

# HUMBOLDT COMMUNITY SERVICES DISTRICT

## FY 2018-19 CAPITAL IMPROVEMENT PROGRAM

**With Details  
for  
FY 2018/19 - FY 2022/23**

**Adopted June 26, 2018**



# Table of Contents

Executive Summary	1
Introduction	3
Background	3
Operation	6
Vehicles and Equipment	11
Building, Yard and Paving Improvements	13
Water System Improvements	16
Sewer System Improvements	23
Engineering and Studies	33
Exhibits	
A. District Information - Facts and Figures	41
B. 10-Year Vehicle Replacement Schedule	42
C. District Water Tank Info	43
D. District Sewer Lift Station Data	44
E. Future Major Projects	45

## Executive Summary FY 2018/19

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The Fiscal Year 2018/19 Capital Improvement Program is dominated by the necessity to continue replacing sewer and water facilities and other infrastructure to minimize inconvenience to our customers and reduce emergency call-out and repair. Other notable projects planned during FY 2018/19 include the following:

Vehicles and Equipment: Replace one backhoe.

Building, Yard and Paving Improvements: Finish rehabilitating front siding and windows on the District's main office building. Also included is site prep for Phase 1 of the Walnut Yard Improvement Project.

Water System Improvements: Water system improvements include the completion of the South Bay well and the destruction of the existing South Bay well and the Princeton North well. Also included are replacement of 750' of steel water main; the replacement of the second of four pumps at the Truesdale water pumping station; and a directional drill project to relocate a water line as required by the County of Humboldt.

Sewer System Improvements: Sewer system improvements include a Martin Slough reversal/connection and associated lift station upgrade; replacement of 555' of sewer main; two other sewer lift station upgrades; and pump replacements.

Engineering and Studies: Anticipated Engineering and Studies include the completion of the District-wide leak detection study; South Bay well construction management; Martin Slough station reversal; McKay Ranch annexation; Walnut Yard Improvement Project design; Phase 1 Water Tank Rehabilitation project; and other sewer and water projects.

2018/19 Capital Improvement Plan Summary: The proposed 2018/19 Capital Improvement Program for the District consists of:

- 32 Capital Improvement and Capital Outlay items, specifically
  - > (1) Vehicles and Equipment
  - > (2) Building, Yard and Paving Improvements
  - > (9) Water System Improvements
  - > (10) Sewer System Improvements
  - > (10) Engineering and Studies

SUMMARY							
REVENUE FUNDED		Previous	Proposed	Projected	Projected	Projected	Projected
CAPITAL PROGRAM PROJECTIONS		FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
		1	2	3	4	5	
VEHICLES & EQUIPMENT		\$39,890	\$130,000	\$150,000	\$500,000	\$150,000	\$170,000
BUILDING AND YARD		\$70,000	\$75,000	\$245,000	\$165,000	\$180,000	\$0
ENGINEERING & STUDIES		\$92,000	\$131,500	\$73,000	\$140,000	\$65,000	\$20,000
CIP - WATER		\$830,000	\$346,240	\$535,000	\$400,000	\$402,500	\$289,650
CIP - SEWER		\$278,250	\$684,385	\$825,000	\$993,500	\$339,875	\$443,300
<b>CIP TOTALS</b>		\$1,467,140	\$1,367,125	\$1,833,000	\$2,206,500	\$1,136,375	\$927,950
(Sewer + Water Outlay)		\$1,108,250	\$1,030,625	\$1,363,000	\$1,393,500	\$741,375	\$737,950
Pipeline Quantities/Yr							
Water LF		900	1,360	900	1,000	1,250	815
Sewer LF		0	2,181	2,125	1,135	420	1,676
		3,081	3,541	3,025	2,135	1,670	2,491

## Introduction

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The Fiscal Year (FY) 2018/19 Capital Improvement Program (CIP) is a five-year master plan for budgeting and planning of District water and sewer facility improvements and Capital Outlay items. The CIP is used to identify, prioritize and schedule necessary improvements within budget funding constraints. The CIP consists of projects that require major financial and manpower resources in a concise, scheduled format. Interdependency of year to year project selections is a major consideration to insure an efficient and orderly progression of improvements. Routine maintenance is generally not considered a capital improvement expense.

Criteria for CIP project selection includes projects that reduce maintenance and cost to the District, improve service and reliability, and provide for future growth. The CIP is also used as the master plan for scheduled infrastructure replacements based on performance and useful life expectancy.

## Background

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The District was created in 1952 to provide water and sewer service to the unincorporated areas of Eureka. The District has now expanded the service area to include Cutten, Ridgewood, Myrtle town, Pine Hill, Humboldt Hill, Fields Landing, King Salmon, Pigeon Point, Rosewood and Freshwater (Figure 1). Expansion was accomplished both by District construction of facilities, such as in Myrtle town and Cutten, and by assumption of existing facilities such as the Pialorsi water system in Humboldt Hill and the County Service Area No. 3 in King Salmon and Fields Landing. The District is governed by five elected officials and has a staff of 20 (Figure 2).

The Capital Improvement Program was modest during the early years (1974-1980), consisting mostly of equipment and plant purchases. Between 1980-1988, program costs accelerated and included revenue bond financing of major projects consisting primarily of water supply, distribution, and storage. Since 1989, the District has operated under a more sophisticated approach to capital expenditures. In Fiscal Year 1993, the District developed a formal five-year Capital Improvement Program focusing on steel main replacement and sewage lift station upgrades.

The FY 2018/19 Capital Improvement Program is a five-year summary of ongoing and proposed capital improvements to the District's infrastructure assets. Although, the FY 2018/19 CIP covers the period from FY 2018/19 through FY 2022/23, it is renewed annually to create a rolling, five-year planning document. For FY 2018/19, the information in this CIP is essential to the development of the District's FY 2018/19 budget. For subsequent years, this CIP includes anticipated projects and capital expenditures that are likely to occur and/or needed to maintain acceptable services to the customers of the District.

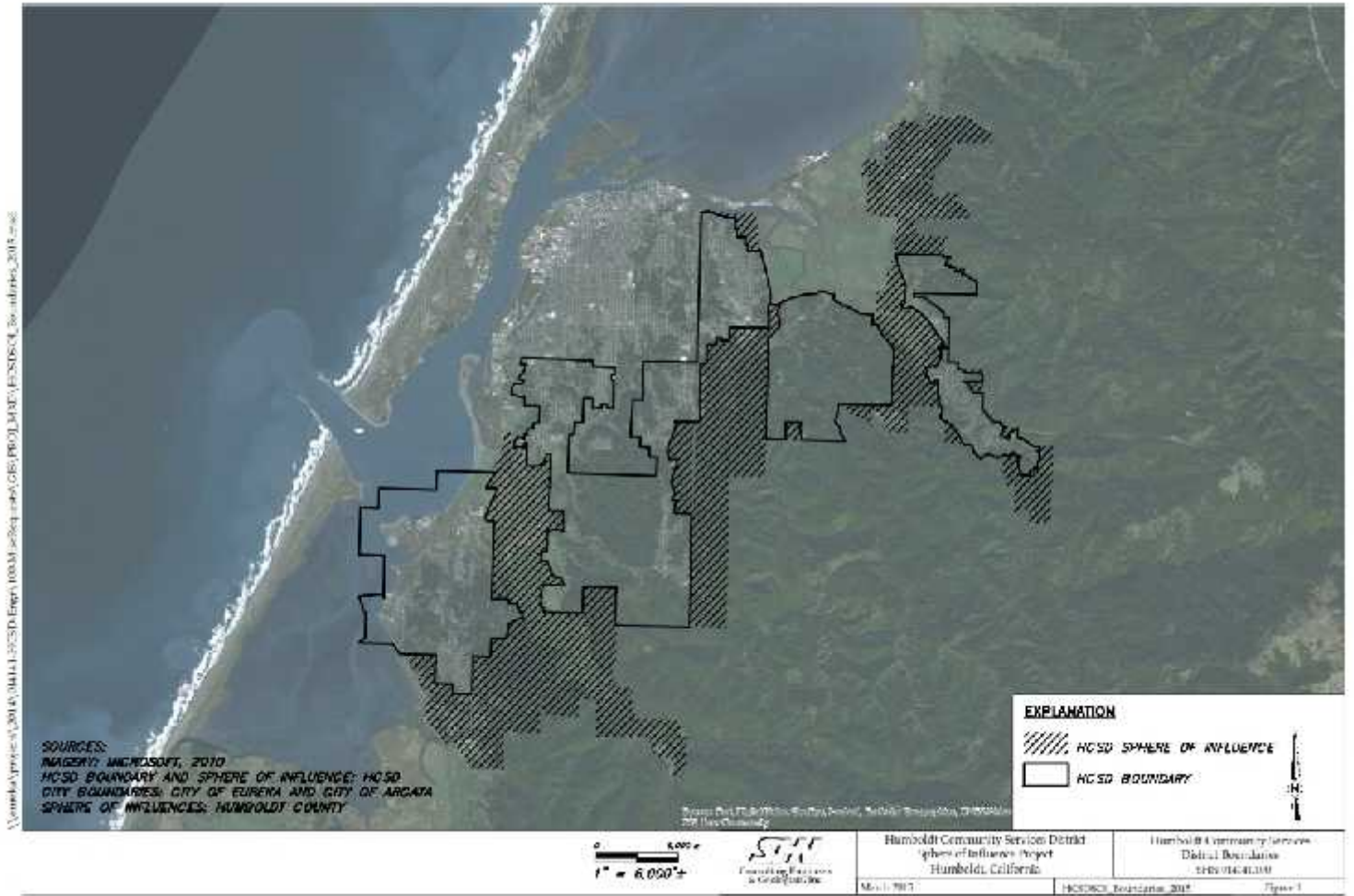


Figure 1: FY 2018/19 District Boundaries

**HUMBOLDT COMMUNITY SERVICES DISTRICT**  
**ORGANIZATIONAL CHART**  
 January 2018

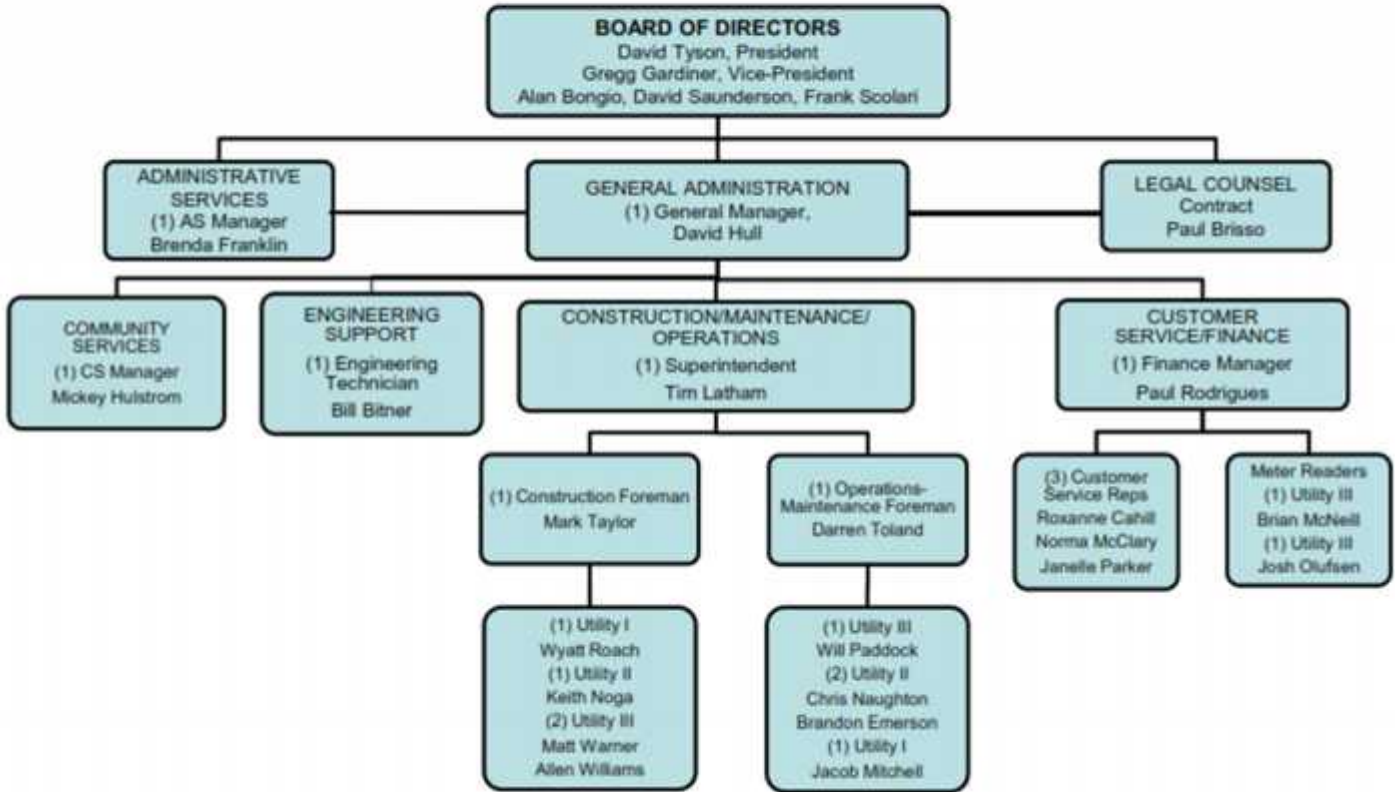


Figure 2: FY 2018/19 District Organizational Chart

# Operations

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## General

The District is in the unique position of providing water distribution and storage and sewage collection without providing water treatment (for the most part) or sewage treatment. Normally, the District supplies approximately one-third of its own water from District wells, but for the most part, purchased water makes up two thirds of the water supplied to District customers.

Historically, the District has always maintained an “in-house” (District forces) construction department. Previously, the construction team installed new subdivision sewer and water mains and services, paid for by the developer. Today, this practice is no longer followed with all subdivision improvements being performed by private licensed contractors under contract and control of the developer (except live water main hot taps). The District continues to perform most routine repair work of the sewer and water system and the construction and maintenance of capital improvement program infrastructure. The District has made a concerted effort to perform more of its own CIP work. The Board of Directors and management direction have resulted in hiring skilled construction personnel; purchasing, replacing and maintaining state of the art construction equipment; and taking pride in accomplishing major infrastructure improvements on a cost efficient basis for the District’s customers.

## Operational Philosophy

The operational philosophy of the District during FY 2018/19, by priority, is:

1. Provide the highest level of customer service - always
2. Repair sewer overflows and major water leaks – immediately as necessary
3. Install new services – as-needed every Friday, but in no case later than 3 weeks after application
4. Complete CIP projects – ongoing throughout fiscal year
  - a) Sewer I&I and trouble spots
  - b) Water leak detection and repair
  - c) Water tank rehab
  - d) Steel Water Main Replacement
  - e) Other projects on CIP list



## Elements in Determining CIP Priorities

The elements that determined the priorities for Capital Improvement spending during FY 2018/19 included:

1. Major trouble spot repair
2. Obligations with other Agencies
  - i. 2018/19 City of Eureka Wastewater CIP; County
3. South Bay well replacement
4. Multi-Year Projects
  - i. Water tank rehabilitation
  - ii. Leak detection
  - iii. Martin Slough Interceptor connections
  - iv. Walnut Yard Improvement Project
5. Projects that result in new customers
6. Steel water line replacement

2016/17 the District began several multi-year projects aimed at various projects that were similar, but that were too expensive or too labor intensive to accomplish all in one year. The four multi-year projects include:

- Water tank structural and coating analysis followed by any improvements/repairs for all of the District's 10 water tanks.
- Martin Slough Interceptor flow reversals and lift station elimination/modifications.
- Walnut Yard Improvement Project including facility maintenance, improvements and repairs.
- Water leak location and repair.

Details of these multi-year projects are described in the following sections of this CIP.

## Outside Obligations for Capital Improvements

**Water:** Except for the District-owned water wells near Humboldt Hill, the District purchases the majority of the approximately 730 million-gallons of water per year the District uses from either the Humboldt Bay Municipal Water District or the City of Eureka. In both cases, the District has contracts with each agency and therefore the District is subject to increases in the cost of water from both agencies and the proportional cost of capital improvements to the Humboldt Bay Municipal Water District's water supply infrastructure.

**Sewer:** The District collects wastewater from District customers and sends it to the City of Eureka's Elk River Wastewater Treatment Plant. A "Wastewater Agreement" with the City provides the framework for this relationship regarding the District's use of the Greater Eureka Wastewater Treatment Project (GEAWP) facilities. The GEAWP included the Elk River Wastewater Treatment Plant and the Crosstown interceptor project that consisted of the pipeline as well as the Hill Street, Washington Street and McCullens Avenue wastewater pumping stations.

In 1982, the City and the District entered into an agreement entitled "Agreement Between the City of Eureka and Humboldt Community Services District for Regional Wastewater Treatment" (Agreement). This Agreement was updated in 2011 which superseded the 1982 agreement. In 2011, the Agreement was expanded to also include references to the Martin Slough Interceptor project.

The 1982 and the 2011 agreements both state that the City and the District determined that the GEAWP could be best designed, financed, constructed and operated if it is managed solely by the City in accordance with the provisions of the Agreement. It was also noted that the Elk River Wastewater Treatment Plant was constructed in 1984; that the City and District each operated a wastewater collection system; and that the District desired to continue to contract with the City for the transportation, treatment and disposal of all wastewater originating within the District.

In general, the provisions of the 2011 agreement state:

- The District is obligated to pay 32.1% of the Capital expenses at the treatment plant
- The District is obligated to pay 32.1% of the Fixed Operation and Maintenance expenses (personnel, administration, upkeep, building maintenance, etc)
- District receives a 32.1% capacity share (of the Elk River Wastewater Treatment Plant and a proportional capacity share of other components of the GEAWP.
- The District is obligated to pay for a portion of the variable expenses at the treatment plant (electricity, chemicals, biosolids processing, equipment repair, etc) based upon the District's volumetric share of flow.
- The District is obligated to pay 3% of the City's annual O&M costs of wastewater collection and pumping.

Since the wastewater treatment plant is more than 30 years old and is nearing the end of its design life, major structural components are trending toward failure or emergency repairs at an increasing rate. This situation has resulted in significant and unpredictable District cash outlays to maintain the function of the treatment plant. Figure 3 details the City's estimated capital improvement expenses for the wastewater treatment plant for FY 2018/19. Figure 3 also shows the District's obligation of these expenses for 2018/19 is \$821,440.

**WASTEWATER**

Page #	Project Name	(Thousands of Dollars)					
		Total Project Cost	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
		2018 Dollars	18-19	19-20	20-21	21-22	22-23
PG. 6-4	WASTEWATER INFLOW & INFILTRATION REDUCTION PROGRAM	\$ 5,000	\$ 1,000	\$ 1,040	\$ 1,082	\$ 1,125	\$ 1,170
PG. 6-5	WASTEWATER COLLECTION SYSTEM MAINTENANCE	\$ 2,500	\$ 516	\$ 530	\$ 546	\$ 560	\$ 575
PG. 6-6	WASTEWATER LIFT STATION UPGRADE PROGRAM	\$ 1,149	\$ 371	\$ 284	\$ 244	\$ 337	\$ -
PG. 6-7	CROSS TOWN INTERCEPTOR MAINTENANCE	\$ 479	\$ 479	\$ -	\$ -	\$ -	\$ -
PG. 6-8	WASTEWATER PUMP STATION UPGRADE PROGRAM	\$ 798	\$ 26	\$ 241	\$ 247	\$ 393	\$ -
PG. 6-9	WWTP COMBINED HEAT & POWER REPLACEMENT PROJECT	\$ 3,120	\$ -	\$ -	\$ 3,375	\$ -	\$ -
PG. 6-10	SECONDARY CLARIFIER MAINTENANCE	\$ 1,191	\$ 1,191	\$ -	\$ -	\$ -	\$ -
PG. 6-11	WWTP BIOSOLIDS CLASS "A"	\$ 2,080	\$ -	\$ -	\$ -	\$ 2,250	\$ -
PG. 6-12	HEADWORKS CONCRETE STRUCTURE	\$ 1,100	\$ -	\$ 104	\$ 1,082	\$ -	\$ -
PG. 6-13	ENCLOSED BAYS & ESTUARIES COMPLIANCE FEASIBILITY STUDY	\$ 3,000	\$ 500	\$ -	\$ 1,082	\$ 1,125	\$ 585
<b>TOTAL</b>		<b>\$ 20,417</b>	<b>\$ 4,083</b>	<b>\$ 2,199</b>	<b>\$ 7,658</b>	<b>\$ 5,790</b>	<b>\$ 2,330</b>

District 32% share of Items 6-6; 6-7; 6-8; 6-9; 6-10; 6-11; 6-12; and 6-13 for FY 2018/19 totals \$821,440

Figure 3: Wastewater Treatment Plant Estimated Capital Expenditures (all totals are x 1,000)

Other Outside Obligations: Several State and County code sections basically state that if the District has utilities in a County road, and the County decides the District needs to relocate those utilities to accommodate their road project, the District must pay for the relocation and do it within the County's timeframe. Specifically, Humboldt County Code Section 411-11 (h) and California Streets and Highways Code Sections 1463 and 1481, state that utility relocation work must be done at the sole expense of the District.

Projects to potentially be done by the County in FY 2018/19 that fall under these requirements are:

- Pine Hill Bridge Renovation.
  - Project description: Bridge is to be widened by County. District must relocate 10" waterline that is attached to the existing bridge. District currently envisions a directional drill project along the north side of the new bridge. This project was originally scheduled to be completed in FY 2017/18. Permitting and County processes have pushed this project to FY 2018/19.
  - District cost: ~\$150,000
  - Estimated bridge construction start: May 2019

Impact of Outside Obligations: In the most general sense, every ratepayer dollar that the District spends on outside obligations to the City of Eureka or the County of Humboldt are dollars that cannot be spent on improving the District's water and sewer infrastructure. The notable exception is that as part "owner" of the City's wastewater treatment plant, any improvements to this plant are, in a sense, improvements to the District's infrastructure.



# Vehicles and Equipment

# Vehicles and Equipment

## General

In 1993, the District's Board approved a Vehicle and Equipment Replacement Plan that is reviewed on a yearly basis as a part of the Capital Improvement Program.

## Background

The current vehicle and equipment replacement strategy provides the criteria for replacements include: primary function, performance of the task needed, economy, efficiency and maintenance record. The District has two groups of equipment and replacement criteria, they include: service vehicles, (replaced after 10 years or 100,000 miles) and heavy-duty construction equipment including dump trucks, backhoes, and Vac-Con (replaced after 15 years or repair history). The District has found that adhering to these replacement criteria saves undue maintenance costs during the final years of service; provides for the highest resale value; and maximizes performance and efficiencies and limits downtime.

Another factor in scheduling vehicle replacement is consideration of the California air quality emissions standards. Replacement of some large-engine vehicles is more economical than retrofitting the vehicles emission systems. The adopted replacement schedule meets the replacement criteria while balancing the capital outlay (Exhibit B).

The District's current vehicle and equipment inventory consists of: (5) small vehicles, (7) full sized trucks, (3) dump trucks, (2) backhoes, (1) excavator, (1) "Bobcat" with attachments, (2) large flat bed trailers, (2) small utility trailers, (1) hydro sewer cleaning machine, (1) sewer camera van, (1) hydraulic excavator (VacCon), (1) sewage bypass pump, (3) portable generators, (1) portable light trailer, (1) compressor and (1) roller. This fleet of 33 vehicles and equipment is needed to support a construction crew, maintenance department, customer service/meter readers, community services and engineering support.

## Specific FY 2018/19 Activities

For FY 2018/19, the 1998 backhoe "L". The backhoe is being replaced with a loader due to maintenance considerations and age.

REVENUE FUNDED				Previous	Proposed	Projected	Projected	Projected	Projected	Comments
CAPITAL PROGRAM PROJECTIONS				FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	
<b>VEHICLES / EQUIPMENT</b>					<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
			<b>C=Contract</b>	WS=Wrapped	Steel Pipe					
			<b>M=Martin Slough Re</b>	GI=Galvanized	Iron Pipe					
			<b>V=Vendor</b>							
<b>Light Duty Service Vehicles</b>										
				Mileage						
				Hours						
12	2011	Ford Ranger		111,564	\$ 30,000					Completed
6	2008	Ford F350		76,275	\$ 50,000					Completed
11	2013	Toyota Tacoma	V	87,217		\$ 30,000				Replacement/age
16	2005	Dodge	V	61,503					\$ 40,000	Replacement/age
9	2006	Ford Van	V	76,190		\$ 50,000				Replacement/age
13	2007	VacCon	V	29,326			\$ 500,000			Replacement/age/AQMD
4	2010	Ford F450 w/crane	V	61,788		\$ 70,000				Replacement
14	2008	Peterbilt 10 YD Dump Truck	V	41,130				\$ 150,000		Replacement/AQMD
<b>Heavy Duty Equipment</b>										
	1998	Backhoe "L"	V	5,302		\$ 130,000				Replacement/age/replace with loader
	2004	580 Super M Backhoe	V						\$ 130,000	Replacement/age
<b>Specialty Equipment</b>										
		Copier Replacement/Construction office			\$ 5,000					Completed
		Postage Meter			\$ 4,890					Completed
<b>Vehicles &amp; Equipment</b>				\$89,890	<b>\$130,000</b>	\$150,000	\$500,000	\$150,000	\$170,000	\$1,189,890



# Building, Yard and Paving Improvements



# Building, Yard and Paving Improvements

## General

Within the 15 square-miles of District territory, the District owns or has leases/easements for 28 sewer lift stations, three water well sites, 10 water tank sites, 13 water booster pumping stations and a main office and equipment yard (Walnut Facility). See Exhibit A for a summary of the District's physical assets.

For the purpose of the District's Capital Improvement Program, this section details the proposed improvements to the Walnut Facility located at 5055 Walnut Drive, Cutten, California. Proposed improvements to Water and Sewer structures and facilities are included in their respective section of this Capital Improvement Plan.

## Background

The District's Walnut Yard presently contains the District's office building; one, 1 million gallon water storage tank; one, 0.5 million gallon water storage tank; a water booster station; and four buildings that include a training room, vehicle repair shop, construction shop and a small vehicle/equipment garage. The Walnut Yard presently occupies approximately four-acres.

In 2013, the District purchased an additional 23 acres surrounding the Walnut Yard from Green Diamond Resources Company. This purchase was made for future yard expansion and as a buffer from the County's McKay Community Forest.

The Walnut Yard is located approximately in the geographic center of the present District boundaries. For several years, there had been a desire to create additional equipment storage capacity in the southern portion of the District. The rationale was that a storage facility in the southern part of the District would create additional equipment storage and allow for potentially quicker response to emergencies in that part of the District.

In 2014 and again in 2017, the District's Board of Directors conducted a project review and directed that any future District equipment storage and maintenance needs should be met at the District's Walnut Yard and not at any satellite locations. The Board felt the Walnut Yard's centralized location and the recently purchased additional acreage allowed for expanded equipment storage, better utilization of the property and more efficient District operations.

With the District Board's direction, the District created the following framework for the multi-phased, multi-year Walnut Yard Improvement Project.

The Walnut Yard Improvement Project presently includes the following elements to be scheduled over the next five-years or more, as the budget allows:

#### Phase 1 – Repairs and Information Collection

- Identify potential yard expansion opportunities – Completed FY 2017/18
- Survey yard including potential expansion areas - Completed FY 2017/18
- Repair/replace siding and windows on the front of the office building - Started FY 2017/18
- Re-roof the office building
- Complete landscaping upgrades to decrease water use
- Updates to the customer service space

#### Phase 2 – Yard Master Planning

- Develop Master Plan for yard improvements
  - Design and permit
    - Yard perimeter
    - Drainage improvements
    - Siting of additional vehicle/equipment/parts storage building

#### Phase 3- Master Plan Implementation

- Expand facility by < three acres
  - Clear and grub
- Grade yard
- Seal-coat front parking lot and restripe
- Replace roof on upper truck shop
- Improve yard drainage
- Pave adjacent to the lower shop
- Pave remainder of facility
- Update and secure existing wooden small truck and equipment storage building
- Fence entire facility

### Specific 2018/19 Activities

Specifically, for FY 2018/19 the District will complete the repair/replacement of siding and windows on the front of the office building. In addition, as a maintenance task, the District will complete landscaping upgrades in front of the main office to decrease water use.

Also during 2018/19, the Walnut Yard Master Plan will be completed and several engineering details and studies will be completed in support of this plan. See the “Engineering and Studies” section of this report for details.

REVENUE FUNDED		Previous	Proposed	Projected	Projected	Projected	Projected	Comments
CAPITAL PROGRAM PROJECTIONS		FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	
<b>BUILDING, YARD &amp; PAVING IMPROVEMENTS</b>								
	Office ADA			\$100,000				MOVED FROM 18-19
	Seal Coat Parking Lot	C		\$20,000				Front parking lot-Moved from 17/18
	Walnut Yard Improvement Project	C	\$75,000	\$75,000				Design, Permits 2017-19, Site Prep 18-20
	Lower Shop Paving	C		\$30,000				Replace pavement-moved from 17/18
	Lower Shop Drain	C		\$20,000				Eng. 18/19, Construction 19/20
	Metal Storage Building	C				\$60,000		Additional secured storage
	Office Building (Front)	C	\$70,000					In process
	Office Building Roof	C			\$35,000			Moved from 17/18 to 20/21 per inspection
	Complete Walnut Yard Fencing	C			\$30,000			Bid Specs 19/20, Const. 20/21
	Future Yard Paving	C			\$100,000			To be determined
		C				\$120,000		Design, etc. 20/21, Const. 21/22
	<b>Building and Yard</b>	\$70,000	\$75,000	\$245,000	\$165,000	\$180,000		\$735,000



# Water System Improvements

# Water System Improvements

## General

The District's water distribution and storage system is a complex system consisting of twenty-three (23) different pressure zones; ten (10) water storage tanks containing 5.0 million gallons of storage capacity; thirteen (13) water booster pumping stations; and over 114 miles of mainline. A summary of the District's water distribution system is shown in Exhibit A.

Water supply is furnished by three sources, namely, approximately one-third of the District consumption is purchased from the Humboldt Bay Municipal Water District (HBMWD) through the Truesdale booster pump station; one-third is purchased from the City of Eureka (COE, who purchases it from HBMWD) through the Hubbard and Harris booster pump station; and the final third has traditionally been pumped from District-owned wells located in the Humboldt Hill area (Elk River aquifer). These three water sources supply the three major service areas of the District and total approximately 730 million gallons per year.

Hubbard and Harris pump station (COE water) supplies the northern area of Myrtle town, Pigeon Point and Freshwater. Truesdale pump station (HBMWD water) supplies the central areas of Cutten, Rosewood and Ridgewood. Historically, District well water supplied the southern area of Humboldt Hill, Pine Hill, King Salmon, Fields Landing and College of the Redwoods. In addition to these three District service and supply areas, interties exist between these areas to move water from one service/supply area to another.

Interties also exist between the City of Eureka water system and the District for emergency purposes. Although these District service/supply interties exist, moving water from one service zone to another is complicated by undersized transmission mains and under capacity storage volume necessary to supply both zone demands concurrently. In addition to cost considerations (cost per million gallons of water supplied), quantity, quality, emergency ability to supply and purchased water contract obligations are all taken into consideration when making annual CIP recommendations.



## 2018/19 Specific Water Activities

South Bay Well Replacement Project: In order to meet the District's present and future (2035) water demand as approved by the District's Board of Directors on April 12, 2016, the District's water supply needs are to be met by utilizing a combination of the District's existing wells and water purchased from the City of Eureka and Humboldt Bay Municipal Water District.

The District's South Bay well was originally installed in 1988 to a depth of 474-feet. It was constructed with a 12-inch steel casing and had a historical production of 700 -1,100 GPM (Figure 5).

In 2013 District staff reported that the South Bay well appeared to be discharging coarse sand. The District's Operations Department immediately took the well off-line and arranged for a contractor familiar with the South Bay well to proceed with removal of the pumps. The District also arranged for a contractor to film the well casing once the pumps were removed to determine the problem. The results of that filming indicated that there were numerous holes in the original 12"-diameter steel well casing between the depths of -217 to -227-feet. Although a repair was made, it was ultimately concluded that the well could not be returned to service and should be abandoned. In order to meet the present and future demand, the District must replace the South Bay well.

At their May 26, 2015 meeting, the District's Board of Directors retained the services of Integral Consulting, Inc. to start the process for the development of a new South Bay well on the same District property. The consultant's completed their work in August of 2015 and provided the District with design (Figure 6) and technical specifications for a new South Bay well and for the abandonment of the existing South Bay well. In FY 2016/17, the District prepared a bid package for the abandonment of the existing South Bay well and the installation of a new well on the same District-owned property with the intention of starting construction within the fiscal year. However, emergency contract obligations with the City of Eureka caused this project to be shelved until FY 2017/18.

As a part of the approved 2017/18 Capital Improvement Program, the District circulated a bid package for the South Bay Well Project that included the destruction of the existing South Bay well and the Princeton North well and the drilling of a new South Bay well. On February 27, 2018, the District awarded a contract to Nor-Cal Pump & Well Drilling, Inc, for \$379,004.00. The FY 2017/18 Budget and CIP approved \$405,000 for this project.

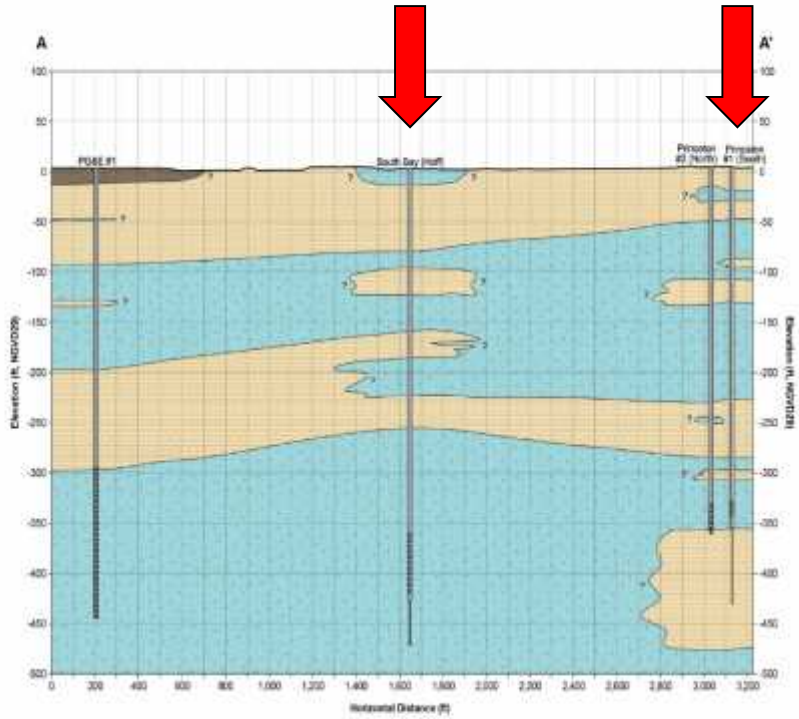
The South Bay Well Project is scheduled to begin in June 2017 and must be completed by August 31, 2018. While the contractor will be used to complete the well drilling and well destruction, District staff and resources will be used to make the physical connections at the well head, to the water system and to the electrical components.



- Legend**
- Bay Shell with Organics
  - Fine-Grained Matrix
  - Coarse-Grained Matrix
  - Ground Surface
  - Inferred Geologic Contact
  - Well Casing
  - Well Screen Interval
  - Drilled Sandstone

**Note:**

- Well locations are approximate
- Vertical Exaggeration 2:1
- Horizontal Exaggeration 1:0.2
- Fine-Grained Matrix includes soils classified on being high as clay, then silty, brown clay, yellow-brown clay, clay with shells, clay with streaks of sand/gravels/silt, sandy clay, silty clay, silt clay, and other variations of fine-grained geologic materials of lower permeability. Shallow clay bearing strata includes the Upper Hookton (Silt and Clay Bed) and the Silt Bay Clay. Deeper clay bearing strata may include the Unit F Clay.
- Coarse-Grained Matrix includes soils classified on being high as sand and gravel, silty sand, brown sand, sand with shells, clayey sand, silty sand with streaks of sand/shells/gravel/wood, and other variations of coarse-grained geologic materials of higher permeability.



**Figure 3:**  
Geologic Cross-Section A-A'  
Humboldt Community Services District South Bay (Hoff)  
and Princeton #1 (South) Well Evaluation

Figure 5: Existing South Bay and Princeton North Well Location

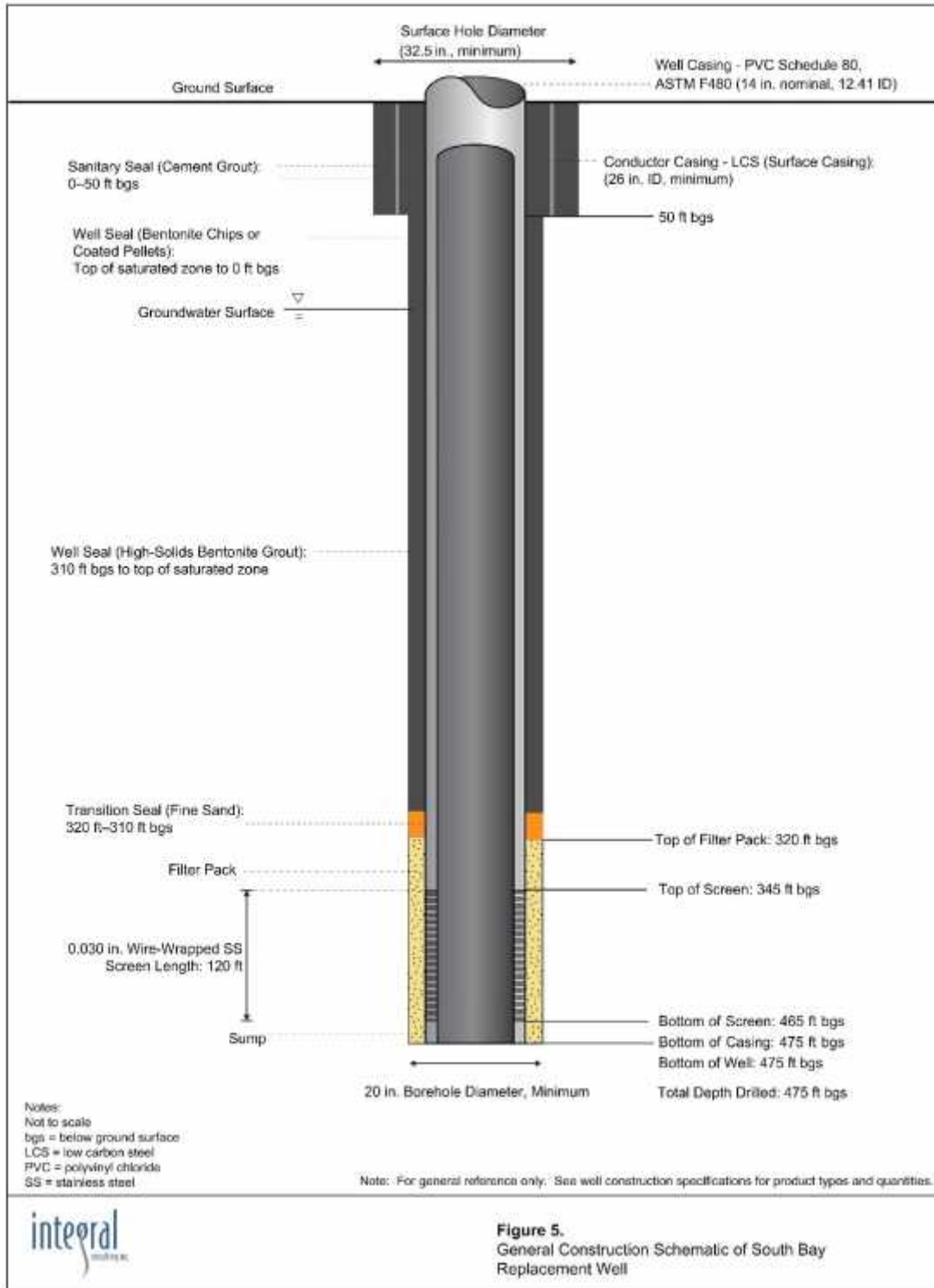


Figure 6: Construction Schematic of new South Bay well



Replace Truesdale water pump station pumps: The Truesdale pump station near the Bayshore Mall is the only connection the District has to obtain water from the Humboldt Bay Municipal Water District. These four pumps provide more than 1/3 of all of the District's water needs and feed primarily the central portion of the District. The pumps are at the end of their useful life and need to be replaced in order to assure a reliable water supply to District customers.

In FY 2017/18, the District embarked on a four-year program to replace one pump per year at the Truesdale pump station. In FY 2017/18, one pump was replaced. One more pump will be replaced in FY 2018/19.

Water Tank Rehabilitation Project: All infrastructure subject to constant use and exposed to the elements requires periodic maintenance and refurbishment in order to avoid catastrophic and expensive failure. Exhibit C provides details on the District's 10 water tanks.

During FY 2017/18, the District's Engineer assisted the District in retaining the Consulting firm, Harper and Associates to assess the condition of three of the District's water storage tanks, namely, the Walnut 1.0 million gallon, Ridgewood 0.5 million gallon and the Donna Drive 0.5 million gallon tanks and recommend any necessary repairs.

Their assessments showed that Ridgewood, Donna and Walnut 1MG tanks all had structural issues in the roofs, needed upgrades to the safety equipment and needed to be painted inside and out. After review of the assessments, District staff determined that the Walnut 1 MG tank and the Ridgewood Tank were the highest priority.

Based upon their assessments, Harper and Associates provided a quote for doing bid specs; temporary storage design (at the Ridgewood tank); bid assistance; construction assistance; and inspection for the repairs, safety improvements and painting inside and out of the Ridgewood 0.5 MG and Walnut 1 MG water tank. Based upon their assessments, the engineering and inspection work noted above has been programmed into the FY 2018/19 CIP as the Water Tank Rehabilitation Project – Phase 1 - Walnut 1.0 MG, Ridgewood 0.5 MG and the Donna Drive 0.5 MG Water Storage Tanks.

This Phase of the project involves the engineering, design, specifications, bidding and inspection; and construction/fabrication/painting work to: blast clean the exterior of each tank, repaint and make any necessary exterior repairs; make any necessary internal structural, venting and hatch repairs; blast clean and paint the entire interior of each tank; new cleanouts, gates, handrails, ladders, vent screening and fall restraint system for the Walnut 1MG, Ridgewood and Donna Drive water storage tanks. For FY 2018/19, many of the engineering tasks are programmed to be completed as detailed in the Engineering and Studies portion of this report. No tank repair/painting is programmed for FY 2018/19, but will occur in FY 2019/20, FY 2020/21 and FY 2021/22.

Steel Water Line Replacement: Since 1993, the District has replaced approximately 61,877 feet (~11.72 miles) of steel water line within the District. This steel water line was largely installed in the 1950s. It has a thin wall thickness, was not generally corrosion resistant and has been a major source of water leaks in the District's system.

The District has approximately 1.25 miles of steel water main left to be replaced. Table 1 details the remaining sizes and footages of steel water line remaining within the District.

In FY 2017/18, the District completed the replacement of all 10" steel water line that was in the District. For FY 2018/19 the District will replace approximately 350' of 6" steel main and approximately 400' of 4" steel water main.

Table 1: Remaining Steel Water Line to be Replaced.

Remaining Totals by line size:
2" Galvanized - ~ 5,565' Remaining
4" Steel - ~ 218' Remaining
6" Steel - ~ 1,007' Remaining
No 8" or 10" Steel Main Remaining

Water Radio Telemetry System Evaluation and Upgrade: The District's water system includes 16 Remote telemetry Units (RTU) that connect its water booster pumping stations and water storage tanks to the District's office. Due to the current status (age and operational abilities) of the District's SCADA and mobile fleet radio systems, during FY 2018/19 the District will retain a contractor to complete a radio system evaluation, mapping and install improvements/repairs as necessary.

<b>WATER</b>			Previous FY 17-18	<b>Proposed FY 18-19</b>	Projected FY 19-20	Projected FY 20-21	Projected FY 21-22	Projected FY 22-23	Comments		
<b>CAPITAL IMPROVEMENTS - WATER</b>			LF	1	2	3	4	5	<b>Water main replacements</b>		
<b>WATER MAIN REPLACEMENTS</b>									<b>\$110.00/LF except as noted</b>		
	<b>C=Contract</b>										
	<b>SMR=STEEL MAIN REPLACEMENT</b>										
New Connections			\$5,000								
Sea View Drive		300	\$45,000								
Harris Street	SMR	600	\$85,000						Completed		
		<table border="1"><tr><td>FY 16-17</td><td>900</td></tr></table>	FY 16-17	900							
FY 16-17	900										
New Connections				<b>\$5,000</b>							
Pine Hill Bridge WL Replacement	C	550	\$150,000	<b>\$150,000</b>					County Project - Moved from 17/18		
Lloyd Street	SMR	350		<b>\$48,500</b>					\$110/LF + addl trucking		
LaPointe	SMR	460		<b>\$60,000</b>					\$110/LF + addl trucking		
		<table border="1"><tr><td><b>FY 18-19</b></td><td><b>1360</b></td></tr></table>	<b>FY 18-19</b>	<b>1360</b>							
<b>FY 18-19</b>	<b>1360</b>										
New Connections					\$5,000						
18th Street	SMR	400			\$50,000				\$110.00/LF plus additional trucking		
Park Street	SMR	500			\$65,000				\$110.00/LF plus additional trucking		
		<table border="1"><tr><td>FY 19-20</td><td>900</td></tr></table>	FY 19-20	900							
FY 19-20	900										
New Connections						\$5,000					
Vista Tie In Phase 1		1000				\$130,000			\$110.00/LF plus additional trucking		
		<table border="1"><tr><td>FY 20-21</td><td>1000</td></tr></table>	FY 20-21	1000							
FY 20-21	1000										
New Connections							\$5,000				
Vista Tie In Phase 2		1000					\$130,000		\$110.00/LF plus additional trucking		
Stanford Court		100					\$11,000		\$110.00/LF plus additional trucking		
Christiansen Street	SMR	150					\$16,500		\$110.00/LF plus additional trucking		
		<table border="1"><tr><td>FY 21-22</td><td>1250</td></tr></table>	FY 21-22	1250							
FY 21-22	1250										
New Connections								\$5,000			
Shady Lane	SMR	400						\$54,000	\$110.00/LF plus additional trucking		
Crane Street	SMR	250						\$32,500	\$110.00/LF plus additional trucking		
Temple Circle		165						\$18,150	\$110.00/LF plus additional trucking		
		<table border="1"><tr><td>FY 22-23</td><td>815</td></tr></table>	FY 22-23	815							
FY 22-23	815										
Projected Five Year Water Main Replacement Totals:			6,225	\$285,000	<b>\$263,500</b>	\$120,000	\$135,000	\$162,500	\$109,650	\$966,000 \$161,000 Average over 6 years	

<b>WATER</b>			Previous FY 17-18	<b>Proposed FY 18-19</b>	Projected FY 19-20	Projected FY 20-21	Projected FY 21-22	Projected FY 22-23	Comments
<b>WATER SYSTEM IMPROVEMENTS</b>				<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>C=Contract</b>									
<b>PUMPING FACILITY UPGRADES</b>									
Truesdale New Pump			\$25,000	<b>\$25,000</b>	\$25,000	\$25,000			New pumps/Upgrade
New South Bay Well	C		\$405,000						Well replacement (to be completed 8/18)
Ridgewood and Walnut Drive1 MG Water Storage Tanks	C		\$100,000						Interim repairs and fall protection
18th & Quaker PSV			\$15,000						System improvement
Donna Drive Tank	C						\$240,000		Tank Rehab
Water Storage Tank Cleaning/Maintenance	C			<b>\$25,000</b>					5 tanks
South Bay School dbl. detector check valve				<b>\$15,000</b>					
(2) new construction meters				<b>\$5,000</b>					
Complete radio system eval and upgrade	C			<b>\$12,740</b>					Radio system eval and upgrade
Ridgewood Tank	C					\$200,000			Tank Rehab
Donna Drive Hydro-tank Replacement					\$50,000				DOHS required
Hubbard 3rd Pump						\$30,000			Upsize pump and modify system
Walnut Drive 1.0 MG Tank	C				\$340,000				Tank Rehab
Pigeon Point WBS Building Rehab						\$10,000			Roofing and siding
Walnut Drive 0.5 MG Tank	C						\$150,000		Tank Rehab
Briar Lane Tank	C						\$150,000		Rank Rehab
Spruce Point Well Spare Pump							\$20,000		Pump Replacement
South Bay Well Pump							\$30,000		Pump replacement
Donna Drive Building Rehab							\$30,000		Siding, roofing and drainage repairs
<b>Projected Water Pumping Facilities Totals:</b>			\$545,000	<b>\$82,740</b>	\$415,000	\$265,000	\$240,000	\$180,000	\$1,727,740 \$287,957 Average over 6 years
<b>CIP WATER</b>			\$830,000	<b>\$346,240</b>	\$535,000	\$400,000	\$402,500	\$289,650	\$2,803,390 \$467,232 Average over 6 years



# Sewer System Improvements

# Sewer System Improvements

## General

Unlike the water system, the 75 miles of sewage collection system is straightforward in concept. All sewage collection gravity flows or is pumped to the City of Eureka's Elk River Wastewater Treatment Plant for treatment.

The hilly terrain and historical piecemeal development within the District has resulted in the necessity to operate 28 sewage lift stations (Exhibit D). By comparison the McKinleyville Community Services District (MCSD) operates 6 stations, City of Arcata operates 8 stations, and City of Fortuna operates 5 stations. The City of Eureka, adjacent to and similar to the District topography, operates 26 stations. Needless to say, this large number of stations have resulted in major manpower and financial resources to operate, maintain, and replace. Under this operational framework, the District had no alternative but to pursue the Martin Slough Interceptor Project in order to upgrade and replace as many of these stations as possible to achieve reduced maintenance, emergency call-out and sewage overflow potential.

## 2018/19 Specific Activities

Martin Slough Interceptor Project: In the early 1980's the concept of a regional sewage lift station serving both the City of Eureka and District customers in the Ridgewood, Pine Hill and City Golf Course area was explored (Figures 7 and 8). The general concept had multiple benefits:

1. To eliminate existing sewer overflows and provide increased environmental protection;
2. Eliminate approximately three major and three minor City and 10 minor District lift stations;
3. Reduce the large pumping and maintenance costs associated with pumping into a cascading lift station system, which has to be pumped along an in-direct route, completely around the City; and
4. Provide for future development of new residential units in the non-sewered areas of Westgate and Ridgewood as contained in the existing Eureka Community Plan.

The result was that the City of Eureka and the District partnered on the Martin Slough Interceptor Project to achieve the above benefits. In 2015, the main interceptor line had been completed and the collector lines installed. The City of Eureka owns and operates the system with a 36 percent allocated volumetric capacity and the District paying for and receiving the remaining 64 percent volumetric capacity.

In 2015/16 the District began the process of decommissioning the 10 lift stations. Figure 9 details the lift stations to be removed and the dates proposed for their decommissioning. Three of the lift stations are termed as "TBD" for "to be determined" due to the fact that these lift stations service very few homes and are very high cost to decommission. The TBD stations therefore are characterized as a low priority and their necessity will be determined at a future date after the

other higher-priority stations are decommissioned.

During FY 2015/16, the District began a multi-year process to decommission the 10 District lift stations and connect to the Interceptor. Within the next five-years, the District proposes to reverse the flow and eliminate five more lift stations increasing sewer system reliability, minimizing sewer spills and reducing energy costs.

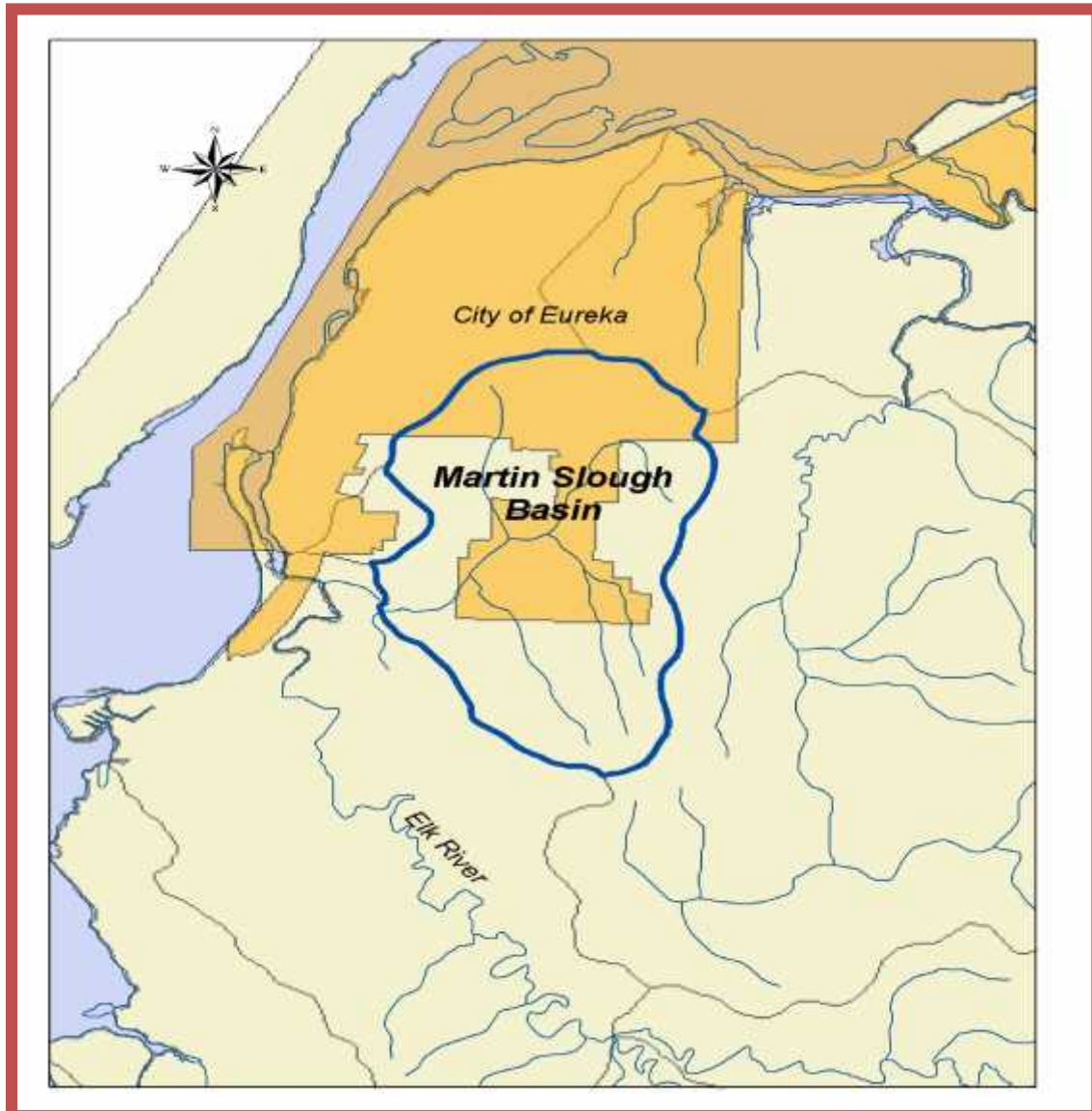


Figure 7: Approximate Location of the Martin Slough Basin, Eureka, CA.

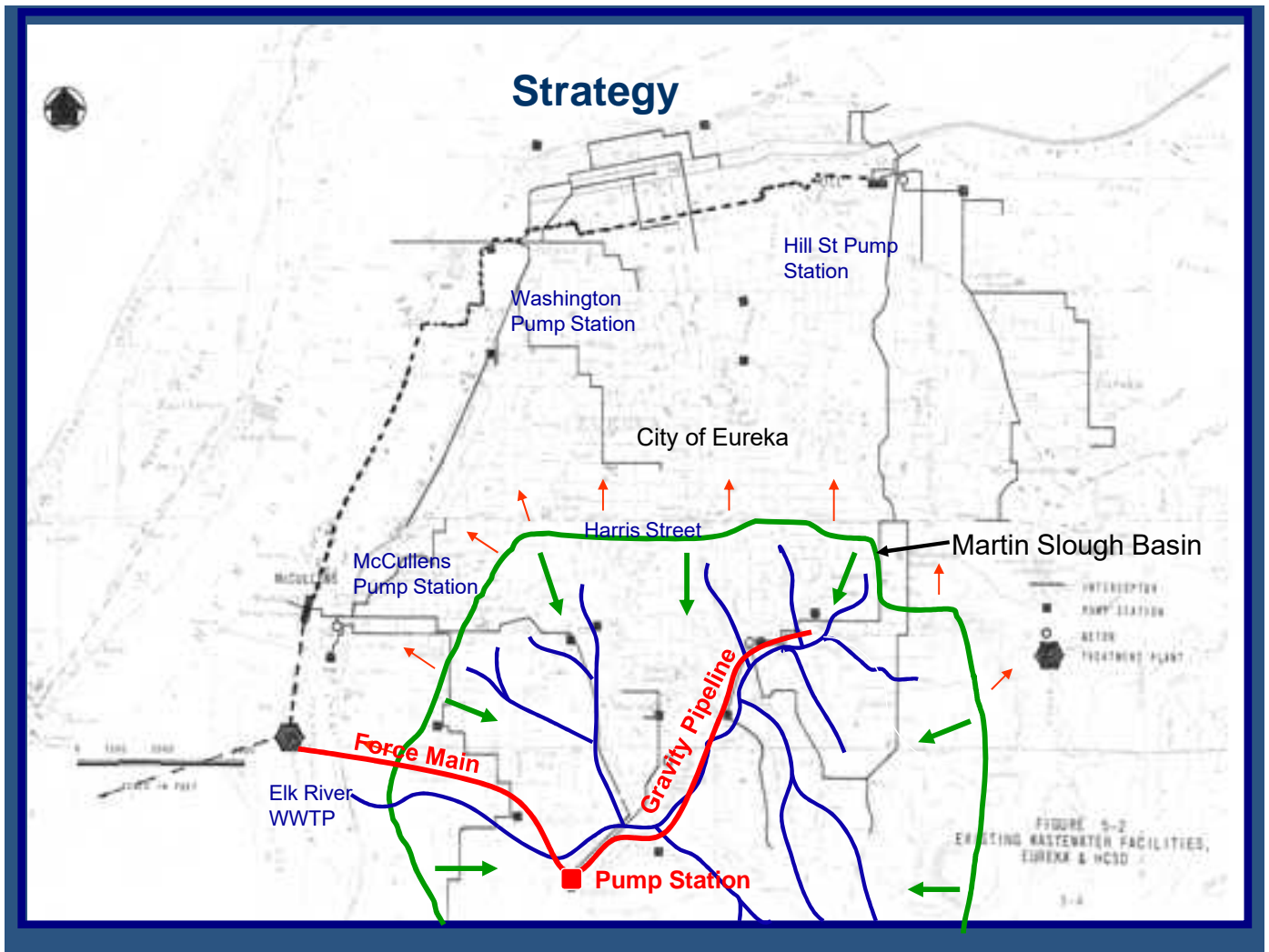


Figure 8: Approximate location of the Martin Slough Interceptor within the Martin Slough Basin.



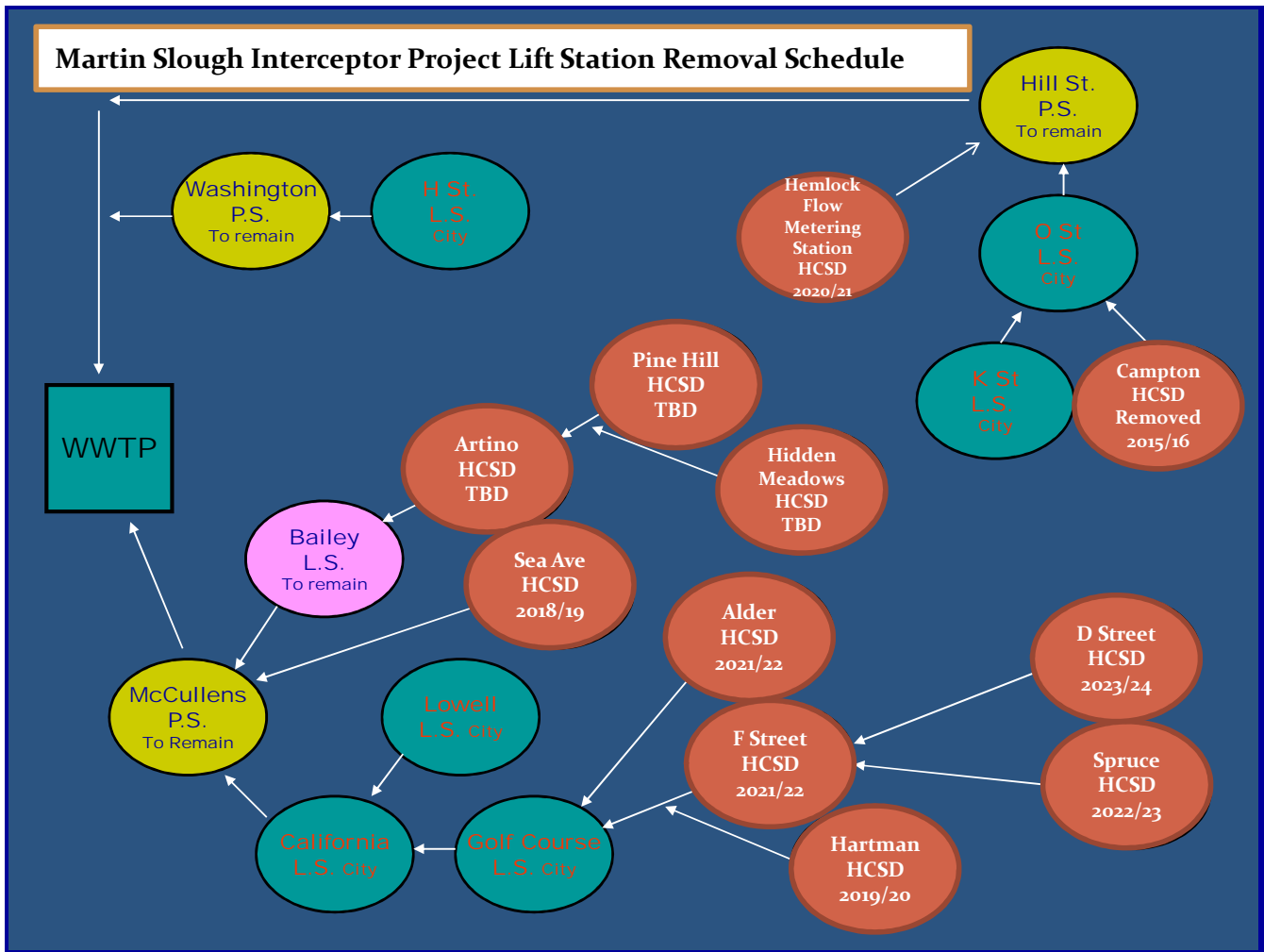


Figure 9: Martin Slough Interceptor Project Lift Station Removal Schedule

Martin Slough "Sea Avenue Force Main Reversal Project" - In FY 2017/18, the District initiated the project to reroute the sewage flow from the Union Street/Sea Ave Sewage Lift Station (Sea SLS) to the Martin Slough interceptor, aka the "Sea Avenue Force Main Reversal Project". This Project involved obtaining easements across three properties; installation of approximately 1,600-feet of pressure sewer main; and making improvements to the Sea Avenue lift station.

Originally envisioned as a gravity sewer main, the District's engineers determined that a gravity sewer main was inadequate due to current insufficient flows and nearly flat grade. In other words, there is presently not enough sewage flow from the Sea Avenue SLS to create self-scouring action in the proposed new gravity main. Without adequate flows, possible sewage backup could result and constant maintenance of the main would be necessary.

Therefore, the engineers proposed that a “pressure” sewer main be installed. To clarify, “pressure” is a little misleading as it may only operate at ~5psi – just enough “pressure” to keep the flow going. As proposed, this pressure sewer line has several advantages over the gravity line, namely:

- The Sea Avenue SLS flows will not be sent to the Allard Street Flow metering Station as they do presently.
- The pumps at the Sea Avenue SLS can be down-sized because they will no longer be pushing sewage all the way to the top of Sea Avenue, therefore there will be a long term electrical cost savings.
- There would not have to be manholes and an all weather access road along the new route.
- It is quicker and easier to install a pressure sewer main than a gravity sewer main. It is planned that this line will be installed by directional drilling, thereby minimizing ground disruption. It may take 5-7 working days to install the pressure main and it might take 2-3 weeks to install a gravity main with manholes.

During FY 2017/18, the District worked on the design and permitting for the “Sea Avenue Force Main Reversal” and associated modifications to the Sea Avenue sewer lift station. To date, the appraisals have been completed for two of the parcels with the other two nearing completion; permit applications are now being finalized; surveys and legal descriptions are in process; and the bid specs are being finalized.

Although a straightforward project estimated to take approximately four weeks to construct (consisting of ~ 1,000 feet of open trench and a directional drill for the remaining ~600 feet), permitting delays and construction season mandates and other factors may delay the project. That said, it is the District’s intention to have this project completed before late fall 2018.



Figure 10: Martin Slough "Sea Avenue Force Main Reversal Project"

General Sewer System Maintenance Plan – In 2018/19, the District will continue a coordinated systematic program to improve the sewer system. The program consists of the following general correction schedule:

1. Replace electrical control panels.
2. Upgrade emergency transfer switches to all control panels.
3. Continue to implement a video inspection program to determine the condition of the underground sewer pipeline system.
4. Continue an Inflow and Infiltration program to identify and reduce surface and groundwater from entering the sewer system.
5. Maintain stationary emergency generators to sewage lift station locations in environmentally critical habitat locations.

Sewage Lift Stations – The District has converted approximately 96 percent of all sewage lift stations from dry-well operation to submersible wetwell operation and replaced the existing control panels. Drywell conversion consists of converting the dry-well housing and pumps to submersible wetwell operation. In addition to reduced maintenance and improved pump efficiency, drywell conversion increases the storage capacity of the station. All lift stations have also been retrofitted with emergency transfer switches, which permit direct electrical connection to power the station from a mobile emergency generator.

Specifically during FY 2018/19 the District plans on making upgrades to the Sea Avenue, Fields Landing and Sequoia sewer lift stations as well as replacing four existing sewer pumps.

Inflow and Infiltration Program – Sanitary sewers are used to convey domestic wastewater from point of disposal to treatment location. It is important to reduce non-sanitary flows such as surface inflow and groundwater infiltration flows to a minimum. Excess unwanted surface flows result in increased pumping and treatment costs and may overload the design capacity of the system. Identifying surface inflow consists of smoke testing the underground pipe system with a smoke generating apparatus and observing where the non-toxic smoke reaches the surface. Locations where the smoke occurs aboveground are pathways for surface inflow (rainfall) to enter the sewer system.

Contrary to aboveground surface flows entering the sewer system (Inflow), Infiltration is groundwater that enters the underground sewer system through a combination of broken or separated pipes (cracks), twisted rubber couplings (joints) or leaking manholes. To determine where infiltration occurs, sewage flow monitoring is performed. Flow monitoring consists of placing flow recording instruments in sewer manholes at several locations and comparing dry weather flow to wet weather rainfall events. In a perfect system, dry weather and wet weather flows would be equal, with no extraneous flows entering the system. Since no system is perfect, a typical system would be designed to accommodate an additional 100 gallons per inch pipe diameter per mile of pipe. Comparison of different areas of the District during wet weather events, also allow us to balance the costs of infiltration control against the benefits obtained.

During FY 2017/18, the District participated with the City of Eureka and the County of Humboldt on the “Eureka Area Watershed Storm Water Resource Plan” project. This Project was funded

through a \$394,830 grant from the California State Water Resources Control Board to the City of Eureka. Although the primary purpose of this grant is to prepare a Storm Water Resource Plan in the Eureka Plain Hydrological Unit that is compliant with the State Water Board's adopted guidelines, the District participated directly with smoke testing a two portions of the District's sewer system in northern Myrtle town, the community of King Salmon and the Community of Fields Landing. Twenty-seven sewer inflow issues were discovered through this project. The District has since corrected its issues and is presently working with landowners to eliminate private inflow issues that were discovered. Table 2 details the results of the smoke testing of these areas.

For FY 2018/ 19, the District will continue to select certain areas of the District to conduct smoke testing.

Table 2: FY 2017/18 Smoke Test Results.

	<u>Maple Ln Drainage Basin</u>	<u>Wellington Drainage Basin</u>	<u>King Salmon Community</u>	<u>Fields Landing Community</u>
Outdoor issue:	5	3	17	15
Under structure:	0	0	6	7
Within structure:	1	1	1	4
Roof drains:	0	0	3	0
Approximate # of parcels:	60	40	145	135
Footages of gravity sewer pipe tested:	2910'	1380'	5960'	7900'

Collection System - The estimated 75 miles of collection system main were installed primarily in the 1960's and 1970's. Over time, a number of trouble spots developed in the collection system. Generally the problems are caused by poor or negative grades in the gravity sewer from settlement of the pipeline. Currently, District personnel are cleaning these locations on a periodic basis in order to minimize the potential for stoppages. The ultimate solution requires physical repair or replacement of the pipeline in these areas.

The District is signatory to the Commercial Shellfish Management Plan, delegated by California Department of Health Services (DOHS), which prohibits any sewer discharges. The District has in effect gone to a "zero discharge" policy to reduce or eliminate potential spills that may degrade the environment and result in large fines that could be better used in making sewer improvements. The "zero discharge" program includes an increased awareness of the situation, increased maintenance of trouble spots, maintaining trailer mounted emergency generators, enlargement of existing sewage lift station wetwell holding capacity and replacement of antiquated sewage pump stations.

In 2018/19 the District will continue proactively evaluating the condition of the sewage collection system using a sewer camera system. This video inspection program will evaluate and prioritize deteriorated sections of the sewer system. The camera system is also used to perform the required 11-month inspection of the sewer system in new subdivision development. Based on the Video Inspection and Infiltration programs, a priority list of repair and corrective action is continually being developed to improve the performance of the system and reduce treatment costs and overflow potential. Typically, approximately three miles of the District's gravity collection system are filmed per year and approximately 14 miles are cleaned.

Sewer Radio Telemetry System Evaluation and Upgrade: The District's sewer system includes 28 Remote Telemetry Units (RTU) that connect the District's sewer lift stations to the District's office. Due to the current status (age and operational abilities) of the District's SCADA and mobile fleet radio systems, during FY 2018/19 the District will retain a contractor to complete a radio system evaluation, mapping and install improvements/repairs as necessary.

<b>SEWER</b>		Previous	<b>Proposed</b>	Projected	Projected	Projected	Projected	Comments	
		FY 17-18	<b>FY 18-19</b>	FY 19-20	FY 20-21	FY 21-22	FY 22-23		
<b>CAPITAL IMPROVEMENTS - SEWER</b>	LF		<b>1</b>	2	3	4	5	<b>Sewer main replacements \$175.00/LF except as noted</b>	
<b>MAIN EXTENSION &amp; REPLACEMENTS</b>									
	<b>C=Contract M=Martin Slough Reversal V=Vendor</b>								
<b>New Connections</b>		\$5,000	<b>\$5,000</b>	\$5,000	\$5,000	\$5,000	\$5,000		
	FY17-18	0							
Sea Ave FM Reversal Project	M, C	1626	\$203,250	<b>\$300,000</b>				Carry-over from 17/18	
Walnut Drive Lateral Replacement				<b>\$40,000</b>				one 16/17 completed, 2 in 18/19	
Dr. Office Lane		400		<b>\$80,000</b>				\$175.00 LF plus additional trucking	
Burns Drive		155		<b>\$27,125</b>				Sewer main replacement \$175/LF	
	<b>FY 18-19</b>	<b>2181</b>							
Hartman Lane	M	900		\$200,000				MSR/\$200.00 LF plus additional trucking	
Mesa Project	C	700		\$200,000				Sewer main replacement/\$285.00 LF	
Walnut Drive (Redwood toward Hemlock)		525		\$150,000				Upsize/\$250.00 LF plus add'l trucking	
	<b>FY 19-20</b>	<b>2125</b>							
London Drive at Burns		220			\$38,500			Sewer main replacement \$175/LF	
Ridgewood Drive		200			50,000			Sewer main replacement/\$250.00 LF	
Hemlock	M	???			\$700,000			Martin Slough Reversal/estimated	
	<b>FY 20-21</b>	<b>420</b>							
End of summit Ridge to David		265				\$46,375		Sewer main replacement \$175/LF	
F Street	M	900				\$177,500		MSR/\$175.00 LF plus additional trucking	
	<b>FY 21-22</b>	<b>1165</b>							
David Street		676					\$128,300	\$175.00 LF plus additional trucking	
Spruce Street	M	1000					\$195,000	MSR/\$175.00 LF plus additional trucking	
	<b>FY 22-23</b>	<b>1676</b>							
<b>Sewer Main</b>		7,567	\$208,250	<b>\$452,125</b>	\$555,000	\$793,500	\$228,875	\$328,300	\$2,566,050 \$427,675 Average over 6 years

<b>SEWER</b>		Previous	<b>Proposed</b>	Projected	Projected	Projected	Projected	Comments
<b>SEWAGE LIFT STATIONS</b>		FY 17-18	<b>FY 18-19</b>	FY 19-20	FY 20-21	FY 21-22	FY 22-23	
	<b>V=Vendor</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
	<b>C=Contract</b>							
	<b>M=Martin Slough Reversal</b>							
South Broadway SLS	C	\$20,000						Transfer switch upgrade Completed
Edgewood New Pump		\$20,000						
Fields Landing SLS	C		<b>\$20,000</b>					Transfer switch upgrade Upgrade for new Force Main Project Carryover from 17-18
Sequoia SLS			<b>\$100,000</b>					
Sea Avenue SLS Upgrade	M	\$30,000	<b>\$30,000</b>					Replacement Radio system eval and upgrade
Replace (4) sewer pumps			<b>\$60,000</b>					
Radio system eval and upgrade	C		<b>\$22,260</b>					
Pine Hill SLS Rehab				\$125,000				SLS conversion/rehab SLS rehab
Blackberry Pumps & Rehab				\$80,000				
Allard Access Vault				\$8,000				Meter vault upgrade Stationary Generator
Bailey SLS Generator	V			\$60,000				
Christine SLS Panel					\$30,000			New electrical control panel Computers 17/18, Upgrade 20/21
SCADA Upgrade					\$60,000	\$60,000		
Artino SLS Generator	C				\$60,000			Stationary generator SLS rehab
Roth Court SLS Upgrade					\$50,000			
Hoover Flow Meter Rehab						\$20,000		Relocate new flow meters Stationary generator
Pine Hill SLS Generator	V					\$60,000		
Beechwood SLS Panel						\$30,000		New electrical control panel Stationary generator
King Salmon SLS Generator	V						\$60,000	
<b>Sewage Lift Stations</b>		\$70,000	<b>\$232,260</b>	\$273,000	\$200,000	\$110,000	\$120,000	\$1,005,260 \$167,543 Average over 6 years
<b>CIP SEWER</b>		\$278,250	<b>\$684,385</b>	\$828,000	\$993,500	\$338,875	\$448,300	\$3,571,310 \$595,218 Average over 6 years





# Engineering and Studies

# Engineering and Studies

## General

Throughout the District's 65-year history, the District has relied on engineering services provided by either a contract engineer or by a Staff engineer. Since the retirement of the District's Staff Engineer in 2013, the District has contracted with a local engineering firm for engineering services.

The District is fortunate to have a wealth of knowledge and institutional memory provided by its Staff. Typically, these talented individuals have the ability to develop general plans and specifications for a particular project based upon their knowledge of the District, District Code and District Standard Plans and Specifications. For these "everyday type projects", the draft plans will be reviewed, edited and ultimately approved by the District Engineer. In other cases the District Engineer may be asked to conduct special studies, design or permit preparation work. Occasionally, the District requires assistance by other engineers/engineering firms as larger projects are pursued. The reliance of having a contract engineer on call for the everyday projects and also having the flexibility to use either the contract engineer, or go out for another engineering firm, has proved to be a cost-effective means of meeting the District's recent engineering needs.

## Background

In addition to the District's everyday engineering needs, the Capital Improvement Program's "Engineering and Studies" section for FY 2018/19 will focus on six specific areas. These areas include:

- Complete a system-wide leak detection survey
- Complete South Bay well construction oversight
- Water tank painting and safety upgrade specifications
- Assess the District's entire radio and SCADA communications system
- Walnut Yard Improvement Project
- Martin Slough flow reversal and lift station design/permitting

## Specific Activities for FY 2018/19

Complete a system-wide leak detection survey: With more than 114 miles of water main line in service throughout the District, water loss through leaks in the pipes is always a concern for many reasons. A District-wide acoustic leak detection survey is necessary to establish a baseline of leak data for the entire District; allow the effective use of District resources to target areas with the most prominent leaks; satisfy regulatory considerations; and ultimately reduce the amount of water that the District purchases.

The acoustic leak detection survey is probably the most common and familiar leak detection methodology. A comprehensive acoustic leak detection survey method listens to all available fittings on the mains (fire hydrants and valves) and service connections in the District's water distribution system. Geophones are used to sound above the mains in case contact points are far apart. Once a leak sound is detected, geophones and leak noise correlators can be used for pinpointing the leak. Even though this leak detection methodology is time consuming, it is an effective way to detect all detectable leaks in the system, including service connection leaks.

In FY 2017/18, the District retained Water Systems Optimization (WSO) to complete a baseline District-wide acoustic leak detection survey. This survey was intended to lead to creating a priority list of leak repair projects to be scheduled over the next five-years. WSO surveyed 93.75 miles of the District's 114 miles of water mains. From that survey, they identified 27 potential leaks in the District's water system. District crews worked throughout FY 2017/18 to explore all 27 potential leaks. Of the 27, 19 leaks were found and repaired. The total estimated water volume recovered from repairing these leaks was 12.67 MG/year.

For FY 2018/19, the District will have WSO come back and complete the remaining ~ 20 miles of water mains in the District and spot check a few other areas.

South Bay well construction oversight: As noted in the Water System Improvements portion of this report, the South Bay Well Project is scheduled to begin in June 2017 and must be completed by August 31, 2018.

On May 9, 2017, the District's Board of Director's approved Amendment 3 to an agreement with Integral Consulting Inc. to provide ongoing support related to the District's replacement of South Bay water supply well and the destruction of Princeton North well. The work to be completed for this amendment includes construction oversight for the South Bay Well Project. For FY 2018/19 Integral representatives will continue to provide construction oversight for Nor-Cal Pump and Well Drilling until project completion the end of August 2018.

Water Tank Rehabilitation Project: All infrastructure subject to constant use and exposed to the elements requires periodic maintenance and refurbishment in order to avoid catastrophic and expensive failure. Exhibit C provides details on the District's 10 water tanks.

During FY 2017/18, the District's Engineer assisted the District in retaining the Consulting firm, Harper and Associates to assess the condition of three of the District's water storage tanks, namely, the Walnut 1.0 million gallon, Ridgewood 0.5 million gallon and the Donna Drive 0.5 million gallon tanks and recommend any necessary repairs.

Their assessments showed that Ridgewood, Donna and Walnut 1MG tanks all had structural issues in the roofs, needed upgrades to the safety equipment and needed to be painted inside and out. After review of the assessments, District staff determined that the Walnut 1 MG tank and the Ridgewood Tank were the highest priority.

Based upon their assessments, Harper and Associates provided a quote for doing bid specs; temporary storage design (at the Ridgewood tank); bid assistance; construction assistance; and inspection for the repairs, safety improvements and painting inside and out of the Ridgewood 0.5 MG and Walnut 1 MG water tank. Based upon their assessments, the engineering and inspection work noted above has been programmed into the FY 2018/19 CIP as the Water Tank Rehabilitation Project – Phase 1 - Walnut 1.0 MG, Ridgewood 0.5 MG and the Donna Drive 0.5 MG Water Storage Tanks.

This Phase of the project involves the engineering, design, specifications, bidding and inspection for the construction/fabrication/painting work to: blast clean the exterior of each tank, repaint and make any necessary exterior repairs; make any necessary internal structural, venting and hatch repairs; blast clean and paint the entire interior of each tank; new cleanouts, gates, handrails, ladders, vent screening and fall restraint system for the Walnut 1MG, Ridgewood and Donna Drive water storage tanks. The following details the engineering tasks for the Phase 1 project.

#### FY 2018/19

- Create Plans, Specifications and preparation of bid package (including contract documents) for the Walnut 1 MG and Ridgewood tanks;
- Design and develop specifications for temporary storage at the Ridgewood tank;
- Provide bid assistance with developing technical aspects of the bid package.

#### FY 2019/20

- Provide engineering inspection of the Ridgewood temporary tank installation;
- Provide engineering inspection for structural/safety repairs for the Walnut 1 MG tank;
- Provide quality control inspection for the Walnut 1 MG tank interior and exterior painting.

#### FY 2020/21

- Provide engineering inspection for structural/safety repairs for the Ridgewood tank;
- Provide quality control inspection for the Ridgewood tank interior and exterior painting
- Create Plans, Specifications and preparation of bid package (including contract documents) for the Donna Drive tanks;
- Design and develop specifications for temporary storage at the Donna Drive tank;
- Provide bid assistance with developing technical aspects of the Donna Drive bid package.

#### FY 2021/22

- Provide engineering inspection of the Donna Drive temporary tank installation;
- Provide engineering inspection for structural/safety repairs for the Donna Drive tank;
- Provide quality control inspection for the Donna Drive tank interior and exterior painting.

Walnut Yard Improvement Project: As noted in the Building, Yard and Paving Improvements portion of this report, the Walnut Yard Improvement Project presently includes the following elements to be scheduled over the next five-years or more, as the budget allows:

Phase 1 – Repairs and Information Collection

- Identify potential yard expansion opportunities – Completed FY 2017/18
- Survey yard including potential expansion areas - Completed FY 2017/18
- Repair/replace siding and windows on the front of the office building - Started FY 2017/18
- Re-roof the office building
- Complete landscaping upgrades to decrease water use
- Updates to the customer service space

Phase 2 – Yard Master Planning

- Develop Master Plan for yard improvements
  - Design and permit
    - Yard perimeter
    - Drainage improvements
    - Siting of additional vehicle/equipment/parts storage building

Phase 3- Master Plan Implementation

- Expand facility by < three acres
  - Clear and grub
- Grade yard
- Seal-coat front parking lot and restripe
- Replace roof on upper truck shop
- Improve yard drainage
- Pave adjacent to the lower shop
- Pave remainder of facility
- Update and secure existing wooden small truck and equipment storage building
- Fence entire facility

For FY 2018/19, engineering services will be required to begin Phase 2 of the Walnut Yard Improvement Project (Yard Master Planning).

Martin Slough lift station reversal design/permitting: In 2015/16 the District began the process of decommissioning and/or reversing flow for 10 sewer lift stations. Table 3 details the proposed schedule of lift station removal and the approximate dates proposed for their decommissioning. Three of the lift stations are termed as “TBD” for “to be determined” due to the fact that these lift stations service very few homes and are very high cost to decommission. The TBD stations therefore are characterized as a low priority and their necessity will be determined at a future date after the other higher-priority stations are decommissioned.

Specifically during FY 2018/19, the District Engineer will provide construction oversight for the Sea Avenue Force Main Reversal project including associated modifications to the Sea Avenue sewer lift station. In addition, engineering services will be required to begin the design and permitting for the Hartman sewer lift station reversal project.

Table 3: Martin Slough Interceptor Proposed Flow Reversals

Reversals	Approximate Schedule
Sea Avenue	2017/18 and 18/19
Hartman	2019/20
Hemlock	2020/21
F Street	2021/22
Spruce	2022/23
Alder	2021/22
D Street	2023/24
Artino	TBD
Pine Hill	TBD
Hidden Meadows	TBD

REVENUE FUNDED CAPITAL PROGRAM PROJECTIONS	Previous FY 17-18	Proposed FY 18-19	Projected FY 19-20	Projected FY 20-21	Projected FY 21-22	Projected FY 22-23	Comments
<b>ENGINEERING &amp; TECHNICAL STUDIES</b>							
Fields Landin Sewer Force Main Test and Design	\$25,000						Condition Assessment
So. Broadway Sewer Force Main Test and Design	\$25,000						Condition Assessment
Robot Plotter/Scanner	\$10,000						Completed
Lower Shop Drain Design	\$5,000						Design assistance and approval
Water Tank Exterior Painting Specs	\$5,000						Water tank exterior painting specs
Donna Drive Tank	\$5,000			\$78,000			Design/Specs/Bid Assist
18th and Quaker PSV Modeling	\$2,000						Water modeling
Walnut 1 MG Tank	\$5,000	\$10,750	\$53,800				Design/Specs/Bid Assist
South Bay Well Construction Management	\$40,000	\$30,000					Project Mgmt-Carry over from 17-18
Leak Detection Survey	\$30,000	\$13,000					Survey for water leaks District-wide
Hartman SLS Reversal	M	\$10,000					Design assistance and approval
Hemlock Diversion Design	M	\$5,000					Design assistance and approval
Walnut Yard Improvement Project		\$15,000					Design
Sea Avenue Force Main Reversal	M	\$5,000					Potential underground boring design
McKay and Green Diamond Annexation		\$10,000					Initiate annexations
Mesa Sewer Line Replacement		\$5,000					Plan review and bid specs
Ridgewood Tank		\$22,750	\$15,000	\$53,800			Design/Specs/Bid Assist
Future Tank Repairs	C		\$5,000				To be determined
"F" Street SLS Reversal	M			\$10,000			Design assistance and approval
Brier Lane Tank					\$25,000		Design/Specs/Bid Assist
Walnut Drive 0.5 MG Tank					\$25,000		Design/Specs/Bid Assist
Small Truck Garage				\$5,000			Rehab
Hoover Crossing					\$5,000		Sewer line replacement design
Spruce SLS Reversal	M				\$10,000		Design assistance and approval
Alder SLS Reversal	M					\$10,000	Design assistance and approval
"D" Street SLS Reversal	M					\$10,000	Design assistance and approval
<b>Engineering &amp; Technical Studies</b>	\$192,000	\$131,500	\$73,800	\$146,800	\$65,000	\$20,000	\$629,100

Exhibit A

# *Humboldt Community Services District*

## THE DISTRICT AT A GLANCE

SERVICE AREA – Approximately 15 square miles serving the unincorporated area around Eureka, including Cutten, Rosewood, Worthington, Pine Hill, Humboldt Hill, Fields Landing, King Salmon, Myrtle town, Cummings Road, Pigeon Point, Mitchell Heights, and Freshwater Valley.

POPULATION – Estimated 22,842

### WATER SOURCES

MAD RIVER – Purchased direct from Humboldt Bay Municipal Water District, with connection behind Bayshore Mall at the Truesdale water booster pump station. Mad River water is also purchased from the City of Eureka through connection near Redwood Acres at the Harris and Hubbard water booster pump station.

GROUND WATER – From District-owned deep wells (3) located at the base of Humboldt Hill at the Spruce Point, South Bay and Princeton wells.

### WATER

WELLS	3 (2 Active)
FIRE HYDRANTS	550
SERVICE CONNECTIONS (TOTAL ACCOUNTS)	7698
WATER STORAGE RESERVOIRS	10
TOTAL STORAGE CAPACITY (MG)	5
WATER BOOSTER PUMPING STATIONS	13
2016 PEAK DAILY WATER CONSUMPTION (MG)	2.38
2016 AVERAGE DAILY WATER CONSUMPTION (MG)	2.0
APPROXIMATE LENGTH OF WATER MAIN (MILES)	114.52

### SEWER

SERVICE CONNECTIONS (TOTAL ACCOUNTS)	6326
WASTEWATER PUMPING STATIONS	28
2016 PEAK DAILY WET WEATHER WASTEWATER FLOW (MG)	1.8
2016 PEAK DAILY DRY WASTEWATER FLOW GENERATED (MG)	0.65
APPROXIMATE TOTAL LENGTH OF SEWER MAIN (MILES)	75 (~61 gravity/14 pressure)

### STREET LIGHTS

STREET LIGHTS	524
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HUMBOLDT COMMUNITY SERVICES DISTRICT															
10 YEAR VEHICLE REPLACEMENT PROGRAM															
FY 2018/19															
Unit No.	Year	Model	Make	Miles/Hrs. (6/2017)	Replaced FY 16/17	Proposed FY 17/18	Projected FY 18/19	Projected FY 19/20	Projected FY 20/21	Projected FY 21/22	Proposed FY 22/23	Projected FY 23/24	Proposed FY 24/25	Projected FY 25/26	Comments
					1	2	3	4	5	6	7	8	9	10	
<b>Light Duty Service Vehicles</b>															
2	2013	Pick-up F-350 4x4	Ford	40,236									50,000		Construction
3	2012	Pick-up F-350 4x4	Ford	44,051									50,000		Construction
5	2013	Pick-up Tacoma	Toyota	13,172									30,000		Engineering
6	2008	Pick-up F350	Ford	77,871		50,000									Maintenance
7	2008	Pick-up Ranger	Ford	33,546									30,000		Planning Dept
9	2006	Van E-250	Ford	77,596				50,000							Maintenance
11	2013	Pick-up Tacoma	Toyota	90,247			30,000								Customer Service
12	2011	Pick-up Ranger	Ford	113,747		30,000									Customer Service
15	2017	Pick-up F-350 Utility	Ford	4,404	50,000										Maintenance
16	2005	Pick-up Ram 1500	Dodge-4x4	61,998				40,000							Maintenance
19	2002	Pick-up Ranger	Ford	121,408											Construction/Maintenance
<b>Heavy Duty Equipment</b>															
1	2012	Utility	Peterbilt	17,194											
4	2010	Utility F-450 w/crane	Ford	62,989				70,000				100,000			15yr Replacement
8	2013	3CY Dump Truck	Peterbilt	17,192										100,000	15yr Replacement
10	2010	7CY Dump Truck	Peterbilt	35,757							200,000				15yr Replacement
14	2008	10CY Dump Truck	Peterbilt	41,307						200,000					15yr Replacement
580-SL	1998	Loader/Backhoe	Case	5,308			130,000								15yr Replacement
580-M	2004	Loader/Backhoe	Case	3,673											15yr Replacement
<b>Speciality Equipment</b>															
13	2007	VacCon	Sterling	29,469					500,000						
18	2017	Vac/Excavator	Peterbilt	4,366	400,000										15yr Replacement
17	2001	Van/Camera	Ford	18,380											15yr Replacement
	2011	Excavator	Cat	1,214								40,000			15yr replacement
	2013	Skid Steer Loader	Bobcat	345											15yr Replacement
	2000	Skid Steer Loader	Bobcat	2,319											15yr Replacement
	1994	Ingersoll Rand	Comp.	1,213											As Necessary
	2008	Cat Roller	6000 lbs.	341									30,000		As Necessary
Trailer -	2007	Portable Light Tower	Multiquip	53											15 or 20 yr replacement
Trailer -	2013	Generator MQ-125	Magnetek	52											AQMD Requirement
Trailer-	2001	Generator MQ 45	Multiquip	701											AQMD Requirement
Trailer-	2001	Generator MQ 70	Multiquip	501											AQMD Requirement
Trailer-	2007	Sewer Bypass Pump	Thompson	1,106											15 or 20 yr replacement
Trailer-	2009	Towmaster, T-40	40K GVWR												As Necessary
Trailer-	1988	Ziemann Tilt	25K GVWR											35,000	As Necessary
Trailer-	2004	Towmaster, T-5T	9 GVWR												As Necessary
Trailer-	2006	Foriv-Van41	7 GVWR												As Necessary
Trailer-	2005	Contrail	12K GVWR											35,000	As Necessary
<b>Totals</b>					<b>\$450,000</b>	<b>\$80,000</b>	<b>\$160,000</b>	<b>\$160,000</b>	<b>\$500,000</b>	<b>\$200,000</b>	<b>\$200,000</b>	<b>\$140,000</b>	<b>\$190,000</b>	<b>\$170,000</b>	<b>\$1,350,000</b>
<b>Notes:</b>															
1	Replacement cost shown does not include resale value, which is included as revenue in the budget														
2	Replacement schedule: Customer Service - 8 years; Light Duty - 10 years; Heavy Equipment - 15 years; Specialty Equipment - 15-20 years														

**Exhibit B**

## Exhibit C

# Water Storage Tank Information

### **Walnut Drive**

1.0 M.G.  
Erected: 1971  
Contract # 31707  
67' Diameter x 40' Height

### **Blue Spruce**

1.0 M.G.  
Erected:  
Contract # 2219  
72' Diameter x 35' Height

### **Lentell**

0.15 M.G.  
Erected: 1992  
Contract # 92037  
37' Diameter x 20' Height

### **Cummings**

0.12 M.G.  
Erected: 1991  
Contract # 91037  
30' Diameter x 24' Height

### **Dana Lane**

0.375 M.G.  
Erected: 1992  
Contract # 92037A  
48' Diameter x 30' Height

### **Pigeon Point**

0.17 M.G.  
Erected: 1996  
Contract #  
35.5' Diameter x 24' Height

### **Brier Lane**

0.5 M.G.  
Erected: 1982  
Contract #  
52' Diameter x 32' Height

### **Donna Drive**

0.5 M.G.  
Erected: 1988  
Contract #  
61' Diameter x 24' Height

### **Ridgewood**

0.5 M.G.  
Erected: 1982  
Contract #  
40' Diameter x 52' Height

### **Walnut Drive**

0.5 M.G.  
Erected: 1952?  
Contract #  
50' Diameter x 34' Height

## HCSD SEWER LIFT STATION DATA

LOCATION	MFG and MODEL #	HP	VOLTAGE / PHASE	# OF PUMPS	STATION REHAB YEAR	GEN. TFR. SWITCH	OUTPUT (GPM) 1PUMP/2 PUMPS	# OF WET WELLS	WELL(S) DIAMETER (FT)	WELL (S) TOTAL STORAGE CAPACITY (GALS)	INFLOW (GPM)	COMMENTS
"D" street	Flygt 3085.092-434	3	240/3	2	1996	YES	174/210	1	6	844	5	
Alder Street	Flygt 3127.090-484	10	240/3	2	1997	YES	210/280	1	6	844	1	
Spruce Street	Flygt 3085.092-434	3	240/3	2	1996	YES	196/247	1	6	1055	7	
Blackberry Lane	Essco Pump	5	240/1	2	1984	YES	74/125	1	6	1055	1	
Liberty Bell Court	Flygt 3102.090-432	5	240/3	2	1993	YES	64/105	1	6	1055	4	
Roth Court	Essco Pump	10	240/3	2	1989	YES	146/163	1	6	1266	6	
Bailey Street	Flygt NP3153.091-456HT	15	480/3	2	2007	YES	389/506	2	6, 6	2110	50	
Hartman Lane	Myers (grinder pumps)	3	240/3	2	1988	YES	40/55	1	4	657	1	
Hoover Street	Flygt N3127.180-422/498	10	480/3	3	1987	Stationary	948/1494	2	7, 7	4000	400-500	
Sea Avenue	Essco Pump	20	480/3	2	1986	YES	75/83	1	6	1266	13	
"F" Street	Essco Pump	10	240/3	2	1995	YES	448/655	2	6, 6	2536	44	
Foxwood Estates	Flygt 3127.090-488	10	240/3	2	2004	YES	176/195	1	6	1585	31	
Perch	Flygt NP3085.092-436	2.4	240/3	1	2001	YES	343	1	4	470	9	Station is 1 phase, pump is 3 phase (inverter)
Buhne	Flygt NP3085.092-436	2.4	240/3	1	1998	YES	106	1	4	470	12	Station is 1 phase, pump is 3 phase (inverter)
Campton Road	Flygt 3102/Flygt 3153	5, 12	240/3	2	1994	YES	371/700	2	5, 6	2149	14	Decommissioned 2015/16 for Martin Slough
Edgewood Street	Flygt 3171/Essco	25/15	480/3	2	2009/1995	Stationary	326/421	2	7, 5	2172	10	
Maple Lane	Flygt 3085.092-434	3	240/3	2	2000	YES	109/211	2	6, 4	1220	8	
Moore Avenue	Flygt 3102.890-216	6	240/3	2	2008	YES	119/176	1	6	1056	1	Station is 1 phase, pump is 3 phase (inverter)
Sequoia Lane	Flygt NP3102.090-422	5	240/3	2	1998	YES	388/???	3	4, 6, 6	610	87	
Hidden Meadows	Flygt 3102	4, 5	240/1	2	1990	YES	132/150	1	6	1056	2	
Beechwood Drive	Flygt 3152.091-432/454	20	480/3	2	1999	YES	151/178	2	5, 7	1737	5	
Artino Street	Flygt CP3127.090-488	10	240/3	2	1990	YES	366/408	2	6, 6	2537	85	
Pine Hill Road	Cornell 4414T VC18D	25	240/3	2	2000	YES	315/341	1	4	375	44	
Christine Drive	Flygt 3127.095-249	11	240/3	2	2012	YES	200/238	1	7	1440	18	
Cedar Ridge	Flygt 3085.091-434	3.2	240/3	2	1992	YES	87/157	1	6	1056	9	
Wellington	Flygt 3127.090-433/489	7.5	240/3	2	1998	YES	211/243	2	5, 7	3041	10	
South Broadway	Flygt NP3127/NP3202	7.5/70/70	480/3	3	2005	Stationary	400/1900	1	7	1150	144	
King Salmon	Flygt NP3085.092-463/462	2.1, 3	240/3	2	2008	YES	150/220	1	5	1174	3	
Fields Landing	Flygt 3127/3153	7.5/7.5/20	480/3	3	2011	Stationary	240/470	2	6, 7	3000	14	
<b>SUMMARY</b>												
LIFT STATIONS	29											
FLYGT PUMPS	46											
ESSCO PUMPS	9											
CORNELL PUMPS	2											
MYERS PUMPS	2											

### Exhibit D

Humboldt Community  
Services District

Potential Future Major Projects and Costs

Project	Description	Code	Estimated Cost	Comments
<b>WATER</b>				
New Ridgewood 1.0 mg Tank	Additional storage, Ridgewood growth	G,S	\$1,700,000	
			\$1,700,000	
<b>SEWER</b>				
Sewer Transmission Line Replacement	Replaces aging transmission line to WWTP	M,R	\$2,000,000	
			\$2,000,000	
<b>Other</b>				
			\$0	
Code		<b>TOTAL</b>	<b>\$3,700,000</b>	
C = Cost				
G = Growth				
M = Maintenance / Replacement				
O = Other				
R = Reliability				
S = System Efficiency				

**Exhibit E**