LOS OLIVOS COMMUNITY SERVICES DISTRICT **Posted: 10-22-2024**
TECHNICAL SUBCOMMITTEE MEETING
October 28, 2024 – 8:30 AM
St Mark's in the Valley Episcopal Church
2901 Nojoqui Ave, Los Olivos CA 93441
Please observe decorum and instructions from the Subcommittee Chair

Subcommittee Members: Director Fayram (Chair), Director Parks, and General Manager Guy Savage

This meeting will be held both in-person and electronically via Zoom Meetings. In-person the meeting will be held at the location above.

The public will also be able to hear and participate electronically via Zoom by using the following links:

Zoom:	https://us06web.zoom.us/j/81937722522?pwd=SWpSU0RYZFljZTBLNGphZG41TGs4dz09		
By Phone:	+1 669 900 6833 US (San Jose)	Meeting ID: 819 3772 2522	Passcode: 914085
One tap mobile:	+14086380968,,81937722522#,,,,*914085# US (San Jose)		

The Los Olivos Community Services District is committed to ensuring equal access to meetings. In compliance with the American Disabilities Act, if you need special assistance to participate in the meeting or need this agenda provided in a disability-related alternative format, please call 805.500.4098 or email to losolivoscsd@gmail.com. Any public records, which are distributed less than 72 hours prior to this meeting to all, or a majority of all, of the District's Board members in connection with any agenda item (other than closed sessions) will be available for public inspection at the time of such distribution at a location to be determined in Los Olivos, California 93441.

MEETING AGENDA

1. **CALL TO ORDER**

2. **ROLL CALL**

3. **PUBLIC COMMENTS**
   Members of the public may address the Subcommittee on any items of interest within the subject matter and jurisdiction of the Board but not on the agenda today (Gov. Code - 54954.3). The public may also request future agenda topics at this time. Speakers are limited to a maximum of 3 minutes. Due to the requirements of the Ralph M. Brown Act, the Subcommittee cannot take action today on any matter not on the agenda, but a matter raised during Public Comments can be referred to District staff for discussion and possible action at a future meeting.

ADMINISTRATIVE ITEMS:
All matters listed hereunder constitute an administrative / consent agenda and will be acted upon by a single vote of the Board. Matters listed on the Consent Agenda will be read only on the request of a member of the Subcommittee, in which event the matter may be removed from the Consent Agenda and considered as a separate item. Public may comment on any of the items prior to the vote being taken by the Subcommittee.

4. **CONSENT AGENDA**
   A. **MINUTES APPROVAL**
      Approval of the minutes from October 4, 2024.

BUSINESS ITEMS:
All matters listed hereunder will be acted upon separately and public comment will be held for each item. As a Subcommittee of Thea full Board of Directors, Business Items may include one or more recommendations for further discussion or action at a full Board of Directors meeting.

5. **DISCUSSION REGARDING POSSIBLE LOCSD CONNECTION TO THE CITY OF SOLVANG'S WASTEWATER TREATMENT PLANT AND RELATED INFRASTRUCTURE, INCLUDING WSC AND CAROLLO CONTRACTED EFFORTS AND CLOACINA ESTIMATES**
   The Subcommittee will discuss potential connection to the City of Solvang, including technical and financial issues raised by the potential connection. See the attached draft reports from WSC and Carollo, as well as estimates from Cloacina for a local solution.

6. **GENERAL DISCUSSION OF COLLECTION, TREATMENT, AND DISPOSAL OPTIONS**
   The Subcommittee will discuss options for the collection, treatment, and disposal of wastewater for the District. Given the Regen contract, this discussion will focus heavily on Treatment options, including Membrane Bioreactor (MBR), connection to Solvang's treatment plant, and other solutions previously brought up by members of the public.

7. **ADJOURNMENT**

MINUTES

LOS OLIVOS COMMUNITY SERVICES DISTRICT **Posted: 9-28-2024**
TECHNICAL SUBCOMMITTEE MEETING
October 4, 2024 – 9:00 AM
St Mark's in the Valley Episcopal Church
2901 Nojoqui Ave, Los Olivos CA 93441
Please observe decorum and instructions from the Subcommittee Chair

Subcommittee Members: Director Fayram (Chair), Director Parks, and General Manager Guy Savage

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MEETING AGENDA

1. **CALL TO ORDER**
   Chair Fayram called the meeting to order at: 9:00 AM

2. **ROLL CALL**
   Present: Chair Fayram, Director Parks, GM Savage
   Absent: None

3. **PUBLIC COMMENTS**
   Members of the public may address the Subcommittee on any items of interest within the subject matter and jurisdiction of the Board but not on the agenda today (Gov. Code - 54954.3). The public may also request future agenda topics at this time. Speakers are limited to a maximum of 3 minutes. Due to the requirements of the Ralph M. Brown Act, the Subcommittee cannot take action today on any matter not on the agenda, but a matter raised during Public Comments can be referred to District staff for discussion and possible action at a future meeting.

   The Chair opened the floor for public comment.
   No requests to speak.

ADMINISTRATIVE ITEMS:
All matters listed hereunder constitute an administrative / consent agenda and will be acted upon by a single vote of the Board. Matters listed on the Consent Agenda will be read only on the request of a member of the Subcommittee, in which event the matter may be removed from the Consent Agenda and considered as a separate item. Public may comment on any of the items prior to the vote being taken by the Subcommittee.

4. **CONSENT AGENDA**
   A. **MINUTES APPROVAL**
      Approval of the minutes from August 21, 2024.

The Chair opened the floor for public comment.
No requests to speak.

Motion to approve the Consent Agenda.
Motion by: Director Parks , Second: Chair Fayram
Voice vote: 3-0

BUSINESS ITEMS:
All matters listed hereunder will be acted upon separately and public comment will be held for each item. As a Subcommittee of the full Board of Directors, Business Items may include one or more recommendations for further discussion or action at a full Board of Directors meeting.

5. **CONSIDERATION OF TWO CONTRACTS THAT WOULD CREATE A WASTEWATER TRANSMISSION PIPELINE BETWEEN THE LOCSD AND THE CITY OF SOLVANG. CONTRACT #1 – STANTEC IN THE AMOUNT OF $99,500 (NINETY-NINE THOUSAND AND FIVE HUNDRED DOLLARS) AND CONTRACT #2 – REGEN IN THE AMOUNT OF $50,000 (FIFTY THOUSAND DOLLARS)**
The Subcommittee will consider making a recommendation to the full Board of Directors regarding the two submitted proposals for the creation of 30% engineering and design, plus costs for connecting the District to the City of Solvang. For the purposes of the contractor's proposals, they were instructed to estimate the roughly the 18,000 feet of distance involved. They were also instructed, pursuant to discussions with the City of Solvang, to include an equalization tank. Flows from the District were to be consistent with the Basis of Design documents each contractor used when creating their 30% engineering designs and based on the technology approach used. Stantec's proposal therefore assumes a gravity fed collection system, while REGEN's proposal focuses more heavily on effluent sewer collection.

GM Savage introduces the item. Director Fayram comments on the differences between the two proposals. Stantec is proposing to do topo / maps, whereas REGEN does not. He goes on to comment about using County of Santa Barbara approved consultants. He proposes that the District go back and remove the topo piece for the 30% design, noting that it is probably not necessary at this time: essentially scaling it back. Director Parks concurs. GM Savage wonders how best to move this forward without delaying the whole process a month. Director Fayram suggests focusing online sizing, creek crossings, some level of depth for the pipe. At the request of Chair Fayram, Paeter Garcia from #ID1 comments on their piping that travels down Alamo Pintado.

The Chair opened the floor for public comment.
Mike Buchardi comments.

Chair Fayram and GM Savage respond to public comment, noting that the District is only focused on service District constituents. Director Fayram asks if Stantec can come back with a revised proposal, a special meeting could be held to review and/or approve the contracts.

Direction to staff to put on agenda as is, with a push to get Stantec to revise their proposal along the lines that Director Fayram suggests. He adds that he does want to see a plan, with costs, for the force main from Stantec. Director Parks comments that he will not make next Wednesday's meeting but would like to see this moving forward.

6. **DISCUSSION REGARDING POSSIBLE LOCSD CONNECTION TO THE CITY OF SOLVANG'S WASTEWATER TREATMENT PLANT AND RELATED INFRASTRUCTURE, INCLUDING WSC AND CAROLLO CONTRACTED EFFORTS**
The Subcommittee will discuss potential connection to the City of Solvang, including technical issues raised by connection, requests from the two contractors who the LOCSD has engaged to perform studies related to the connection.
GM Savage briefly introduces the item. Director Parks asks GM Savage if he has made any comparisons between the District's flows, and the community of Santa Ynez. GM Savage responds he has not, because of differences between the two communities.

Chair Fayram opened the floor for public comment.
No requests to speak.

7. GENERAL DISCUSSION OF COLLECTION, TREATMENT, AND DISPOSAL OPTIONS

The Subcommittee will discuss options for the collection, treatment, and disposal of wastewater for the District. Given the Regen contract, this discussion will focus heavily on Treatment options, including Membrane Bioreactor (MBR), connection to Solvang's treatment plant, and other solutions previously brought up by members of the public.

GM Savage comments that he has spoken to Jake Lincoln at Cloacina about providing estimates for both effluent (Option A) and gravity fed collection. Cloacina has committed to providing the cost estimates by the end of the month. He adds that he asked Cloacina to focus on the full implementation as opposed to spending much time for a phased approach. Director Parks asks that Cloacina do Option B (all effluent) as well.

8. ADJOURNMENT

Motion to adjourn at 9:32 AM.
Motion by: Director Parks, Second: Director Fayram
Voice vote: 3-0

Respectfully submitted:

Guy W. Savage
General Manager – Los Olivos Community Services District

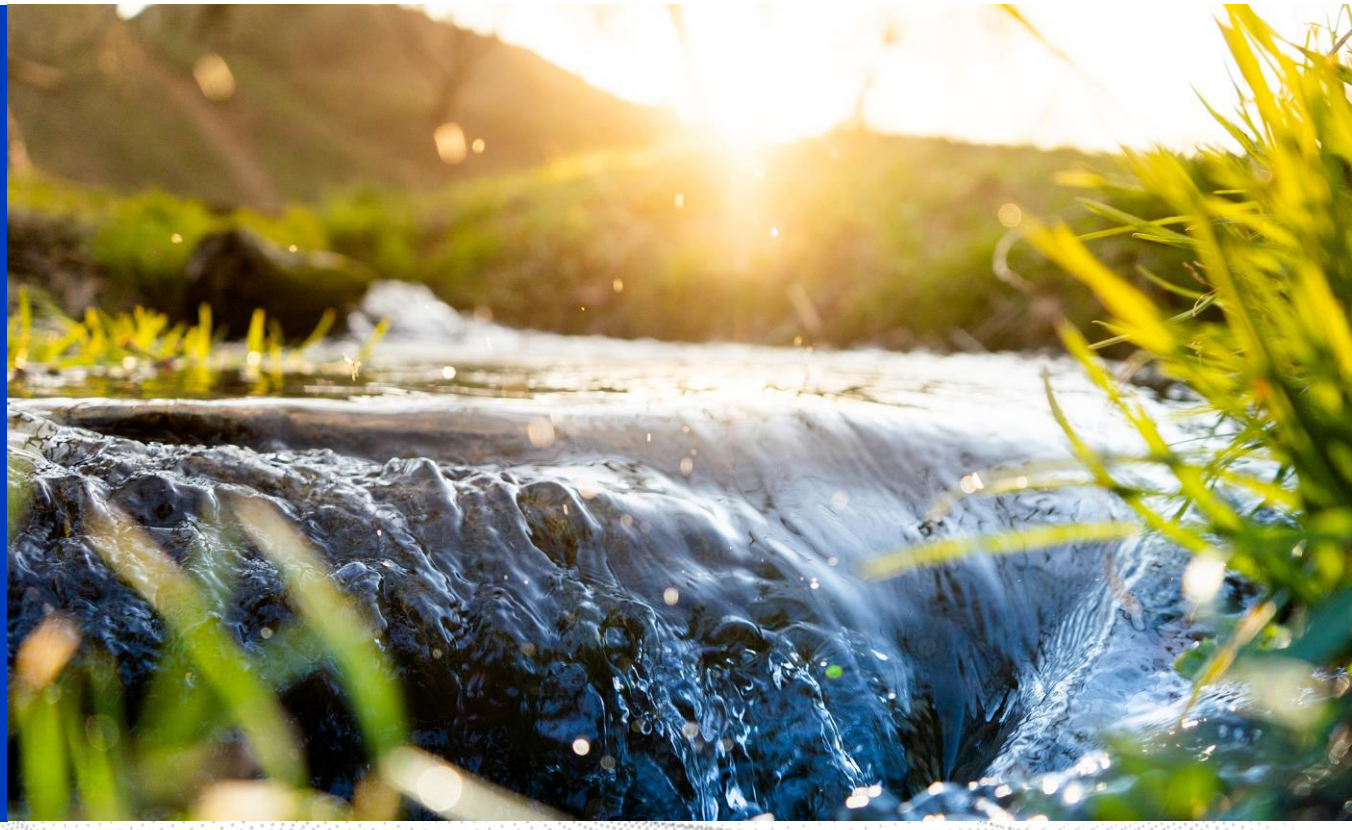
Approved:

_____
Director Tom Fayram, Chair

ITEM 5 – CITY OF SOLVANG VS LOCAL SOLUTION COSTS

CITY OF SOLVANG VS LOCAL SOLUTION COSTS

Evaluation of Los Olivos Flows on Solvang WWTP



TECHNICAL MEMORANDUM 1

Wastewater Connection Evaluation

DRAFT / October 2024

Evaluation of Los Olivos Flows on Solvang WWTP

TECHNICAL MEMORANDUM 1

Wastewater Connection Evaluation

DRAFT / October 2024

This document is released for the purpose of information exchange review and planning only under the authority of Jeffrey A. Weishaar, October 17, 2024, California C-75245.

Contents

Tables

Figures

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INTRODUCTION

Background

In August 2024, the Los Olivos Community Services District (LOCSD) contracted with Carollo Engineers, Inc. (Carollo) to evaluate the impact of connecting the LOCSD's wastewater flows to the City of Solvang's existing wastewater treatment plant (WWTP). This evaluation is part of a larger project to convert residential and commercial septic tanks within the LOCSD to a wastewater pipeline conveyance system.

As part of the evaluation, Carollo analyzed data from the City of Solvang and the LOCSD, including water quality of drinking water and wastewater within both service areas. Carollo analyzed this data to determine what effect the addition of LOCSD wastewater will have on the Solvang WWTP, and if any changes to treatment processes or plant capacity would be required in order to accept and treat LOCSD wastewater. The findings of this analysis are presented in this technical memorandum.

During this analysis, the ability of the Solvang WWTP to accept and treat wastewater flow from LOCSD was gauged by the WWTP's ability to comply with its effluent permit limits. The treatment processes at the WWTP were simulated using a biological process model which is discussed later in this memo.

Data Review

LOCSD provided Carollo with several sources of background information used in this evaluation. These sources include a report authored by Stantec in 2022 titled "Wastewater Collection and Treatment Basis of Design Report" (BODR), which estimated design wastewater flows and loads from the LOCSD as well as established design criteria for the future wastewater collection system within the LOCSD.

The wastewater constituents estimated in the BODR included 5-day biological oxygen demand (BOD_5), total suspended solids (TSS), and total kjedahl nitrogen (TKN). BOD_5 is a measure of the amount of oxygen required by microorganisms to break down matter in wastewater over a 5-day period. TSS is a measure of the amount of particles suspended in wastewater, and TKN is a measure of the amount of ammonia and organic nitrogen in wastewater. These parameters are all important ways of assessing the level of pollution in wastewater, and all three are regulated in some form and part of the Solvang WWTP's effluent permit.

Lastly, Carollo obtained information on the LOCSD's drinking water supply from the Santa Ynez River Water Conservation District, Improvement District No. 1 (SYRWCD ID1), which provides all of the drinking water within the LOCSD service area.

Wastewater Data

The 2022 Stantec BODR divided the septic to sewer conversion project into three phases. Phase I captured the core downtown area within the LOCSD which includes the commercial area and neighboring residential properties. Phase II includes the residential area to the east and south of Phase I. Finally, Phase III includes the remaining property in the LOCSD boundary that were not included in the previous phases, and also accounts for future growth within the LOCSD over the next 20 years.

For the purposes of this evaluation, Carollo considered the scenario where the full Phase III wastewater flows and loads would be connected to the Solvang WWTP. These future flows and wastewater concentrations are presented in Table 1 below alongside Solvang wastewater flows and concentrations. The flows are presented as average daily max month flows (ADMMF), which are the highest 30-day average flows that occur within a year. Influent wastewater concentrations provided are monthly averages. The combination of ADMMF flow with average wastewater concentrations typically provides a 'worst-case' loading scenario for the WWTP, which was used for the analysis conducted in this report.

Additionally, the Solvang WWTP has an agreement with the Santa Ynez Community Services District (SYCSD) to provide up to 0.3 million gallons per day (mgd) of WWTP treatment capacity as shown in Table 1. A 2017 report prepared for the SYCSD titled "Recycled Water Facilities Plan" characterized the strength of SYCSD's wastewater, which is also included in Table 1.

Table 1 Wastewater Quality Parameters

Source	Constituent	ADMMF Flow (gpd)	Avg. Influent Wastewater Concentration (mg/L)	WWTP Influent Load (lb/day)
City of Solvang Wastewater(1)	BOD_5	713,000	263	2,018
	TSS		201	1,542
	TKN		59	453
LOCSD Phase III Wastewater(2)	BOD_5	133,800	416	451
	TSS		320	347
	TKN		63	68
SYCSD Wastewater(3)	BOD_5	300,000	320	658
	TSS		176	503
	TKN		63	148

Notes:
Abbreviations: gpd = gallons per day; lb/day = pounds per day; mg/L = milligrams per liter; avg = average
(1) WWTP average influent concentrations provided by City of Solvang.
(2) LOCSD estimated wastewater concentrations from 2022 Stantec BODR.
(3) SYCSD wastewater concentrations from 2017 Recycled Water Facilities Plan.

Salt Loading Data

An additional concern when considering the ability of the Solvang WWTP to accept wastewater flow from LOCSD is the concentration of certain constituents in the wastewater including total dissolved solids (TDS), sodium, and chloride. The Central Coast Regional Water Quality Control Board (RWQCB) has imposed WWTP effluent limits for these constituents on the City of Solvang and has recently altered those limits to be more stringent. However, none of these constituents are removed by conventional wastewater treatment such as is employed at the Solvang WWTP.

Drinking water in the City of Solvang is comprised of a blended mixture of water from the State Water Project (SWP) as well as local groundwater wells. The flow-weighted drinking water quality concentrations for the City of Solvang are presented in Table 2 alongside the drinking water quality for the LOCSD, which is comprised entirely of water from ID1.

Table 2 Salt Loading Parameters

Constituent	Solvang Wastewater Concentrations[1] (mg/L)	Solvang Blended Drinking Water Concentrations[2] (mg/L)	LOCSD ID1 Concentrations[3] (mg/L)
TDS	1,017	931	581
Sodium	185	61	46
Chloride	239	81	39

Notes:
Abbreviations: mg/L = milligrams per liter
(1) Average of Solvang wastewater data from 2012 to 2023.
(2) Average of flow-weighted concentrations of all active Solvang drinking water sources from 2012 to 2023.
(3) Average of ID1 water quality data sourced from Consumer Confidence Reports from 2012 to 2023.

Carollo has water and wastewater data for these constituents provided by the City of Solvang, but the concentrations of these parameters were not considered in the 2022 Stantec BODR. Therefore, Carollo has estimated the LOCSD wastewater concentrations by first subtracting the background Solvang drinking water concentrations from the total wastewater concentrations for these constituents, resulting in an estimated contribution in wastewater loading from water use, called the user contribution.

The user contribution loads were then converted to concentrations, and these same concentrations from the users in Solvang were used to calculate the user contribution load for LOCSD based on the Phase III flow estimate. The LOCSD drinking water contribution loads were calculated using the ID1 concentrations from Table 2 as well as the Phase III flow estimate. The user contribution loads and drinking water loads were added to form the LOCSD total contribution load in Table 3. Finally, the total LOCSD load was added to the loading data from Solvang to calculate an estimated WWTP load that includes wastewater from Solvang and LOCSD. The total WWTP load was converted to concentrations and compared alongside the WWTP effluent permit limits in Table 3.

Table 3 Estimated Wastewater Salt Loads

Constituent	LOCSD Avg Drinking Water Contribution (lb/day)	LOCSD Avg User Contribution[1] (lb/day)	LOCSD Avg Total Contribution (lb/day)	Total Avg WWTP Load (lb/day)	WWTP Concentration (mg/L)	WWTP Effluent Permit Limit[2] (mg/L)
TDS	648	101	749	6,303	949	1,500
Sodium	51	81	132	1,147	173	100
Chloride	44	97	140	1,455	219	150

Notes:
Abbreviations: lb/day = pounds per day; mg/L = milligrams per liter; avg = average
(1) Assumed same concentrations contributed by users in Solvang service area.
(2) 25-month rolling median effluent permit limit provided.

FINDINGS

Wastewater Data Analysis and Discussion

The influent wastewater flows and concentrations from Table 1 were input into the biological model developed by Carollo using BioWin modeling software. An diagram of the model configuration is included in Figure 1 on the following page. The model reflects the future treatment processes at the WWTP following the upcoming Phase 2 Upgrades project that is meant to address treatment deficiencies at the plant, as discussed below.

Currently, the plant is equipped with sequencing batch reactors (SBRs) that carry out biological treatment of the wastewater. New effluent permit limits imposed by regulators have caused the plant to struggle to treat all incoming flow while also complying with the effluent limits, and this is largely due to the operation of the SBRs.

The Phase 2 Upgrades project will include reconfiguring the existing SBRs to operate as flow through aeration basins, a process that allows more flow to be treated while also removing enough nitrogen to comply with effluent limits. The Phase 2 project will also add secondary clarifiers in order to further remove solids while contributing to the successful biological treatment of nitrogen. The Phase 2 Upgrades Project is currently entering the preliminary design phase and construction is anticipated to be completed in April 2028.

The model was run at the worst-case condition, using ADMMF and average wastewater concentrations to simulate the typical highest wastewater loads on the WWTP. The model results for BOD_5, TSS, and total nitrogen (TN) are summarized in Table 3 alongside the Solvang WWTP permit limits for comparison.

Table 4 Solvang WWTP Effluent Concentrations

Constituent	WWTP Effluent Permit Limit (mg/L)	Modelled Effluent Concentration (mg/L)
BOD_5(1)	30	2.4
TSS(1)	20	4.2
TN(2)	10	8.8

Notes:
Abbreviations: mg/L = milligrams per liter
(1) 30-day average effluent permit limit provided.
(2) 25-month rolling median effluent permit limit provided.

As can be seen from Table 4, even at worst-case maximum month wastewater loading, the future planned WWTP is able to effectively meet effluent permit limits while accepting full Phase 3 buildout ADMMF from LOCSD. This will only be possible, however, after the WWTP Phase 2 Upgrades project is constructed.

The Solvang WWTP is rated to treat 1.5 mgd of influent wastewater flow. Presently, however, the WWTP struggles to meet the effluent limits at current flows due to process limitations that the Phase 2 project is intended to address, and it is considered highly unlikely that the WWTP in its current state would continue to meet permit limits with higher flows from LOCSD.

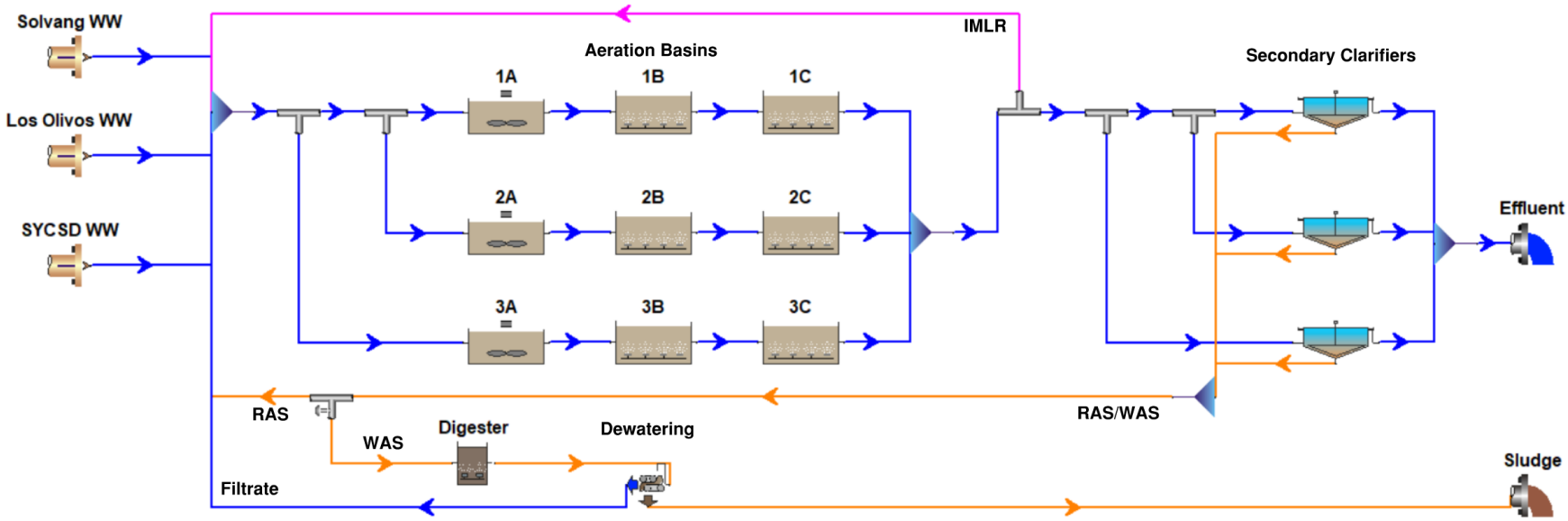


Figure 1 BioWin Model Diagram

Salt Data Analysis and Discussion

As shown previously in Table 2, the average background concentrations of TDS, sodium, and chloride in the LOCSD's drinking water are lower than those in the City of Solvang's blended drinking water, but still contribute to the salt load at the WWTP in addition to the estimated user contribution. Since salt is not removed at the WWTP, it simply passes through and exits with the WWTP effluent. Table 2 shows that the estimated salt load, including that from LOCSD, will violate the effluent permit limits at the WWTP.

This is an issue that has been ongoing for the City of Solvang, even before the permit limits were updated. Due to the hardness of Solvang's drinking water supply, many residents use automatic water softeners (AWS) in their homes to soften their water before consumption. These AWS units discharge salt into the sewer every time they regenerate, which Carollo believes is a significant source of TDS, sodium, and chloride in Solvang's wastewater. The City of Solvang currently has a ban on the use of commercial AWS units but does not have any restrictions on residential use.

As discussed previously, the RWQCB has updated Solvang's permit for these constituents to require more restrictive limits which the WWTP is unable to meet. Solvang has contracted with Carollo to develop a compliance plan to provide to the RWQCB that will outline several options for compliance with the salt permit limits at the WWTP. The first option being considered is not enact a ban or rebate program on residential AWS systems in an effort to eliminate them within Solvang city limits. While this likely won't solve the salt issue entirely, Carollo hopes that it will appease the regulators by demonstrating that Solvang is attempting to address the problem.

Summary and Recommendations

After analyzing estimated wastewater data and drinking water data from the LOCSD, Carollo has concluded that the Solvang WWTP will be able to receive Phase III LOCSD wastewater flows in the future. The addition of LOCSD wastewater will not affect the ability of the WWTP to meet its effluent permit limits, and the flow rate will not cause the WWTP to exceed its rated capacity. These conditions were checked at max-month flow and loading scenario, which is a conservative scenario. Additionally, Carollo does not foresee the background concentrations of TDS, sodium, or chloride in the LOCSD's drinking water as negatively affecting the WWTP's ability to meet permit limits for these constituents.

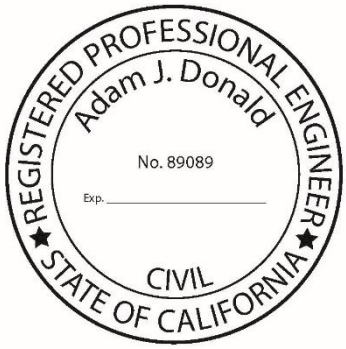
However, Carollo does not recommend that the LOCSD wastewater flows be connected to the Solvang WWTP until after completion of the Phase 2 Upgrades Project at the plant. This will allow the plant to be able to effectively receive and treat the additional flows from LOCSD and will also allow the LOCSD the time necessary to construct a new sewer collection system and connect it to the Solvang WWTP.

The Phase 2 Upgrades Project is currently underway as it is entering preliminary design. Construction of the project is anticipated to be completed in April 2028, which is the earliest that the Solvang WWTP would be able to receive wastewater flow from LOCSD.

Additionally, Carollo recommends that LOCSD implement an AWS ban or rebate program to eliminate AWS systems within its service area. Carollo believes this is a necessary step to comply with WWTP permit limits and appease the RWQCB, as discussed previously, and it is a step currently being pursued by the City of Solvang in its service area.

DRAFT Technical Memorandum

Date:	10/7/2024
To:	Guy Savage, General Manager
CC:	Doug Pike, PE
Prepared By:	Adam Donald, PE
Reviewed By:	Joshua Reynolds, PE
Project:	2582-11920 Solvang Wastewater Treatment Plant and Infrastructure Analysis
Subject:	Los Olivos CSD Flow Impacts on Solvang Wastewater Treatment Plant



1.0 Introduction

In June 2024, Los Olivos Community Services District (Los Olivos) contracted with Water Systems Consulting (WSC) to evaluate the impacts of adding the District's wastewater to the City of Solvang's collection system for treatment at the City of Solvang's (Solvang's) wastewater treatment plant. Los Olivos currently treats their wastewater through septic systems but there is mutual interest in having Solvang treat Los Olivos's wastewater. The goal of this analysis is to understand what capacity upgrades would be required in Solvang's collection system to allow Los Olivos to have their wastewater treated by Solvang.

This analysis utilized the Solvang's collection system hydraulic model. WSC developed and calibrated this model in 2022 as part of Solvang's Sewer Master Plan. For the purposes of this analysis, the model was assumed to be calibrated and that no major infrastructure changes have occurred in Solvang's collection system since the completion of Solvang's Sewer Master Plan.

2.0 Los Olivos CSD Loading

2.1 Loading Estimate

Since Los Olivos currently treats their wastewater using septic systems, there is no metering data to represent their current wastewater loading. In January 2022, Stantec Consulting Services, Inc. (Stantec) prepared the Wastewater Collection and Treatment Basis of Design Report to provide design criteria for a wastewater collection and reclamation system and treatment plant to serve Los Olivos. These design criteria represent the best estimation of

existing and buildout flows and loading that would be conveyed to the Solvang's wastewater treatment plant and is shown in Table 2-1. Stantec estimated the peak hour wet weather flow (PHWWF) has a peaking factor of 4.0 relative to the average dry weather flow. This is consistent with what was observed within Solvang's collection system.

Table 2-1: Los Olivos Flow Projections, Prepared by Stantec

Development Condition Number	Development Condition	Average Dry Weather Flow (gpd[1])	Peak Hour Flow (gpd[1])
1	Existing (Phase I Residential and Commercial)	43,800	175,200
2	Residential Buildout (Phase I+II)	54,500	218,000
3	Overall Buildout (Phase I+II+III)	117,752	471,008
4	Buildout + Inflow (Phase I+II+III+ADU)	120,400	481,600

[1]gpd = gallons per day

For the purposes of loading the hydraulic model, each development condition (as shown in Table 2-1) was added to the appropriate model scenario as a point load at Solvang manhole MD-114, which is located near Sunny Fields Park and is assumed to be the point of connection for a Los Olivos wastewater pipeline. A peaking factor of 4.0 was applied to the average dry weather flow in Table 2-1 to evaluate the peak hour wet weather flow scenarios for existing and buildout development conditions.

2.2 Sensitivity Analysis Loading

Los Olivos hired Regen AEC, PLLC (Regen) to prepare a Basis of Design Report looking at alternative collection system configurations that utilized both gravity sewer and pressurized effluent sewer to serve Los Olivos. The Regen report was completed in May 2024. The Regen analysis utilized pressurized effluent sewers[1], which tend to have lower infiltration and inflow than gravity sewers since any infiltration or inflow must overcome the pressure in the pipeline to enter the system. This assumption resulted in wastewater flows prepared by Regen being lower than that used in the Stantec analysis. However, the flow projections prepared by Stantec were used for the analysis of impacts to Solvang's collection system (this Technical Memorandum)

[1] Pressurized effluent sewers utilize grinder pumps at each individual user's location to pump sewage into a small diameter force main. The pumped flow allows the sewers to be smaller diameter and at a lower depth of cover than a gravity system but require ongoing pumping costs.

since the Stantec flow projections are more conservative. However, the Regen analysis flow projections were utilized in a sensitivity analysis to determine how sensitive the recommended projects (Section 4.0) are to variable wastewater flow projections.

The Regen analysis looked at four options for providing wastewater collection service to Los Olivos. These options are summarized in Table 2-2. The peak hour flows of each scenario were evaluated with Solvang's existing loading to perform a sensitivity analysis. The results of the sensitivity analysis are provided in Section 3.2.6.

Table 2-2: Regen Analysis Loading

Option	Description	Peak Hour Flow (gpm[1])	Peak Hour Flow (gpd[2])
A	Gravity sewer for collection of wastewater within Zones 1 & 2 (commercial) and effluent sewer within Zones 3, 4, 5, & 6.	308	443,520
B	Effluent sewer in all zones.	134	192,960
C	Gravity sewer for collection of wastewater within Zones 1 & 2 (commercial) and effluent sewer within Zones 3, 4, & 5, and advanced onsite systems in Zone 6.	287	413,280
D	Effluent sewer in Zones 1, 2, 3, 4, & 5 and advanced onsite systems in Zone 6.	113	162,720

[1]gpm = gallons per minute
[2]gpd = gallons per day

3.0 Hydraulic Modeling Results

This section establishes the evaluation criteria and summarizes the results of the hydraulic modeling effort. The hydraulic modeling effort focused on the flow projections from the Stantec basis of design report as discussed in Section 2.1. No pipe segments were identified as over-capacity under average annual flow conditions; therefore, the results below are focused on PHWWF conditions.

3.1 Evaluation Criteria

To evaluate capacity constraints, the evaluation criteria from Solvang's Sewer Master Plan were utilized to provide a consistent metric in determining when a pipe is undersized. These criteria are presented in Table 3-1 and Table 3-2.

Table 3-1: Pipeline Evaluation Criteria

Pipe Size	Maximum Depth/Diameter (d/D)
10" diameter and smaller	0.50
Greater than 10" diameter	0.75

Table 3-2: Pump Evaluation Criteria

Parameter	Criteria
Pump Capacity	Capacity should be sufficient to meet PHWWF, with one pump available as a backup.

SewerGEMS has multiple calculations for d/D within its results. For the purposes of this analysis, the "dnormal/D" value was utilized. This parameter calculates the normal depth in the pipe under steady flow conditions and does not consider backwater flow in the pipe.

3.2 Pipeline Capacity Evaluation

The hydraulic model was used in conjunction with the gravity pipeline evaluation criteria, described in Table 3-1, to identify capacity deficiencies in the collection system under the various flow scenarios. Modeling flow scenarios are shown in Table 3-3. No pipe segments were identified as overcapacity under the average annual flow scenarios; therefore, the results below are focused on PHWWF scenarios.

For the purposes of this memo, the results are focused solely on the pipes that are impacted by the addition of Los Olivos wastewater flows. These impacted mains are highlighted in Figure 3-1.

Table 3-3: Modeling Flow Scenarios

Scenario	Description
Baseline Existing Average	Existing average annual flow for Solvang only
Baseline Existing PHWWF	Existing peak hour wet weather flow for Solvang only
Existing Average	Existing average annual flow for Solvang with the addition of Los Olivos existing average dry weather flows (Development Condition 1)
Existing PHWWF	Existing peak wet weather flow for Solvang with the addition of Los Olivos existing peak wet weather flows (Development Condition 1)
Baseline Buildout Average	Buildout + infill average annual flow for Solvang only
Baseline Buildout PHWWF	Buildout + infill peak hour wet weather flow for Solvang only
Buildout Average	Buildout average annual flow for Solvang with the addition of Los Olivos buildout average dry weather flows (Development Condition 3)
Buildout PHWFF	Buildout peak wet weather flow for Solvang with the addition of Los Olivos buildout peak wet weather flows (Development Condition 3)
Buildout + Infill Average	Buildout + infill average annual flow for Solvang with the addition of Los Olivos average dry weather buildout + infill flows (Development Condition 4)
Buildout + Infill PHWWF	Buildout + infill peak wet weather flow for Solvang with the addition of Los Olivos buildout + infill peak wet weather flows (Development Condition 4)

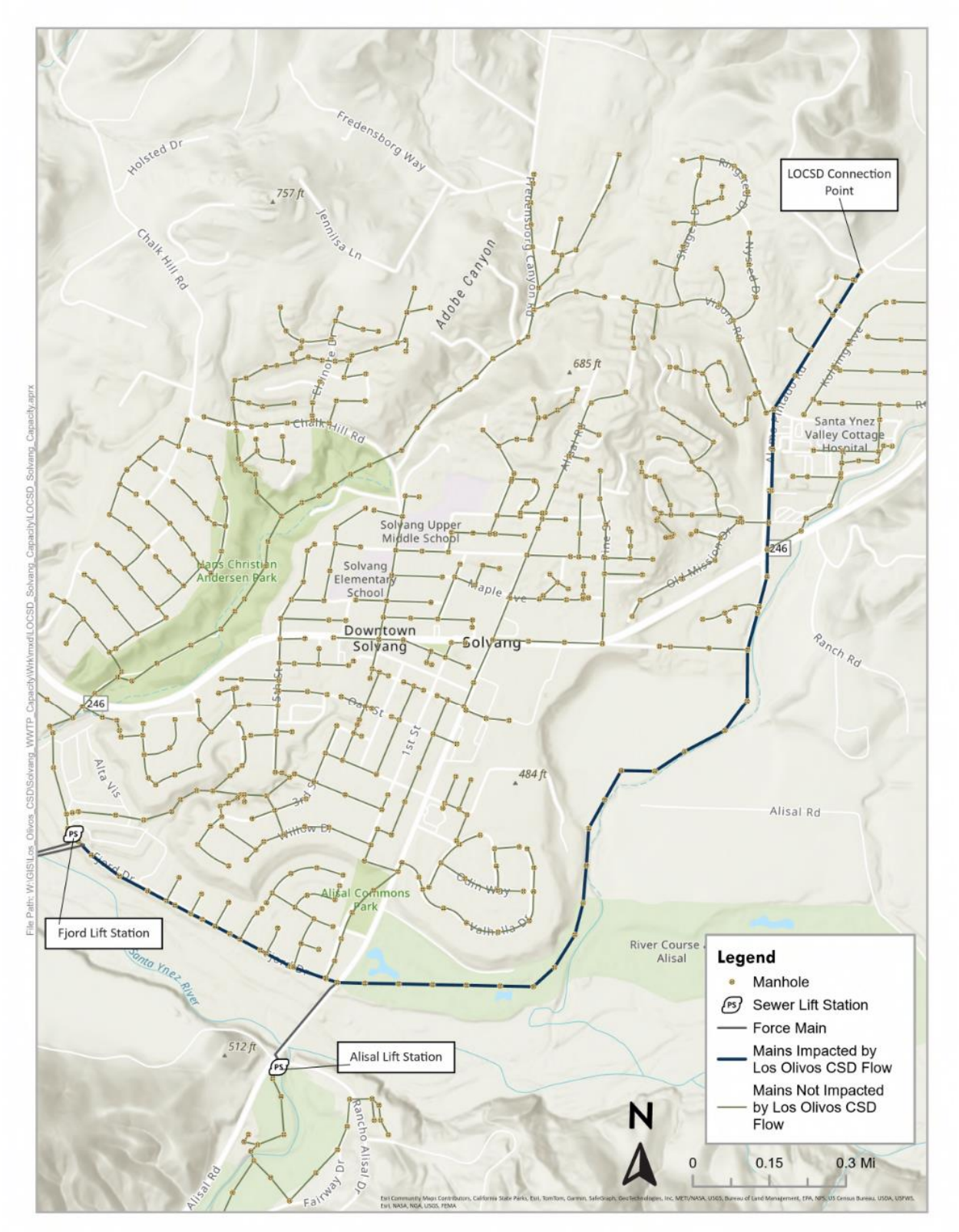


Figure 3-1: Mains impacted by Los Olivos's flows

3.2.1 Baseline Existing Peak Hour Wet Weather Flow

The baseline existing PHWWF scenario identifies the capacity constrained mains within Solvang's current collection system amongst the mains that would be impacted by the addition of Los Olivos's wastewater to Solvang's collection system. This scenario identified nine mains (0.32 miles) along Fjord Drive that exceed the capacity criteria under existing conditions (Figure 3-2). These five mains are triggered for two primary reasons: (1) they have low slopes and (2) they only exceed the capacity criteria when the Alisal Force Main is actively pumping and discharging into the collection system. Solvang's master plan recommended these mains be surveyed to determine if the slopes are actually as low as Solvang's GIS indicated and that flow be monitored to determine if the peak flows are actually triggering these conditions.

3.2.2 Existing Peak Hour Wet Weather Flow

Analysis of Solvang's collection system under existing PHWWF conditions with the addition of Los Olivos's wastewater flow identified 11 pipe segments (0.43 miles) that exceed the capacity criteria. A map showing these capacity constrained pipe segments is shown in Figure 3-3. The pipes impacted by Los Olivos loading are primarily located along Fjord Drive. The additional flow above the baseline Solvang flow causes these low slope mains to exceed the capacity criteria. There is also one main exceeding capacity criteria near the proposed connection point. This area consists of end of the line mains that were not anticipating future flows and the smaller size results in a capacity constraint. A summary of the pipe segments that exceeded the capacity criteria is contained in Appendix A.

3.2.3 Baseline Buildout Peak Hour Wet Weather Flow

The baseline buildout PHWWF scenario identifies the capacity constrained mains within Solvang's collection system under full buildout conditions amongst the mains that would be impacted by the addition of Los Olivos's wastewater to Solvang's collection system. This baseline scenario assumes Solvang is fully built out including the addition of accessory dwelling units (ADUs). The baseline buildout PHWWF scenario identified nine pipe segments (0.32 miles) that exceeded the capacity criteria, all along Fjord drive. A map showing these capacity constrained pipe segments is shown in Figure 3-4. As with the existing PHWWF baseline scenario, these nine mains are triggered for two primary reasons: (1) they have low slopes and (2) they only exceed the capacity criteria when the Alisal Force Main is actively pumping and discharging into the collection system. Solvang's master plan recommended these mains be surveyed to determine if the slopes are actually as low as Solvang's GIS indicated and that flow be monitored to determine if the peak flows are actually triggering these conditions.

3.2.4 Buildout Peak Hour Wet Weather Flow

The buildout PHWWF analysis used the overall buildout flow from Table 2-1 as it is more conservative than the residential buildout flow. Analysis of the collection system under buildout PHWWF conditions identified 19 pipe segments (0.87 miles) that exceed the capacity criteria. A

map showing pipe segments with capacity constraints under buildout PHWWF conditions is shown in Figure 3-5. The pipes impacted by Los Olivos loading are primarily located near the proposed connection point as these are end of the line mains that were not anticipating future flows as well a section of trunk main that was identified as potentially capacity constrained in Solvang's Sewer Master Plan. Adding Los Olivos's loading to this trunk main, further creates a capacity concern within the trunk. A summary of the pipe segments that exceeded the capacity criteria is contained in Appendix A.

3.2.5 Buildout + Infill Peak Hour Wet Weather Flow

Analysis of the collection system under buildout + infill PHWWF conditions identified 19 pipe segments (0.87 miles) that exceed the capacity criteria. A map showing pipe segments with capacity constraints under buildout + infill PHWWF conditions is shown in Figure 3-6. The pipes impacted by Los Olivos loading are primarily located near the proposed connection point as these are end of the line mains that were not anticipating future flows as well a section of trunk main that was identified as potentially capacity constrained in Solvang's Sewer Master Plan. Adding the Los Olivos's loading to this trunk main further creates a capacity concern within the trunk. A summary of the pipe segments that exceeded the capacity criteria is contained in Appendix A.

3.2.6 Sensitivity Analysis

A sensitivity analysis was performed in the hydraulic model to evaluate the lower peak wet weather flows estimated in the Regen Basis of Design Report (Section 2.2). Each Regen loading scenario was added at Manhole MD-114 in the model and evaluated with Solvang's existing flows. The Regen results are listed below and generally aligned with the Stantec loading scenarios used in this analysis.

- Regen Option A identified the same over capacity pipes as the Buildout + Infill Peak Wet Weather Flow scenario.
- Regen Option B identified the same over capacity pipes as the Existing Peak Wet Weather Flow scenario.
- Regen Option C identified the same over capacity pipes as the Buildout + Infill Peak Wet Weather Flow scenario with the exception of mains SWP0126 and SWP0110.
- Regen Option D identified the same over capacity pipes as the Existing Peak Wet Weather Flow Scenario.

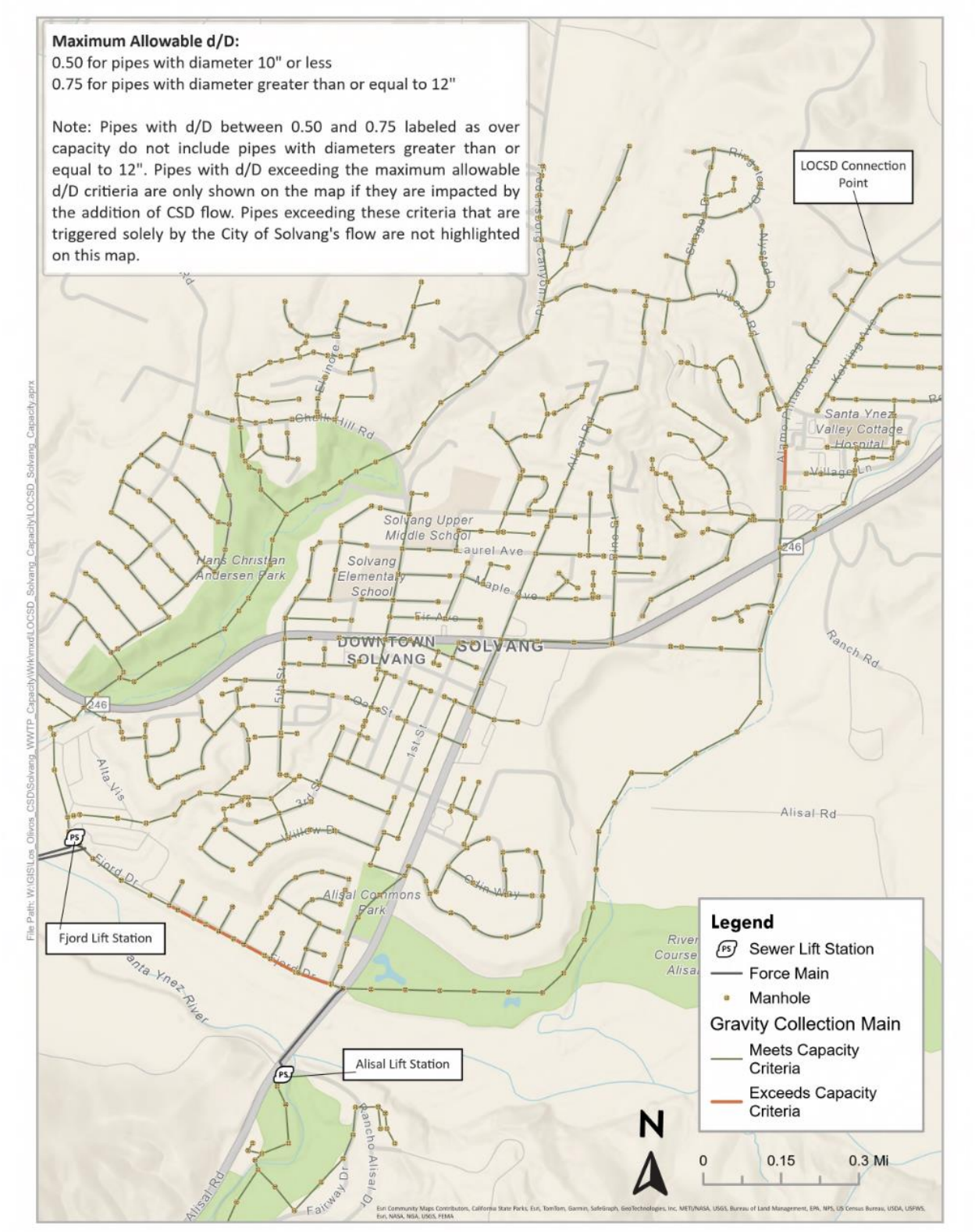


Figure 3-2: Baseline (Solvang Only) Existing PHWWF Capacity Constraints

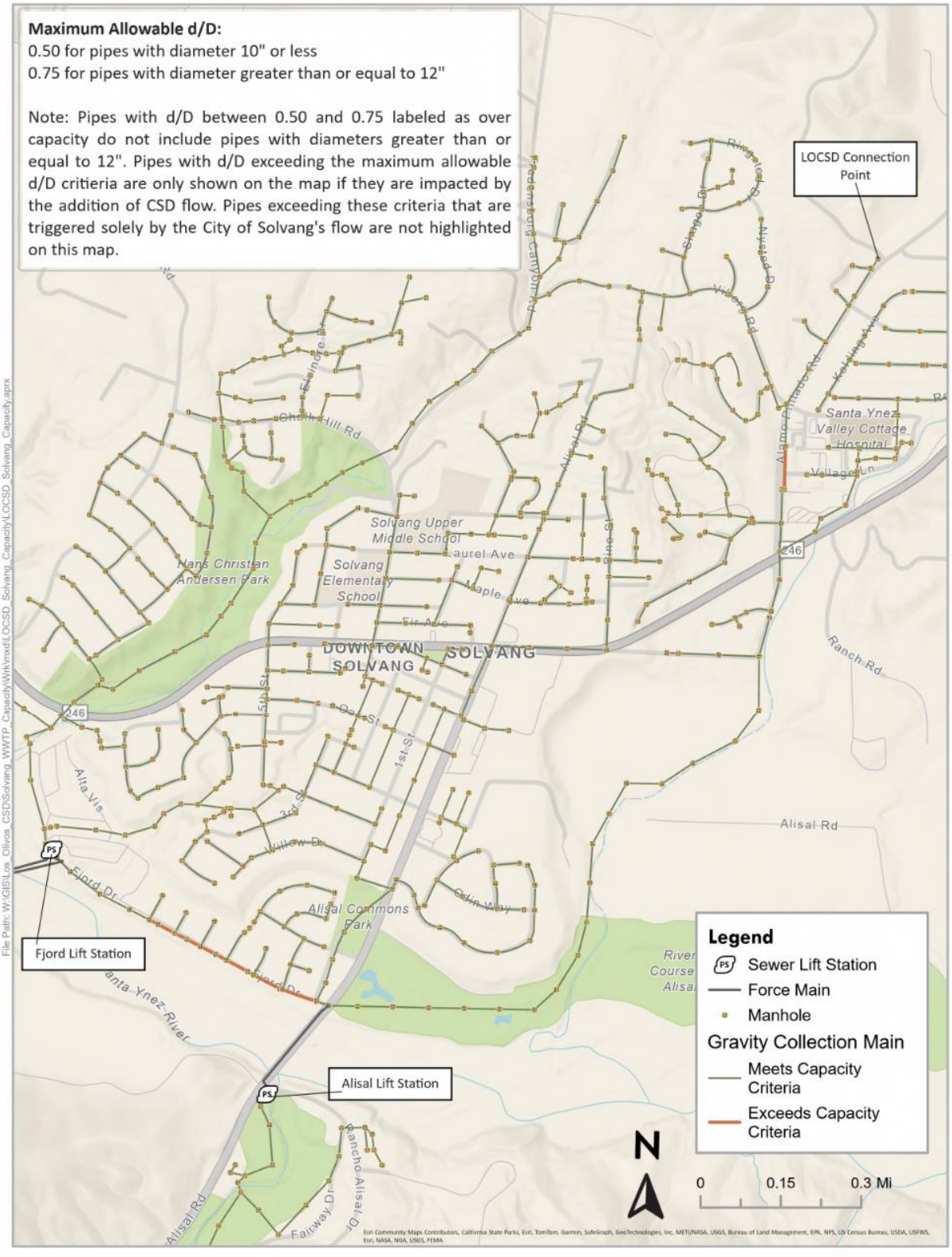


Figure 3-3: Existing PHWWF Capacity Constraints

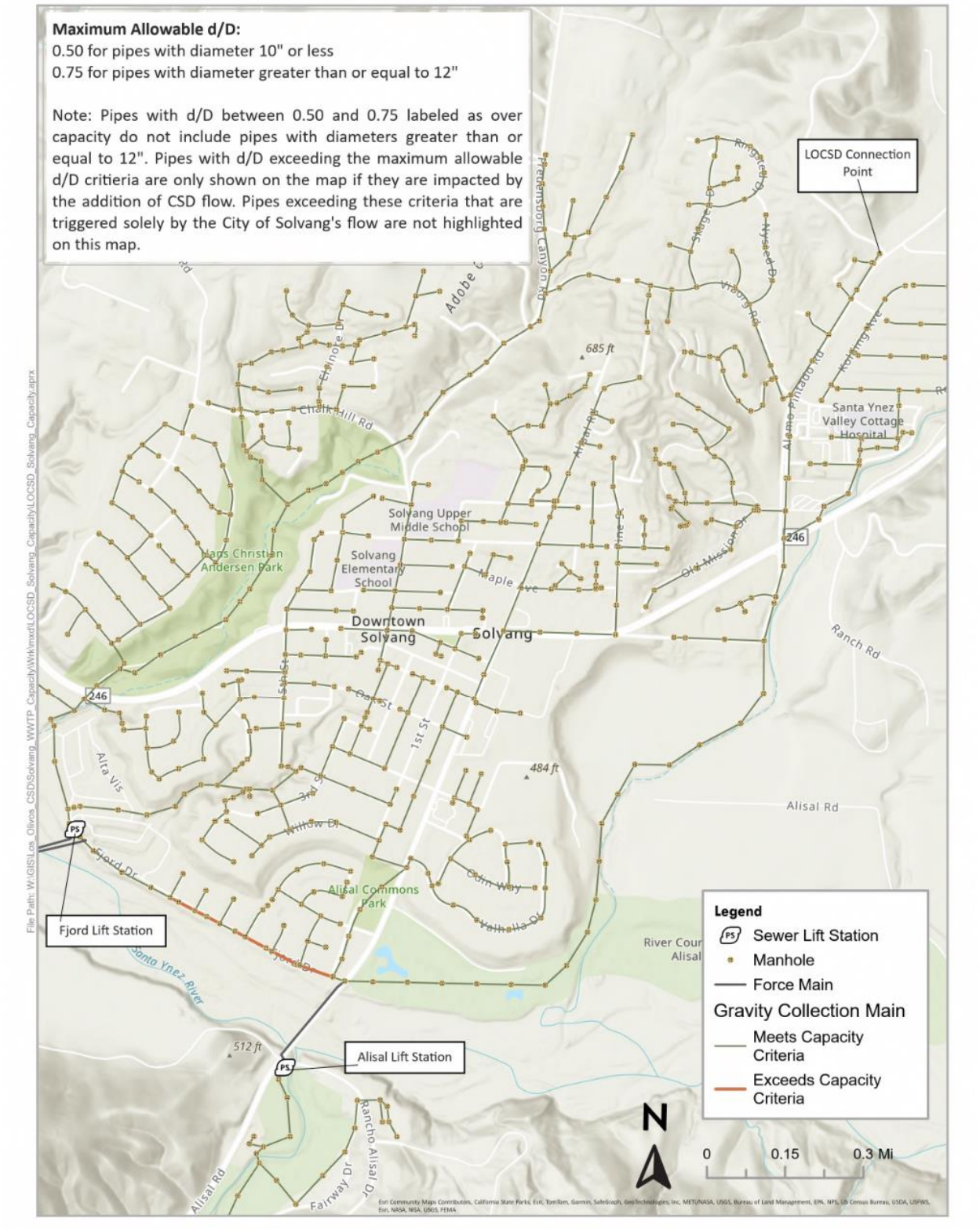


Figure 3-4: Baseline (Solvang Only) Buildout PHWWF Capacity Constraints

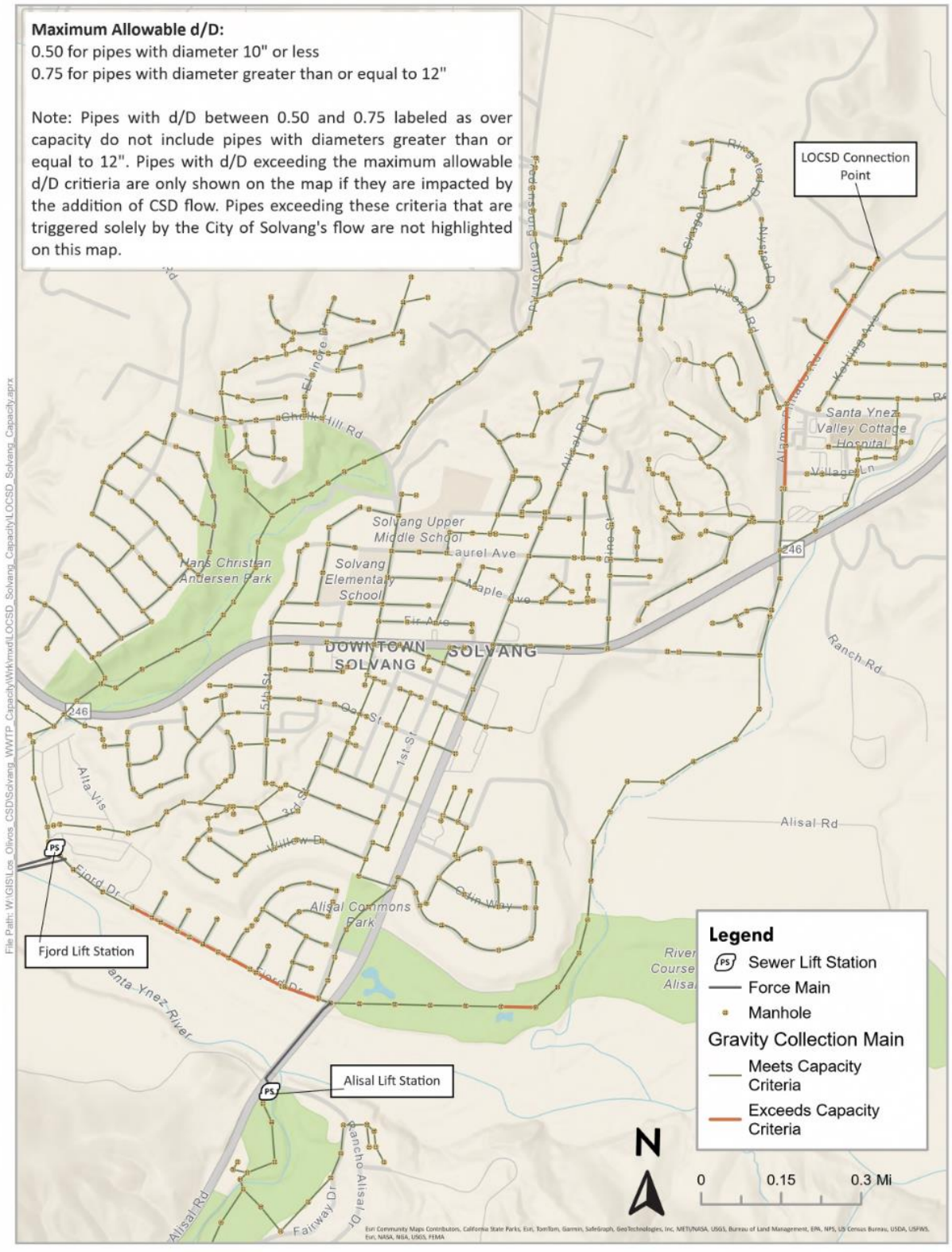


Figure 3-5: Buildout PHWWF Capacity Constraints

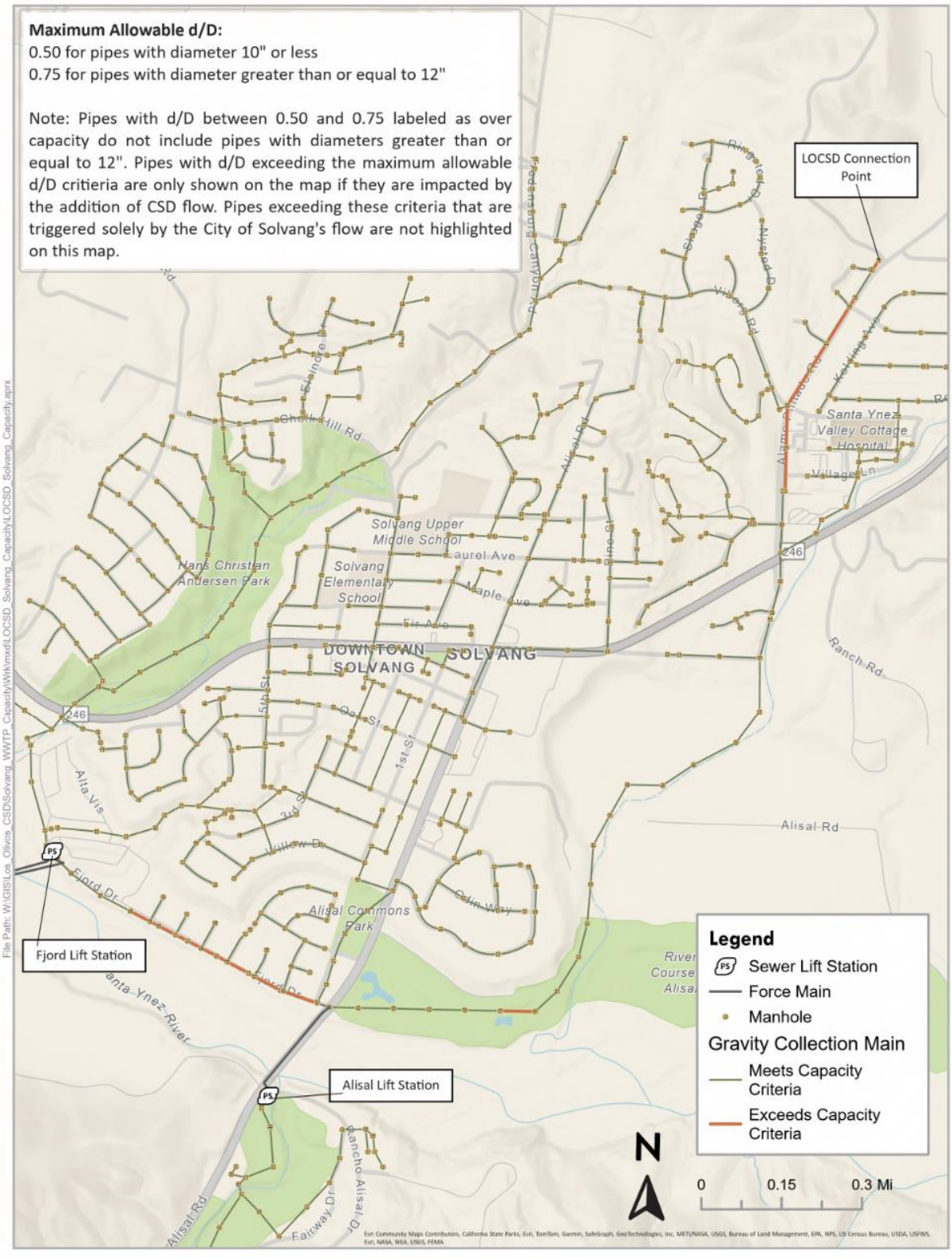


Figure 3-6: Buildout + Infill PHWWF Capacity Constraints

3.3 Fjord Lift Station Capacity Evaluation

The capacity of the Fjord Lift Station was also assessed based on the various PHWWF scenarios. PHWWF inflow rates were compared to the lift station's reliable capacity. Results of the lift station capacity evaluation are presented in Table 3-4. As shown, the Fjord Lift station has sufficient capacity to accommodate existing PHWWF, buildout PHWWF, and buildout + infill PHWWF. It should be noted that Santa Ynez Community Services District (SYCSD) owns 20% of the capacity (0.30 MGD) at Solvang's 1.5 MGD wastewater treatment plant but operational restrictions can limit their flow to 0.24 MGD. All SYCSD flow is discharged at the Fjord Lift Station prior to being pumped to the treatment plant. Even if SYCSD were to discharge their full 20% of the reliable capacity (777,600 gpd) under PHWWF conditions, the reliable capacity of Fjord Lift Station is sufficient to meet the pumping needs of Solvang and Los Olivos under existing and future buildout scenarios. No capacity upgrades are required at the Fjord Lift Station at this time. However, Solvang's Sewer Master Plan recommended upgrades at the Fjord Lift Station to address needed structural improvements and ultimately recommends the pumps at the lift station be replaced by 2032.

A sensitivity analysis was performed at Fjord Lift Station with the various Regen development conditions. Since the Regen development conditions have less overall flow than the scenarios used in this analysis, none of the Regen development conditions triggered any upgrades at the Fjord Lift Station.

Table 3-4: Fjord Lift Station Capacity and Demand Summary

Lift Station Condition	Reliable Capacity (gpm)[1]	Reliable Capacity (gpd)	Existing PHWWF (gpd)	Residential Buildout PHWWF (gpd)	Overall Buildout PHWWF (gpd)	Buildout + Infill PHWWF (gpd)	Future Capacity Available
Fjord Lift Station[2]	2,700	3,888,000	2,275,953	2,306,813	2,306,813	2,362,659	Yes
Fjord Lift Station with Santa Ynez CSD Flow[3]	2,700	3,888,000	3,053,553	3,084,413	3,084,413	3,140,259	Yes
Fjord Lift Station with Santa Ynez and Los Olivos CSD Flow[3]	2,700	3,888,000	3,228,746	3,302,413	3,555,421	3,621,853	Yes

1. Lift station reliable capacity is based on calculated lift station pump capacity with one pump in reserve.
2. Values shown do not include flows from the Santa Ynez Community Services District that are discharged into Fjord Lift Station.
3. Values shown assume Santa Ynez Community Services District is using 20% of the Fjord Lift Station's reliable capacity (777,600 gpd).

gpm = gallons per minute

gpd = gallons per day

4.0 Recommended Projects

The following sections provide an overview of the cost opinion assumptions and the recommended projects needed in Solvang's collection system in order to accommodate Los Olivos discharging their wastewater into Solvang's collection system.

4.1 Cost Opinion Basis and Assumptions

The cost opinions (estimates) in this analysis have been prepared in conformance with industry practices as planning level cost opinions and are classified as Class 5 Conceptual Report Classification of Opinion of Probable Construction Costs as developed by AACE International. The purpose of a Class 5 Estimate is to provide a conceptual level of effort that is expected to range in accuracy from -25% to +50%. A Class 5 Estimate also includes an appropriate level of contingency so that it can be used in future planning and feasibility studies. The design concepts and associated costs presented in this analysis are conceptual in nature due to the limited design information that is available at this stage of project planning. These cost estimates have been developed using a combination of data from RS Means CostWorks® and recent bids, experience with similar projects, current and foreseeable regulatory requirements, and an understanding of necessary project components. As the projects progress, the designs and associated costs could vary significantly from the project components identified in this analysis.

The recommended projects and these cost opinions are based on the following assumptions:

1. The scope of this analysis was limited to addressing pipeline capacity constraints through upsizing the existing mains. All prices are based on upsizing the existing mains. In some instances, where feasible, parallel mains may provide a better solution to address the capacity constraints. This should be evaluated during the design process.
2. For projects that have applicable cost data available in the RS Means Costworks® (e.g. pipeline installation), cost data for Quarter 4 of 2024, adjusted for Santa Barbara County, is used. Material prices were further adjusted in some cases to provide estimates that align more closely with actual local bid results.
3. For projects where RS Means CostWorks® data is not available, cost opinions are generally derived from bid prices from similar projects, vendor quotes, material prices, and labor estimates, with adjustments for inflation, size, complexity, and location.
4. Cost opinions are in 2024 dollars (ENR Construction Cost Index of 13,632.23 for September 2024). When budgeting for future years, appropriate escalation factors should be applied. The past 5-year average increase of the ENR CCI 20 City Average is considered a reasonable factor to use for escalation.
5. Cost opinions are "planning-level" and may not fully account for site-specific conditions that will affect the actual costs, such as soil conditions and utility conflicts.
6. Construction Costs include the following mark-up items:

a. 25% construction contingency based on construction sub-total.

7. Total Project Costs include the following allowances:
    a. 15% of Construction Total for project development, including administration, alternatives analysis, planning, engineering, surveying, etc.
    b. 10% of Construction Total for construction phase support services, including administration, inspection, materials testing, office engineering, construction administration, etc.

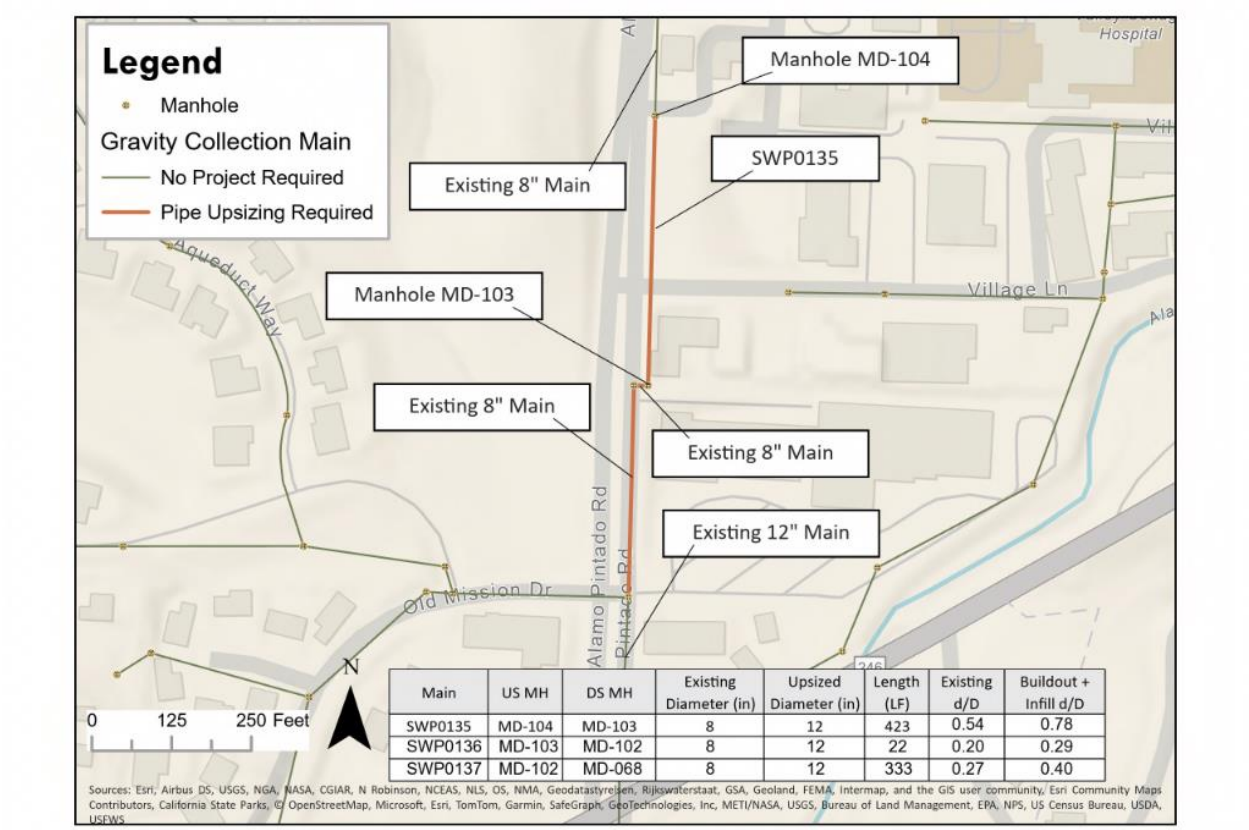
4.2 Gravity Collection Mains

The modeling results (Section 0) identified 11 pipe segments under existing conditions, 19 pipe segments under buildout conditions, and 19 pipe segments under buildout + infill conditions that have capacity constraints and are impacted by the addition of Los Olivos's wastewater flow. Detailed descriptions of recommended projects based on these results are provided in the following subsections.

4.2.1 Alamo Pintado Phase 1

The existing 8-inch sewer main (SWP0135) along Alamo Pintado Road near Village Lane is capacity deficient under existing, buildout, and buildout + infill peak wet weather loading. The hydraulic model indicates that upsizing this main to a 10-inch main addresses the existing deficiency but is insufficient for handling buildout flows. To fully accommodate buildout flows, this main must be upsized to a 12-inch pipe. The two downstream mains (SWP0136 and SWP0137) are both 8-inch vitrified clay pipes that are recommended to be upsized to 12-inch mains for continuity.

The recommended project consists of removing the existing 8-inch sewer mains and constructing 778 linear feet of 12-inch PVC sewer in its place. The project extents are shown in Figure 4-1. Estimated project costs are shown in Table 4-1. A detailed cost opinion is provided in Appendix B.



Main	US MH	DS MH	Existing Diameter (in)	Upsized Diameter (in)	Length (LF)	Existing d/D	Buildout + Infill d/D
SWP0135	MD-104	MD-103	8	12	423	0.54	0.78
SWP0136	MD-103	MD-102	8	12	22	0.20	0.29
SWP0137	MD-102	MD-068	8	12	333	0.27	0.40

Figure 4-1: Alamo Pintado Phase 1 Map

Table 4-1: Estimated Costs for Alamo Pintado Phase 1

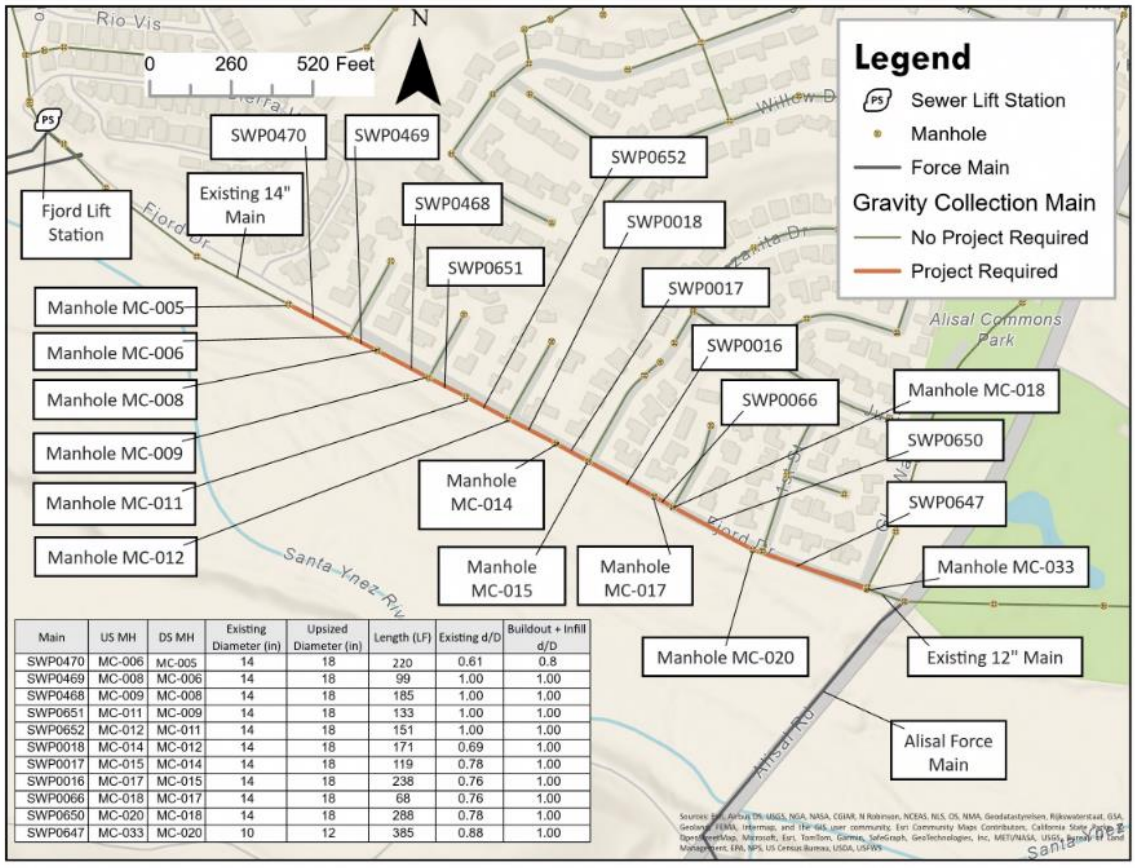
Item	Cost
Base Construction Cost	$176,500
Construction Contingency (25%)	$44,000
Construction Total	$220,500
Project Development and Implementation (25%)	$55,000
Opinion of Total Project Cost	**$275,500**

4.2.2 Fjord Drive

The existing 14-inch sewer mains between manholes MC-006 and MC-020 and the 10-inch sewer main between manholes MC-020 and MC-03 are capacity deficient under existing, buildout, and buildout + infill peak wet weather loading. Under buildout and buildout + infill peak wet weather loading, the existing 14-inch sewer main between manholes MC-005 and MC-006 is also capacity deficient. The hydraulic model indicates upsizing the 14-inch mains to 18-inch

mains and the 10-inch main to a 12-inch main addresses the capacity deficiencies. The recommended project consists of removing these existing mains and constructing 1,673 linear feet of 18-inch PVC sewer and 385 LF of 12-inch PVC sewer in its place. The project extents are shown in Figure 4-2. Estimated project costs are shown in Table 4-2. A detailed cost opinion is provided in Appendix B.

The stretch of pipe between manhole MC-008 and manhole MD-001 where the Alisal Lift Station discharges into the system was identified as having capacity constraints in Solvang's Sewer Master Plan. The master plan identified the need to survey this area as the pipes in this section consisted of low slopes and seemed to only exceed capacity criteria when the Alisal Lift Station turned on. As an alternative to upsizing the existing piping, WSC also evaluated reconfiguring the Alisal Force Main to discharge directly to Solvang's wastewater treatment plant. Modeling results indicated that this stretch of pipe remains capacity deficient with the addition of the Los Olivos flows even when the flows from the Alisal Force Main are diverted. Therefore, the optimal project for this section of pipe is to upsize the existing alignment.



Main	US MH	DS MH	Existing Diameter (in)	Upsized Diameter (in)	Length (LF)	Existing d/D	Buildout + Infill d/D
SWP0470	MC-006	MC-005	14	18	220	0.61	0.8
SWP0469	MC-008	MC-006	14	18	99	1.00	1.00
SWP0468	MC-009	MC-008	14	18	185	1.00	1.00
SWP0651	MC-011	MC-009	14	18	133	1.00	1.00
SWP0652	MC-012	MC-011	14	18	151	1.00	1.00
SWP0018	MC-014	MC-012	14	18	171	0.69	1.00
SWP0017	MC-015	MC-014	14	18	119	0.78	1.00
SWP0016	MC-017	MC-015	14	18	238	0.76	1.00
SWP0066	MC-018	MC-017	14	18	68	0.76	1.00
SWP0650	MC-020	MC-018	14	18	288	0.78	1.00
SWP0647	MC-033	MC-020	10	12	385	0.88	1.00

Figure 4-2: Fjord Drive Map

Table 4-2: Estimated Costs for Fjord Drive Improvements

Item	Cost
Base Construction Cost	$798,300
Construction Contingency (25%)	$200,000
Construction Total	$998,300
Project Development and Implementation (25%)	$250,000
Opinion of Total Project Cost	**$1,248,300**

4.2.3 River Course Golf Course

The existing 12-inch sewer main between manholes MD-006 and MD-007 runs full (d/D equal to 1) under buildout and buildout + infill peak wet weather loading. The hydraulic model indicates that upsizing this main to a 15-inch main addresses this deficiency.

The recommended project consists of removing the existing 12-inch sewer main (SWP0248) and constructing 344 linear feet of 15-inch PVC sewer in its place. The project extents are shown in Figure 4-3. Estimated project costs are shown in Table 4-3. A detailed cost opinion is provided in Appendix B.

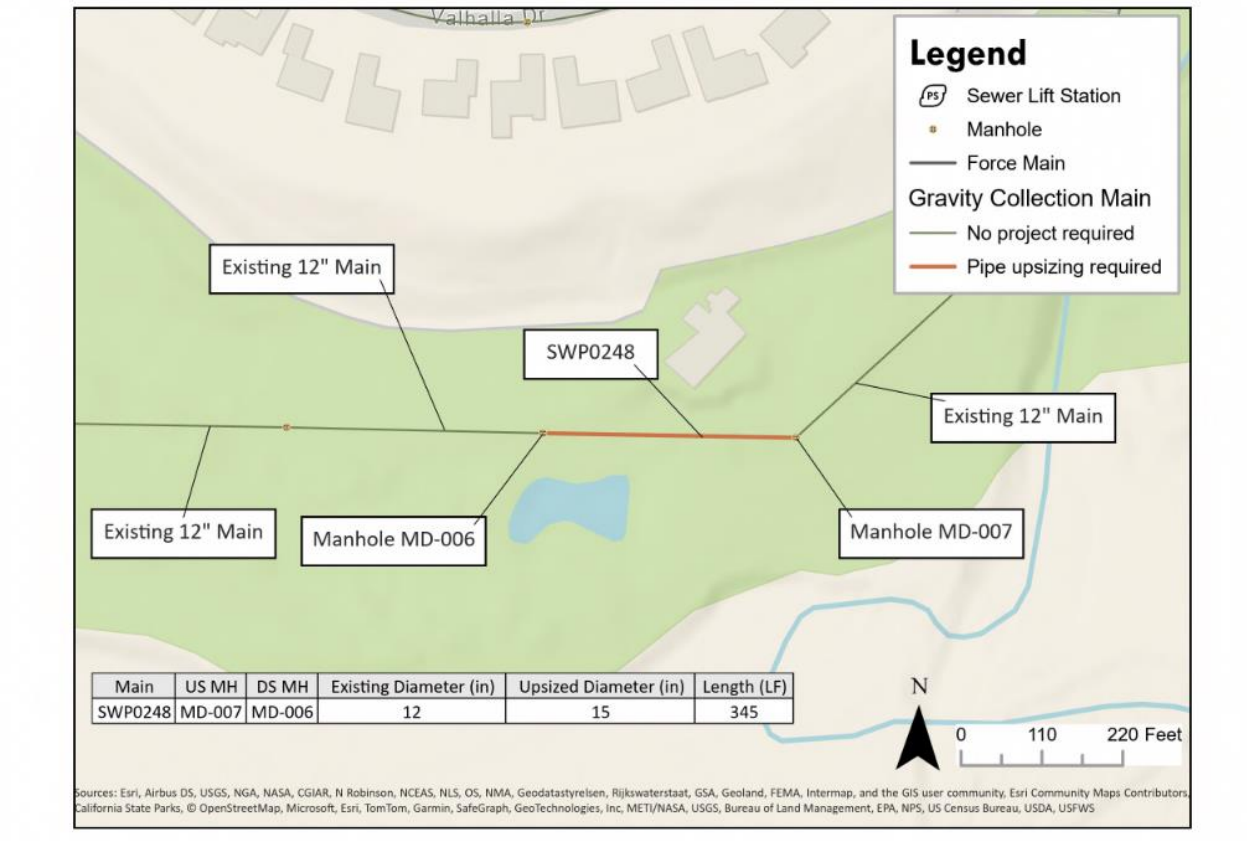


Figure 4-3: River Course Golf Course Map

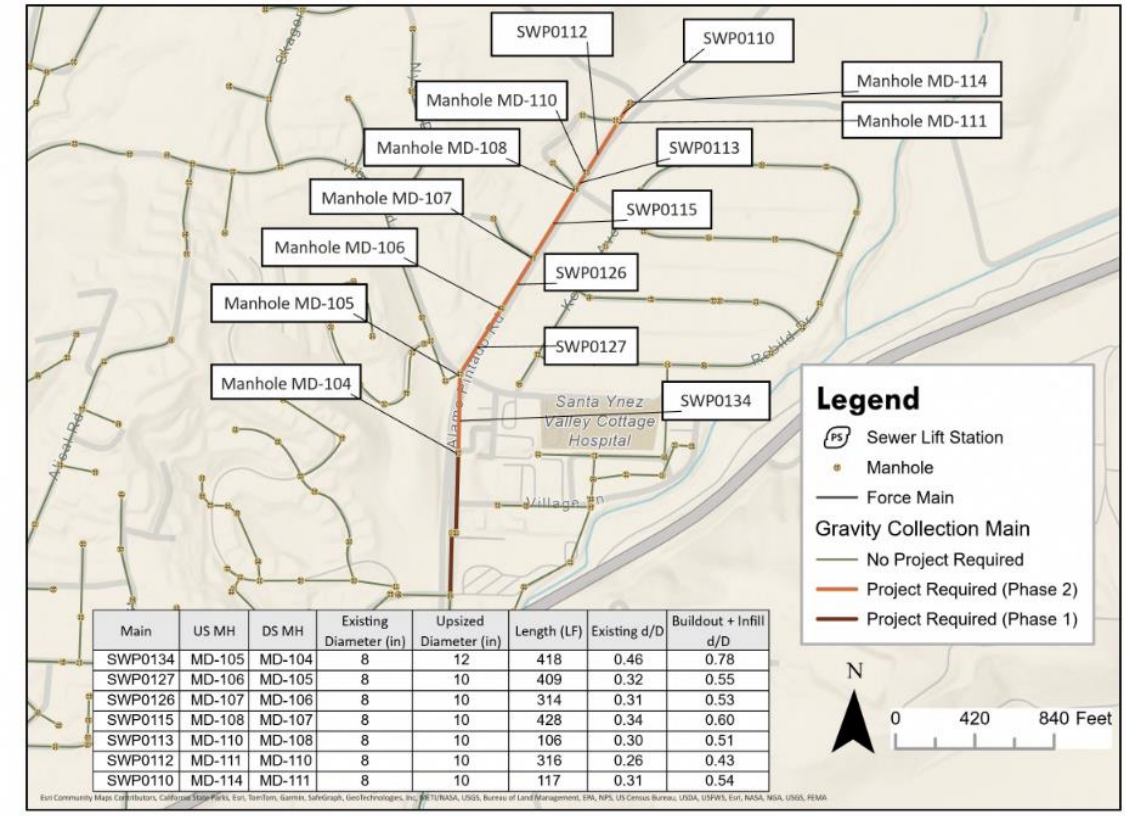
Table 4-3: Estimated Costs for River Course Golf Course

Item	Cost
Base Construction Cost	$88,300
Construction Contingency (25%)	$22,000
Construction Total	$110,300
Project Development and Implementation (25%)	$28,000
Opinion of Total Project Cost	**$138,300**

4.2.4 Alamo Pintado Phase 2

The existing 8-inch sewer mains from manhole MD-068 to manhole MD-114 along Alamo Pintado Road near Village Lane is capacity deficient under buildout and buildout + infill peak wet weather loading. The hydraulic model indicates upsizing these mains to 12-inch and 10-inch mains addresses these deficiencies.

The recommended project consists of removing the existing 8-inch sewer mains and constructing 418 linear feet of 12-inch PVC sewer and 1,691 linear feet of 10-inch PVC sewer in its place. The project extents are shown in **Error! Reference source not found.**. Estimated project costs are shown in Table 4-4. A detailed cost opinion is provided in Appendix B.



Main	US MH	DS MH	Existing Diameter (in)	Upsized Diameter (in)	Length (LF)	Existing d/D	Buildout + Infill d/D
SWP0134	MD-105	MD-104	8	12	418	0.46	0.78
SWP0127	MD-106	MD-105	8	10	409	0.32	0.55
SWP0126	MD-107	MD-106	8	10	314	0.31	0.53
SWP0115	MD-108	MD-107	8	10	428	0.34	0.60
SWP0113	MD-110	MD-108	8	10	106	0.30	0.51
SWP0112	MD-111	MD-110	8	10	316	0.26	0.43
SWP0110	MD-114	MD-111	8	10	117	0.31	0.54

Figure 4-4: Alamo Pintado Phase 2 Map

Table 4-4: Estimated Costs for Alamo Pintado Phase 2

Item	Cost
Base Construction Cost	$690,000
Construction Contingency (25%)	$173,000
Construction Total	$863,000
Project Development and Implementation (25%)	$216,000
Opinion of Total Project Cost	**$1,079,000**

4.3 Sewer Lift Stations

As discussed in Section 3.3, the Fjord Lift Station is anticipated to have sufficient capacity to accommodate Los Olivos's peak wastewater flow with the station's existing firm capacity. While this does not trigger any immediate upgrades, Solvang's Sewer Master Plan identified the need to perform structural upgrades, upgrade the electrical (programmable logic controller (PLC) and modular multilevel converter (MMC)), SCADA system, and install an HVAC system for optimal variable frequency drive operation, and to replace the pumps. The time frame and the cost of these projects from the Sewer Master Plan, escalated to 2024 dollars, are shown in Table 4-5. Should Los Olivos choose to partner with Solvang and send their wastewater into Solvang's collection system, Solvang may require Los Olivos to share in the costs of these upgrades.

Table 4-5: Fjord Lift Station Project Costs

Project	Estimated Start Date Range	Estimated Cost (2024 $)
Lift Station Structural Improvements (Fjord Only) (Sewer Master Plan Project A4)	2024 - 2027	$74,000
Fjord Lift Station Cathodic Protection (Sewer Master Plan Project A5)	2024 -2027	$56,000
Fjord Lift Station Electrical, Instrumentation, and Controls Improvements (Sewer Master Plan Project B1)	2028 - 2032	$401,000
Fjord Lift Station Emergency Storage Evaluation (Sewer Master Plan Project B2)	2028 -2032	$17,000
Fjord Lift Station Pump Upgrades (Sewer Master Plan Project C1)	2033-2042	$384,000

Appendix A Los Olivos Flow Impacted Pipes Exceeding Capacity Criteria

Table A-1: Pipes Exceeding Capacity By Scenario

Pipe ID	Diameter (in)	Length (LF)	Over Capacity Under Baseline Existing PHWWF?	Over Capacity Under Existing PHWWF?	Over Capacity Under Baseline Buildout PHWWF?	Over Capacity Under Buildout PHWWF?	Over Capacity Under Buildout + Infill PHWWF?
SWP0016	14	237.5	Yes	Yes	Yes	Yes	Yes
SWP0017	14	119.4	Yes	Yes	Yes	Yes	Yes
SWP0018	14	171	No	Yes	No	Yes	Yes
SWP0066	14	68.4	Yes	Yes	Yes	Yes	Yes
SWP0110	8	116.8	No	No	No	Yes	Yes
SWP0113	8	106.3	No	No	No	Yes	Yes
SWP0115	8	428.2	No	No	No	Yes	Yes
SWP0126	8	314.2	No	No	No	Yes	Yes
SWP0127	8	409.3	No	No	No	Yes	Yes
SWP0134	8	417.7	No	No	No	Yes	Yes
SWP0135	8	423.2	No	Yes	No	Yes	Yes
SWP0248	12	344.4	No	No	No	Yes	Yes
SWP0468	14	185.3	Yes	Yes	Yes	Yes	Yes
SWP0469	14	99	Yes	Yes	Yes	Yes	Yes
SWP0470	14	219.9	No	No	No	Yes	Yes
SWP0647	10	385.3	Yes	Yes	Yes	Yes	Yes
SWP0650	14	288.2	Yes	Yes	Yes	Yes	Yes
SWP0651	14	133.2	Yes	Yes	Yes	Yes	Yes
SWP0652	14	151.1	Yes	Yes	Yes	Yes	Yes

Table A-2: Pipes Exceeding Capacity d/D Values

Pipe ID	Diameter (in)	Length (LF)	Baseline Existing PHWWF d/D	Existing PHWWF d/D	Baseline Buildout PHWWF d/D	Buildout PHWWF d/D	Buildout + Infill PHWWF d/D
SWP0016	14	237.5	76.2	88.8	78.6	100.0	100.0
SWP0017	14	119.4	77.6	100.0	80.2	100.0	100.0
SWP0018	14	171	68.6	76.3	70.3	100.0	100.0
SWP0066	14	68.4	76.4	89.4	78.8	100.0	100.0
SWP0110	8	116.8	2.6	31.0	2.6	53.5	54.2
SWP0113	8	106.3	6.0	29.7	6.1	50.3	51
SWP0115	8	428.2	8.1	34.2	8.2	58.8	59.7
SWP0126	8	314.2	8.7	31.2	9.0	52.3	53.1
SWP0127	8	409.3	9.4	32.2	9.7	54.3	55.1
SWP0134	8	417.7	25.6	46.0	26.4	75.7	77.7
SWP0135	8	423.2	29.5	53.8	30.7	100.0	100.0
SWP0248	12	344.4	43.2	59.4	45.4	100.0	100.0
SWP0468	14	185.3	100.0	100.0	100.0	100.0	100.0
SWP0469	14	99	100.0	100.0	100.0	100.0	100.0
SWP0470	14	219.9	60.8	66.6	62.3	78.0	79.7
SWP0647	10	385.3	88.1	100.0	100.0	100.0	100.0
SWP0650	14	288.2	78.0	100.0	80.7	100.0	100.0
SWP0651	14	133.2	100.0	100.0	100.0	100.0	100.0
SWP0652	14	151.1	100.0	100.0	100.0	100.0	100.0
		d/D values are given as a percentage					

Appendix B Recommended Project Cost Opinions

Opinion of Probable Construction Cost

Project CSD1: Alamo Pintado Phase 1

Los Olivos Community Services District

10/7/2024

Bid Item	Description	Quantity	Unit	Unit Price	Cost
1	Mobilization	1	LS	$ 7,900.00	$ 7,900.00
2	Sawcut & Remove	433	SY	$ 8.50	$ 3,700.00
3	Hauling Pavement	217	LCY	$ 11.10	$ 2,400.00
4	Pavement Repair	433	SY	$ 60.70	$ 26,300.00
5	Shoring	15683	SF Wall	$ 1.50	$ 23,400.00
6	Excavation-Trench	849	BCY	$ 7.30	$ 6,200.00
7	Pipe Bedding (sand import)	52	LCY	$ 46.20	$ 2,400.00
8	Bedding Compaction	42	ECY	$ 4.80	$ 200.00
9	Native Backfill & Compaction	797	ECY	$ 5.00	$ 4,000.00
10	Hauling Excavation	1019	LCY	$ 5.50	$ 5,600.00
11	Abandon Existing Main in Place - 8" Pipe	778	LF	$ 2.60	$ 2,000.00
12	12" PVC SDR 35	778	LF	$ 101.80	$ 79,200.00
13	Service Connections to 12" Gravity Main	2	EA	$ 600.00	$ 1,200.00
14	Bypass Pumping	1	LS	$ 12,000.00	$ 12,000.00
				Subtotal	$ 176,500.00
				Construction Contingency (25%)	$ 44,000.00
				Construction Total	$ 220,500.00
				Project Development & Implementation (25%)	$ 55,000.00
				Project Costs	$ 275,500.00

Opinion of Probable Construction Cost

Project CSD2: Fjord Drive

Los Olivos Community Services District

10/7/2024

Bid Item	Description	Quantity	Unit	Unit Price	Cost
1	Mobilization	1	LS	$ 36,700.00	$ 36,700.00
2	Sawcut & Remove	1237	SY	$ 8.50	$ 10,500.00
3	Hauling Pavement	619	LCY	$ 10.70	$ 6,600.00
4	Pavement Repair	1237	SY	$ 60.60	$ 75,000.00
5	Shoring	44501	SF Wall	$ 1.50	$ 66,300.00
6	Excavation-Trench	19150	BCY	$ 7.30	$ 139,800.00
7	Pipe Bedding (sand import)	156	LCY	$ 44.90	$ 7,000.00
8	Bedding Compaction	124	ECY	$ 4.00	$ 500.00
9	Native Backfill & Compaction	18994	ECY	$ 4.90	$ 93,100.00
10	Hauling Excavation	22980	BCY	$ 5.50	$ 126,400.00
11	Abandon Existing Main in Place - 10" Pipe	385	LF	$ 3.60	$ 1,400.00
12	Abandon Existing Main in Place - 14" Pipe	1673	LF	$ 5.20	$ 8,700.00
13	12" PVC SDR 35	385	LF	$ 72.70	$ 28,000.00
14	18" PVC SDR 35	1673	LF	$ 101.80	$ 170,300.00
15	Bypass Pumping	1	LS	$ 28,000.00	$ 28,000.00
				Subtotal	$ 798,300.00
				Construction Contingency (25%)	$ 200,000.00
				Construction Total	$ 998,300.00
				Project Development & Implementation (25%)	$ 250,000.00
				Project Costs	$ 1,248,300.00

Opinion of Probable Construction Cost

Project CSD3: River Course Golf Course

Los Olivos Community Services District

10/7/2024

Bid Item	Description	Quantity	Unit	Unit Price	Cost
1	Mobilization	1	LS	$ 4,000.00	$ 4,000.00
2	Sawcut & Remove	201	SY	$ 8.50	$ 1,700.00
3	Hauling Pavement	101	LCY	$ 10.90	$ 1,100.00
4	Pavement Repair	201	SY	$ 60.70	$ 12,200.00
5	Shoring	9527	SF Wall	$ 1.50	$ 14,200.00
6	Excavation-Trench	558	BCY	$ 7.30	$ 4,100.00
7	Pipe Bedding (sand import)	25	LCY	$ 44.00	$ 1,100.00
8	Bedding Compaction	20	ECY	$ 5.00	$ 100.00
9	Native Backfill & Compaction	533	ECY	$ 4.90	$ 2,600.00
10	Hauling Excavation	670	BCY	$ 5.50	$ 3,700.00
11	Abandon Existing Main in Place - 12" Pipe	344	LF	$ 4.40	$ 1,500.00
12	15" PVC SDR 35	344	LF	$ 101.90	$ 35,100.00
13	Service Connections to 15" Gravity Main	1	EA	$ 900.00	$ 900.00
14	Bypass Pumping	1	LS	$ 6,000.00	$ 6,000.00
				Subtotal	$ 88,300.00
				Construction Contingency (25%)	$ 22,000.00
				Construction Total	$ 110,300.00
				Project Development & Implementation (25%)	$ 28,000.00
				Project Costs	$ 138,300.00

Opinion of Probable Construction Cost

Project CSD4: Alamo Pintado Phase 2

Los Olivos Community Services District

10/7/2024

Bid Item	Description	Quantity	Unit	Unit Price	Cost
1	Mobilization	1	LS	$ 31,500.00	$ 31,500.00
2	Sawcut & Remove	1140	SY	$ 8.50	$ 9,700.00
3	Hauling Pavement	570	LCY	$ 10.70	$ 6,100.00
4	Pavement Repair	1140	SY	$ 60.60	$ 69,100.00
5	Shoring	47213	SF Wall	$ 1.50	$ 70,400.00
6	Excavation-Trench	13304	BCY	$ 7.30	$ 97,100.00
7	Pipe Bedding (sand import)	135	LCY	$ 44.40	$ 6,000.00
8	Bedding Compaction	107	ECY	$ 3.70	$ 400.00
9	Native Backfill & Compaction	13169	ECY	$ 4.90	$ 64,500.00
10	Hauling Excavation	15965	BCY	$ 5.50	$ 87,800.00
11	Abandon Existing Main in Place - 8" Pipe	2108	LF	$ 2.50	$ 5,300.00
12	10" PVC SDR 35	1691	LF	$ 101.80	$ 172,100.00
13	12" PVC SDR 35	418	LF	$ 72.80	$ 30,400.00
14	Service Connections to 10" Gravity Main	18	EA	$ 433.30	$ 7,800.00
15	Service Connections to 12" Gravity Main	3	EA	$ 600.00	$ 1,800.00
16	Bypass Pumping	1	LS	$ 30,000.00	$ 30,000.00
				Subtotal	$ 690,000.00
				Construction Contingency (25%)	$ 173,000.00
				Construction Total	$ 863,000.00
				Project Development & Implementation (25%)	$ 216,000.00
				Project Costs	$ 1,079,000.00

Opinion of Probable Construction Cost

Project CSD1: Alamo Pintado Phase 1

Los Olivos Community Services District

10/7/2024

Bid Item	Description	Quantity	Unit	Unit Price	Cost
1	Mobilization	1	LS	$ 7,900.00	$ 7,900.00
2	Sawcut & Remove	433	SY	$ 8.50	$ 3,700.00
3	Hauling Pavement	217	LCY	$ 11.10	$ 2,400.00
4	Pavement Repair	433	SY	$ 60.70	$ 26,300.00
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14	Bypass Pumping	1	LS	$ 12,000.00	$ 12,000.00
				Subtotal	$ 176,500.00
				Construction Contingency (25%)	$ 44,000.00
				Construction Total	$ 220,500.00
				Project Development & Implementation (25%)	$ 55,000.00
				Project Costs	$ 275,500.00

Opinion of Probable Construction Cost

Project CSD2: Fjord Drive

Los Olivos Community Services District

10/7/2024

Bid Item	Description	Quantity	Unit	Unit Price	Cost
1	Mobilization	1	LS	$ 36,700.00	$ 36,700.00
2	Sawcut & Remove	1237	SY	$ 8.50	$ 10,500.00
3	Hauling Pavement	619	LCY	$ 10.70	$ 6,600.00
4	Pavement Repair	1237	SY	$ 60.60	$ 75,000.00
5	Shoring	44501	SF Wall	$ 1.50	$ 66,300.00
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				Subtotal	$ 798,300.00
				Construction Contingency (25%)	$ 200,000.00
				Construction Total	$ 998,300.00
				Project Development & Implementation (25%)	$ 250,000.00
				Project Costs	$ 1,248,300.00

Opinion of Probable Construction Cost

Project CSD3: River Course Golf Course

Los Olivos Community Services District

10/7/2024

Bid Item	Description	Quantity	Unit	Unit Price	Cost
1	Mobilization	1	LS	$ 4,000.00	$ 4,000.00
2	Sawcut & Remove	201	SY	$ 8.50	$ 1,700.00
3	Hauling Pavement	101	LCY	$ 10.90	$ 1,100.00
4	Pavement Repair	201	SY	$ 60.70	$ 12,200.00
5	Shoring	9527	SF Wall	$ 1.50	$ 14,200.00
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				Subtotal	$ 88,300.00
				Construction Contingency (25%)	$ 22,000.00
				Construction Total	$ 110,300.00
				Project Development & Implementation (25%)	$ 28,000.00
				Project Costs	$ 138,300.00

Opinion of Probable Construction Cost

Project CSD4: Alamo Pintado Phase 2

Los Olivos Community Services District

10/7/2024

Bid Item	Description	Quantity	Unit	Unit Price	Cost
1	Mobilization	1	LS	$ 31,500.00	$ 31,500.00
2	Sawcut & Remove	1140	SY	$ 8.50	$ 9,700.00
3	Hauling Pavement	570	LCY	$ 10.70	$ 6,100.00
4	Pavement Repair	1140	SY	$ 60.60	$ 69,100.00
5	Shoring	47213	SF Wall	$ 1.50	$ 70,400.00
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				Project Costs	$ 1,079,000.00

Subsequent pages removed at request of vendor