CITY OF HOLLISTER

Sanitary Sewer Collection System Master Plan Update

March 2018

WALLACE GROUP®

CITY OF HOLLISTER

SANITARY SEWER COLLECTION SYSTEM

MASTER PLAN UPDATE MARCH 2018

City Council

Mayor Ignacio Velazquez

Mayor Pro Tempore Mickie Solorio Luna

Councilman Raymond Friend

Councilman Jim Gillio

Councilman Karson Klauer

Adopted by the City of Hollister:

Resolution No. 2018-71

March 19, 2018

Reviewed By:

REGISTERED PROFESSIONAL ENGINEER
DANNY L. HILLSTOCK
No. C70647
Exp. 12/31/19
CIVIL
STATE OF CALIFORNIA

Danny Hillstock, P.E. 70647
City Engineer

WALLACE GROUP®

RESOLUTION NO. 2018-71

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HOLLISTER ADOPTING THE CITY OF HOLLISTER'S SANITARY SEWER COLLECTION SYSTEM MASTER PLAN 2018 UPDATE

WHEREAS, it is necessary to update the 2010 Sanitary Sewer Collection System Master Plan because of the projects that are planned, approved, completed in and around the City limits and within the larger area known as the sanitary sewer service area have changed the needs of the Master Plan; and

WHEREAS, the City of Hollister City Council adopted Resolution No. 2016-135 approving a Task Order with the Wallace Group to prepared the Sanitary Sewer Collection System Master Plan 2018 Update; and

WHEREAS, the Sanitary Sewer Collection System Master Plan 2018 Update is now complete.

NOW THEREFORE BE IT RESOLVED, that the City Council of the City of Hollister adopts the Sanitary Sewer Collection System Master Plan 2018 Update.

PASSED AND ADOPTED, by the City Council of the City of Hollister at a regular meeting held this 19th day of March, 2018, by the following vote:

AYES: Council Members Gillio, Luna, Friend, Klauer, and Mayor Velazquez.
NOES: None.
ABSTAINED: None.
ABSENT: None.

Ignacio Velazquez, Mayor

ATTEST:

Christine Black, MMC, City Clerk

APPROVED AS TO FORM:

JRG, Attorneys at Law

E. Soren Diaz, City Attorney

DUPLICATE OF ORIGINAL
ON FILE IN THE
OFFICE OF THE CITY CLERK
CITY OF HOLLISTER

CERTIFICATION

In accordance with the provisions of Section 6735 of the Business and Professions Code of the State of California, this report was prepared by or under the direction of the following Civil Engineer, licensed in the State of California:

ENGINEER IN RESPONSIBLE CHARGE:

Kari Wagner, PE C66026 expiration: 6/2018 3/14/18 **Date**

Table of Contents

LIST OF APPENDICES

List of Tables

List of Figures

List of Acronyms

ABS	Acrylonitrile Butadiene Styrene
ADF	Average Daily Flow
AMBAG	Association of Monterey Bay Area Government
CEQA	California Environmental Quality Act
CIP	Capital Improvement Projects
City	City of Hollister
County	San Benito County
d/D	Depth over Diameter
DOF	Department of Finance
du/ac	Dwelling Units per Acreage
E.I.T.	Engineering In Training
EIR	Environmental Impact Reports
ENR	Engineering New Record
ESRI	Environmental Systems Research Institute
FAR	Floor Area Ratio
FOG	fats, oil, and grease
FPS	Feet per Second
FRM	Fluid Resource Management
Ft	Feet
Ft/Sec	Feet per Second
GIS	Geographic Information System
GISP	Geographic Information System Professional
GPD	Gallons Per Day
GPM	Gallons Per Minute
HDPE	High Density Polyethylene
I/I	Infiltration and Inflow
LF	Linear Feet
MDDWF	Maximum Day Dry Weather Flow
MGD	Million Gallons Per Day
min	Minute
NA	Not Applicable
NAD	North American Datum
NAVD	North American Vertical Datum
ND	Negative Declarations
O&M	Operation and Maintenance
P.E.	Professional Engineer
P.L.S.	Professional Land Surveyor
PF	Peaking Factor
PHDWF	Peak Hour Dry Weather Flow
PHWWF	Peak Hour Wet Weather Flow
PVC	Polyvinyl Chloride
RDWWTP	Regional Domestic Wastewater Treatment Plant
S.F.	Square Foot
SSCSMP	Sanitary Sewer Collection System Master Plan
VCP	Vitrified Clay Pipe
VFD	Variable Frequency Drive

CHAPTER 1
INTRODUCTION

This report presents the Sanitary Sewer Collection System Master Plan Update (SSCSMPU) for the City of Hollister (City). Since the completion of the 2010 Sanitary Sewer Collection System Master Plan (2010 SSCSMP), the City of Hollister has seen an influx in development, most particularly on the edges of the service boundary. In addition to the development of the 2010 SSCSMP, Wallace Group (WG) has completed several small sewer analyses to confirm the impact that the developments have on the City's sewer collection system, but not all have been evaluated. In addition, the City's wastewater flows have decreased due to the state's most recent drought and resulting water conservation efforts.

The SSCSMPU focuses on re-evaluating the wastewater flows to identify and model the developments that have been approved or are anticipated to be approved since the completion of the 2010 SSCSMP. The final result of this analysis includes a Capital Improvement Program that will assist the City in prioritizing both existing and future wastewater collection system needs through repair, rehabilitation, replacement, and new facility installation. The master planning process will also tie the wastewater capacity assessment, both existing and future, to the infrastructure budgeting process.

BACKGROUND

The City is located in San Benito County (County), 40 miles east of the City of Monterey and is intersected by State Highways 156 and 25. The City provides wastewater service to an existing population of 37,126. The City is governed by a City Council made up of a Mayor, Vice Mayor, and three council members. The City is currently responsible for the maintenance and operation of the wastewater collection system serving the City. In addition, there are two areas outside the current City limits from which the City receives wastewater flow. These areas include a small residential development located off Southside Road at Hospital Road and a residential multi-family development off County Labor Camp Road.

The City of Hollister owns a Regional Domestic Wastewater Treatment Plant (RDWWTP) that provides wastewater collection service to residential, industrial, and commercial customers. The RDWWTP is operated by the City's contractor, Veolia. The City completed a substantial upgrade to their wastewater treatment plant in 2008, including a plant expansion and upgrade, a seasonal storage pond system, and recycled water distribution system, allowing the City to accept additional wastewater flow from new customers. In 2016, the City replaced and upgraded the membranes which increased actual treatment capacity, but did not increase the permitted capacity of 4.0 million gallons per day (MGD) for dry weather flow conditions and 5.0 MGD for wet weather flow conditions. Prior to these upgrades, the City was under a building moratorium required by the Regional Water Quality Control Board in 2002 when the City's previous treatment plant reached design capacity. The moratorium was lifted at completion of the plant upgrade. The City also owns an industrial wastewater treatment plant (IWWTP) and collection system that will not be analyzed as a part of this study. The IWWTP is also operated by Veolia.

ENVIRONMENTAL REVIEW

In accordance with Title 14, California Code of Regulations, Chapter 3, Article 18 (Statutory Exemptions), this SSCSMPU is considered a planning study and therefore adoption of this document is exempt from the requirements to prepare Environmental Impact Reports (EIR) or Negative Declarations (ND). However, on a project-specific basis, the California Environmental Quality Act (CEQA) must be satisfied for any major capital improvement projects described in this report that will be implemented by the City in the future, through the preparation of an appropriate EIR or ND.

AUTHORIZATION AND SCOPE OF WORK

On September 6, 2016, the City authorized Wallace Group to prepare a Sanitary Sewer Collection System Master Plan Update. The SSCSMPU was prepared in accordance with Wallace Group's proposal, dated August 9, 2016. The scope of work is as follows:

Land Use Evaluation and Wastewater Flow

We will use population and density information from the City's General Plan, Land Use documents, regional wastewater treatment plant flow records, previous wastewater flow estimates, to update the land use, population and existing and future dry weather sewer flow estimates for the City.

Geographic Information System (GIS)

We will obtain record drawings from the City on upgrades that were completed to the sewer collection system since the completion of the 2010 Sewer Collection System Master Plan. We will make any updates to the GIS database and provide the City with updated Atlas maps and GIS files.

Collection System Modeling

We will use the Innovyze InfoSWMM version 14.5 GIS-based sewer model developed for the 2010 Sewer Collection System Master Plan to model the collection system under dry weather conditions for the existing and future loadings. Wet weather conditions will not be analyzed as part of this report.

Sanitary Sewer Collection System Master Plan

We will utilize the information determined in the previous tasks and prepare a SSCSMPU. The master plan will provide a summary of the existing facilities, wastewater flows, identified system capacity deficiencies for existing and future conditions, recommended capital improvement projects (CIP), recommended operation and maintenance (O&M) practices, and recommended inspection programs. The CIPs will be grouped into two categories; Near Term, those projects that are required due to existing deficiencies and will be prioritized based on need. Long Term, those upgrades that are required due to future development (construction timeframe dependent on future development). We will determine cost estimates for each of the CIPs and O&M activities, which will include construction and soft costs.

ACKNOWLEDGEMENTS

Wallace Group thanks and gratefully acknowledges the following City of Hollister and San Benito County staff for their efforts, involvement, input and assistance in preparing the SSCSMP:

City of Hollister

Bryan Swanson, Development Services Director
Danny Hillstock, P.E. City Engineer
David Rubcic, P.E., P.L.S., Senior Engineer
Abraham Prado, Development Services
Henry Gonzales, Utility Supervisor

San Benito County

Rene Anchieta, GIS Analyst

The SSCSMPU was completed with the efforts of many team members. They include:

Wallace Group

Kari Wagner, P.E., Director of Water Resources
Rob Miller, P.E., Principal Engineer
Valerie Huff, P.E., Senior Civil Engineer
Kyle Anderson, P.E., Civil Engineer
Andrea Kingsbury, E.I.T., Associate Engineer
Jeff LeNay, GIS Specialist

CHAPTER 2
LAND USE AND POPULATION

This Chapter presents the land use and existing and future population forecasts for the City's SSCSMPU study area. The purpose of establishing the existing population and land use is to better understand the existing wastewater flow characteristics throughout the City's collection system, which would then provide a framework to forecast the wastewater flows that may be contributed in the future by vacant or under-utilized land. All figures are located at the end of this chapter.

INTRODUCTION

The City owns and operates a RDWWTP, which provides wastewater service to residential, commercial, and industrial customers within the City and portions of the County. The City's current Wastewater Service Boundary incorporates 5,701 acres. However, the purpose of this Master Plan Update is to evaluate the impacts that potential development occurring outside of the current service area will have on the sewer collection system. Figure 2-1 provides an overview of the limits of the wastewater service area. The area to be evaluated as part of this study, known as the study area, is significantly larger than the current service area and is also shown on Figure 2-1. The study area boundary corresponds to the boundary as presented within the 2008 *Hollister Urban Area Water and Wastewater Master Plan*. As a reference, Figure 2-1 also depicts the City's General Plan Boundary.

The City also owns and operates an industrial wastewater treatment plant that provides treatment to one industrial facility within the City. The evaluation of this facility and related collection system is not part of this study.

It should be noted that this SSCSMPU is based on the City's 2005 General Plan. An update may be required dependent upon the findings in the City's updated General Plan, anticipated to be released in 2018.

Existing Service Area Boundary

The City of Hollister currently provides sewer service to the following:

- Incorporated City;
- Commercial facilities on Highway 156 near the RDWWTP;
- A small housing development, the County public works/planning facility, and the labor camp located south of the City near Hospital Road and Southside Road;

Since the completion of the 2010 SSCSMP, significant development has been approved and expanded the wastewater service area as shown in Figure 2-2. Table 2-1 provides a summary of the residential projects and Table 2-2 provides a summary of the non-residential projects that have been constructed since the completion of the 2010 SSCSCMP that are now contributing wastewater to the RDWWTP. Future projects are discussed later in this chapter. For the purposes of this Master Plan Update, developments that were approved and constructed prior to 2016 will be considered existing unless noted otherwise. All developments approved in 2016 or 2017 or have approved Tentative Maps will be considered future development as they have not contributed to the wastewater flows used to develop this Update.

Table 2-1 City of Hollister 2010-2016 Existing Residential Developments		
Development	**Units**	**Unit Type**
Residential		
Homestead/Benchmark	81	SFD
Stonebridge	29	SFD
Ladd Lane/Itravia/Bella Serra	38	SFD Smaller Lots
Apricot Lane	100	SFD
Saddlebrook Property	43	SFD Smaller Lots
Old Flour Mill	8	MF
Anderson Homes	6	SFD
Hillock Ranch	36	SFD
Hillview	27	SFD
La Baig 5	38	SFD
Las Brisas 7&8	18	SFD
The Villages	13	SFD
Valley View (Phs. 3&6)	11	SFD
Vista Meadows Senior Apts	72	MFD
Walnut Park	68	SFD
Westside Apts	31	MFD
Eden West	43	SFD

Table 2-2 City of Hollister 2010-2016 Existing Non-Residential Developments	
Non-Residential Development	**Area (s.f.)**
Commercial	
Walgreens	14,550
Mini Market 1615 San Juan Rd.	4,560
Les Schwab Tire Center	10,400
Veterinary Clinic 38 East St.	1,440
Hotel	
Fairfield Inn & Suites Hotel (77 rooms)	51,693
Industrial	
All-Rite Warehouse Building	17,850
Ozeki Sake Processing Facility	15,000

Study Area

The study area boundary is larger than the existing service area boundary. Much of the study area includes areas within the County that are anticipated to be either incorporated into the City and/or will be eventually served by the City. Cielo Vista Estates and a proposed community college are included in the study area boundary since there is opportunity to direct the wastewater flow from these developments to the City's collection system, through the proposed Roberts Ranch Development.

LAND USE

The following sections discuss the existing and future land uses within the study area. The existing land uses are based on the County's GIS database.

Land Use: Existing Wastewater Service Area

The City is comprised of primarily residential development, with commercial development in and around the downtown area, and a heavy concentration of industrial development near the airport. The City's current wastewater service area is comprised of 10,677 parcels (4,761 acres). Figure 2-3 depicts the land uses for all parcels in the existing wastewater service area. Existing land uses within the City's wastewater service area are summarized in Table 2-3. Existing land use codes were provided by the County in GIS format. For the purpose of this SSCSMPU only, County land use codes were summarized into categories that can be utilized for estimating sewer flow rates. Where possible within the existing City sewer service area, land use categories were applied to parcels with no County land use code, in order to accurately represent existing sewer flow contribution. Land use for these non-coded parcels was determined by parcel location in conjunction with aerial imagery and building type information available through ESRI and Google Earth.

Table 2-3 City of Hollister Wastewater Service Area Existing Land Use

Land Use Category for SSCSMP	Number of Parcels	Sum of Parcel Areas [Acres]	Percent of Service Area
Low Density Residential	9,130	1,578	33.1%
Industrial	150	609	12.8%
Agriculture	33	595	12.5%
Airport	9	362	7.6%
Vacant Residential	8	360	7.6%
Commercial	413	320	6.7%
Vacant Industrial	76	194	4.1%
School	16	175	3.7%
Medium/High Density Residential	609	156	3.3%
Vacant	39	96	2.0%
Open Space	45	70	1.5%
Unknown	7	45	0.9%
Vacant Low Density Residential	57	34	0.7%
Vacant Commercial	22	33	0.7%
Residential Estate	20	33	0.7%
Vacant Residential Estate	10	29	0.6%
Mixed Use	1	23	0.5%
Jail	1	21	0.4%
Roads	22	14	0.3%
Vacant Medium/High Density Residential	4	7	0.2%
Motel	5	6	0.1%
TOTAL	**10,677**	**4,761**	**100%**

* Information provided by the County of San Benito's GIS parcel data.

Within the existing service area, approximately 36% of the parcel acreage is residential, with single-family accounting for 91% of the residential use. The second largest category is industrial, comprising 13% of the service area land use, while agricultural accounts for 12.5% of the land use and 16% of the parcel acreage is vacant.

Land Use: Study Area

The study area totals 12,914 parcels (11,935 acres). The land uses for the study area are summarized in Table 2-4. This table includes the area within the current wastewater service area within City limits and those areas identified in the County that will either be incorporated into the City or served by the City in the future. Within the study area, only 27% of the parcel acreage is residential. The largest land use within the study is agriculture, covering 37% of the total study area. Commercial and industrial land uses combined, account for 11%. Only 12% is considered vacant.

Table 2-4 SSCSMPU Study Area Existing Land Use

Land Use Category for SSCSMPU	Existing Land Use Code per County GIS Data	No. Parcels	Total Parcel Area [Acres]	Percent of Total Acres
Agriculture	A000, AAPP, AAPR, ACHE, ADRY, AFIE, AGDX, AGRA, APAS, APOU, ARIV, AROW, ATGX, ATRG, ATRO, ATRX, AVIN, AWAL, AXXX, WAPR, WDRY, WGDX, WRGX, WROW, WTRX, WWAL	163	4,412	37.0%
Airport	(BLANK)	9	362	3.0%
Commercial	CAUP, CAUT, CBAN, CBAR, CBUL, CCAW, CCCC, CCEM, CCHU, CCLH, CCOS, CCST, CFFR, CFUH, CHSP, CLAU, CLIQ, CMDO, CMST, COFF, CPAR, CRCA, CREP, CRES, CRWY, CSER, CSFG, CSFS, CSHO, CSLH, CSUP, CTHE, CTRU, CVET, CWAR, CXXX, IMST, IPAR, IREP, ITRU	426	362	3.0%
Golf Course	CGOC	23	300	2.5%
Industrial	CFSE, CLUM, CMWS, CSAN, ICAN, IEXP, IFOP, IFSE, IJUY, IMFG, IMWS, ISAN, IWAR, IWIN, IXXX	159	976	8.2%
Jail	(BLANK)	1	21	0.2%
Low Density Residential	SS01, SS02, SS03, SS04, SS05, SS06, SS07, SSM2, SSM3, SSO1, SXXX	10,705	3,229	27.1%
Medium/High Density Residential	CMHP, M000, MA02, MA03, MA04, MA05, MA06, MA07, MA08, MA09, MA10, MA11, MA12, MA13, MA14, MA19, MA20, MA24, MA29, MA30, MA36, MA40, MA41, MA42, MXXX, RMH1, RMH2, RSM1, RSM2, RSM3, RSM5	931	184	1.5%
Mixed Use	(BLANK)	1	23	0.2%
Motel	CM21, CM25, CM31, CM42	5	6	0.05%
Open Space	(BLANK)	45	70	0.6%
Residential Estate	RS01, RS02, RS03, RS05, RXXX	48	122	1.0%
Roads	IRWY, RRWY, SRWY	38	24	0.2%
School	CSCH, (BLANK)	19	179	1.5%
Unknown	(BLANK), ICOS, IOFF, XXXX	59	265	2.2%
Vacant	(BLANK)	39	96	0.8%
Vacant Commercial	C000, CVLM	23	35	0.3%
Vacant Industrial	I000, IVLM	76	194	1.6%
Vacant Low Density Residential	S000, SVLM	67	39	0.3%
Vacant Medium/High Density Residential	MVLM	4	7	0.1%
Vacant Residential	(BLANK)	56	985	8.3%
Vacant Residential Estate	R000, RVLM	17	43	0.4%
	Total	**12,914**	**11,935**	**100.0%**

Future Development Density Factors

The study area for this master plan lies within both the City and the County. To identify the future development potential for the study area, both the City's General Plan and the County's General Plan were used. It should be noted that the total parcels and acres for each land use are based on the City's digital AutoCAD file provided by the City, not the City's 2005 General Plan document.

Future Development Projects: Study Area

The City's Growth Management Program provides priority for medium to high density residential and mixed-use development projects within the Redevelopment Project Area. For this reason, in the near future the majority of development is anticipated to occur within the City's Former Redevelopment Area, which focuses growth in and near downtown Hollister.

Developments approved in and after 2016 or have approved Tentative Maps are considered future developments as they have not contributed to the wastewater flows used to develop this Update. Table 2-5 provides a summary of the future residential projects inside the City limits and those outside the City limits but within the sewer service area. Table 2-6 provides a summary of the future non-residential projects.

This list is not inclusive of all potential development within the study area, and only includes those projects currently identified by the City. Additional potential development will be accounted for in this analysis based on projected density in accordance with the City and County land use plan. Locations of these approved and potential development projects are depicted on Figure 2-4.

It should be noted that the Ridgemark development is not being analyzed in the SSCSMPU. Subsequent to the 2010 Master Plan, the Ridgemark Community proceeded with completing upgrades to their wastewater treatment plant and are no longer considering sending their wastewater to the regional wastewater treatment plant.

Land Use Summary and Recommendations

For this SSCSMPU, existing land use codes have been summarized into categories in order to estimate existing flow contribution to the sewer collection system on a per parcel basis. To analyze future conditions, future land use within the City's General Plan Boundary will follow that of land use designations per the 2005 General Plan. Future land use outside of the City's General Plan will follow designated land use per the County's General Plan. Future density for vacant or under-utilized land will be based on maximum permitted density per the designated land use category. For parcels included in a tentative map or approved development project, the proposed project density will be used for analysis. For the purpose of locating and assigning future sewer loading for this collection system analysis, the parcels illustrated in Figure 2-5 will be considered as future contributors to the City's RDWWTP through year 2023.

Table 2-5 City of Hollister Future Residential Developments			
Development	**Planning Dept. Status**	**Units**	**Unit Type**
Roberts Ranch	In Process	227	Application in process for 192 SFD and 35 MF
Santana Ranch	Approved	1,092	SFD/MF
Cerrato	Approved	241	SFD
Sunnyside	Approved	213	SFD
The Villages	Approved	155	SFD
Ladd Ranch	Approved	82	SFD
Ladd Lane/Itravia/Bella Serra	Approved	63	MF
Fay Properties	Approved	90	SFD
The Cottages	Approved	37	SFD Smaller Lots
Orchard Ranch	Approved	53	SFD
Orchard Park	Approved	82	SFD Smaller Lots
Buena Vista	Approved	4,007	SFD/MF
CHISPA North of Buena Vista	Approved	54	SFD/MF
CHISPA	Approved	49	Affordable/ MF Seniors
Walnut Park	Approved	42	SFD Smaller Lots
Del Curto South of Hillcrest	Approved	22	SFD
Maple Park	Approved	49	SFD Smaller Lots
Cross Subdivision Map Check	Approved	3	SFD
Vista de Oro/Saroyan & Howard	Approved	80	MF
Hillcrest Meadows	Approved	49	SFD
Sywak	Approved	13	SFD Smaller Lots
J. Coria	Approved	7	MF
Braer	Approved	6	MF
Valles	Approved	85	15 SFD Smaller Lots, 26 Townhomes, 44 Apartments
Ray Mariotiini	Approved	13	MF
Pine Drive	Approved	3	MF
E. Coria	Approved	2	MF
Silver Oaks	Approved	170	SFD Smaller Lots/ Age Restricted Seniors Only
Brigantino and Fuller/North Street/Allendale	Approved	279	219 SFD, 60 MF
Thorning	In Process	79	Application in process for 79 residential units
Nektarios Matheou 1051 Monterey St.	Approved	2	SFD
West of Fairview/Award Homes	Approved	667	SFD/MF/Duettes
Jim Matthews 1650 Cienega Road	Approved	8	SFD Smaller Lots
Bob Kutz South of Hillcrest Road	Approved	19	SFD

Table 2-6 City of Hollister Future Non-Residential Developments		
Non-Residential Development	**Planning Dept. Status**	**Area (s.f.)**
Commercial		
Santana Neighborhood Commercial	Approved	309,276
Lab&RV Storage	Approved	N/A
Multi-Tenant Shopping Center	Approved	83,559 of the 165,533 was approved
Industrial		
Cleariest Park Industrial Building	Approved	151,200
School		
Santana Ranch	Approved	527,076

POPULATION

Population for the SSCSMPU is comprised of the City population and unincorporated land of the County within the study area. Three sources of information were utilized to determine existing and future population for the study area:

1. The City of Hollister's 2005 General Plan
2. City of Hollister 2017 Planning Update
3. The Association of Monterey Bay Area Government (AMBAG) 2014 Regional Growth Forecast
4. The United States Census Bureau 2016 Population Estimate

It should be noted that in December 2008, the Regional Water Quality Control Board lifted the six-year building moratorium from the City following the completion of the City's RDWWTP upgrade. The project included a treatment plant expansion and upgrade, a seasonal storage pond system, and recycled water distribution system, allowing the City to accept additional wastewater flow from new customers.

Existing Population

The City's RDWWTP receives flow from not only the City, but also unincorporated areas of the County. Therefore, to determine the existing population, it is necessary to identify the population from both regions. The total population is estimated to be 37,126 persons. The following sections provide an overview of the population estimates for within the City and within the service area outside of the City limits.

City of Hollister

The existing population for the City was determined using the four sources noted previously.

- The 2005 General Plan: 2017 population at 53,600 persons using a 2.6% average annual growth rate from year 2000.
- Updated City Planning (1/1/2017): Table 2 of the E-5 housing, estimates the population within the City to be 36,670 persons.
- AMBAG 2014 Regional Forecast estimates the 2010 population at 34,928 persons.

- The 2016 United States Census Bureau estimates a year 2015 population of 37,462.

For the purposes of this report, The City Planning estimate of 36,670 persons will be used for the existing population within the existing City limits.

County of San Benito

The population of the area served by the City's wastewater treatment plant outside of the City limits includes the unincorporated 56-unit subdivision and County owned labor camp near Hospital Road and Southside Road. Population for the subdivision is estimated to be 182 persons, based on the AMBAG population density for the County of 3.25 persons per household. Per the County, seasonal population for the labor camp is estimated between 274 persons during the summer and 187 persons in the winter. Therefore, the total estimated population outside of the City limits, but currently served by the City's wastewater treatment plant, is 456 persons.

The total estimated existing population for the City's service area is **37,126** persons.

Future Population

The future population of the wastewater treatment plant service area will include infill within the City noted by the General Plan, conversion of existing County developed land on septic to be connected to the City's collection system, and future development projects within the County. In addition, the wastewater flow from the existing Cielo Vista Estates will be evaluated.

General Plan Boundary

At this time, the City's General Plan projects a 2023 future population based on an annual growth rate of 2.6%. This projected population is 55,192 persons, which is noted to not be full build-out. It is assumed that this estimated population does not include the existing unincorporated "islands" within the current City limits.

Septic System Conversions within the City Service Area

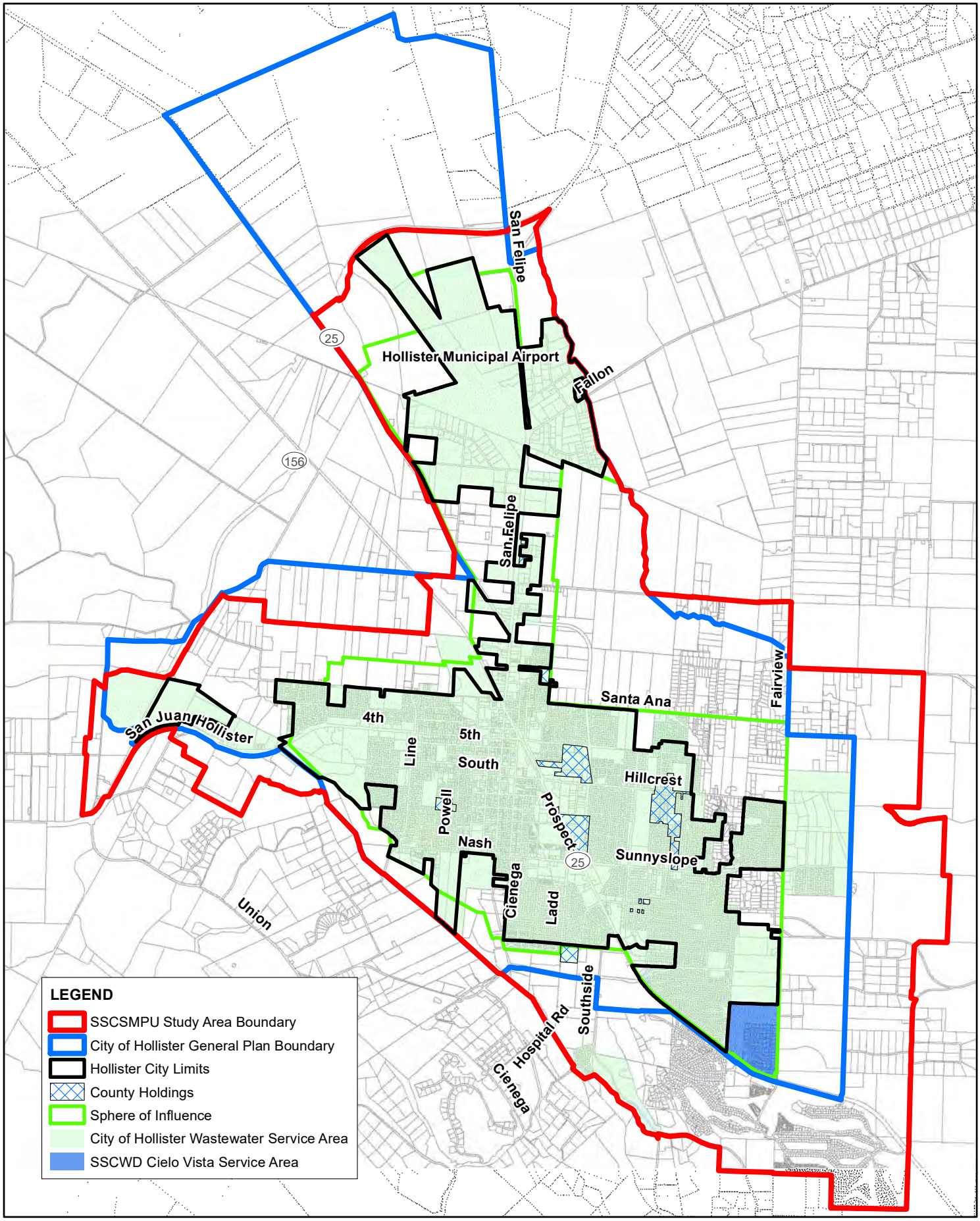
The City estimates based on assessor tax rolls that approximately 880 housing units within the City's Sphere of Influence, in the unincorporated County area, are currently on septic systems. These housing units consist of a total population of approximately 3,080 persons. These units include multiple County "islands" within the City limits. These island parcels are under the jurisdiction of the County and are not served by the City's wastewater collection system or considered in the existing population estimate for the City. Refer to Figure 2-5 for locations of potential septic conversions.

Future Development Projects

Future development projects include those projects identified as well as all potential future developments on vacant parcels. Vacant parcel projections are based on maximum permitted density per the designated land use category. For parcels included in a tentative map or approved development project, the proposed project density was used for analysis. The total number of future development units is 11,485 for a total population increase of 40,197.

The total estimated future population for the study area is **77,369** persons. This exceeds the City's General Plan due to the additional areas (septic system conversions) that are being considered for the wastewater service within the study area. This population may or may not occur by the year 2023, which is the City's General Plan planning horizon and also, does not represent full build-out. It is not the intention of this report to contradict

the General Plan's population, but to anticipate the potential future impact that wastewater flow from the various contributors may have on the collection system without knowing where the development may occur first. Therefore, the conservative approach is to assume that all development potential will occur. Decisions on completion of upgrades to the collection system, WWTP, or recycled water project should be based on the General Plan and on development as it occurs and not based on this theoretical population projection from this report.



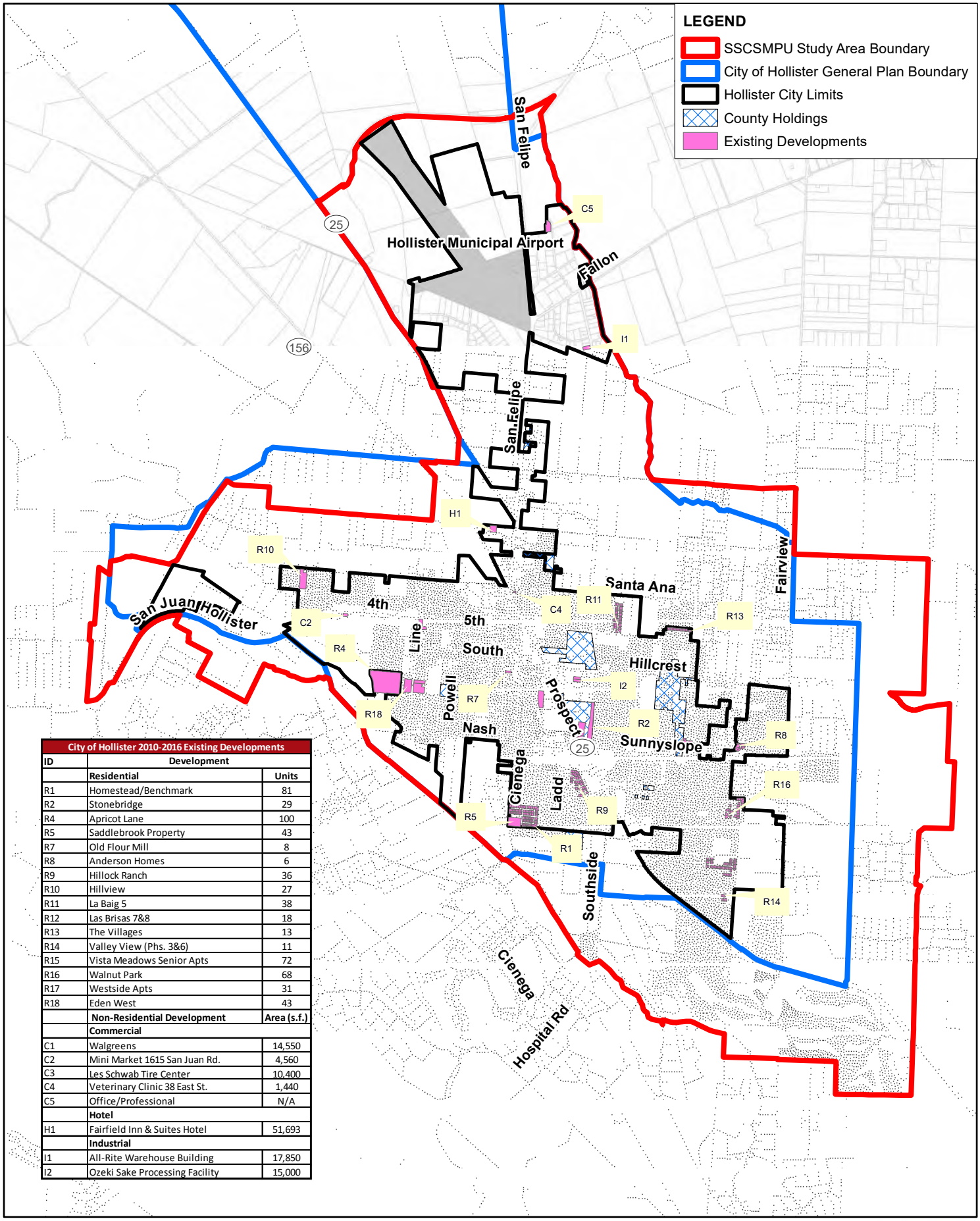
WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 2-1: LAND USE JURISDICTIONS

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED MARCH 2018.



City of Hollister 2010-2016 Existing Developments		
ID	Development	
	Residential	**Units**
R1	Homestead/Benchmark	81
R2	Stonebridge	29
R4	Apricot Lane	100
R5	Saddlebrook Property	43
R7	Old Flour Mill	8
R8	Anderson Homes	6
R9	Hillock Ranch	36
R10	Hillview	27
R11	La Baig 5	38
R12	Las Brisas 7&8	18
R13	The Villages	13
R14	Valley View (Phs. 3&6)	11
R15	Vista Meadows Senior Apts	72
R16	Walnut Park	68
R17	Westside Apts	31
R18	Eden West	43
	Non-Residential Development	**Area (s.f.)**
	Commercial	
C1	Walgreens	14,550
C2	Mini Market 1615 San Juan Rd.	4,560
C3	Les Schwab Tire Center	10,400
C4	Veterinary Clinic 38 East St.	1,440
C5	Office/Professional	N/A
	Hotel	
H1	Fairfield Inn & Suites Hotel	51,693
	Industrial	
I1	All-Rite Warehouse Building	17,850
I2	Ozeki Sake Processing Facility	15,000

WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES

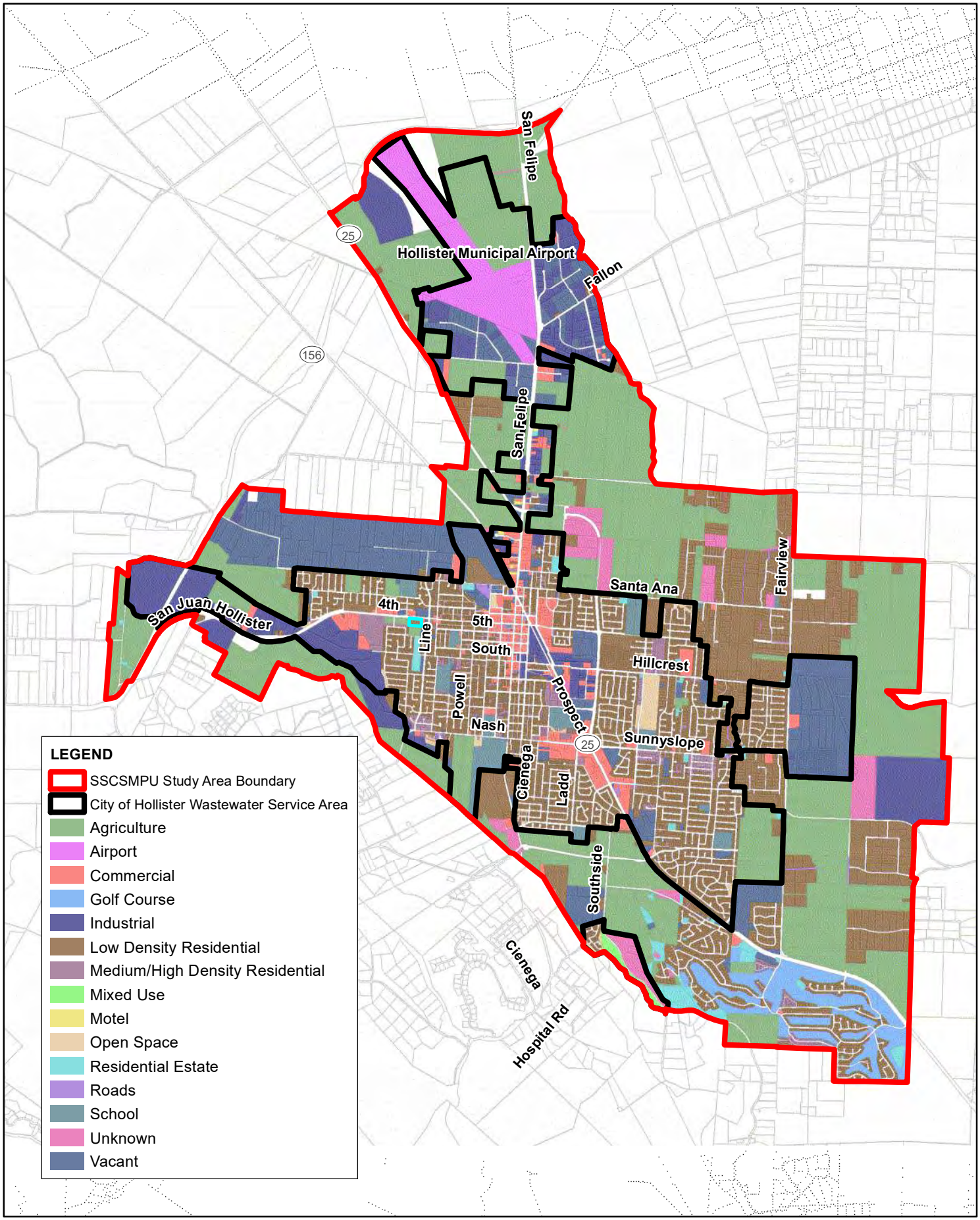
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 2-2: 2010-2016 EXISTING DEVELOPMENTS

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED MARCH 2018.



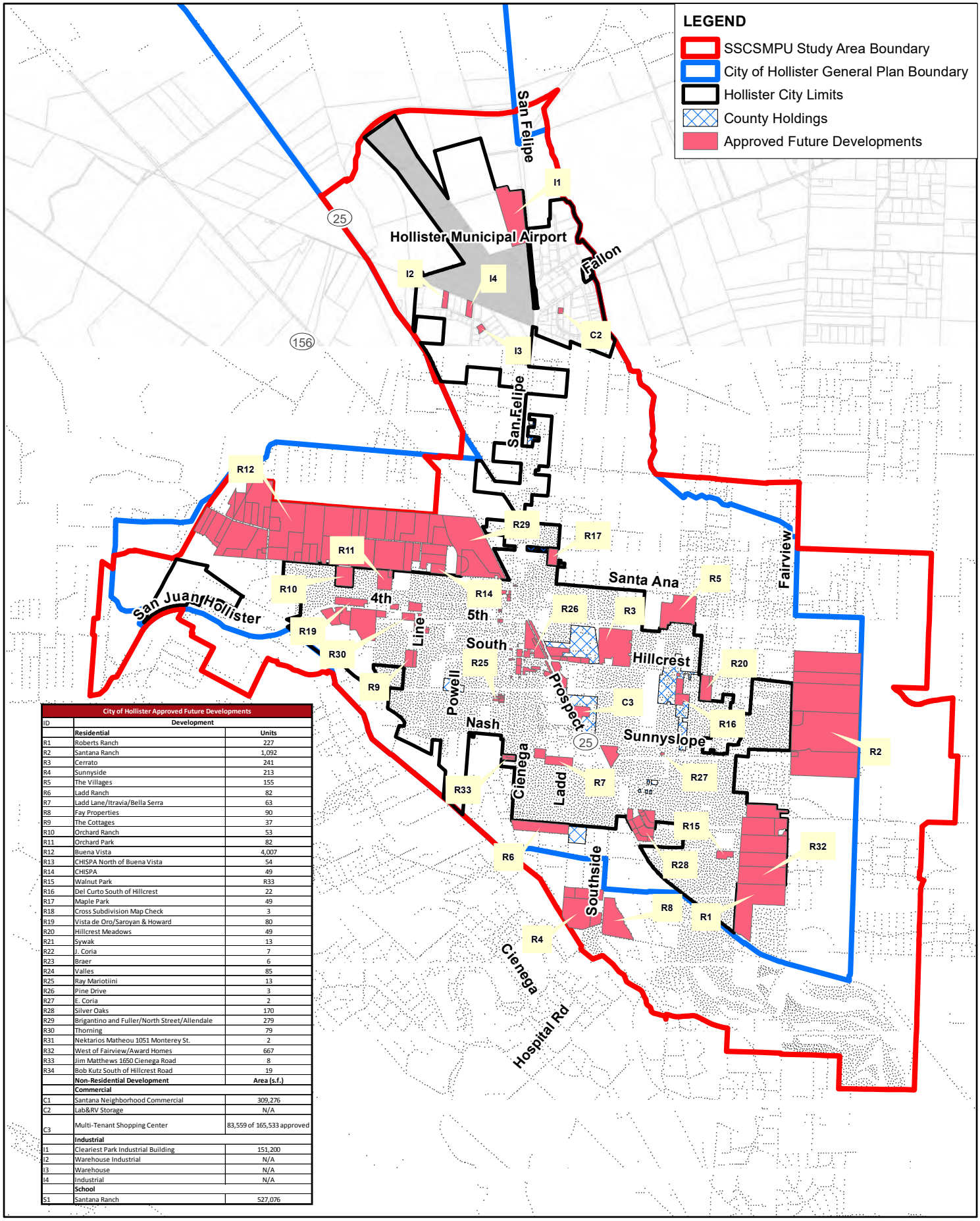
WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 2-3: EXISTING LAND USE

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.



City of Hollister Approved Future Developments		
ID	Development	
	Residential	**Units**
R1	Roberts Ranch	227
R2	Santana Ranch	1,092
R3	Cerrato	241
R4	Sunnyside	213
R5	The Villages	155
R6	Ladd Ranch	82
R7	Ladd Lane/Ittravia/Bella Serra	63
R8	Fay Properties	90
R9	The Cottages	37
R10	Orchard Ranch	53
R11	Orchard Park	82
R12	Buena Vista	4,007
R13	CHISPA North of Buena Vista	54
R14	CHISPA	49
R15	Walnut Park	R33
R16	Del Curto South of Hillcrest	22
R17	Maple Park	49
R18	Cross Subdivision Map Check	3
R19	Vista de Oro/Saroyan & Howard	80
R20	Hillcrest Meadows	49
R21	Sywak	13
R22	J. Coria	7
R23	Braer	6
R24	Valles	85
R25	Ray Mariotiini	13
R26	Pine Drive	3
R27	E. Coria	2
R28	Silver Oaks	170
R29	Brigantino and Fuller/North Street/Allendale	279
R30	Thorning	79
R31	Nektarios Matheou 1051 Monterey St.	2
R32	West of Fairview/Award Homes	667
R33	Jim Matthews 1650 Cienega Road	8
R34	Bob Kutz South of Hillcrest Road	19
	Non-Residential Development	**Area (s.f.)**
	Commercial	
C1	Santana Neighborhood Commercial	309,276
C2	Lab&RV Storage	N/A
C3	Multi-Tenant Shopping Center	83,559 of 165,533 approved
	Industrial	
I1	Clearlest Park Industrial Building	151,200
I2	Warehouse Industrial	N/A
I3	Warehouse	N/A
I4	Industrial	N/A
	School	
S1	Santana Ranch	527,076

WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES

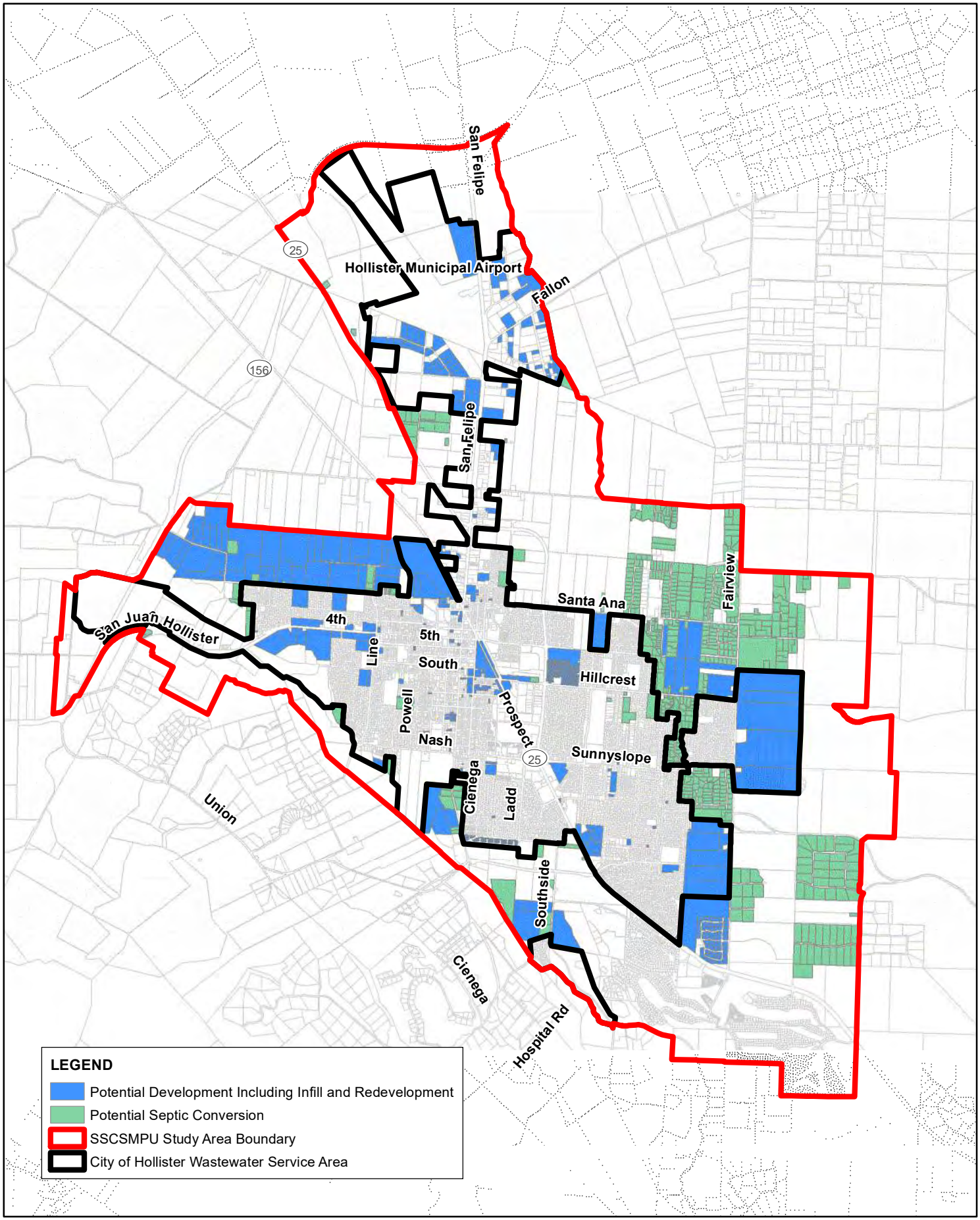
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 2-4: APPROVED FUTURE DEVELOPMENTS

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.



WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 2-5: POTENTIAL FUTURE DEVELOPMENT CONSIDERATIONS

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.

CHAPTER 3
COLLECTION SYSTEM OVERVIEW

This Chapter provides an overview of the existing domestic wastewater collection system for the City. All figures are located at the end of this chapter.

COLLECTION SYSTEM OVERVIEW

The City's wastewater collection system consists of over 100 miles of gravity sewer pipes ranging in diameter from 4-inch to 36-inch. The City also owns and operates four (4) lift stations and corresponding force mains. Collected wastewater flows to the City's RDWWTP plant which is located off San Juan Road near State Highway 156.

Since the majority of the City's system was constructed in the 1950s and 1960s, the pipe material throughout the system consists primarily of Vitrified Clay Pipe (VCP). Some Polyvinyl Chloride (PVC) pipe has been installed with newer construction. Table 3-1 provides an inventory of the existing sewer pipe by diameter and Figure 3-1 shows the existing collection system throughout the City as of October 2016.

Table 3-1 Existing Pipeline Inventory by Diameter

Diameter (inches)	Length	
	Feet	Miles
4	596	0.11
6	135,416	25.65
8	314,345	59.54
10	33,616	6.37
12	21,200	4.02
14	2,790	0.53
15	26,199	4.96
18	11,443	2.17
21	5,919	1.12
24	3,301	0.63
27	2,596	0.49
30	5,468	1.04
36	8,973	1.70
Total	**571,864**	**108.31**

Manholes

The City's existing wastewater collection system contains approximately 2,110 sewer manholes. From an initial review of the surveyed manholes from the 2010 Master Plan there are concrete and brick manholes throughout the collection system.

Maintenance Problem Areas

The City's operations department provided a list of known problem areas throughout the collection system. The locations listed in Table 3-2 are "hotspots" caused by grease build-up and are inspected by the City on a weekly basis.

Table 3-2 Sanitary Sewer High Maintenance Areas	
Location	
Astro & Mars (Airport)	Mapleton & Fremont Way
Burger Factory & Main St.	McKinnon Lumber Alley
Busby Ct. off Hillcrest	Monterey & Swope Alley
Caputo Ct.	Monterey St. (Health Foundation)
Central Ave. & Ranchito Ct.	Flora Ave. (Los Cuates)
Community Center	N. Sally St. & Maple (DMV)
College & Fremont Way	Powell & Wentz Alley
El Toro Dr.	San Benito St. & Hawkins
Fremont Alley	San Juan Dr. & Maple
Graf & San Juan	Suiter & Powell
Hawkins & East St.	Suiter Alley
Hawkins & Nolte Alley	Thompson St. (Behind Ranchers Feed)
Hermosa Way (off Westwood Dr.)	Veterans Building off East St.
Line & South St.	West St. & Ann St.
Locust Ave. & Fremont Way (CommCenter)	West St. & Haydon St.
Locust Ave. & West 2nd St.	

Based on discussions with City engineering and operations staff, the following segments of the collection system are continual maintenance problems. Note, these hot spots were identified in the 2010 Master Plan:

Powell Street

The entire length of Powell Street was identified as a maintenance hotspot by City staff due to grease build-up and flat slopes. Based on survey data the stretch of 6-inch sewer pipe from Nash Road to 7th Street varies in slope from -1.01% to 0.74%. The negative slopes occur at the intersections of South Street, Wiebe Way, and Walnut Lane. At the time of this report there was insufficient information to determine the cause of the negative slope in these areas. The sewer pipe on Powell Street receives wastewater flow from approximately 280 residential customers before it empties into the 24-inch sewer pipe on 7th Street.

West Street

The entire length of West Street was identified as a maintenance hotspot by City staff due to grease build-up and flat slopes. Based on survey data the stretch of 6-inch sewer pipe from Nash Road to 7th Street varies in slope from 0.38% to 3.5%. The shallowest pipe slopes occur in West Street from Hawkins Street to South Street. The sewer pipe on West Street receives wastewater flow from approximately 200 residential customers before it empties into the 24-inch sewer pipe on 7th Street. Figure 3-2 illustrates the known high maintenance areas throughout the City.

Lift Stations

The City owns and operates four lift stations located throughout the collection system. These lift stations are briefly summarized in this chapter. Refer to Chapter 5 for detailed descriptions and the complete evaluation of the four lift stations and corresponding service areas.

Airport Lift Station

The Airport Lift Station is located off Highway 156 (San Felipe Road) on Hollister Municipal Airport property near Armory Drive. The lift station receives flow from the airport, the corrections center off Airway Drive, and the commercial parks north and south of Fallon Road. The lift station discharges through a 10-inch diameter force main to the GLP Lift Station located on Frontage Road between Park Center Drive and McCloskey Road.

GLP Lift Station

The GLP Lift Station is located on Frontage Road between Park Center Drive to the north and McCloskey Road to the south. The lift station receives flow from the Airport lift station, industrial and commercial parcels along San Felipe Road/Frontage Road from the GLP lift station to Maple Street. It also receives flow from residential lots along Rustic Street and Pacific Way to Chappell Road. The lift station discharges through a 12-inch diameter force main to a sewer manhole located at the intersection of East Street and Second Street near the 2nd and East Lift Station. The GLP lift station does not flow into the 2nd and East lift station, rather it flows to the discharge manhole located adjacent to the 2nd and East Lift Station facility.

2nd and East Lift Station

The 2nd and East Lift Station is located at the intersection of 2nd Street and East Street. The lift station receives flow from commercial lots located along San Felipe Road from Flora Avenue to Santa Ana Road and at the intersection of Alvarado Street and McCarthy Street. The majority of the flow to the lift station is from residential lots from East Street to San Tropez Drive and Maple Street to Meridian Street. The lift station discharges through a short 8-inch ductile iron pipe (DIP) force main to a 72-inch “discharge” sewer manhole outside the fenced enclosure of the 2nd and East Lift Station on East Street.

Southside Lift Station

The Southside Lift Station is located near the intersection of Southside Road and Enterprise Road outside the City limits. The lift station receives flow from a residential development located off Southside Road at Hospital Road and a residential multi-family development off County Labor Camp Road. The lift station discharges through a 6-inch PVC force main to a sewer manhole located at the intersection of Southside Road and Union Road.

General Operational Based Capital Improvement Project Recommendations

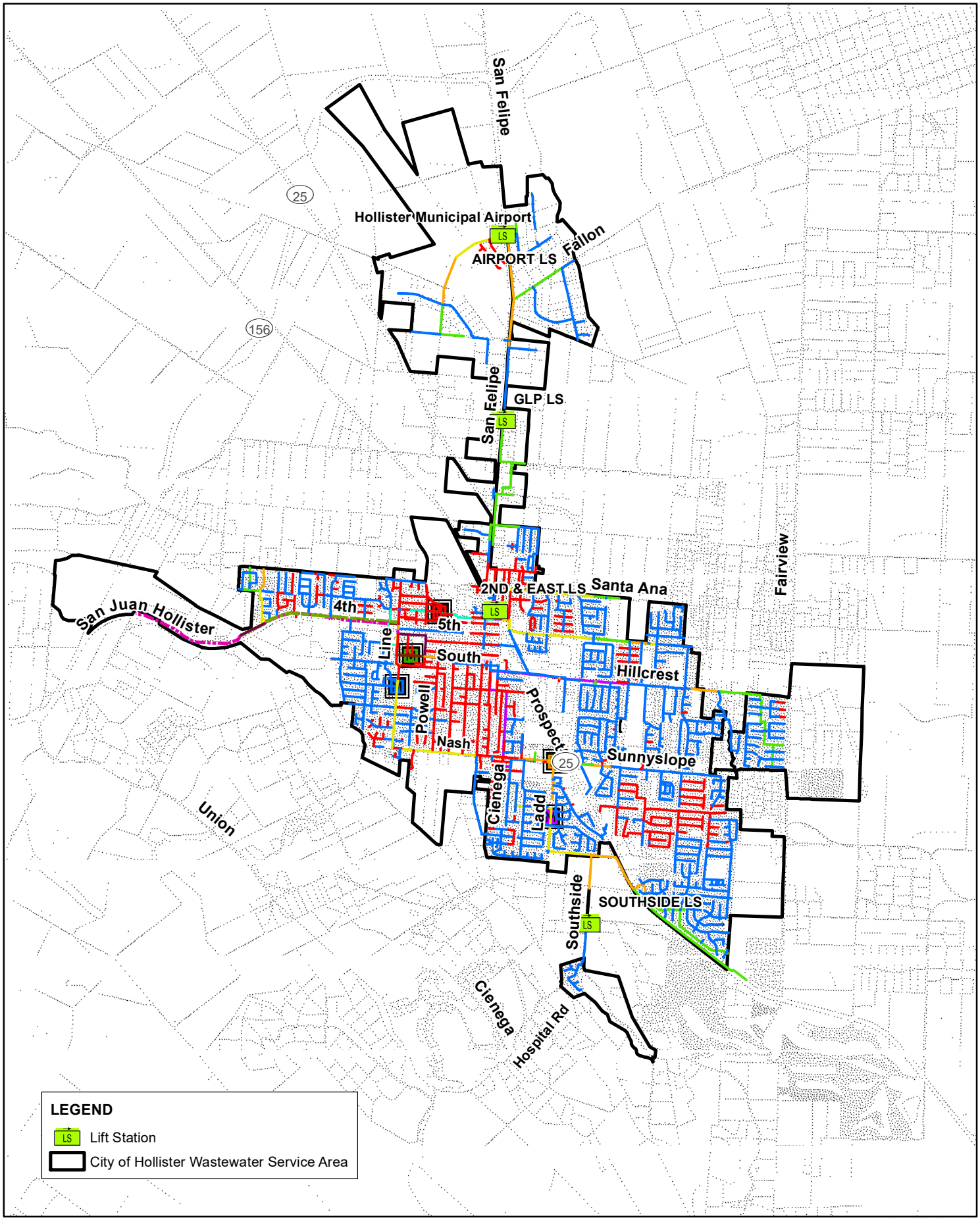
Based on the information provided above, the following are recommendations for capital improvement projects:

Sewer System Management Plan Update

A requirement of the State Water Resources Control Board (SWRCB) is to prepare, implement, audit and update a Sewer System Management Plan (SSMP) based on the timeline guidelines provided by the SWRCB. The City has completed the SSMP and is now required to review and revise this plan as necessary every year. The SSMP

must be audited every two years and formally updated and re-certified by the City Council every 5 years. A bi-annual audit was completed in 2017. The next 5-year update is due August 2019. It is recommended the City evaluate the requirements on the SSMP in conjunction with this SSCSMPU recommended capital improvement projects provided in Chapter 7 to develop their annual budget. The SSMP makes recommendations that are updated every two years, therefore are not included in this SSCSMPU. The operational based programs include, but not limited to:

- Update GIS database and collection system mapping
- Update Work History Program
- Continue developing and implementing FOG program
- Clean and video inspect sewer collection system
- Manhole inspection
- Lift Station cleaning and inspection
- Training
- Design and construction standards
- Outreach and education



WALLACE GROUP

CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES

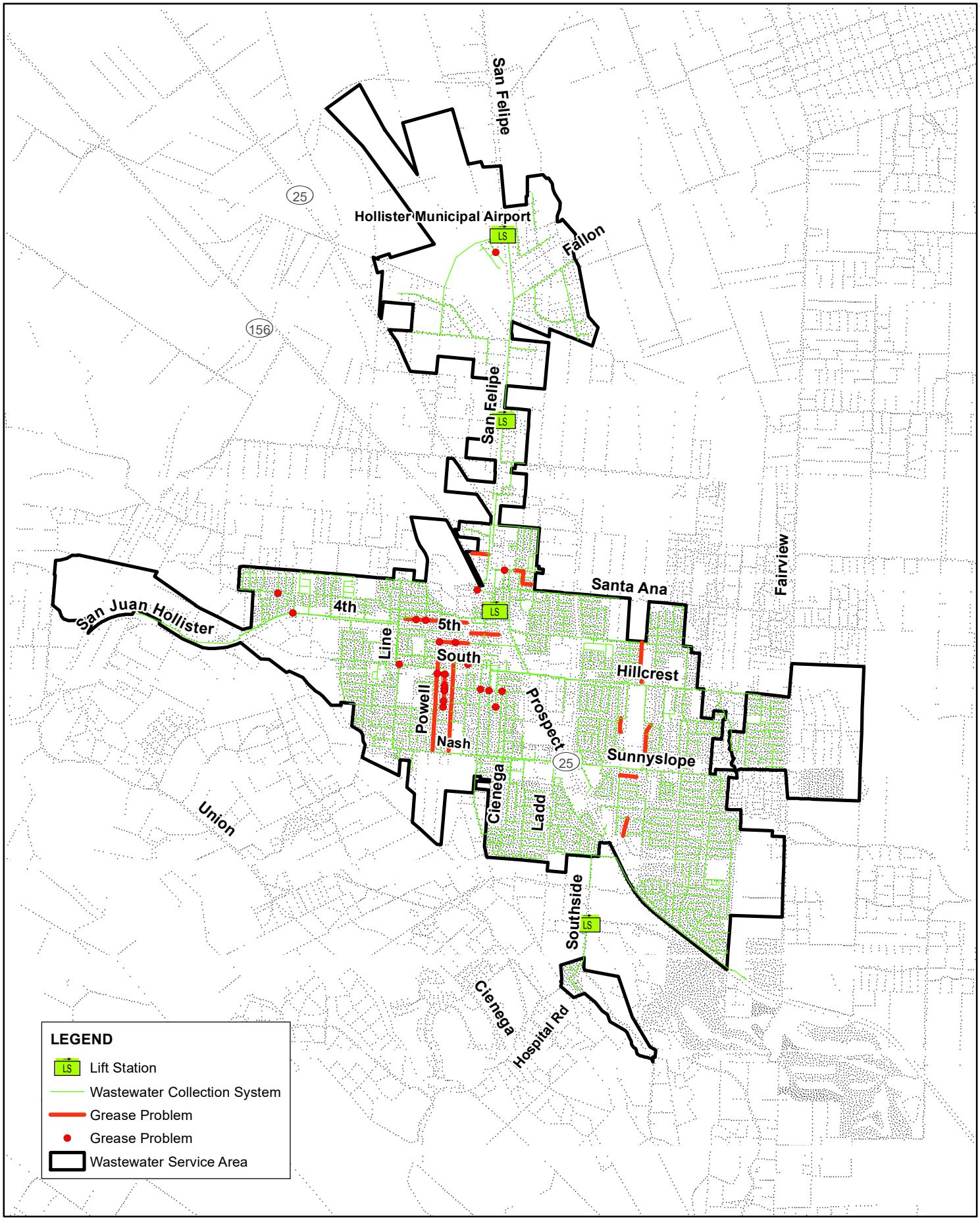
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 3-1: WASTEWATER SYSTEM OVERVIEW MAP

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.



WALLACE GROUP

CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES

612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 3-2: WASTEWATER SYSTEM PROBLEM AREAS OVERVIEW MAP

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.

CHAPTER 4
WASTEWATER FLOWS

This Chapter presents the results of the development of the wastewater flow characteristics used for the analysis of the collection system for the City. A portion of the referenced figures are located at the end of this chapter.

INTRODUCTION

Historical wastewater flows were examined for the City's collection system by utilizing the daily flow records from the RDWWTP. It should be noted that no sewer flow monitoring was conducted for the SSCSMPU. For the purpose of the SSCSMPU, it is assumed that wastewater flow trends remained constant from 2010 to current.

CITY OF HOLLISTER RDWWTP DAILY FLOW RECORDS

The City provided daily wastewater flow data from January 2013 through December 2016 for the RDWWTP. Table 4-1 provides a summary of the average daily flow for the City from 2013 through 2016 as well as the minimum and maximum daily flows for each year.

Table 4-1 City of Hollister Average Annual Flow Summary from RDWWTP

Year	Average Daily Flow (mgd)	Minimum Daily Flow (mgd)	Maximum Daily Flow (mgd)
2013	2.14	1.27	2.71
2014	2.20	1.10	2.89
2015	2.20	1.79	2.58
2016	2.26	1.28	2.55
4 Year Average	2.20	1.36	2.68

EXISTING WASTEWATER FLOWS

Based on the 4-year average (2.68 MGD) for wastewater flows to the City's RDWWTP and reliable wastewater resources such as Metcalf & Eddy, Wastewater Engineering Treatment and Reuse, fifth edition, the wastewater generation characteristics of various existing development types within the City were developed and are presented in Table 4-2 and Table 4-3. The existing average daily flows presented in the tables incorporate new residential developments to the end of 2016.

Table 4-2 Existing Average Daily Flows by Land Use				
Source of Flow	**Quantity**	**Unit**	**Flow Factor (gal/day/unit)**	**Total Average Annual Flow (gal/day)**
Residential	37,172	persons	40	1,486,868
Corrections Facility	160	persons	40	6,400
Hotel Rooms	196	rooms	100	19,600
School	9,625	students	20	192,500
Commercial	8,776,133	s.f.	0.06	526,568
			Existing Average Daily Flows	**2,231,936**

Sewer Flows By Tributary

For the 2010 SSCSMP, sewer flow monitoring was conducted at five (5) different locations on main trunk lines throughout the City's collection system. The flow monitoring locations are as follows:

- **Central Avenue:** Located on Central Avenue west of Locust Avenue
- **Ladd Lane:** Located on Ladd Lane north of Talbot Drive
- **Line Street:** Initially located on Line Street near Peridot Court, moved to the intersection of Line Street and Steinbeck Drive
- **Tres Pinos Road:** Located on Tres Pinos Road at Ladd Lane
- **7th Street:** Located on 7th Street at Convent Alley

For additional information on the flow meters used, the process for model calibration, and the results of the flow metering, please refer to the 2010 SSCSMP. For the purposes of this Update, it is assumed that the proportionate flows from each of the tributary areas was the same as the 2010 SSCSMP, in addition to flow increases from each of the new developments that have been constructed since 2010. Table 4-3 provides a summary of the existing average daily flows by Tributary Area. Figure 4-1 provides an overview of the tributary areas.

Table 4-3 Existing Average Daily Flows By Tributary Area

Description of Tributary Area	# of Residential Units	Density	Estimated Residential Population (Including Mixed-Use)	gpd	# of Corrections Facilities	# of Inmates	gpd	# of Hotels	# of Hotel Rooms	gpd	Schools	Estimated # of Students	gpd	Commercial/ Industrial/Public Facility (sq. ft.)	gpd	Total Flow Calculated (gpd)	Total Flow Metered (gpd)	Flow Meter Results
Central Avenue Tributary Area																		
Central Avenue	2,348	2.6	6,105	244,192	2	160	6,400	5	196	19,600	3	2,399	47,980	4,198,967	251,938	570,110		
																570,110	**1,076,021**	Measured
Line Street Tributary Area																		
Line Street	1,167	2.2	2,567	102,696	0	0	0	0	0	0	1	1,489	29,780	850,277	51,017	183,493	226,000	Calculated[2]
Tres Pinos	1,680	3.8	6,384	255,360	0	0	0	0	0	0	2	663	13,260	778,124	46,687	315,307	380,000	Measured
																498,800	**606,000**	Measured
7th Street Tributary Area																		
7th Street	3,197	4.1	13,108	524,308	0	0	0	0	0	0	6	3,795	75,900	1,352,218	81,133	681,341	975,653	Calculated[2]
Ladd Lane	1,072	3.3	3,538	141,504	0	0	0	0	0	0	1	620	12,400	271,267	16,276	170,180	206,000	Measured
																851,521	**1,181,653**	Measured
RDWWTP Area																		
RDWWTP[1]	2,026	2.7	5,470	218,808	0	0	0	0	0	0	1	659	13,180	1,325,281	79,517	**311,505**		
TOTAL	**11,490**		**37,172**	**1,486,868**	**2**	**160**	**6,400**	**5**	**196**	**19,600**	**14**	**9,625**	**192,500**	**8,776,133**	**526,568**	**2,231,936**	**2,863,674**	

1. Wastewater flows were not measured for the area between the Central Avenue and 7th Street flow meters to the RDWWTP . Estimated flows were added to this table to estimate total flow within in the current wastewater service area.
2. The Line Street and 7th Street flow meters received flow from other tributary areas as noted on this sheet. To compare estimated flows to metered flows a calculated flow value was determined for these meters.

Peaking Factor Analysis

When discussing wastewater flows, it is important to define some of the terminology used to describe and analyze wastewater flows for this analysis. Table 4-4 provides a summary of the peaking factors to be used in this master plan:

Average Daily Flow (ADF) is the average flowrate over a 24-hr period based on daily flow conveyed to a RDWWTP. In the case of this report, the ADF is based on flow records from the City's RDWWTP. Note, the ADF from January 2004 through December 2009 was estimated to be 2.48 mgd. The ADF from January 2013 through December 2016 was estimated to be 2.20 mgd, a decrease of 0.28 MGD even though population has risen in the last six years. It is likely that the decrease in the ADF value is due to state mandates in water conservation during the most recent California drought.

Maximum Day Dry Weather Flow (MDDWF) is the peak flow recorded for a 24-hr period by the RDWWTP flow meter. This flow condition reflects the seasonal variation in dry weather flow and commonly occurs during the summer months. For the purposes of this study, the historical MDDWF is 2.82 mgd based on an average of three MDDWF records from the City's RDWWTP, which occurred on September 7, 2012, March 4, 2013, and December 6, 2014.

Diurnal Curve is the variation in sewer flows throughout a 24-hr period due to customer usage patterns. Since additional flow monitoring was not completed for the SSCSMPU, the diurnal curve reflects the one used for the 2010 SSCSMP. The residential diurnal curve was estimated from the Ladd Lane flow meter, which recorded almost entirely residential flow. The commercial diurnal curve was estimated based on a typical commercial usage pattern. The diurnal curve does not include I/I flow contributions to the collection system. Figure 4-2, located at the end of this chapter, provides a residential and commercial diurnal curve for the City's collection system with a dry weather diurnal peaking factor of 1.8 for residential and 2.1 for commercial.

Peak Hour Dry Weather Flow (PHDWF) is the peak dry weather flow anticipated in a collection system, which is used to appropriately size wastewater collection system facilities. Peak hour flow factor is calculated by multiplying the maximum day factor and the diurnal peak factor. It is important to note that the peak hour factor is applied at the flow generation location, therefore the peak is dampened due to travel time as flows travel downstream. For this reason, peak hour factors used for collection system analysis are typically higher than those used for treatment plant analysis. Since additional flow monitoring was not completed for the SSCSMPU, the PHDWF uses the diurnal factor from 2010 multiplied by the current MDDWF.

Peak Hour Wet Weather Flow (PHWWF) was not analyzed as part of this report based on direction provided by the City not to proceed on wet weather analysis. The City is confident that I/I is not a significant contributor of flow to the wastewater collection system, therefore I/I flow monitoring or additional analysis was not completed as part of this report.

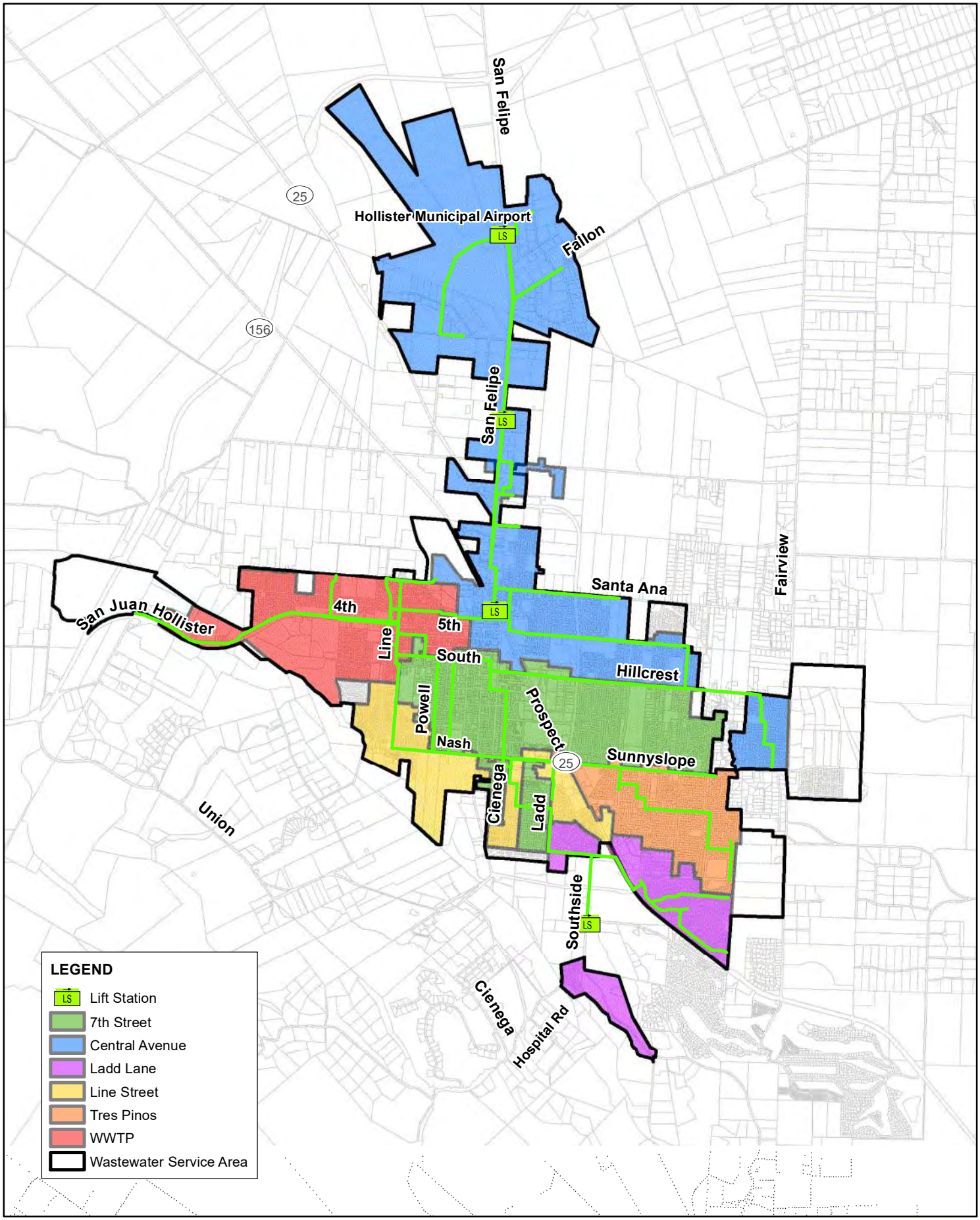
Table 4-4 Summary of Peaking Factor Analysis			
Flow Condition	**Flow (mgd)**	**Peaking Factor**	**Notes**
Average Daily Flow (ADF)	2.18	--	Recorded daily flow from City's RDWWTP from January 2012 through December 2016
Maximum Day Dry Weather Flow (MDDWF)	2.82	1.29	Recorded daily flow from City's RDWWTP are an average of three MDDWF which occurred on September 7, 2012, March 4, 2013, and December 6, 2014.
Peak Hour Dry Weather Flow (PHDWF)		2.32 - Residential	Flow monitoring from August 28, 2009 through September 30, 2009 are from the 2010 SSCSMP. A 1.8 residential diurnal factor was determined from the Ladd Lane flow meter results in the 2010 SSCSMP and a 2.1 commercial diurnal factor was determined based on Metcalf & Eddy.
		2.71 - Commercial	

FUTURE WASTEWATER FLOWS

Projection of wastewater flow is tied closely to population projections and anticipated development. As noted in Chapter 2 of this report, the future flows for this collection system will come from infill, septic system conversion, re-development, and new development. It is unknown the timing of when these developments or septic conversions will occur in the future. Future capital improvement projects required due to future development will be required to be completed prior to the project coming on-line.

Although it is assumed that water conservation measures will be taken, such as low flow plumbing fixtures for all future development, to determine the future flows, the existing flow factors, noted in Table 4-2 will be used. In addition, the existing peaking factors noted in Table 4-4 will also be used for estimating future development MDDWF and PHDWF. Table 4-5 provides a breakdown of the land uses and the estimated future wastewater flows for the City.

Table 4-5 Future Average Daily Flows by Land Use				
Source of Flow	**Quantity**	**Unit**	**Flow Factor (gal/day/unit)**	**Total Average Annual Flow (gal/day)**
Residential	77,369	persons	40	3,094,768
Corrections Facility	160	persons	40	6,400
Hotel Rooms	196	rooms	100	19,600
School	9,625	students	20	192,500
Commercial	22,725,968	s.f.	0.06	1,363,558
Future Average Daily Flows				**4,6776,826**



WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

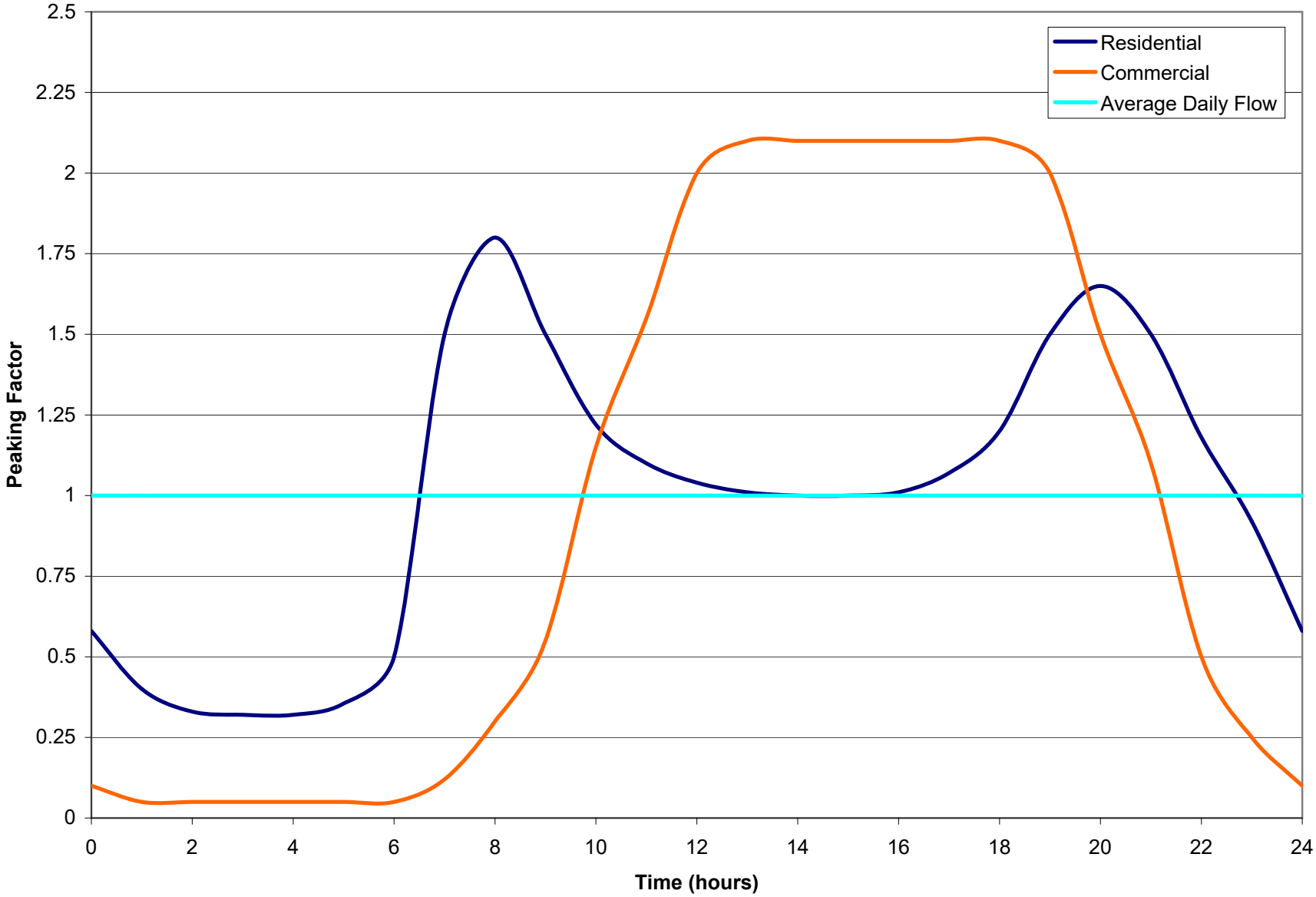
NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 4-1: FLOW METER LOCATION AND TRIBUTARY BASIN MAP

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.

Figure 4-2 Diurnal Curve



WALLACE GROUP®

CHAPTER 5
LIFT STATION EVALUATION

This Chapter presents the evaluation of the City's four lift stations for their ability to meet existing and future wastewater flow demands. All figures are located at the end of this chapter.

LIFT STATION BACKGROUND

The City owns and operates four lift stations located throughout the collection system. The existing service areas and locations of the lift stations are depicted in Figure 5-1 and their features are summarized in Table 5-1. Figure 5-2 depicts the future lift station tributary area boundaries based on the 2010 SSCSMP anticipated future flow contribution. Further analysis for these varying tributary areas should be completed at time of anticipated development. The four lift stations are as follows:

Airport Lift Station

The Airport Lift Station is located off of Highway 156 (San Felipe Road) on Hollister Municipal Airport property near Armory Drive. This lift station collects flow from the airport, commercial and industrial parcels near the airport, and a small number of homes east of San Felipe Road.

GLP Lift Station

The GLP List Station is located on Frontage Road between Park Center Drive to the north and McCloskey Road to the south. This lift station collects flow from residential customers between San Felipe Road and North Chappell Road, commercial and industrial customers along San Felipe Road, including the Best Western and Wiebe Motel. This station also receives flow directly from the Airport Lift Station force main.

2nd & East Lift Station

The 2nd & East Lift Station is located at the intersection of Second Street and East Street. This lift station collects flow from residential customers between Highway 156 and Monte Carlo Drive, Gabilan Hills Elementary School and Maze Middle School, commercial customers along Highway 156 and McCray Street, and the Hollister Inn and Cinderella Motel.

Southside Lift Station

The Southside Lift Station is located near the intersection of Southside Road and Enterprise Road outside the City limits. This lift station collects flow from the 56 unit subdivision, San Benito County public works facility and County owned labor camp near Hospital Road and Southside Road.

PHYSICAL DESCRIPTION

Information regarding the physical characteristics of the four lift stations was provided by City staff, and above ground features were visually reviewed by Wallace Group during site visits. A physical investigation of the City's lift stations was not conducted as a part of this analysis. The lift station features are summarized in Table 5-1.

Table 5-1 Lift Station Summary					
		Lift Station			
		Airport	**GLP**	**2nd & East**	**Southside**
Date Constructed		NA	NA	NA	1995
Date Refurbished		2001	2001	1993	---
Type		submersible	submersible	submersible	submersible
Pump Manufacturer		Wemco	Flygt	Flygt	Flygt
Number of Pumps		2	3	3	2
Horsepower (HP), each		25	20	10	7.5
Impeller Trim (in) OR Impeller Code		10.375	454	434	439
Pump Model #		E5K-ST-EEXZ4	3152-091-9144	3127-093-0850072	3127-090-439MT
Motor Model #		EEXZ4	NA	NA	NA
Motor Serial #		01DW03318-01, -02, -03	NA	NA	NA
Voltage		460	460	460	460
Speed (rpm)		1750	1750	1750	1750
Motor Type		Constant Speed	Constant Speed	Constant Speed	Constant Speed
Pump Design Point	gpm	800	NA	600	400
	TDH (ft)	70	NA	14.5	33
Permanent Standby Generator		no	no	no	no
Portable Generator Power Receptacle		yes	yes	yes	yes
Bypass Capabilities		no	no	yes	no
Wet Pit Coating		NA	NA	epoxy	NA
Wet Well Diameter or Length (ft)		10	10	10	6
Wet Well Width (ft)		6	---	---	---
Wet Well Invert Elevation (ft)		191.38	231	258	303.62
Wet Well Total Depth (ft)		28.10	17	25	17.25
Wet Well Set Points (feet)[1]	Low Alarm	0.4	0.5	2.0	0.0
	Off	3.0	2.6	2.7	3.0
	Lead On	5.9	5.7	5.0	6.1
	Lag On	6.3	6.7	5.2	7.5
	Last On	---	7.2	5.6	---
	High Alarm	9.0	8.0	8.0	8.0
	Overflow	---	---	15.0	---
Wet Well Operating Volume (gal)[2]		1,302	1,821	1,351	656
Wet Well Maximum Volume (gal)[3]		3,860	4,406	3,525	1,692
Force Main Diameter (inches)		10	12	8 & 10	6
Force Main Material		PVC	PVC	DI	PVC
Force Main Length (feet)		6,992	7,128	37	1,320
Force Main Start Elevation (feet)[4]		193.03	231.00	260.00	303.62
Force Main End Elevation (feet)		244.67	280.12	273.72	327.32
Force Main Total Static Head (feet)		51.6	49.1	13.7	23.7

NA - Not Available

1. Information provided by City staff.
2. Wet well operating volume calculated based on operating range from Pump Off to Lead On
3. Wet well maximum volume calculated based on maximum desired operating range (Low Alarm to High Alarm)
4. Elevation assumed for 2nd & East and Southside Lift Stations, based on low wet well alarm.

LIFT STATION EVALUATION

The City budgeted upgrades to the lift stations in 2017. In April 2017, Wallace Group prepared a memorandum updating the current conditions of each lift station and made recommendations to assist the City in budgeting for the upgrades. The City evaluated the memorandum and proceeded with upgrades to the Airport and GLP Lift Stations.

It should be noted that an updated hydraulic evaluation of the Southside Lift Station was also completed based on new information regarding future development. This evaluation identified the required upgrades to meet the needs of the developments. As a result, these upgrades will be completed by developers prior to construction of the new developments upstream of the lift station. The updated future flows did not trigger upgrades to the lift station pumps, therefore there were no upgrades required to the downstream collection system.

In December 2017, Wallace Group provided a second memorandum discussing additional deficiencies that were identified once the survey was completed at the Airport and GLP Lift Stations. Both the April and December 2017 memos are provided in Appendix A for reference. Wallace Group and the City are currently working through the recommended upgrades. The proposed project will provide additional emergency storage, a new back-up generator, replace corroded piping, and correct poor accessibility for valves and parking. The project is proposed to go to construction in 2018.

At this time, upgrades to the 2nd and East Lift Station are not being pursued, but are summarized in the April memorandum and will be included as a capital improvement project.

After further evaluation of the wastewater flows in Chapter 4, flows to the lift stations have stayed the same or decreased slightly. This excludes the proposed future development to the Southside Lift Station, which was addressed in a separate design memorandum. Therefore, a full lift station evaluation was not updated for this SSCSMPU, as the recommendations that were previously identified will remain. Please refer to the 2010 SSCSMP for general information on all four lift stations.

SUMMARY OF LIFT STATION RECOMMENDATIONS

Based on the memorandums completed for each lift station and the previous recommendations from the 2010 SSCSMP, the following is a summary of recommendations for the City's four lift stations.

Airport Lift Station

The Airport lift station has adequate hydraulic capacity for existing conditions. The following near-term upgrades per the December 2017 memorandum are as follows:

- Provide permanent standby generator:
- Eliminate the bioxide tank, provide BioCube™ system;
- Provide new shallow bury tanks for overflow;
- Verify property boundary issues prior to installing new BioCube™ system;
- Consider pump replacement if warranted, based on City records of the existing submersible pumps;
- Replace discharge piping inside wet well.

With the new emergency storage and emergency generator proposed in the near-term project, the lift station can meet the needs for any minor development that may occur in the future. There is still a concern regarding potential large development to occur near the Airport Lift Station, which could have a large unknown impact on the Airport Lift Station. To meet future flow demands from large commercial and industrial development, it is recommended the City to continue to monitor and complete evaluations once realistic development starts to occur. In the future, it may be necessary to replace the existing lift station with a new triplex VFD station, with the following design considerations:

- Construct the new lift station adjacent to the existing lift station;
- Convert the existing wet well to an over flow basin for emergency storage.

GLP Lift Station

The GLP lift station has adequate hydraulic capacity for existing conditions. The following near-term upgrades per the December 2017 memorandum are as follows:

- Provide permanent standby generator;
- Provide protective guard railing (Caltrans "Midwest") on the west side of the site;
- Eliminate the bioxide tank, provide BioCube™ system;
- Provide removable bollards immediately in front of LS power/control panel;
- Use the existing wet well as an emergency overflow wet well only, thus limiting the frequency with which City staff must access this wet well that is in the middle of the roadway. Alternatively, the overflow pipe connection can be made "low" such that both wet wells can be used for operational storage;
- Construct new wet well (with interior protective lining) in the footprint of existing bioxide tank, repair concrete pad in this area, construct new overflow piping, connecting new wet well to existing wet well (if the "high" overflow option is employed, the City would need to use a portable trash pump to evacuate the existing wet well after use); install new 6" vent extending to future BioCube™ area;
- Consider replacement of all three existing submersible pumps, depending on available records and feedback from City staff;
- Equip new wet well with all new pumps, piping, slide rails, level control, vault access lid, vent, etc.;
- Abandon three existing check valve vaults in the roadway (remove check valves/piping, and backfill with slurry), and provide new single valve vault within the existing LS fence line. Provide all new valves and piping in the new single vault. Connect new discharge force main to existing force main;
- Add driveway on the north side of the site, allowing for single vehicle parking and turn around. Provide 10-foot wide double leaf gate on this north end for access to the lift station;
- Extend concrete pad and fencing to the south as shown, to accommodate room for the BioCubes™ and generator.

With the new emergency storage and emergency generator proposed in the near-term project, the lift station can meet the needs for any minor development that may occur in the future. There is still a concern regarding potential large development to occur near the Airport Lift Station, which could have a large unknown impact on the Airport Lift Station. If the Airport Lift Station is upgraded, this will impact the GLP Lift Station. To meet

future flow demands from large commercial and industrial development, it is recommended the City to continue to monitor and complete evaluations once realistic development starts to occur. In the future, it may be necessary to replace the existing lift station with a new triplex VFD station.

2nd & East Lift Station

The 2nd & East lift station has adequate hydraulic capacity for existing conditions. The lift station is equipped with a vent and odor scrubber to minimize hydrogen sulfide attack and a bypass line to discharge overflow to the downstream collection system. New pumps, rails, slide gate and check valves have been installed since the completion of the 2010 SSCSMP.

Per the April 2017 memorandum it is recommended that a permanent on-site generator be installed, which will also require survey research to determine the limits of the small property where the lift station situated.

To provide service for future flows from residential and commercial development, the following long term upgrades are recommended:

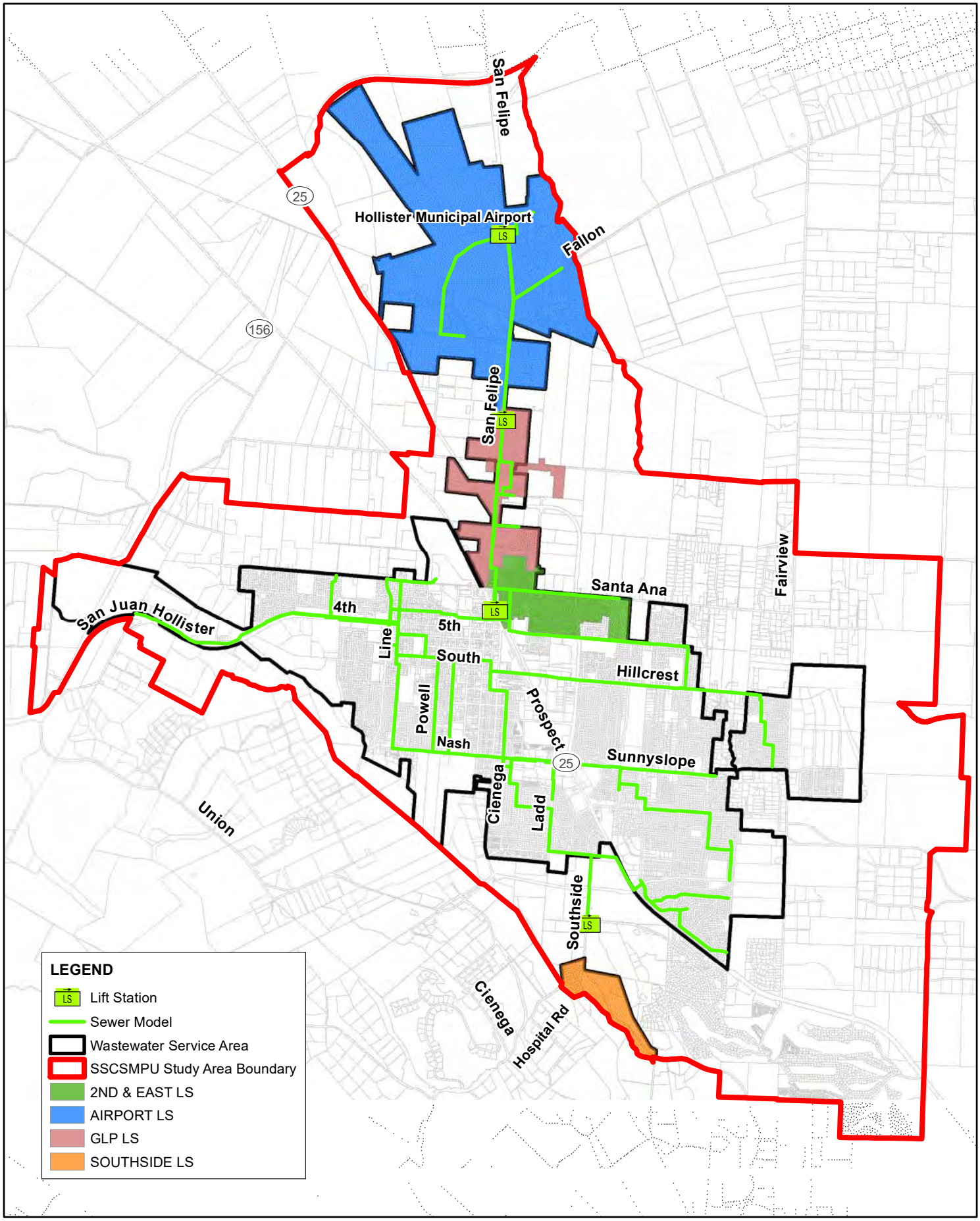
- Perform a pump test and physical evaluation to determine operating capacity of the pumps prior to allowing additional services to contribute flow;
- Adjust the wet well operating volume as needed to limit pump cycles.

Southside Lift Station

The Southside lift station has adequate hydraulic capacity for existing conditions. Since the 2010 SSCSMP, new development has been proposed in the County, and will be served by the City for wastewater services. A hydraulic evaluation was completed for the future development. The analysis did not find any hydraulic deficiencies in the existing lift station. The deficiencies identified included:

- Inadequate emergency storage;
- Installation of BioCube™ system;
- Installation of back-up generator.

The proposed improvements are being completed by the developers as part of their conditions of approval.



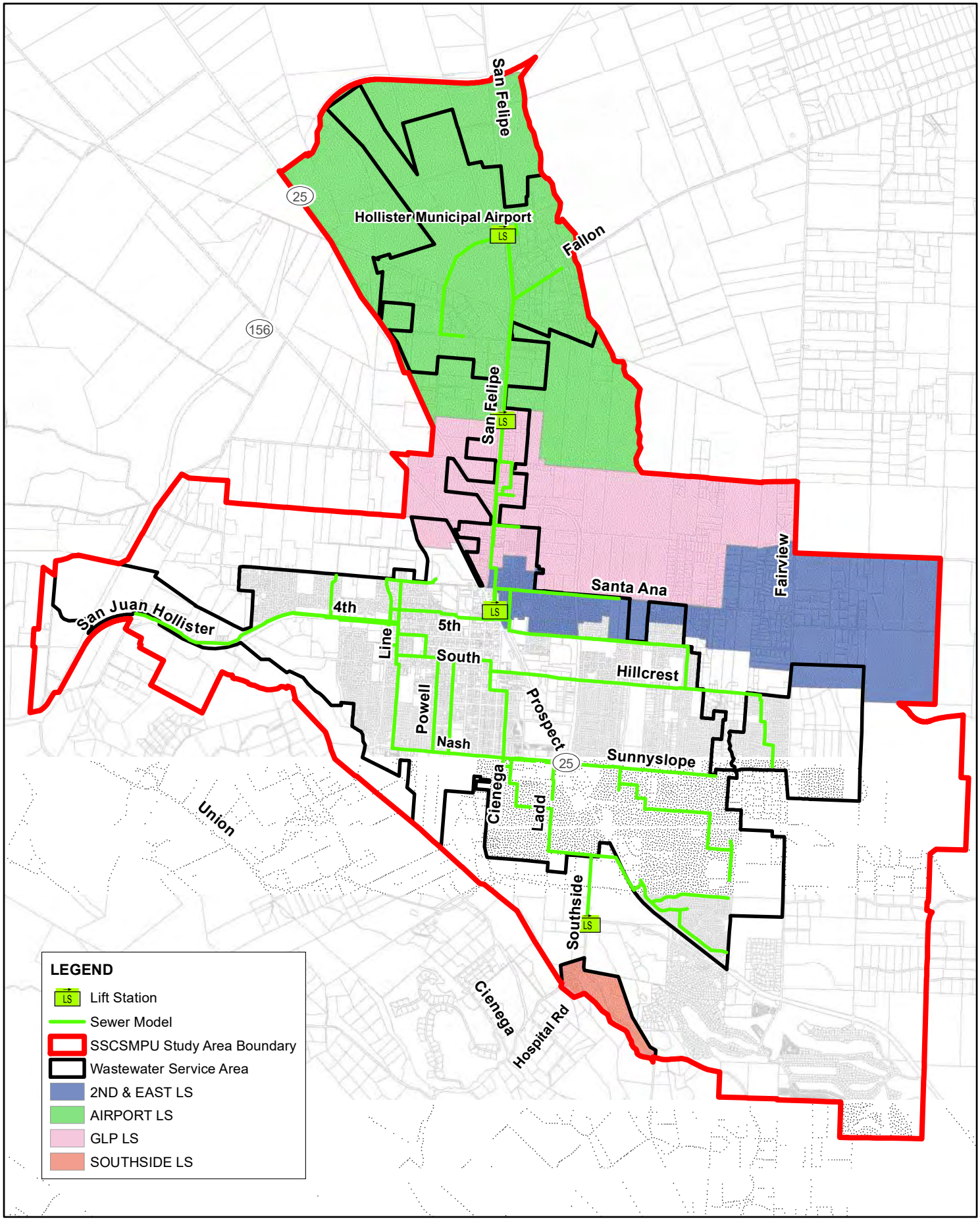
WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 5-1: EXISTING LIFT STATION TRIBUTARY AREA MAP

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED MARCH 2018.



WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 5-2: FUTURE LIFT STATION TRIBUTARY AREA MAP

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED MARCH 2018.

CHAPTER 6
COLLECTION SYSTEM ANALYSIS

This Chapter presents the analysis of the domestic wastewater collection system for the City. Refer to Chapter 5 for a detailed evaluation of the City's four (4) lift stations and corresponding force mains. All figures are provided at the end of this chapter.

INTRODUCTION

The City's collection system consists of a network of 4-inch to 36-inch gravity sewer pipes, and four (4) lift stations, providing service throughout the City and an area of the County located at Southside Road near Hospital Road. The main trunk sewer system was analyzed using Innovyze InfoSWMM Version 14.5 sewer modeling program to evaluate performance of the wastewater collection system under both existing and future flow conditions. Figure 6-1 provides an overview of the existing gravity wastewater collection system, lift stations, and force mains that were included in the hydraulic model. Typically 8-inch sewer pipes and larger in diameter are modeled and are considered to be the trunk sewer system. However, not all 8-inch sewer pipes were modeled as part of this project. In addition, several segments of 6-inch diameter sewer pipes were included in the sewer model under the direction of City Staff. The 6-inch segments consisted of known "problem areas" throughout the system and/or may receive additional flows from potential future development. The analysis of the wastewater collection system is based on the model developed for the 2010 SSCSMP.

COLLECTION SYSTEM ANALYSIS CRITERIA

Design criteria, as described in the City's May 1992 Design Standards, were applied in the analysis of the trunk sewer collection system model. These design criteria provide capacity buffer to prevent surcharge conditions and for fluctuations in flows due to diurnal variations. Gravity pipe performance was analyzed based on maximum percent full depth over diameter (d/D) ratio, defined as the depth of flow in a pipe divided by the diameter of the pipe. Criteria utilized are as follows:

- Minimum Velocity: 2 feet per second (fps) under average flow conditions
- Maximum Velocity: 10 fps
- Percent full (d/D) criteria:
    - 10-inches or less maximum d/D of 0.5
    - 12-inches or larger maximum d/D of 0.67

- Manning coefficient of friction:
    - n = 0.013 for VCP and RCP
    - n = 0.011 for PVC
- All new sewers are PVC, ABS, HDPE, composite or solid walled pipes with coefficient of friction "n" = 0.011.
- Minimum and Maximum Pipe Slopes per Table 6-1

Table 6-1 Minimum and Maximum Pipe Slopes		
Pipe Inside Diameter (in)	**Minimum Slope (%)**	**Maximum Slope (%)**
8	0.35	8.0
10	0.25	6.0
12	0.20	4.0
15	0.15	3.0
18	0.12	2.6
21	0.10	2.0
24	0.08	1.8
27	0.08	1.5
30	0.08	1.3
33	0.08	1.2
36	0.08	1.0
39-60	0.08	0.9

COLLECTION SYSTEM FLOWS

Existing and future flows were analyzed in the sewer model for dry weather conditions only. Wet weather flows were not modeled since wet weather flow data (peaking factors) were not obtained during the flow monitoring task of this master planning project. Flow rates were derived on a per-parcel basis as described in Chapter 4 of this report. Flow parameters utilized in this analysis are defined as follows:

- ADF: Average daily dry weather system flow
- MDDWF: Maximum daily dry weather system flow
- PHDWF: Peak hour dry weather system flow

COLLECTION SYSTEM MODEL DEVELOPMENT

A hydraulic model of the sewer collection system was developed by Wallace Group with the Innovyze InfoSWMM Version 14.5 sewer modeling program. InfoSWMM utilizes Manning's Equation for open channel flow (gravity pipes), Dynamic Wave analysis for flow routing through the collection system, and the Hazen-Williams Equation for pressurized flow conditions (force mains). Model results were evaluated for pipeline capacity, flow velocity, and maximum d/D ratio under various flow conditions.

Flow Allocation

Wastewater flows were assigned to the sewer model utilizing estimated flows as described in Chapter 4. Flows were allocated to individual sewer manholes based on actual location of City sewer customers. Tributary areas for each modeled manhole were developed by Wallace Group and are shown on Figure B-1 included in Appendix B. Each tributary area represents the total residential, motel, commercial, and institutional customers contained within the tributary boundary. Future flows were allocated to the model based on most probable connection location (refer to Figure B-2 included in Appendix B for the future flow locations).

Diurnal curves were applied to the allocated flows to represent varying flow conditions throughout the day. A separate diurnal curve was applied to residential and commercial connections, with hotels and schools included in the commercial curve. A detailed discussion of the diurnal curves for the City's sewer system is included in Chapter 4.

Model Calibration

As part of the preparation of the 2010 SSCSMP, approximately five weeks of sewer flow data was collected in support of the hydraulic model development, as described in Chapter 4 of the 2010 report. Representative data for each flow monitoring location was compared to the model results. Through this process the diurnal curves applied to the model were adjusted to accurately represent the system flows as recorded through the flow monitoring. Model results for existing conditions were also compared to the City's maintenance records to confirm locations where the model exhibited existing collection system deficiencies. For this update, it was assumed that the calibration results from the 2010 model are still valid. Therefore, no additional calibration was completed.

System Conditions Analyzed

The hydraulic model was utilized to analyze dry weather system flow for both existing and future flow conditions. Within the model, multiple scenarios were developed that represent these various conditions. Existing and future scenarios were utilized to identify system upgrades required in order to meet performance criteria as specified, and to identify areas recommended for high priority maintenance operations. Scenarios developed consist of the following:

- *Existing MDDWF Scenario:* This scenario represents the trunk sewer system under existing maximum dry weather flow conditions.

- *Future MDDWF Scenario:* This scenario represents the trunk sewer system under future maximum dry weather flow conditions, with all future development as described in Chapter 2 flowing to the existing collection system.

- *Existing and Future WWF Scenarios:* Existing and Future WWF conditions were not analyzed as part of this master plan study, per City Staff. It should be noted that City Staff indicated that inflow and infiltration is not a major concern for the wastewater collection system and therefore was not required to be modeled. After review of the RDWWTP daily influent flow records from 2004 to 2009, flows during peak summer demands appear to be greater than rain days.

Because of the decrease in sewer flows throughout the City since the 2010 master plan was prepared (attributed to conservation efforts during the drought), some of the deficiencies identified in 2010 are no longer deficiencies. However, it is recommended that these deficiencies (and their associated CIPs) remain in the 2017 master plan as a precaution in case sewer flows rebound to 2010 levels. Therefore, the following sections incorporate the results from both the 2010 model and the 2017 model.

COLLECTION SYSTEM MODEL RESULTS – EXISTING FLOW CONDITIONS

Deficient System Capacity

The following locations were identified through the analysis as having insufficient capacity to meet the City's performance standards while conveying existing population wastewater flows. Pipe upgrades identified for existing conditions may increase in diameter for future conditions, as described later in this chapter. Refer to Figure 6-2 for a system-wide map of maximum d/D under existing worst case MDDWF conditions. Refer to Figure 6-3 for an overall map of the recommended areas for pipe upgrades.

Where improvements are recommended to the collection system, worst case d/D values are provided for reference. These d/D values represent a snapshot of the system under either: a) existing conditions, or b) proposed conditions with *all* improvements in place. In many cases, recommended upgrades would increase downstream maximum d/D, exceeding the City's standards, if the downstream recommended improvements were not constructed. Through the digital sewer model, maximum d/D was analyzed for the system as a whole, ensuring that recommended upgrades did not trigger additional downstream improvements. As discussed, existing flow conditions in the 2010 model were higher than the 2017 model; therefore, the existing flow deficiencies presented below reflect those in the 2010 SSCSMP.

Sunset Drive:

- Location Extents: Sunnyslope Road to Cerra Vista Drive

The Sunset Drive pipe deficiencies consist of several individual streets and are described as follows:

Memorial Drive from Sunnyslope Road to Cedar Street is an existing 8-inch VCP that primarily receives flow from residential lots. Pipe segment d/D ranged from 0.54 to 1.00 during existing MDDWF conditions. Upgrading the existing pipe with 602 feet of 10-inch PVC decreased the d/D to a range 0.35 to 0.55.

Cedar Street from Memorial Drive to Iris Street is an existing 6-inch VCP that primarily receives flow from residential lots. Pipe segment d/D ranged from 0.86 to 0.89 during existing MDDWF conditions. Upgrading the existing pipe with 661 feet of 8-inch PVC decreased the d/D to 0.43.

Iris Street from Cedar Street to Juniper Drive is an existing 6-inch VCP that primarily receives flow from residential lots. Pipe segment d/D ranged from 0.89 to 1.00 during existing MDDWF conditions. Upgrading the existing pipe with 469 feet of 8-inch PVC decreased the d/D to 0.50.

Valley View Road from Juniper Drive to Sunset Drive is an existing 6-inch VCP that primarily receives flow from residential lots. Pipe segment d/D ranged from 0.87 to 1.00 during existing MDDWF conditions. Upgrading the existing pipe with 725 feet of 8-inch PVC decreased the d/D to 0.41.

Sunset Drive from Valley View Road to Cerra Vista Drive is an existing 6-inch VCP that primarily receives flow from residential lots. Pipe segment d/D ranged from 0.50 to 0.87 during existing MDDWF conditions. Upgrading the existing pipe with 2,399 feet of 8-inch PVC decreased the d/D to a range of 0.30 to 0.57.

Cerra Vista Drive from Sunset Drive to Tiburon Drive is an existing 6-inch PVC that primarily receives flow from residential lots. Pipe segment d/D ranged from 0.67 to 0.86 during existing MDDWF conditions. Upgrading the existing pipe with 1,287 feet of 8-inch PVC decreased the d/D to a range of 0.38 to 0.44.

Nash Road:

- Location Extents: San Benito Street to Freedom Road

The Nash Road pipe deficiencies consist of several individual streets and are described as follows:

Nash Road from San Benito Street to Prune Street is an existing 12-inch VCP sewer pipe that receives a substantial amount of residential flow from the south east portion of the City and commercial flow from Tres Pinos Road and Airline Highway. Pipe segment d/D ran at 0.69 during existing MDDWF conditions. Upgrading the existing pipe with 957 feet of 15-inch PVC decreased the d/D to a range 0.43 to 0.47.

Tres Pinos Road from Prune Street to McCray Street is an existing 12-inch VCP sewer pipe that receives a substantial amount of residential flow from the south east portion of the City and commercial flow from Tres Pinos Road and Airline Highway. During existing MDDWF model simulation a number of sewer manholes, along Tres Pinos Road from Airline Highway to Rancho Drive, indicated surcharged manholes. Digital photos of the manhole interior, collected during the field survey, confirmed that this surcharging was occurring in the system. Pipe segment d/D ranged from 0.69 to 1.0 during MDDWF conditions. Upgrading the existing pipe with 2,342 feet of 15-inch PVC decreased the d/D to a range 0.44 to 0.68.

Sunnyslope Road from McCray to Freedom Road is an existing 12-inch PVC sewer pipe. Pipe segment d/D ranged from 0.78 to 0.87 during existing MDDWF conditions. Upgrading the existing pipe with 1,307 feet of 15-inch PVC decreased the d/D to a range 0.45 to 0.52.

Sunnyslope Road from Memorial Drive west 370 feet west on Sunnyslope Road is an existing 8-inch VCP that primarily receives flow from residential lots. Pipe segment d/D ran at 0.74 during existing MDDWF conditions. Upgrading the existing pipe with 370 feet of 10-inch PVC decreased the d/D to 0.49.

Line Street:

- Location Extents: Nash Street to Peridot Court

Line Street is an existing 15-inch VCP sewer pipe that receives a substantial amount of residential flow from the southern portion of the City and commercial flow from Tres Pinos Road and Airline Highway. Line Street serves as one of the major trunk sewer pipes prior to emptying into the 36-inch trunk sewer pipe on San Juan Road. Pipe segment d/D ranged from 0.64 to 0.77 during existing MDDWF conditions. Upgrading the existing pipe with 3,000 feet of 18-inch PVC decreased the d/D to a range 0.44 to 0.58.

Powell Street:

- Location Extents: 7th Street to Glenmore Drive

Powell Street is an existing 6-inch VCP sewer pipe that receives flow from approximately 280 residential lots from Nash Street to 7th Street. Pipe segment d/D ranged from 0.6 to 1.0 during existing MDDWF conditions.

Manhole surcharging was apparent during model simulations. Digital photos of the manhole interior, collected during the field survey, confirmed that this surcharging was occurring in the manholes. Upgrading the existing pipe with 388 feet of 10-inch PVC at the intersection of Powell Street and 7th Street and 1,086 of 8-inch PVC for the remaining deficient 6-inch pipe segments decreased the d/D to a range of 0.29 to 0.56.

West Street:

- Location Extents: 7th Street to Haydon Street

West Street is an existing 6-inch VCP sewer pipe that receives flow from approximately 200 residential lots from Nash Street to 7th Street. Pipe segment d/D ranged from 0.97 to 1.0 during existing MDDWF conditions. Manhole surcharging was apparent during model simulations. Digital photos of the manhole interior, collected during the field survey, confirmed that this surcharging was occurring in the manholes. Upgrading the existing pipe with 375 feet of 10-inch PVC at the intersection of West Street and 7th Street and 1,242 of 8-inch PVC for the remaining deficient 6-inch pipe segments decreased the d/D to a range of 0.41 to 0.51.

Marginal System Capacity

Locations where pipes flow close to design standards as defined by the City's performance criteria were identified within the hydraulic model, as follows. The d/D values provided represent system performance with all improvements recommended for existing conditions in place.

Bridge Road:

- Location Extents: Valona Way to Graf Road

This portion of 21-inch VCP sewer pipe on Bridge Road ran at a d/D of 0.63 to 0.79 during existing MDDWF model simulations. Based on the model it is our assumption that the flows are not being properly distributed between the parallel lines. The 21-inch runs parallel with the main 36-inch trunk sewer on San Juan Road and supports the 36-inch trunk sewer with conveying flow to the RDWWTP.

Hillcrest Road:

- Location Extents: Memorial Drive to east of Busby Court

This portion of 8-inch VCP sewer pipe on Hillcrest Road ran at a d/D of 0.56 during existing MDDWF model simulations. Total length of 8-inch VCP under this flow condition is 658 feet.

Sunnyslope Road:

- Location Extents: Memorial Drive to El Toro Drive

This portion of 8-inch VCP sewer pipe on Sunnyslope Road ran at a d/D of 0.69 during existing MDDWF model simulations prior to downstream improvements. The d/D was reduced to 0.5 once downstream improvements were implemented. Total length of 8-inch VCP under this flow condition is 602 feet.

- Location Extents: Freedom Road to west of Memorial Drive

This portion of 12-inch VCP sewer pipe on Sunnyslope Road ran at a d/D of 0.70 during existing MDDWF model simulations prior to downstream improvements. The d/D was reduced to 0.62 once downstream improvements were implemented. Total length of 12-inch VCP under this flow condition is 312 feet.

Tres Pinos Road:

- Location Extents: Along Tres Pinos east to Ladd Lane

This portion of 12-inch VCP sewer pipe on Tres Pinos Road ran at a d/D of 1.00 during existing MDDWF model simulations prior to downstream improvements. The d/D was reduced to 0.64 once downstream improvements were implemented. Total length of 12-inch VCP under this flow condition is 340 feet.

West Street:

- Location Extents: D Court to Haydon Street

This portion of 6-inch VCP sewer pipe on West Street ran at a d/D of 1.00 during existing MDDWF model simulations prior to downstream improvements. The d/D was reduced to 0.5 once downstream improvements were implemented. Total length of 6-inch VCP under this flow condition is 1,217 feet.

Low Pipe Velocity

Low pipe velocity results in the increased likelihood for solids to settle out of wastewater flow, leading to pipe backups and blockages. The City's design standards specify a minimum pipe velocity of 2 fps at ADF to maintain solids in suspension. A total of 264 modeled pipes were identified with a velocity below 2 fps under existing average day conditions, and a total of 190 pipes did not meet velocity criteria under maximum day conditions. It is recommended that pipes identified with a maximum velocity of less than 2 fps be flushed on a regular basis that corresponds with the City's maintenance schedule. Total length of pipe running with an average day velocity less than 2 fps is 12 miles. Figure 6-4 depicts the pipes identified with low pipe velocities.

Pipe Travel Time

Excessive wastewater travel time is a result of low velocity and can lead to problems with hydrogen sulfide attack and odors throughout the collection system. Typically wastewater is oxygenated as it flows through a manhole, decreasing likelihood of hydrogen sulfide generation. Travel time exceeding thirty (30) minutes through a single pipe (manhole to manhole) is undesirable. All pipes included in the hydraulic model have an existing ADF of wastewater travel time of thirty (30) minutes or less; pipe travel time is not anticipated to cause maintenance issues for the City's system.

COLLECTION SYSTEM MODEL RESULTS – FUTURE FLOW CONDITIONS

Refer to Figure 6-5 for a system-wide map of worst case d/D under future MDDWF conditions. Refer to Figure 6-6 for an overall map of the recommended areas for pipe upgrades.

Deficient System Capacity

The following locations were identified through the analysis as having insufficient capacity to meet the City's performance standards while conveying future population wastewater flows. These flows includes potential wastewater from future developments and septic system conversions as discussed in Chapter 2 and 4.

Aerostar Way:

- Location Extents: Airway Drive 1,800 feet North towards Airport LS

Aerostar Way is an existing 12-inch VCP sewer pipe. Pipe segment d/D ranged from 0.67 to 0.87 during 2010 future MDDWF conditions. Upgrading the existing pipe with 1,900 feet of 15-inch PVC decreased the d/D to a range 0.42 to 0.51. Due to the potential impact to upcoming Hollister Airport work, this project is currently in design and set for construction in 2018.

Bridge Road:

- Location Extents: Valona Way to Graf Road

This is an existing 21-inch VCP sewer pipe, which runs parallel with the main 36-inch trunk sewer on San Juan Road and supports the 36-inch trunk sewer with conveying flow to the RDWWTP. Pipe segment d/D ranged from 0.96 to 1.00 during 2010 future MDDWF conditions. Based on the model it is our assumption that the flows are not being properly distributed between the parallel lines. Installing 30 feet of 21-inch PVC interconnect between manholes on the 21-inch and 36-inch trunk sewer pipes decreased the d/D to a range 0.71 to 0.75 during future MDDWF conditions. The parallel 36-inch VCP ran at a d/D of 0.52 with the interconnect in place.

Hillcrest Road:

- Location Extents: Memorial Drive to El Cerro Drive

Hillcrest Road is an existing 8-inch VCP sewer pipe. Pipe segment d/D ran at 0.47 to 0.65 during 2010 future MDDWF conditions. Upgrading the existing pipe with 1,400 feet of 10-inch PVC decreased the d/D to a range 0.31 to 0.48.

Fallon Road:

- Location Extents: Frontage Road to Shelton Drive

Fallon Road is an existing 10-inch VCP sewer pipe. Pipe segment d/D ranged from 0.56 to 0.73 during 2017 future MDDWF conditions. Upgrading the existing pipe with 2,200 feet of 12-inch PVC decreased the d/D to a range 0.39 to 0.50.

Kirk Patrick to GLP LS:

- Location Extents: 425 feet south of Chappell Road to GLP Lift Station

The Kirk Patrick to GLP LS pipe deficiencies consist of several individual streets and are described as follows:

Frontage Road from McCloskey Road to GLP LS is an existing 10-inch VCP sewer pipe. Pipe segment d/D ranged from 0.58 to 0.73 during 2010 future MDDWF conditions. Upgrading the existing pipe with 1,600 feet of 12-inch PVC decreased the d/D to a range 0.43 to 0.52.

McCloskey Road from Kirk Patrick to Frontage Road is an existing 10-inch VCP sewer pipe. Pipe segment d/D ran at 0.66 during 2010 future MDDWF conditions. Upgrading the existing pipe with 500 feet of 12-inch PVC decreased the d/D to 0.44

Kirk Patrick from McCloskey to Chappell Road is an existing 10-inch VCP sewer pipe. Pipe segment d/D ranged from 0.55 to 0.62 during 2010 future MDDWF conditions. Upgrading the existing pipe with 1,700 feet of 12-inch PVC decreased the d/D to a range 0.38 to 0.42.

San Felipe Road 425 feet south of Chappell Road to Kirk Patrick is an existing 10-inch VCP sewer pipe. Pipe segment d/D ran at 0.57 during future MDDWF conditions. Upgrading the existing pipe with 500 feet of 12-inch PVC decreased the d/D to 0.39.

Line Street:

- Location Extents: 5th Street to West Street

The Line Street pipe deficiencies consist of several individual streets and are described as follows:

Line Street from 5th Street to Peridot Court is an existing 15-inch VCP sewer pipe and a major trunk line for the existing collection system. Pipe segment d/D ranged from 0.62 to 1.00 during 2010 future MDDWF conditions. Upgrading the existing pipe with 1,600 feet of 18-inch PVC decreased the d/D to a range 0.46 to 0.61.

Nash Road from Line Street to West Street is an existing 15-inch VCP sewer pipe and a major trunk line for the existing collection system. Pipe segment d/D ranged from 0.73 to 0.80 during 2010 future MDDWF conditions. Upgrading the existing pipe with 1,800 feet of 18-inch PVC decreased the d/D to a range 0.52 to 0.55.

Miller Road:

- Location Extents: San Juan Road North 290 feet

Miller Road is an existing 8-inch VCP sewer. Pipe segment d/D ran at 0.65 during 2010 future MDDWF conditions. Upgrading the existing pipe with 300 feet of 12-inch PVC decreased the d/D to 0.55 during MDDWF conditions.

Nash Road:

- Location Extents: San Benito Street to Memorial Drive

The Nash Road pipe deficiencies consist of several individual streets and are described as follows:

Nash Road from San Benito Street to Prune Street is an existing 12-inch VCP sewer pipe. Pipe segment d/D ranged from 0.79 to 0.85 during 2010 future MDDWF conditions. Upgrading the existing pipe with 1,000 feet of 15-inch PVC decreased the d/D to a range 0.55 to 0.60.

Tres Pinos Road from Prune Street to McCray Street is an existing 12-inch VCP sewer pipe. Pipe segment d/D ranged from 0.69 to 1.0 during 2017 future MDDWF conditions. Upgrading the existing pipe with 2,700 feet of 15-inch PVC decreased the d/D to a range 0.39 to 0.66.

Sunnyslope Road from McCray Street to Memorial Drive is an existing 12-inch PVC sewer pipe, with a short segment of 8-inch VCP. Pipe segment d/D ran at 1.00 during 2010 future MDDWF conditions. Upgrading the existing pipes with 1,700 feet of 15-inch PVC and 400 feet of 12-inch PVC decreased the d/D to a range 0.40 to 0.67.

Sunset Drive:

- Location Extents: Sunnyslope Road to Cerra Vista Drive

Memorial Drive from Sunnyslope Road to Cedar Street is an existing 8-inch VCP sewer pipe. Pipe segment d/D ranged from 0.55 to 1.00 during 2010 future MDDWF conditions. Upgrading the existing pipe with 600 feet of 12-inch PVC decreased the d/D to a range 0.36 to 0.52.

Cedar Street from Memorial Drive to Iris Street to is an existing 6-inch VCP sewer pipe. Pipe segment d/D ranged from 0.86 to 1.00 during 2010 future MDDWF conditions. Upgrading the existing pipe with 700 feet of 12-inch PVC decreased the d/D to 0.35.

Iris Street View Road from Juniper Drive to Cedar Street is an existing 6-inch VCP sewer pipe. Pipe segment d/D ran at 1.00 during 2017 future MDDWF conditions. Upgrading the existing pipe with 500 feet of 12-inch PVC decreased the d/D to 0.28.

Valley View Road from Sunset Drive to Iris Street is an existing 6-inch VCP sewer pipe. Pipe segment d/D ran at 1.00 during 2010 future MDDWF conditions. Upgrading the existing pipe with 800 feet of 12-inch PVC decreased the d/D to 0.32.

Sunset Drive from Cerra Vista Drive to Valley View Road is an existing 6-inch VCP sewer pipe. Pipe segment d/D ran at 1.00 during 2010 future MDDWF conditions. Upgrading the existing pipe with 600 feet of 12-inch PVC and 1,900 feet of 10-inch PVC decreased the d/D to a range of 0.39 to 0.53.

Cerra Vista Drive from Sunset Drive to Tiburon Drive is an existing 6-inch PVC sewer pipe. Pipe segment d/D ran at 1.00 during 2017 future MDDWF conditions. Upgrading the existing pipe with 1,300 feet of 10-inch PVC decreased the d/D to a range of 0.31 to 0.37.

Powell Street:

- Location Extents: 7th Street to Vali Way

Powell Street is an existing 6-inch VCP sewer pipe. Pipe segment d/D ranged from 0.87 to 1.0 during 2010 future MDDWF conditions. Manhole surcharging was apparent during model simulations. Digital photos of the manhole interior, collected during the field survey, confirmed that this surcharging was occurring in the manholes. Upgrading the existing pipe with 800 feet of 10-inch PVC at the intersection of Powell Street and 7th Street and 400 feet of 8-inch PVC for the remaining deficient 6-inch pipe segments decreased the d/D to a range of 0.33 to 0.49.

San Juan Road:

- Location Extents: San Juan Road at Westside Boulevard

San Juan Road is an existing 27-inch VCP sewer pipe on San Juan Road. Pipe segment d/D ran at a d/D of 0.75 during 2010 future MDDWF model simulations and increased to a d/D of 0.83 once upstream system improvements were in place. This 27-inch VCP receives flow from the 30-inch VCP trunk sewer coming north from Central Avenue and then empties into the 36-inch trunk sewer on San Juan Road. Upgrading the existing pipe with 30 feet of 36-inch ADS or approved equal decreased the d/D to 0.67.

Technology Parkway:

- Location Extents: San Felipe Road 350 North of Technology Parkway

Technology Parkway is an existing 10-inch PVC sewer pipe. Pipe segment d/D ranged from 0.52 to 0.79 during 2010 future MDDWF conditions. Upgrading the existing pipe with 700 feet of 12-inch PVC decreased the d/D to a range of 0.33 to 0.57.

West Street:

- Location Extents: 7th Street to B Street

West Street is an existing 6-inch VCP sewer pipe. Pipe segment d/D ran 1.0 during 2017 future MDDWF conditions. Manhole surcharging was apparent during model simulations. Digital photos of the manhole interior, collected during the field survey, confirmed that this surcharging was occurring in the manholes. Upgrading the existing pipe with 800 feet of 10-inch PVC at the intersection of West Street and 7th Street and 1,600 of 8-inch PVC for the remaining deficient 6-inch pipe segments decreased the d/D to a range of 0.25 to 0.40.

Marginal System Capacity

Locations where pipes flow close to design standards as defined by the City's performance criteria were identified within InfoSWMM. The d/D values provided represent system performance with all improvements recommended for future conditions in place.

Brighton Drive:

- Location Extents: Valley View Road northeast 280 feet along Brighton Drive

This portion of 8-inch PVC sewer pipe on Brighton Drive ran at a d/D of 0.56 during 2010 future MDDWF model simulations. Total length of 8-inch VCP under this flow condition is 276 feet.

Powell Street:

- Location Extents: Vali Way 370 feet South

This portion of 6-inch VCP sewer pipe on Powell Street d/D ranged from 0.74 to 1.00 during 2010 future MDDWF model simulations prior to downstream improvements. The d/D was reduced to 0.50 once downstream improvements were implemented. Total length of 6-inch VCP under this flow condition is 370 feet.

Santa Ana Road:

- Location Extents: Last pipe segment on Santa Ana Road going East

This portion of 10-inch PVC sewer pipe on Santa Ana Road ran at a d/D of 0.53 during 2010 future MDDWF model simulations. Total length of 10-inch PVC under this flow condition is 470 feet.

San Juan Road:

- Location Extents: Plumtree Drive to Westside Boulevard

This portion of 36-inch VCP sewer pipe on Westside Boulevard ranged from a d/D of 0.59 to 0.73 during 2010 future MDDWF model simulations and increased to a d/D of 0.66 to 0.83 once upstream improvements were in place. Total length of 36-inch VCP under this flow condition is 1,860 feet.

Sunnyslope Road:

- Location Extents: Memorial Drive to El Toro Drive

This portion of 8-inch VCP sewer pipe on Sunnyslope Road ran at a d/D of 0.71 during 2010 future MDDWF model simulations prior to downstream improvements. The d/D was reduced to 0.57 once downstream improvements were implemented. Total length of 8-inch VCP under this flow condition is 602 feet.

Tiburon Drive:

- Location Extents: Cerra Vista Drive to 295 feet East

This portion of 8-inch PVC sewer pipe on Tiburon Drive ran at a d/D of 1.00 during 2010 future MDDWF model simulations prior to downstream improvements. The d/D was reduced to 0.52 once downstream improvements were implemented. Total length of 8-inch PVC under this flow condition is 295 feet.

Valley View Road:

- Location Extents: Union Road 140 feet North

This portion of 8-inch PVC sewer pipe on Valley View Road ran at a d/D of 0.55 during 2010 future MDDWF model simulations. Total length of 8-inch PVC under this flow condition is 140 feet.

West Street:

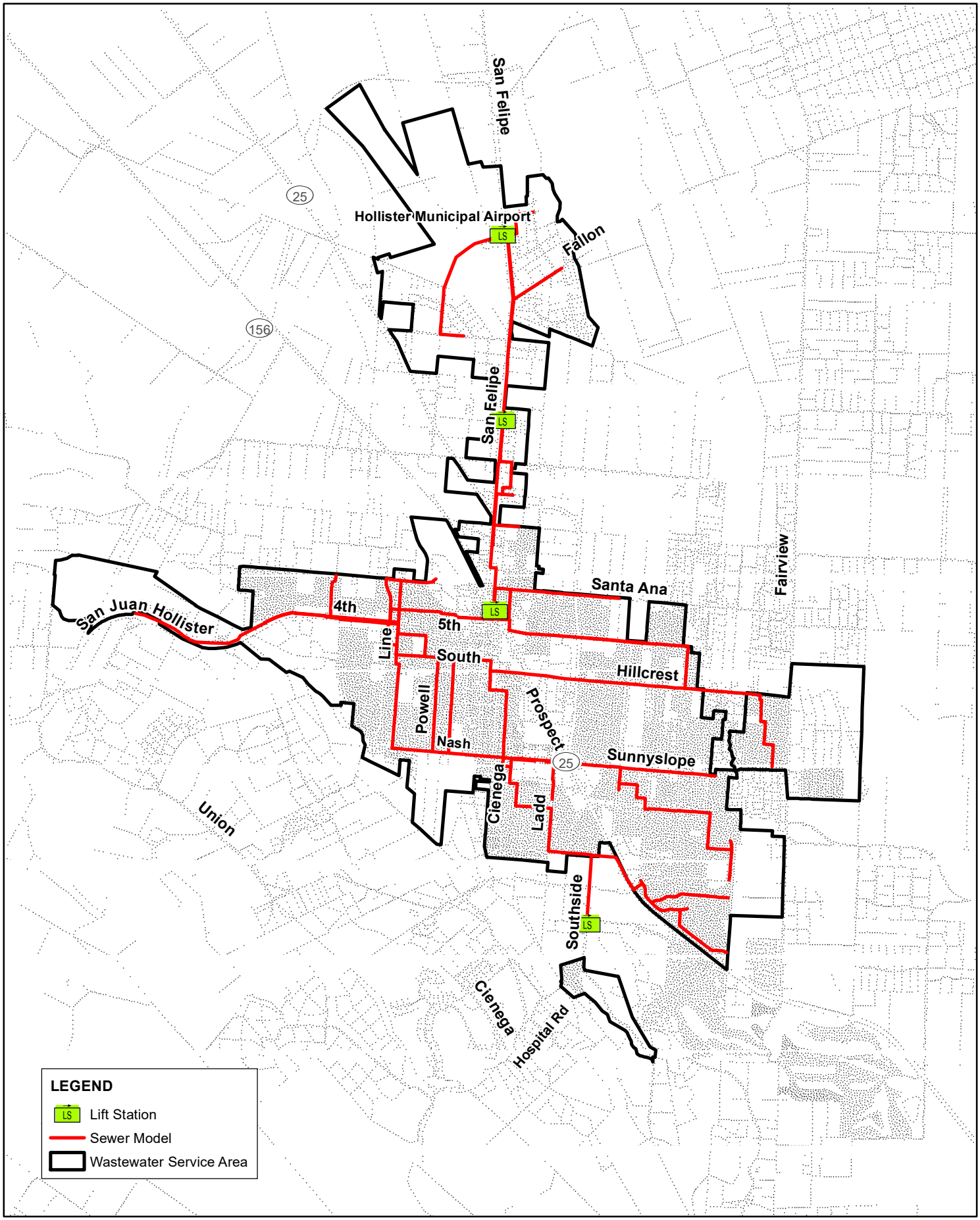
- Location Extents: B Street 546 feet South

This portion of 6-inch VCP sewer pipe on West Street ran at a d/D of 1.00 during 2010 future MDDWF model simulations prior to downstream improvements. The d/D was reduced to 0.50 once downstream improvements were implemented. Total length of 6-inch VCP under this flow condition is 547 feet.

Westside Boulevard:

- Location Extents: Jan Avenue to San Juan Drive

This portion of 30-inch VCP sewer pipe on Westside Boulevard ran at a d/D of 0.66 during 2010 future MDDWF model simulations and increased to a d/D of 0.70 once upstream improvements were in place. Total length of 30-inch VCP under this flow condition is 768 feet.



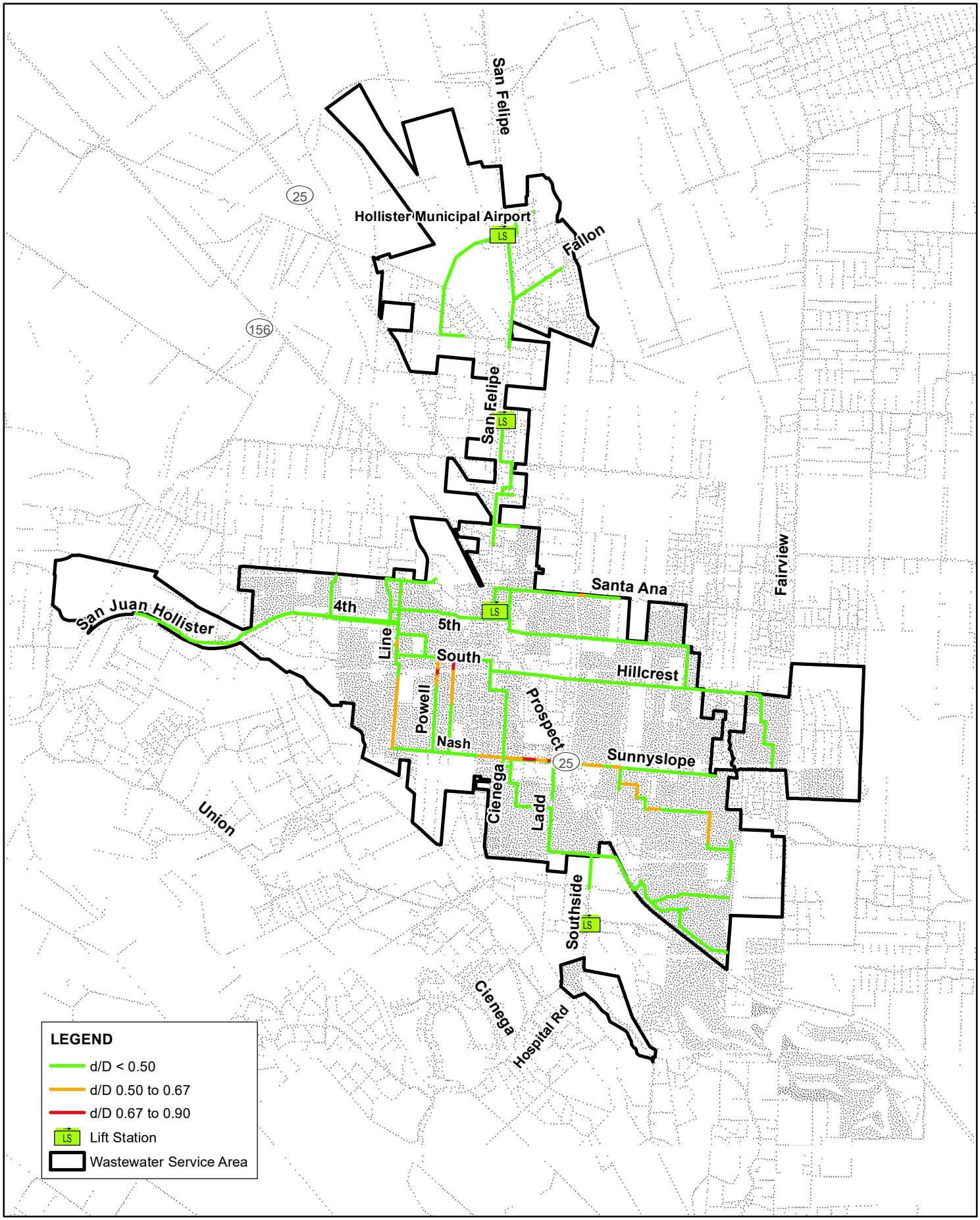
WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 6-1: WASTEWATER MODEL OVERVIEW MAP

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.



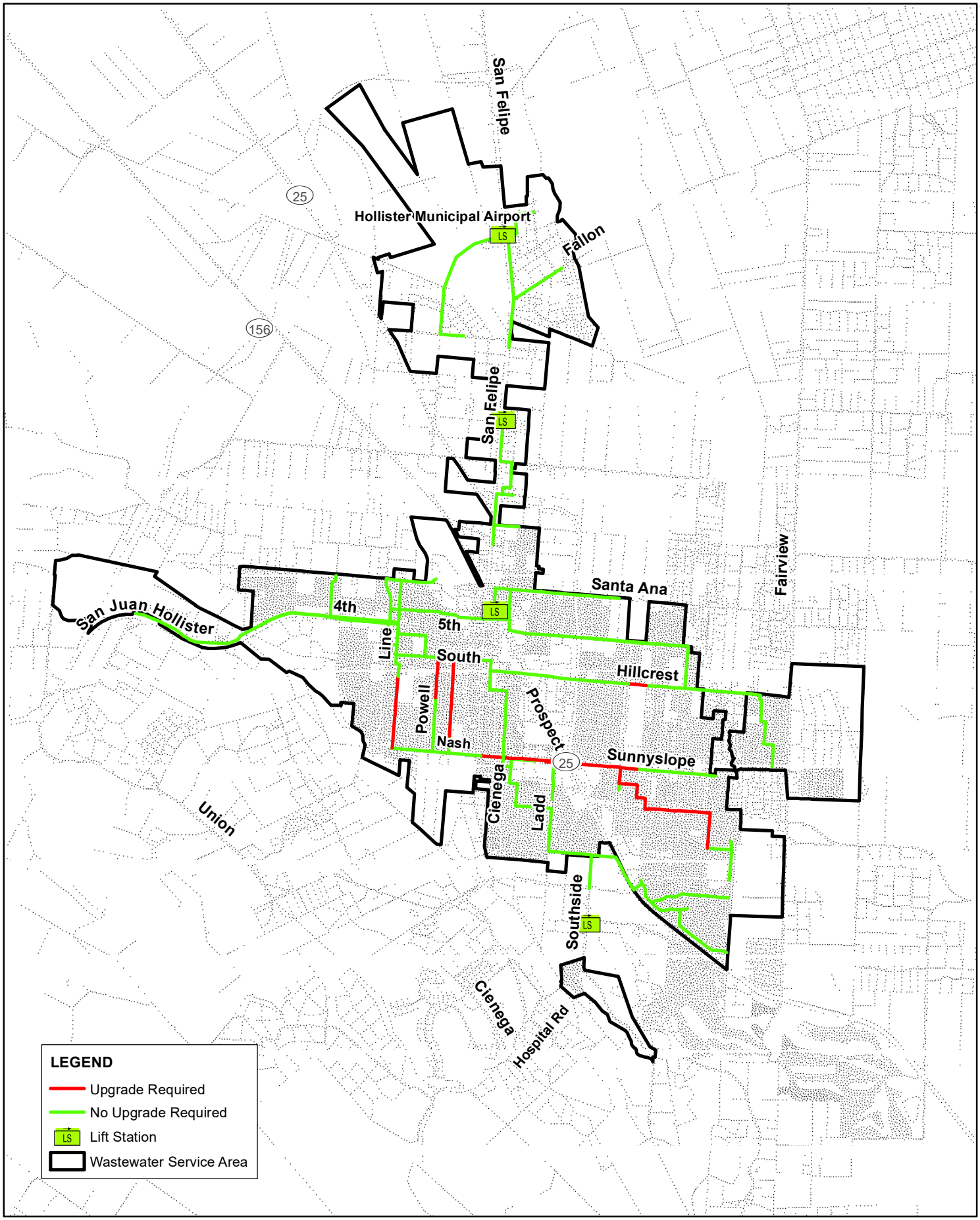
WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 6-2: EXISTING MAXIMUM d/D DURING MDDWF CONDITIONS

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.



WALLACE GROUP

CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES

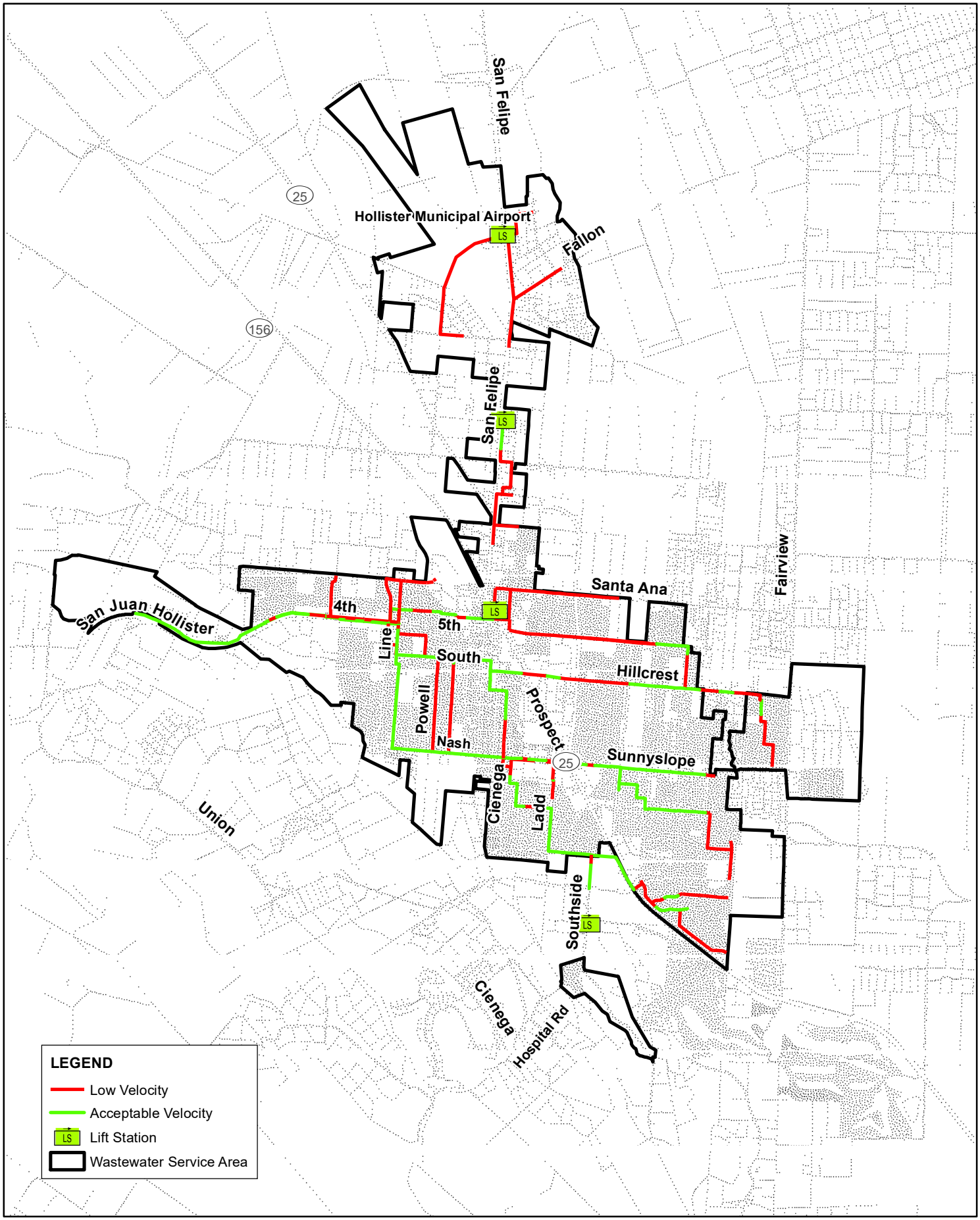
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 6-3: EXISTING MDDWF PIPE DEFICIENCIES

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.



WALLACE GROUP

CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES

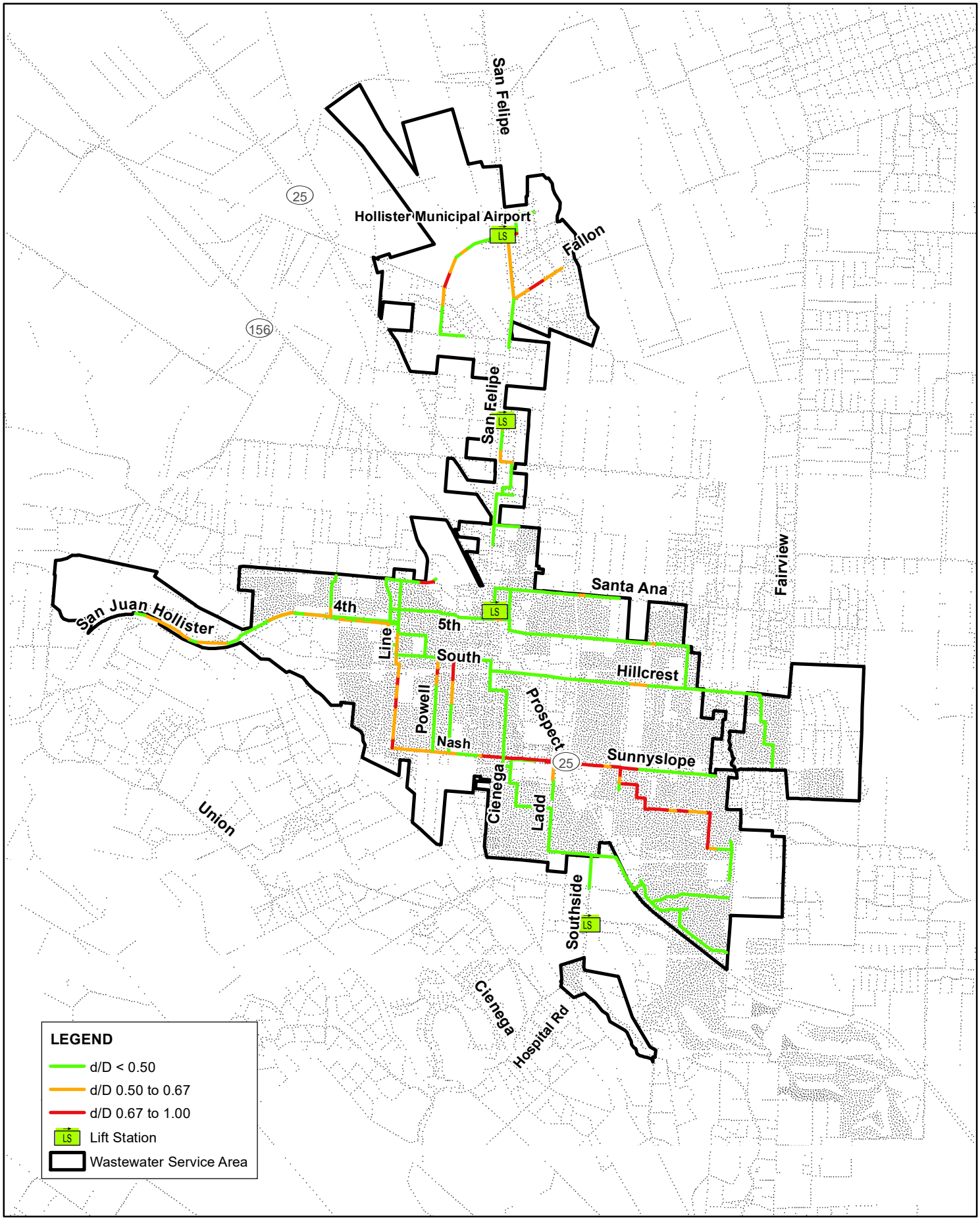
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 6-4: EXISTING ADF
LOW VELOCITY PIPES

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.



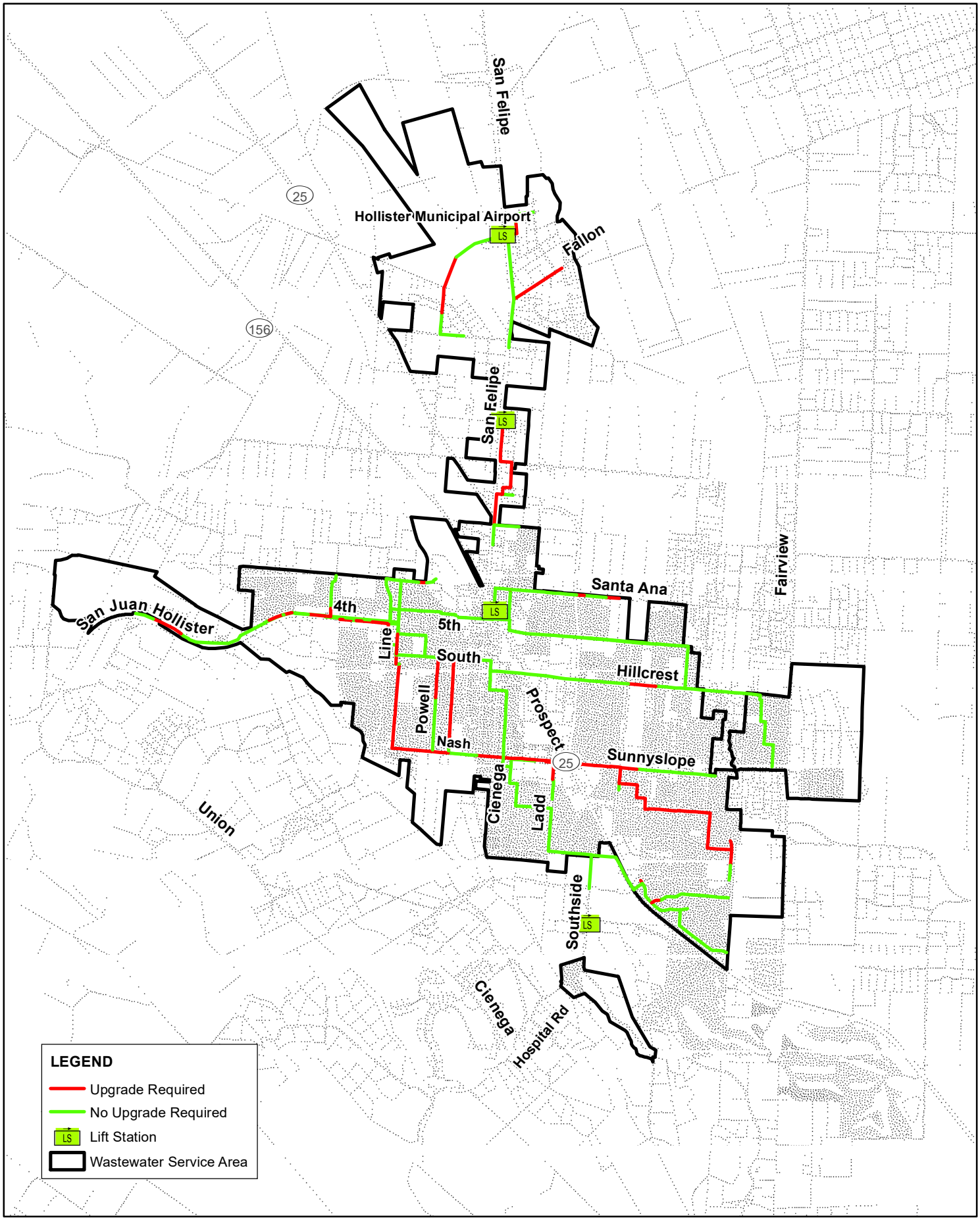
WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 6-5: FUTURE MAXIMUM d/D DURING MDDWF CONDITIONS

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.



WALLACE GROUP

CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES

612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE 6-6: FUTURE MDDWF PIPE DEFICIENCIES

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.

CHAPTER 7
CAPITAL IMPROVEMENT PROGRAM

This Chapter presents the proposed Capital Improvement Program (CIP), with a brief description of the proposed projects and a preliminary cost estimate for each proposed improvement for the City. Also included in the CIP recommendations are general timelines and scheduling for the needed improvements, and general guidelines for cost allocations relative to existing and future developments. As noted in Chapter 3, it is recommended the City incorporate all operational based projects or activities that are identified and updated bi-annually in the SSMP. These operational based projects or activities are not included in the CIP provided in this chapter.

As discussed in Chapter 6, because of the decrease in sewer flows throughout the City since the 2010 master plan was prepared (attributed to conservation efforts during the drought), some of the deficiencies identified in 2010 are no longer deficiencies. However, it is recommended that these deficiencies (and their associated CIPs) remain in the 2017 master plan as a precaution in case sewer flows rebound to 2010 levels. Therefore, the following sections incorporate the results from both the 2010 model and the 2017 model.

BASIS OF CAPITAL IMPROVEMENT PROGRAM COSTS

The capital improvement program (CIP) costs were developed based on engineering judgment, confirmed bid prices for similar work in the Central Coast area, consultation with vendors and contractors, established budgetary unit prices for the work, and other reliable sources. Hard construction costs are typically escalated by a factor of 1.4, to allow budget for "soft costs" that include preliminary engineering, engineering, administration, construction management and inspection costs. Some projects may have factors other than 1.4 depending on project type. All CIP costs are expressed in Year 2017 dollars, using McGraw-Hill ENR Construction Cost Index of **10870** (December 2017). CIP costs were escalated by 25% from the March 2010 values and will need to be escalated to the year or years scheduled for the work. The unit cost for new gravity sewers includes the proposed pipelines, manholes, lateral re-connections, sewer bypassing, traffic control, etc., and all other aspects of sewer system construction.

TIMING OF RECOMMENDED IMPROVEMENTS

This master plan identifies projects triggered by existing deficiencies and projects triggered by future development. The projects that address existing deficiencies are ranked in order of importance, which is discussed in greater detail within this Chapter and shown in Table 7-1. These existing deficiencies are considered Near Term projects and are recommended to be completed within the next 1 to 5 years and are shown in Table 7-2. Near Term CIP that are triggered by existing demands, but also must be upgraded for future flows are identified in Tables 7-1 and 7-2. In these cases the CIP recommendation is the upgrade required to accommodate future flows.

There are also projects that are triggered by potential future development, for which the timing is always difficult to ascertain. These Long Term projects are presented in Table 7-3.

Recommended projects have not been evaluated for potential environmental impacts as a part of this study. Projects will be subject to the requirements of CEQA prior to approval and funding.

CIP RANKING

The near term capital improvement projects were ranked to determine what priority the existing recommended projects should be constructed. Table 7-1 evaluates each of the projects in six categories: overflow to a water body of the state, hydraulic capacity (d/D) in the 2017 Model, hydraulic capacity (d/D) in the 2010 Model, community impact, maintenance hot spots, and cost. Each category was provided a weighted importance factor based on the relative importance of the category. The importance factor is multiplied by the score the project received and then summed together to determine its final score.

*Although the projects are ranked as described above, it should be noted that **all** projects identified in the Near Term CIPs are a result of deficiencies in the existing collection system due to existing needs and are therefore all important to be constructed within the next 1 to 5 years. It is also recommended that the City review these projects periodically to determine if any substantial changes have occurred that may re-prioritize a project to a higher ranking.*

Table 7-2 provides a summary of all the existing recommended CIPs, or Near Term Projects, in order of ranking from Table 7-1. Table 7-2 also provides an estimate of the construction and "soft" costs for each project. The costs are based on engineering judgment, confirmed bid prices for similar work in the Central Coast area, consultation with vendors and contractors, established budgetary unit prices for the work, and other reliable sources. The cost estimates are approximate and should be used for planning purposes only. Actual project costs will vary depending upon economic conditions at the time of construction. As noted previously, these costs are based on Year 2017 dollars (McGraw-Hill ENR Construction Cost Index of **10870**) and need to be escalated to the year or years scheduled for the work.

Table 7-3 provides a summary of the future recommended CIPs, or Long Term Projects, and their estimated costs. Long Term CIPs not triggered by future conditions in the 2017 model are noted in the table and still recommended should sewer flows rebound to the 2010 model future conditions.

Following the tables, project description sheets are provided for each project noted. The project description sheets provide the following information:

- Project name
- Project trigger
- Project benefit
- Project need
- Project cost
- Project schedule
- Project description
- Project map

These description sheets can be used by City Staff in the planning for each project, and for inclusion in fiscal year budget requests.

Exhibits 1 and 2 in Appendix C show the Near Term and Long Term CIPS throughout the City.

UNIT COSTS

Table 7-2 and 7-3 provide costs for the recommended capital improvement projects. The unit costs are based on recent construction costs and engineering judgment. The unit costs for the various pipe diameters are as follows in Table 7-4:

Table 7-4 Unit Cost for Construction of Sewer Mains

Pipe Diameter (inches)	Unit Cost ($/LF)	Notes
8	225	Typical construction
8	295	For projects with heavy traffic control requirements
10	245	Typical construction
10	320	For projects with heavy traffic control requirements
12	255	Typical construction
12	330	For projects with heavy traffic control requirements
12	375	For projects located in trenches with concrete backfill
15	275	Typical construction
15	350	For projects with heavy traffic controls requirements
15	395	For projects located in trenches with concrete backfill
18	295	Typical construction
18	405	For projects with heavy traffic controls requirements
21	315	Typical construction
21	405	For projects with heavy traffic controls requirements
36	500	Typical construction

Projects with heavy traffic control requirements will be identified using the listing of highways, major thoroughfares, major collectors, and collectors as defined in Appendix D of the City's 1992 Design Standards.

Table 7-1. City of Hollister CIP Ranking Matrix

Importance Factor	6	5	4	3	2	1			
	Overflow to Water Body of the State	Design Standard in 2017 Model	Design Standard in 2010 Model	Community Impact	Maintenance Hot Spot	Cost	Impacted By Future Development		
Project Name	Yes - 10 No - 0	Meets Design Standard - 0 Doesn't Meet Design Standards - 2 Surcharging - 5 Overflowing - 10	Meets Design Standard - 0 Doesn't Meet Design Standards - 2 Surcharging - 5 Overflowing - 10	< 1,000 - 0 1,001 to 5,000 - 5 >5,000 - 10	Not Critical - 0 Yearly Check - 5 Weekly or Monthly Checks - 10	<$25,000 - 10 $25,001 to $100,000 - 5 >$100,000 - 2	Yes/No	Score	Ranking
								= Sum of Importance Factor X Points	
Bridge Road Interconnect	0	2	2	10	0	10	No	58	1
Powell Street Sewer Pipe Upgrade	0	5	2	0	10	2	Yes	52	2
West Street Sewer Pipe Upgrade	0	5	2	0	10	2	Yes	52	3
Nash Road Sewer Pipe Upgrade	0	5	2	5	0	2	Yes	47	4
Sunset Drive Sewer Pipe Upgrade	0	5	2	5	0	2	Yes	47	5
GLP Lift Station Upgrades Near Term	0	2	2	0	10	2	No	40	6
Line Street Near Term Sewer Pipe Upgrade	0	2	0	10	0	2	No	40	7
2nd and East Lift Station Upgrades Near Term	0	0	0	0	10	10	No	30	8
Airport Lift Station Upgrades Near Term	0	0	0	0	10	2	No	22	9

Table 7-2. City of Hollister Near Term Capital Improvement Program

Project #	Title	Description	Quantity	Length (Ft)	Old Diameter (in)	New Diameter (in)	Street	Location	Upstream Manhole Number	Downstream Manhole Number	Uprade to Meet Future Needs*	Traffic Control	Construction Cost ($)		Subtotal ($)	Total Project Cost ($)**
1	**Bridge Road Interconnect**	New Pipe	--	30	--	21	Bridge Road	Northeast of Azul Court	WG549	549	Yes	Light	$315	LF	$9,450	**$13,230**
2	**Powell Street Sewer Pipe Upgrade**	Pipe Upgrade	**--**	800	6	10	Powell Street	From Wiebe Way to 7th Street	462	427	Yes	Light	$245	LF	$196,000	$274,400
				400	6	8	Powell Street	From Vali Way to Wiebe Way	459	462	Yes	Light	$225	LF	$90,000	$126,000
			Total Pipe Length	1,200											**Total**	**$400,400**
3	**West Street Sewer Pipe Upgrade**	Pipe Upgrade	**--**	800	6	10	West Street	From SMH 471 to 7th Street	471	428	Yes	Light	$245	LF	$196,000	$274,400
				1,600	6	8	West Street	From B Street to SMH 471	475	471	Yes	Light	$225	LF	$360,000	$504,000
			Total Pipe Length	2,400											**Total**	**$778,400**
4	**Nash Road Sewer Pipe Upgrade**	Pipe Upgrade	**--**	1,000	12	15	Nash Road	From San Benito Street to Prune Street	268	271	Yes	Heavy	$350	LF	$350,000	$490,000
				2,700	12	15	Tres Pinos Road	From Prune Street to Airline Highway	290	268	Yes	Heavy	$350	LF	$945,000	$1,323,000
				1,700	12	15	Sunnyslope Road	From Airline Highway to SMH 259	259	290	Yes	Heavy	$350	LF	$595,000	$833,000
				400	8	12	Sunnyslope Road	From SMH 259 to Memorial Drive	245	259	Yes	Heavy	$330	LF	$132,000	$184,800
			Total Pipe Length	5,800											**Total**	**$2,830,800**
5	**Sunset Drive Sewer Pipe Upgrade**	Pipe Upgrade	**--**	600	8	12	Memorial Drive	From Sunnyslope Road to Cedar Street	207	245	Yes	Heavy	$330	LF	$198,000	$277,200
				700	6	12	Cedar Street	From Memorial Drive to Iris Street	204	207	Yes	Heavy	$330	LF	$231,000	$323,400
				500	6	12	Iris Street	From Cedar Street to Valley View Road	202	204	Yes	Heavy	$330	LF	$165,000	$231,000
				800	6	12	Valley View Drive	From Iris Street to Sunset Drive	188	202	Yes	Heavy	$330	LF	$264,000	$369,600
				600	6	12	Sunset Drive	From Valley View Drive to SMH 190	190	188	Yes	Heavy	$330	LF	$198,000	$277,200
				1,900	6	10	Sunset Drive	From Valley View Drive to Ciera Vista Drive	197	190	Yes	Heavy	$320	LF	$608,000	$851,200
				1,300	6	10	Ciera Vista Drive	From Sunset Drive to Tiburon Drive	199	197	Yes	Heavy	$320	LF	$416,000	$582,400
			Total Pipe Length	6,400											**Total**	**$2,912,000**
6	**GLP LS Upgrades**	Facility Upgrades	1	--	--	--	Frontage Road	Frontage Road 1,500 feet north of McCloskey Road	--	--	No	Light	$349,800	LS	$349,800	**$489,720**
7	**Line Street Near Term Sewer Pipe Upgrade**	Pipe Upgrade	--	3,000	15	18	Line Street	From Nash Road to Mica Court	274	414	Yes	Heavy	$405	LF	$1,215,000	**$1,701,000**
8	**2nd and East LS Upgrades**	Facility Upgrades	1	--	--	--	East Street	At the intersection of 2nd Street and East Street	--	--	No	--	$9,000	LS	$9,000	**$12,600**
9	**Aiport LS Upgrades**	Facility Upgrades	1	--	--	--	San Felipe Road	At Hollister municpal airport	--	--	No	--	$211,200	LS	$211,200	**$295,680**
															TOTAL NEAR TERM PROJECT COSTS	**$9,433,830**

*** If noted "Yes", then the proposed project has existing deficiencies. In addition, upgrades are necessary for future development. The proposed pipe diameter noted in this Table is to meet the capacity needs of future development.**

**** Total includes construction cost plus preliminary engineering, design engineering, administration construction management and inspection costs. Construction costs were developed based on engineering judgment, confirmed bid prices for similar work in the Central Coast area, consultation with vendors and contractors, established budgetary unit prices for the work, and other reliable sources.**

WALLACE GROUP®

Table 7-3. City of Hollister Long Term Capital Improvement Program

Project #	Title	Description	Quantity	Length (Ft)	Old Diameter (in)	New Diameter (in)	Street	Location	Upstream Manhole Number	Downstream Manhole Number	Traffic Control	Construction Cost ($)		Subtotal ($)	Total Project Cost ($)**
1	**Hillcrest Road Sewer Pipe Upgrade**	Pipe Upgrade	--	1,400	8	10	Hillcrest Road	From El Cerro Drive to Memorial Drive	335	330	Heavy	$320	LF	$448,000	**$627,200**
2	**Fallon Road Sewer Pipe Upgrade**	Pipe Upgrade	--	2,200	10	12	Fallon Road	From Shelton Drive to Technology Parkway	485	480	Heavy	$330	LF	$726,000	**$1,016,400**
3	**Kirk Patrick to GLP LS**	Pipe Upgrade	--	1,600	10	12	Frontage Road	From McCloskey Road To GLP Lift Station	WG373	GLP LS	Light	$255	LF	$408,000	$571,200
		Pipe Upgrade	--	500	10	12	McCloskey Road	From McCloskey Road to Frontage Road	WG372	WG373	Light	$255	LF	$127,500	$178,500
		Pipe Upgrade	--	1,700	10	12	Kirk Patrick	From Chappel Road to McCloskey Road	525	WG372	Light	$255	LF	$433,500	$606,900
		Pipe Upgrade	--	500	10	12	San Felipe Road	From SMH 524 to Chappell Road	524	525	Light	$255	LF	$127,500	$178,500
		Total Pipe Length		4,300										**Total**	**$1,535,100**
4	**Line Street Long Term Sewer Pipe Upgrade**	Pipe Upgrade	--	1,600	15	18	Line Street	From Peridot Court to 5th Street	414	406	Heavy	$405	LF	$648,000	$907,200
		Pipe Upgrade	--	1,800	15	18	Nash Road	From West Street to Line SMH 274	281	274	Heavy	$405	LF	$729,000	$1,020,600
		Total Pipe Length		3,400										**Total**	**$1,927,800**
5*	**Aerostar Way Sewer Pipe Upgrade**	Pipe Upgrade	--	1,900	12	15	Aerostar Way	From Airway Drive to SMH 503	494	503	Light	$275	LF	$522,500	**$731,500**
6*	**Miller Road Sewer Pipe Upgrade**	Pipe Upgrade	--	300	8	12	Miller Road	From Shelton Drive to Technology Parkway	485	480	Light	$255	LF	$76,500	**$107,100**
7*	**San Juan Road Sewer Pipe Upgrade**	Pipe Upgrade	--	30	27	36	San Juan Road	At the intersection of Westside Boulevard	543	542	Heavy	$500	LF	$15,000	**$21,000**
8*	**Technology Parkway Sewer Pipe Upgrade**	Pipe Upgrade	--	700	10	12	Technology Parkway	From SMH 488 to SMH 510	488	510	Light	$255	LF	$178,500	**$249,900**
9*	**Aiport LS VFD Upgrade**	Facility Upgrades	1	--	--	--	San Felipe Road	At Hollister municpal airport	--	--	Minimal	$277,500	LS	$277,500	**$388,500**
10*	**GLP LS VFD Upgrade**	Facility Upgrades	1	--	--	--	Frontage Road	Frontage Road 1,500 feet north of McCloskey Road	--	--	Light	$375,000	LS	$375,000	**$525,000**
11*	**2nd and East LS Upgrades**	Facility Upgrades	1	--	--	--	East Street	At the intersection of 2nd Street and East Street	--	--	Light	$8,125	LS	$8,125	**$11,375**
12*	**Cushman Street Sewer Pipe Upgrade**	Pipe Upgrade	--	600	15	18	Cushman Street	From Velado Street to Andrews Drive	177	179	Light	$295	LF	$177,000	**$247,800**
														TOTAL LONG TERM PROJECT COSTS	**$7,388,675**

***Long Term CIPs are not triggered by the 2017 Sewer Model due to decreased sewer flow; however, they are still recommended should sewer flows rebound to the 2010 Sewer Model.**
**** Total includes construction cost plus preliminary engineering, design engineering, administration construction management and inspection costs. Construction costs were developed based on engineering judgment, confirmed bid prices for similar work in the Central Coast area, consultation with vendors and contractors, established budgetary unit prices for the work, and other reliable sources.**

Near Term Project No. 1: Bridge Road Interconnect

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [x] Existing Condition
- [ ] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

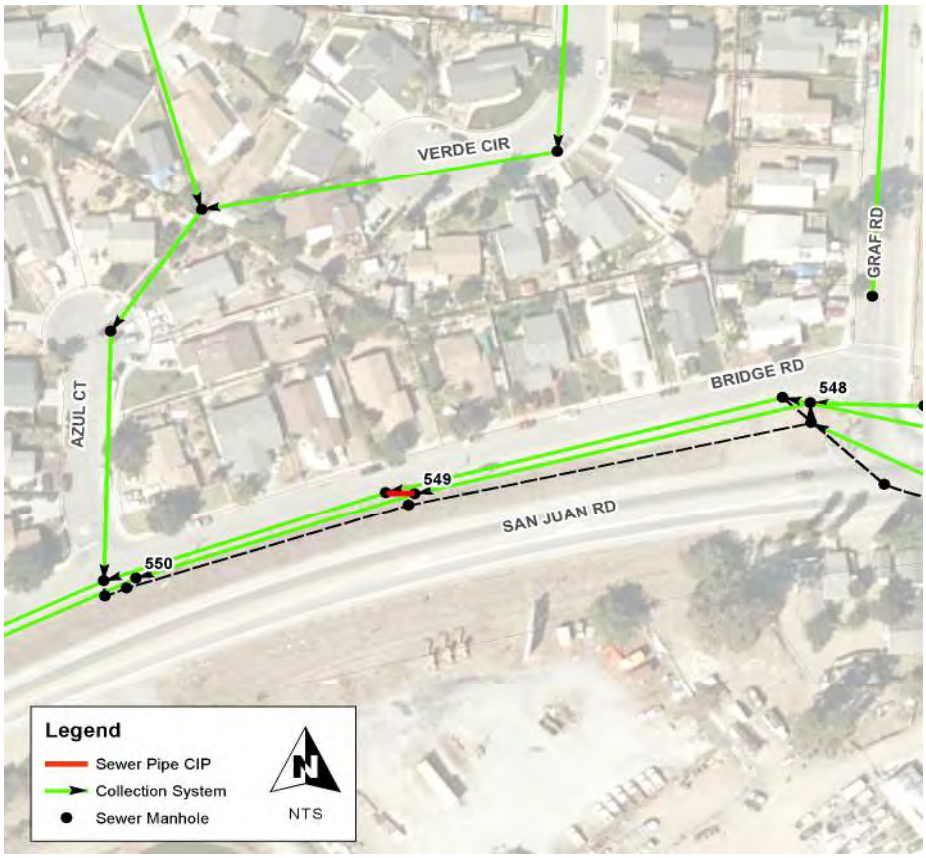
Existing Customers	60%
New Development	40%

Project Components

- [ ] Upgrade Gravity Pipeline
- [x] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 2 weeks



Project Need

- [x] Insufficient capacity for existing flow
- [x] Insufficient capacity for future flow
- [ ] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$9,450
Planning, Engineering, CM, Legal/Admin (40%)	$3,780
Total Project Cost	**$13,230**

Project Description

The Bridge Road Near Term project proposes to add approximately 30 feet of 21-inch pipe between two sewer manholes on the existing parallel 21-inch and 36-inch sewer pipes on Bridge Road. The existing 21-inch runs at 60% to 80% full during existing peak flow conditions and 90% full during future peak flow conditions. It is assumed that wastewater flows are not properly distributed between the parallel sewer pipes. This upgrade would allow for continued use of the existing 21-inch sewer pipe without upgrading the sewer pipe.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Near Term Project No. 2: Powell Street Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [x] Existing Condition
- [ ] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

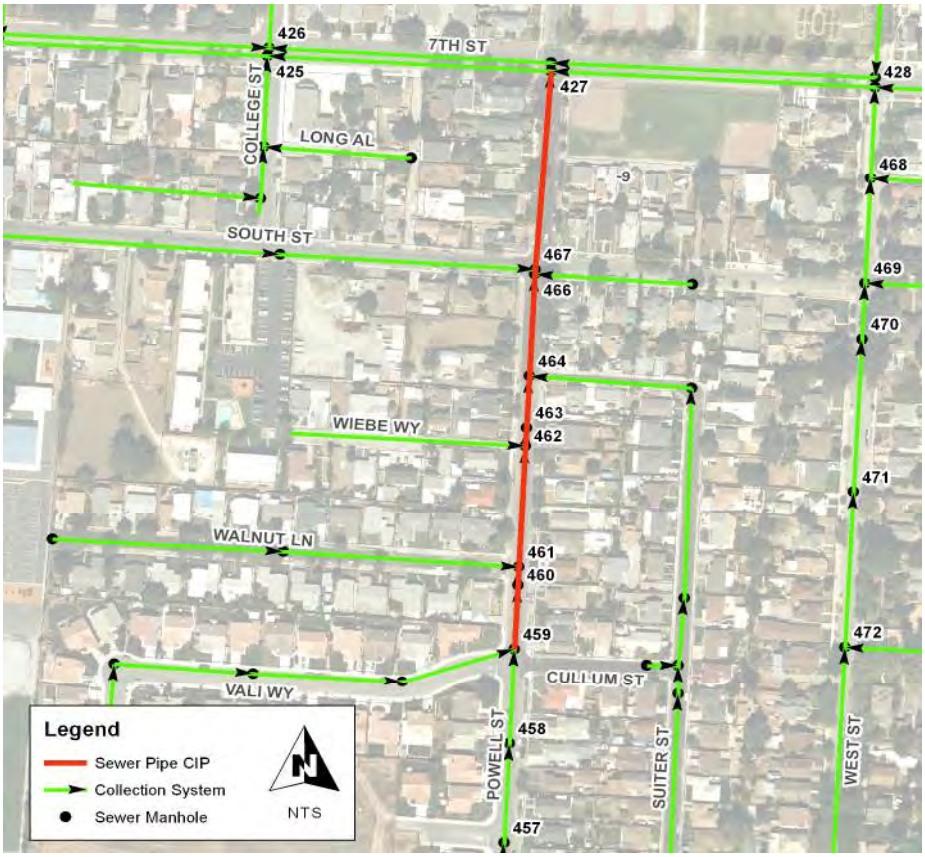
Existing Customers	95%
New Development	5%

Project Components

- [x] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [x] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 6 weeks



Project Need

- [x] Insufficient capacity for existing flow
- [x] Insufficient capacity for future flow
- [ ] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$286,000
Planning, Engineering, CM, Legal/Admin (40%)	$114,400
Total Project Cost	**$400,400**

Project Description

The Powell Street Near Term project proposes to replace approximately 1,200 feet of 6-inch pipe with 8-inch and 10-inch pipe on Powell Street from 7th Street to Vali Way. Powell Street is a known problem area and has insufficient capacity for existing conditions. These pipes segments run 50% to 100% full during existing peak flow conditions. Although these pipe will receive future flow, the pipes will not need to be upsized further to accept future flow conditions since future pipe size recommendations are being used for this near term project.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Near Term Project No. 3: West Street Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [x] Existing Condition
- [ ] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

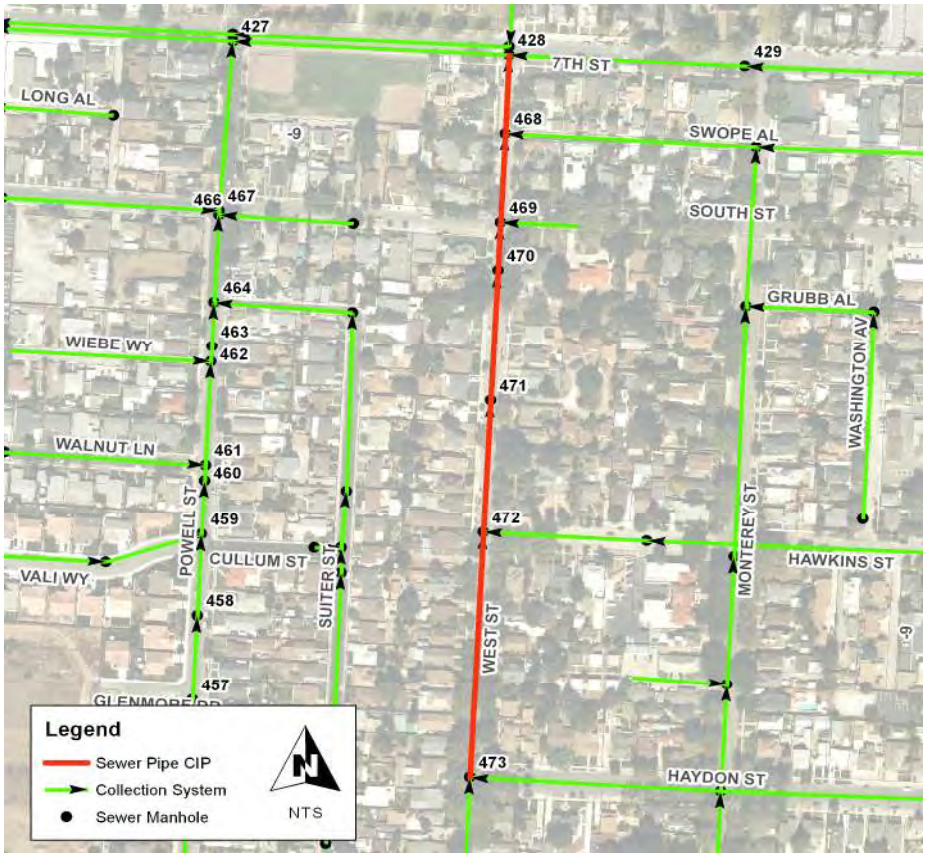
Existing Customers	90%
New Development	10%

Project Components

- [x] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 10 weeks



Project Need

- [x] Insufficient capacity for existing flow
- [x] Insufficient capacity for future flow
- [ ] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$556,000
Planning, Engineering, CM, Legal/Admin (40%)	$222,400
Total Project Cost	**$778,400**

Project Description

The West Street Near Term project proposes to replace approximately 2,400 feet of 6-inch pipe with 8-inch and 10-inch pipe on West Street from 7th Street to Haydon Street. West Street is a known problem area and has insufficient capacity for existing conditions. These pipes segments run 90% to 100% full during existing peak flow conditions. Although these pipe will receive future flow, the pipes will not need to be upsized further to accept future flow conditions since future pipe size recommendations are being used for this near term project.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Near Term Project No. 4: Nash Road Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [x] Existing Condition
- [ ] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

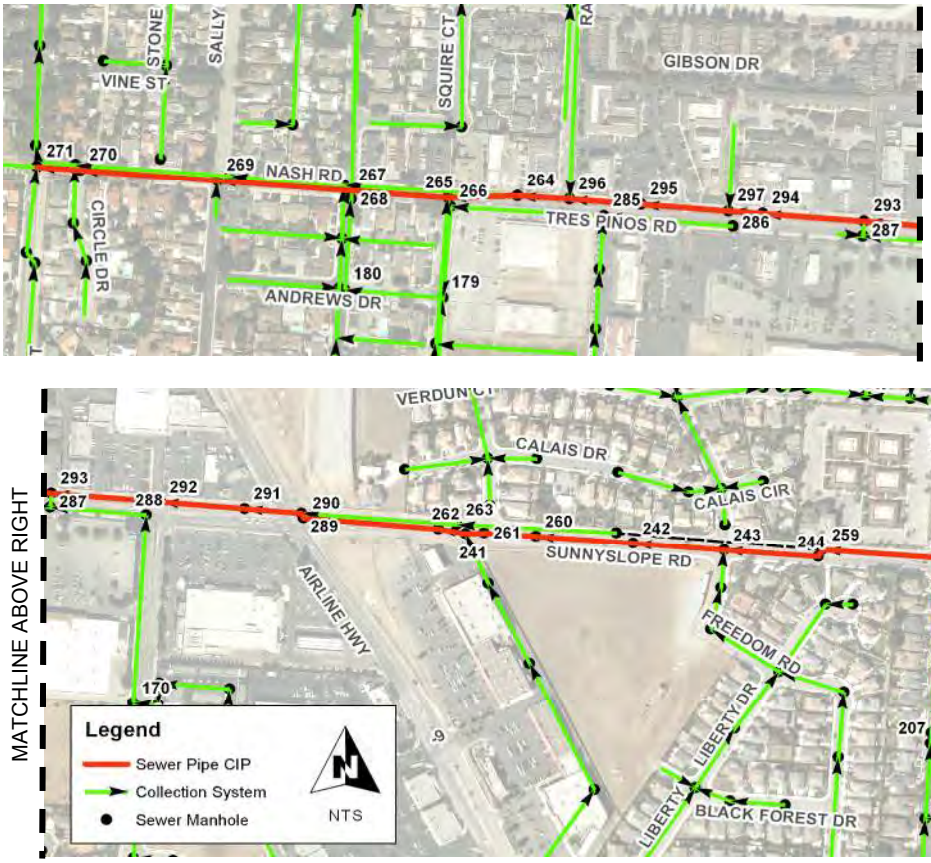
Existing Customers	70%
New Development	30%

Project Components

- [x] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 24 weeks



Project Need

- [x] Insufficient capacity for existing flow
- [x] Insufficient capacity for future flow
- [ ] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$2,022,000
Planning, Engineering, CM, Legal/Admin (40%)	$808,800
Total Project Cost	**$2,830,800**

Project Description

The Nash Road Near Term project proposes to replace approximately 5,400 feet of 12-inch pipe and 400 of 8-inch pipe with 15-inch pipe and 12-inch pipe on Nash Road from San Benito Street to Memorial Drive. These pipes segments run 70% to 100% full during existing peak flow conditions. Although these pipe will receive future flow, the pipes will not need to be upsized further to accept future flow conditions since future pipe size recommendations are being used for this near term project.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Near Term Project No. 5: Sunset Drive Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [x] Existing Condition
- [ ] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

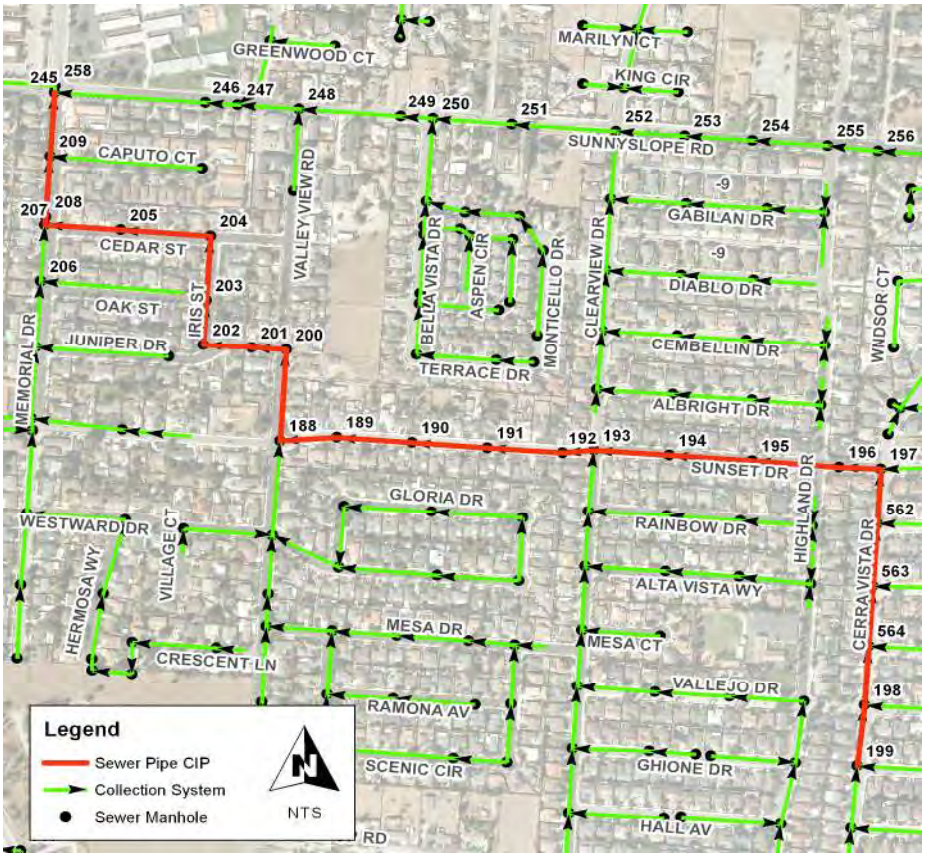
Existing Customers	60%
New Development	40%

Project Components

- [x] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 24 weeks



Project Need

- [x] Insufficient capacity for existing flow
- [x] Insufficient capacity for future flow
- [ ] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$2,080,000
Planning, Engineering, CM, Legal/Admin (40%)	$832,000
Total Project Cost	**$2,912,000**

Project Description

The Sunset Drive Near Term project proposes to replace approximately 5,800 feet of 6-inch pipe and 600 feet of 8-inch pipe with 10-inch pipe and 12-inch pipe along Sunset Drive from Sunnyslope Road to Tiburon Drive. These pipe segments run 50% to 100% full during existing peak flow conditions. Although these pipes will receive future flow, the pipes will not need to be upsized further to accept future flow conditions since future pipe size recommendations are being used for this near term project.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Near Term Project No. 6: GLP Lift Station Upgrade

City of Hollister Capital Improvement Project Information Sheet
2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [x] Existing Condition
- [ ] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

Existing Customers	100%
New Development	0%

Project Components

- [ ] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [x] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [x] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 35 weeks

Project Need

- [ ] Insufficient capacity for existing flow
- [ ] Insufficient capacity for future flow
- [x] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$349,800
Planning, Engineering, CM, Legal/Admin (40%)	$139,920
Total Project Cost	**$489,720**

Project Description

The GLP Lift Station Near Term project proposes the installation of a new wetwell and the conversion of the existing wetwell to an emergeny overflow. The project also proposes a permanent standby generator and an odor control system.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Near Term Project No. 7: Line Street Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [x] Existing Condition
- [ ] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

Existing Customers	70%
New Development	30%

Project Components

- [x] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 12 weeks

Project Need

- [x] Insufficient capacity for existing flow
- [x] Insufficient capacity for future flow
- [ ] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$1,215,000
Planning, Engineering, CM, Legal/Admin (40%)	$486,000
Total Project Cost	**$1,701,000**

Project Description

The Line Street Near Term project proposes to replace approximately 3,000 feet of 15-inch pipe with 18-inch pipe on Line Street from Nash Road to Mica Court. These pipes segments run 75% full during existing peak flow conditions. Although these pipes will receive future flow, the pipes will not need to be upsized further to accept future flow conditions.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Near Term Project No. 8: 2nd and East Lift Station Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [x] Existing Condition
- [ ] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

Existing Customers	100%
New Development	0%

Project Components

- [ ] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [x] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 1 week

Project Need

- [ ] Insufficient capacity for existing flow
- [ ] Insufficient capacity for future flow
- [x] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$9,000
Planning, Engineering, CM, Legal/Admin (40%)	$3,600
Total Project Cost	**$12,600**

Project Description

The 2nd and East Near Term Project proposes to replace an existing slide gate due to corrosion. The slide gate protects the lift station from backflow entering the wetwell through the overflow pipeline.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Near Term Project No. 9: Airport Lift Station Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [x] Existing Condition
- [ ] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

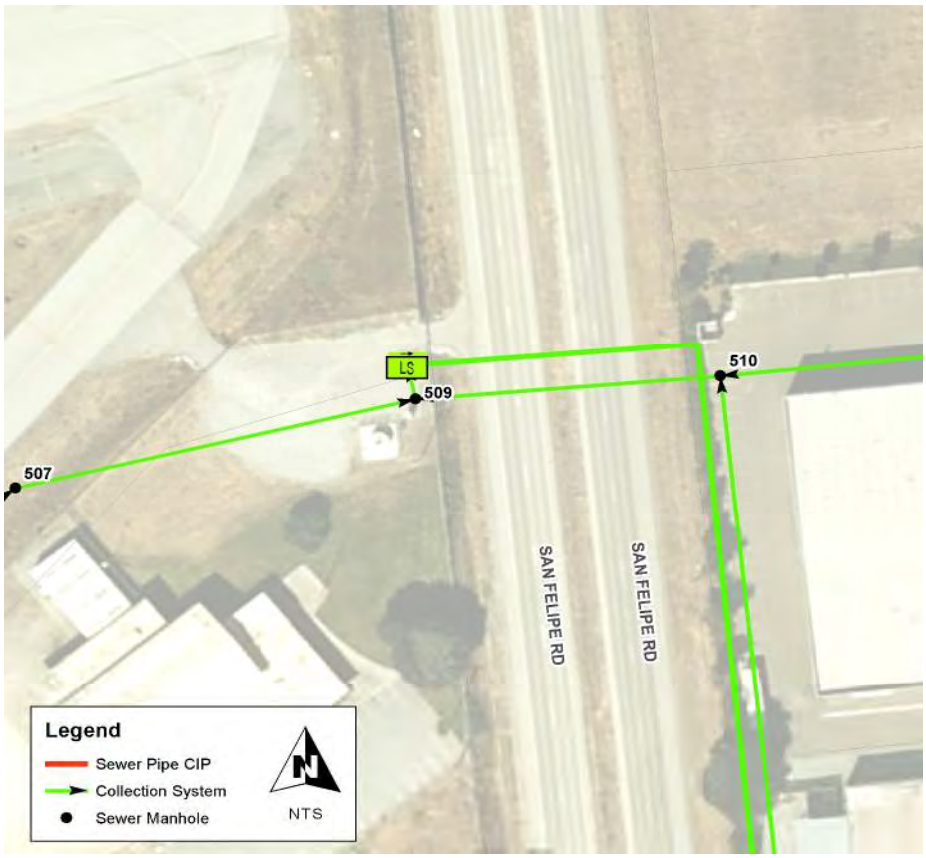
Existing Customers	100%
New Development	0%

Project Components

- [ ] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [x] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [x] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 35 weeks



Project Need

- [ ] Insufficient capacity for existing flow
- [ ] Insufficient capacity for future flow
- [x] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$211,200
Planning, Engineering, CM, Legal/Admin (40%)	$84,480
Total Project Cost	**$295,680**

Project Description

The Airport Lift Station Near Term project proposes a permanent standby generator and overflow wetwell for an emergency overflow situation. The project also proposes to install a blower and odor scrubber adjacent to the wet well to help prevent corrosion of the wet well, pumps, and piping. In addition, it is proposed to prepare a feasibility and cost analysis to determine if the Airport lift station could be upgraded in the future to bypass the GLP lift station and flow to the gravity collection system.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 1: Hillcrest Road Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- ☐ Existing Condition
- ☑ Future Condition

Jurisdiction

- ☑ City of Hollister
- ☐ San Benito County

Project Benefit

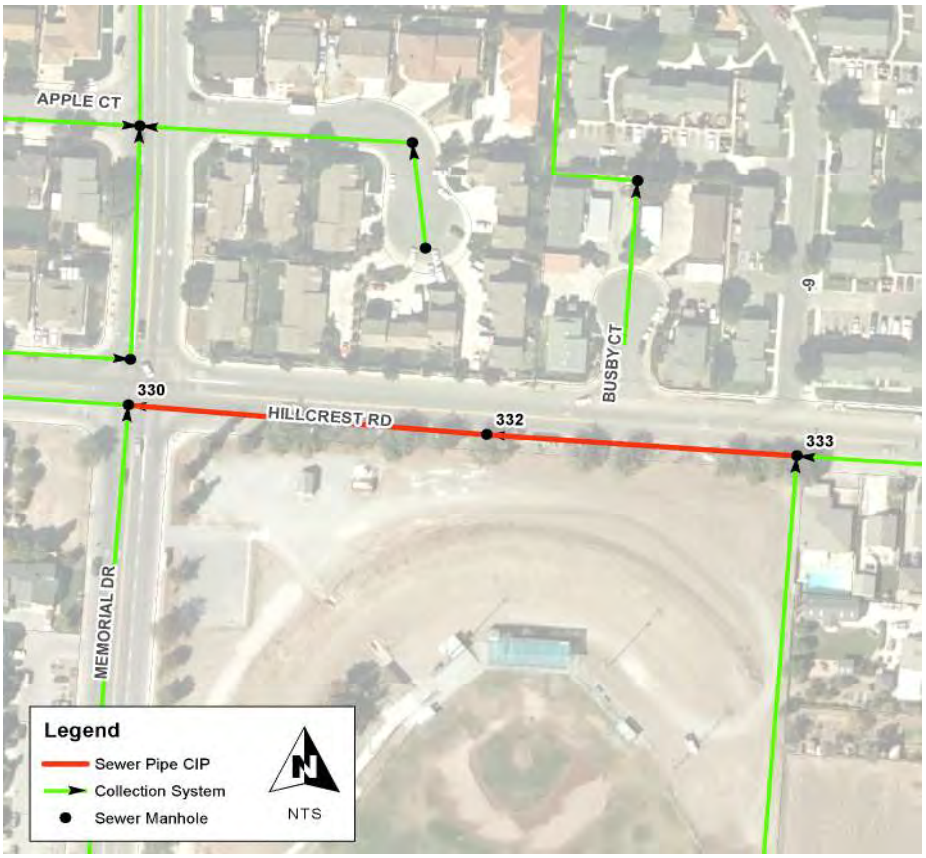
Existing Customers	0%
New Development	100%

Project Components

- ☑ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☐ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole

Project Scheduling

Est. Construction Duration: 6 weeks



Project Need

- ☐ Insufficient capacity for existing flow
- ☑ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$448,000
Planning, Engineering, CM, Legal/Admin (40%)	$179,200
Total Project Cost	**$627,200**

Project Description

The Hillcrest Road Long Term project proposes to replace approximately 1,400 feet of 8-inch pipe with 10-inch pipe on Hillcrest Road from Memorial Drive to Busby Court. These pipe segments run 50% to 70% full during future peak flow conditions. This upgrade increases collection system capacity to serve future flow conditions within the project area.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 2: Fallon Road Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- ☐ Existing Condition
- ☑ Future Condition

Jurisdiction

- ☑ City of Hollister
- ☐ San Benito County

Project Benefit

Existing Customers	0%
New Development	100%

Project Components

- ☑ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☐ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole

Project Scheduling

Est. Construction Duration: 8 weeks

Project Need

- ☐ Insufficient capacity for existing flow
- ☑ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$726,000
Planning, Engineering, CM, Legal/Admin (40%)	$290,400
Total Project Cost	**$1,016,400**

Project Description

The Fallon Road Long Term project proposes to replace approximately 2,200 feet of 10-inch pipe with 12-inch pipe on Fallon Road from Technology Drive to Shelton Drive. These pipe segments run 50% to 70% full during future peak flow conditions. This upgrade increases collection system capacity to serve future flow conditions within the project area.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 3: Kirk Patrick to GLP Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- ☐ Existing Condition
- ☑ Future Condition

Jurisdiction

- ☑ City of Hollister
- ☐ San Benito County

Project Benefit

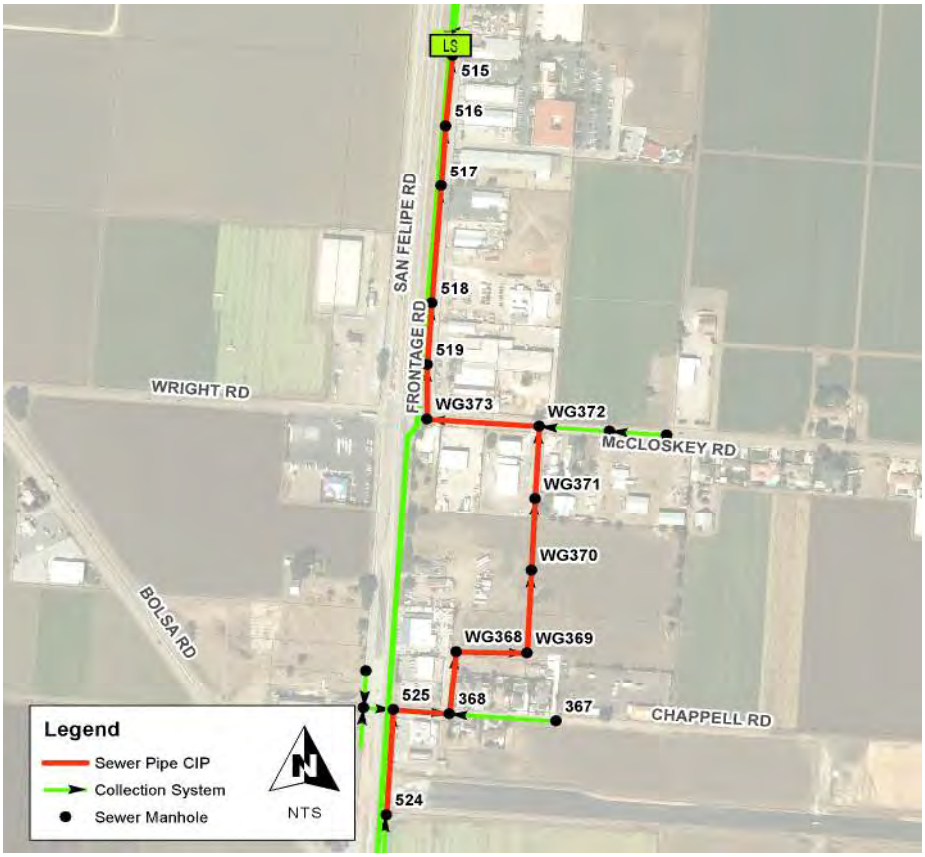
Existing Customers	0%
New Development	100%

Project Components

- ☑ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☐ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole

Project Scheduling

Est. Construction Duration: 20 weeks



Project Need

- ☐ Insufficient capacity for existing flow
- ☑ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$1,096,500
Planning, Engineering, CM, Legal/Admin (40%)	$438,600
Total Project Cost	**$1,535,100**

Project Description

The Kirk Patrick to GLP Lift Station Long Term project proposes to replace approximately 4,300 feet of 10-inch pipe with 12-inch pipe along Kirk Patrick from Chappell Road to GLP Lift Station. These pipe segments run 50% to 80% full during future peak flow conditions. This upgrade increases collection system capacity to serve future flow conditions within the project area.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870 , and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 4: Line Street Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- ☐ Existing Condition
- ☑ Future Condition

Jurisdiction

- ☑ City of Hollister
- ☐ San Benito County

Project Benefit

Existing Customers	0%
New Development	100%

Project Components

- ☑ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☐ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole

Project Scheduling

Est. Construction Duration: 12 weeks

Project Need

- ☐ Insufficient capacity for existing flow
- ☑ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$1,377,000
Planning, Engineering, CM, Legal/Admin (40%)	$550,800
Total Project Cost	**$1,927,800**

Project Description

The Line Street Long Term project proposes to replace approximately 3,400 feet of 15-inch pipe with 18-inch pipe on Nash Road from West Street to Homestead Avenue and Line Street from Peridot Court to 5th Street. These pipe segments run 50% to 80% full during future peak flow conditions. This upgrade increases collection system capacity to serve future flow conditions within the project area. It is recommended that Near Term Project No. 1: Line Street Sewer Pipe Upgrade be completed prior to the completion of this long term project.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 5: Aerostar Way Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- ☐ Existing Condition
- ☑ Future Condition

Jurisdiction

- ☑ City of Hollister
- ☐ San Benito County

Project Benefit

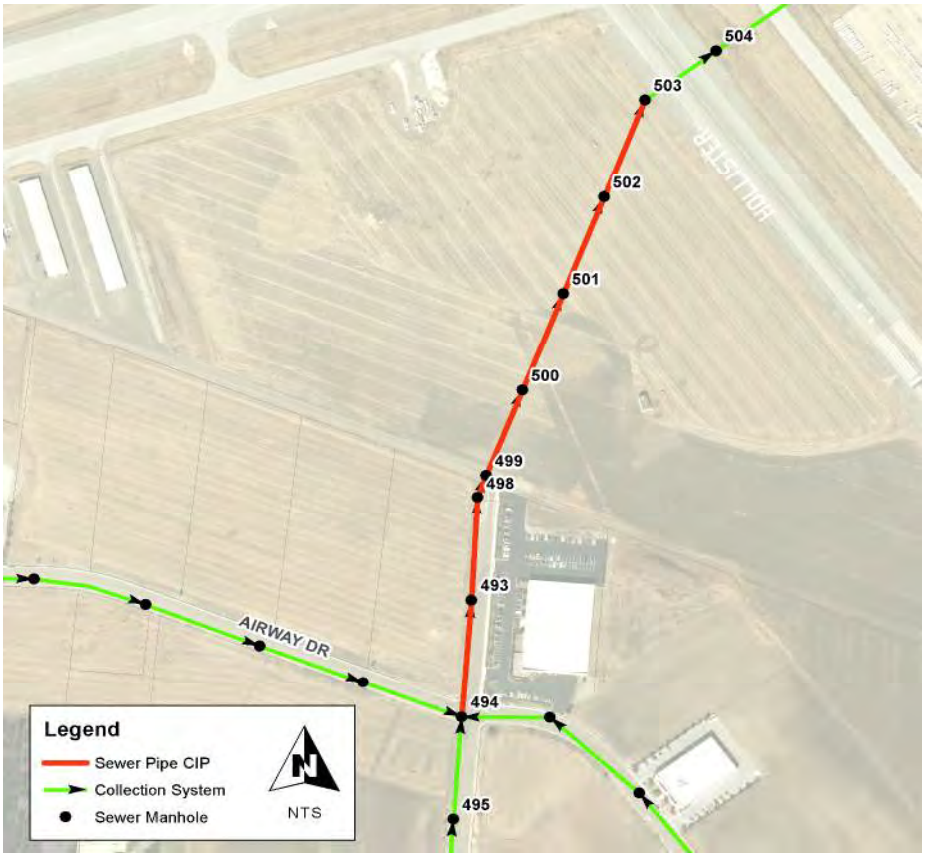
Existing Customers	0%
New Development	100%

Project Components

- ☑ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☐ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole

Project Scheduling

Est. Construction Duration: 8 weeks



Project Need

- ☐ Insufficient capacity for existing flow
- ☑ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$522,500
Planning, Engineering, CM, Legal/Admin (40%)	$209,000
Total Project Cost	**$731,500**

Project Description

The Aerostar Way Long Term project proposes to replace approximately 1,900 feet of 12-inch pipe with 15-inch pipe on Aerostar Way from Airway Drive north to the airport. These pipe segments run 70% to 90% full during future peak flow conditions. This upgrade increases collection system capacity to serve future flow conditions within the project area.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 6: Miller Road Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- ☐ Existing Condition
- ☑ Future Condition

Jurisdiction

- ☑ City of Hollister
- ☐ San Benito County

Project Benefit

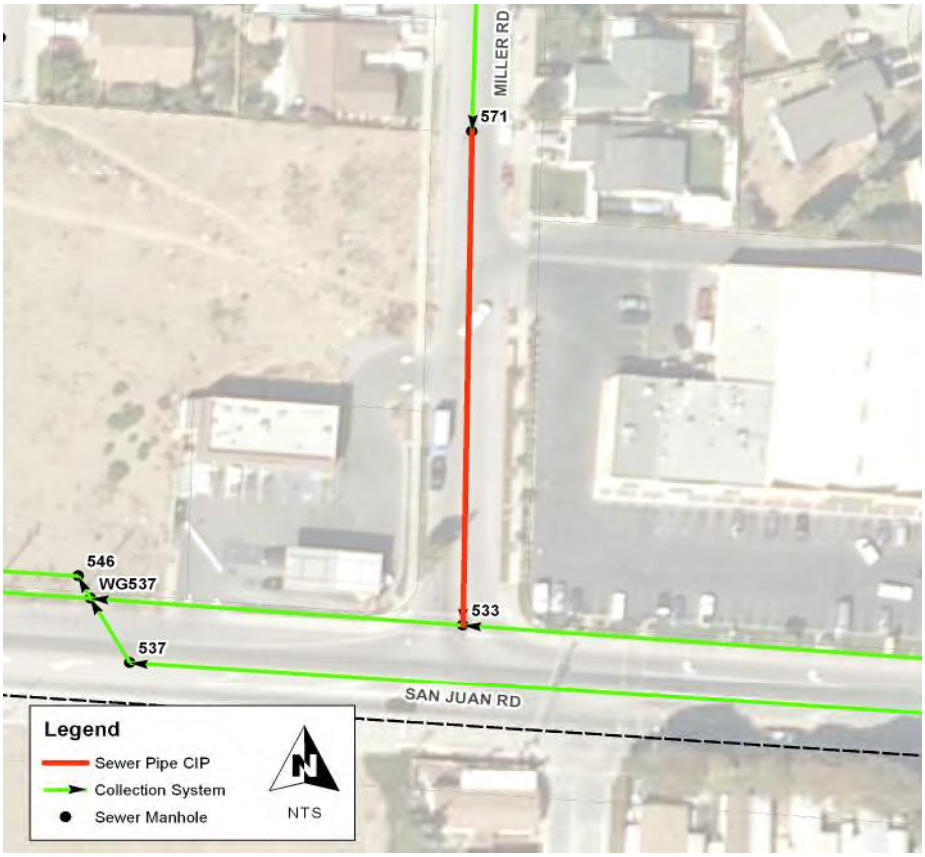
Existing Customers	0%
New Development	100%

Project Components

- ☑ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☐ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole

Project Scheduling

Est. Construction Duration: 2 weeks



Project Need

- ☐ Insufficient capacity for existing flow
- ☑ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$76,500
Planning, Engineering, CM, Legal/Admin (40%)	$30,600
Total Project Cost	**$107,100**

Project Description

The Miller Road Long Term project proposes to replace approximately 300 feet of 8-inch pipe with 12-inch pipe from San Juan Road north on Miller Road. This pipe segment runs 65% full during future peak flow conditions. This upgrade increases collection system capacity to serve future flow conditions within the project area.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 7: San Juan Road Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [ ] Existing Condition
- [x] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

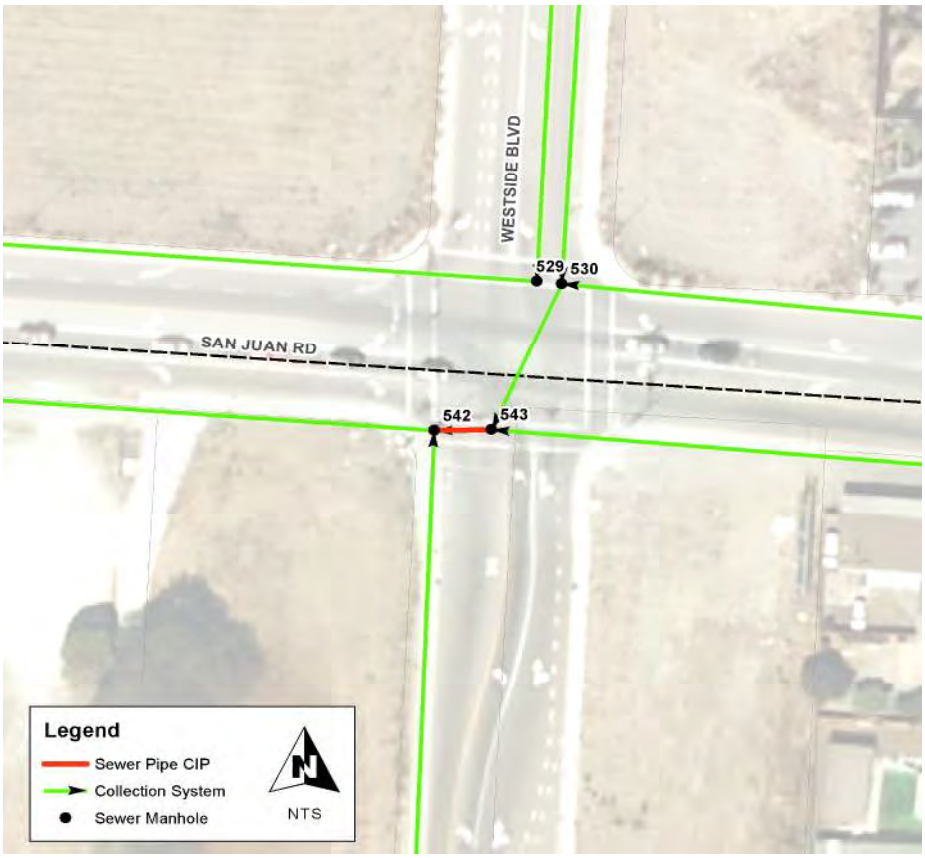
Existing Customers	0%
New Development	100%

Project Components

- [x] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 1 weeks



Project Need

- [ ] Insufficient capacity for existing flow
- [x] Insufficient capacity for future flow
- [ ] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$15,000
Planning, Engineering, CM, Legal/Admin (40%)	$6,000
Total Project Cost	**$21,000**

Project Description

The San Juan Road Long Term project proposes to replace approximately 30 feet of 27-inch pipe with 36-inch pipe on San Juan Road at Westside Boulevard. This is a short pipe segment that receives upstream flow from existing 27-inch and 36-inch pipes. This pipe segment runs at 85% full once all existing and future upstream improvements are in place.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 8: Technology Parkway Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [ ] Existing Condition
- [x] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

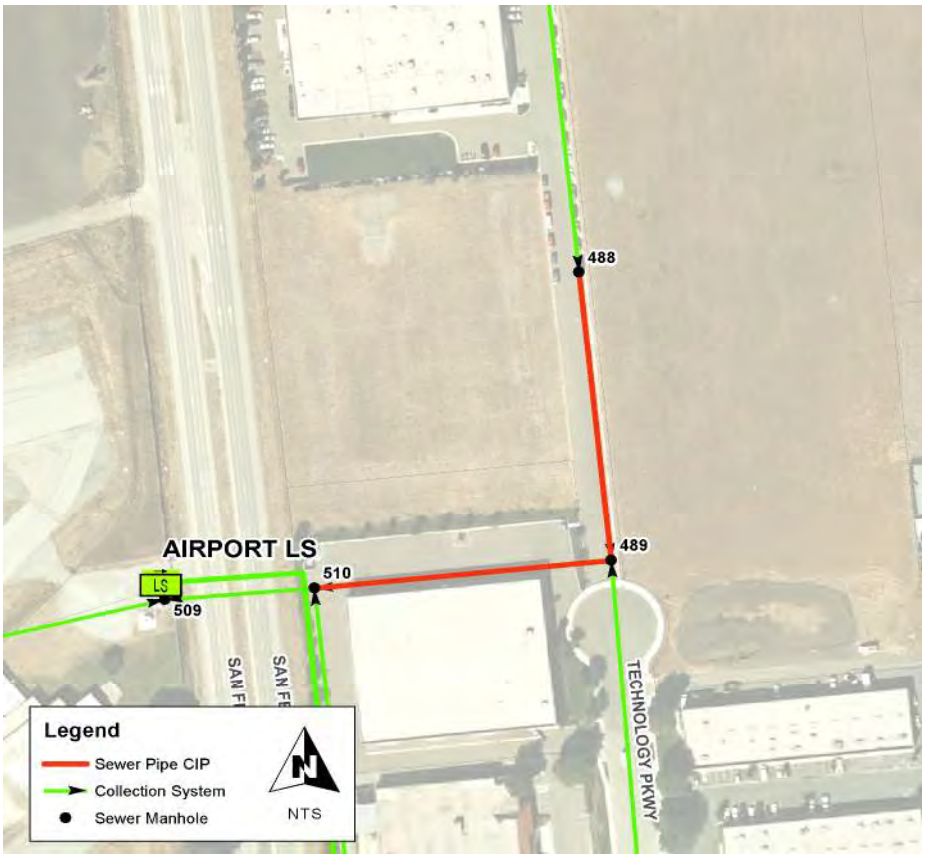
Existing Customers	0%
New Development	100%

Project Components

- [x] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 3 weeks



Project Need

- [ ] Insufficient capacity for existing flow
- [x] Insufficient capacity for future flow
- [ ] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$178,500
Planning, Engineering, CM, Legal/Admin (40%)	$71,400
Total Project Cost	**$249,900**

Project Description

The Technology Parkway Long Term project proposes to replace approximately 700 feet of 10-inch pipe with 12-inch pipe at Technology Road. These pipe segments run 50% to 80% full during future peak flow conditions. This upgrade increases collection system capacity to serve future flow conditions within the project area.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No.9: Airport Lift Station Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- ☐ Existing Condition
- ☑ Future Condition

Jurisdiction

- ☑ City of Hollister
- ☐ San Benito County

Project Benefit

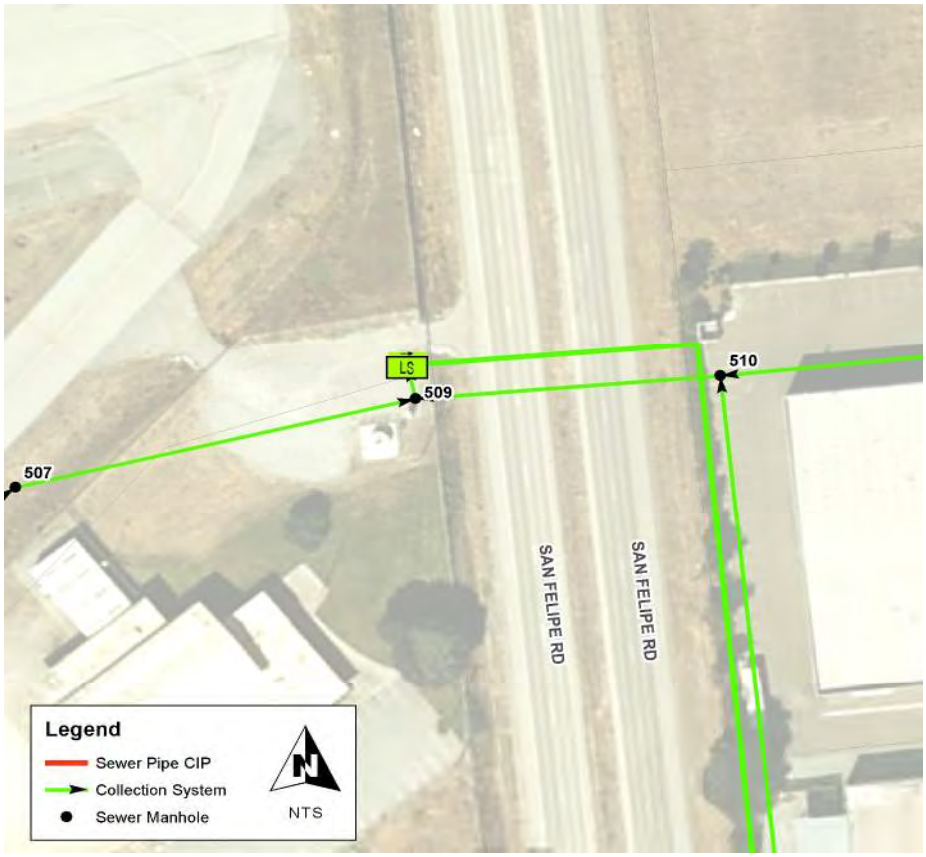
Existing Customers	0%
New Development	100%

Project Components

- ☐ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☑ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole

Project Scheduling

Est. Construction Duration: 30 weeks



Project Need

- ☐ Insufficient capacity for existing flow
- ☑ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$277,500
Planning, Engineering, CM, Legal/Admin (40%)	$111,000
Total Project Cost	**$388,500**

Project Description

The Airport Lift Station Long Term project proposes to replace the existing lift station with three new VFD operated submersible pumps capable of providing service for future flows. The installation of VFDs will minimize impact to the GLP Lift Station and downstream collection system due to potential increased flow from the Airport Lift Station.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 10: GLP Lift Station Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- ☐ Existing Condition
- ☑ Future Condition

Jurisdiction

- ☑ City of Hollister
- ☐ San Benito County

Project Benefit

Existing Customers	0%
New Development	100%

Project Components

- ☐ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☑ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☐ Inspection and/or analysis
- ☐ Replace Manhole

Project Scheduling

Est. Construction Duration: 30 weeks

Project Need

- ☐ Insufficient capacity for existing flow
- ☑ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☐ Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$375,000
Planning, Engineering, CM, Legal/Admin (40%)	$150,000
Total Project Cost	**$525,000**

Project Description

The GLP Lift Station Long Term project proposes to upgrade the existing lift station with three new VFD operated submersible pumps capable of providing service for future flows. The installation of VFDs will minimize impact to the downstream collection system due to potential increased future flows.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 11: 2nd and East Lift Station Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- ☐ Existing Condition
- ☑ Future Condition

Jurisdiction

- ☑ City of Hollister
- ☐ San Benito County

Project Benefit

Existing Customers	0%
New Development	100%

Project Components

- ☐ Upgrade Gravity Pipeline
- ☐ New Gravity Pipeline
- ☐ Upgrade Lift Station
- ☐ Upgrade Force Main
- ☐ Rehabilitation/Repair
- ☑ Inspection and/or analysis
- ☐ Replace Manhole

Project Scheduling

Est. Construction Duration: 2 weeks

Project Need

- ☐ Insufficient capacity for existing flow
- ☐ Insufficient capacity for future flow
- ☐ Existing condition limits O&M
- ☑ Monitor capacity and performance

Project Cost Breakdown

Construction Cost[1]	$8,125
Planning, Engineering, CM, Legal/Admin (40%)	$3,250
Total Project Cost	**$11,375**

Project Description

The 2nd and East Lift Station Long Term project proposes to perform a pump test and physical evaluation of the lift station to monitor performance and capacity as future services contribute to this lift station. Project cost does not include any required upgrades or rehabilitation.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

Long Term Project No. 12: Cushman Street Sewer Pipe Upgrade

City of Hollister Capital Improvement Project Information Sheet

2017 Sanitary Sewer Collection System Master Plan Update

Project Trigger

- [ ] Existing Condition
- [x] Future Condition

Jurisdiction

- [x] City of Hollister
- [ ] San Benito County

Project Benefit

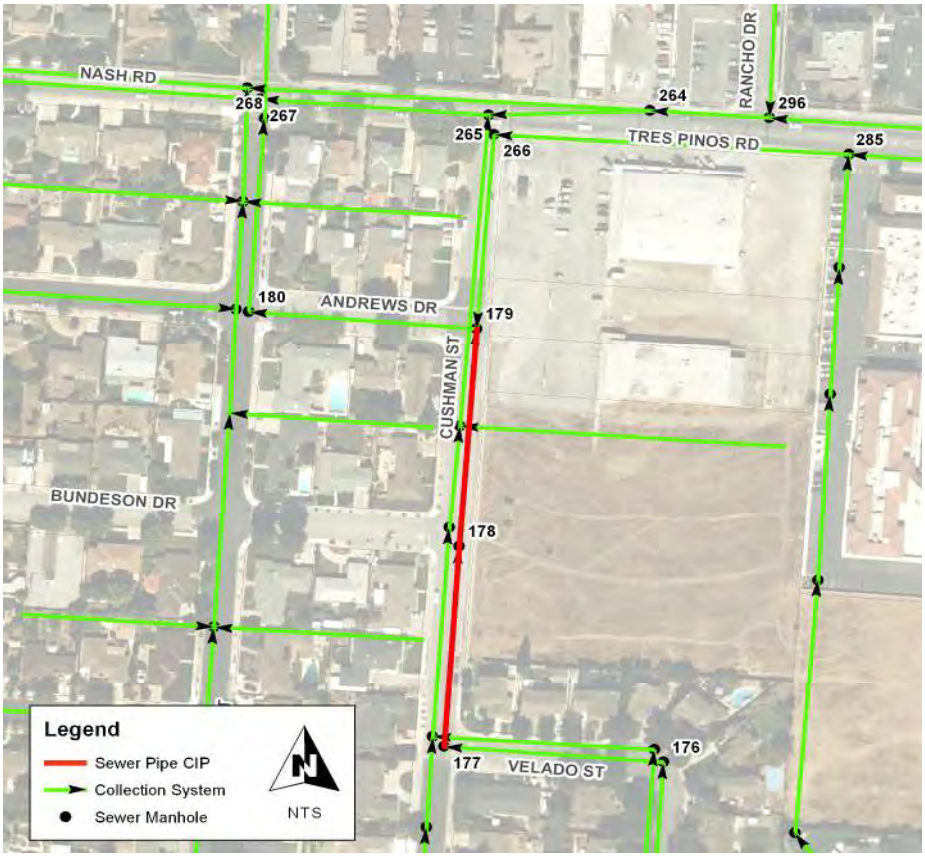
Existing Customers	0%
New Development	100%

Project Components

- [x] Upgrade Gravity Pipeline
- [ ] New Gravity Pipeline
- [ ] Upgrade Lift Station
- [ ] Upgrade Force Main
- [ ] Rehabilitation/Repair
- [ ] Inspection and/or analysis
- [ ] Replace Manhole

Project Scheduling

Est. Construction Duration: 3 weeks



Project Need

- [ ] Insufficient capacity for existing flow
- [x] Insufficient capacity for future flow
- [ ] Existing condition limits O&M
- [ ] Consolidate parallel sewer mains

Project Cost Breakdown

Construction Cost[1]	$177,000
Planning, Engineering, CM, Legal/Admin (40%)	$70,800
Total Project Cost	**$247,800**

Project Description

The Cushman Street Long Term project proposes to replace approximately 600 feet of 15-inch pipe with 18-inch pipe from Velado Street to Andrews Drive. With all existing and future improvement in place throughout the City, these pipe segments run 80% to 90% full during future peak flow conditions with the additional flow contributions from Ridgemark and Cielo Vista Estates. It is recommended that all downstream improvements are in place prior to the completion of this project. This upgrade increases collection system capacity to serve future flow conditions from Ridgemark and Cielo Vista Estates.

1. Construction costs are expressed in Year 2017 dollars, using an ENR construction Cost Index of 10870, and will need to be escalated to the year or years scheduled for the work.

PREPARED BY:
Wallace Group
www.wallacegroup.us
San Luis Obispo, CA

CHAPTER 8
OPERATIONS AND MAINTENANCE RESOURCE ASSESSMENT

This Chapter presents an analysis of the City's Operations and Maintenance (O&M) Program for the sanitary sewer collection system, including current and forecasted resource and staffing needs.

BASIS OF OPERATIONS AND MAINTENANCE PROGRAM ANALYSIS

The operations and maintenance (O&M) program analysis is based on a comparison of the City's Sanitary Sewer Management Plan (SSMP), which outlines the activities required to operate and maintain the City's sewer collection system to the City's current O&M activities. Phone interviews with City staff were conducted, as well as follow up emails for clarifications to understand the current City operations. Recommendations are provided based on if current O&M activities are meeting the City's goals and objectives or if additional staffing and/or resources are needed. In addition, there are several elements from the SSMP that the City is currently in the initial stages of implementation and/or have not yet implemented. For these programs, estimations of the staffing and resources required for start-up as well as on-going annual efforts following start-up are provided.

Information was analyzed and compiled into the following groups:

- Current Staffing
- Sewer System Management Plan Reviews
- Training
- Design and Construction Standards
- Community Outreach and Education
- New Development Review
- Customer Service Calls
- After Hour Calls (Emergency Response)
- Routine Cleaning, Hot Spots, CCTV Inspections, and Manhole Inspections
- Lift Station Cleaning, Inspection, and Testing
- Mapping, GIS and Work History Programming
- FOG Program (To Be Developed)
- Sewer Lateral Repairs
- Equipment Requirements

A summary of the overall resources is provided at the end of the chapter. The costs and estimated hours associated with the recommendations herein were developed based on engineering judgment, the City's current budget, and comparison to other similar public agencies.

CURRENT STAFFING

As with many smaller public agencies, City staff is often shared between departments (sewer, storm, and water). Table 8-1 provides a listing of the City Staff responsible for sewer O&M, their primary responsibilities, and their approximate percentage of working hours currently dedicated to sewer management, engineering or operations tasks for the sewer collection system per year. The remaining hours not shown in this Table are dedicated to

other City functions such as water, storm, airport, etc. In addition, the City hires temporary staff to assist in seasonal work such as vegetation clearing. These hours are not included in this analysis. It is also important to note that funding for the City's wastewater collection and conveyance system is funded through the City Enterprise Fund which covers expenditures for sewer collection, conveyance and wastewater treatment. Wastewater treatment is and associated staffing needs are not addressed in this analysis. The City's organizational chart is provided in Figure 8-1.

The number of working hours for City ranges for employees based on the number of years the employee has worked for the City. Working hours does not include overtime or on-call time. A Full-Time Equivalent (FTE) is equal to 2,080 hours per year. The City's benefits are as follows:

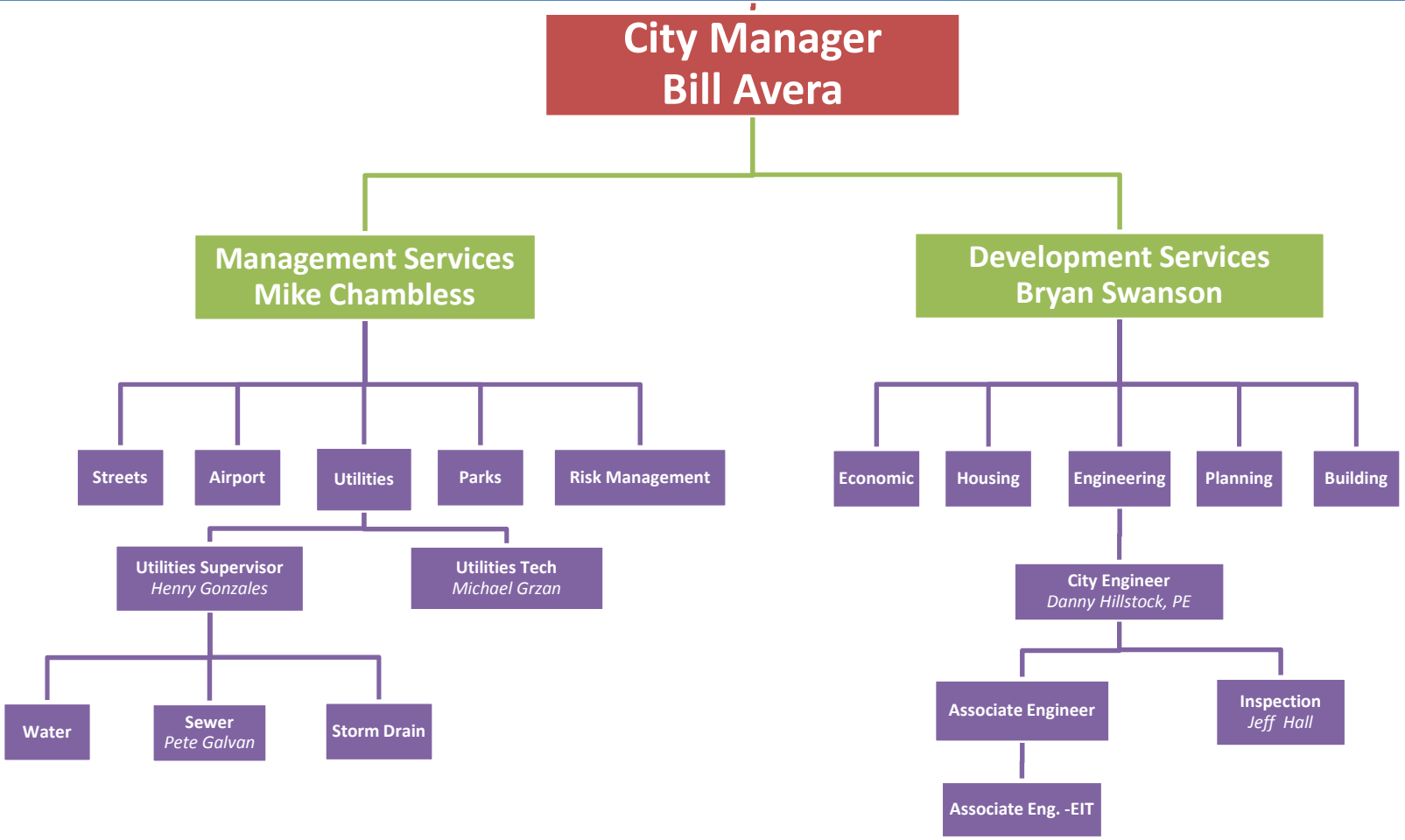
- Holiday: 10.5 paid holiday days = 84 hours
- Sick: 12 days = 96 hours
- Vacation: Ranges depending on years of service between 10 and 25 days = 80 to 200 hours. For the purposes of this report, an average of 120 hours for vacation will be used
- Administrative Leave and/or Comp Time (in lieu of overtime): 150 hours

Based on the benefits identified above, the total available working hours for City employees is 1,630 hours (2,080-84-96-120-150 = 1,630 hours). Therefore, a FTE for the purposes of this report is 1,630 working hours.

Table 8-1 Current Staffing Descriptions					
Staff Title	**Primary Responsibilities**	**Current Full Time Equivalents**	**% Dedicated to Sewer Activities**	**Estimated Total Available Hours**	**Total Employee Available Hours**
City Manager	Overall executive decisions, reports to City Council (administrative fee)	1	10	165	165
Development Services Department Head	Oversees Engineering and Planning staff, responds to public , oversees all CIP projects (administrative fee)	1	15	245	245
Management Services Department Head	Oversees utilities staff and airport functions. Oversees all regulatory compliance for water, sewer and storm water, manages all utility O&M projects	1	25	410	410
City Engineer	Reports to Engineering Department Head, oversees development, responsible for standards,	1	25	410	410
Associate Engineer (Utilities)	Manages all utility Capital Improvement Projects for water, sewer and storm water	1	20	326	326
Utilities Technician	Assists Management Services Director, Maintains GIS	1	50	815	815
Utilities Supervisor	Oversees Utility Staff	1	40	652	652
Maintenance Worker III (Sewer Lead Worker)	Reports to Utilities Supervisor, performs all O&M activities	1	100	1,630	1,630
Maintenance Worker II	Reports to Utilities Supervisor, works with Maintenance Worker III, performs O&M activities	4	100	1,630	6,520
Maintenance Worker I	Reports to Utilities Supervisor, works with Maintenance Worker II, performs O&M activities	2	100	1,630	3,260
Maintenance Worker (Temp)	Reports to Utilities Supervisor, works with Maintenance Worker II, performs O&M activities	2	100	1,630	3,260
Administrative Assistant	Assists either utilities or engineering departments with management, filing, customer service, organization, etc.	2	50	815	1,630

City of Hollister

Figure 8-1 Organizational Chart



SEWER SYSTEM MANAGEMENT PLAN (SSMP) REVIEWS

A requirement of the State Water Resources Control Board (SWRCB) is to prepare, implement, audit and update a SSMP based on the timeline guidelines provided by the SWRCB. The City has completed the SSMP and is now required to review and revise this plan as necessary every year. The SSMP must be audited every two years and formally updated and re-certified by the City Council every 5 years.

Regular reviews of the SSMP help keep the SSMP relevant, compliant with statewide sewer system requirements, and can identify issues in the collection system or other areas of the operations before they become problematic. Table 8-2 provides a summary of the estimated number of hours that are recommended for staff for the annual reviews and bi-annual Audits. In addition, Table 8-2 provides a summary of the hours required for completion of the 5-year Update. The Bi-annual Audit and the 5-Year update are assumed to be completed by a consultant and should be included in the City's annual budget; however, staff time is still required to be dedicated to coordinating with the consultant and reviewing the SSMP.

Table 8-2 SSMP Reviews

Staff Title	Current Full Time Equivalents	Annual Reviews	Bi-Annual Audit (Next Due 8/2017)	5-Year Update & Bi-Annual Audit (Next Due 8/2019)
City Manager	1	4	2	8
Development Services Department Head	1	4	2	8
Management Services Department Head	1	24	18	44
City Engineer	1	4	2	8
Associate Engineer (Utilities)	1	0	0	0
Utilities Technician	1	10	10	20
Utilities Supervisor	1	10	10	20
Maintenance Worker III (Sewer Lead Worker)	1	8	4	10
Maintenance Worker II	4	6	4	10
Maintenance Worker I	2	0	0	0
Maintenance Worker (Temp)	2	0	0	0
Administrative Assistant	2	4	2	8

TRAINING

Training staff at all levels is an essential tool for the City to keep staff up to date on current standards of practice in the industry, protect against injury, and ensure that all personnel are kept apprised of the goals and objectives of the City. Currently, staff does not receive sufficient training (approximately 3 hours per year) to meet the above goals. Table 8-3 provides a summary of the hours recommended for training for sewer activities to comply with the elements of the SSMP and basic safety requirements. Additional training will be required for staff that are responsible for other aspects of the City including management, storm, water, airport, etc.

Table 8-3 Training

Staff Title	Current Full Time Equivalents	Cal OSHA	IIPP	CIWQs	Continuing Education	SSMP SOP/EOP	Total Hours
		Hours per FTE					
City Manager	1	0	4	0	0	4	8
Development Services Department Head	1	0	4	0	0	4	8
Management Services Department Head	1	0	4	4	24	24	56
City Engineer	1	0	4	0	24	4	32
Associate Engineer (Utilities)	1	0	4	0	0	0	4
Utilities Technician	1	0	4	4	24	8	40
Utilities Supervisor	1	20	4	4	24	24	76
Maintenance Worker III (Sewer Lead Worker)	1	20	4	4	16	24	68
Maintenance Worker II	4	20	4	4	16	24	272
Maintenance Worker I	2	20	4	4	16	24	136
Maintenance Worker (Temp)	2	20	4	4	16	24	136
Administrative Assistant	2	8	4	0	8	8	56

IIPP – Injury and Illness Prevention Plan
SOP – Standard Operating Procedures
EOP – Emergency Operating Procedures

DESIGN AND CONSTRUCTION STANDARDS

The City Engineer is recommended to periodically review the sewer-related design and construction standards including standards notes, details, front-end specifications, and technical specifications, and update the standards as needed. At this time, the engineering standards are dated 1995. It is recommended that the City Engineer update the standards to meet current engineering practice. Once updated, the standards can be reviewed annually and updated as needed. The standards update can be completed in-house or outsourced to an engineering firm. If the work is outsourced, the City Engineer must still dedicate time to review and approve the standards. In addition, the City's Legal Counsel should be involved in reviewing the City's front-end specifications. Table 8-4 provides a summary of the hours estimated to update the City's standards either completed in-house or out sourced and then the hours recommended annually following completion of the standards.

Table 8-4 Design and Construction Standards Update

Staff Title	Full Update		Annual Reviews (In-House)
	In-House	Out-Sourced	
City Manager	0	0	0
Development Services Department Head	8	2	2
Management Services Department Head	16	8	8
City Engineer	60	20	16
Associate Engineer (Utilities)	40	20	8
Utilities Technician	80	0	8
Utilities Supervisor	16	16	8
Maintenance Worker III (Sewer Lead Worker)	0	0	0
Maintenance Worker II	0	0	0
Maintenance Worker I	0	0	0
Maintenance Worker (Temp)	0	0	0
Administrative Assistant	20	4	4
Legal Counsel	8	8	4

COMMUNITY OUTREACH AND EDUCATION

Keeping the Community educated about ways to help protect the sewer collection system, reduce or eliminate Fats, Oils and Grease (FOG), reduce water use, etc. ultimately helps improve the City's overall operations and maintenance. The SSMP outlines the City's means of educating the community about the sewer system and related programs. Currently the outreach and education is limited to the City's website, social media, newsletters and informational flyers. The City's goal also includes visits to local schools, and updating the information material available to the City's customers. In addition, the City should be outreaching to neighboring agencies such as the County of San Benito to communicate about community programs. This should be the responsibility of the Management Services Director and Utilities Technician. Table 8-5 provides a recommendation on the number of hours recommended to be dedicated to outreach and education.

Table 8-5 Outreach and Education

Staff Title	Annual Recommendations
City Manager	8
Development Services Department Head	8
Management Services Department Head	16
City Engineer	16
Associate Engineer (Utilities)	8
Utilities Technician	40
Utilities Supervisor	16
Maintenance Worker III (Sewer Lead Worker)	4
Maintenance Worker II	0
Maintenance Worker I	0
Maintenance Worker (Temp)	0
Administrative Assistant	16

NEW DEVELOPMENT REVIEW

Assisting the building department's reviews of plans for new development projects are typically funded by the developer and are not considered in this O&M resource assessment. At this time, the City outsources the majority of the development review to an outside consultant. However, City engineering staff time is still required to coordinate with the developer and the reviewer, and oversee the progress of the projects. This coordination time does impact the amount of time available to complete other required work that is included in this resource assessment and therefore, Table 8-6 provides a summary of the hours recommended for new development review. Note this recommendation is highly dependent on the development market and can't be predicted. Currently, the development market is strong and staffing requirements are high. As the development market slows, this level of effort will not be required.

The City has inspectors to oversee the construction of the developments, which is not included in the resource assessment; however, engineering staff time is also required during the construction phase of projects. Table 8-6 also provides a summary of the hours that are required during the construction phase.

Table 8-6 New Development Review

Staff Title	Annual Design Phase Recommendations	Annual Construction Phase Recommendations
City Manager	30	10
Development Services Department Head	60	30
Management Services Department Head	96	56
City Engineer	160	100
Associate Engineer (Utilities)	80	40
Utilities Technician	80	40
Utilities Supervisor	30	30
Maintenance Worker III (Sewer Lead Worker)	0	40
Maintenance Worker II	0	40
Maintenance Worker I	0	0
Maintenance Worker (Temp)	0	0
Administrative Assistant	100	60

CUSTOMER SERVICE CALLS

Assisting customers with questions, concerns, complaints, and/or emergencies, during normal working hours is part of the responsibilities of the City staff. The City has estimated that overall, approximately 20% of the sewer maintenance staff's time is spent responding to customer service calls, which range anywhere from odor complaints to lateral blockages, to sanitary sewer overflows. This commitment is anticipated to remain fairly consistent from year to year. As the sewer collection system expands due to new development, it can be expected that service calls will also increase incrementally. Table 8-7 provides a summary of estimated hours the City currently spends on responding to customer service calls.

Table 8-7 Customer Service Calls

Staff Title	Current Full Time Equivalents	Annual Hours per Employee	Total Summary of Hours
City Manager	1	8	8
Development Services Department Head	1	60	60
Management Services Department Head	1	120	120
City Engineer	1	40	40
Associate Engineer (Utilities)	1	8	8
Utilities Technician	1	80	80
Utilities Supervisor	1	200	200
Maintenance Worker III (Sewer Lead Worker)	1	380	380
Maintenance Worker II	4	380	1,520
Maintenance Worker I	2	380	760
Maintenance Worker (Temp)	2	380	760
Administrative Assistant	2	80	160

AFTER HOUR CALLS (EMERGENCY RESPONSE)

Outside of regular business hours, responding to complaints or issues is considered emergency response. The number of after hour or emergency calls has declined over the years for the City, but they still do occur occasionally. On average, an emergency after hour call requires approximately 4 hours for a Maintenance Worker to respond and resolve. In addition, if the emergency is severe, additional staff from other City departments, such as water or airport, may be required to be called to assist. Since this work is based on emergencies and are outside of the normal working hours, which results in overtime, the number of hours are not identified in this resource assessment. However, the City should include overtime hours within its annual budget. In addition, the City should evaluate if the City has sufficient trained staff to meet the on-call emergency demands when required.

ROUTINE SEWER COLLECTION SYSTEM CLEANING, HIGH MAINTENANCE AREA CLEANING, CCTV INSPECTION, AND MANHOLE INSPECTION

To operate and maintain the sewer collection system and prevent sewer system overflows, the City must invest in cleaning and inspections of its facilities. To best facilitate this, the City should engage in four preventative maintenance programs: Routine Sewer Collection System Cleaning, High Maintenance Area Cleaning, Manhole Inspections, and Closed-Circuit Television (CCTV) Inspection.

Routine Sewer Collection System Cleaning

The SSMP identifies the City's goal to clean the entire sewer collection system every two years for general preventative maintenance. Currently, the City maintains approximately 570,500 feet of sewer main that requires routine cleaning. Half of the year, the City maintenance staff (Maintenance II & Maintenance I) cleans the sewer mains and the other half of the year is dedicated to cleaning the storm drain mains. Based on information provided by other agencies, two full time crew maintenance workers with a dedicated vacuum truck are estimated to be able to clean 2,000 to 5,000 feet of sewer main per day. With approximately 120 working days (excluding holidays) available per year to clean the sewer collection system, the City would be required to clean approximately 2,400 lineal feet per day. Therefore, approximately 3-4 days per week should be dedicated to routine sewer collection system cleaning. Currently, City staff is only minimally being dedicated to completing the routine sewer cleaning and is only cleaning approximately 6,000 to 10,000 feet per year and is not meeting the City's established goal to clean 100% of gravity sewer lines annually.

High Maintenance Sewer Collection System Cleaning

Sewer 'High Maintenance Areas' which are areas known by the City to be prone to flow restrictions, blockage and/or sewer system overflows are required to be inspected daily and cleaned as necessary. Currently, the SSMP lists 43 known High Maintenance Areas, which requires approximately 12 hours per week for two full time sewer maintenance staff and the sewer department's vacuum truck to maintain.

CCTV Inspection

Following the cleaning of the sewer collection system, the City should be conducting CCTV inspections to evaluate the interior condition of the pipes. The City's goal is to complete this effort every 4 years or ¼ of the sewer collection system per year. The inspections highlight broken sewer mains, offset joints, sags, and root intrusion, all conditions that may cause future blockages and potential operations and maintenance emergencies. Following the routine sewer cleaning allows for the sewer main to be clear of any debris to allow the operators or engineers the best opportunity to evaluate the condition of the sewer main. It is essential that the City videos the sewer mains and reviews and completes a condition assessment for all sewer mains as this information is what is needed to identify maintenance based Capital Improvement Projects (CIP) and High Maintenance Areas.

It is estimated that ¼ of the sewer collection system can be inspected over a 6-month period, in conjunction with the routine sewer cleaning, utilizing one Maintenance Worker for 3 days per week. In addition, 8 hours per week, for 6 months, are required for an Engineering Technician to review and evaluate the video inspections and prepare an assessment report. The City Engineer or Utilities Supervisor would evaluate the assessment report and provide CIP recommendations and priorities.

At this time, the City does not have a formal CCTV inspection program. There are industry standards that can be implemented and staff can be trained to provide for consistent reporting and determination of maintenance defects. This program development and training should be included in the first year's estimate of CCTV Inspections.

Manhole Inspection

In conjunction with the CCTV inspections, the Maintenance Operator would complete a manhole inspection to identify any manholes that have excessive corrosion and need replacement or coatings. This effort could also be completed during the routine sewer cleaning efforts. This information would be included in the assessment report and identified by the City Engineer or Utilities Supervisor as a CIP recommendation. No additional hours are required for this effort as it would be done in conjunction with the CCTV inspection and/or the routine sewer cleaning and is included in the hours identified above.

Cleaning and Inspection Summary

Table 8-8 provides a summary of the estimated number of hours required to clean and inspect the City's sewer collection system based on the current City goals.

Table 8-8 Sewer Cleaning and Inspection

Staff Title	Routine Cleaning	Hot Spots	CCTV and Manhole Inspection	Total
City Manager	0	0	0	0
Development Services Department Head	8	8	8	24
Management Services Department Head	24	24	24	72
City Engineer	0	0	16	16
Associate Engineer (Utilities)	0	0	40	40
Utilities Technician	8	8	192	208
Utilities Supervisor	48	24	12	84
Maintenance Worker III (Sewer Lead Worker)	126	126	126	378
Maintenance Worker II	687	136	400	1,223
Maintenance Worker I	687	136	122	945
Maintenance Worker (Temp)	60	60	60	180
Administrative Assistant	24	24	40	88

MAPPING, GIS, AND WORK HISTORY PROGRAMMING

The sewer collection system is currently mapped in GIS and is updated periodically by an outside consultant to include new developments and upgrades to the sewer collection system. However, the GIS database is not being used by the maintenance staff to its fullest potential. The GIS database is ideal for the City staff to utilize for scheduling the cleaning and inspections, daily work orders, dispatching, odor complaints, work history, creating exhibits for public presentations, etc. This effort would require training of the City staff to use a GIS based program, potential upgrades to the City's software and hardware, and daily inputs to ensure that the data is accurate and up to date. The Operations Staff can be assisted by an engineering technician to input the data into GIS. Table 8-9 provides a summary of the hours required for implementing a GIS based network and hours for continued maintenance. Ultimately, moving towards a GIS based system will provide better reporting and understanding of the deficiencies in the sewer collection system.

Table 8-9 Mapping and GIS Maintenance

Staff Title	GIS Implementation	Annual Maintenance
City Manager	8	6
Development Services Department Head	8	6
Management Services Department Head	40	36
City Engineer	8	12
Associate Engineer (Utilities)	8	6
Utilities Technician	60	800
Utilities Supervisor	24	24
Maintenance Worker III (Sewer Lead Worker)	8	50
Maintenance Worker II	8	50
Maintenance Worker I	8	8
Maintenance Worker (Temp)	8	8
Administrative Assistant	8	24

LIFT STATION CLEANING, INSPECTION AND TESTING

The City owns and operates four lift stations. Operations staff visits each lift station daily, including weekends, to record pump run times and conduct visual inspections. Daily inspections take approximately 2 hours for one maintenance worker. In addition, each lift station is cleaned weekly and more thoroughly inspected. During these inspections, lift station components such as the pumps, alarms, generators, etc., are tested. This effort takes approximately 4 hours for two workers per week. Table 8-10 provides a summary of the hours required to maintain the four lift stations. It should be noted that as development occurs within the City, additional hours may be required for daily and weekly inspections if additional lift stations are constructed.

Table 8-10 Lift Station Maintenance

Staff Title	Daily Inspections	Weekly Inspections
City Manager	0	0
Development Services Department Head	0	0
Management Services Department Head	24	24
City Engineer	0	0
Associate Engineer (Utilities)	0	0
Utilities Technician	0	0
Utilities Supervisor	26	26
Maintenance Worker III (Sewer Lead Worker)	0	208
Maintenance Worker II	730	104
Maintenance Worker I	0	104
Maintenance Worker (Temp)	0	0
Administrative Assistant	0	12

FATS, OILS, AND GREASE (FOG)

A SSMP Goal for the City is to develop and implement a FOG Program for the City's 125 food service establishments. This preventative maintenance and source control program is designed to help reduce the amount of fats, oil and grease in the sewer collection system, which is the number one cause of sewer system overflows. The first phase of the program would be development and first year implementation. The FOG program can be developed in-house or by an outside consultant. The second phase is the subsequent annual inspections. As with the first phase, the annual inspections can be conducted by in-house staff or outsourced to outside consultant. Table 8-11 provides a summary of hours required to develop the FOG program, complete the first-year inspections and the anticipated hours for inspections in subsequent years. Table 8-11 assumes that the work effort will be completed in-house.

Table 8-11 FOG

Staff Title	Phase 1		Phase 2
	Development and Implementation	Inspections and Re-Inspections	Annual Inspections and Re-Inspections
City Manager	8	0	0
Development Services Department Head	8	0	0
Management Services Department Head	56	32	32
City Engineer	24	0	0
Associate Engineer (Utilities)	0	0	0
Utilities Technician	50	50	40
Utilities Supervisor	24	100	50
Maintenance Worker III (Sewer Lead Worker)	0	0	0
Maintenance Worker II	0	480	370
Maintenance Worker I	0	0	0
Maintenance Worker (Temp)	0	0	0
Administrative Assistant	16	200	100
Legal Counsel	24	4	4
Code Enforcement	20	60	40

SEWER LATERAL REPAIRS

City Staff are responsible for assessing and repairing sewer laterals that have root intrusion caused by City owned trees. If a customer suspects a sewer lateral problem is caused by a City tree, the customer is required to submit a sewer lateral video to City staff. The City reviews the CCTV information and if the cause of the problem is roots from a City tree, the City replaces the lateral. It is estimated that approximately 20 laterals per year are replaced by City staff.

Inspections of CCTV reports and interactions with lateral owners are completed by the City Utilities Supervisor. Replacement of sewer laterals requires 3 staff from the sewer department and generally requires 4 days to complete. Sewer lateral replacements often require the demolition and replacement of asphalt, curb, gutters and sidewalks in the general area of the lateral replacement. Table 8-12 provides a summary of the hours anticipated for replacement of sewer laterals.

Table 8-12 Sewer Lateral Repairs

Staff Title	Annual Repairs
City Manager	0
Development Services Department Head	0
Management Services Department Head	40
City Engineer	0
Associate Engineer (Utilities)	12
Utilities Technician	0
Utilities Supervisor	52
Maintenance Worker III (Sewer Lead Worker)	640
Maintenance Worker II	860
Maintenance Worker I	280
Maintenance Worker (Temp)	140
Administrative Assistant	40

EQUIPMENT REQUIREMENTS

To properly operate and maintain the sewer collection system, the City operators must have equipment for the tasks they are required to complete. To meet the goals identified in the SSMP and further enhance the programs identified throughout this chapter, the City needs the following additional equipment:

- Air Compressor: to be used for emergency repairs and routine maintenance.
- Backhoe: to be used for emergency repairs and routine maintenance.
- Dump Truck: to be used for emergency repairs and routine maintenance.
- Vacuum Truck: To be used for sewer collection system cleaning.
- Emergency Power Supply: Portable Generators for power outages at City Lift Stations

SUMMARY AND FINDINGS

The information provided throughout this Staffing Assessment identifies areas where the City has sufficient staff resources (surplus) and areas where the City is in a deficit to accomplish the various sewer system related tasks. This assessment considers tasks and resource hours required for proper management, operation and maintenance of the City's Sewer Collection and Conveyance System and compliance with State regulatory requirements requiring the City to develop, implement and maintain a Sewer System Management Plan (SSMP).

Table 8-13 was developed summarizing the resource requirements for each City staff position responsible for the management, operation and maintenance of the City of Hollister sewer system. This table shows the following:

- Current available staff hours,
- Staff hours required for the first year of SSMP and other sewer system related tasks,
- Staff hours required for on-going management, operations and maintenance,
- Surplus of Deficit staff hours for the first year of SSMP and other sewer system related tasks,
- Surplus or Deficit staff hours for on-going management, operations and maintenance

Table 8-13 Summary of Current Staffing Resources: City of Hollister Sewer System

Staff Title	Current Available	First Year	On-Going Maintenance	First Year Surplus or Deficit	On Going (Annual) Surplus or Deficit
City Manager	165	84	78	81	87
Development Services Department Head	245	218	206	27	39
Management Services Department Head	410	672	624	-262	-214
City Engineer	410	460	400	-50	10
Associate Engineer (Utilities)	326	240	206	86	120
Utilities Technician	815	738	1,356	77	-541
Utilities Supervisor	652	714	642	-62	10
Maintenance Worker III (Sewer Lead Worker)	1,630	1,734	1,778	-104	-148
Maintenance Worker II	6,520	5,243	5,179	1,277	1,341
Maintenance Worker I	3,260	2,233	2,233	1,027	1,027
Maintenance Worker (Temp)	3,260	1,224	1,224	2,036	1,027
Administrative Assistant	1,630	780	668	850	962

**This table does not include resource hours for City Legal Council and City Code Enforcement Staff. These positions are included in the FOG Program discussion and it is anticipated that annual resource hour demands will be 60 hours or less per year. It should also be noted that the hours for City Engineer position do not include additional time for plan check and development review completed by contract staff.*

Table 8-13 indicates there are staffing deficits and surpluses for various City staff positions responsible for the management, operation and maintenance of the City's sewer system in both the initial year and on an ongoing basis in subsequent years. As a general observation, positions with surplus hours are associated with upper management, engineering, non-supervisorial maintenance workers and the administrative assistant position. While these surplus hours are a positive conclusion of this analysis, these surplus hours do not translate to completion of the core needs of the City to complete essential operations and maintenance activities required of Utilities staff and the Management Services Department Head.

Based on the Full-Time Equivalent (FTE) for City staff of 1,630 working hours, resource constraints by position are as follows:

Initial Year

- Management Services Director: ..... Deficit = 262 hours /33 days
- City Engineer: ..... Deficit = 50 hours/6 days
- Utilities Supervisor: ..... Deficit = 62 hours /8 days
- Maintenance Worker III: ..... Deficit = 104 hours /13 days

Future Years (Annually)

- Management Services Director: ..... Deficit = 214 hours /27 days
- Utilities Technician: ..... Deficit = 541 hours /68 days
- Maintenance Worker III: ..... Deficit = 148 hours /19 days

RECOMMENDATIONS

The following recommendations are provided based on the staffing deficits and surplus identified above:

Management Services Director:

Option A - Investigate the possibility of delegating a portion of tasks associated with deficit hours between the Associate Engineer (Utilities) and City Engineer for tasks such as New Development Review and Design and Construction Standards Updates/Reviews.
Option B - If Engineering staff are unavailable due to workload with other City Departments, a part time (0.5 FTE) additional Utilities Technician should be considered to assist the Management Services Director and the existing (1.0 FTE) Utilities Technician.

City Engineer:

Deficit hours are relatively low in comparison to other position descriptions in this assessment and are only projected in the initial year.
Option A – Investigate opportunities to delegate tasks associated with deficit hours to the Associate Engineer (Utilities), such as the development of FOG Program standard details and requirements.
Option B – If Engineering staff are unavailable due to workload with other City Departments, these tasks may be contracted out as the overall deficit in available hours are relatively low.

Utilities Technician:

Option A -Investigate the possibility of training and delegating some data entry tasks related to GIS annual maintenance and/or Work History Management to Administrative Assistant staff.
Option B - If Administrative Assistant staff are unavailable due to workload with other City Departments, a part time (0.5 FTE) additional Utilities Technician should be considered to assist the existing (1.0 FTE) Utilities Technician and Management Services Director as stated above.

Utilities Supervisor:

This position does show a deficit which may be helped by the contracting of FOG inspection services which would potentially reduce this positions deficit by approximately 80 hours in the near term and add to the 10-hour surplus with 50 hours in subsequent years.

Maintenance Worker III (Sewer Lead Worker):

This position shows a deficit which is less than 0.25 FTE. The City should consider identifying a viable candidate from the Maintenance Worker II classification (which has a significant surplus) as a specialized Maintenance II position, capable of performing some of the technical duties currently carried out by the Maintenance Worker III. This position would receive direction from the Utilities Supervisor and Maintenance Worker III (Sewer Lead Worker).

APPENDIX A

Lift Station Reference Information

MEMORANDUM

City of Hollister

Date: April 17, 2017

To: David Rubcic, PE

From: Kari Wager, PE

Subject: Lift Station Upgrade Recommendations

In 2010, Wallace Group prepared a Sanitary Sewer Collection System Master Plan (Master Plan) that evaluated the hydraulic capacity of the sewer collection system. Included in the Master Plan was an overview of City's four lift stations and made recommendations that were incorporated into the Capital Improvement Program. To date, the City has made some modifications at each of the lift stations, but additional work is still required. On March 29, 2017, Wallace Group met with City staff (David Rubcic and Pete Galvan) and toured three of the four lift stations to determine the upgrades that are still recommended. The following memo provides an overview of the results of the discussions with City staff and the site visit.

2nd & East Lift Station

The Sewer Master Plan called for replacement of the slide gate due to corrosion. To date, 2nd & East Lift Station has had new pumps, rails, slide gate, and check valves installed since the completion of the Master Plan.

The existing lift station does not have a permanent generator on site, but is equipped for a portable generator. In the event of a power outage during peak hour dry weather flows, as noted in the Master Plan, the City has a response time of 12 minutes before the station will flow into the downstream collection system via a by-pass. Due to backwater effect, the downstream collection system does limit the by-pass flow and ultimately could cause an overflow. Therefore, it is recommended that a permanent on-site generator be placed at the site to minimize the risk for overflow at this site.

The site is small and currently is not able to house a permanent pad mounted generator within the current fence line. Currently, the City must chain and lock the temporary generator to the fence of the Lift Station on the public side, leaving the generator accessible and vulnerable for damage or theft. Additional City owned land may be available beyond the existing fence line. It is recommended to research the parcel size by requesting a title report and having a record of survey performed (if necessary) which will place property corners at the locations not identified, and make recommendations for siting the permanent generator as well as installing new fencing if necessary. No additional upgrades are requested or needed for operations and maintenance.

WALLACE GROUP®

CIVIL AND TRANSPORTATION ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING / GIS SOLUTIONS
WATER RESOURCES

WALLACE GROUP
A California Corporation
612 CLARION CT
SAN LUIS OBISPO
CALIFORNIA 93401
T 805 544-4011
F 805 544-4294
www.wallacegroup.us

GLP Lift Station

The Sewer Master Plan called for an evaluation of the SCADA control system to send failure notices when one or both pumps are not operating. The CIP also proposed to reconfigure the SCADA controls to disable the pumps at the Airport LS when the GLP LS is not operating due to high potential for overflowing if GLP LS is down (See Airport LS for these recommendations). The Lift Station recently received new rails and pumps. Based on the Master Plan proposed CIP and the site visit, the following are the recommendations for the GLP LS:

- Install a Caltrans standard guardrail such as a tri-beam rail to deflect high speed vehicles on the Highway 156 side of the lift station
- Eliminate the Bioxide tank, re-pour the pad foundation and install the Bio Cubes similar to 2nd & East.
- Evaluate an option to place bollards in front of the Control Panel along the frontage road side. This option may not be feasible due to proximity to road and bicycle lane.
- Install a new generator – The emergency response time for the GLP LS is 7 minutes if the Airport LS is not disabled during a power outage at GLP or bypassed around GLP LS (See Airport recommendations). Without Airport LS flow, the response time is 45 minutes. During an overflow, wastewater would flow from the manholes located near Wiebe Motel on San Felipe Road, cause backups and enter the City's drainage system. To limit the potential impacts from a power outage, it is recommended to install a new on-site permanent pad mounted generator. The site has adequate space for the placement of the permanent generator.
- Evaluate the topography and need to install an overflow manhole to reduce the impacts of a spill or potential back up in the collection system.

Airport Lift Station

The Sewer Master Plan called for a blower and odor scrubber adjacent to the wet well and to prepare a feasibility study to determine if Airport LS could be upgraded to pump around the GLP Lift Station. The lift station components (rails, pumps, etc) are in good condition. Based on the site visit and the Master Plan, the following are the recommendations for the Airport Lift Station:

- Install Bio Cubes similar to 2nd & East Lift Station
- Install a new generator – The response time during peak hour dry weather flows is 38 minutes, which is okay. If an overflow were to occur due to a power outage, the wastewater would back up on Bert Drive, Technology Parkway, and Apollo Court. It is recommended to install a permanent pad mounted generator at the Airport LS site to minimize the risk of an overflow at this site during a power outage. The site has adequate space for the placement of a permanent generator.
- Evaluate the topography and need to install an overflow manhole to reduce the impacts of a spill or potential back up in the collection system.
- Complete a hydraulic evaluation of the lift station to determine the feasibility of pumping temporarily or permanently around GLP Lift Station. The study to identify the upgrades required at the Airport Lift Station and at the GLP Lift Station.

- Evaluate the capacity of the Airport LS for future development upstream of the Lift Station.

Southside Lift Station

The Sewer Master Plan called for the installation of a blower and odor scrubber adjacent to the wet well and install security fencing. Since the Sewer Master Plan, fencing has been installed. In addition, significant development has been proposed around the facility and additional studies have been prepared to determine the development impacts. At this time, development around the Lift Station is being conditioned to install a secondary 6-ft diameter wet well and a permanent on-site generator. Based on discussions with the City, the following recommendations are also requested:

- Install Bio Cubes similar to 2nd & East. This may require additional land acquisition. The development will be required to acquire land for the new wet well and generator. It is recommended to include enough land for the bio cubes.
- Install privacy slats to shield the lift station

SCADA and Lift Station Alarm Upgrades

The City staff has noted that the alarms for the lift stations have been disabled due to the frequency of "ghost" alarms at all hours of the day and night. City staff also noted that some of the equipment may be approaching the end of its useful life. Therefore, in addition to the upgrades noted above at each lift station, it is recommended to evaluate the overall condition of the SCADA system and determine the necessary upgrades and requirements for equipment replacement at each lift station including use of the City's fiber optic lines for communication. This work effort should be completed by a SCADA consultant.

MEMORANDUM

City of Hollister
Airport and GLP Lift Stations

Date: December 4, 2017

To: Danny Hillstock, City of Hollister

From: Steven G. Tanaka, PE / Kari Wagner, PE

Subject: Airport and GLP Lift Station Preliminary Design Recommendations

On November 1, 2017, Steve Tanaka of Wallace Group conducted a field review of the Airport and GLP Lift Stations, and was accompanied by Henry and David of the City operations staff. The 2nd/East Lift Station was also reviewed during this site visit. The goal of this site visit was to update the prior April 17, 2017 Lift Station Upgrades Memorandum prepared by Kari Wagner.

2ND/EAST LIFT STATION

Observations

This lift station (LS) is on a compact site at the SE corner of 2nd Street/East Street in the City. Overall, the lift station is in fair condition. Review of the interior of the wetwell showed the concrete walls to be smooth (not pitted), and protective lining to be intact. The pump discharge piping was also in fair condition. Some rust and corrosion was visible on the piping, but was considered minor in nature. Flange bolts were visible and appeared to be in good condition.

The BioCubes™ at the site are in two stacks of 3 cubes and 4 cubes, and are run in series. A blower (operates on 3 phase 240v power) draws air from the wetwell through the two stacks of BioCubes™. Both stacks of BioCubes™ have a condensate drain that conveys moisture back to the wetwell. Henry indicated that this LS has had odor complaints in the past when bioxide was being used; however, after switching to the BioCubes™, odor complaints have stopped.

WALLACE GROUP®

CIVIL AND TRANSPORTATION ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING / GIS SOLUTIONS
WATER RESOURCES

WALLACE GROUP
A California Corporation
612 CLARION CT
SAN LUIS OBISPO
CALIFORNIA 93401
T 805 544-4011
F 805 544-4294
www.wallacegroup.us

Recommendations

Overall the 2nd/East LS is in good condition, and no additional lift station repairs or improvements are identified at this time.

GLP LIFT STATION

Observations

The wetwell concrete lining was in fair condition. There did not appear to be any breaches in the liner system. Discharge piping was in poor condition; flange bolts were rusty and deteriorated. Some spalling of the piping was noted.

Valve Vault. The check valves are set in three individual vaults, just barely large enough to house the flanged check valve. There is no way that a person could enter the vault, unbolt the flanges on the check valve and service/replace it. City staff has never had to service the valves, but concur that the existing layout of the valve vaults in the roadway is undesirable and does not allow the City to adequately access and maintain the check valves.

Bioxide Tank. The tank is recessed approximately 4-feet below grade, with a concentric second containment system. The secondary containment ring has buckled in places as water enters the perimeter and pushes the walls of the secondary containment inward. This has also resulted in the cracking and failure of one portion of the concrete pad. It was envisioned that if the lift station is refurbished, the new wetwell would be located in the place of the existing bioxide tank, and the BioCubes™ would likely be located within the existing fence on the south side of the site or the extreme north end of the LS site. The two existing units, Siemens vessel and AOP control box, would be removed thus making room for the BioCubes™ or the generator. Three phase power may need to be extended to the BioCubes™ for the blower; however, this should be relatively easy since the power source and panel is very close to this area, even if the BioCubes™ are located on the north end.

It is envisioned that the existing wetwell will remain in its current location in the roadway and used as an emergency overflow wetwell. The existing valve vaults would be abandoned in the roadway, and a new single valve vault would be located within the existing site. If additional room is needed for the generator and valve vault, this can be accommodated by extending the concrete pad of the existing fenced lift station to the north and /or south.

As a separate concern, existing sewer manholes with deteriorated ladder rungs, should have the ladder rungs removed. Even if ladder rungs are in good condition, the City should always use confined space entry procedures including access using a tripod system and harnesses for staff. Any new manholes installed should not be equipped with ladder rungs.

Wetwell and Response Time

Response times were evaluated for both the GLP and Airport Lift Stations in the August 2010 Sewer Master Plan. For the GLP Lift Station, response time is limited due to the fact that this lift station receives pumped flow from the Airport Lift Station, in addition to tributary gravity sewage flows. Response times are summarized in Table 5-6 of the Master Plan. If the Airport LS is pumping in conjunction with average daily flow (ADF) to the GLP Lift station, response time is only 7 minutes; however, depending on the operation of the Airport LS at the time, response time can range between 7 minutes and 56 minutes. During peak hour flow conditions, response times will vary between 6 minutes and 25 minutes only. It should be noted that the above discussion is relevant to the time frame with which the Master Plan was prepared in 2010, but flow conditions may have increased in the past seven years.

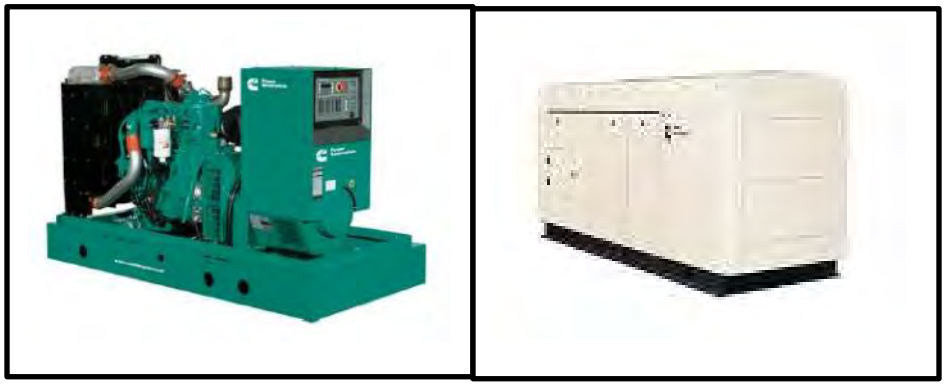
If the City implements the recommendation to provide permanent standby power, the risk of overflows will be significantly reduced during a power outage, but the risk would remain prevalent should there be pump failures. However, it is noted that the GLP Lift Station is a tri-plex lift station with good redundancy for pumping.

Response times at this lift station are very short, whether at peak or average day flow conditions, and whether or not the Airport LS is pumping to the GLP LS. Similar to the Airport LS, it is recommended that additional emergency storage be provided, even if the permanent standby power is provided at this lift station.

Standby Generator

If all three pumps are running, the standby generator should be capable of running the three 20-HP Pumps. This equates to a draw of approximately 45 kW. It is recommended that the generator be sized at 50 kW. Additional consideration may need to be given to the BioCube™ blower; however, this blower can likely remain off during an emergency overflow situation.

A 50 kW generator may be one similar to the Onan S-1653, a picture of which is provided below. Power compatibility between that available at the site and that provided by the generator will be confirmed as part of electrical design.



This unit is a fully integrated system and comes with available dual-wall, sub-base fuel tanks. This unit is approximately 7-feet in length, 4-feet tall, and 3-1/2-feet wide (deep).

BioCubes™

The conversion to BioCubes™ at the 2nd/East Lift Station has proven effective at controlling odors. Staff has indicated that prior to use of the BioCubes™, odor complaints were common at this lift station. Odor problems are almost non-existent now with the implementation of this odor control system.

The vessels for the odor system come in a stack of six media trays or containers, each containing patented media composed of compost, absorbents and pH buffers that claim to achieve 99% H_2S removal. In reviewing the photographs of the 2nd/East Lift Station, this station is equipped with two stacks; however, one stack includes three media trays, while the other includes a stack of four media trays. The literature did not make it clear if the standard stack of six trays can be customized in this manner or not. Wallace Group will seek clarification from the Vendor in this regard.

Wallace Group is waiting for the City to provide H_2S readings for the GLP LS; once this information is provided, the Vendor can then confirm air flow requirements and number of stacks required. Based on the Vendor's criteria, the wetwell will require six air changes per hour. Based on calculations and including the air space of the potential new overflow wetwell, the GLP LS will require up to three stacks of six media trays. Each stack is 6-feet in diameter, and thus a conceptual layout for the odor control system is shown on the conceptual site plan. We have shown the layout to accommodate up to three stacks; however, we suggest the City begin with two stacks and order the third stack should it become necessary. The air piping and blower should be sized for three stacks, or up to 450 cfm.

Driveway Access from Frontage Road

The lift station will need access from the frontage road. Wallace Group suggests that this access be designed to allow a truck to back up to the new wetwell, as shown on the attached site plan figure. This driveway access can be paved or base rock. Some minor grading will be required to accommodate the new driveway.

Recommendations

Refer to conceptual demolition plan, site plan and overflow wetwell schematic drawings at the end of this memorandum. The following recommendations should be considered for this lift station:

- Per the 4/17/17 TM:
  - provide permanent standby generator;
  - provide protective guard railing (Caltrans "Midwest") on the west side of the site;
  - eliminate the bioxide tank, provide BioCube™ system;
  - provide removable bollards immediately in front of LS power/control panel.
- Use the existing wetwell as an emergency overflow wetwell only, thus limiting the frequency with which City staff must access this wetwell that is in the middle of the roadway. Alternatively, the overflow pipe connection can be made "low" such that both wetwells can be used for operational storage.
- Construct new wetwell (with interior protective lining) in the footprint of existing bioxide tank, repair concrete pad in this area, construct new overflow piping, connecting new wetwell to existing wetwell (if the "high" overflow option is employed, the City would need to use a portable trash pump to evacuate the existing wetwell after use); install new 6" vent extending to future BioCube™ area.
- Consider replacement of all three existing submersible pumps, depending on available records and feedback from City staff.
- Equip new wetwell with all new pumps, piping, slide rails, level control, vault access lid, vent, etc.
- Abandon three existing check valve vaults in the roadway (remove check valves/piping, and backfill with slurry), and provide new single valve vault within the existing LS fence line. Provide all new valves and piping in the new single vault. Connect new discharge force main to existing force main.
- Check with City for existing geotechnical reports, and condition of groundwater in the area of GLP LS. If warranted, the construction documents will need to address dewatering during construction.
- Add driveway on the north side of the site, allowing for single vehicle parking and turn around. Provide 10-foot wide double leaf gate on this north end for access to the lift station.
- Extend concrete pad and fencing to the south as shown, to accommodate room for the BioCubes™ and generator.

Optional Considerations for Overflow Wetwell

Regarding the overflow wetwell, there are two basic alternatives to operation:

- Option 1, Connect the new overflow piping at a high elevation such that the overflow wetwell only receives wastewater during an overflow/emergency condition.
- Option 2, Connect the new overflow piping at a low elevation thus allowing both wetwells to operate in conjunction with one another.

Option 1 Pros and Cons:

- Allows overflow wetwell to remain unused and relatively clean during normal routine operations.
- There will still be migration of sewer gases to the overflow wetwell (existing); thus, it is anticipated the BioCubes™ will need to be sized with this in mind.
- Overflow wetwell must be manually pumped down, following an overflow event.
- Overflow wetwell cannot be used as operational volume in conjunction with the existing wetwell.

Option 2 Pros and Cons:

- Overflow wetwell always receives raw wastewater, and would require the same level of maintenance and cleaning as the duty wetwell (thus continued routine access to the existing wetwell in the street will be required).
- Using both wetwells will essentially double the volume of air required to be scrubbed and treated through the BioCubes™.
- Overflow wetwell does not need to be manually pumped down (other than the higher portions of interior walls that normally are not subject to wastewater contact), following an overflow event.
- Overflow wetwell is always used as operational volume in conjunction with the existing wetwell.

A suggested maximum elevation of sewage in the wetwell is depicted on the schematic drawings. The City should consider to what degree they will allow "storage" of raw sewage in the collection system in the vicinity of the lift station.

Conceptual Cost

The following is a conceptual cost estimate for the GLP Lift Station:

ITEM	QTY	UNITS	DESCRIPTION	UNIT PRICE	ENGINEER'S ESTIMATE
1	1	LS	MOBILIZATION	$ 10,000	$ 10,000
2	1	LS	CONSTRUCTION SURVEY	$ 3,500	$ 3,500
3	1	LS	SHEETING, SHORING, BRACING	$ 20,000	$ 20,000
4	1	LS	DEMOLITION	$ 20,000	$ 20,000
5	1	LS	GUARD RAILING	$ 5,000	$ 5,000
6	1	LS	ACCESS DRIVEWAY - BASE	$ 10,000	$ 10,000
7	1	LS	FENCING AND GATES	$ 5,000	$ 5,000
8	1	LS	CONCRETE WORK	$ 25,000	$ 25,000
9	1	LS	REMOVABLE BOLLARDS	$ 3,000	$ 3,000
10	1	LS	BIOCUBE ODOR CONTROL SYS	$ 20,000	$ 20,000
11	1	LS	VALVE VAULT	$ 30,000	$ 30,000
12	1	LS	NEW WETWELL, PUMPS, PIPING	$ 100,000	$ 100,000
13	1	LS	STANDBY GENERATOR	$ 40,000	$ 40,000
			PROBABLE CONSTRUCTION COST		$ 291,500
			CONSTR. CONTINGENCY (20%)		$ 58,300
			TOTAL CONSTRUCTION COST		$ 349,800

AIRPORT LIFT STATION

Observations

Discharge piping is in very poor condition, showing major signs of deterioration on the exterior of the fittings, flanges and couplings. The existing single valve vault shows the piping is in good condition. The site, immediately west of the existing wetwell, appears to be relatively clear of utilities and can accommodate a new overflow wetwell.

Bioxide Tank/fenced enclosure. This property may not be City property. When the bioxide tank and facilities are removed, the City should verify if this fenced enclosure and pad should be removed, or if this area can continue to be used for the both the new BioCubes™ and generator. If this fenced area is no longer available, there is ample room on the City site within the existing paved area. A new vent will need to be installed and penetrated into the wetwell, to accommodate venting to where the BioCubes™ will be located to the south of the wetwell. The existing 4" vent can remain as an auxiliary vent if needed.

Similar to the GLP Lift station, existing sewer manholes with deteriorated ladder rungs, should have the ladder rungs removed. Even if ladder rungs are in good condition, the City should always use confined space entry procedures including access using a tripod system and harnesses for staff. Any new manholes installed should not be equipped with ladder rungs.

Wetwell and Response Time

Response times were evaluated for both the GLP and Airport Lift Stations in the August 2010 Sewer Master Plan. For the Airport Lift Station, response time is one hour during average daily flow conditions. Unlike the GLP Lift Station, the Airport Lift station only receives tributary gravity sewage flows. Response times are summarized in Table 5-6 of the Master Plan. During peak hour flow conditions, response time will be approximately 38 minutes. It should be noted that the above discussion is relevant to the time frame with which the Master Plan was prepared in 2010, but flow conditions may have increased in the past seven years.

If the City implements the recommendation to provide permanent standby power, the risk of overflows will be significantly reduced during a power outage, but would still remain prevalent should there be pump failures. In addition, should the City program/control lift station operations stop the Airport LS pumps in the event of overflow condition at the GLP LS, risk of potential overflow at the Airport LS would

increase significantly. Whether or not the City provides permanent standby power at this GLP LS, the fact remains that response time is limited to an hour or less in the event of a mechanical failure at the Airport LS. Thus, it is recommended that the additional overflow storage be provided.

Optional Considerations for Overflow Wetwell

If a standard wetwell is installed at the Airport LS, the same considerations described for the GLP Lift Station will apply.

Another consideration for the Airport LS the City may consider, in lieu of a conventional deep wetwell for overflow purposes, is the installation of shallow bury tanks. This may save excavation costs, particularly if there is shallow groundwater in the area. With this configuration, the overflow tanks would be used solely for overflow, and these tanks, if designed properly, would not require manual pump-back after each event/use. Dual manways would be provided to allow easy access for wash-down of the tanks.

If an additional one hour (at ADF) response time is desired, a tank volume of approximately 3,600 gallons to 4,000 gallons would be appropriate. Once installed, the tank may have some un-usable volume that must be considered.

Following this paragraph is an excerpt from Xerxes fiberglass tanks. A tank of 6-foot diameter and 22-feet in length would provide 4,000 gallons of storage. This would limit excavation to approximately 11-feet, to accommodate 3 to 4-feet cover (if in traffic conditions) plus bedding for the tank. However, to accept gravity overflow from the existing wetwell, and minimize backup/storage in the collection system, additional depth may be required. Alternatively, if a new wetwell of same depth is installed at this location, the new wetwell would require excavation of approximately 30-feet. Another option is to have two 2,000-gallon or 3,000-gallon tanks, which would provide more storage, and would capture smaller spills in the first tank, before "dirtying" the second tank.

Capacity and Dimensional Specifications:

Nominal Tank Diameter (Ft.)	Nominal Tank Capacity (Gal.)	Actual Tank Capacity * (Gal.)	Actual Tank Diameter ** (Ft./In.)	Actual Tank Length (Ft./In.)	Nominal Tank Weight *** (Lb.)
4	600	602	4'-1/2"	6'-11 7/8"	500
	1,000	1,009	4'-1/2"	11'-3 7/8"	700
	2,000	2,376	6'-3 1/2"	13'-5 3/4"	1,000
	2,500	–	–	–	–
6	3,000	2,973	6'-3 1/2"	16'-4 1/4"	1,200
	4,000	4,131	6'-3 1/2"	21'-11 1/8"	1,600
	5,000	5,064	6'-3 1/2"	26'-5"	1,900
	6,000	5,960	6'-3 1/2"	30'-8 3/4"	2,200
	2,000	2,189	8'-0"	9'-1/2"	900
	3,000	3,271	8'-0"	12'-3"	1,200
	4,000	4,218	8'-0"	15'-1/2"	1,400
	5,000	5,165	8'-0"	17'-8 1/2"	1,700

Another option, as depicted in the schematic, is to allow the tank to fill by gravity up through the bottom, and when the wetwell level subsides, the tanks automatically drain back into the wetwell. The only drawback to this option is that the tanks will always be subject to wetwell gases. However, for any overflow tank configuration, direct connection to the wetwell is unavoidable.

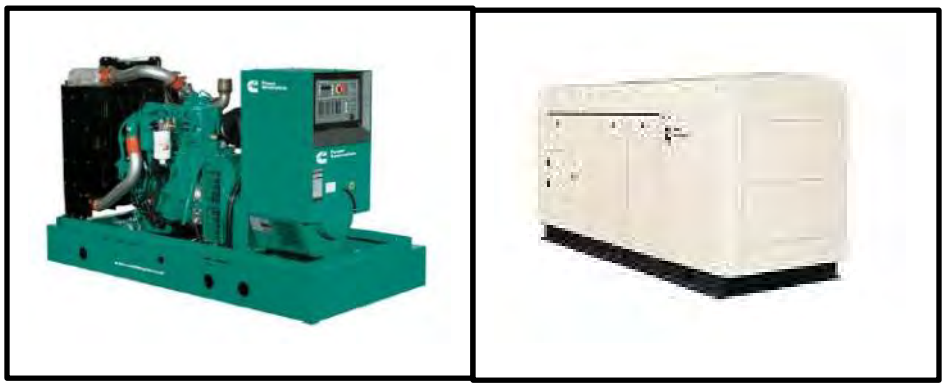
The tanks can be equipped with appurtenances and connections including manways, flanged connections, sumps, vents and other features. Multiple manways will allow better access for cleaning and hose down following an overflow event. These fiberglass tanks are commonly used for wastewater and are corrosion resistant.

The cost of a 6,000-gallon tank of this size is approximately $15,000 including shipping. The cost of the two smaller 3,000-gallon tanks is likely in the range of $10,000 each, with an estimated installed cost of $40,000. The conceptual drawings show a concrete pad over the tank area; this could be deleted to reduce overall construction costs.

Standby Generator

If both pumps are running, the standby generator should be capable of running the two 25-HP Pumps. This equates to a draw of approximately 37 kW. It is recommended that the generator be sized at 50 kW.

A 50 kW generator may be one similar to the Onan S-1653, a picture of which is provided below. Power compatibility between that available at the site and that provided by the generator will be confirmed as part of electrical design.



This unit is a fully integrated system and comes with available dual-wall sub-base fuel tanks. This unit is approximately 7 feet in length, 4 feet tall, and 3-1/2 feet wide (deep).

BioCube™

Wallace Group is waiting for the City to provide H_2S readings for the Airport LS; once this information is provided, the Vendor can then confirm air flow requirements and number of stacks required. Based on the Vendor's criteria, the wetwell will require six air changes per hour. Based on calculations and including the air space of the potential new overflow tanks, the Airport LS will require two stacks of six media trays.

Each stack is 6-feet in diameter, and thus a conceptual layout for the odor control system is shown on the conceptual site plan. As mentioned prior, the area of the existing Bioxide tank will be a good location for the BioCubes™ but confirmation of right of way/property issues should be confirmed prior to continued use of this area.

Recommendations

Refer to conceptual demolition plan, site plan and overflow tank schematic drawings at the end of this memorandum.

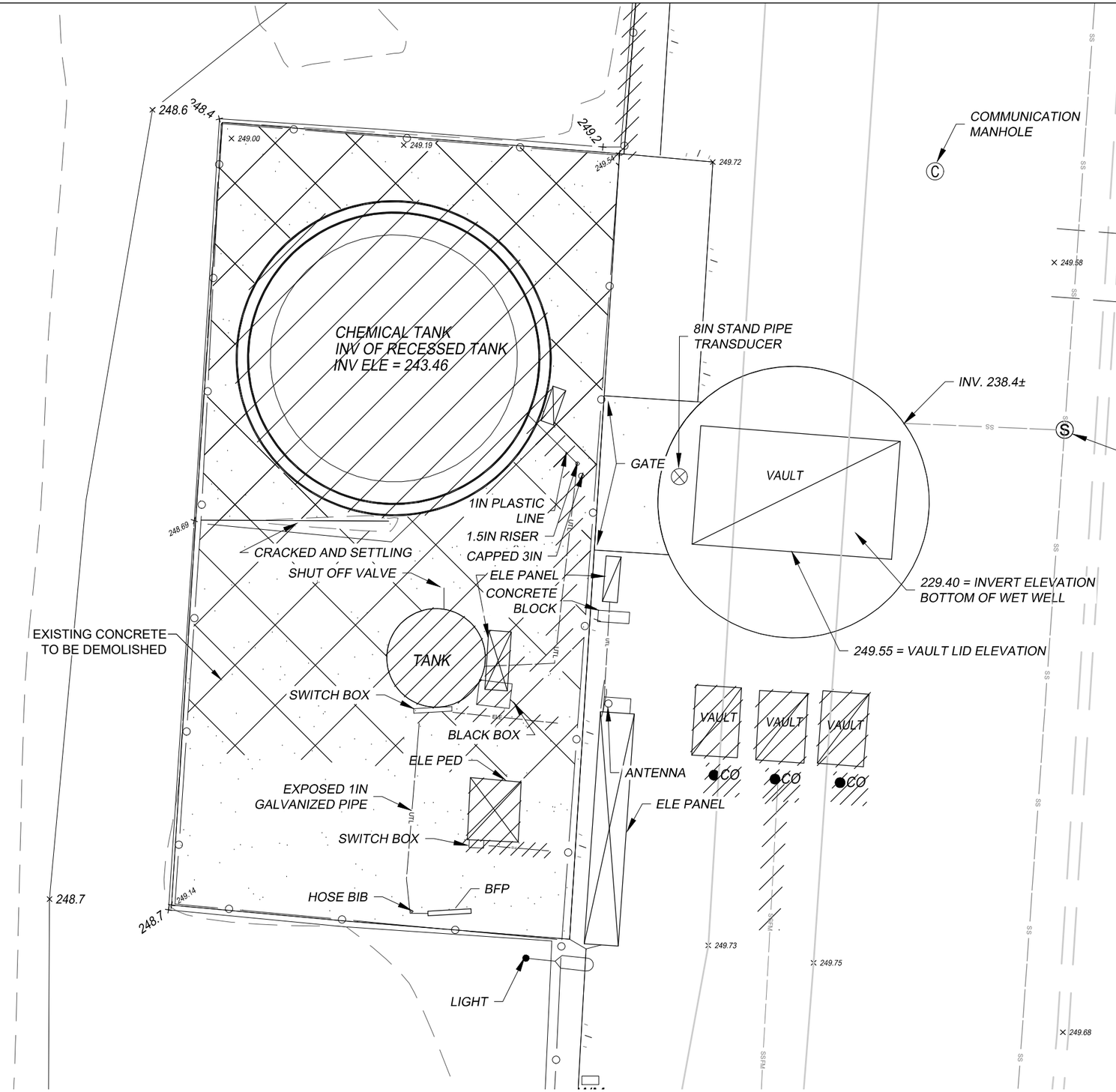
- Per the 4/17/17 TM:
  - provide permanent standby generator;
  - eliminate the bioxide tank, provide BioCube™ system;
  - provide new shallow bury tanks for overflow as shown on the schematic drawings
- Verify property boundary issues prior to installing new BioCube™ system.
- Consider pump replacement if warranted, based on City records of the existing submersible pumps. Replace discharge piping inside wetwell.
- Consider horizontal overflow tanks that would limit depth of excavation, and likely reduce construction cost.
- Check with City for existing geotechnical reports, and condition of groundwater in the area of Airport LS. If warranted, the construction documents will need to address dewatering during construction.

A suggested maximum elevation of sewage in the wetwell is depicted on the schematic drawings. The City should consider to what degree they will allow "storage" of raw sewage in the collection system in the vicinity of the lift station.

Conceptual Cost

A conceptual cost estimate for the Airport Lift Station is as follows:

ITEM	QTY	UNITS	DESCRIPTION	UNIT PRICE	ENGINEER'S ESTIMATE
1	1	LS	MOBILIZATION	$ 7,500	$ 7,500
2	1	LS	CONSTRUCTION SURVEY	$ 2,500	$ 2,500
3	1	LS	SHEETING, SHORING, BRACING	$ 10,000	$ 10,000
4	1	LS	DEMOLITION (BIOXIDE TANK)	$ 10,000	$ 10,000
5	1	LS	BIOCUBE ODOR CONTROL SYS	$ 15,000	$ 15,000
6	1	LS	OVERFLOW TANKS	$ 45,000	$ 45,000
7	1	LS	CONCRETE PAD OVER TANKS	$ 25,000	$ 25,000
8	1	LS	REPLACE WETWELL PIPING	$ 15,000	$ 15,000
9	1	LS	STANDBY GENERATOR	$ 40,000	$ 40,000
			PROBABLE CONSTRUCTION COST		$ 170,000
			CONSTR. CONTINGENCY (20%)		$ 34,000
			TOTAL CONSTRUCTION COST		$ 204,000



WALLACE GROUP®

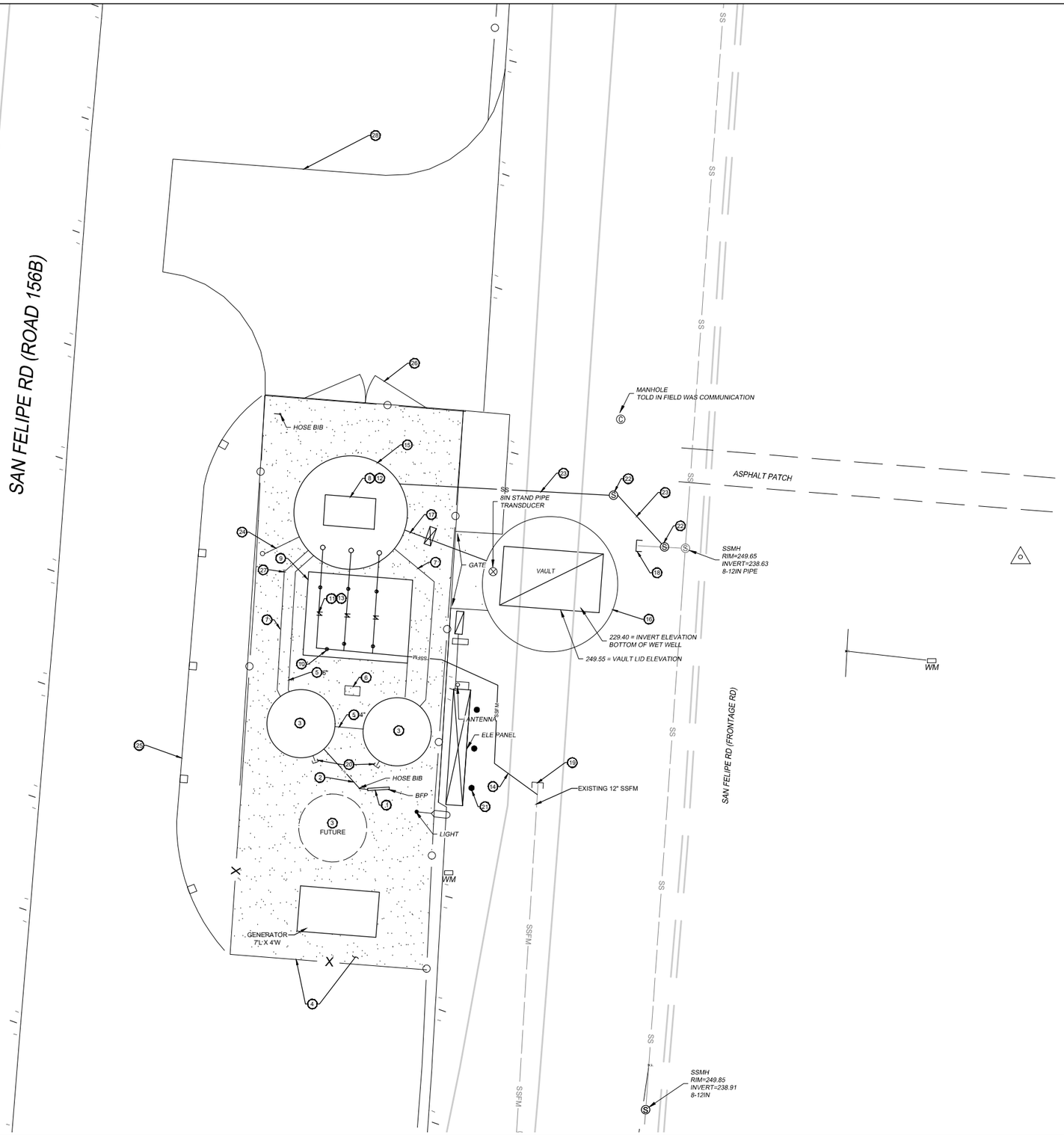
CIVIL AND TRANSPORTATION ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING / GIS SOLUTIONS
WATER RESOURCES

612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

GLP LIFT STATION
CONCEPTUAL DEMOLITION PLAN

JOB No. :	1011-0003-04
DRAWING :	DEMO
DRAWN BY:	SGT/ASB
DATE :	11/27/17
SCALE :	1" = 5'

REGISTERED PROFESSIONAL ENGINEER
STEVEN G. TANAKA
No. 49779
FOR PLAN REVIEW ONLY
NOT FOR CONSTRUCTION
CIVIL
STATE OF CALIFORNIA



	KEYNOTES
1	EXISTING WATER BACKFLOW DEVICE TO REMAIN. PROTECT IN PLACE.
2	1" GALVANIZED STEEL WATER PIPE, LAY ON CONCRETE SLAB WITH U-CLAMP SPACED 6' O.C. WRAP PIPE WITH FREEZE PROTECTION INSULATION.
3	BIOCUBES, TWO STACKS, 6 TRAYS EACH, MOUNTED ON 12' X 8' CONCRETE RAISED SLAB (6 INCHES).
4	EXTEND NEW CHAIN LINK FENCE AND CONCRETE SLAB TO EXTENT SHOWN TO ACCOMMODATE SITE EXPANSION AND BIOCUBES.
5	DIP VENT PIPING, SIZE PER PLAN, PROTECTO 401 CERAMIC EPOXY LINED, STANDARD ASPHALTIC COATING.
6	AIR BLOWER TO DRAW AIR INTO BIOCUBES. PROVIDE 240V, 3 PHASE POWER TO BLOWER.
7	1" GALVANIZED STEEL CONDENSATE DRAIN TO WETWELL.
8	NON-TRAFFIC RATED TRI-FOLD VAULT LID.
9	8' X 6' PRECAST CONCRETE VALVE VAULT WITH BI-FOLD LID AS SHOWN (OR PROVIDE NEW).
10	ISOLATION PLUG VALVES, TYP. 6
11	CHECK VALVES, TYP. 3
12	RELOCATE EXISTING SUBMERSIBLE PUMPS TO NEW WETWELL SHOWN.
13	12" DIP PUMP DISCHARGE PIPING, PROTECTO 401 CERAMIC EPOXY LINING, STANDARD ASPHALTIC COATING.
14	12" PVC FORCE MAIN, TIE INTO EXISTING FORCE MAIN AS SHOWN.
15	NEW 10' DIAMETER WETWELL, SANCON OR EQUAL CONCRETE INTERIOR COATING.
16	EXISTING WETWELL TO REMAIN IN SERVICE AS OVERFLOW WETWELL.
17	NEW 12" DIAMETER GRAVITY OVERFLOW BETWEEN NEW AND EXISTING WETWELL.
18	CUT AND CAP EXISTING GRAVITY SEWER.
19	CUT AND CAP EXISTING SSFM.
20	STUB 6" DIAMETER DIP VENT PIPING FOR FUTURE STACK.
21	REMOVABLE BOLLARDS, TYP. 3.
22	NEW 48" SSMH.
23	NEW 12" SDR 35 PVC GRAVITY SEWER.
24	4" VENT.
25	CALTRANS "MIDWEST" GUARD RAIL.
26	10' WIDE DOUBLE LEAF GATE.
27	INSTALL CLEANOUT.
28	PROPOSED DRIVEWAY LOCATION.

WALLACE GROUP®
CIVIL AND TRANSPORTATION ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING / GIS SOLUTIONS
WATER RESOURCES

612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

GLP LIFT STATION
CONCEPTUAL SITE PLAN

JOB No. :	1011-0003-04
DRAWING :	SITE
DRAWN BY:	SGT/ASB
DATE :	11/27/17
SCALE :	1" = 10'

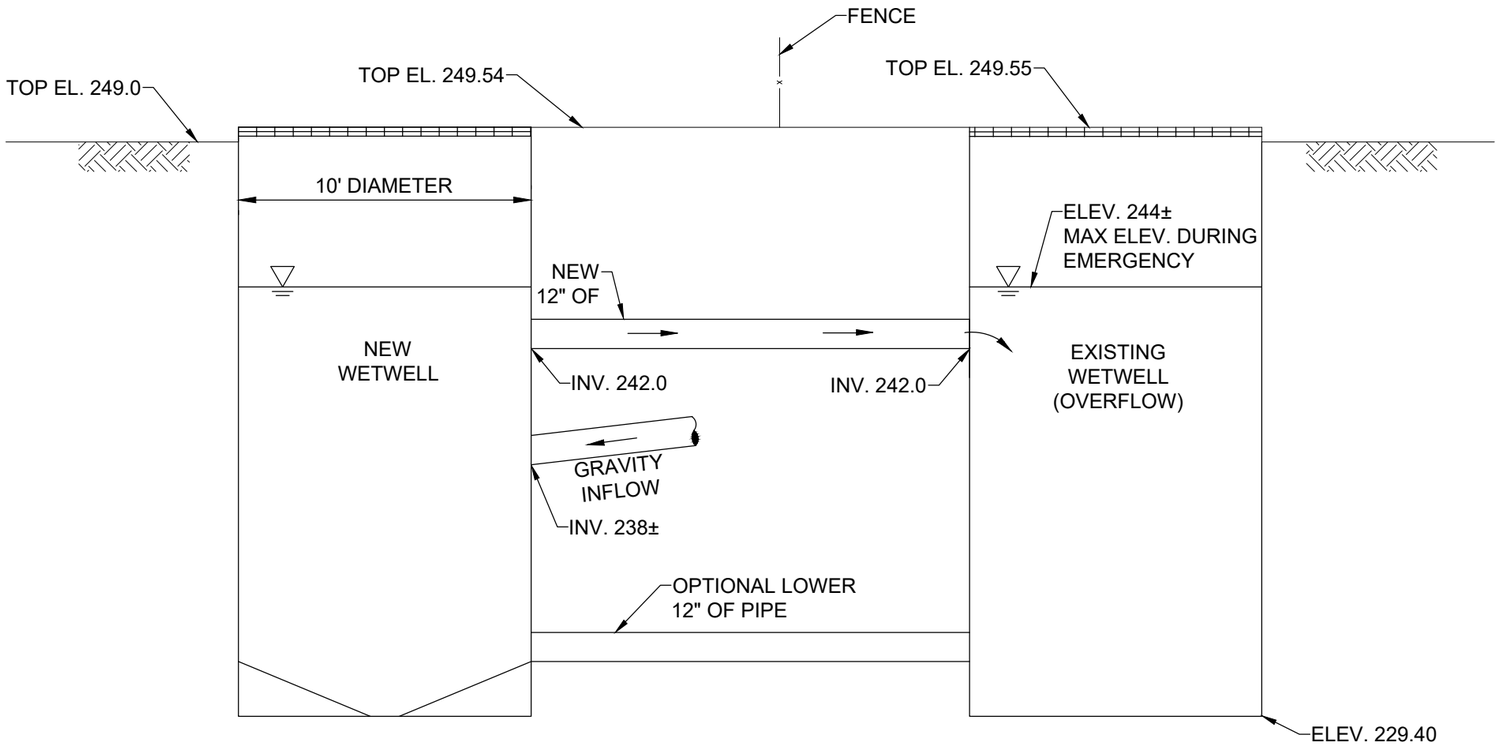
GRAPHIC SCALE

0 5 10 20

(IN FEET)

1 IN = 10 FT

REGISTERED PROFESSIONAL ENGINEER
STEVEN G. TANAKA
No. 49779
FOR PLAN REVIEW ONLY
NOT FOR CONSTRUCTION
CIVIL
STATE OF CALIFORNIA



1 EXISTING AND NEW WETWELL

Scale: NTS

WALLACE GROUP®

CIVIL AND TRANSPORTATION ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING / GIS SOLUTIONS
WATER RESOURCES

612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

GLP LIFT STATION
OVERFLOW WETWELL SCHEMATIC

JOB No. :	1011-0003-04
DRAWING :	DETAIL
DRAWN BY:	SGT/ASB
DATE :	11/27/17
SCALE :	NTS

REGISTERED PROFESSIONAL ENGINEER
STEVEN G. TANAKA
No. 49779
FOR PLAN REVIEW ONLY
NOT FOR CONSTRUCTION
CIVIL
STATE OF CALIFORNIA

AIRPORT

SAN FELIPE RD (ROAD 156B)

METAL POST

VENT

4IN PVC VENT

221.34= VAULT LID

VAULT

191.99 = INVERT ELEVATION BOTTOM OF WET WELL

TOP OF PIPE = 203.89

HOSE BIB

POWER BOX
INSTRUMENTATION BOX

EXPOSED 2IN PVC

1IN CONDUIT RISER

SSMH
RIM=220.13
8IN FL DROP = 211.33
INVERT=203.08

ELE PANEL

SS

SSMH
RIM=219.95
INVERT=211.55

ELE PANEL

ELE RISER AND METER TO REMAIN

ELE. GROUND

BFP

2IN RISER

1IN DRAIN

EXPOSED 2IN PVC END

1IN RISER

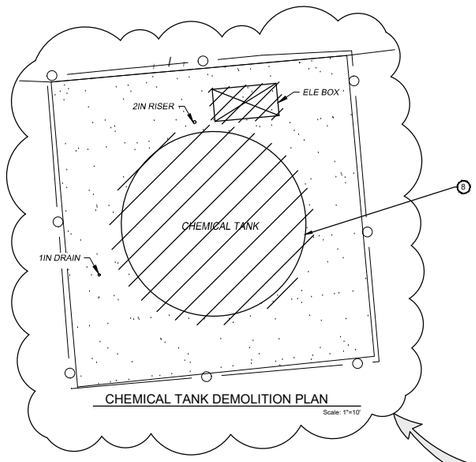
3IN RISER

CONCRETE DI? ABANDONED?

SD

SD

SD



CHEMICAL TANK DEMOLITION PLAN

Scale: 1"=10'

	KEYNOTES
1	BIOCUBES, TWO STACKS, 6 TRAYS EACH, MOUNTED ON 12' X 8' CONCRETE RAISED SLAB (6 INCHES).
2	4" DIAMETER DIP VENT PIPING, PROTECTO 401 CERAMIC EPOXY LINED, STANDARD ASPHALTIC COATING.
3	AIR BLOWER TO DRAW AIR INTO BIOCUBES. PROVIDE 240V, 3 PHASE POWER TO BLOWER.
4	CONNECT VENT LINE TO EXISTING WETWELL.
5	TWO 6-FT DIAMETER, 3,000 GALLON BURIED OVERFLOW TANKS.
6	PROVIDE NEW CONCRETE PAD, 6" THICKNESS.
7	REPLACE DISCHARGE PIPING IN WETWELL.
8	REMOVE EXISTING BIOXIDE TANK AND CONTROL BOX.
9	REMOVE EXISTING DO2E PANEL.
10	NEW 50kW STANDBY GENERATOR.
11	2" GALVANIZED STEEL CONDENSATE DRAIN TO WETWELL.

WALLACE GROUP®

CIVIL AND TRANSPORTATION ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING / GIS SOLUTIONS
WATER RESOURCES

612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

AIRPORT LIFT STATION
CONCEPTUAL SITE PLAN

JOB No. :	1011-0003-04
DRAWING :	SITE
DRAWN BY:	SGT/ASB
DATE :	11/27/17
SCALE :	1" = 10'

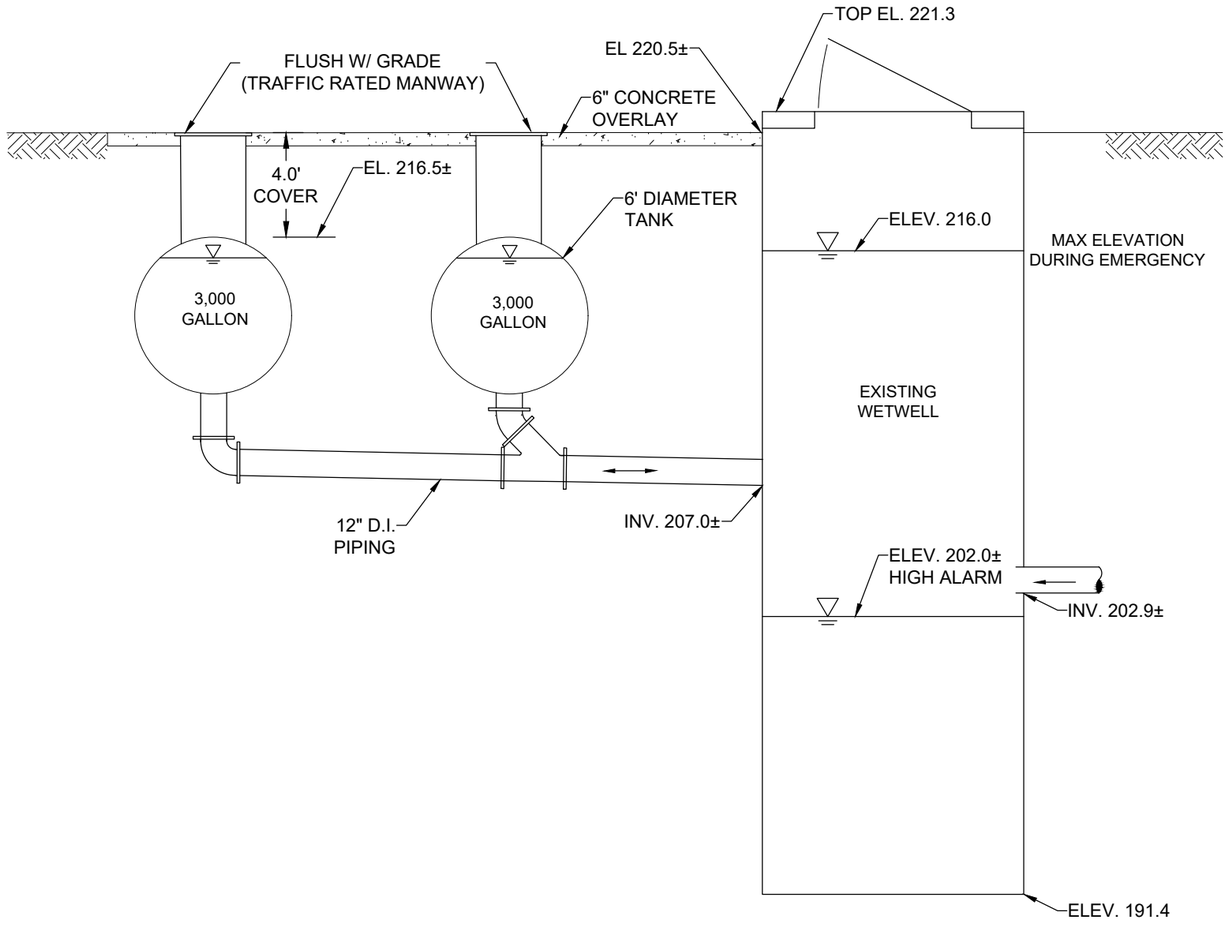
GRAPHIC SCALE

0 5 10 20

(IN FEET)

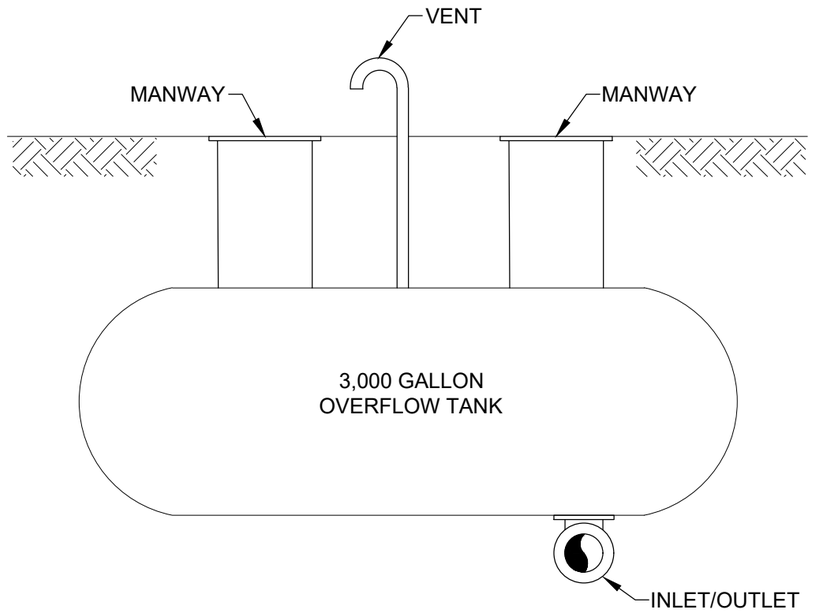
1 IN = 10 FT

REGISTERED PROFESSIONAL ENGINEER
STEVEN G. TANAKA
No. 49779
FOR PLAN REVIEW ONLY
NOT FOR CONSTRUCTION
CIVIL
STATE OF CALIFORNIA



1 OVERFLOW TANK WITH WETWELL

Scale: NTS



2 OVERFLOW TANK PROFILE

Scale: NTS

WALLACE GROUP®
CIVIL AND TRANSPORTATION ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING / GIS SOLUTIONS
WATER RESOURCES

612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

AIRPORT LIFT STATION
OVERFLOW TANK SCHEMATIC

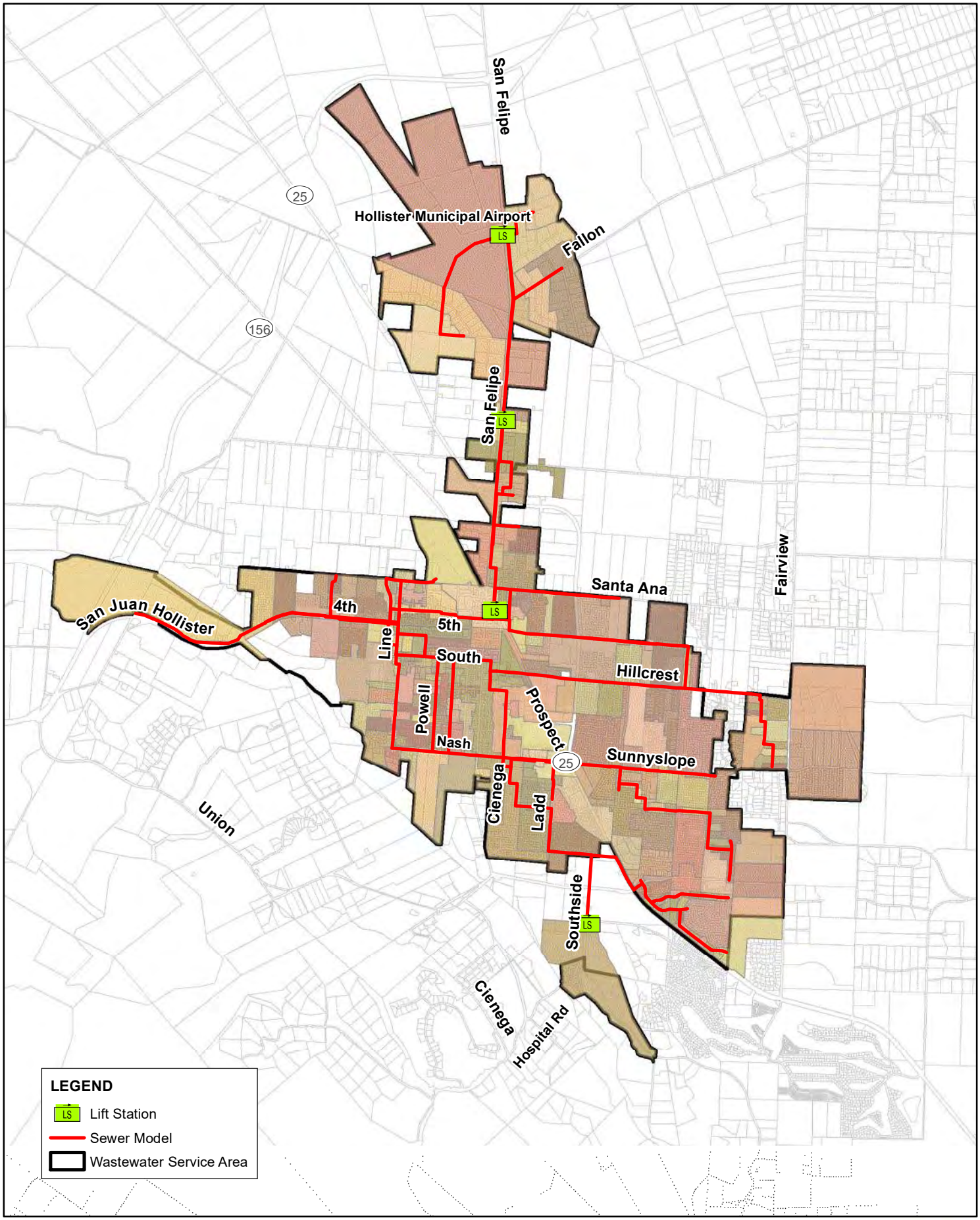
JOB No. :	1011-0003-04
DRAWING :	DETAIL
DRAWN BY:	SGT/ASB
DATE :	11/27/17
SCALE :	NTS

N

REGISTERED PROFESSIONAL ENGINEER
STEVEN G. TANAKA
No. 49779
FOR PLAN REVIEW ONLY
NOT FOR CONSTRUCTION
CIVIL
STATE OF CALIFORNIA

APPENDIX B

2017 Sewer Model Flow Results



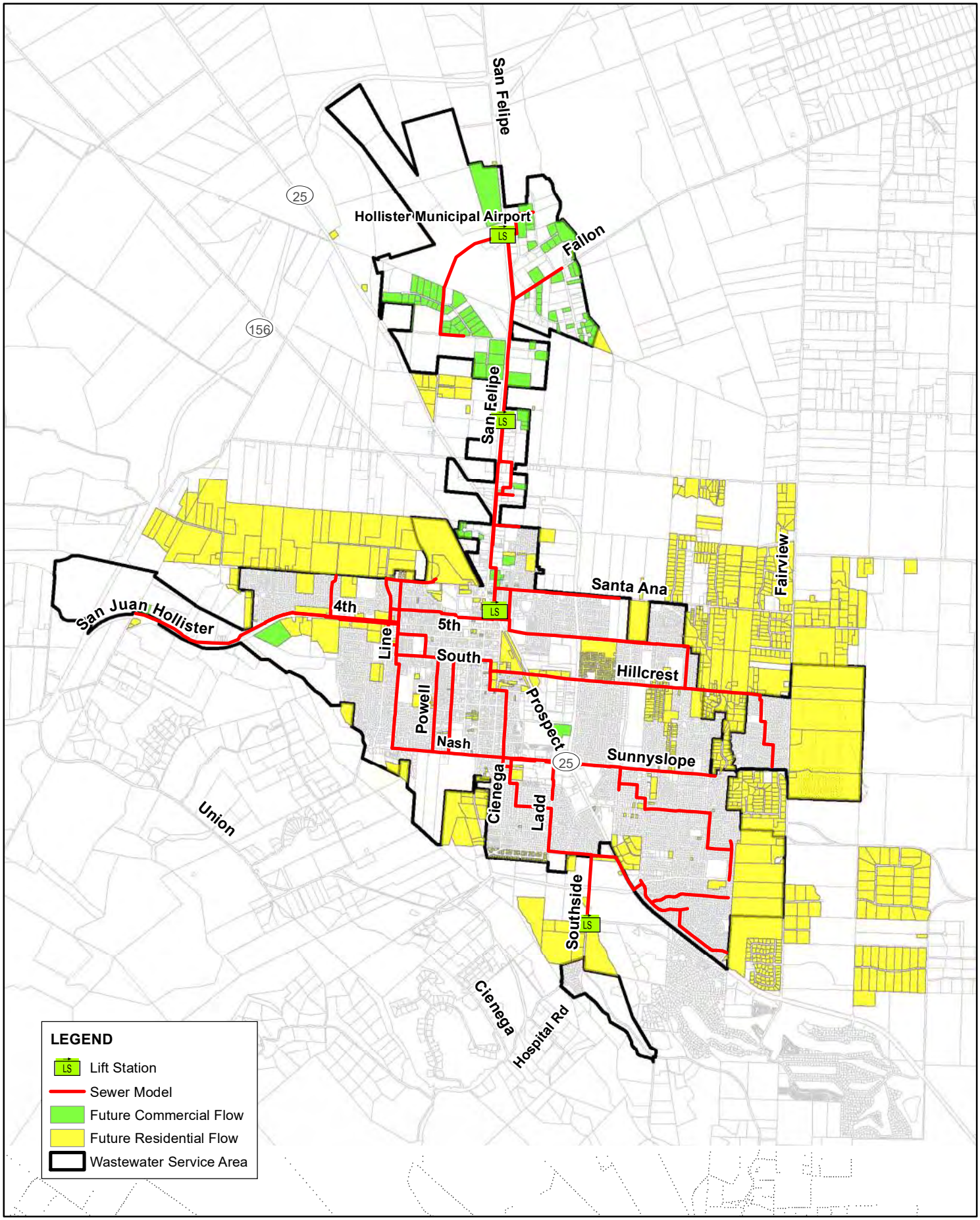
WALLACE GROUP
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE B-1: WASTEWATER FLOW TRIBUTARY BASIN MAP

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.



CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES

WALLACE GROUP

612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
www.wallacegroup.us

NTS

CITY OF HOLLISTER
2017 SSCSMPU

FIGURE B-2: FUTURE SEWER FLOW LOCATIONS

NOTES:
BASEMAP COMPILED FROM GIS DATA PROVIDED BY SAN BENITO COUNTY AND THE CITY OF HOLLISTER.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.
MAP PRODUCED DECEMBER 2017.

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Existing MDF d/D (exist pipe dia)	Existing MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
101-102	81	10	10	0.04	0.04	NO		
102-103	85	10	10	0.04	0.04	NO		
103-104	211	10	10	0.04	0.04	NO		
104-WG104	118	10	10	0.04	0.04	NO		
105-WG105	188	10	10	0.05	0.05	NO		
106-107	226	10	10	0.07	0.07	NO		
107-108	234	10	10	0.09	0.09	NO		
108-110	284	10	10	0.10	0.10	NO		
109-111	296	10	10	0.10	0.10	NO		
110-109	267	10	10	0.09	0.09	NO		
111-113	281	10	10	0.15	0.15	NO		
112-113	267	10	10	0.15	0.15	NO		
113-114	260	10	10	0.16	0.16	NO		
114-115	113	10	10	0.16	0.16	NO		
115-116	181	10	10	0.17	0.17	NO		
116-117	253	10	10	0.18	0.18	NO		
117-118	170	10	10	0.22	0.22	NO		
118-119	169	10	10	0.28	0.28	NO		
119-134	234	12	12	0.27	0.27	NO		
120-121	322	8	8	0.06	0.06	NO		
121-122	280	8	8	0.07	0.07	NO		
122-123	297	8	8	0.07	0.07	NO		
123-124	221	8	8	0.06	0.06	NO		
124-125	221	8	8	0.07	0.07	NO		
125-126	212	8	8	0.11	0.11	NO		
126-127	103	8	8	0.16	0.16	NO		
127-128	189	8	8	0.15	0.15	NO		
128-129	175	8	8	0.13	0.13	NO		
129-130	177	8	8	0.12	0.12	NO		
130-131	103	8	8	0.14	0.14	NO		
131-132	110	8	8	0.15	0.15	NO		
132-133	193	8	8	0.15	0.15	NO		
133-119	276	8	8	0.27	0.27	NO		
134-135	199	12	12	0.28	0.28	NO		
135-136	66	12	12	0.29	0.29	NO		
136-137	216	12	12	0.30	0.30	NO		
137-141	102	12	12	0.31	0.31	NO		
138-141	140	8	8	0.32	0.32	NO		
141-142	248	12	12	0.32	0.32	NO		
142-369	145	12	12	0.31	0.31	NO		
143-144	120	12	12	0.21	0.21	NO		
144-145	200	12	12	0.23	0.23	NO		
145-146	227	12	12	0.21	0.21	NO		
146-147	323	12	12	0.22	0.22	NO		
147-148	354	12	12	0.18	0.18	NO		
148-149	96	12	12	0.11	0.11	NO		
149-157	88	12	12	0.18	0.18	NO		
150-151	299	12	12	0.26	0.26	NO		
151-152	27	12	12	0.26	0.26	NO		
152-WG152	314	15	15	0.24	0.24	NO		
153-154	65	12	12	0.30	0.30	NO		
154-155	421	12	12	0.30	0.30	NO		
155-156	428	12	12	0.22	0.22	NO		
156-152	320	12	12	0.23	0.23	NO		
157-150	402	12	12	0.26	0.26	NO		
158-WG158	376	15	15	0.23	0.23	NO		
159-160	307	15	15	0.23	0.23	NO		
160-161	320	15	15	0.23	0.23	NO		
161-162	319	15	15	0.24	0.24	NO		
162-163	310	15	15	0.24	0.24	NO		
163-164	300	15	15	0.23	0.23	NO		
164-171	184	15	15	0.24	0.24	NO		
165-166	231	12	12	0.06	0.06	NO		
166-167	108	12	12	0.09	0.09	NO		
167-168	170	12	12	0.16	0.16	NO		
168-169	185	12	12	0.20	0.20	NO		
169-170	50	12	12	0.19	0.19	NO		
170-288	611	12	12	0.24	0.24	NO		
171-WG171	273	15	15	0.24	0.24	NO		
172-175	429	15	15	0.25	0.25	NO		
173-172	297	15	15	0.25	0.25	NO		
174-173	7	15	15	0.36	0.36	NO		
175-176	382	15	15	0.24	0.24	NO		
176-177	290	15	15	0.23	0.23	NO		
177-178	286	15	15	0.25	0.25	NO		
178-179	314	15	15	0.30	0.30	NO		
179-180	301	18	18	0.27	0.27	NO		
180-268	276	18	18	0.26	0.26	NO		
181-182	335	8	8	0.12	0.12	NO		
182-186	290	8	8	0.16	0.16	NO		
183-182	261	8	8	0.13	0.13	NO		
184-183	298	8	8	0.10	0.10	NO		
185-WG185	263	8	8	0.09	0.09	NO		
186-187	303	8	8	0.16	0.16	NO		
187-199	295	8	8	0.25	0.21	NO		
188-200	394	6	8	0.49	0.29	YES	Sunset Drive	Valley View Road
189-188	227	6	8	0.63	0.40	YES	Sunset Drive	Sunset Drive
190-189	301	6	8	0.62	0.33	YES	Sunset Drive	Sunset Drive

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Existing MDF d/D (exist pipe dia)	Existing MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
191-190	300	6	8	0.45	0.27	YES	Sunset Drive	Sunset Drive
192-191	300	6	8	0.43	0.26	YES	Sunset Drive	Sunset Drive
193-192	125	6	8	0.46	0.28	YES	Sunset Drive	Sunset Drive
194-193	302	6	8	0.44	0.27	YES	Sunset Drive	Sunset Drive
195-194	331	6	8	0.37	0.23	YES	Sunset Drive	Sunset Drive
196-195	348	6	8	0.37	0.23	YES	Sunset Drive	Sunset Drive
197-196	165	6	8	0.52	0.30	YES	Sunset Drive	Sunset Drive
198-564	258	6	8	0.51	0.30	YES	Sunset Drive	Cerra Vista Drive
199-198	264	6	8	0.50	0.30	YES	Sunset Drive	Cerra Vista Drive
200-201	139	6	8	0.47	0.29	YES	Sunset Drive	Valley View Road
201-202	192	6	8	0.49	0.29	YES	Sunset Drive	Valley View Road
202-203	194	6	8	0.61	0.35	YES	Sunset Drive	Iris Street
203-204	275	6	8	0.59	0.34	YES	Sunset Drive	Iris Street
204-205	359	6	8	0.51	0.30	YES	Sunset Drive	Cedar Street
205-207	302	6	8	0.51	0.31	YES	Sunset Drive	Cedar Street
206-207	242	8	8	0.27	0.24	NO		
207-208	34	8	10	0.38	0.25	YES	Sunset Drive	Memorial Drive
208-209	265	8	10	0.39	0.26	YES	Sunset Drive	Memorial Drive
209-245	274	8	10	0.47	0.31	YES	Sunset Drive	Memorial Drive
210-211	267	10	10	0.08	0.08	NO		
211-212	277	10	10	0.10	0.10	NO		
212-213	244	10	10	0.12	0.12	NO		
213-217	342	10	10	0.11	0.11	NO		
214-218	161	10	10	0.17	0.17	NO		
215-214	327	10	10	0.14	0.14	NO		
216-215	299	10	10	0.11	0.11	NO		
217-216	193	10	10	0.09	0.09	NO		
218-219	250	10	10	0.16	0.16	NO		
219-220	261	10	10	0.16	0.16	NO		
220-221	264	10	10	0.19	0.19	NO		
221-222	61	10	10	0.21	0.21	NO		
222-226	178	10	10	0.22	0.22	NO		
223-230	420	8	8	0.24	0.24	NO		
223-337	178	8	8	0.24	0.24	NO		
224-223	247	8	8	0.22	0.22	NO		
225-343	358	10	10	0.23	0.23	NO		
226-225	347	10	10	0.22	0.22	NO		
227-231	183	8	8	0.18	0.18	NO		
228-227	272	8	8	0.24	0.24	NO		
229-228	420	8	8	0.29	0.29	NO		
230-229	421	8	8	0.26	0.26	NO		
231-318	280	8	8	0.20	0.20	NO		
232-308	248	10	10	0.22	0.22	NO		
234-233	14	15	15	0.18	0.18	NO		
234-307	299	15	15	0.25	0.25	NO		
235-234	212	15	15	0.23	0.23	NO		
236-232	518	10	10	0.22	0.22	NO		
237-235	230	15	15	0.24	0.24	NO		
238-237	300	15	15	0.23	0.23	NO		
239-236	351	10	10	0.24	0.24	NO		
240-238	302	15	15	0.23	0.23	NO		
241-262	85	12	15	0.55	0.36	YES	Nash Road	Sunnyslope Road
242-260	299	12	15	0.57	0.37	YES	Nash Road	Sunnyslope Road
243-242	278	12	15	0.50	0.33	YES	Nash Road	Sunnyslope Road
244-243	288	12	12	0.47	0.43	YES	Nash Road	Sunnyslope Road
245-258	29	8	10	0.60	0.38	YES	Nash Road	Memorial Drive
246-245	602	8	8	0.41	0.36	YES	Nash Road	Sunnyslope Road
247-246	128	8	8	0.30	0.30	NO		
248-247	246	8	8	0.30	0.30	NO		
249-248	407	8	8	0.28	0.28	NO		
250-249	128	8	8	0.26	0.26	NO		
251-250	315	8	8	0.24	0.24	NO		
252-251	417	8	8	0.22	0.22	NO		
253-252	273	8	8	0.20	0.20	NO		
254-253	272	8	8	0.17	0.17	NO		
255-254	299	8	8	0.20	0.20	NO		
256-255	202	8	8	0.22	0.22	NO		
257-256	194	8	8	0.24	0.24	NO		
258-259	371	8	10	0.50	0.34	YES	Nash Road	Sunnyslope Road
259-244	26	12	12	0.34	0.34	NO		
260-261	158	12	15	0.53	0.35	YES	Nash Road	Sunnyslope Road
261-241	57	12	15	0.50	0.33	YES	Nash Road	Sunnyslope Road
262-290	413	12	15	0.51	0.34	YES	Nash Road	Sunnyslope Road
263-289	475	10	10	0.34	0.28	NO		
264-265	213	12	15	0.52	0.34	YES	Nash Road	Tres Pinos Road
265-267	302	12	15	0.52	0.34	YES	Nash Road	Tres Pinos Road
266-179	278	18	18	0.16	0.16	NO		
267-269	404	12	15	0.52	0.34	YES	Nash Road	Nash Road
268-440	610	18	18	0.25	0.25	NO		
269-270	421	12	15	0.52	0.34	YES	Nash Road	Nash Road
270-271	132	12	15	0.51	0.36	YES	Nash Road	Nash Road
271-284	273	15	15	0.37	0.37	NO		
272-273	19	15	18	0.49	0.34	YES	Line Street	Line Street
273-415	295	15	18	0.56	0.40	YES	Line Street	Line Street
274-272	281	15	18	0.50	0.35	YES	Line Street	Nash Road
275-274	85	15	15	0.47	0.43	NO		
276-275	371	15	15	0.48	0.48	NO		
277-276	50	15	15	0.49	0.49	NO		

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Existing MDF d/D (exist pipe dia)	Existing MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
278-277	321	15	15	0.48	0.48	NO		
279-278	364	15	15	0.49	0.49	NO		
280-279	291	15	15	0.50	0.50	NO		
281-280	290	15	15	0.48	0.48	NO		
282-281	265	15	15	0.43	0.43	NO		
283-282	250	15	15	0.39	0.39	NO		
284-283	268	15	15	0.37	0.38	NO		
285-266	469	8	8	0.22	0.22	NO		
286-285	395	8	8	0.15	0.15	NO		
287-293	46	12	12	0.72	0.48	NO		
288-287	294	12	12	0.50	0.42	NO		
289-291	174	12	15	0.55	0.36	YES	Nash Road	Tres Pinos Road
290-289	17	12	15	0.45	0.33	YES	Nash Road	Sunnyslope Road
291-292	258	12	15	0.62	0.40	YES	Nash Road	Tres Pinos Road
292-293	334	12	15	0.70	0.44	YES	Nash Road	Tres Pinos Road
293-294	311	12	15	0.62	0.40	YES	Nash Road	Tres Pinos Road
294-297	105	12	15	0.57	0.37	YES	Nash Road	Tres Pinos Road
295-296	219	12	15	0.84	0.52	YES	Nash Road	Tres Pinos Road
296-264	158	12	15	0.67	0.43	YES	Nash Road	Tres Pinos Road
297-295	268	12	15	0.72	0.45	YES	Nash Road	Tres Pinos Road
298-374	383	15	15	0.34	0.34	NO		
299-298	317	15	15	0.30	0.30	NO		
2NDEJ-WG380	152	10	10	0.66	0.66	NO		
300-299	343	15	15	0.29	0.29	NO		
301-300	261	15	15	0.29	0.29	NO		
302-301	249	15	15	0.29	0.29	NO		
303-302	223	15	15	0.30	0.30	NO		
304-303	286	15	15	0.28	0.28	NO		
305-304	300	15	15	0.27	0.27	NO		
306-305	263	15	15	0.29	0.29	NO		
307-306	551	15	15	0.30	0.30	NO		
308-307	18	10	10	0.20	0.20	NO		
309-240	301	15	15	0.24	0.24	NO		
310-239	511	10	10	0.24	0.24	NO		
311-309	292	12	12	0.29	0.29	NO		
312-310	448	8	8	0.24	0.24	NO		
313-311	288	12	12	0.29	0.29	NO		
314-312	271	8	8	0.13	0.13	NO		
315-316	20	8	8	0.31	0.31	NO		
316-313	382	15	15	0.42	0.42	NO		
317-315	283	8	8	0.26	0.26	NO		
318-317	402	8	8	0.21	0.21	NO		
319-321	508	10	10	0.03	0.03	NO		
320-319	470	10	10	0.02	0.02	NO		
321-322	292	15	15	0.08	0.08	NO		
322-356	279	15	15	0.57	0.57	NO		
323-355	596	18	18	0.26	0.26	NO		
324-323	286	18	18	0.26	0.26	NO		
325-324	231	18	18	0.28	0.28	NO		
326-327	28	18	18	0.24	0.24	NO		
327-325	244	18	18	0.28	0.28	NO		
328-326	266	18	18	0.26	0.26	NO		
329-328	195	18	18	0.30	0.30	NO		
330-329	462	18	18	0.24	0.24	NO		
332-330	353	8	8	0.39	0.39	NO		
333-332	305	8	8	0.35	0.35	NO		
334-333	346	8	8	0.31	0.31	NO		
335-334	334	8	8	0.26	0.26	NO		
336-335	410	8	8	0.27	0.27	NO		
337-336	151	8	8	0.27	0.27	NO		
338-224	295	12	12	0.16	0.16	NO		
339-338	324	12	12	0.18	0.18	NO		
340-339	366	12	12	0.18	0.18	NO		
341-340	258	10	10	0.19	0.19	NO		
342-341	275	10	10	0.17	0.17	NO		
343-342	301	10	10	0.20	0.20	NO		
344-345	25	24	24	0.26	0.26	NO		
345-432	178	24	24	0.29	0.29	NO		
349-344	235	18	18	0.25	0.25	NO		
350-349	548	18	18	0.26	0.26	NO		
351-350	350	18	18	0.25	0.25	NO		
352-351	233	18	18	0.28	0.28	NO		
353-352	663	18	18	0.26	0.26	NO		
354-353	511	18	18	0.24	0.24	NO		
355-354	220	18	18	0.25	0.25	NO		
356-357	255	15	15	0.18	0.18	NO		
357-358	144	15	15	0.19	0.19	NO		
358-359	318	15	15	0.22	0.22	NO		
359-366	82	15	15	0.23	0.23	NO		
360-379	763	18	18	0.19	0.19	NO		
361-360	277	15	15	0.31	0.31	NO		
362-361	279	15	15	0.24	0.24	NO		
363-362	23	6	6	0.34	0.34	NO		
364-362	375	15	15	0.23	0.23	NO		
365-364	462	15	15	0.21	0.21	NO		
366-365	395	15	15	0.21	0.21	NO		
367-368	400	10	10	0.15	0.15	NO		
368-WG368	257	10	10	0.30	0.30	NO		

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Existing MDF d/D (exist pipe dia)	Existing MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
369-370	55	12	12	0.22	0.22	NO		
370-143	79	12	12	0.17	0.17	NO		
371-363	523	6	6	0.12	0.12	NO		
372-371	529	6	6	0.09	0.09	NO		
373-372	64	6	6	0.00	0.00	NO		
374-375	307	15	15	0.32	0.32	NO		
375-376	300	18	18	0.35	0.35	NO		
376-396	242	30	30	0.27	0.27	NO		
377-376	20	27	27	0.25	0.26	NO		
378-380	42	12	12	0.30	0.30	NO		
379-2NDE	44	18	18	0.53	0.53	NO		
380-WG380	24	18	18	0.18	0.18	NO		
381-377	242	27	27	0.26	0.26	NO		
382-530	451	30	30	0.22	0.22	NO		
383-382	38	30	30	0.23	0.23	NO		
384-402	270	6	6	0.16	0.16	NO		
385-383	99	30	30	0.24	0.24	NO		
386-385	400	30	30	0.23	0.23	NO		
387-386	366	30	30	0.25	0.25	NO		
388-387	364	30	30	0.26	0.26	NO		
389-388	300	30	30	0.24	0.24	NO		
390-389	57	30	30	0.23	0.23	NO		
391-390	59	30	30	0.21	0.21	NO		
392-391	535	30	30	0.23	0.23	NO		
393-392	97	30	30	0.29	0.29	NO		
394-393	353	30	30	0.28	0.28	NO		
395-394	405	30	30	0.26	0.26	NO		
396-395	342	30	30	0.27	0.27	NO		
397-398	61	6	6	0.08	0.08	NO		
398-399	201	6	6	0.17	0.17	NO		
399-400	275	6	6	0.20	0.20	NO		
400-401	251	6	6	0.26	0.26	NO		
401-384	244	6	6	0.21	0.21	NO		
402-403	5	8	8	0.12	0.12	NO		
403-528	203	18	18	0.09	0.09	NO		
404-545	137	12	12	0.25	0.25	NO		
405-404	188	12	12	0.20	0.20	NO		
406-545	330	18	18	0.29	0.30	NO		
407-406	182	15	15	0.48	0.48	NO		
408-438	334	30	30	0.30	0.30	NO		
409-407	276	15	15	0.50	0.50	NO		
410-408	358	27	27	0.39	0.39	NO		
411-409	278	15	15	0.47	0.47	NO		
412-411	360	15	15	0.46	0.46	NO		
413-412	117	15	15	0.41	0.41	NO		
414-413	445	15	15	0.48	0.48	NO		
415-416	69	15	18	0.56	0.40	YES	Line Street	Line Street
416-417	375	15	18	0.52	0.36	YES	Line Street	Line Street
417-418	375	15	18	0.51	0.36	YES	Line Street	Line Street
418-419	106	15	18	0.52	0.36	YES	Line Street	Line Street
419-420	253	15	18	0.53	0.37	YES	Line Street	Line Street
420-421	20	15	18	0.51	0.36	YES	Line Street	Line Street
421-422	374	15	18	0.54	0.37	YES	Line Street	Line Street
422-423	374	15	18	0.53	0.37	YES	Line Street	Line Street
423-414	377	15	18	0.55	0.42	YES	Line Street	Line Street
424-410	552	27	27	0.34	0.34	NO		
425-424	496	27	27	0.35	0.35	NO		
426-433	189	14	14	0.34	0.34	NO		
427-425	501	27	27	0.35	0.35	NO		
428-427	571	24	24	0.33	0.33	NO		
429-428	488	24	24	0.29	0.29	NO		
430-429	609	24	24	0.28	0.28	NO		
431-430	259	24	24	0.29	0.29	NO		
432-431	176	24	24	0.26	0.26	NO		
433-434	381	14	14	0.13	0.13	NO		
434-435	189	14	14	0.15	0.15	NO		
435-436	325	14	14	0.15	0.15	NO		
436-437	324	14	14	0.15	0.15	NO		
437-405	381	14	14	0.17	0.17	NO		
438-542	768	30	30	0.41	0.41	NO		
440-441	383	18	18	0.25	0.25	NO		
441-442	461	18	18	0.26	0.26	NO		
442-443	456	18	18	0.26	0.26	NO		
443-444	564	18	18	0.24	0.24	NO		
444-445	366	18	18	0.25	0.25	NO		
445-446	268	18	18	0.26	0.26	NO		
446-447	345	18	18	0.26	0.26	NO		
447-344	336	18	18	0.26	0.26	NO		
448-397	229	8	8	0.07	0.08	NO		
449-448	246	8	8	0.06	0.07	NO		
450-449	237	8	8	0.03	0.03	NO		
451-452	297	6	6	0.07	0.07	NO		
452-453	799	6	6	0.17	0.17	NO		
453-454	30	6	6	0.23	0.23	NO		
454-455	364	6	6	0.28	0.28	NO		
455-456	302	6	6	0.30	0.31	NO		
456-457	113	6	6	0.31	0.29	NO		
457-458	189	6	8	0.32	0.20	YES	Powell Street	Powell Street

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Existing MDF d/D (exist pipe dia)	Existing MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
458-459	181	6	8	0.33	0.21	YES	Powell Street	Powell Street
459-460	121	6	8	0.48	0.31	YES	Powell Street	Powell Street
460-461	35	6	8	0.54	0.34	YES	Powell Street	Powell Street
461-462	232	6	8	0.59	0.37	YES	Powell Street	Powell Street
462-463	35	6	8	0.64	0.39	YES	Powell Street	Powell Street
463-464	99	6	8	0.52	0.31	YES	Powell Street	Powell Street
464-466	195	6	8	0.73	0.41	YES	Powell Street	Powell Street
466-467	9	6	10	0.84	0.35	YES	Powell Street	Powell Street
467-427	379	6	10	0.62	0.27	YES	Powell Street	Powell Street
468-428	175	6	10	0.88	0.37	YES	West Street	West Street
469-468	200	6	10	0.85	0.30	YES	West Street	West Street
470-469	106	6	8	0.66	0.34	YES	West Street	West Street
471-470	292	6	8	0.60	0.36	YES	West Street	West Street
472-471	296	6	8	0.57	0.34	YES	West Street	West Street
473-472	548	6	8	0.53	0.32	YES	West Street	West Street
474-473	333	6	6	0.46	0.41	NO		
475-474	337	6	6	0.41	0.42	NO		
476-475	547	6	6	0.41	0.41	NO		
477-476	278	6	6	0.41	0.41	NO		
478-477	270	6	6	0.21	0.21	NO		
479-526	898	10	10	0.21	0.21	NO		
480-511	594	12	12	0.31	0.31	NO		
481-480	627	10	10	0.36	0.36	NO		
482-481	204	10	10	0.38	0.38	NO		
483-482	419	10	10	0.38	0.38	NO		
484-483	600	10	10	0.34	0.34	NO		
485-484	252	10	10	0.33	0.33	NO		
486-487	670	10	10	0.18	0.18	NO		
487-488	360	10	10	0.17	0.17	NO		
488-489	354	10	10	0.21	0.21	NO		
489-510	336	10	10	0.34	0.34	NO		
490-497	237	10	10	0.10	0.10	NO		
491-490	600	10	10	0.05	0.05	NO		
492-491	266	10	10	0.00	0.00	NO		
493-498	294	12	12	0.13	0.13	NO		
494-493	332	12	12	0.13	0.13	NO		
495-494	291	10	10	0.12	0.12	NO		
496-495	249	10	10	0.07	0.07	NO		
497-496	300	10	10	0.09	0.09	NO		
498-499	65	12	12	0.14	0.14	NO		
499-500	260	12	12	0.15	0.15	NO		
500-501	295	12	12	0.15	0.15	NO		
501-502	293	12	12	0.14	0.14	NO		
502-503	295	12	12	0.13	0.13	NO		
503-504	232	15	15	0.12	0.12	NO		
504-505	304	15	15	0.12	0.12	NO		
505-506	298	15	15	0.11	0.11	NO		
506-508	748	15	15	0.11	0.11	NO		
507-509	227	15	15	0.09	0.09	NO		
508-507	119	15	15	0.11	0.11	NO		
509-AP	21	15	15	0.54	0.54	NO		
510-509	169	15	15	0.17	0.17	NO		
511-510	1797	12	12	0.32	0.32	NO		
512-520	256	12	12	0.11	0.11	NO		
514-GLP	11	10	10	0.34	0.34	NO		
515-514	49	10	10	0.39	0.39	NO		
516-515	284	10	10	0.36	0.36	NO		
517-516	246	10	10	0.32	0.32	NO		
518-517	476	10	10	0.31	0.31	NO		
519-518	251	10	10	0.33	0.33	NO		
520-521	509	12	12	0.11	0.11	NO		
521-522	503	12	12	0.11	0.11	NO		
522-480	503	12	12	0.21	0.21	NO		
523-526	727	10	10	0.19	0.19	NO		
524-525	425	10	10	0.31	0.31	NO		
525-368	210	10	10	0.31	0.31	NO		
526-524	722	10	10	0.30	0.30	NO		
527-WG527	7	14	14	0.07	0.07	NO		
528-530	301	21	21	0.20	0.20	NO		
529-531	943	21	21	0.07	0.07	NO		
530-543	79	36	36	0.15	0.15	NO		
531-532	688	21	21	0.10	0.10	NO		
532-533	545	21	21	0.11	0.11	NO		
533-WG537	173	21	21	0.34	0.34	NO		
534-WG534	187	21	21	0.38	0.38	NO		
535-536	477	36	36	0.30	0.30	NO		
536-548	93	36	36	0.28	0.28	NO		
537-WG537	27	36	36	0.27	0.27	NO		
538-537	473	36	36	0.32	0.32	NO		
539-547	403	36	36	0.41	0.41	NO		
540-539	201	36	36	0.35	0.35	NO		
541-540	582	36	36	0.40	0.40	NO		
542-541	596	36	36	0.44	0.44	NO		
543-542	26	27	27	0.39	0.39	NO		
544-543	310	27	27	0.21	0.21	NO		
545-544	35	36	36	0.15	0.15	NO		
546-535	612	36	36	0.29	0.29	NO		
547-538	78	36	36	0.46	0.46	NO		

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Existing MDF d/D (exist pipe dia)	Existing MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
548-549	333	36	36	0.20	0.20	NO		
548-WG548	23	21	21	0.36	0.36	NO		
549-550	240	36	36	0.30	0.30	NO		
550-552	480	36	36	0.29	0.29	NO		
551-553	152	21	21	0.28	0.28	NO		
552-SPI	43	36	36	0.25	0.25	NO		
553-552	7	21	21	0.24	0.24	NO		
562-197	240	6	8	0.58	0.33	YES	Sunset Drive	Cerra Vista Drive
563-562	268	6	8	0.55	0.32	YES	Sunset Drive	Cerra Vista Drive
564-563	257	6	8	0.53	0.32	YES	Sunset Drive	Cerra Vista Drive
565-566	190	8	8	0.09	0.09	NO		
566-567	122	8	8	0.09	0.09	NO		
567-568	240	8	8	0.10	0.10	NO		
568-569	256	8	8	0.14	0.14	NO		
569-570	228	8	8	0.20	0.20	NO		
570-571	239	8	8	0.18	0.18	NO		
571-533	291	8	8	0.24	0.24	NO		
576-577	326	36	36	0.37	0.37	NO		
577-578	586	36	36	0.36	0.36	NO		
578-582	229	36	36	0.38	0.38	NO		
580-WWTP	331	36	36	0.32	0.32	NO		
581-580	349	36	36	0.37	0.37	NO		
582-581	24	36	36	0.41	0.41	NO		
583-576	109	36	36	0.36	0.36	NO		
584-583	221	36	36	0.33	0.33	NO		
585-584	32	36	36	0.26	0.26	NO		
586-585	280	36	36	0.31	0.31	NO		
587-586	592	36	36	0.38	0.38	NO		
588-587	582	36	36	0.36	0.36	NO		
APJ-GLP	6953	10	10	0.86	0.86	NO		
CDT-49	24	21	21	0.37	0.37	NO		
CDT-51	167	8	8	0.07	0.08	NO		
CDT-53	109	8	8	0.00	0.00	NO		
CDT-55	1920	4	4	0.03	0.05	NO		
CDT-57	270	8	8	0.07	0.07	NO		
CDT-59	270	8	8	0.07	0.07	NO		
CDT-61	1590	8	8	0.10	0.10	NO		
GLPJ-378	7121	12	12	0.73	0.73	NO		
SBCO-SS	42	8	8	0.55	0.55	NO		
SPI-SPO	1100	36	36	0.29	0.29	NO		
SPO-WG588	172	36	36	0.30	0.30	NO		
SSJ-153	1246	6	6	0.73	0.73	NO		
WG104-105	146	10	10	0.05	0.05	NO		
WG105-106	197	10	10	0.06	0.06	NO		
WG152-158	456	15	15	0.25	0.25	NO		
WG158-159	431	15	15	0.22	0.22	NO		
WG171-173	549	15	15	0.36	0.36	NO		
WG185-184	287	8	8	0.09	0.09	NO		
WG322-356	395	15	15	0.16	0.16	NO		
WG368-WG369	265	10	10	0.31	0.31	NO		
WG369-WG370	333	10	10	0.31	0.31	NO		
WG370-WG371	293	10	10	0.31	0.31	NO		
WG371-WG372	293	10	10	0.31	0.31	NO		
WG372-WG373	422	10	10	0.33	0.33	NO		
WG373-519	219	10	10	0.36	0.36	NO		
WG380-381	88	27	27	0.25	0.25	NO		
WG384-383	224	30	30	0.24	0.24	NO		
WG401-WG403	13	18	18	0.05	0.05	NO		
WG403-403	277	18	18	0.07	0.07	NO		
WG527-528	38	18	18	0.08	0.08	NO		
WG534-WG536	307	21	21	0.32	0.32	NO		
WG536-548	79	21	21	0.28	0.28	NO		
WG537-534	618	21	21	0.46	0.46	NO		
WG537-546	43	36	36	0.34	0.34	NO		
WG548-WG549	335	21	21	0.40	0.40	NO		
WG549-WG551	243	21	21	0.41	0.41	NO		
WG551-551	300	21	21	0.43	0.43	NO		
WG588-588	385	36	36	0.33	0.33	NO		

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Future MDF d/D (exist pipe dia)	Future MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
101-102	81	10	10	0.25	0.25	NO		
102-103	85	10	10	0.25	0.25	NO		
103-104	211	10	10	0.20	0.20	NO		
104-WG104	118	10	10	0.16	0.16	NO		
105-WG105	188	10	10	0.16	0.16	NO		
106-107	226	10	10	0.18	0.18	NO		
107-108	234	10	10	0.21	0.21	NO		
108-110	284	10	10	0.23	0.23	NO		
109-111	296	10	10	0.22	0.22	NO		
110-109	267	10	10	0.20	0.20	NO		
111-113	281	10	10	0.25	0.25	NO		
112-113	267	10	10	0.18	0.18	NO		
113-114	260	10	10	0.22	0.22	NO		
114-115	113	10	10	0.21	0.21	NO		
115-116	181	10	10	0.23	0.23	NO		
116-117	253	10	10	0.24	0.24	NO		
117-118	170	10	10	0.29	0.29	NO		
118-119	169	10	10	0.39	0.39	NO		
119-134	234	12	12	0.40	0.40	NO		
120-121	322	8	8	0.29	0.29	NO		
121-122	280	8	8	0.27	0.27	NO		
122-123	297	8	8	0.23	0.23	NO		
123-124	221	8	8	0.18	0.18	NO		
124-125	221	8	8	0.19	0.19	NO		
125-126	212	8	8	0.24	0.24	NO		
126-127	103	8	8	0.29	0.29	NO		
127-128	189	8	8	0.28	0.28	NO		
128-129	175	8	8	0.24	0.24	NO		
129-130	177	8	8	0.22	0.22	NO		
130-131	103	8	8	0.25	0.25	NO		
131-132	110	8	8	0.26	0.26	NO		
132-133	193	8	8	0.27	0.27	NO		
133-119	276	8	8	0.42	0.42	NO		
134-135	199	12	12	0.41	0.41	NO		
135-136	66	12	12	0.41	0.41	NO		
136-137	216	12	12	0.44	0.44	NO		
137-141	102	12	12	0.45	0.45	NO		
138-141	140	8	8	0.41	0.41	NO		
141-142	248	12	12	0.44	0.44	NO		
142-369	145	12	12	0.43	0.43	NO		
143-144	120	12	12	0.29	0.29	NO		
144-145	200	12	12	0.32	0.32	NO		
145-146	227	12	12	0.30	0.30	NO		
146-147	323	12	12	0.31	0.31	NO		
147-148	354	12	12	0.26	0.26	NO		
148-149	96	12	12	0.17	0.17	NO		
149-157	88	12	12	0.26	0.26	NO		
150-151	299	12	12	0.40	0.40	NO		
151-152	27	12	12	0.38	0.38	NO		
152-WG152	314	15	15	0.36	0.36	NO		
153-154	65	12	12	0.31	0.34	NO		
154-155	421	12	12	0.34	0.37	NO		
155-156	428	12	12	0.27	0.29	NO		
156-152	320	12	12	0.32	0.33	NO		
157-150	402	12	12	0.40	0.40	NO		
158-WG158	376	15	15	0.34	0.34	NO		
159-160	307	15	15	0.34	0.35	NO		
160-161	320	15	15	0.35	0.35	NO		
161-162	319	15	15	0.35	0.36	NO		
162-163	310	15	15	0.35	0.35	NO		
163-164	300	15	15	0.33	0.33	NO		
164-171	184	15	15	0.34	0.34	NO		
165-166	231	12	12	0.06	0.06	NO		
166-167	108	12	12	0.09	0.09	NO		
167-168	170	12	12	0.18	0.18	NO		
168-169	185	12	12	0.22	0.22	NO		
169-170	50	12	12	0.21	0.22	NO		
170-288	611	12	12	0.54	0.25	NO		
171-WG171	273	15	15	0.34	0.34	NO		
172-175	429	15	15	0.35	0.35	NO		
173-172	297	15	15	0.35	0.35	NO		
174-173	7	15	15	0.48	0.48	NO		
175-176	382	15	15	0.34	0.34	NO		
176-177	290	15	15	0.32	0.32	NO		
177-178	286	15	15	0.36	0.36	NO		
178-179	314	15	15	0.42	0.42	NO		
179-180	301	18	18	0.36	0.36	NO		
180-268	276	18	18	0.36	0.36	NO		
181-182	335	8	8	0.19	0.19	NO		
182-186	290	8	8	0.29	0.29	NO		
183-182	261	8	8	0.28	0.28	NO		
184-183	298	8	8	0.25	0.25	NO		
185-WG185	263	8	8	0.29	0.29	NO		
186-187	303	8	8	0.30	0.30	NO		
187-199	295	8	8	0.51	0.32	NO		
188-200	394	6	12	0.71	0.23	YES	Sunset Drive	Valley View Road
189-188	227	6	12	0.85	0.33	YES	Sunset Drive	Sunset Drive
190-189	301	6	12	0.90	0.28	YES	Sunset Drive	Sunset Drive

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Future MDF d/D (exist pipe dia)	Future MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
191-190	300	6	10	0.75	0.29	YES	Sunset Drive	Sunset Drive
192-191	300	6	10	0.67	0.28	YES	Sunset Drive	Sunset Drive
193-192	125	6	10	0.78	0.30	YES	Sunset Drive	Sunset Drive
194-193	302	6	10	0.80	0.31	YES	Sunset Drive	Sunset Drive
195-194	331	6	10	0.67	0.28	YES	Sunset Drive	Sunset Drive
196-195	348	6	10	0.66	0.28	YES	Sunset Drive	Sunset Drive
197-196	165	6	10	0.83	0.37	YES	Sunset Drive	Sunset Drive
198-564	258	6	10	1.00	0.31	YES	Sunset Drive	Cerra Vista Drive
199-198	264	6	10	1.00	0.31	YES	Sunset Drive	Cerra Vista Drive
200-201	139	6	12	0.74	0.23	YES	Sunset Drive	Valley View Road
201-202	192	6	12	0.88	0.23	YES	Sunset Drive	Valley View Road
202-203	194	6	12	1.00	0.28	YES	Sunset Drive	Iris Street
203-204	275	6	12	0.85	0.27	YES	Sunset Drive	Iris Street
204-205	359	6	12	0.78	0.24	YES	Sunset Drive	Cedar Street
205-207	302	6	12	0.75	0.25	YES	Sunset Drive	Cedar Street
206-207	242	8	8	0.32	0.27	NO		
207-208	34	8	12	0.49	0.25	YES	Sunset Drive	Memorial Drive
208-209	265	8	12	0.51	0.26	YES	Sunset Drive	Memorial Drive
209-245	274	8	12	0.77	0.32	YES	Sunset Drive	Memorial Drive
210-211	267	10	10	0.08	0.08	NO		
211-212	277	10	10	0.10	0.10	NO		
212-213	244	10	10	0.12	0.12	NO		
213-217	342	10	10	0.11	0.11	NO		
214-218	161	10	10	0.17	0.17	NO		
215-214	327	10	10	0.14	0.14	NO		
216-215	299	10	10	0.11	0.11	NO		
217-216	193	10	10	0.09	0.09	NO		
218-219	250	10	10	0.16	0.16	NO		
219-220	261	10	10	0.16	0.16	NO		
220-221	264	10	10	0.19	0.19	NO		
221-222	61	10	10	0.30	0.30	NO		
222-226	178	10	10	0.42	0.42	NO		
223-230	420	8	8	0.38	0.38	NO		
223-337	178	8	8	0.38	0.38	NO		
224-223	247	8	8	0.40	0.40	NO		
225-343	358	10	10	0.44	0.44	NO		
226-225	347	10	10	0.42	0.42	NO		
227-231	183	8	8	0.27	0.27	NO		
228-227	272	8	8	0.37	0.37	NO		
229-228	420	8	8	0.44	0.44	NO		
230-229	421	8	8	0.41	0.41	NO		
231-318	280	8	8	0.29	0.29	NO		
232-308	248	10	10	0.22	0.22	NO		
234-233	14	15	15	0.26	0.26	NO		
234-307	299	15	15	0.32	0.33	NO		
235-234	212	15	15	0.31	0.31	NO		
236-232	518	10	10	0.22	0.22	NO		
237-235	230	15	15	0.32	0.32	NO		
238-237	300	15	15	0.31	0.31	NO		
239-236	351	10	10	0.24	0.24	NO		
240-238	302	15	15	0.30	0.30	NO		
241-262	85	12	15	0.77	0.47	YES	Nash Road	Sunnyslope Road
242-260	299	12	15	0.79	0.49	YES	Nash Road	Sunnyslope Road
243-242	278	12	15	0.70	0.44	YES	Nash Road	Sunnyslope Road
244-243	288	12	15	0.64	0.41	YES	Nash Road	Sunnyslope Road
245-258	29	8	12	1.00	0.39	YES	Nash Road	Memorial Drive
246-245	602	8	8	0.70	0.47	YES	Nash Road	Sunnyslope Road
247-246	128	8	8	0.42	0.42	NO		
248-247	246	8	8	0.44	0.44	NO		
249-248	407	8	8	0.41	0.41	NO		
250-249	128	8	8	0.38	0.38	NO		
251-250	315	8	8	0.36	0.36	NO		
252-251	417	8	8	0.34	0.34	NO		
253-252	273	8	8	0.33	0.33	NO		
254-253	272	8	8	0.33	0.33	NO		
255-254	299	8	8	0.39	0.39	NO		
256-255	202	8	8	0.43	0.43	NO		
257-256	194	8	8	0.46	0.46	NO		
258-259	371	8	12	0.73	0.35	YES	Nash Road	Memorial Drive
259-244	26	12	15	0.45	0.31	YES	Nash Road	Sunnyslope Road
260-261	158	12	15	0.74	0.46	YES	Nash Road	Sunnyslope Road
261-241	57	12	15	0.70	0.43	YES	Nash Road	Sunnyslope Road
262-290	413	12	15	0.69	0.44	YES	Nash Road	Sunnyslope Road
263-289	475	10	10	0.63	0.36	NO		
264-265	213	12	15	0.67	0.43	YES	Nash Road	Tres Pinos Road
265-267	302	12	15	0.69	0.44	YES	Nash Road	Tres Pinos Road
266-179	278	18	18	0.20	0.20	NO		
267-269	404	12	15	0.68	0.44	YES	Nash Road	Nash Road
268-440	610	18	18	0.34	0.34	NO		
269-270	421	12	15	0.68	0.43	YES	Nash Road	Nash Road
270-271	132	12	15	0.66	0.47	YES	Nash Road	Nash Road
271-284	273	15	15	0.47	0.48	NO		
272-273	19	15	18	0.63	0.44	YES	Line Street	Line Street
273-415	295	15	18	0.70	0.49	YES	Line Street	Line Street
274-272	281	15	18	0.64	0.44	YES	Line Street	Line Street
275-274	85	15	18	0.60	0.42	YES	Line Street	Nash Road
276-275	371	15	18	0.60	0.42	YES	Line Street	Nash Road
277-276	50	15	18	0.62	0.42	YES	Line Street	Nash Road

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Future MDF d/D (exist pipe dia)	Future MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
278-277	321	15	18	0.61	0.42	YES	Line Street	Nash Road
279-278	364	15	18	0.62	0.43	YES	Line Street	Nash Road
280-279	291	15	18	0.63	0.44	YES	Line Street	Nash Road
281-280	290	15	18	0.61	0.43	YES	Line Street	Nash Road
282-281	265	15	15	0.54	0.50	NO		
283-282	250	15	15	0.49	0.50	NO		
284-283	268	15	15	0.47	0.48	NO		
285-266	469	8	8	0.22	0.22	NO		
286-285	395	8	8	0.15	0.15	NO		
287-293	46	12	15	1.00	0.57	YES	Nash Road	Tres Pinos Road
288-287	294	12	15	0.93	0.39	YES	Nash Road	Tres Pinos Road
289-291	174	12	15	1.00	0.47	YES	Nash Road	Tres Pinos Road
290-289	17	12	15	0.59	0.42	YES	Nash Road	Sunnyslope Road
291-292	258	12	15	1.00	0.53	YES	Nash Road	Tres Pinos Road
292-293	334	12	15	1.00	0.57	YES	Nash Road	Tres Pinos Road
293-294	311	12	15	1.00	0.51	YES	Nash Road	Tres Pinos Road
294-297	105	12	15	1.00	0.47	YES	Nash Road	Tres Pinos Road
295-296	219	12	15	1.00	0.66	YES	Nash Road	Tres Pinos Road
296-264	158	12	15	0.84	0.54	YES	Nash Road	Tres Pinos Road
297-295	268	12	15	1.00	0.57	YES	Nash Road	Tres Pinos Road
298-374	383	15	15	0.42	0.42	NO		
299-298	317	15	15	0.37	0.37	NO		
2NDEJ-WG380	152	10	10	0.66	0.90	NO		
300-299	343	15	15	0.36	0.36	NO		
301-300	261	15	15	0.36	0.36	NO		
302-301	249	15	15	0.36	0.36	NO		
303-302	223	15	15	0.37	0.37	NO		
304-303	286	15	15	0.35	0.35	NO		
305-304	300	15	15	0.34	0.34	NO		
306-305	263	15	15	0.35	0.35	NO		
307-306	551	15	15	0.37	0.37	NO		
308-307	18	10	10	0.20	0.20	NO		
309-240	301	15	15	0.32	0.32	NO		
310-239	511	10	10	0.24	0.24	NO		
311-309	292	12	12	0.39	0.39	NO		
312-310	448	8	8	0.24	0.24	NO		
313-311	288	12	12	0.39	0.39	NO		
314-312	271	8	8	0.13	0.13	NO		
315-316	20	8	8	0.43	0.43	NO		
316-313	382	15	15	0.52	0.52	NO		
317-315	283	8	8	0.36	0.36	NO		
318-317	402	8	8	0.31	0.31	NO		
319-321	508	10	10	0.35	0.35	NO		
320-319	470	10	10	0.38	0.38	NO		
321-322	292	15	15	0.21	0.21	NO		
322-356	279	15	15	0.62	0.62	NO		
323-355	596	18	18	0.35	0.35	NO		
324-323	286	18	18	0.36	0.36	NO		
325-324	231	18	18	0.37	0.37	NO		
326-327	28	18	18	0.34	0.34	NO		
327-325	244	18	18	0.38	0.38	NO		
328-326	266	18	18	0.36	0.36	NO		
329-328	195	18	18	0.41	0.41	NO		
330-329	462	18	18	0.34	0.34	NO		
332-330	353	8	10	0.60	0.43	YES	Hillcrest Road	Hillcrest Road
333-332	305	8	10	0.58	0.37	YES	Hillcrest Road	Hillcrest Road
334-333	346	8	10	0.49	0.32	YES	Hillcrest Road	Hillcrest Road
335-334	334	8	10	0.43	0.29	YES	Hillcrest Road	Hillcrest Road
336-335	410	8	8	0.45	0.43	NO		
337-336	151	8	8	0.43	0.44	NO		
338-224	295	12	12	0.31	0.31	NO		
339-338	324	12	12	0.34	0.34	NO		
340-339	366	12	12	0.33	0.33	NO		
341-340	258	10	10	0.35	0.35	NO		
342-341	275	10	10	0.32	0.32	NO		
343-342	301	10	10	0.39	0.39	NO		
344-345	25	24	24	0.33	0.33	NO		
345-432	178	24	24	0.38	0.38	NO		
349-344	235	18	18	0.34	0.34	NO		
350-349	548	18	18	0.36	0.36	NO		
351-350	350	18	18	0.34	0.34	NO		
352-351	233	18	18	0.38	0.38	NO		
353-352	663	18	18	0.36	0.36	NO		
354-353	511	18	18	0.33	0.33	NO		
355-354	220	18	18	0.34	0.34	NO		
356-357	255	15	15	0.26	0.26	NO		
357-358	144	15	15	0.26	0.26	NO		
358-359	318	15	15	0.30	0.30	NO		
359-366	82	15	15	0.32	0.32	NO		
360-379	763	18	18	0.26	0.26	NO		
361-360	277	15	15	0.41	0.41	NO		
362-361	279	15	15	0.31	0.31	NO		
363-362	23	6	6	0.44	0.44	NO		
364-362	375	15	15	0.30	0.30	NO		
365-364	462	15	15	0.28	0.28	NO		
366-365	395	15	15	0.29	0.29	NO		
367-368	400	10	10	0.22	0.18	NO		
368-WG368	257	10	12	0.44	0.31	YES	Kirk Patrick To GLP LS	Kirk Patrick

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Future MDF d/D (exist pipe dia)	Future MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
369-370	55	12	12	0.31	0.31	NO		
370-143	79	12	12	0.24	0.24	NO		
371-363	523	6	6	0.12	0.12	NO		
372-371	529	6	6	0.09	0.09	NO		
373-372	64	6	6	0.00	0.00	NO		
374-375	307	15	15	0.40	0.41	NO		
375-376	300	18	18	0.53	0.53	NO		
376-396	242	30	30	0.46	0.46	NO		
377-376	20	27	27	0.43	0.43	NO		
378-380	42	12	12	0.66	0.66	NO		
379-2NDE	44	18	18	0.55	0.55	NO		
380-WG380	24	18	18	0.33	0.33	NO		
381-377	242	27	27	0.45	0.45	NO		
382-530	451	30	30	0.38	0.38	NO		
383-382	38	30	30	0.40	0.40	NO		
384-402	270	6	6	0.21	0.21	NO		
385-383	99	30	30	0.42	0.42	NO		
386-385	400	30	30	0.42	0.42	NO		
387-386	366	30	30	0.45	0.44	NO		
388-387	364	30	30	0.46	0.46	NO		
389-388	300	30	30	0.44	0.43	NO		
390-389	57	30	30	0.41	0.41	NO		
391-390	59	30	30	0.38	0.38	NO		
392-391	535	30	30	0.41	0.41	NO		
393-392	97	30	30	0.49	0.49	NO		
394-393	353	30	30	0.46	0.46	NO		
395-394	405	30	30	0.44	0.44	NO		
396-395	342	30	30	0.46	0.46	NO		
397-398	61	6	6	0.11	0.11	NO		
398-399	201	6	6	0.23	0.23	NO		
399-400	275	6	6	0.26	0.26	NO		
400-401	251	6	6	0.33	0.33	NO		
401-384	244	6	6	0.26	0.26	NO		
402-403	5	8	8	0.15	0.15	NO		
403-528	203	18	18	0.11	0.11	NO		
404-545	137	12	12	0.29	0.30	NO		
405-404	188	12	12	0.24	0.24	NO		
406-545	330	18	18	0.35	0.36	NO		
407-406	182	15	18	0.59	0.45	YES	Line Street	Line Street
408-438	334	30	30	0.37	0.37	NO		
409-407	276	15	18	0.62	0.43	YES	Line Street	Line Street
410-408	358	27	27	0.48	0.48	NO		
411-409	278	15	18	0.58	0.41	YES	Line Street	Line Street
412-411	360	15	18	0.56	0.40	YES	Line Street	Line Street
413-412	117	15	18	0.50	0.36	YES	Line Street	Line Street
414-413	445	15	18	0.60	0.41	YES	Line Street	Line Street
415-416	69	15	18	0.70	0.49	YES	Line Street	Line Street
416-417	375	15	18	0.66	0.45	YES	Line Street	Line Street
417-418	375	15	18	0.65	0.45	YES	Line Street	Line Street
418-419	106	15	18	0.66	0.45	YES	Line Street	Line Street
419-420	253	15	18	0.67	0.46	YES	Line Street	Line Street
420-421	20	15	18	0.64	0.44	YES	Line Street	Line Street
421-422	374	15	18	0.67	0.46	YES	Line Street	Line Street
422-423	374	15	18	0.66	0.46	YES	Line Street	Line Street
423-414	377	15	18	0.69	0.46	YES	Line Street	Line Street
424-410	552	27	27	0.43	0.43	NO		
425-424	496	27	27	0.43	0.43	NO		
426-433	189	14	14	0.37	0.37	NO		
427-425	501	27	27	0.43	0.43	NO		
428-427	571	24	24	0.41	0.41	NO		
429-428	488	24	24	0.37	0.37	NO		
430-429	609	24	24	0.36	0.36	NO		
431-430	259	24	24	0.38	0.38	NO		
432-431	176	24	24	0.34	0.34	NO		
433-434	381	14	14	0.15	0.15	NO		
434-435	189	14	14	0.17	0.17	NO		
435-436	325	14	14	0.17	0.17	NO		
436-437	324	14	14	0.17	0.17	NO		
437-405	381	14	14	0.20	0.20	NO		
438-542	768	30	30	0.55	0.56	NO		
440-441	383	18	18	0.34	0.34	NO		
441-442	461	18	18	0.34	0.34	NO		
442-443	456	18	18	0.33	0.33	NO		
443-444	564	18	18	0.30	0.30	NO		
444-445	366	18	18	0.31	0.31	NO		
445-446	268	18	18	0.32	0.32	NO		
446-447	345	18	18	0.32	0.32	NO		
447-344	336	18	18	0.32	0.32	NO		
448-397	229	8	8	0.40	0.39	NO		
449-448	246	8	8	0.44	0.41	NO		
450-449	237	8	8	0.82	0.51	NO		
451-452	297	6	6	0.07	0.07	NO		
452-453	799	6	6	0.17	0.17	NO		
453-454	30	6	6	0.23	0.23	NO		
454-455	364	6	6	0.28	0.28	NO		
455-456	302	6	6	0.31	0.31	NO		
456-457	113	6	6	0.32	0.32	NO		
457-458	189	6	6	0.33	0.34	NO		

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

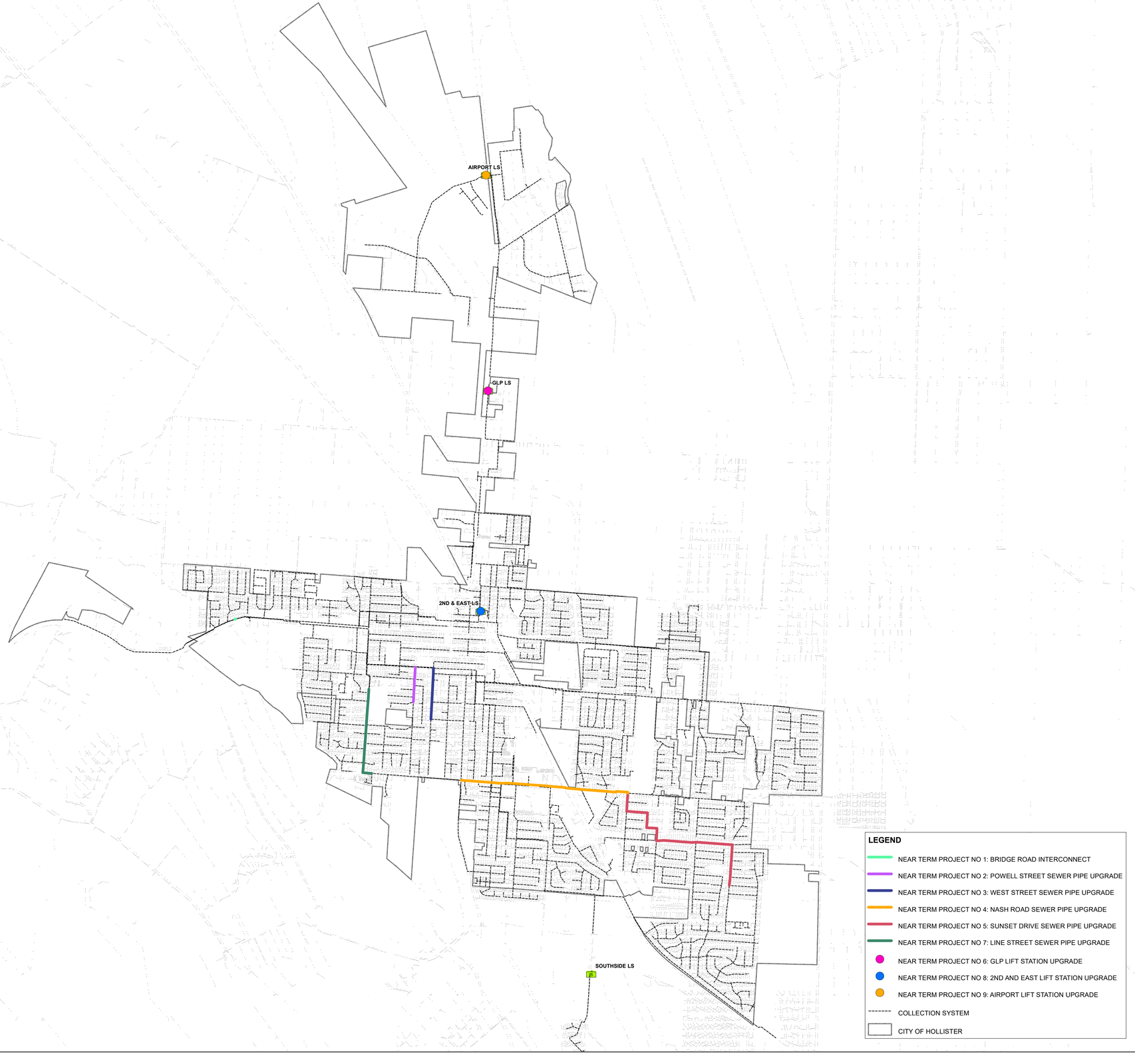
Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Future MDF d/D (exist pipe dia)	Future MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
458-459	181	6	6	0.34	0.32	NO		
459-460	121	6	8	0.49	0.31	YES	Powell Street	Powell Street
460-461	35	6	8	0.55	0.34	YES	Powell Street	Powell Street
461-462	232	6	8	0.60	0.36	YES	Powell Street	Powell Street
462-463	35	6	10	0.65	0.30	YES	Powell Street	Powell Street
463-464	99	6	10	0.53	0.23	YES	Powell Street	Powell Street
464-466	195	6	10	0.75	0.33	YES	Powell Street	Powell Street
466-467	9	6	10	0.87	0.35	YES	Powell Street	Powell Street
467-427	379	6	10	0.64	0.27	YES	Powell Street	Powell Street
468-428	175	6	10	0.91	0.40	YES	West Street	West Street
469-468	200	6	10	1.00	0.32	YES	West Street	West Street
470-469	106	6	10	1.00	0.26	YES	West Street	West Street
471-470	292	6	10	0.79	0.26	YES	West Street	West Street
472-471	296	6	8	0.58	0.33	YES	West Street	West Street
473-472	548	6	8	0.54	0.32	YES	West Street	West Street
474-473	333	6	8	0.46	0.28	YES	West Street	West Street
475-474	337	6	8	0.42	0.25	YES	West Street	West Street
476-475	547	6	6	0.41	0.38	NO		
477-476	278	6	6	0.41	0.42	NO		
478-477	270	6	6	0.21	0.21	NO		
479-526	898	10	10	0.25	0.25	NO		
480-511	594	12	12	0.56	0.56	NO		
481-480	627	10	12	0.67	0.50	YES	Fallon Road	Fallon Road
482-481	204	10	12	0.73	0.48	YES	Fallon Road	Fallon Road
483-482	419	10	12	0.71	0.47	YES	Fallon Road	Fallon Road
484-483	600	10	12	0.60	0.41	YES	Fallon Road	Fallon Road
485-484	252	10	12	0.56	0.39	YES	Fallon Road	Fallon Road
486-487	670	10	10	0.29	0.30	NO		
487-488	360	10	10	0.27	0.26	NO		
488-489	354	10	12	0.47	0.30	YES	Technology Parkway	Technology Parkway
489-510	336	10	12	0.72	0.53	YES	Technology Parkway	Technology Parkway
490-497	237	10	10	0.20	0.20	NO		
491-490	600	10	10	0.10	0.10	NO		
492-491	266	10	10	0.00	0.00	NO		
493-498	294	12	15	0.59	0.37	YES	Aerostar Way	Aerostar Way
494-493	332	12	15	0.60	0.39	YES	Aerostar Way	Aerostar Way
495-494	291	10	10	0.43	0.36	NO		
496-495	249	10	10	0.14	0.14	NO		
497-496	300	10	10	0.17	0.17	NO		
498-499	65	12	15	0.65	0.40	YES	Aerostar Way	Aerostar Way
499-500	260	12	15	0.73	0.45	YES	Aerostar Way	Aerostar Way
500-501	295	12	15	0.68	0.43	YES	Aerostar Way	Aerostar Way
501-502	293	12	15	0.63	0.39	YES	Aerostar Way	Aerostar Way
502-503	295	12	15	0.59	0.41	YES	Aerostar Way	Aerostar Way
503-504	232	15	15	0.49	0.49	NO		
504-505	304	15	15	0.50	0.50	NO		
505-506	298	15	15	0.47	0.47	NO		
506-508	748	15	15	0.47	0.47	NO		
507-509	227	15	15	0.33	0.33	NO		
508-507	119	15	15	0.47	0.47	NO		
509-AP	21	15	15	0.58	0.58	NO		
510-509	169	15	15	0.34	0.34	NO		
511-510	1797	12	12	0.59	0.59	NO		
512-520	256	12	12	0.21	0.21	NO		
514-GLP	11	10	12	0.52	0.40	YES	Kirk Patrick To GLP LS	Frontage Road/San Felipe Road
515-514	49	10	12	0.61	0.44	YES	Kirk Patrick To GLP LS	Frontage Road/San Felipe Road
516-515	284	10	12	0.57	0.40	YES	Kirk Patrick To GLP LS	Frontage Road/San Felipe Road
517-516	246	10	12	0.49	0.34	YES	Kirk Patrick To GLP LS	Frontage Road/San Felipe Road
518-517	476	10	12	0.48	0.33	YES	Kirk Patrick To GLP LS	Frontage Road/San Felipe Road
519-518	251	10	12	0.52	0.36	YES	Kirk Patrick To GLP LS	Frontage Road/San Felipe Road
520-521	509	12	12	0.21	0.21	NO		
521-522	503	12	12	0.20	0.20	NO		
522-480	503	12	12	0.38	0.38	NO		
523-526	727	10	10	0.24	0.24	NO		
524-525	425	10	12	0.45	0.31	YES	Kirk Patrick To GLP LS	San Felipe Road
525-368	210	10	12	0.45	0.31	YES	Kirk Patrick To GLP LS	Kirk Patrick
526-524	722	10	10	0.41	0.38	NO		
527-WG527	7	14	14	0.07	0.07	NO		
528-530	301	21	21	0.32	0.33	NO		
529-531	943	21	21	0.13	0.13	NO		
530-543	79	36	36	0.25	0.24	NO		
531-532	688	21	21	0.15	0.15	NO		
532-533	545	21	21	0.25	0.24	NO		
533-WG537	173	21	21	0.57	0.61	NO		
534-WG534	187	21	21	0.54	0.52	NO		
535-536	477	36	36	0.41	0.42	NO		
536-548	93	36	36	0.37	0.38	NO		
537-WG537	27	36	36	0.38	0.44	NO		
538-537	473	36	36	0.44	0.47	NO		
539-547	403	36	36	0.56	0.56	NO		
540-539	201	36	36	0.50	0.51	NO		
541-540	582	36	36	0.56	0.57	NO		
542-541	596	36	36	0.62	0.63	NO		
543-542	26	27	36	0.56	0.41	YES	San Juan Road	San Juan Road
544-543	310	27	27	0.27	0.26	NO		
545-544	35	36	36	0.17	0.18	NO		
546-535	612	36	36	0.40	0.45	NO		
547-538	78	36	36	0.62	0.62	NO		

City of Hollister
2017 Sewer Model Results
Worst Case d/D, Pipe Upgrades, and CIPs

Pipe ID	Length [feet]	Existing Diameter [inches]	Proposed Diameter [inches]	Future MDF d/D (exist pipe dia)	Future MDF d/D (proposed pipe dia)	2010 CIP	CIP Name	Location
548-549	333	36	36	0.28	0.28	NO		
548-WG548	23	21	21	0.52	0.53	NO		
549-550	240	36	36	0.41	0.42	NO		
550-552	480	36	36	0.40	0.41	NO		
551-553	152	21	21	0.37	0.37	NO		
552-SPI	43	36	36	0.35	0.36	NO		
553-552	7	21	21	0.34	0.34	NO		
562-197	240	6	10	1.00	0.37	YES	Sunset Drive	Cerra Vista Drive
563-562	268	6	10	1.00	0.32	YES	Sunset Drive	Cerra Vista Drive
564-563	257	6	10	1.00	0.32	YES	Sunset Drive	Cerra Vista Drive
565-566	190	8	8	0.09	0.09	NO		
566-567	122	8	8	0.09	0.09	NO		
567-568	240	8	8	0.10	0.10	NO		
568-569	256	8	8	0.19	0.19	NO		
569-570	228	8	8	0.31	0.31	NO		
570-571	239	8	8	0.28	0.26	NO		
571-533	291	8	12	0.57	0.35	YES	Miller Road	Miller Road
576-577	326	36	36	0.58	0.59	NO		
577-578	586	36	36	0.57	0.58	NO		
578-582	229	36	36	0.59	0.60	NO		
580-WWTP	331	36	36	0.49	0.49	NO		
581-580	349	36	36	0.57	0.57	NO		
582-581	24	36	36	0.62	0.62	NO		
583-576	109	36	36	0.56	0.57	NO		
584-583	221	36	36	0.51	0.51	NO		
585-584	32	36	36	0.39	0.40	NO		
586-585	280	36	36	0.46	0.47	NO		
587-586	592	36	36	0.58	0.58	NO		
588-587	582	36	36	0.55	0.56	NO		
APJ-GLP	6953	10	10	1.00	1.00	NO		
CDT-49	24	21	21	0.53	0.53	NO		
CDT-51	167	8	8	0.36	0.35	NO		
CDT-53	109	8	8	0.18	0.18	NO		
CDT-55	1920	4	4	0.81	0.81	NO		
CDT-57	270	8	8	0.32	0.32	NO		
CDT-59	270	8	8	0.30	0.30	NO		
CDT-61	1590	8	8	0.31	0.31	NO		
GLPJ-378	7121	12	12	1.00	1.00	NO		
SBCO-SS	42	8	8	0.56	0.56	NO		
SPI-SPO	1100	36	36	0.41	0.41	NO		
SPO-WG588	172	36	36	0.42	0.42	NO		
SSJ-153	1246	6	6	0.73	0.73	NO		
WG104-105	146	10	10	0.16	0.16	NO		
WG105-106	197	10	10	0.16	0.16	NO		
WG152-158	456	15	15	0.37	0.37	NO		
WG158-159	431	15	15	0.34	0.34	NO		
WG171-173	549	15	15	0.48	0.48	NO		
WG185-184	287	8	8	0.26	0.26	NO		
WG322-356	395	15	15	0.23	0.23	NO		
WG368-WG369	265	10	12	0.46	0.32	YES	Kirk Patrick To GLP LS	Kirk Patrick
WG369-WG370	333	10	12	0.47	0.33	YES	Kirk Patrick To GLP LS	Kirk Patrick
WG370-WG371	293	10	12	0.47	0.33	YES	Kirk Patrick To GLP LS	Kirk Patrick
WG371-WG372	293	10	12	0.49	0.34	YES	Kirk Patrick To GLP LS	Kirk Patrick
WG372-WG373	422	10	12	0.53	0.37	YES	Kirk Patrick To GLP LS	McCloskey Road
WG373-519	219	10	12	0.56	0.38	YES	Kirk Patrick To GLP LS	Frontage Road/San Felipe Road
WG380-381	88	27	27	0.43	0.43	NO		
WG384-383	224	30	30	0.42	0.41	NO		
WG401-WG403	13	18	18	0.06	0.06	NO		
WG403-403	277	18	18	0.08	0.08	NO		
WG527-528	38	18	18	0.09	0.09	NO		
WG534-WG536	307	21	21	0.45	0.44	NO		
WG536-548	79	21	21	0.39	0.39	NO		
WG537-534	618	21	21	0.65	0.71	NO		
WG537-546	43	36	36	0.47	0.48	NO		
WG548-WG549	335	21	21	0.57	0.58	YES	Bridge Road	Bridge Road
WG549-WG551	243	21	21	0.57	0.58	YES	Bridge Road	Bridge Road
WG551-551	300	21	21	0.59	0.60	YES	Bridge Road	Bridge Road
WG588-588	385	36	36	0.49	0.50	NO		

APPENDIX C

Exhibits



SANITARY SEWER COLLECTION SYSTEM MASTER PLAN

EXHIBIT 1 NEAR TERM PROJECTS OVERVIEW MAP

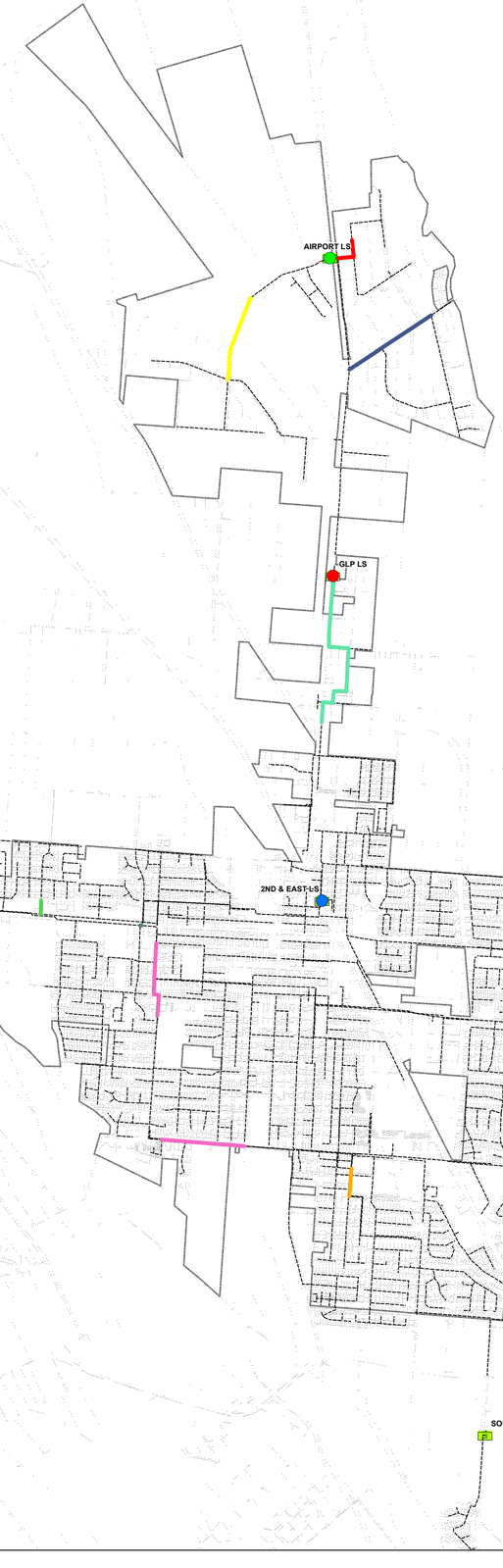
1 inch = 1,500 Feet

0 750 1,500

JOB NO: 1011-0003-03
MAP DOC: EXHIBIT 1 - NEAR TERM PROJECTS OVERVIEW MAP
CREATED BY: KEA
DATE: DECEMBER 2017

NOTES:
BASEMAP PROVIDE BY SAN BENITO COUNTY.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.

CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
FUNDING STRATEGIES INTERNATIONAL
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
WALLACE GROUP www.wallacegroup.us



LEGEND

- LONG TERM PROJECT NO 1: HILLCREST ROAD SEWER PIPE UPGRADE
- LONG TERM PROJECT NO 2: FALLON ROAD SEWER PIPE UPGRADE
- LONG TERM PROJECT NO 3: KIRK PATRICK TO GLP SEWER PIPE UPGRADE
- LONG TERM PROJECT NO 4: LINE STREET SEWER PIPE UPGRADE
- LONG TERM PROJECT NO 5: AEROSTAR WAY SEWER PIPE UPGRADE
- LONG TERM PROJECT NO 6: MILLER ROAD SEWER PIPE UPGRADE
- LONG TERM PROJECT NO 7: SAN JUAN ROAD SEWER PIPE UPGRADE
- LONG TERM PROJECT NO 8: TECHNOLOGY PARKWAY SEWER PIPE UPGRADE
- LONG TERM PROJECT NO 12: CUSHMAN STREET SEWER PIPE UPGRADE
- LONG TERM PROJECT NO 9: AIRPORT LIFT STATION UPGRADE
- LONG TERM PROJECT NO 10: GLP LIFT STATION UPGRADE
- LONG TERM PROJECT NO 11: 2ND AND EAST LIFT STATION UPGRADE
- COLLECTION SYSTEM
- CITY OF HOLLISTER

HOLLISTER
Hometown, California
Est. 1872

SANITARY SEWER COLLECTION SYSTEM MASTER PLAN

EXHBIT 2
LONG TERM PROJECTS OVERVIEW MAP

1 inch = 1,500 Feet

0 750 1,500

JOB NO: 1011-0003-03
MAP DOC: EXHIBIT 1 - NEAR TERM PROJECTS OVERVIEW MAP
CREATED BY: KEA
DATE: DECEMBER 2017

NOTES:
BASEMAP PROVIDE BY SAN BENITO COUNTY.
WALLACE GROUP DID NOT PERFORM BOUNDARY SURVEY SERVICES FOR THIS MAP. NOT A LEGAL DOCUMENT.

CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT
LANDSCAPE ARCHITECTURE
MECHANICAL ENGINEERING
PLANNING
PUBLIC WORKS ADMINISTRATION
SURVEYING/GIS SOLUTIONS
WATER RESOURCES
WALLACE GROUP, A CORPORATION
612 CLARION COURT
SAN LUIS OBISPO, CA 93401
T 805 544-4011 F 805 544-4294
WALLACE GROUP www.wallacegroup.us