New Single Family Service New Multi Family Service	58.9	(100% of New HHs)	22.6	(100% of New HHs)	2.608 DU/Acre
Service at the end of HDSD Comp. Plan	97.9	(86% of Ultimate)	36.8	(Existing & New)	2.658 DU/Acre
Single Family Service - end of Comp. Plan Multi Family Service - end of Comp. Plan	97.9		36.8		2.658 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0				
Actual Rate	1.06%			1.17%			Ultimate	7.9				
Projected Rate	4.50%			5.28%			Buildout %	100%				
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	39.0	39.0		14.2	14.2		1997	1.00				
1	39.5	39.5		14.4	14.4		1998	1.11				
2	40.0	40.0		14.6	14.6		1999	1.23				
3	42.2	42.2		15.4	15.4		2000	1.36				
4	44.4	44.4		16.2	16.2		2001	1.51				
5	46.8	46.8		17.0	17.0		2002	1.68				
6	49.2	49.2		17.9	17.9		2003	1.86				
7	51.8	51.8		18.9	18.9		2004	2.06				
8	54.5	54.5		19.9	19.9		2005	2.28				
9	57.3	57.3		20.9	20.9		2006	2.53				
10	60.2	60.2		22.0	22.0		2007	2.81				
11	63.3	63.3		23.2	23.2		2008	3.11				
12	66.5	66.5		24.4	24.4		2009	3.45				
13	69.8	69.8		25.7	25.7		2010	3.82				
14	73.3	73.3		27.0	27.0		2011	4.24				
15	77.0	77.0		28.5	28.5		2012	4.70				
16	80.8	80.8		30.0	30.0		2013	5.21				
17	84.8	84.8		31.6	31.6		2014	5.78				
18	89.0	89.0		33.2	33.2		2015	6.40				
19	93.3	93.3		35.0	35.0		2016	7.10				
20	97.9	97.9		36.8	36.8		2017	7.87				
Ultimate	114.46	114.46		51.00	51.00			7.9				

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
250	9,751					100.0	10,001	4.24	42,441				0.042
277	9,876					101.5	10,153	4.24	43,066				0.043
307	10,001					103.1	10,308	4.24	43,707				0.044
341	10,539					108.8	10,880	4.23	46,060				0.046
378	11,103					114.8	11,480	4.23	48,524				0.049
419	11,691					121.1	12,110	4.22	51,102				0.051
464	12,306					127.7	12,770	4.21	53,801				0.054
515	12,949					134.6	13,463	4.21	56,626				0.057
571	13,620					141.9	14,191	4.20	59,584				0.060
633	14,322					149.5	14,955	4.19	62,682				0.063
701	15,055					157.6	15,757	4.18	65,927				0.066
778	15,822					166.0	16,600	4.18	69,327				0.069
862	16,623					174.9	17,485	4.17	72,891				0.073
956	17,460					184.2	18,416	4.16	76,626				0.077
1,060	18,335					193.9	19,394	4.15	80,542				0.081
1,175	19,249					204.2	20,424	4.14	84,650				0.085
1,303	20,204					215.1	21,506	4.14	88,959				0.089
1,444	21,202					226.5	22,646	4.13	93,481				0.093
1,601	22,245					238.5	23,846	4.12	98,228				0.098
1,775	23,335					251.1	25,111	4.11	103,213				0.103
1,968	24,475					264.4	26,443	4.10	108,449				0.108
1,968	28,616					286.2	30,584	4.09	125,002				0.125

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

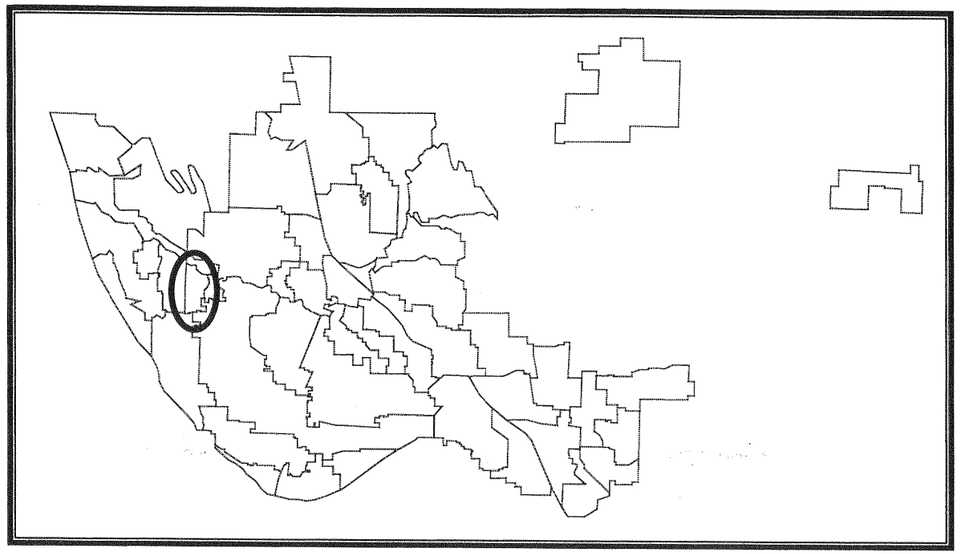
HDSD Basin Summary

Basin Number **16**

MUIRWOOD

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	68.0	(16% of Ultimate)	23.8	(Average Densities)	2.853 DU/Acre
Existing Single Family Served	67.0	(99% of Exist.)	23.7	(100% of Exist.)	2.825 DU/Acre
Existing Multi Family Served	1.0	(1% of Exist.)	0.1	(0% of Exist.)	9.001 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	35.5	(8% of Ultimate Service)	12.6	(9.69% of Ultimate)	2.817 DU/Acre
New/Updated Single Family Served (est.)	34.3	(97% of New HHs)	12.4	(98% of New HHs)	2.765 DU/Acre
New/Updated Multi Family Served (est.)	1.2	(3% of New HHs)	0.2	(2% of New HHs)	6.154 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	422.8		130.0	(Proposed Densities)	3.252 DU/Acre
Ultimate Single Family Served	321.3	(76% of Ultimate)	115.0	(88% of Ultimate)	2.794 DU/Acre
Ultimate Multi Family Served	101.5	(24% of Ultimate)	15.0	(12% of Ultimate)	6.767 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	153.5	(36% of Ultimate SF & MF)	52.0	(40% of Ultimate SF & MF)	2.950 DU/Acre
New Single Family Service	138.7	(90% of New HHs)	49.5	(95% of New HHs)	2.802 DU/Acre
New Multi Family Service	14.8	(10% of New HHs)	2.6	(5% of New HHs)	5.812 DU/Acre
Service at the end of HDSD Comp. Plan	221.5	(52% of Ultimate)	75.9	(Existing & New)	2.919 DU/Acre
Single Family Service - end of Comp. Plan	205.7	(93% of Projected)	73.2	(96% of Projected)	2.809 DU/Acre
Multi Family Service - end of Comp. Plan	15.8	(7% of Projected)	2.7	(4% of Projected)	5.946 DU/Acre



	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0				
	Actual Rate	11.73%	48.05%		23.39%	65.63%	Ultimate	71.0				
	Projected Rate	2.67%	11.60%		4.00%	12.79%	Buildout %	50%				
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	68.0	67.0	1.0	23.8	23.7	0.1	1997	1.00				
1	84.7	83.2	1.5	29.5	29.3	0.2	1998	1.20				
2	103.5	101.3	2.2	36.4	36.1	0.3	1999	1.43				
3	108.3	105.9	2.4	37.9	37.6	0.3	2000	1.71				
4	113.3	110.6	2.7	39.5	39.1	0.4	2001	2.04				
5	118.5	115.5	3.0	41.1	40.6	0.4	2002	2.44				
6	123.8	120.4	3.4	42.8	42.3	0.5	2003	2.92				
7	129.3	125.5	3.8	44.5	44.0	0.6	2004	3.49				
8	135.0	130.8	4.2	46.3	45.7	0.6	2005	4.17				
9	140.9	136.2	4.7	48.3	47.5	0.7	2006	4.98				
10	147.0	141.7	5.3	50.3	49.5	0.8	2007	5.96				
11	153.2	147.4	5.9	52.3	51.4	0.9	2008	7.12				
12	159.7	153.2	6.6	54.5	53.5	1.0	2009	8.51				
13	166.5	159.2	7.3	56.8	55.6	1.1	2010	10.18				
14	173.5	165.3	8.2	59.2	57.9	1.3	2011	12.17				
15	180.7	171.6	9.1	61.6	60.2	1.5	2012	14.54				
16	188.3	178.1	10.2	64.2	62.6	1.6	2013	17.38				
17	196.1	184.7	11.4	66.9	65.1	1.9	2014	20.78				
18	204.2	191.5	12.7	69.8	67.7	2.1	2015	24.84				
19	212.7	198.5	14.2	72.8	70.4	2.4	2016	29.69				
20	221.5	205.7	15.8	75.9	73.2	2.7	2017	35.50				
Ultimate	422.77	321.27	101.50	130.00	115.00	15.00		71.0				

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
250	16,753	250				171.9	17,253	4.17	71,966				0.072
299	20,799	370				213.8	21,468	4.14	88,821				0.089
357	25,320	548				260.9	26,226	4.10	107,621				0.108
427	26,474	612				273.7	27,513	4.10	112,671				0.113
510	27,653	683				286.8	28,847	4.09	117,889				0.118
610	28,864	762				300.5	30,237	4.08	123,309				0.123
729	30,107	851				314.8	31,687	4.07	128,949				0.129
872	31,383	949				329.8	33,205	4.06	134,831				0.135
1,042	32,694	1,059				345.4	34,796	4.05	140,979				0.141
1,246	34,039	1,182				361.8	36,467	4.04	147,418				0.147
1,489	35,420	1,320				379.1	38,229	4.03	154,182				0.154
1,780	36,838	1,473				397.4	40,091	4.02	161,307				0.161
2,128	38,294	1,644				416.7	42,066	4.01	168,837				0.169
2,544	39,788	1,834				437.3	44,167	4.00	176,821				0.177
3,041	41,323	2,047				459.2	46,411	3.99	185,318				0.185
3,636	42,898	2,285				482.7	48,818	3.98	194,397				0.194
4,346	44,515	2,550				508.0	51,411	3.97	204,137				0.204
5,195	46,176	2,846				535.3	54,217	3.96	214,632				0.215
6,210	47,881	3,176				565.0	57,267	3.95	225,992				0.226
7,423	49,631	3,544				597.5	60,599	3.93	238,346				0.238
8,874	51,428	3,956				633.1	64,257	3.92	251,844				0.252
	17,748	80,318	25,375			996.0	123,440	3.80	469,211				0.469

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

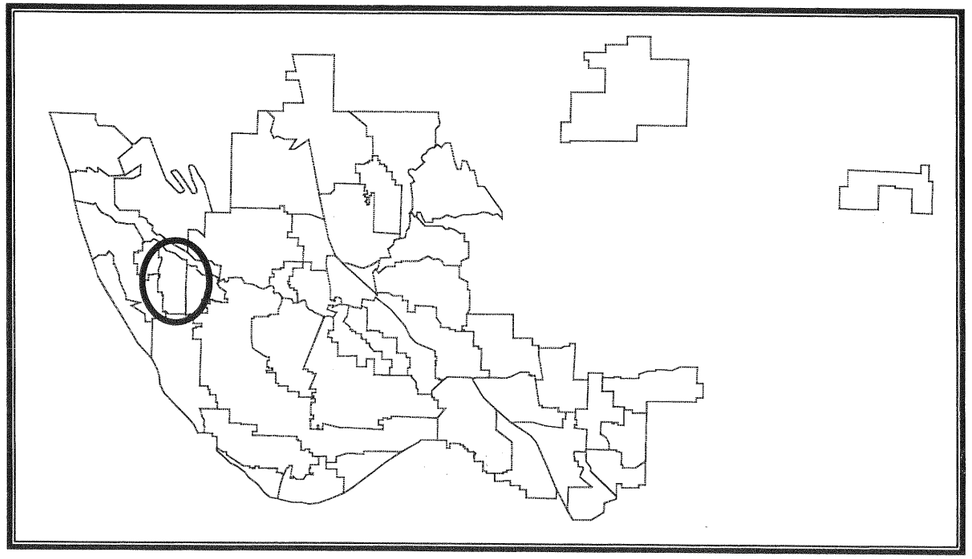
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **17**

MTN. VIEW GARDEN



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	126.0	(18% of Ultimate)	33.9	(Average Densities)	3.719 DU/Acre
Existing Single Family Served	108.0	(86% of Exist.)	31.9	(94% of Exist.)	3.388 DU/Acre
Existing Multi Family Served	18.0	(14% of Exist.)	2.0	(6% of Exist.)	9.001 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	41.0	(6% of Ultimate Service)	10.8	(4.88% of Ultimate)	3.799 DU/Acre
New/Updated Single Family Served (est.)	35.0	(85% of New HHs)	10.1	(94% of New HHs)	3.450 DU/Acre
New/Updated Multi Family Served (est.)	6.0	(15% of New HHs)	0.7	(6% of New HHs)	9.170 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	701.9		221.0	(Proposed Densities)	3.176 DU/Acre
Ultimate Single Family Served	548.9	(78% of Ultimate)	199.0	(90% of Ultimate)	2.758 DU/Acre
Ultimate Multi Family Served	153.0	(22% of Ultimate)	22.0	(10% of Ultimate)	6.955 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	140.9	(20% of Ultimate SF & MF)	38.0	(17% of Ultimate SF & MF)	3.705 DU/Acre
New Single Family Service	118.7	(84% of New HHs)	35.5	(93% of New HHs)	3.340 DU/Acre
New Multi Family Service	22.3	(16% of New HHs)	2.5	(7% of New HHs)	8.866 DU/Acre
Service at the end of HDSD Comp. Plan	266.9	(38% of Ultimate)	71.9	(Existing & New)	3.712 DU/Acre
Single Family Service - end of Comp. Plan	226.7	(85% of Projected)	67.4	(94% of Projected)	3.363 DU/Acre
Multi Family Service - end of Comp. Plan	40.3	(15% of Projected)	4.5	(6% of Projected)	8.926 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0			596 cap	
Actual Rate		7.26%	15.55%		14.79%	15.28%	Ultimate	124.1			660 cap	
Projected Rate		1.53%	2.91%		2.66%	2.98%	Buildout %	50%			100%	
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	126.0	108.0	18.0	33.9	31.9	2.0	1997	1.00			596.00	
1	145.7	124.9	20.8	38.9	36.6	2.3	1998	1.23			599.05	
2	167.0	142.9	24.0	44.7	42.0	2.7	1999	1.51			602.11	
3	171.8	147.0	24.7	45.9	43.1	2.7	2000	1.86			605.19	
4	176.6	151.2	25.5	47.1	44.3	2.8	2001	2.28			608.28	
5	181.6	155.4	26.2	48.4	45.5	2.9	2002	2.81			611.39	
6	186.6	159.7	27.0	49.7	46.7	3.0	2003	3.45			614.52	
7	191.7	164.0	27.7	51.0	47.9	3.1	2004	4.24			617.66	
8	196.9	168.4	28.5	52.4	49.2	3.2	2005	5.21			620.82	
9	202.2	172.8	29.4	53.8	50.5	3.3	2006	6.41			623.99	
10	207.6	177.4	30.2	55.2	51.8	3.4	2007	7.88			627.18	
11	213.1	182.0	31.1	56.7	53.2	3.5	2008	9.68			630.39	
12	218.7	186.6	32.0	58.2	54.6	3.6	2009	11.90			633.61	
13	224.3	191.4	32.9	59.8	56.1	3.7	2010	14.63			636.85	
14	230.1	196.2	33.9	61.4	57.6	3.8	2011	17.98			640.11	
15	236.0	201.1	34.9	63.0	59.1	3.9	2012	22.10			643.38	
16	242.0	206.1	35.9	64.7	60.7	4.0	2013	27.17			646.67	
17	248.0	211.1	36.9	66.4	62.3	4.1	2014	33.40			649.98	
18	254.2	216.2	38.0	68.2	64.0	4.3	2015	41.05			653.30	
19	260.5	221.4	39.1	70.0	65.7	4.4	2016	50.47			656.64	
20	266.9	226.7	40.3	71.9	67.4	4.5	2017	62.03			660.00	
Ultimate	701.88	548.88	153.00	221.00	199.00	22.00		124.1			660.0	

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		Total (mgd)
250	27,003	4,500		5,960		425.9	37,713	4.01	151,194				0.151
307	31,217	5,200		5,990		474.6	42,715	3.99	170,252				0.170
378	35,737	6,009		6,021		527.2	48,144	3.96	190,761				0.191
464	36,761	6,184		6,052		540.3	49,462	3.96	195,704				0.196
571	37,796	6,364		6,083		553.7	50,813	3.95	200,765				0.201
702	38,846	6,549		6,114		567.5	52,211	3.95	205,987				0.206
862	39,913	6,739		6,145		581.9	53,660	3.94	211,389				0.211
1,060	40,996	6,935		6,177		596.8	55,167	3.93	216,999				0.217
1,303	42,095	7,137		6,208		612.4	56,743	3.93	222,847				0.223
1,602	43,211	7,344		6,240		628.7	58,397	3.92	228,972				0.229
1,969	44,344	7,558		6,272		646.0	60,143	3.91	235,422				0.235
2,420	45,494	7,777		6,304		664.3	61,996	3.91	242,252				0.242
2,975	46,662	8,003		6,336		683.9	63,977	3.90	249,534				0.250
3,657	47,848	8,236		6,369		705.0	66,110	3.89	257,351				0.257
4,495	49,052	8,476		6,401		727.9	68,424	3.88	265,808				0.266
5,526	50,274	8,722		6,434		753.0	70,956	3.88	275,031				0.275
6,793	51,515	8,975		6,467		780.6	73,750	3.87	285,175				0.285
8,350	52,775	9,236		6,500		811.4	76,861	3.86	296,428				0.296
10,264	54,054	9,505		6,533		846.1	80,356	3.85	309,018				0.309
12,616	55,353	9,781		6,566		885.4	84,317	3.83	323,226				0.323
15,508	56,671	10,065		6,600		930.3	88,845	3.82	339,389				0.339
31,017	137,220	38,250		6,600		1662.9	213,087	3.65	777,072				0.777

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

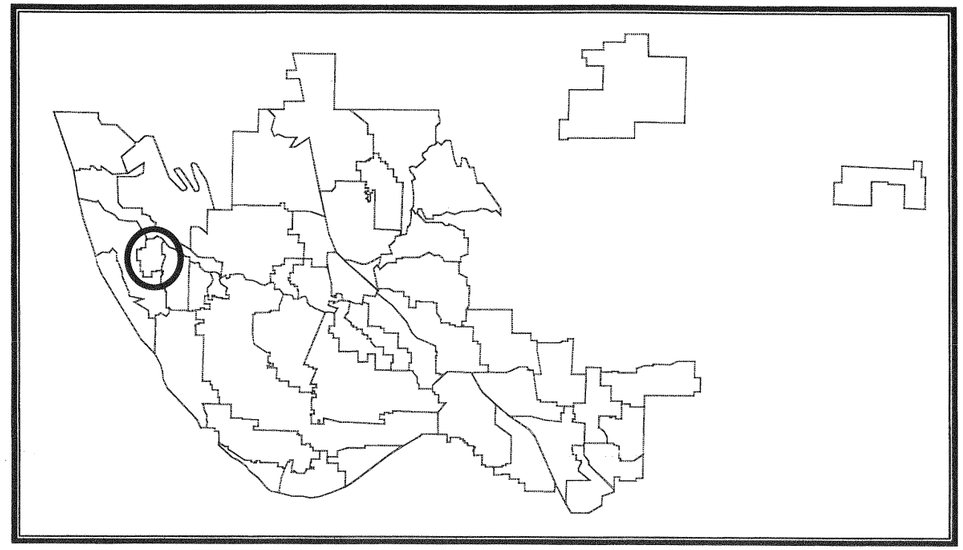
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **18**

SEWARD BRIDGE SOUTH



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	195.0	(66% of Ultimate)	71.2	(Average Densities)	2.738 DU/Acre
Existing Single Family Served Existing Multi Family Served Existing UH/UR Served	195.0	(100% of Exist.)	71.2	(100% of Exist.)	2.738 DU/Acre
New Service thru the updated connections	7.0	(2% of Ultimate Service)	2.1	(1.79% of Ultimate)	3.260 DU/Acre
New/Updated Single Family Served (est.) New/Updated Multi Family Served (est.)	7.0	(100% of New HHs)	2.1	(100% of New HHs)	3.260 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	295.1		120.0	(Proposed Densities)	2.459 DU/Acre
Ultimate Single Family Served Ultimate Multi Family Served Ultimate UH/UR Served	295.1	(100% of Ultimate)	120.0	(100% of Ultimate)	2.459 DU/Acre
New Service During the Comp. Plan	82.4	(28% of Ultimate SF & MF)	27.0	(23% of Ultimate SF & MF)	3.051 DU/Acre
New Single Family Service New Multi Family Service	82.4	(100% of New HHs)	27.0	(100% of New HHs)	3.051 DU/Acre
Service at the end of HDSD Comp. Plan	277.4	(94% of Ultimate)	98.2	(Existing & New)	2.824 DU/Acre
Single Family Service - end of Comp. Plan Multi Family Service - end of Comp. Plan	277.4		98.2		2.824 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served																	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed
Actual Rate	1.78%			1.49%			Ultimate																		
Projected Rate	1.78%			1.63%			Buildout %																		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	195.0	195.0		71.2	71.2		1997							48,753					487.5	48,753	3.98	194,029				0.194
1	198.5	198.5		72.3	72.3		1998							49,620					496.2	49,620	3.98	197,284				0.197
2	202.0	202.0		73.4	73.4		1999							50,502					505.0	50,502	3.97	200,592				0.201
3	205.6	205.6		74.6	74.6		2000							51,399					514.0	51,399	3.97	203,954				0.204
4	209.3	209.3		75.8	75.8		2001							52,313					523.1	52,313	3.96	207,372				0.207
5	213.0	213.0		77.0	77.0		2002							53,243					532.4	53,243	3.96	210,845				0.211
6	216.8	216.8		78.3	78.3		2003							54,190					541.9	54,190	3.96	214,374				0.214
7	220.6	220.6		79.6	79.6		2004							55,153					551.5	55,153	3.95	217,962				0.218
8	224.5	224.5		80.9	80.9		2005							56,134					561.3	56,134	3.95	221,607				0.222
9	228.5	228.5		82.2	82.2		2006							57,132					571.3	57,132	3.94	225,312				0.225
10	232.6	232.6		83.5	83.5		2007							58,147					581.5	58,147	3.94	229,077				0.229
11	236.7	236.7		84.9	84.9		2008							59,181					591.8	59,181	3.94	232,903				0.233
12	240.9	240.9		86.3	86.3		2009							60,233					602.3	60,233	3.93	236,792				0.237
13	245.2	245.2		87.7	87.7		2010							61,304					613.0	61,304	3.93	240,743				0.241
14	249.6	249.6		89.1	89.1		2011							62,394					623.9	62,394	3.92	244,759				0.245
15	254.0	254.0		90.6	90.6		2012							63,503					635.0	63,503	3.92	248,840				0.249
16	258.5	258.5		92.1	92.1		2013							64,632					646.3	64,632	3.91	252,987				0.253
17	263.1	263.1		93.6	93.6		2014							65,781					657.8	65,781	3.91	257,201				0.257
18	267.8	267.8		95.1	95.1		2015							66,950					669.5	66,950	3.91	261,483				0.261
19	272.6	272.6		96.7	96.7		2016							68,141					681.4	68,141	3.90	265,835				0.266
20	277.4	277.4		98.2	98.2		2017							69,352					693.5	69,352	3.90	270,256				0.270
Ultimate	295.14	295.14		120.00	120.00									73,784					737.8	73,784	3.88	286,376				0.286

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

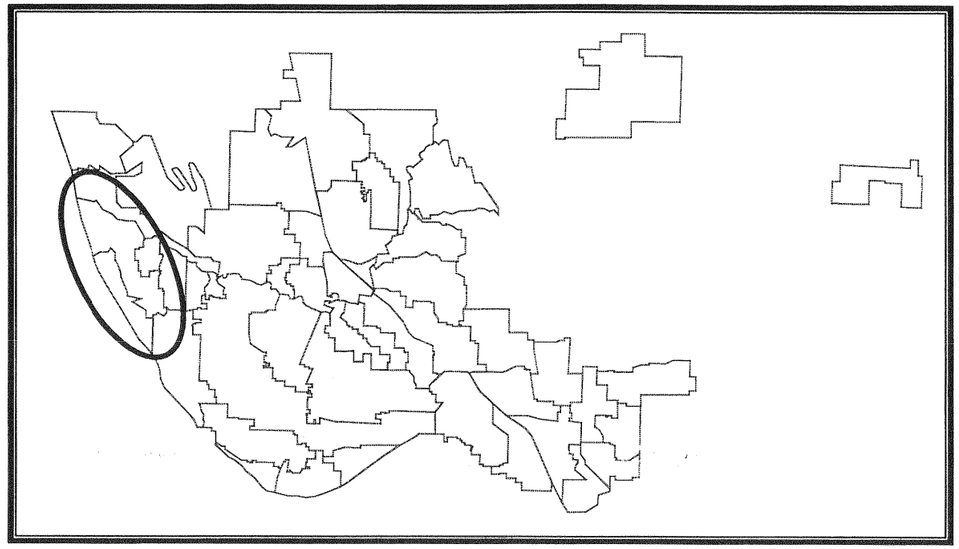
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **19**

FELIDA



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	176.0	(9% of Ultimate)	61.0	(Average Densities)	2.887 DU/Acre
Existing Single Family Served	163.0	(93% of Exist.)	59.5	(98% of Exist.)	2.738 DU/Acre
Existing Multi Family Served	13.0	(7% of Exist.)	1.4	(2% of Exist.)	9.003 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	72.0	(4% of Ultimate Service)	24.6	(2.75% of Ultimate)	2.931 DU/Acre
New/Updated Single Family Served (est.)	66.7	(93% of New HHs)	24.0	(98% of New HHs)	2.781 DU/Acre
New/Updated Multi Family Served (est.)	5.3	(7% of New HHs)	0.6	(2% of New HHs)	9.145 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1917.9		893.0	(Proposed Densities)	2.148 DU/Acre
Ultimate Single Family Served	1794.5	(94% of Ultimate)	876.0	(98% of Ultimate)	2.048 DU/Acre
Ultimate Multi Family Served	123.4	(6% of Ultimate)	17.0	(2% of Ultimate)	7.259 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	1185.1	(62% of Ultimate SF & MF)	482.0	(54% of Ultimate SF & MF)	2.459 DU/Acre
New Single Family Service	1104.6	(93% of New HHs)	471.8	(98% of New HHs)	2.341 DU/Acre
New Multi Family Service	80.6	(7% of New HHs)	10.2	(2% of New HHs)	7.893 DU/Acre
Service at the end of HDSD Comp. Plan	1361.2	(71% of Ultimate)	543.0	(Existing & New)	2.507 DU/Acre
Single Family Service - end of Comp. Plan	1267.6	(93% of Projected)	531.4	(98% of Projected)	2.385 DU/Acre
Multi Family Service - end of Comp. Plan	93.6	(7% of Projected)	11.7	(2% of Projected)	8.030 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	1.0	0.0		
	Actual Rate	5.53%	18.60%		18.43%	18.34%	Ultimate	422.9	9.0	15.0		
	Projected Rate	5.43%	9.49%		10.83%	10.22%	Buildout %	50%	85%	90%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	176.0	163.0	13.0	61.0	59.5	1.4	1997	1.00	1.00	0.04		
1	210.9	195.5	15.4	72.2	70.5	1.7	1998	1.31	1.11	0.05		
2	248.0	229.7	18.3	85.5	83.5	2.0	1999	1.71	1.23	0.07		
3	285.2	265.1	20.0	94.8	92.6	2.2	2000	2.23	1.36	0.10		
4	324.4	302.5	21.9	105.0	102.6	2.5	2001	2.92	1.50	0.13		
5	365.9	341.9	24.0	116.4	113.7	2.7	2002	3.81	1.66	0.17		
6	409.7	383.4	26.3	129.0	126.0	3.0	2003	4.98	1.84	0.23		
7	456.0	427.2	28.8	142.9	139.6	3.3	2004	6.51	2.04	0.31		
8	504.9	473.4	31.5	158.4	154.8	3.6	2005	8.51	2.26	0.41		
9	556.6	522.0	34.5	175.5	171.5	4.0	2006	11.13	2.50	0.55		
10	611.1	573.4	37.8	194.5	190.1	4.4	2007	14.54	2.77	0.73		
11	668.8	627.5	41.4	215.5	210.7	4.9	2008	19.01	3.06	0.98		
12	729.8	684.5	45.3	238.8	233.5	5.4	2009	24.84	3.39	1.32		
13	794.2	744.6	49.6	264.7	258.8	5.9	2010	32.46	3.75	1.76		
14	862.3	808.0	54.3	293.3	286.8	6.5	2011	42.43	4.15	2.35		
15	934.3	874.9	59.5	325.0	317.8	7.2	2012	55.45	4.60	3.15		
16	1,010.4	945.3	65.1	360.1	352.2	7.9	2013	72.48	5.09	4.21		
17	1,090.9	1,019.6	71.3	399.1	390.4	8.7	2014	94.72	5.64	5.64		
18	1,176.0	1,098.0	78.1	442.2	432.6	9.6	2015	123.80	6.24	7.54		
19	1,266.0	1,180.5	85.5	490.0	479.5	10.6	2016	161.80	6.91	10.09		
20	1,361.2	1,267.6	93.6	543.0	531.4	11.7	2017	211.47	7.65	13.50		
Ultimate	1917.88	1794.47	123.40	893.00	876.00	17.00		422.9	9.0	15.0		

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
250	40,761	3,251	1,200			434.8	45,462	4.00	182,062	72	72		0.182
327	48,869	3,856	1,329			521.3	54,380	3.96	215,610	96	96		0.216
427	57,426	4,573	1,471			613.3	63,897	3.93	250,921	129	129		0.251
558	66,286	5,008	1,628			706.5	73,480	3.89	286,002	172	172		0.286
729	75,627	5,483	1,803			805.2	83,642	3.86	322,747	231	231		0.323
953	85,474	6,003	1,996			909.9	94,427	3.83	361,282	309	309		0.362
1,246	95,857	6,573	2,209			1021.0	105,885	3.79	401,747	413	413		0.402
1,628	106,803	7,197	2,446			1139.0	118,075	3.76	444,296	552	552		0.445
2,128	118,344	7,880	2,708			1264.6	131,060	3.73	489,109	739	739		0.490
2,782	130,511	8,628	2,998			1398.5	144,919	3.70	536,395	989	989		0.537
3,635	143,339	9,447	3,319			1541.5	159,740	3.67	586,398	1,323	1,323		0.588
4,751	156,864	10,343	3,674			1694.8	175,633	3.64	639,409	1,770	1,770		0.641
6,210	171,123	11,325	4,068			1859.4	192,726	3.61	695,776	2,368	2,368		0.698
8,116	186,156	12,400	4,504			2037.0	211,175	3.58	755,921	3,167	3,167		0.759
10,608	202,005	13,577	4,986			2229.3	231,175	3.55	820,362	4,238	4,238		0.825
13,864	218,715	14,865	5,520			2438.8	252,964	3.52	889,734	5,669	5,669		0.895
18,119	236,333	16,276	6,111			2668.2	276,839	3.49	964,825	7,585	7,585		0.972
23,681	254,907	17,821	6,765			2921.3	303,174	3.45	1,046,614	10,148	10,148		1.057
30,950	274,489	19,513	7,490			3202.7	332,442	3.42	1,136,328	13,576	13,576		1.150
40,451	295,135	21,365	8,292			3518.2	365,242	3.38	1,235,504	18,163	18,163		1.254
52,867	316,902	23,392	9,180			3875.5	402,342	3.35	1,346,074	24,300	24,300		1.370
105,735	448,618	30,851	10,800			4720.7	596,004	3.27	1,947,770	27,000	27,000		1.975

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

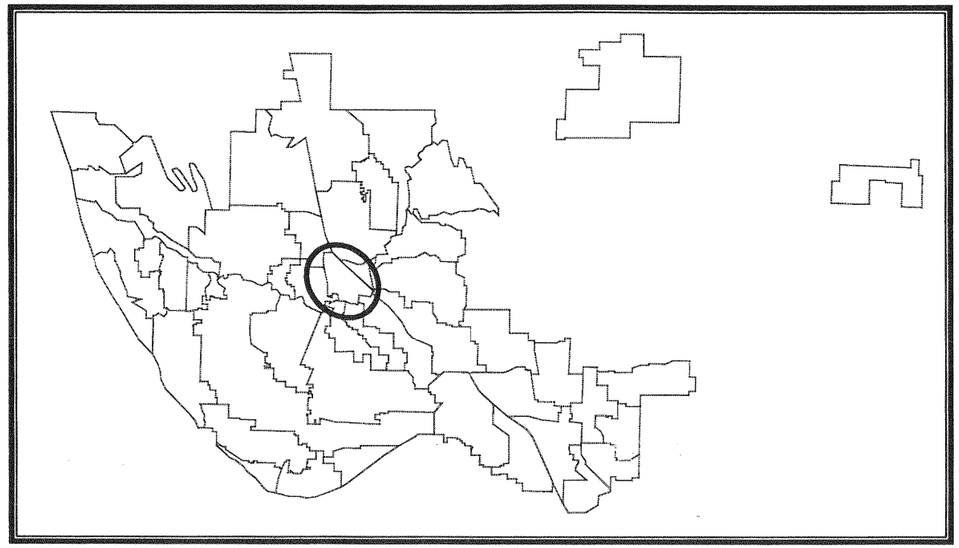
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

HDSD Basin Summary

Basin Number **20**

HIGHWAY 99 NORTH



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	5.0	(1% of Ultimate)	0.6	(Average Densities)	8.199 DU/Acre
Existing Single Family Served	1.0	(20% of Exist.)	0.2	(35% of Exist.)	4.652 DU/Acre
Existing Multi Family Served	4.0	(80% of Exist.)	0.4	(65% of Exist.)	10.129 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	2.1	(1% of Ultimate Service)	0.3	(0.24% of Ultimate)	8.239 DU/Acre
New/Updated Single Family Served (est.)	0.4	(20% of New HHs)	0.1	(35% of New HHs)	4.743 DU/Acre
New/Updated Multi Family Served (est.)	1.6	(80% of New HHs)	0.2	(65% of New HHs)	10.155 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	352.2		104.0	(Proposed Densities)	3.386 DU/Acre
Ultimate Single Family Served	295.4	(84% of Ultimate)	99.6	(96% of Ultimate)	2.965 DU/Acre
Ultimate Multi Family Served	56.8	(16% of Ultimate)	4.4	(4% of Ultimate)	12.887 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	154.5	(44% of Ultimate SF & MF)	25.2	(24% of Ultimate SF & MF)	6.127 DU/Acre
New Single Family Service	74.1	(48% of New HHs)	12.6	(50% of New HHs)	5.893 DU/Acre
New Multi Family Service	80.3	(52% of New HHs)	12.6	(50% of New HHs)	6.360 DU/Acre
Service at the end of HDSD Comp. Plan	159.5	(45% of Ultimate)	25.8	(Existing & New)	6.176 DU/Acre
Single Family Service - end of Comp. Plan	75.1	(47% of Projected)	12.8	(50% of Projected)	5.872 DU/Acre
Multi Family Service - end of Comp. Plan	84.3	(53% of Projected)	13.0	(50% of Projected)	6.475 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	37.0			
	Actual Rate	0.28%	18.81%		18.88%	18.77%	Ultimate	74.1	111.0			
	Projected Rate	3.86%	16.20%		23.10%	19.13%	Buildout %	100%	80%			
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	5.0	1.0	4.0	0.6	0.2	0.4	1997	1.00	37.00			
1	6.0	1.2	4.8	0.7	0.3	0.5	1998	1.24	38.65			
2	7.1	1.4	5.6	0.9	0.3	0.6	1999	1.54	40.38			
3	10.9	4.3	6.6	1.0	0.4	0.7	2000	1.91	42.19			
4	15.0	7.4	7.6	1.3	0.5	0.8	2001	2.37	44.08			
5	19.4	10.5	8.9	1.5	0.6	0.9	2002	2.93	46.05			
6	24.1	13.8	10.3	1.8	0.7	1.1	2003	3.64	48.11			
7	29.1	17.1	12.0	2.2	0.9	1.3	2004	4.51	50.26			
8	34.6	20.7	13.9	2.7	1.1	1.6	2005	5.60	52.51			
9	40.5	24.3	16.2	3.2	1.3	1.9	2006	6.94	54.85			
10	46.9	28.1	18.8	3.9	1.6	2.3	2007	8.61	57.31			
11	53.9	32.1	21.8	4.7	2.0	2.7	2008	10.67	59.87			
12	61.5	36.2	25.4	5.6	2.4	3.2	2009	13.24	62.55			
13	69.9	40.4	29.5	6.8	3.0	3.8	2010	16.42	65.34			
14	79.1	44.8	34.2	8.1	3.7	4.4	2011	20.36	68.27			
15	89.2	49.4	39.8	8.9	4.5	4.4	2012	25.25	71.32			
16	100.4	54.2	46.2	10.0	5.6	4.4	2013	31.31	74.51			
17	112.9	59.1	53.7	11.3	6.9	4.4	2014	38.84	77.84			
18	121.1	64.3	56.8	12.9	8.4	4.4	2015	48.16	81.32			
19	126.4	69.6	56.8	14.8	10.4	4.4	2016	59.73	84.96			
20	132.0	75.1	56.8	17.2	12.8	4.4	2017	74.08	88.76			
Ultimate	352.20	295.37	56.83	104.02	99.61	4.41		74.1	111.0			

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
250	250	1,000	44,400			12.6	45,901	4.40	202,166				0.202
310	303	1,189	46,386			15.2	48,187	4.40	211,805				0.212
385	355	1,412	48,460			18.1	50,612	4.39	221,986				0.222
477	1,083	1,641	50,627			28.1	53,828	4.36	234,652				0.235
591	1,839	1,907	52,892			38.8	57,229	4.34	248,129				0.248
733	2,624	2,216	55,257			50.4	60,831	4.31	262,422				0.262
910	3,440	2,575	57,728			63.1	64,653	4.29	277,570				0.278
1,128	4,287	2,992	60,310			76.9	68,717	4.27	293,636				0.294
1,399	5,167	3,477	63,007			92.1	73,050	4.25	310,697				0.311
1,735	6,081	4,040	65,825			108.9	77,681	4.23	328,848				0.329
2,152	7,030	4,695	68,769			127.5	82,646	4.21	348,199				0.348
2,669	8,016	5,456	71,844			148.3	87,984	4.19	368,885				0.369
3,309	9,040	6,340	75,057			171.7	93,746	4.17	391,060				0.391
4,104	10,103	7,367	78,414			198.1	99,988	4.15	414,908				0.415
5,090	11,207	8,561	81,921			228.0	106,778	4.13	440,645				0.441
6,313	12,354	9,948	85,584			262.3	114,199	4.10	468,529				0.469
7,829	13,545	11,559	89,412			301.6	122,345	4.08	498,860				0.499
9,709	14,782	13,432	93,411			347.0	131,334	4.05	531,999				0.532
12,041	16,067	14,208	97,588			389.1	139,904	4.03	563,513				0.564
14,933	17,401	14,208	101,952			431.3	148,495	4.01	594,928				0.595
18,520	18,787	14,208	106,512			481.0	158,027	3.98	629,389				0.629
18,520	73,843	14,208	133,140			846.4	239,711	3.85	921,814				0.922

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

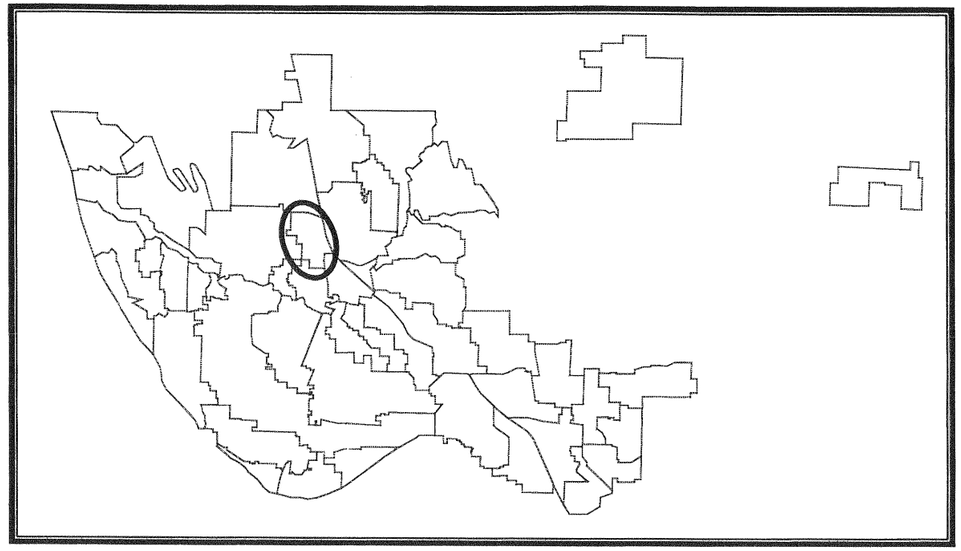
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **21**

NE 16TH AVE



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	42.0	(9% of Ultimate)	9.2	(Average Densities)	4.570 DU/Acre
Existing Single Family Served	30.0	(71% of Exist.)	8.1	(88% of Exist.)	3.713 DU/Acre
Existing Multi Family Served	12.0	(29% of Exist.)	1.1	(12% of Exist.)	10.802 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	11.8	(3% of Ultimate Service)	2.7	(3.67% of Ultimate)	4.450 DU/Acre
New/Updated Single Family Served (est.)	8.3	(70% of New HHs)	2.3	(86% of New HHs)	3.620 DU/Acre
New/Updated Multi Family Served (est.)	3.5	(30% of New HHs)	0.4	(14% of New HHs)	9.607 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	446.8		72.4	(Proposed Densities)	6.174 DU/Acre
Ultimate Single Family Served	88.4	(20% of Ultimate)	28.5	(39% of Ultimate)	3.102 DU/Acre
Ultimate Multi Family Served	358.4	(80% of Ultimate)	43.9	(61% of Ultimate)	8.168 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	146.1	(33% of Ultimate SF & MF)	29.3	(41% of Ultimate SF & MF)	4.982 DU/Acre
New Single Family Service	79.7	(55% of New HHs)	20.0	(68% of New HHs)	3.982 DU/Acre
New Multi Family Service	66.4	(45% of New HHs)	9.3	(32% of New HHs)	7.132 DU/Acre
Service at the end of HDSD Comp. Plan	188.1	(42% of Ultimate)	38.5	(Existing & New)	4.884 DU/Acre
Single Family Service - end of Comp. Plan	109.7	(58% of Projected)	28.1	(73% of Projected)	3.905 DU/Acre
Multi Family Service - end of Comp. Plan	78.4	(42% of Projected)	10.4	(27% of Projected)	7.523 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	19.0	48.0		
Actual Rate	2.42%	13.77%		13.25%	15.37%		Ultimate	138.5	54.1	116.0		
Projected Rate	1.90%	9.41%		5.69%	11.46%		Buildout %	30%	80%	85%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	42.0	30.0	12.0	9.2	8.1	1.1	1997	1.00	19.00	48.00		
1	47.7	34.1	13.7	10.4	9.2	1.3	1998	1.20	19.80	49.76		
2	53.8	38.3	15.5	11.8	10.4	1.5	1999	1.45	20.63	51.58		
3	58.6	41.6	17.0	12.6	11.0	1.6	2000	1.75	21.49	53.47		
4	63.7	45.1	18.6	13.4	11.6	1.8	2001	2.11	22.40	55.43		
5	68.9	48.6	20.3	14.3	12.2	2.0	2002	2.54	23.34	57.46		
6	74.4	52.1	22.3	15.2	12.9	2.3	2003	3.06	24.32	59.57		
7	80.1	55.7	24.4	16.2	13.7	2.5	2004	3.69	25.34	61.75		
8	86.1	59.4	26.6	17.3	14.5	2.8	2005	4.44	26.40	64.01		
9	92.4	63.2	29.2	18.4	15.3	3.2	2006	5.35	27.51	66.36		
10	99.0	67.0	31.9	19.7	16.1	3.5	2007	6.45	28.66	68.79		
11	105.9	71.0	34.9	21.0	17.1	3.9	2008	7.77	29.87	71.31		
12	113.1	74.9	38.2	22.4	18.0	4.4	2009	9.36	31.12	73.92		
13	120.8	79.0	41.8	23.9	19.1	4.9	2010	11.27	32.43	76.63		
14	128.9	83.1	45.7	25.6	20.1	5.4	2011	13.58	33.79	79.43		
15	137.4	87.4	50.0	27.4	21.3	6.1	2012	16.36	35.20	82.34		
16	143.1	88.4	54.7	29.3	22.5	6.8	2013	19.71	36.68	85.36		
17	148.3	88.4	59.9	31.3	23.8	7.5	2014	23.75	38.22	88.49		
18	153.9	88.4	65.5	33.5	25.1	8.4	2015	28.62	39.83	91.73		
19	160.1	88.4	71.7	35.9	26.6	9.4	2016	34.48	41.50	95.09		
20	166.8	88.4	78.4	38.5	28.1	10.4	2017	41.54	43.24	98.57		
Ultimate	446.81	88.38	358.43	72.37	28.49	43.88		138.5	54.1	116.0		

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		Total (mgd)
250	7,501	3,001	22,800			100.3	33,552	4.24	142,367	86,400	86,400		0.229
301	8,523	3,414	23,757			114.2	35,994	4.23	152,161	89,565	89,565		0.242
363	9,568	3,884	24,754			128.8	38,569	4.21	162,446	92,847	92,847		0.255
437	10,410	4,249	25,793			140.8	40,890	4.20	171,731	96,248	96,248		0.268
527	11,267	4,649	26,876			153.3	43,319	4.19	181,418	99,774	99,774		0.281
635	12,140	5,087	28,004			166.4	45,865	4.18	191,539	103,430	103,430		0.295
765	13,030	5,566	29,179			180.2	48,540	4.16	202,126	107,219	107,219		0.309
921	13,937	6,089	30,404			194.9	51,352	4.15	213,219	111,147	111,147		0.324
1,110	14,861	6,662	31,680			210.3	54,314	4.14	224,857	115,219	115,219		0.340
1,337	15,803	7,289	33,010			226.8	57,439	4.13	237,088	119,440	119,440		0.357
1,611	16,762	7,976	34,395			244.3	60,744	4.12	249,966	123,816	123,816		0.374
1,941	17,740	8,726	35,839			263.1	64,247	4.10	263,551	128,352	128,352		0.392
2,339	18,737	9,547	37,343			283.3	67,966	4.09	277,911	133,054	133,054		0.411
2,818	19,752	10,446	38,911			305.1	71,927	4.08	293,125	137,928	137,928		0.431
3,395	20,787	11,429	40,544			328.7	76,155	4.06	309,283	142,982	142,982		0.452
4,091	21,841	12,504	42,246			354.4	80,682	4.05	326,489	148,220	148,220		0.475
4,928	22,095	13,681	44,019			374.2	84,723	4.04	341,922	153,650	153,650		0.496
5,938	22,095	14,969	45,867			394.1	88,868	4.03	357,713	159,279	159,279		0.517
7,154	22,095	16,377	47,792			417.0	93,418	4.01	374,936	165,114	165,114		0.540
8,620	22,095	17,919	49,798			443.3	98,431	4.00	393,776	171,163	171,163		0.565
10,385	22,095	19,605	51,888			473.8	103,973	3.99	414,450	177,434	177,434		0.592
34,617	22,095	89,608	64,860			902.0	211,179	3.83	808,487	208,746	208,746		1.017

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

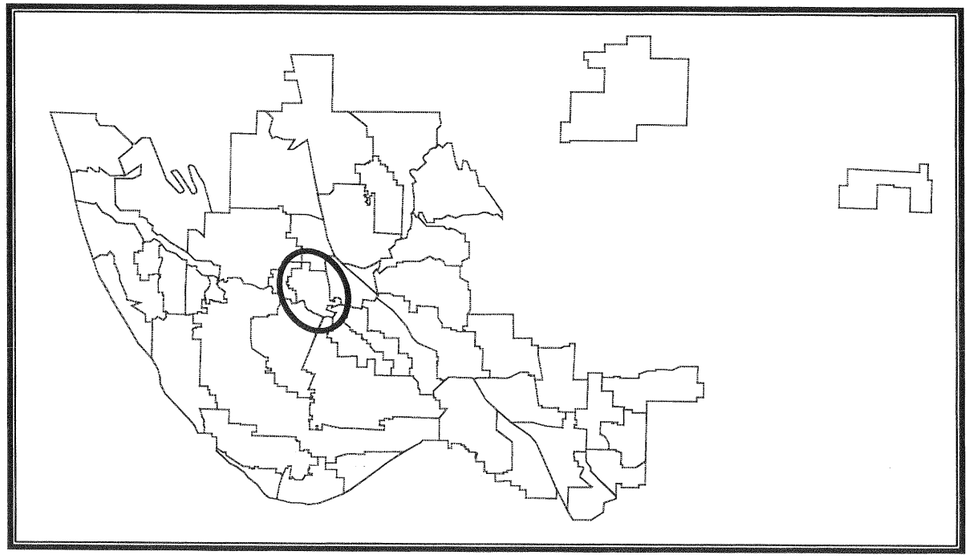
HDSD Basin Summary

Basin Number **22**

KNOLLRIDGE

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	441.0	(35% of Ultimate)	93.5	(Average Densities)	4.715 DU/Acre
Existing Single Family Served	430.0	(98% of Exist.)	92.5	(99% of Exist.)	4.650 DU/Acre
Existing Multi Family Served	11.0	(2% of Exist.)	1.1	(1% of Exist.)	10.421 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections					
New/Updated Single Family Served (est.)					
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	1268.9		187.0	(Proposed Densities)	6.785 DU/Acre
Ultimate Single Family Served	1163.4	(92% of Ultimate)	175.0	(94% of Ultimate)	6.648 DU/Acre
Ultimate Multi Family Served	105.5	(8% of Ultimate)	12.0	(6% of Ultimate)	8.792 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	45.2	(4% of Ultimate SF & MF)	12.1	(6% of Ultimate SF & MF)	3.725 DU/Acre
New Single Family Service	44.0	(97% of New HHs)	12.0	(99% of New HHs)	3.679 DU/Acre
New Multi Family Service	1.2	(3% of New HHs)	0.2	(1% of New HHs)	6.839 DU/Acre
Service at the end of HDSD Comp. Plan	486.2	(38% of Ultimate)	105.7	(Existing & New)	4.602 DU/Acre
Single Family Service - end of Comp. Plan	474.0	(97% of Projected)	104.4	(99% of Projected)	4.539 DU/Acre
Multi Family Service - end of Comp. Plan	12.2	(3% of Projected)	1.2	(1% of Projected)	9.903 DU/Acre



	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	0.0			469 cap															
	Actual Rate						Ultimate	2.0			520 cap															
	Projected Rate	0.54%	0.59%		0.68%	0.87%	Buildout %	100%			100%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	441.0	430.0	11.0	93.5	92.5	1.1	1997		0.04		469.00			107,501	2,750	48	4,690		1095.9	114,989	3.77	433,971				0.434
1	441.0	430.0	11.0	93.5	92.5	1.1	1998		0.05		471.43			107,501	2,750	58	4,714		1095.9	115,024	3.77	434,101				0.434
2	441.0	430.0	11.0	93.5	92.5	1.1	1999		0.06		473.87			107,501	2,750	71	4,739		1095.9	115,061	3.77	434,241				0.434
3	443.4	432.3	11.1	94.2	93.1	1.1	2000		0.07		476.32			108,084	2,766	86	4,763		1101.9	115,700	3.77	436,470				0.436
4	445.8	434.7	11.1	94.8	93.7	1.1	2001		0.09		478.78			108,570	2,782	105	4,788		1107.8	116,345	3.77	438,725				0.439
5	448.2	437.0	11.2	95.4	94.4	1.1	2002		0.11		481.26			109,260	2,799	128	4,813		1113.9	116,999	3.77	441,005				0.441
6	450.7	439.4	11.3	96.1	95.0	1.1	2003		0.13		483.75			109,853	2,815	155	4,838		1119.9	117,660	3.77	443,315				0.443
7	453.1	441.8	11.3	96.8	95.6	1.1	2004		0.16		486.25			110,449	2,832	189	4,863		1126.0	118,331	3.77	445,657				0.446
8	455.6	444.2	11.4	97.4	96.3	1.1	2005		0.19		488.77			111,048	2,848	230	4,888		1132.1	119,013	3.76	448,038				0.448
9	458.1	446.6	11.5	98.1	96.9	1.1	2006		0.23		491.30			111,550	2,865	279	4,913		1138.3	119,707	3.76	450,462				0.450
10	460.6	449.0	11.5	98.7	97.6	1.1	2007		0.28		493.84			112,256	2,882	339	4,938		1144.5	120,416	3.76	452,938				0.453
11	463.1	451.5	11.6	99.4	98.3	1.1	2008		0.34		496.40			112,865	2,899	413	4,964		1150.7	121,140	3.76	455,472				0.455
12	465.6	453.9	11.7	100.1	98.9	1.2	2009		0.42		498.97			113,477	2,916	502	4,990		1156.9	121,885	3.76	458,078				0.458
13	468.1	456.4	11.7	100.8	99.6	1.2	2010		0.51		501.55			114,093	2,933	610	5,015		1163.2	122,652	3.76	460,766				0.461
14	470.6	458.8	11.8	101.5	100.3	1.2	2011		0.62		504.14			114,712	2,950	742	5,041		1169.5	123,446	3.76	463,553				0.464
15	473.2	461.3	11.9	102.1	101.0	1.2	2012		0.75		506.75			115,334	2,967	903	5,068		1175.9	124,272	3.75	466,457				0.466
16	475.8	463.8	11.9	102.8	101.6	1.2	2013		0.91		509.37			115,960	2,985	1,098	5,094		1182.3	125,136	3.75	469,502				0.470
17	478.4	466.4	12.0	103.5	102.3	1.2	2014		1.11		512.01			116,589	3,002	1,335	5,120		1188.7	126,046	3.75	472,716				0.473
18	481.0	468.9	12.1	104.2	103.0	1.2	2015		1.35		514.66			117,222	3,020	1,623	5,147		1195.2	127,011	3.75	476,132				0.476
19	483.6	471.4	12.2	104.9	103.7	1.2	2016		1.64		517.32			117,858	3,038	1,974	5,173		1201.7	128,042	3.75	479,792				0.480
20	486.2	474.0	12.2	105.7	104.4	1.2	2017		2.00		520.00			118,497	3,055	2,400	5,200		1208.2	129,152	3.75	483,746				0.484
Ultimate	1268.87	1163.37	105.50	187.00	175.00	12.00			2.0		520.0			290,841	26,375	2,400	5,200		3108.9	324,816	3.43	1,113,862				1.114

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

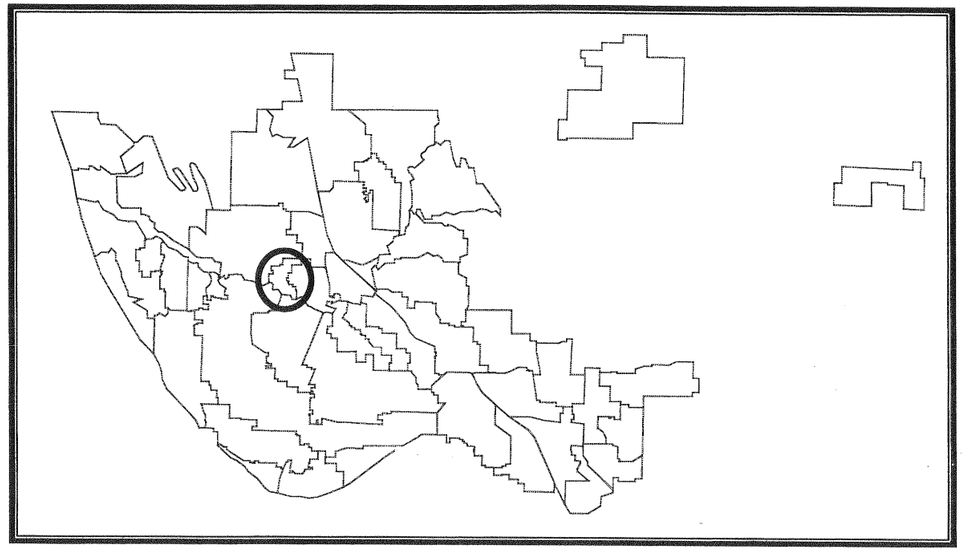
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **23**

WOODCREEK



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	179.0	(51% of Ultimate)	38.3	(Average Densities)	4.575 DU/Acre
Existing Single Family Served	177.0	(99% of Exist.)	38.1	(99% of Exist.)	4.650 DU/Acre
Existing Multi Family Served	2.0	(1% of Exist.)	0.2	(1% of Exist.)	9.000 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	1.0	(0% of Ultimate Service)	0.2	(0.23% of Ultimate)	5.197 DU/Acre
New/Updated Single Family Served (est.)	1.0	(99% of New HHs)	0.2	(99% of New HHs)	5.169 DU/Acre
New/Updated Multi Family Served (est.)	0.0	(1% of New HHs)	0.0	(1% of New HHs)	10.012 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	353.2		84.8	(Proposed Densities)	4.165 DU/Acre
Ultimate Single Family Served	326.5	(92% of Ultimate)	80.9	(95% of Ultimate)	4.034 DU/Acre
Ultimate Multi Family Served	26.7	(8% of Ultimate)	3.9	(5% of Ultimate)	6.879 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	17.0	(5% of Ultimate SF & MF)	3.3	(4% of Ultimate SF & MF)	5.150 DU/Acre
New Single Family Service	16.8	(99% of New HHs)	3.2	(95% of New HHs)	5.320 DU/Acre
New Multi Family Service	0.2	(1% of New HHs)	0.2	(5% of New HHs)	1.608 DU/Acre
Service at the end of HDSD Comp. Plan	196.0	(56% of Ultimate)	41.6	(Existing & New)	4.713 DU/Acre
Single Family Service - end of Comp. Plan	193.8	(99% of Projected)	41.3	(99% of Projected)	4.687 DU/Acre
Multi Family Service - end of Comp. Plan	2.2	(1% of Projected)	0.2	(1% of Projected)	9.098 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0																		
Actual Rate		0.24%	0.28%		0.25%	0.25%	Ultimate	31.9																		
Projected Rate		0.40%	0.61%		0.43%	0.55%	Buildout %	50%																		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	179.0	177.0	2.0	38.3	38.1	0.2	1997	1.00					250	44,251	500				448.8	45,001	4.00	179,908				0.160
1	179.5	177.5	2.0	38.4	38.2	0.2	1998	1.15					287	44,374	501				450.4	45,162	4.00	180,520				0.181
2	180.0	178.0	2.0	38.5	38.3	0.2	1999	1.32					330	44,498	503				452.1	45,330	4.00	181,155				0.181
3	180.9	178.8	2.0	38.6	38.4	0.2	2000	1.52					379	44,710	506				454.7	45,594	4.00	182,153				0.182
4	181.7	179.7	2.0	38.8	38.6	0.2	2001	1.74					435	44,923	509				457.4	45,867	3.99	183,182				0.183
5	182.6	180.5	2.0	39.0	38.8	0.2	2002	2.00					500	45,136	512				460.3	46,148	3.99	184,245				0.184
6	183.5	181.4	2.1	39.2	38.9	0.2	2003	2.30					574	45,351	515				463.2	46,440	3.99	185,348				0.185
7	184.3	182.3	2.1	39.3	39.1	0.2	2004	2.64					659	45,567	518				466.2	46,744	3.99	186,495				0.186
8	185.2	183.1	2.1	39.5	39.3	0.2	2005	3.03					757	45,783	521				469.4	47,062	3.99	187,692				0.188
9	186.1	184.0	2.1	39.7	39.4	0.2	2006	3.48					870	46,001	525				472.7	47,395	3.99	188,948				0.189
10	187.0	184.9	2.1	39.8	39.6	0.2	2007	4.00					999	46,219	528				476.2	47,746	3.99	190,268				0.190
11	187.9	185.8	2.1	40.0	39.8	0.2	2008	4.59					1,148	46,438	531				479.9	48,117	3.98	191,664				0.192
12	188.8	186.6	2.1	40.2	39.9	0.2	2009	5.27					1,318	46,658	534				483.8	48,510	3.98	193,145				0.193
13	189.7	187.5	2.2	40.4	40.1	0.2	2010	6.06					1,514	46,879	538				488.0	48,930	3.98	194,724				0.195
14	190.6	188.4	2.2	40.5	40.3	0.2	2011	6.96					1,739	47,100	541				492.5	49,380	3.98	196,415				0.196
15	191.5	189.3	2.2	40.7	40.5	0.2	2012	7.99					1,998	47,323	544				497.3	49,865	3.98	198,233				0.198
16	192.4	190.2	2.2	40.9	40.6	0.2	2013	9.18					2,294	47,547	547				502.6	50,388	3.97	200,197				0.200
17	193.3	191.1	2.2	41.1	40.8	0.2	2014	10.54					2,635	47,771	551				508.3	50,957	3.97	202,329				0.202
18	194.2	192.0	2.2	41.2	41.0	0.2	2015	12.11					3,027	47,996	554				514.4	51,578	3.97	204,651				0.205
19	195.1	192.9	2.2	41.4	41.2	0.2	2016	13.91					3,477	48,223	557				521.2	52,257	3.96	207,193				0.207
20	196.0	193.8	2.2	41.6	41.3	0.2	2017	15.97					3,994	48,450	561				528.7	53,004	3.96	209,984				0.210
Ultimate	353.15	326.46	26.69	84.80	80.92	3.88		31.9					7,987	81,615	6,673				866.9	96,275	3.84	369,614				0.370

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

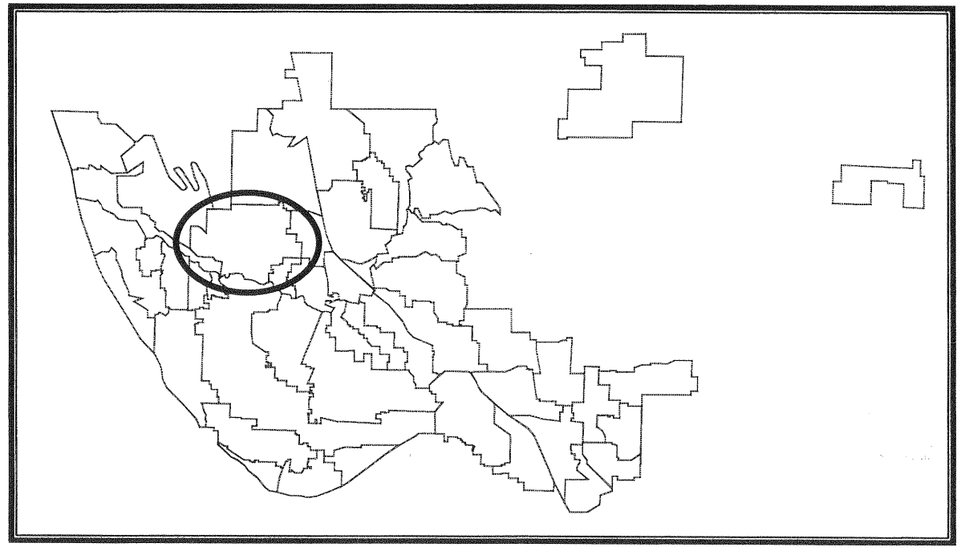
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

HDSD Basin Summary

Basin Number **24**

ORO-VEGA



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	963.1	(35% of Ultimate)	213.4	(Average Densities)	4.512 DU/Acre
Existing Single Family Served	808.1	(84% of Exist.)	199.1	(93% of Exist.)	4.059 DU/Acre
Existing Multi Family Served	155.0	(16% of Exist.)	14.4	(7% of Exist.)	10.801 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	301.8	(11% of Ultimate Service)	62.5	(8.45% of Ultimate)	4.828 DU/Acre
New/Updated Single Family Served (est.)	248.9	(82% of New HHs)	58.0	(93% of New HHs)	4.292 DU/Acre
New/Updated Multi Family Served (est.)	52.9	(18% of New HHs)	4.5	(7% of New HHs)	11.690 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	2718.8		740.0	(Proposed Densities)	3.674 DU/Acre
Ultimate Single Family Served	1929.4	(71% of Ultimate)	645.0	(87% of Ultimate)	2.991 DU/Acre
Ultimate Multi Family Served	789.4	(29% of Ultimate)	95.0	(13% of Ultimate)	8.309 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	1009.7	(37% of Ultimate SF & MF)	224.9	(30% of Ultimate SF & MF)	4.490 DU/Acre
New Single Family Service	798.6	(79% of New HHs)	205.6	(91% of New HHs)	3.885 DU/Acre
New Multi Family Service	211.0	(21% of New HHs)	19.3	(9% of New HHs)	10.935 DU/Acre
Service at the end of HDSD Comp. Plan	1972.7	(73% of Ultimate)	438.3	(Existing & New)	4.501 DU/Acre
Single Family Service - end of Comp. Plan	1606.7	(81% of Projected)	404.6	(92% of Projected)	3.971 DU/Acre
Multi Family Service - end of Comp. Plan	366.0	(19% of Projected)	33.7	(8% of Projected)	10.878 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	5.0	53.0	4642 cap															
Actual Rate	12.55%	15.80%		13.62%	14.68%		Ultimate	124.5	20.0	127.0	5050 cap															
Projected Rate	2.15%	3.19%		2.55%	3.26%		Buildout %	50%	85%	90%	100%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	963.1	808.1	155.0	213.4	199.1	14.4	1997	1.00	5.00	53.00	4642.00		250	202,015	38,753	6,000	46,420		2317.2	293,438	3.54	1,037,364	95,400	95,400		1.133
1	1,104.6	925.1	179.5	242.7	226.2	16.5	1998	1.23	5.32	55.08	4661.59		307	231,268	44,878	6,379	46,616		2656.8	329,447	3.49	1,148,681	99,137	99,137		1.248
2	1,264.6	1,056.8	207.9	275.9	257.0	18.9	1999	1.51	5.65	57.23	4681.27		378	264,191	51,971	6,781	46,813		3040.7	370,134	3.44	1,272,309	103,021	103,021		1.375
3	1,296.8	1,082.3	214.6	283.1	263.6	19.5	2000	1.86	6.01	59.48	4701.03		465	270,567	53,638	7,209	47,010		3118.0	378,889	3.43	1,298,878	107,057	107,057		1.406
4	1,329.6	1,108.2	221.4	290.5	270.3	20.1	2001	2.28	6.39	61.81	4720.87		571	277,040	55,350	7,664	47,209		3196.8	387,834	3.42	1,325,933	111,251	111,251		1.437
5	1,363.1	1,134.6	228.5	298.0	277.2	20.8	2002	2.81	6.79	64.23	4740.80		702	283,652	57,117	8,147	47,408		3277.6	397,026	3.41	1,353,646	115,609	115,609		1.469
6	1,397.4	1,161.6	235.8	305.8	284.3	21.5	2003	3.45	7.22	66.74	4760.81		863	290,405	58,940	8,662	47,608		3360.6	406,478	3.40	1,382,047	120,138	120,138		1.502
7	1,432.5	1,189.2	243.3	313.7	291.6	22.2	2004	4.25	7.67	69.36	4780.91		1,061	297,303	60,822	9,208	47,809		3445.9	416,203	3.39	1,411,172	124,844	124,844		1.536
8	1,468.5	1,217.4	251.1	321.9	299.0	22.9	2005	5.22	8.16	72.07	4801.09		1,305	304,349	62,763	9,789	48,011		3533.5	426,217	3.38	1,441,060	129,735	129,735		1.571
9	1,505.3	1,246.2	259.1	330.3	306.7	23.6	2006	6.42	8.67	74.90	4821.35		1,604	311,547	64,767	10,407	48,214		3623.7	436,538	3.37	1,471,757	134,817	134,817		1.607
10	1,542.9	1,275.6	267.3	338.9	314.5	24.4	2007	7.89	9.22	77.83	4841.70		1,972	318,899	66,834	11,063	48,417		3716.6	447,186	3.36	1,503,317	140,099	140,099		1.643
11	1,581.5	1,305.6	275.9	347.7	322.5	25.2	2008	9.70	9.80	80.88	4862.14		2,425	326,408	68,967	11,762	48,621		3812.5	458,184	3.35	1,535,799	145,587	145,587		1.681
12	1,621.0	1,336.3	284.7	356.8	330.8	26.0	2009	11.92	10.42	84.05	4882.66		2,981	334,079	71,169	12,504	48,827		3911.5	469,559	3.34	1,569,277	151,290	151,290		1.721
13	1,661.4	1,367.7	293.8	366.1	339.2	26.9	2010	14.66	11.08	87.34	4903.27		3,665	341,914	73,441	13,293	49,033		4013.9	481,346	3.33	1,603,834	157,217	157,217		1.761
14	1,702.8	1,399.7	303.1	375.6	347.9	27.8	2011	18.02	11.78	90.76	4923.97		4,506	349,918	75,785	14,131	49,240		4120.2	493,580	3.32	1,639,569	163,376	163,376		1.803
15	1,745.2	1,432.4	312.8	385.4	356.7	28.7	2012	22.16	12.52	94.32	4944.76		5,540	358,093	78,204	15,023	49,448		4230.7	506,307	3.31	1,676,601	169,776	169,776		1.846
16	1,788.6	1,465.8	322.8	395.4	365.8	29.6	2013	27.24	13.31	98.01	4965.63		6,811	366,444	80,700	15,971	49,656		4345.9	519,582	3.30	1,715,069	176,427	176,427		1.891
17	1,833.0	1,499.9	333.1	405.7	375.2	30.6	2014	33.49	14.15	101.85	4986.59		8,373	374,973	83,276	16,979	49,866		4466.4	533,468	3.29	1,755,140	183,338	183,338		1.938
18	1,878.5	1,534.7	343.7	416.3	384.8	31.6	2015	41.18	15.04	105.84	5007.64		10,294	383,686	85,935	18,050	50,076		4592.9	548,041	3.28	1,797,015	190,520	190,520		1.988
19	1,925.1	1,570.3	354.7	427.2	394.6	32.6	2016	50.62	15.99	109.99	5028.77		12,656	392,586	88,678	19,189	50,288		4726.4	563,396	3.27	1,840,934	197,984	197,984		2.039
20	1,972.7	1,606.7	366.0	438.3	404.6	33.7	2017	62.24	17.00	114.30	5050.00		15,560	401,676	91,509	20,400	50,500		4867.8	579,644	3.26	1,887,187	205,740	205,740		2.093
Ultimate	2718.80	1929.44	789.36	740.00	645.00	95.00		124.5	20.0	127.0	5050.0		31,119	482,360	197,340	24,000	50,500		6323.4	785,320	3.15	2,472,977	228,600	228,600		2.702

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

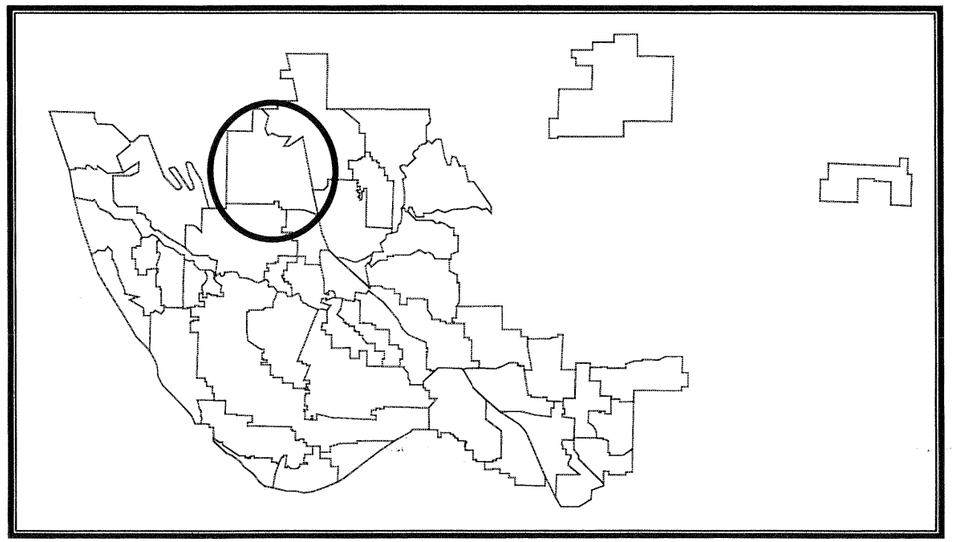
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **25**

WHIPPLE CREEK WEST



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	2.0	(0% of Ultimate)	1.3	(Average Densities)	1.601 DU/Acre
Existing Single Family Served	1.0	(50% of Exist.)	0.3	(20% of Exist.)	4.003 DU/Acre
Existing Multi Family Served	1.0	(50% of Exist.)	1.0	(80% of Exist.)	1.001 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections					
New/Updated Single Family Served (est.)					
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	416.4		493.0	(Proposed Densities)	0.845 DU/Acre
Ultimate Single Family Served	343.3	(82% of Ultimate)	166.0	(34% of Ultimate)	2.068 DU/Acre
Ultimate Multi Family Served	49.6	(12% of Ultimate)	6.0	(1% of Ultimate)	8.267 DU/Acre
Ultimate UH/UR Served	23.6	(6% of Ultimate)	321.0	(65% of Ultimate)	0.074 DU/Acre
New Service During the Comp. Plan	159.4	(41% of Ultimate SF & MF)	121.4	(71% of Ultimate SF & MF)	1.314 DU/Acre
New Single Family Service	138.3	(87% of New HHs)	89.8	(74% of New HHs)	1.540 DU/Acre
New Multi Family Service	20.0	(13% of New HHs)	31.6	(26% of New HHs)	0.633 DU/Acre
Service at the end of HDSD Comp. Plan	161.4	(39% of Ultimate)	122.6	(Existing & New)	1.317 DU/Acre
Single Family Service - end of Comp. Plan	139.3	(87% of Projected)	90.0	(73% of Projected)	1.547 DU/Acre
Multi Family Service - end of Comp. Plan	21.0	(13% of Projected)	32.6	(27% of Projected)	0.644 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0	0.0		
	Actual Rate						Ultimate	293.9	156.0	194.0		
	Projected Rate	2.16%	18.42%		38.69%	21.35%	Buildout %	20%	50%	50%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	2.0	**1.0**	**1.0**	**1.3**	**0.3**	**1.0**	**1997**	**1.00**	**0.04**	**0.04**		
1	2.0	1.0	1.0	1.3	0.3	1.0	1998	1.23	0.06	0.06		
2	2.0	1.0	1.0	1.3	0.3	1.0	1999	1.50	0.09	0.09		
3	8.5	7.4	1.2	1.6	0.3	1.2	2000	1.84	0.12	0.13		
4	15.3	13.9	1.4	2.0	0.5	1.5	2001	2.26	0.18	0.19		
5	22.2	20.5	1.7	2.5	0.7	1.8	2002	2.77	0.27	0.28		
6	**29.3**	**27.3**	**2.0**	**3.1**	**0.9**	**2.2**	**2003**	**3.39**	**0.39**	**0.41**		
7	36.6	34.2	2.3	3.9	1.3	2.6	2004	4.16	0.57	0.61		
8	44.1	41.3	2.8	5.0	1.8	3.2	2005	5.10	0.83	0.90		
9	51.8	48.6	3.3	6.3	2.5	3.9	2006	6.25	1.21	1.33		
10	**59.8**	**55.9**	**3.9**	**8.1**	**3.4**	**4.7**	**2007**	**7.67**	**1.77**	**1.97**		
11	68.1	63.5	4.6	10.4	4.7	5.7	2008	9.40	2.58	2.91		
12	76.6	71.2	5.4	12.6	6.6	6.0	2009	11.52	3.77	4.29		
13	85.5	79.1	6.4	15.1	9.1	6.0	2010	14.13	5.50	6.34		
14	94.8	87.2	7.6	18.7	12.7	6.0	2011	17.32	8.04	9.36		
15	**104.4**	**95.4**	**9.0**	**23.5**	**17.5**	**6.0**	**2012**	**21.23**	**11.74**	**13.82**		
16	114.5	103.8	10.7	30.3	24.3	6.0	2013	26.03	17.14	20.41		
17	125.0	112.4	12.6	39.7	33.7	6.0	2014	31.91	25.04	30.13		
18	136.1	121.1	15.0	52.8	46.8	6.0	2015	39.11	36.57	44.49		
19	147.8	130.1	17.7	70.9	64.9	6.0	2016	47.95	53.41	65.70		
20	160.2	139.3	21.0	96.0	90.0	6.0	2017	58.78	78.00	97.00		
Ultimate	416.45	343.25	49.60	493.00	166.00	6.00		293.9	156.0	194.0		

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		Total (mgd)
250	**250**	**250**	**48**			**6.9**	**798**	**4.43**	**3,536**	**72**	**72**		**0.004**
306	250	250	70			7.5	877	4.43	3,881	106	106		0.004
376	250	250	102			8.2	978	4.42	4,327	157	157		0.004
461	1,840	296	150			25.3	2,746	4.37	11,990	232	232		0.012
565	3,466	351	218			43.0	4,600	4.33	19,905	342	342		0.020
692	5,127	415	319			61.3	6,553	4.30	28,153	505	505		0.029
849	**6,824**	**492**	**466**			**80.5**	**8,630**	**4.27**	**36,836**	**746**	**746**		**0.038**
1,040	8,558	582	680			100.4	10,861	4.24	46,083	1,101	1,101		0.047
1,275	10,329	690	994			121.3	13,288	4.22	56,069	1,626	1,626		0.058
1,564	12,138	817	1,451			143.2	15,970	4.20	67,032	2,401	2,401		0.069
1,917	**13,987**	**967**	**2,120**			**166.4**	**18,990**	**4.18**	**79,305**	**3,546**	**3,546**		**0.083**
2,350	15,875	1,145	3,096			191.0	22,466	4.16	93,351	5,235	5,235		0.099
2,881	17,804	1,356	4,521			217.2	26,562	4.13	109,829	7,730	7,730		0.118
3,532	19,775	1,606	6,603			245.3	31,516	4.11	129,667	11,413	11,413		0.141
4,329	21,788	1,902	9,644			275.6	37,663	4.09	154,191	16,851	16,851		0.171
5,307	**23,845**	**2,252**	**14,085**			**308.6**	**45,490**	**4.07**	**185,287**	**24,881**	**24,881**		**0.210**
6,507	25,946	2,667	20,572			344.8	55,691	4.05	225,658	36,737	36,737		0.262
7,976	28,092	3,158	30,045			384.7	69,272	4.03	279,176	54,242	54,242		0.333
9,779	30,285	3,740	43,881			429.1	87,684	4.01	351,394	80,089	80,089		0.431
11,988	32,525	4,429	64,088			478.8	113,029	3.98	450,291	118,252	118,252		0.569
14,696	**34,814**	**5,245**	**93,600**			**535.0**	**148,354**	**3.96**	**587,328**	**174,600**	**174,600**		**0.762**
79,379	85,813	12,400	187,200			952.4	364,792	3.81	1,391,158	349,200	349,200		1.740

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

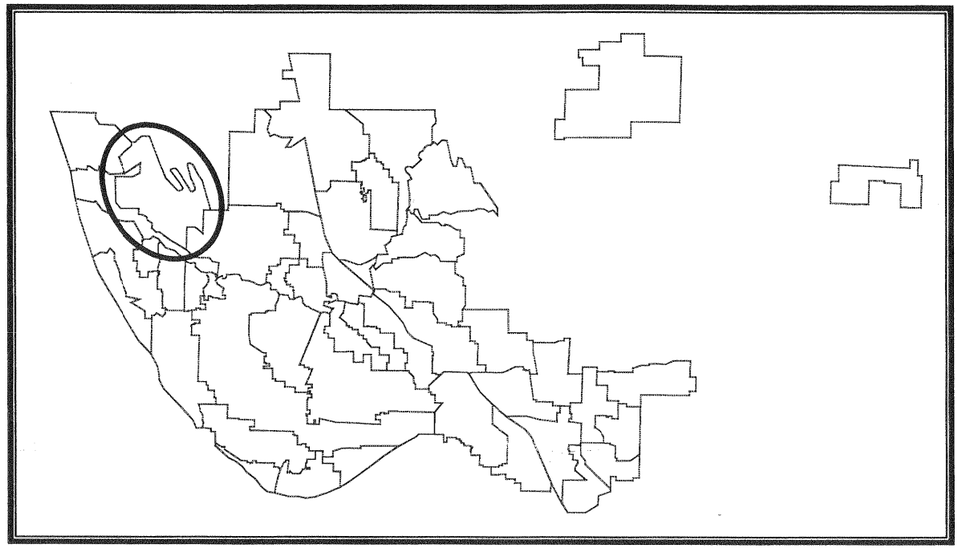
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

HDSD Basin Summary

Basin Number **26**

SEWARD BRIDGE NORTH



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	2.0	(1% of Ultimate)	0.5	(Average Densities)	4.131 DU/Acre
Existing Single Family Served	2.0	(100% of Exist.)	0.5	(100% of Exist.)	4.131 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections	43.1	(12% of Ultimate Service)	11.5	(9.17% of Ultimate)	3.758 DU/Acre
New/Updated Single Family Served (est.)	43.1	(100% of New HHs)	11.5	(100% of New HHs)	3.758 DU/Acre
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	389.8		640.0	(Proposed Densities)	0.609 DU/Acre
Ultimate Single Family Served	352.0	(90% of Ultimate)	125.0	(20% of Ultimate)	2.816 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served	37.9	(10% of Ultimate)	515.0	(80% of Ultimate)	0.074 DU/Acre
New Service During the Comp. Plan	201.8	(57% of Ultimate SF & MF)	87.1	(70% of Ultimate SF & MF)	2.317 DU/Acre
New Single Family Service	201.8	(100% of New HHs)	87.1	(100% of New HHs)	2.317 DU/Acre
New Multi Family Service					
Service at the end of HDSD Comp. Plan	203.8	(52% of Ultimate)	87.6	(Existing & New)	2.327 DU/Acre
Single Family Service - end of Comp. Plan	203.8		87.6		2.327 DU/Acre
Multi Family Service - end of Comp. Plan					

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0																		
	Actual Rate	5.84%			396.08%		Ultimate	356.1																		
	Projected Rate	1.87%			11.70%		Buildout %	5%																		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	2.0	2.0		0.5	0.5		1997	1.00					250	500					7.5	750	4.43	3,321				0.003
1	22.9	22.9		2.4	2.4		1998	1.15					289	5,729					60.2	6,017	4.30	25,862				0.026
2	45.1	45.1		11.9	11.9		1999	1.33					333	11,263					116.0	11,596	4.23	48,998				0.049
3	52.6	52.6		13.3	13.3		2000	1.54					385	13,142					135.3	13,527	4.21	56,887				0.057
4	60.2	60.2		14.9	14.9		2001	1.78					445	15,052					155.0	15,497	4.19	64,876				0.065
5	68.0	68.0		16.6	16.6		2002	2.05					514	16,998					175.1	17,511	4.17	72,995				0.073
6	75.9	75.9		18.6	18.6		2003	2.37					593	18,979					195.7	19,572	4.15	81,254				0.081
7	84.0	84.0		20.8	20.8		2004	2.74					685	20,998					216.8	21,683	4.14	89,660				0.090
8	92.2	92.2		23.2	23.2		2005	3.16					791	23,055					238.5	23,846	4.12	98,225				0.098
9	100.6	100.6		25.9	25.9		2006	3.65					913	25,150					260.6	26,063	4.10	106,959				0.107
10	109.1	109.1		29.0	29.0		2007	4.22					1,055	27,284					283.4	28,339	4.09	115,874				0.116
11	117.8	117.8		32.3	32.3		2008	4.87					1,218	29,458					306.8	30,676	4.07	124,984				0.125
12	126.7	126.7		36.1	36.1		2009	5.63					1,407	31,672					330.8	33,079	4.06	134,303				0.134
13	135.7	135.7		40.4	40.4		2010	6.50					1,625	33,929					355.5	35,553	4.05	143,847				0.144
14	144.9	144.9		45.1	45.1		2011	7.51					1,876	36,227					381.0	38,103	4.03	153,635				0.154
15	154.3	154.3		50.4	50.4		2012	8.67					2,167	38,568					407.3	40,735	4.02	163,688				0.164
16	163.8	163.8		56.3	56.3		2013	10.01					2,502	40,953					434.6	43,455	4.00	174,030				0.174
17	173.5	173.5		62.8	62.8		2014	11.56					2,890	43,383					462.7	46,272	3.99	184,687				0.185
18	183.4	183.4		70.2	70.2		2015	13.35					3,337	45,857					491.9	49,195	3.98	195,690				0.196
19	193.5	193.5		78.4	78.4		2016	15.42					3,854	48,379					522.3	52,233	3.96	207,072				0.207
20	203.8	203.8		87.6	87.6		2017	17.80					4,451	50,947					554.0	55,398	3.95	218,873				0.219
Ultimate	389.80	351.95		640.00	125.00			356.1					98,484	87,988					879.9	186,472	3.84	715,146				0.715

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

Updated Connection Date 1/1/1999

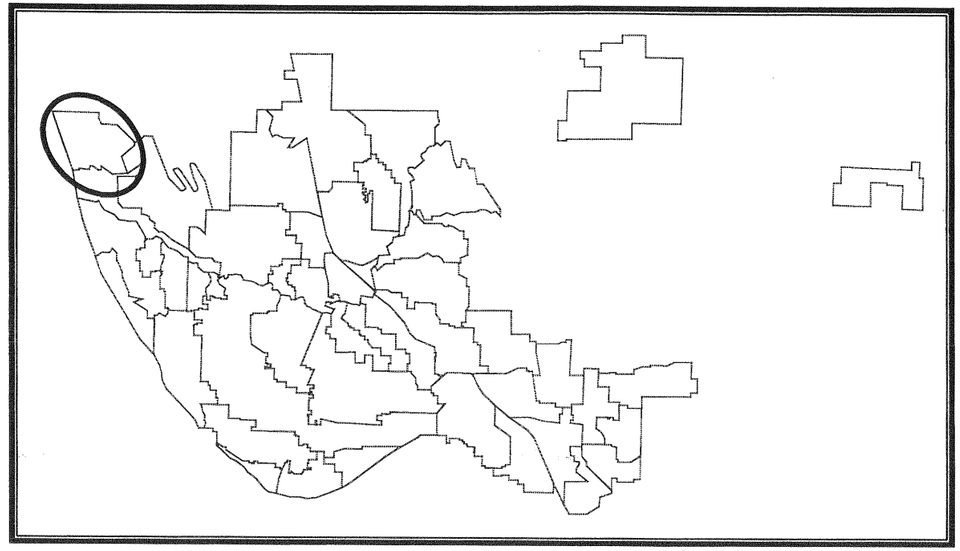
Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **27**

GREEN LAKE

	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	1.0	(82% of Ultimate)	0.3	(Average Densities)	4.002 DU/Acre
Existing Single Family Served	1.0	(100% of Exist.)	0.3	(100% of Exist.)	4.002 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections					
New/Updated Single Family Served (est.)					
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	1.2		3.5	(Proposed Densities)	0.349 DU/Acre
Ultimate Single Family Served	1.0	(82% of Ultimate)	0.5	(14% of Ultimate)	2.001 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served	0.2	(18% of Ultimate)	3.0	(86% of Ultimate)	0.074 DU/Acre
New Service During the Comp. Plan	0.0	(0% of Ultimate SF & MF)	0.0	(0% of Ultimate SF & MF)	
New Single Family Service	0.0		0.0		
New Multi Family Service					
Service at the end of HDSD Comp. Plan	1.0	(82% of Ultimate)	0.2	(Existing & New)	4.000 DU/Acre
Single Family Service - end of Comp. Plan	1.0		0.2		4.000 DU/Acre
Multi Family Service - end of Comp. Plan					



	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0																		
	Actual Rate						Ultimate	75.7																		
	Projected Rate	0.00%			0.00%		Buildout %																			
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	1.0	1.0		0.3	0.3		1997	1.00					250	250					5.0	500	4.44	2,220				0.002
1	1.0	1.0		0.3	0.3		1998	1.00					250	250					5.0	500	4.44	2,220				0.002
2	1.0	1.0		0.3	0.3		1999	1.00					250	250					5.0	500	4.44	2,220				0.002
3	1.0	1.0		0.2	0.2		2000	1.00					250	250					5.0	500	4.44	2,220				0.002
4	1.0	1.0		0.2	0.2		2001	1.00					250	250					5.0	500	4.44	2,220				0.002
5	1.0	1.0		0.2	0.2		2002	1.00					250	250					5.0	500	4.44	2,220				0.002
6	1.0	1.0		0.2	0.2		2003	1.00					250	250					5.0	500	4.44	2,220				0.002
7	1.0	1.0		0.2	0.2		2004	1.00					250	250					5.0	500	4.44	2,220				0.002
8	1.0	1.0		0.2	0.2		2005	1.00					250	250					5.0	500	4.44	2,220				0.002
9	1.0	1.0		0.2	0.2		2006	1.00					250	250					5.0	500	4.44	2,220				0.002
10	1.0	1.0		0.2	0.2		2007	1.00					250	250					5.0	500	4.44	2,220				0.002
11	1.0	1.0		0.2	0.2		2008	1.00					250	250					5.0	500	4.44	2,220				0.002
12	1.0	1.0		0.2	0.2		2009	1.00					250	250					5.0	500	4.44	2,220				0.002
13	1.0	1.0		0.2	0.2		2010	1.00					250	250					5.0	500	4.44	2,220				0.002
14	1.0	1.0		0.2	0.2		2011	1.00					250	250					5.0	500	4.44	2,220				0.002
15	1.0	1.0		0.2	0.2		2012	1.00					250	250					5.0	500	4.44	2,220				0.002
16	1.0	1.0		0.2	0.2		2013	1.00					250	250					5.0	500	4.44	2,220				0.002
17	1.0	1.0		0.2	0.2		2014	1.00					250	250					5.0	500	4.44	2,220				0.002
18	1.0	1.0		0.2	0.2		2015	1.00					250	250					5.0	500	4.44	2,220				0.002
19	1.0	1.0		0.2	0.2		2016	1.00					250	250					5.0	500	4.44	2,220				0.002
20	1.0	1.0		0.2	0.2		2017	1.00					250	250					5.0	500	4.44	2,220				0.002
Ultimate	1.22	1.00		3.50	0.50		75.7						18,976	250					2.5	19,226	4.46	85,687				0.086

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

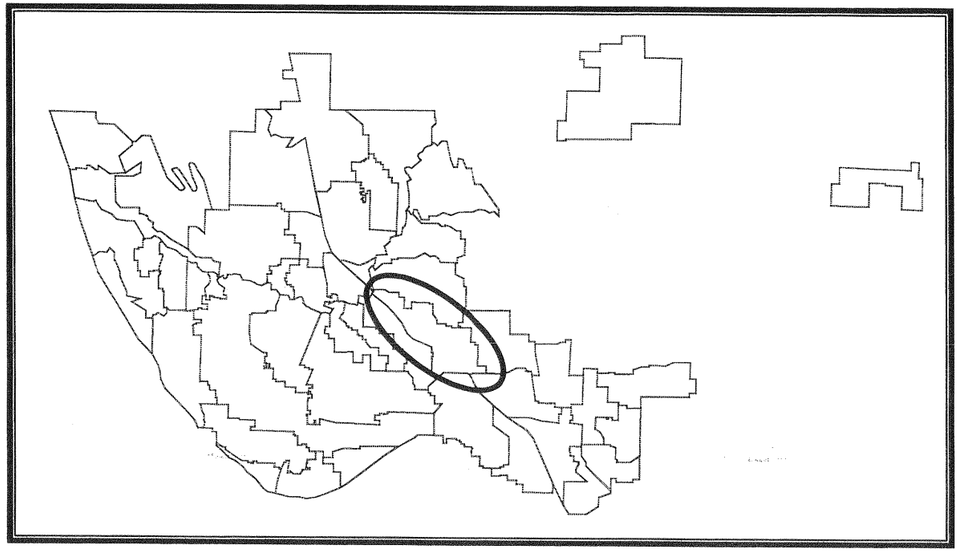
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **28**

ST. JOHNS



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	253.0	(14% of Ultimate)	55.5	(Average Densities)	4.560 DU/Acre
Existing Single Family Served	252.0	(100% of Exist.)	54.5	(98% of Exist.)	4.625 DU/Acre
Existing Multi Family Served	1.0	(0% of Exist.)	1.0	(2% of Exist.)	1.000 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	159.0	(9% of Ultimate Service)	34.3	(6.13% of Ultimate)	4.632 DU/Acre
New/Updated Single Family Served (est.)	158.4	(100% of New HHs)	33.7	(98% of New HHs)	4.693 DU/Acre
New/Updated Multi Family Served (est.)	0.6	(0% of New HHs)	0.6	(2% of New HHs)	1.097 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1859.0		560.0	(Proposed Densities)	3.320 DU/Acre
Ultimate Single Family Served	1849.9	(100% of Ultimate)	559.0	(100% of Ultimate)	3.309 DU/Acre
Ultimate Multi Family Served	9.1	(0% of Ultimate)	1.0	(0% of Ultimate)	9.100 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	394.4	(21% of Ultimate SF & MF)	88.6	(16% of Ultimate SF & MF)	4.451 DU/Acre
New Single Family Service	392.7	(100% of New HHs)	87.2	(98% of New HHs)	4.502 DU/Acre
New Multi Family Service	1.6	(0% of New HHs)	1.4	(2% of New HHs)	1.196 DU/Acre
Service at the end of HDSD Comp. Plan	647.4	(35% of Ultimate)	144.1	(Existing & New)	4.493 DU/Acre
Single Family Service - end of Comp. Plan	644.7	(100% of Projected)	141.7	(98% of Projected)	4.549 DU/Acre
Multi Family Service - end of Comp. Plan	2.6	(0% of Projected)	2.4	(2% of Projected)	1.113 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0	0.0																
Actual Rate	12.31%	28.09%		27.23%	25.85%		Ultimate	353.6	5.0	10.0																
Projected Rate	1.50%	2.67%		2.67%	2.26%		Buildout %	40%	100%	80%																
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
	253.0	252.0	1.0	55.5	54.5	1.0	1997	1.00	0.04	0.04			250	63,008	250	48			634.5	63,556	3.92	249,062	72	72		0.249
1	327.8	326.6	1.3	70.6	69.3	1.3	1998	1.28	0.05	0.05			320	81,641	320	61			822.0	82,343	3.85	317,288	94	94		0.317
2	411.9	410.3	1.6	89.8	88.2	1.6	1999	1.64	0.06	0.07			410	102,567	410	78			1032.9	103,466	3.79	392,227	122	122		0.392
3	423.5	421.8	1.7	91.6	90.6	1.0	2000	2.10	0.08	0.09			525	105,454	421	99			1063.0	106,500	3.78	402,861	159	159		0.403
4	435.2	433.4	1.7	94.0	93.0	1.0	2001	2.69	0.11	0.12			673	108,357	433	126			1093.6	109,589	3.77	413,656	208	208		0.414
5	447.0	445.2	1.8	96.5	95.5	1.0	2002	3.45	0.13	0.15			862	111,304	444	160			1125.0	112,771	3.77	424,742	271	271		0.425
6	459.0	457.2	1.8	99.0	98.0	1.0	2003	4.42	0.17	0.20			1,104	114,295	456	204			1157.5	116,059	3.76	436,169	353	353		0.437
7	471.2	469.3	1.9	101.6	100.6	1.0	2004	5.66	0.22	0.26			1,415	117,330	468	260			1191.0	119,473	3.75	447,996	460	460		0.448
8	483.6	481.6	1.9	104.3	103.3	1.0	2005	7.25	0.28	0.33			1,812	120,411	481	331			1225.9	123,035	3.74	460,302	599	599		0.461
9	496.1	494.2	2.0	107.1	106.1	1.0	2006	9.28	0.35	0.43			2,321	123,538	493	422			1262.3	126,774	3.73	473,183	781	781		0.474
10	508.9	506.8	2.0	109.9	108.9	1.0	2007	11.89	0.45	0.57			2,973	126,712	507	537			1300.7	130,729	3.72	486,765	1,018	1,018		0.488
11	521.8	519.7	2.1	112.8	111.8	1.0	2008	15.23	0.57	0.74			3,808	129,934	520	683			1341.4	134,945	3.71	501,206	1,327	1,327		0.503
12	534.9	532.8	2.1	115.8	114.8	1.0	2009	19.51	0.72	0.96			4,878	133,203	534	870			1384.9	139,486	3.70	516,706	1,730	1,730		0.518
13	548.3	546.1	2.2	118.9	117.9	1.0	2010	25.00	0.92	1.25			6,249	136,522	548	1,107			1431.9	144,426	3.69	533,521	2,254	2,254		0.536
14	561.8	559.6	2.3	122.0	121.0	1.0	2011	32.02	1.17	1.63			8,004	139,890	563	1,410			1483.2	149,867	3.68	551,974	2,938	2,938		0.555
15	575.5	573.2	2.3	125.2	124.2	1.0	2012	41.01	1.50	2.13			10,253	143,309	578	1,794			1540.0	155,935	3.67	572,477	3,829	3,829		0.576
16	589.5	587.1	2.4	128.6	127.6	1.0	2013	52.53	1.90	2.77			13,134	146,779	593	2,284			1603.6	162,791	3.66	595,552	4,991	4,991		0.601
17	603.6	601.2	2.4	132.0	131.0	1.0	2014	67.29	2.42	3.61			16,823	150,301	609	2,908			1675.9	170,642	3.64	621,858	6,504	6,504		0.628
18	618.0	615.5	2.5	135.5	134.5	1.0	2015	86.20	3.09	4.71			21,550	153,876	626	3,702			1759.0	179,754	3.63	652,232	8,477	8,477		0.661
19	632.6	630.0	2.6	139.0	138.0	1.0	2016	110.42	3.93	6.14			27,604	157,504	642	4,713			1856.0	190,464	3.61	687,726	11,049	11,049		0.699
20	647.4	644.7	2.6	142.7	141.7	1.0	2017	141.44	5.00	8.00			35,359	161,187	659	6,000			1970.5	203,205	3.59	729,670	14,400	14,400		0.744
Ultimate	1859.00	1849.90	9.10	560.00	559.00	1.00		353.6	5.0	10.0			88,397	462,475	2,275	6,000			4642.0	559,147	3.27	1,831,063	18,000	18,000		1.849

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

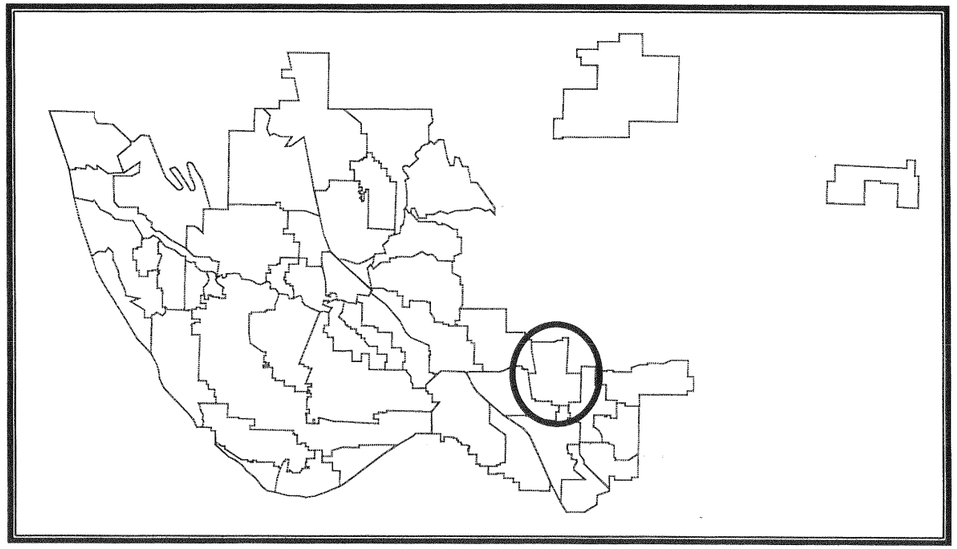
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **29**

GLENWOOD CREEK



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	43.0	(4% of Ultimate)	10.4	(Average Densities)	4.141 DU/Acre
Existing Single Family Served	43.0	(100% of Exist.)	10.4	(100% of Exist.)	4.141 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections	39.0	(4% of Ultimate Service)	9.4	(2.70% of Ultimate)	4.145 DU/Acre
New/Updated Single Family Served (est.)	39.0	(100% of New HHs)	9.4	(100% of New HHs)	4.145 DU/Acre
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	1067.2		354.5	(Proposed Densities)	3.010 DU/Acre
Ultimate Single Family Served	1066.3	(100% of Ultimate)	348.8	(98% of Ultimate)	3.057 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served	0.8	(0% of Ultimate)	5.7	(2% of Ultimate)	0.147 DU/Acre
New Service During the Comp. Plan	592.0	(56% of Ultimate SF & MF)	167.5	(48% of Ultimate SF & MF)	3.535 DU/Acre
New Single Family Service	592.0	(100% of New HHs)	167.5	(100% of New HHs)	3.535 DU/Acre
New Multi Family Service					
Service at the end of HDSD Comp. Plan	635.0	(60% of Ultimate)	177.9	(Existing & New)	3.570 DU/Acre
Single Family Service - end of Comp. Plan	635.0		177.9		3.570 DU/Acre
Multi Family Service - end of Comp. Plan					

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0	0.0	1 cap															
Actual Rate	2.95%			38.02%			Ultimate	607.8	14.3	73.6	486 cap															
Projected Rate	3.32%			12.97%			Buildout %	70%	85%	70%	100%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	43.0	43.0		10.4	10.4		1997	1.00	0.04	0.04	1.00		250	10,754		48	10		110.0	11,062	4.23	46,814	72	72		0.047
1	62.2	62.2		14.3	14.3		1998	1.35	0.05	0.06	1.36		338	15,555		64	14		158.9	15,971	4.18	66,801	103	103		0.067
2	82.0	82.0		19.8	19.8		1999	1.83	0.07	0.08	1.86		458	20,497		85	19		209.6	21,059	4.14	87,195	147	147		0.087
3	104.9	104.9		22.4	22.4		2000	2.48	0.09	0.12	2.53		620	26,230		113	25		268.5	26,988	4.10	110,613	211	211		0.111
4	128.6	128.6		25.3	25.3		2001	3.36	0.13	0.17	3.45		839	32,154		150	34		329.9	33,178	4.06	134,720	302	302		0.135
5	153.1	153.1		28.5	28.5		2002	4.54	0.17	0.24	4.70		1,135	38,275		200	47		394.1	39,658	4.03	159,632	431	431		0.160
6	178.4	178.4		32.2	32.2		2003	6.15	0.22	0.34	6.40		1,537	44,600		266	64		461.4	46,467	3.99	185,494	617	617		0.186
7	204.5	204.5		36.4	36.4		2004	8.32	0.30	0.49	8.72		2,080	51,135		355	87		532.2	53,657	3.96	212,489	883	883		0.213
8	231.5	231.5		41.1	41.1		2005	11.26	0.39	0.70	11.88		2,815	57,887		472	119		607.0	61,293	3.93	240,846	1,263	1,263		0.242
9	259.5	259.5		46.5	46.5		2006	15.24	0.52	1.00	16.18		3,810	64,864		628	162		686.7	69,464	3.90	270,863	1,806	1,806		0.273
10	288.3	288.3		52.5	52.5		2007	20.63	0.70	1.44	22.05		5,157	72,073		835	220		772.3	78,286	3.87	302,930	2,584	2,584		0.306
11	318.1	318.1		59.3	59.3		2008	27.92	0.93	2.05	30.04		6,979	79,521		1,111	300		865.0	87,913	3.84	337,561	3,696	3,696		0.341
12	348.9	348.9		67.0	67.0		2009	37.79	1.23	2.94	40.92		9,446	87,218		1,479	409		966.6	98,552	3.81	375,429	5,288	5,288		0.381
13	380.7	380.7		75.7	75.7		2010	51.14	1.64	4.20	55.76		12,785	95,169		1,968	558		1079.5	110,480	3.78	417,430	7,564	7,564		0.425
14	413.5	413.5		85.5	85.5		2011	69.22	2.18	6.01	75.97		17,304	103,386		2,619	760		1206.9	124,068	3.75	464,742	10,821	10,821		0.476
15	447.5	447.5		96.6	96.6		2012	93.68	2.90	8.60	103.51		23,421	111,875		3,484	1,035		1353.0	139,815	3.71	518,927	15,480	15,480		0.534
16	482.6	482.6		109.2	109.2		2013	126.79	3.86	12.30	141.03		31,699	120,647		4,636	1,410		1523.5	158,392	3.67	582,041	22,144	22,144		0.604
17	518.8	518.8		123.3	123.3		2014	171.61	5.14	17.60	192.15		42,903	129,711		6,169	1,922		1726.1	180,704	3.63	656,794	31,678	31,678		0.688
18	556.3	556.3		139.4	139.4		2015	232.27	6.84	25.18	261.80		58,067	139,075		8,209	2,618		1971.4	207,969	3.59	746,743	45,317	45,317		0.792
19	595.0	595.0		157.4	157.4		2016	314.36	9.10	36.01	356.70		78,591	148,751		10,923	3,567		2273.4	241,833	3.54	856,537	64,826	64,826		0.921
20	635.0	635.0		177.9	177.9		2017	425.48	12.11	51.52	486.00		106,369	158,749		14,535	4,860		2651.2	284,514	3.49	992,228	92,736	92,736		1.085
Ultimate	1067.17	1066.33		354.50	348.80			607.8	14.3	73.6	486.0		152,166	266,583		17,100	4,860		2665.8	440,708	3.49	1,536,076	132,480	132,480		1.669

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

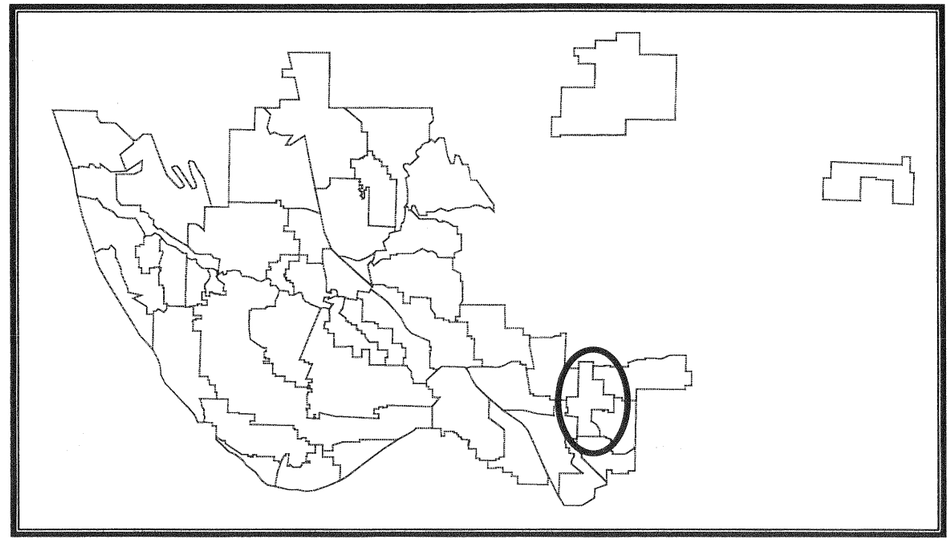
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **30**

NE 86TH ST



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	178.0	(27% of Ultimate)	47.9	(Average Densities)	3.713 DU/Acre
Existing Single Family Served	178.0	(100% of Exist.)	47.9	(100% of Exist.)	3.713 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections	82.2	(13% of Ultimate Service)	21.2	(9.53% of Ultimate)	3.868 DU/Acre
New/Updated Single Family Served (est.)	82.2	(100% of New HHs)	21.2	(100% of New HHs)	3.868 DU/Acre
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	657.0		223.5	(Proposed Densities)	2.940 DU/Acre
Ultimate Single Family Served	657.0	(100% of Ultimate)	223.0	(100% of Ultimate)	2.946 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served	0.0	(0% of Ultimate)	0.5	(0% of Ultimate)	0.074 DU/Acre
New Service During the Comp. Plan	189.4	(29% of Ultimate SF & MF)	51.3	(23% of Ultimate SF & MF)	3.695 DU/Acre
New Single Family Service	189.4	(100% of New HHs)	51.3	(100% of New HHs)	3.695 DU/Acre
New Multi Family Service					
Service at the end of HDSD Comp. Plan	367.4	(56% of Ultimate)	99.2	(Existing & New)	3.703 DU/Acre
Single Family Service - end of Comp. Plan	367.4		99.2		3.703 DU/Acre
Multi Family Service - end of Comp. Plan					

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0		0.0	603.0	0.0														
Actual Rate	9.63%			20.11%			Ultimate	228.6		83.6	700.0	0.0														
Projected Rate	1.11%			2.02%			Buildout %	50%	50%	50%	100%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	178.0	178.0		47.9	47.9		1997	1.00		0.04	603.00	0.04	250	44,504			6,030	18	447.5	50,802	4.00	203,134	72	72		0.203
1	217.2	217.2		57.6	57.6		1998	1.27		0.06	607.51	0.04	317	54,295			6,075	18	546.1	60,705	3.95	240,041	102	102		0.240
2	260.1	260.1		69.2	69.2		1999	1.61		0.08	612.06	0.04	402	65,029			6,121	18	654.3	71,569	3.91	279,927	144	144		0.280
3	265.6	265.6		70.6	70.6		2000	2.04		0.11	616.64	0.04	509	66,396			6,166	18	669.1	73,090	3.91	285,473	204	204		0.286
4	271.1	271.1		72.0	72.0		2001	2.58		0.16	621.26	0.04	645	67,765			6,213	18	684.1	74,641	3.90	291,120	289	289		0.291
5	276.6	276.6		73.5	73.5		2002	3.27		0.23	625.91	0.04	817	69,149			6,259	18	699.7	76,243	3.89	296,944	409	409		0.297
6	282.2	282.2		75.0	75.0		2003	4.14		0.32	630.60	0.04	1,036	70,548			6,306	18	715.8	77,908	3.89	302,979	580	580		0.304
7	287.9	287.9		76.5	76.5		2004	5.25		0.46	635.32	0.04	1,313	71,963			6,353	18	732.8	79,647	3.88	309,271	820	820		0.310
8	293.6	293.6		78.0	78.0		2005	6.66		0.65	640.07	0.04	1,664	73,393			6,401	18	750.6	81,476	3.88	315,874	1,161	1,161		0.317
9	299.4	299.4		79.6	79.6		2006	8.44		0.91	644.86	0.04	2,109	74,839			6,449	18	769.5	83,415	3.87	322,858	1,644	1,644		0.325
10	305.2	305.2		81.2	81.2		2007	10.69		1.29	649.69	0.04	2,673	76,302			6,497	18	789.7	85,489	3.86	330,311	2,328	2,328		0.333
11	311.1	311.1		82.8	82.8		2008	13.55		1.83	654.56	0.04	3,388	77,780			6,546	18	811.7	87,731	3.86	338,344	3,295	3,295		0.342
12	317.1	317.1		84.5	84.5		2009	17.17		2.59	659.46	0.04	4,293	79,275			6,595	18	835.7	90,181	3.85	347,098	4,664	4,664		0.352
13	323.1	323.1		86.2	86.2		2010	21.76		3.67	664.39	0.04	5,441	80,786			6,644	18	862.3	92,889	3.84	356,748	6,603	6,603		0.363
14	329.3	329.3		88.0	88.0		2011	27.58		5.19	669.37	0.04	6,896	82,314			6,694	18	892.1	95,922	3.83	367,518	9,348	9,348		0.377
15	335.4	335.4		89.8	89.8		2012	34.96		7.35	674.38	0.04	8,740	83,859			6,744	18	926.0	99,361	3.82	379,686	13,233	13,233		0.393
16	341.7	341.7		91.6	91.6		2013	44.31		10.41	679.43	0.04	11,077	85,422			6,794	18	965.0	103,310	3.81	393,605	18,734	18,734		0.412
17	348.0	348.0		93.4	93.4		2014	56.15		14.73	684.51	0.04	14,038	87,001			6,845	18	1010.4	107,902	3.80	409,716	26,520	26,520		0.436
18	354.4	354.4		95.3	95.3		2015	71.17		20.86	689.64	0.04	17,791	88,598			6,896	18	1063.9	113,304	3.78	428,571	37,544	37,544		0.466
19	360.9	360.9		97.2	97.2		2016	90.19		29.53	694.80	0.04	22,548	90,213			6,948	18	1127.6	119,727	3.77	450,864	53,149	53,149		0.504
20	367.4	367.4		99.2	99.2		2017	114.31		41.80	700.00	0.04	28,577	91,845			7,000	18	1204.2	127,440	3.75	477,457	75,240	75,240		0.553
Ultimate	657.00	656.97		223.50	223.00			228.6		83.6	700.0	0.0	57,164	164,242			7,000	22	1642.4	228,428	3.65	833,927	150,480	150,480		0.984

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

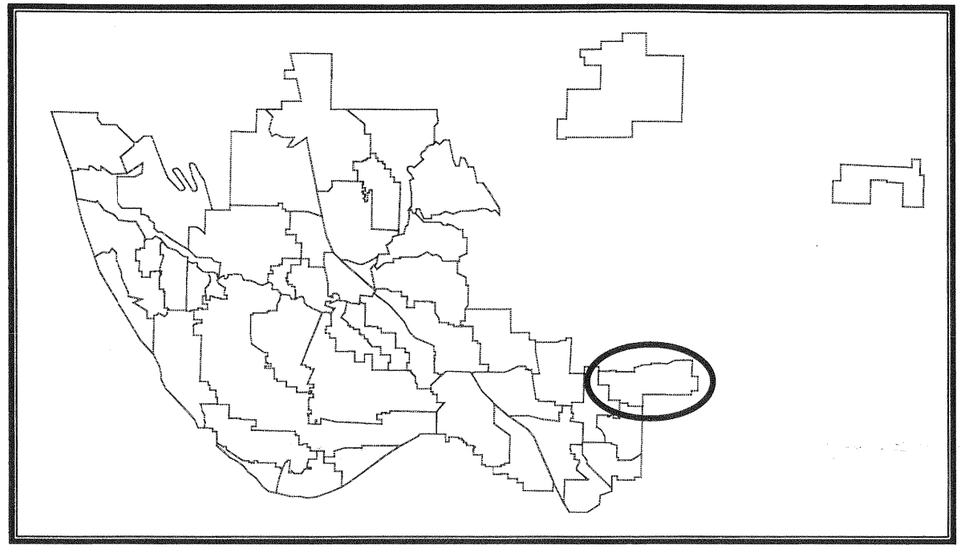
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **31**

COUNTRY MEADOWS



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	366.1	(26% of Ultimate)	92.4	(Average Densities)	3.964 DU/Acre
Existing Single Family Served	365.1	(100% of Exist.)	91.4	(99% of Exist.)	3.996 DU/Acre
Existing Multi Family Served	1.0	(0% of Exist.)	1.0	(1% of Exist.)	1.000 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	14.9	(1% of Ultimate Service)	3.5	(0.84% of Ultimate)	4.252 DU/Acre
New/Updated Single Family Served (est.)	14.8	(100% of New HHs)	3.5	(99% of New HHs)	4.283 DU/Acre
New/Updated Multi Family Served (est.)	0.1	(0% of New HHs)	0.0	(1% of New HHs)	1.495 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1428.8		462.2	(Proposed Densities)	3.091 DU/Acre
Ultimate Single Family Served	1264.2	(88% of Ultimate)	402.4	(87% of Ultimate)	3.142 DU/Acre
Ultimate Multi Family Served	161.4	(11% of Ultimate)	15.8	(3% of Ultimate)	10.188 DU/Acre
Ultimate UH/UR Served	3.2	(0% of Ultimate)	44.0	(10% of Ultimate)	0.074 DU/Acre
New Service During the Comp. Plan	1377.7	(97% of Ultimate SF & MF)	439.7	(105% of Ultimate SF & MF)	3.133 DU/Acre
New Single Family Service	1226.9	(89% of New HHs)	422.5	(96% of New HHs)	2.904 DU/Acre
New Multi Family Service	150.9	(11% of New HHs)	17.3	(4% of New HHs)	8.737 DU/Acre
Service at the end of HDSD Comp. Plan	1743.8	(122% of Ultimate)	532.1	(Existing & New)	3.277 DU/Acre
Single Family Service - end of Comp. Plan	1592.0	(91% of Projected)	513.8	(97% of Projected)	3.098 DU/Acre
Multi Family Service - end of Comp. Plan	151.9	(9% of Projected)	18.3	(3% of Projected)	8.313 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	2.0	19.0		
	Actual Rate	0.30%	2.85%		1.88%	1.92%	Ultimate	2089.6	39.1	230.3		
	Projected Rate	2.24%	31.78%		9.84%	17.27%	Buildout %	10%	100%	60%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	366.1	365.1	1.0	92.4	91.4	1.0	1997	1.00	2.00	19.00		
1	373.5	372.5	1.0	94.1	93.1	1.0	1998	1.31	2.32	20.98		
2	381.0	379.9	1.1	95.9	94.8	1.0	1999	1.71	2.69	23.17		
3	436.6	435.2	1.4	105.4	104.1	1.2	2000	2.23	3.12	25.59		
4	493.7	491.9	1.8	115.8	114.4	1.4	2001	2.91	3.62	28.25		
5	552.2	549.8	2.4	127.3	125.7	1.7	2002	3.80	4.21	31.20		
6	612.2	609.0	3.2	140.0	138.0	2.0	2003	4.97	4.88	34.46		
7	673.8	669.5	4.2	153.9	151.6	2.3	2004	6.49	5.66	38.05		
8	737.0	731.4	5.5	169.2	166.5	2.7	2005	8.47	6.57	42.02		
9	802.0	794.7	7.3	186.1	182.9	3.2	2006	11.07	7.62	46.40		
10	869.1	859.4	9.6	204.7	200.9	3.7	2007	14.46	8.84	51.24		
11	938.3	925.6	12.7	225.1	220.7	4.4	2008	18.88	10.26	56.58		
12	1,009.9	993.2	16.7	247.6	242.5	5.1	2009	24.66	11.90	62.48		
13	1,084.4	1,062.4	22.0	272.3	266.3	6.0	2010	32.21	13.81	69.00		
14	1,162.1	1,133.1	29.0	299.6	292.5	7.0	2011	42.08	16.03	76.20		
15	1,243.6	1,205.4	38.2	329.6	321.3	8.2	2012	54.96	18.59	84.14		
16	1,314.6	1,264.2	50.4	362.6	353.0	9.7	2013	71.79	21.57	92.92		
17	1,330.6	1,264.2	66.4	399.0	387.7	11.3	2014	93.77	25.03	102.61		
18	1,351.7	1,264.2	87.4	415.7	402.4	13.3	2015	122.48	29.04	113.31		
19	1,379.5	1,264.2	115.2	418.0	402.4	15.6	2016	159.98	33.70	125.13		
20	1,416.1	1,264.2	151.9	418.2	402.4	15.8	2017	208.96	39.10	138.18		
Ultimate	1428.83	1264.22	161.38	462.24	402.40	15.84		2089.6	39.1	230.3		

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
250	91,270	250	2,400			917.1	94,170	3.82	360,097	34,200	34,200	14,000	0.408
327	93,121	257	2,785			936.4	96,489	3.82	368,416	37,767	37,767	14,000	0.420
427	94,977	265	3,231			956.1	98,899	3.81	377,054	41,706	41,706	34,000	0.453
557	108,811	348	3,749			1096.3	113,465	3.77	428,206	46,055	46,055	34,000	0.508
728	122,971	459	4,350			1240.5	128,508	3.74	480,324	50,859	50,859	34,000	0.565
951	137,449	605	5,047			1388.6	144,052	3.70	533,501	56,163	56,163	34,000	0.624
1,242	152,252	797	5,855			1541.0	160,147	3.67	587,907	62,020	62,020	34,000	0.684
1,622	167,387	1,051	6,794			1698.1	176,853	3.64	643,740	68,489	68,489	34,000	0.746
2,118	182,862	1,385	7,883			1860.3	194,247	3.61	701,237	75,632	75,632	34,000	0.811
2,767	198,683	1,825	9,146			2028.4	212,421	3.58	760,683	83,519	83,519	34,000	0.878
3,614	214,860	2,404	10,612			2203.0	231,490	3.55	822,428	92,230	92,230	34,000	0.949
4,720	231,399	3,168	12,312			2385.3	251,600	3.53	886,905	101,849	101,849	34,000	1.023
6,166	248,310	4,175	14,286			2576.5	272,936	3.50	954,651	112,471	112,471	34,000	1.101
8,053	265,600	5,502	16,575			2778.3	295,730	3.47	1,026,336	124,201	124,201	34,000	1.185
10,519	283,277	7,250	19,232			2993.1	320,278	3.44	1,102,802	137,155	137,155	34,000	1.274
13,740	301,352	9,554	22,314			3223.5	346,959	3.42	1,185,110	151,459	151,459	34,000	1.371
17,947	316,055	12,590	25,890			3435.7	372,481	3.39	1,263,347	167,255	167,255	34,000	1.465
23,442	316,055	16,590	30,039			3521.1	386,126	3.38	1,306,030	184,699	184,699	34,000	1.525
30,619	316,055	21,862	34,853			3632.9	403,389	3.37	1,359,610	203,962	203,962	34,000	1.598
39,994	316,055	28,809	40,439			3779.4	425,297	3.36	1,426,993	225,234	225,234	34,000	1.686
52,240	316,055	37,963	46,920			3971.5	453,178	3.34	1,511,854	248,724	248,724	34,000	1.795
523,208	316,055	40,345	46,920			3467.2	926,528	3.39	3,139,307	414,540	414,540	34000	3.588

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

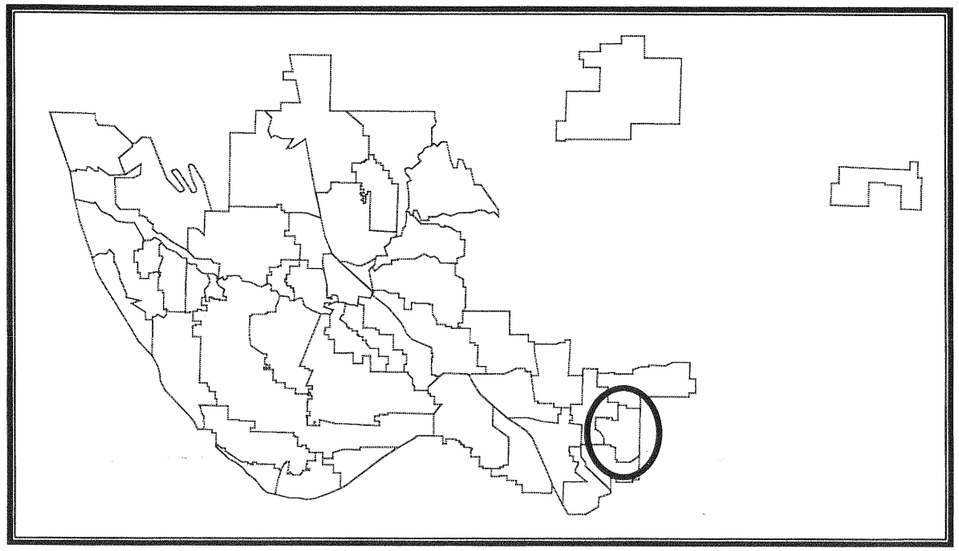
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **32**

ORCHARD CREST NORTH



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	192.0	(36% of Ultimate)	49.6	(Average Densities)	3.871 DU/Acre
Existing Single Family Served	180.0	(94% of Exist.)	48.5	(98% of Exist.)	3.713 DU/Acre
Existing Multi Family Served	12.0	(6% of Exist.)	1.1	(2% of Exist.)	10.800 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	110.6	(21% of Ultimate Service)	28.8	(21.63% of Ultimate)	3.845 DU/Acre
New/Updated Single Family Served (est.)	97.9	(89% of New HHs)	27.3	(95% of New HHs)	3.584 DU/Acre
New/Updated Multi Family Served (est.)	12.7	(11% of New HHs)	1.4	(5% of New HHs)	8.792 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	529.6		133.0	(Proposed Densities)	3.982 DU/Acre
Ultimate Single Family Served	364.6	(69% of Ultimate)	113.0	(85% of Ultimate)	3.226 DU/Acre
Ultimate Multi Family Served	165.0	(31% of Ultimate)	20.0	(15% of Ultimate)	8.250 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	255.7	(48% of Ultimate SF & MF)	65.7	(49% of Ultimate SF & MF)	3.892 DU/Acre
New Single Family Service	209.0	(82% of New HHs)	60.1	(91% of New HHs)	3.479 DU/Acre
New Multi Family Service	46.7	(18% of New HHs)	5.6	(9% of New HHs)	8.309 DU/Acre
Service at the end of HDSD Comp. Plan	447.7	(85% of Ultimate)	115.3	(Existing & New)	3.883 DU/Acre
Single Family Service - end of Comp. Plan	389.0	(87% of Projected)	108.6	(94% of Projected)	3.583 DU/Acre
Multi Family Service - end of Comp. Plan	58.7	(13% of Projected)	6.7	(6% of Projected)	8.720 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	6.0	11.0		
	Actual Rate	12.34%	43.33%		25.02%	51.50%	Ultimate	193.3	39.0	100.0		
	Projected Rate	1.18%	4.94%		2.01%	5.54%	Buildout %	30%	50%	40%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	192.0	180.0	12.0	49.6	48.5	1.1	1997	1.00	6.00	11.00		
1	243.3	226.1	17.2	62.3	60.6	1.7	1998	1.23	6.36	11.73		
2	302.5	277.9	24.7	78.3	75.8	2.6	1999	1.50	6.75	12.52		
3	309.4	283.5	25.9	80.0	77.3	2.7	2000	1.84	7.16	13.35		
4	316.3	289.1	27.2	81.7	78.9	2.8	2001	2.25	7.60	14.24		
5	323.4	294.8	28.5	83.5	80.5	3.0	2002	2.76	8.06	15.19		
6	330.5	300.6	29.9	85.3	82.1	3.2	2003	3.38	8.55	16.20		
7	337.8	306.5	31.4	87.1	83.8	3.3	2004	4.14	9.06	17.28		
8	345.3	312.4	32.9	89.0	85.4	3.5	2005	5.07	9.61	18.44		
9	352.9	318.3	34.6	90.9	87.2	3.7	2006	6.22	10.20	19.66		
10	360.7	324.4	36.3	92.9	88.9	3.9	2007	7.62	10.82	20.98		
11	368.6	330.5	38.1	94.9	90.7	4.1	2008	9.33	11.47	22.37		
12	376.7	336.7	39.9	96.9	92.5	4.4	2009	11.43	12.17	23.87		
13	384.9	343.0	41.9	99.0	94.4	4.6	2010	14.00	12.91	25.46		
14	393.3	349.3	44.0	101.2	96.3	4.9	2011	17.15	13.69	27.16		
15	401.9	355.7	46.2	103.4	98.3	5.1	2012	21.01	14.52	28.97		
16	410.7	362.2	48.4	105.7	100.2	5.4	2013	25.74	15.40	30.90		
17	415.4	364.6	50.8	108.0	102.2	5.7	2014	31.54	16.34	32.96		
18	417.9	364.6	53.3	110.4	104.3	6.0	2015	38.64	17.33	35.16		
19	420.5	364.6	56.0	112.8	106.4	6.4	2016	47.34	18.38	37.50		
20	423.3	364.6	58.7	115.3	108.6	6.7	2017	57.99	19.50	40.00		
Ultimate	529.56	364.56	165.00	133.00	113.00	20.00		193.3	39.0	100.0		

Average Domestic Flow (gpd) Without Industrial					
UH/UR*	SF	MF	Comm	Schools	Parks
250	45,002	3,000	7,200		
306	56,523	4,300	7,637		
375	69,467	6,164	8,101		
460	70,877	6,471	8,592		
563	72,286	6,790	9,114		
690	73,712	7,126	9,667		
845	75,155	7,477	10,254		
1,035	76,615	7,847	10,877		
1,268	78,093	8,234	11,537		
1,554	79,587	8,641	12,237		
1,904	81,100	9,068	12,980		
2,332	82,630	9,515	13,768		
2,857	84,179	9,985	14,604		
3,500	85,745	10,478	15,490		
4,288	87,331	10,996	16,431		
5,254	88,935	11,539	17,428		
6,436	90,558	12,109	18,486		
7,885	91,141	12,707	19,608		
9,660	91,141	13,334	20,798		
11,834	91,141	13,993	22,061		
14,498	91,141	14,684	23,400		
48,325	91,141	41,250	46,800		

Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
475.3	55,452	3.99	221,001	19,800	19,800		0.241
601.0	68,767	3.93	270,377	21,120	21,120		0.291
745.3	84,106	3.88	326,223	22,528	22,528		0.349
762.5	86,399	3.87	334,610	24,031	24,031		0.359
780.1	88,753	3.87	343,205	25,633	25,633		0.369
798.2	91,195	3.86	352,103	27,342	27,342		0.379
816.8	93,732	3.85	361,331	29,165	29,165		0.390
836.1	96,374	3.85	370,921	31,110	31,110		0.402
856.2	99,132	3.84	380,912	33,184	33,184		0.414
877.1	102,019	3.84	391,347	35,397	35,397		0.427
899.0	105,051	3.83	402,278	37,757	37,757		0.440
921.9	108,246	3.82	413,768	40,275	40,275		0.454
946.2	111,625	3.82	425,888	42,960	42,960		0.469
972.1	115,215	3.81	438,724	45,825	45,825		0.485
999.8	119,046	3.80	452,381	48,880	48,880		0.501
1029.6	123,155	3.79	466,980	52,139	52,139		0.519
1062.0	127,589	3.78	482,669	55,616	55,616		0.538
1086.8	131,341	3.78	495,994	59,324	59,324		0.555
1109.3	134,933	3.77	508,764	63,280	63,280		0.572
1136.1	139,028	3.76	523,246	67,499	67,499		0.591
1168.0	143,722	3.76	539,750	72,000	72,000		0.612
1224.9	227,516	3.74	851,245	180,000	180,000		1.031

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

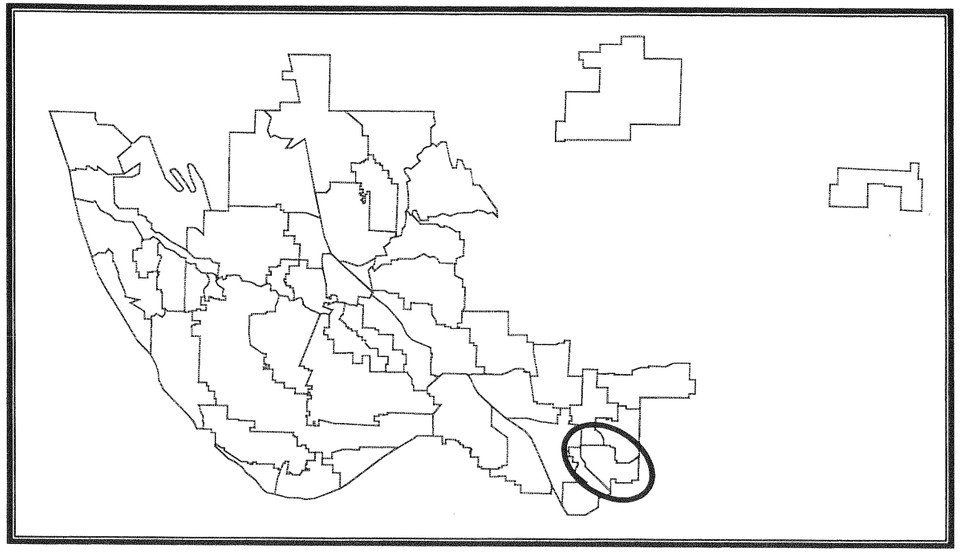
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
Ex. Connection Date	12/31/1996
Updaied Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

HDSD Basin Summary

Basin Number **33**

ORCHARD CREST SOUTH



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	230.0	(29% of Ultimate)	61.7	(Average Densities)	3.730 DU/Acre
Existing Single Family Served	229.0	(100% of Exist.)	61.6	(100% of Exist.)	3.719 DU/Acre
Existing Multi Family Served	1.0	(0% of Exist.)	0.1	(0% of Exist.)	10.801 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	46.5	(6% of Ultimate Service)	12.6	(6.01% of Ultimate)	3.703 DU/Acre
New/Updated Single Family Served (est.)	45.6	(98% of New HHs)	12.5	(99% of New HHs)	3.662 DU/Acre
New/Updated Multi Family Served (est.)	0.9	(2% of New HHs)	0.1	(1% of New HHs)	8.121 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	797.0		209.0	(Proposed Densities)	3.814 DU/Acre
Ultimate Single Family Served	578.1	(73% of Ultimate)	182.0	(87% of Ultimate)	3.176 DU/Acre
Ultimate Multi Family Served	219.0	(27% of Ultimate)	27.0	(13% of Ultimate)	8.109 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	111.6	(14% of Ultimate SF & MF)	30.1	(14% of Ultimate SF & MF)	3.712 DU/Acre
New Single Family Service	106.9	(96% of New HHs)	29.5	(98% of New HHs)	3.628 DU/Acre
New Multi Family Service	4.7	(4% of New HHs)	0.6	(2% of New HHs)	7.886 DU/Acre
Service at the end of HDSD Comp. Plan	341.6	(43% of Ultimate)	91.7	(Existing & New)	3.724 DU/Acre
Single Family Service - end of Comp. Plan	335.9	(98% of Projected)	91.0	(99% of Projected)	3.690 DU/Acre
Multi Family Service - end of Comp. Plan	5.7	(2% of Projected)	0.7	(1% of Projected)	8.277 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0	0.0	587 cap	
Actual Rate	4.33%	39.13%		9.64%	49.81%		Ultimate	285.9	2.0	33.0	587 cap	
Projected Rate	0.58%	6.19%		1.16%	6.89%		Buildout %	40%	100%	80%	100%	
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	230.0	229.0	1.0	61.7	61.6	0.1	1997	1.00	0.04	0.04	587.00	
1	252.7	251.3	1.4	67.6	67.5	0.1	1998	1.27	0.05	0.06	587.00	
2	276.5	274.6	1.9	74.2	74.0	0.2	1999	1.61	0.06	0.08	587.00	
3	279.9	277.8	2.1	75.1	74.9	0.2	2000	2.04	0.07	0.11	587.00	
4	283.3	281.1	2.2	76.0	75.7	0.2	2001	2.58	0.09	0.15	587.00	
5	286.7	284.4	2.3	76.9	76.6	0.3	2002	3.27	0.11	0.20	587.00	
6	290.1	287.7	2.5	77.8	77.5	0.3	2003	4.14	0.13	0.28	587.00	
7	293.6	291.0	2.6	78.7	78.4	0.3	2004	5.25	0.16	0.39	587.00	
8	297.1	294.3	2.8	79.6	79.3	0.3	2005	6.66	0.19	0.54	587.00	
9	300.6	297.7	2.9	80.6	80.2	0.3	2006	8.44	0.23	0.74	587.00	
10	304.2	301.1	3.1	81.5	81.2	0.4	2007	10.69	0.28	1.03	587.00	
11	307.8	304.5	3.3	82.5	82.1	0.4	2008	13.55	0.34	1.42	587.00	
12	311.4	307.9	3.5	83.4	83.0	0.4	2009	17.18	0.42	1.97	587.00	
13	315.1	311.3	3.7	84.4	84.0	0.4	2010	21.77	0.51	2.72	587.00	
14	318.7	314.8	4.0	85.4	85.0	0.5	2011	27.59	0.62	3.76	587.00	
15	322.5	318.2	4.2	86.4	86.0	0.5	2012	34.97	0.75	5.21	587.00	
16	326.2	321.7	4.5	87.5	86.9	0.5	2013	44.32	0.91	7.21	587.00	
17	330.0	325.2	4.8	88.5	88.0	0.6	2014	56.17	1.11	9.97	587.00	
18	333.8	328.8	5.1	89.6	89.0	0.6	2015	71.19	1.35	13.79	587.00	
19	337.7	332.3	5.4	90.6	90.0	0.6	2016	90.23	1.64	19.08	587.00	
20	341.6	335.9	5.7	91.7	91.0	0.7	2017	114.35	2.00	26.40	587.00	
Ultimate	797.03	578.08	218.95	209.00	182.00	27.00		285.9	2.0	33.0	587.0	

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
250	57,253	250	48	5,870		576.9	63,671	3.94	250,956	72	72		0.251
317	62,827	348	58	5,870		634.1	69,421	3.92	272,054	100	100		0.272
402	68,643	484	71	5,870		694.1	75,470	3.90	294,081	138	138		0.294
509	69,461	514	86	5,870		703.6	76,440	3.89	297,602	191	191		0.298
645	70,276	546	105	5,870		713.4	77,442	3.89	301,234	264	264		0.301
818	71,096	580	128	5,870		723.5	78,490	3.89	305,032	365	365		0.305
1,036	71,920	616	155	5,870		734.2	79,597	3.88	309,036	505	505		0.310
1,313	72,749	654	189	5,870		745.6	80,775	3.88	313,294	699	699		0.314
1,664	73,583	694	230	5,870		757.8	82,041	3.87	317,866	966	966		0.319
2,109	74,422	737	279	5,870		770.9	83,418	3.87	322,829	1,337	1,337		0.324
2,673	75,266	783	339	5,870		785.3	84,932	3.87	328,279	1,850	1,850		0.330
3,388	76,115	831	413	5,870		801.3	86,617	3.86	334,338	2,559	2,559		0.337
4,294	76,968	883	502	5,870		819.3	88,517	3.85	341,157	3,540	3,540		0.345
5,443	77,827	937	610	5,870		839.8	90,687	3.85	348,928	4,898	4,898		0.354
6,898	78,690	996	742	5,870		863.4	93,196	3.84	357,891	6,777	6,777		0.365
8,742	79,559	1,057	903	5,870		891.0	96,131	3.83	368,348	9,375	9,375		0.378
11,080	80,432	1,123	1,098	5,870		923.7	99,602	3.82	380,677	12,971	12,971		0.394
14,043	81,310	1,192	1,335	5,870		962.6	103,750	3.81	395,351	17,945	17,945		0.413
17,798	82,194	1,266	1,623	5,870		1009.5	108,751	3.80	412,963	24,827	24,827		0.438
22,557	83,083	1,344	1,974	5,870		1066.6	114,827	3.78	434,251	34,348	34,348		0.469
28,588	83,977	1,428	2,400	5,870		1136.5	122,262	3.76	460,133	47,520	47,520		0.508
71,471	144,520	54,738	2,400	5,870		1861.2	278,998	3.61	1,007,147	59,400	59,400		1.067

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

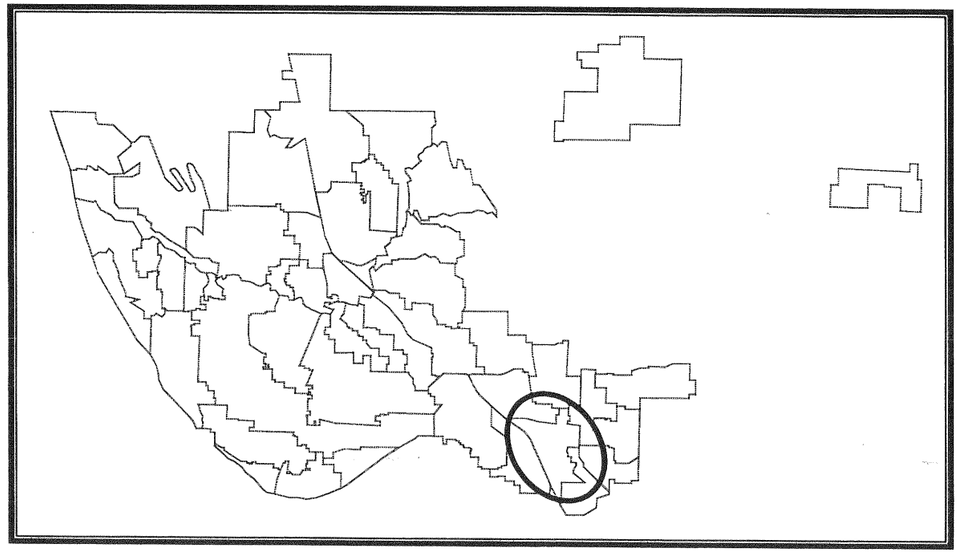
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **34**

COVINGTON NORTH



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	216.0	(15% of Ultimate)	53.4	(Average Densities)	4.042 DU/Acre
Existing Single Family Served	211.0	(98% of Exist.)	52.9	(99% of Exist.)	3.987 DU/Acre
Existing Multi Family Served	5.0	(2% of Exist.)	0.5	(1% of Exist.)	9.644 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	7.0	(0% of Ultimate Service)	1.7	(0.44% of Ultimate)	4.092 DU/Acre
New/Updated Single Family Served (est.)	6.8	(98% of New HHs)	1.7	(99% of New HHs)	4.034 DU/Acre
New/Updated Multi Family Served (est.)	0.2	(2% of New HHs)	0.0	(1% of New HHs)	9.820 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1464.6		391.0	(Proposed Densities)	3.746 DU/Acre
Ultimate Single Family Served	1180.9	(81% of Ultimate)	362.0	(93% of Ultimate)	3.262 DU/Acre
Ultimate Multi Family Served	283.7	(19% of Ultimate)	29.0	(7% of Ultimate)	9.783 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	205.5	(14% of Ultimate SF & MF)	50.8	(13% of Ultimate SF & MF)	4.045 DU/Acre
New Single Family Service	195.9	(95% of New HHs)	49.9	(98% of New HHs)	3.925 DU/Acre
New Multi Family Service	9.7	(5% of New HHs)	0.9	(2% of New HHs)	10.532 DU/Acre
Service at the end of HDSD Comp. Plan	421.6	(29% of Ultimate)	104.3	(Existing & New)	4.043 DU/Acre
Single Family Service - end of Comp. Plan	406.9	(97% of Projected)	102.8	(99% of Projected)	3.957 DU/Acre
Multi Family Service - end of Comp. Plan	14.7	(3% of Projected)	1.4	(1% of Projected)	10.211 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	7.0	0.0	176 cap															
Actual Rate		0.52%	1.66%		1.59%	1.63%	Ultimate	437.9	55.0	1.0	200 cap															
Projected Rate		1.42%	5.97%		3.58%	5.64%	Buildout %	70%	85%	70%	100%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	216.0	211.0	5.0	53.4	52.9	0.5	1997	1.00	7.00	0.04	176.00		250	52,755	1,250	8,400	1,760		539.5	64,415	3.96	254,889	72	72		0.255
1	219.5	214.4	5.1	54.3	53.8	0.5	1998	1.33	7.70	0.05	177.13		333	53,606	1,271	9,237	1,771		549.0	66,218	3.95	261,757	83	83		0.262
2	223.0	217.8	5.2	55.2	54.6	0.5	1999	1.77	8.46	0.05	178.26		443	54,462	1,292	10,157	1,783		558.9	68,136	3.95	269,061	96	96		0.269
3	232.6	227.1	5.5	57.1	56.6	0.6	2000	2.36	9.31	0.06	179.41		590	56,783	1,369	11,168	1,794		584.1	71,704	3.94	282,410	111	111		0.283
4	242.4	236.6	5.8	59.2	58.6	0.6	2001	3.14	10.23	0.07	180.56		786	59,139	1,451	12,280	1,806		610.3	75,462	3.93	296,425	128	128		0.297
5	252.3	246.1	6.1	61.3	60.7	0.6	2002	4.18	11.25	0.08	181.72		1,046	61,529	1,537	13,504	1,817		637.4	79,433	3.92	311,191	147	147		0.311
6	262.3	255.8	6.5	63.5	62.9	0.7	2003	5.57	12.37	0.09	182.88		1,393	63,953	1,629	14,849	1,829		665.8	83,652	3.91	326,827	170	170		0.327
7	272.5	265.6	6.9	65.8	65.1	0.7	2004	7.42	13.61	0.11	184.05		1,854	66,411	1,727	16,327	1,841		695.8	88,159	3.90	343,476	196	196		0.344
8	282.9	275.6	7.3	68.2	67.4	0.7	2005	9.88	14.96	0.13	185.23		2,469	68,903	1,830	17,954	1,852		727.6	93,008	3.88	361,318	226	226		0.362
9	293.5	285.7	7.8	70.6	69.9	0.8	2006	13.15	16.45	0.15	186.42		3,287	71,431	1,939	19,742	1,864		761.9	98,264	3.87	380,579	261	261		0.381
10	304.2	296.0	8.2	73.2	72.4	0.8	2007	17.51	18.09	0.17	187.62		4,377	73,995	2,055	21,708	1,876		799.3	104,011	3.86	401,546	301	301		0.402
11	315.1	306.4	8.7	75.8	74.9	0.9	2008	23.31	19.89	0.19	188.82		5,828	76,595	2,177	23,870	1,888		840.8	110,359	3.85	424,583	348	348		0.425
12	326.2	316.9	9.2	78.5	77.6	0.9	2009	31.04	21.87	0.22	190.03		7,759	79,233	2,307	26,248	1,900		887.5	117,447	3.83	450,154	401	401		0.451
13	337.4	327.6	9.8	81.4	80.4	1.0	2010	41.32	24.05	0.26	191.25		10,331	81,907	2,445	28,862	1,912		941.0	125,457	3.82	478,855	463	463		0.479
14	348.8	338.5	10.4	84.3	83.3	1.0	2011	55.02	26.45	0.30	192.48		13,755	84,619	2,591	31,736	1,925		1003.4	134,626	3.80	511,451	534	534		0.512
15	360.5	349.5	11.0	87.3	86.3	1.1	2012	73.25	29.08	0.34	193.71		18,314	87,370	2,746	34,897	1,937		1077.7	145,264	3.78	548,925	616	616		0.550
16	372.3	360.6	11.6	90.5	89.3	1.2	2013	97.53	31.98	0.39	194.95		24,384	90,160	2,910	38,373	1,950		1167.5	157,776	3.76	592,546	711	711		0.593
17	384.3	372.0	12.3	93.8	92.5	1.2	2014	129.86	35.16	0.46	196.20		32,465	92,989	3,083	42,195	1,962		1278.0	172,695	3.73	643,944	820	820		0.645
18	396.5	383.4	13.1	97.1	95.8	1.3	2015	172.90	38.66	0.53	197.46		43,226	95,859	3,268	46,397	1,975		1415.7	190,724	3.70	705,219	946	946		0.706
19	408.9	395.1	13.9	100.6	99.3	1.4	2016	230.21	42.52	0.61	198.73		57,552	98,769	3,463	51,019	1,987		1589.5	212,790	3.66	779,069	1,092	1,092		0.780
20	421.6	406.9	14.7	104.3	102.8	1.4	2017	306.51	46.75	0.70	200.00		76,628	101,720	3,669	56,100	2,000		1811.4	240,117	3.62	868,948	1,260	1,260		0.870
Ultimate	1464.65	1180.95	283.70	391.00	362.00	29.00		437.9	55.0	1.0	200.0		109,468	295,237	70,925	66,000	2,000		3491.4	543,630	3.39	1,840,518	1,800	1,800		1.842

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

HDSD Basin Summary

Basin Number **35**

COVINGTON SOUTH

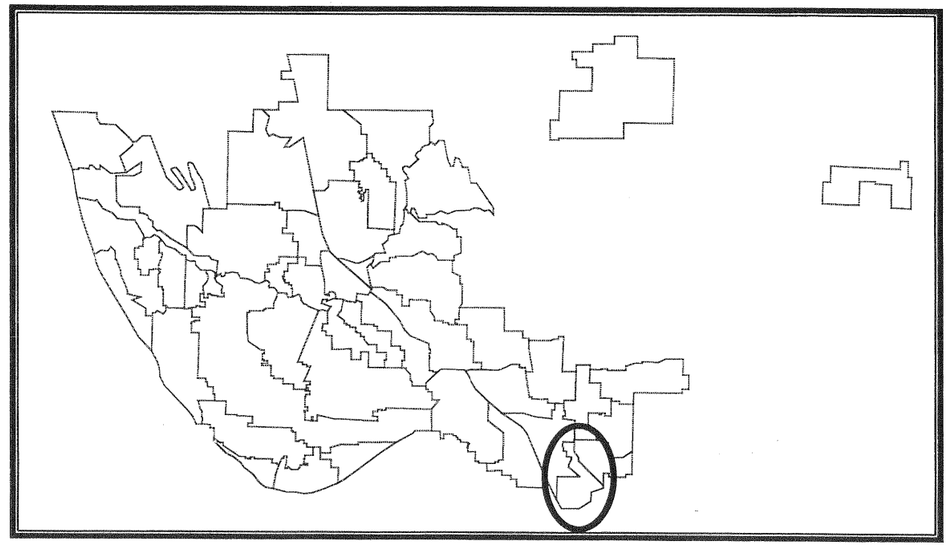
Updates

Ex. Connection Date 12/31/1996

Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	220.0	(22% of Ultimate)	33.9	(Average Densities)	6.490 DU/Acre
Existing Single Family Served	87.0	(40% of Exist.)	21.6	(64% of Exist.)	4.030 DU/Acre
Existing Multi Family Served	133.0	(60% of Exist.)	12.3	(36% of Exist.)	10.801 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	12.0	(1% of Ultimate Service)	1.7	(0.87% of Ultimate)	6.895 DU/Acre
New/Updated Single Family Served (est.)	4.8	(40% of New HHs)	1.1	(64% of New HHs)	4.288 DU/Acre
New/Updated Multi Family Served (est.)	7.2	(60% of New HHs)	0.6	(36% of New HHs)	11.478 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	999.3		201.0	(Proposed Densities)	4.972 DU/Acre
Ultimate Single Family Served	472.0	(47% of Ultimate)	143.0	(71% of Ultimate)	3.300 DU/Acre
Ultimate Multi Family Served	527.4	(53% of Ultimate)	58.0	(29% of Ultimate)	9.092 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	154.1	(15% of Ultimate SF & MF)	23.3	(12% of Ultimate SF & MF)	6.618 DU/Acre
New Single Family Service	62.7	(41% of New HHs)	15.0	(65% of New HHs)	4.176 DU/Acre
New Multi Family Service	91.3	(59% of New HHs)	8.3	(35% of New HHs)	11.062 DU/Acre
Service at the end of HDSD Comp. Plan	374.1	(37% of Ultimate)	57.2	(Existing & New)	6.542 DU/Acre
Single Family Service - end of Comp. Plan	149.8	(40% of Projected)	36.6	(64% of Projected)	4.090 DU/Acre
Multi Family Service - end of Comp. Plan	224.3	(60% of Projected)	20.6	(36% of Projected)	10.906 DU/Acre



	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	3.0			
Actual Rate		0.58%	2.68%		2.54%	2.53%	Ultimate	324.6	12.0			
Projected Rate		0.73%	2.64%		2.69%	2.61%	Buildout %	50%	50%			
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	220.0	87.0	133.0	33.9	21.6	12.3	1997	1.00	3.00			
1	226.0	89.4	136.6	34.8	22.1	12.6	1998	1.29	3.11			
2	232.0	91.8	140.2	35.6	22.7	12.9	1999	1.66	3.22			
3	238.7	94.8	144.0	36.6	23.3	13.3	2000	2.15	3.33			
4	245.6	97.8	147.8	37.6	23.9	13.6	2001	2.77	3.45			
5	252.6	100.9	151.7	38.6	24.6	14.0	2002	3.57	3.57			
6	259.7	104.0	155.7	39.6	25.2	14.3	2003	4.60	3.69			
7	266.9	107.1	159.8	40.6	25.9	14.7	2004	5.94	3.82			
8	274.3	110.3	164.0	41.7	26.6	15.1	2005	7.66	3.96			
9	281.8	113.4	168.4	42.8	27.3	15.5	2006	9.88	4.10			
10	289.4	116.6	172.8	44.0	28.1	15.9	2007	12.74	4.24			
11	297.2	119.8	177.4	45.1	28.8	16.3	2008	16.43	4.39			
12	305.1	123.0	182.1	46.3	29.6	16.7	2009	21.19	4.55			
13	313.2	126.3	186.9	47.6	30.4	17.2	2010	27.33	4.71			
14	321.4	129.6	191.8	48.8	31.2	17.6	2011	35.25	4.87			
15	329.8	132.9	196.9	50.1	32.1	18.1	2012	45.47	5.05			
16	338.3	136.2	202.1	51.5	32.9	18.6	2013	58.64	5.22			
17	347.0	139.6	207.4	52.8	33.8	19.0	2014	75.64	5.41			
18	355.8	142.9	212.9	54.3	34.7	19.5	2015	97.56	5.60			
19	364.9	146.3	218.5	55.7	35.7	20.0	2016	125.83	5.80			
20	374.1	149.8	224.3	57.2	36.6	20.6	2017	162.29	6.00			
Ultimate	999.31	471.95	527.36	201.00	143.00	58.00		324.6	12.0			

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
250	21,752	33,252	3,600			472.7	58,854	3.99	234,629				0.235
322	22,344	34,145	3,727			486.2	60,539	3.98	240,972				0.241
416	22,940	35,062	3,858			500.0	62,276	3.97	247,499				0.247
536	23,696	35,989	3,994			515.8	64,216	3.97	254,760				0.255
692	24,459	36,940	4,135			532.3	66,226	3.96	262,263				0.262
892	25,227	37,917	4,281			549.4	68,317	3.95	270,046				0.270
1,151	25,000	38,919	4,432			567.3	70,502	3.95	278,158				0.278
1,484	26,779	39,948	4,588			586.2	72,800	3.94	286,662				0.287
1,914	27,564	41,004	4,750			606.4	75,232	3.93	295,637				0.296
2,469	28,354	42,088	4,918			628.1	77,829	3.92	305,184				0.305
3,185	29,150	43,200	5,091			651.7	80,627	3.91	315,433				0.315
4,108	29,952	44,342	5,271			677.6	83,673	3.90	326,548				0.327
5,298	30,760	45,515	5,457			706.5	87,029	3.89	338,739				0.339
6,833	31,574	46,718	5,649			739.1	90,774	3.88	352,277				0.352
8,813	32,394	47,953	5,848			776.5	95,008	3.87	367,504				0.368
11,367	33,219	49,220	6,054			819.9	99,861	3.85	384,858				0.385
14,661	34,051	50,521	6,268			871.1	105,501	3.84	404,897				0.405
18,910	34,888	51,857	6,489			932.1	112,144	3.82	428,331				0.428
24,389	35,732	53,228	6,718			1005.7	120,067	3.80	456,060				0.456
31,456	36,582	54,635	6,955			1095.6	129,628	3.77	489,226				0.489
40,572	37,438	56,079	7,200			1206.3	141,288	3.75	529,267				0.529
81,143	117,988	131,840	14,400			2181.9	345,372	3.56	1,228,172				1.228

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

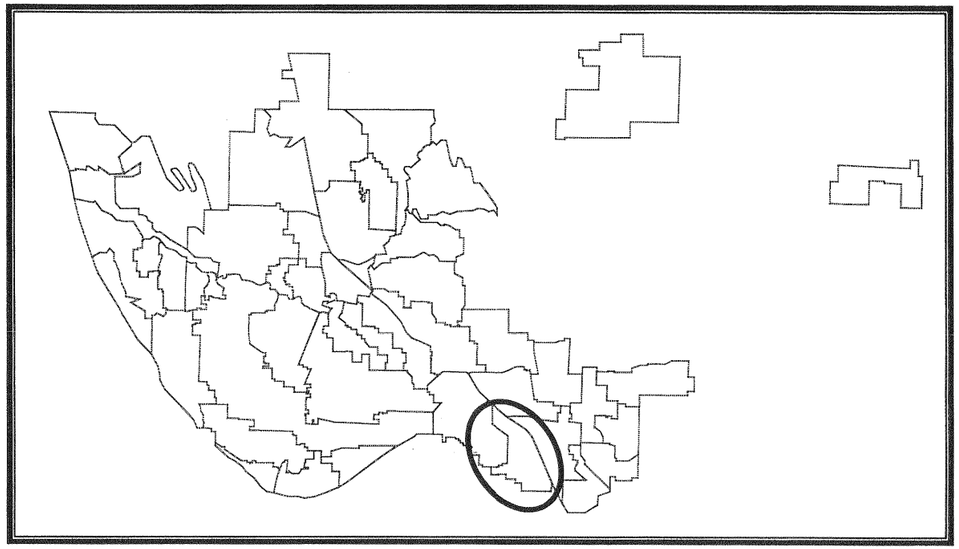
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
	Ex. Connection Date 12/31/1996
	Updated Connection Date 1/1/1999
	Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **36**

GREEN MEADOWS EAST



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	242.0	(14% of Ultimate)	51.9	(Average Densities)	4.662 DU/Acre
Existing Single Family Served	241.0	(100% of Exist.)	51.8	(100% of Exist.)	4.651 DU/Acre
Existing Multi Family Served	1.0	(0% of Exist.)	0.1	(0% of Exist.)	10.801 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	5.0	(0% of Ultimate Service)	1.1	(0.31% of Ultimate)	4.605 DU/Acre
New/Updated Single Family Served (est.)	5.0	(99% of New HHs)	1.1	(100% of New HHs)	4.592 DU/Acre
New/Updated Multi Family Served (est.)	0.0	(1% of New HHs)	0.0	(0% of New HHs)	10.703 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1762.9		351.0	(Proposed Densities)	5.022 DU/Acre
Ultimate Single Family Served	1106.5	(63% of Ultimate)	300.0	(85% of Ultimate)	3.688 DU/Acre
Ultimate Multi Family Served	656.4	(37% of Ultimate)	51.0	(15% of Ultimate)	12.870 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	338.4	(19% of Ultimate SF & MF)	72.2	(21% of Ultimate SF & MF)	4.684 DU/Acre
New Single Family Service	313.1	(93% of New HHs)	70.0	(97% of New HHs)	4.474 DU/Acre
New Multi Family Service	25.3	(7% of New HHs)	2.3	(3% of New HHs)	11.189 DU/Acre
Service at the end of HDSD Comp. Plan	580.4	(33% of Ultimate)	124.2	(Existing & New)	4.675 DU/Acre
Single Family Service - end of Comp. Plan	554.1	(95% of Projected)	121.8	(98% of Projected)	4.549 DU/Acre
Multi Family Service - end of Comp. Plan	26.3	(5% of Projected)	2.4	(2% of Projected)	11.173 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0		355.0															
Actual Rate	0.34%	1.28%		1.04%	1.30%		Ultimate	490.5	39.0		400.0															
Projected Rate	1.96%	19.75%		4.74%	19.53%		Buildout %	15%	90%		100%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	242.0	241.0	1.0	51.9	51.8	0.1	1997	1.00	0.04		355.00		250	60,257	250	48	3,550		607.0	64,355	3.93	252,680				0.253
1	244.5	243.5	1.0	52.5	52.4	0.1	1998	1.24	0.06		357.12		310	60,878	253	67	3,571		613.8	65,079	3.93	255,550				0.256
2	247.0	246.0	1.0	53.0	52.9	0.1	1999	1.54	0.08		359.26		384	61,500	256	95	3,593		620.8	65,828	3.92	258,311				0.258
3	261.7	260.4	1.2	55.5	55.4	0.1	2000	1.91	0.11		361.41		476	65,106	307	133	3,614		658.2	69,636	3.91	272,266				0.272
4	276.6	275.1	1.5	58.2	58.0	0.1	2001	2.36	0.16		363.58		591	68,787	368	186	3,636		696.6	73,567	3.90	286,602				0.287
5	291.9	290.2	1.8	61.0	60.8	0.2	2002	2.93	0.22		365.75		732	72,540	440	261	3,658		736.1	77,631	3.88	301,355				0.301
6	307.6	305.5	2.1	63.9	63.7	0.2	2003	3.63	0.31		367.94		908	76,366	527	367	3,679		776.7	81,848	3.87	316,592				0.317
7	323.6	321.1	2.5	66.9	66.7	0.2	2004	4.50	0.43		370.14		1,125	80,268	632	514	3,701		818.7	86,241	3.85	332,400				0.332
8	340.0	337.0	3.0	70.1	69.9	0.3	2005	5.58	0.60		372.36		1,395	84,246	756	722	3,724		862.2	90,843	3.84	348,893				0.349
9	356.8	353.2	3.6	73.5	73.2	0.3	2006	6.92	0.84		374.59		1,730	88,302	906	1,013	3,746		907.2	95,697	3.83	366,219				0.366
10	374.1	369.8	4.3	77.0	76.6	0.4	2007	8.58	1.18		376.83		2,144	92,438	1,085	1,422	3,768		954.1	100,857	3.81	384,575				0.385
11	391.8	386.6	5.2	80.7	80.3	0.5	2008	10.63	1.66		379.08		2,659	96,655	1,299	1,995	3,791		1003.0	106,398	3.80	404,224				0.404
12	410.0	403.8	6.2	84.6	84.1	0.6	2009	13.18	2.33		381.35		3,296	100,954	1,555	2,800	3,814		1054.3	112,419	3.79	425,514				0.426
13	428.8	421.4	7.5	88.7	88.1	0.7	2010	16.35	3.27		383.64		4,086	105,338	1,863	3,930	3,836		1108.4	119,053	3.77	448,916				0.449
14	448.2	439.2	8.9	93.1	92.2	0.8	2011	20.26	4.60		385.93		5,066	109,807	2,231	5,515	3,859		1165.7	126,478	3.76	475,061				0.475
15	468.1	457.5	10.7	97.6	96.6	1.0	2012	25.12	6.45		388.24		6,281	114,365	2,671	7,739	3,882		1226.8	134,938	3.74	504,804				0.505
16	488.8	476.0	12.8	102.4	101.2	1.2	2013	31.15	9.05		390.57		7,786	119,011	3,199	10,860	3,906		1292.3	144,762	3.73	539,303				0.539
17	510.3	495.0	15.3	107.4	106.0	1.4	2014	38.61	12.70		392.90		9,653	123,749	3,831	15,241	3,929		1363.1	156,403	3.71	580,132				0.580
18	532.7	514.3	18.3	112.7	111.0	1.6	2015	47.87	17.82		395.25		11,968	128,580	4,587	21,388	3,953		1440.3	170,475	3.69	629,433				0.629
19	556.0	534.0	22.0	118.3	116.3	2.0	2016	59.35	25.01		397.62		14,837	133,505	5,493	30,014	3,976		1525.2	187,826	3.67	690,132				0.690
20	580.4	554.1	26.3	124.2	121.8	2.4	2017	73.58	35.10		400.00		18,395	138,527	6,579	42,120	4,000		1619.2	209,620	3.66	766,223				0.766
Ultimate	1762.88	1106.53	656.35	351.00	300.00	51.00		490.5	39.0		400.0		122,631	276,632	164,088	46,800	4,000		4013.4	614,151	3.33	2,046,372				2.046

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

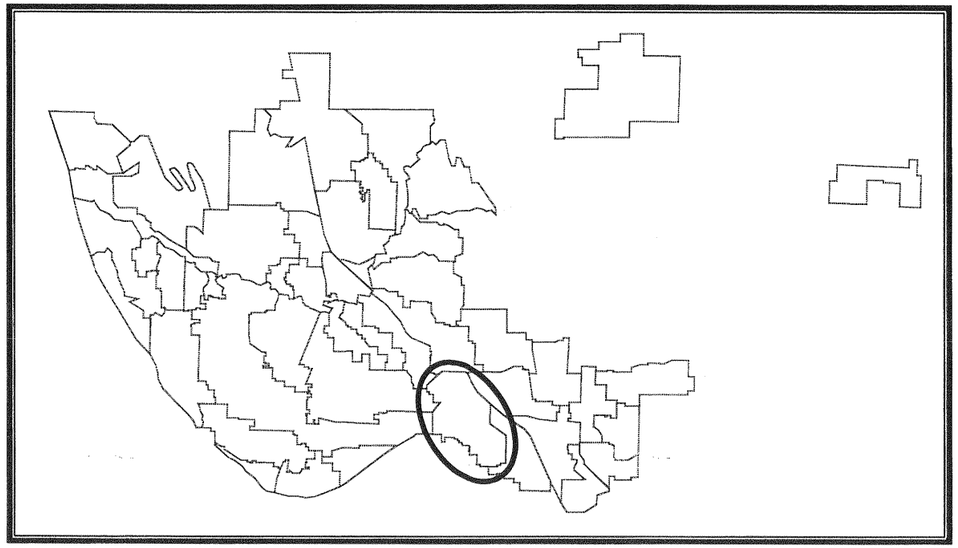
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **37**

GREEN MEADOWS WEST



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	397.0	(27% of Ultimate)	68.2	(Average Densities)	5.821 DU/Acre
Existing Single Family Served	285.0	(72% of Exist.)	61.3	(90% of Exist.)	4.650 DU/Acre
Existing Multi Family Served	112.0	(28% of Exist.)	6.9	(10% of Exist.)	16.201 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	28.4	(2% of Ultimate Service)	4.5	(1.33% of Ultimate)	6.352 DU/Acre
New/Updated Single Family Served (est.)	20.4	(72% of New HHs)	4.0	(90% of New HHs)	5.077 DU/Acre
New/Updated Multi Family Served (est.)	8.0	(28% of New HHs)	0.5	(10% of New HHs)	17.667 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1445.0		335.0	(Proposed Densities)	4.314 DU/Acre
Ultimate Single Family Served	1082.2	(75% of Ultimate)	305.0	(91% of Ultimate)	3.548 DU/Acre
Ultimate Multi Family Served	362.8	(25% of Ultimate)	30.0	(9% of Ultimate)	12.094 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	319.9	(22% of Ultimate SF & MF)	53.9	(16% of Ultimate SF & MF)	5.932 DU/Acre
New Single Family Service	231.8	(72% of New HHs)	48.6	(90% of New HHs)	4.774 DU/Acre
New Multi Family Service	88.0	(28% of New HHs)	5.4	(10% of New HHs)	16.416 DU/Acre
Service at the end of HDSD Comp. Plan	716.9	(50% of Ultimate)	122.1	(Existing & New)	5.870 DU/Acre
Single Family Service - end of Comp. Plan	516.8	(72% of Projected)	109.8	(90% of Projected)	4.705 DU/Acre
Multi Family Service - end of Comp. Plan	200.1	(28% of Projected)	12.3	(10% of Projected)	16.295 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0	6.0		
Actual Rate	1.79%	3.50%		3.22%	3.22%		Ultimate	279.2	81.0	288.0		
Projected Rate	1.73%	2.88%		2.93%	2.88%		Buildout %	30%	90%	70%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	397.0	285.0	112.0	68.2	61.3	6.9	1997	1.00	0.04	6.00		
1	411.1	295.1	115.9	70.4	63.3	7.1	1998	1.25	0.06	7.15		
2	425.4	305.4	120.0	72.7	65.3	7.4	1999	1.56	0.08	8.53		
3	439.0	315.5	123.4	74.8	67.2	7.6	2000	1.94	0.12	10.16		
4	452.8	325.8	127.0	77.0	69.2	7.8	2001	2.42	0.18	12.12		
5	466.9	336.3	130.7	79.2	71.2	8.0	2002	3.03	0.26	14.45		
6	481.3	346.9	134.4	81.6	73.3	8.3	2003	3.77	0.38	17.22		
7	496.0	357.7	138.3	83.9	75.5	8.5	2004	4.71	0.55	20.53		
8	511.0	368.8	142.3	86.4	77.7	8.7	2005	5.88	0.81	24.47		
9	526.4	380.0	146.4	88.9	79.9	9.0	2006	7.33	1.17	29.17		
10	542.0	391.4	150.6	91.5	82.3	9.2	2007	9.15	1.71	34.78		
11	557.9	403.0	154.9	94.2	84.7	9.5	2008	11.42	2.49	41.46		
12	574.2	414.8	159.4	97.0	87.2	9.8	2009	14.25	3.62	49.43		
13	590.8	426.8	164.0	99.8	89.7	10.1	2010	17.78	5.27	58.92		
14	607.7	439.0	168.7	102.7	92.4	10.4	2011	22.19	7.67	70.24		
15	625.0	451.4	173.6	105.7	95.1	10.7	2012	27.68	11.16	83.73		
16	642.6	464.1	178.6	108.8	97.9	11.0	2013	34.55	16.24	99.82		
17	660.6	476.9	183.7	112.0	100.7	11.3	2014	43.11	23.64	119.00		
18	679.0	490.0	189.0	115.3	103.7	11.6	2015	53.79	34.41	141.86		
19	697.8	503.3	194.5	118.7	106.7	11.9	2016	67.12	50.08	169.11		
20	716.9	516.8	200.1	122.1	109.8	12.3	2017	83.75	72.90	201.60		
Ultimate	1445.04	1082.23	362.81	335.00	305.00	30.00		279.2	81.0	288.0		

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
250	71,256	28,002	48			927.9	99,556	3.82	380,376	10,800	10,800		0.391
312	73,780	28,983	70			961.2	103,145	3.81	393,088	12,875	12,875		0.406
389	76,350	29,998	102			995.4	106,839	3.80	406,127	15,348	15,348		0.421
486	78,878	30,862	148			1028.2	110,375	3.79	418,560	18,297	18,297		0.437
606	81,450	31,751	215			1061.9	114,023	3.78	431,355	21,812	21,812		0.453
756	84,067	32,666	314			1096.5	117,803	3.77	444,571	26,002	26,002		0.471
944	86,729	33,607	457			1132.1	121,736	3.76	458,287	30,997	30,997		0.489
1,178	89,437	34,575	664			1168.9	125,854	3.76	472,615	36,952	36,952		0.510
1,469	92,192	35,571	967			1206.9	130,199	3.75	487,705	44,051	44,051		0.532
1,834	94,994	36,595	1,408			1246.4	134,831	3.74	503,766	52,514	52,514		0.556
2,288	97,845	37,649	2,049			1287.5	139,831	3.73	521,090	62,603	62,603		0.584
2,855	100,745	38,734	2,983			1330.4	145,316	3.72	540,089	74,629	74,629		0.615
3,562	103,695	39,849	4,342			1375.4	151,449	3.71	561,340	88,967	88,967		0.650
4,445	106,697	40,997	6,319			1423.0	158,459	3.70	585,662	106,058	106,058		0.692
5,547	109,750	42,178	9,198			1473.5	166,673	3.69	614,214	126,433	126,433		0.741
6,921	112,856	43,393	13,389			1527.6	176,559	3.67	648,648	150,723	150,723		0.799
8,636	116,016	44,643	19,488			1585.8	188,784	3.66	691,318	179,678	179,678		0.871
10,777	119,231	45,929	28,367			1649.1	204,303	3.65	745,586	214,196	214,196		0.960
13,447	122,501	47,252	41,290			1718.6	224,490	3.64	816,258	255,346	255,346		1.072
16,779	125,828	48,613	60,100			1795.5	251,320	3.62	910,215	304,401	304,401		1.215
20,938	129,212	50,013	87,480			1881.6	287,643	3.61	1,037,310	362,880	362,880		1.400
69,792	270,557	90,702	97,200			3394.9	528,251	3.40	1,794,059	518,400	518,400		2.312

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

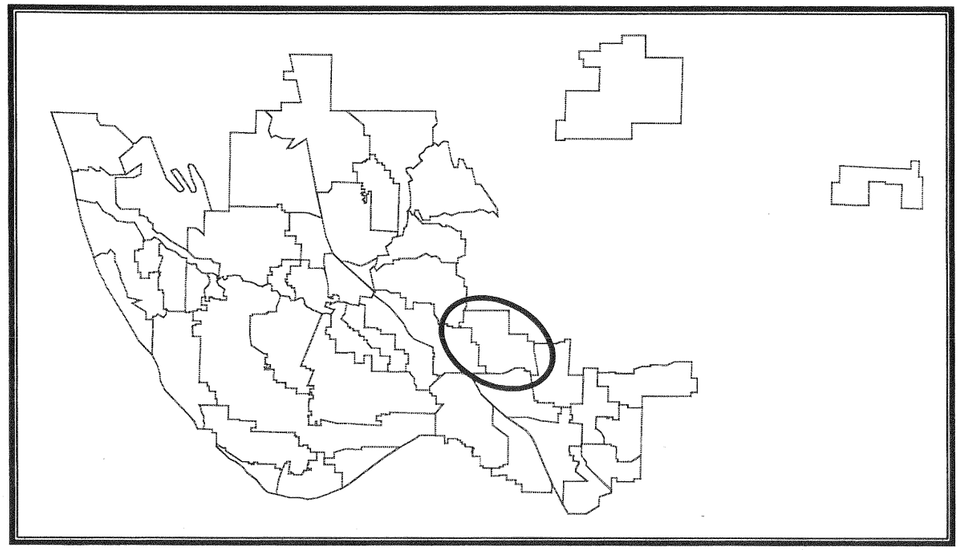
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

HDSD Basin Summary

Basin Number **38**

CURTIN CREEK



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	3.0	(1% of Ultimate)	0.6	(Average Densities)	4.652 DU/Acre
Existing Single Family Served Existing Multi Family Served Existing UH/UR Served	3.0	(100% of Exist.)	0.6	(100% of Exist.)	4.652 DU/Acre
New Service thru the updated connections	3.0	(1% of Ultimate Service)	0.6	(0.42% of Ultimate)	4.652 DU/Acre
New/Updated Single Family Served (est.) New/Updated Multi Family Served (est.)	3.0	(100% of New HHs)	0.6	(100% of New HHs)	4.652 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	469.9		154.3	(Proposed Densities)	3.046 DU/Acre
Ultimate Single Family Served Ultimate Multi Family Served Ultimate UH/UR Served	469.9	(100% of Ultimate)	154.3	(100% of Ultimate)	3.046 DU/Acre
New Service During the Comp. Plan	142.4	(30% of Ultimate SF & MF)	34.1	(22% of Ultimate SF & MF)	4.173 DU/Acre
New Single Family Service New Multi Family Service	142.4	(100% of New HHs)	34.1	(100% of New HHs)	4.173 DU/Acre
Service at the end of HDSD Comp. Plan	145.4	(31% of Ultimate)	34.8	(Existing & New)	4.182 DU/Acre
Single Family Service - end of Comp. Plan Multi Family Service - end of Comp. Plan	145.4		34.8		4.182 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0	0.0		
Actual Rate		0.55%			41.37%		Ultimate	268.0	62.0	280.1		
Projected Rate		2.31%			20.08%		Buildout %	60%	100%	95%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	3.0	3.0		0.6	0.6		1997	1.00	0.04	0.04		
1	4.5	4.5		0.9	0.9		1998	1.29	0.06	0.06		
2	6.0	6.0		1.3	1.3		1999	1.66	0.08	0.10		
3	12.3	12.3		1.5	1.5		2000	2.14	0.12	0.15		
4	18.8	18.8		1.9	1.9		2001	2.76	0.17	0.23		
5	25.4	25.4		2.2	2.2		2002	3.56	0.25	0.36		
6	32.2	32.2		2.7	2.7		2003	4.59	0.36	0.56		
7	39.2	39.2		3.2	3.2		2004	5.92	0.52	0.87		
8	46.3	46.3		3.9	3.9		2005	7.63	0.76	1.35		
9	53.5	53.5		4.6	4.6		2006	9.84	1.09	2.10		
10	61.0	61.0		5.6	5.6		2007	12.68	1.57	3.26		
11	68.6	68.6		6.7	6.7		2008	16.35	2.27	5.07		
12	76.3	76.3		8.0	8.0		2009	21.08	3.28	7.87		
13	84.3	84.3		9.7	9.7		2010	27.17	4.74	12.22		
14	92.4	92.4		11.6	11.6		2011	35.03	6.84	18.97		
15	100.8	100.8		13.9	13.9		2012	45.16	9.88	29.46		
16	109.3	109.3		16.7	16.7		2013	58.22	14.26	45.75		
17	118.0	118.0		20.1	20.1		2014	75.06	20.59	71.04		
18	126.9	126.9		24.1	24.1		2015	96.76	29.72	110.32		
19	136.1	136.1		29.0	29.0		2016	124.74	42.91	171.32		
20	145.4	145.4		34.8	34.8		2017	160.82	61.96	266.05		
Ultimate	469.90	469.90		154.26	154.26			268.0	62.0	280.1		

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
250	750		48			10.0	1,048	4.41	4,628	72	72		0.005
322	1,124		69			14.5	1,516	4.40	6,666	112	112		0.007
416	1,500		100			19.2	2,015	4.38	8,834	174	174		0.009
536	3,082		144			36.2	3,762	4.34	16,330	270	270		0.017
691	4,702		209			53.9	5,601	4.31	24,128	419	419		0.025
890	6,359		301			72.5	7,551	4.28	32,311	650	650		0.033
1,148	8,055		435			92.0	9,637	4.25	40,990	1,010	1,010		0.042
1,480	9,790		628			112.7	11,897	4.23	50,313	1,568	1,568		0.052
1,908	11,565		906			134.7	14,379	4.21	60,474	2,435	2,435		0.063
2,459	13,381		1,308			158.4	17,149	4.18	71,737	3,781	3,781		0.076
3,170	15,239		1,889			184.1	20,298	4.16	84,461	5,872	5,872		0.090
4,087	17,140		2,728			212.3	23,955	4.14	99,137	9,119	9,119		0.108
5,269	19,085		3,938			243.5	28,292	4.12	116,439	14,160	14,160		0.131
6,793	21,075		5,686			278.7	33,553	4.09	137,298	21,990	21,990		0.159
8,757	23,111		8,209			318.7	40,077	4.07	162,998	34,148	34,148		0.197
11,290	25,194		11,852			364.8	48,335	4.04	195,314	53,028	53,028		0.248
14,555	27,325		17,111			418.8	58,991	4.01	236,707	82,348	82,348		0.319
18,764	29,505		24,705			482.7	72,974	3.98	290,586	127,878	127,878		0.418
24,190	31,736		35,669			559.3	91,595	3.95	361,682	198,583	198,583		0.560
31,186	34,018		51,498			652.0	116,702	3.91	456,552	308,380	308,380		0.765
40,205	36,353		74,352			765.6	150,910	3.87	584,294	478,886	478,886		1.063
67,008	117,476		74,352			1174.8	258,836	3.75	971,620	504,090	504,090		1.476

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

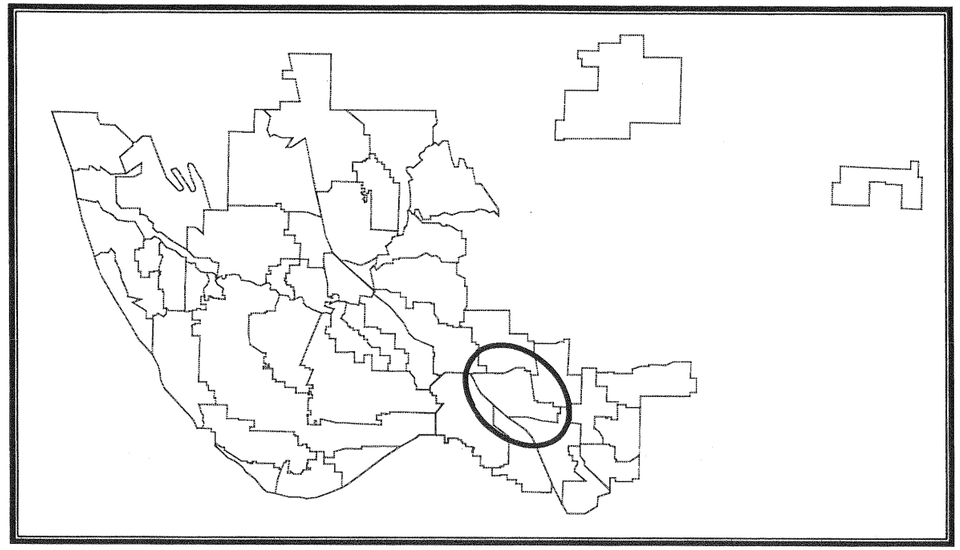
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **39**

CEDAR 49



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	232.0	(32% of Ultimate)	49.9	(Average Densities)	4.550 DU/Acre
Existing Single Family Served	232.0	(100% of Exist.)	49.9	(100% of Exist.)	4.550 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections	8.0	(1% of Ultimate Service)	1.6	(0.82% of Ultimate)	5.035 DU/Acre
New/Updated Single Family Served (est.)	8.0	(100% of New HHs)	1.6	(100% of New HHs)	5.035 DU/Acre
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	734.6		194.0	(Proposed Densities)	3.787 DU/Acre
Ultimate Single Family Served	734.6	(100% of Ultimate)	194.0	(100% of Ultimate)	3.787 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served					
New Service During the Comp. Plan	176.6	(24% of Ultimate SF & MF)	37.2	(19% of Ultimate SF & MF)	4.745 DU/Acre
New Single Family Service	176.6	(100% of New HHs)	37.2	(100% of New HHs)	4.745 DU/Acre
New Multi Family Service					
Service at the end of HDSD Comp. Plan	408.6	(56% of Ultimate)	87.1	(Existing & New)	4.691 DU/Acre
Single Family Service - end of Comp. Plan	408.6		87.1		4.691 DU/Acre
Multi Family Service - end of Comp. Plan					

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0	4.0		
Actual Rate		1.25%			1.58%		Ultimate	86.0	32.0	191.0		
Projected Rate		2.34%			2.96%		Buildout %	50%	70%	70%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	232.0	232.0		49.9	49.9		1997	1.00	0.04	4.00		
1	236.0	236.0		50.7	50.7		1998	1.21	0.05	4.77		
2	240.0	240.0		51.5	51.5		1999	1.46	0.08	5.68		
3	247.6	247.6		53.0	53.0		2000	1.76	0.10	6.77		
4	255.5	255.5		54.6	54.6		2001	2.12	0.14	8.07		
5	263.5	263.5		56.2	56.2		2002	2.56	0.19	9.62		
6	271.6	271.6		57.9	57.9		2003	3.09	0.27	11.46		
7	280.0	280.0		59.6	59.6		2004	3.73	0.37	13.66		
8	288.6	288.6		61.3	61.3		2005	4.50	0.50	16.28		
9	297.4	297.4		63.2	63.2		2006	5.43	0.69	19.40		
10	306.4	306.4		65.0	65.0		2007	6.56	0.95	23.13		
11	315.5	315.5		67.0	67.0		2008	7.91	1.30	27.56		
12	325.0	325.0		68.9	68.9		2009	9.55	1.78	32.85		
13	334.6	334.6		71.0	71.0		2010	11.52	2.45	39.15		
14	344.4	344.4		73.1	73.1		2011	13.91	3.36	46.66		
15	354.5	354.5		75.3	75.3		2012	16.79	4.60	55.60		
16	364.8	364.8		77.5	77.5		2013	20.26	6.32	66.27		
17	375.4	375.4		79.8	79.8		2014	24.45	8.67	78.98		
18	386.2	386.2		82.2	82.2		2015	29.51	11.90	94.13		
19	397.3	397.3		84.6	84.6		2016	35.61	16.32	112.18		
20	408.6	408.6		87.1	87.1		2017	42.98	22.40	133.70		
Ultimate	734.59	734.59		194.00	194.00			86.0	32.0	191.0		

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
250	58,003		48			582.5	58,301	3.94	229,658	7,200	7,200		0.237
302	58,996		66			593.0	59,364	3.93	233,595	8,581	8,581		0.242
364	60,002		90			603.7	60,456	3.93	237,637	10,227	10,227		0.248
439	61,910		124			623.5	62,473	3.92	245,082	12,188	12,188		0.257
530	63,864		170			643.9	64,564	3.92	252,781	14,526	14,526		0.267
640	65,864		234			665.0	66,737	3.91	260,762	17,312	17,312		0.278
773	67,911		320			686.8	69,004	3.90	269,065	20,633	20,633		0.290
932	70,005		440			709.4	71,377	3.89	277,745	24,590	24,590		0.302
1,125	72,149		603			732.7	73,878	3.88	286,869	29,306	29,306		0.316
1,358	74,343		828			757.0	76,529	3.87	296,527	34,927	34,927		0.331
1,639	76,589		1,136			782.3	79,363	3.87	306,838	41,626	41,626		0.348
1,978	78,887		1,559			808.6	82,423	3.86	317,955	49,610	49,610		0.368
2,387	81,239		2,139			836.3	85,765	3.85	330,085	59,126	59,126		0.389
2,881	83,646		2,935			865.3	89,461	3.84	343,500	70,466	70,466		0.414
3,477	86,109		4,027			895.9	93,613	3.83	358,565	83,981	83,981		0.443
4,197	88,630		5,526			928.3	98,352	3.82	375,766	100,089	100,089		0.476
5,065	91,210		7,582			962.8	103,857	3.81	395,755	119,286	119,286		0.515
6,112	93,851		10,404			999.6	110,368	3.80	419,408	142,165	142,165		0.562
7,377	96,554		14,276			1039.3	118,207	3.79	447,902	169,433	169,433		0.617
8,903	99,319		19,589			1082.2	127,812	3.78	482,824	201,930	201,930		0.685
10,745	102,150		26,880			1129.0	139,775	3.77	526,312	240,660	240,660		0.767
21,490	183,647		38,400			1836.5	243,537	3.61	880,215	343,800	343,800		1.224

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

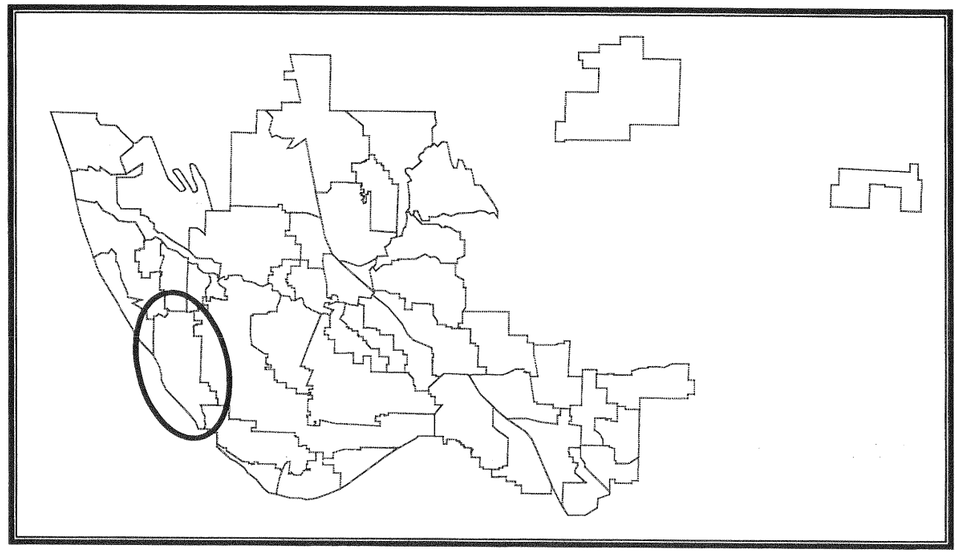
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
	Ex. Connection Date 12/31/1996
	Updated Connection Date 1/1/1999
	Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **41**

LAKESHORE



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	1270.5	(60% of Ultimate)	354.5	(Average Densities)	3.583 DU/Acre
Existing Single Family Served	1241.2	(98% of Exist.)	351.8	(99% of Exist.)	3.528 DU/Acre
Existing Multi Family Served	29.3	(2% of Exist.)	2.7	(1% of Exist.)	10.800 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	31.0	(1% of Ultimate Service)	7.5	(1.13% of Ultimate)	4.144 DU/Acre
New/Updated Single Family Served (est.)	30.3	(98% of New HHs)	7.4	(99% of New HHs)	4.078 DU/Acre
New/Updated Multi Family Served (est.)	0.7	(2% of New HHs)	0.1	(1% of New HHs)	12.526 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	2118.4		662.0	(Proposed Densities)	3.200 DU/Acre
Ultimate Single Family Served	2008.1	(95% of Ultimate)	650.0	(98% of Ultimate)	3.089 DU/Acre
Ultimate Multi Family Served	110.3	(5% of Ultimate)	12.0	(2% of Ultimate)	9.188 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	346.1	(16% of Ultimate SF & MF)	86.5	(13% of Ultimate SF & MF)	4.001 DU/Acre
New Single Family Service	336.5	(97% of New HHs)	85.7	(99% of New HHs)	3.926 DU/Acre
New Multi Family Service	9.6	(3% of New HHs)	0.8	(1% of New HHs)	12.332 DU/Acre
Service at the end of HDSD Comp. Plan	1616.6	(76% of Ultimate)	441.0	(Existing & New)	3.665 DU/Acre
Single Family Service - end of Comp. Plan	1577.7	(98% of Projected)	437.5	(99% of Projected)	3.606 DU/Acre
Multi Family Service - end of Comp. Plan	38.9	(2% of Projected)	3.5	(1% of Projected)	11.143 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0			
Actual Rate		1.20%	1.23%		1.05%	1.06%	Ultimate	11.0	7.0			
Projected Rate		1.20%	1.45%		1.10%	1.30%	Buildout %	35%	95%			
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	1,270.5	1,241.2	29.3	354.5	351.8	2.7	1997	1.00	0.04			
1	1,285.9	1,256.3	29.6	358.3	355.5	2.7	1998	1.07	0.05			
2	1,301.5	1,271.5	30.0	362.0	359.3	2.8	1999	1.14	0.07			
3	1,317.2	1,286.8	30.4	366.0	363.2	2.8	2000	1.22	0.09			
4	1,333.2	1,302.4	30.9	370.0	367.2	2.8	2001	1.31	0.11			
5	1,349.4	1,318.1	31.3	374.1	371.3	2.9	2002	1.40	0.14			
6	1,365.7	1,334.0	31.8	378.3	375.3	2.9	2003	1.50	0.19			
7	1,382.3	1,350.1	32.2	382.4	379.5	3.0	2004	1.61	0.24			
8	1,399.0	1,366.4	32.7	386.6	383.7	3.0	2005	1.72	0.31			
9	1,416.0	1,382.8	33.2	390.9	387.9	3.0	2006	1.84	0.40			
10	1,433.2	1,399.5	33.6	395.2	392.2	3.1	2007	1.97	0.52			
11	1,450.5	1,416.4	34.1	399.6	396.5	3.1	2008	2.10	0.67			
12	1,468.1	1,433.5	34.6	404.0	400.8	3.1	2009	2.25	0.86			
13	1,485.9	1,450.8	35.1	408.4	405.3	3.2	2010	2.41	1.11			
14	1,503.9	1,468.3	35.6	412.9	409.7	3.2	2011	2.58	1.43			
15	1,522.1	1,486.0	36.2	417.5	414.2	3.3	2012	2.76	1.85			
16	1,540.6	1,503.9	36.7	422.1	418.8	3.3	2013	2.95	2.39			
17	1,559.2	1,522.0	37.2	426.8	423.4	3.4	2014	3.16	3.09			
18	1,578.1	1,540.3	37.8	431.5	428.1	3.4	2015	3.38	3.99			
19	1,597.2	1,558.9	38.3	436.2	432.8	3.4	2016	3.61	5.15			
20	1,616.6	1,577.7	38.9	441.0	437.5	3.5	2017	3.86	6.65			
Ultimate	2118.37	2008.12	110.25	662.00	650.00	12.00		11.0	7.0			

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
250	310,306	7,313	48			3161.1	317,917	3.42	1,088,230				1.088
267	314,065	7,403	62			3199.6	321,798	3.42	1,100,061				1.100
286	317,869	7,494	80			3238.5	325,730	3.41	1,112,030				1.112
306	321,706	7,603	103			3277.9	329,719	3.41	1,124,153				1.124
328	325,589	7,714	133			3317.8	333,763	3.40	1,136,426				1.136
351	329,518	7,826	172			3358.2	337,866	3.40	1,148,857				1.149
375	333,494	7,939	223			3399.0	342,031	3.40	1,161,456				1.161
401	337,518	8,055	287			3440.4	346,261	3.39	1,174,236				1.174
429	341,590	8,172	371			3482.3	350,562	3.39	1,187,211				1.187
459	345,710	8,290	479			3524.7	354,939	3.38	1,200,403				1.200
491	349,880	8,411	619			3567.6	359,401	3.38	1,213,837				1.214
526	354,100	8,533	799			3611.1	363,958	3.37	1,227,544				1.228
563	358,370	8,657	1,032			3655.1	368,622	3.37	1,241,566				1.242
602	362,692	8,782	1,333			3699.7	373,409	3.36	1,255,955				1.256
644	367,065	8,910	1,721			3744.8	378,340	3.36	1,270,778				1.271
689	371,490	9,039	2,222			3790.5	383,441	3.35	1,286,123				1.286
737	375,969	9,171	2,870			3836.8	388,746	3.35	1,302,098				1.302
789	380,501	9,304	3,706			3883.6	394,299	3.34	1,318,848				1.319
844	385,087	9,439	4,785			3931.0	400,155	3.34	1,336,553				1.337
903	389,728	9,576	6,180			3979.1	406,387	3.34	1,355,451				1.355
966	394,425	9,715	7,980			4027.7	413,086	3.33	1,375,842				1.376
2,761	502,029	27,563	8,400			5229.8	540,753	3.23	1,744,935				1.745

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

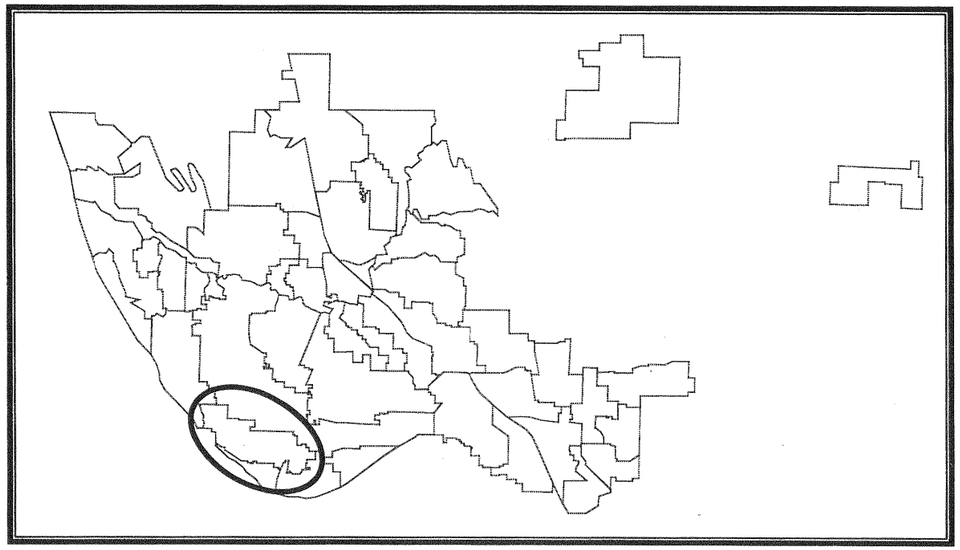
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **42**

CHICKEN CREEK



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	1226.0	(48% of Ultimate)	257.1	(Average Densities)	4.768 DU/Acre
Existing Single Family Served	879.4	(72% of Exist.)	234.8	(91% of Exist.)	3.745 DU/Acre
Existing Multi Family Served	346.5	(28% of Exist.)	22.3	(9% of Exist.)	15.515 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	25.0	(1% of Ultimate Service)	5.8	(1.21% of Ultimate)	4.283 DU/Acre
New/Updated Single Family Served (est.)	17.9	(72% of New HHs)	5.3	(91% of New HHs)	3.360 DU/Acre
New/Updated Multi Family Served (est.)	7.1	(28% of New HHs)	0.5	(9% of New HHs)	13.782 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	2557.0		482.0	(Proposed Densities)	5.305 DU/Acre
Ultimate Single Family Served	1238.1	(48% of Ultimate)	373.0	(77% of Ultimate)	3.319 DU/Acre
Ultimate Multi Family Served	1318.8	(52% of Ultimate)	109.0	(23% of Ultimate)	12.100 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	274.0	(11% of Ultimate SF & MF)	62.5	(13% of Ultimate SF & MF)	4.383 DU/Acre
New Single Family Service	189.7	(69% of New HHs)	56.0	(90% of New HHs)	3.391 DU/Acre
New Multi Family Service	84.3	(31% of New HHs)	6.6	(10% of New HHs)	12.852 DU/Acre
Service at the end of HDSD Comp. Plan	1500.0	(59% of Ultimate)	319.7	(Existing & New)	4.692 DU/Acre
Single Family Service - end of Comp. Plan	1069.2	(71% of Projected)	290.8	(91% of Projected)	3.677 DU/Acre
Multi Family Service - end of Comp. Plan	430.8	(29% of Projected)	28.9	(9% of Projected)	14.911 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	53.0		432 cap															
Actual Rate	0.72%	1.02%		1.13%	1.15%		Ultimate	357.5	93.0		475 cap															
Projected Rate	0.72%	1.10%		1.07%	1.31%		Buildout %	5%	90%		100%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	1,226.0	879.4	346.5	257.1	234.8	22.3	1997	1.00	53.00		432.00		250	219,860	86,628	63,600	4,320		2859.5	374,658	3.46	1,296,325				1.296
1	1,238.4	888.3	350.1	260.0	237.5	22.6	1998	1.16	54.22		434.05		289	222,085	87,513	65,070	4,341		2888.8	379,297	3.46	1,310,960				1.311
2	1,250.9	897.3	353.6	263.0	240.1	22.8	1999	1.33	55.48		436.12		334	224,326	88,407	66,574	4,361		2918.5	384,002	3.45	1,325,782				1.326
3	1,263.8	906.3	357.5	265.8	242.7	23.1	2000	1.54	56.76		438.19		385	226,571	89,382	68,112	4,382		2948.9	388,833	3.45	1,340,983				1.341
4	1,276.8	915.3	361.5	268.7	245.3	23.5	2001	1.78	58.07		440.28		445	228,832	90,368	69,686	4,403		2979.6	393,734	3.44	1,356,386				1.356
5	1,289.9	924.4	365.5	271.7	247.9	23.8	2002	2.06	59.41		442.37		514	231,109	91,365	71,297	4,424		3010.6	398,709	3.44	1,371,998				1.372
6	1,303.1	933.6	369.5	274.6	250.6	24.1	2003	2.38	60.79		444.47		594	233,403	92,372	72,944	4,445		3042.0	403,758	3.44	1,387,826				1.388
7	1,316.4	942.9	373.6	277.6	253.2	24.4	2004	2.74	62.19		446.59		686	235,713	93,391	74,630	4,466		3073.8	408,886	3.43	1,403,878				1.404
8	1,329.8	952.2	377.7	280.7	255.9	24.7	2005	3.17	63.63		448.71		792	238,040	94,421	76,355	4,487		3105.9	414,095	3.43	1,420,163				1.420
9	1,343.4	961.5	381.8	283.7	258.7	25.0	2006	3.66	65.10		450.85		915	240,383	95,462	78,119	4,508		3138.5	419,388	3.43	1,436,689				1.437
10	1,357.0	971.0	386.1	286.8	261.4	25.4	2007	4.23	66.60		452.99		1,057	242,743	96,515	79,925	4,530		3171.5	424,770	3.42	1,453,468				1.453
11	1,370.8	980.5	390.3	289.9	264.2	25.7	2008	4.88	68.14		455.14		1,221	245,120	97,579	81,772	4,551		3205.0	430,243	3.42	1,470,510				1.471
12	1,384.7	990.1	394.6	293.1	267.1	26.0	2009	5.64	69.72		457.31		1,410	247,514	98,655	83,662	4,573		3239.0	435,814	3.41	1,487,829				1.488
13	1,398.7	999.7	399.0	296.3	269.9	26.4	2010	6.52	71.33		459.48		1,629	249,925	99,743	85,595	4,595		3273.6	441,487	3.41	1,505,439				1.505
14	1,412.8	1,009.4	403.4	299.5	272.8	26.7	2011	7.53	72.98		461.67		1,882	252,353	100,843	87,573	4,617		3308.8	447,268	3.41	1,523,356				1.523
15	1,427.0	1,019.2	407.8	302.8	275.7	27.1	2012	8.69	74.66		463.86		2,173	254,799	101,956	89,597	4,639		3344.6	453,163	3.40	1,541,598				1.542
16	1,441.4	1,029.0	412.3	306.1	278.7	27.4	2013	10.04	76.39		466.07		2,511	257,262	103,080	91,668	4,661		3381.1	459,181	3.40	1,560,186				1.560
17	1,455.8	1,039.0	416.9	309.4	281.6	27.8	2014	11.60	78.16		468.29		2,900	259,743	104,217	93,786	4,683		3418.5	465,328	3.39	1,579,142				1.579
18	1,470.4	1,049.0	421.5	312.8	284.7	28.1	2015	13.40	79.96		470.51		3,350	262,241	105,366	95,954	4,705		3456.7	471,616	3.39	1,598,493				1.598
19	1,485.1	1,059.0	426.1	316.2	287.7	28.5	2016	15.48	81.81		472.75		3,869	264,758	106,528	98,171	4,728		3495.9	478,053	3.39	1,618,268				1.618
20	1,500.0	1,069.2	430.8	319.7	290.8	28.9	2017	17.88	83.70		475.00		4,469	267,292	107,703	100,440	4,750		3536.2	484,654	3.38	1,638,501				1.639
Ultimate	2557.00	1238.15	1318.85	482.00	373.00	109.00		357.5	93.0		475.0		89,381	309,537	329,712	111,600	4,750		5601.2	844,980	3.20	2,703,047				2.703

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

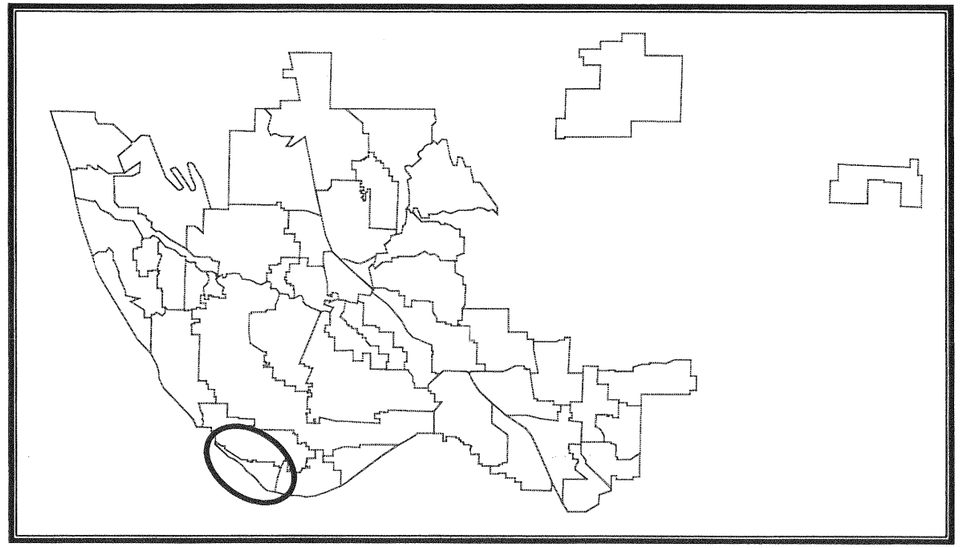
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **43**

OVERLOOK



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	438.8	(75% of Ultimate)	72.9	(Average Densities)	6.016 DU/Acre
Existing Single Family Served	207.1	(47% of Exist.)	55.8	(76% of Exist.)	3.713 DU/Acre
Existing Multi Family Served	231.8	(53% of Exist.)	17.2	(24% of Exist.)	13.500 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	1.0	(0% of Ultimate Service)	0.1	(0.07% of Ultimate)	10.763 DU/Acre
New/Updated Single Family Served (est.)	0.5	(47% of New HHs)	0.1	(76% of New HHs)	6.644 DU/Acre
New/Updated Multi Family Served (est.)	0.5	(53% of New HHs)	0.0	(24% of New HHs)	24.143 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	588.0		133.7	(Proposed Densities)	4.399 DU/Acre
Ultimate Single Family Served	318.2	(54% of Ultimate)	95.7	(72% of Ultimate)	3.326 DU/Acre
Ultimate Multi Family Served	269.8	(46% of Ultimate)	38.0	(28% of Ultimate)	7.099 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	10.1	(2% of Ultimate SF & MF)	0.9	(1% of Ultimate SF & MF)	10.664 DU/Acre
New Single Family Service	4.8	(47% of New HHs)	0.7	(76% of New HHs)	6.601 DU/Acre
New Multi Family Service	5.3	(53% of New HHs)	0.2	(24% of New HHs)	23.842 DU/Acre
Service at the end of HDSD Comp. Plan	448.9	(76% of Ultimate)	73.9	(Existing & New)	6.076 DU/Acre
Single Family Service - end of Comp. Plan	211.8	(47% of Projected)	56.5	(76% of Projected)	3.749 DU/Acre
Multi Family Service - end of Comp. Plan	237.1	(53% of Projected)	17.4	(24% of Projected)	13.633 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed	
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0																		
	Actual Rate	0.06%	0.11%		0.06%	0.06%	Ultimate	193.8																		
	Projected Rate	0.06%	0.11%		0.06%	0.06%	Buildout %	17%																		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)
	438.8	207.1	231.8	72.9	55.8	17.2	1997	1.00					250	51,765	57,938				960.5	109,953	3.81	419,054				0.419
1	439.3	207.3	232.0	73.0	55.8	17.2	1998	1.19					298	51,824	58,004				962.0	110,125	3.81	419,662				0.420
2	439.8	207.5	232.3	73.0	55.8	17.2	1999	1.42					355	51,883	58,070				963.7	110,307	3.81	420,303				0.420
3	440.3	207.8	232.5	73.1	55.9	17.2	2000	1.69					422	51,942	58,135				965.5	110,500	3.81	420,982				0.421
4	440.8	208.0	232.8	73.1	55.9	17.2	2001	2.01					503	52,002	58,201				967.4	110,706	3.81	421,707				0.422
5	441.3	208.2	233.1	73.2	56.0	17.2	2002	2.40					599	52,062	58,268				969.4	110,928	3.81	422,486				0.422
6	441.8	208.5	233.3	73.2	56.0	17.2	2003	2.85					713	52,121	58,334				971.7	111,168	3.81	423,329				0.423
7	442.3	208.7	233.6	73.3	56.0	17.2	2004	3.40					849	52,181	58,400				974.1	111,430	3.81	424,249				0.424
8	442.8	209.0	233.9	73.3	56.1	17.3	2005	4.05					1,012	52,240	58,466				976.9	111,718	3.81	425,259				0.425
9	443.3	209.2	234.1	73.4	56.1	17.3	2006	4.82					1,205	52,300	58,533				979.9	112,038	3.81	426,378				0.426
10	443.8	209.4	234.4	73.4	56.1	17.3	2007	5.74					1,435	52,360	58,599				983.3	112,394	3.80	427,625				0.428
11	444.3	209.7	234.7	73.5	56.2	17.3	2008	6.84					1,709	52,420	58,666				987.1	112,794	3.80	429,025				0.429
12	444.8	209.9	234.9	73.5	56.2	17.3	2009	8.14					2,035	52,479	58,732				991.5	113,247	3.80	430,607				0.431
13	445.4	210.2	235.2	73.6	56.2	17.3	2010	9.69					2,424	52,539	58,799				996.5	113,762	3.80	432,406				0.432
14	445.9	210.4	235.5	73.6	56.3	17.3	2011	11.55					2,886	52,599	58,866				1002.2	114,351	3.80	434,463				0.434
15	446.4	210.6	235.7	73.6	56.3	17.3	2012	13.75					3,437	52,659	58,932				1008.9	115,029	3.80	436,826				0.437
16	446.9	210.9	236.0	73.7	56.4	17.3	2013	16.37					4,094	52,719	58,999				1016.5	115,812	3.80	439,553				0.440
17	447.4	211.1	236.3	73.7	56.4	17.4	2014	19.50					4,875	52,779	59,066				1025.4	116,721	3.79	442,714				0.443
18	447.9	211.4	236.5	73.8	56.4	17.4	2015	23.22					5,806	52,839	59,133				1035.9	117,779	3.79	446,390				0.446
19	448.4	211.6	236.8	73.8	56.5	17.4	2016	27.66					6,915	52,899	59,200				1048.1	119,014	3.79	450,679				0.451
20	448.9	211.8	237.1	73.9	56.5	17.4	2017	32.94					8,235	52,959	59,268				1062.4	120,462	3.78	455,696				0.456
Ultimate	588.00	318.24	269.75	133.68	95.68	38.00		193.8					48,441	79,561	67,438				1308.1	195,440	3.72	727,379				0.727

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

HDSD Basin Summary

Basin Number **44**

HIGHWAY 99 SOUTH

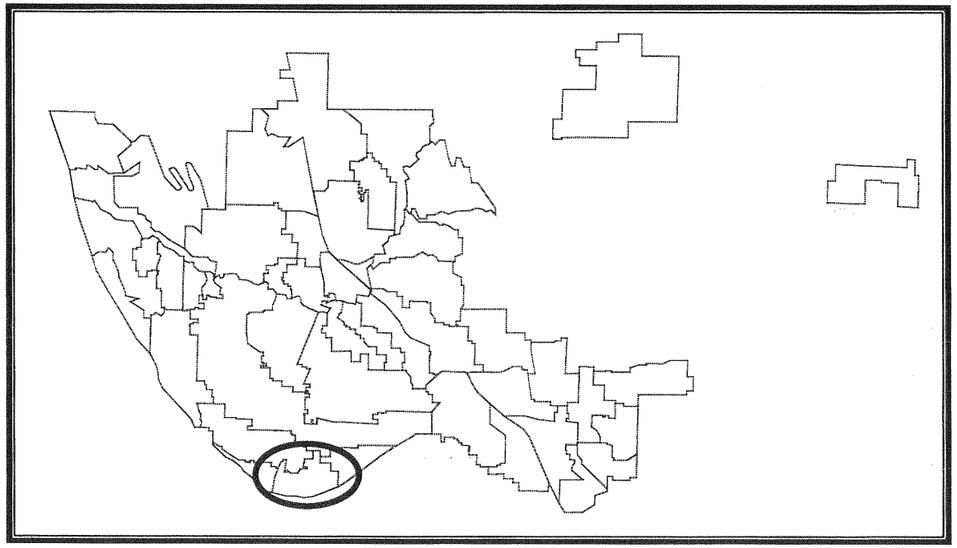
Updates

Ex. Connection Date 12/31/1996

Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	547.2	(49% of Ultimate)	73.7	(Average Densities)	7.428 DU/Acre
Existing Single Family Served	254.7	(47% of Exist.)	54.8	(74% of Exist.)	4.650 DU/Acre
Existing Multi Family Served	292.5	(53% of Exist.)	18.9	(26% of Exist.)	15.474 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	8.0	(1% of Ultimate Service)	0.9	(0.43% of Ultimate)	9.199 DU/Acre
New/Updated Single Family Served (est.)	3.7	(47% of New HHs)	0.6	(74% of New HHs)	5.767 DU/Acre
New/Updated Multi Family Served (est.)	4.3	(53% of New HHs)	0.2	(26% of New HHs)	19.166 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1120.1		202.0	(Proposed Densities)	5.545 DU/Acre
Ultimate Single Family Served	653.1	(58% of Ultimate)	169.0	(84% of Ultimate)	3.864 DU/Acre
Ultimate Multi Family Served	467.0	(42% of Ultimate)	33.0	(16% of Ultimate)	14.151 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	101.6	(9% of Ultimate SF & MF)	11.4	(6% of Ultimate SF & MF)	8.892 DU/Acre
New Single Family Service	48.4	(48% of New HHs)	8.6	(75% of New HHs)	5.654 DU/Acre
New Multi Family Service	53.2	(52% of New HHs)	2.9	(25% of New HHs)	18.536 DU/Acre
Service at the end of HDSD Comp. Plan	648.8	(58% of Ultimate)	85.1	(Existing & New)	7.624 DU/Acre
Single Family Service - end of Comp. Plan	303.0	(47% of Projected)	63.3	(74% of Projected)	4.786 DU/Acre
Multi Family Service - end of Comp. Plan	345.7	(53% of Projected)	21.8	(26% of Projected)	15.878 DU/Acre



	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	20.0	0.0		
	Actual Rate	0.26%	0.73%		0.59%	0.59%	Ultimate	470.2	50.0	39.0		
	Projected Rate	0.33%	0.85%		0.74%	0.72%	Buildout %	5%	60%	50%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	547.2	254.7	292.5	73.7	54.8	18.9	1997	1.00	20.00	0.04		
1	551.2	256.5	294.6	74.1	55.1	19.0	1998	1.17	20.41	0.05		
2	555.2	258.4	296.8	74.5	55.4	19.1	1999	1.37	20.83	0.07		
3	560.1	260.8	299.3	75.1	55.8	19.3	2000	1.61	21.25	0.10		
4	565.1	263.2	301.9	75.6	56.2	19.4	2001	1.88	21.69	0.14		
5	570.1	265.7	304.4	76.2	56.7	19.5	2002	2.20	22.13	0.19		
6	575.1	268.1	307.0	76.8	57.1	19.7	2003	2.58	22.59	0.26		
7	580.2	270.5	309.6	77.3	57.5	19.8	2004	3.02	23.05	0.35		
8	585.3	273.0	312.3	77.9	57.9	20.0	2005	3.54	23.52	0.48		
9	590.4	275.4	314.9	78.5	58.4	20.1	2006	4.14	24.00	0.65		
10	595.5	277.9	317.6	79.1	58.8	20.3	2007	4.85	24.49	0.88		
11	600.7	280.4	320.3	79.6	59.2	20.4	2008	5.68	25.00	1.20		
12	605.9	282.9	323.1	80.2	59.7	20.6	2009	6.65	25.51	1.64		
13	611.2	285.4	325.8	80.8	60.1	20.7	2010	7.79	26.03	2.23		
14	616.4	287.9	328.6	81.4	60.6	20.9	2011	9.12	26.56	3.05		
15	621.8	290.4	331.4	82.0	61.0	21.0	2012	10.68	27.11	4.15		
16	627.1	292.9	334.2	82.6	61.5	21.2	2013	12.50	27.66	5.66		
17	632.5	295.4	337.1	83.2	61.9	21.3	2014	14.64	28.23	7.71		
18	637.9	297.9	339.9	83.9	62.4	21.5	2015	17.14	28.81	10.50		
19	643.3	300.5	342.8	84.5	62.9	21.6	2016	20.08	29.40	14.31		
20	648.8	303.0	345.7	85.1	63.3	21.8	2017	23.51	30.00	19.50		
Ultimate	1120.05	653.06	466.99	202.00	169.00	33.00		470.2	50.0	39.0		

Average Domestic Flow (gpd) Without Industrial						
UH/UR*	SF	MF	Comm	Schools	Parks	
250	63,666	73,127	24,000			
293	64,132	73,658	24,492			
343	64,598	74,193	24,993			
401	65,201	74,826	25,505			
470	65,806	75,463	26,027			
550	66,413	76,106	26,560			
645	67,022	76,755	27,104			
755	67,633	77,409	27,659			
884	68,246	78,068	28,226			
1,035	68,860	78,733	28,804			
1,212	69,477	79,404	29,394			
1,419	70,096	80,081	29,996			
1,662	70,718	80,763	30,610			
1,946	71,341	81,451	31,237			
2,279	71,966	82,145	31,877			
2,669	72,593	82,845	32,530			
3,126	73,223	83,551	33,196			
3,660	73,854	84,263	33,876			
4,286	74,487	84,981	34,570			
5,019	75,123	85,705	35,278			
5,877	75,761	86,436	36,000			
117,547	163,265	116,749	60,000			

Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
1194.9	161,043	3.75	603,719	72	72		0.604
1204.0	162,574	3.75	609,094	98	98		0.609
1213.3	164,128	3.74	614,543	134	134		0.615
1224.7	165,933	3.74	620,841	182	182		0.621
1236.3	167,766	3.74	627,231	248	248		0.627
1248.0	169,630	3.74	633,719	338	338		0.634
1260.0	171,525	3.73	640,311	461	461		0.641
1272.2	173,455	3.73	647,016	628	628		0.648
1284.6	175,424	3.73	653,845	856	856		0.655
1297.3	177,433	3.72	660,807	1,167	1,167		0.662
1310.4	179,488	3.72	667,917	1,590	1,590		0.670
1323.8	181,593	3.72	675,190	2,166	2,166		0.677
1337.6	183,753	3.71	682,642	2,952	2,952		0.686
1351.9	185,976	3.71	690,295	4,023	4,023		0.694
1366.8	188,267	3.71	698,173	5,482	5,482		0.704
1382.2	190,637	3.70	706,302	7,470	7,470		0.714
1398.5	193,095	3.70	714,716	10,179	10,179		0.725
1415.5	195,653	3.70	723,450	13,871	13,871		0.737
1433.6	198,324	3.69	732,549	18,902	18,902		0.751
1452.8	201,125	3.69	742,062	25,758	25,758		0.768
1473.3	204,074	3.69	752,049	35,100	35,100		0.787
2519.9	457,560	3.51	1,604,035	70,200	70,200		1.674

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

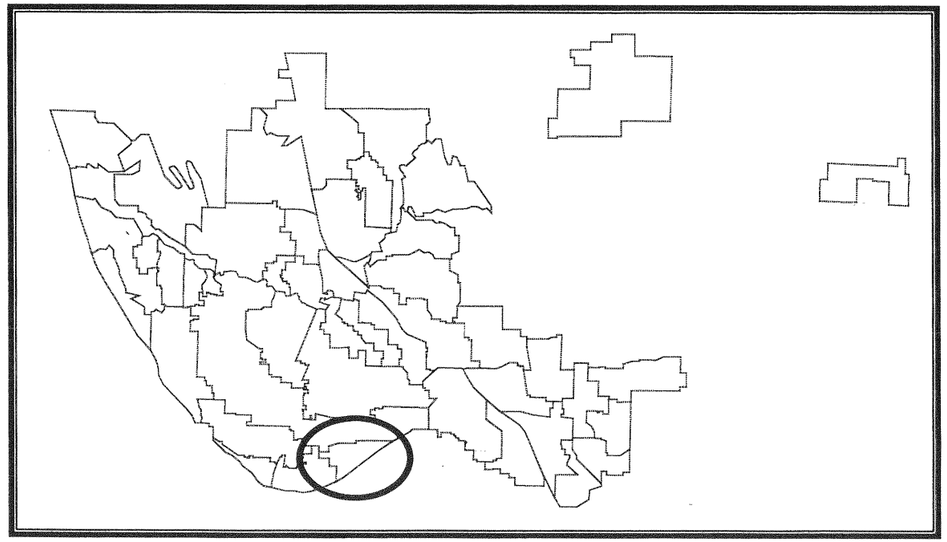
***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates	
	Ex. Connection Date 12/31/1996
	Updated Connection Date 1/1/1999
	Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **45**

MINNEHAHA



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	2.0	(0% of Ultimate)	1.3	(Average Densities)	1.601 DU/Acre
Existing Single Family Served	1.0	(50% of Exist.)	0.3	(20% of Exist.)	4.002 DU/Acre
Existing Multi Family Served	1.0	(50% of Exist.)	1.0	(80% of Exist.)	1.001 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	6.0	(1% of Ultimate Service)	3.7	(2.35% of Ultimate)	1.617 DU/Acre
New/Updated Single Family Served (est.)	3.0	(50% of New HHs)	0.8	(21% of New HHs)	3.801 DU/Acre
New/Updated Multi Family Served (est.)	3.0	(50% of New HHs)	2.9	(79% of New HHs)	1.026 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	732.9		158.0	(Proposed Densities)	4.639 DU/Acre
Ultimate Single Family Served	416.0	(57% of Ultimate)	119.0	(75% of Ultimate)	3.496 DU/Acre
Ultimate Multi Family Served	316.9	(43% of Ultimate)	39.0	(25% of Ultimate)	8.126 DU/Acre
Ultimate UH/UR Served					
New Service During the Comp. Plan	258.3	(35% of Ultimate SF & MF)	96.9	(61% of Ultimate SF & MF)	2.666 DU/Acre
New Single Family Service	135.3	(52% of New HHs)	52.2	(54% of New HHs)	2.590 DU/Acre
New Multi Family Service	123.0	(48% of New HHs)	44.6	(46% of New HHs)	2.755 DU/Acre
Service at the end of HDSD Comp. Plan	260.3	(36% of Ultimate)	98.1	(Existing & New)	2.653 DU/Acre
Single Family Service - end of Comp. Plan	136.3	(52% of Projected)	52.5	(53% of Projected)	2.597 DU/Acre
Multi Family Service - end of Comp. Plan	124.0	(48% of Projected)	45.6	(47% of Projected)	2.717 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0		0.0		
	Actual Rate	0.63%	99.78%		103.87%	97.88%	Ultimate	235.0		50.0		
	Projected Rate	2.48%	21.03%		24.34%	14.61%	Buildout %	10%		30%		
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	2.0	1.0	1.0	1.3	0.3	1.0	1997	1.00		0.04		
1	4.5	2.5	2.0	2.5	0.5	2.0	1998	1.17		0.05		
2	8.0	4.0	4.0	5.0	1.0	3.9	1999	1.37		0.07		
3	14.8	9.9	4.8	5.8	1.3	4.5	2000	1.61		0.10		
4	21.8	16.0	5.9	6.8	1.6	5.1	2001	1.88		0.13		
5	29.3	22.2	7.1	7.9	2.0	5.9	2002	2.20		0.18		
6	37.2	28.6	8.6	9.2	2.5	6.8	2003	2.58		0.24		
7	45.5	35.1	10.4	10.8	3.1	7.8	2004	3.02		0.32		
8	54.4	41.8	12.6	12.7	3.8	8.9	2005	3.54		0.43		
9	63.9	48.7	15.2	15.0	4.8	10.2	2006	4.14		0.58		
10	74.1	55.7	18.4	17.6	5.9	11.7	2007	4.85		0.77		
11	85.2	62.9	22.3	20.8	7.4	13.4	2008	5.68		1.04		
12	97.2	70.3	26.9	24.5	9.2	15.3	2009	6.65		1.40		
13	110.5	77.8	32.6	29.0	11.4	17.6	2010	7.78		1.88		
14	125.1	85.6	39.5	34.3	14.2	20.1	2011	9.12		2.53		
15	141.3	93.5	47.8	40.7	17.7	23.1	2012	10.67		3.41		
16	159.5	101.7	57.8	48.4	22.0	26.5	2013	12.50		4.58		
17	180.0	110.0	70.0	57.6	27.3	30.3	2014	14.64		6.17		
18	203.2	118.6	84.7	68.7	34.0	34.7	2015	17.14		8.29		
19	229.8	127.3	102.5	81.2	42.2	39.0	2016	20.07		11.15		
20	260.3	136.3	124.0	91.5	52.5	39.0	2017	23.50		15.00		
Ultimate	732.91	416.01	316.90	158.00	119.00	39.00		235.0		50.0		

Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow	Total (mgd)
UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		
250	250	250				6.9	750	4.43	3,323	72	72		0.003
293	624	500				13.0	1,417	4.40	6,237	97	97		0.006
343	1,000	998				21.0	2,342	4.38	10,251	130	130		0.010
401	2,480	1,209				38.0	4,090	4.34	17,741	175	175		0.018
470	3,997	1,463				55.8	5,930	4.30	25,529	236	236		0.026
550	5,552	1,771				74.5	7,873	4.28	33,670	317	317		0.034
645	7,145	2,143				94.2	9,933	4.25	42,223	426	426		0.043
755	8,778	2,594				115.0	12,127	4.23	51,255	573	573		0.052
884	10,452	3,139				137.2	14,475	4.20	60,844	771	771		0.062
1,035	12,167	3,800				160.9	17,001	4.18	71,083	1,037	1,037		0.072
1,212	13,924	4,598				186.3	19,735	4.16	82,078	1,394	1,394		0.083
1,419	15,725	5,565				213.7	22,710	4.14	93,958	1,875	1,875		0.096
1,662	17,571	6,735				243.5	25,968	4.12	106,875	2,522	2,522		0.109
1,946	19,462	8,152				276.0	29,560	4.09	121,007	3,392	3,392		0.124
2,279	21,400	9,865				311.8	33,544	4.07	136,569	4,562	4,562		0.141
2,669	23,386	11,940				351.3	37,995	4.05	153,814	6,136	6,136		0.160
3,125	25,421	14,450				395.3	42,997	4.02	173,045	8,252	8,252		0.181
3,659	27,507	17,488				444.6	48,655	4.00	194,618	11,098	11,098		0.206
4,285	29,645	21,166				500.2	55,096	3.97	218,958	14,927	14,927		0.234
5,018	31,835	25,616				563.2	62,469	3.95	246,570	20,075	20,075		0.267
5,876	34,080	31,002				635.2	70,958	3.92	278,048	27,000	27,000		0.305
58,762	104,003	79,225				1642.1	241,990	3.65	883,453	90,000	90,000		0.973

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

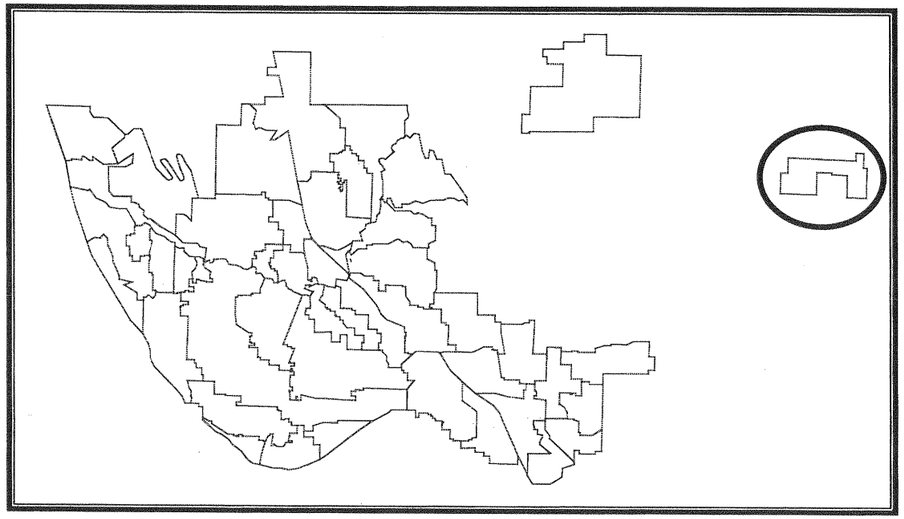
HDSD Basin Summary

Basin Number **46**

HOCKINSON

Updates	
Ex. Connection Date	12/31/1996
Updated Connection Date	1/1/1999
Number of Years incl'd in Update	2.0014

	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	1.0	(1% of Ultimate)	0.3	(Average Densities)	4.003 DU/Acre
Existing Single Family Served	1.0	(100% of Exist.)	0.3	(100% of Exist.)	4.003 DU/Acre
Existing Multi Family Served					
Existing UH/UR Served					
New Service thru the updated connections	3.2	(3% of Ultimate Service)	0.8	(0.50% of Ultimate)	3.935 DU/Acre
New/Updated Single Family Served (est.)	3.2	(100% of New HHs)	0.8	(100% of New HHs)	3.935 DU/Acre
New/Updated Multi Family Served (est.)					
Ultimate Service (75% of Undev. & Ex. Dev.)	120.6		358.3	(Proposed Densities)	0.336 DU/Acre
Ultimate Single Family Served	97.3	(81% of Ultimate)	164.0	(46% of Ultimate)	0.593 DU/Acre
Ultimate Multi Family Served					
Ultimate UH/UR Served	23.3	(19% of Ultimate)	194.3	(54% of Ultimate)	0.120 DU/Acre
New Service During the Comp. Plan	81.6	(84% of Ultimate SF & MF)	53.4	(33% of Ultimate SF & MF)	1.530 DU/Acre
New Single Family Service	81.6	(100% of New HHs)	53.4	(100% of New HHs)	1.530 DU/Acre
New Multi Family Service					
Service at the end of HDSD Comp. Plan	82.6	(69% of Ultimate)	53.6	(Existing & New)	1.541 DU/Acre
Single Family Service - end of Comp. Plan	82.6		53.6		1.541 DU/Acre
Multi Family Service - end of Comp. Plan					



	Residential Land Served						Non-Residential Land & Septic Served						Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed		Subtotal
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	5.0		1369.0	0.0															
Actual Rate	0.20%			106.11%			Ultimate	798.0	26.9		1600.0	7.1															
Projected Rate	0.52%			24.34%			Buildout %	10%	70%		100%	80%															
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind	Flow	Total (mgd)	Unpeaked
	1.0	1.0		0.3	0.3		1997	1.00	5.00		1369.00	0.04	250	250		6,000	13,690	18	5.0	20,208	4.44	89,708				0.090	20,208
1	2.6	2.6		0.5	0.5		1998	1.24	5.34		1379.71	0.05	311	650		6,411	13,797	23	9.6	21,192	4.42	93,590				0.094	21,192
2	4.2	4.2		1.1	1.1		1999	1.55	5.71		1390.51	0.07	387	1,050		6,850	13,905	30	14.4	22,222	4.40	97,736				0.098	22,222
3	8.4	8.4		1.3	1.3		2000	1.93	6.10		1401.40	0.08	482	2,091		7,320	14,014	38	25.7	23,945	4.37	104,519				0.105	23,945
4	12.6	12.6		1.6	1.6		2001	2.40	6.52		1412.36	0.11	600	3,139		7,821	14,124	48	37.4	25,732	4.34	111,641				0.112	25,732
5	16.8	16.8		2.0	2.0		2002	2.99	6.96		1423.42	0.14	747	4,192		8,357	14,234	62	49.4	27,592	4.32	119,081				0.119	27,592
6	21.0	21.0		2.5	2.5		2003	3.72	7.44		1434.56	0.18	930	5,250		6,929	14,346	79	61.8	29,535	4.30	126,858				0.127	29,535
7	25.3	25.3		3.2	3.2		2004	4.63	7.95		1445.79	0.23	1,158	6,315		9,541	14,458	102	74.7	31,573	4.28	135,010				0.135	31,573
8	29.5	29.5		3.9	3.9		2005	5.77	8.50		1457.10	0.29	1,441	7,384		10,195	14,571	130	88.3	33,722	4.26	143,587				0.144	33,722
9	33.8	33.8		4.9	4.9		2006	7.18	9.08		1468.51	0.37	1,794	8,459		10,893	14,685	167	102.5	35,999	4.24	152,655				0.153	35,999
10	38.2	38.2		6.1	6.1		2007	8.93	9.70		1480.00	0.48	2,233	9,540		11,639	14,800	214	117.7	38,427	4.22	162,295				0.162	38,427
11	42.5	42.5		7.5	7.5		2008	11.12	10.36		1491.58	0.61	2,780	10,626		12,437	14,916	274	134.1	41,033	4.21	172,605				0.173	41,033
12	46.9	46.9		9.4	9.4		2009	13.84	11.07		1503.26	0.78	3,461	11,719		13,289	15,033	351	151.8	43,851	4.19	183,709				0.184	43,851
13	51.3	51.3		11.7	11.7		2010	17.23	11.83		1515.02	1.00	4,308	12,816		14,199	15,150	450	171.2	46,923	4.17	195,756				0.196	46,923
14	55.7	55.7		14.5	14.5		2011	21.45	12.64		1526.88	1.28	5,362	13,920		15,172	15,269	576	192.8	50,299	4.15	208,929				0.209	50,299
15	60.1	60.1		18.0	18.0		2012	26.70	13.51		1538.83	1.64	6,675	15,029		16,211	15,388	738	217.0	54,041	4.13	223,454				0.223	54,041
16	64.6	64.6		22.4	22.4		2013	33.24	14.43		1550.87	2.10	8,309	16,144		17,322	15,509	945	244.5	58,228	4.11	239,605				0.240	58,228
17	69.1	69.1		27.9	27.9		2014	41.37	15.42		1563.01	2.69	10,343	17,264		18,509	15,630	1,210	276.1	62,956	4.09	257,720				0.258	62,956
18	73.6	73.6		34.7	34.7		2015	51.50	16.48		1575.25	3.44	12,875	18,391		19,777	15,752	1,550	312.7	68,345	4.07	278,216				0.278	68,345
19	78.1	78.1		43.1	43.1		2016	64.11	17.61		1587.57	4.41	16,027	19,523		21,132	15,876	1,985	355.5	74,543	4.05	301,599				0.302	74,543
20	82.6	82.6		53.6	53.6		2017	79.80	18.82		1600.00	5.65	19,951	20,662		22,579	16,000	2,543	406.1	81,734	4.02	328,491				0.328	81,734
Ultimate	120.56	97.29		358.34	164.01			798.0	26.9		1600.0	7.1	205,323	24,323		32,256	16,000	3,179	243.2	281,080	4.12	1,156,879				1.157	

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

Updates

Ex. Connection Date 12/31/1996

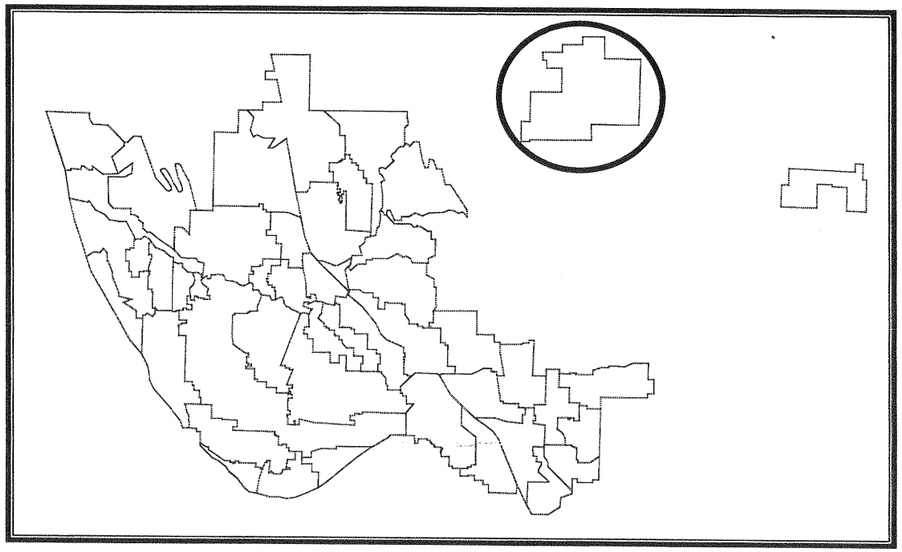
Updated Connection Date 1/1/1999

Number of Years incl'd in Update 2.0014

HDSD Basin Summary

Basin Number **47**

MEADOW GLADE



	Households		Area (Acres)		Dwelling Units/Acre
Existing Service	306.0	(25% of Ultimate)	306.0	(Average Densities)	1.000 DU/Acre
Existing Single Family Served	305.0	(100% of Exist.)	305.0	(100% of Exist.)	1.000 DU/Acre
Existing Multi Family Served	1.0	(0% of Exist.)	1.0	(0% of Exist.)	1.000 DU/Acre
Existing UH/UR Served					
New Service thru the updated connections	74.0	(6% of Ultimate Service)	73.2	(6.44% of Ultimate)	1.011 DU/Acre
New/Updated Single Family Served (est.)	72.3	(98% of New HHs)	72.8	(99% of New HHs)	0.994 DU/Acre
New/Updated Multi Family Served (est.)	1.7	(2% of New HHs)	0.4	(1% of New HHs)	4.337 DU/Acre
Ultimate Service (75% of Undev. & Ex. Dev.)	1236.7		1292.7	(Proposed Densities)	0.957 DU/Acre
Ultimate Single Family Served	831.1	(67% of Ultimate)	1099.1	(85% of Ultimate)	0.756 DU/Acre
Ultimate Multi Family Served	385.8	(31% of Ultimate)	38.0	(3% of Ultimate)	10.151 DU/Acre
Ultimate UH/UR Served	19.8	(2% of Ultimate)	155.6	(12% of Ultimate)	0.128 DU/Acre
New Service During the Comp. Plan	582.1	(48% of Ultimate SF & MF)	589.7	(52% of Ultimate SF & MF)	0.987 DU/Acre
New Single Family Service	492.9	(85% of New HHs)	578.5	(98% of New HHs)	0.852 DU/Acre
New Multi Family Service	89.3	(15% of New HHs)	11.1	(2% of New HHs)	8.009 DU/Acre
Service at the end of HDSD Comp. Plan	888.2	(72% of Ultimate)	895.7	(Existing & New)	0.992 DU/Acre
Single Family Service - end of Comp. Plan	797.9	(90% of Projected)	883.5	(99% of Projected)	0.903 DU/Acre
Multi Family Service - end of Comp. Plan	90.3	(10% of Projected)	12.1	(1% of Projected)	7.432 DU/Acre

	Residential Land Served						Non-Residential Land & Septic Served					
	Annual Population Growth Rates(HHs)			Annual Service Growth Rates(Area)			Existing	1.0	0.0	0.0	456.0	0.0
Actual Rate	4.08%	62.84%		11.29%	17.51%		Ultimate	564.0	13.1	8.6	548.0	4.0
Projected Rate	2.07%	21.65%		4.83%	12.84%		Buildout %	10%	70%	40%	100%	100%
Year	Total HHs	SF	MF	Total Area	SF	MF	Year	Septic	Comm	Industrial	Schools	Parks
	306.0	305.0	1.0	306.0	305.0	1.0	1997	1.00	0.04	0.04	456.00	0.04
1	342.1	340.5	1.6	340.6	339.4	1.2	1998	1.22	0.05	0.05	460.21	0.05
2	380.0	377.3	2.7	379.1	377.8	1.4	1999	1.50	0.07	0.06	464.46	0.06
3	400.1	396.9	3.2	397.6	396.0	1.6	2000	1.83	0.09	0.08	468.75	0.08
4	420.7	416.8	3.9	416.9	415.2	1.8	2001	2.24	0.12	0.10	473.07	0.10
5	441.9	437.1	4.8	437.2	435.3	2.0	2002	2.74	0.16	0.12	477.44	0.13
6	463.7	457.9	5.8	458.5	456.3	2.2	2003	3.35	0.20	0.15	481.85	0.16
7	486.1	479.1	7.1	480.9	478.3	2.5	2004	4.10	0.27	0.19	486.30	0.20
8	509.3	500.7	8.6	504.3	501.5	2.9	2005	5.02	0.35	0.24	490.78	0.25
9	533.2	522.8	10.5	528.9	525.7	3.2	2006	6.14	0.46	0.30	495.32	0.32
10	558.0	545.3	12.7	554.7	551.1	3.6	2007	7.51	0.61	0.37	499.89	0.40
11	583.8	568.3	15.5	581.8	577.7	4.1	2008	9.19	0.79	0.46	504.50	0.51
12	610.6	591.8	18.8	610.3	605.7	4.6	2009	11.24	1.04	0.58	509.16	0.64
13	638.6	615.7	22.9	640.1	634.9	5.2	2010	13.75	1.37	0.73	513.86	0.80
14	668.0	640.2	27.9	671.5	665.6	5.9	2011	16.82	1.79	0.91	518.60	1.01
15	699.0	665.1	33.9	704.4	697.8	6.6	2012	20.58	2.35	1.13	523.39	1.27
16	731.8	690.6	41.2	739.0	731.5	7.5	2013	25.18	3.09	1.42	528.22	1.60
17	766.8	716.6	50.1	775.3	766.9	8.5	2014	30.80	4.05	1.77	533.10	2.02
18	804.2	743.2	61.0	813.5	803.9	9.5	2015	37.68	5.32	2.21	538.02	2.55
19	844.5	770.3	74.2	853.5	842.8	10.8	2016	46.10	6.98	2.77	542.99	3.21
20	888.2	797.9	90.3	895.7	883.5	12.1	2017	56.40	9.16	3.46	548.00	4.04

	Average Domestic Flow (gpd) Without Industrial						Domestic Flow Summary (gpd)				Industrial Flow*** (gpd)		Fixed Flow		Subtotal
	UH/UR*	SF	MF	Comm	Schools	Parks	Population	Subtotal	PF**	Peaked Dom	Flow	Peaked Ind		Total (mgd)	Unpeaked
	250	76,261	250	48	4,560	18	767.0	81,387	3.87	315,076	72	72		0.315	81,459
1	306	85,117	407	63	4,602	23	857.3	90,518	3.84	347,781	90	90		0.348	90,608
2	374	94,335	663	83	4,645	29	952.1	100,128	3.81	381,851	112	112		0.382	100,240
3	458	99,220	807	108	4,687	36	1002.9	105,316	3.80	400,115	141	141		0.400	105,457
4	560	104,199	981	142	4,731	45	1055.1	110,659	3.78	418,831	176	176		0.419	110,835
5	685	109,282	1,194	187	4,774	57	1108.7	116,179	3.77	438,071	220	220		0.438	116,399
6	838	114,470	1,452	245	4,818	72	1164.1	121,896	3.76	457,900	274	274		0.458	122,171
7	1,025	119,766	1,767	321	4,863	91	1221.3	127,833	3.74	478,394	343	343		0.479	128,176
8	1,254	125,172	2,149	422	4,908	114	1280.6	134,019	3.73	499,647	428	428		0.500	134,448
9	1,535	130,689	2,614	553	4,953	144	1342.1	140,489	3.71	521,771	536	536		0.522	141,024
10	1,878	136,321	3,180	726	4,999	181	1406.2	147,285	3.70	544,907	669	669		0.546	147,954
11	2,297	142,070	3,869	953	5,045	228	1473.1	154,462	3.69	569,227	836	836		0.570	155,298
12	2,810	147,938	4,706	1,250	5,092	287	1543.2	162,083	3.67	594,942	1,045	1,045		0.596	163,129
13	3,438	153,928	5,725	1,641	5,139	361	1617.2	170,231	3.66	622,314	1,306	1,306		0.624	171,537
14	4,206	160,041	6,964	2,153	5,186	455	1695.4	179,005	3.64	651,665	1,633	1,633		0.653	180,638
15	5,145	166,282	8,472	2,825	5,234	573	1778.7	188,531	3.62	683,394	2,040	2,040		0.685	190,571
16	6,295	172,651	10,306	3,706	5,282	722	1867.8	198,963	3.61	717,996	2,550	2,550		0.721	201,513
17	7,701	179,153	12,537	4,863	5,331	910	1963.8	210,495	3.59	756,084	3,187	3,187		0.759	213,682
18	9,421	185,790	15,251	6,381	5,380	1,146	2068.0	223,369	3.57	798,420	3,983	3,983		0.802	227,352
19	11,525	192,564	18,552	8,373	5,430	1,443	2181.9	237,888	3.56	845,949	4,978	4,978		0.851	242,865
20	14,100	199,479	22,568	10,987	5,480	1,817	2307.3	254,431	3.54	899,647	6,221	6,221		0.906	260,652
Ultimate	1236.74	831.15	385.75	1292.69	1099.07	38.00	564.0	13.1	8.6	548.0	4.0	145,963	207,787	96,438	15,696	5,480	1,817	2810.8	473,181	3.47	1,640,182	15,552	15,552		1.656

*Includes Septic Tank conversions within the Urban Growth Area; **Peaking factor includes normal I/I flows.

***Industrial flows are peaked separately using a peaking factor of 1.00.

IX. Miscellaneous Information

Total Projected Sewage flow from the Hazel Dell Sewer District Service Area*

Time Frame		Total for Hazel Dell Sewer District				Tributary to SCWWTP				Tributary to VWWTP			
Year	Date	ERUs	Population	Peak Flow gal/day	Average Flow gal/day	ERUs	Population	Peak Flow gal/day	Average Flow gal/day	ERUs	Population	Peak Flow gal/day	Average Flow gal/day
0	1/1/1997	21,267	39,971	12,525,189	5,316,815	17,409	31,788	10,114,244	4,352,350	3,858	8,183	2,932,300	964,465
1	1/1/1998	22,257	42,044	13,116,092	5,564,155	18,355	33,777	10,677,870	4,588,749	3,902	8,267	2,961,196	975,406
2	1/1/1999	23,328	44,288	13,755,931	5,832,001	19,381	35,933	11,289,397	4,845,229	3,947	8,355	2,991,141	986,772
3	1/1/2000	24,201	45,835	14,238,822	6,050,136	20,203	37,380	11,740,778	5,050,704	3,998	8,455	2,024,269	999,432
4	1/1/2001	25,026	47,433	14,719,463	6,256,609	20,977	38,876	12,189,228	5,244,224	4,050	8,557	3,058,045	1,012,385
5	1/1/2002	25,890	49,086	15,219,873	6,472,433	21,787	40,425	12,656,702	5,446,772	4,103	8,661	3,092,530	1,025,661
6	1/1/2003	26,795	50,800	15,742,123	6,698,697	22,638	42,033	13,145,196	5,659,394	4,157	8,767	3,127,802	1,039,303
7	1/1/2004	27,747	52,580	16,288,737	6,936,733	23,533	43,704	13,657,136	5,883,372	4,213	8,876	3,163,957	1,053,361
8	1/1/2005	28,753	54,433	16,862,821	7,188,201	24,481	45,446	14,195,511	6,120,300	4,272	8,987	3,201,113	1,067,901
9	1/1/2006	29,814	56,351	17,464,195	7,453,567	25,482	47,250	14,759,994	6,370,565	4,332	9,101	3,239,413	1,083,002
10	1/1/2007	30,947	58,356	18,100,736	7,736,693	26,552	49,137	15,358,285	6,637,922	4,395	9,219	3,279,038	1,098,771
11	1/1/2008	32,166	60,463	18,779,660	8,041,412	27,704	51,123	15,997,375	6,926,074	4,461	9,340	3,320,211	1,115,338
12	1/1/2009	33,472	62,647	19,498,417	8,367,992	28,940	53,180	16,674,434	7,235,115	4,532	9,467	3,363,212	1,132,877
13	1/1/2010	34,891	64,927	20,268,238	8,722,693	30,284	55,330	17,100,341	7,571,085	4,606	9,597	3,408,393	1,151,608
14	1/1/2011	36,469	67,366	21,112,440	9,117,304	31,782	57,632	18,197,969	7,945,489	4,687	9,734	3,456,200	1,171,815
15	1/1/2012	38,251	69,992	22,049,781	9,562,806	33,476	60,115	19,085,512	8,368,935	4,775	9,877	3,507,195	1,193,871
16	1/1/2013	40,279	72,799	23,094,139	10,069,709	35,406	62,771	20,076,130	8,851,446	4,873	10,028	3,562,099	1,218,263
17	1/1/2014	42,589	75,715	24,250,529	10,647,164	37,606	65,527	21,173,919	9,401,538	4,983	10,188	3,621,828	1,245,626
18	1/1/2015	45,355	78,945	25,601,690	11,338,659	40,247	68,588	22,460,438	10,061,861	5,107	10,357	3,687,561	1,276,798
19	1/1/2016	48,747	82,578	27,216,053	12,186,792	43,496	72,039	24,002,599	10,873,911	5,252	10,539	3,760,816	1,312,881
20	1/1/2017	53,008	86,720	29,188,239	13,251,876	47,586	75,985	25,893,056	11,896,543	5,421	10,735	3,873,554	1,355,333
	Ultimate	96,679	131,331	54,905,940	24,169,765	86,915	115,030	49,043,934	21,728,843	9,764	16,301	6,413,580	2,440,922

*Includes Hockinson and Meadow Glade

Time Frame		Projections						Actual[5]	
		HDSD[1]		Battle Ground[2]		SCWWTP[4]		SCWWTP	
Year	Date	Population	Average Flow gal/day	Population	Average Flow gal/day[3]	Population	Average Flow gal/day	Average Flow gal/day	% Error
0	1/1/1997	31,788	4,352,350	8,225	1,135,394	40,013	5,487,744	5,750,532	4.6%
1	1/1/1998	33,777	4,588,749	8,900	1,228,610	42,677	5,817,359	5,861,879	0.8%
2	1/1/1999	35,933	4,845,229	9,631	1,297,777	45,564	6,143,006		
3	1/1/2000	37,380	5,050,704	10,421	1,372,623	47,801	6,423,327		
4	1/1/2001	38,876	5,244,224	11,277	1,453,613	50,153	6,697,837		
5	1/1/2002	40,425	5,446,772	12,203	1,541,253	52,628	6,988,025		
6	1/1/2003	42,033	5,659,394	13,205	1,636,089	55,238	7,295,483		
7	1/1/2004	43,704	5,883,372	14,289	1,738,710	57,993	7,622,082		
8	1/1/2005	45,446	6,120,300	15,462	1,849,756	60,908	7,970,056		
9	1/1/2006	47,250	6,370,565	16,731	1,969,920	63,981	8,340,485		
10	1/1/2007	49,137	6,637,922	18,105	2,099,949	67,242	8,737,871		
11	1/1/2008	51,123	6,926,074	19,591	2,240,653	70,714	9,166,727		
12	1/1/2009	53,180	7,235,115	21,200	2,392,909	74,380	9,628,024		
13	1/1/2010	55,330	7,571,085	22,940	2,557,665	78,270	10,128,750		
14	1/1/2011	57,632	7,945,489	24,824	2,735,947	82,456	10,681,436		
15	1/1/2012	60,115	8,368,935	26,862	2,928,867	86,977	11,297,802		
16	1/1/2013	62,771	8,851,446	29,067	3,137,625	91,838	11,989,071		
17	1/1/2014	65,527	9,401,538	31,453	3,363,523	96,980	12,765,061		
18	1/1/2015	68,588	10,061,861	34,036	3,607,966	102,624	13,669,827		
19	1/1/2016	72,039	10,873,911	36,830	3,872,479	108,869	14,746,390		
20	1/1/2017	75,985	11,896,543	39,854	4,158,708	115,839	16,055,251		
	Ultimate/2018[6]	115,030	21,728,843	43,126	4,468,436	158,156	26,197,279		

[1] *Flow for HDSD is based on TAZ/ERU model created to project flows through the duration of the General Sewer Plan*

[2] *Projected population from the 1998 General Sewer Plan for the City of Battle Ground*

[3] *Battle Ground projects flows as WWADF. Average daily flows shown are derived from Battle Ground projections divided by a WWADF to DWADF factor.*

[4] *SCWWTP projections are based on adding HDSD and Battle Ground flows.*

[5] *Actual flows are influent flows measured at the SCWWTP.*

[6] *Ultimate value for HDSD; 2018 value for Battle Ground.*

Total Salmon Creek Treatment Plant (including Battle Ground, Hockinson, & Meadow Glade)

	1995		1996		1997		1998		Average	Maximum	Ratio
	Flow	PF	Flow	PF	Flow	PF	Flow	PF	PF	PF	WW/DW
DW Average Daily Flow	4.29 mgd	0.86	4.79 mgd	0.85	5.09 mgd	0.89	5.19 mgd	0.89	0.87	0.89	1.29
Average Daily Flow	4.96 mgd	1.00	5.64 mgd	1.00	5.75 mgd	1.00	5.86 mgd	1.00	1.00	1.00	
WW Average Daily Flow	5.53 mgd	1.12	6.50 mgd	1.15	6.47 mgd	1.13	6.54 mgd	1.12	1.13	1.15	
Maximum 30-Days	6.80 mgd	1.37	7.70 mgd	1.37	7.68 mgd	1.34	7.47 mgd	1.27	1.34	1.37	
Maximum 7-Day	7.57 mgd	1.52	9.71 mgd	1.72	9.13 mgd	1.59	8.26 mgd	1.41	1.56	1.72	
Maximum Day	8.31 mgd	1.67	11.73 mgd	2.08	9.65 mgd	1.68	9.78 mgd	1.67	1.78	2.08	

Salmon Creek Treatment Plant Base Flow (excluding Battle Ground, Hockinson, Meadow Glade)

	1995		1996		1997		1998		Average	Maximum	Ratio
	Flow	PF	Flow	PF	Flow	PF	Flow	PF	PF	PF	WW/DW
DW Average Daily Flow	3.45 mgd	0.90	3.91 mgd	0.88	4.20 mgd	0.92	4.31 mgd	0.92	0.90	0.92	1.21
Average Daily Flow	3.85 mgd	1.00	4.47 mgd	1.00	4.57 mgd	1.00	4.67 mgd	1.00	1.00	1.00	
WW Average Daily Flow	4.18 mgd	1.09	5.04 mgd	1.13	4.99 mgd	1.09	5.04 mgd	1.08	1.10	1.13	
Maximum 30-Days	4.92 mgd	1.28	5.93 mgd	1.33	6.20 mgd	1.36	5.45 mgd	1.17	1.28	1.36	
Maximum 7-Day	5.79 mgd	1.51	8.04 mgd	1.80	7.78 mgd	1.70	6.39 mgd	1.37	1.59	1.80	
Maximum Day	6.70 mgd	1.74	9.78 mgd	2.19	7.69 mgd	1.68	7.65 mgd	1.64	1.87	2.19	

Battle Ground Flows

	1995		1996		1997		1998		Average	Maximum	Ratio
	Flow	PF	Flow	PF	Flow	PF	Flow	PF	PF	PF	WW/DW
DW Average Daily Flow	0.75 mgd	0.73	0.79 mgd	0.73	0.80 mgd	0.73	0.78 mgd	0.72	0.73	0.73	1.74
Average Daily Flow	1.04 mgd	1.00	1.08 mgd	1.00	1.09 mgd	1.00	1.09 mgd	1.00	1.00	1.00	
WW Average Daily Flow	1.27 mgd	1.23	1.37 mgd	1.27	1.40 mgd	1.28	1.40 mgd	1.29	1.27	1.29	
Maximum 30-Days	1.78 mgd	1.72	1.81 mgd	1.68	1.67 mgd	1.53	1.90 mgd	1.74	1.67	1.74	
Maximum 7-Day	2.19 mgd	2.11	1.99 mgd	1.85	1.89 mgd	1.73	2.01 mgd	1.84	1.88	2.11	
Maximum Day	2.31 mgd	2.23	2.12 mgd	1.96	2.06 mgd	1.89	2.24 mgd	2.06	2.04	2.23	

Hockinson & Meadow Glade

	1995		1996		1997		1998		Average	Maximum	Ratio
	Flow	PF	Flow	PF	Flow	PF	Flow	PF	PF	PF	WW/DW
DW Average Daily Flow	0.09 mgd	1.06	0.09 mgd	0.98	0.09 mgd	1.02	0.10 mgd	1.02	1.02	1.06	0.97
Average Daily Flow	0.08 mgd	1.00	0.09 mgd	1.00	0.09 mgd	1.00	0.10 mgd	1.00	1.00	1.00	
WW Average Daily Flow	0.08 mgd	0.94	0.09 mgd	1.02	0.09 mgd	0.99	0.10 mgd	0.98	0.99	1.02	
Maximum 30-Days	0.11 mgd	1.35	0.11 mgd	1.31	0.12 mgd	1.31	0.14 mgd	1.35	1.33	1.35	
Maximum 7-Day	0.14 mgd	1.71	0.14 mgd	1.65	0.14 mgd	1.49	0.18 mgd	1.74	1.65	1.74	
Maximum Day	0.20 mgd	2.39	0.25 mgd	2.85	0.17 mgd	1.88	0.27 mgd	2.68	2.45	2.85	

Battle Ground, Hockinson, & Meadow Glade

	1995		1996		1997		1998		Average	Maximum	Ratio
	Flow	PF	Flow	PF	Flow	PF	Flow	PF	PF	PF	WW/DW
DW Average Daily Flow	0.84 mgd	0.75	0.87 mgd	0.75	0.89 mgd	0.75	0.88 mgd	0.74	0.75	0.75	1.66
Average Daily Flow	1.12 mgd	1.00	1.17 mgd	1.00	1.18 mgd	1.00	1.19 mgd	1.00	1.00	1.00	
WW Average Daily Flow	1.35 mgd	1.21	1.46 mgd	1.25	1.49 mgd	1.26	1.50 mgd	1.26	1.25	1.26	
Maximum 30-Days	1.90 mgd	1.70	1.92 mgd	1.65	1.79 mgd	1.51	2.03 mgd	1.71	1.64	1.71	
Maximum 7-Day	2.33 mgd	2.08	2.13 mgd	1.83	2.03 mgd	1.72	2.18 mgd	1.83	1.87	2.08	
Maximum Day	2.51 mgd	2.24	2.37 mgd	2.03	2.24 mgd	1.89	2.51 mgd	2.11	2.07	2.24	

Plan Year	Calendar Year	Basin 1	Basin 2	Basin 3	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 10	Basin 11	Basin 12	Basin 13	Basin 14	Basin 15	Basin 16	Basin 17	Basin 18	Basin 19	Basin 20	Basin 21	Basin 22	Basin 23	Basin 24	Basin 25
	1997	0.306	0.060	0.319	0.728	0.002	0.145	0.155	0.213	0.253	0.407	0.346	1.584	1.122	2.795	0.042	0.072	0.151	0.194	0.182	0.202	0.229	0.434	0.180	1.133	0.004
1	1998	0.359	0.065	0.331	0.769	0.003	0.146	0.156	0.222	0.253	0.412	0.360	1.606	1.146	2.862	0.043	0.089	0.170	0.197	0.216	0.212	0.242	0.434	0.181	1.248	0.004
2	1999	0.422	0.070	0.342	0.812	0.003	0.146	0.158	0.232	0.254	0.416	0.375	1.629	1.170	2.931	0.044	0.108	0.191	0.201	0.251	0.222	0.255	0.434	0.181	1.375	0.004
3	2000	0.465	0.075	0.349	0.844	0.006	0.155	0.164	0.245	0.267	0.421	0.386	1.674	1.194	2.976	0.046	0.113	0.196	0.204	0.286	0.235	0.268	0.436	0.182	1.406	0.012
4	2001	0.510	0.079	0.357	0.878	0.008	0.163	0.171	0.258	0.280	0.426	0.397	1.721	1.219	3.023	0.049	0.118	0.201	0.207	0.323	0.248	0.281	0.439	0.183	1.437	0.020
5	2002	0.559	0.084	0.365	0.914	0.011	0.173	0.177	0.272	0.293	0.431	0.408	1.769	1.244	3.070	0.051	0.123	0.206	0.211	0.362	0.262	0.295	0.441	0.184	1.469	0.029
6	2003	0.610	0.089	0.373	0.951	0.014	0.182	0.184	0.287	0.307	0.436	0.419	1.819	1.270	3.118	0.054	0.129	0.211	0.214	0.402	0.278	0.309	0.443	0.185	1.502	0.038
7	2004	0.665	0.094	0.381	0.990	0.017	0.192	0.192	0.301	0.322	0.441	0.431	1.869	1.297	3.167	0.057	0.135	0.217	0.218	0.445	0.294	0.324	0.446	0.186	1.536	0.047
8	2005	0.724	0.099	0.390	1.031	0.021	0.201	0.199	0.316	0.336	0.446	0.443	1.921	1.325	3.217	0.060	0.141	0.223	0.222	0.490	0.311	0.340	0.448	0.188	1.571	0.058
9	2006	0.788	0.104	0.393	1.074	0.025	0.212	0.207	0.331	0.351	0.451	0.455	1.975	1.353	3.267	0.063	0.147	0.229	0.225	0.537	0.329	0.357	0.450	0.189	1.607	0.069
10	2007	0.856	0.109	0.395	1.118	0.030	0.222	0.215	0.347	0.367	0.456	0.467	2.029	1.383	3.319	0.066	0.154	0.235	0.229	0.588	0.348	0.374	0.453	0.190	1.643	0.083
11	2008	0.928	0.114	0.398	1.165	0.036	0.233	0.224	0.363	0.383	0.461	0.480	2.086	1.415	3.372	0.069	0.161	0.242	0.233	0.641	0.369	0.392	0.455	0.192	1.681	0.099
12	2009	1.007	0.120	0.400	1.201	0.043	0.244	0.233	0.379	0.400	0.466	0.492	2.144	1.448	3.426	0.073	0.169	0.250	0.237	0.698	0.391	0.411	0.458	0.193	1.721	0.118
13	2010	1.091	0.125	0.403	1.227	0.052	0.256	0.242	0.396	0.418	0.472	0.506	2.203	1.484	3.481	0.077	0.177	0.257	0.241	0.759	0.415	0.431	0.461	0.195	1.761	0.141
14	2011	1.181	0.131	0.406	1.255	0.063	0.268	0.251	0.414	0.436	0.477	0.519	2.264	1.522	3.537	0.081	0.185	0.266	0.245	0.825	0.441	0.452	0.464	0.196	1.803	0.171
15	2012	1.279	0.137	0.409	1.285	0.078	0.280	0.261	0.431	0.455	0.483	0.532	2.327	1.565	3.596	0.085	0.194	0.275	0.249	0.895	0.469	0.475	0.466	0.198	1.846	0.210
16	2013	1.384	0.144	0.412	1.317	0.098	0.293	0.271	0.450	0.475	0.488	0.546	2.392	1.612	3.655	0.089	0.204	0.285	0.253	0.972	0.499	0.496	0.470	0.200	1.891	0.262
17	2014	1.497	0.150	0.415	1.351	0.125	0.306	0.282	0.468	0.497	0.494	0.561	2.459	1.665	3.717	0.093	0.215	0.296	0.257	1.057	0.532	0.517	0.473	0.202	1.938	0.333
18	2015	1.619	0.157	0.419	1.387	0.161	0.320	0.293	0.488	0.519	0.499	0.575	2.527	1.727	3.781	0.098	0.226	0.309	0.261	1.150	0.564	0.540	0.476	0.205	1.988	0.431
19	2016	1.751	0.165	0.423	1.426	0.211	0.334	0.305	0.507	0.543	0.505	0.590	2.598	1.799	3.847	0.103	0.238	0.323	0.266	1.254	0.595	0.565	0.480	0.207	2.039	0.569
20	2017	1.894	0.172	0.427	1.467	0.280	0.348	0.317	0.628	0.569	0.511	0.605	2.671	1.884	3.916	0.108	0.252	0.339	0.270	1.370	0.629	0.592	0.484	0.210	2.093	0.762
Ultimate		2.917	0.556	0.494	2.226	1.035	0.598	0.438	1.136	1.342	0.796	1.123	5.132	3.054	7.480	0.125	0.469	0.777	0.286	1.975	0.922	1.017	1.114	0.370	2.702	1.740

Plan Year	Calendar Year	Basin 26	Basin 27	Basin 28	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 37	Basin 38	Basin 39	Basin 40	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin 46	Basin 47
	1997	0.003	0.002	0.249	0.047	0.203	0.408	0.241	0.251	0.255	0.235	0.253	0.391	0.005	0.237	2.838	1.088	1.296	0.419	0.604	0.003	0.090	0.315
1	1998	0.026	0.002	0.317	0.067	0.240	0.420	0.291	0.272	0.262	0.241	0.256	0.406	0.007	0.242	3.072	1.100	1.311	0.420	0.609	0.006	0.094	0.348
2	1999	0.049	0.002	0.392	0.087	0.280	0.453	0.349	0.294	0.269	0.247	0.258	0.421	0.009	0.248	3.244	1.112	1.326	0.420	0.615	0.010	0.098	0.382
3	2000	0.057	0.002	0.403	0.111	0.286	0.508	0.359	0.298	0.283	0.255	0.272	0.437	0.017	0.257	3.432	1.124	1.341	0.421	0.621	0.018	0.105	0.400
4	2001	0.065	0.002	0.414	0.135	0.291	0.565	0.369	0.301	0.297	0.262	0.287	0.453	0.025	0.267	3.634	1.136	1.356	0.422	0.627	0.026	0.112	0.419
5	2002	0.073	0.002	0.425	0.160	0.297	0.624	0.379	0.305	0.311	0.270	0.301	0.471	0.033	0.278	3.853	1.149	1.372	0.422	0.634	0.034	0.119	0.438
6	2003	0.081	0.002	0.437	0.186	0.304	0.684	0.390	0.310	0.327	0.278	0.317	0.489	0.042	0.290	4.090	1.161	1.388	0.423	0.641	0.043	0.127	0.458
7	2004	0.090	0.002	0.448	0.213	0.310	0.746	0.402	0.314	0.344	0.287	0.332	0.510	0.052	0.302	4.347	1.174	1.404	0.424	0.648	0.052	0.135	0.479
8	2005	0.098	0.002	0.461	0.242	0.317	0.811	0.414	0.319	0.362	0.296	0.349	0.532	0.063	0.316	4.624	1.187	1.420	0.425	0.655	0.062	0.144	0.500
9	2006	0.107	0.002	0.474	0.273	0.325	0.878	0.427	0.324	0.381	0.305	0.366	0.556	0.076	0.331	4.925	1.200	1.437	0.426	0.662	0.072	0.153	0.522
10	2007	0.116	0.002	0.488	0.306	0.333	0.949	0.440	0.330	0.402	0.315	0.385	0.584	0.090	0.348	5.250	1.214	1.453	0.428	0.670	0.083	0.162	0.546
11	2008	0.125	0.002	0.503	0.341	0.342	1.023	0.454	0.337	0.425	0.327	0.404	0.615	0.108	0.368	5.602	1.228	1.471	0.429	0.677	0.096	0.173	0.570
12	2009	0.134	0.002	0.518	0.381	0.352	1.101	0.469	0.345	0.451	0.339	0.426	0.650	0.131	0.389	5.982	1.242	1.488	0.431	0.686	0.109	0.184	0.596
13	2010	0.144	0.002	0.536	0.425	0.363	1.185	0.485	0.354	0.479	0.352	0.449	0.692	0.159	0.414	6.394	1.256	1.505	0.432	0.694	0.124	0.196	0.624
14	2011	0.154	0.002	0.555	0.476	0.377	1.274	0.501	0.365	0.512	0.368	0.475	0.741	0.197	0.443	6.840	1.271	1.523	0.434	0.704	0.141	0.209	0.653
15	2012	0.164	0.002	0.576	0.534	0.393	1.371	0.519	0.378	0.550	0.385	0.505	0.799	0.248	0.476	7.322	1.286	1.542	0.437	0.714	0.160	0.223	0.685
16	2013	0.174	0.002	0.601	0.604	0.412	1.465	0.538	0.394	0.593	0.405	0.539	0.871	0.319	0.515	7.844	1.302	1.560	0.440	0.725	0.181	0.240	0.721
17	2014	0.185	0.002	0.628	0.688	0.436	1.525	0.555	0.413	0.645	0.428	0.580	0.960	0.418	0.562	8.409	1.319	1.579	0.443	0.737	0.206	0.258	0.759
18	2015	0.196	0.002	0.661	0.792	0.466	1.598	0.572	0.438	0.706	0.456	0.629	1.072	0.560	0.617	9.020	1.337	1.598	0.446	0.751	0.234	0.278	0.802
19	2016	0.207	0.002	0.699	0.921	0.504	1.686	0.591	0.469	0.780	0.489	0.690	1.215	0.765	0.685	9.681	1.355	1.618	0.451	0.768	0.267	0.302	0.851
20	2017	0.219	0.002	0.744	1.085	0.553	1.795	0.612	0.508	0.870	0.529	0.766	1.400	1.063	0.767	10.397	1.376	1.639	0.456	0.787	0.305	0.328	0.906
																11.171							
Ultimate		0.715	0.086	1.849	1.669	0.984	3.588	1.031	1.067	1.842	1.228	2.046	2.312	1.476	1.224	11.171	1.745	2.703	0.727	1.674	0.973	1.157	1.656

Plan Year	Calendar Year	Basin 1	Basin 2	Basin 3	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 10	Basin 11	Basin 12	Basin 13	Basin 14	Basin 15	Basin 16	Basin 17	Basin 18	Basin 19	Basin 20	Basin 21	Basin 22	Basin 23	Basin 24	Basin 25
	1997	289	143	1886	1704	5	275	211	537	645	1011	554	3350	2373	6118	100	172	426	488	435	13	100	1096	449	2317	7
1	1998	392	155	1979	1807	5	275	211	562	647	1023	585	3419	2425	6296	102	214	475	495	521	15	114	1096	450	2657	7
2	1999	516	168	2078	1916	6	276	211	588	649	1034	618	3488	2477	6478	103	261	527	505	613	18	129	1096	452	3041	8
3	2000	598	179	2168	1993	11	298	220	624	684	1045	639	3629	2529	6573	109	274	540	514	706	28	141	1102	455	3118	25
4	2001	685	190	2264	2073	17	320	229	661	720	1057	661	3775	2582	6669	115	287	554	523	805	39	153	1108	457	3197	43
5	2002	778	201	2364	2157	23	344	239	699	757	1068	683	3925	2636	6766	121	301	568	532	910	50	166	1114	460	3278	61
6	2003	877	213	2469	2244	28	368	249	738	796	1080	705	4080	2692	6865	128	315	582	542	1021	63	180	1120	463	3361	80
7	2004	983	225	2580	2335	34	393	260	778	835	1092	728	4240	2749	6965	135	330	597	552	1139	77	195	1126	466	3446	100
8	2005	1096	237	2697	2430	41	419	271	819	877	1104	751	4404	2809	7066	142	345	612	561	1265	92	210	1132	469	3534	121
9	2006	1217	249	2804	2530	47	446	282	862	919	1116	775	4574	2872	7169	150	362	629	571	1398	109	227	1138	473	3624	143
10	2007	1346	262	2912	2634	54	473	294	905	964	1129	800	4749	2939	7274	158	379	646	581	1542	128	244	1144	476	3717	166
11	2008	1485	275	3027	2743	61	502	307	950	1010	1141	824	4929	3010	7381	166	397	664	592	1695	148	263	1151	480	3812	191
12	2009	1633	288	3149	2814	68	532	320	997	1058	1154	850	5116	3086	7490	175	417	684	602	1859	172	283	1157	484	3911	217
13	2010	1793	302	3278	2850	76	563	334	1045	1108	1167	876	5308	3170	7602	184	437	705	613	2037	198	305	1163	488	4014	245
14	2011	1965	316	3415	2890	84	595	348	1094	1161	1179	903	5507	3263	7717	194	459	728	624	2229	228	329	1170	493	4120	276
15	2012	2150	330	3560	2932	93	628	363	1145	1216	1192	930	5713	3369	7836	204	483	753	635	2439	262	354	1176	497	4231	309
16	2013	2350	345	3713	2977	102	663	378	1197	1275	1206	958	5925	3491	7959	215	508	781	646	2668	302	374	1182	503	4346	345
17	2014	2566	360	3875	3025	112	698	394	1252	1337	1219	987	6146	3634	8087	226	535	811	658	2921	347	394	1189	508	4466	385
18	2015	2799	375	4046	3077	123	736	411	1308	1404	1232	1016	6374	3805	8221	238	565	846	670	3203	389	417	1195	514	4593	429
19	2016	3051	391	4228	3132	134	774	428	1366	1475	1246	1046	6610	4013	8363	251	597	885	681	3518	431	443	1202	521	4726	479
20	2017	3324	408	4420	3192	146	815	447	1426	1552	1260	1078	6856	4270	8514	264	633	930	694	3875	481	474	1208	529	4868	535
Ultimate		4909	902	948	4447	213	1004	530	2399	3256	2119	1927	12464	6140	16567	286	996	1663	738	4721	846	902	3109	867	6323	952

Plan Year	Calendar Year	Basin 26	Basin 27	Basin 28	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 37	Basin 38	Basin 39	Basin 40	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin 46	Basin 47
	1997	8	5	634	110	448	917	475	577	540	473	607	928	10	583	8225	3161	2859	960	1195	7	5	767
1	1998	60	5	822	159	546	936	601	634	549	486	614	961	14	593	8900	3200	2889	962	1204	13	10	857
2	1999	116	5	1033	210	654	956	745	694	559	500	621	995	19	604	9631	3239	2918	964	1213	21	14	952
3	2000	135	5	1063	268	669	1096	763	704	584	516	658	1028	36	623	10421	3278	2949	965	1225	38	26	1003
4	2001	155	5	1094	330	684	1240	780	713	610	532	697	1062	54	644	11277	3318	2980	967	1236	56	37	1055
5	2002	175	5	1125	394	700	1389	798	724	637	549	736	1096	72	665	12203	3358	3011	969	1248	74	49	1109
6	2003	196	5	1157	461	716	1541	817	734	666	567	777	1132	92	687	13205	3399	3042	972	1260	94	62	1164
7	2004	217	5	1191	532	733	1698	836	746	696	586	819	1169	113	709	14289	3440	3074	974	1272	115	75	1221
8	2005	238	5	1226	607	751	1860	856	758	728	606	862	1207	135	733	15462	3482	3106	977	1285	137	88	1281
9	2006	261	5	1262	687	769	2028	877	771	762	628	907	1246	158	757	16731	3525	3138	980	1297	161	103	1342
10	2007	283	5	1301	772	790	2203	899	785	799	652	954	1287	184	782	18105	3568	3172	983	1310	186	118	1406
11	2008	307	5	1341	865	812	2385	922	801	841	678	1003	1330	212	809	19591	3611	3205	987	1324	214	134	1473
12	2009	331	5	1385	967	836	2576	946	819	887	706	1054	1375	244	836	21200	3655	3239	992	1338	244	152	1543
13	2010	356	5	1432	1080	862	2778	972	840	941	739	1108	1423	279	865	22940	3700	3274	997	1352	276	171	1617
14	2011	381	5	1483	1207	892	2993	1000	863	1003	777	1166	1474	319	896	24824	3745	3309	1002	1367	312	193	1695
15	2012	407	5	1540	1353	926	3224	1030	891	1078	820	1227	1528	365	928	26862	3790	3345	1009	1382	351	217	1779
16	2013	435	5	1604	1523	965	3436	1062	924	1168	871	1292	1586	419	963	29067	3837	3381	1017	1398	395	245	1868
17	2014	463	5	1676	1726	1010	3521	1087	963	1278	932	1363	1649	483	1000	31453	3884	3418	1025	1416	445	276	1964
18	2015	492	5	1759	1971	1064	3633	1109	1010	1416	1006	1440	1719	559	1039	34036	3931	3457	1036	1434	500	313	2068
19	2016	522	5	1856	2273	1128	3779	1136	1067	1590	1096	1525	1796	652	1082	36830	3979	3496	1048	1453	563	356	2182
20	2017	554	5	1970	2651	1204	3971	1168	1136	1811	1206	1619	1882	766	1129	39854	4028	3536	1062	1473	635	406	2307
																43126							
Ultimate		880	3	4642	2666	1642	3467	1225	1861	3491	2182	4013	3395	1175	1836	43126	5230	5601	1308	2520	1642	511	2811

Plan Year	Calendar Year	Basin 1	Basin 2	Basin 3	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 10	Basin 11	Basin 12	Basin 13	Basin 14	Basin 15	Basin 16	Basin 17	Basin 18	Basin 19	Basin 20	Basin 21	Basin 22	Basin 23	Basin 24	Basin 25
	1997	60,513	14,300	88,615	200,062	548	35,504	37,353	53,757	64,506	107,254	87,455	456,176	317,174	837,097	10,001	17,253	37,713	48,753	45,462	45,901	33,552	114,989	45,001	293,438	798
1	1998	74,585	15,572	92,088	212,363	608	35,580	37,722	56,269	64,685	108,551	91,459	463,762	324,625	860,735	10,153	21,468	42,715	49,620	54,380	48,187	35,994	115,024	45,162	329,447	877
2	1999	91,582	16,878	95,702	225,422	683	35,660	38,104	58,832	64,877	109,866	95,577	471,470	332,251	884,881	10,308	26,226	48,144	50,502	63,897	50,612	38,569	115,061	45,330	370,134	978
3	2000	103,202	17,979	98,202	235,373	1,264	37,887	39,682	62,430	68,377	111,198	98,526	487,136	339,816	900,259	10,880	27,513	49,462	51,399	73,480	53,828	40,890	115,700	45,594	378,889	2,746
4	2001	115,698	19,106	100,782	245,810	1,876	40,190	41,326	66,130	71,990	112,549	101,536	503,299	347,576	915,904	11,480	28,847	50,813	52,313	83,642	57,229	43,319	116,345	45,867	387,834	4,600
5	2002	129,161	20,261	103,445	256,767	2,527	42,571	43,039	69,933	75,716	113,919	104,609	519,964	355,553	931,843	12,110	30,237	52,211	53,243	94,427	60,831	45,865	116,999	46,148	397,026	6,553
6	2003	143,682	21,446	106,195	268,271	3,228	45,033	44,823	73,844	79,563	115,307	107,748	537,150	363,770	948,087	12,770	31,687	53,660	54,190	105,885	64,653	48,540	117,860	46,440	406,478	8,630
7	2004	159,363	22,662	109,036	280,355	3,996	47,578	46,681	77,867	83,540	116,715	110,955	554,879	372,261	964,652	13,463	33,205	55,167	55,153	118,075	68,717	51,352	118,331	46,744	416,203	10,861
8	2005	176,312	23,911	111,972	293,049	4,853	50,211	48,616	82,006	87,656	118,142	114,233	573,171	381,068	981,555	14,191	34,796	56,743	56,134	131,060	73,050	54,314	119,013	47,062	426,217	13,288
9	2006	194,652	25,196	113,385	306,390	5,830	52,936	50,632	86,265	91,923	119,589	117,583	592,049	390,246	998,818	14,955	36,467	58,397	57,132	144,919	77,681	57,439	119,707	47,395	436,538	15,970
10	2007	214,517	26,519	114,472	320,413	6,971	55,756	52,731	90,650	96,353	121,056	121,008	611,538	399,868	1,016,464	15,757	38,229	60,143	58,147	159,740	82,646	60,744	120,416	47,746	447,188	18,990
11	2008	236,056	27,884	115,624	335,158	8,337	58,676	54,918	95,165	100,962	122,544	124,512	631,664	410,028	1,034,521	16,600	40,091	61,996	59,181	175,633	87,984	64,247	121,140	48,117	458,184	22,466
12	2009	259,431	29,293	116,843	346,409	10,013	61,700	57,195	99,818	105,770	124,053	128,097	652,455	420,851	1,053,024	17,485	42,066	63,977	60,233	192,726	93,746	67,966	121,885	48,510	469,559	26,562
13	2010	284,825	30,752	118,133	354,464	12,121	64,834	59,567	104,613	110,797	125,583	131,767	673,941	432,504	1,072,013	18,416	44,167	66,110	61,304	211,175	99,988	71,927	122,652	48,930	481,346	31,516
14	2011	312,438	32,265	119,499	363,083	14,829	68,084	62,038	109,558	116,070	127,135	135,525	696,157	445,207	1,091,539	19,394	46,411	68,424	62,394	231,175	106,778	76,155	123,446	49,380	493,580	37,663
15	2012	342,490	33,838	120,946	372,306	18,377	71,454	64,611	114,661	121,621	128,709	139,376	719,137	459,249	1,111,660	20,424	48,818	70,956	63,503	252,964	114,199	80,682	124,272	49,865	506,307	45,490
16	2013	375,226	35,477	122,476	382,175	23,103	74,951	67,291	119,929	127,488	130,305	143,323	742,924	475,017	1,132,450	21,506	51,411	73,750	64,632	276,839	122,345	84,723	125,136	50,388	519,582	55,691
17	2014	410,917	37,191	124,097	392,736	29,485	78,582	70,083	125,371	133,715	131,925	147,372	767,559	493,024	1,153,997	22,646	54,217	76,861	65,781	303,174	131,334	88,868	126,046	50,957	533,468	69,272
18	2015	449,862	38,988	125,813	404,038	38,199	82,355	72,990	130,998	140,358	133,567	151,528	793,093	513,952	1,176,412	23,846	57,267	80,356	66,950	332,442	139,904	93,418	127,011	51,578	548,041	87,684
19	2016	492,394	40,881	127,629	416,132	50,200	86,278	76,019	136,820	147,483	135,233	155,796	819,579	538,708	1,199,829	25,111	60,599	84,317	68,141	365,242	148,495	98,431	128,042	52,257	563,396	113,029
20	2017	538,878	42,881	129,552	429,073	66,842	90,360	79,173	142,849	155,171	136,923	160,184	847,078	568,497	1,224,413	26,443	64,257	88,845	69,352	402,342	158,027	103,973	129,152	53,004	579,644	148,354
Ultimate		878,772	145,245	129,552	676,313	250,232	157,295	110,515	322,475	393,465	223,232	312,004	1,783,642	964,962	2,648,303	30,584	123,440	213,087	73,784	596,004	239,711	211,179	324,816	96,275	785,320	364,792

Plan Year	Calendar Year	Basin 26	Basin 27	Basin 28	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 37	Basin 38	Basin 39	Battle Gr.* 40	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin 46	Basin 47
	1997	750	500	63,556	11,062	50,802	94,170	55,452	63,671	64,415	58,854	64,355	99,556	1,048	58,301		317,917	374,658	109,953	161,043	750	20,208	81,387
1	1998	6,017	500	82,343	15,971	60,705	96,489	68,767	69,421	66,218	60,539	65,079	103,145	1,516	59,364		321,798	379,297	110,125	162,574	1,417	21,192	90,518
2	1999	11,596	500	103,466	21,059	71,569	98,899	84,106	75,470	68,136	62,276	65,828	106,839	2,015	60,456		325,730	384,002	110,307	164,128	2,342	22,222	100,128
3	2000	13,527	500	106,500	26,988	73,090	113,465	86,399	76,440	71,704	64,216	69,636	110,375	3,762	62,473		329,719	388,833	110,500	165,933	4,090	23,945	105,316
4	2001	15,497	500	109,589	33,178	74,641	128,508	88,753	77,442	75,462	66,226	73,567	114,023	5,601	64,564		333,763	393,734	110,706	167,766	5,930	25,732	110,659
5	2002	17,511	500	112,771	39,658	76,243	144,052	91,195	78,490	79,433	68,317	77,631	117,803	7,551	66,737		337,866	398,709	110,928	169,630	7,873	27,592	116,179
6	2003	19,572	500	116,059	46,467	77,908	160,147	93,732	79,597	83,652	70,502	81,848	121,736	9,637	69,004		342,031	403,758	111,168	171,525	9,933	29,535	121,896
7	2004	21,683	500	119,473	53,657	79,647	176,853	96,374	80,775	88,159	72,800	86,241	125,854	11,897	71,377		346,261	408,886	111,430	173,455	12,127	31,573	127,833
8	2005	23,846	500	123,035	61,293	81,476	194,247	99,132	82,041	93,008	75,232	90,843	130,199	14,379	73,878		350,562	414,095	111,718	175,424	14,475	33,722	134,019
9	2006	26,063	500	126,774	69,464	83,415	212,421	102,019	83,418	98,264	77,829	95,697	134,831	17,149	76,529		354,939	419,388	112,038	177,433	17,001	35,999	140,489
10	2007	28,339	500	130,729	78,286	85,489	231,490	105,051	84,932	104,011	80,627	100,857	139,831	20,298	79,363		359,401	424,770	112,394	179,488	19,735	38,427	147,285
11	2008	30,676	500	134,945	87,913	87,731	251,600	108,246	86,617	110,359	83,673	106,398	145,316	23,955	82,423	377,183	363,958	430,243	112,794	181,593	22,710	41,033	154,462
12	2009	33,079	500	139,486	98,552	90,181	272,936	111,625	88,517	117,447	87,029	112,419	151,449	28,292	85,765	850,617	368,622	435,814	113,247	183,753	25,968	43,851	162,083
13	2010	35,553	500	144,426	110,480	92,889	295,730	115,215	90,687	125,457	90,774	119,053	158,459	33,553	89,461	1,343,562	373,409	441,487	113,762	185,976	29,560	46,923	170,231
14	2011	38,103	500	149,867	124,068	95,922	320,278	119,046	93,196	134,626	95,008	126,478	166,673	40,077	93,613	1,854,599	378,340	447,268	114,351	188,267	33,544	50,299	179,005
15	2012	40,735	500	155,935	139,815	99,361	346,959	123,155	96,131	145,264	99,861	134,938	176,559	48,335	98,352	2,381,645	383,441	453,163	115,029	190,637	37,995	54,041	188,531
16	2013	43,455	500	162,791	158,392	103,310	372,481	127,589	99,602	157,776	105,501	144,762	188,784	58,991	103,857	2,921,791	388,746	459,181	115,812	193,095	42,997	58,228	198,963
17	2014	46,272	500	170,642	180,704	107,902	386,126	131,341	103,750	172,695	112,144	156,403	204,303	72,974	110,368	3,471,091	394,299	465,328	116,721	195,653	48,655	62,956	210,495
18	2015	49,195	500	179,754	207,969	113,304	403,389	134,933	108,751	190,724	120,067	170,475	224,490	91,595	118,207	4,024,310	400,155	471,616	117,779	198,324	55,096	68,345	223,369
19	2016	52,233	500	190,464	241,833	119,727	425,297	139,028	114,827	212,790	129,628	187,826	251,320	116,702	127,812	4,574,600	406,387	478,053	119,014	201,125	62,469	74,543	237,888
20	2017	55,398	500	203,205	284,514	127,440	453,178	143,722	122,262	240,117	141,288	209,620	287,643	150,910	139,775	5,113,094	413,086	484,654	120,462	204,074	70,958	81,734	254,431
																5,771,094							
Ultimate		186,472	19,226	559,147	440,708	228,428	926,528	227,516	278,998	543,630	345,372	614,151	528,251	258,836	243,537	5,771,094	540,753	844,980	195,440	457,560	241,990	281,080	473,181

*Battle Ground is calculated sepatately

Plan Year	Calendar Year	Basin 1	Basin 2	Basin 3	Basin 4	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 10	Basin 11	Basin 12	Basin 13	Basin 14	Basin 15	Basin 16	Basin 17	Basin 18	Basin 19	Basin 20	Basin 21	Basin 22	Basin 23	Basin 24	Basin 25
	1997	59,040											32,400	3,600	147,600					72		86,400			95,400	72
1	1998	59,043											32,400	3,600	150,361					96		89,565			99,137	106
2	1999	59,045											32,400	3,600	153,175					129		92,847			103,021	157
3	2000	59,048											32,400	3,600	155,040					172		96,248			107,057	232
4	2001	59,051											32,400	3,600	158,960					231		99,774			111,251	342
5	2002	59,053											32,400	3,600	161,934					309		103,430			115,609	505
6	2003	59,056											32,400	3,600	164,963					413		107,219			120,138	746
7	2004	59,059											32,400	3,600	168,050					552		111,147			124,844	1,101
8	2005	59,062											32,400	3,600	171,194					739		115,219			129,735	1,626
9	2006	59,064											32,400	3,600	174,396					989		119,440			134,817	2,401
10	2007	59,067											32,400	3,600	177,659					1,323		123,816			140,099	3,546
11	2008	59,070											32,400	3,600	180,983					1,770		128,352			145,587	5,235
12	2009	59,072											32,400	3,600	184,369					2,368		133,054			151,290	7,730
13	2010	59,075											32,400	3,600	187,818					3,167		137,928			157,217	11,413
14	2011	59,078											32,400	3,600	191,332					4,238		142,982			163,376	16,851
15	2012	59,080											32,400	3,600	194,912					5,669		148,220			169,776	24,881
16	2013	59,083											32,400	3,600	198,558					7,585		153,650			176,427	36,737
17	2014	59,086											32,400	3,600	202,273					10,148		159,279			183,338	54,242
18	2015	59,089											32,400	3,600	206,058					13,576		165,114			190,520	80,089
19	2016	59,091											32,400	3,600	209,913					18,163		171,163			197,984	118,252
20	2017	59,094											32,400	3,600	213,840					24,300		177,434			205,740	174,600
Ultimate		59,094											32,400	3,600	237,600					27,000		208,746			228,600	349,200

Plan Year	Calendar Year	Basin 26	Basin 27	Basin 28	Basin 29	Basin 30	Basin 31	Basin 32	Basin 33	Basin 34	Basin 35	Basin 36	Basin 37	Basin 38	Basin 39	Basin 40	Basin 41	Basin 42	Basin 43	Basin 44	Basin 45	Basin 46	Basin 47
	1997			72	72	72	34,200	19,800	72	72			10,800	72	7,200					72	72		72
1	1998			94	103	102	37,767	21,120	100	83			12,875	112	8,581					98	97		90
2	1999			122	147	144	41,706	22,528	138	96			15,348	174	10,227					134	130		112
3	2000			159	211	204	46,055	24,031	191	111			18,297	270	12,188					182	175		141
4	2001			208	302	289	50,859	25,633	264	128			21,812	419	14,526					248	236		176
5	2002			271	431	409	56,163	27,342	365	147			26,002	650	17,312					338	317		220
6	2003			353	617	580	62,020	29,165	505	170			30,997	1,010	20,633					461	426		274
7	2004			460	883	820	68,489	31,110	699	196			36,952	1,568	24,590					628	573		343
8	2005			599	1,263	1,161	75,632	33,184	966	226			44,051	2,435	29,306					856	771		428
9	2006			781	1,806	1,644	83,519	35,397	1,337	261			52,514	3,781	34,927					1,167	1,037		536
10	2007			1,018	2,584	2,328	92,230	37,757	1,850	301			62,603	5,872	41,626					1,590	1,394		669
11	2008			1,327	3,696	3,295	101,849	40,275	2,559	348			74,629	9,119	49,610					2,166	1,875		836
12	2009			1,730	5,288	4,664	112,471	42,960	3,540	401			88,967	14,160	59,126					2,952	2,522		1,045
13	2010			2,254	7,564	6,603	124,201	45,825	4,898	463			106,058	21,990	70,466					4,023	3,392		1,306
14	2011			2,938	10,821	9,348	137,155	48,880	6,777	534			126,433	34,148	83,981					5,482	4,562		1,633
15	2012			3,829	15,480	13,233	151,459	52,139	9,375	616			150,723	53,028	100,089					7,470	6,136		2,040
16	2013			4,991	22,144	18,734	167,255	55,616	12,971	711			179,678	82,348	119,286					10,179	8,252		2,550
17	2014			6,504	31,678	26,520	184,699	59,324	17,945	820			214,196	127,878	142,165					13,871	11,098		3,187
18	2015			8,477	45,317	37,544	203,962	63,280	24,827	946			255,346	198,583	169,433					18,902	14,927		3,983
19	2016			11,049	64,826	53,149	225,234	67,499	34,348	1,092			304,401	308,380	201,930					25,758	20,075		4,978
20	2017			14,400	92,736	75,240	248,724	72,000	47,520	1,260			362,880	478,886	240,660					35,100	27,000		6,221
Ultimate				18,000	132,480	150,480	414,540	180,000	59,400	1,800			518,400	504,090	343,800					70,200	90,000		15,552