



City of Chula Vista

Salt Creek Sewer Basin

Development Impact Fee Study

Final Report

June 2015

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TABLE OF CONTENTS

SECTION 1: EXECUTIVE SUMMARY 1
1.1 Background 1
1.2 Purpose 1
1.3 Recommended DIF 2
1.4 Legal Overview 2
SECTION 2: INTRODUCTION 4
2.1 1994 Wilson Study 4
2.2 2004 City Update 4
SECTION 3: BASIN DESCRIPTION 6
3.1 Basin Area 6
3.2 Sewerage Facilities 6
3.3 Wastewater Duty Factors 13
3.4 EDU Projections 14
SECTION 4: 2050 BUILD-OUT CAPACITY ANALYSIS 18
4.1 Flow Projection 19
4.2 Hydraulic Model Development 21
4.3 Hydraulic Analysis 25
4.4 Capital Improvement Program and Cost Estimates 26
SECTION 5: DIF ANALYSIS 31
5.1 Current DIF Program 31
5.2 Fee Methodology 31
5.3 Project Costs 32
5.4 Developer Credits 32
5.5 Construction Funding 33
5.6 Environmental Mitigation 34
5.7 DIF Administration 34
5.8 Available Reserves 34
5.9 Development Impact Fee Calculation 34
5.10 DIF Comparison 35
SECTION 6: CONCLUSIONS 37
6.1 Recommendations 37
6.2 Updates 37
6.3 Environmental Review 37
6.4 Annual Adjustment 38
6.5 Study Limitations 38

APPENDIX A: Development Area Wastewater Flow & EDU Projections (Remaining Only)
APPENDIX B: 2050 Land Use and Wastewater Flow Projections (Existing and Remaining Connections)
APPENDIX C: Salt Creek Interceptor (detail)
APPENDIX D: Salt Creek Improvement Plan
APPENDIX E: Proposed Trunk Sewers
APPENDIX F: 2050 CIP Pipeline Proposed in 2014 WWMP
APPENDIX G: 2050 PWWF Model Result with Existing Pipeline Conditions
APPENDIX H: 2050 PWWF Model Result with Proposed Future Diameters
APPENDIX I: Salt Creek Sewer Lateral Improvements – Bond Estimate
APPENDIX J: Wolf Canyon Sewer Trunk Facilities

TABLE OF TABLES

Table 1: DIF Calculation 2
Table 2: List of Facilities 11
Table 3: Wastewater Duty Factor Comparison 13
Table 4: EDU Conversion Factors 14
Table 5: Salt Creek Basin Remaining Acreage and Units 15
Table 6: Change in EDUs 17
Table 7: 2050 Salt Creek Interceptor Wastewater Flow Projections 20
Table 8: Pipeline Unit Costs 28
Table 9: Future Capital Improvement Projects with Cost Estimate 29
Table 10: Project Costs 32
Table 11: Financing Cost 33
Table 12: DIF Calculation 35
Table 13: DIF Comparison 35
Table 14: Comparison of DIF Studies 36

TABLE OF FIGURES

Figure 1: Study Area & Proposed Trunk Lines 12
Figure 2: Existing and Proposed New Developments 16
Figure 3: Hunte Parkway Extension 23
Figure 4: Normalized Diurnal Curves 24

SECTION 1: Executive Summary

1.1 Background

The City first developed a sewer analysis and basin plan for the Salt Creek Sewer Basin in 1994. The purpose of the basin plan was to project development in the basin, determine sewer facilities needed to serve development, and to calculate an impact fee to recover the cost of those facilities. The 1994 Study included the Salt Creek Interceptor Reaches 1 through 8 at a total cost of $8.2 million. At that time, Reach 9 was assumed to be a regional facility that would serve customers outside of the Salt Creek Basin. The cost of Reaches 1 through 8 was spread among nearly 29,000 equivalent dwelling units (EDUs) in the basin to calculate a Salt Creek Sewer Basin development impact fee (DIF) of $284 per EDU. The City adopted the DIF with Ordinance No. 2617 on December 6, 1994. The concept of the DIF is that customers benefiting from capital facilities should pay their proportionate share for the construction of those facilities.

The DIF was revised in 2004 by City staff to reflect the final construction cost of the Salt Creek Sewer, to include Reach 9A, the Rock Mountain Road/Main Street and Heritage Road Trunk Sewer lines located in the Wolf Canyon Basin, to add developer credits and financing costs, and to revise the remaining EDUs predicted to develop in the basin. The 2004 study increased the cost recovered by the DIF from $8.2 million to $34.1 million and adjusted the remaining EDUs from 28,737 to 25,668. The 2004 study increased the Salt Creek DIF from $284 to $1,330 per EDU.

1.2 Purpose

The purpose of this report is to update the Salt Creek Basin development impact fee originally established in 1994 and last updated in 2004. The 2015 update of the Salt Creek DIF is necessary for the following reasons:

- To reflect the updated development projections
- To reflect the updated wastewater generation rates of various land use types
- To revise the list of facilities to be financed by the DIF
- To update the construction cost of the Rock Mountain Road/Main Street and Heritage Road Trunk Sewers
- To update financing costs, developer contributions, environmental mitigation, and administrative costs

1.3 Recommended DIF

The Salt Creek DIF is calculated based on the costs of capital facilities less available DIF fund reserves divided by the remaining EDUs within the basin benefitting from the facilities. The 2015 updated fee is based on the final cost of the Salt Creek Interceptor (Reaches 1-9A) and estimated costs for the Wolf Canyon Trunk Sewer lines (Rock Mountain Road/Main Street, Heritage Road, and lines identified in the 2014 Wastewater Master Plan Update). The fee also accounts for developer credits, financing costs, environmental mitigation, administrative costs, and available fund reserves. In total, $27.5 million in costs are attributable to the Salt Creek DIF. These costs are divided amongst the 20,668 EDUs remaining in the Salt Creek Sewer Basin. Table 1 shows the DIF calculation. The 2015 updated fee is $1,330 and is equal to the current fee.

Table 1: DIF Calculation
City of Chula Vista
Salt Creek DIF Study

	Amount
Cost Category	
Outstanding Loan Payments	$24,575,429
Future Construction Cost	7,603,478
Outstanding Developer Credits	0
Environmental Mitigation	1,000,000
DIF Administration Cost	120,000
Less: DIF Fund Reserve	(5,805,114)
Subtotal	$27,493,793
Remaining EDUs	20,668
New DIF (per EDU)	**$1,330**

Note: The City will maintain a loan repayment reserve of $1.3 million.

1.4 Legal Overview

In California, the basic statutory standards governing water and sewer capacity fees are embodied in Government Code Section 66013, 66016, and 66022 (Mitigation Fee Act). The development impact fee, as described in this report is essentially a capacity fee attributable to a specific development area – the Salt Creek Basin. The Salt Creek DIF is governed by the same statutory requirements as capacity fees or connection fees. Government Code 66013 provides the fundamental provisions:

a) Notwithstanding any other provisions of law, when a local agency imposes fees for water connections or sewer connections, or imposes capacity charges, those fees or charges shall not exceed the estimated reasonable cost of providing the service for

which the fee or charge is imposed, unless a question regarding the amount the fee or charge imposed in excess of the estimated reasonable cost of providing the services or materials is submitted to, and approved by, a popular vote of two-thirds of those electors voting on the issue.

b) As used in this section
    1) "Sewer connection" means the connection of a building to a public sewer system.
    2) "Water connection" means the connection of a building to a public water system, as defined in subdivision (e) of Section 4010.1 of the Health and Safety Code.
    3) "Capacity charges" means charges for facilities in existence at the time the charge is imposed or charges for new facilities to be constructed in the future which are of benefit to the person or property being charged.
    4) "Local agency" means a local agency as defined in Section 66000.

c) Any judicial action or proceeding to attack, review, set aside, void, or annul the ordinance, resolution, or motion imposing a fee or capacity charge subject to this section shall be brought pursuant to Section 66022. Section 66013 indicates that any connection fee must be based on an estimate of the reasonable cost of providing service. The legislative history of this provision indicates that the legislature did not intend to limit the types of costs that would be included.

SECTION 2: Introduction

The City of Chula Vista (City) provides wastewater collection throughout its service area of over 50 square miles. The service area is comprised of 8 drainage basins that route wastewater flow through connections to regional sewerage facilities located along the San Diego Bay to the west and the Sweetwater River to the north. Last year, the City completed the 2014 Wastewater Master Plan Update (WWMP) which revised the City's wastewater generation rates and developed a City-wide capacity fee for new customers connecting to the wastewater system. In addition to the City-wide capacity fee, the City also collects development impact fees (DIFs) for drainage basin-specific facilities. This report updates the development impact fee for the Salt Creek Basin.

The Salt Creek Basin is defined as the area served by the Salt Creek Interceptor, a 16.5 mile sewer line that begins west of the Upper Otay Reservoir and ultimately ties into the City of San Diego's Metro sewer line just west of Interstate 5 near Main Street. The interceptor is divided into nine reaches, which are points of slope change or connections with other major tributary sewer lines. The Wolf Canyon Basin is also served by the Salt Creek Interceptor and is therefore considered part of the Salt Creek Basin for engineering purposes and financial planning. The Salt Creek DIF is collected from new connections in both the Salt Creek Basin and the Wolf Canyon Basin.

2.1 1994 Wilson Study

The City first commissioned a basin plan for the Salt Creek Sewer Basin in 1994. The study was performed by Wilson Engineering and defined the fee benefit area from which DIFs would be collected. Wilson Engineering calculated the DIF to include project costs of $8.2 million reflecting Reaches 1 through 8. Although the Wolf Canyon Sewer Basin was considered part of the Salt Creek Basin, no additional facilities were envisioned for the Wolf Canyon Basin. It was assumed that customers could connect to the Salt Creek Interceptor via laterals. Wilson Engineering defined an EDU as generating 280 gallons per day of wastewater flow and determined a DIF customer base of 28,737 EDUs. The 1994 Study calculated a DIF of $284 per EDU.

2.2 2004 City Update

The Salt Creek DIF was last updated in 2004 by the City. The 2004 Study updated the 1994 Wilson Study to reflect the final construction cost of facilities and the financing mechanisms used by the City. Reaches 1, 2A, and 2B were constructed by developers at the developers' expense. Thus, the 2004 Study includes developer credits for the construction cost of those

Reaches. The final project cost of Reaches constructed by the City (Reaches 3, 4A, 5B, 6, 7, 8, and 9A) was updated. As available, the City utilized DIF reserves to fund project costs. However, the City also relied on loans made from the Trunk Sewer Capital Reserve Fund to the Salt Creek DIF fund. Reaches 4B and 5A were constructed by San Diego Gas and Electric (SDG&E) but were funded at the City's expense via a loan from the Trunk Sewer Capital Reserve Fund. The 2004 Study added the estimated financing costs associated with these loans. The 1994 Wilson Study did not include financing costs.

The 2004 Study reflected the City's revised plan for Reach 9 and the Wolf Canyon Basin. Reach 9 was redefined as Reach 9A, Reach 9B, and Reach 9B'. Reach 9A was considered to be a Salt Creek Basin facility and was included in the DIF. Reaches 9B and 9B' were considered to be regional facilities. These facilities were described in the 2004 Study but their project costs were not included in the DIF. The cost for Reaches 9B and 9B' are obligated to the Trunk Sewer Capital Reserve Fund. Trunk lines for the Wolf Canyon Basin (Rock Mountain Road/Main Street and Heritage Road Trunk Sewers) were added to the DIF at a cost of $5.7 million.

From the 1994 Wilson Study to the 2004 Study, the DIF cost recovery amount was increased from $8.2 million to $34.1 million to reflect the actual construction cost of facilities, new facility costs for Reach 9A and the Wolf Canyon Basin, and the financing costs of the loans from the Trunk Sewer Capital Reserve Fund. The 2004 Study defined an EDU as generating 265 gallons per day of wastewater flow and determined a DIF customer base of 25,668 EDUs. The 2004 Study calculated a DIF of $1,330 per EDU.

Since the adoption of the 2004 updated DIF, the City has had various changes in planned development and reduced flows due to water conservation efforts. For this reason, past infrastructure planning assumptions needed to be reexamined.

SECTION 3: Basin Description

3.1 Basin Area

The Salt Creek Sewer Basin is located in the eastern part of the City which conveys wastewater flow from EastLake, Otay Ranch, Rolling Hills Ranch, portions of the Otay River Basin, and unincorporated areas north and east of the Otay Lakes. The Salt Creek Basin includes the Wolf Canyon Sewer Basin located to the southwest of the Salt Creek Basin.

The 2004 Update to the Sewer Basin Plan provides the following description of the Salt Creek sewer alignment:

> The Salt Creek Trunk Sewer generally begins just west of the Upper Otay Reservoir, then proceeds southerly parallel to the Salt Creek and the Otay Valley Rivers, then turns Westerly along Main Street, continuing under the I-805 Freeway along Main Street to Industrial Blvd., after which it goes under the 1-5 Freeway and terminates at a junction structure that ties it to the City of San Diego's Metro Sewer line just west of Interstate 5 on Frontage Road. The line was segregated into nine Reaches, which were divided primarily at points of major slope changes and locations where significant amount of sewage flow from tributary properties entered the line.

3.2 Sewerage Facilities

Facilities making up the Salt Creek Interceptor are described below.[1] The interceptor is comprised of Reaches 1 through 9A and the Wolf Canyon Trunk Sewers.

3.2.1 Constructed by Others

Reaches 1, 2A and 2B were constructed by developers for the benefit of their development areas. The developers constructed these facilities at their own cost and dedicated them to the City in exchange for credits that could be used at a future date to offset other costs that the developer may owe. The 2004 Basin Plan noted $553,472 in developer credits outstanding. Since 2004, the developers expended their credits and there are no remaining credits. For the 2015 study, the cost of Reaches 1, 2A, and 2B are included as project costs and developer credits are shown as $0.

[1] Facilities descriptions taken from the 2004 Update to the Salt Creek Sewer Basin Plan

Descriptions of facilities constructed by others - Reaches 1, 2A, 2B, 4B and 5A - are provided below.

Reach 1

Reach 1 was constructed by Pacific Bay Homes to serve the Rolling Hills Communities in Fiscal Year (FY) 1998. It consists of approximately 4,517 linear feet of 15" PVC pipe. Based on the cost estimate a provided by Pacific Bay Homes to the City, the total cost of this Reach including construction, inspection and administration is $173,613.

Reach 2

Reaches 2A and 2B were constructed by the Eastlake Company to serve Eastlake Trails North Community in FY2001. Detailed cost estimates for Reaches 2A and 2B are provided as an appendix to the 2004 Update to the Salt Creek Sewer Basin Plan.

Reach 2A consists of 2,204 linear feet of 18" PVC. Based on the cost estimate and addendums provided by the Eastlake Company to the City, the total cost of this Reach including construction, inspection and administration is $112,199.

Reach 2B was constructed by Eastlake Company to serve Eastlake Trails South community. It consists of 2,327 feet of 18" PVC pipe. Reach 2B currently ends at the Olympic Parkway Pump Station. Based on the cost estimate and addendums provided by the Eastlake Company to the City, the total cost of this Reach including construction, inspection and administration is $267,660.

Reach 4B

Reaches 4B and 5A were constructed by San Diego Gas and Electric but were funded by the City. At the time of construction, Salt Creek DIF funds were not available so the City issued a loan from the Trunk Sewer Capital Reserve Fund to the Salt Creek DIF. The loan used to fund Reaches 4B and 5A is still outstanding and is included in the DIF calculation.

Reach 4B was constructed by SDG&E as part of a joint project with the City of Chula Vista. SDG&E was reimbursed $341,509 for this segment. This Reach consists of 2,608 linear feet of 24" PVC pipe. For the engineering design for Reaches 4B and 5A, the City paid a total of $58,814. Of this amount, $33,883 was exclusively for the design of Reach 4B. The total cost for Reach 4B, including construction, design, inspection and administration, is $390,422.

Reach 5A

Reach 5A consists of 1,919 linear feet of 24" PVC pipe and was also constructed by San Diego Gas & Electric (SDG&E) as part of the joint project with the City of Chula Vista. The total reimbursed to SDG&E for the construction of Reach 5A was $251,286. The City paid $24,931 for the design services for this Reach. The total cost for Reach 5A, including construction, engineering services, inspection and administration, is $287,278.

3.2.2 Constructed by City

Reaches 3, 4A, 5B, 6, 7, 8, and 9 were constructed by the City and are described below.

Reach 3

Reach 3 consists of 2,391 linear feet (L. F.) of dual 20" PVC and 194 L. F. of single 20" PVC pipe. Reach 3 begins at the Olympic Parkway Pump Station and terminates at the northerly portion of Reach 4A. This Reach cost $1,526,107.

Reach 4A

Reach 4A consists of 3,452 L. F. of dual 24" PVC, 562 L. F. of single 24" PVC and 2,310 L. F. 10" PVC pipe. The total cost for Reach 4A is $2,921,271.

Reach 5B

Reach 5B consists of 3,654 L. F. of 30" PVC pipe. The construction cost for Reach 5B is $1,295,895; this cost includes construction, engineering services, inspection and administration.

Reach 6

The cost for Reach 6, including construction, engineering services, inspection and administration, is $973,024. Reach 6 consists of 2,924 linear feet of 30" PVC pipe.

Reach 7

Reach 7 consists of 8,420 L. F. of 36" PVC pipe. The cost, including construction, engineering services, inspection and administration, for Reach 7 is $3,222,772.

Reach 8

Reach 8A consists of 2,542 linear feet of 42" PVC pipe and has a cost, including construction, engineering services, inspection and administration, of $1,218,959.

Reach 8B consists of 3,952 linear feet of 42" PVC; it has a cost, including construction, engineering services, inspection and administration, of $1,895,193.

Reach 9

Reach 9 is the final segment of the Salt Creek Interceptor, which connects the system to the existing 72" City of San Diego Metro Sewer Interceptor on West Frontage Road. Reach 9 consists of approximately 26,300 linear feet of 42" and 48" PVC. The total cost, including construction, engineering services, inspection and administration is $17,709,228.

To expedite the construction of this trunk line, Reach 9 was further divided into 3 sub-reaches, Reaches 9A, 9B and 9B'. Reach 9A consists of approximately of 1,500 linear feet of 42" PVC and 9,400 linear feet 45" PVC totaling 10,900 linear feet and cost $6,115,322 to construct. Reaches 9B and 9B' are regional facilities benefitting customers both inside and outside the basin. Reaches 9B and 9B' were funded with Trunk Sewer Capital Reserve Funds. The cost of Reach 9A is included in the Salt Creek DIF calculation; Reaches 9B and 9B' are regional facilities and their costs are not recoverable through the Salt Creek DIF.

Wolf Canyon Trunk Sewer

The 2004 DIF contemplated additional improvements within the Wolf Canyon basin that would be needed to serve the southwestern edge of the basin located west of the SR-125. These improvements are referred as the Heritage Road trunk sewer lines and the Rock Mountain Road/Main Street trunk sewer. The alignment of Rock Mountain Road/Main Street trunk sewer is still being developed and Heritage Road is under construction at this time. This 2015 Study updated the Heritage Road and Rock Mountain Road/Main Street trunk sewer costs with the most current information available. Section 4.4: Capital Improvement Program and Cost Estimates provides a description and detailed cost estimate for the Wolf Canyon Trunk Sewer. In total, the Wolf Canyon Trunk Sewer projected cost is $7,282,642.

More recent analyses by various land owners and staff have determined that the Rock Mountain Road/Main Street trunk sewer would be needed to serve the Village 4 and Village 7 properties. Current studies for Village 4 indicate that Rock Mountain Road/Main Street trunk sewer will be needed to serve this development. Additionally, while current studies for Village 7 contemplate a temporary sewer main through Village 8 West, the permanent solution to serve Village 4 and Village 7 developments would be the Rock Mountain Road/Main Street trunk sewer in Main Street.

Additional DIF Eligible Facilities

The stretch of trunk sewer serving Village 11 is commonly referred to as the Hunte Parkway Extension (Extension). The Extension heads easterly along Hunte Parkway and south to the Salt Creek Interceptor.

In 2008, a study prepared by PBS&J recommended that a larger portion of the EUC Millenia be graded to drain to a centrally-located diversion structure. The study recommended that the diversion structure would serve as an interim solution to sewer a larger portion of the EUC by gravity to Hunte Parkway until the construction of the Rock Mountain Road/Main Street Trunk Sewer was completed. The study also recommended a permanent solution following the existing sewer system through the neighboring Village 7 development ultimately connecting to the Rock Mountain Road/Main Street Trunk Sewer.

More recent analyses by landowners of the EUC Millenia have determined that the EUC will be graded to permanently drain by gravity to the Salt Creek Interceptor via the Eastlake Parkway and Hunte Parkway sewer mains. This study determined that the Extension will actually serve Village 11 and a major portion of the EUC Millenia. Therefore, the Extension qualifies as a regional facility serving several developments within the basin and is eligible for inclusion in the 2015 DIF update. The proposed Hunte Parkway Extension capacity enhancement consists of 250-linear ft of parallel 16-inch pipeline to the existing 12-inch pipeline that connects to the Salt Creek Interceptor near the University development. The Hunte Parkway Extension is estimated to cost $320,836 (excluding 5-year maintenance fees).

3.2.3 Facilities Summary

Table 2 provides a summary of the facilities located within the Salt Creek Basin. Not all facilities located within the basin are recoverable from the development impact fee. In summary, the Salt Creek Sewer Basin includes about 87,000 linear feet (LF) or about 16.5 miles of sewer lines with a total cost of $40.3 million for both current and future facilities. Of the facilities located in the Salt Creek Basin, about $28 million is recoverable from the DIF.

Table 2: List of Facilities
City of Chula Vista
Salt Creek DIF Study

COMPLETED FACILITIES SALT CREEK BASIN - Reaches	Length (LF)	Cost	Constructed by	Year	Costs Included in the DIF
1	4,517	$173,613	Pacific Bay Homes	FY1998	$173,613
2A	2,204	$112,199	Eastlake Company	FY2001	$112,199
2B	2,327	$267,660	Eastlake Company	FY2001	$267,660
3	2,585	$1,526,107	City	FY2003	$1,526,107
4A	6,324	$2,921,271	City	FY2003	$2,921,271
4B	2,608	$390,422	SDG&E	FY1998	$390,422
5A	1,919	$287,278	SDG&E	FY1998	$287,278
5B	3,654	$1,295,895	City	FY2003	$1,295,895
6	2,924	$973,024	City	FY2003	$973,024
7	8,420	$3,222,772	City	FY2003	$3,222,772
8A	2,542	$1,218,959	City	FY2003	$1,218,959
8B	3,952	$1,895,193	City	FY2003	$1,895,193
9A	10,903	$6,115,322	City	FY2003	$6,115,322
9B	14,010	$7,657,988	City	FY2003	None - regional facility
9B'	1,329	$3,936,373	City	FY2003	None - regional facility
Auto Park Sewer (The Crossings)	540	$144,808	Yacoel Properties	FY2007	None - regional facility
Auto Park Extension and Environmental Review	350	$152,815	City	FY2008	None - regional facility
Auto Park Pump Station Decommissioning	0	$392,916	City	FY2010	None - regional facility
	71,108	$32,684,615			$20,399,715*

FUTURE FACILITIES	Length (LF)	Cost	To be Constructed by	Year	Costs Included in the DIF
Heritage Road	6,267	$2,444,130	City	Future	$2,444,130
Rock Mountain Road/Main Street	9,300	$4,838,512	City	Future	$4,838,512
Hunte Parkway Extension	250	$320,836	City	Future	$320,836
	15,817	$7,603,478			$7,603,478
TOTAL	86,925	$40,288,093			$28,003,193

*The City incurred $267,762 due to additional project costs after the 2004 DIF Study was completed.

Legend

studied_pipes

DESCRIPT

- Heritage Rd Trunk Sewer
- Rock Mountain Rd/Main St Trunk Sewer
- Chula Vista City Boundary
- Proposed Road Circulation Alignment

Exiting Salt Creek Trunk Sewer

Reaches

- SALT CREEK_R1
- SALT CREEK_R2A
- SALT CREEK_R2B
- SALT CREEK_R3
- SALT CREEK_R4A
- SALT CREEK_R4B
- SALT CREEK_R5A
- SALT CREEK_R5B
- SALT CREEK_R6
- SALT CREEK_R7
- SALT CREEK_R8A
- SALT CREEK_R8B
- SALT CREEK_R9'B
- SALT CREEK_R9A
- SALT CREEK_R9B

Hunte Parkway Extension

Wastewater Basins

- "G" STREET BASIN
- BAYFRONT\BASIN
- MAIN STREET BASIN
- POGGI CANYON\SUB-BASIN
- SALT CREEK BASIN
- SWEETWATER BASIN
- TELEGRAPH CANYON BASIN
- WOLF CANYON BASIN

SALT CREEK BASIN

SWEETWATER BASIN

"G" STREET BASIN

TELEGRAPH CANYON BASIN

POGGI CANYON SUB-BASIN

BAYFRONT BASIN

MAIN STREET BASIN

WOLF CANYON BASIN

HERITAGE RD TRUNK SEWER

ROCK MOUNTAIN RD/MAIN ST TRUNK SEWER

SALT CREEK_R1

SALT CREEK_R2A

SALT CREEK_R2B

SALT CREEK_R3

SALT CREEK_R4A

SALT CREEK_R4B

SALT CREEK_R5A

SALT CREEK_R5B

SALT CREEK_R6

SALT CREEK_R7

SALT CREEK_R8A

SALT CREEK_R8B

SALT CREEK_R9A

SALT CREEK_R9B

SALT CREEK_R9'B

Hunte Parkway Extension

PROCTOR VALLEY

SR-125 SB

SR-125 NB

SAN MIGUEL

MOUNT MIGUEL

PROCTOR VALLEY

WILLOW

BONITA

30TH

SR-54 WB

SR-54 EB

I-805 NB

I-805 SB

PLAZA BONITA RD

BONITA

C

E ST

I-5 NB

I-5 SB

CORRAL CANYON

OTAY LAKES

H

EASTLAKE

URBAN CENTER NORTH

EASTLAKE PKWY

HUNTE

WUESTE

PASTELEGRAPH CANYON

LA MEDIA

OLYMPIC PARKWAY

BIRCH

MARINA

BROADWAY

03RD

04TH

HILLTOP

MEDICAL CENTER DR

RANCHERO

J

PALOMAR

ORANGE

MAIN

OTAY VALLEY

BEYER

HERITAGE

BAY

SR-125 NB

SR-125 SB

0 6,000 12,000 Feet

Infrastructure ENGINEERING CORPORATION

City of Chula Vista
Salt Creek DIF Study

Study Area & Proposed Trunk Lines

May 2015

Figure 1

3.3 Wastewater Duty Factors

The wastewater flow of the various land use types projected for the Salt Creek Sewer Basin is provided in Table 3. The wastewater flow is the capacity in the system that each new customer will utilize after connecting. Thus, wastewater flow is an appropriate metric to apportion the costs of Salt Creek facilities to new customers. Table 3 compares the updated wastewater generation (duty) factors of each land use type to the duty factor used in the 2004 Study. Wastewater duty factors are lower for all land use types due to water conservation measures required for new development.

Table 3: Wastewater Duty Factor Comparison
City of Chula Vista
Salt Creek DIF Study

	Wastewater Duty Factor	
Land Use	**2004 Study**	**2015 Study**
Single Family	265 gpd	230 gpd
Multi-Family	199 gpd	182 gpd
Park	500 gpd/acre	410 gpd
CPF	2,500 gpd/acre	1,313 gpd/acre
School	15 gpd/student	1,181 gpd/acre
Commercial	2,500 gpd/acre	1,401 gpd/acre
Industrial	2,500 gpd/acre	712 gpd/acre
University	20 gpd/student	1,080 gpd/acre

Source: City of Chula Vista, 2004, Update to the Salt Creek Sewer Basin Plan; IEC, 2014 Wastewater Master Plan Update
CPF- Community Public Facility; gpd - gallons per day

3.4 EDU Projections

For the purpose of calculating the development impact fee, projected development was converted to equivalent dwelling units based on the updated wastewater duty factors determined by IEC. An equivalent dwelling unit is equal to the wastewater flow generated by a single family residential customer, which is 230 gallons per day (gpd). For example, a park is estimated to produce 410 gallons per day of wastewater flow per acre. 410 gpd divided by 230 gpd results in an EDU factor of 1.78 for parkland. Thus, each acre of parkland development is equal to 1.78 EDUs, see Table 4.

Table 4: EDU Conversion Factors
City of Chula Vista
Salt Creek DIF Study

Land Use	Wastewater Duty Factor	Units	EDU Factor
Single Family	230	gpd per acre	1.00
Multi-Family	182	gpd per acre	0.79
Park	410	gpd per acre	1.78
CPF	1,313	gpd per acre	5.71
School	1,181	gpd per acre	5.13
Commercial sq-ft	80	gpd per 1,000 sq ft	0.0003
Commercial acre	1,401	gpd per acre	6.09
Industrial	712	gpd per acre	3.10
University	1,080	gpd per acre	4.70

Source: IEC, 2014 Wastewater Master Plan Update
CPF- Community Public Facility; gpd - gallons per day; sq ft - square feet

Table 5 shows the development projection by land use type for the Salt Creek Basin through build-out. Table 5 is based on the wastewater duty factors estimated in the 2014 Wastewater Master Plan and the development acreages and residential units provided by the City. Appendix A provides the estimated remaining wastewater flow of each development area. In total, the remaining EDUs in the Salt Creek Basin are estimated to produce a wastewater flow of 4.75 million gallons per day.

In total, an estimated 20,668 EDUs are remaining in the Salt Creek Basin to be developed through build-out. As shown, more than half of the remaining development is projected to be multi-family units. Table 6 compares the EDU count calculated in the 2004 Salt Creek DIF Study to the EDU count calculated in this 2015 update. Across the basin, this study projects a count of 20,668 EDUs remaining, a change from the 25,668 EDUs projected in 2004. Some areas of the basin have been developed since 2004 which reduced the remaining EDUs.

Table 5: Salt Creek Basin Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

	Nonresidential Acreage							Residential Units		TOTAL
Development Area	**Park**	**CPF**	**School**	**Comm sq-ft**	**Comm acre**	**Industrial**	**University**	**Single Family**	**Multi-Family**	**REMAINING EDUS**
Bella Lago	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53	0	53
Eastlake Woods/Trails	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15	0	15
Eastlake Vistas	0.0	0.0	0.0	15,000	0.00	0.0	0.0	0	230	187
Village 8 West	27.9	5.8	31.6	300,000	0.0	0.0	0.0	621	1,429	2,101
Village 8 East*	7.3	4.2	10.8	20,000	0.0	0.0	0.0	943	2,617	3,113
Village 9	27.5	5.0	19.8	1,500,000	0.0	0.0	0.0	266	3,734	3,922
Regional Technology Park[+]	0.0	0.0	0.0	1,850,000	0.0	0.0	0.0	0	0	643
University	0.0	0.0	0.0	0.0	0.0	0.0	290.0	0	0	1,362
Village 10*	7.6	4.3	9.2	0.0	0.0	0.0	0.0	695	1,045	1,607
Village 11	0.0	0.0	32.6	0.0	0.0	0.0	0.0	0	89	238
Planning Area 20	188.0	0.0	0.0	0.0	15.0	0.0	0.0	0	0	427
Birch Foundation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	128	0	128
Village 2* [++]	5.1	1.4	9.5	0	0.0	36.5	0.0	517	659	1,217
Village 3*	7.9	4.2	8.3	20,000	11.3	39.9	0.0	1,002	595	1,753
Village 4	62.8	0.0	0.0	0.0	0.0	0.0	0.0	453	0	565
Village 7[++]	0.0	6.3	0.0	0.0	0.0	0.0	0.0	81	0	117
Planning Area 12 (EUC) [++**]	23.2	10.7	6.0	3,487,000	0.0	0.0	0.0	0	2,993	3,219
Total	357.3 acres	41.9 acres	127.8 acres	7,192,000 sq-ft	26.3 acres	76.4 acres	290.0 acres	4,774 units	13,391 units	**20,668 EDUs**

EDU - equivalent dwelling units, one EDU = 230 gallons per day wastewater flow
Source: development projections - City of Chula Vista; wastewater duty factors - IEC, 2014 Wastewater Collection System Master Plan
* Proposed General Plan Land Use
** Net Reduction of 495 EDUs is based on the preferred alternative of permanently diverting into Poggi Basin 529 EDUs at 215 gpd/EDU converted to 230 gpd/EDU basis (per EUC Tech Sewer Study PBS&J, 1/2008).
[+] The adopted General Plan has a (floor area ratio) FAR of between 0.25 and 0.75 for the 85 acre (3,700,000 sq ft) Regional Technology Park. Based on a City's FAR assumption of 0.50 that would generate about 1,850,000 sq ft.
[++] Portions of Village 2, Village 7 and EUC are located within the Poggi Canyon Basin

Legend

DESCRIPT

- Heritage Rd Trunk Sewer
- Rock Mountain Rd/ Main St Trunk Sewer

Salt Creek Trunk Sewer

City of Chula Vista Boundary

- City of Chula Vista Boundary

Wastewater Basins

MajorProjects

NAME

- Bella Lago
- Eastlake Greens
- Eastlake Land Swap
- Eastlake Trails
- Eastlake Vistas
- Eastlake Woods
- Eastlake Woods West
- Olympic Training Center
- Otay Ranch Village 12 (Birch Patrick Estates)
- Rolling Hills Ranch
- EASTERN URBAN CENTER (PA12)
- FREEWAY COMMERCIAL (PA12)
- OTAY RANCH TOWN CENTER (PA12)
- PLANNING AREA 20
- UNIVERSITY
- VILLAGE 10
- VILLAGE 11
- VILLAGE 1
- VILLAGE 2
- VILLAGE 3
- VILLAGE 4
- VILLAGE 5
- VILLAGE 6
- VILLAGE 7
- VILLAGE 8 EAST
- VILLAGE 8 WEST
- VILLAGE 9
- High Tech High
- Eastlake Vistas-Lake Pointe/Olympic Pointe

0 2,000 4,000 8,000 Feet

Bella Lago

SALT CREEK BASIN

Rolling Hills Ranch

Eastlake Woods West

Eastlake Woods

SWEETWATER BASIN

Birch Foundation

Eastlake Trails

Eastlake Greens

Eastlake Vistas

Village 5

Lake Pointe/ Olympic Pointe

Eastlake Land Swap

MAIN STREET BASIN

Free Commercial PA 12

Olympic Training Center

TELEGRAPH CANYON BASIN

Village 1

Village 6

Village 11

Town Center PA 12

POGGI CANYON SUB-BASIN

HighTech High

Village 2

Village 7

EUC - PA 12

University

WOLF CANYON BASIN

Village 9

Village 10

Heritage Rd Trunk Sewer

Village 3

Rock Mountain Rd/ Main St Trunk Sewer

Village 4

Village 8 West

Village 8 East

MAIN STREET BASIN

PLANNING AREA 20

Infrastructure ENGINEERING CORPORATION

City of Chula Vista
Salt Creek DIF Study

Existing and Proposed New Developments

May 2015

Figure 2

Table 6: Change in EDUs
City of Chula Vista
Salt Creek DIF Study

	Equivalent Dwelling Units		
Development Area	**2004 Study**	**2015 Study**	**Difference**
Village 8 (East and West)	1,663	5,214	3,551
University	not included	1,362	1,362
Village 2	466	1,217	751
Planning Area 20	not included	427	427
Village 9	3,526	3,922	396
Regional Technology Park	not included	643	643
Birch Foundation	not included	128	128
Planning Area 12 (EUC)	3,111	3,219	108
Eastlake Greens	8	build-out**	(8)
Bella Lago	140	53	(87)
Village 4	705	565	(140)
Eastlake Woods/Trails	160	15	(145)
Village 16*	411	not included	(411)
Misc.	596	not included	(596)
Village 3	2,427	1,753	(674)
Rolling Hills Ranch	723	build-out**	(723)
Eastlake Vistas-Lake Pointe & Olympic Pointe	1,109	187	(922)
Village 10	2,540	1,607	(933)
Village 7	1,635	117	(1,518)
Village 11	1,986	238	(1,748)
Village 14*	1,838	not included	(1,838)
Village 13*	2,624	not included	(2,624)
Total	25,668	20,668	(5,000)

*Not included; County service areas.
**Development area is at build-out. No future development will occur.

3.4.1 County Properties

The 2015 Study does not include the areas in the County known as Village 13, 14, and 16. Although these properties were included in the 2004 DIF, it is assumed that once the County development has been defined and authorized, and subsequent to the necessary technical sewer studies by the County, the DIF will be updated by the City. The approved County General Plan indicates these areas represent 4,500 EDUs.

3.4.2 Diverted EDUs

A smaller portion of Planning Area 12 (the Eastern Urban Center – EUC Millenia) is located in the Poggi Canyon Basin. The 2008 PB&J EUC Sewer Tech Study identified 189 EDUs located within the Poggi Canyon Basin. The most current grading proposal for the EUC indicates an increase in flows permanently diverted from the Salt Creek Basin to the Poggi Canyon Basin. A total estimated flow equal to 495 EDUs will be permanently diverted to the Poggi Canyon Basin. This diversion is permanent in nature and no additional impacts as previously identified in the 2009 Poggi DIF Update are anticipated.

SECTION 4: 2050 Build-out Capacity Analysis

IEC completed a Wastewater Master Plan Update (WWMP) for the City in May 2014 which evaluated the system capacity through 2050 and developed a capital improvement program (CIP) for rehabilitation and expansion to accommodate system discrepancies. A hydraulic model was developed in support of the evaluation. IEC modified the hydraulic model with updated land use projections of major developments in planning year 2050, which was provided by the City, to re-evaluate the Salt Creek Trunk Sewer and developed additional CIP projects with cost estimates.

The purpose of this section is to analyze the hydraulic capacity of the Salt Creek Interceptor and recommended pipeline sizes of the two trunk sewers it serves, which includes the Heritage Road Trunk Sewer and the Rock Mountain Road/Main Street Trunk Sewer. Four CIP projects proposed in 2014 WWMP, which are P29, P30, P42, and P43, and the Hunte Parkway Extension Project were also analyzed for their hydraulic capacity as they were affected by the proposed developments flows and connected to the Salt Creek Interceptor. The Hunte Parkway Extension improvement plans have been approved by the City. Both the Hunte Parkway Extension improvement project and P30 from 2014 WWMP propose improvement for the same pipeline segment, but with different methods. The Hunte Parkway Extension improvement project proposes to install a new pipeline parallel to the pipeline segment, and P30 proposes to upsize the pipeline segment.

The Salt Creek Trunk Sewer is currently divided into nine reaches, approximately north from Stone Gate Street to east of I-805 Freeway. Since the Salt Creek DIF was established in 1994, the DIF continued to be revised and updated for growth and developments within the Salt Creek Sewer Basin and its adjacent basins, such as Poggi Canyon Basin and Wolf Canyon Basin. Population growth and developments proposed within these basins may increase wastewater delivered to the Salt Creek Trunk Sewer and require rehabilitation and additional facilities to support the additional development. This study added the Heritage Road Trunk Sewer and Rock Mountain Road/Main Street Trunk Sewer for evaluation under 2050 PWWF conditions. These two trunk sewers are proposed to be served by the Salt Creek Interceptor. In order to have sufficient fund for the construction of the Salt Creek Interceptor, a hydraulic capacity analysis is needed to identify deficient pipelines, develop additional capital improvements, if necessary, to eliminate system deficiencies and increase the system's hydraulic performance, and update the costs associated with the additional capital improvements.

4.1 Flow Projection

The Salt Creek Trunk Sewer mainly serves the Salt Creek Basin, Wolf Canyon Basin, Poggi Canyon Basin, and Main Street Basin, therefore, population growth and developments within these areas would have potential impact on the Salt Creek Trunk Sewer. In the 2014 WWMP study, IEC has developed wastewater flow projections for the City through 2050. Information on major developments is provided by the City with land use types and area under parcel level. Flows associated with these proposed developments were projected based on the General Plan Dwelling Units (DU) per acre. The City provided IEC updates on land use projections with targeted buildout information of the development projects and added few more development projects within the study area by planning year 2050 into consideration. Flow projections for each development project in 2050 is updated by calculating the maximum buildout of each land use type for each proposed development.

Table 7 lists the 2050 wastewater flow projections for proposed new developments to the Salt Creek Sewer Interceptor. Detailed land use buildout information with corresponding tributary manholes along the Salt Creek Interceptor can be seen in Appendix B and Appendix C, respectively.

Table 7: **2050 Salt Creek Interceptor Wastewater Flow Projections**
City of Chula Vista
Salt Creek DIF Study

Proposed Development Project	Wastewater Flow (gpd)	
Bella Lago	32,200	
Eastlake Trails	244,951	
Eastlake Woods and West Development	193,772	
Eastlake Greens & Landswap Development 1 (Salt Creek Basin)	232,300	
Eastlake Greens & Landswap Development 1 (Poggi Basin)	460,308	
Eastlake Vistas-Lake Pointe & Olympic Pointe	119,140	
Eastlake Vistas	387,646	
Olympic Training Center	153,057	*
Village 2 (Salt Creek Basin)	279,985	
Village 2 (Poggi Basin)**	757,928	
Village 3	403,146	
Village 4	130,020	
Village 7 (Salt Creek Basin)	212,170	
Village 7 (Poggi Basin)**	198,303	
Village 8 West	483,323	
Village 8 East	716,046	
Village 9	901,992	
Regional Technology Park	148,000	
University	313,200	
Village 10	369,667	
Village 11	554,806	
Plng. Area 12 (EUC) (Salt Creek Basin)	740,483	
Plng. Area 12 (EUC) (Poggi Basin)**	113,932	
Plng. Area 12 -(Freeway Commercial) (Poggi Basin)**	149,524	
Plng. Area 20	98,095	
Birch Foundation	29,440	
Rolling Hills Ranch	303,692	
High Tech High	93,012	
Total	8,820,138	

*Flow adopted from Table 3-1 of the 2014 WWMP. Assumed 100% Return-To-Sewer Ratio to account for future buildout.
**Wastewater flows projected from the Poggi Basin are for hydraulic analysis purposes only.

The total sewer flows projected for the listed proposed developments in 2014 WWMP was approximately 8.34 mgd by planning year 2050, and the new sewer flows projected in this study are 8.82 mgd with an incremental flow increase of 0.48 mgd. The Salt Creek Interceptor is assumed to collect flows from Salt Creek Basin, Main Street Basin, and Wolf Canyon Basin only. The Heritage Road Trunk Sewer is proposed to serve the Village 2 and a large portion of Village 3 development areas while Rock Mountain Road/Main Street Trunk Sewer is proposed to serve a small portion of Village 3, Village 4, and Village 7 development areas.

4.2 Hydraulic Model Development

As part of the City's Wastewater Master Plan preformed in July 2014, IEC developed an InfoSWMM sewer system hydraulic model from the sewer system GIS database. This platform combines a fully dynamic hydraulic modeling engine developed and approved by the Environmental Protection Agency (EPA) with the GIS interface that can take advantage of the data that the City has built into its sewer system GIS database. This model was used and revised for the hydraulic capacity analysis in this study.

4.2.1 Model Revision

Three flow conditions were analyzed in this study, which were Average Dry Weather Flow (ADWF), Peak Dry Weather Flow (PDWF), and Peak Wet Weather Flow (PWWF) conditions. The base flows (ADWF) developed for 2050 in 2014 WWMP have been updated with the new flow projections in this study to account for the incremental flow increase, per the updated development information provided by the City.

The model network has been reviewed for consistency with the City's as-built plans. Several inconsistencies in pipe sizes, connections, and slopes were discovered and corrected based upon verification of as-built plans.

There are dual pipelines along Salt Creek Interceptor between Olympic Parkway and the connections with the Olympic Training Center laterals, as shown in Figure A-1-2 and Figure A-1-3 in Appendix C. With verification from the City, one of the parallel pipelines is used as an overflow facility. Therefore, the model was run with single pipeline to be conservative for analysis.

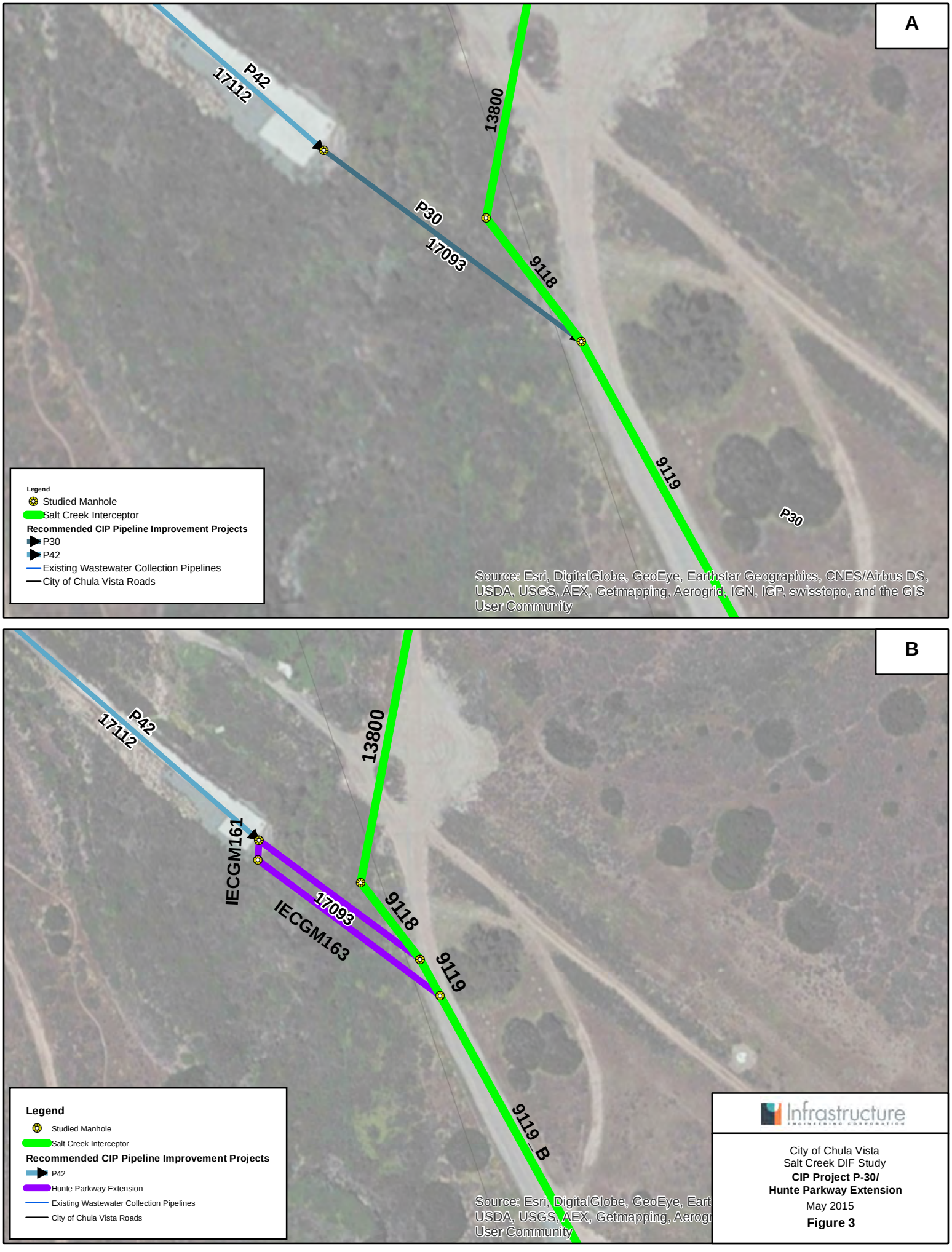
The Hunte Parkway Extension is a Salt Creek sewer lateral improvement project that proposed a parallel 16-inch pipeline to the existing 12-inch pipeline that connects to Salt Creek Interceptor near the University Development Project site. Its plans have been approved by the City and can be seen in Appendix D. The same 12-inch pipeline has been recommended for upsizing to 18 inches in diameter in the 2014 WWMP, as shown in Figure 3. Per the City request, IEC has modeled the Hunte Parkway extension as a CIP alternative for evaluation.

The 2014 WWMP does not include analysis for the Heritage Road Trunk Sewer and Rock Mountain Road/Main Street Trunk Sewer, but the Heritage Road Trunk Sewer is under construction concurrently with the construction of the Heritage Road street improvements at this time and recent analyses by the various land owners and the City has shown that the Rock Mountain Road/Main Street trunk sewer would be needed to serve the Village 4 and Village 7 Developments. Therefore, these two trunk sewers were added to the model for analysis in this

study. The Heritage Road Trunk Sewer locates within the vicinity of Village 2 and Village 3 developments, and is proposed to serve these two development sites. According to current studies for Village 7 development, sewer flows from Village 7 development will be diverted through Village 8 West temporarily south to the Salt Creek Interceptor, and current studies for Village 4 development indicated that it would be unlikely sewer flows from Village 4 conveyed westerly through Village 8 West development and then south to the Salt Creek Interceptor. A permanent solution serving both Village 4 and Village 7 developments is anticipated with the construction of the Rock Mountain Road/Main Street trunk sewer in Main Street.

The two trunk sewers were aligned to match the proposed road circulation alignment with minimum slope requirement to be conservative for analysis. The City has a minimum of 0.4% slope requirement for sewer construction.

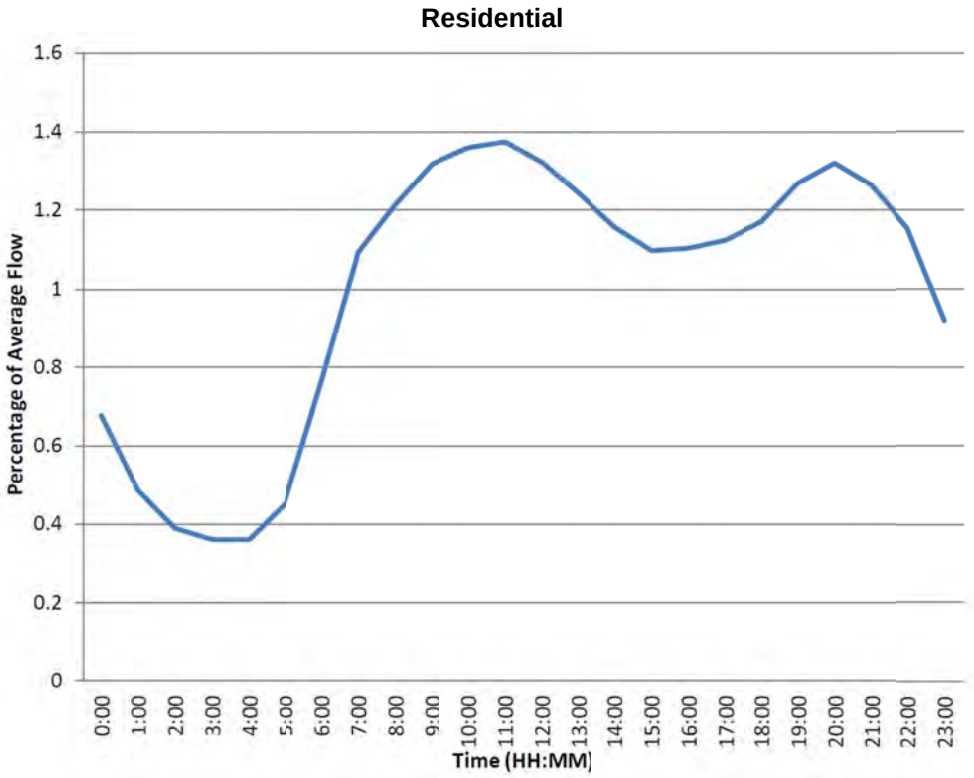
The pipelines evaluated in this study include the Salt Creek Interceptor, the Heritage Road Trunk Sewer, the Rock Mountain Road/Main Street Trunk Sewer, four affected CIP projects proposed in 2014 WWMP, and the Hunte Parkway Extension. Details of Salt Creek Interceptor are shown from Figure A-1-1 to Figure A-1-13 in Appendix C, and details of the two trunk sewers are shown in Figure A-2 in Appendix E. The four CIP projects evaluated in this study are shown in Figure A-3-1 and Figure A-3-2 in Appendix F.

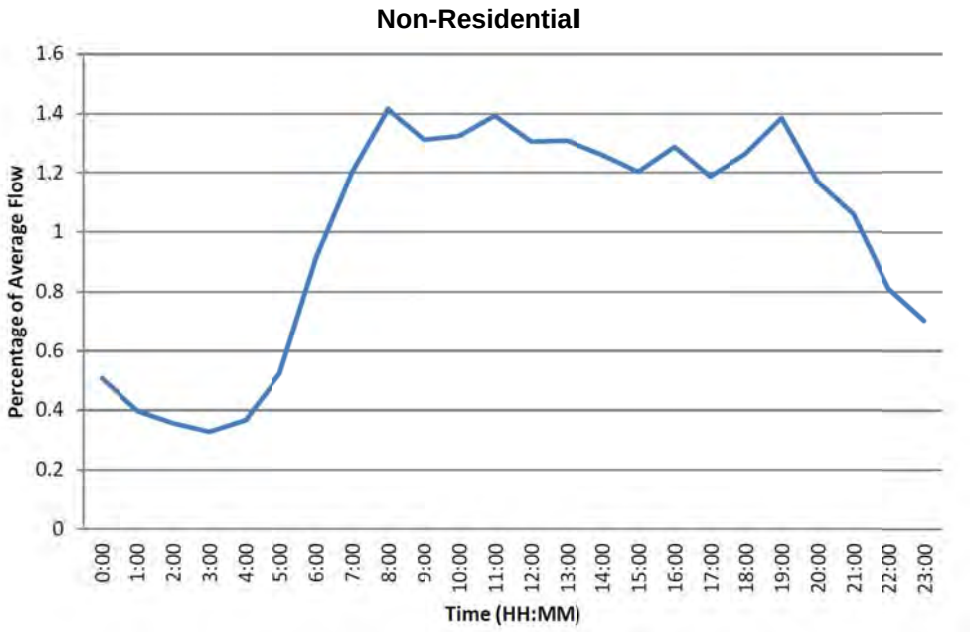

A
P42
17112
13800
P30
17093
9118
9119
P30
Legend
Studied Manhole
Salt Creek Interceptor
Recommended CIP Pipeline Improvement Projects
P30
P42
Existing Wastewater Collection Pipelines
City of Chula Vista Roads
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
B
P42
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Legend
Studied Manhole
Salt Creek Interceptor
Recommended CIP Pipeline Improvement Projects
P42
Hunte Parkway Extension
Existing Wastewater Collection Pipelines
City of Chula Vista Roads
Source: Esri, DigitalGlobe, GeoEye, Eart
USDA, USGS, AEX, Getmapping, Aerogr
User Community
Infrastructure
ENGINEERING CORPORATION
City of Chula Vista
Salt Creek DIF Study
CIP Project P-30/
Hunte Parkway Extension
May 2015
Figure 3

4.2.2 Peak Dry Weather Flow (PDWF)

PDWF was developed by peaking the average dry weather flow (ADWF) with diurnal curves to account for the variation in sewer generation that occurs over the course of a typical day. Residential and non-residential flows have different usage patterns, so two diurnal curves were extracted from flow monitoring data collected from the City. The normalized diurnal curves for residential and non-residential sewer flows can been seen in Figure 4 and Figure 5. Base infiltration (BI) was not included in PDWF as it is usually small under dry weather conditions and due to lack of information.

Figure 4: Normalized Diurnal Curves





4.2.3 Peak Wet Weather Flow (PWWF)

The PWWF was calculated PDWF plus rainfall dependent infiltration/inflow (RDI/I) and BI, combined as Inflow/Infiltration (I/I) based on the best data available. RDI/I is storm water that enters the wastewater collection system in direct response to the intensity and duration of individual rainfall events, RDI/I may recede gradually after a storm, however, any residual flow is considered to be a general increase in GWI.

Peak values were evaluated based on consistency throughout the year from data gathered from the City's main outfalls, removing any inconsistent peaks, resulting in an average peaking factor for I/I of 1.85. Since the maximum peaking factor for total PDWF is approximately 1.45 times ADWF, the total I/I is approximately 40% of ADWF. The total volume of I/I was averaged out across the city and multiplied accordingly to each pipeline based on its length-diameter. Then Respective I/I value was then added to the base flow per time period for PWWF.

4.3 Hydraulic Analysis

The hydraulic model is the primary tool to analyze the hydraulic capacity of the Salt Creek Interceptor and the Trunk Sewer lines that it serves. Identification of hydraulic deficient pipelines and development of capital improvement projects (CIPs) are based on the City's design criteria.

4.3.1 Design Criteria

The following design criteria, as described in the 2014 WWMP, are used in this analysis:
For existing pipelines,

- Pipes 12-inches in diameter and smaller: 70% full at peak wet weather flow
- Pipes over 12-inches in diameter: 85% full at peak wet weather flow
- Manning's n: 0.013

For proposed new pipelines,

- Pipes 12-inches in diameter and smaller: 50% full at peak wet weather flow
- Pipes over 12-inches in diameter: 75% full at peak wet weather flow
- Manning's n: 0.013

4.3.2 Model Results

The new flows projected based on the updated land use information add an additional flow of approximately 0.48 mgd to the Salt Creek Interceptor. Table T-2 in Appendix G shows the model results for 2050 system with existing conditions under the three flow conditions. Table T-3 in Appendix H shows the model results for 2050 system with CIP projects proposed in 2014 WWMP and Hunte Parkway Extension pipeline improvement project under the three flow conditions. CIP project P30 proposed in 2014 WWMP and the Hunte Parkway Extension project that was approved by the City are two alternatives to eliminate the hydraulic deficiency in Pipe 17093. Model results showed that both alternatives are effective in eliminating the hydraulic deficiency.

Pipe ID with prefix "IECGM" are new pipelines for either Heritage Road Trunk Sewer, Rock Mountain Road/ Main Street Trunk Sewer, or the parallel pipelines of Hunte Parkway extension.

4.4 Capital Improvement Program and Cost Estimates

Since the existing lines and the affected CIP projects proposed in 2014 WWMP are able to meet the design criteria with the new 2050 flows, no additional pipeline improvements are needed on the existing system. Based on model results, three CIP projects are identified, which included the Heritage Road Trunk Sewer and the Rock Mountain Road/ Main Street Trunk Sewer, to serve Village 2, Village 3, Village 4, and Village 7 (See Figure A-2 in Appendix E), and the Hunte Parkway Extension project (See Figure 2).

The Heritage Road Trunk Sewer is aligned along Heritage Road from Santa Victoria Road to Main Street with approximately 6,300 ft. It is recommended for sizing of 15 inches in diameter. The Rock Mountain Road/Main Street Trunk Sewer is aligned along Rock Mountain Road/Main Street from Magdalena Avenue to Heritage Road with approximately 9,300 ft. Its sewer lines

between Magdalena Avenue and La Media Road are recommended for sizing of 12 inches in diameter, and its sewer lines between La Media Road and Heritage Road are recommended for sizing of 15 inches in diameter. The Hunte Parkway Extension is chosen over CIP project P30 as an alternative for Pipe 17093 as it has been approved by the City.

4.4.1 Cost Estimates

Capital improvement costs of the Heritage Road Trunk Sewer, Rock Mountain Road/Main Street Trunk Sewer, and the Hunte Parkway Extension project were estimated in this section. Capital improvement costs of both trunk sewers were estimated based on the unit costs developed from the previous projects done by IEC in a similar manner. The unit cost for the Rock Mountain Road/Main Street Trunk Sewer were adjusted due to uncertainties with the construction phasing of the sewer and road improvements associated with Main Street between Village 8 West development and Heritage Road. The capital improvement costs of the Hunte Parkway Extension project were adopted from the City's Bond Estimate for the Hunte Parkway Extension project, as shown in Appendix J.

These estimates are based on the best available data at the time of this study; however, since prices of materials and labor fluctuate with time, new estimates should be obtained during pre-design for proposed facilities to confirm budget amounts. The ENR-CCI-LA is 10760 for November 2014. Costs estimated herein for recommended facilities should be adjusted in the future either by making new estimates or by comparing the future ENR-CCI-LA index to 10760.

The unit costs used in this study were developed based upon the previous projects done by IEC in a similar nature. Engineering, administration services and contingencies were included as a percentage of total construction costs for pipeline improvements. A factor of 20% of construction cost has been used for engineering and administration as soft costs, which includes but is not limited to the following:

- Planning and design reports
- Design
- CEQA compliance
- Permits
- Surveying
- Service during construction (submittals, as-builts)
- Inspection

Pipe materials, pavement saw cutting, removal, and replacement, traffic control, installation of miscellaneous appurtenances, excavation, bedding and backfill were taken into consideration in developing unit costs for wastewater pipeline construction. A factor of 30% of construction cost and soft cost has been used for contingency cost. Table 8 presents the pipeline unit cost.

Table 8: Pipeline Unit Costs
City of Chula Vista
Salt Creek DIF Study

Pipeline Diameter (in.)	Material	Construction Cost ($)	Soft Cost ($)	Contingency ($)	Total Unit Cost ($)
8	VCP	170	34	61	265
12	VCP	200	40	72	312
15	VCP	250	50	90	390

Note: Unit costs include construction cost, soft cost, and contingency cost.

Table 9 presents the cost estimates for each project based upon the unit costs, proposed location, proposed diameter, and estimated length of each project. The total cost of the Wolf Canyon Trunk Sewer is estimated to be approximately $7.6 million.

Table 9: Future Capital Improvement Projects with Cost Estimate
City of Chula Vista
Salt Creek DIF Study

Project No.	Description	Location	Size (in.)	Length (LF)	Capital Cost ($)	
SCP-1	Heritage Road Trunk Sewer*	Heritage Road From Santa Victoria Road to Main Street	15	6,267	$2,444,130	
SCP-2	Rock Mountain Road/ Main Street Trunk Sewer	Rock Mountain Road/ Main Street between Magdalena Avenue and La Media Road	12	1,038	48,786	**
		Main Street from La Media Road to Heritage Road	15	8,262	4,789,726	+
Hunte Parkway Extension	City Approved Plans++ (Appendix D)	Please see Figure 3	16	250	320,836	++
Total				15,817	$7,603,478	

* Heritage Road Trunk Sewer is under construction at this time. Proposed alignment provided by the City.
** Estimate based on the incremental cost from 8" to 12" pipe sizes. Village 8 West pipeline segments will require to upsize from 8" to 12" pipe sizes due to additional flows from offsite developments.
+ Capital costs for SCP-2 were calculated based on unit construction costs 66% higher than Table 8 due to uncertainties with the construction phasing of the sewer and road improvements in Main Street between Village 8 West and Heritage Road.
++ Capital costs were adopted from the City's Bond Estimate for the Salt Creek Sewer Lateral Improvement Project.5-year maintenance expenses excluded. Development impact fees may only recover capital costs and DIF administrative costs.

The Heritage Trunk Sewer was proposed to be 3,100 LF of 10-inch pipelines and 1,500 LF of 12-inch pipelines in the 2004 Salt Creek DIF study, and is proposed to be 63,00 LF of 15-inch pipelines in this study. The Rock Mountain Road/Main Street Trunk Sewer, which was proposed to be 7,400 LF of 15-inch pipelines in the 2004 Salt Creek DIF, is now proposed to extend another 1,900 LF in this study. Within these 1,900 LF of pipelines, about 1,000 LF of pipelines were proposed sizing of 8 inches in diameter in the City's previous individual project impact study, but are required to be upsized to 12 inches in diameter in this study. The differential costs of these pipelines from size of 8-inch in diameter to 12-inch in diameter are included in the cost estimates. The alignment of the Rock Mountain Road/Main Street trunk sewer is still being developed. It is uncertain whether the Rock Mountain Road/Main Street sewer improvements would be constructed concurrent with the street improvements. Construction costs of sewer improvements that do not follow a road configuration may tend to become significant higher than a typical combined sewer and street improvements. According to the cost estimate for the Wolf Canyon sewer facilities developed in the 2004 Salt Creek DIF study (See Appendix J), there were contracted design and project management services for the Rock Mountain Road/Main Street Trunk Sewer with higher construction inspection and administration costs projected as compared to the capital improvement costs of the Heritage Road Trunk Sewer. Based on the review of the Wolf Canyon topography, construction phasing of the Main Street improvements between Village 8 West and Heritage Road and City discussions with property owners of Village 4, 7, and 8 West properties, the capital costs of the Rock Mountain Road/Main Street trunk sewer were escalated with higher unit costs, which is approximately 66% higher than the unit costs shown in Table 8. The total cost of the CIP projects is estimated to be approximately $7.6 million.

SECTION 5: DIF Analysis

5.1 Current DIF Program

The 2004 Update to the Salt Creek Sewer Basin Plan described project costs and program costs that were eligible for DIF funding. The study included over 13.5 miles of sewer pipeline to serve development in the Salt Creek Basin and Wolf Canyon Basin. The Salt Creek Basin is now envisioned to include about 16.5 miles of pipeline. The 2015 Study removes developer credits that have since been expended, updates financing costs, adds the environmental mitigation cost, adds DIF program administrative costs, and revises the Salt Creek Basin reserve fund balance.

5.2 Fee Methodology

Although not stated explicitly, the 1994 Wilson Study used a capacity expansion fee methodology to calculate the DIF which was carried forward to the 2004 Study and is used in this update. The City's DIF studies define an area of service (i.e. the sewer basin) and the facilities needed to serve growth in that service area. The Salt Creek facilities do not provide a general benefit to connections in other basins; instead, the Salt Creek facilities serve only new growth occurring in the Salt Creek basin.

When new customers connect to the wastewater system, they use either reserve capacity available in existing facilities, or they require new capacity that must be added to the system to accommodate their needs. Under this method, each new customer would pay for the marginal cost of his use of the reserve capacity and for new facilities necessary to provide service to them. The goal of this method is to minimize or eliminate the need to raise rates in order to provide for system expansion.

Consequently, new customers pay fully for the additional facilities without imposing a burden on existing customers. Since it is likely that the timing of payments received from the capacity fees will not exactly match the timing of expenditures to provide facilities, the fee should be adjusted to reflect the time value of money. The intent is that the charge be equal to the required investment as if the construction were to occur at the time of contribution. The 2015 fee calculation includes financing costs which reflect the carrying cost of City (i.e. the City financed capital facilities upfront and is making debt service payments which will benefit new customers who connect in the future).

5.3 Project Costs

Table 10 shows the Salt Creek DIF obligated facilities costs including the cost of the Reaches constructed by the City and the Reaches constructed by others. Table 10 also estimates a construction cost for future facilities needed to serve growth consisting of the Rock Mountain Road/Main Street, Heritage Road, and the 2014 WWMP projects. The 2014 WWMP lines are new projects that was not envisioned in the 2004 study. In total, $28 million in project costs are included in the 2015 DIF.

Table 10: Project Costs
City of Chula Vista
Salt Creek DIF Study

Line	Project Cost
Constructed by City	
Reach 1	$173,613
Reach 2A	112,199
Reach 2B	267,660
Reach 3	1,526,107
Reach 4A	2,921,271
Reach 5B	1,295,895
Reach 6	973,024
Reach 7	3,222,772
Reach 8A	1,218,959
Reach 8B	1,895,193
Reach 9A	6,115,322
Subtotal	$19,722,015*
Constructed by Others	
Reach 4B and 5A	$677,700
Future Construction Cost	
Heritage Road Trunk Sewer (Wolf Canyon)**	2,444,130
Rock Mountain Road/Main Street Trunk Sewer (Wolf Canyon)**	4,838,512
Hunte Parkway Extension	320,836
Subtotal	$7,603,478
Total Project Costs	$28,003,193

*The City incurred $267,762 due to additional project costs after the 2004 DIF was completed.

**The alignment of Rock Mountain Road/Main Street is still being developed and Heritage Road is under construction at this time.

5.4 Developer Credits

Reaches 1, 2A, and 2B were constructed by developers who were owed $553,000 in credit for those facilities. Since 2004, all outstanding developer credits have been expended and no developer credits are included in the 2015 DIF calculation. Instead, the cost of Reaches 1, 2A, and 2B are noted as facility costs for the 2015 study.

Future Wolf Canyon Trunk Sewer lines are assumed to be constructed by the City. However, based on the provisions of Sections 15 and 16 of Ordinance No. 2617, a developer who agrees or is required to construct facilities benefitting the basin would be entitled to receive a reimbursement or credit at the City's option. If the City issues developer credits in the future, the City should revise the DIF to include the value of the developer credits.

5.5 Construction Funding

The Salt Creek Basin facilities have been constructed through the years using funding through the Salt Creek Basin DIF fund and, where DIF funds were not available, through loans from the Trunk Sewer Capital Reserve Fund. Loans made from the Trunk Sewer Capital Reserve Fund must be repaid using DIF funds. Table 11 summarizes the history of loans from the Trunk Sewer Capital Reserve Fund to the Salt Creek DIF fund. The loans will be repaid over a term of 20 years. To date, financing costs total about $5.9 million. For payments made into the future, the City estimates approximately $505,000 in additional financing costs. Subtracted from the total financing cost is about $2.5 million in debt service that has already been paid with DIFs collected from past connections. In total, the Salt Creek DIF is obligated to pay $24.6 million in debt service costs.

Table 11: Financing Cost
City of Chula Vista
Salt Creek DIF Study

Loan Name	Facilities	Loan Date	Original Principal	Amount Now Due	Financing Cost through FY2014
SW210	Reaches 4B & 5A	07/01/97	$674,180	1,108,018	$433,838
SW219	Reaches 3, 4A, 5B, 6, 7, 8	12/29/00	7,585,500	7,661,810	2,576,393
SW219	Reaches 3, 4A, 5B, 6, 7, 8	12/04/01	1,300,000	1,676,937	376,937
SW219	Reaches 3, 4A, 5B, 6, 7, 9	08/13/02	2,524,596	3,182,833	658,237
SW225	Wolf Canyon Trunk	06/30/04	1,000,000	1,218,734	218,734
SW219	Reach 9A	08/17/04	6,115,322	7,436,646	1,321,324
SW219	Reach 7A	08/17/04	1,467,879	1,785,040	317,161
Total Loans			**$20,667,477**	**$24,070,018**	**$5,902,624**
				Future Financing Cost	$505,411
				Total Financing Cost	**$6,408,035**
				Original Principal	$20,667,477
				Total Loan Repayment	**$27,075,512**
				Payments to Date	($2,500,083)
				Outstanding Loan Payments	**$24,575,429**

Source: City staff
*The construction cost of facilities was $20.4 million as shown in Table 2. In addition, the City incurred $267,762 due to additional project costs after the 2004 DIF Study was completed.
Note: The City will maintain a loan repayment reserve of $1.3 million.

5.6 Environmental Mitigation

Following the City's Section 10(a) permit under the Federal Endangered Species Act, a contribution of $1,000,000 must be made to the Preserve Management Endowment Fund (PMEF) as a requirement for the Salt Creek Gravity Sewer Interceptor project. The Salt Creek Trunk Sewer is a planned facility through the preserve and the funds will be used for preserve restoration and maintenance. To see a complete account of the environmental concerns and recommendations made by the environmental community and the full explanations on how they were addressed by the City, refer to the "*Final Program Environmental Impact Report – Salt Creek Interceptor Sewer and Wolf Canyon Trunk Sewer*", prepared by Dudek & Associates dated June 2001.[2]

5.7 DIF Administration

BWA estimates the Salt Creek DIF administrative cost to be $120,000 through build-out. State law requires that development impact fees and capacity fees be held in a restricted fund and used only to improve facilities needed to serve growth. The administrative portion of the DIF will be used to cover the costs of accounting for the restricted DIF fund.

5.8 Available Reserves

As of June 30, 2014, the Salt Creek DIF fund balance is $5,805,114. The balance is made up of development impact fees paid in the past by customers connecting to the system and interest earned on the past fees. The DIF fund balance therefore represents the portion of facility costs that have already been paid for by past customers proportional to their capacity in the system. After the fund balance is applied, the outstanding cost is the portion of facilities costs attributable to the Basin's remaining EDUs.

5.9 Development Impact Fee Calculation

Table 12 calculates the Salt Creek Basin development impact fee. The fee includes construction costs for existing facilities, estimated construction costs for future facilities, financing costs, and administrative costs. Subtracted from these costs is the balance of the Salt Creek DIF reserve fund. The total cost to be recovered from the Salt Creek DIF is $27.5 million. This cost is spread over the remaining EDUs in the basin to calculate a fee of $1,330 per EDU.

[2] Environmental Mitigation description taken from the 2004 Update to the Salt Creek Sewer Basin Plan

Table 12: DIF Calculation
City of Chula Vista
Salt Creek DIF Study

	Amount	Source
Cost Category		
Outstanding Loan Payments	$24,575,429	Table 11
Future Construction Cost	7,603,478	Table 9
Outstanding Developer Credits	0	City Staff
Environmental Mitigation	1,000,000	City Staff
DIF Administration Cost	120,000	City Staff
Less: DIF Fund Reserve	(5,805,114)	City Staff
Subtotal	$27,493,793	
Remaining EDUs	20,668	Table 5
New DIF (per EDU)	**$1,330**	

Note: The City will maintain a loan repayment reserve of $1.3 million.

5.10 DIF Comparison

Table 13 provides a comparison between the fee recommended in this study, the current fee (last updated in 2004), and a hypothetical fee that represents the 2004 fee escalated to current dollars. The fee recommended in this study is the same as the current fee.

Table 13: DIF Comparison
City of Chula Vista
Salt Creek DIF Study

Description	Fee Amount	
2004 Salt Creek Sewer Basin Plan	$1,330	per EDU
2004 DIF escalated to 2014	$1,747	per EDU
2015 DIF calculation	$1,330	per EDU

Table 14 provides more detail on the change in costs attributable to the Salt Creek DIF between 2004 and 2015. The 2004 Study calculated a revenue requirement of over $34.1 million. In comparison, this update calculates a revenue requirement of about $27.5 million. The 2004 Study included higher financing costs and lower available reserves to offset construction costs. This 2015 Study includes higher project costs for the Rock Mountain/Main Street and Heritage Road Trunk Sewer lines and a new project – the Hunte Parkway Extension.

Table 14: Comparison of DIF Studies
City of Chula Vista
Salt Creek DIF Study

Description	2004 Study	2015 Study	Difference
Facility Cost/Original Principal	$19,846,243	$20,667,477*	4.1%
Future Project Cost			
Heritage Road	$1,256,000	$2,444,130	94.6%
Rock Mountain Road/Main Street	$4,460,000	$4,838,512	8.5%
Hunte Parkway Extension		$320,836	
Financing Cost	$10,788,873	$3,907,952	-63.8%
Environmental Mitigation		$1,000,000	
Developer Credits	$553,472		-100.0%
DIF Administration		$120,000	
Available Reserve	($2,771,042)	($5,805,114)	109.5%
Total	$34,133,546	$27,493,793	-19.5%
EDUs	25,668	20,668	-19.5%
DIF	$1,330	$1,330	0.0%

Note: The City will maintain a loan repayment reserve of $1.3 million.
*The City incurred $267,762 due to additional project costs after the 2004 DIF was completed.

SECTION 6: Conclusions

6.1 Recommendations

To provide adequate funding for the Salt Creek Basin facilities and to promote equity between customers who have already connected to the system and future customers, the City should implement the following recommendations:

- Add the Hunte Parkway Extension project cost to the DIF
- As DIF funds are available, transfer funds from the Salt Creek DIF to the Trunk Sewer Capital Reserve Fund to pay off the DIF's outstanding loans
- Maintain the Salt Creek DIF of $1,330 per EDU
- Adjust the Salt Creek DIF by the annual change in the Engineering News Record's Construction Cost Index for Los Angeles
- Conduct a DIF study at least every ten years to reflect revised land use projections and cost information

6.2 Updates

Recommended pipeline sizes and length have been re-determined for Rock Mountain Road/Main Street Trunk Sewer and Heritage Road Trunk Sewer based on the updated development flow projections in 2050. The Hunte Parkway Extension project is recommended to add to the DIF study as it is needed to eliminate a potential pipeline failure at the connection to Salt Creek Interceptor in the ultimate system. The capital improvement costs of Rock Mountain Road/Main Street Trunk Sewer and heritage Road Trunk Sewer have been updated, and the Hunte Parkway Trunk Sewer project costs are added to the Salt Creek DIF.

6.3 Environmental Review

The City's Development Services Director has reviewed the implementation of the DIF for compliance with the California Environmental Quality Act (CEQA) and has determined that the proposed actions are not a "Project" as defined under Section 15378 of the State CEQA Guidelines because the activity consists of a governmental fiscal/administrative activity which does not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment. Therefore, pursuant to Section 15060(c)(3) of the State CEQA Guidelines the activity is not subject to CEQA. Thus, no environmental review is required.

Although environmental review is not required at this time, once the scope of potential individual City projects to be funded have been defined, environmental review will be required for each project and the appropriate environmental determination will be made.

6.4 Annual Adjustment

Capacity fees and development impact fees should be adjusted regularly to prevent them from falling behind the costs of constructing new facilities. Several methods can be used to adjust the fees, including:

- ENR Construction Cost Index: ENR (Engineering News-Record) magazine publishes construction cost indices monthly for Los Angeles. This index can be used to estimate the change in the construction cost of facilities. If the ENR Index has increased by three percent since the last fee adjustment, the fee should be increased by three percent.
- U.S., California, or regional consumer price index.
- Interest rate and borrowing costs: The interest and borrowing costs for debt issued to finance sewer capital projects can be added to the capacity fee annually.

It is recommended that the City adjust its fee annually by the change in the ENR Construction Cost Index for Los Angeles. This is the most appropriate index because it directly reflects construction costs. Suggested language for implementing this policy is:

> Each year, commencing on ___(m/d/y)___ and continuing thereafter on each (m/d)__, the capacity fee shall be adjusted by an increment based on the change in the Engineering News-Record Construction Cost Index for Los Angeles over the prior year.
>
> However, the City Council may at its option determine, by resolution adopted prior thereto, that such adjustment shall not be effective for the next succeeding year, or may determine other amounts as appropriate.

6.5 Study Limitations

Note that this study has been prepared specifically for the purpose of updating the Salt Creek Sewer Basin development impact fee. Timing and ultimate needs for additional facilities to serve development should be determined independently by the City.

APPENDIX A: Development Area Wastewater Flow & EDU Projections (Remaining Only)

Bella Lago Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	53.00	dwellings	230	12,190	53
Multi-Family	0.00	dwellings	182	0	0
Park	0.00	acres	410	0	0
CPF	0.00	acres	1,313	0	0
School	0.00	acres	1,181	0	0
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				12,190	**53**

Eastlake Woods/Trails Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	26.00	dwellings	230	3,450	15
Multi-Family	0.00	dwellings	182	0	0
Park	0.00	acres	410	0	0
CPF	0.00	acres	1,313	0	0
School	0.00	acres	1,181	0	0
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				4,450	**15**

Eastlake Vistas-Lake Pointe & Olympic Pointe Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	0.00	dwellings	230	0	0
Multi-Family	230.00	dwellings	182	41,860	182
Park	0.00	acres	410	0	0
CPF	0.00	acres	1,313	0	0
School	0.00	acres	1,181	0	0
Commercial	15,000	sq. ft.	0.08	1,200	5
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				43,060	**187**

Village 8 West Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	621.00	dwellings	230	142,830	621
Multi-Family	1,429.00	dwellings	182	260,078	1,131
Park	27.90	acres	410	11,439	50
CPF	5.80	acres	1,313	7,615	33
School	31.60	acres	1,181	37,320	162
Commercial	300,000	sq. ft.	0.08	24,000	104
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				483,282	**2,101**

Village 8 East Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	943.00	dwellings	230	216,890	943
Multi-Family	2,617.00	dwellings	182	476,294	2,071
Park	7.30	acres	410	2,993	13
CPF	4.20	acres	1,313	5,515	24
School	10.80	acres	1,181	12,755	55
Commercial	20,000	sq. ft.	0.08	1,600	7
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				713,053	**3,113**

Village 9 Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	266.00	dwellings	230	61,180	266
Multi-Family	3,734.00	dwellings	182	679,588	2,955
Park	27.50	acres	410	11,275	49
CPF	5.00	acres	1,313	6,565	29
School	19.80	acres	1,181	23,384	102
Commercial	1,500,000	sq. ft.	0.08	120,000	522
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				901,992	**3,922**

Regional Technology Park Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	0.00	dwellings	230	0	0
Multi-Family	0.00	dwellings	182	0	0
Park	0.00	acres	410	0	0
CPF	0.00	acres	1,313	0	0
School	0.00	acres	1,181	0	0
Commercial	1,850,000	sq. ft.	0.08	148,000	643
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				148,000	**643**

The adopted General Plan has a (floor area ratio) FAR of between 0.25 and 0.75 for the 85 acre (3,700,000 sq ft) Regional Technology Park. Based on a City's FAR assumption of 0.50 that would generate about 1,850,000 sq ft.

University Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	0.00	dwellings	230	0	0
Multi-Family	0.00	dwellings	182	0	0
Park	0.00	acres	410	0	0
CPF	0.00	acres	1,313	0	0
School	0.00	acres	1,181	0	0
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	290.00	acres	1,080	313,200	1,362
				313,200	**1,362**

Village 10 Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	695.00	dwellings	230	159,850	695
Multi-Family	1,045.00	dwellings	182	190,190	827
Park	7.60	acres	410	3,116	14
CPF	4.30	acres	1,313	5,646	25
School	9.20	acres	1,181	10,865	47
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				369,667	**1,607**

Village 11 Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	0.00	dwellings	230	0	0
Multi-Family	43.00	dwellings	182	16,198	70
Park	0.00	acres	410	0	0
CPF	0.00	acres	1,313	0	0
School	35.00	acres	1,181	38,501	167
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				54,699	**238**

Planning Area 20 Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	0.00	dwellings	230	0	0
Multi-Family	0.00	dwellings	182	0	0
Park	188.00	acres	410	77,080	335
CPF	0.00	acres	1,313	0	0
School	0.00	acres	1,181	0	0
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	15.00	acres	1,401	21,015	91
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				98,095	**427**

Birch Foundation Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	128.00	dwellings	230	29,440	128
Multi-Family	0.00	dwellings	182	0	0
Park	0.00	acres	410	0	0
CPF	0.00	acres	1,313	0	0
School	0.00	acres	1,181	0	0
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				29,440	**128**

Village 2 Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	517.00	dwellings	230	118,910	517
Multi-Family	659.00	dwellings	182	119,938	521
Park	5.10	acres	410	2,091	9
CPF	1.40	acres	1,313	1,838	8
School	9.50	acres	1,181	11,220	49
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	0.00	acres	1,401	0	0
Industrial	36.50	acres	712	25,988	113
University	0.00	acres	1,080	0	0
				279,985	**1,217**

Village 3 Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	1,002.00	dwellings	230	230,460	1,002
Multi-Family	595.00	dwellings	182	108,290	471
Park	7.90	acres	410	3,239	14
CPF	4.20	acres	1,313	5,515	24
School	8.30	acres	1,181	9,802	43
Commercial	20,000	sq. ft.	0.08	1,600	7
Commercial	11.30	acres	1,401	15,831	69
Industrial	39.90	acres	712	28,409	124
University	0.00	acres	1,080	0	0
				403,146	**1,753**

Village 4 Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	130.00	dwellings	230	104,190	453
Multi-Family	620.00	dwellings	182	0	0
Park	62.80	acres	410	25,748	112
CPF	0.00	acres	1,313	0	0
School	0.00	acres	1,181	0	0
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				129,938	**565**

Village 7 Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	313.00	dwellings	230	18,630	81
Multi-Family	33.00	dwellings	182	0	0
Park	0.00	acres	410	0	0
CPF	6.30	acres	1,313	8,272	36
School	0.00	acres	1,181	0	0
Commercial	0.00	sq. ft.	0.08	0	0
Commercial	7.20	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
				26,902	**117**

Planning Area 12 (EUC) Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Land Use	Count	Units	Wastewater Duty Factor (gpd)	Flow (gpd)	Remaining EDUs
Single Family	0.00	dwellings	230	0	0
Multi-Family	2,993.00	dwellings	182	544,726	2,368
Park	23.20	acres	410	9,512	41
CPF	10.70	acres	1,313	14,049	61
School	6.00	acres	1,181	7,086	31
Commercial	3,487,000	sq. ft.	0.08	278,960	1,213
Commercial	0.00	acres	1,401	0	0
Industrial	0.00	acres	712	0	0
University	0.00	acres	1,080	0	0
Permanent Poggi Diversion				(113,850)	(495)
				740,483	**3,219**

Salt Creek Basin Remaining Acreage and Units
City of Chula Vista
Salt Creek DIF Study

Development Area	Flow (gpd)	Remaining EDUs
Bella Lago	12,190	53
Eastlake Woods/Trails	3,450	15
Eastlake Vistas-Lake Pointe & Olympic Pointe	43,060	187
Village 8 West	483,282	2,101
Village 8 East	713,053	3,113
Village 9	901,992	3,922
Regional Technology Park	148,000	643
University	313,200	1,362
Village 10	369,667	1,607
Village 11	54,699	238
Planning Area 20	98,095	427
Birch Foundation	29,440	128
Village 2	279,985	1,217
Village 3	403,146	1,753
Village 4	129,938	565
Village 7	26,902	117
Planning Area 12 (EUC)*	740,483	3,219
Total	4,750,582	20,668

*Net Reduction of 495 EDUs is based on the preferred alternative of permanently diverting into Poggi Basin 529 EDUs at 215 gpd/EDU converted to 230 gpd/EDU basis (per EUC Tech Sewer Study PBS&J, 1/2008).

APPENDIX B: 2050 Land Use and Wastewater Flow Projections (Existing and Remaining Connections)

Proposed Development Project	SF (Unit)	MF (Unit)	Hotel (Rms)	Park (Acre)	CPF (Acre)	Elem. Sch (Acre)	Elem Sch (# of Students)	Jr. High/High Sch (Acre)	Jr. High/High Schl (# of Students)	Comm. (Sq. ft.)	Comm. (Acre)	Ind. (Acre)	University (Acre)	Wastewater Flow (gpd)		Existing EDUs/Total EDUs within Salt Creek Basin [1]	Tributary Manhole (Salt Creek Interceptor)
Bella Lago	140	0	0	0	0	0	0	0	0	0	0	0	0	32,200		87/140	13347
Eastlake Trails	956	189	0	18.6	6	0	795	0	0	0	0	0	0	244,951		1215/1215	13385; 9123
Eastlake Woods and West Development	664	0	0	0	4	0	1,022	0	1,767	0	0	0	0	193,772		828/843	13347; 13385
Eastlake Greens & Landswap Development 1 (Salt Creek Basin)	771	253	0	7	4	0	0	0	0	0	0	0	0	232,300		1010/1010	9123; 13902
Eastlake Greens & Landswap Development 1 (Poggi Basin)	846	791	0	13	12	0	800	0	2,400	0	43	0	0	460,308		-/-	-
Eastlake Vistas-Lake Pointe & Olympic Pointe	0	648	0	0	0	0	0	0	0	15,000	0	0	0	119,140		338/525	13902
Eastlake Vistas	777	1,043	0	7	12	0	0	0	0	0	0	0	0	387,646		1685/1685	13902
OTC	0	0	0	0	0	0	0	0	0	0	130	0	0	153,057	**	911/911	13902;13989
Village 2 (Salt Creek Basin)	517	659	0	5	1	10	0	0	0	0	0	37	0	279,985		0/1217	IECMH10
*Village 2 (Poggi Basin)	827	2,542	0	19	11	10	0	0	0	0	20	60	0	757,928		-/-	-
Village 3	1,002	595	0	8	4	8	0	0	0	20,000	11	40	0	403,146		0/1753	IECMH44
Village 4	453	0	0	63	0	0	0	0	0	0	0	0	0	130,020		0/565	IECMH22
Village 7 (Salt Creek)	327	306	0	0	0	0	0	65	0	0	8	0	0	212,170		406/523	IECMH26; IECMH50
*Village 7 (Poggi Basin)	726	142	0	8	2	0	0	0	0	0	0	0	0	198,303		-/-	-
Village 8 West	621	1,429	0	28	6	32	0	0	0	300,000	0	0	0	483,323		0/2101	13941
Village 8 East	943	2,617	0	7	4	11	0	0	0	20,000	0	0	0	716,046		0/3113	13978
Village 9	266	3,734	0	28	5	20	0	0	0	1,500,000	0	0	0	901,992		0/3922	13957
Regional Technology Park	0	0	0	0	0	0	0	0	0	1,850,000	0	0		148,000		0/643	13964
University	0	0	0	0	0	0	0	0	0	0	0		290	313,200		0/1362	13979
Village 10	695	1,045		8	4	9	0		0	0	0	0	0	369,667		0/1621	13971
Village 11	1,101	1,203		10	12	12	0	33	0	0	10	0	0	554,806		2176/2414	13998; 15066
Plng. Area 12 (EUC) (Salt Creek Basin)	0	2,367	0	23	11	6	0	0	0	3,487,000	0	0	0	740,483		0/3219	15066
*Plng. Area 12 (EUC) (Poggi Basin)	0	626	0	0	0	0	0	0	0	0	0	0	0	113,932		-/-	-
*Plng. Area 12 -(Freeway Commercial) (Poggi Basin)	0	650	310	2	0	0	0	0	0	0	4	0	0	149,524		-/-	-
Plng. Area 20	0	0	0	188	0	0	0	0	0	0	15	0	0	98,095		0/427	13952;13954;13935;13925
Birch Foundation	128	0	0		0	0	0	0	0	0	0	0	0	29,440		0/128	12202;12206
Rolling Hills Ranch	1,086	116	0	52	28	0	0	0	0	0	0	0	0	303,692		1320/1320	13347
High Tech High	0	0	0	0	0	0	0	79	0	0	0	0	0	93,012		743/743	15056;15060
Total	12,846	20,955	310	493	127	117	2,617	176	4,167	5,342,000	241	221	290	8,820,138		9808/30475	-
Unit	Unit	Unit	Rms	Acre	Acre	Acre	Students	Acre	Students	Sq. ft.	Acre	Acre	Acre	gpd		EDUs/EDUs	-

1. Only existing and total EDU's in Salt Creek Basin included in this column.
* Land Use Projection in Poggi Basin are shown for hydraulic purposes only.
** Flow adopted from Table 3-1 of the 2014 WWMP and assumed 100% Return-To-Sewer Ratio to account for future buildout.

APPENDIX C: Salt Creek Interceptor (detail)

N

0 500 1,000 Feet

12869 16319 16318 16317 16316 16314 16315 15420 9110 15421 15422 15423 15424 12086 13808 16753 16751 16749 13805 13804 9182 17528

YOSEMITE WY
BRYCE CANYON AV
YOSEMITE DR
WIND CAVE PL
TABLE ROCK AV
DUNCAN RANCH RD
CHESAPEAKE PL
NORTHWOODS DR
ASPEN GLEN RD
GATE ELEVEN PL
ADIRONDACK PL
WOODS DR
GATE SIX PL
STONE GATE ST
SILVER OAK PL
HAWTHORNE CREEK DR
MTN ASH AV
WHITE ALDER AV
SUTTER RIDGE DR
SUTTER RIDGE WY
SHENANDOAH DR
WOODS DR
GATE ONE PL
SADLERS CREEK RD
JOSHUA CREEK RD
ROUTE 9
OTAY LAKES RD
LA COSTA AV
TORREY PINES RD
HUNTE PY
BOW WILLOW TRAIL WY
PARADISE TRAIL RD
SECRET CANYON PL
MEADOWS TRAIL LN
CACTUS TRAIL LN
KING CREEK WY
COYOTE RIDGE TR
NORTH CREEKSIDE DR
HITCHING POST LN
GRANITE SPRINGS DR
SILVER SAGE RD
NOBLE CANYON RD
POPLAR SPRING RD
OLD JANAL RANCH RD
LONG VIEW DR
CLUBHOUSE DR
WILDHORSE TRAIL WY

Legend

- Existing Manholes
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, AEX, Getmapping, Aerogrid, IGN, IGP, swisst

Infrastructure ENGINEERING CORPORATION

City of Chula Vista
Salt Creek DIF Study

Salt Creek Interceptor

November 2014

Figure A-1-1

N

0 500 1,000 Feet

CLUBHOUSE DR
WILDHORSE TRAIL WY
GARNET PEAK DR
PINNACLE PEAK DR
SCHOOL HOUSE RD
THUNDER SPRING DR
SILVER SPRINGS DR
TAMARISK GROVE DR
OAK SPRINGS DR
RIO SECO CT
GRANITE SPRINGS DR
INDIAN CREEK PL
HIDDEN SPRINGS PL
GREEN VALLEY RD
APPALACHIAN PL
FERN VALLEY RD
SOUTH CREEKSIDE DR
RIVIERA DR
SHOREACRES DR
HUNTE PY
STEAMBOAT SPRINGS CT
S GREENSVIEW DR
NEW SEABURY WY
MYRTLE BEACH WY
VALLEY GARDENS DR
GRAND FORKS RD
ASHFORD CASTLE DR
OLYMPIC PY
QUIET TRAIL WY
PICKET FENCE DR
HIKERS TRAIL WY
COPPER PENNY DR
QUIET TRAIL DR
HIKERS TRAIL DR
EVENING STAR ST
WINDINGWALK ST
STARGAZE DR
WISHING STAR DR
FALLING STAR DR
STARLIGHT CT
MORNING STAR DR
SUMMER SKY ST
HIDDEN DR
ET SAGE ST
OLD JANAL RANCH RD
RAMBLING VISTA RD
LONG VIEW DR
MARBLE CANYON WY
YELLOWSTONE AV
LOST CREEK RD
GEIGER CREEK CT
OLYMPIC VISTA RD
HACKBERRY PL
RED WILLOW PL
BURR OAK PL

9182
17528
13803
13801
15859
15860
15861
15862
15863
15864
16494
16496
13780
13839
13838
13836
13837
13835
13834
13833

Legend

- Existing Manholes
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, F
AEX, Getmapping, Aerogrid, IGN, IGP, swisst

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City of Chula Vista
Salt Creek DIF Study

Salt Creek Interceptor

November 2014

Figure A-1-2

N

0 500 1,000 Feet

HUNTE PY

P43 16464
P43 16465
P43 16476
P43 16477
P43 16478
P43 16479
P43 16480
P43 16481
P43 16482
P43 17111
P42 17112
P42

13833
13832
13831
13830
13828
13826
13800
9118
17093
P30 9119
17094
17095
17096
17098
17099
17101
17102
17103
17104
17105
17106
17107
13778

PRIVATE RD

Legend

- Existing Manholes
- Salt Creek Interceptor

2014 WWMP CIP Projects

Project_No

- P30
- P42
- P43
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, F
AEX, Getmapping, Aerogrid, IGN, IGP, swisst

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City of Chula Vista
Salt Creek DIF Study

Salt Creek Interceptor

November 2014

Figure A-1-3

N

0 380 760 Feet

17107
13779
13756
13778
13844
13843
13777
13842
13824
13823
13822
13821
13820
13819
13818
13766
13765
13764

PRIVATE RD

WILEY RD

Legend

- Existing Manholes
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX
User Community

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City of Chula Vista
Salt Creek DIF Study

Salt Creek Interceptor

November 2014

Figure A-1-4

N

0 500 1,000 Feet

SR-125 SB

SR-125 NB

13772 13773 13774 13775 WILEY RD 13776 13813 13814 13815 13816 13817 13759 13760 13761 13762 13763 13764

PRIVATE RD

PRIVATE RD

Legend

- Existing Manholes
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX
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City of Chula Vista
Salt Creek DIF Study

Salt Creek Interceptor

November 2014

Figure A-1-5

N

0 500 1,000 Feet

PRIVATE RD

13793 13794 13795 13796 13797 13798 13799 13846 13847 13811 13812 13767 WILEY RD 13768 13769 13770 13771 13772

PRIVATE RD

Legend

- Existing Manholes
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, User Community

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City of Chula Vista
Salt Creek DIF Study

Salt Creek Interceptor

November 2014

Figure A-1-6

N

0 500 1,000 Feet

ENERGY WY

MAXWELL RD

NIRVANA AV

IECGM115

IECMH48

IECGM117

IECGM119

MAIN ST

13784 13825 13785 13786 13787 13788 13789 13845 13790 13791 13792 13793

WILEY RD

ENTERTAINMENT CR

HERITAGE RD

Legend

- Existing Manholes
- New Manhole
- Heritage Rd Trunk
- Rock Mountain Rd/Main St Trunk
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX User Community

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City of Chula Vista
Salt Creek DIF Study

Salt Creek Interceptor

November 2014

Figure A-1-7

N

0 500 Feet 1,000

MARL AV
TALUS ST
TILIA CT
OLIVE AV
TALLOW CT
PRIVATE RD
PRIVATE RD
PRIVATE RD
POINT ARGUELLO DR
POINT ESTERO DR
MENDOCINO DR
TAMARACK ST
TIMBER ST
TIMBER CT
OLEANDER AV
TANOAK CT
TARATA CT
OCALA AV
TANBARK ST
MELROSE AV
TURQUOISE CT
TOPAZ CT
TOURMALINE CT
MELROSE WY
I-805 SB OFF RA
I-805 NB ON RA
BRANDYWINE AV
AUTO PARK PL
AUTO PARK AV
RESEARCH CT
DESIGN CT
MAXWELL RD
15932
15933
15908
15912
15910
15902
P27 MAIN ST
15904
15903
15900
15901
15905
15907
15906
15895
MAIN CT
AUTO PARK DR
MELROSE AV
I-805 SB ON RA
I-805 SB
I-805 NB
I-805 NB OFF RA
RANCHO DR
PRIVATE RD
PRIVATE RD

Legend

- Existing Manholes
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX
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Salt Creek DIF Study

Salt Creek Interceptor

November 2014

Figure A-1-8



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November 2014

Figure A-1-9

N

0 255 510 Feet

ALLEY

MONTGOMERY ST

ALBANY AV

ALLEY

ZENITH ST

ALLEY

BANNER AV

16551

16550

16549

16548

P22

MAIN ST

16547

P35

16546

16545

16544

16543

CONNOLEY CR

HOLIDAY CT

JASPER AV

HILLTOP DR

TOURMALINE ST

PRIVATE DY

PRIVATE DY

ALLEY

BRITTON AV

REED CT

MACE ST

Legend

- Existing Manholes
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX User Community

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City of Chula Vista
Salt Creek DIF Study

Salt Creek Interceptor

November 2014

Figure A-1-10

N

0 255 510 Feet

ALLEY
ALLEY
03RD AV
PRIVATE RD
04TH AV
MONTGOMERY ST
ALLEY
ZENITH ST
FRESNO AV
ALLEY
ALLEY
16557
16556
16555
17550
17549
16553
16552
16551
MAIN ST
07TH ST
ALLEY
BEYER WY
DEL MONTE AV
EENA DR
PRIVATE RD

Legend

- Existing Manholes
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX User Community

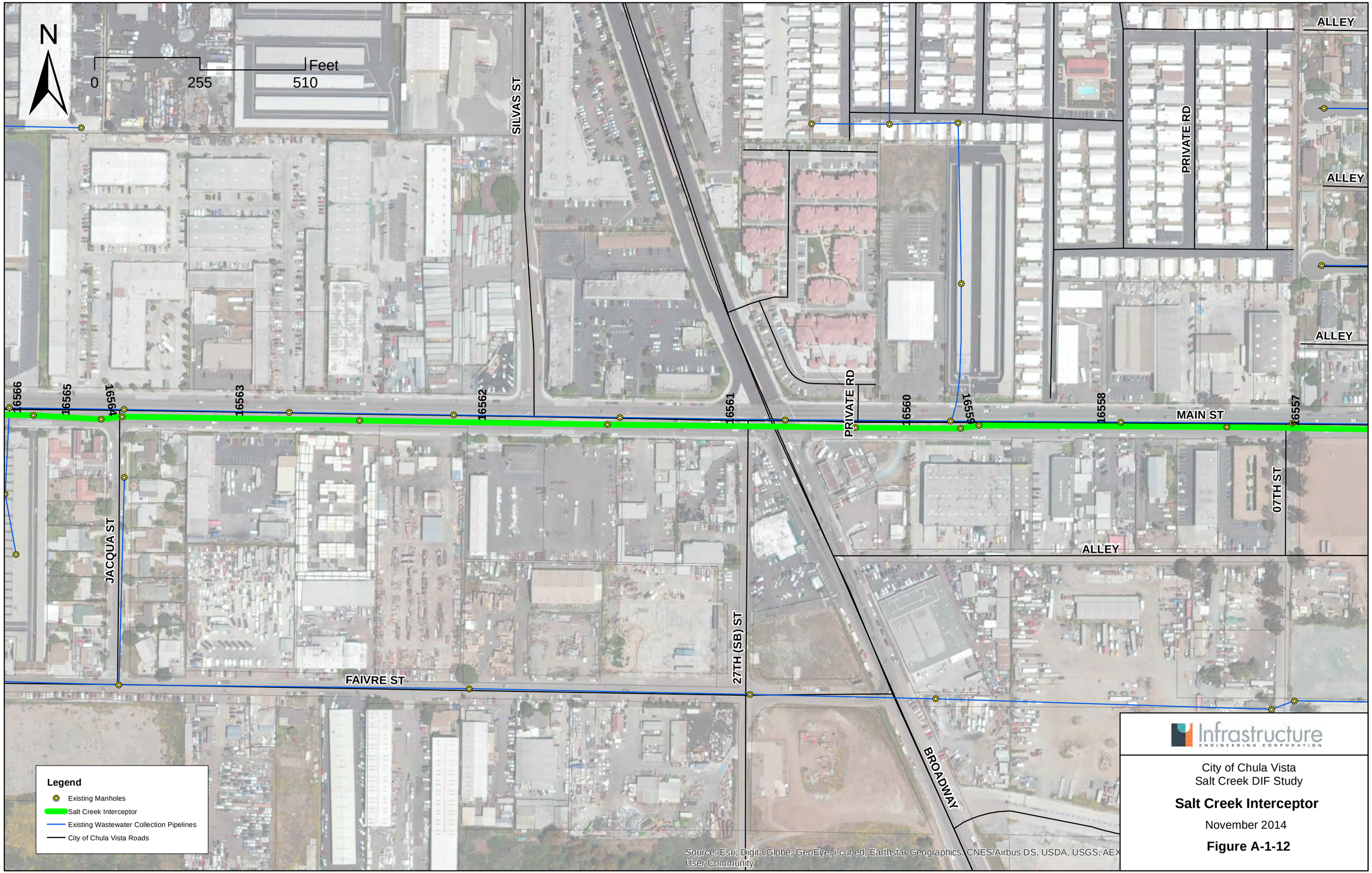
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Salt Creek Interceptor

November 2014

Figure A-1-11



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November 2014

Figure A-1-12

N

0 250 510 Feet

W FRONTAGE RD

I-5 SB OFF RA

W FRONTAGE RD

I-5 NB ON RA

I-5 SB

16570

I-5 NB OFF RA

I-5 SB ON RA

I-5 NB

MAIN ST

16569

16568

CDT-59

INDUSTRIAL BL

16567

MAIN ST

16566

FAIVRE ST

Legend

- Existing Manholes
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX User Community

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City of Chula Vista
Salt Creek DIF Study

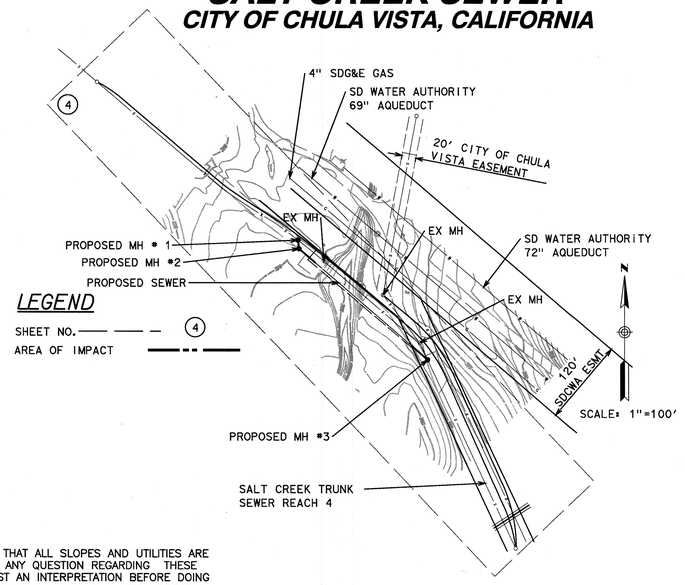
Salt Creek Interceptor

November 2014

Figure A-1-13

APPENDIX D: Salt Creek Improvement Plan

IMPROVEMENT PLANS FOR:
SALT CREEK SEWER
CITY OF CHULA VISTA, CALIFORNIA



GENERAL NOTES:

1. ALL WORK SHALL BE COMPLETED PER THESE PLANS AND APPROVED REVISIONS. ALL CHANGES OR REVISIONS THERETO, MUST BE APPROVED BY THE CITY ENGINEER, IN WRITING, PRIOR TO ANY REQUEST FOR INSPECTION.

2. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITY PIPES AND STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS, TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN HEREON, HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING UTILITIES OR STRUCTURES LOCATED AT THE WORK SITE. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT THE UNDERGROUND SERVICE ALERT (PHONE 1-800-422-4133) TWO (2) WORKING DAYS IN ADVANCE OF ANY EXCAVATION OF COMMENCEMENT OF WORK. FOR ANY QUESTIONS REGARDING THE MARK OUT OF UNDERGROUND UTILITIES, THE CONTRACTOR SHOULD CONTACT THE RESPECTIVE UTILITY COMPANY:

STREET LIGHT OR SIGNAL LIGHT CONDUIT SEWER OR STORM DRAIN	CITY OF CHULA VISTA	(619)397-6166
	CITY OF CHULA VISTA VERIFICATION	(619)397-6000
	NOTIFICATION	(619)397-6000
GAS AND ELECTRIC	SAN DIEGO GAS & ELECTRIC	(619)230-7800
WATER	OTAY WATER DISTRICT	(619)670-2222
	SAN DIEGO COUNTY WATER AUTHORITY	(858)522-6900
TELEPHONE	PACIFIC BELL	(619)266-4683
TELEVISION	COX CABLE OF SAN DIEGO	(619)263-9251
TELEVISION	ULTRONICS	(619)476-0177

3. CITY OF CHULA VISTA INSPECTION NOTICE:

   A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INFORM THE CITY ENGINEER 2 WORKING DAYS IN ADVANCE OF COMMENCEMENT OF WORK. PHONE: (619)397-6128.

   B. THE CONTRACTOR SHALL GIVE 24 HOURS NOTICE (ONE WORKING DAY) NOTICE ON ALL CALLS FOR INSPECTION, PHONE: (619)397-6128.

   C. ANY WORK PERFORMED WITHOUT BENEFIT OF INSPECTION SHALL BE SUBJECT TO REJECTION AND REMOVAL AT CONTRACTOR'S EXPENSE.

   D. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND WORK PRIOR TO THE EXCAVATION FOR INSTALLATION OF NEW UNDERGROUND WORK.

4. NEITHER THE OWNER NOR THE ENGINEER OF WORK WILL ENFORCE SAFETY MEASURES OR REGULATIONS. THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS DURING CONSTRUCTION OPERATIONS

5. ALL UTILITIES SHALL HAVE A MINIMUM OF 90% RELATIVE COMPACTION IN ALL TRENCH BACKFILL.

6. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY MONUMENTS AND OR VERTICAL CONTROL BENCHMARKS WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION. A LAND SURVEYOR MUST FIELD LOCATE, REFERENCE AND/OR PRESERVE ALL HISTORICAL OR CONTROLLING MONUMENTS PRIOR TO ANY EARTHWORK OR PROPOSED IMPROVEMENTS; AND IF DESTROYED, A LAND SURVEYOR, OR A CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING SHALL REPLACE SUCH MONUMENTS WITH THE APPROPRIATE MONUMENTS. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED AS REQUIRED BY THE PROFESSIONAL LAND SURVEYORS ACT. IF ANY VERTICAL CONTROL IS TO BE DISTURBED OR DESTROYED, THE CITY OF CHULA VISTA FIELD SURVEY SECTION MUST BE NOTIFIED, IN WRITING, AT LEAST (3) DAYS PRIOR TO THE CONSTRUCTION. THE DEVELOPER/CONTRACTOR WILL BE RESPONSIBLE FOR THE COST OF REPLACING ANY VERTICAL CONTROL BENCHMARKS DESTROYED BY THE CONSTRUCTION.

7. AS-BUILT DRAWINGS: A SET OF BLUELINE PRINTS AND A SET OF SPECIFICATIONS SHALL BE KEPT AT ALL TIMES ON WHICH ALL CHANGES OR VARIATIONS IN THE WORK, INCLUDING ALL UTILITIES, ARE TO BE RECORDED.

8. CONTRACTOR SHALL FURNISH TO THE ENGINEER OF WORK AS-BUILT PLANS FOR ALL NEW IMPROVEMENTS SHOWN ON THESE PLANS FOR SUBMITTAL TO THE CITY ENGINEER FOR APPROVAL.

9. THE OWNER MUST OBTAIN AN EXCAVATION PERMIT FROM THE DIVISION OF OCCUPATIONAL SAFETY AND HEALTH (D.O.S.H.) PRIOR TO THE START OF CONSTRUCTION.

10. DUST GENERATED BY CONSTRUCTION ACTIVITIES SHALL COMPLY WITH THE LOCAL DUST CONTROL AND UNIFORM BUILDING CODE (UBC) REQUIREMENTS WHICH INCLUDE DUST CONTROL MEASURES FOR CONSTRUCTION SITES. DUST REDUCING MEASURES SHALL INCLUDE REGULAR WATERING OF GRADED SURFACES AND RESTRICTION OF ALL CONSTRUCTION VEHICLES AND EQUIPMENT TO TRAVEL ALONG ESTABLISHED AND REGULARLY WATERED ROADWAYS.

DIG ALERT NOTICE

SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES THAT DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER, CALL UNDERGROUND SERVICE ALERT TOLL FREE 1-800-422-4133 AT LEAST TWO WORKING DAYS BEFORE YOU DIG.

UNDERGROUND SERVICE ALERT

CALL:TOLL FREE
(800)422-4133 OR 811
TWO WORKING DAYS BEFORE YOU DIG

"CAUTION": REMEMBER THAT THE USA CENTER NOTIFIES ONLY THOSE UTILITIES BELONGING TO THE CENTER. THERE COULD BE OTHER UTILITIES PRESENT AT THE WORK SITE. THE CENTER WILL INFORM YOU OF WHOM THEY WILL NOTIFY.

ASSESSORS PARCEL 643-070-10

SPECIAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO INSURE THAT ALL SLOPES AND UTILITIES ARE BUILT IN ACCORDANCE WITH THESE PLANS. IF THERE IS ANY QUESTION REGARDING THESE PLANS OR FIELD STAKES, THE CONTRACTOR SHALL REQUEST AN INTERPRETATION BEFORE DOING ANY WORK BY CALLING THE ENGINEER OF WORK AT (619)291-0707 AND THE CITY INSPECTOR. CONTRACTOR SHALL ALSO TAKE THE NECESSARY STEPS TO PROTECT THE PROJECT AND ADJACENT PROPERTY FROM ANY EROSION AND SILTATION THAT RESULT FROM CONTRACTOR'S OPERATIONS BY APPROPRIATE MEANS (SAND BAGS, HAY BALES, TEMPORARY DESILTING BASINS, SILT FENCES, DIKES, SHORING, ETC.) UNTIL SUCH TIME THAT THE TOTAL PROJECT IS COMPLETED AND ACCEPTED FOR MAINTENANCE BY WHATEVER OWNER, AGENCY OR ASSOCIATION IS TO BE ULTIMATELY RESPONSIBLE FOR MAINTENANCE.

2. CONTRACTOR WILL MAKE EXPLORATION EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.

3. LOCATION AND ELEVATIONS OF IMPROVEMENTS TO BE MET (OR AVOIDED) BY WORK TO BE DONE SHALL BE CONFIRMED BY FIELD MEASUREMENTS PRIOR TO CONSTRUCTION OF NEW WORK. CONTRACTOR SHALL REPORT TO THE ENGINEER OR CITY INSPECTOR ANY DISCREPANCIES BETWEEN FIELD MEASUREMENTS AND THE PLANS.

4. BEFORE EXCAVATING FOR THIS CONTRACT, THE CONTRACTOR SHALL FIELD VERIFY LOCATION OF UNDERGROUND UTILITIES. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO OTHER EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS.

5. CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER EXISTING LINES NOT OF RECORD OR NOT SHOWN ON THESE **PLANS**.

6. CONTRACTOR AGREES: TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER, THE ENGINEER AND THE CITY OF CHULA VISTA HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING THEREFROM LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER OR THE CITY OF CHULA VISTA.

7. IF REQUIRED CONTRACTOR IS RESPONSIBLE FOR HAVING TRAFFIC CONTROL PLANS APPROVED BY THE CITY ENGINEER PRIOR TO COMMENCING ANY WORK IN THE PUBLIC RIGHT OF WAY.

8. CONTRACTOR SHALL REPAIR ALL DESTROYED OR DAMAGED EXISTING SURFACE IMPROVEMENTS WITH IMPROVEMENTS EQUAL OR SUPERIOR.

9. ALL DEMOLISHED MATERIAL AND TRENCH SPOILS SHALL BE REMOVED FROM THE JOB SITE TO AN APPROVED DISPOSAL SITE.

10. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL PROPOSED CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS AND THE CITY

ENGINEER.

OWNERS CERTIFICATE:

IT IS AGREED THAT FIELD CONDITIONS MAY REQUIRE CHANGES TO THESE PLANS. IT IS FURTHER AGREED THAT THE OWNER (DEVELOPER) SHALL HAVE THE ENGINEER OF WORK MAKE SUCH CHANGES, ALTERATIONS OR ADDITIONS TO THESE PLANS, WHICH THE ENGINEER OF WORK DETERMINES ARE NECESSARY AND DESIRABLE FOR THE PROPER COMPLETION OF THE IMPROVEMENTS. ALL PLAN CHANGES SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO CONTRUCTION.

I FURTHER AGREE TO COMMENCE WORK ON ANY IMPROVEMENTS SHOWN ON THESE PLANS WITHIN EXISTING CITY RIGHT-OF-WAY WITHIN 60 DAYS AFTER ISSUANCE OF THE CONSTRUCTION PERMIT AND TO PURSUE SUCH WORK ACTIVELY ON EVERY NORMAL WORKING DAY UNTIL COMPLETED, IRRESPECTIVE AND INDEPENDENT OF ANY OTHER WORK ASSOCIATED WITH THIS PROJECT OR UNDER MY CONTROL.

NAME: SLF IV/McMILLIN MILLENIA JV, LLC
ADDRESS: 2750 WOMBLE ROAD, SUITE 200
SAN DIEGO, CA 92106
TEL: (619)477-4117
FAX: (619)336-3010

BY: Don Mitchell, SVP DATE: 3.12.14

ENGINEER OF WORK:

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE IMPROVEMENTS SHOWN ON THIS SET OF PLANS (SHEET 1 THROUGH 4) HAVE BEEN INSTALLED AND CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH SAID PLANS, APPROPRIATE STANDARDS AND ANY DISCRETIONARY APPROVAL(S) FOR THE PROJECT.

SIGNED: _____ DATE: _____

PRINTED NAME: JOHN D. GODDARD JR. P.E. NO. 33037

DISCIPLINE: CIVIL MY REGISTRATION EXPIRES: 06/30/14

DECLARATION OF RESPONSIBLE CHARGE:

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF THE PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF CHULA VISTA IS CONFINED TO REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN.

RICK ENGINEERING COMPANY
5620 FRIARS ROAD
SAN DIEGO, CA 92110

BY: _____
JOHN D. GODDARD JR.
R.C.E. 33037 EXP. 06/30/14

DATE: 5/4/14

WORK TO BE DONE:

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE IN ACCORDANCE WITH THESE PLANS, THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (MAY 2006) COMMONLY REFEREED TO AS THE "GREEN BOOK," SAN DIEGO REGIONAL SUPPLEMENT AMENDMENTS (2006), SAN DIEGO AREA REGIONAL STANDARD DRAWINGS (AUGUST 2012), STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARD PLANS (MAY 2010) AND STANDARD SPECIFICATIONS (MAY 2006), STATE OF CALIFORNIA MANUAL OF TRAFFIC CONTROLS (JAN 2010), DESIGN AND CONSTRUCTION STANDARDS OF THE CITY OF CHULA VISTA (2010), AND CITY OF CHULA VISTA STANDARD SPECIAL PROVISIONS (2008), ALL AS ADOPTED BY THE CITY OF CHULA VISTA, ARE MADE PART OF THE SPECIFICATIONS. ANY CHANGES OR REVISIONS THEREFROM SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO ANY REQUEST FOR INSPECTION.

LEGEND

5' SEWER MANHOLE_____S.D.A.R.S.D. NOS. SM-2, SM-3, SM-4, SM-5, SM-7, M-4_____

EXISTING SEWER MANHOLE MAIN_____AS SHOWN_____

SEWER MAIN_____(SIZE, CLASS & TYPE PER PLAN)___S.D.R.S.D. NO. SP-2_____

ENVIRONMENTALLY CLEARED FOOTPRINT_____

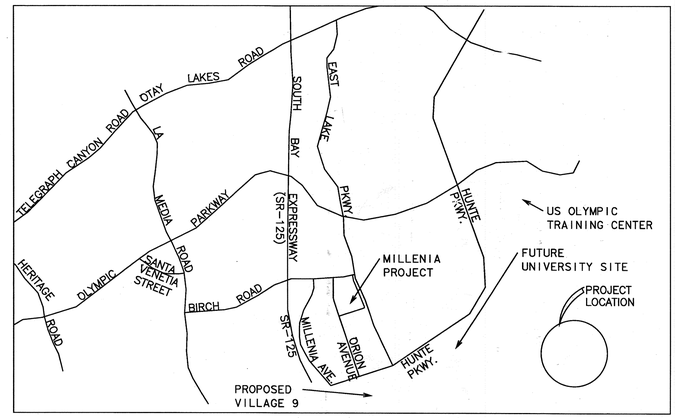
SDG&E RIGHT-OF-WAY LINE_____

SEWER NOTES:

1. SEWER SHOWN ON THESE PLANS IS P.V.C. SEWER PIPE PER ASTM D-3034 TYPE C905, UNLESS OTHERWISE NOTED, WITH MINIMUM PIPE STIFFNESS OF 46 WHEN TESTED AT FIVE (5) PERCENT DEFLECTION. GRAVITY P.V.C. SEWER SHALL HAVE A 3/4-INCH MAXIMUM CRUSHED ROCK BACKFILL TO ONE FOOT ABOVE THE PIPE.
2. AS AN ALTERNATE TO P.V.C. AN A.B.S. COMPOSITE SEWER PIPE CONFORMING TO ASTM D-2680 WITH TYPE S.C. COUPLERS MAY BE USED IN SIZES EIGHT (8) INCHES AND ABOVE. FOUR (4) OR SIX (6) INCH PIPES SHALL BE ABS. SOLID WALL WITH F/DY NOT LESS THAN 150 PSI PER ASTM D-2751
3. SEWER CONTRACTOR SHALL MAKE CERTAIN THAT ALL MANHOLES ARE CONSTRUCTED IN EXACT LOCATION SHOWN, AND WITH THE OFFSET CONE POSITIONED AWAY FROM SURVEY MONUMENT LOCATION ADJACENT THERETO.
4. THE PIPE BEDDING SHALL BE IN ACCORDANCE WITH REGIONAL STANDARD DRAWING NO. S-4 (TYPE C).
5. THE P.V.C. AND A.B.S. PIPE CONNECTIONS TO MANHOLES SHALL HAVE MANHOLE WATER STOP GASKETS AT EACH CONNECTION TO MANHOLES. THESE WATER STOP GASKETS SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID FOR MANHOLES.
6. PIPE CONNECTION TO MANHOLE (MH) SHALL COMPLY WITH REGIONAL STANDARDS.

TRAFFIC CONTROL:

IF THE NEED FOR TRAFFIC CONTROL BECOMES APPARENT AFTER THE ISSUANCE OF A PERMIT OR START OF WORK, THE INSPECTION SECTION MAY REQUIRE THE PREPARATION OF SUCH A PLAN. IF SUCH A DETERMINATION IS MADE BY THE INSPECTION SECTION, UPON NOTIFICATION OF THE SUPERINTENDENT OF THE JOB IN QUESTION, WORK IN THE RIGHT OF WAY SHALL CEASE UNTIL SUCH TIME AS TRAFFIC CONTROL PLANS HAVE BEEN APPROVED BY TRAFFIC ENGINEERING.



VICINITY MAP
NO SCALE

AS BUILT

SIGNED _____ DATE: _____

PRINT NAME: JOHN D. GODDARD, JR. P.E. NO. 33037

DISCIPLINE: CIVIL REGISTRATION EXPIRES:

RICK ENGINEERING COMPANY
5620 FRIARS ROAD
SAN DIEGO, CA 92110
619.291.0707
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rickengineering.com
San Diego · Riverside · Orange · San Luis Obispo · Bakersfield · Sacramento · Phoenix · Tucson

J-16629M

REGISTERED PROFESSIONAL ENGINEER — JOHN D. GODDARD — NO. 33037 CIVIL — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — THOMAS E. ADLER — No. 59934 — Exp. 6/30/14 — CIVIL — STATE OF CALIFORNIA

TOTAL SHEETS = 4

CONSTRUCTION RECORD	REFERENCES	By	REVISIONS	Date	App'd
Contractor	DRW NO. 96-64				
Inspector					
Date Completed					

BENCH MARK: CITY CHULA VISTA VERTICAL CONTROL BENCHMARK, INDEX NO. 1750, DESCRIPTION: BRASS DISK IN WELL

SCALE: Horizontal AS SHOWN, Vertical NA

Designed By PT | Drawn By PT | Checked By JDG
Plans Prepared Under Supervision Of
ENGINEER
Date 5/4/14
R.C.E. No. 33037

Submitted 3/18/14
By _____
Office SH

Approved 3/19/14
By Tom Adler
Principal Civil Engineer

CITY OF CHULA VISTA — DEVELOPMENT SERVICES
PLANS FOR THE IMPROVEMENT OF SEWER & TEMPORARY HI-LINE:
SALT CREEK SEWER

Drawing No. 13045- 1
W.O.No. PC2232

SALT CREEK SEWER IMPROVEMENT PLAN

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MITIGATION MEASURES FROM EIR

MITIGATION MEASURE 4.7-4:

FOR ANY WORK PROPOSED TO BE INITIATED BETWEEN FEBRUARY 15 AND AUGUST 15, PRIOR TO ISSUANCE OF ANY LAND DEVELOPMENT PERMITS, INCLUDING CLEARING, GRUBBING, GRADING, AND CONSTRUCTION PERMITS ASSOCIATED WITH IMPROVEMENTS TO THE OFF-SITE SCSL, A PRECONSTRUCTION SURVEY FOR THE COASTAL CALIFORNIA GNATCATCHER MUST BE PERFORMED IN ORDER TO REAFFIRM THE PRESENCE AND EXTENT OF OCCUPIED HABITAT. THE PRE-CONSTRUCTION SURVEY AREA FOR THE COASTAL CALIFORNIA GNATCATCHER SHALL ENCOMPASS ALL HABITAT WITHIN THE PROJECT WORK ZONE AS WELL AS A 300-FOOT BUFFER EXTENDING FROM THE STUDY AREA AS DELINEATED ON FIGURE 5 OF THE HELIX BIOLOGICAL TECHNICAL REPORT.

THE PRE-CONSTRUCTION SURVEY MUST BE PERFORMED TO THE SATISFACTION OF THE ENVIRONMENTAL REVIEW COORDINATOR (ERC) BY A QUALIFIED BIOLOGIST FAMILIAR WITH THE CITY'S MSCP SUBAREA PLAN. THE RESULTS OF THE PRE-CONSTRUCTION SURVEY MUST BE SUBMITTED IN A REPORT TO THE ERC FOR REVIEW AND APPROVAL PRIOR TO THE ISSUANCE OF ANY LAND DEVELOPMENT PERMITS AND PRIOR TO INITIATING ANY CONSTRUCTION ACTIVITIES. IF THE COASTAL CALIFORNIA GNATCATCHER IS DETECTED, A MINIMUM 300-FOOT BUFFER DELINEATED BY ORANGE BIOLOGICAL FENCING SHALL BE ESTABLISHED AROUND THE DETECTED SPECIES TO ENSURE THAT NO WORK SHALL OCCUR WITHIN THE OCCUPIED HABITAT FROM FEBRUARY 15 THROUGH AUGUST 15 AND ON-SITE NOISE REDUCTION TECHNIQUES SHALL BE INCORPORATED, AS APPROPRIATE. THE ERC SHALL HAVE THE DISCRETION TO MODIFY THE BUFFER WIDTH DEPENDING ON SITE-SPECIFIC CONDITIONS. IF THE RESULTS OF THE PRE-CONSTRUCTION SURVEY DETERMINE THAT THE SURVEY AREA IS UNOCCUPIED, THE WORK MAY COMMENCE AT THE DISCRETION OF THE ERC FOLLOWING THE REVIEW AND APPROVAL OF THE PRE-CONSTRUCTION REPORT.

MITIGATION MEASURE 4.7-5:

PRIOR TO ISSUANCE OF LAND DEVELOPMENT PERMITS, INCLUDING CLEARING, GRUBBING, GRADING AND CONSTRUCTION PERMITS FOR THE OFF-SITE SCSL PROJECT, THE APPLICANT SHALL PROVIDE A REVEGETATION PLAN FOR 0.16 ACRE OF DIEGAN COASTAL SAGE SCRUB TO THE SATISFACTION OF THE CITY'S ENVIRONMENTAL REVIEW COORDINATOR (ERC). THE REVEGETATION PLAN MUST BE PREPARED BY A QUALIFIED CITY-APPROVED BIOLOGIST FAMILIAR WITH THE CITY'S MSCP SUBAREA PLAN AND MUST INCLUDE, BUT NOT BE LIMITED TO, AN IMPLEMENTATION PLAN; APPROPRIATE SEED MIXTURES AND PLANTING METHOD; IRRIGATION METHOD; QUANTITATIVE AND QUALITATIVE SUCCESS CRITERIA; MAINTENANCE, MONITORING, AND REPORTING PROGRAM; ESTIMATED COMPLETION TIME; AND CONTINGENCY MEASURES. THE APPLICANT SHALL ALSO BE REQUIRED TO IMPLEMENT THE REVEGETATION PLAN SUBJECT TO THE OVERSIGHT AND APPROVAL OF THE ERC

MITIGATION MEASURE 4.7-6:

PRIOR TO ISSUANCE OF LAND DEVELOPMENT PERMITS, INCLUDING CLEARING OR GRUBBING AND GRADING AND/OR CONSTRUCTION PERMITS FOR THE OFFSITE SCSL, THE APPLICANT SHALL INSTALL FENCING IN ACCORDANCE WITH CVMC 17.35.030. PROMINENTLY COLORED, WELL-INSTALLED FENCING AND SIGNAGE SHALL BE IN PLACE WHEREVER THE LIMITS OF GRADING ARE ADJACENT TO SENSITIVE VEGETATION COMMUNITIES OR OTHER BIOLOGICAL RESOURCES, AS IDENTIFIED BY THE QUALIFIED MONITORING BIOLOGIST. FENCING SHALL REMAIN IN PLACE DURING ALL CONSTRUCTION ACTIVITIES. ALL TEMPORARY FENCING SHALL BE SHOWN ON GRADING PLANS FOR THE OFF-SITE SCSL. PRIOR TO RELEASE OF GRADING AND/OR IMPROVEMENT BONDS, A QUALIFIED BIOLOGIST SHALL PROVIDE EVIDENCE THAT WORK WAS CONDUCTED AS AUTHORIZED UNDER THE APPROVED LAND DEVELOPMENT PERMIT AND ASSOCIATED PLANS.

MITIGATION MEASURE 4.7-7:

A BIOLOGICAL MONITOR SHALL ATTEND ALL PRE-CONSTRUCTION MEETINGS AND BE PRESENT DURING THE REMOVAL OF ANY VEGETATION ASSOCIATED WITH THE MODIFICATIONS TO THE OFF-SITE SCSL. PRIOR TO ISSUANCE OF LAND DEVELOPMENT PERMITS, INCLUDING CLEARING OR GRUBBING AND GRADING AND/OR CONSTRUCTION PERMITS FOR THE SCSL PROJECT, THE APPLICANT SHALL PROVIDED WRITTEN CONFIRMATION THAT A CITY-APPROVED BIOLOGICAL MONITOR HAS BEEN RETAINED AND SHALL BE ON-SITE DURING CLEARING, GRUBBING, AND/OR GRADING ACTIVITIES TO ENSURE THAT THE APPROVED LIMITS OF DISTURBANCE ARE NOT EXCEEDED AND PROVIDE PERIODIC MONITORING OF THE IMPACT AREA INCLUDING, BUT NOT LIMITED TO, TRENCHES, STOCKPILES, STORAGE AREAS, AND FENCING. THE BIOLOGICAL MONITOR SHALL ALSO BE ON-SITE DURING THE PLACEMENT AND REMOVAL OF THE PROPOSED HIGH LINE TO ENSURE THAT REMOVAL OR DAMAGING OF NATIVE VEGETATION DOES NOT OCCUR. THE BIOLOGICAL MONITOR SHALL BE AUTHORIZED TO HALT ALL ASSOCIATED PROJECT ACTIVITIES THAT MAY BE IN VIOLATION OF THE CITY'S MSCP SUBAREA PLAN.

MITIGATION MEASURE 4.7-8:

PRIOR TO ISSUANCE OF LAND DEVELOPMENT PERMITS, AND PRIOR TO CONSTRUCTION ACTIVITIES OCCURRING IN AREAS CONTAINING SENSITIVE BIOLOGICAL RESOURCES WITHIN THE OFF-SITE SCSL, ALL WORKERS SHALL BE EDUCATED BY A CITY-APPROVED BIOLOGIST TO RECOGNIZE AND AVOID THOSE AREAS WHICH HAVE BEEN MARKED AS SENSITIVE BIOLOGICAL RESOURCES.

MITIGATION MEASURE 4.7-12: (SEE "PERMIT NOTE")

PRIOR TO ISSUANCE OF LAND DEVELOPMENT PERMITS, INCLUDING CLEARING, GRUBBING, GRADING AND CONSTRUCTION PERMITS FOR THE OFF-SITE SCSL, THE APPLICANT SHALL PROVIDE THE CITY WITH WRITTEN CONFIRMATION TO THE SATISFACTION OF THE CITY'S ENVIRONMENTAL REVIEW COORDINATOR THAT THE RESOURCE AGENCIES HAVE BEEN NOTIFIED OF THE SCSL GRADING. THE APPLICANT SHALL ALSO BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE REGULATORY PERMITS, SUCH AS THOSE REQUIRED UNDER SECTION 404 OF THE FEDERAL CLEAN WATER ACT, SECTION 1600 OF THE CALIFORNIA DEPARTMENT OF FISH AND GAME CODE, AND PORTER COLOGNE WATER QUALITY ACT. IN ADDITION, PRIOR TO ISSUANCE OF ANY GRADING PERMITS ASSOCIATED WITH THE OFF-SITE SCSL, THE APPLICANT SHALL PREPARE A FRAC-OUT CONTINGENCY PLAN (FCP) TO THE SATISFACTION OF THE CITY ENGINEER AND THE CITY'S ERC. THE FCP SHALL ESTABLISH OPERATIONAL PROCEDURES AND RESPONSIBILITIES FOR THE PREVENTION, CONTAINMENT, NOTIFICATION, AND CLEAN-UP OF THE INADVERTENT RELEASE OF DRILLING FLUID (FRAC-OUT) THAT COULD POTENTIALLY OCCUR WITH THE PROPOSED DIRECTIONAL DRILLING UNDER SALT CREEK. ISSUES ADDRESSED IN THE PLAN SHALL INCLUDE BUT NOT BE LIMITED TO:

1 .SPOIL STOCKPILE MANAGEMENT;

2 .HAZARDOUS MATERIALS STORAGE AND SPILL CLEANUP;

3 .SITE-SPECIFIC EROSION AND SEDIMENT CONTROL;

4.PROCEDURES FOR TIMELY DETECTION OF FRAC-OUTS; AND

ANY OTHER BMPS TO ENSURE PROTECTION OF SENSITIVE BIOLOGICAL RESOURCES IN THE ADJACENT PRESERVE AREAS AND MINIMIZE WATER QUALITY IMPACTS AS DESCRIBED IN THE SWPPP.

IF A FRAC-OUT EVENT WERE TO OCCUR DURING THE BORING AND JACKING PROCESS, WORK SHOULD CEASE IMMEDIATELY, AND MEASURES SHOULD BE TAKEN TO CONTAIN THE FRAC-OUT SLURRY IN AS SMALL AN AREA AS POSSIBLE. THE BIOLOGICAL MONITOR SHALL CONTACT THE CITY AND APPROPRIATE RESOURCE AGENCIES WITHIN 24 HOURS OF THE FRAC-OUT AND PROVIDE AN INITIAL ASSESSMENT OF IMPACTS TO NATIVE VEGETATION. MITIGATION FOR THE IMPACTS WILL BE COORDINATED IN CONJUNCTION WITH THE CITY AND RESOURCE AGENCIES.

MITIGATION MEASURE 4.7-9:

PRIOR TO ISSUANCE OF LAND DEVELOPMENT PERMITS, INCLUDING CLEARING OR GRUBBING AND GRADING AND/OR CONSTRUCTION PERMITS FOR THE EUC PROJECT SITE (INCLUDING THE OFF-SITE SSA) OR SCSL, THE APPLICANT SHALL PROVIDE WRITTEN CONFIRMATION THAT MITIGATION MEASURE 4.9.2 (HYDROLOGY AND DRAINAGE), REQUIRING A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT (NPDES) AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP), HAS BEEN FULFILLED TO THE SATISFACTION OF THE CITY ENGINEER.

MITIGATION MEASURE 4.7-10:

PRIOR TO ISSUANCE OF LAND DEVELOPMENT PERMITS, INCLUDING CLEARING OR GRUBBING AND GRADING AND/OR CONSTRUCTION PERMITS FOR THE OFFSITE SSA, THE APPLICANT SHALL INSTALL TEMPORARY ORANGE BIOLOGICAL FENCING ALONG THE LIMITS OF GRADING IN AREAS ADJACENT TO SENSITIVE BIOLOGICAL RESOURCES TO AVOID IMPACTS ON SUCH RESOURCES. ALL FENCING, INCLUDING TEMPORARY FENCING, SHALL BE SHOWN ON THE PROJECT GRADING PLANS. PRIOR TO AND DURING CONSTRUCTION, THE CITY'S MITIGATION MONITOR SHALL VERIFY THAT BIOLOGICAL FENCING IS PROPERLY INSTALLED AND MAINTAINED.

MITIGATION MEASURE 4.7-13:

TO AVOID ANY DIRECT IMPACTS TO RAPTORS AND/OR ANY MIGRATORY BIRDS, REMOVAL OF HABITAT THAT SUPPORTS ACTIVE NESTS ON THE PROPOSED AREA OF DISTURBANCE (WITHIN THE EUC PROJECT SITE, SCSL, OR SSA) SHOULD OCCUR OUTSIDE OF THE BREEDING SEASON FOR THESE SPECIES (JANUARY 15 TO AUGUST 31). IF REMOVAL OF HABITAT ON THE PROPOSED AREA OF DISTURBANCE (WITHIN THE EUC PROJECT SITE, SCSL, OR SSA) MUST OCCUR DURING THE BREEDING SEASON, THE APPLICANT SHALL RETAIN A CITY-APPROVED BIOLOGIST TO CONDUCT A PRE-CONSTRUCTION SURVEY TO DETERMINE THE PRESENCE OR ABSENCE OF NESTING BIRDS ON THE PROPOSED AREA OF DISTURBANCE. THE PRE-CONSTRUCTION SURVEY MUST BE CONDUCTED WITHIN 10 CALENDAR DAYS PRIOR TO THE START OF CONSTRUCTION, THE RESULTS OF WHICH MUST BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO INITIATING ANY CONSTRUCTION ACTIVITIES. IF NESTING BIRDS ARE DETECTED, A LETTER REPORT OR MITIGATION PLAN AS DEEMED APPROPRIATE BY THE CITY, SHALL BE PREPARED AND INCLUDE PROPOSED MEASURES TO BE IMPLEMENTED TO ENSURE THAT DISTURBANCE OF BREEDING ACTIVITIES IS AVOIDED. THE REPORT OR MITIGATION PLAN SHALL BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL AND IMPLEMENTED TO THE SATISFACTION OF THE CITY. THE CITY$^{S}/_{32}$S MITIGATION MONITOR SHALL VERIFY AND APPROVE THAT ALL MEASURES IDENTIFIED IN THE REPORT OR MITIGATION PLAN ARE IN PLACE PRIOR TO AND/OR DURING CONSTRUCTION.

MITIGATION MEASURE 4.9-1:

PRIOR TO ISSUANCE OF EACH GRADING PERMIT FOR THE EUC SPA PLAN, THE SSA, THE SALT CREEK SEWER LATERAL IMPROVEMENT, AND THE POGGI CANYON SEWER IMPROVEMENT AREA OR ANY LAND DEVELOPMENT PERMIT, INCLUDING CLEARING AND GRADING, THE PROJECT APPLICANT(S) SHALL SUBMIT A NOTICE OF INTENT (NOI) AND OBTAIN COVERAGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR CONSTRUCTION ACTIVITY FROM THE STATE WATER RESOURCES CONTROL BOARD (SWRCB). THE PERMIT REQUIRES DEVELOPMENT OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND MONITORING PLAN THAT SHALL BE SUBMITTED TO THE CITY ENGINEER AND THE DIRECTOR OF PUBLIC WORKS. THE SWPPP SHALL BE INCORPORATED INTO THE GRADING AND DRAINAGE PLANS AND SHALL PROVIDE FOR IMPLEMENTATION OF CONSTRUCTION AND POST-CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPS) ON SITE TO REDUCE THE AMOUNT OF SEDIMENTS AND POLLUTANTS IN CONSTRUCTION AND POST-CONSTRUCTION SURFACE RUNOFF BEFORE IT IS DISCHARGED INTO OFF-SITE STORM WATER FACILITIES. THE BMPS SHALL INCLUDE MEASURES TO MITIGATE POTENTIALLY SIGNIFICANT INDIRECT IMPACTS TO THE JURISDICTIONAL FEATURE APPROXIMATELY 300 FEET DOWNSTREAM OF THE OFF-SITE SOILS STOCKPILING AREA. THE GRADING PLANS SHALL NOTE THE CONDITION REQUIRING A SWPPP AND MONITORING PLANS.

MITIGATION FOR INDIRECT IMPACTS (BIOLOGICAL TECHNICAL REPORT, 7-2)

7.2 MITIGATION FOR INDIRECT IMPACTS

THE PROJECT IS A MODIFICATION OF A PLANNED FACILITY AND IS SUBJECT TO THE CITY'S ADJACENCY MANAGEMENT ISSUES (SECTION 7.5.2 OF THE CITY'S SUBAREA PLAN). THE FOLLOWING MEASURES WILL BE IMPLEMENTED TO MITIGATE POTENTIAL INDIRECT IMPACTS BOTH ON SITE AND WITHIN THE OFF SITE MITIGATION PARCELS FOR THE EASTERN OTAY RANCH DRAINAGE FACILITIES PROJECT, HUNTE PARKWAY PROJECT, AND OTAY RANCH VILLAGE 11 PROJECT RESULTING FROM THE PROJECT.

SIGNAGE: APPLICANT WILL INSTALL BARRIERS AND SIGNAGE WHERE NECESSARY TO DIRECT PUBLIC ACCESS AWAY FROM SENSITIVE RESOURCES WITHIN THE PROJECT AREA DURING CONSTRUCTION AND FOLLOW UP RESTORATION OF THE SITE.

DRAINAGE ISSUES: NO RELEASE OF TOXINS, CHEMICALS PETROLEUM PRODUCTS, EXOTIC PLANT MATERIALS OR OTHER ELEMENTS THAT MIGHT HARM OR DEGRADE THE NATURAL ECOSYSTEM OF THE PRESERVE SHALL BE ALLOWED; THE APPLICANT WILL INCORPORATE BEST MANAGEMENT PRACTICES (BMP) STANDARDS AS DEFINED BY THE CITY'S STANDARD URBAN STORM MITIGATION PLAN (SUSMP).

TOXIC SUBSTANCES: THE PROPOSED PROJECT IS A SEWER BY-PASS AND NO TOXIC SUBSTANCES FROM AGRICULTURAL AND/OR RECREATIONAL WILL BE RELEASED INTO THE PRESERVE.

NOISE: THE PROJECT MAY HAVE INDIRECT EFFECTS (NOISE) ON NESTING BIRDS. IF CONSTRUCTION, INCLUDING PUMPING ASSOCIATED WITH THE HIGH LINE, IS TO TAKE PLACE DURING GNATCATCHER NESTING SEASON (FEBRUARY 15 THROUGH AUGUST 15), THE APPLICANT WILL CONDUCT A NESTING BIRD SURVEY PRIOR TO ANY GROUND CLEARING AND/OR GROUND DISTURBING ACTIVITIES. ACTIVE NEST WILL BE FLAGGED AND NOISE REDUCTION TECHNIQUES WILL BE INCORPORATED TO REDUCE NOISE LEVELS TO BELOW SIGNIFICANT LEVELS. NO RESTRICTIONS ARE PLACED ON TEMPORARY CONSTRUCTION NOISE OUTSIDE THE BIRD BREEDING SEASON(S).

INVASIVES: NO INVASIVE NON-NATIVE PLANT SPECIES WILL BE INTRODUCED INTO THE PRESERVE BY THIS PROJECT.

WITH IMPLEMENTATION OF THE MITIGATION MEASURES OUTLINED ABOVE, ALL IMPACTS TO BIOLOGICAL RESOURCES WILL BE MITIGATED TO BELOW A LEVEL OF SIGNIFICANCE.

PERMIT NOTE

PER THE SALT CREEK SEWER LATERAL BIOLOGICAL TECHNICAL REPORT PREPARED BY HELIX ENVIRONMENTAL PLANING INC, DATED JANUARY 5, 2009, NO AGENCY PERMITS (INCLUDING ACOE 404 PERMIT, CDFW 1602 PERMIT OR A RWCQ 401 PERMIT) ARE REQUIRED FOR THIS PROJECT

CONSTRUCTION NOTES

1. GROUNDWATER MAY BE HIGH AND SEASONALLY VARIABLE AT EXCAVATIONS. DEWATERING SYSTEMS SHALL EFFECTIVELY INTERCEPT AND REMOVE WATER FROM THE SURROUNDING STRATA AND THUS PREVENT ITS ENTRY INTO THE EXCAVATION. THE EMPLOYMENT OF ANY OF THE AVAILABLE ALTERNATIVES TO ACHIEVE THIS OBJECTIVE MAY BE REQUIRED. RELIANCE SHALL NOT BE PLACED SOLELY ON SHEETING TO PROTECT WORK AREAS. THE ALTERNATIVE USE OF INTERLOCKING SHEET PILING WITH BRACES OR ANCHORAGE SUPPLEMENTED BY DEWATERING MEASURES OR OTHER MEANS WHICH MAY BE SUITABLE, SHALL BE PERMITTED THROUGH THE APPROPRIATE GOVERNING AGENCY.

2. IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL USE DEWATERING MEASURES OR OTHER MEANS WHICH MAY BE SUITABLE. DEWATERING SHALL BE PERMITTED THROUGH THE APPROPRIATE GOVERNING AGENCIES.

3. IF FEASABLE THE CONTRACTOR SHALL OBTAIN AUTHORIZATION FROM THE CITY OF CHULA VISTA SEWER DEPARTMENT PRIOR TO DISCHARGING GROUNDWATER INTO THE ADJACENT SEWER SYSTEM.

3. SITE WILL BE ACCESSED BY EXISITING DIRT AND PAVED ROADS.

HIGH LINE SEWER NOTES

1. CONTRACTOR SHALL SUBMIT A SEWER BYPASS HIGH LINE PLAN TO THE CITY ENGINEER FOR APPROVAL PRIOR TO PRE-CONSTRUCTION MEETING. SEWER BYPASS HIGH LINE PLAN SHALL INCLUDE LOCATIONS OF PUMPS, BACKUP PUMPS, HIGH LINES, FAILURE PROTECTION FACILITIES, ANY NECCESSARY EROSION CONTROL MEASURES, LOCATION OF ALL HABITAT AND MITIGATION LIMITS, AND SIZE AND LOCATION OF JACKING AND RECEIVING PITS OR ANY OTHER INFORMATION OR FACILITIES AS REQUIRED BY RESIDENT ENGINEER.

2. CONTRACTOR SHALL DETERMINE THE FLOAT LEVELS FOR BYPASS PUMPING. THE PUMP STARTS AT THE HIGH WATER LEVEL(HWL), SHUTS OFF AT THE LOW WATER LEVEL (LWL). THE HIGH, HIGH WATER LEVEL (HHWL) SHALL BE SIGNIFICANTLY BELOW THE RIM OF THE MANHOLE TO GIVE THE CONTRACTOR ENOUGHT TIMETO REMEDY THE PROBLEM.

3. CONTRACTOR SHALL HAVE ONE OPERATIONAL PUMP AND ONE STANDBY PUMP AT ALL TIMES IN THE MANHOLE.

4. THE PROJECT FALLS UNDER CAL-OSHA JURISDICTION AND THE CONTRACTOR SHALL MAKE HIS PERSONNEL AWARE THAT THEY WILL BE EXPOSED TO RAW WASTEWATER DURING THIS CONSTRUCTION PROJECT. THE CONTRACTOR SHALL TAKE THE NECESARRY HEALTH PRECAUTIONS TO GUARD AGAINST CONTACT WITH THE RAW WASTEWATER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PREVENT ANY SPILL OF RAW WASTEWATER AS A RESULT OF HIS OPERATIONS .

5. THE NEW SEWER MUST BE PRESSURE TESTED BEFORE BYPASSING INTO A NEW MANHOLE CAN COMMENCE. ONCE THE NEWLY INSTALLED SEWER HAS PASSED, BYPASSING CAN BEGIN.

6. SEWER HIGH LINE WILL BE LAID ON GROUND SURFACE AND NOT INVOLVE ANY EXCAVATION OF SURFACE DISTURBANCE.

7. SEWER HIGH LINE WILL BE BRIDGED ACROSS CHANNEL WHERE NEEDED.

GROUT NOTES AND SPECIFICATIONS

MATERIALS

A. GROUT. THE GROUT MATERIALS SHALL CONSIST OF PORTLAND CEMENT (PORTLAND CEMENT AND FLY ASH) AND/OR ADDITIVES.

B. COMPRESSIVE STRENGTH. THE GROUT SHALL HAVE A MINIMUM PENETRATION RESISTANCE OF 100 PSI IN 24 HOURS WHEN TESTED IN ACCORDANCE WITH ASTM C 403 AND A MINIMUM COMPRESSIVE STRENGTH OF 300 PSI IN 28 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM C 495 AND C 109.

C. PERFORMANCE REQUIREMENTS. THE GROUTING SYSTEM SHALL HAVE SUFFICIENT GAUGES, MONITORING DEVICES, AND TESTS TO DETERMINE THE EFFECTIVENESS OF THE GROUTING OPERATION AND TO ENSURE COMPLIANCE WITH THE PIPE SPECIFICATIONS AND DESIGN PARAMETERS.

D. MIX DESIGNS. ONE OR MORE MIXES SHALL BE DEVELOPED TO COMPLETELY FILL THE ANNULAR SPACE BASED ON THE FOLLOWING REQUIREMENTS.

1. SIZE OF THE ANNULAR VOID.

2. SUFFICIENT STRENGTH AND DURABILITY TO PREVENT MOVEMENT OF THE CARRIER PIPE.

3. PROVIDE ADEQUATE RETARDATION.

4. PROVIDE LESS THAN 1 PERCENT SHRINKAGE BY VOLUME.

E. DENSITY. THE CONTRACTOR SHALL DESIGN A GROUT MIX WITH A DENSITY TO MEET THE REQUIREMENTS TO PREVENT FLOATING OF THE PIPE. THE APPARENT VISCOSITY SHALL NOT EXCEED 35 SECONDS IN ACCORDANCE WITH ASTM C 939.

EXECUTION

A. QUALIFICATIONS

THE CONTRACTOR SHALL PROVIDE REFERENCES OF PREVIOUS PROJECTS DEMONSTRATING TO THE ENGINEER ITS CAPABILITIES OF FILLER THE ANNULAR SPACE AND PERFORMING WORK IN CONFORMANCE WITH THE PLANS AND THE SPECIFICATIONS.

B. GROUTING EQUIPMENT

THE MATERIALS SHALL BE MIXED IN EQUIPMENT OF SUFFICIENT SIZE AND CAPACITY TO PROVIDE THE DESIRED AMOUNT OF GROUT MATERIAL FOR EACH STAGE IN A SINGLE OPERATION. THE EQUIPMENT SHALL BE CAPABLE OF MIXING THE GROUT AT DENSITIES REQUIRED FOR THE APPROVED PROCEDURE AND SHALL ALSO BE CAPABLE OF CHANGING DENSITY AS DICTATED BY FIELD CONDITIONS ANY TIME DURING THE GROUTING OPERATION.

C. INJECTION PROCEDURE AND PRESSURE

THE GAUGED PUMPING PRESSURE SHALL NOT EXCEED THE LINER PIPE MANUFACTURER$^{S}/_{32}$S APPROVED RECOMMENDATIONS. PUMPING EQUIPMENT SHALL BE OF A SIZE SUFFICIENT TO INJECT GROUT AT VELOCITY AND PRESSURE RELATIVE TO THE SIZE OF THE ANNULAR SPACE. GAUGES TO MONITOR GROUT PRESSURE SHALL BE ATTACHED IMMEDIATELY ADJACENT TO EACH INJECTION PORT. THE GAUGE SHALL CONFORM TO AN ACCURACY OF NO MORE THAN ONE-HALF PERCENT ERROR OVER THE FULL RANGE OF THE GAUGE. THE RANGE OF THE GAUGE SHALL NOT BE MORE THAN 100 PERCENT GREATER THAN THE DESIGN GROUT PRESSURE. PRESSURE GAUGES SHALL BE INSTRUMENT OIL FILLED AND ATTACHED TO A SADDLE-TYPE DIAPHRAGM SEAL (GAUGE SAVER) TO PREVENT CLOGGING WITH GROUT. ALL GAUGES SHALL BE CERTIFIED AND CALIBRATED IN ACCORDANCE WITH ANSI B40, GRADE 2A.

D. ON-SITE TEST EQUIPMENT

DENSITY SHALL BE VERIFIED BY ASTM C 138. VISCOSITIES SHALL BE CHECKED WITH A FLOWCONE PROVIDED BY THE CONTRACTOR AND TESTED PER ASTM C 939.

E. TEST SECTION

THE CONTRACTOR MAY BE REQUIRED TO PERFORM AN ABOVE-GROUND TEST ON EACH TYPE OF GROUT AND GROUT SYSTEM PROPOSED TO BE USED. THE TEST SECTION TO BE GROUTED AND THE SIZE OF THE ANNULAR SPACE CONSIDERED FOR EACH TYPE OF GROUT SYSTEM SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE DISTRICT.

AS BUILT

SIGNED _____ DATE: _____

PRINT NAME: JOHN D. GODDARD, JR. P.E. NO. 33037

DISCIPLINE: CIVIL REGISTRATION EXPIRES:

RICK ENGINEERING COMPANY
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(FAX)619.291.4165
rickengineering.com

J-16629M

REGISTERED PROFESSIONAL ENGINEER * JOHN D. GODDARD JR. * NO. 33837 CIVIL * STATE OF CALIFORNIA *

CONSTRUCTION RECORD	REFERENCES	By	REVISIONS	Date	App'd	BENCH MARK	SCALE	Designed By	Drawn By	Checked By
Contractor	DRW NO. 96-64					CITY CHULA VISTA VERTICAL CONTROL BENCHMARK, INDEX NO. 1750, DESCRIPTION: BRASS DISK IN WELL	Horizontal AS SHOWN	PT	PT	JDG
Inspector							Vertical NA	Plans Prepared Under Supervision Of	Date 3/14/14	
Date Completed								ENGINEER	R.C.E. NO. 33037	

Submitted 3/18/14 By _____ Office SH

Approved 3/19/14 By _____ Principal Civil Engineer

CITY OF CHULA VISTA **DEVELOPMENT SERVICES**

PLANS FOR THE IMPROVEMENT OF SEWER & TEMPORARY HI-LINE:

SALT CREEK SEWER

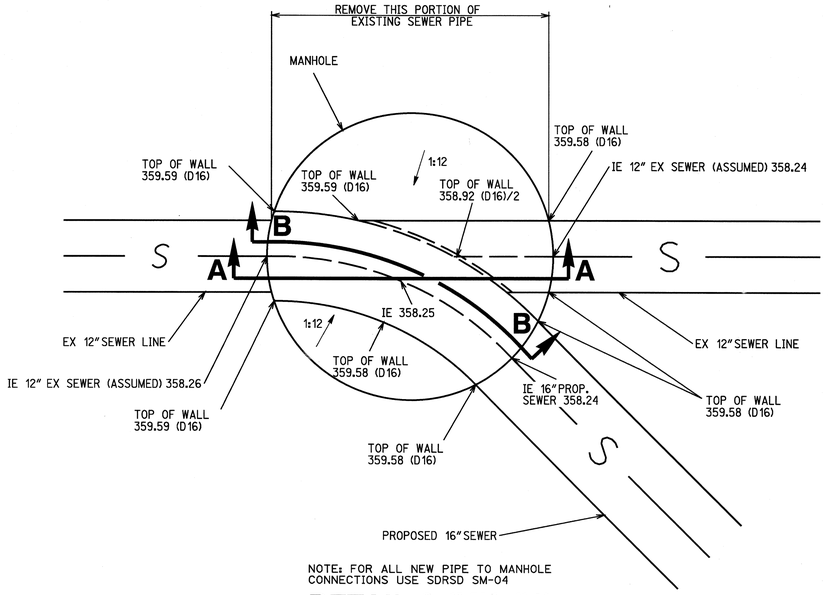
Drawing No. 13045- 2

W.O.No. PC2232

SALT CREEK SEWER IMPROVEMENT PLAN

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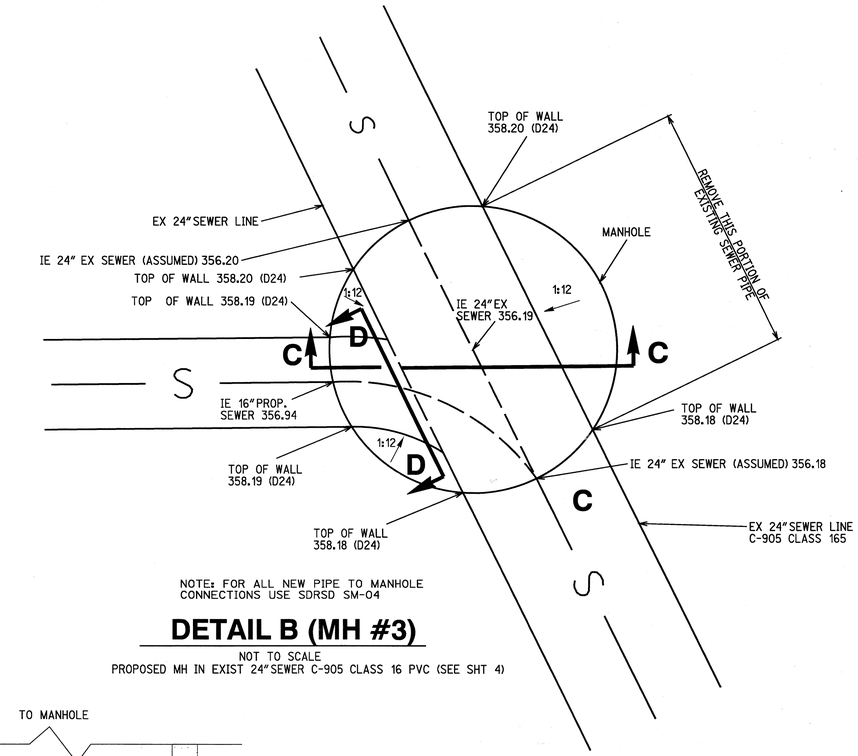
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NOTE: FOR ALL NEW PIPE TO MANHOLE CONNECTIONS USE SDRSD SM-04

DETAIL A (MH #1)

NOT TO SCALE

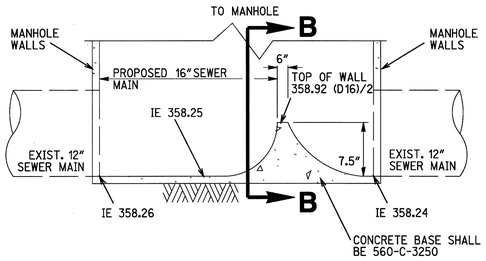


NOTE: FOR ALL NEW PIPE TO MANHOLE CONNECTIONS USE SDRSD SM-04

DETAIL B (MH #3)

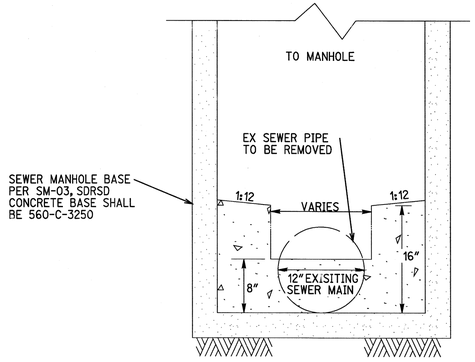
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PROPOSED MH IN EXIST 24"SEWER C-905 CLASS 16 PVC (SEE SHT 4)



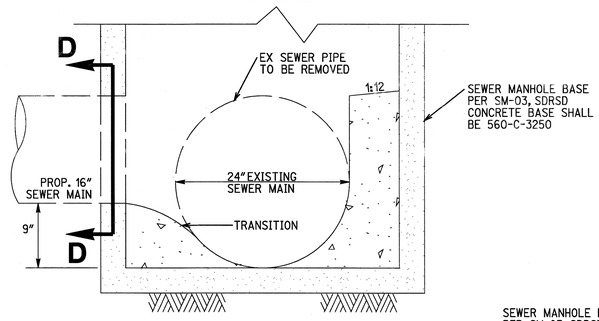
CROSS SECTION A-A

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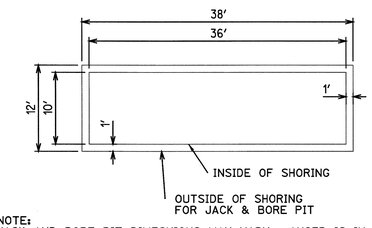
CROSS SECTION B-B

NOT TO SCALE



CROSS SECTION C-C

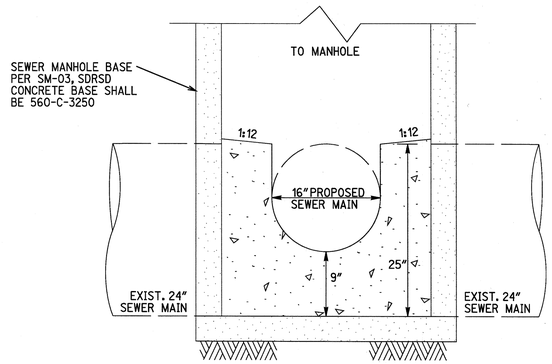
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NOTE:
JACK AND BORE PIT DIMESNIONS MAY VARY. AUGER IS IN 10' LENGTHS. PIT LENGHT IS BORE MACHINE PLUS WORK ROOM PLUS MULTPLES OF 10'. RECEIVING PIT IS BIG ENOUGH TO MAKE TIE WELD.

JACK AND BORE PIT DETAIL

NOT TO SCALE



CROSS SECTION D-D

NOT TO SCALE

AS BUILT

SIGNED _____ DATE: _____

PRINT NAME: JOHN D. GODDARD, JR. P.E. NO. 33037

DISCIPLINE: CIVIL REGISTRATION EXPIRES:

REGISTERED PROFESSIONAL ENGINEER — JOHN D. GODDARD JR. — NO. 33037 CIVIL — STATE OF CALIFORNIA

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rickengineering.com
San Diego Riverside · Orange · San Luis Obispo · Bakersfield · Sacramento · Phoenix · Tucson

J-16629M

CONSTRUCTION RECORD	REFERENCES	By	REVISIONS	Date	App'd
Contractor	DRW NO. 96-64				
Inspector					
Date Completed					

BENCH MARK: CITY CHULA VISTA VERTICAL CONTROL BENCHMARK, INDEX NO. 1750; DESCRIPTION: BRASS DISK IN WELL

SCALE	Designed By	Drawn By	Checked By
Horizontal AS SHOWN	PT	PT	JDG
Vertical NA	Plans Prepared Under Supervision Of	Date 3/17/14	
	ENGINEER	R.C.E. No. 33037	

Submitted 3/18/14 By _____ Office SH

Approved 3/19/14 By _____ Principal Civil Engineer

CITY OF CHULA VISTA **DEVELOPMENT SERVICES**

PLANS FOR THE IMPROVEMENT OF SEWER & TEMPORARY HI-LINE:

SALT CREEK SEWER

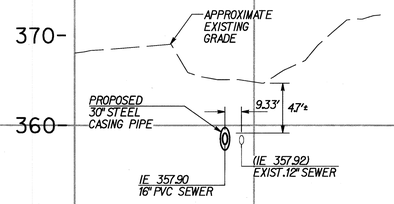
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W.O.No. PC2232

SALT CREEK SEWER IMPROVEMENT PLAN

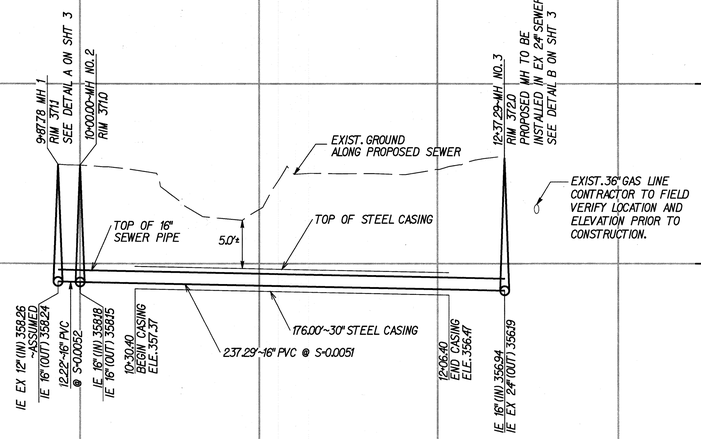
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SECTION A-A

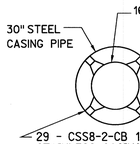
SCALE: HORIZ. 1"=40', VERT. 1"=8'



PROFILE: SALT CREEK SEWER

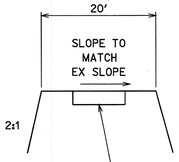
SCALE: HORIZ. 1"=40', VERT. 1"=8'

10+00 11+00 12+00



24" STEEL CASING AND SPACERS

NOT TO SCALE



TYPICAL ACCESS ROAD DETA

NOT TO SCALE

GRAPHIC SCALE 1" = 40'

SEWER DATA

NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N06°39'20"W		12.22'	16" PVC C905
2	N49°12'09"W		237.29'	16" PVC C905

TEMPORARY SEWER HI-LINE 1 DATA

NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
3	Δ=12°01'21"	200.00'	42.32'	*
4	N49°36'49"W		176.25'	*
5	Δ=03°14'36"	995.00'	56.33'	*
6	Δ=07°42'57"	600.00'	80.80'	*
7	N50°14'39"W		176.67'	*
8	Δ=24°51'23"	203.00'	88.07'	*
9	N24°20'46"W		198.38'	*
10	Δ=16°36'44"	200.00'	57.99'	*

* 4" DIAMETER FLEXIBLE PIPE (SEE NOTES ON SHEET 2)

CASING PIPE DATA

NO.	DELTA OR BRG.	LENGTH	REMARKS
11	N49°12'09"W	176.00'	30" STEEL (0.5" THICK WALL)

TEMPORARY SEWER HI-LINE 2 DATA

NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
12	N50°14'39"W		53.88'	*
13	Δ=24°51'23"	214.20'	92.93'	*
14	N24°20'46"W		169.67'	*
15	Δ=24°10'40"	211.20'	89.12'	*

* 4" DIAMETER FLEXIBLE PIPE (SEE NOTES ON SHEET 2)

NOTES:
1. ALL ELEVATIONS AND LOCATIONS OF EXISTING UTLITIES ON THIS PLAN ARE APPROXIMATE AND BASED ON EXISTING PLANS (SALT CREEK INTERCEPTOR, A PORTION OF REACH 4 & 5, APPROVED ON 8/8/96).

2. CONTRACTOR TO VERIFY ALL EXISTING UTILITY ELEVATIONS AND CONNECTION POINTS BEFORE CONSTRUCTION.

3. CONTRACTOR TO ENSURE SEWER BEARING BASED ON FIELD SURVEY OF SEWER MH CONNECTION POINTS BEFORE COMMENCING JACK AND BORE WORK.

4. STANDARD J&B DOES NOT INVOLVE FRACKING TECHNOLOGY AND SHALL NOT BE PERMITED.

5. CONTRACTOR TO REPLACE ANY DAMAGED ACCESS ROAD IN KIND. CONCRETE ACCESS ROAD TO BE REPLACED PER TYPICAL DETAIL THIS SHEET.

• EPOXY WARREN SEAL MANHOLES AND LIDS (5 TOTAL)
MANHOLE LIDS LOCKING DEVICE PER SDRSD M-4

AS BUILT

SIGNED _____ DATE: _____

PRINT NAME: JOHN D. GODDARD, JR. P.E. NO. 33037

DISCIPLINE: CIVIL REGISTRATION EXPIRES:

SPECIAL NOTE:
PRE CONSTRUCTION INSPECTION DIVISION APPROVAL NEEDED, SEE SHEET 2 FOR HIGH LINE SEWER NOTES

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Riverside · Orange · San Luis Obispo · Bakersfield · Sacramento · Phoenix · Tucson

J-16629M

REGISTERED PROFESSIONAL ENGINEER JOHN D. GODDARD JR. NO. 33837 CIVIL STATE OF CALIFORNIA

CONSTRUCTION RECORD	REFERENCES	By	REVISIONS	Date	App'd
Contractor	DRW NO. 96-64				
Inspector					
Date Completed					

BENCH MARK: CITY CHULA VISTA VERTICAL CONTROL BENCHMARK, INDEX NO. 1750, DESCRIPTION: BRASS DISK IN WELL

SCALE: Horizontal AS SHOWN, Vertical NA

Designed By PT (Plans) Drawn By PT Checked By JDG

Prepared Under Supervision Of ENGINEER Date 3/14/14 R.C.E. No. 33037

Submitted 3/18/14 By _____ Office

Approved 3/19/14 By _____ Principal Civil Engineer

CITY OF CHULA VISTA DEVELOPMENT SERVICES

PLANS FOR THE IMPROVEMENT OF SEWER & TEMPORARY HI-LINE:

SALT CREEK SEWER

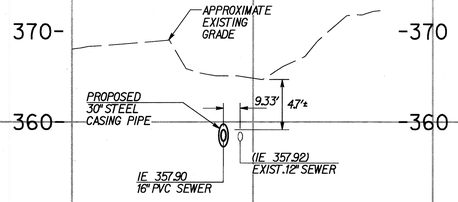
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W.O.No. PC2232

SALT CREEK SEWER IMPROVEMENT PLAN

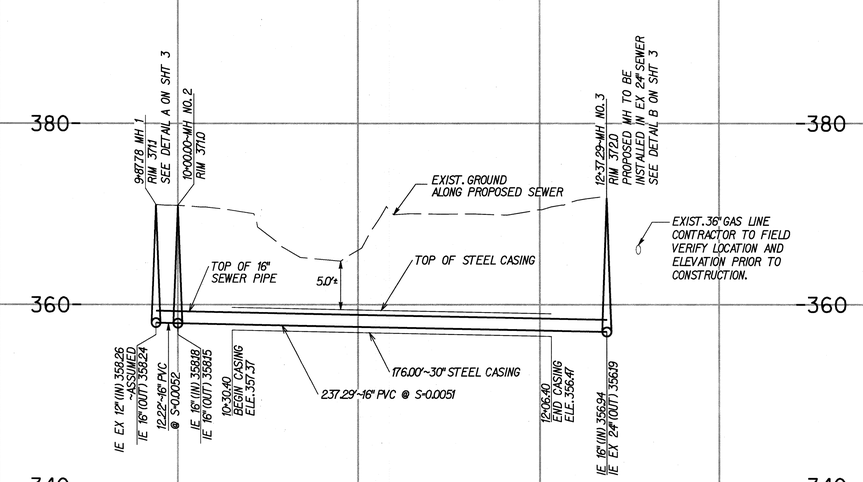
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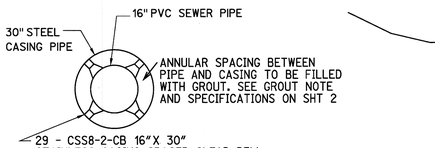
SECTION A-A

SCALE: HORIZ. 1"=40', VERT. 1"=8'



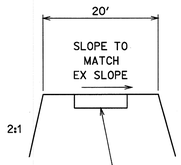
PROFILE: SALT CREEK SEWER

SCALE: HORIZ. 1"=40', VERT. 1"=8'



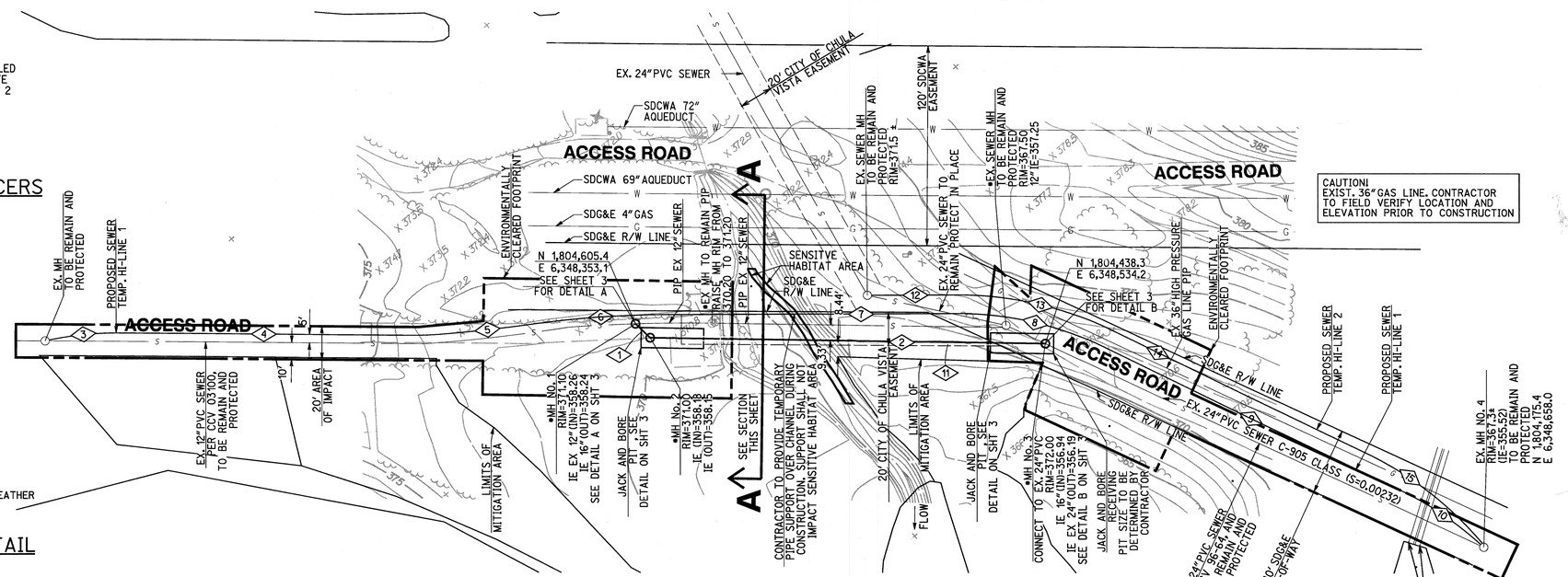
24" STEEL CASING AND SPACERS

NOT TO SCALE



TYPICAL ACCESS ROAD DETAIL

NOT TO SCALE



PLAN: SALT CREEK SEWER

40 20 0 40 80 120

GRAPHIC SCALE 1" = 40'

SPECIAL NOTE:
PRE CONSTRUCTION INSPECTION DIVISION APPROVAL NEEDED, SEE SHEET 2 FOR HIGH LINE SEWER NOTES

SEWER DATA

NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
<1>	N06°39'20"W		12.22'	16" PVC C905
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TEMPORARY SEWER HI-LINE 1 DATA

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<3>	Δ=12°07'21"	200.00'	42.32'	*
<4>	N49°36'49"W		176.25'	*
<5>	Δ=03°14'36"	995.00'	56.33'	*
<6>	Δ=07°42'57"	600.00'	80.80'	*
<7>	N50°14'39"W		176.67'	*
<8>	Δ=24°51'23"	203.00'	88.07'	*
<9>	N24°20'46"W		198.38'	*
<10>	Δ=16°36'44"	200.00'	57.99'	*

* 4" DIAMETER FLEXIBLE PIPE (SEE NOTES ON SHEET 2)

CASING PIPE DATA

NO.	DELTA OR BRG.	LENGTH	REMARKS
<11>	N49°12'09"W	176.00'	30" STEEL (0.5" THICK WALL)

TEMPORARY SEWER HI-LINE 2 DATA

NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
<12>	N50°14'39"W		53.88'	*
<13>	Δ=24°51'23"	214.20'	92.93'	*
<14>	N24°20'46"W		169.67'	*
<15>	Δ=24°10'40"	211.20'	89.12'	*

* 4" DIAMETER FLEXIBLE PIPE (SEE NOTES ON SHEET 2)

NOTES:
1. ALL ELEVATIONS AND LOCATIONS OF EXISTING UTLITIES ON THIS PLAN ARE APPROXIMATE AND BASED ON EXISTING PLANS (SALT CREEK INTERCEPTOR, A PORTION OF REACH 4 & 5, APPROVED ON 8/8/96).

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3. CONTRACTOR TO ENSURE SEWER BEARING BASED ON FIELD SURVEY OF SEWER MH CONNECTION POINTS BEFORE COMMENCING JACK AND BORE WORK.

4. STANDARD J&B DOES NOT INVOLVE FRACKING TECHNOLOGY AND SHALL NOT BE PERMITED.

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• EPOXY WARREN SEAL MANHOLES AND LIDS (5 TOTAL)
MANHOLE LIDS LOCKING DEVICE PER SDRSD M-4

AS BUILT

SIGNED _____ DATE: _____

PRINT NAME: JOHN D. GODDARD, JR. P.E. NO. 33037

DISCIPLINE: CIVIL REGISTRATION EXPIRES:

RICK ENGINEERING COMPANY
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J-16629M

REGISTERED PROFESSIONAL ENGINEER JOHN D. GODDARD JR. NO. 33837 CIVIL STATE OF CALIFORNIA

CONSTRUCTION RECORD	REFERENCES	By	REVISIONS	Date	App'd
Contractor	DRW NO. 96-64				
Inspector					
Date Completed					

BENCH MARK
CITY CHULA VISTA VERTICAL CONTROL BENCHMARK, INDEX NO. 1750.
DESCRIPTION: BRASS DISK IN WELL

SCALE
Horizontal AS SHOWN
Vertical NA

Designed By PT
Drawn By JDG
Checked By
Plans Prepared Under Supervision Of
Date 3/18/14
ENGINEER
R.C.E. No. 33037

Submitted 3/18/14
By
Office

Approved 3/19/14
By Tom Adler
Principal Civil Engineer

CITY OF CHULA VISTA DEVELOPMENT SERVICES
PLANS FOR THE IMPROVEMENT OF SEWER & TEMPORARY HI-LINE:
SALT CREEK SEWER

Drawing No. 13045- 4
W.O.No. PC2232

SALT CREEK SEWER IMPROVEMENT PLAN

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APPENDIX E: Proposed Trunk Sewers

N

0 950 1,900 Feet

HERITAGE RD

MAXWELL RD

ENERGY WY

PEABODY WY

LA MEDIA RD

SANTA LUNA ST

MAGDALENA AV

ROCK MTN RD

PRIVATE RD

IECGM107

IECGM109

IECGM111

IECGM113

IECGM115

IECGM117

IECGM119

IECGM121

IECGM127

IECGM87

IECGM89

IECGM91

IECGM101

13787 13788 13789 13848 13790 13791 13792 13793 13794 13795 13796 13797

Legend

- Existing Manholes
- New Manhole
- Heritage Rd Trunk Sewer
- Rock Mountain Rd/Main St Trunk Sewer
- Salt Creek Interceptor
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX User Community

Infrastructure ENGINEERING CORPORATION

City of Chula Vista
Salt Creek DIF Study

Proposed Trunk Sewers

November 2014

Figure A-2

APPENDIX F: 2050 CIP Pipeline Proposed in 2014 WWMP


N
0
170
340
Feet
EXPLORATION FALLS DR
WANDER ST
TRELLIS ST
HUNTE PY
P29
16461
P29
16462
P29
16463
P43
16464
P43
16465
P43
16476
P43
16477
P43
16478
P43
16479
P43
16480
P29
16808
P29
16809
Legend
Existing Manholes
Recommended CIP Pipeline Improvement Projects
Project_No
P29
P43
Existing Wastewater Collection Pipelines
City of Chula Vista Roads
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmap
Community
Infrastructure
ENGINEERING CORPORATION
City of Chula Vista
Salt Creek DIF Study
2050 CIP Pipeline
Proposed in 2014 WWMP
Feb 2015
Figure A-3-1

N

0 170 340 Feet

P43 16478

P43 16479

P43 16480

P43 16481

P43 16482

P43 17111

P42 17112

P30 17093

13830

13829

13828

13827

13826

13800

9118

9119

P30

Legend

- Existing Manholes
- Salt Creek Interceptor

Recommended CIP Pipeline Improvement Projects

Project_No

- P30
- P42
- P43
- Existing Wastewater Collection Pipelines
- City of Chula Vista Roads

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmap Community

Infrastructure ENGINEERING CORPORATION

City of Chula Vista
Salt Creek DIF Study

2050 CIP Pipeline Proposed in 2014 WWMP

Feb 2015

Figure A-3-2

APPENDIX G: 2050 PWWF Model Result with Existing Pipeline Conditions

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
9097	14214	14074	42	135.8	1.13	Main Street	MAIN ST	PVC	10,662,038	14,464,976	18,536,797	0.443	47.9%
9101	13847	13881	18	72.5	0.00	Salt Creek	NORTH CREEKSIDE DR	PVC	682,894	938,912	1,612,292	0.514	39.5%
9110	9105	13141	15	313.7	1.31	Salt Creek	HUNTE PY	PVC	515,169	709,073	1,170,749	0.350	58.8%
9118	9124	13980	24	84.6	8.41	Salt Creek	PRIVATE RD	PVC	1,796,129	2,466,213	3,970,860	0.384	54.8%
9119	13980	13979	24	320.7	0.23	Salt Creek	PRIVATE RD	PVC	3,004,697	4,132,217	5,813,364	0.658	22.6%
9182	14038	13847	18	316.2	0.51	Salt Creek	NORTH CREEKSIDE DR	PVC	682,710	938,667	1,611,317	0.496	41.6%
12869	13347	13134	15	197.8	4.19	Salt Creek	HUNTE PY	PVC	323,686	445,343	813,030	0.259	69.5%
12870	13138	13385	15	41.9	0.24	Salt Creek	HUNTE PY	PVC	362,965	499,774	880,668	0.455	46.5%
13756	14016	14008	30	36.3	11.02	Salt Creek	PRIVATE RD	PVC	3,694,344	5,078,372	6,815,019	0.429	49.5%
13759	13950	13949	36	304.2	0.25	Salt Creek	WILEY RD	PVC	4,801,975	6,583,473	8,461,259	0.458	46.1%
13760	13951	13950	36	353.8	0.24	Salt Creek	WILEY RD	PVC	4,801,977	6,583,483	8,455,290	0.444	47.8%
13761	13952	13951	36	353.8	0.24	Salt Creek	WILEY RD	PVC	4,801,975	6,584,109	8,448,813	0.447	47.4%
13762	13953	13952	36	510.2	0.30	Salt Creek	WILEY RD	PVC	4,766,952	6,537,383	8,394,764	0.430	49.4%
13763	13954	13953	30	598.6	1.09	Salt Creek	WILEY RD	PVC	4,707,029	6,456,204	8,302,994	0.436	48.7%
13764	13955	13954	30	599.5	0.34	Salt Creek	WILEY RD	PVC	4,687,888	6,431,400	8,268,133	0.467	45.1%
13765	13956	13955	30	522.8	0.35	Salt Creek	WILEY RD	PVC	4,687,888	6,433,032	8,259,700	0.538	36.7%
13766	13957	13956	30	600.0	0.34	Salt Creek	WILEY RD	PVC	4,687,888	6,434,712	8,252,685	0.522	38.6%
13767	13935	13934	42	502.9	0.24	Salt Creek	WILEY RD	PVC	6,033,705	8,239,965	10,284,394	0.401	52.8%
13768	13936	13935	42	599.7	0.62	Salt Creek	WILEY RD	PVC	6,001,186	8,198,176	10,230,837	0.349	58.9%
13769	13937	13936	36	600.0	1.45	Salt Creek	WILEY RD	PVC	6,001,186	8,198,978	10,217,579	0.328	61.4%
13770	13938	13937	36	599.5	0.22	Salt Creek	WILEY RD	PVC	6,001,186	8,199,603	10,206,153	0.419	50.7%

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
13771	13939	13938	36	600.1	0.22	Salt Creek	WILEY RD	PVC	6,001,186	8,201,811	10,196,299	0.519	38.9%
13772	13940	13939	36	475.0	0.23	Salt Creek	WILEY RD	PVC	6,001,186	8,204,432	10,187,021	0.502	40.9%
13773	13941	13940	36	304.7	2.07	Salt Creek	WILEY RD	PVC	6,001,186	8,206,955	10,180,148	0.389	54.2%
13774	13942	13941	36	439.8	0.62	Salt Creek	WILEY RD	PVC	5,517,873	7,551,314	9,517,857	0.336	60.5%
13775	13943	13942	36	394.1	0.62	Salt Creek	WILEY RD	PVC	5,517,873	7,551,956	9,509,645	0.381	55.2%
13776	13944	13943	36	598.4	0.61	Salt Creek	WILEY RD	PVC	5,517,873	7,552,813	9,502,547	0.365	57.1%
13777	14007	13965	30	83.8	5.40	Salt Creek	PRIVATE RD	PVC	3,694,344	5,075,829	6,831,276	0.337	60.4%
13778	14008	13967	30	299.3	0.11	Salt Creek	PRIVATE RD	PVC	3,694,344	5,077,767	6,819,487	0.666	21.6%
13779	14009	14016	30	13.0	45.04	Salt Creek	PRIVATE RD	PVC	3,694,344	5,078,422	6,814,452	0.161	81.1%
13780	14010	14002	20	177.5	1.23	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,796	3,453,113	0.425	50.0%
13784	13917	13916	42	594.3	0.10	Main Street	MAIN ST	PVC	7,089,984	9,664,619	11,941,253	0.557	34.5%
13785	13918	13987	42	136.0	0.10	Main Street	MAIN ST	PVC	7,084,608	9,658,398	11,910,499	0.563	33.8%
13786	13919	13918	42	598.8	0.10	Main Street	MAIN ST	PVC	7,077,797	9,650,055	11,898,942	0.560	34.1%
13787	13920	13919	42	599.4	0.17	Main Street	MAIN ST	PVC	7,077,797	9,650,762	11,885,633	0.511	39.9%
13788	13921	13920	42	521.8	0.10	Main Street	MAIN ST	PVC	7,077,797	9,651,074	11,871,871	0.505	40.6%
13789	13922	13921	42	449.6	1.07	Main Street	MAIN ST	PVC	7,070,422	9,641,664	11,850,211	0.413	51.4%
13790	13923	14004	42	682.8	0.28	Salt Creek	WILEY RD	PVC	6,045,219	8,251,644	10,438,767	0.335	60.6%
13791	13924	13923	42	599.8	0.28	Salt Creek	WILEY RD	PVC	6,045,219	8,252,192	10,423,269	0.392	53.9%
13792	13925	13924	42	599.6	0.86	Salt Creek	WILEY RD	PVC	6,045,219	8,252,382	10,409,370	0.309	63.6%
13793	13926	13925	42	437.8	0.49	Salt Creek	WILEY RD	PVC	6,033,812	8,237,632	10,380,557	0.312	63.3%
13794	13927	13926	42	498.3	0.23	Salt Creek	WILEY RD	PVC	6,033,812	8,237,753	10,370,408	0.379	55.4%
13795	13928	13927	42	310.3	0.25	Salt Creek	WILEY RD	PVC	6,033,812	8,237,926	10,358,893	0.404	52.5%
13796	13929	13928	42	438.7	0.24	Salt Creek	WILEY RD	PVC	6,033,812	8,238,044	10,351,752	0.398	53.2%

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
13797	13930	13929	42	430.4	0.19	Salt Creek	WILEY RD	PVC	6,033,812	8,238,037	10,341,474	0.391	54.0%
13798	13931	13930	42	447.1	0.19	Salt Creek	WILEY RD	PVC	6,033,812	8,238,892	10,332,170	0.428	49.6%
13799	13932	13931	42	320.4	0.25	Salt Creek	WILEY RD	PVC	6,033,812	8,239,033	10,321,887	0.407	52.1%
13800	13988	9124	24	254.0	0.97	Salt Creek	PRIVATE RD	PVC	1,796,129	2,466,213	3,969,729	0.361	57.5%
13801	14034	14033	18	283.8	0.47	Salt Creek	SOUTH CREEKSIDE DR	PVC	749,337	1,029,800	1,832,897	0.447	47.4%
13803	14035	14034	18	235.6	0.41	Salt Creek	SOUTH CREEKSIDE DR	PVC	744,968	1,023,870	1,814,999	0.449	47.2%
13804	14166	14038	18	336.6	0.43	Salt Creek	NORTH CREEKSIDE DR	PVC	682,239	938,049	1,607,534	0.410	51.8%
13805	14039	14166	18	404.7	0.42	Salt Creek	NORTH CREEKSIDE DR	PVC	682,014	937,757	1,603,896	0.422	50.4%
13806	13850	13849	18	56.9	1.77	Salt Creek	NORTH CREEKSIDE DR	PVC	676,024	929,773	1,578,400	0.286	66.4%
13808	9123	13850	18	481.8	0.42	Salt Creek	OTAY LAKES RD	PVC	676,024	929,781	1,577,837	0.376	55.8%
13811	13933	14006	42	298.9	0.25	Salt Creek	WILEY RD	PVC	6,033,812	8,239,202	10,304,608	0.384	54.8%
13812	13934	13933	42	596.5	0.22	Salt Creek	WILEY RD	PVC	6,033,812	8,239,549	10,297,944	0.403	52.6%
13813	13945	13944	36	598.4	0.62	Salt Creek	WILEY RD	PVC	5,517,873	7,553,838	9,491,476	0.366	56.9%
13814	13946	13945	36	600.0	0.60	Salt Creek	WILEY RD	PVC	5,517,873	7,555,084	9,480,593	0.366	56.9%
13815	13947	13946	36	593.7	0.62	Salt Creek	WILEY RD	PVC	5,517,873	7,556,790	9,470,068	0.366	56.9%
13816	13948	13947	36	483.4	0.63	Salt Creek	WILEY RD	PVC	5,517,873	7,558,982	9,460,090	0.363	57.3%
13817	13949	13948	36	597.3	0.22	Salt Creek	WILEY RD	PVC	4,801,977	6,582,858	8,472,790	0.419	50.7%
13818	13958	13957	30	600.0	0.34	Salt Creek	WILEY RD	PVC	3,785,455	5,195,406	7,003,531	0.499	41.3%
13819	13959	13958	30	317.3	1.58	Salt Creek	WILEY RD	PVC	3,785,455	5,195,896	6,994,031	0.391	54.0%
13820	13960	13959	30	568.0	1.08	Salt Creek	WILEY RD	PVC	3,785,455	5,196,119	6,988,956	0.334	60.7%

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
13821	13961	13960	30	569.7	1.08	Salt Creek	WILEY RD	PVC	3,785,455	5,196,591	6,979,932	0.350	58.8%
13822	13962	13961	30	82.9	1.23	Salt Creek	WILEY RD	PVC	3,785,455	5,196,889	6,970,693	0.344	59.5%
13823	13963	13962	30	179.7	0.77	Salt Creek	WILEY RD	PVC	3,785,455	5,196,838	6,969,252	0.381	55.2%
13824	13964	13963	30	525.1	0.37	Salt Creek	WILEY RD	PVC	3,785,455	5,197,670	6,967,086	0.433	49.1%
13825	13987	13917	42	455.9	0.10	Main Street	MAIN ST	PVC	7,084,608	9,658,138	11,920,895	0.558	34.4%
13826	13989	13988	24	566.6	0.34	Salt Creek	PRIVATE RD	PVC	1,796,129	2,466,302	3,966,402	0.436	48.7%
13827	13990	13989	24	24.6	0.29	Salt Creek	PRIVATE RD	PVC	1,718,024	2,360,140	3,828,174	0.465	45.3%
13828	13991	13990	24	409.1	0.32	Salt Creek	PRIVATE RD	PVC	1,718,024	2,360,174	3,827,864	0.489	42.5%
13829	13992	13991	24	17.0	0.53	Salt Creek	PRIVATE RD	PVC	1,718,024	2,360,203	3,822,404	0.480	43.5%
13830	13993	13992	24	506.1	1.75	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,254	3,822,212	0.392	53.9%
13831	13994	13993	24	515.0	1.58	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,291	3,815,457	0.307	63.9%
13832	13995	13994	24	515.0	0.85	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,311	3,808,572	0.347	59.2%
13833	13996	13995	24	515.0	1.30	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,360	3,801,702	0.353	58.5%
13834	13997	13996	24	515.0	1.89	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,406	3,794,831	0.310	63.5%
13835	13998	13997	24	477.2	0.89	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,441	3,787,950	0.338	60.2%
13836	13999	14000	20	569.1	0.89	Salt Creek	HUNTE PY	PVC	1,586,627	2,180,641	3,471,186	0.424	50.1%
13837	14000	13998	20	599.4	1.60	Salt Creek	HUNTE PY	PVC	1,586,625	2,180,573	3,478,166	0.418	50.8%
13838	14001	13999	20	630.7	2.04	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,735	3,464,577	0.412	51.5%
13839	14002	14001	20	351.3	1.11	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,785	3,457,218	0.399	53.1%
13842	13965	13964	30	263.4	0.39	Salt Creek	PRIVATE RD	PVC	3,694,344	5,075,698	6,835,679	0.465	45.3%
13843	13966	14007	30	305.8	0.11	Salt Creek	PRIVATE RD	PVC	3,694,344	5,075,830	6,829,875	0.532	37.4%
13844	13967	13966	30	411.6	0.11	Salt Creek	PRIVATE RD	PVC	3,694,344	5,076,920	6,825,666	0.645	24.1%
13845	14004	13922	42	353.5	1.24	Main Street	WILEY RD	PVC	6,387,306	8,718,902	10,914,706	0.273	67.9%

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
13846	14005	13932	42	302.4	0.26	Salt Creek	PRIVATE RD	PVC	6,033,813	8,239,121	10,314,481	0.392	53.9%
13847	14006	14005	42	123.1	0.34	Salt Creek	PRIVATE RD	PVC	6,033,812	8,239,141	10,307,422	0.382	55.1%
15420	13140	9105	15	209.4	2.10	Salt Creek	HUNTE PY	PVC	515,169	709,095	1,168,144	0.318	62.6%
15421	13141	13142	15	234.4	1.09	Salt Creek	HAWTHORNE CREEK DR	PVC	515,169	709,057	1,172,696	0.350	58.8%
15422	13142	13143	18	399.0	1.03	Salt Creek	RUSTIC WOOD ST	PVC	515,169	709,023	1,176,670	0.280	67.1%
15423	13143	13144	18	298.1	1.04	Salt Creek	RUSTIC WOOD ST	PVC	518,763	713,791	1,184,469	0.287	66.2%
15424	13144	13878	18	295.6	1.05	Salt Creek	OTAY LAKES RD	PVC	518,763	713,739	1,187,391	0.266	68.7%
15859	14033	14032	18	316.2	0.44	Salt Creek	SOUTH CREEKSIDE DR	PVC	776,952	1,067,678	1,912,212	0.464	45.4%
15860	14032	14031	18	266.9	0.39	Salt Creek	SOUTH CREEKSIDE DR	PVC	777,561	1,068,460	1,915,682	0.502	40.9%
15861	14031	14030	18	381.8	0.44	Salt Creek	SOUTH CREEKSIDE DR	PVC	778,226	1,069,301	1,920,367	0.374	56.0%
15862	14030	14029	18	188.6	8.02	Salt Creek	SOUTH CREEKSIDE DR	PVC	784,149	1,077,296	1,940,102	0.269	68.4%
15863	14029	14028	18	291.4	1.61	Salt Creek	PRIVATE RD	PVC	784,149	1,077,290	1,943,025	0.349	58.9%
15864	14028	14027	18	274.4	1.19	Salt Creek	PRIVATE RD	PVC	784,261	1,077,432	1,945,925	0.330	61.2%
15866	14027	13902	18	31.4	2.58	Salt Creek	PRIVATE RD	PVC	784,261	1,077,431	1,946,100	0.336	60.5%
15897	13916	14228	42	600.0	0.10	Main Street	MAIN ST	PVC	7,089,984	9,663,906	11,954,544	0.560	34.1%
15898	14228	14220	42	600.0	0.10	Main Street	MAIN ST	PVC	7,089,984	9,663,215	11,967,859	0.559	34.2%
15899	13915	13914	42	73.2	0.10	Main Street	MAIN ST	PVC	7,096,944	9,668,989	12,025,017	0.573	32.6%
15900	14224	13915	42	265.4	0.10	Main Street	MAIN ST	PVC	7,096,944	9,669,210	12,023,555	0.576	32.2%
15901	14223	14224	42	73.2	0.10	Main Street	MAIN ST	PVC	7,096,944	9,669,396	12,017,553	0.578	32.0%
15902	14226	14227	42	600.0	0.10	Main Street	MAIN ST	PVC	7,096,944	9,667,814	12,056,364	0.567	33.3%

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
15903	13914	14225	42	199.4	0.10	Main Street	MAIN ST	PVC	7,096,944	9,668,848	12,029,515	0.565	33.5%
15904	14225	14226	42	600.0	0.10	Main Street	MAIN ST	PVC	7,096,944	9,668,526	12,043,140	0.562	33.9%
15905	14222	14223	42	600.0	0.10	Main Street	MAIN ST	PVC	7,090,708	9,661,834	12,008,301	0.574	32.5%
15906	14220	14221	42	600.0	0.10	Main Street	MAIN ST	PVC	7,089,984	9,662,527	11,981,124	0.557	34.5%
15907	14221	14222	42	598.1	0.10	Main Street	MAIN ST	PVC	7,090,708	9,662,715	11,995,190	0.563	33.8%
15908	14211	14235	42	955.5	0.10	Main Street	MAIN ST	PVC	7,371,351	10,009,119	12,559,825	0.572	32.7%
15909	14212	14211	42	146.8	0.10	Main Street	MAIN ST	PVC	7,111,132	9,685,331	12,091,283	0.576	32.2%
15910	14227	14213	42	268.5	0.10	Main Street	MAIN ST	PVC	7,099,023	9,669,933	12,064,745	0.572	32.7%
15912	14213	14212	42	331.5	0.10	Main Street	MAIN ST	PVC	7,105,853	9,678,590	12,081,142	0.576	32.2%
15913	14215	14071	42	78.0	0.45	Main Street	DATE ST	PVC	10,659,887	14,462,132	18,525,453	0.492	42.1%
15914	14216	14215	42	26.3	0.53	Main Street	OTAY VALLEY RD	PVC	10,659,463	14,461,572	18,523,066	0.509	40.1%
15915	14070	14214	42	204.4	1.11	Main Street	MAIN ST	PVC	10,661,198	14,463,868	18,532,511	0.355	58.2%
15916	14071	14070	42	22.6	1.42	Main Street	DATE ST	PVC	10,659,888	14,462,129	18,525,977	0.422	50.4%
15917	14217	14114	42	46.7	0.39	Main Street	MAIN ST	PVC	10,656,357	14,457,524	18,474,673	0.458	46.1%
15918	14218	14216	42	400.3	0.24	Main Street	OTAY VALLEY RD	PVC	10,659,463	14,461,586	18,522,478	0.541	36.4%
15919	14097	14218	42	133.4	0.33	Main Street	OTAY VALLEY RD	PVC	10,658,563	14,460,407	18,511,933	0.548	35.5%
15920	14099	14232	42	177.3	0.40	Main Street	OTAY VALLEY RD	PVC	10,657,319	14,464,839	18,503,077	0.511	39.9%
15921	14219	14099	42	129.1	0.16	Main Street	OTAY VALLEY RD	PVC	10,656,857	14,488,750	18,498,313	0.537	36.8%
15922	14103	14219	42	18.1	0.72	Main Street	PRIVATE RD	PVC	10,656,857	14,492,771	18,495,297	0.580	31.8%
15923	14229	14103	42	298.6	1.57	Main Street	OTAY VALLEY RD	PVC	10,656,857	14,559,598	18,494,914	0.448	47.3%
15924	14230	14229	42	298.6	1.40	Main Street	OTAY VALLEY RD	PVC	10,656,693	14,673,527	18,487,714	0.336	60.5%
15925	14231	14230	42	83.8	1.30	Main Street	OTAY VALLEY RD	PVC	10,656,693	14,798,331	18,480,711	0.368	56.7%
15926	14113	14231	42	90.8	1.17	Main Street	OTAY VALLEY RD	PVC	10,656,508	15,092,724	18,478,503	0.369	56.6%

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
15927	14114	14113	42	63.8	1.44	Main Street	OTAY VALLEY RD	PVC	10,656,357	14,694,889	18,476,178	0.366	56.9%
15928	14115	14217	42	19.2	0.68	Main Street	MAIN ST	PVC	10,656,357	14,478,013	18,473,583	0.533	37.3%
15929	14232	14097	42	176.3	0.30	Main Street	OTAY VALLEY RD	PVC	10,657,552	14,459,080	18,507,498	0.536	36.9%
15930	14116	14115	42	268.5	1.49	Main Street	MAIN ST	PVC	10,656,357	14,457,541	18,473,147	0.430	49.4%
15931	14233	14116	42	400.0	0.10	Main Street	MAIN ST	PVC	7,371,351	10,007,914	12,588,211	0.437	48.6%
15932	14234	14233	42	289.7	0.10	Main Street	MAIN ST	PVC	7,371,351	10,007,981	12,578,885	0.555	34.7%
15933	14235	14234	42	567.9	0.10	Main Street	MAIN ST	PVC	7,371,351	10,008,253	12,572,322	0.568	33.2%
16314	13385	13139	15	276.7	2.10	Salt Creek	STONE GATE ST	PVC	515,169	709,145	1,163,108	0.296	65.2%
16315	13139	13140	15	398.1	2.25	Salt Creek	HUNTE PY	PVC	515,169	709,118	1,166,413	0.295	65.3%
16316	13137	13138	15	336.9	1.21	Salt Creek	HUNTE PY	PVC	362,965	499,846	880,374	0.453	46.7%
16317	13136	13137	15	400.5	2.19	Salt Creek	HUNTE PY	PVC	362,965	499,916	877,617	0.276	67.5%
16318	13135	13136	15	381.1	1.25	Salt Creek	HUNTE PY	PVC	323,686	445,185	819,523	0.274	67.8%
16319	13134	13135	15	410.5	0.94	Salt Creek	HUNTE PY	PVC	323,686	445,327	816,461	0.301	64.6%
16461	15046	15058	10	248.3	1.08	Salt Creek	WANDER ST	PVC	317,847	437,717	527,239	0.420	44.0%
16462	15058	15066	10	288.6	1.04	Salt Creek	TRELLIS ST	PVC	326,373	449,437	548,859	0.452	39.7%
16463	15066	15056	12	82.0	1.04	Salt Creek	HUNTE PY	PVC	1,115,554	1,540,522	1,685,726	0.639	14.8%
16464	15056	15059	12	383.8	0.87	Salt Creek	HUNTE PY	PVC	1,164,154	1,608,319	1,756,092	0.692	7.7%
16465	15059	15067	12	400.5	1.54	Salt Creek	HUNTE PY	PVC	1,164,154	1,608,317	1,758,771	0.569	24.1%
16476	15067	15060	12	261.2	10.13	Salt Creek	HUNTE PY	PVC	1,164,154	1,608,316	1,760,520	0.335	55.3%
16477	15060	15061	12	349.3	8.09	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,272	1,824,814	0.381	49.2%
16478	15061	15062	12	369.9	1.11	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,269	1,827,288	0.652	13.1%
16479	15062	15063	12	350.6	1.31	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,268	1,829,634	0.615	18.0%
16480	15063	15065	12	350.0	6.80	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,266	1,831,977	0.380	49.3%

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
16481	15065	15064	12	225.0	10.32	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,266	1,833,483	0.369	50.8%
16482	15064	15069	12	336.9	1.13	Salt Creek	PRIVATE RD	PVC	1,208,566	1,670,263	1,835,736	0.649	13.5%
16492	13902	14012	21	112.6	3.43	Salt Creek	PRIVATE RD	PVC	1,586,625	2,180,835	3,447,469	0.284	66.6%
16493	14012	14013	21	14.4	7.52	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,834	3,447,638	0.291	65.8%
16494	14013	14014	21	156.5	1.71	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,827	3,449,467	0.552	35.1%
16495	14014	14025	21	40.4	0.44	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,805	3,449,932	0.621	26.9%
16496	14025	14010	20	94.7	6.36	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,804	3,451,041	0.335	60.6%
16543	14074	15114	42	544.2	0.35	Main Street	MAIN ST	PVC	10,662,067	14,465,000	18,549,559	0.434	48.9%
16544	15114	14069	42	499.2	1.36	Main Street	MAIN ST	PVC	10,662,067	14,464,974	18,561,210	0.338	60.2%
16545	14069	14068	42	32.9	1.34	Main Street	MAIN ST	PVC	10,665,544	14,469,512	18,566,515	0.347	59.2%
16546	14068	14067	42	507.5	1.12	Main Street	MAIN ST	PVC	10,666,698	14,471,011	18,579,894	0.455	46.5%
16547	14067	14066	42	600.0	0.29	Main Street	MAIN ST	PVC	10,667,994	14,472,631	18,595,525	0.450	47.1%
16548	14066	14082	42	590.0	1.25	Main Street	MAIN ST	PVC	10,670,567	14,475,957	18,612,651	0.354	58.4%
16549	14082	14077	42	585.0	1.24	Main Street	MAIN ST	PVC	10,675,218	14,482,012	18,632,396	0.335	60.6%
16550	14077	14065	42	47.3	1.99	Main Street	PRIVATE DY	PVC	10,675,217	14,482,005	18,633,493	0.354	58.4%
16551	14065	14072	42	510.7	0.71	Main Street	MAIN ST	PVC	10,675,879	14,482,855	18,646,296	0.402	52.7%
16552	14072	14073	42	474.3	0.71	Main Street	MAIN ST	PVC	10,676,451	14,483,595	18,658,146	0.402	52.7%
16553	14073	14095	42	71.1	0.72	Main Street	MAIN ST	PVC	10,676,782	14,484,015	18,660,226	0.432	49.2%
16555	13911	14129	42	600.0	0.22	Main Street	MAIN ST	PVC	10,687,026	14,496,510	18,701,194	0.581	31.6%
16556	14129	14128	42	600.0	0.22	Main Street	MAIN ST	PVC	10,688,505	14,498,289	18,716,960	0.496	41.6%
16557	14128	14127	42	600.0	0.77	Main Street	MAIN ST	PVC	10,688,764	14,498,572	18,731,271	0.431	49.3%
16558	14127	14126	42	600.0	0.48	Main Street	MAIN ST	PVC	10,690,883	14,501,290	18,748,018	0.432	49.2%
16559	14126	14125	42	45.0	0.76	Main Street	MAIN ST	PVC	10,691,107	14,501,566	18,749,337	0.406	52.2%

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
16560	14125	13912	42	254.1	0.63	Main Street	MAIN ST	PVC	10,692,180	14,502,963	18,756,685	0.425	50.0%
16561	13912	14117	42	600.0	0.62	Main Street	MAIN ST	PVC	10,693,030	14,504,079	18,771,862	0.406	52.2%
16562	14117	14120	42	600.0	0.91	Main Street	MAIN ST	PVC	10,694,703	14,506,217	18,788,030	0.388	54.4%
16563	14120	14122	42	575.0	0.74	Main Street	MAIN ST	PVC	10,700,703	14,514,008	18,809,261	0.424	50.1%
16564	14122	14121	42	51.2	0.49	Main Street	JACQUA ST	PVC	10,700,703	14,513,986	18,810,426	0.474	44.2%
16565	14121	14123	42	164.2	0.38	Main Street	MAIN ST	PVC	10,700,837	14,514,168	18,814,457	0.457	46.2%
16566	14123	14119	42	535.6	0.65	Main Street	MAIN ST	PVC	10,700,968	14,514,319	18,827,142	0.454	46.6%
16567	14119	14124	42	384.2	0.35	Main Street	MAIN ST	PVC	10,700,968	14,514,255	18,836,052	0.553	34.9%
16568	14124	GTWY_MH_03	42	92.9	0.27	Main Street	INDUSTRIAL BL	PVC	10,702,777	14,516,811	18,840,832	0.634	25.4%
16569	14003	14118	42	211.0	2.60	Main Street	I-5 NB ON RA	PVC	12,147,245	16,444,885	21,336,539	0.417	50.9%
16570	14118	OUTFALL_9152	42	1127.4	0.38	Main Street	I-5 NB ON RA	PVC	12,147,306	16,444,768	21,362,783	0.518	39.1%
16749	14040	14039	18	304.5	3.21	Salt Creek	NORTH CREEKSIDE DR	PVC	680,687	936,029	1,595,419	0.333	60.8%
16751	14041	14040	18	182.5	2.97	Salt Creek	NORTH CREEKSIDE DR	PVC	677,952	932,391	1,588,647	0.249	70.7%
16753	13849	14041	18	149.8	2.63	Salt Creek	NORTH CREEKSIDE DR	PVC	676,133	929,917	1,580,049	0.256	69.9%
16807	15288	15066	12	14.7	1.88	Salt Creek	HUNTE PY	PVC	701,077	969,140	1,000,174	0.431	42.5%
16808	15289	15288	12	211.8	2.08	Salt Creek	HUNTE PY	PVC	701,077	969,140	1,000,076	0.425	43.3%
16809	15287	15289	12	399.9	1.04	Salt Creek	HUNTE PY	PVC	701,077	969,140	998,659	0.428	42.9%
17086	13878	9123	15	336.8	2.51	Salt Creek	OTAY LAKES RD	PVC	518,763	713,716	1,190,186	0.407	52.1%
17093	15538	13980	12	174.0	0.58	Salt Creek	PRIVATE RD	PVC	1,208,566	1,670,259	1,840,389	0.826	-10.1%
17094	13979	13978	24	406.7	0.23	Salt Creek	PRIVATE RD	PVC	3,317,897	4,565,719	6,253,256	0.685	19.4%

T-2. 2050 PWWF Model Result with Existing Pipeline Conditions

ID	From MH ID	To MH ID	Existing Diameter (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)
17095	13978	13977	24	400.0	0.23	Salt Creek	PRIVATE RD	PVC	3,317,897	4,564,596	6,257,928	0.672	20.9%
17096	13977	13976	24	187.4	0.24	Salt Creek	PRIVATE RD	PVC	3,317,897	4,564,267	6,260,069	0.643	24.4%
17097	13976	13975	24	164.5	0.26	Salt Creek	PRIVATE RD	PVC	3,317,897	4,564,051	6,261,967	0.632	25.6%
17098	13975	14026	24	200.0	3.30	Salt Creek	PRIVATE RD	PVC	3,317,897	4,564,040	6,264,634	0.340	60.0%
17099	14026	13974	24	231.3	3.11	Salt Creek	PRIVATE RD	PVC	3,317,897	4,563,999	6,267,701	0.334	60.7%
17100	13974	13973	24	154.2	3.89	Salt Creek	PRIVATE RD	PVC	3,325,144	4,573,428	6,279,204	0.326	61.6%
17101	13973	13972	24	220.5	4.09	Salt Creek	PRIVATE RD	PVC	3,325,144	4,573,401	6,282,131	0.307	63.9%
17102	13972	13971	24	348.9	6.32	Salt Creek	PRIVATE RD	PVC	3,325,144	4,573,346	6,286,756	0.292	65.6%
17103	13971	13985	24	283.3	5.30	Salt Creek	PRIVATE RD	PVC	3,694,344	5,080,252	6,797,883	0.314	63.1%
17104	13985	13970	24	400.0	4.25	Salt Creek	PRIVATE RD	PVC	3,694,344	5,079,927	6,802,998	0.380	55.3%
17105	13970	13969	24	377.9	1.45	Salt Creek	PRIVATE RD	PVC	3,694,346	5,079,410	6,807,656	0.434	48.9%
17106	13969	13968	24	328.1	1.45	Salt Creek	PRIVATE RD	PVC	3,694,344	5,079,018	6,811,739	0.508	40.2%
17107	13968	14009	30	177.3	0.38	Salt Creek	PRIVATE RD	PVC	3,694,344	5,078,428	6,814,240	0.451	46.9%
17111	15069	15542	12	128.1	5.10	Salt Creek	PRIVATE RD	PVC	1,208,566	1,670,263	1,836,593	0.413	44.9%
17112	15542	15538	12	393.6	3.94	Salt Creek	PRIVATE RD	PVC	1,208,566	1,670,262	1,839,226	0.558	25.6%
17528	13881	14035	18	303.9	0.42	Salt Creek	NORTH CREEKSIDE DR	PVC	715,006	982,741	1,714,982	0.447	47.4%
17549	14095	15953	42	455.3	0.71	Main Street	MAIN ST	PVC	10,678,874	14,486,741	18,673,610	0.375	55.9%
17550	15953	13911	42	144.7	2.54	Main Street	MAIN ST	PVC	10,685,896	14,495,089	18,685,755	0.426	49.9%
CDT-59	GTWY_ MH_03	14003	42	602.4	0.23	Main Street	INDUSTRIAL BL	PVC	12,140,562	16,436,157	21,322,878	0.482	43.3%

*Pipe ID in Red is hydraulically deficient under 2050 PWWF condition.

APPENDIX H: 2050 PWWF Model Result with Proposed Future Diameters

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
9097	14214	14074	42	135.8	1.13	Main Street	MAIN ST	PVC	10,669,356	14,493,145	18,563,491	0.44	47.9%	0
9101	13847	13881	18	72.5	0.00	Salt Creek	NORTH CREEKSIDE DR	PVC	682,894	938,910	1,612,295	0.51	39.5%	0
9110	9105	13141	15	313.7	1.31	Salt Creek	HUNTE PY	PVC	515,169	709,075	1,170,756	0.35	58.8%	0
9118	9124	13980	24	84.6	8.41	Salt Creek	PRIVATE RD	PVC	1,796,129	2,466,199	3,970,881	0.38	54.8%	0
9119	13980	13979	24	320.7	0.23	Salt Creek	PRIVATE RD	PVC	3,004,697	4,131,949	5,813,351	0.66	22.6%	0
9182	14038	13847	18	316.2	0.51	Salt Creek	NORTH CREEKSIDE DR	PVC	682,710	938,665	1,611,320	0.50	41.6%	0
12869	13347	13134	15	197.8	4.19	Salt Creek	HUNTE PY	PVC	323,686	445,342	813,036	0.26	69.5%	0
12870	13138	13385	15	41.9	0.24	Salt Creek	HUNTE PY	PVC	362,965	499,774	880,672	0.46	46.5%	0
13756	14016	14008	30	36.3	11.02	Salt Creek	PRIVATE RD	PVC	3,694,344	5,078,483	6,815,196	0.43	49.5%	0
13759	13950	13949	36	304.2	0.25	Salt Creek	WILEY RD	PVC	4,801,975	6,585,168	8,462,971	0.46	46.0%	0
13760	13951	13950	36	353.8	0.24	Salt Creek	WILEY RD	PVC	4,801,977	6,585,132	8,456,931	0.44	47.8%	0
13761	13952	13951	36	353.8	0.24	Salt Creek	WILEY RD	PVC	4,801,975	6,585,745	8,450,425	0.45	47.4%	0
13762	13953	13952	36	510.2	0.30	Salt Creek	WILEY RD	PVC	4,766,952	6,538,772	8,396,123	0.43	49.4%	0
13763	13954	13953	30	598.6	1.089	Salt Creek	WILEY RD	PVC	4,707,029	6,457,164	8,304,031	0.44	48.7%	0
13764	13955	13954	30	599.5	0.34	Salt Creek	WILEY RD	PVC	4,687,888	6,432,241	8,269,030	0.47	45.1%	0
13765	13956	13955	30	522.8	0.35	Salt Creek	WILEY RD	PVC	4,687,888	6,433,727	8,260,488	0.54	36.7%	0
13766	13957	13956	30	600.0	0.34	Salt Creek	WILEY RD	PVC	4,687,888	6,435,207	8,253,312	0.52	38.6%	0
13767	13935	13934	42	502.9	0.237	Salt Creek	WILEY RD	PVC	6,033,705	8,241,756	10,287,452	0.40	52.8%	0
13768	13936	13935	42	599.7	0.62	Salt Creek	WILEY RD	PVC	6,001,186	8,200,001	10,233,939	0.35	58.9%	0
13769	13937	13936	36	600.0	1.45	Salt Creek	WILEY RD	PVC	6,001,186	8,200,822	10,220,721	0.33	61.4%	0
13770	13938	13937	36	599.5	0.22	Salt Creek	WILEY RD	PVC	6,001,186	8,201,457	10,209,316	0.42	50.7%	0
13771	13939	13938	36	600.1	0.22	Salt Creek	WILEY RD	PVC	6,001,186	8,203,811	10,199,631	0.52	38.9%	0

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
13772	13940	13939	36	475.0	0.23	Salt Creek	WILEY RD	PVC	6,001,186	8,206,592	10,190,523	0.50	40.9%	0
13773	13941	13940	36	304.7	2.07	Salt Creek	WILEY RD	PVC	6,001,186	8,209,202	10,183,679	0.39	54.2%	0
13774	13942	13941	36	439.8	0.62	Salt Creek	WILEY RD	PVC	5,517,873	7,554,102	9,521,202	0.34	60.4%	0
13775	13943	13942	36	394.1	0.62	Salt Creek	WILEY RD	PVC	5,517,873	7,554,744	9,512,974	0.38	55.2%	0
13776	13944	13943	36	598.4	0.61	Salt Creek	WILEY RD	PVC	5,517,873	7,555,585	9,505,827	0.37	57.1%	0
13777	14007	13965	30	83.8	5.40	Salt Creek	PRIVATE RD	PVC	3,694,344	5,075,954	6,831,505	0.34	60.4%	0
13778	14008	13967	30	299.3	0.11	Salt Creek	PRIVATE RD	PVC	3,694,344	5,077,881	6,819,676	0.67	21.6%	0
13779	14009	14016	30	13.0	45.04	Salt Creek	PRIVATE RD	PVC	3,694,344	5,078,521	6,814,621	0.16	81.1%	0
13780	14010	14002	21	177.5	1.23	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,795	3,453,113	0.40	53.5%	0
13784	13917	13916	42	594.3	0.099	Main Street	MAIN ST	PVC	7,089,984	9,665,974	11,943,216	0.56	34.5%	0
13785	13918	13987	42	136.0	0.10	Main Street	MAIN ST	PVC	7,084,608	9,659,745	11,912,448	0.56	33.8%	0
13786	13919	13918	42	598.8	0.10	Main Street	MAIN ST	PVC	7,077,797	9,651,396	11,900,877	0.56	34.1%	0
13787	13920	13919	42	599.4	0.17	Main Street	MAIN ST	PVC	7,077,797	9,652,094	11,887,537	0.51	39.9%	0
13788	13921	13920	42	521.8	0.10	Main Street	MAIN ST	PVC	7,077,797	9,652,406	11,873,768	0.51	40.6%	0
13789	13922	13921	42	449.6	1.07	Main Street	MAIN ST	PVC	7,070,422	9,642,995	11,852,096	0.41	51.4%	0
13790	13923	14004	42	682.8	0.28	Salt Creek	WILEY RD	PVC	6,045,219	8,253,387	10,441,600	0.34	60.6%	0
13791	13924	13923	42	599.8	0.28	Salt Creek	WILEY RD	PVC	6,045,219	8,253,924	10,426,114	0.39	53.9%	0
13792	13925	13924	42	599.6	0.86	Salt Creek	WILEY RD	PVC	6,045,219	8,254,110	10,412,224	0.31	63.6%	0
13793	13926	13925	42	437.8	0.49	Salt Creek	WILEY RD	PVC	6,033,812	8,239,357	10,383,422	0.31	63.3%	0
13794	13927	13926	42	498.3	0.23	Salt Creek	WILEY RD	PVC	6,033,812	8,239,478	10,373,282	0.38	55.4%	0
13795	13928	13927	42	310.3	0.25	Salt Creek	WILEY RD	PVC	6,033,812	8,239,650	10,361,775	0.40	52.5%	0
13796	13929	13928	42	438.7	0.24	Salt Creek	WILEY RD	PVC	6,033,812	8,239,766	10,354,640	0.40	53.2%	0
13797	13930	13929	42	430.4	0.19	Salt Creek	WILEY RD	PVC	6,033,812	8,239,755	10,344,355	0.39	54.0%	0

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
13798	13931	13930	42	447.1	0.19	Salt Creek	WILEY RD	PVC	6,033,812	8,240,642	10,335,131	0.43	49.6%	0
13799	13932	13931	42	320.4	0.25	Salt Creek	WILEY RD	PVC	6,033,812	8,240,784	10,324,859	0.41	52.1%	0
13800	13988	9124	24	254.0	0.97	Salt Creek	PRIVATE RD	PVC	1,796,129	2,466,199	3,969,749	0.36	57.5%	0
13801	14034	14033	18	283.8	0.47	Salt Creek	SOUTH CREEKSIDE DR	PVC	749,337	1,029,799	1,832,903	0.45	47.4%	0
13803	14035	14034	18	235.6	0.41	Salt Creek	SOUTH CREEKSIDE DR	PVC	744,968	1,023,869	1,815,005	0.45	47.2%	0
13804	14166	14038	18	336.6	0.431	Salt Creek	NORTH CREEKSIDE DR	PVC	682,239	938,048	1,607,538	0.41	51.8%	0
13805	14039	14166	18	404.7	0.42	Salt Creek	NORTH CREEKSIDE DR	PVC	682,014	937,755	1,603,901	0.42	50.4%	0
13806	13850	13849	18	56.9	1.77	Salt Creek	NORTH CREEKSIDE DR	PVC	676,024	929,772	1,578,404	0.29	66.4%	0
13808	9123	13850	18	481.8	0.423	Salt Creek	OTAY LAKES RD	PVC	676,024	929,779	1,577,841	0.38	55.8%	0
13811	13933	14006	42	298.9	0.25	Salt Creek	WILEY RD	PVC	6,033,812	8,240,944	10,307,585	0.38	54.8%	0
13812	13934	13933	42	596.5	0.22	Salt Creek	WILEY RD	PVC	6,033,812	8,241,309	10,300,954	0.40	52.6%	0
13813	13945	13944	36	598.4	0.62	Salt Creek	WILEY RD	PVC	5,517,873	7,556,597	9,494,702	0.37	56.9%	0
13814	13946	13945	36	600.0	0.60	Salt Creek	WILEY RD	PVC	5,517,873	7,557,820	9,483,742	0.37	56.9%	0
13815	13947	13946	36	593.7	0.62	Salt Creek	WILEY RD	PVC	5,517,873	7,559,470	9,473,093	0.37	56.9%	0
13816	13948	13947	36	483.4	0.63	Salt Creek	WILEY RD	PVC	5,517,873	7,561,522	9,462,875	0.36	57.3%	0
13817	13949	13948	36	597.3	0.22	Salt Creek	WILEY RD	PVC	4,801,977	6,584,505	8,474,456	0.42	50.7%	0
13818	13958	13957	30	600.0	0.34	Salt Creek	WILEY RD	PVC	3,785,455	5,195,665	7,003,964	0.50	41.3%	0
13819	13959	13958	30	317.3	1.58	Salt Creek	WILEY RD	PVC	3,785,455	5,196,142	6,994,450	0.39	54.0%	0
13820	13960	13959	30	568.0	1.08	Salt Creek	WILEY RD	PVC	3,785,455	5,196,354	6,989,364	0.33	60.7%	0
13821	13961	13960	30	569.7	1.08	Salt Creek	WILEY RD	PVC	3,785,455	5,196,820	6,980,334	0.35	58.8%	0

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
13822	13962	13961	30	82.9	1.23	Salt Creek	WILEY RD	PVC	3,785,455	5,197,100	6,971,077	0.34	59.5%	0
13823	13963	13962	30	179.7	0.77	Salt Creek	WILEY RD	PVC	3,785,455	5,197,048	6,969,636	0.38	55.2%	0
13824	13964	13963	30	525.1	0.37	Salt Creek	WILEY RD	PVC	3,785,455	5,197,824	6,967,416	0.43	49.1%	0
13825	13987	13917	42	455.9	0.10	Main Street	MAIN ST	PVC	7,084,608	9,659,488	11,922,852	0.56	34.4%	0
13826	13989	13988	24	566.6	0.34	Salt Creek	PRIVATE RD	PVC	1,796,129	2,466,288	3,966,421	0.44	48.7%	0
13827	13990	13989	24	24.6	0.29	Salt Creek	PRIVATE RD	PVC	1,718,024	2,360,136	3,828,184	0.47	45.3%	0
13828	13991	13990	24	409.1	0.32	Salt Creek	PRIVATE RD	PVC	1,718,024	2,360,173	3,827,873	0.49	42.5%	0
13829	13992	13991	24	17.0	0.53	Salt Creek	PRIVATE RD	PVC	1,718,024	2,360,200	3,822,412	0.48	43.5%	0
13830	13993	13992	24	506.1	1.75	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,251	3,822,221	0.39	53.9%	0
13831	13994	13993	24	515.0	1.577	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,287	3,815,466	0.31	63.9%	0
13832	13995	13994	24	515.0	0.85	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,308	3,808,581	0.35	59.2%	0
13833	13996	13995	24	515.0	1.30	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,357	3,801,711	0.35	58.5%	0
13834	13997	13996	24	515.0	1.89	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,402	3,794,838	0.31	63.5%	0
13835	13998	13997	24	477.2	0.89	Salt Creek	HUNTE PY	PVC	1,718,024	2,360,436	3,787,959	0.34	60.2%	0
13836	13999	14000	21	569.1	0.89	Salt Creek	HUNTE PY	PVC	1,586,625	2,180,640	3,471,185	0.40	53.5%	0
13837	14000	13998	21	599.4	1.597	Salt Creek	HUNTE PY	PVC	1,586,625	2,180,572	3,478,164	0.40	53.5%	0
13838	14001	13999	21	630.7	2.04	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,733	3,464,577	0.38	54.9%	0
13839	14002	14001	21	351.3	1.11	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,784	3,457,218	0.37	56.2%	0
13842	13965	13964	30	263.4	0.39	Salt Creek	PRIVATE RD	PVC	3,694,344	5,075,833	6,835,910	0.47	45.3%	0
13843	13966	14007	30	305.8	0.11	Salt Creek	PRIVATE RD	PVC	3,694,344	5,075,954	6,830,103	0.53	37.4%	0
13844	13967	13966	30	411.6	0.11	Salt Creek	PRIVATE RD	PVC	3,694,344	5,077,034	6,825,871	0.65	24.1%	0
13845	14004	13922	42	353.5	1.24	Main Street	WILEY RD	PVC	6,387,306	8,721,138	10,917,943	0.27	67.9%	0
13846	14005	13932	42	302.4	0.26	Salt Creek	PRIVATE RD	PVC	6,033,813	8,240,869	10,317,456	0.39	53.9%	0

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
13847	14006	14005	42	123.1	0.34	Salt Creek	PRIVATE RD	PVC	6,033,812	8,240,885	10,310,396	0.38	55.1%	0
15420	13140	9105	15	209.4	2.10	Salt Creek	HUNTE PY	PVC	515,169	709,096	1,168,151	0.32	62.6%	0
15421	13141	13142	15	234.4	1.09	Salt Creek	HAWTHORNE CREEK DR	PVC	515,169	709,059	1,172,704	0.35	58.8%	0
15422	13142	13143	18	399.0	1.03	Salt Creek	RUSTIC WOOD ST	PVC	515,169	709,027	1,176,679	0.28	67.1%	0
15423	13143	13144	18	298.1	1.04	Salt Creek	RUSTIC WOOD ST	PVC	518,763	713,786	1,184,471	0.29	66.2%	0
15424	13144	13878	18	295.6	1.05	Salt Creek	OTAY LAKES RD	PVC	518,763	713,737	1,187,394	0.27	68.7%	0
15859	14033	14032	18	316.2	0.44	Salt Creek	SOUTH CREEKSIDE DR	PVC	776,952	1,067,678	1,912,219	0.46	45.4%	0
15860	14032	14031	18	266.9	0.39	Salt Creek	SOUTH CREEKSIDE DR	PVC	777,561	1,068,461	1,915,688	0.50	40.9%	0
15861	14031	14030	18	381.8	0.44	Salt Creek	SOUTH CREEKSIDE DR	PVC	778,226	1,069,302	1,920,374	0.37	56.0%	0
15862	14030	14029	18	188.6	8.02	Salt Creek	SOUTH CREEKSIDE DR	PVC	784,149	1,077,297	1,940,109	0.27	68.4%	0
15863	14029	14028	18	291.4	1.61	Salt Creek	PRIVATE RD	PVC	784,149	1,077,293	1,943,032	0.35	58.9%	0
15864	14028	14027	18	274.4	1.19	Salt Creek	PRIVATE RD	PVC	784,261	1,077,434	1,945,931	0.33	61.2%	0
15866	14027	13902	18	31.4	2.58	Salt Creek	PRIVATE RD	PVC	784,261	1,077,432	1,946,107	0.34	60.5%	0
15897	13916	14228	42	600.0	0.10	Main Street	MAIN ST	PVC	7,089,984	9,665,270	11,956,514	0.56	34.1%	0
15898	14228	14220	42	600.0	0.10	Main Street	MAIN ST	PVC	7,089,984	9,664,587	11,969,834	0.56	34.2%	0
15899	13915	13914	42	73.2	0.10	Main Street	MAIN ST	PVC	7,096,944	9,670,409	12,027,020	0.57	32.6%	0
15900	14224	13915	42	265.4	0.10	Main Street	MAIN ST	PVC	7,096,944	9,670,627	12,025,557	0.58	32.2%	0
15901	14223	14224	42	73.2	0.10	Main Street	MAIN ST	PVC	7,096,944	9,670,810	12,019,555	0.58	32.0%	0
15902	14226	14227	42	600.0	0.10	Main Street	MAIN ST	PVC	7,096,944	9,669,253	12,058,380	0.57	33.3%	0
15903	13914	14225	42	199.4	0.10	Main Street	MAIN ST	PVC	7,096,944	9,670,270	12,031,520	0.57	33.5%	0

T-3. 2050 PWWF Model Result with Proposed Future Diameters

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15904	14225	14226	42	600.0	0.10	Main Street	MAIN ST	PVC	7,096,944	9,669,953	12,045,148	0.56	33.9%	0
15905	14222	14223	42	600.0	0.098	Main Street	MAIN ST	PVC	7,090,708	9,663,241	12,010,298	0.57	32.5%	0
15906	14220	14221	42	600.0	0.10	Main Street	MAIN ST	PVC	7,089,984	9,663,909	11,983,105	0.56	34.5%	0
15907	14221	14222	42	598.1	0.10	Main Street	MAIN ST	PVC	7,090,708	9,664,109	11,997,180	0.56	33.8%	0
15908	14211	14235	42	955.5	0.10	Main Street	MAIN ST	PVC	7,378,667	10,023,232	12,585,799	0.57	32.7%	0
15909	14212	14211	42	146.8	0.10	Main Street	MAIN ST	PVC	7,111,132	9,686,820	12,093,362	0.58	32.1%	0
15910	14227	14213	42	268.5	0.10	Main Street	MAIN ST	PVC	7,099,024	9,671,387	12,066,774	0.57	32.6%	0
15912	14213	14212	42	331.5	0.10	Main Street	MAIN ST	PVC	7,105,854	9,680,059	12,083,190	0.58	32.2%	0
15913	14215	14071	42	78.0	0.45	Main Street	DATE ST	PVC	10,667,205	14,493,839	18,552,145	0.49	42.0%	0
15914	14216	14215	42	26.3	0.53	Main Street	OTAY VALLEY RD	PVC	10,666,781	14,492,462	18,549,757	0.51	40.1%	0
15915	14070	14214	42	204.4	1.11	Main Street	MAIN ST	PVC	10,668,516	14,494,775	18,559,202	0.36	58.2%	0
15916	14071	14070	42	22.6	1.42	Main Street	DATE ST	PVC	10,667,205	14,494,628	18,552,669	0.42	50.4%	0
15917	14217	14114	42	46.7	0.39	Main Street	MAIN ST	PVC	10,663,677	14,551,232	18,501,384	0.46	46.0%	0
15918	14218	14216	42	400.3	0.24	Main Street	OTAY VALLEY RD	PVC	10,666,781	14,508,649	18,549,173	0.54	36.4%	0
15919	14097	14218	42	133.4	0.33	Main Street	OTAY VALLEY RD	PVC	10,665,881	14,568,492	18,538,632	0.55	35.4%	0
15920	14099	14232	42	177.3	0.40	Main Street	OTAY VALLEY RD	PVC	10,664,637	14,627,071	18,529,780	0.51	39.9%	0
15921	14219	14099	42	129.1	0.16	Main Street	OTAY VALLEY RD	PVC	10,664,173	14,661,239	18,525,018	0.54	36.8%	0
15922	14103	14219	42	18.1	0.72	Main Street	PRIVATE RD	PVC	10,664,173	14,661,926	18,522,003	0.58	31.8%	0
15923	14229	14103	42	298.6	1.57	Main Street	OTAY VALLEY RD	PVC	10,664,173	14,739,863	18,521,626	0.45	47.3%	0
15924	14230	14229	42	298.6	1.40	Main Street	OTAY VALLEY RD	PVC	10,664,011	14,858,906	18,514,426	0.34	60.5%	0
15925	14231	14230	42	83.8	1.3	Main Street	OTAY VALLEY RD	PVC	10,664,011	15,012,032	18,507,423	0.37	56.7%	0
15926	14113	14231	42	90.8	1.17	Main Street	OTAY VALLEY RD	PVC	10,663,826	15,321,891	18,505,215	0.37	56.6%	0
15927	14114	14113	42	63.8	1.44	Main Street	OTAY VALLEY RD	PVC	10,663,677	14,900,687	18,502,888	0.37	56.9%	0

T-3. 2050 PWWF Model Result with Proposed Future Diameters

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15928	14115	14217	42	19.2	0.68	Main Street	MAIN ST	PVC	10,663,677	14,633,080	18,500,293	0.53	37.2%	0
15929	14232	14097	42	176.3	0.301	Main Street	OTAY VALLEY RD	PVC	10,664,872	14,591,889	18,534,201	0.54	36.9%	0
15930	14116	14115	42	268.5	1.49	Main Street	MAIN ST	PVC	10,663,677	14,470,404	18,499,859	0.43	49.3%	0
15931	14233	14116	42	400.0	0.10	Main Street	MAIN ST	PVC	7,378,667	10,022,092	12,614,214	0.44	48.5%	0
15932	14234	14233	42	289.7	0.10	Main Street	MAIN ST	PVC	7,378,667	10,022,165	12,604,890	0.55	35.1%	0
15933	14235	14234	42	567.9	0.10	Main Street	MAIN ST	PVC	7,378,667	10,022,426	12,598,327	0.56	33.8%	0
16314	13385	13139	15	276.7	2.10	Salt Creek	STONE GATE ST	PVC	515,169	709,145	1,163,114	0.30	65.2%	0
16315	13139	13140	15	398.1	2.25	Salt Creek	HUNTE PY	PVC	515,169	709,118	1,166,420	0.30	65.3%	0
16316	13137	13138	15	336.9	1.21	Salt Creek	HUNTE PY	PVC	362,965	499,843	880,377	0.45	46.7%	0
16317	13136	13137	15	400.5	2.19	Salt Creek	HUNTE PY	PVC	362,965	499,913	877,620	0.28	67.5%	0
16318	13135	13136	15	381.1	1.25	Salt Creek	HUNTE PY	PVC	323,686	445,182	819,526	0.27	67.8%	0
16319	13134	13135	15	410.5	0.94	Salt Creek	HUNTE PY	PVC	323,686	445,329	816,468	0.30	64.6%	0
16461	15046	15058	15	248.3	1.08	Salt Creek	WANDER ST	PVC	317,847	437,717	527,239	0.24	68.1%	P29
16462	15058	15066	15	288.6	1.04	Salt Creek	TRELLIS ST	PVC	326,373	449,437	548,859	0.24	67.6%	P29
16463	15066	15056	18	82.0	1.04	Salt Creek	HUNTE PY	PVC	1,115,554	1,540,522	1,685,726	0.34	54.5%	P43
16464	15056	15059	18	383.8	0.87	Salt Creek	HUNTE PY	PVC	1,164,154	1,608,319	1,756,093	0.36	51.7%	P43
16465	15059	15067	18	400.5	1.54	Salt Creek	HUNTE PY	PVC	1,164,154	1,608,317	1,758,771	0.31	58.5%	P43
16476	15067	15060	18	261.2	10.13	Salt Creek	HUNTE PY	PVC	1,164,154	1,608,317	1,760,520	0.19	74.3%	P43
16477	15060	15061	18	349.3	8.09	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,272	1,824,814	0.21	72.3%	P43
16478	15061	15062	18	369.9	1.11	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,270	1,827,288	0.35	53.9%	P43
16479	15062	15063	18	350.6	1.31	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,269	1,829,635	0.33	55.9%	P43
16480	15063	15065	18	350.0	6.80	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,268	1,831,978	0.22	70.9%	P43
16481	15065	15064	18	225.0	10.315	Salt Creek	HUNTE PY	PVC	1,208,566	1,670,268	1,833,483	0.20	73.7%	P43

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
16482	15064	15069	18	336.9	1.13	Salt Creek	PRIVATE RD	PVC	1,208,566	1,670,266	1,835,738	0.35	54.0%	P43
16492	13902	14012	21	112.6	3.43	Salt Creek	PRIVATE RD	PVC	1,586,625	2,180,832	3,447,469	0.28	66.6%	0
16493	14012	14013	21	14.4	7.52	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,832	3,447,638	0.29	65.8%	0
16494	14013	14014	21	156.5	1.71	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,827	3,449,467	0.55	35.1%	0
16495	14014	14025	21	40.4	0.44	Salt Creek	OLYMPIC PY	PVC	1,586,625	2,180,802	3,449,930	0.62	26.9%	0
16496	14025	14010	21	94.7	6.34	Salt Creek	OLYMPIC PY	PVC	1,586,627	2,180,802	3,451,039	0.31	63.2%	0
16543	14074	15114	42	544.2	0.35	Main Street	MAIN ST	PVC	10,669,383	14,484,011	18,576,248	0.44	48.8%	0
16544	15114	14069	42	499.2	1.36	Main Street	MAIN ST	PVC	10,669,383	14,481,307	18,587,896	0.34	60.2%	0
16545	14069	14068	42	32.9	1.34	Main Street	MAIN ST	PVC	10,672,861	14,485,080	18,593,198	0.35	59.2%	0
16546	14068	14067	42	507.5	1.119	Main Street	MAIN ST	PVC	10,674,014	14,485,935	18,606,576	0.46	46.4%	0
16547	14067	14066	42	600.0	0.29	Main Street	MAIN ST	PVC	10,675,312	14,486,124	18,622,192	0.45	46.9%	0
16548	14066	14082	42	590.0	1.25	Main Street	MAIN ST	PVC	10,677,885	14,489,152	18,639,310	0.36	58.2%	0
16549	14082	14077	42	585.0	1.24	Main Street	MAIN ST	PVC	10,682,536	14,495,052	18,659,052	0.34	60.6%	0
16550	14077	14065	42	47.3	1.99	Main Street	PRIVATE DY	PVC	10,682,536	14,495,010	18,660,148	0.35	58.4%	0
16551	14065	14072	42	510.7	0.71	Main Street	MAIN ST	PVC	10,683,197	14,495,816	18,672,949	0.40	52.6%	0
16552	14072	14073	42	474.3	0.71	Main Street	MAIN ST	PVC	10,683,770	14,496,503	18,684,796	0.40	52.7%	0
16553	14073	14095	42	71.1	0.72	Main Street	MAIN ST	PVC	10,684,100	14,496,902	18,686,874	0.43	49.1%	0
16555	13911	14129	42	600.0	0.22	Main Street	MAIN ST	PVC	10,694,344	14,509,339	18,727,831	0.58	31.5%	0
16556	14129	14128	42	600.0	0.22	Main Street	MAIN ST	PVC	10,695,822	14,511,169	18,743,574	0.50	41.6%	0
16557	14128	14127	42	600.0	0.77	Main Street	MAIN ST	PVC	10,696,082	14,511,465	18,757,878	0.43	49.3%	0
16558	14127	14126	42	600.0	0.48	Main Street	MAIN ST	PVC	10,698,201	14,514,185	18,774,618	0.43	49.2%	0
16559	14126	14125	42	45.0	0.76	Main Street	MAIN ST	PVC	10,698,425	14,514,460	18,775,937	0.41	52.1%	0
16560	14125	13912	42	254.1	0.63	Main Street	MAIN ST	PVC	10,699,497	14,515,857	18,783,284	0.43	50.0%	0

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
16561	13912	14117	42	600.0	0.62	Main Street	MAIN ST	PVC	10,700,349	14,516,973	18,798,460	0.41	52.2%	0
16562	14117	14120	42	600.0	0.91	Main Street	MAIN ST	PVC	10,702,021	14,519,112	18,814,624	0.39	54.4%	0
16563	14120	14122	42	575.0	0.74	Main Street	MAIN ST	PVC	10,708,020	14,526,904	18,835,848	0.42	50.1%	0
16564	14122	14121	42	51.2	0.49	Main Street	JACQUA ST	PVC	10,708,020	14,526,884	18,837,012	0.47	44.2%	0
16565	14121	14123	42	164.2	0.38	Main Street	MAIN ST	PVC	10,708,155	14,527,066	18,841,042	0.46	46.2%	0
16566	14123	14119	42	535.6	0.65	Main Street	MAIN ST	PVC	10,708,285	14,527,217	18,853,727	0.45	46.6%	0
16567	14119	14124	42	384.2	0.35	Main Street	MAIN ST	PVC	10,708,285	14,527,159	18,862,633	0.55	34.9%	0
16568	14124	GTWY_MH_03	42	92.9	0.27	Main Street	INDUSTRIAL BL	PVC	10,710,094	14,529,695	18,867,300	0.64	25.3%	0
16569	14003	14118	42	211.0	2.60	Main Street	I-5 NB ON RA	PVC	12,154,563	16,457,705	21,361,532	0.42	50.9%	0
16570	14118	OUTFALL_9152	42	1127.4	0.38	Main Street	I-5 NB ON RA	PVC	12,154,624	16,457,597	21,387,779	0.52	39.1%	0
16749	14040	14039	18	304.5	3.21	Salt Creek	NORTH CREEKSIDE DR	PVC	680,687	936,023	1,595,421	0.33	60.8%	0
16751	14041	14040	18	182.5	2.97	Salt Creek	NORTH CREEKSIDE DR	PVC	677,952	932,390	1,588,650	0.25	70.7%	0
16753	13849	14041	18	149.8	2.63	Salt Creek	NORTH CREEKSIDE DR	PVC	676,133	929,916	1,580,053	0.26	69.9%	0
16807	15288	15066	15	14.7	1.88	Salt Creek	HUNTE PY	PVC	701,077	969,140	1,000,174	0.31	58.1%	P29
16808	15289	15288	15	211.8	2.083	Salt Creek	HUNTE PY	PVC	701,077	969,140	1,000,076	0.31	58.7%	P29
16809	15287	15289	15	399.9	1.04	Salt Creek	HUNTE PY	PVC	701,077	969,142	998,659	0.31	58.5%	P29
17086	13878	9123	15	336.8	2.51	Salt Creek	OTAY LAKES RD	PVC	518,763	713,714	1,190,190	0.41	52.1%	0
17093	15538	13980	18	174.0	0.58	Salt Creek	PRIVATE RD	PVC	1,208,566	1,670,265	1,840,392	0.42	44.7%	P30
17094	13979	13978	24	406.7	0.23	Salt Creek	PRIVATE RD	PVC	3,317,897	4,565,699	6,253,276	0.69	19.4%	0

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
17095	13978	13977	24	400.0	0.23	Salt Creek	PRIVATE RD	PVC	3,317,897	4,564,617	6,257,975	0.67	20.9%	0
17096	13977	13976	24	187.4	0.24	Salt Creek	PRIVATE RD	PVC	3,317,897	4,564,299	6,260,124	0.64	24.4%	0
17097	13976	13975	24	164.5	0.26	Salt Creek	PRIVATE RD	PVC	3,317,897	4,564,090	6,262,030	0.63	25.6%	0
17098	13975	14026	24	200.0	3.30	Salt Creek	PRIVATE RD	PVC	3,317,897	4,564,083	6,264,701	0.34	60.0%	0
17099	14026	13974	24	231.3	3.11	Salt Creek	PRIVATE RD	PVC	3,317,897	4,564,048	6,267,771	0.33	60.7%	0
17100	13974	13973	24	154.2	3.89	Salt Creek	PRIVATE RD	PVC	3,325,144	4,573,486	6,279,280	0.33	61.6%	0
17101	13973	13972	24	220.5	4.09	Salt Creek	PRIVATE RD	PVC	3,325,144	4,573,463	6,282,212	0.31	63.9%	0
17102	13972	13971	24	348.9	6.32	Salt Creek	PRIVATE RD	PVC	3,325,144	4,573,413	6,286,840	0.29	65.6%	0
17103	13971	13985	24	283.3	5.30	Salt Creek	PRIVATE RD	PVC	3,694,344	5,080,252	6,797,961	0.31	63.1%	0
17104	13985	13970	24	400.0	4.25	Salt Creek	PRIVATE RD	PVC	3,694,344	5,079,963	6,803,103	0.38	55.3%	0
17105	13970	13969	24	377.9	1.45	Salt Creek	PRIVATE RD	PVC	3,694,346	5,079,465	6,807,781	0.43	48.9%	0
17106	13969	13968	24	328.1	1.45	Salt Creek	PRIVATE RD	PVC	3,694,344	5,079,097	6,811,888	0.51	40.2%	0
17107	13968	14009	30	177.3	0.38	Salt Creek	PRIVATE RD	PVC	3,694,344	5,078,521	6,814,405	0.45	46.9%	0
17111	15069	15542	18	128.1	5.10	Salt Creek	PRIVATE RD	PVC	1,208,566	1,670,266	1,836,595	0.24	68.7%	P43
17112	15542	15538	18	393.6	3.944	Salt Creek	PRIVATE RD	PVC	1,208,566	1,670,265	1,839,228	0.25	66.7%	P42
17528	13881	14035	18	303.9	0.42	Salt Creek	NORTH CREEKSIDE DR	PVC	715,006	982,738	1,714,988	0.45	47.4%	0
17549	14095	15953	42	455.3	0.71	Main Street	MAIN ST	PVC	10,686,191	14,499,612	18,700,258	0.38	55.8%	0
17550	15953	13911	42	144.7	2.54	Main Street	MAIN ST	PVC	10,693,214	14,507,954	18,712,403	0.43	49.9%	0
CDT-59	GTWY_MH_03	14003	42	602.4	0.23	Main Street	INDUSTRIAL BL	PVC	12,147,879	16,448,977	21,347,870	0.48	43.3%	0
IECGM101	IECMH30	IECMH36	15	865.7	0.40	Salt Creek	PRIVATE RD	-	342,086	471,884	471,885	0.29	61.5%	SCP-2

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
IECGM107	IECMH 10	IECMH 40	15	844.9	0.40	Salt Creek	HERITAGE RD	-	279,971	385,317	385,315	0.26	65.5%	SCP-1
IECGM109	IECMH 40	IECMH 42	15	936.1	0.41	Salt Creek	HERITAGE RD	-	279,971	385,275	385,275	0.26	65.6%	SCP-1
IECGM111	IECMH 42	IECMH 44	15	897.4	0.40	Salt Creek	HERITAGE RD	-	279,971	385,188	385,188	0.34	55.3%	SCP-1
IECGM113	IECMH 44	IECMH 46	15	1349.9	0.40	Salt Creek	MAXWELL RD	-	683,117	940,859	940,859	0.41	44.9%	SCP-1
IECGM115	IECMH 46	IECMH 48	15	1211.3	0.40	Salt Creek	ENERGY WY	-	683,117	940,795	940,795	0.42	44.4%	SCP-1
IECGM117	IECMH 48	13922	15	1027.2	0.40	Salt Creek	ENERGY WY	-	683,117	940,736	940,736	0.40	46.4%	SCP-1
IECGM119	IECMH 36	14004	15	4295.4	0.40	Salt Creek	PRIVATE RD	-	342,086	469,729	469,734	0.28	62.8%	SCP-2
IECGM121	IECMH 50	IECMH 56	12	709.0	0.40	Salt Creek	MAGDALENA AV	-	97,032	134,500	134,500	0.21	59.0%	SCP-2
IECGM127	IECMH 56	IECMH 26	12	1041.9	0.40	Salt Creek	ROCK MTN RD	-	97,032	134,378	134,378	0.24	51.2%	SCP-2
IECGM87	IECMH 26	IECMH 28	15	1005.3	0.40	Salt Creek	LA MEDIA RD	-	212,148	292,887	292,887	0.23	70.0%	SCP-2
IECGM89	IECMH 28	IECMH 22	15	1933.6	0.40	Salt Creek	LA MEDIA RD	-	212,148	292,814	292,814	0.26	65.9%	SCP-2
IECGM91	IECMH 22	IECMH 30	15	1167.2	0.40	Salt Creek	PRIVATE RD	-	342,086	471,974	471,974	0.29	61.9%	SCP-2
Hunte Pkwy Extension														
9119	13980	IECMH 58	24	22.1	0.27	Salt Creek	PRIVATE RD	PVC	-	-	4,670,826	0.71	16.8%	0
17093	15538	13980	12	174.0	0.58	Salt Creek	PRIVATE RD	PVC	-	-	697,854	0.44	12.0%	P30
9119_B	IECMH 58	13979	24	294.5	0.23	Salt Creek	-	-	-	-	5,813,201	0.66	22.7%	0

T-3. 2050 PWWF Model Result with Proposed Future Diameters

ID	From MH	To MH	Diameter Proposed in 2014 WWMP (in.)	Length (ft.)	Slope (%)	Basin	Street	Pipe Material	ADWF (gpd)	PDWF (gpd)	PWWF (gpd)	PWWF d/D	Hydraulic Capacity Remaining (%)	Project No.
IECGM161	15538	IECMH 60	16	12.2	0.94	Salt Creek	PRIVATE RD	-	-	-	1,142,542	0.36	51.9%	Hunte Pkwy
IECGM163	IECMH 60	IECMH 58	16	237.3	0.51	Salt Creek	-	-	-	-	1,142,542	0.45	40.5%	Hunte Pkwy

APPENDIX I: Salt Creek Sewer Lateral Improvements – Bond Estimate

Appendix T-4

SALT CREEK SEWER LATERAL IMPROVEMENTS - BOND ESTIMATE

JOB NO.: 1001
DATE: 10/10/2013
REVISED

ITEM	DESCRIPTION	UNIT	QUANTITY TOTAL	UNIT PRICE	TOTAL COST
1.	SEWER MANHOLE,PER S-2 (3'x5' PVC-LINEI	EA	3	$5,525.00	$16,575
2.	15" PVC SEWER MAIN, PER S-4	L.F.	250	$108.00	$27,000
3.	36" STEEL CASING	L.F.	176	$110.00	$19,360
4.	JACK AND BORE	LF	176	$800.00	$140,800
5.	TRENCH SHORING (5'-10' DEEP)	L.F.	200	$11.20	$2,240
6.	CONSTRUCTION FENCING	L.F.	2,058	$1.60	$3,293
7.	HI LINE SEWER	LF	1,283	$40.00	$51,320
8.	SITE PREPARATION	L.S.	1	$2,500.00	$2,500
9.	PLANT INSTALLATION (435 PLANTS)	L.S.	1	$4,900.00	$4,900
10.	SEED INSTALLATION (8 LBS OF SEED)	L.S.	1	$1,200.00	$1,200
11.	HAND WATERING (8 WATERING EVENTS	L.S.	1	$9,800.00	$9,800
12.	MAINTENANCE (5 YRS)	L.S.	1	$32,000.00	$32,000
	SUBTOTAL ON-SITE IMPROVEMENTS:				$310,988
	15% CONTINGENCY				$46,648
	TOTAL ON-SITE IMPROVEMENTS				**$357,636**

NOTE:PRICES BASED ON COUNTY OF SAN DIEGO 2012 UNIT PRICE LIST



APPENDIX J: Wolf Canyon Sewer Trunk Facilities

CITY OF CHULA VISTA

WASTEWATER ENGINEERING

WOLF CANYON SEWER TRUNK FACILITIES

TABLE 3.3b

UPDATED COST ESTIMATE FOR THE WOLF CANYON SEWER FACILITIES

PROJECTED CONSTRUCTION COSTS

	ROCK MOUNTAIN ROAD	HERITAGE ROAD
CONSTRUCTION COST *	$2,463,000	1,092,500
ENVIRONMENTAL PERMITS & MITIGATION COSTS	$80,000	$0
~~ENDOWMENT FUND~~	~~$500,000.00~~	$0
ACQUISITION OF RIGHT-OF-WAY	$80,000	$0
SUBTOTAL	$2,623,000	1,092,500

* Based on HGB Construction Estimate for Option 4a

CURRENT CONTRACTED COSTS FOR DESIGN AND PROJECT MANAGEMENT

			ROCK MOUNTAIN ROAD	HERITAGE ROAD
PRELIMINARY DESIGN REPORT			$210,000.00	
ESTIMATED FINAL DESIGN COSTS			$400,000.00	
PROJECT MANAGEMENT SERVICES	(MMS)	$275,000.00	$450,000.00	
	(HGB)	$175,000.00		
LEGAL COUNSEL NEEDED FOR ENVIRONMENTAL			$20,000.00	
LEGAL COUNSEL NEEDED FOR RIGHT-OF-WAY			$50,000.00	
TITLE REPORTS			$7,000.00	
RIGHT-OF-WAY APPRAISAL SERVICES			$25,000.00	
SUBTOTAL			$1,162,000	$0.00

PROJECTED COSTS FOR CONSTRUCTION INSPECTION AND ADMINISTRATION BY CITY STAFF

	ROCK MOUNTAIN ROAD	HERITAGE ROAD
CONSTRUCTION INSPECTION	$225,000.00	
CITY STAFF AND ADMINISTRATION	$450,000.00	
SUBTOTAL	$675,000	$0.00

TOTAL SOFT COSTS:	(HERITAGE ROAD) -	15%	1,997,000	163,500
TOTAL FOR EACH FACILITY			$4,460,000	$1,256,000
TOTAL COST FOR WOLF CANYON TRUNK SEWER				$5,716,000