CITY OF SAN JUAN BAUTISTA

2020
WASTEWATER MASTER PLAN

AMENDMENT NO. 1

Draft

August 2021

AKEL ENGINEERING GROUP, INC.

AKEL
ENGINEERING GROUP, INC.

August 31, 2021

City of San Juan Bautista
319 Third Street
San Juan Bautista, CA 95045

Attention: Mr. Don Reynolds
City Manager

Subject: 2020 Wastewater Master Plan - Amendment No. 1 (Draft)

Dear Don:

We are pleased to submit this Amendment No. 1 to the City of San Juan Bautista's 2020 Wastewater Master Plan, documenting the impact of the updated phased population projections. This amendment includes a section discussing revisions to each chapter in the 2020 Wastewater Master Plan (2020 WWMP).

The intent of this amendment is to add intermediate population projections for phasing infrastructure improvements. The population phases are summarized in this amendment document, with discussions on the impact to infrastructure construction triggers. It should be noted that since buildout population did not change, buildout improvements included in the 2020 WWMP are generally not impacted.

We are extending our thanks to you and other city of San Juan Bautista staff whose courtesy and cooperation were integral to the success of this study. Should you need additional information, or have questions regarding this amendment, please do not hesitate to call me. I look forward to hearing from you.

Sincerely,

AKEL ENGINEERING GROUP, INC.

Tony Akel, P.E.
Principal

TAA
Enclosure: 2020 Wastewater Master Plan – Amendment No. 1

1.0 BACKGROUND

The City of San Juan Bautista (City) completed a 2020 Wastewater Master Plan (2020 WWMP), and which was adopted in November 2020. The 2020 WWMP evaluated the capacity adequacies of existing wastewater facilities to service existing customers, and recommended facilities to service buildout growth identified in the 2035 General Plan (November 2015).

Akel Engineering Group prepared the 2020 WWMP as part of the integrated infrastructure master plan process for the water and wastewater master plans. The purpose of the 2020 WWMP is to document the planned land use for the City, identify existing and future flows generated within the City, and to plan wastewater infrastructure to provide adequate levels of service to the customers at the lowest lifecycle cost feasible.

After the finalization of the 2020 WWMP, the City participated in a regional population study. This study suggested growth would be slower in the City than anticipated in the master planning process. Accordingly, the City initiated a master plan amendment to address the impacts of the slower growth, which included the impacts to the phasing of large-scale planned infrastructure.

This Master Plan Amendment No. 1 (Amendment) documents the impacts to the City's 2020 WWMP based on the incorporation of findings from the regional population study and flow updates. These impacts include updates to the population growth projections, to the force main pipeline alignment to the regional wastewater treatment plant in the City of Hollister, to flow projections, and to recommended buildout infrastructure needs. The Amendment includes the following sections:

- Previous Planning Documents
- Updated Phased Population Projections
- Updated Peak Wet Weather Flows
- Updated Force Main Alignment to the Regional WWTP in Hollister
- Summary of Revisions to 2020 Wastewater Master Plan

2.0 PREVIOUS PLANNING DOCUMENTS

The following documents were considered in the development of this Amendment to the 2020 WWMP:

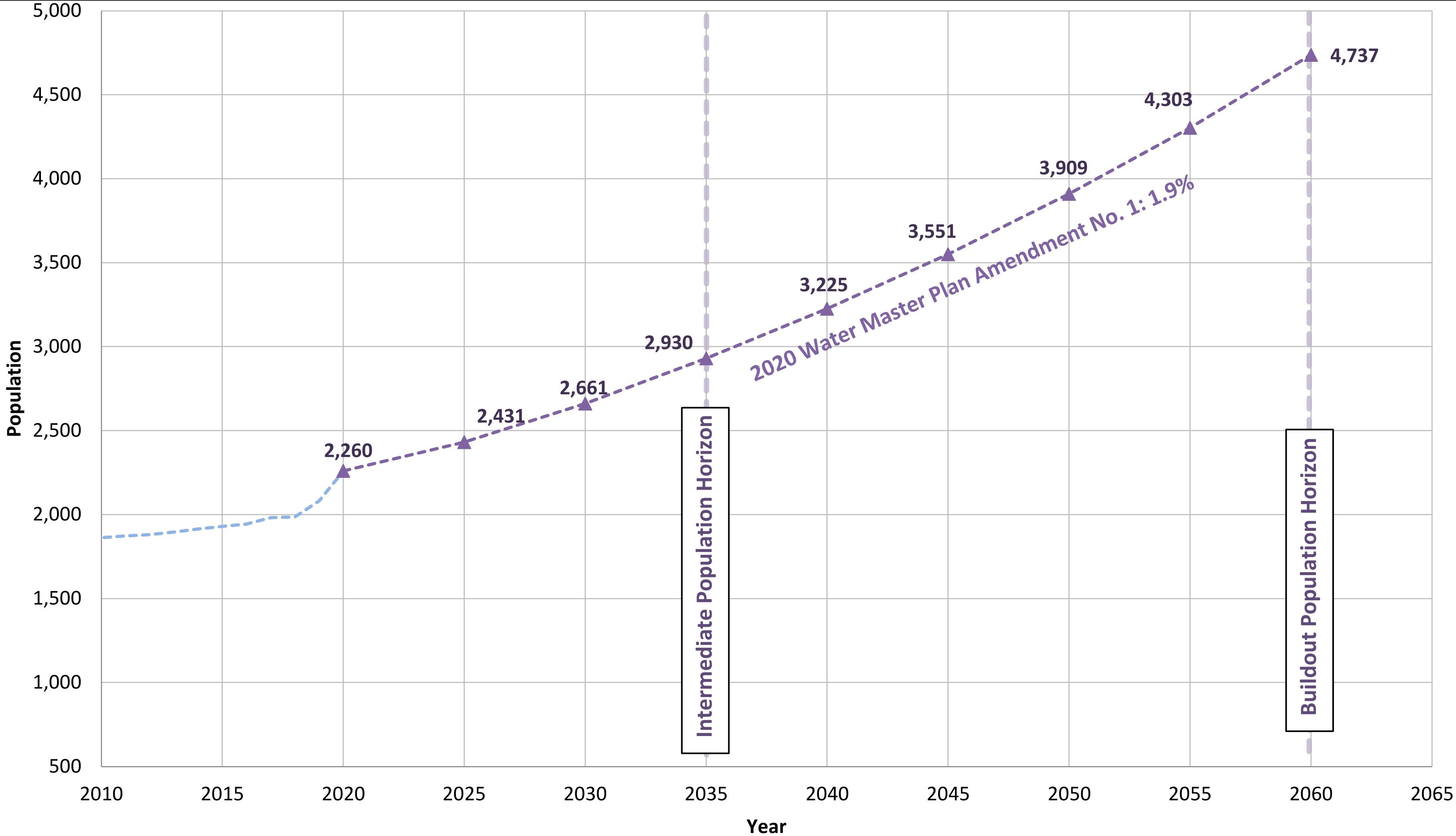
- **2020 Wastewater Master Plan.** The 2020 WWMP documents planned land use for the City, identifies existing and future flows generated within the City's service area, and plans wastewater infrastructure to provide adequate levels of service for the existing and future customers

- **City of San Juan Bautista – Wastewater Treatment Improvements Project (Preliminary Engineering Report), February 2021.** The Preliminary Engineering Report (PER) investigates alternatives to the existing WWTP and recommend a program to bring the WWTP in to compliance with regulatory standards. The PER is included in **Appendix B**.
- **City of San Juan Bautista 2035 General Plan, November 2015.** The 2035 General Plan represents the official adopted goals and policies of the City of San Juan Bautista, and addresses planning issues within the community such as historic preservation, economic development, and development of public facilities. This includes establishing a plan for municipal elements such as land use, housing, and economic development. Additionally, this plan describes the wastewater system service area and population projections that were used in the WWMP.
- **Association of Monterey Bay Area Governments (AMBAG), San Juan Bautista Final 2022 Regional Growth Forecast.** This document was used as the basis for defining alternate growth projections for the City. This included using the AMBAG projections, as well as alternatives based on the AMBAG information

3.0 UPDATED PHASED POPULATION PROJECTIONS

The City's 2035 General Plan assumed a buildout horizon of 2035 and a total service area population of 3,485 people. This projected population reflected an average annual growth rate of 2.9% per year. The 2022 AMBAG Regional Growth Forecast predicted an average annual growth rate of 1.1% per year for the City. Following a review of several growth alternatives City staff elected to amend the 2020 WWMP based on an average annual growth rate of 1.9%, which approximately averages the annual population growth of the 2035 General Plan and the 2020 AMBAG Regional Growth Forecast. The projected populations included in the 2020 WWMP Amendment are summarized on **Table 1** and shown graphically on **Figure 1**. Based on these revised population projects this Amendment considers the following planning horizons.

- **Intermediate Population Horizon (2035):** The intermediate planning horizon reflects the planning horizon of the City's 2035 General Plan. The estimated population in 2035 is used to estimate the wastewater conveyance requirements for the City as discussed in Section 4 – Revised Regional Treatment Alternatives.
- **Buildout Flow Horizon (2060):** The buildout flow horizon is based on the estimated wastewater flows following the development of potential growth areas as identified in the City's General Plan. Assuming historical average per capita wastewater flows of 90 gallons per day per capita (gpdc) and an average annual growth rate of 1.9% it is estimated that the buildout flows will be achieved in the year 2060. The recommended wastewater system improvements documented in the City's 2020 WWMP are based on this planning horizon.



LEGEND

2020 Master Plan

Historical[1]

Projected[2]

Notes: 1. Source: 2020 Infrastructure Master Plans

2. Projected populations based on AMBAG population projection plus half the difference between AMBAG and General Plan population projections, equal to approximately 1.9%.

June 23, 2021

Figure 1
Historical and Projected Population

Wastewater Master Plan
Amendment No. 1
City of San Juan Bautista

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Table 1 Historical and Projected Population
Wastewater Master Plan Amendment No. 1
City of San Juan Bautista

Year	Population[1,2]
Historical	
2000	1,549
2001	1,566
2002	1,579
2003	1,594
2004	1,690
2005	1,688
2006	1,683
2007	1,779
2008	1,835
2009	1,852
2010	1,862
2011	1,873
2012	1,881
2013	1,895
2014	1,914
2015	1,930
2016	1,943
2017	1,981
2018	1,986
2019	2,081
2020	2,260
Projected	
2021	2,235
2022	2,284
2023	2,333
2024	2,382
2025	2,431
2026	2,477
2027	2,523
2028	2,569
2029	2,615
2030	2,661
2031	2,715
2032	2,768
2033	2,822
2034	2,876
2035	2,930
2036	2,986
2037	3,044
2038	3,103
2039	3,164
2040	3,225
2041	3,288
2042	3,352
2043	3,417
2044	3,483
2045	3,551
2046	3,619
2047	3,690
2048	3,761
2049	3,834
2050	3,909
2051	3,985
2052	4,062
2053	4,141
2054	4,221
2055	4,303
2056	4,387
2057	4,472
2058	4,559
2059	4,647
2060	4,737

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Note :
1. Historical Populations per California Department of Finance estimates.
2. Projected populations based on AMBAG population projection plus half the difference between AMBAG and General Plan population projections, equal to approximately 1.9%.

It should be noted the population projections do not impact the buildout wastewater flows incorporated in the master plan. Population projections only impact the timing of flows and the corresponding capacity needs.

4.0 UPDATED PEAK WET WEATHER FLOWS

This section discusses updates to the peak wet weather flows, as well as new information related to temporary flows from the Well No. 6 site.

4.1 Updated Peak Wet Weather Flows

Following the adoption of the 2020 WWMP, existing and buildout peak wet weather flows were reviewed and updated. Due to the absence of Flow Monitoring Data and Hourly WWTP Inflow Data, the original 2020 WWMP analysis was overconservative in its estimation of Rainfall Dependent I&I. After additional review of historical WWTP flows and common engineering practices, the PWWF peaking factors were updated and are summarized below. The updated WWMP design flows are shown on **Table 2.**

- Existing Peak Wet Weather Flows have been updated to reflect a PWWF peaking factor of **4.8**. Previously 10.9.
- Buildout Peak Wet Weather Flows have been updated to reflect a PWWF peaking factor of **3.8**. Previously 5.2

4.2 Updated Lift Station 2 Flows and Recommendations

Following the adoption of the 2020 WWMP, Akel Engineering worked with City Staff to reevaluate Lift Station No. 2 for capacity adequacy due to a temporary flow routing condition from Well No. 6. Well No. 6 is currently inactive due to water quality issues, and the City has opted to run a 2-Month well testing period. This testing results in approximately 320 gpm of additional Backwash and Treated Discharge flow being conveyed to Lift Station No. 2. **Table 3** documents the capacity analysis and updated lift station recommendation for Lift Station No. 2, under the temporary flow conditions.

4.3 Updated Lift Station Analysis

The 2020 WWMP evaluated the capacity adequacy of the City's lift stations under design flows that reflected high I&I. The Lift Station Analysis as shown on **Table 4**, was updated to reflect changes to flow conditions following the wet weather flow updates mentioned in the Section 4.1 and to updated lift station inflows discussed in Section 4.2.

5.0 UPDATED FORCE MAIN ALIGNMENT TO THE REGIONAL WWTP IN HOLLISTER

The 2020 WWMP evaluated various solutions to mitigate ongoing wastewater quality issues at the City's WWTP. One of these solutions included conveying sewer flow from the City's WWTP to the

Table 2 Wastewater Design Flows

Wastewater Master Plan - Amendment No. 1

City of San Juan Bautista

Existing, Intemediate and Buildout Planning Horizons	Description	Year	Design Flows				
			Average Annual (mgd)	Maximum Day		Peak Hour	
				Dry Weather Flow (mgd)	Wet Weather Flow (mgd)	Peak Dry Weather Flow (mgd)	Peak Wet Weather Flow (mgd)
Existing	2020 Conditions	**2020**	0.16	0.28	0.40	0.51	0.77
Intermediate (Planning Horizon)	Focus of Master Plan Amendment No. 1	**2035**	0.26	0.46	0.65	0.82	1.09
Buildout (Horizon of General Plan)	2020 Master Plan Projections	**2060**	0.43	0.75	1.08	1.39	1.63

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Table 3 Lift Station 2 Capacity Analysis

Wastewater Master Plan Amendment No. 1

City of San Juan Bautista

Lift Station 2	
Inflows	
Well 6 Backwash[1]	250 gpm
Well 6 Treated Discharge[1]	70 gpm
Estimated Gravity Users[2]	5 gpm
Total	**325 gpm**
Pump Capacity Analysis	
Required Capacity	325 gpm
Available Capacity[3]	
Total Capacity	2 x 100 gpm
Firm Capacity	1 x 100 gpm
Capacity Surplus/Deficit[4]	**-225 gpm**
Recommended Improvement Replace existing pumps with **2 x 350 gpm (1 duty and 1 standby)**	
Lift Station 2 Force Main	
Existing Pumps limited at 2 x 100 gpm	
Pump Station Flow[5]	100 gpm
Available Capacity[6]	392 gpm
Capacity Surplus/Deficit	**292 gpm**
Upgraded Pumps to 2 x 350 gpm	
Pump Station Flow[5]	350 gpm
Available Capacity[6]	392 gpm
Capacity Surplus/Deficit	**42 gpm**

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Notes:

1. Source: Email received from CSG Consultants staff July 21, 2021.
2. Gravity user flow for planning purposes only and to be confirmed by City staff.
3. Existing lift station capacity based on information provided by CSG Consultants on July 21, 2021.
4. Lift station firm capcaity required to meet peak hour inflow
5. Force main required capacity equal to lift station firm capacity.
6. Available force main capacity based on maximum pipeline velocity of 10 ft/s.

Table 4 Existing Lift Station and Capacity Analysis

Wastewater Master Plan Amendment No. 1

City of San Juan Bautista

Pump Station No.	Facility Name	Firm Capacity (Excludes Standby)	Total Capacity (Includes Standby)	Existing Peak Flows				Buildout Flows				Surplus/ Deficiency	Adequate Capacity	Recommended Total Pump Station Capacity
				Dry Weather		Wet Weather		Dry Weather		Wet Weather				
		(gpm)	(gpm)	(gpm)	(mgd)	(gpm)	(mgd)	(gpm)	(mgd)	(gpm)	(mgd)	(gpm)		(gpm)
LS-1	(SJB WWTP)	40	60	22.4	0.032	37.1	0.053	23.1	0.033	38.2	0.055	1.8	No	3 @ 20 gpm
LS-2[1,2]	(Old San Juan Hollister Rd & Mission Vineyard Rd)	100	200	325.0	0.468	73.8	0.106	76.5	0.110	100.2	0.144	225.0	No	2 @ 350 gpm
LS-3[3]	(Lang Ct. Cul-de-sac)	67	134	8.5	0.012	17.6	0.025	Lift Station to be Abandoned				-	-	-
LS-5	(Rancho Vista Lift Station)	100	200	3.4	0.005	4.5	0.006	26.6	0.038	90.1	0.130	9.9	Yes	

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8/23/2021

Notes:

1. There are no existing users tributary to Lift Station 2 that contribute Dry Weather Flow. Wet Weather flow is based on Rainfall Dependent Infiltration and Inflow for the area tributary to the Lift Station.
2. Existing Dry Weather Flow of 325 gpm provided by City Staff July 21, 2021 to reflect temporary Backwash and Treated Discharge flow from Domestic Water Well #6

Hollister WWTP. The 2020 WWMP assumes the Hollister WWTP will collect 100% of the buildout sewer flows from the City.

Following the adoption of the 2020 WWMP, Stantec Consulting provided an updated to the regional force main alignment. In addition, Akel Engineering updated the existing and buildout Peak Wet Weather Flow projections as discussed in Section 4.1.

The following sections summarize the updated regional force main sizing based on comments from Stantec Consulting and updated wet weather flows.

5.1 Regional Force Main Capacity Analysis

The 2020 WWMP evaluated multiple force main sizes between the City's WWTP and the Hollister WWTP. The future regional force main was planned to convey 100% of the City's Buildout Flows. This amendment revises the regional force main capacity analysis based on the updated flow projections. The results of the updated force main capacity analysis are shown on **Table 5** and briefly summarized below

5.1.1 Intermediate Flows (2035)

Table 5 summarizes the results of the force main capacity analysis for the 2035 Flow Condition. Assuming 100% of the City's peak wet weather flows are conveyed to Hollister's WWTP, the minimum required force main size is 6-inch, which requires the use of a booster station.

5.1.2 Buildout Flows (2060)

Table 5 summarizes the results of the force main capacity analysis for the Buildout Flow Condition. Assuming 100% of the City's peak wet weather flows are conveyed to Hollister's WWTP, the minimum required force main size is 8-inch, which requires the use of a booster station.

5.1.3 Recommended Force Main Size

This Amendment recommends the construction of a 10-inch force main and booster station to convey the City's flows to the City of Hollister's WWTP. This recommendation updates the 2020 WWMP and is consistent with the updated alignment and force main recommendations provided by Stantec Consulting.

6.0 SUMMARY OF REVISIONS TO 2020 WASTEATER MASTER PLAN

The following sections document the changes to each chapter of the 2020 WWMP, including any affected tables and figures. The Amended master plan tables and figures are also included in **Appendix A**.

6.1 Executive Summary

The Executive Summary of the 2020 WWMP summarized the key elements of the master plan. This Master Plan Amendment revised the sections that are described as follows.

Table 5 Pipe Size Alternatives for the Regional Force Main from San Juan Bautista to Hollister WWTP

Wastewater Master Plan Amendment No .1
City of San Juan Bautista

Existing/Future Flow Condition	Flows [1]		Pump Station Recommendation [2]		Pipe Size Alternatives (Approximate Length 33,700 LF) [3]					
					6-inch		8-inch		10-inch	
			Pumping Requirement	Pump Firm Capacity	Velocity	Headloss	Velocity	Headloss	Velocity	Headloss
	(gpm)	(mgd)		(gpm)	(ft/s)	(ft/kft)	(ft/s)	(ft/kft)	(ft/s)	(ft/kft)
Existing System										
Average Annual Flow	114	0.16	3 @ 60 gpm	120	1.4	1.5	0.8	0.4	0.5	0.1
Peak Dry Weather Flow	354	0.51	3 @ 180 gpm	360	4.1	11.2	2.3	2.7	1.5	0.9
Peak Wet Weather Flow	533	0.77	3 @ 270 gpm	540	**6.1**	23.8	3.4	5.7	2.2	2.0
Intermediate Flows (2035 Projection)[4]										
Average Annual Flow	183	0.26	3 @ 95 gpm	190	2.2	3.4	1.2	0.8	0.8	0.3
Peak Dry Weather Flow	573	0.82	3 @ 290 gpm	580	6.6	27.2	3.7	6.5	2.4	2.3
Peak Wet Weather Flow	759	1.09	3 @ 380 gpm	760	**8.6**	44.8	4.8	11.0	3.1	3.7
Buildout Flows										
Average Annual Flow	299	0.43	3 @ 150 gpm	300	3.4	8.0	1.9	2.0	1.2	0.7
Peak Dry Weather Flow	962	1.39	3 @ 485 gpm	970	**11.0**	70.3	6.1	17.1	4.0	5.9
Peak Wet Weather Flow	1,135	1.63	3 @ 570 gpm	1,140	**12.9**	94.8	**7.2**	23.2	4.7	7.9

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6/15/2021

Notes:

1. Average Annual Flows for 2045 Projections are estimated from AMBAG Population Growth Forecast and per capita demands of 90 gpdc.
2. Pump Station recommendations assume a 3-pump configuration, two duty and one standby.
3. The length of the Regional Transmission Main was calculated based on the alignment between the Hollister WWTP and the proposed connection point to the existing San Juan Bautista sanitary sewer system.
4. 2035 Projection (AMBAG + General Plan) population projection of 2,930 provided by City Staff on February 24, 2021.

6.1.1 Section ES.4 – Existing Wastewater Collection System Overview

The 2020 Master Plan Amendment revises the existing wastewater collection system mapping to reflect revisions to mapping errors along San Juan Hollister Road discovered after the adoption of the Master Plan. It should be noted that this update is graphical only and has no impact to the WWMP recommendations. This amendment also revises the following figures:

- **Figure ES.2** – The existing system map has been updated to reflect revisions to mapping errors along San Juan Hollister Road discovered since the adoption of the WWMP.

6.1.2 Section ES.9 – Capital Improvement Program

The 2020 Master Plan Amendment revises the regional force main alternative diameter and alignment recommendation to be consistent with Stantec Consulting's most recent Preliminary Engineering Report (PER). Further, this Amendment revises the Lift Station recommendations to reflect the updated Wet Weather Flows.

- **Figure ES.3** – The Capital Improvement Program has been updated to reflect infrastructure needs for the updated Regional Connection Alternatives and Wet Weather Flow projections.
- **Table ES.2** – The Capital Improvement Program has been updated to reflect infrastructure needs for the updated Regional Connection Alternatives and Wet Weather Flow projections

6.2 Chapter 1 – Introduction

This chapter summarized the background of the City's domestic water system and objectives of the Master Plan. No sections of this chapter are revised as part of this Amendment.

6.3 Chapter 2 – Planning Area Characteristics

This chapter summarized the master plan study area, wastewater collection system service area, existing and future land use, as well as historical and projected population. This Amendment revises the following section:

6.3.1 Section 2.3 – Historical Population and Future Growth

This section previously reflected population projections that were consistent with the 2035 General Plan. As discussed in Section 3.0 of this Amendment a revised population projection was requested by City staff that would consider local AMBAG projections in addition to those documented in the 2035 General Plan. City staff elected to use an average annual growth rate of 1.9% per year, which approximately reflects an average between the 2035 General Plan and the 2022 AMBAG Regional Growth Forecast.

The 2020 WWMP notes a 2035 population of approximately 3,500 people, which is extracted from the 2035 General Plan. This Amendment now estimates the 2035 population at approximately 2,900 people, based on the revised average annual growth rate, as shown in **Figure 1**. This Amendment also revises the following tables:

- **Table 2.2** – The projected populations have been extended to 2060 and reflect an average annual growth rate of 1.9% per year. These updated populations are also documented on **Table 1** in this Amendment.

6.4 Chapter 3 – System Performance and Design Criteria

This chapter summarized the water system performance and design criteria. No sections of this chapter are revised as part of this Amendment.

6.5 Chapter 4 – Existing Wastewater Collection Facilities

This chapter summarized the wastewater collection system facilities and operational characteristics. This Amendment revises the following sections.

6.5.1 Section 4.1 – Wastewater Collection System Overview

The 2020 Master Plan Amendment revises the existing wastewater collection system mapping to reflect revisions to mapping errors along San Juan Hollister Road discovered after the adoption of the Master Plan. It should be noted that this update is graphical only and has no impact to the WWMP recommendations. This amendment also revises the following figures:

- **Figure 4.1** – The existing system map has been updated to reflect revisions to mapping errors along San Juan Hollister Road discovered since the adoption of the WWMP.

6.6 Chapter 5 – Wastewater Flows

This section previously reflected Wet Weather Flows that estimated high levels of I&I in the wastewater collection system. As discussed in Section 5.0 of this Amendment, peak wet weather flow projections were updated as they were deemed too conservative in the 2020 WWMP. The impacts to this chapter are documented in the following sections.

6.6.1 Section 5.4 – Wastewater Collection System Design Flows

The 2020 WWMP notes an existing PWWF peaking factor of 10.9 and a buildout PWWF peaking factor of 5.2. This Amendment now reflects an existing PWWF peaking factor of **4.8** and a buildout PWWF peaking factor of **3.8**.

The 2020 WWMP previously reflected an existing and buildout PWWF of 1.74 mgd and 2.25 mgd respectively. The existing and buildout PWWFs used for the Amendment are estimated at 0.77 mgd and 1.63 mgd respectively. This Amendment also revises the following tables.

- **Table 5.3** – The existing and buildout wet weather flows have been updated to reflect less conservative PWWF peaking factors. These updated flows are also documented on **Table 3** in this Amendment.

6.7 Chapter 6 – Hydraulic Model Development

This chapter summarized the development of the City’s wastewater collection system hydraulic model. No sections of this chapter are revised as part of this Amendment.

6.8 Chapter 7 – Evaluation and Proposed Improvements

This chapter summarized the evaluation of the wastewater collection system and identified improvements needed to mitigate deficiencies or service future growth. This Amendment revises the following section:

6.8.1 Section 7.2 – Existing Collection System Capacity Evaluation

The 2020 WWMP previously reflected an existing PWWF of 1.74 mgd. Due to revised Wet Weather Flows, this Amendment reflects an existing PWWF of 0.77 mgd. This Amendment also revises the following figure.

- Figure 7.2 – The existing peak wet weather flows have been updated to reflect less conservative PWWF peaking factors. The existing system analysis was reevaluated under revised flow conditions.

6.8.2 Section 7.4 – Regional Connection Alternatives

The 2020 WWMP previously reflected a Regional Connection Alternative recommendation for a booster station and approximately 34,320 feet of new 8-inch sewer main along 1st Street and future Right-of-Way north of Highway 156 from Rancho Way to Hollister WWTP.

This Amendment reflects Stantec Consulting's updated alignment and diameter recommendation of a booster station at the WWTP and approximately 39,750 feet of 10-inch gravity main along San Justo Road, Duncan Road, and Freitas Road north of Highway 156 from the City's WWTP to Hollister WWTP. The 28-inch casing requirement under Highway 156 was updated to a 30-inch casing to reflect Stantec's updated alignment and diameter. This Amendment also revises the following tables and figures.

- Figure 7.3 – The Regional Connection Alternatives have been updated to reflect the most recent alignment provided by Stantec Consulting.
- Figure 7.4 – The Capital Improvement Program has been updated to reflect infrastructure needs for the updated Regional Connection Alternatives and Wet Weather Flow projections.
- Table 7.1 – The Capital Improvement Program has been updated to reflect infrastructure needs for the updated Regional Connection Alternatives and Wet Weather Flow projections

6.8.3 Section 7.5 – Ultimate Buildout Capacity Improvements

The 2020 WWMP previously reflected a buildout PWWF of 2.25 mgd. Due to updated Wet Weather Flows, this Amendment reflects buildout PWWF of 1.63 mgd.

The 2020 WWMP previously recommended FLS-1 replace its pumps with 3 new pumps rated at 25 gpm each, this Amendment updates these recommendations to require 3 new pumps rated at 20 gpm each.

Additionally, the 2020 WWMP previously recommended FLS-2 replace its pumps with 2 new pumps rated at 100 gpm each, this Amendment updates these recommendations to require 2 new pumps rated at 350 gpm each. This Amendment also revises the following table.

- **Table 7.2** – The Existing Lift Station and Capacity Analysis has been updated to reflect the reduction in Peak Wet Weather Flows, and to reflect the temporary flow conditions at Lift Station No.2, as discussed in Section 4.2 of this Amendment.

6.9 Chapter 8 – Capital Improvement Program

This chapter summarized the recommended wastewater collection system improvements and presented cost criteria and methodology. This Amendment revises the following sections.

6.9.1 Section 8.2.2 – Construction Cost Index

The 2020 WWMP previously reflected Capital Improvement Costs using a 20-City national average ENR CCI of 11,412 reflecting a date of April 2020. This Amendment updates the ENR CCI to 12,464 to reflect a date of August 2021.

6.9.2 Section 8.3 – Capital Improvement Program

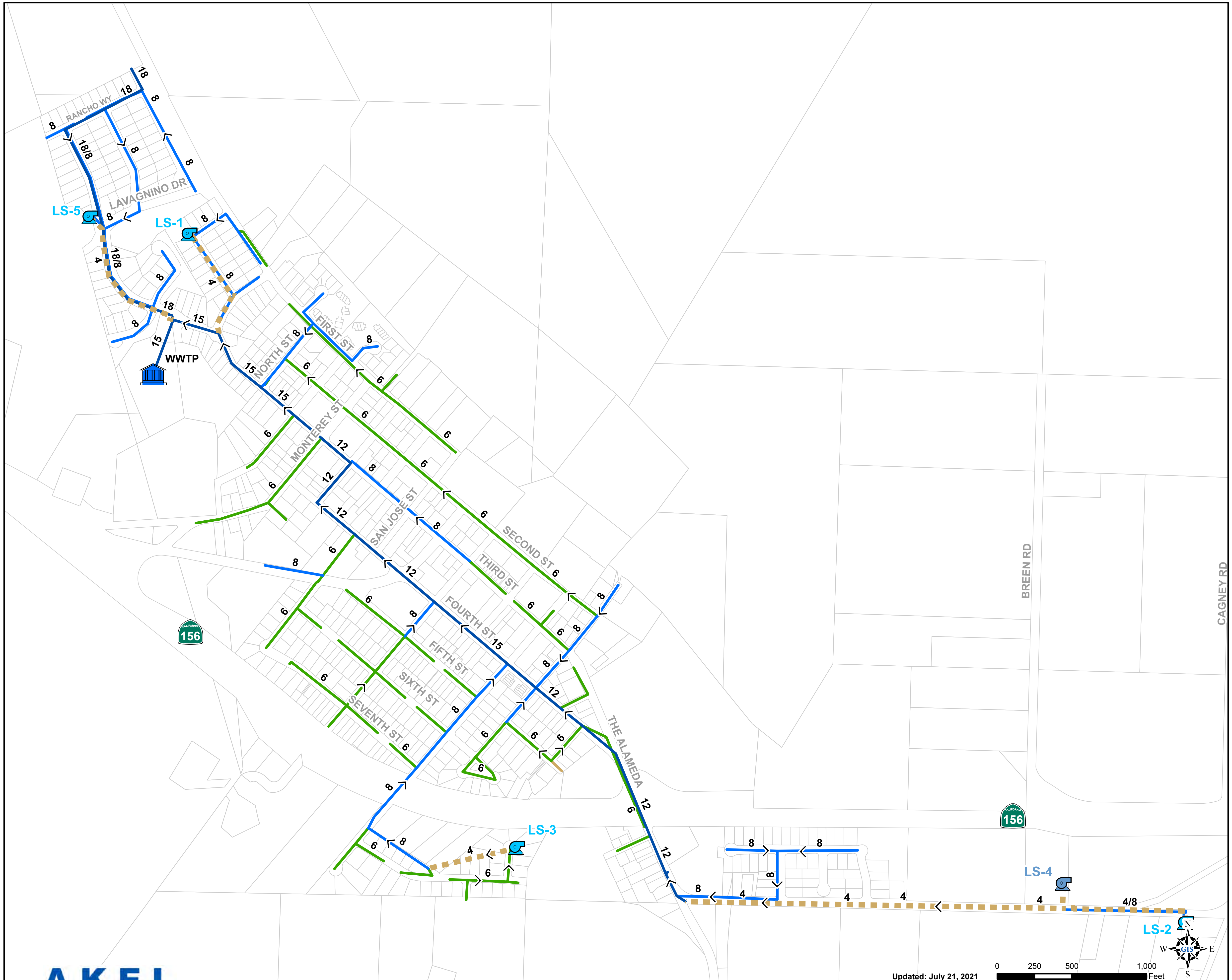
The 2020 WWMP previously reflected buildout recommendations based on Stantec's previous flow routing alternative and the high I&I Wet Weather Flows. This Amendments updates the Capital Improvement Program to reflect the updates to the Regional Connection Alternatives and Existing Lift Station Capacity Analysis.

The 2020 WWMP previously estimated a total Capital Improvement Cost of $10,635,200. This Amendment updates the Capital Improvement Costs to $11,887,625. This Amendment also revises the following table and figure.

- **Figure 8.1** – The Capital Improvement Program has been updated to reflect infrastructure needs for the updated Regional Connection Alternatives and Wet Weather Flow projections.
- **Table 8.2** – The Capital Improvement Program has been updated to reflect infrastructure needs for the updated Regional Connection Alternatives and Wet Weather Flow projections

APPENDIX A

2020 Wastewater Master Plan Amendment No. 1
Tables and Figures



Legend

Existing System

- WWTP
- Lift Station
- Private Lift Station

Gravity Mains by Diameter

- 4"
- 6"
- 8"
- 10" and Greater
- Force Mains
- Parcels

ES.2
Existing System
Wastewater Master Plan
Amendment No. 1 City of
San Juan Bautista

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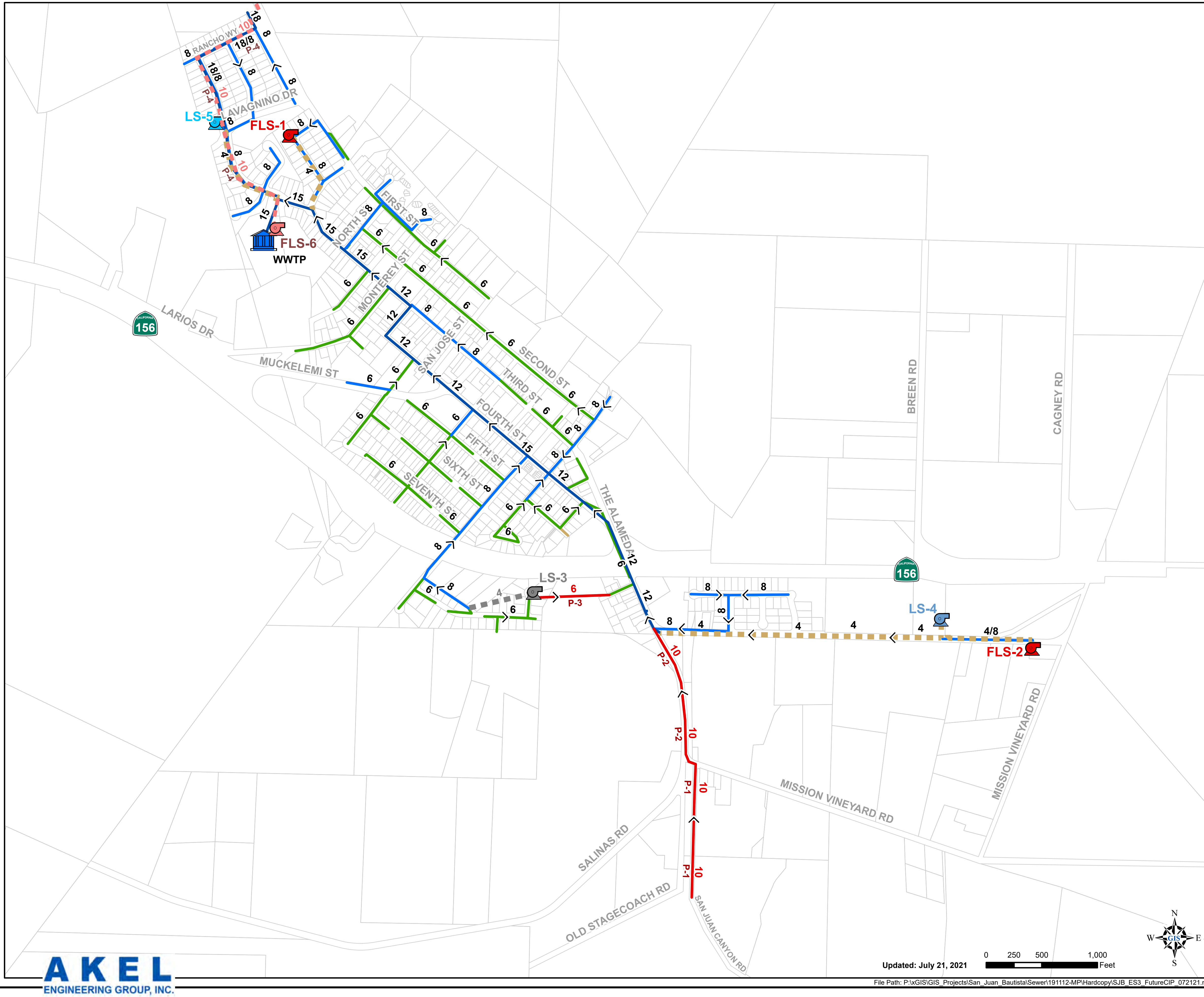

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Legend

- Future Lift Station
- Hollister WWTP Connection Pump
- Abandoned Lift Station
- Future Pipes
- Hollister WWTP Connection Force Main
- Abandoned Force Main

Existing System

- WWTP
- Lift Station
- Private Lift Station

Gravity Mains by Diameter

- 4"
- 6"
- 8"
- 10" and Greater
- Force Mains
- Parcels

ES.3
Capital Improvement Program

Wastewater Master Plan
Amendment No. 1
City of San Juan Bautista

Table ES.2 Buildout Capital Improvement Program

Wastewater Master Plan
City of San Juan Bautista

Improv. No.[1]	Type of Improvement	Alignment	Limits	Improvement Details				Infrastructure Costs[2]		Baseline Construction Cost	Estimated Construction Cost[4,5]	Capital Improvement Cost[5,6]	Construction Trigger	Suggested Cost Allocation		Cost Allocation	
								Unit Cost ($)	Infr. Cost[3] ($)	($)	($)	($)		Existing Users (%)	Future Users (%)	Existing Users ($)	Future Users ($)
Pipeline Improvements				**Existing Diameter (in)**	**New/ Replace**	**Diameter (in)**	**Length (ft)**										
P-1	Gravity Main	San Juan Canyon Rd	From 1,200 s/o Mission Vineyard Rd to Mission Vineyard Rd	-	New	10	1,200	273	327,600	327,600	425,900	553,700	With Development	0%	100%	0	553,700
P-2	Gravity Main	Monterey and Alameda State Hwy	From Mission Vineyard Rd to Old San Juan Hollister Rd	-	New	10	1,350	273	368,550	368,600	479,200	623,000	With Development	0%	100%	0	623,000
P-3	Gravity Main	ROW	From Lang Ct. Cul-de-sac to Lang St.	-	New	6	720	183	132,088	132,100	171,800	223,400	Existing Deficiency	100%	0%	223,400	0
				Subtotal - Pipeline Improvements					**828,238**	**828,300**	**1,076,900**	**1,400,100**				**223,400**	**1,176,700**
Lift Station Improvements				**Existing Capacity (gpm)**	**New/ Replace**	**Capacity (gpm)**											
FLS-1	Lift Station Replacement	Lift Station 1 (SJB WWTP)		3 @ 20 gpm	Replace	3 @ 20 gpm			413,253	413,300	537,300	698,500	Existing Deficiency	97%	3%	678,539	19,961
FLS-2	Lift Station Replacement	Lift Station 2 (Old San Juan Hollister Rd & Mission Vineyard Rd)		2 @ 100 gpm	Replace	2 @ 350 gpm			727,950	728,000	946,400	1,230,400	With Development	0%	100%	0	1,230,400
				Subtotal - Lift Station Improvements					**1,141,203**	**1,141,300**	**1,483,700**	**1,928,900**				**678,539**	**1,250,361**
Regional Connection Alternative[3]				**Existing (in) (gpm)**	**New/ Replace**	**Diameter Capacity (in) (gpm)**	**Length (ft)**										
P-4[7,8]	Force Main	Along San Justo Road north of Hwy 156	From San Juan Bautista WWTP to Hollister WWTP	-	New	8	39,000	-	-	-	-	-	Existing Deficiency	37%	63%	-	-
P-5[7]	Casing	ROW	Crossing under Hwy 156	-	New	28	160	-	-	-	-	-	Existing Deficiency	37%	63%	-	-
FLS-6[7,8]	New Lift Station	SJB Wastewater Treatment Plant		-	New	3 @ 550 gpm			-	-	-	-	Existing Deficiency	37%	63%	-	-
				Subtotal - Lift Station Improvements[5]					**6,846,840**	**6,846,900**	**6,846,900**	**8,558,625**		37%	63%	**3,148,720**	**5,409,905**
Total Wastewater System Improvements																	
				Subtotal Pipeline Improvements					**828,238**	**828,300**	**1,076,900**	**1,400,100**				**223,400**	**1,176,700**
				Subtotal Lift Station improvements					**1,141,203**	**1,141,300**	**1,483,700**	**1,928,900**				**678,539**	**1,250,361**
				Subtotal Regional Connection Alternative					**6,846,840**	**6,846,900**	**6,846,900**	**8,558,625**				**3,148,720**	**5,409,905**
				Total Improvement Costs					**8,816,281**	**8,816,500**	**9,407,500**	**11,887,625**				**4,050,659**	**7,836,966**

8/23/2021

Notes:

1. Improvements P-4, P-5, and FLS-6 are required for the Regional Connection Alternative as documented in Alternative 3 of the *Wastewater Treatment Improvements Project Preliminary Engineering Report* completed by Stantec Consulting Services.
2. Infrastructure construction costs estimated using August 2021 ENR CCI of 12,464.
3. Infrastructure Costs for the Regional Connection Alternative were extracted from the *Wastewater Treatment Improvements Project Preliminary Engineering Report* completed by Stantec Consulting Services.
4. Baseline construction costs plus 30% to account for unforeseen events and unknown conditions.
5. To ensure consistency with the *Wastewater Treatment Improvements Project Preliminary Engineering Report completed by Stantec Consulting Services*, Capital Improvement Costs for the Regional Connection Alternative only include a singular contingency markup of 25%.
6. Estimated construction costs plus 30% to cover other costs including: engineering design, project administration (developer and City staff), construction management and inspection, and legal costs.
7. Infrastructure Costs for P-4 and P-5 are accounted for in improvement FLS-6.
8. Regional Connection Alternative updated alignment and diameter provided by Stantec Consulting on June 29, 2021.

Table 2.2 Historical and Projected Population

Wastewater Master Plan Amendment No. 1
City of San Juan Bautista

Year	Population[1,2]
Historical	
2000	1,549
2001	1,566
2002	1,579
2003	1,594
2004	1,690
2005	1,688
2006	1,683
2007	1,779
2008	1,835
2009	1,852
2010	1,862
2011	1,873
2012	1,881
2013	1,895
2014	1,914
2015	1,930
2016	1,943
2017	1,981
2018	1,986
2019	2,081
2020	2,260
Projected	
2021	2,235
2022	2,284
2023	2,333
2024	2,382
2025	2,431
2026	2,477
2027	2,523
2028	2,569
2029	2,615
2030	2,661
2031	2,715
2032	2,768
2033	2,822
2034	2,876
2035	2,930
2036	2,986
2037	3,044
2038	3,103
2039	3,164
2040	3,225
2041	3,288
2042	3,352
2043	3,417
2044	3,483
2045	3,551
2046	3,619
2047	3,690
2048	3,761
2049	3,834
2050	3,909
2051	3,985
2052	4,062
2053	4,141
2054	4,221
2055	4,303
2056	4,387
2057	4,472
2058	4,559
2059	4,647
2060	4,737

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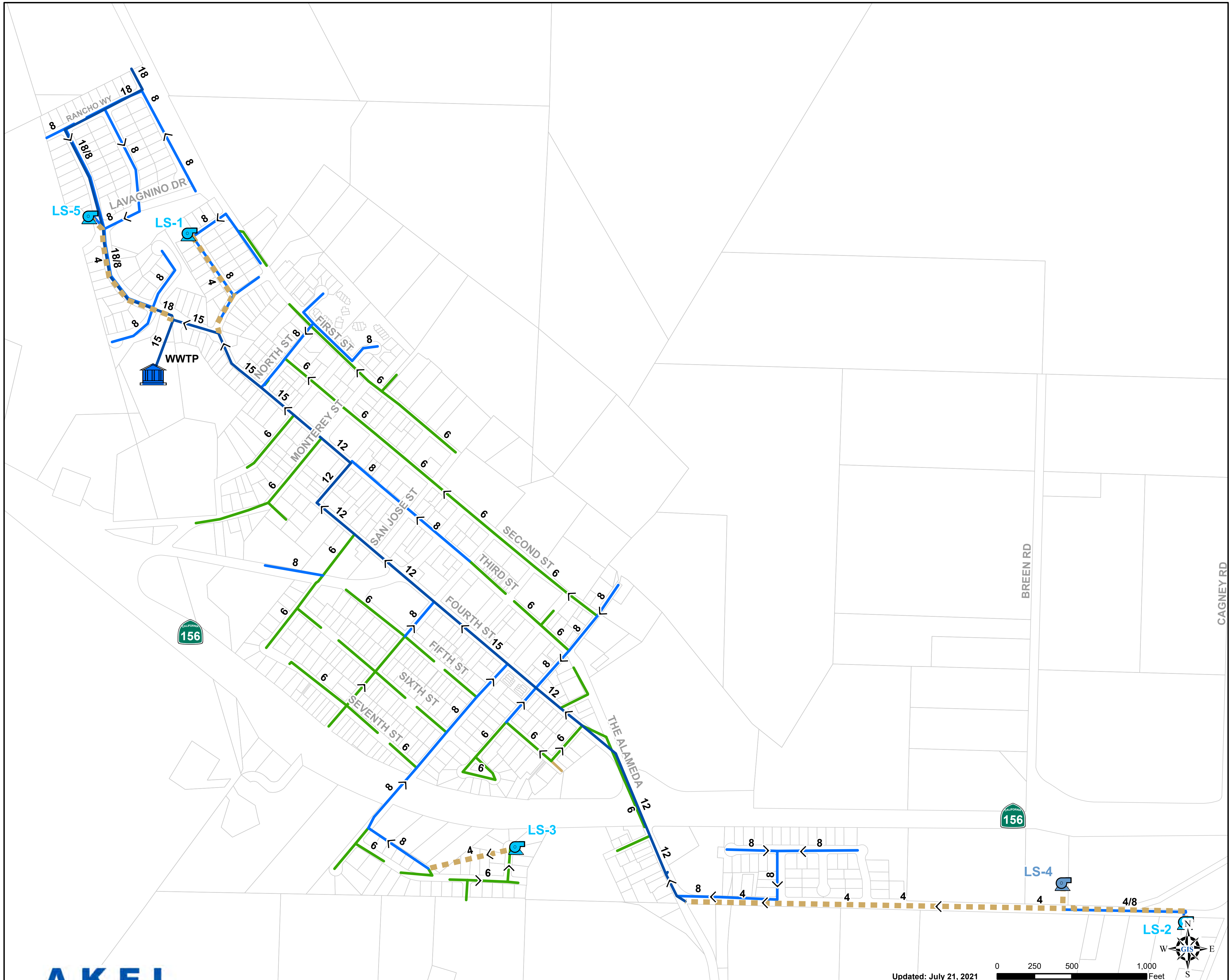
7/15/2021

Note :

1. Historical Populations per California Department of Finance estimates.
2. Projected populations based on AMBAG population projection plus half the difference between AMBAG and General Plan population projections, equal to approximately 1.9%.



Legend

Existing System

- WWTP
- Lift Station
- Private Lift Station

Gravity Mains by Diameter

- 4"
- 6"
- 8"
- 10" and Greater
- Force Mains
- Parcels

Figure 4.1
Existing System
Wastewater Master Plan
Amendment No. 1
City of San Juan Bautista

AKEL
ENGINEERING GROUP, INC.

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Table 5.3 Wastewater Design Flows

Wastewater Master Plan - Amendment No. 1

City of San Juan Bautista

Existing, Intemediate and Buildout Planning Horizons	Description	Year	Design Flows				
			Average Annual (mgd)	Maximum Day		Peak Hour	
				Dry Weather Flow (mgd)	Wet Weather Flow (mgd)	Peak Dry Weather Flow (mgd)	Peak Wet Weather Flow (mgd)
Existing	2020 Conditions	**2020**	0.16	0.28	0.40	0.51	0.77
Intermediate (Planning Horizon)	Focus of Master Plan Amendment No. 1	**2035**	0.26	0.46	0.65	0.82	1.09
Buildout (Horizon of General Plan)	2020 Master Plan Projections	**2060**	0.43	0.75	1.08	1.39	1.63

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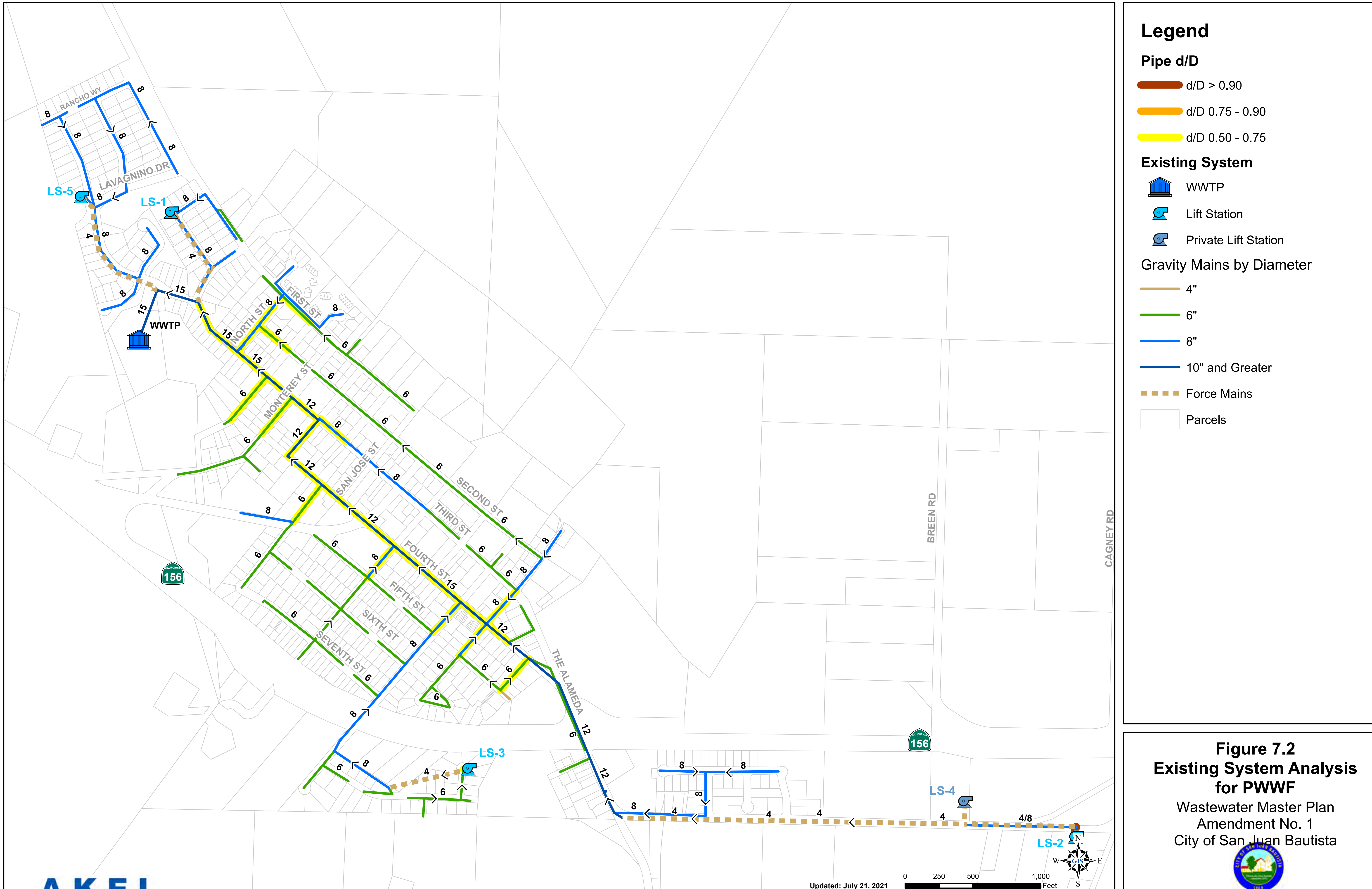

Updated: July 21, 2021

File Path: P:\xGIS\GIS_Projects\San_Juan_Bautista\Sewer\191112-MP\Hardcopy\SJB_Fig7-2_PDWWF_072121.mxd

Figure 7.2
Existing System Analysis for PWWF
Wastewater Master Plan
Amendment No. 1
City of San Juan Bautista

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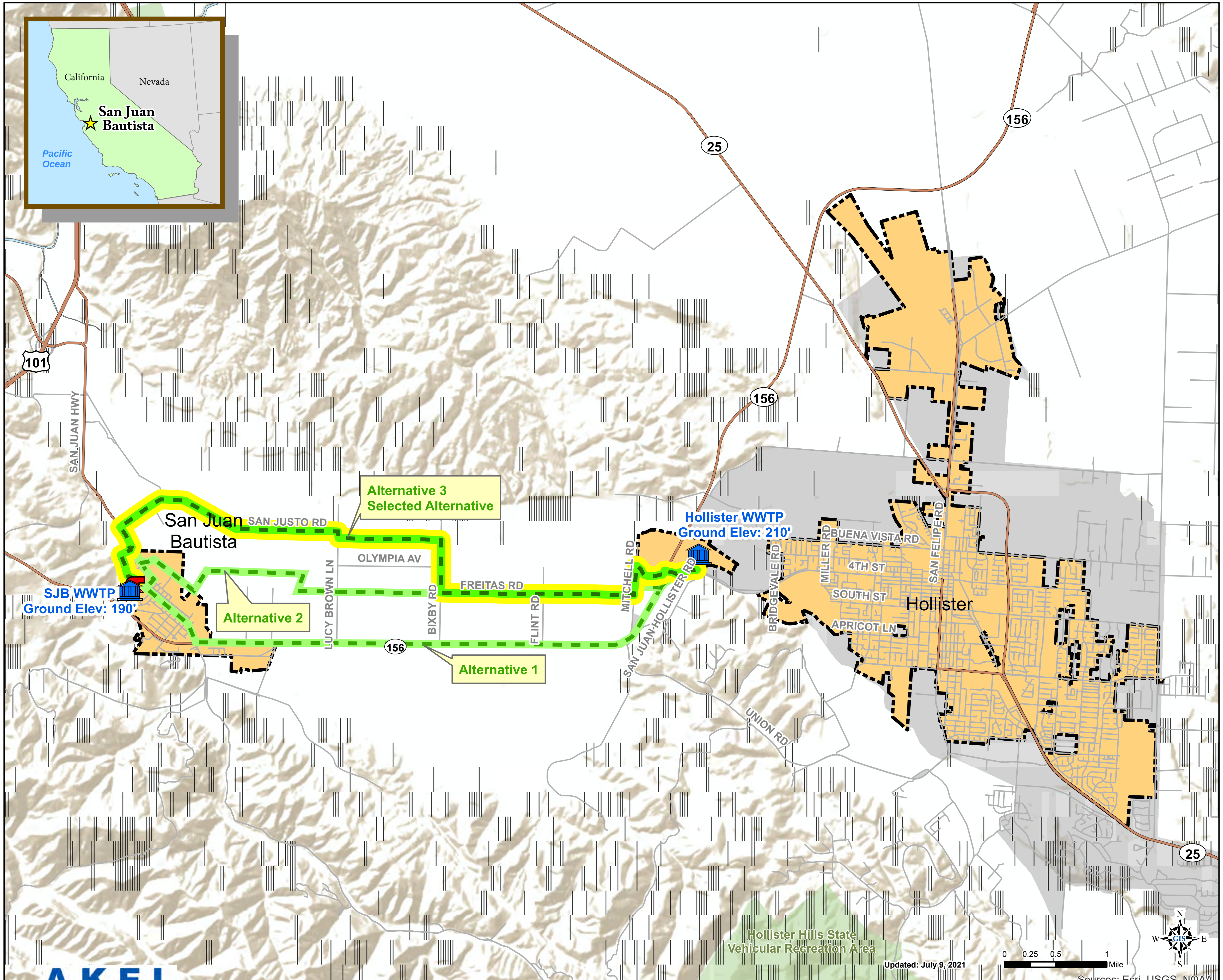

Legend

- Potential Lift Station
- Selected Connection Alignment
- Alternative Connection Alignments
- Major Highways
- City Limits
- Urbanized Area
- Protected Open Space
- Rivers/Streams
- Waterbodies

Figure 7.3
Regional
Connection Alternatives

Wastewater Master Plan Amendment No. 1 City of San Juan Bautista

AKEL
ENGINEERING GROUP, INC.

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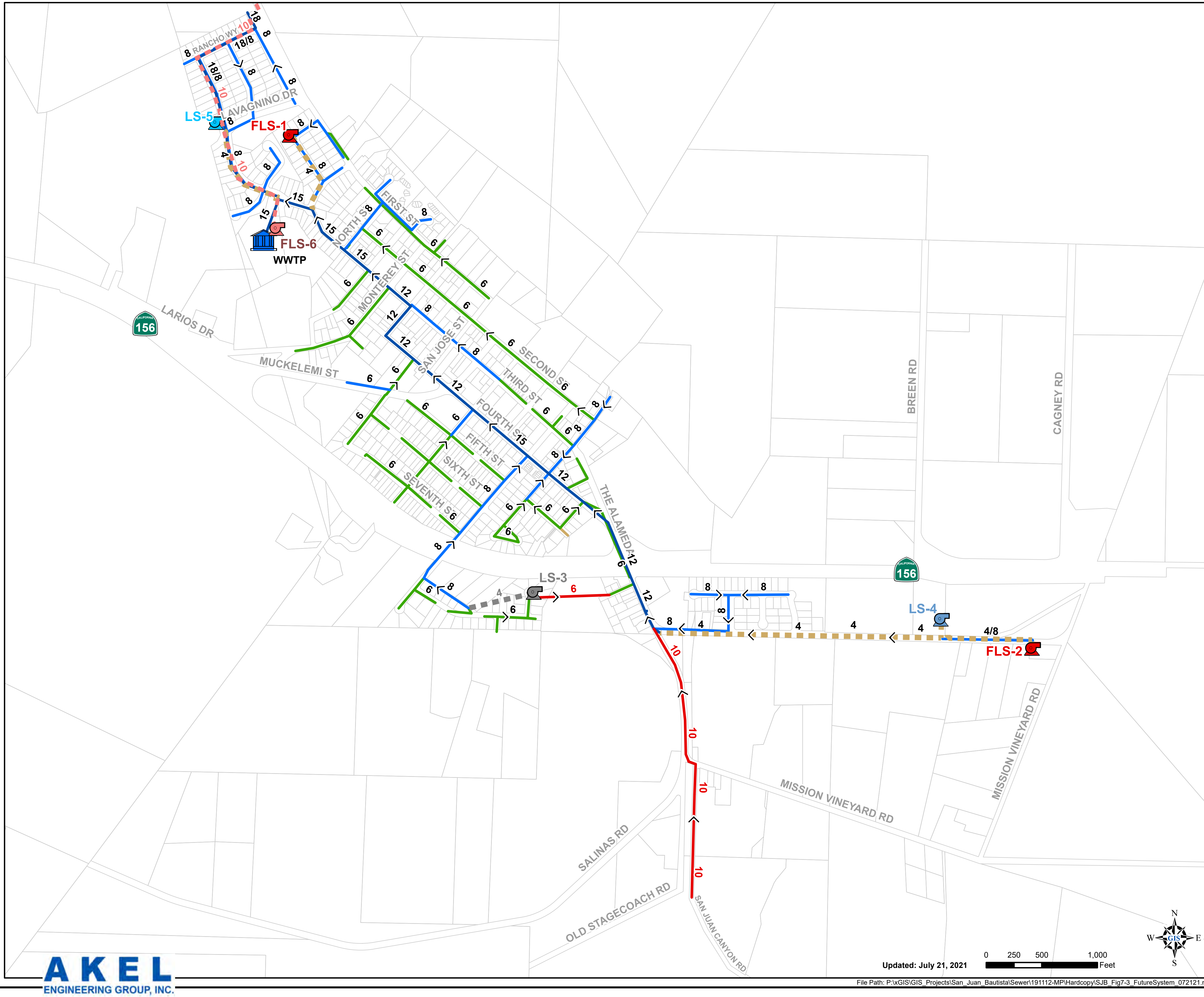

Figure 7.4
Recommended Improvements
Wastewater Master Plan
Amendment No. 1
City of San Juan Bautista

Table 7.1 Schedule of Improvements
Wastewater Master Plan
City of San Juan Bautista

Improv. No.	Type of Improvement	Alignment	Limits	Existing Diameter (in)	Pipeline Improvements New/Parallel/ Replace	Pipeline Improvements Diameter (in)	Pipeline Improvements Length (ft)
Pipeline Improvements							
P-1	Gravity Main	San Juan Canyon Rd	From 1,200 s/o Mission Vineyard Rd to Mission Vineyard Rd	-	New	10	1,200
P-2	Gravity Main	Monterey and Alameda State Hwy	From Mission Vineyard Rd to Old San Juan Hollister Rd	-	New	10	1,350
P-3	Gravity Main	ROW	From Lang Ct. Cul-de-sac to Lang St.	-	New	6	720
P-4	Force Main	Along San Justo Road north of Hwy 156	From San Juan Bautista WWTP to Hollister WWTP	-	New	10	39,750
P-5	Casing	ROW	Crossing under Hwy 156	-	New	30	160
Lift Station Improvements							
FLS-1	Lift Station Replacement	Lift Station 1 (SJB WWTP)			Replace	3 @ 20 gpm	
FLS-2	Lift Station Replacement	Lift Station 2 (Old San Juan Hollister Rd & Mission Vineyard Rd)			Replace	2 @ 350 gpm	
FLS-6	New Lift Station	SJB Wastewater Treatment Plant			New	3 @ 550 gpm	

AKEL ENGINEERING GROUP, INC.

8/23/2021

Notes:

1. Improvements P-4, P-5, and FLS-6 are required for the Regional Connection Alternative as documented in Alternative 3 of the *Wastewater Treatment Improvements Project Preliminary Engineering Report* completed by Stantec Consulting Services.

Table 7.2 Existing Lift Station and Capacity Analysis

Wastewater Master Plan

City of San Juan Bautista

Pump Station No.	Facility Name	Firm Capacity (Excludes Standby)	Total Capacity (Includes Standby)	Existing Peak Flows				Buildout Flows				Surplus/ Deficiency	Adequate Capacity	Recommended Total Pump Station Capacity
				Dry Weather		Wet Weather		Dry Weather		Wet Weather				
		(gpm)	(gpm)	(gpm)	(mgd)	(gpm)	(mgd)	(gpm)	(mgd)	(gpm)	(mgd)	(gpm)		(gpm)
LS-1	(SJB WWTP)	40	60	22.4	0.032	37.1	0.053	23.1	0.033	38.2	0.055	1.8	No	3 @ 20 gpm
LS-2[1,2]	(Old San Juan Hollister Rd & Mission Vineyard Rd)	100	200	325.0	0.468	73.8	0.106	76.5	0.110	100.2	0.144	225.0	No	2 @ 350 gpm
LS-3[3]	(Lang Ct. Cul-de-sac)	67	134	8.5	0.012	17.6	0.025	Lift Station to be Abandoned				-	-	-
LS-5	(Rancho Vista Lift Station)	100	200	3.4	0.005	4.5	0.006	26.6	0.038	90.1	0.130	9.9	Yes	

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Notes:

1. There are no existing users tributary to Lift Station 2 that contribute Dry Weather Flow. Wet Weather flow is based on Rainfall Dependent Infiltration and Inflow for the area tributary to the Lift Station.
2. Existing Dry Weather Flow of 325 gpm provided by City Staff July 21, 2021 to reflect temporary Backwash and Treated Discharge flow from Domestic Water Well #6
3. Lift Station 3 to be abandoned per City comments.

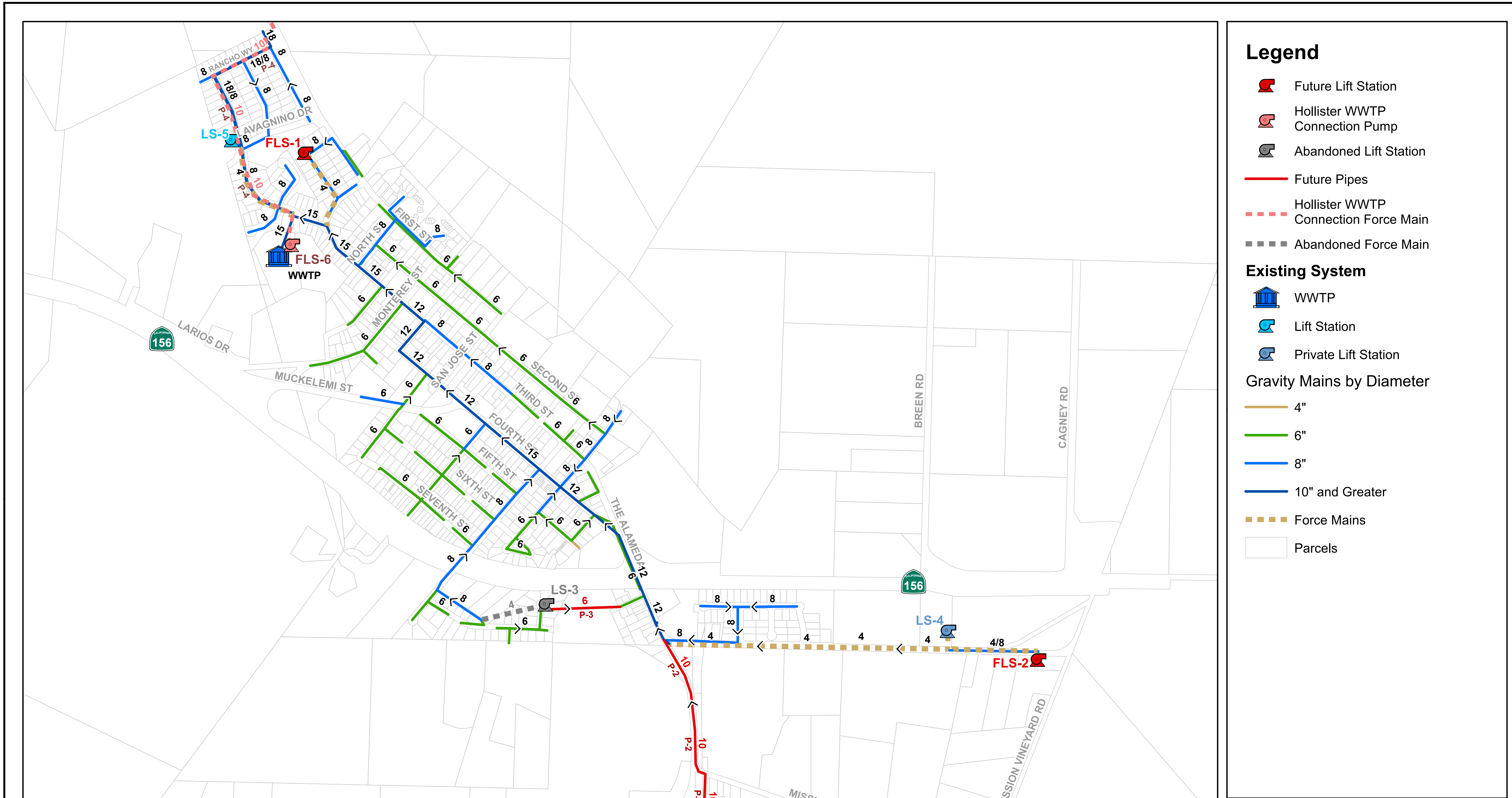

Figure 8.1
Capital Improvement Program
Wastewater Master Plan
Amendment No. 1
City of San Juan Bautista

Table 8.2 Buildout Capital Improvement Program

Wastewater Master Plan
City of San Juan Bautista

Improv. No.[1]	Type of Improvement	Alignment	Limits	Improvement Details				Infrastructure Costs[2] Unit Cost ($)	Infrastructure Costs[2] Infr. Cost[3] ($)	Baseline Construction Cost ($)	Estimated Construction Cost[4,5] ($)	Capital Improvement Cost[5,6] ($)	Construction Trigger	Suggested Cost Allocation Existing Users (%)	Suggested Cost Allocation Future Users (%)	Cost Allocation Existing Users ($)	Cost Allocation Future Users ($)
Pipeline Improvements				Existing Diameter (in)	New/ Replace	Diameter (in)	Length (ft)										
P-1	Gravity Main	San Juan Canyon Rd	From 1,200 s/o Mission Vineyard Rd to Mission Vineyard Rd	-	New	10	1,200	273	327,600	327,600	425,900	553,700	With Development	0%	100%	0	553,700
P-2	Gravity Main	Monterey and Alameda State Hwy	From Mission Vineyard Rd to Old San Juan Hollister Rd	-	New	10	1,350	273	368,550	368,600	479,200	623,000	With Development	0%	100%	0	623,000
P-3	Gravity Main	ROW	From Lang Ct. Cul-de-sac to Lang St.	-	New	6	720	183	132,088	132,100	171,800	223,400	Existing Deficiency	100%	0%	223,400	0
							Subtotal - Pipeline Improvements		**828,238**	**828,300**	**1,076,900**	**1,400,100**				**223,400**	**1,176,700**
Lift Station Improvements				Existing Capacity (gpm)	New/ Replace	Capacity (gpm)											
FLS-1	Lift Station Replacement	Lift Station 1 (SJB WWTP)		3 @ 20 gpm	Replace	3 @ 20 gpm			413,253	413,300	537,300	698,500	Existing Deficiency	97%	3%	678,539	19,961
FLS-2	Lift Station Replacement	Lift Station 2 (Old San Juan Hollister Rd & Mission Vineyard Rd)		2 @ 100 gpm	Replace	2 @ 350 gpm			727,950	728,000	946,400	1,230,400	With Development	0%	100%	0	1,230,400
							Subtotal - Lift Station Improvements		**1,141,203**	**1,141,300**	**1,483,700**	**1,928,900**				**678,539**	**1,250,361**
Regional Connection Alternative[3]				Existing (in) (gpm)	New/ Replace	Diameter Capacity (in) (gpm)	Length (ft)										
P-4[7,8]	Force Main	Along San Justo Road north of Hwy 156	From San Juan Bautista WWTP to Hollister WWTP	-	New	8	39,000	-	-	-	-	-	Existing Deficiency	37%	63%	-	-
P-5[7]	Casing	ROW	Crossing under Hwy 156	-	New	28	160	-	-	-	-	-	Existing Deficiency	37%	63%	-	-
FLS-6[7,8]	New Lift Station	SJB Wastewater Treatment Plant		-	New	3 @ 550 gpm			-	-	-	-	Existing Deficiency	37%	63%	-	-
							Subtotal - Lift Station Improvements[5]		**6,846,840**	**6,846,900**	**6,846,900**	**8,558,625**		37%	63%	**3,148,720**	**5,409,905**
Total Wastewater System Improvements																	
							Subtotal Pipeline Improvements		**828,238**	**828,300**	**1,076,900**	**1,400,100**				**223,400**	**1,176,700**
							Subtotal Lift Station improvements		**1,141,203**	**1,141,300**	**1,483,700**	**1,928,900**				**678,539**	**1,250,361**
							Subtotal Regional Connection Alternative		**6,846,840**	**6,846,900**	**6,846,900**	**8,558,625**				**3,148,720**	**5,409,905**
							Total Improvement Costs		**8,816,281**	**8,816,500**	**9,407,500**	**11,887,625**				**4,050,659**	**7,836,966**

8/23/2021

Notes:

1. Improvements P-4, P-5, and FLS-6 are required for the Regional Connection Alternative as documented in Alternative 3 of the *Wastewater Treatment Improvements Project Preliminary Engineering Report* completed by Stantec Consulting Services.
2. Infrastructure construction costs estimated using August 2021 ENR CCI of 12,464.
3. Infrastructure Costs for the Regional Connection Alternative were extracted from the *Wastewater Treatment Improvements Project Preliminary Engineering Report* completed by Stantec Consulting Services.
4. Baseline construction costs plus 30% to account for unforeseen events and unknown conditions.
5. To ensure consistency with the *Wastewater Treatment Improvements Project Preliminary Engineering Report completed by Stantec Consulting Services*, Capital Improvement Costs for the Regional Connection Alternative only include a singular contingency markup of 25%.
6. Estimated construction costs plus 30% to cover other costs including: engineering design, project administration (developer and City staff), construction management and inspection, and legal costs.
7. Infrastructure Costs for P-4 and P-5 are accounted for in improvement FLS-6.
8. Regional Connection Alternative updated alignment and diameter provided by Stantec Consulting on June 29, 2021.

APPENDIX B

Wastewater Treatment Improvements Project

San Juan Bautista, Wastewater Treatment Improvements Project

Preliminary Engineering Report

February 16, 2021

Submitted to:

Akel Engineering Group, Inc.

Prepared for:

The City of San Juan Bautista

Prepared by:

Stantec Consulting Services Inc.

This document entitled San Juan Bautista, Wastewater Treatment Improvements Project Preliminary Engineering Report was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of City of San Juan Bautista (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by ______________________________
(signature)

Beth Cohen, P.E.

Reviewed by ______________________________
(signature)

Steven L. Beck, P.E.

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INTRODUCTION

The San Juan Bautista Wastewater Treatment Plant (WWTP) operates under Order No. R3-2009-0019 NPDES permit No. CA0047902. Amongst other effluent limitations, the average monthly discharge limits for chloride, sodium, and total dissolved solids (TDS) are 200 mg/L, 250 mg/L, and 1400 mg/L, respectively. The City has been in violation of these three effluent limits for several years and currently remains in violation.

The elevated chloride, sodium, and TDS levels observed in the City's wastewater are thought to be driven by agricultural processing (disinfection chemicals) and source water (groundwater) hardness and associated self-regenerating water softeners used for potable water treatment throughout the community. The agricultural processing facilities discharge can be mitigated by establishing a new industrial pre-treatment program, but source water reductions may still be necessary. The existing groundwater wells produce very hard water (greater than 300 mg/L as $CaCO_3$) and, as a result, many of the City's residents have installed domestic self-regenerating water softeners to provide local treatment. Water softeners exchange calcium and magnesium (the main constituents contributing to hardness) for sodium or common salt (sodium chloride, NaCl). This process results in elevated chloride, sodium, and TDS concentrations that are discharged into the City's wastewater collection system and then pass through the WWTP untreated, causing effluent discharge permit violations.

The purpose of this report is to investigate alternatives and develop a recommended program to bring the wastewater treatment plant into compliance with regulatory requirements. The alternative projects considered herein include the following:

1. <u>Alternative 1, On-Site WWTP Upgrades and Off-Site Salinity Control</u>: Provide source control in order to reduce the wastewater influent salinity concentrations to permittable levels. This project will allow the existing WWTP to remain operational with upgrades to the existing process facilities. All off-site salinity control options will also include the implementation of an industrial pre-treatment program for agricultural processing facilities (to limit salt discharge from those users).

    A. Off-site salinity control will be accomplished by replacing well water (very hard water) with treated surface water (moderately hard) and remove self-regenerating water softeners in order to reduce the wastewater influent salinity concentrations to permittable levels (as detailed in Appendix A.1).

2. <u>Alternative 2, On-Site WWTP Upgrades and On-Site Salinity Control:</u> This project will replace the existing WWTP sequencing batch reactor (SBR) treatment system with a new membrane bioreactor (MBR), and reverse osmosis (RO) treatment or Electrodialysis Reversal (EDR) facilities that will remove salinity.

3. Alternative 3, Regionalization with Hollister WWTP and Off-Site Salinity Control: Provide source control in order to reduce the wastewater influent salinity concentrations and then pump the influent wastewater to a neighboring community (the City of Hollister WWTP). This project will replace the existing WWTP with an equalization basin and emergency storage pond to service a new pump station and pipeline to the Hollister WWTP for off-site treatment and disposal. All off-site salinity control options will also include the implementation of an industrial pre-treatment program for agricultural processing facilities (to limit salt discharge from those users).

   A. Off-site salinity control will be accomplished by replacing well water (very hard water) with treated surface water (moderately hard) and remove self-regenerating water softeners in order to reduce the wastewater influent salinity concentrations to permittable levels (as detailed in Appendix A.1).

Alternatives 1 and 3 both require agricultural processing facilities to have an industrial pre-treatment program (reducing the allowable salinity discharge into the sewers) and potable water source control in order to reduce wastewater influent salinity concentrations to permittable levels (i.e. providing soft water to the community and eliminating self-regenerating water softeners that dump high levels of chloride, sodium, and TDS into the sewers). The source control options were investigated in a separate report (see Appendix A.1) that will be considered herein for its life cycle costs and impacts on the associated alternative.

This Preliminary Engineering Report documents the alternative analysis and provides additional information related to the Best Apparent Project with the intent of complying with the requirements of the United States Department of Agriculture – Rural Development (USDA-RD) funding program.

1.0 PROJECT PLANNING

The purpose of this section is to describe the project area, including the location, environmental resources, population and community. This section is divided into the following sub sections.

- Project Location
- Environmental Resources Present
- Population Trends
- Community Engagement

1.1 LOCATION

The City of San Juan Bautista (City) provides sanitary sewer collection, treatment and disposal for the community and is located in San Benito County, California. The Wastewater Treatment Plant (WWTP) is located on APN 002-220-0070 at 1120 Third Street, San Juan Bautista, CA 95045. A vicinity map showing the location of the WWTP is shown in **Figure 1**.

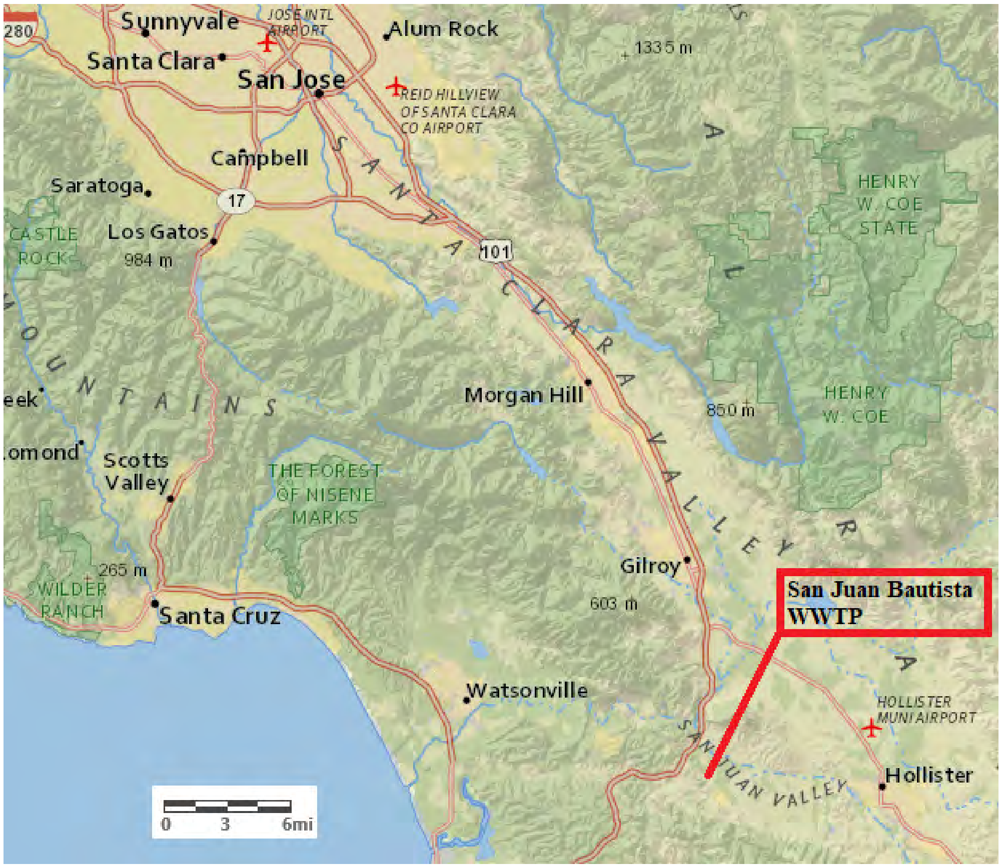


Figure 1 San Juan Bautista WWTP Vicinity Map

1.2 ENVIRONMENTAL RESOURCES PRESENT

A separate CEQA Initial Study and Mitigated Negative Declaration (IS/MND) checklist will be provided to document environmental resources present in the Project area and impacts from this Project are generally anticipated to be as follows:

- **Aesthetics**. Less than significant with mitigation incorporated. The selected project is considered to have less than significant impact.
- **Agricultural Resources**. No Impact. The selected project is not anticipated to impact any existing farmland (as the entire project falls under the rehabilitation of existing facilities and regional pipeline alignments along existing roads within the public-right-of way) and could be used to improve those resources by providing high quality effluent discharged to downstream agricultural resources.

- **Air Quality**. Less than significant with mitigation incorporated. The selected project will have a similar amount of equipment as the existing facilities, with the opportunity to provide more efficient motors and control algorithms within the rehabilitated facility.
- **Biological Resources**. No Impact. The selected project does not have any impacts to known habitat as it involves replacing existing infrastructure. However, habitat is known to exist in the project vicinity and will require careful biological surveys.
- **Cultural Resources**. No Impact. The site has been extensively modified and no archeological or historic resources were noted during the construction and operation of the facility. Further, if human remains are unearthed during construction, the project will be halted until a qualified archeologist can assess its significance and until the County Coroner has made necessary findings as to the origin.
- **Geology and Soils**. Less Than Significant Impact. The selected project is expected to have an equal or lesser risk related to expansive soils.
- **Hazardous Material**. Less than significant. The selected project does not anticipate encountering any hazardous materials and all process chemicals will be double contained.
- **Hydrology and Water Quality**. No Impact. The selected project is anticipated to have a positive impact on water quality.
- **Land Use and Planning**. No Impact. The selected project would not change or alter any existing land use planning.
- **Mineral Resources**. No Impact. The selected project is not anticipated to impact mineral resources.
- **Noise**. No Impact. The selected project is not anticipated to create more noise than the existing wastewater facility and, in fact, will have modern drives and controllers that reduce noise from potential receptors.
- **Population and Housing**. No Impact. The selected project will serve the same community plan and have a positive impact on the surrounding community by providing reliable wastewater treatment.
- **Public Services**. No Impact. The selected project will not impact public services.
- **Recreation**. No Impact. The selected project will not impact recreation opportunities in the community.
- **Transportation/Traffic**. No Impact. The selected project will not impact traffic except during construction, but there will be no long-term transportation or traffic impacts.
- **Utilities or Services**. No Impact. The selected project will not impact utilities except to repair and rehabilitate the City of San Juan Bautista WWTP.

1.2.1 Engineered Environmental Mitigation

The proposed Project is located within the existing WWTP fence line (and potentially a regional pipeline along road alignments within the public right-of-way), in previously disturbed areas and the nearest neighbors are over 200 feet away. As such, the Project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community or reduce the number or restrict the range of a rare or endangered plant or animal. The amount of disturbance within the Project area (existing WWTP and roadways) indicates a low likelihood that cultural resources would be encountered during Project construction activities. Therefore, the potential array of impacts is considered less than significant and assumed to require the following Best Management Practices (to be verified in the IS/MND):

Erosion Control and Stormwater Pollution Prevention Plan: The construction contractor will prepare an erosion control plan and a stormwater pollution prevention plan prior to construction for all grading activities that exceed one acre of disturbance (as required by the Regional Board). The plans shall provide, at a minimum, measures to trap sediment, stabilize excavated soil piles, stabilize and revegetate disturbed areas, and any special stabilization measures required by the design engineer or the City. The plan shall be implemented and inspected accordingly in compliance with the permit throughout the construction process.

Noise Control: The construction contractor will be responsible for keeping construction noise levels within an acceptable range according to applicable County standards and ordinances.

Dust and Emission Control Plan: The construction contractor will prepare a dust and emission control plan prior to construction. The plans shall provide, at a minimum, measures to reduce dust and emissions (by minimizing idling time of diesel-powered equipment, apply water to disturbed areas, restrict grading and earth moving operations when wind speeds exceed 20 mph, etc.)

1.3 POPULATION TRENDS

Since the 1990's the City of San Juan Bautista has experienced a slow, but steady, rate of growth. According to census data, the City has grown from a population of 1,390 (in 1990) to a population of 1,862 (in 2010), as shown in **Table 1**. This equates to an approximate annual growth rate of 1.5%.

In accordance with the 2014-2018 American Community Survey (ACS) 5-year estimates, the population in 2018 was 1,965. This intermediate measurement shows a slowing in the growth for the rural community.

Table 1 San Juan Bautista Population Data

Year	Population
1990	1,390
2000	1,548
2010	1,862
2018 (ACS)	1,965
2020*	2,030
2030*	2,247

*Projections based on least regression model.

1.4 COMMUNITY ENGAGEMENT

In the City's efforts to achieve the project objectives, public involvement is an important aspect of the overall plan, so that the City residents and businesses know what the City is doing with their water resources (potable water and wastewater), why, and how the City intends to 1) protect public health and enhance the environment, 2) comply with pertinent laws and regulations, 3) protect the value of properties served by the water and wastewater utilities, and 4) fund the improvements. Primary outreach efforts include:

- Community Workshops
- Community Survey
- Utility Bill Inserts
- Board Meetings

The need for wastewater treatment improvements has been known by the City for many years, as the plant has been out of compliance since the 2009 NPDES permit was adopted, and has been discussed over the years at many City Council meetings with public discussion and discourse. Most recently, there was a City Council and community workshop held on February 15, 2020, to set goals for the City (including water and wastewater treatment). Further, the City initiated a community survey to identify what is important to ratepayers. The survey was mailed to every resident in the March 2020 water utility bill. Additionally, presentations have been made by City Staff to the Council related to the project, including (most recently) on April 21, 2020. These presentations included opportunity for public involvement during the public comment period.

2.0 EXISTING WWTP FACILITIES

The existing San Juan Bautista Wastewater Treatment Plant (WWTP) is a tertiary treatment facility and is described herein.

2.1 LOCATION MAP

The existing treatment facility site layout is shown in **Figure 2**.

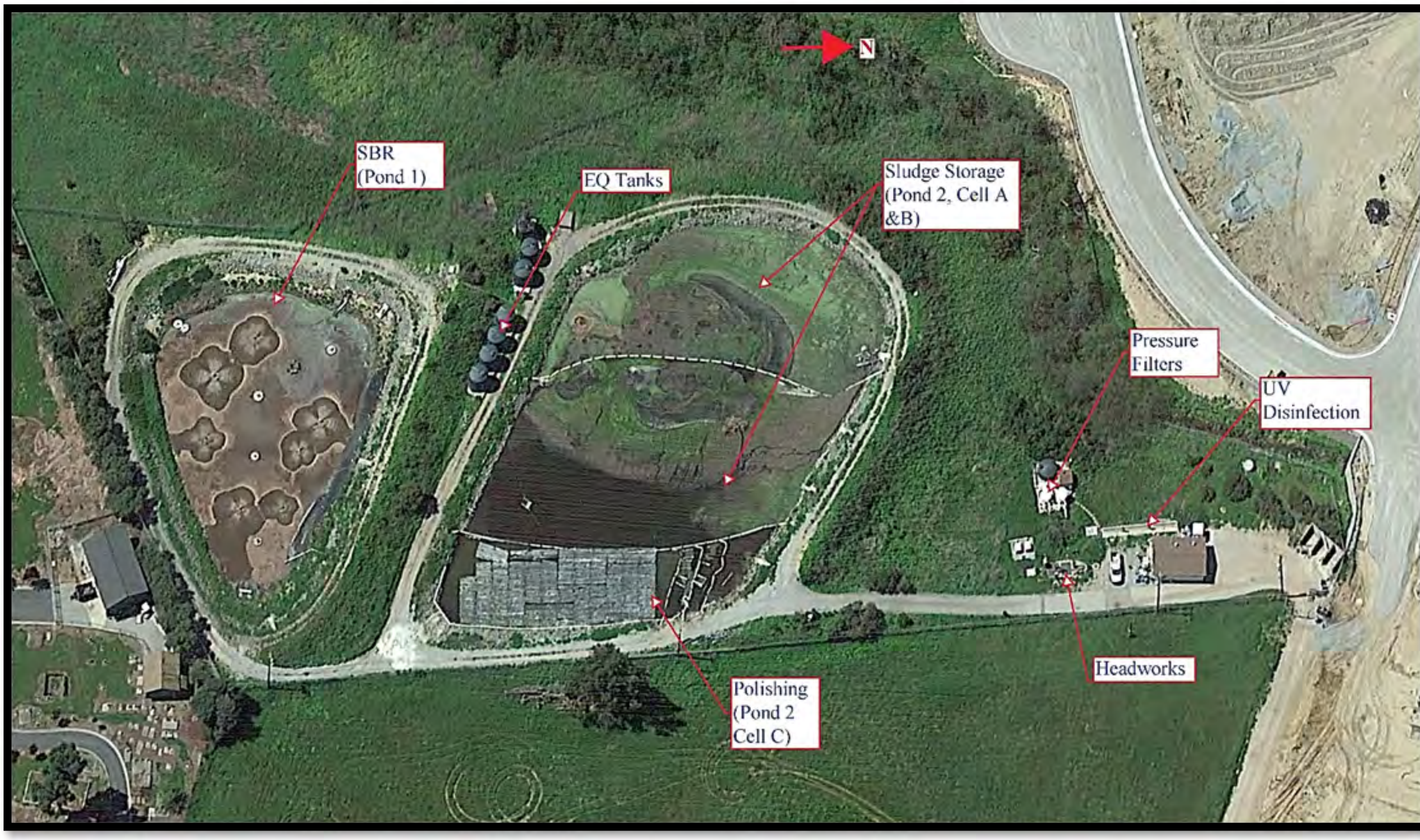


Figure 2 San Juan Bautista WWTP Site Layout

2.2 HISTORY

The original wastewater treatment plant was a facultative pond plant. The last major improvements project, in 2010, upgraded Pond 1 to an aerated pond that functions as sequencing batch reactors (SBR) and split Pond 2 into three cells (Cell A, B, and C). Cell C functions as a denitrifying polishing pond, while cells A and B are used as sludge storage lagoons. The 2010 upgrade project also added a mechanical basket screen (in the headworks), a new dual media pressure filtration system, and UV disinfection system. In 2018, the City removed 30-years of accumulated sludge from Pond 2, to accommodate continued operation of the treatment plant.

2.2.1 Flows and Load Characterization

Historical Flows

Influent flow data for the period from January 2016 to April 2020 were obtained and analyzed. Data shown herein is in gallons per day (gpd) or million gallons per day (Mgal/d). Daily, monthly and annual average flows are shown in **Figure 3**. The monthly flow was calculated as the rolling 30-day centered average based on the period from 14 days before to 15 days after the day in question. The annual average flow was calculated as the rolling 365-day centered average based on 182 days before to 182 days after the date in question. As shown, there are large flow spikes throughout the year and these correspond to dates when there were large storm events (January 2017 storm event resulted in 14-inches of rainfall in the month and February 2019 resulted in 7.5-inches of precipitation) and/or when industrial dischargers send wash water to the WWTP (annual average daily flow rate of 25,000 gpd and max day of 100,000 gpd).

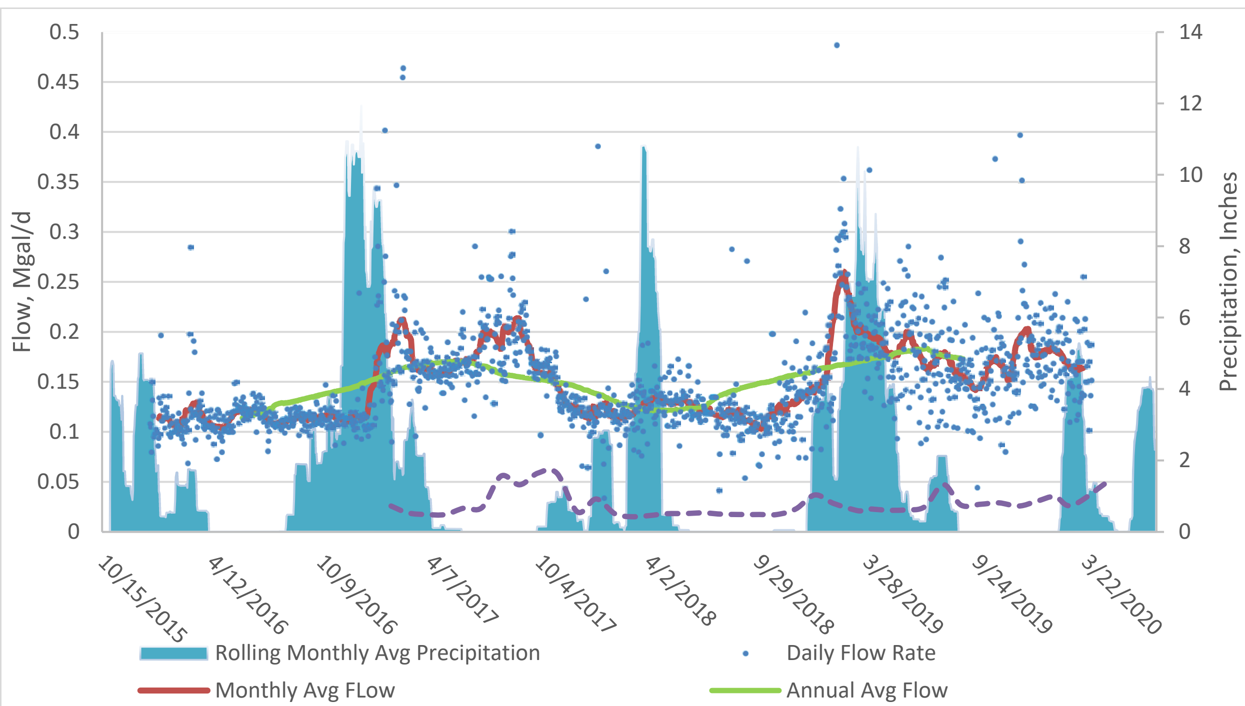


Figure 3 WWTP Historical Influent Flow Rates

The ratio of the daily flow and monthly flow to the annual average flow is plotted in **Figure 4**. The ratios of peak month flow and peak day flow to the AAF is 1.58 and 2.97, respectively as shown in **Figure 4**. The average dry weather flow (ADWF) was calculated as the average daily flow from June 1st through August 31st each year. The data shows that the AAF is nearly identical to ADWF, which indicates minimal inflow/infiltration and that industrial dischargers has a large impact on season flow, see **Table 2**.

The peak hour flow is an important parameter for wastewater treatment plant design because the headworks and the influent pumping must be designed to handle the short-term peak flows. There are no hourly logs available at the plant and so the peak hour flow ratio is assumed to be 4.0.

Based on the above data analysis, the recommended flow peaking factors are as follows:

Average Dry Weather Flow / Annual Average Flow (ADWF / AAF) = 1.0	(Table 2)
Max Month Flow / Annual Average Flow (MMF / AAF) = 1.58	(Figure 4)
Peak Day Flow / Annual Average Flow (PDF / AAF) = 2.97	(Figure 4)
Peak Hour Flow / Annual Average Flow (PHF / AAF) = 4.0	(assumed)

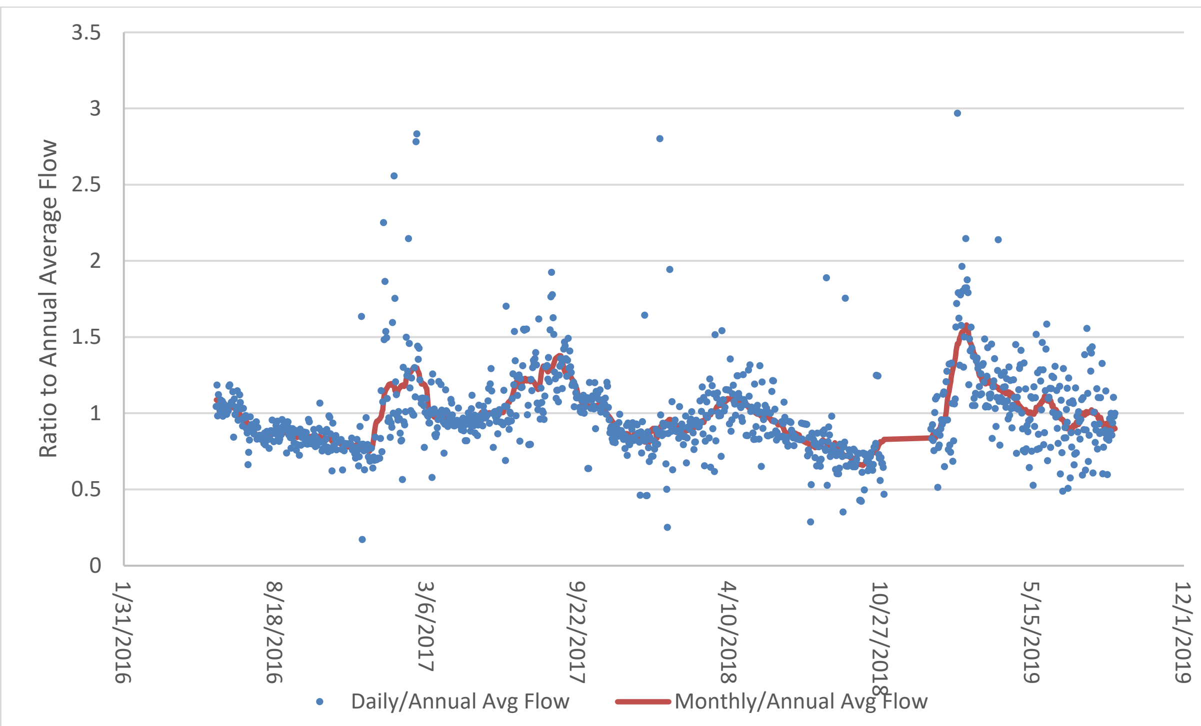


Figure 4 Flow Peaking Factors (Ratio of Daily and Monthly Flow to AAF)

Table 2 Relationship Between ADWF and AAF

Year	ADWF Mgal/d	AAF, Mgal/d[a]	ADWF/AAF Ratio
2016	0.12	0.11	1.01
2017	0.19	0.17	1.12 [b]
2018	0.12	0.12	1.00
2019	0.17	0.18	0.96

a) Calculated as the average daily flow during a specific year
b) Industrial Dischargers contributed to 25% of the flow during the 2017 summer months, skewing the ratio

Historical Loads

Plant influent Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) concentrations from January 2016 to March 2020 were obtained and analyzed. Samples were flow based proportional composites (although the solenoid valve that is supposed to automatically open to take the sample has become unreliable, making the sample not fully representative of the entire day's loading). These samples were taken twice a month. BOD and TSS concentrations (mg/L) and daily influent flows were used to calculate the influent load (lb/d). As shown in **Figure 5**, the annual average BOD and TSS loads were calculated to be 334 lb/d and 351 lb/d, respectively.

Both influent BOD and TSS concentrations were highly variable beginning in 2018. Historically, samples were collected only on Thursdays. However, beginning in 2018, samples were also collected on the weekends (Friday and Saturday). Because there is a high concentration of restaurants within the City that accommodate out of town tourists, it is likely that weekend concentrations are higher than weekdays.

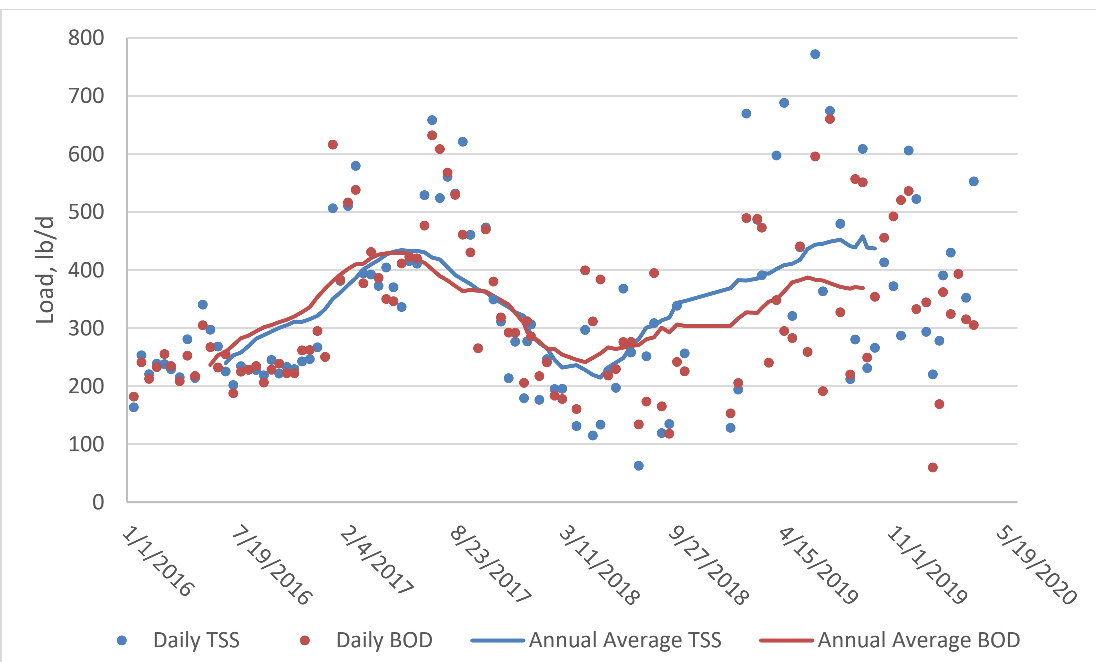


Figure 5 Influent BOD & TSS Loading

As a reality check, the average BOD expected from San Juan Bautista was calculated based on the City's population of approximately 1,900 capita and the typical BOD generation of 0.22 lb/capita/day when disposal grinders are utilized in the community or 0.18 lb/capita/day without grinders (Metcalf and Eddy, 4th edition). The resulting BOD load is between 342 and 418 lb/d, which is within the range observed from the historical sampling. As such, it is assumed that the existing annual average BOD load into the plant is 420 lb/d. It is noted that the loading increases during the summer of 2017 and 2019, likely from the industrial discharges as they are providing a higher flow rate during summer months of those two years.

However, the ratio of TSS to BOD was also variable beginning in 2018, which could be attributed to non-representative sampler withdrawal location. As shown in **Figure 6**, the ratio was around 1.0 until 2018 and then fluctuated between 0.5 and 2.1 thereafter. The typical value of TSS/BOD for municipal wastewater ranges from 1.0 to 1.1; a ratio of 1.1 was selected.

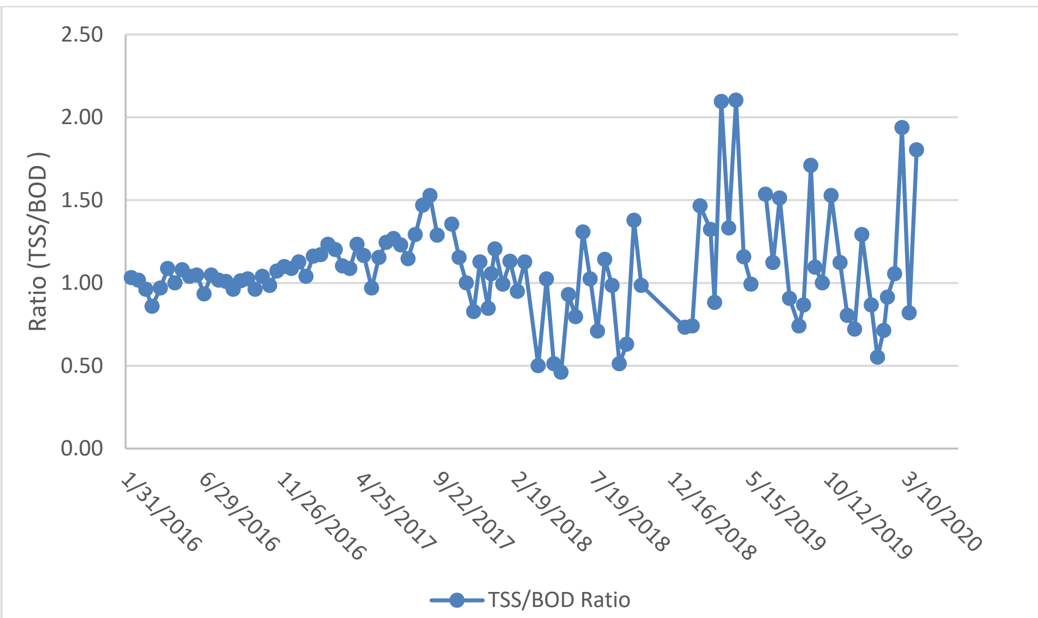


Figure 6 Influent TSS to BOD Ratio

Loading Peaking Factors

The size of the reactor basins should be large enough to accommodate a peak month load. Therefore, the ratio of the peak month load to the annual average load is an important design parameter. The ratios of the average day maximum month load (ADMML) to average annual load (AAL), for BOD and TSS, are shown in **Figure 7**. Since the historical load data is questionable, it is recommended to use a typical peak month load factor of 1.4 (adopted form Figure 3-8, Metcalf and Eddy, fourth edition), which is similar to the ratios found in the data prior to 2018.

Influent total Kjeldahl nitrogen (TKN, or ammonia plus organic nitrogen) is an important parameter that needs to be determined for plant design. The typical value of TKN/BOD for municipal wastewater ranges from 0.17 to 0.21. A conservative ratio of 0.19 is selected for design.

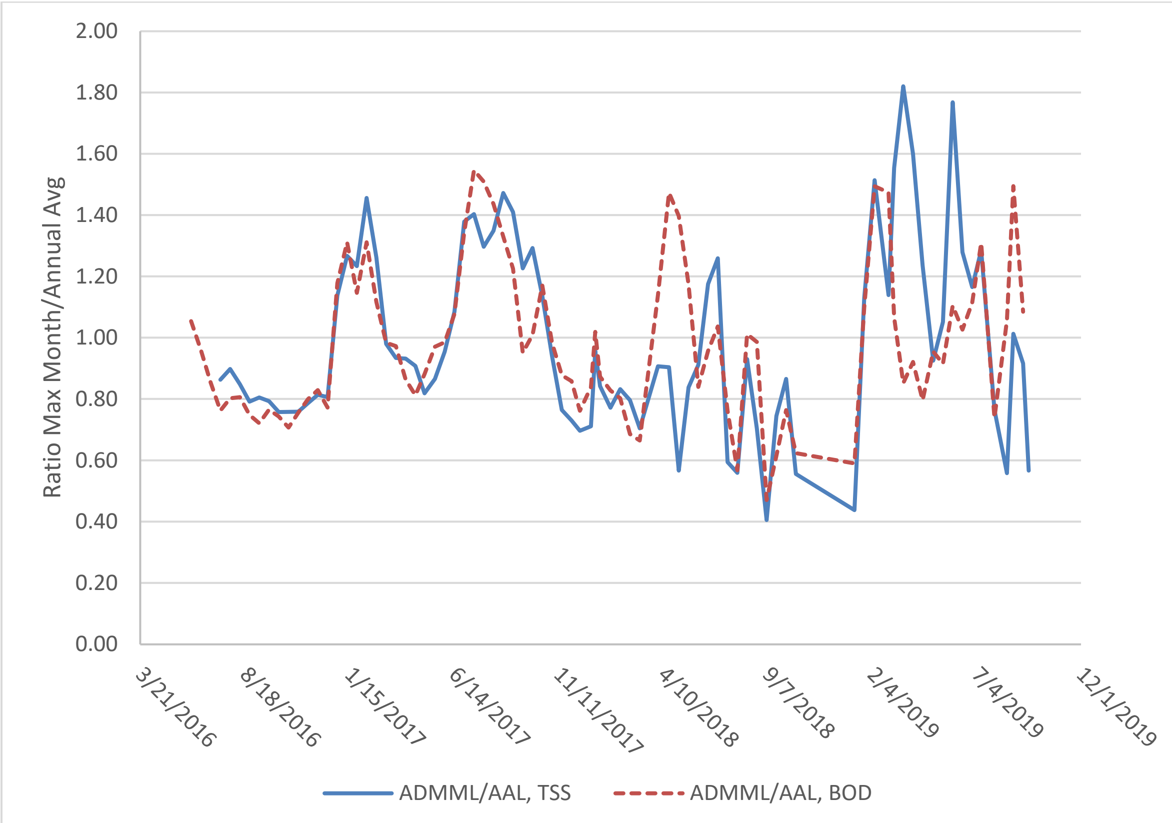


Figure 7 BOD and TSS Peaking Factors (Ratio of ADMML/AAL)

Historical Salt Concentrations

The data presented in this section provides the most up to date characterization of influent wastewater salt concentrations, so that effluent concentrations can be projected for this project. These samples were taken once a month, using a grab sample technique, which means each sample represents the wastewater concentration at a single point in time. The discharge permit issued by the Regional Board currently includes (and is expected to continue to include) limitations for TDS, chloride, and sodium. As shown in **Figures 8 to 11**, both the influent loading (lb/d) and influent concentrations have increased, likely due to the increasing population (adding associated flow) and water conservation measures, as well as continued discharge from the industrial dischargers. When people conserve water, the mass of pollutants (salt) discharged by each person remain unchanged, but because that mass is conveyed with less water, it results in higher pollutant concentrations arriving at the wastewater treatment facility.

The annual average influent concentrations for chloride and sodium are 600 mg/L and 300 mg/L, respectively, and the annual average concentration for TDS is 1800 mg/L.

A wastewater influent salinity balance is provided in **Section 2.5,** to document the likely contributors of salt loading on the plant.

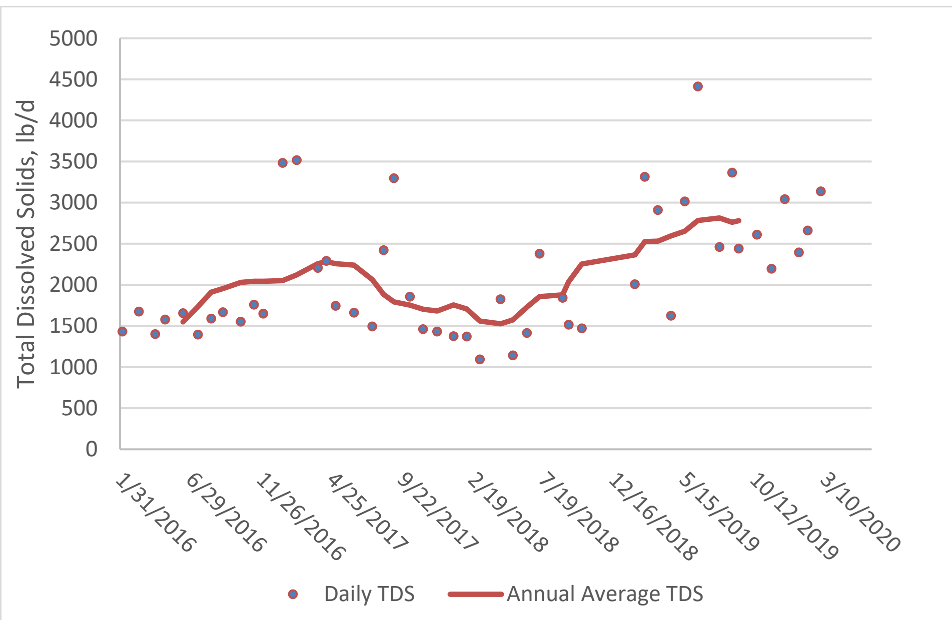


Figure 8 Influent TDS Loading

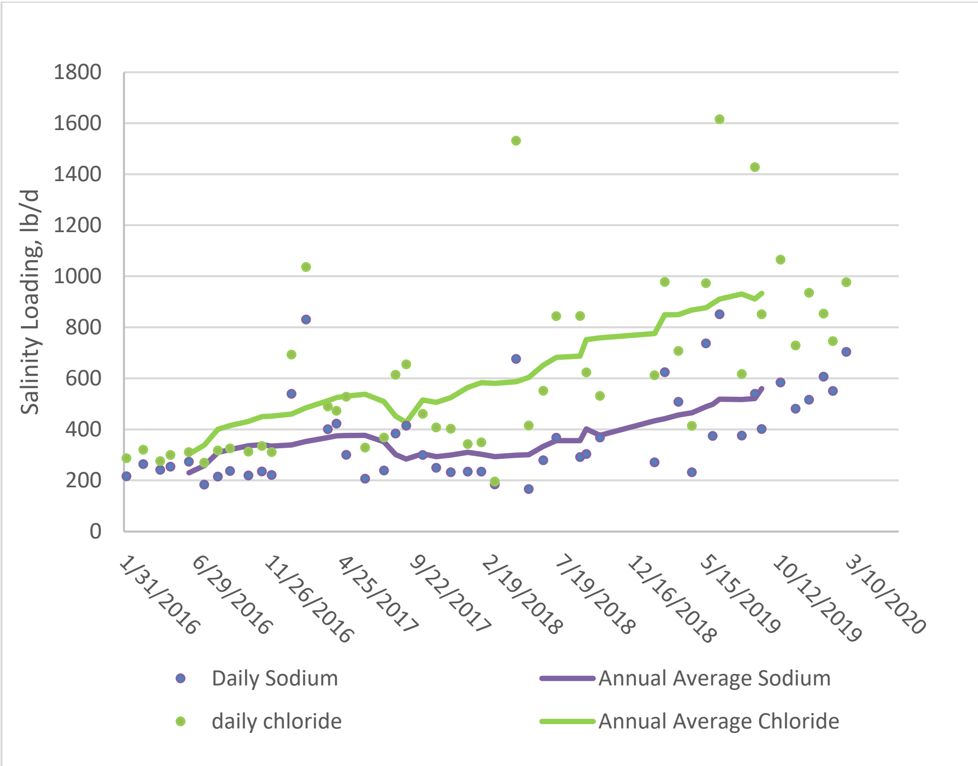


Figure 9 Influent Sodium and Chloride Loading

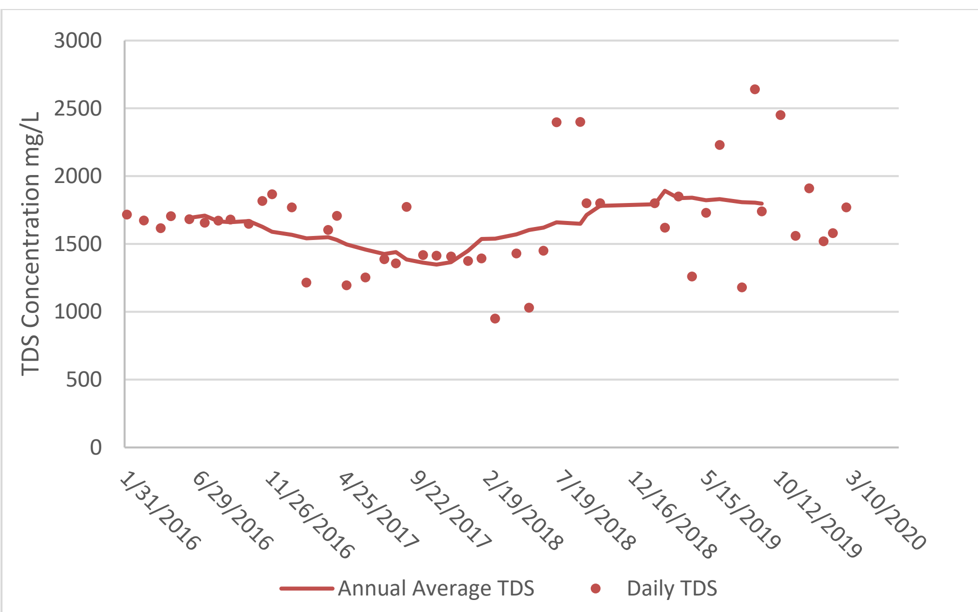


Figure 10 Influent TDS Concentration

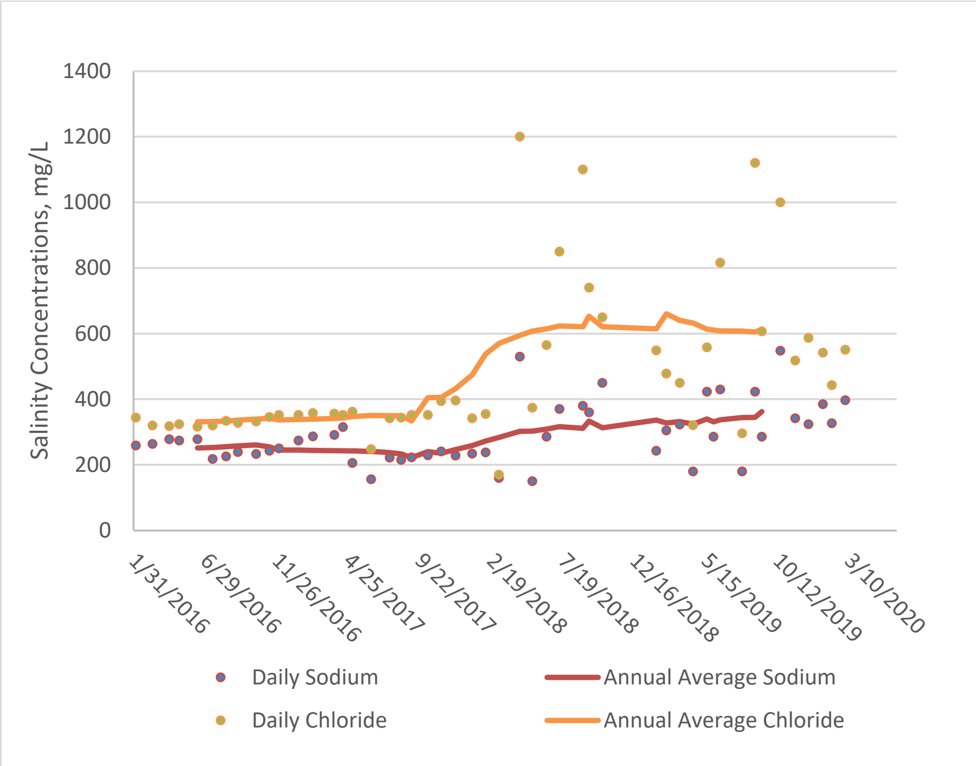


Figure 11 Influent Sodium and Chloride Concentrations

Source Water Salinity

The elevated chloride, sodium, and TDS levels observed in the City's wastewater are thought to be driven, in part, by source water (groundwater) hardness and associated self-regenerating water softeners used for potable water treatment throughout the community. The existing groundwater wells produce very hard water (greater than 300 mg/L as CaCO3) and, as a result, many of the City's residents have installed domestic self-regenerating water softeners to provide local treatment. Water softeners exchange calcium and magnesium (the main constituents contributing to hardness) for sodium or common salt (sodium chloride, NaCl). This process results in elevated chloride, sodium, and TDS that is inevitably discharged to the City's wastewater collection system and negatively impacts the WWTP. For comparison, the relative hardness scale is provided as follows:

- **Soft:** 0 to 75 mg/L as $CaCO_3$
- **Moderate:** 75 to 150 mg/L as $CaCO_3$
- **Hard:** 150 to 300 mg/L as $CaCO_3$
- **Very Hard:** Above 300 mg/L as $CaCO_3$

Water quality data for the existing potable water supply wells (Well No. 1, Well No. 5, and Well No. 6) are show in **Table 3**, below. For an analysis on the overall impact of the source water on the wastewater salinity budget, refer to **Section 2.5**, which documents the likely contributors of salt loading on the plant.

Table 3 Source Water Chemistry for Existing City Wells

Constituent	City Well 1 (Raw)	City Well 5 (Raw)	City Well 6 (Raw)
pH (std. units)	6.7 – 8.0	7.5	7.7 – 8.1
Hardness as $CaCO_3$ (mg/l) (mg/l)	353 – 485	321	334 – 371
Alkalinity as $CaCO_3$ (mg/l)	278 – 360	320	380
TDS (mg/l)	499 – 760	550	640 – 750
Chloride (mg/l)	61 – 100	81	89 – 110
Sodium (mg/l)	47 – 100	72	130 – 140

As documented in the 2020 Water Master Plan (Appendix A), the City currently uses Well No. 1 as their primary water source for much of the year. As demands increase, Well No. 1 cannot keep up with high flow rates and requires Well No. 5 to provide additional flow. Well No. 5 requires iron and manganese treatment prior to distribution, as the raw water concentrations exceed the secondary maximum contaminant levels (MCLs). Well No. 6 is the preferred primary producer but has been taken off-line due to high nitrate contamination, which hasn't yet been isolated or controlled.

The salinity balance in Section 2.5 is based on use of Well No. 1 as the current primary source water.

Industrial Wastewater Salinity

In addition to domestic water softeners contributing to elevated chloride, sodium, and TDS levels, industrial wastewater is also driving the elevated salinity at the WWTP influent. Taylor Farms, an of the industrial dischargers to the sewer collection system, is an agricultural processing facility that washes produce with what is believed to be a sodium hypochlorite solution (or NaCl, which is industry standard for disinfecting food, prior to packaging). As detailed in **Table 4,** this disinfection method adds substantial salinity loading to wastewater influent (from the facility's discharge). Because there is no pre-treatment program in place for the City's industrial users, there is no historical monitoring data (other than flow rate information) for the industrial users. Industrial users, including Taylor Farms, have been discharging into the City's collection system since 2003. Because the City was in violation of chlorides prior to Taylor Farm's connection (as detailed in **Appendix C**), it is believed the salinity problem cannot be completely resolved by eliminating this source. However, the industrial users have certainly exasperated the salinity problems at the WWTP, as described herein.

To get a better understanding of the concentrated loadings being discharged into the system, the City sampled industrial users wastewater (prior to mixing with any other sources of sanitary sewers), as documented in **Table 4**. Although only two weeks of composite samples were taken (on 6/26-7/9/2020), it provides important insight into the impacts that industrial users have on the City's municipal wastewater treatment plant. It is recommended that the City take additional samples to get a better understanding of how the loads change daily and seasonally.

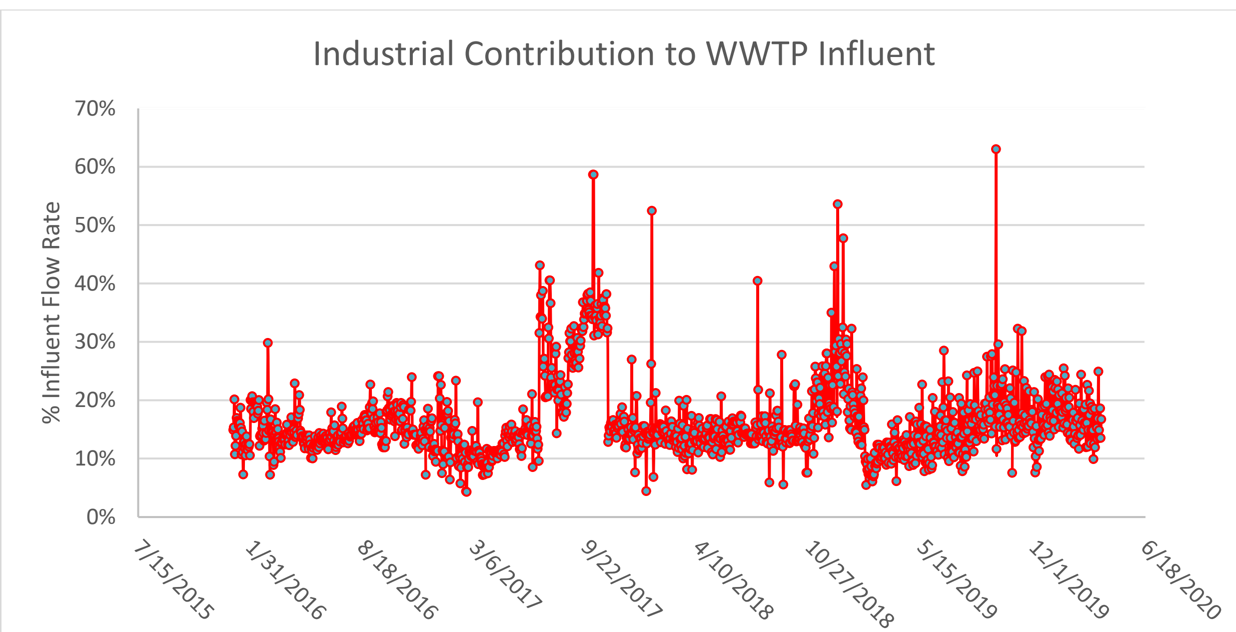
Table 4 Industrial Drain Sampling Data

Constituent	Concentration[1], mg/L	Average Load, lb/d [2]	Peak Load, lb/d[3]
TDS	3816	878	1910
Chloride	1623	373	812
Sodium[4]	950	219	475

1. Concentrations based on composite sampling event from 6/26/2020 to 7/92020
2. Average load based on average load and average flow rate of 27,600 gal/d
3. Peak load based on average load and max month daily flow rate of 60,000 gpd
4. Sodium nitrate is added to the pump station for odor control at a rate of 40 lb $_{NaNO3}$/month (= 10.8 lb $_{sodium}$/month = 0.36 lb/day). As such, 0.2% of the sodium load from the industrial facility is added by the City (and not attributed to the industry).

The City of San Juan Bautista is not required to have an industrial pre-treatment program, as the WWTP flow rates are under the Regional Board's mandated threshold. However, many treatment plants require industrial dischargers to comply with certain guidelines prior to sending flow to the sewers. When pre-treatment guidelines are implemented, they help limit impacts on downstream wastewater treatment and disposal facilities and help reduce the burden on residential ratepayers (who would otherwise need to offset the treatment costs associated with a few high-impact users).

As graphically depicted below, industrial wastewater is typically 15-percent of the monthly wastewater influent flow rate (peak week events reaching 40-percent and daily peaks reaching 60-percent of the influent daily flow rate, in 10/5/2017 and 9/25/2019), but calculated loading contribution are much higher (typically contributing to 30% influent salinity loading). Refer to **Section 2.5** for an analysis of the industrial wastewater discharger's impact on the WWTP influent salinity balance, which documents the likely contributors of salt loading on the plant.



Projected Design Flows and Loads

The current wastewater flows and loads presented above are used for projecting future flows and loads. Future increases in all sewage flows and loads are expected to be proportional to increases in average annual flows, which should be roughly proportional to the number of sewer connections and/or population growth. The projections further assume that all the commercial development will increase loads proportional to existing values and future industrial connections will have pre-treatment programs to ensure loading is similar to residential/commercial properties. Based on these assumptions, flow and load peaking factors will remain at current values. The Phase 1 design criteria is based on the permitted treatment capacity of 0.27 Mgal/d (ADWF). The full buildout of the service area is based on a flow rate of 0.48 Mgal/d, as described in the 2020 Wastewater Master Plan, as shown in **Appendix A**. Wastewater flows and loads for the San Juan Bautista WWTP Improvement Project are included in **Table 5**.

Table 5 WWTP Design Flows and Loads

Parameter	Unit	Current Condition ADWF = 0.18 Mgal/d	Phase 1 Condition ADWF = 0.27 Mgal/d	Buildout Condition ADWF = 0.48 Mgal/d
Flow				
Average Dry Weather Flow (ADWF)	Mgal/d	0.18	0.27	0.48
Avg. Day Annual Flow (AAF)	Mgal/d	0.18	0.27	0.48
Average Day Max Month Flow (ADMMF)	Mgal/d	0.29	0.43	0.75
Peak Day Flow (PDF)	Mgal/d	0.54	0.80	1.42
Peak Hour Flow (PHF)	Mgal/d	0.72	1.08	1.91
Biological Oxygen Demand (BOD)				
Annual Average Load (AAL)	lb/d	420	628	1,110
Avg. Day Max Month Load (ADMML)	lb/d	588	879	1,553
Average Concentration	mg/L	279	279	279
Max Month Concentration	mg/L	390	390	390
Total Suspended Solids (TSS)				
Annual Average Load (AAL)	lb/d	462	691	1,220
Avg. Day Max Month Load (ADMML)	lb/d	647	967	1,709
Average Concentration	mg/L	307	307	307
Max Month Concentration	mg/L	430	430	430
TKN Concentration				
Annual Average Load (AAL)	lb/d	80	119	211
Avg. Day Max Month Load (ADMML)	lb/d	112	167	295
Average Concentration	mg/L	53	53	53
Max Month Concentration	mg/L	74	74	75
Total Dissolved Solids[4]	mg/L	1800	1800	1800
Chloride[4]	mg/L	600	600	600
Sodium[4]	mg/L	300	300	300

1. If water conservation measures materialize, then the design organic load of the plant will be reached before the hydraulic design flow.
2. Average concentrations are calculated using AAF combined w/AAL
3. Average day max month load is calculated using AAF combined w/ADMML
4. Salinity concentrations shown are prior to source control reduction (pretreatment & potable water improvements)

2.3 CONDITION OF EXISTING FACILITIES

The San Juan Bautista WWTP is a tertiary treatment facility that includes a mechanical screen and influent pump station, sequencing batch reactor pond (SBR, located in Pond 1), flow equalization tanks, a denitrification pond (located in Pond 2C with floating media), pressure sand filters, and ultraviolet (UV) disinfection. Sludge is stored in lagoons (Pond 2A and 2B).

2.3.1 Process Descriptions and Summary of Condition

Raw sewage enters the WWTP in the headworks, where a mechanical auger screen removes large debris from the incoming wastewater. Screened raw sewage is pumped to the SBR (Pond 1, Cell No. 1 or Cell No. 2). As with other conventional activated sludge SBR facilities, aeration and mixing is achieved in batch cycles (sending flow into one half of the pond while the other half is decanted). Once the biological reaction is complete, sludge settles, and supernatant is discharged to equalization storage tanks (70,000-gallon tanks). Waste activated sludge is withdrawn from the SBR and sent to the sludge storage lagoons (Pond 2A/2B).

After equalization, flow passes through the polishing pond (Pond 2C), where secondary effluent is mixed with polymer. The blended solution flows through multimedia sand filters to reduce suspended solids and turbidity. Filtered effluent is sent through a UV disinfection channel and discharged to the outfall.

Table 6 identifies the original design criteria established for the existing WWTP, as defined in the operation and maintenance manual. When comparing the existing design criteria to the current loading conditions shown in **Table 5**, the secondary treatment process is already beyond its design capacity. Further, the WWTP was never designed to remove salinity from the waste stream.

Table 6 Existing WWTP Design Criteria

Parameter	Unit	Existing WWTP Design Criteria [1]
Influent		
Secondary Capacity	Mgal/d	0.27
Tertiary Capacity	Mgal/d	0.20
BOD_5 Loading	lb/d	357
BOD_5 Concentration	mg/L	210
TSS Loading	lb/d	399
TSS Concentration	mg/L	235
Effluent		
Avg Month BOD5 Concentration	mg/L	20
Daily Max BOD5 Concentration	mg/L	60
Avg Month TSS Concentration	lb/d	20
Daily Max TSS Concentration	mg/L	60

1. Existing WWTP Design Criteria, as defined in the O&M manual.

In addition to the secondary facilities being apparently undersized (design capacity is lower than current loading rates), the plastic partition wall between the sludge storage lagoon (Ponds 2B and 2C) and the polishing pond (Pond 2A) is not sealed, allowing sludge to leach into the secondary effluent. Due to this inadvertent mixing of sludge and secondary effluent, the plant is at risk for discharge violations. For long term compliance, the sludge storage ponds need to be completely separated from the process flow stream.

Figure 12 is a picture of Pond 2, including the sludge storage lagoon and polishing pond.

Figure 12 Partition Wall Between Sludge Storage Lagoon and Polishing Pond

Further, the tertiary treatment facility is only designed to handle 0.2 Mgal/d, which is 80,000 gpd less than the existing maximum month average day flow rate (0.28 - 0.20 = 0.08 Mgal/d = 80,000 gpd). While there is some buffering capacity available in the SBR (the entire pond volume is 1.6M gallons), the available volume is not enough to equalize the excess daily flow for an entire month (totaling 2.4M gallons of excess wastewater in one month). For long term compliance, the tertiary treatment train needs to be expanded to accommodate higher flow rates (equalizing to annual average flows is not cost effective).

2.3.2 Discharge Permit Compliance Issues

The San Juan Bautista Wastewater Treatment Plant (WWTP) operates under Order No. R3-2009-0019 NPDES permit No. CA0047902. Below is a summary of the City's ability to comply with salinity, BOD, TSS, and Total Coliform effluent limitations.

Salinity Compliance

Amongst other effluent limitations, the average monthly discharge limits for chloride, sodium, and total dissolved solids (TDS) are 200 mg/L, 250 mg/L, and 1400 mg/L, respectively. As shown in **Figure 13**, the City was compliant except for chlorides, until 2018, and is now in violation of all three effluent limits.

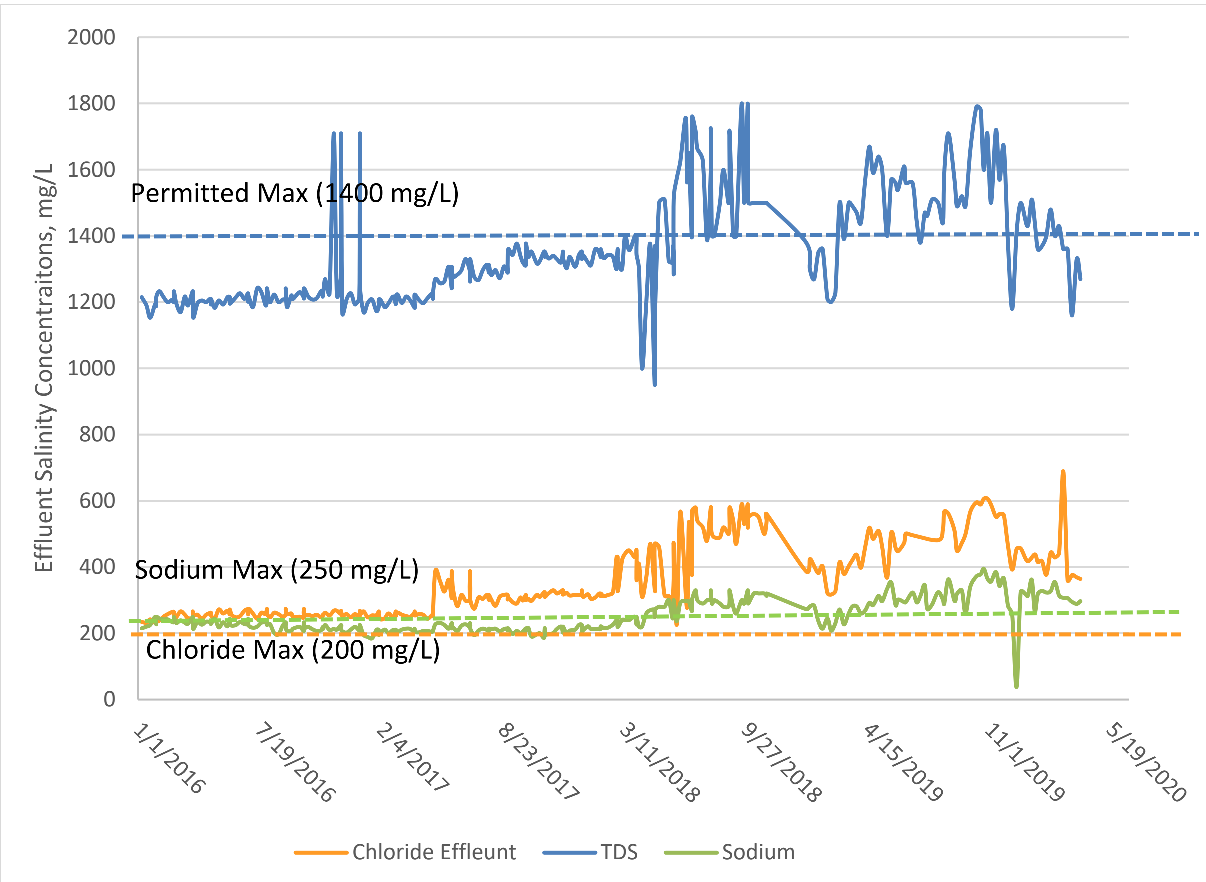


Figure 13 Effluent Monthly Salinity Concentrations

BOD and TSS Limitations

The NPDES permit limits effluent concentration for BOD and TSS to 20 mg/L (average monthly concentration) and 60 mg/L (daily maximum concentration). The plant has historically met these limits, as shown in **Figure 14**. There were three days in 2018 (August 16, August 31, and September 30) where the effluent TSS concentration was reported to be 310 mg/L. These outlier days were removed from the graph shown below because duplicate samples taken on the same day show much lower values (around 30 mg/L) and the low values match those of surrounding days (whereas 310 mg/L would be expected in the wastewater influent, not effluent). However, there were still two events in 2019 that resulted in TSS exceeding the maximum daily limit. Further, there were several exceedances of the monthly average limits for both BOD and TSS. It is likely that the samples from August and September were affected by the sludge dredging operations, which occurred in the same time period, as further explained below.

Because the plastic partition wall between the sludge storage lagoon (Ponds 2B and 2C) and the polishing pond (Pond 2A) is not sealed, sludge leaches into the secondary effluent. Due to this inadvertent mixing of sludge and secondary effluent, the plant is at risk for discharge violations. In 2018, the City removed the accumulated sludge from Pond 2B and 2C and the operations staff was able to stabilize the biology by the following summer and have remained compliant with effluent BOD and TSS limitations since that date. However, for long term compliance, the baffle walls need to be rebuilt and the sludge storage ponds need to be completely separated from the process flow stream.

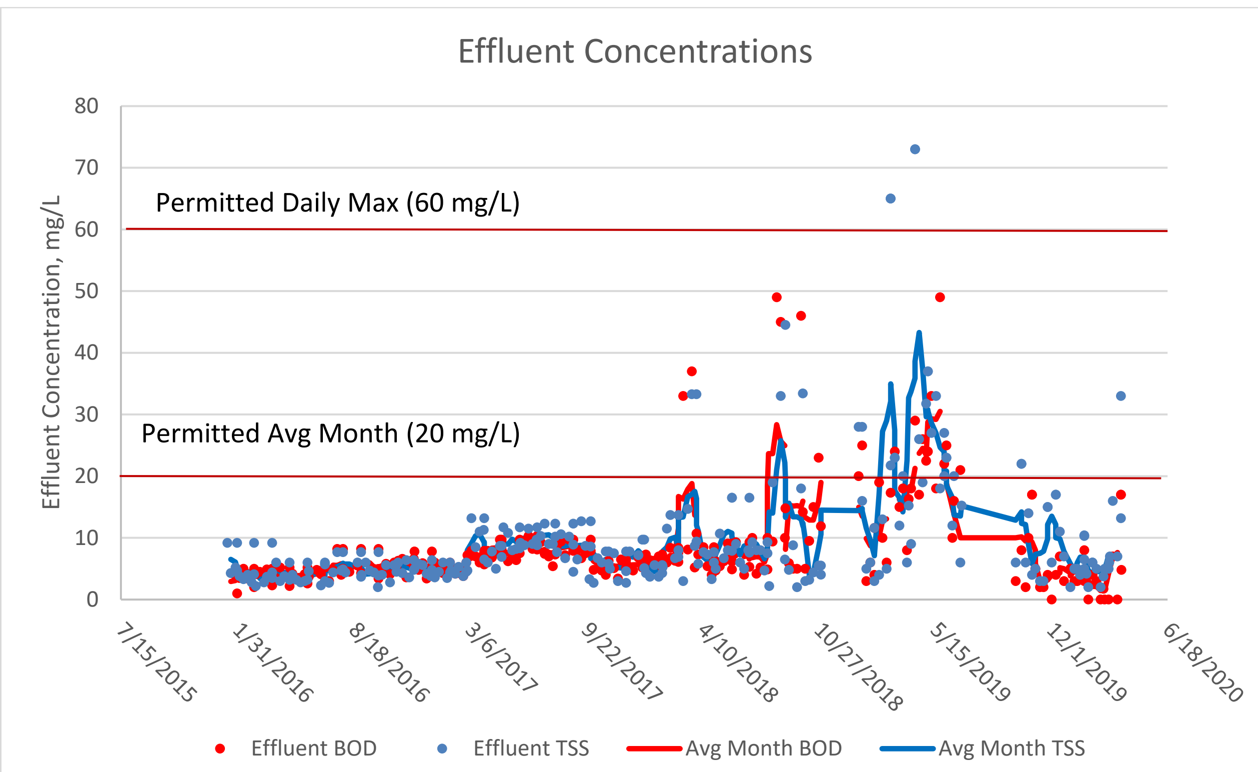


Figure 14 BOD and TSS Effluent Concentrations

Total Coliform Limitations

The permitted effluent limitation for total coliform is 23 MPN/100mL (five-day median concentration) and 2300 MPN/100mL (daily maximum concentration). The plant has historically met these limits, as shown in **Figure 15 and 16.** However, between February and April of 2019, there were several exceedances of both daily and five-day median total coliform. The discharge violations were likely due to UV bulb/sleeve aging and potentially due to undersized equalization facilities. After the city replaced cracked UV bulbs and broken sleeves (in summer of 2019), the coliform has remained compliant with discharge limitations. For long term compliance, all UV disinfection equipment must be maintained and replaced in accordance with the manufacturer's guidelines and upsized (or re-rated) to handle flow rates higher than the annual average flow.

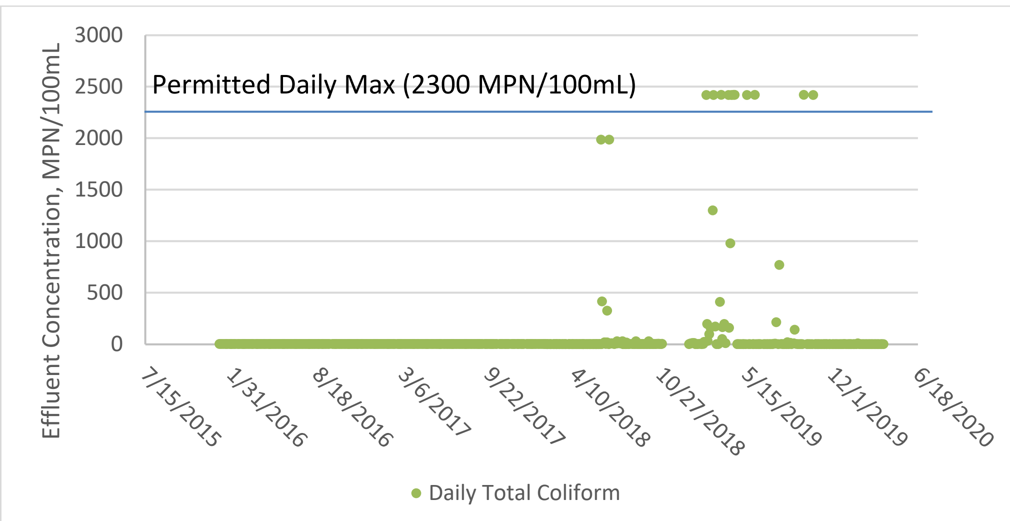


Figure 15 Daily Total Coliform Effluent Concentrations

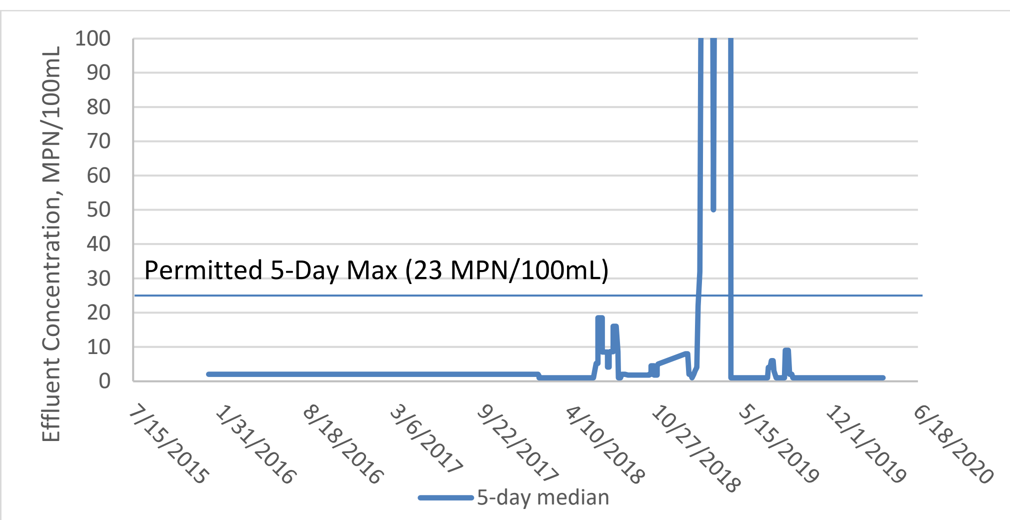


Figure 16 Five-Day Median Total Coliform Effluent Concentrations

2.4 FINANCIAL STATUS OF EXISTING FACILITES

The median household income (MHI) for the City of San Juan Bautista is $53,077, which is 74.5% of State average, and has a population of approximately 2,030. A comprehensive operating budget for the City is attached to the project application (see **Appendix B**) and includes detailed expenses and assets associated with the City's budget. The City prepared a Rate Study in 2015 and adopted new sewer rates with Ordinance 2015-20, which is summarized as:

- the base rate of $83.61/month (residential),
- $84.03 (commercial), and
- Cost per 1,000 gallons: $9.10/month (standard strength), $13.63/month (moderate strength), and $18.18/month (high strength).

There are currently 804 residential, commercial, industrial, and institutional sewer connections. The estimated Equivalent Dwelling Units (EDUs) in the City of San Juan Bautista is 1,165 as documented in **Appendix E** and **Table 7**.

Table 7 Equivalent Dwelling Unit (EDU) Calculation

User Type	Average Monthly Wastewater Usage (Gallons)	Number of Users (connections)	Average Monthly Usage per connection (Gallons)	Number of EDUs
Residential (Single-Family)	3,895	672	2,617,109	672
Other – Multi-Family Residential	5,271	38		51
Other - Commercial	10,545	77		208
Other – Industrial	206,179	4		212
Other – Public	6,455	13		22
			TOTAL EDUs	**1,165**

The 2020 Water and Wastewater Masterplan (in **Appendix A**) includes a capital improvement program for major upcoming projects, including the recommendations from this report. **Table 8** shows the sewer operating revenue and expenses from June 2019 Auditor's Report and Financial Statement.

Table 8 Financial Status, 2019 Auditor's Report

Assets	Sewer
Operating Revenue	**1,182,920**
Operating Expense	
Contractual Services and Utilities	291,529
Personnel	113,110
Supplies, Materials, and Repairs	573,351
Depreciation	308,686
Total Operating Expense	**1,286,676**
Non-Operating Revenue / (Expense)	
Development Impact Fees	163,993
Interest Income	22,349
Interest Expense	(220,954)
Total Non-Operating Revenue / (Expense)	**(34,612)**

2.5 WASTEWATER AUDITS

The City is in the middle of updating their water and wastewater masterplan, as shown in **Appendix A**. The results of which have been incorporated into this report. In addition to the wastewater audits from the masterplan, the following salinity information is important to document.

2.5.1 WWTP Influent Salinity Balance

Salinity (salt) is measured by the total concentration of dissolved minerals, such as magnesium, potassium, sodium, and chlorides. Once salinity is in wastewater, it is difficult to remove. All potable water contains naturally occurring salt, but water users (industrial, agricultural, and residential) also add salt to the water before discharging into the sewers. For example, households add salt to their drains from excess salt in their diet, and use of detergents, cleaning products, soaps, and shampoos. Salt is further added to sewers when it is exchanged for hardness in the self-regenerating water softeners.

As stated previously, many of the City's residents have installed domestic self-regenerating water softeners to provide local treatment to potable water. Water softeners exchange calcium and magnesium (the main constituents contributing to hardness) for sodium or common salt (sodium chloride, NaCl). This process results in elevated chloride, sodium, and TDS that is inevitably discharged to the City's wastewater collection system.

Further, the City receives flow from industrial dischargers (including Taylor Farms). Taylor Farms, an agricultural processing facility, washes produce with what is believed to be a mixture of sodium hypochlorite and a proprietary substance called SmartWash Solution (T128). While the disinfection and washing procedures of the facility are not known, it is assumed that sodium hypochlorite is used on site based on the sampling data reported herein and symposium presentations from the company at multiple agricultural conferences in the last decade. This disinfection method adds substantial salinity loading to the industrial discharge.

Based on **Table 4**, Taylor Farms (and possibly another industry) discharges 3816 mg/L TDS, 1623 mg/L Chloride, and 950 mg/L sodium and historical billing information (documenting daily and monthly flow rates) the facility discharges an average flow rate of 27,600 gpd (15% of the average influent daily flow rate). Although the flow rates from industrial dischargers are 15% (on average) of the total influent flow rate, they make up 40% of the influent chloride and sodium concentrations (and likely more during the peak month events). When the influent flow rate from industrial dischargers is higher (ratio of industry flow rate to total influent flow rate is more than 15%), the wastewater influent salinity concentrations go up.

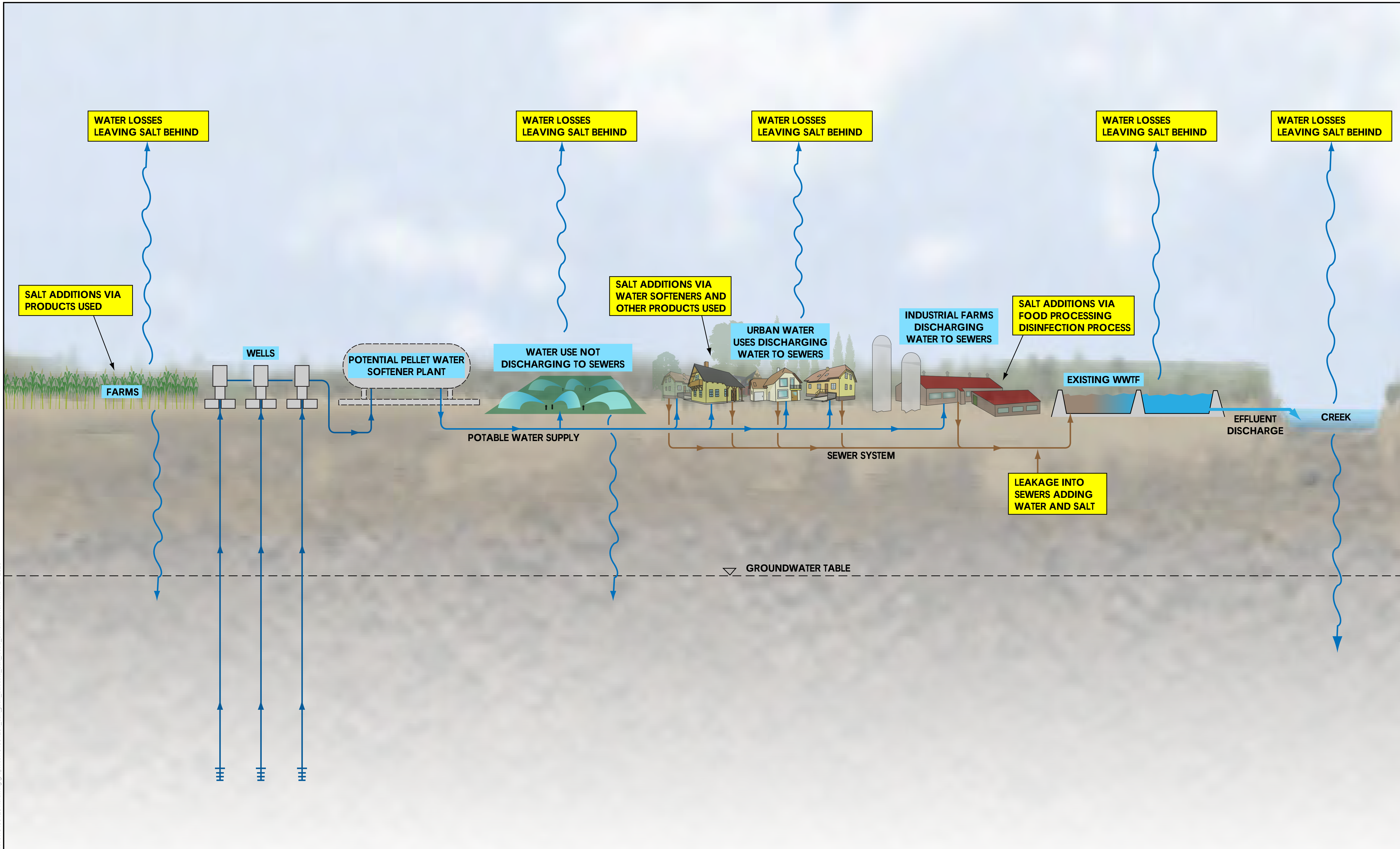
Table 9 shows an estimated salt balance for the City of San Juan Bautista wastewater influent.

As shown in **Figure 17**, salt comes from many sources and requires careful consideration as to the best option for removal.

Table 9 WWTP Influent Salinity Balance (Average Daily Loads)

Salt Contributors to Total WWTP Influent	TDS	Chloride	Sodium
SALINITY LOADING, lb/d			
Well No. 1 (Raw Water)[1]	948	116	91
Diet and Personal Care Products[2]	400	27	19
Self-Regenerating Water Softeners[3]	545	327	218
Industrial User[4]	878	373	219
Inflow and Infiltration[5]	0	60	0
TOTAL WWTP INFLUENT, lb/d	2,772	904	546
SALINITY CONCENTRATION, mg/L			
Well No. 1 (Raw Water)[1]	628	77	60
Diet and Personal Care Products[2]	265	18	12
Self-Regenerating Water Softeners[3]	361	217	144
Industrial User[4]	582	247	145
Inflow and Infiltration[5]	0	40	0
TOTAL WWTP INFLUENT, mg/L	1836	600	362

1. Based on average well data shown in Table 3: 0.18 Mgal/d and TDS 628 mg/L, Chloride 77 mg/L, and Sodium 60 mg/L.
2. Dietary and Personal Care Products: TDS concentration of 265 mg/L based on Central Valley Clean Water Association "Salinity Management Practices for POTWs" 2012. Chloride and sodium concentrations based on "Chloride Contributions from Water Softeners and Other Domestic Sources" University of Minnesota 2019 and "Characterizing and Managing Salinity Loading in Reclaimed Water Systems" by AWWA & Thompson 2006.
3. Water softener efficiency based on 3300 grains hardness per pound NaCl (and average hardness 425 mg/L $CaCO_3$) in accordance with historical and current California efficiency standards and half the influent flow rate is being treated by ion exchange water softeners. Calculation assumes 40% of households have water softeners (approximately 350 softeners in use).
4. Industrial sampling from June 2020 on industrial discharge (27,600 gal/d and average concentrations of 3816 mg/L TDS, 1623 mg/L chloride, and 950 mg/L sodium). To corelate these values to total wastewater influent flow concentration, the sample concentrations were multiplied by 15% (27,600gpd ÷ 180,000gpd = 15%)
5. To account for missing salinity, inflow and infiltration (I/I) based loading (salinity from agricultural runoff and natural erosion/weathering of rock minerals) was calculated by taking the difference between historical influent loads (from Table 4) and total other loads contributors identified herein. The missing chloride concentration may also be linked to the historical changes in the primary source water, as various wells were placed online or taken offline (i.e. Well No. 1 has chloride concentrations that are 25 mg/L lower than Well No. 6, etc).



Stantec

Figure 17
Sources for Salt Balance

While industrial dischargers provide 15-percent of the average wastewater influent flow rates, the peak month reaches 33-percent of the actual flows (60,000 gpd sent to the plant during summer months) and peak week reaches 44-percent of influent flows (80,000 gpd sent in fall). During the peak month and peak week discharges from industrial users, the industrial loading contributions increase. The anticipated average annual salinity concentrations (shown in **Table 9**) correspond to the historical concentrations identified in **Figures 10 and 11**.

As detailed in the project needs discussion (**Section 3.1.3**), the current permit limits effluent concentrations of 200 mg/L chloride, 250 mg/L sodium, and 1400 mg/L TDS. In the next permit renewal cycle, these limits are expected to be decreased to 150 mg/L chloride, 200 mg/L sodium, and 1200 mg/L TDS. The least cost solution is to reduce loading from the industrial dischargers. Based on the salinity balance presented above, a pretreatment program will bring the chloride, sodium, and TDS numbers closer to the discharge permit limits, but is unlikely to resolve the chloride issues entirely. This is further evident when looking at the WWTP historical violations (as detailed in **Appendix C**), which indicate the City has received fines for high chlorides prior to industrial discharger (Taylor Farms) connection to the sewer system (the industrial source connected in 2003 and fines date back to 2000). However, the industrial dischargers have certainly exasperated the salinity problems at the WWTP. The full extent of salt reduction will not be fully known until a pre-treatment program is implemented and additional samples are collected.

Taylor Farms is currently permitted to operate their own SBR treatment plant and discharge to their industrial spray fields under Waste Discharge Requirement (WDR) Order No. R3-2004-0066, but since 2003 they have sent flow the City's WWTP for treatment and disposal through the San Juan Bautista sewer collection system. As such, it is recommended to limit discharge into the collection system from Taylor Farms (and all industrial dischargers) to only municipal sewage (wash water and other industrial waste must be removed from the City's facilities and handled by the industry). Alternatively, the City may elect to allow the user to discharge wash water into the collection system after creating an industrial pre-treatment program that is approved by the City Council. Once the discharge limitations are enacted and the industrial dischargers are complying with the pre-treatment program, the City can establish a monitoring schedule to ensure the WWTP will remain compliant with the NPDES permit, along with implementing the below recommended upgrades.

3.0 NEED FOR PROJECT

3.1 HEALTH, SANITATION, AND SECURITY

Below are descriptions of the current regulatory compliance issues for the City's wastewater treatment facility.

3.1.1 Biological and Solids Management Project Needs

The San Juan Bautista WWTP currently operates under NPDES permit number CA0047902. The NPDES permit limits effluent concentration for BOD and TSS to 20 mg/L (average monthly concentration) and 60 mg/L (daily maximum concentration). In the past few years, the Regional Board has issued the City violation notices for BOD, ammonia, and suspended solids (as shown in **Figure 14** and documented in **Appendix C**). Based on the existing wastewater influent loading and the original design criteria of the WWTP, the secondary treatment facilities are undersized (design capacity is lower than current loading rates, as shown in **Tables 5 and 6**) and need to be modified to ensure continued compliance with nutrient removal.

Further, the plastic partition wall between the sludge storage lagoon (Ponds 2B and 2C) and the polishing pond (Pond 2A) is not sealed, allowing sludge to leach into the secondary effluent. Due to this inadvertent mixing of sludge and secondary effluent, the plant is at risk for continued discharge violations. For long term compliance, the sludge storage ponds need to be completely separated from the process flow stream.

3.1.2 Tertiary Treatment and Disinfection Project Needs

The permitted effluent limitation for total coliform is 23 MPN/100mL (five-day median concentration) and 2300 MPN/100mL (daily maximum concentration). Recently, there were several exceedances of both daily and five-day median total coliform and the Regional Board issued violation notices and fines (as shown in **Figure 15 and 16** and documented in **Appendix C**). Based on the existing wastewater influent flow rates and the original design criteria of the WWTP (shown in **Tables 5 and 6**), the tertiary facilities are undersized, as discussed herein.

The tertiary treatment facility is only designed to handle 0.2 Mgal/d, which is 80,000 gpd less than the existing average day maximum month flow rate (0.28 - 0.20 = 0.08 Mgal/d = 80,000 gpd). While there is some buffering capacity available in the SBR (the entire pond volume is only 1.6M gallons), the available volume is not enough to equalize the excess daily flow for an entire month (totaling 2.4M gallons of excess wastewater in one month). For long term compliance, the tertiary treatment and disinfection train needs to be expanded to accommodate higher flow rates (equalizing to annual average flows is not cost effective) or re-validate the existing facilities to higher flow rates than indicated in the design criteria (i.e. by increasing filtration rates to 5 gpm/sf and increasing UV dose rate or reducing turbidity).

3.1.3 Salinity Control Project Needs

When salinity is referenced herein (as with other engineering and scientific documents), it is often interchangeable with total dissolved solids (TDS) or electrical conductivity (EC) and includes nonionic substances (like silica) and ionic substances (like chloride, sodium, calcium, magnesium, sulfate, and nitrates). Salinity is transported with water and, as such, salt that originates in one location may be carried downstream to another. Significant problems ensue when the receiving water basin has no reliable way of disposing of salt. Increased levels of salinity can accelerate corrosion in plumbing, become toxic to aquatic life, and (most notably) negatively impact crop production.

California is one of the most productive agricultural areas on Earth. However, a downside of intensive irrigated agriculture is that it concentrates salt (both naturally occurring and added by agriculture as fertilizers and processing facilities) in residual water. The problem of salt accumulation in residual water has been recognized for decades, but potential remedies are expensive, which contributes to the ever-increasing problem of salt accumulation in the Central Coast.

In an effort to control the salt accumulation problem and ultimately stabilize it, and possibly reverse it (to some extent), the Regional Water Quality Control Board developed a salinity control plan that is incorporated into the 2016 Basin Plan and further disseminated such requirements to local municipalities within their NDPES discharge permits.

The San Juan Bautista WWTP currently operates under NPDES permit number CA0047902. Amongst other effluent limitations, the average monthly discharge limits for chloride, sodium, and total dissolved solids (TDS) are 200 mg/L, 250 mg/L, and 1400 mg/L, respectively. Based on conversations with the Regional Board and the 2016 Basin Plan, the salinity limits are expected to decrease in the next permit renewal cycle and is assumed to be similar to limits enforced in the City of Hollister's WWTP NPDES permit (150, 200, and 1200 mg/L, respectively).

As described previously, and shown in **Figure 13**, the City is currently in violation of chlorides, sodium, and TDS effluent limits and has received multiple violation notices and fines from the Regional Board for these effluent exceedance events (as documented in **Appendix C**). Further, the existing treatment facilities are not designed to remove salinity from the wastewater stream. In order to ensure long-term compliance with salinity limitations, the City will need to either implement source control measures (industrial pre-treatment programs and potentially lowering potable water hardness and associated self-regenerating water softener use) or provide additional treatment facilities to remove salinity from the wastewater.

Based on the average salinity concentrations entering the plant and the anticipated new permit limits, as shown in **Table 5** and described herein, the new salinity control measures need to be capable of removing at least 450 mg/L chloride, and 100 mg/L sodium, and 600 mg/L TDS.

3.2 AGING INFRASTRUCTURE

The original wastewater treatment plant was a facultative pond plant. The last major improvements project, in 2010, upgraded Pond 1 to an aerated pond that functions as sequencing batch reactors (SBR) and split Pond 2 into three cells (Cell A, B, and C). However, the 2010 project did not upgrade the liner in either Pond 1 or Pond 2. The liners have met their useful life and need to be replaced. The existing influent auto sampler does not function properly, providing unreliable composite samples, and has reached the end of life and should be replaced.

3.3 REASONABLE GROWTH

The planning period used for the project is 20 years. This allows for an appropriate timeline accommodating a limited amount of population growth (1.5%) in accordance with the City's planning horizons and roughly matches industry standards for the useful life of treatment works.

The current ADWF is approximately 0.18 Mgal/d and the treatment plant capacity is 0.27 Mgal/d. This leaves some unused treatment plant capacity that can be used to accommodate growth, some of which is already reserved. As stated previously, the WWTP should be improved in phased increments (Existing, Phase 1- near term growth, Phase 2- buildout capacity) and future users will have to fund the future capacity.

- Current: During the interim phase, the existing WWTP will continue to be used to provide treatment to the existing sewer connections. This includes ongoing maintenance and repairs at the existing plant and implementation of an industrial pre-treatment program, but does not provide upgrades to the infrastructure to ensure long-term compliance with NPDES permits.

- Phase 1: The Phase 1 Project will upgrade the existing WWTP (including potential source water control) to accommodate 1.5% annual growth within current plant capacity. Upgrades to the existing facilities will ensure compliance with existing and anticipated future permits. The Phase 1 Project is described in the below detailed evaluation.

- Phase 2: The Phase 2 Project will expand the WWTP facilities to serve additional users, to accommodate "build out" conditions based on the City's Master Plan. The Phase 2 Project is not considered herein and is mentioned for long-term planning purposes only.

4.0 WWTP UPGRADE ALTERNATIVES CONSIDERED

The purpose of this report is to investigate alternatives and develop a recommended program for bringing the wastewater treatment plant into compliance with regulatory requirements. The alternative projects considered herein include the following:

1. Alternative 1, On-Site WWTP Upgrades and Off-Site Salinity Control: Provide source control in order to reduce the wastewater influent salinity concentrations to permittable levels. This project will allow the existing WWTP to remain operational with upgrades to the existing process facilities. All off-site salinity control options will also include the implementation of an industrial pre-treatment program for agricultural processing facilities (to limit salt discharge from those users).

    A. Off-site salinity control will be accomplished by replacing well water (very hard water) with treated surface water (moderately hard) and remove self-regenerating water softeners in order to reduce the wastewater influent salinity concentrations to permittable levels (as detailed in Appendix A.1).

2. Alternative 2, On-Site WWTP Upgrades and On-Site Salinity Control: This project will replace the existing WWTP sequencing batch reactor (SBR) treatment system with a new membrane bioreactor (MBR), and reverse osmosis (RO) treatment or Electrodialysis Reversal (EDR) facilities that will remove salinity.

3. Alternative 3, Regionalization with Hollister WWTP and Off-Site Salinity Control: Provide source control in order to reduce the wastewater influent salinity concentrations and then pump the influent wastewater to a neighboring community (the City of Hollister WWTP). This project will replace the existing WWTP with an equalization basin and emergency storage pond to service a new pump station and pipeline to the Hollister WWTP for off-site treatment and disposal. All off-site salinity control options will also include the implementation of an industrial pre-treatment program for agricultural processing facilities (to limit salt discharge from those users).

    A. Off-site salinity control will be accomplished by replacing well water (very hard water) with treated surface water (moderately hard) and remove self-regenerating water softeners in order to reduce the wastewater influent salinity concentrations to permittable levels (as detailed in Appendix A.1).

Based on the average salinity concentrations entering the plant and the assumed effluent limits in the new permit, as shown in **Table 5** and described in **Section 3.1.2**, the new facilities (industrial pre-treatment program and source control options) need to be capable of removing at least 600 mg/L TDS, 450 mg/L chloride, and 100 mg/L sodium. It is assumed that, once implemented, the industrial pre-treatment program will remove at least 562 mg/L TDS, 196 mg/L chloride, and 143 mg/L sodium (with a presumed sewer discharge limit of 4,000 gpd average flow rate and 885 mg/L TDS, 110 mg/L chloride, and 80 mg/L sodium, which is considered 15% higher than the average municipal wastewater concentrations). As such, the source control measures may require an additional 205 mg/L chloride, 0 mg/L sodium, and 38 mg/L TDS removal.

The extent of industrial based salt reduction will not be fully known until an industrial pre-treatment program is implemented and additional samples are collected (the preliminary numbers presented herein are based on two weeks of composite samples from industrial dischargers). Once the pre-treatment program is adopted and frequent representative samples are analyzed, the remaining salinity removal needed to comply with the NPDES permit will be better quantified. For the purposes of this analysis, it is assumed that each source control option will provide sufficient salinity reduction, in combination with the pre-treatment program, to achieve compliance with the permit.

Note that Alternatives 1 and 3 both require the agricultural processing facility to have an industrial pre-treatment program (reducing the allowable salinity discharged into the sewers) and incorporating potable water source control in order to reduce wastewater influent salinity concentrations to permittable levels (i.e. providing soft water to the community and eliminating self-regenerating water softeners that dump high levels of chloride, sodium, and TDS into the sewers). The source control options were investigated in a separate report (see Appendix A.1) that will be considered herein for its life cycle costs and impacts on the associated alternative.

4.1 ALTERNATIVE DESCRIPTIONS AND COST ESTIMATES

Alternatives 1 through 3 are described herein.

4.1.1 Alternative 1, On-Site WWTP Upgrades and Off-Site Salinity Control

Off-site source control options were evaluated in **Appendix A.1** and the resulting best option is described as follows:

To reduce wastewater salinity and provide water security to the City of San Juan Bautista, a new regional potable water connection will be installed that supplies water from the West Hills WTP to the City's distribution system. This project includes installation of a new 12-inch diameter pipe that will be constructed in a 6.0-mile long alignment (between the City of Hollister and the City of San Juan Bautista). After the West Hills WTP water source is installed, the City will need to implement a buy-back program to remove domestic water softeners from homes. Depending on the community, the rebate may cost between $300 to $800 per unit ($105,000 to $280,000- using cash payments and credits on sewer bills). The total life cycle cost for this option is $9.2 million, as shown in **Table 10**. The water improvements will be used in conjunction with the pre-treatment program (reducing industrial discharge loading) to comply with the NPDES permit.

Table 10 West Hills WTP Life Cycle Costs

Description	Cost
Construction Costs	$5,200,000
Engineering/CM Costs (25%)	$1,300,000
Annual O&M[1]	$168,000
Present Worth O&M, 20-years @ 3%	$2,500,000
Domestic Softener Buyback	$193,000
Total Life Cycle Cost	$9,193,000

1. Based on $1500/acre-feet (West Hills wholesale fee schedule), purchasing 0.2 MGD, & saving $168,000/yr in existing water system operating costs (by not running/maintaining the wells as frequently).

WWTP Upgrades

Because the SBR pond is undersized (existing influent loading is already higher than the design criteria for the secondary treatment process) and the liner has reached is useful life expectancy, the SBR pond will be decommissioned and converted into an equalization basin (aerators will remain in place to reduce odors and provide mixing). The SBR will be replaced with a membrane bioreactor (MBR) facility, to ensure continued compliance with the permit (typically an SBR facility costs 5% more than a packaged MBR facility, but have additional benefits described herein). MBRs are considered the most robust and reliable treatment system available. MBRs provide a higher level of treatment than any other system, which is helpful in meeting both existing and anticipated future discharge requirements.

Further, MBRs have the smallest footprint and are easy to expand. Additionally, an MBR facility can act as a pre-treatment process if additional on-site salinity control is needed in the future (as it produces high quality effluent that is suitable for treatment in a reverse osmosis or electrodialysis reversal).

MBR Process Description

An MBR is a suspended growth biological treatment system like conventional activated sludge. However, in the MBR, the effluent clarification stage is replaced by a membrane filtration system. Membrane filtration units are typically placed inside basins that are specifically designed and located for this use (membrane basins). Treated wastewater effluent is drawn through the membranes, leaving activated sludge solids behind. The membranes provide such a high level of solids removal that the effluent from the MBR does not need further filtration through sand filters, such as required with conventional activated sludge. This is also helpful for the City because the existing sand filters are undersized (they are designed to accommodate only 0.2 Mgal/d and there is insufficient equalization capacity to reduce existing flows that low during peak month flow condition).

In fact, MBR effluent is superior to the effluent of a conventional activated sludge system with sand filters, having a typical effluent turbidity less than 0.2 NTU, compared to 2 NTU for the conventional system. The low turbidity is highly reliable because the membranes provide an absolute barrier to solids larger than the pore size of the membranes. This will be beneficial to the City because the existing UV disinfection system is sized to accommodate 0.2 Mgal/d, assuming 2 NTU filter effluent. With better quality effluent from the MBR, it is anticipated that the disinfection system can be re-rated to accommodate higher flows.

Because an MBR system does not require solids to settle in clarifiers (or the clarification stage of the SBR process pond), mixed liquor solids concentrations can be typically about three times as high as those in a conventional activated sludge system, making the footprint much smaller than an SBR. Further, because the clarification stage of the SBR and the tertiary filters are not needed, the MBR system will have a much smaller footprint than a conventional system. The waste activated sludge will be sent to a sludge storage tank and dewatering screw press for solids handling.

MBR systems require screens with openings of 1 to 3 mm, depending on the specific manufacturer, compared to 6 mm openings on the existing influent screen. Therefore, for the MBR alternative, new screens are required. See **Figure 18** for an MBR process flow schematic.

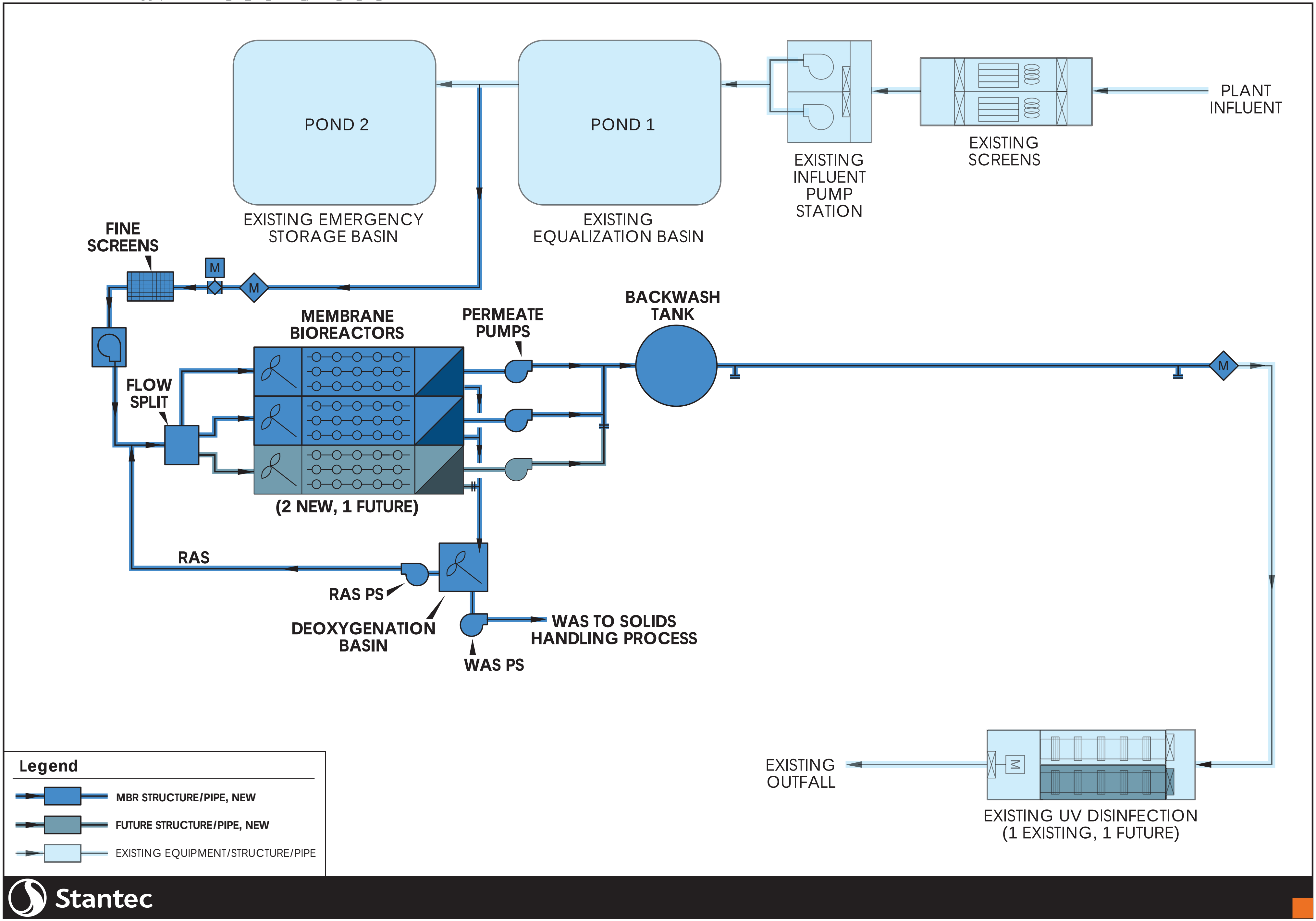


Figure 18
MBR Process Flow Diagram

MBR Design Criteria

There are now a significant number of MBR manufacturers with many installations worldwide that could supply a system to meet the requirements at San Juan Bautista. The membrane filtration systems of these various manufacturers are substantially different from each other and require different structural and equipment layouts. Therefore, it is typical to have a separate bid process, evaluation, and selection of the MBR equipment prior to proceeding with detail design of the project. For this report, proposals were received from two of the leading manufacturers (Suez and Ovivo). The analysis and costs presented herein are believed to be generally applicable to both of these manufactures, as well as others. The design criteria for the MBR system are listed in **Table 11**.

Table 11 MBR Design Criteria

Parameter	Value
Flow Rate, Mgal/d	
Average Day	0.27
Peak Month[1]	0.43
Influent Loading	
BOD average annual load, lb/d	628
BOD Max Month Load, lb/d	879
TSS average annual load, lb/d	691
TSS Max Month Load, lb/d	967
Mixed Liquor Suspended Solids (MLSS), mg/L	
Aeration and Anoxic Basin	8,000
Membrane Basin	10,000
Minimum Monthly Average Process Temperature, ^{o}C	10

1. Flow rates higher than peak month will be equalized

Future Salinity Control with MBRs

Unlike the existing sand media filtration system, an MBR system can function as a pre-treatment process step for reverse osmosis (RO) treatment. A small RO unit can be installed on the MBR effluent to remove just the amount of salt needed to comply with whatever regulation necessitates salinity removal. Although RO treatment is not needed for this alternative, as source control measures will reduce salt loading to the permitted levels, mechanical removal at the treatment plant may become necessary if further salinity removal is required in future permit cycles (beyond the anticipated effluent limits of 150 mg/L chloride, 200 mg/L sodium, and 1200 mg/L TDS).

MBR Life Cycle Costs

The life cycle costs for the MBR plant are presented in **Table 12**.

Table 12 MBR Process Life Cycle Costs

Description	Cost
Construction Costs	$7,300,000
Engineering/CM Costs (25%)	$1,825,000
Annual O&M[1]	$73,800
Present Worth O&M, 20-years @ 3%	$1,100,000
Total Life Cycle Cost	$10,225,000

1. Based on mixing and aeration power, permeate pump and air scour power, membrane cleaning chemicals and membrane replacement costs.

Total Life Cycle Costs for Alternative 1

Because Alternative 1 requires off-site salinity control in order to reduce the wastewater influent salinity concentrations to permittable levels, the costs for source control must be incorporated into the MBR costs to get the total project cost. The source control can be used in conjunction with the pre-treatment program and are evaluated in case the pretreatment program (reducing industrial discharge loading) does not remove enough salinity from the influent wastewater stream to fully comply with the NPDES permit.

Table 13 Alternative 1 Life Cycle Costs

Description	Cost
MBR Construction Costs	$7,300,000
Off-Site Salinity Control Costs	$5,200,000
Engineering/CM Costs (25%)	$3,125,000
Annual Source Water O&M	$168,000
Annual MBR O&M[1]	$73,800
Present Worth O&M, 20-years @ 3%	$3,600,000
Domestic Softener Buyback	$193,000
Total Life Cycle Cost	$19,418,000

4.1.2 Alternative 2, On-Site WWTP Upgrades and On-Site Salinity Control

Similar to Alternative 1, the option for on-site salinity control includes an MBR facility (for biological control and as a pre-treatment train for the reverse osmosis, RO, system), but does not require the off-site West Hills WTP source control to be implemented. While the West Hills WTP connection will not be required (to reduce salinity) connection to the Batebel Road Well is required (for water security needs), as defined in Appendix A.1. The costs associated with connecting to the Batebel Road Well (detailed in Appendix A.1) is included in the construction costs for this alternative. The costs developed for the MBR facility will be carried forward from the previous section. The purpose of this section is to analyze the RO design and cost parameters and assess the viability of a side-stream RO treatment system, as depicted in **Figure 19**.

<u>Reverse Osmosis Process Description</u>

Reverse osmosis is the reversal of the natural osmotic process, accomplished by applying pressure in excess of the osmotic pressure to the more concentrated solution. This pressure forces the water through the membrane against the natural osmotic gradient, thereby increasingly concentrating the water on one side (i.e., the feed) of the membrane and increasing the volume of water with a lower concentration of dissolved solids on the opposite side (i.e., the filtrate or permeate). The required operating pressure varies depending on the total dissolved solids (TDS) in the feed water (i.e., osmotic potential), as well as on membrane properties and temperature.

For San Juan Bautista, only part of the MBR effluent needs to pass through the RO process in order to reduce salinity to permittable levels. This would eliminate almost all salinity in the RO-treated portion of the flow, such that when this side-stream flow is re-combined with the remainder of the plant flow, the overall TDS, chlorides, and sodium levels would be met.

RO membranes are not designed to remove suspended solids; therefore, the main objective of the treatment facilities upstream of the RO is to minimize the amount of suspended solids loading reaching the RO system. Further, the ionic and organic constituents play a major role in determining the overall water recovery and the necessity for chemical treatment requirements (such as pH adjustment and/or scale prevention). Fouling of RO membranes usually occur due to one of the following factors:

- Suspended solids in the feedwater
- Scale formation of metals
- Precipitation of low solubility salts
- Adsorption of organic materials on the membrane surface and biofouling (organic growth)

Suspended solids will be reduced to allowable levels as it passes through the MBR treatment process (silt density index, SDI, of three will be achieved, and SDI less than five is needed to meet RO warranty requirements). Due to hardness in the City's water, anti-scalant chemicals must be added continuously to the RO influent in order to control scale formation. To prevent precipitation of salts, acid may be required (depending on the Langlier Saturation Index, LSI, at the plant. LSI must remain below 2.5). In order to

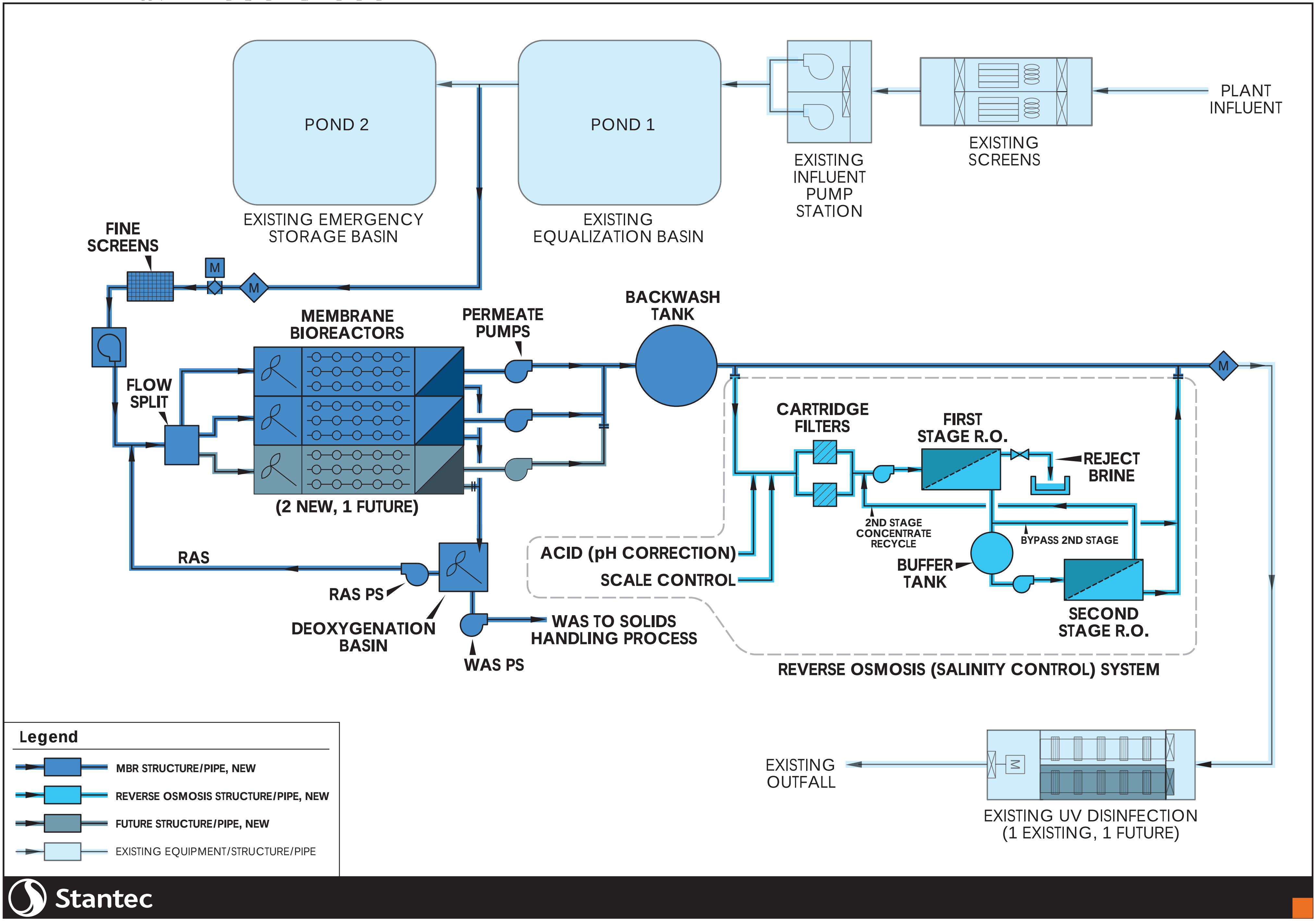


Figure 19
MBR Plus Reverse Osmosis Process Flow Diagram

A two stage RO configuration is recommended for high water recovery (80% overall) is proposed. The reject stream from the first stream becomes the feed water from the second stage, as shown in **Figure 21**. In contrast to MBRs, there are no backwash mechanisms for RO systems, but they do require chemical cleaning.

The RO membranes are a spiral-wound module with a sandwich arrangement of flat membrane sheets (called a “leaf”) wound around a central perforated tube. One leaf consists of two membrane sheets placed back to back and separately by a fabric spacer called a permeate carrier. The layers of the leaf are glued along three edges, while the unglued edge is sealed around the perforated central tube. A layer of plastic mesh called a spacer that serves as the feed water channel separates each leaf. Feed water enters the spacer channels at the end of the spiral-wound element in a path parallel to the central tube. As the feed water flows across the membrane surface through the spacers, a portion permeates through either of the two surrounding membrane layers and into the permeate carrier, leaving behind any dissolved and particulate contaminants that are rejected by the semi-permeable membrane. The filtered water in the permeate carrier travels spirally inward around the element toward the central collector tube, while the water in the feed spacer that does not permeate through the membrane layer continues to flow across the membrane surface, becoming increasingly concentrated in rejected contaminants. This concentrate stream exits the membrane element parallel to the central tube through the opposite end from which the feed water entered. A diagram of the spiral-wound element is shown in **Figure 22**.

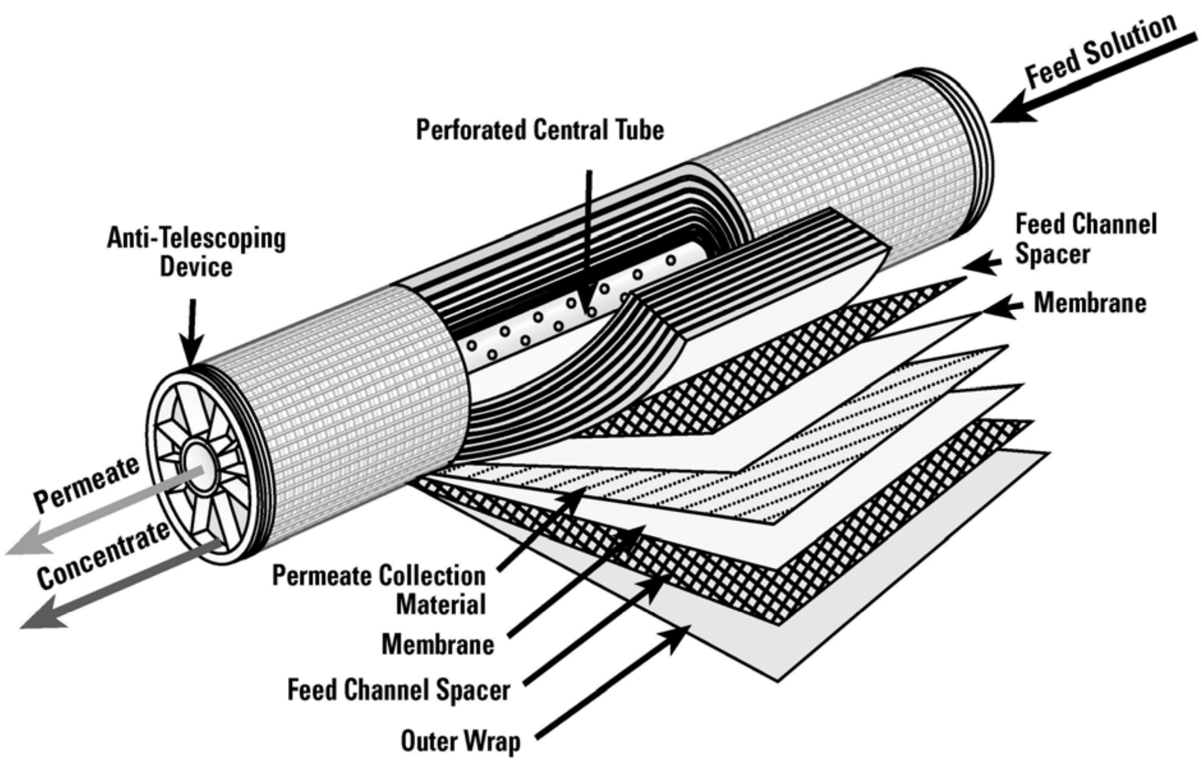


Figure 20 – Spiral-Wound RO Membrane Element Diagram

Reverse Osmosis Concentrate Management

Concentrate generated from the RO side-stream treatment process contains high amounts of TDS, chlorides, and organic compounds that are rejected by the RO membranes. Management of the reject brine solution (RO concentrate), which is typically 15% of the feed flow, poses the greatest challenge and costs for inland communities, such as San Juan Bautista.

Because ocean discharge and (presumably) deep well injection disposal options are not available, the City will need to figure out a way to manage the large volume of water rejected from the RO system. There are mechanical means to further concentrate the brine solution (such as vibratory shear enhanced processing, VSEP), which reduces the brine volume by 90%. After reducing the volume, the remaining highly concentrated brine will be stored throughout the winter season and dried in the summer before being hauled off-site for disposal (100-year water balance requires 6 acres of storage/drying and disposing in Buena Vista Landfill or John Smith Landfill). The cost of the brine management is included in the life cycle costs below.

MBR/RO Design Criteria

The MBR treatment design will be identical to the processes described in Alternative 1, with design criterial listed in Table 11. The sizing of the RO system is dependent on the targeted reduction in salinity, which may change before final design decisions are made (depending on the effectiveness of the industrial pre-treatment program). The design criteria for the side-stream RO system are listed in **Table 14**.

Table 14 Reverse Osmosis Design Criteria

Parameter	Value
Side-Stream Flow Rate,	
To RO, Mgal/d	0.43
RO Reject (flow to VSEP), gpm	60
VSEP Reject flow, gpm	6
From RO (Permeate), Mgal/d	0.34
Influent Concentrations, mg/L	
TDS	1800
Chlorides	600
Sodium	300

Table 14 Reverse Osmosis Design Criteria (Continued)

Parameter	Value
Effluent (Permeate) Concentrations, mg/L	
TDS	10.9
Chlorides	3.9
Sodium	2.3
Blended Concentrations, TDS, Chlorides, Sodium; mg/L	325,130,73

1. Flow rates higher than peak month will be equalized

Life Cycle Costs for Alternative 2

Because Alternative 2 requires MBR treatment to remove suspended solids and organic concentrations prior to entering the RO system, the MBR costs developed in Alternative 1 are included herein. The costs for RO side-stream treatment and brine concentration (VSEP) is also provided, see **Table 15** for the total life cycle costs associated with Alternative 2.

Table 15 Alternative 2 Life Cycle Costs

Description	Cost
MBR Construction Costs	$7,300,000
RO Construction Costs	$4,800,000
Engineering/CM Costs (25%)	$3,025,000
Annual MBR O&M	$73,800
Annual RO and VSEP O&M[2]	$74,400
Annual Brine Removal O&M[3]	$46,600
Present Worth O&M, 20-years @ 3%	$2,900,000
Domestic Softener Buyback	--
Total Life Cycle Cost[4]	**$18,025,000**

1. Including cost to purchase 6-acres for brine storage/drying at $85,000 per acre.
2. Based on chemical cleaning, booster pump electricity, and RO membrane replacement
3. Assumed hauling costs of $50/ton, dried to 50-percent concentration
4. The City will need to invest in the Betable Well development, to provide water reliability, adding an additional $5.7M to the total cost of this project (making the total life cycle costs $23.7M).

4.1.3 Alternative 3, Off-Site Salinity Source Control and Regionalization with Hollister WWTP

In order to send wastewater to Hollister WWTP, the off-site source control measures must be enacted, and salinity must be within Hollister's effluent limits. As such, the costs developed for the source control options, detailed in Appendix A.1 and documented in Alternative 1, will be carried though here. The source control measures can be used in conjunction with the pre-treatment program and are evaluated in case the pretreatment program (reducing industrial discharge loading) does not remove enough salinity from the influent wastewater stream to fully comply with the NPDES permit. The purpose of this section is to analyze regionalization with Hollister WWTP and the costs associated with pumping wastewater off-site for treatment and disposal, as depicted in **Figure 21**.

Regionalization Process Description

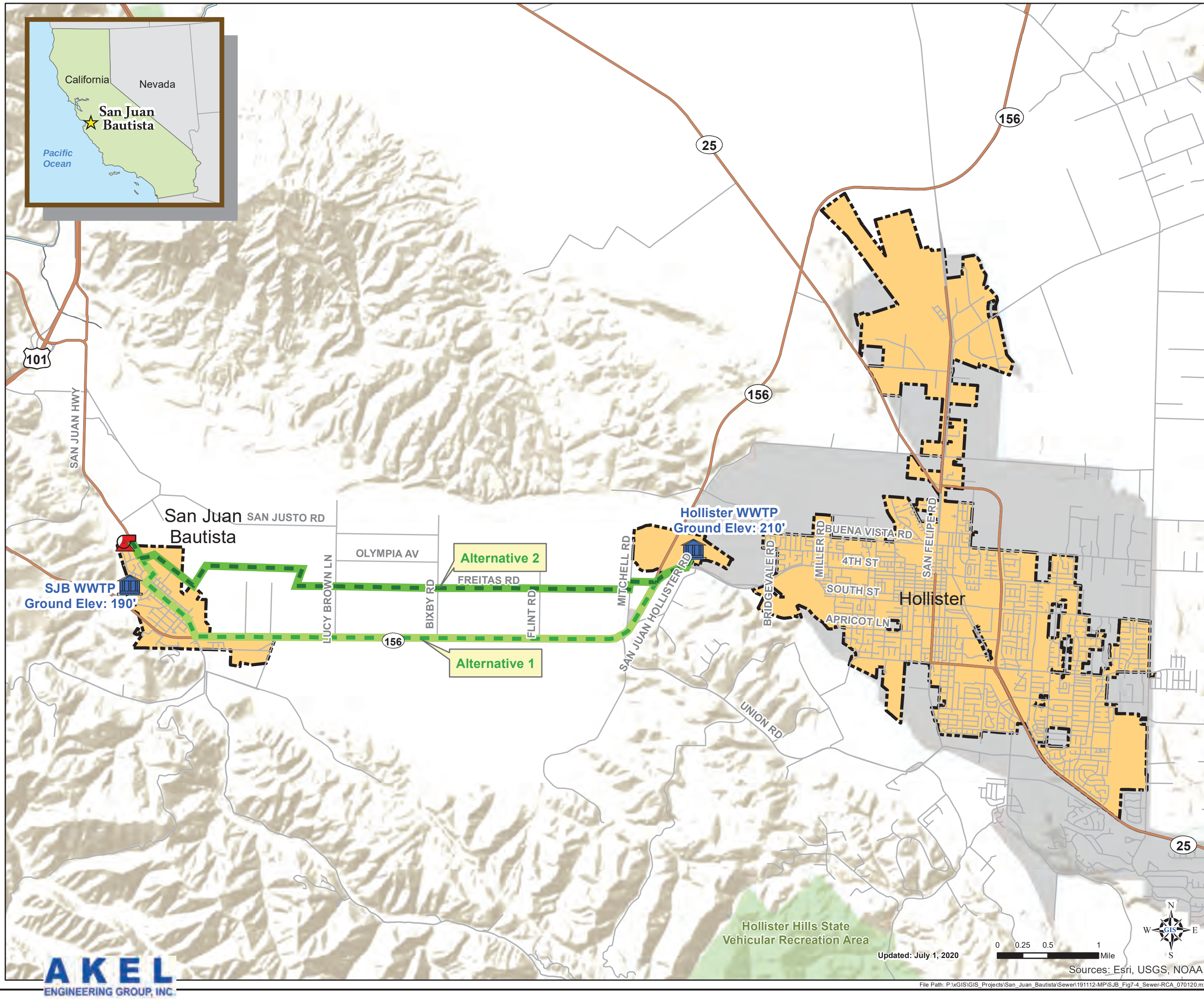
In order to send flow to the City of Hollister WWTP, the San Juan Bautista WWTP will be decommissioned and the ponds converted into equalization and emergency storage basins (aerators will remain in place to reduce odors and provide mixing). All screened raw sewage, up to the peak daily flow rates, will be pumped to Hollister in an 8-inch pipeline. The remaining flow will be diverted to a lined equalization pond (Pond 1) and overflow into an emergency storage basin (Pond 2). The pump station will be a trench style, self-cleaning, submersible pump station with centrifugal pumps. The facility will include a surge tank and pig launching station. The pipe alignment will include pig launching and receiving stations, to ensure the pipe can be properly maintained and cleaned.

Regionalization Design Criteria

The design criteria for the regional needs are listed in **Table 16**.

Table 16 Regionalization Design Criteria

Parameter	Value
Pump Station	
Capacity, gpm	550
Head, psi	105
Power Demands, HP	50
Number of Pumps	3 (1 duty, 1 standby, 1 future)
Surge Tank Size, gallons	10,000
Lined Equalization Basin Size, MG	1.6
Emergency Storage Basin Size, MG	4.3
Pipeline Dimeter (inch) & Length (miles)	8 & 6.4



Legend

- Potential Lift Station
- Alternative Connection Alignments
- Major Highways
- City Limits
- Urbanized Area
- Protected Open Space
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 21
Regional Connection Alternatives
Wastewater System Master Plan
City of San Juan Bautista

Benefits of Regionalization

The California State Water Resources Control Board developed twelve general principles (adopted in 1972) for water quality control, which have been incorporated into the Water Quality Control Plan (Central Coast Basin Plan). Two of the principles specifically encourage regional (centralized) solutions, as quoted below:

- "Coordinated management of water supplies and wastewaters on a regional basis must be promoted to achieve efficient utilization of water"
- "Wastewater collection and treatment facilities must be consolidated in all cases where feasible and desirable to implement sound water quality management programs based upon long-range economic and water quality benefits to an entire basin."

Some Regional Boards have even passed resolutions (similar to the Central Valley Resolution No. R5-2009-0028), that requires the Regional Water Board to facilitate opportunities for regionalization and consider innovative permitting options when existing NPDES permit requirements, waste discharge requirements, and/or enforcement Orders inhibit the ability to implement regionalization. Similarly, in recent meetings with the Central Coast Regional Board, Board staff are encouraging regionalization for the City of San Juan Bautista.

There are a number of potential benefits to regionalization including the following:

1. Coordinated management of water supplies and wastewaters on a regional basis promotes efficient utilization of water.
2. Reducing discharges of wastewater into seasonal or ephemeral streams (such as the drainage channel adjacent to the facility) decreases habitat changes to the waterbodies that occur when flow is not naturally present in the streams.
3. The costs of constructing, expanding, upgrading, and maintaining wastewater treatment systems are large, and can be a severe impact on small communities. Increased rates on most communities, but especially for the small communities in particular, result in the likelihood of a successful Proposition 218 challenge to rate increases. Although the capital investment for regionalization may result in a higher initial cost (compared to upgrading an existing facility to meet current regulatory requirements), the costs associated with meeting future regulatory requirements can be spread over a larger population and ultimately reduce the per capita costs of wastewater treatment and disposal. Regionalization also increases the technical and economic feasibility of a higher level of wastewater treatment, allowing the treated water to become a resource.

Life Cycle Costs for Alternative 3

Because Alternative 3 requires off-site salinity control in order to reduce the wastewater influent salinity concentrations to permittable levels, the costs for source control must be incorporated into the pump station and pipeline costs to get the total project cost, as shown in **Table 17**. The source control can be used in conjunction with the pre-treatment program and are evaluated in case the pretreatment program (reducing industrial discharge loading) does not remove enough salinity from the influent wastewater stream to fully comply with the NPDES permit.

Table 17 Alternative 3 Life Cycle Costs

Description	Cost
Regional Construction Costs	$6,270,000
Hollister Connection Fees[1]	$4,670,000
Easements	$1,021,000
Off-Site Salinity Control Costs	$5,200,000
Engineering/CM Costs (25%)	$2,870,000
Annual Source Water O&M	$168,000
Annual Regional Pumping O&M[1]	$238,000
Present Worth O&M, 20-years @ 3%	$6,050,000
Domestic Softener Buyback	$193,000
Total Life Cycle Cost	$26,274,000

1. City of Hollister connection fee calculated at $27.9/gpd and $4531.66/residential user.
2. Includes City of Hollister monthly service fee at $8.7/HCF (minus the cost savings for decommissioning the SJB WWTP, assumed to be half the existing service fees), and new regional pump station power costs.

4.2 COMMON DESIGN CRITERIA

In order to develop a fair comparison of alternatives, it is important to establish common design criteria on which to base the evaluation. Key design parameters are discussed below:

- **Design Wastewater Flow**: The design criteria of the WWTP Improvements Project indicate that the design annual average influent flow rate and peak day max month flow rates are 0.27 and 0.43 Mgal/d, respectively.

- **Design Wastewater Loads**: The design criterial of the WWTP Improvements Project indicate that the average annual influent BOD load and peak month load are 628 lb/d and 879 lb/d, respectively. Further, the average annual influent TSS load and peak month load are 307 and 430 lb/d, respectively.

- **Design Salinity Loads**: The design criterial of the WWTP Improvements Project indicate that the average annual influent TDS, Chloride, and Sodium concentrations are 1800, 600, and 300 mg/L, without industrial pretreatment or source control.

- **Industrial Pre-Treatment Salinity Reduction:** It is assumed that, once implemented, the industrial pre-treatment program will remove at least 562 mg/L TDS, 196 mg/L chloride, and 143 mg/L sodium (with a presumed sewer discharge limit of 4,000 gpd average flow rate for municipal wastewater only and 885 mg/L TDS, 110 mg/L chloride, and 80 mg/L sodium, which is considered 15% higher than the average municipal wastewater concentrations). <u>As such, the source control measures may require an additional 205 mg/L chloride, 0 mg/L sodium, and 38 mg/L TDS removal</u>

    - The extent of industrial based salt reduction will not be fully known until a pre-treatment program is implemented and additional samples are collected (the preliminary numbers presented herein are based on a two-week sampling event from industrial dischargers). Once the pre-treatment program is adopted and frequent representative samples are analyzed, the remaining salinity removal needed to comply with the NPDES permit will be better quantified.

    - For the purposes of this analysis, it is assumed that each source control option will provide sufficient salinity reduction, in combination with the pre-treatment program, to achieve compliance with the permit.

- **Potable Water Reliability:** The City only has a firm capacity of 130 gpm using Well No. 1 as the primary source of water (when the higher production Well No. 5 is removed from service for routine maintenance or possible nitrate contamination). As such, the City needs a backup water source to ensure a viable water portfolio, which can be achieved by a new well (the Betable Road Well) or connecting to Hollister WTP. Costs associated with water reliability measures will be incorporated into all alternatives.

- **Cost Index, Interest Rate and Useful Lives:** The cost index used for the project cost estimates is based on the ENR Construction Cost Index at start of construction (CCI) of 11,000 (June 2020). The interest rate adjusted for inflation used in the life cycle analyses is 3.0% per year and the useful life of most of the project alternatives is estimated to be approximately 20 years to match the planning horizon (although structural components will last much longer, equipment will not).

- **Planning Period:** The planning period used for the project is 20 years. This allows for an appropriate timeline accommodating community service and a limited amount of growth in accordance with City planning horizons and roughly matches industry standards for the useful life of treatment works.

- **Contingency:** For the level of project development, all costs will be escalated by 30% contingency factor, to account for unknown project details.

The design parameters relevant to the development and analysis of the various project alternatives are summarized in **Table 18**.

Table 18 WWTP Improvement Project Design Criteria

Parameter	Unit	Phase 1 Condition ADWF = 0.27 Mgal/d
Flow		
Avg. Day Annual Flow (AAF)	Mgal/d	0.27
Average Day Max Month Flow (ADMMF)	Mgal/d	0.43
Peak Day Flow (PDF)	Mgal/d	0.80
Peak Hour Flow (PHF)	Mgal/d	1.08
Biological Oxygen Demand (BOD)		
Annual Average Load (AAL)	lb/d	628
Avg. Day Max Month Load (ADMML)	lb/d	879
Average Concentration	mg/L	279
Max Month Concentration	mg/L	390
Total Suspended Solids (TSS)		
Annual Average Load (AAL)	lb/d	691
Avg. Day Max Month Load (ADMML)	lb/d	967
Average Concentration	mg/L	307
Max Month Concentration	mg/L	430
TKN Concentration		
Annual Average Load (AAL)	lb/d	119
Avg. Day Max Month Load (ADMML)	lb/d	167
Average Concentration	mg/L	53
Max Month Concentration	mg/L	74
Total Dissolved Solids[4]	mg/L	790
Chloride[4]	mg/L	196
Sodium[4]	mg/L	111

1. If water conservation measures materialize, then the design organic load of the plant will be reached before the hydraulic design flow.
2. Average concentrations are calculated using AAF combined w/AAL
3. Average day max month load is calculated using AAF combined w/ADMML
4. After implementation of an industrial pre-treatment program and source control. To be confirmed with local limits study and additional samples.

4.3 POTENTIAL ENVIRONMENTAL IMPACTS OF PROJECT ALTERNATIVES

4.3.1 Alternative 1, On-Site WWTP Upgrades and Off-Site Salinity Control

The source water pipe alignment will be installed within previously disturbed areas, along the side of roadways (in the public utilities right-of-way) and the wastewater upgrades will be done at the treatment plant site (within the existing fence line). Environmental impacts are considered less than significant and, if selected, will be confirmed during the CEQA Initial Study and Mitigated Negative Declaration (IS/MND) phase.

4.3.2 Alternative 2, On-Site WWTP Upgrades and On-Site Salinity Control

The wastewater upgrades will be done at the treatment plant site (within the existing fence line). This option requires the acquisition of 6-acres of land and converting it into a brine storage and drying pond. Any new property purchased by the City will be carefully chosen to minimize environmental impacts. All other environmental impacts are considered less than significant and, if selected, will be confirmed during the CEQA Initial Study and Mitigated Negative Declaration (IS/MND) phase.

4.3.3 Alternative 3, Off-Site Salinity Source Control and Regionalization with Hollister WWTP

The source water pipe and wastewater pipe alignment will be installed within previously disturbed areas, along the side of roadways (in the public utilities right-of-way) and the wastewater decommissioning and conversion to a pump station will be done at the treatment plant site (within the existing fence line). Environmental impacts are considered less than significant and, if selected, will be confirmed during the CEQA Initial Study and Mitigated Negative Declaration (IS/MND) phase.

4.4 LAND REQUIREMENTS

The proposed Project components are all located in City owned property (within existing well sites or at the Wastewater Treatment Plant) or along existing roadways within the City's right-of-way in regional alignments and are within previously disturbed areas. Other than the Regional Alignments and the brine storage (for the RO option), the properties are currently owned by the City and does not require any additional acquisitions or lease of land. For any regional pipeline, the City will need to ensure they stay within the public utility right-of-way. If the City installs a RO (or EDR) system, they will need to purchase 6-acres of property to store and dry brine solution.

4.5 POTENTIAL CONSTRUCTION PROBLEMS

Construction of each alternative project is expected to be routine. However, potential construction problems could include keeping the existing treatment plant in operation during construction. The construction activities will also require temporary shutdowns of portions of the treatment plant though these are common for this type of project. Ingress/egress to the treatment plant must also be maintained throughout construction.

4.6 SUSTAINABILITY CONSIDERATIONS

4.6.1 Water and Energy Efficiency

The improvement project will include Title 24 compliance equipment, including premium efficiency motors. It will include upgraded instrumentation to optimize treatment performance, minimizing energy demands associated with aeration and mixing. All options will provide better water quality (effluent) that achieves water quality goals set by the Regional Board.

4.6.2 Other, California Priorities

The California state planning priorities identified in Government Code 65041.1 are intended to promote equity, strengthen the economy, protect the environment, and promote public health and safety in the State, including in urban, suburban, and rural communities. These priorities are described as follows:

- **Promoting infill development** and equity by rehabilitating, maintaining, and improving existing infrastructure that supports infill development and appropriate reuse and redevelopment of previously developed, underutilized land that is presently served by transit, streets, water, sewer, and other essential services, particularly in underserved areas, and to preserving cultural and historic resources.

- **Protecting environmental and agricultural resources** by protecting, preserving, and enhancing the state's most valuable natural resources, including working landscapes such as farm, range, and forest lands, natural lands such as wetlands, watersheds, wildlife habitats, and other wildlands, recreation lands such as parks, trails, greenbelts, and other open space, and landscapes with locally unique features and areas identified by the state as deserving special protection.

- **Encouraging efficient development** patterns by ensuring that any infrastructure associated with development, other than infill development, supports new development that does all of the following:

    - Uses land efficiently.
    - Is built adjacent to existing developed areas to the extent consistent with the priorities specified pursuant to subdivision.
    - Is located in an area appropriately planned for growth.
    - Is served by adequate transportation and other essential utilities and services.
    - Minimizes ongoing costs to taxpayers

The following bullets describe how the City will promote project alternatives that address each of the planning practices as defined in Section 65041.1 of the California Government Code and sustainable water resources management priorities.

- **Infill Development.** The City promotes infill development and equity by rehabilitating, maintaining, and improving existing infrastructure that supports infill development and appropriate reuse and redevelopment of previously developed, underutilized land that is presently served by water and sewer infrastructure, particularly in underserved areas, and to preserving cultural and historic resources. Planning activities for this and prior plant upgrades have been limited to providing capacity for anticipated infill growth within the City. Growth outside the City or in excess of capacity planned to serve anticipated infill must be planned, designed and constructed by those private parties which will benefit from those improvements.

- **Environmental Resources.** The City protects, preserves, and enhances the state's most valuable natural resources, including forest lands, natural lands such as wetlands, watersheds, wildlife habitats, and other wildlands, recreation lands such as parks, trails and other open space, and landscapes with locally unique features and areas identified by the state as deserving special protection. They accomplish this by: optimizing the footprint of their facilities, keeping those to a minimum, thereby preserving nearby forested and grassland open spaces and wetlands; water quality is protected and enhanced by the operation of their treatment and disposal facilities which produce effluent which meets (other than identified herein) and in some cases exceeds established water quality objectives. Taken together these activities enhance the overall environmental quality within the watershed.

- **Efficient Development Patterns.** The City encourages efficient development patterns by ensuring that any infrastructure associated with development that is not infill supports new development, uses land efficiently, is built adjacent to existing developed areas to the extent possible and is placed in areas appropriately planned for growth, is served by adequate infrastructure and other essential utilities and services, and minimizes ongoing costs to taxpayers. Planning activities for this and prior plant upgrades have been limited to providing capacity for anticipated infill growth within the City. Growth outside the City or in excess of capacity planned to serve anticipated infill must be planned, designed and constructed by those private parties which will benefit from those improvements.

- **Water Resources Management.** The City encourages sustainable water resources management by ensuring that sustainable water resources measures are implemented, such as conserving water, conserving energy, and applying Low Impact Development Best Management Practices to the maximum extent practicable. Taken together with the above noted activities these enhance the overall environmental quality within the watershed.

4.7 COST ESTIMATES

See Section 5.1.

5.0 SELECTION OF AN ALTERNATIVE

5.1 LIFE CYCLE COST ANALYSIS

The life cycle cost estimates for Alternatives 1, 2, and 3 are summarized in **Table 19**.

Table 19 Alternative Options Life Cycle Costs Summary

Description	Alternative 1: On-Site WWTP Upgrades & Off-Site Source Control (MBR & West Hills WTP)	Alternative 2: On-Site WWTP Upgrades and On-Site Source Control (MBR+RO)	Alternative 3: Regionalization with Hollister WWTP & Off-Site Source Control (Hollister WWTP & West Hills WTP)
Source Control Costs (West Hills WTP, See Appendix A.1)			
Construction Costs [1]	$5,200,000		$5,200,000
Engineering/CM Costs [2]	$1,300,000		$1,300,000
Present Worth O&M, 20-years @ 3% [3]	$2,500,000		$2,500,000
Domestic Softener Buyback	$193,000		$193,000
Source Control, Total Life Cycle Cost	$9,193,000		$9,193,000
Water Security Costs (Betabel Road Well, See Appendix A.1)			
Construction/Engineering/CM Costs [4]	---	$5,010,000	---
Present Worth O&M, 20-years @ 3% [5]	---	$670,000	---
Water Security, Total Life Cycle Cost	---	$5,680,000	---
WWTP Upgrade Costs			
Construction Costs	$7,300,000	$12,100,000 [6]	$11,961,000 [7]
Engineering/CM Costs	$1,825,000	$3,025,000	$1,568,000
Present Worth O&M, 20-years @ 3%	$1,100,000	$2,900,000 [8]	$3,550,000 [9]
WWTP Upgrade, Total Life Cycle Cost	$10,225,000	$18,025,000	$17,078,000
IMPROVEMENT PROJECT TOTAL LIFE CYCLE	$19,418,000	$23,705,000	$26,272,000

1. Based on a 12-inch diameter pipe in a 6.0-mile long alignment (connecting to West Hills WTP)
2. Engineering/CM fees are estimated to be 25% of construction cost
3. Based on $1500/acre-feet (West Hills wholesale fee schedule), purchasing 200,000 gpd, and saving $168,000/yr in existing water system operating costs (by not running/maintaining the wells as frequently).
4. Based on a 12-inch diameter pipe in a 3.5-mile long alignment and cost of iron/manganese filter (connecting to Betable Road Well)
5. Based on $200/acre-feet, purchasing 200,000 gpd
6. Includes cost to purchase 6-acres for brine storage/drying (at $85,000 per acre)
7. Includes City of Hollister connection fee calculated $27.9/gpd and $4531.66/residential user (totaling $4.7M)
8. Includes brine hauling costs of $50/ton, dried to 50-percent concentration
9. Includes City of Hollister monthly service fee at $8.7/HCF (minus the cost savings for decommissioning the SJB WWTP, assumed to be half the existing service fees), and new regional pump station power costs
10. Construction costs based on ENR of 13,000

5.2 NON-MONETARY FACTORS

The Improvement Project options considered must be evaluated not only for their ability to meet NPDES discharge permit compliance, but also for their ranking against the other non-monetary factors. To compare the options, a list of criteria is developed by which the alternatives will be ranked. **Table 20** provides a list of criteria and a brief explanation why it is important in the evaluation process.

Table 20 Improvements Project Selection Criteria

Criterion	Description
Life Cycle Costs (Capital and O&M)	Cost to design new processes, purchase equipment and construct facilities. Including the cost to operate new facilities – such as power costs, chemical costs, periodic replacement costs, maintenance costs, etc.
Footprint	The amount of land area needed to physically house the new process facilities
Operational Simplicity	A measure of operator time required to operate and perform routine maintenance on equipment. It is expected that the fewer moving parts in the process, the less operator time will be needed to maintain the equipment
Reliability	A measure of how dependable and robust the system is and how well it will react to changing wastewater quantity and quality (flows and loads)
Future Regulations Compliance	Ability for new equipment to fit into existing processes and flexibility of process to meet future regulations

1. All options presented include added costs to implement water security measures (where applicable) and therefore this criterion was removed from the list.

The criteria themselves are given a score from one to five based their importance to the project. A score of five carries the highest level of relative importance while a score of one has a relatively lower level of importance. The value entered in the blue squares compares the criterion in the row to the criterion in the column for relative importance in the selection process. Each score entered in the blue squares will have a paired score in the white squares and the two paired scores will equal six. The relative weight of each criterion is calculated and ranked in the two columns on the right.

Table 21 provides a matrix assigning a score for each of the alternatives and its relative weight in determining the preliminary treatment process selected.

Table 21 Improvements Project Options Criteria Weight

	Life Cycle Costs (Capital and O&M)	Footprint	Ease of O&M	Reliability	Flexibility (Future Regulations)	Relative Weight
Life Cycle Costs (Capital and O&M)		**5**	**2**	**3**	**2**	***12***
Footprint	**1**		**1**	**2**	**1**	***5***
Operational Simplicity	**4**	**5**		**3**	**2**	***14***
Reliability	**3**	**4**	**3**		**3**	***13***
Future Regulations Compliance	**4**	**5**	**4**	**3**		***16***

Evaluation Criterion	**Entered Score**	**Paired Score**
Substantially More Important	5	1
Somewhat More Important	4	2
Equal Importance	3	3
Somewhat Less Important	2	4
Substantially Less Important	1	5

1. Blue cells are scored using evaluation criterion (score 1-5) as it's compared to the top row criteria. White cells are the paired score (score 5-1). Relative weight is the total of the entire row and carried through to the selection matrix.

Table 22 presents a comparative score (with the total of the scores equal to exactly ten) for the three alternatives evaluated. This matrix also takes the relative weight determined in Table 21 for each of the evaluation criteria and multiplies that number by the comparative score for each of the criteria. This calculation returns a weighted score for each of the evaluation criteria and each of the alternative source control measures. The sums of these weighted scores for the seven evaluation criteria is presented as a total score on the bottom row. The higher the total score, the better the option for this application.

Table 22 Improvements Project Options Selection Matrix

		Comparative Score (Score Total Must Equal 10)			Criterion Score (Relative Weight Times Comparative Score)		
Criteria	***Relative Weight***	**MBR & West Hills WTP**	**MBR/RO**	**Hollister WWTP & West Hills WTP**	**MBR & West Hills WTP**	**MBR/RO**	**Hollister WWTP & West Hills WTP**
Life Cycle Costs (Capital and O&M)	***12***	3.6	3.3	3.1	43	40	37
Footprint	***5***	4.0	2.0	4.0	20	10	20
Operational Simplicity	***14***	3.0	2.0	5.0	42	28	70
Reliability	***13***	3.0	3.0	4.0	39	39	52
Future Regulations Compliance	***16***	3.0	3.0	4.0	48	48	64
				TOTAL SCORE	**192**	**165**	**243**

Improvements Project Recommendation

As shown in **Table 22**, connecting to regional facilities including the Hollister WWTP (and separate source control measures with West Hills WTP connection, detailed in Appendix A.1) Alternative 3 scores the highest compared to the other options evaluated in the analysis and is therefore the recommended improvement project.

Benefits of Regionalization

With increasingly stringent regulations, the small City of San Juan Bautista has historically struggled to operate the WWTP in a way that complies with regulatory requirements, as noted in Section 2.3. Long-term regulatory compliance is a main project objective and indicated in the evaluation matrix (within criteria labeled "future regulation compliance") and regionalization with the City of Hollister will provide the best means to that end. The California State Water Resources Control Board (SWRCB) strongly supports regionalization and the City will be applying for financial assistance for this project through the State as well.

The SWRCB developed twelve general principles (adopted in 1972) for water quality control, which have been incorporated into the Water Quality Control Plan (Central Coast Basin Plan). Two of the principles specifically encourage regional (centralized) solutions, as quoted below:

- “Coordinated management of water supplies and wastewaters on a regional basis must be promoted to achieve efficient utilization of water”
- “Wastewater collection and treatment facilities must be consolidated in all cases where feasible and desirable to implement sound water quality management programs based upon long-range economic and water quality benefits to an entire basin.”

Some Regional Boards have even passed resolutions (similar to the Central Valley Resolution No. R5-2009-0028), that requires the Regional Water Board to facilitate opportunities for regionalization and consider innovative permitting options when existing NPDES permit requirements, waste discharge requirements, and/or enforcement Orders inhibit the ability to implement regionalization. Similarly, in recent meetings with the Central Coast Regional Board, Board staff are encouraging regionalization for the City of San Juan Bautista.

There are a number of potential benefits to regionalization including the following:

1. Coordinated management of water supplies and wastewaters on a regional basis promotes efficient utilization of water.

2. Reducing discharges of wastewater into seasonal or ephemeral streams (such as the drainage channel adjacent to the facility) decreases habitat changes to the waterbodies that occur when flow is not naturally present in the streams.

3. The costs of constructing, expanding, upgrading, and maintaining wastewater treatment systems are large, and can be a severe impact on small communities. Increased rates on most communities, but especially for the small communities in particular, result in the likelihood of a successful Proposition 218 challenge to rate increases. Although the capital investment for regionalization may result in a higher initial cost (compared to upgrading an existing facility to meet current regulatory requirements), the costs associated with meeting future regulatory requirements can be spread over a larger population and ultimately reduce the per capita costs of wastewater treatment and disposal. Regionalization also increases the technical and economic feasibility of a higher level of wastewater treatment, allowing the treated water to become a resource.

It is recommended that the City of San Juan Bautista sends wastewater to the City of Hollister WWTP for advanced treatment at the regional facility.

6.0 PROPOSED PROJECT, RECOMMENDED ALTERNATIVE

As shown in **Table 22**, connecting to regional facilities including the Hollister WWTP (and separate source control measures with West Hills WTP connection, detailed in Appendix A.1) Alternative 3 scores the highest compared to the other options evaluated in the analysis and is therefore the recommended improvement project.

6.1 PRELIMINARY PROJECT DESIGN DESCRIPTION

The Apparent Best Project includes decommissioning the existing SBR pond plant and converting it into an equalization basin (aerators will remain in place to reduce odors and provide mixing). A new pump station will be constructed to deliver equalized and screened raw sewage to the City of Hollister WWTP in an 8-inch diameter pipe (for treatment and disposal at the Hollister plant), as shown in **Figure 21**. A separate source control project will be constructed (as defined in Appendix A.1) to reduce hardness in the potable water system and associated salinity in the wastewater stream.

The off-site Water Source Control portion of the project will be constructed as a separate, stand-alone, project that will not utilize USDA funding. As such, the associated costs are not included in the project budget detailed below. The water source control project, which will provide less hard water to the City of San Juan Bautista, is scheduled for completion prior to the City's regional sewer connection at the Hollister WWTP.

6.2 PROPOSED PROJECT SCHEDULE

Implementation of the project will follow the timeline required to secure funding and to complete the environmental CEQA and permitting process, establish user rates, complete the Proposition 218 process for those rates, and complete design and construction. An estimate of the timeline, subject to change, is presented in **Table 23**.

Table 23 Preliminary Project Schedule

Task	Completion Data
Preliminary Engineering Report	August 2020
Submit Construction Funding Application	February 2021
Implement Pre-Treatment Program	October 2020
Design & Project Management Consultant Selection	February 2021
Collect Samples at Industrial Discharge	April 2021
Begin Design	May 2021
NEPA and CEQA permitting process	February 2022
Final Design (Drawings and Specifications)	March 2022
Bidding Process	May 2022
Construction NTP	June 2022
Construction Substantially Complete	July 2023
Final Startup, Testing, and Operations	November 2023

6.3 PERMIT REQUIREMENTS

As stated previously, the San Juan Bautista Wastewater Treatment Plant (WWTP) operates under Order No. R3-2009-0019 NPDES permit No. CA0047902. Based on the current permit, the average monthly discharge limits for chloride, sodium, and total dissolved solids (TDS) are 200 mg/L, 250 mg/L, and 1400 mg/L, respectively. The anticipated salinity balance, after the project is complete, is shown in **Table 24**. As detailed, the salinity concentrations are anticipated to be in compliance with the current permit once the project is complete (including limiting industrial users to only discharging municipal wastewater into the City's sewer collection system, procuring source water from West Hills WTP that is blended with the City's well water at 60-percent ratio, and implementing a water softener buy-back program that is expected to reduce half the domestic softener use). Future permit restrictions that decrease the salinity concentrations beyond the existing limits (presumed to be 150, 200, and 1200 mg/L, respectively) will need to be accommodated through additional water softener buy-back or higher blended ratios from West Hills WTP.

The design of the improvements will be in compliance with the latest building codes (2019 California Building Code, CBC), design and placement of structural concrete will conform to American Concrete Institute Code Requirements (ACI 318) and for liquid containing structures ACI 350. All drinking water improvements will be done in accordance with NSF 61 standards and comply with CCR Title 17, 22, and 40.

During construction, the General Contractor will be required to obtain an encroachment permit from the County of San Benito, an air permit from the Monterey Bay Air Resources District, and a General Permit for storm water discharges associated with construction (and SWPPP compliance) from the Regional Board.

Table 24 Future WWTP Influent Salinity Balance (Average Daily Loads)

Salt Contributors to Total WWTP Influent	TDS	Chloride	Sodium
SALINITY LOADING, lb/d			
Well No. 1 & West Hills Blend (Raw Water)[1]	615	118	87
Diet and Personal Care Products[2]	400	27	19
Self-Regenerating Water Softeners[3]	146	88	59
Industrial User[4]	30	4	3
Inflow and Infiltration[5]	0	60	0
TOTAL WWTP INFLUENT, lb/d	1,191	296	167
SALINITY CONCENTRATION, mg/L			
Well No. 1 (Raw Water)[1]	407	78	58
Diet and Personal Care Products[2]	265	18	12
Self-Regenerating Water Softeners[3]	97	58	39
Industrial User[4]	20	2	2
Inflow and Infiltration[5]	0	40	0
TOTAL WWTP INFLUENT, mg/L	789	196	111

1. Based on average well & West Hills WTP data shown in Tables 4 & 12 with a blended ratio of 40% well water and 60% surface water.
2. Dietary and Personal Care Products: TDS concentration of 265 mg/L based on Central Valley Clean Water Association “Salinity Management Practices for POTWs” 2012. Chloride and sodium concentrations based on “Chloride Contributions from Water Softeners and Other Domestic Sources” University of Minnesota 2019 and “Characterizing and Managing Salinity Loading in Reclaimed Water Systems” by AWWA & Thompson 2006.
3. Water softener efficiency based on 3300 grains hardness per pound NaCl (and average blended source water hardness of 228 mg/L $CaCO_3$) in accordance with historical and current California efficiency standards and half the influent flow rate is being treated by ion exchange water softeners. Calculation assumes 20% of households will still have water softeners after buyback program takes effect (approximately 175 softeners remaining).
4. Based on industrial pre-treatment limiting drains to only municipal wastewater flow from facility at 4,000 gpd average and salinity concentrations of 885 mg/L TDS, 110 mg/L chloride, and 80 mg/L sodium). To corelate these values to total wastewater influent flow concentration, the sample concentrations were multiplied by 2.2% (4,000 gpd ÷ 180,000gpd = 2.2%)
5. To account for missing salinity, inflow and infiltration (I/I) based loading (salinity from agricultural runoff and natural erosion/weathering of rock minerals) was calculated by taking the difference between historical influent loads (from Table 5) and total other loads contributors identified herein. The missing chloride concentration may also be linked to the historical changes in the primary source water, as various wells were placed online or taken offline (i.e. Well No. 1 has chloride concentrations that are 25 mg/L lower than Well No. 6, etc).

6.4 SUSTAINABLITY CONSIDERATIONS

In agreement with the State planning priorities of Government Code 65041.1 and sustainable water resource management priorities, all new improvements completed with this project will utilize premium efficient motors where feasible. New PLC controls and SCADA alarming will help the new facilities to operate efficiently. This will be important for efficient operation and management of the pump station and pipeline projects.

6.5 ENGINEER'S OPINION OF PROBABLE COSTS

The total capital cost for this project is estimated to be $14,579,000 and is detailed in **Table 25**.

Table 25 Total Project Cost Estimate

ITEM	Subtotal	Total
Property Purchase / Lease Agreements		$100,000
Easement Acquisition / Right of Way / Water Rights		$1,021,000
Bond Counsel		$40,000
Legal Counsel		$30,000
Interest/Refinancing Expense		$500,000
Other		
Other (connection fee)		$4,670,000
Environmental Services		
- CEQA Environmental Report	$70,000	
- NEPA Environmental Report	$30,000	
- Environmental Mitigation Contract Services	$6,000	
Total - Environmental Services:		$106,000
Engineering Services		
Basic Services:		
- Preliminary Engineering Report (PER)	$112,000	
- Preliminary and Final Design Phase Services	$490,000	
- Bidding/Contract Award Phase Services	$28,000	
- Construction and Post-Construction Phase Services (w/o inspection)	$117,000	
- Resident Project Representative Services (resident inspector)	$504,000	
Additional Services:		
- Permitting	$40,000	
- Regulatory Compliance Reports	$5,000	
- Environmental Mitigation Services (Construction Phase)	$10,000	
- Easement Acquisition/ROW's Services (Construction Phase)	--	
- Surveying Services (Construction Phase)	$10,000	
- Operation & Maintenance Manual(s)	$25,000	
- Geotechnical Services	$105,000	
- Hydrogeologist Services	--	
- Materials Testing Services (Construction Phase)	$25,000	
- Other Services (describe)	---	
Total – Engineering Services:		$ 1,471,000
Equipment/Materials (Direct purchase using approved methods, separate from construction bid/cost)		--
Construction Cost Estimate (escalated to mid-point of construction)		$ 6,270,000
Contingency (15% of construction cost estimate)		$ 941,000
TOTAL PROJECT COST ESTIMATE:		**$ 15,149,000**

6.6 ANNUAL OPERATING BUDGET

6.6.1 Income

The City currently charges residential and commercial customers the rates summarized below, as detailed in **Section 2.4**:

- the base rate of $83.61/month (residential),
- $84.03 (commercial), and
- Cost per 1,000 gallons: $9.10/month (standard strength), $13.63/month (moderate strength), and $18.18/month (high strength).

Based on the 2019 Auditor's Report and Financial Statement, the City's annual operating revenue collected from water and sewer fees was $1,312,018 and $1,182,920, respectively.

6.6.2 Annual O&M Costs

The existing SBR and filters will be replaced with an equalization basin, pump station, and regional pipeline (for treatment at the Hollister WWTP). Operation and maintenance costs resulting from the proposed Project are anticipated to decrease and the amount of contract labor needed for operations will also be less, but regional service fees will be added. **Table 26**, below, includes an estimate of the approximate annual operations and maintenance costs of the new facility.

Table 26 Projected Operations and Maintenance Costs

Annual O&M Cost Estimate[1]	Sewer
Operating Expense	
Contractual Services and Utilities[2]	150,000
Regional Service Fees (Hollister WWTP)	772,592
Personnel	55,000
Supplies, Materials, and Repairs[2]	35,000
Total Operating Expense	**1,012,592**

1. O&M costs are projected for 2024 (after first full year of operation of new facilities following completion of project).
2. Utilities and supplies may be decreased even further than shown in table, since the five year average is lower than the 2019 basis.

6.6.3 Debt Repayments

Based on the 2015 wastewater installment sale agreement, (as detailed in **Appendix B.1**), the City issued a bond that paid for the 2008 Water and Sewer capital improvements. The sewer enterprise funds are obligated to pay the principal loan amount ($5,238,000) and the debt service paid during 2020 totals $301,112. The bonds bear interest ranging from 3 to 5-percent and are payable semi-annually, ending on October 2043.

Based on a total Project Cost of $15,149,000 (as shown in Table 25) and an estimated 45% grant from USDA, the City will need to borrow $8,331,950 to pay for the project. Based on an assumed interest rate of 1.375% (current USDA poverty interest rate) and a 40-year term loan, the annual debt service will be $272,199.

The City has limited revenues available to support another loan obligation while keeping user fees manageable for the small city of San Juan Bautista. The City is hoping they will be eligible for additional grant assistance from other sources.

6.6.4 Reserves

Based on the June 2019 Auditor's Report and Financial Statement (as detailed in **Appendix B**), the current "restricted" reserves for the sewer funds amounts to $369,326. The City's net asset positions are summarized in **Table 27**.

Table 27 Statement of Net Asset Positions

Item	Sewer
Current Assets	
Cash and Investments	$1,189,873
Restricted Cash and Investments	$369,326
Accounts Receivable, Net	$98,320
Total Current Assets	$1,657,519
Non-Current Assets	
Property, Plant, and Equipment	$6,052,741
Total Assets	
Total Assets	$7,710,260

The City must establish a short-lived asset reserve to fund replacement of short-lived assets, as documented in **Table 28**.

Table 28 Short Lived Asset Reserves

Asset	Replacement Cost, $	Useful Life, Years	Annual Reserve, $
Influent pumps	$30,000	15	$2,000
Screen	$60,000	15	$4,000
Regional Pumps	$120,000	15	$8,000
EQ Pond Mixers	$20,000	15	$1,333
Standby Generator	$150,000	15	$10,000
Flow Meter	$8,000	10	$800
Sampler	$5,000	10	$500
Total Annual Reserve			**$26,633**

7.0 CONCLUSION AND RECOMMENDATIONS

The Apparent Best Project for the City of San Juan Bautista includes the following components:

- Implement an industrial pre-treatment program for salinity control
- Install a new raw sewage pump station and 8-inch wastewater pipeline to the Hollister WWTP and decommission the existing sequencing batch reactor (SBR) pond and convert to an equalization basin.
- Construct a 12-inch potable water line from the West Hills WTP to the City of San Juan Bautista
- Execute self-regenerating water softener buy-back program

APPENDIX A

2020 Water and Wastewater Masterplan

APPENDIX B

Current City Budget and Financial Audits

APPENDIX C

Violation Notices and Regional Board Comments

APPENDIX D

Pellet Plant Report

APPENDIX E

EDU Calculation Memo