



South Orange County Wastewater Authority

TEN YEAR CAPITAL IMPROVEMENT PROGRAM 2019 - 2028



AUGUST 2019

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DEFINITION

The ongoing purpose of the Ten Year Capital Improvement Plan is to identify projects needed for the rehabilitation or replacement of the facilities owned or operated by the South Orange County Wastewater Authority (SOCWA). The identification of the improvement projects is to describe the need, the approximate scope and the required budget. The goal of the Ten Year Capital Improvement Plan is to allow SOCWA and its member agencies to more effectively plan and budget for capital projects.

The 2019 version of the Ten Year Capital Improvement Plan is the successor to the last Board approved plan in 2010.

Chapter 3 of this document provides more background regarding the development and use of the Plan.

EXTENDED PROJECTION

One unique feature of this Ten Year Plan is that it actually covers a fifteen year span. The planning life of the SOCWA Capital Improvement Plan has been an ongoing topic of discussion among SOCWA staff and members of the SOCWA Engineering Committee. A shorter planning period (< 5 years) provides a greater probability of an accurate cost projection. Beyond the five year planning period there is a greater uncertainty regarding the need, scope and cost of capital improvement projects. There is also a greater chance that unforeseen improvements will need to be addressed. However, several SOCWA member agencies believe the long planning projection is advantageous in

financial planning. The goal of doing a fifteen year plan is to improve the estimating accuracy within the nominal Ten Year period. The longer span allows spreading out projects that might otherwise be forced into Years 8, 9 and 10 of the Plan. This tended to create a spike in capital investment in the late years of the Ten Year Plan.

REPORT ORGANIZATION

This report describes the Ten Year Program through the following chapters:

- Background: Description of the institutional background of SOCWA, basic inventory of facilities and member agency ownership [Chapter 2].
- Ten Year Plan Development: Description of the development and utilization of the Ten Year Plan [Chapter 3].
- Assets: Description of basis for asset life projection at SOCWA facilities [Chapter 4].
- Cost Estimating: Description of cost estimate basis including anticipated accuracy, use of contingencies, and cost indexing [Chapter 5].
- Administrative Cost: Discussion regarding the development and allocation of administrative and legal costs associated with capital projects [Chapter 6].
- Small Capital Improvements: Basis for costs for small capital improvements

program managed by the SOCWA Operations Department [Chapter 7].

- Ten Year Program Summary and Capital Improvement Cost Allocation: Summary tables including the allocations of costs to member agencies [Chapter 8].
- Cost Loading: Projection of annual costs based on expected expenditures [Chapter 9].

More detailed information regarding the Ten Year Plan can be found in the following appendices:

- Cost Escalation Analysis: Analysis of cost escalation factors in order to forecast future capital improvements cost [Appendix A].
- J.B. Latham Treatment Plant: Summary of proposed improvements for the Latham facility [Appendix B].
- J.B. Latham Treatment Plant Project Descriptions: Summary of scope, need, key issues and timing for each capital improvement project for the Latham facility [Appendix C].
- J.B. Latham Treatment Plant Project Cost Tables: Basis for construction and supporting phase costs for each capital improvement project for the Latham facility [Appendix D].
- San Juan Creek Ocean Outfall: Description of proposed improvements for this outfall [Appendix E].
- Coastal Treatment Plant: Summary of proposed improvements for the

Coastal facility [Appendix F].

- Coastal Treatment Plant Project Descriptions: Summary of scope, need, key issues and timing for each capital improvement project for the Coastal facility [Appendix G].
- Coastal Treatment Plant Project Cost Tables: Basis for construction and supporting phase costs for each capital improvement project for the Coastal facility [Appendix H].
- Regional Treatment Plant: Summary of proposed improvements for the Regional facility [Appendix I].
- Regional Treatment Plant Project Descriptions: Summary of scope, need, key issues and timing for each capital improvement project for the Regional facility [Appendix J].
- Regional Treatment Plant Project Cost Tables: Basis for construction and supporting phase costs for each capital improvement project for the Regional facility [Appendix K].
- Effluent Transmission Main: Description of proposed improvements for the pipeline [Appendix L].
- Aliso Creek Ocean Outfall: Description of proposed improvements for this outfall [Appendix M].

SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

The South Orange County Wastewater Authority (SOCWA) is a joint powers authority responsible for the treatment of wastewater and the disposal of treated effluent. The service area is approximately 220 square miles in southern Orange County. SOCWA was formed in July, 2001, by the consolidation of three separate joint powers authorities: the Aliso Water Management Agency (AWMA), the South East Regional Reclamation Authority (SERRA) and the South Orange County Reclamation Authority (SOCRA). AWMA and SERRA were created in the early 1970's in an effort to regionalize wastewater treatment in South Orange County and take maximum advantage of the recently enacted Federal and State Clean Water Acts. The agencies that were originally members of AWMA and SERRA and continue to be part of SOCWA include the following:

- El Toro Water District
- Emerald Bay Service District
- Irvine Ranch Water District
- City of Laguna Beach
- Moulton Niguel Water District
- City of San Clemente
- City of San Juan Capistrano
- Santa Margarita Water District
- South Coast Water District

AWMA and SERRA were constructed around the Aliso Creek and San Juan Creek Watershed Basins respectively. This report will periodically address facilities or projects with respect to the appropriate watershed.

The third joint power authority that was merged into SOCWA was the South Orange County Reclamation Authority (SOCRA). SOCRA was formed in the early 1990's to manage water reuse permits within South Orange County. SOCRA did not directly manage any physical facilities. The Trabuco Canyon Water District, in addition to several of the agencies listed above, was also a member of SOCRA.

FACILITIES

SOCWA owns and/or operates wastewater treatment and disposal facilities in South Orange County. Some facilities that were constructed by AWMA/SERRA in the 1970's and 1980's are operated by the member agencies. The facilities are as follows:

- J. B. Latham Wastewater Treatment Plant [Project Committee 2].
- San Juan Creek Land and Ocean Outfall [Project Committee 5].
- San Clemente Land Outfall (operated by the City of San Clemente) [Project Committee 10].
- Coastal Treatment Plant [Project Committee 15].
- Coastal Treatment Plant Export Sludge Force Main [Project Committee 15].
- Coastal Treatment Plant Access Road [Project Committee 15].
- Regional Treatment Plant [Project Committee 17].

- Aliso Creek Effluent Transmission Main (Reaches B, C, D and E) [Project Committee 21].
- Regional Treatment Plant Effluent Line [Project Committee 2B*].
- Laguna Beach Pump Station (operated by the City of Laguna Beach) [Project Committee 23].
- Bluebird Pump Station (operated by the City of Laguna Beach) [Project Committee 23].
- North Coast Interceptor (operated by the City of Laguna Beach) [Project Committee 23].
- Aliso Creek Land and Ocean Outfall [Project Committee 24].

* Note that this is not the same as Project Committee 2 for the J. B Latham Treatment Plant.

The following facilities are not considered in this analysis:

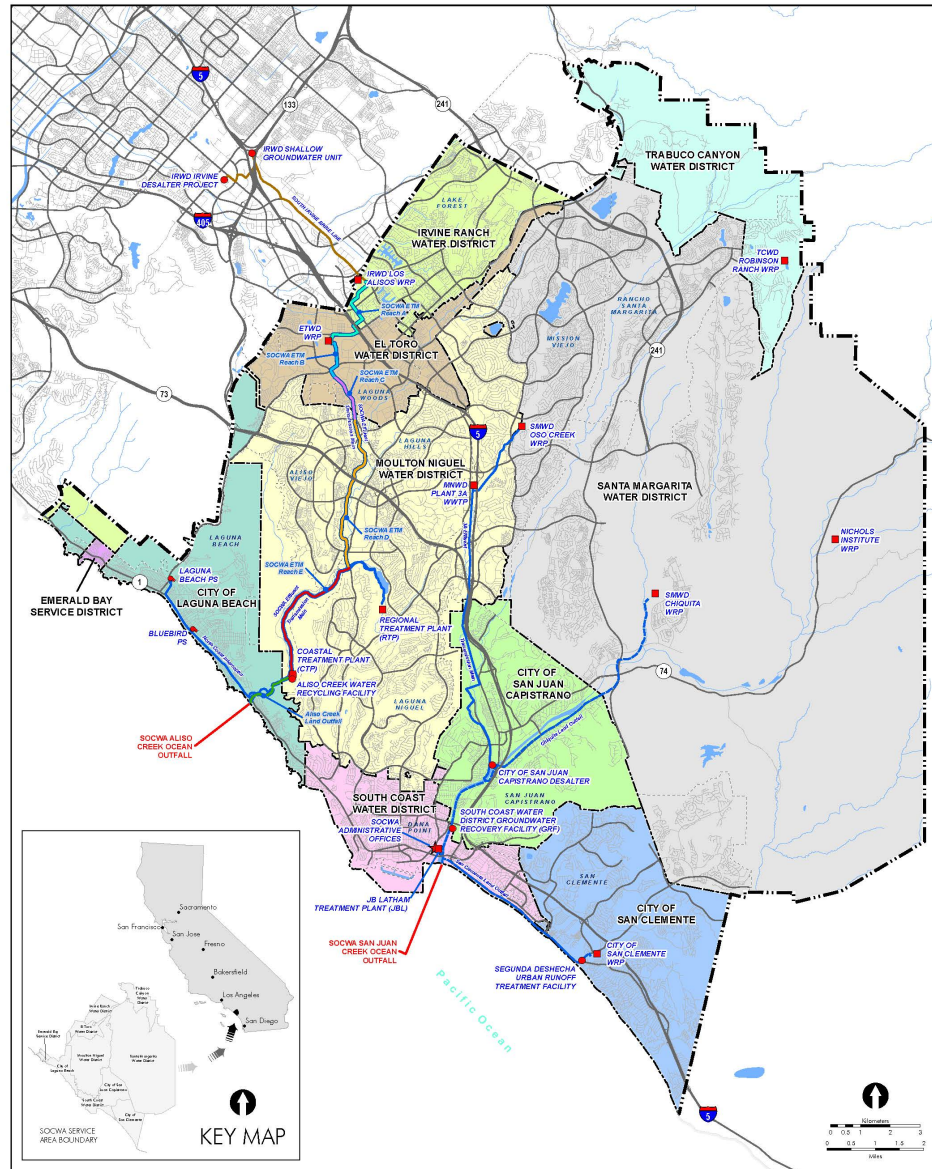
- The San Clemente Land Outfall is owned and operated by the City of San Clemente. That municipality develops and administers any capital projects related that facility
- The North Coast Interceptor, the Laguna Beach Pump Station and the Bluebird Pump Station are operated by the City of Laguna Beach. The City is also responsible for the Capital Programs for those facilities.

The physical facilities for Project Committees 2, 5 and 10 are located within the San Juan Creek Watershed Basin. The physical facilities for the Project Committees 15, 17, 21 (and 2B), 23 and 24 are located within the Aliso Creek Watershed Basin.

The locations of the SOCWA facilities along with boundaries of its member agencies are shown in Figure 2.1.

Figure 2.1
SOCWA Facilities Map

SOCWA SERVICE AREA MAP



- Member Agencies**
- City of Laguna Beach
 - City of San Clemente
 - City of San Juan Capistrano
 - El Toro Water District
 - Emerald Bay Service District
 - Irvine Ranch Water District
 - Moulton Niguel Water District
 - Santa Margarita Water District
 - South Coast Water District
 - Trabuco Canyon Water District

- Facilities**
- SOCWA Administrative Offices
 - Desalter/Treatment Facility
 - Pump Station
 - Treatment Facility
 - Transmission Line
 - South Irvine Brine Line
 - Land Outfall
 - Ocean Outfall

- SOCWA Effluent Transmission Line**
- ETL - Reach A
 - ETL - Reach B
 - ETL - Reach C
 - ETL - Reach D
 - ETL - Reach E
 - Aliso Creek Land Outfall

- SOCWA Boundary Line**
- City Boundary
 - Member Agency Boundary
 - Waterbody
 - Creek/Stream



FACILITY OWNERSHIP

The ownership of capacity by the member agencies in each facility serves as the basis for the allocation of capital improvement programs costs. Tables 2.1 and 2.2 show the capacity ownership in the Aliso Creek and San

Juan Creek Basin Watersheds respectively. The capacity in the AWT at the Joint Regional Treatment Plant is completely owned by the Moulton Niguel Water District; the capacity in the AWT at the Coastal Treatment Plant is completely owned by the South Coast Water District.

Table 2.1
Aliso Creek Basin Project Committee Ownership Percentages

| Ownership percentages by Project Committees | | | | | | | | |
|---|------------------------|-----------------------|------------------------|--------------|-------------------------------------|-----------------------------------|-----------------------------------|-------------------------|
| District | PC 17 Liquid (%) | PC 17 Solid (%) | PC 17 Common (%) | PC 15 (%) | ETM Reach B/C PC 21 (%) | ETM Reach D PC 21 (%) | ETM Reach E PC 21 (%) | Outfall PC 24 (%) |
| ETWD | 0.00 | 20.41 | 10.26 | 0.00 | 50.00 | 50.00 | 23.29 | 16.30 |
| EBSD | 0.00 | 0.59 | 0.33 | 2.99 | 0.00 | 0.00 | 0.00 | 0.78 |
| IRWD | 0.00 | 0.00 | 0.00 | 0.00 | 50.00 | 50.00 | 23.29 | 15.76 |
| CLB | 0.00 | 11.22 | 6.27 | 37.91 | 0.00 | 0.00 | 0.00 | 11.00 |
| MNWD | 100.00 | 58.82 | 78.13 | 29.25 | 0.00 | 0.00 | 53.42 | 43.85 |
| SCWD | 0.00 | 8.96 | 5.01 | 29.85 | 0.00 | 0.00 | 0.00 | 12.31 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

Table 2.2
San Juan Creek Basin Project Committee Ownership Percentages

| District | PC 2 Liquids (%) | PC 2 Solids (%) | PC 2 Common (%) | PC 5 (%) | PC 5 JBLTP Effluent PS (%) | PC 10 (%) |
|----------|------------------------|-----------------------|-----------------------|----------|-------------------------------------|--------------|
| MNWD | 23.08 | 21.62 | 22.35 | 15.51 | 20.27 | 0.00 |
| CSC | 0.00 | 0.00 | 0.00 | 16.62 | 0.00 | 100.00 |
| CSJC | 30.77 | 30.00 | 30.38 | 11.08 | 30.41 | 0.00 |
| SMWD | 17.31 | 28.38 | 22.85 | 44.32 | 20.27 | 0.00 |
| SCWD | 28.84 | 20.00 | 24.42 | 12.47 | 29.05 | 0.00 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

USE OF THE TEN YEAR PLAN

The final Ten Year Capital Improvement Plan has been developed as a planning tool (as opposed to a strict budget). The adopted Ten Year Plan is then used as a guide to be used by SOCWA staff and the Engineering Committee in developing the annual capital improvement budgets. Changes in project priority, scope and cost estimation may occur between the Ten Year Plan and the development of the each annual budget. The proposed capital improvement budget must be developed by SOCWA staff, reviewed by the Engineering Committee and approved by the Board of Directors each fiscal year.

MODIFIED APPROACH

The 2019 version of the Ten Year Capital Improvement Plan (CIP) is the successor to the 2010 Plan which is the last Plan that was formally adopted by the SOCWA Board of Directors. Some of the projects proposed in the 2018 version are similar to projects identified in the 2010 version. However, the approach to defining and estimating the project is both more uniform and detailed in the current plan. This is reflected in the cost estimation tables presented in Appendices D, H, and K. Cost estimates for each proposed project are based on previous engineering studies, supplier quotes, past bid reviews, and additional input from SOCWA staff and consulting engineers. Appendices D, H, and K identify the sources for much of the cost estimate background. The approach to the 2019 CIP also places more emphasis on the useful life as described in Chapter 4 of this report. In addition, the list of assets has been expanded from the list

utilized for the 2010 plan. The more rigorous approach is appropriate as the facility is now nine years older; many of the assets are moving closer to the end of useful lives.

BASIS FOR PROJECTS

The primary basis for the Ten Year Capital Improvement Plan is the retrofit and replacement of equipment as they near the end of their useful lives. The process of defining the useful life is described in Chapter 5 of this report. Relatively few projects have been identified for regulatory compliance (gas flare replacement at Latham and Regional Plants; port duckbill check valves on San Juan Creek Ocean Outfall). Many of the projects addressed in this report address reliability issues; however, those reliability issues are generally related to equipment age.

Each Project Committee has a project that may be identified as speculative. For instance, the relocation of the Land Section of the Aliso Creek Ocean Outfall depends on additional information regarding risk evaluation and potential future actions by the private property owner in whose land the outfall is located. In general, these projects are set in Years 6 through 10 of the Ten Year Plan.

There are a series of large rehabilitation projects that are identified from Years 3 through 15 of the Ten Year Plan. These projects are typically preceded by at least two years by a condition assessment or another study to refine the need, scope, and cost for the rehabilitation work.

FACILITY USEFUL LIFE

A significant amount of capital improvement work has been done at the SOCWA treatment plants over the past 20 years to upgrade and replace aging assets. The Ten Year Plan considers the replacement of existing assets so that the treatment plant can continue to operate within regulatory and industry standards. The approach generally replaces an asset with a like component having the same useful life as the existing component. The intent of the asset replacement is to bring a component or system back to an industry standard. This approach is not based on trying to extend the life of the treatment plant to any specific value.

PROJECT COMMITTEE AGREEMENTS

The issue of the expiration of the Project Committee agreements was raised during the development of the review of the Ten Year Plan for the Coastal Treatment Plant. The development of the treatment plant capital improvement programs did not specifically address the Project Committee agreements as it was anticipated that these agreements would be the subject of future negotiations which would potentially result in studies that would address alternative approaches to capital improvements. The treatment plant Project Committee agreements expire during the following years:

- PC 2: 2023
- PC 15: 2030
- PC 17: 2029

There are two projects in the PC 2 Ten Year Plan that address the impact of changes to the project committee agreement due to the short-term expiration of that agreement in combination with wastewater master plan updates by PC 2 member agencies. Member agencies of PC 15 and PC 17 may elect to include projects in future versions of the SOCWA Ten Year Plan that address the impact of the expiring Project Committees agreements.

UPDATING THE TEN YEAR PLAN

The preparation of the Ten Year Plan included a very detailed Excel model describing the scope, timing, need and cost estimating for the projected capital project. Each year includes a series of studies and condition assessments that will provide information to help refine the Ten Year Plan. It is the intent of SOCWA staff that this information will be used to update the Ten Year Plan each year in conjunction with the preparation of the annual budget.

SOCWA ASSETS

The original listing of SOCWA assets was prepared by TetraTech in 2005 as part of an Asset Management Study. This listing provided a comprehensive list of mechanical items and systems. SOCWA has expanded the list with structural, structural appurtenances, electrical and instrumentation components, site facilities and buried piping. The list was also amended to include structures and equipment associated with new projects. The SOCWA asset listing is maintained in an Excel spreadsheet.

BASIS FOR EXPECTED LIFE

The current version of the Ten Year Plan is largely based on targeting assets for replacement that have exceeded their useful lives or are expected to exceed their useful lives during the 15 year span of the capital improvement program. The 'expected life' can be defined as that point in time when (1) the asset can no longer reliably serve its function, (2) the asset deteriorates to the point that it poses a safety risk, (3) the asset deteriorates to the point that continued maintenance is more expensive than replacement, or (4) the asset is no longer supported by vendors (e.g. can no longer obtain replacement parts). There is no single source defining the expected lives for all of the components in a wastewater treatment plant. The 2005 Asset Management Study prepared by Tetra Tech identified expected lives for many components. During the preparation of this report Carollo Engineers transmitted a list of expected lives typically used in their analyses. These values were comparable to the

numbers 2005 numbers utilized by TetraTech. The Carollo expected life values are presented in Table 4.1 in the column titled 'Life as Recommended by Consultant'. SOCWA staff expanded this listing and modified some of the values. Some of these values were provided at the recommendation of suppliers and installers. However, this list largely reflects the experience of SOCWA staff based on the local conditions found at SOCWA facilities. These values are presented in Table 4.1 in the column 'Life Utilized, Modified or Added by SOCWA Staff'. The values presented in this column are used in this analysis.

CONDITION ASSESSMENTS

Condition assessments are conducted either informally by the SOCWA Operations staff (through their observations of visual condition, performance, and maintenance history) or by external consultants. SOCWA began a program of contracting condition assessments in 2016. The Ten Year Plan includes over two dozen condition assessments over the planning span. The assessments will be used to update the scope and the timing of prospective projects.

UNLISTED ASSETS

Appendices B, F, and I provide lists of Assets included in this plan development for the J. B. Latham, Coastal and Regional Treatment Plants respectively. These tables do not include the list of all assets in the treatment plants. There are many HVAC components (such as fans, air conditioning, and ducting), plumbing items

Table 4.1
Listing of Expected Asset Lives

| Discipline | Asset Type | Life as Recommended by Consultant | Life Utilized, Modified or Added By SOCWA Staff |
|-------------------|--|-----------------------------------|---|
| Structural | Above-ground Concrete | 50 | 50 |
| Structural | Buried Concrete | 50 | 50 |
| <i>Structural</i> | <i>Lining in Concrete Channel</i> | | 30 |
| Structural | Slab on grade | 50 | 50 |
| Structural | Clarifier | 50 | 50 |
| Structural | Digester. | 50 | 50 |
| Structural | Contact Basin | 50 | 50 |
| Structural | Aeration Basin | 50 | 50 |
| Structural | Tank, Chemical | 25 | 25 |
| Structural | Aluminum Covers | | 25 |
| <i>Structural</i> | <i>Fiberglass Weirs, Baffles and Launderers</i> | | 30 |
| <i>Structural</i> | <i>Stainless Steel Appurtenances</i> | | 40 |
| <i>Structural</i> | <i>Coated Steel or Galvanized Structural Appurtenances</i> | | 30 |
| <i>Structural</i> | <i>Wood Doors, Door Frames and Window Frames</i> | | 30 |
| <i>Structural</i> | <i>Metallic Doors, Door Frames and Window Frames</i> | | 35 |
| <i>Structural</i> | <i>Skylights</i> | | 35 |
| <i>Structural</i> | <i>Roof - Built Up and Tiled</i> | | 25 |
| <i>Structural</i> | <i>Roof - Built Up and Shingled</i> | | 25 |
| <i>Structural</i> | <i>Roof - Membrane</i> | | 30 |
| <i>Structural</i> | <i>Roll Up Doors</i> | | 35 |
| <i>Structural</i> | <i>Prefabricated Metal Structures</i> | | 40 |
| <i>Structural</i> | <i>Simple Wood Structures</i> | | 35 |
| <i>Structural</i> | <i>Aluminum Handrail</i> | | 40 |
| <i>Structural</i> | <i>Laboratory Benchwork</i> | | 30 |
| <i>Structural</i> | <i>Maintenance Shop Bench Work</i> | | 30 |
| Structural | Building | 50 | 50 |
| | | | |
| Mechanical | Pump | 25 | 25 |
| Mechanical | Pump, Grit | 20 | 20 |
| Mechanical | Pump, Sludge | 20 | 20 |
| Mechanical | Pump, End Suction | 25 | 25 |
| Mechanical | Pump, Mixing | 25 | 25 |
| Mechanical | Pump, Scum | 25 | 25 |
| Mechanical | Pump, Recirc | 25 | 25 |
| Mechanical | Pump, Vertical Turbine | 30 | 30 |
| Mechanical | Pump, Chemical | 20 | 15 |

Table 4.1
Listing of Expected Asset Lives

| Discipline | Asset Type | Life as Recommended by Consultant | Life Utilized, Modified or Added By SOCWA Staff |
|-------------------|---|-----------------------------------|---|
| Mechanical | Pump, Submersible | 25 | 25 |
| Mechanical | Pump, Water | 25 | 25 |
| Mechanical | Pump, Sump | 20 | 20 |
| Mechanical | Motor | 25 | 25 |
| Mechanical | Gate | 30 | 30 |
| Mechanical | Valve | 35 | 35 |
| <i>Mechanical</i> | <i>Valves, Sludge and Grit</i> | | 20 |
| <i>Mechanical</i> | <i>Valves, Compressed Air</i> | | 25 |
| <i>Mechanical</i> | <i>Valve Actuators</i> | | 20 |
| <i>Mechanical</i> | <i>Strainer</i> | | 30 |
| Mechanical | Bar Screen | 20 | 20 |
| <i>Mechanical</i> | <i>Rotary Screen</i> | | 30 |
| <i>Mechanical</i> | <i>Rotary Screen (Drum)</i> | | 15 |
| Mechanical | Blower (Multistage or PD) | 30 | 30 |
| <i>Mechanical</i> | <i>Blower (Single Stage)</i> | | 30 |
| <i>Mechanical</i> | <i>Blower (Single Stage) Rebuild</i> | | 15 |
| Mechanical | Centrifuge | 30 | 30 |
| <i>Mechanical</i> | <i>Centrifuge Rebuild</i> | | 10 |
| Mechanical | Cogeneration | 25 | 25 |
| <i>Mechanical</i> | <i>Engine Rebuild</i> | | 10 |
| Mechanical | Compressor | 20 | 20 |
| Mechanical | Conveyor | 20 | 20 |
| Mechanical | Crane | 40 | 40 |
| Mechanical | Collector (Circular) | 30 | 30 |
| <i>Mechanical</i> | <i>Collector Recoating</i> | | 15 |
| <i>Mechanical</i> | <i>Chain and Flight (Shafts; Sprockets)</i> | | 30 |
| <i>Mechanical</i> | <i>Chain and Flight</i> | | 20 |
| Mechanical | Drive | 30 | 30 |
| <i>Mechanical</i> | <i>Scum Collector/Beach (Stl)</i> | | 20 |
| <i>Mechanical</i> | <i>Scum Collector/Beach (Stn Stl)</i> | | 30 |
| Mechanical | Trough (Metallic) | 20 | 20 |
| Mechanical | Air Diffusers | 20 | 20 |
| Mechanical | Grinder | 20 | 20 |
| Mechanical | Grit Classifier | 20 | 20 |
| Mechanical | Grit Washer | 20 | 20 |
| <i>Mechanical</i> | <i>Sand and Anthracite Filter Media</i> | | 10 |
| <i>Mechanical</i> | <i>Filter Underdrains/Troughs</i> | | 30 |
| <i>Mechanical</i> | <i>Odor Control Scrubber (FRP Body)</i> | | 30 |
| <i>Mechanical</i> | <i>Odor Control Scrubber (Pumps, Fans)</i> | | 15 |
| <i>Mechanical</i> | <i>Odor Control Ducting and Gates</i> | | 25 |

Table 4.1
Listing of Expected Asset Lives

| Discipline | Asset Type | Life as Recommended by Consultant | Life Utilized, Modified or Added By SOCWA Staff |
|------------------------|---|-----------------------------------|---|
| <i>Mechanical</i> | <i>FRP Chemical Storage Tanks</i> | | 30 |
| Mechanical | Mixer | 20 | 20 |
| <i>Mechanical</i> | <i>Mixer - Low Intensity</i> | | 30 |
| Mechanical | Hydraulic Unit | 30 | 30 |
| Mechanical | Tank, Hydroneumatic Tank | 30 | 30 |
| Mechanical | Boiler/Heat Exchanger | 25 | 25 |
| Mechanical | Generator | 40 | 40 |
| <i>Mechanical</i> | <i>Diesel Storage Tank (Fiberglass)</i> | | 30 |
| Mechanical | Fan | 20 | 20 |
| Mechanical | AC Unit | 20 | 20 |
| Mechanical | Heater | 20 | 20 |
| <i>Mechanical</i> | <i>Maintenance Shop Equipment</i> | | 25 |
| <i>Mechanical</i> | <i>PVC Piping</i> | | 25 |
| <i>Mechanical</i> | <i>Exposed Plumbing</i> | | 25 |
| <i>Mechanical</i> | <i>Stainless Piping & Supports</i> | | 40 |
| <i>Mechanical</i> | <i>Metal Piping & Supports</i> | | 30 |
| | | | |
| Instrumentation | Analyzer | 20 | 20 |
| <i>Instrumentation</i> | <i>Laboratory Equipment</i> | | 25 |
| Instrumentation | Controller | 20 | 20 |
| Instrumentation | Sampler | 20 | 20 |
| Instrumentation | Sensor | 20 | 20 |
| Instrumentation | Flow Meter | 20 | 20 |
| | | | |
| Electrical | Control Panel | 30 | 30 |
| Electrical | MCC | 30 | 30 |
| <i>Electrical</i> | <i>VFD</i> | 20 | 15 |
| <i>Electrical</i> | <i>PLC</i> | 20 | 15 |
| Electrical | Switch | 20 | 20 |
| Electrical | Switchgear | 30 | 30 |
| Electrical | Transformer | 30 | 30 |
| Electrical | Solar | 20 | 20 |
| <i>Electrical</i> | <i>Indoor Lighting, Receptacle</i> | | 35 |
| <i>Electrical</i> | <i>Exterior Conduit, Junction Boxes</i> | | 30 |
| <i>Electrical</i> | <i>Exterior Lighting</i> | | 30 |
| | | | |
| Buried Piping | AC | 60 | |
| Buried Piping | CI | 60-75 | |
| Buried Piping | DIP | 30-50 | |
| Buried Piping | SS | 50 | |

Table 4.1
Listing of Expected Asset Lives

| Discipline | Asset Type | Life as Recommended by Consultant | Life Utilized, Modified or Added By SOCWA Staff |
|---------------|--------------------------------|-----------------------------------|---|
| Buried Piping | RCP | 75 | |
| Buried Piping | CONC | 50-75 | |
| Buried Piping | Manholes | 75 | |
| Buried Piping | HDPE | 100 | |
| Buried Piping | PVC | 100 | |
| Buried Piping | VCP | 75-85 | |
| Buried Piping | VCP-Rehab | 100 | |
| | | | |
| <i>Site</i> | <i>Fencing</i> | | <i>40</i> |
| <i>Site</i> | <i>Storm Drains</i> | | <i>40</i> |
| <i>Site</i> | <i>Concrete Storm Channels</i> | | <i>50</i> |
| Site | Pavement | 40 | |

(such as drains, drain piping, and hose fixtures), instruments (such as pressure gauges and fire alarms), and process components (including small valves and sample pumps) that are not included. Some of these items are included in the agency's Tabware maintenance programs; many of these assets are too limited in value to capitalize. These improvements are expected to be addressed by the Operations Department as part of Small Capital Improvements (or under the repair program if the items do not meet the threshold for capitalization).

The asset listings include a number of items that are earmarked for the Small Capital Improvement Program. These items include the following:

- Vehicles
- Office Furniture and Equipment
- Phone and Public Announcement System

DEVELOPING PROJECT COST ESTIMATES

The cost estimates included in the Ten Year Plan evaluation come from a wide variety of sources including prior bids, engineering studies, vendor quotes and staff estimates. Given this assortment of source the accuracy of the cost estimate can also be expected to vary. There are many characteristics that can be used to categorize cost estimates; the most significant are degree of project design definition (% complete), how the estimate will be used, estimate methodology, and the time and budget available to complete the estimate. In 1998, the Association for the Advancement of Cost Engineering (AACEI), published a "Recommended Practice 18R-97 Cost Estimate Classification System for the Process Industries." The proposed guideline for cost estimating accuracy is shown in Table 5.1.

The effort that has been placed into developing most of the projects in this estimate is termed a magnitude level analysis. The estimates that arise out of this analysis are magnitude estimates that can have a significant level of variation. The goal for the annual update of the Ten Year Capital Improvement Plan will be to continuously update the costs such that a study estimate level of accuracy can be developed for projects within a three year horizon.

The following factors were applied to the capital projects:

- General Conditions, Contractor Overhead and Profit, Bonds and Insurance: 27% (note that this was already integrated into some cost estimates and quotes) allocated as follows:
 - 15% General Conditions/Overhead
 - 10% Profit
 - 2% Bonds and Insurance
- Sales Tax: 8% (note that this was already integrated into some cost estimates and quotes).
- Design: 10% (this number might vary depending on project specific conditions) of estimated construction cost.
- Engineering Services During Construction (including response to RFI's, shop drawing review, preparation of as-built drawings and design intent manuals): 5% for projects >\$1 million; 7.5% for projects <\$1 million and >\$0.5M; 10% for projects <\$0.5M of estimated construction cost.
- Construction Management: 5% of estimated construction cost (or as high as 10 to 15% if either external resident engineering services are required or biological/cultural inspection services are needed. (Note the standard 5% to all projects is based on using external inspection services).

Table 5.1
Expected Cost Estimating Accuracy

| ESTIMATE LEVEL | EXPECTED ESTIMATE ACCURACY |
|-----------------------------|----------------------------|
| Order of Magnitude Estimate | + 50% to – 30% |
| Study or Budget Estimate | + 30% to – 15% |
| Detailed Estimate | + 15% to – 5 % |

CONTINGENCIES

Contingencies are built into each of the project budgets. Contingencies are used for the following purposes:

- **Project Scope Unknowns:** In master planning it is typical to plan a project around a major function (replacing the pumps in a pump station) without necessarily picking up minor issues in that same area (extending a service water line and providing a new hose connection; replacing lighting in the pump station). This can also include bringing the area up to current code and safety regulations. The contingency accounts for growth in the project scope to address minor issues in the vicinity of the main projects.
- **Technical Unknowns:** Master planning analyses also do not develop sufficient detail to know if a project is technically feasible. More expensive alternatives must sometimes be adopted as the understanding of the project grows.
- **Bid Unknowns:** The bid results are dependent on construction market conditions that are often uncertain.
- **Site Condition Unknowns:** The contingency must also address the potential for unknowns in the actual site condition.

This issue can deal with items such as the following:

- Existing underground utilities not recorded on as-built drawings.
- Embedded conduit encountered in saw cut of existing concrete slab.
- Inability to pull wire through conduit which has apparently been crushed.

Project scope and technical unknowns will typically be reduced as the project year draws nearer. Site unknowns may often be explored through potholing and condition assessments.

The range of contingencies used in this analysis typically ranged between 25% (for project costs more than \$500,000) and 30% (for project costs less than \$500,000). Lower and higher contingencies were utilized for project specific reasons.

Contingencies of up to 40% were applied to smaller projects (projects with a total capital price of less than \$200,000 due to the greater impact of uncertainty.

COST ESCALATION

SOCWA staff retained Carollo Engineers to analyze the cost escalation factors available for

SOCWA in order to forecast capital costs. This evaluation recommended the use of 3.2% inflation rate based on the compound annual growth rate of inflation since 1997. This value is incorporated into the Ten Year Plan to reflect the annual rate of inflation in project costs. The Carollo Technical Memorandum titled “Cost Escalation Analysis (May, 2017)” is presented in Appendix A.

Carollo revisited this analysis in June 2019 and incorporated the last two years of escalation data. Based upon this reassessment, Carollo did not make any changes to its previous recommended escalation factor of 3.2%

SOCWA staff have archived bid tabulations for projects over the past 18 years. This information has been used in the estimation of some project costs in this edition of the Ten Year Plan. The Engineering News Record (ENR) Los Angeles Construction Cost Index (CCI) to adjust past bid information to a 2018 value. A 2018 ENR Los Angeles CCI of 11940 was used in this analysis. Table 5.2 present average annual ENR construction cost indexes for the past 40 years.

Table 5.2
Construction Cost Indexes

| YEAR | LOS ANGELES CCI | 20 CITIES CCI |
|------|-----------------|---------------|
| 1980 | 3681 | 3193 |
| 1981 | 5265 | 4201 |
| 1982 | 5452 | 4290 |
| 1983 | 5454 | 4387 |
| 1984 | 5042 | 4161 |
| 1985 | 5265 | 4201 |
| 1986 | 5452 | 4290 |

| YEAR | LOS ANGELES CCI | 20 CITIES CCI |
|------|-----------------|---------------|
| 1987 | 5454 | 4387 |
| 1988 | 5666 | 4525 |
| 1989 | 5676 | 4588 |
| 1990 | 5988 | 4723 |
| 1991 | 6085 | 4818 |
| 1992 | 6302 | 4973 |
| 1993 | 6427 | 5260 |
| 1994 | 6550 | 5408 |
| 1995 | 6529 | 5432 |
| 1996 | 6522 | 5597 |
| 1997 | 6622 | 5860 |
| 1998 | 6691 | 5895 |
| 1999 | 6823 | 6039 |
| 2000 | 7066 | 6238 |
| 2001 | 7247 | 6318 |
| 2002 | 7420 | 6532 |
| 2003 | 7542 | 6709 |
| 2004 | 7844 | 7108 |
| 2005 | 8299 | 7415 |
| 2006 | 8547 | 7700 |
| 2007 | 8855 | 7939 |
| 2008 | 9266 | 8185 |
| 2009 | 9777 | 8578 |
| 2010 | 9962 | 8805 |
| 2011 | 10051 | 9053 |
| 2012 | 10300 | 9291 |
| 2013 | 10305 | 9542 |
| 2014 | 10739 | 9800 |
| 2015 | 10981 | 10039 |
| 2016 | 11148 | 10342 |
| 2017 | 11636 | 10703 |
| 2018 | 11940 | 11069 |
| 2019 | 12113 | 11268 |

¹ Values are based on the published index in June of each year.

ADMINISTRATION

There are two types of administration cost that may be included in the individual project and annual costs:

- Engineering Labor Costs
- Legal Costs.

The engineering labor and legal costs have been estimated as presented in Table 6.1. The estimated administration cost for a given year is then applied to the projects for that year based on the percentage of the individual capital project cost to the overall capital project cost for that year. It is acknowledged that some projects will have an inherently higher (or lower) administration cost than be determined by a straight percentage allocation. However, this level of estimate is more detailed than developed for the Ten Year Plan. The actual allocation of the administration cost will be based on a year to year basis through the annual budgeting process.

There can be additional costs for a project that can be classified as administration. These can include trailer rentals, software, 3rd party inspectors and 3rd party program managers. Where appropriate these costs are included in the specific project cost estimate.

ENGINEERING LABOR COSTS

The engineering labor costs are based on a SOCWA Engineering Department of three individuals: Director of Engineering, Senior Engineer, and Associate Engineer. The salaries and

fringe benefit costs associated with those positions were established by the SOCWA Finance Department.

The escalation of engineering labor costs from Years 2 through 5 is based on a cost of living adjustment (COLA) rate of 1.032 and an average merit increase of 3%. The escalation rate for Years 6 through 15 is based only on the COLA rate of 1.032. The rationale for this lower overall escalation rate is that as staff retires or departs over time they are typically replaced with individuals at a lower pay rate. Therefore, the total cost of engineering labor is not expected to accelerate at a constant pace.

Only a portion of engineering labor is associated with capital projects. The costs for the remaining portion of work is allocated to overall administration. The latter group of activities would include Operations support, Board meetings and Engineering Committee meetings. The expected allocation of engineering labor to capital projects for Year 1 (Fiscal Year 2019/20) is 52.1%. The value is projected increase to as much as 60%. The capital allocation percentages are presented in Table 6.1.

LEGAL COSTS

The legal costs associated with the Capital Improvement Program can vary significantly in any given year. The standard legal costs associated with capital projects include the following:

- Review of contracts, bonds and insurance forms.
- Review of titles and easements.

Table 6.1
Capital Improvement Program Administration Costs

| Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Fiscal Year | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 | 2029-30 | 2030-31 | 2031-32 | 2032-33 | 2033-34 |
| Inflation | | 1.063 | 1.063 | 1.063 | 1.063 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 |
| % To CIP | 52.1% | 53.5% | 55.0% | 56.5% | 58.0% | 59.5% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% |
| Engineering Labor Cost To CIP | \$402,799 | \$439,665 | \$480,449 | \$524,627 | \$572,462 | \$606,060 | \$630,710 | \$650,892 | \$671,721 | \$693,216 | \$715,399 | \$738,292 | \$761,917 | \$786,298 | \$811,460 |
| Legal | \$10,000 | \$10,320 | \$10,650 | \$10,991 | \$11,343 | \$11,706 | \$12,080 | \$12,467 | \$12,866 | \$13,278 | \$13,702 | \$14,141 | \$14,593 | \$15,060 | \$15,542 |
| Legal Inflation | | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 |
| Total Administration Cost To CIP | \$412,799 | \$449,985 | \$491,100 | \$535,618 | \$583,805 | \$617,766 | \$642,790 | \$663,359 | \$684,587 | \$706,494 | \$729,101 | \$752,433 | \$776,510 | \$801,359 | \$827,002 |

- Review of CEQA documentation.

SOCWA has not been involved in any construction claims in over 20 years. However, it can be assumed that disputes will arise requiring legal assistance. The Ten Year Plan is based on the assumption that the initial annual cost for legal support is \$10,000. This value is escalated at the COLA rate of 1.032.

**SMALL CAPITAL
IMPROVEMENTS COSTS**

Each year of the Ten Year Plan includes small capital improvements projects that are managed by SOCWA's Operations Department.

The list of requested projects for the Ten Year Plan is developed each year by the SOCWA Operations Department. Small capital improvement projects are projects that are generally executed by the Operations Department. These projects are usually simple equipment replacement projects that do not require an engineered design. The projects can also include the retrofit of larger equipment such as engines or blowers. The small capital improvements can also address assets not included in Appendices B, F, and I.

The Ten Year Capital Improvement Program does not include a projection of the specific annual small capital improvement projects. Table 7.1 presents the budgetary numbers for small capital improvements for Fiscal Year 2019/20. These numbers have been used as the basis for small capital improvements in Year 2 through 15 using an annual inflation rate of 3.2% as discussed in Chapter 5. The amount and the allocation of the small capital improvements can deviate significantly each year. Therefore, it is noted that these values simply represent budgetary place holders.

The Fiscal Year 2019/20 budget also included limited small capital improvements for Project Committees 5 (San Juan Creek Ocean Outfall) and 24 (Aliso Creek Ocean Outfall). These improvements are not included in the Ten Year Plan as small capital work for these

facilities is rare. Similarly no small capital improvement work has been identified for Project Committee 21 (Effluent Transmission Main).

**RELATIONSHIP OF SMALL
AND LARGE CAPITAL
IMPROVEMENTS**

Table 7.1 identified a small capital improvements budget of slightly over \$2,000,000. This reflects a small capital expenditure that is almost three times higher than the small capital improvements cost used in the 2010 version of the Ten Year Plan. There is likely to be overlap between small capital improvements and large capital projects at the planning level. For instance, one raw sewage pump out of four units may be replaced as a small capital improvement while the reconstruction of the rehabilitation of the raw sewage pump station is included in a later year in the Ten Year Plan. The level of forecasting in the Ten Year Plan does not reflect that a prior small capital improvement may result in a lower cost for the larger rehabilitation project or that the small capital improvement may result in a postponement of the larger project.

Table 7.1
Small Capital Improvements Budget for Fiscal Year 2019-20

| Facility | Cost Center | Small Capital Improvements Budget |
|------------------------------|---------------|-----------------------------------|
| J. B. Latham Treatment Plant | PC 2 | |
| | PC 2 Liquids | \$252,000 |
| | PC 2 Common | \$212,500 |
| | PC 2 Solids | \$220,500 |
| Subtotal | | \$685,000 |
| Coastal Treatment Plant | PC 15 | |
| | PC 15 Liquids | \$581,000 |
| | PC 15 AWT | \$40,000 |
| Subtotal | | \$621,000 |
| Regional Treatment Plant | PC 17 | |
| | PC 17 Liquids | \$316,000 |
| | PC 17 Common | \$165,000 |
| | PC 17 Solids | \$220,000 |
| | PC 17 AWT | \$35,000 |
| Subtotal | | \$736,000 |
| Total | | \$2,042,000 |

GENERAL

This report presents the Ten Year Capital Improvement Program for SOCWA facilities (2019 – 2028). The Capital Improvement Program is to be updated every year to improve the accuracy of the planning/budgeting process. Appendices B, E, F, I, L, and M presented tables identifying the capital improvements according to facility (or project committee) with the costs allocated to the member agencies owning these facilities.

COST SUMMARY TABLES

Table 8.1 shows the total capital cost by project committee by year for the proposed program. Tables 8.2 through 8.10 show the distribution of costs for over the fifteen year planning span for each member agency (with the exception of the Trabuco Canyon Water District which does not own capacity in any SOCWA facility). These costs are adjusted according to anticipated inflation as discussed in Chapter 5. The tables include the administration costs and the small capital improvement costs presented in Chapters 6 and 7 respectively.

Table 8.1 - Annual Capital Improvement Budget

| Year | Fiscal Year | PC 02 | | | PC 02 Total | PC 05 | PC 05 Total | PC 15 | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 21 | | PC 21 Total | PC 24 | PC 24 Total | Grand Total |
|----------------|-------------|--------------|--------------|--------------|---------------|-------------|-------------|--------------|-------------|--------------|--------------|--------------|--------------|-----------|---------------|-------------|-------------|--------------|-------------|-------------|---------------|
| | | Liquids | Common | Solids | | | | Liquids | AWT | | Liquids | Common | Solids | AWT | | B/C/D | E | | | | |
| 1 | 2020 | \$ 4,222,203 | \$ 1,188,671 | \$ 5,080,720 | \$ 10,491,594 | \$ 75,730 | \$ 75,730 | \$12,321,354 | \$ 40,000 | \$12,361,354 | \$ 6,793,536 | \$ 472,696 | \$ 1,974,150 | \$ 35,000 | \$ 9,275,382 | \$ 226,011 | \$ 103,673 | \$ 329,684 | \$ 106,253 | \$ 106,253 | \$ 32,639,997 |
| 2 | 2021 | \$ 4,944,789 | \$ 1,267,467 | \$ 5,419,441 | \$ 11,631,697 | \$ 542,178 | \$ 542,178 | \$ 8,009,136 | | \$ 8,009,136 | \$ 3,945,308 | \$ 1,307,355 | \$ 430,040 | \$ 36,120 | \$ 5,718,823 | \$ 172,288 | \$ 105,640 | \$ 277,927 | \$ 50,703 | \$ 50,703 | \$ 26,230,465 |
| 3 | 2022 | \$ 4,724,339 | \$ 588,149 | \$ 4,816,392 | \$ 10,128,879 | | | \$ 4,529,953 | \$ 67,080 | \$ 4,597,033 | \$ 6,048,663 | \$ 2,407,707 | \$ 3,290,367 | \$ 37,276 | \$ 11,784,013 | \$ 966,608 | | \$ 966,608 | | | \$ 27,476,534 |
| 4 | 2023 | \$ 7,083,766 | \$ 292,576 | \$ 233,560 | \$ 7,609,902 | \$ 178,570 | \$ 178,570 | \$ 1,421,397 | \$ 69,227 | \$ 1,490,624 | \$ 2,057,640 | \$ 2,069,733 | \$ 437,114 | \$ 38,469 | \$ 4,602,956 | | | | \$ 66,964 | \$ 66,964 | \$ 13,949,016 |
| 5 | 2024 | \$ 1,366,148 | \$ 324,455 | \$ 4,356,252 | \$ 6,046,855 | \$ 38,935 | \$ 38,935 | \$ 3,815,124 | \$ 71,442 | \$ 3,886,566 | \$ 591,219 | \$ 5,722,692 | \$ 577,859 | \$ 39,700 | \$ 6,931,469 | \$ 343,142 | | \$ 343,142 | | | \$ 17,246,967 |
| 6 | 2025 | \$ 4,704,987 | \$ 6,923,709 | \$ 819,986 | \$ 12,448,682 | \$ 581,817 | \$ 581,817 | \$ 3,474,072 | \$ 325,719 | \$ 3,799,791 | \$ 3,532,789 | \$ 193,145 | \$16,341,074 | \$ 40,970 | \$ 20,107,977 | \$1,771,090 | | \$ 1,771,090 | \$ 173,071 | \$ 173,071 | \$ 38,882,428 |
| 7 | 2026 | \$ 3,830,223 | \$ 2,356,608 | \$ 5,336,797 | \$ 11,523,628 | \$ 89,987 | \$ 89,987 | \$ 3,200,572 | \$ 76,087 | \$ 3,276,659 | \$ 7,741,809 | \$ 4,112,880 | \$ 1,210,933 | \$ 42,281 | \$ 13,107,903 | \$ 419,939 | \$ 401,942 | \$ 821,881 | \$ 2,431 | \$ 2,431 | \$ 28,822,490 |
| 8 | 2027 | \$ 1,080,349 | \$ 850,038 | \$14,505,508 | \$ 16,435,895 | | | \$ 3,107,973 | \$1,632,435 | \$ 4,740,407 | \$ 8,845,146 | \$ 4,172,379 | \$ 274,271 | \$ 43,634 | \$ 13,335,431 | \$2,915,201 | \$1,590,445 | \$ 4,505,645 | \$ 590,420 | \$ 590,420 | \$ 39,607,798 |
| 9 | 2028 | \$ 324,219 | \$ 3,530,173 | \$ 273,399 | \$ 4,127,791 | \$ 980,647 | \$ 980,647 | \$ 3,252,251 | \$ 81,035 | \$ 3,333,286 | \$ 4,979,468 | \$ 929,274 | \$ 2,649,158 | \$ 45,030 | \$ 8,602,930 | \$ 286,349 | | \$ 286,349 | | | \$ 17,331,003 |
| 10 | 2029 | \$ 6,279,489 | \$ 292,770 | \$ 1,303,936 | \$ 7,876,194 | | | \$ 6,095,769 | \$ 83,628 | \$ 6,179,397 | \$ 5,152,556 | \$ 4,103,969 | \$ 292,106 | \$ 46,471 | \$ 9,595,102 | \$2,697,922 | | \$ 2,697,922 | \$7,896,357 | \$7,896,357 | \$ 34,244,973 |
| 11 | 2030 | \$ 1,917,044 | \$ 2,253,063 | \$ 291,176 | \$ 4,461,282 | | | \$ 4,375,676 | \$3,296,310 | \$ 7,671,987 | \$ 6,100,802 | \$ 226,090 | \$ 742,204 | \$ 47,958 | \$ 7,117,054 | | | | | | \$ 19,250,323 |
| 12 | 2031 | \$ 356,350 | \$ 311,807 | \$ 5,503,266 | \$ 6,171,423 | | | \$ 3,065,020 | \$ 89,066 | \$ 3,154,085 | \$ 1,552,143 | \$ 233,325 | \$21,779,768 | \$ 49,493 | \$ 23,614,729 | | | | | | \$ 32,940,236 |
| 13 | 2032 | \$ 4,122,824 | \$ 321,784 | \$ 310,110 | \$ 4,754,718 | | | \$ 5,202,491 | \$ 91,916 | \$ 5,294,406 | \$ 1,512,516 | \$ 240,791 | \$ 1,519,902 | \$ 51,077 | \$ 3,324,286 | | | | | | \$ 13,373,410 |
| 14 | 2033 | \$ 1,286,627 | \$ 332,081 | \$ 320,033 | \$ 1,938,741 | | | \$ 3,345,682 | \$ 94,857 | \$ 3,440,539 | \$ 7,446,574 | \$ 248,496 | \$ 331,328 | \$ 52,711 | \$ 8,079,110 | | | | | | \$ 13,458,391 |
| 15 | 2034 | \$ 1,267,162 | \$ 1,998,948 | \$ 330,274 | \$ 3,596,384 | | | \$ 8,166,623 | \$ 513,132 | \$ 8,679,755 | \$ 1,509,775 | \$ 4,014,328 | \$ 341,931 | \$ 54,398 | \$ 5,920,432 | | | | \$ 151,315 | \$ 151,315 | \$ 18,347,886 |
| Grand Total | | \$47,510,517 | \$22,832,298 | \$48,900,848 | \$119,243,663 | \$2,487,865 | \$2,487,865 | \$73,383,093 | \$6,531,933 | \$79,915,026 | \$67,809,943 | \$30,454,860 | \$52,192,205 | \$660,589 | \$151,117,598 | \$9,798,549 | \$2,201,700 | \$12,000,249 | \$9,037,514 | \$9,037,514 | \$373,801,915 |
| Ten Year Total | | \$38,560,511 | \$17,614,615 | \$42,145,989 | \$ 98,321,115 | \$2,487,865 | \$2,487,865 | \$49,227,602 | \$2,446,652 | \$51,674,254 | \$49,688,133 | \$25,491,830 | \$27,477,072 | \$404,951 | \$103,061,987 | \$9,798,549 | \$2,201,700 | \$12,000,249 | \$8,886,199 | \$8,886,199 | \$276,431,669 |

Table 8.2 - Annual Capital Improvement Budget - ETWD

| Year | Fiscal Year | PC 17 | | | | PC 17 Total | PC 21 | | PC 21 Total | PC 24 | | PC 24 Total | Grand Total |
|-----------------------|-------------|---------|--------------------|---------------------|------------|---------------------|--------------------|------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| | | Liquids | Common | Solids | AWT | | B/C/D | E | | | | | |
| 1 | 2020 | \$ - | \$ 48,499 | \$ 402,924 | \$- | \$ 451,423 | \$ 113,006 | \$ 24,145 | \$ 137,151 | \$ 17,319 | \$ 17,319 | \$ 17,319 | \$ 605,893 |
| 2 | 2021 | \$ - | \$ 134,135 | \$ 87,771 | \$- | \$ 221,906 | \$ 86,144 | \$ 24,604 | \$ 110,747 | \$ 8,265 | \$ 8,265 | \$ 8,265 | \$ 340,918 |
| 3 | 2022 | \$ - | \$ 247,031 | \$ 671,564 | \$- | \$ 918,595 | \$ 483,304 | | \$ 483,304 | | | | \$ 1,401,899 |
| 4 | 2023 | \$ - | \$ 212,355 | \$ 89,215 | \$- | \$ 301,570 | | | | \$ 10,915 | \$ 10,915 | \$ 10,915 | \$ 312,485 |
| 5 | 2024 | \$ - | \$ 587,148 | \$ 117,941 | \$- | \$ 705,089 | \$ 171,571 | | \$ 171,571 | | | | \$ 876,660 |
| 6 | 2025 | \$ - | \$ 19,817 | \$ 3,335,213 | \$- | \$ 3,355,030 | \$ 885,545 | | \$ 885,545 | \$ 28,211 | \$ 28,211 | \$ 28,211 | \$ 4,268,785 |
| 7 | 2026 | \$ - | \$ 421,982 | \$ 247,151 | \$- | \$ 669,133 | \$ 209,970 | \$ 93,612 | \$ 303,582 | \$ 396 | \$ 396 | \$ 396 | \$ 973,111 |
| 8 | 2027 | \$ - | \$ 428,086 | \$ 55,979 | \$- | \$ 484,065 | \$1,457,600 | \$370,415 | \$1,828,015 | \$ 96,239 | \$ 96,239 | \$ 96,239 | \$ 2,408,318 |
| 9 | 2028 | \$ - | \$ 95,343 | \$ 540,693 | \$- | \$ 636,037 | \$ 143,174 | | \$ 143,174 | | | | \$ 779,211 |
| 10 | 2029 | \$ - | \$ 421,067 | \$ 59,619 | \$- | \$ 480,686 | \$1,348,961 | | \$1,348,961 | \$1,287,106 | \$1,287,106 | \$1,287,106 | \$ 3,116,753 |
| 11 | 2030 | \$ - | \$ 23,197 | \$ 151,484 | \$- | \$ 174,681 | | | | | | | \$ 174,681 |
| 12 | 2031 | \$ - | \$ 23,939 | \$ 4,445,251 | \$- | \$ 4,469,190 | | | | | | | \$ 4,469,190 |
| 13 | 2032 | \$ - | \$ 24,705 | \$ 310,212 | \$- | \$ 334,917 | | | | | | | \$ 334,917 |
| 14 | 2033 | \$ - | \$ 25,496 | \$ 67,624 | \$- | \$ 93,120 | | | | | | | \$ 93,120 |
| 15 | 2034 | \$ - | \$ 411,870 | \$ 69,788 | \$- | \$ 481,658 | | | | \$ 24,664 | \$ 24,664 | \$ 24,664 | \$ 506,322 |
| Grand Total | | \$ - | \$3,124,669 | \$10,652,429 | \$- | \$13,777,098 | \$4,899,275 | \$512,776 | \$5,412,050 | \$1,473,115 | \$1,473,115 | \$1,473,115 | \$20,662,263 |
| Ten Year Total | | \$ - | \$2,615,462 | \$ 5,608,070 | \$- | \$ 8,223,532 | \$4,899,275 | \$512,776 | \$5,412,050 | \$1,448,450 | \$1,448,450 | \$1,448,450 | \$15,084,033 |

Table 8.3 - Annual Capital Improvement Budget - EBSD

| Year | Fiscal Year | PC 15 | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 24 | PC 24 Total | Grand Total |
|-----------------------|-------------|---------------------|------------|--------------------|-------------|------------------|------------------|------------|------------------|-----------------|------------------|--------------------|
| | | Liquids | AWT | | Liquids | Common | Solids | AWT | | | | |
| 1 | 2020 | \$ 367,802 | \$- | \$ 367,802 | \$ - | \$ 1,560 | \$ 11,647 | \$- | \$ 13,207 | \$ 829 | \$ 829 | \$ 381,838 |
| 2 | 2021 | \$ 239,079 | | \$ 239,079 | \$ - | \$ 4,314 | \$ 2,537 | \$- | \$ 6,852 | \$ 395 | \$ 395 | \$ 246,326 |
| 3 | 2022 | \$ 135,222 | \$- | \$ 135,222 | \$ - | \$ 7,945 | \$ 19,413 | \$- | \$ 27,359 | | | \$ 162,581 |
| 4 | 2023 | \$ 42,430 | \$- | \$ 42,430 | \$ - | \$ 6,830 | \$ 2,579 | \$- | \$ 9,409 | \$ 522 | \$ 522 | \$ 52,361 |
| 5 | 2024 | \$ 113,884 | \$- | \$ 113,884 | \$ - | \$ 18,885 | \$ 3,409 | \$- | \$ 22,294 | | | \$ 136,179 |
| 6 | 2025 | \$ 103,704 | \$- | \$ 103,704 | \$ - | \$ 637 | \$ 96,412 | \$- | \$ 97,050 | \$ 1,350 | \$ 1,350 | \$ 202,103 |
| 7 | 2026 | \$ 95,539 | \$- | \$ 95,539 | \$ - | \$ 13,573 | \$ 7,145 | \$- | \$ 20,717 | \$ 19 | \$ 19 | \$ 116,275 |
| 8 | 2027 | \$ 92,775 | \$- | \$ 92,775 | \$ - | \$ 13,769 | \$ 1,618 | \$- | \$ 15,387 | \$ 4,605 | \$ 4,605 | \$ 112,768 |
| 9 | 2028 | \$ 97,082 | \$- | \$ 97,082 | \$ - | \$ 3,067 | \$ 15,630 | \$- | \$ 18,697 | | | \$ 115,779 |
| 10 | 2029 | \$ 181,963 | \$- | \$ 181,963 | \$ - | \$ 13,543 | \$ 1,723 | \$- | \$ 15,267 | \$61,592 | \$ 61,592 | \$ 258,821 |
| 11 | 2030 | \$ 130,617 | \$- | \$ 130,617 | \$ - | \$ 746 | \$ 4,379 | \$- | \$ 5,125 | | | \$ 135,742 |
| 12 | 2031 | \$ 91,493 | \$- | \$ 91,493 | \$ - | \$ 770 | \$128,501 | \$- | \$129,271 | | | \$ 220,764 |
| 13 | 2032 | \$ 155,298 | \$- | \$ 155,298 | \$ - | \$ 795 | \$ 8,967 | \$- | \$ 9,762 | | | \$ 165,060 |
| 14 | 2033 | \$ 99,871 | \$- | \$ 99,871 | \$ - | \$ 820 | \$ 1,955 | \$- | \$ 2,775 | | | \$ 102,646 |
| 15 | 2034 | \$ 243,780 | \$- | \$ 243,780 | \$ - | \$ 13,247 | \$ 2,017 | \$- | \$ 15,265 | \$ 1,180 | \$ 1,180 | \$ 260,225 |
| Grand Total | | \$ 2,190,540 | \$- | \$2,190,540 | \$ - | \$100,501 | \$307,934 | \$- | \$408,435 | \$70,493 | \$ 70,493 | \$2,669,468 |
| Ten Year Total | | \$ 1,469,481 | \$- | \$1,469,481 | \$ - | \$ 84,123 | \$162,115 | \$- | \$246,238 | \$69,312 | \$ 69,312 | \$1,785,031 |

Table 8.4 - Annual Capital Improvement Budget - IRWD

| Year | Fiscal Year | PC 21 B/C/D E | | PC 21 Total | PC 24 | PC 24 Total | Grand Total |
|-----------------------|-------------|---------------------|------------------|--------------------|--------------------|--------------------|--------------------|
| 1 | 2020 | \$ 113,006 | \$ 24,145 | \$ 137,151 | \$ 16,745 | \$ 16,745 | \$ 153,896 |
| 2 | 2021 | \$ 86,144 | \$ 24,604 | \$ 110,747 | \$ 7,991 | \$ 7,991 | \$ 118,738 |
| 3 | 2022 | \$ 483,304 | | \$ 483,304 | | | \$ 483,304 |
| 4 | 2023 | | | | \$ 10,554 | \$ 10,554 | \$ 10,554 |
| 5 | 2024 | \$ 171,571 | | \$ 171,571 | | | \$ 171,571 |
| 6 | 2025 | \$ 885,545 | | \$ 885,545 | \$ 27,276 | \$ 27,276 | \$ 912,821 |
| 7 | 2026 | \$ 209,970 | \$ 93,612 | \$ 303,582 | \$ 383 | \$ 383 | \$ 303,965 |
| 8 | 2027 | \$ 1,457,600 | \$370,415 | \$1,828,015 | \$ 93,050 | \$ 93,050 | \$1,921,065 |
| 9 | 2028 | \$ 143,174 | | \$ 143,174 | | | \$ 143,174 |
| 10 | 2029 | \$ 1,348,961 | | \$1,348,961 | \$1,244,466 | \$1,244,466 | \$2,593,427 |
| 15 | 2034 | | | | \$ 23,847 | \$ 23,847 | \$ 23,847 |
| Grand Total | | \$ 4,899,275 | \$512,776 | \$5,412,050 | \$1,424,312 | \$1,424,312 | \$6,836,363 |
| Ten Year Total | | \$ 4,899,275 | \$512,776 | \$5,412,050 | \$1,400,465 | \$1,400,465 | \$6,812,515 |

Table 8.5 - Annual Capital Improvement Budget - CLB

| Year | Fiscal Year | PC 15 | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 24 | | Grand Total |
|-----------------------|-------------|----------------------|-------------|---------------------|-------------|--------------------|--------------------|-------------|--------------------|------------------|-------------------|---------------------|
| | | Liquids | AWT | | Liquids | Common | Solids | AWT | | PC 24 | PC 24 Total | |
| 1 | 2020 | \$ 4,671,080 | \$ - | \$ 4,671,080 | \$ - | \$ 29,638 | \$ 221,500 | \$ - | \$ 251,138 | \$ 11,688 | \$ 11,688 | \$ 4,933,906 |
| 2 | 2021 | \$ 3,036,299 | | \$ 3,036,299 | \$ - | \$ 81,971 | \$ 48,250 | \$ - | \$ 130,222 | \$ 5,577 | \$ 5,577 | \$ 3,172,098 |
| 3 | 2022 | \$ 1,717,325 | \$ - | \$ 1,717,325 | \$ - | \$ 150,963 | \$ 369,179 | \$ - | \$ 520,142 | | | \$ 2,237,468 |
| 4 | 2023 | \$ 538,858 | \$ - | \$ 538,858 | \$ - | \$ 129,772 | \$ 49,044 | \$ - | \$ 178,817 | \$ 7,366 | \$ 7,366 | \$ 725,041 |
| 5 | 2024 | \$ 1,446,331 | \$ - | \$ 1,446,331 | \$ - | \$ 358,813 | \$ 64,836 | \$ - | \$ 423,649 | | | \$ 1,869,979 |
| 6 | 2025 | \$ 1,317,036 | \$ - | \$ 1,317,036 | \$ - | \$ 12,110 | \$1,833,468 | \$ - | \$1,845,579 | \$ 19,038 | \$ 19,038 | \$ 3,181,653 |
| 7 | 2026 | \$ 1,213,351 | \$ - | \$ 1,213,351 | \$ - | \$ 257,878 | \$ 135,867 | \$ - | \$ 393,744 | \$ 267 | \$ 267 | \$ 1,607,363 |
| 8 | 2027 | \$ 1,178,246 | \$ - | \$ 1,178,246 | \$ - | \$ 261,608 | \$ 30,773 | \$ - | \$ 292,381 | \$ 64,946 | \$ 64,946 | \$ 1,535,574 |
| 9 | 2028 | \$ 1,232,943 | \$ - | \$ 1,232,943 | \$ - | \$ 58,265 | \$ 297,236 | \$ - | \$ 355,501 | | | \$ 1,588,444 |
| 10 | 2029 | \$ 2,310,933 | \$ - | \$ 2,310,933 | \$ - | \$ 257,319 | \$ 32,774 | \$ - | \$ 290,093 | \$868,599 | \$ 868,599 | \$ 3,469,626 |
| 11 | 2030 | \$ 1,658,838 | \$ - | \$ 1,658,838 | \$ - | \$ 14,176 | \$ 83,275 | \$ - | \$ 97,451 | | | \$ 1,756,290 |
| 12 | 2031 | \$ 1,161,963 | \$ - | \$ 1,161,963 | \$ - | \$ 14,629 | \$2,443,690 | \$ - | \$2,458,319 | | | \$ 3,620,282 |
| 13 | 2032 | \$ 1,972,287 | \$ - | \$ 1,972,287 | \$ - | \$ 15,098 | \$ 170,533 | \$ - | \$ 185,631 | | | \$ 2,157,918 |
| 14 | 2033 | \$ 1,268,363 | \$ - | \$ 1,268,363 | \$ - | \$ 15,581 | \$ 37,175 | \$ - | \$ 52,756 | | | \$ 1,321,119 |
| 15 | 2034 | \$ 3,096,003 | \$ - | \$ 3,096,003 | \$ - | \$ 251,698 | \$ 38,365 | \$ - | \$ 290,063 | \$ 16,645 | \$ 16,645 | \$ 3,402,711 |
| Grand Total | | \$ 27,819,859 | \$ - | \$27,819,859 | \$ - | \$1,909,520 | \$5,855,965 | \$ - | \$7,765,485 | \$994,127 | \$ 994,127 | \$36,579,471 |
| Ten Year Total | | \$ 18,662,404 | ## | \$18,662,404 | \$ - | \$1,598,338 | \$3,082,928 | ## | \$4,681,265 | \$977,482 | \$ 977,482 | \$24,321,152 |

Table 8.6 - Annual Capital Improvement Budget - MNWD

| Year | Fiscal Year | PC 02 | | | PC 02 Total | PC 05 | PC 05 Total | PC 15 | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 21 | | PC 21 Total | PC 24 | PC 24 Total | Grand Total |
|----------------|-------------|---------------|-------------|--------------|--------------|-----------|-------------|--------------|------|--------------|--------------|--------------|--------------|-----------|---------------|-------|-------------|-------------|-------------|-------------|---------------|
| | | Liquids | Common | Solids | | | | Liquids | AWT | | Liquids | Common | Solids | AWT | | B/C/D | E | | | | |
| 1 | 2020 | \$ 974,355 | \$ 265,659 | \$ 1,098,534 | \$ 2,338,548 | \$ 11,746 | \$ 11,746 | \$ 3,604,456 | \$ - | \$ 3,604,456 | \$ 6,793,536 | \$ 369,313 | \$ 1,161,195 | \$ 35,000 | \$ 8,359,044 | \$ - | \$ 55,382 | \$ 55,382 | \$ 46,592 | \$ 46,592 | \$ 14,415,767 |
| 2 | 2021 | \$ 1,141,105 | \$ 283,270 | \$ 1,171,771 | \$ 2,596,146 | \$ 84,092 | \$ 84,092 | \$ 2,342,971 | | \$ 2,342,971 | \$ 3,945,308 | \$ 1,021,425 | \$ 252,950 | \$ 36,120 | \$ 5,255,803 | \$ - | \$ 56,433 | \$ 56,433 | \$ 22,233 | \$ 22,233 | \$ 10,357,677 |
| 3 | 2022 | \$ 1,090,232 | \$ 131,447 | \$ 1,041,382 | \$ 2,263,061 | | | \$ 1,325,180 | \$ - | \$ 1,325,180 | \$ 6,048,663 | \$ 1,881,121 | \$ 1,935,394 | \$ 37,276 | \$ 9,902,454 | \$ - | | \$ - | | | \$ 13,490,695 |
| 4 | 2023 | \$ 1,634,715 | \$ 65,388 | \$ 50,499 | \$ 1,750,603 | \$ 27,696 | \$ 27,696 | \$ 415,812 | \$ - | \$ 415,812 | \$ 2,057,640 | \$ 1,617,065 | \$ 257,111 | \$ 38,469 | \$ 3,970,284 | | | | \$ 29,364 | \$ 29,364 | \$ 6,193,759 |
| 5 | 2024 | \$ 315,265 | \$ 72,513 | \$ 941,892 | \$ 1,329,671 | \$ 6,039 | \$ 6,039 | \$ 1,116,066 | \$ - | \$ 1,116,066 | \$ 591,219 | \$ 4,471,090 | \$ 339,897 | \$ 39,700 | \$ 5,441,905 | \$ - | | \$ - | | | \$ 7,893,680 |
| 6 | 2025 | \$ 1,085,766 | \$1,547,399 | \$ 177,294 | \$ 2,810,459 | \$ 90,240 | \$ 90,240 | \$ 1,016,296 | \$ - | \$ 1,016,296 | \$ 3,532,789 | \$ 150,902 | \$ 9,611,819 | \$ 40,970 | \$ 13,336,481 | \$ - | | \$ - | \$ 75,891 | \$ 75,891 | \$ 17,329,367 |
| 7 | 2026 | \$ 883,898 | \$ 526,685 | \$ 1,153,902 | \$ 2,564,484 | \$ 13,957 | \$ 13,957 | \$ 936,287 | \$ - | \$ 936,287 | \$ 7,741,809 | \$ 3,213,358 | \$ 712,271 | \$ 42,281 | \$ 11,709,718 | \$ - | \$ 214,717 | \$ 214,717 | \$ 1,066 | \$ 1,066 | \$ 15,440,230 |
| 8 | 2027 | \$ 249,311 | \$ 189,977 | \$ 3,136,326 | \$ 3,575,615 | | | \$ 909,198 | \$ - | \$ 909,198 | \$ 8,845,146 | \$ 3,259,843 | \$ 161,326 | \$ 43,634 | \$ 12,309,950 | \$ - | \$ 849,616 | \$ 849,616 | \$ 258,899 | \$ 258,899 | \$ 17,903,278 |
| 9 | 2028 | \$ 74,820 | \$ 788,968 | \$ 59,113 | \$ 922,901 | \$152,098 | \$152,098 | \$ 951,405 | \$ - | \$ 951,405 | \$ 4,979,468 | \$ 726,033 | \$ 1,558,235 | \$ 45,030 | \$ 7,308,767 | \$ - | | \$ - | | | \$ 9,335,171 |
| 10 | 2029 | \$ 1,449,113 | \$ 65,432 | \$ 281,932 | \$ 1,796,477 | | | \$ 1,783,240 | \$ - | \$ 1,783,240 | \$ 5,152,556 | \$ 3,206,395 | \$ 171,817 | \$ 46,471 | \$ 8,577,239 | \$ - | | \$ - | \$3,462,553 | \$3,462,553 | \$ 15,619,509 |
| 11 | 2030 | \$ 442,395 | \$ 503,543 | \$ 62,957 | \$ 1,008,895 | | | \$ 1,280,049 | \$ - | \$ 1,280,049 | \$ 6,100,802 | \$ 176,642 | \$ 436,565 | \$ 47,958 | \$ 6,761,967 | | | | | | \$ 9,050,910 |
| 12 | 2031 | \$ 82,235 | \$ 69,686 | \$ 1,189,895 | \$ 1,341,816 | | | \$ 896,633 | \$ - | \$ 896,633 | \$ 1,552,143 | \$ 182,295 | \$12,810,860 | \$ 49,493 | \$ 14,594,790 | | | | | | \$ 16,833,239 |
| 13 | 2032 | \$ 951,421 | \$ 71,916 | \$ 67,051 | \$ 1,090,388 | | | \$ 1,521,923 | \$ - | \$ 1,521,923 | \$ 1,512,516 | \$ 188,128 | \$ 894,006 | \$ 51,077 | \$ 2,645,727 | | | | | | \$ 5,258,038 |
| 14 | 2033 | \$ 296,914 | \$ 74,218 | \$ 69,196 | \$ 440,328 | | | \$ 978,737 | \$ - | \$ 978,737 | \$ 7,446,574 | \$ 194,148 | \$ 194,887 | \$ 52,711 | \$ 7,888,321 | | | | | | \$ 9,307,386 |
| 15 | 2034 | \$ 292,422 | \$ 446,750 | \$ 71,411 | \$ 810,583 | | | \$ 2,389,042 | \$ - | \$ 2,389,042 | \$ 1,509,775 | \$ 3,136,359 | \$ 201,124 | \$ 54,398 | \$ 4,901,657 | | | | \$ 66,352 | \$ 66,352 | \$ 8,167,633 |
| Grand Total | | \$ 10,963,965 | \$5,102,853 | \$10,573,156 | \$26,639,974 | \$385,868 | \$385,868 | \$21,467,293 | \$ - | \$21,467,293 | \$67,809,943 | \$23,794,118 | \$30,699,455 | \$660,589 | \$122,964,106 | \$ - | \$1,176,148 | \$1,176,148 | \$3,962,950 | \$3,962,950 | \$176,596,339 |
| Ten Year Total | | \$ 8,898,579 | \$3,936,738 | \$ 9,112,646 | \$21,947,964 | \$385,868 | \$385,868 | \$14,400,911 | ## | \$14,400,911 | \$49,688,133 | \$19,916,546 | \$16,162,014 | \$404,951 | \$ 86,171,644 | \$ - | \$1,176,148 | \$1,176,148 | \$3,896,598 | \$3,896,598 | \$127,979,133 |

Table 8.7 - Annual Capital Improvement Budget - CSC

| Year | Fiscal Year | PC 05 | PC 05 Total | Grand Total |
|-----------------------|-------------|-------------------|-------------------|-------------------|
| 1 | 2020 | \$ 12,586 | \$ 12,586 | \$ 12,586 |
| 2 | 2021 | \$ 90,110 | \$ 90,110 | \$ 90,110 |
| 4 | 2023 | \$ 29,678 | \$ 29,678 | \$ 29,678 |
| 5 | 2024 | \$ 6,471 | \$ 6,471 | \$ 6,471 |
| 6 | 2025 | \$ 96,698 | \$ 96,698 | \$ 96,698 |
| 7 | 2026 | \$ 14,956 | \$ 14,956 | \$ 14,956 |
| 9 | 2028 | \$ 162,984 | \$ 162,984 | \$ 162,984 |
| Grand Total | | \$ 413,483 | \$ 413,483 | \$ 413,483 |
| Ten Year Total | | \$ 413,483 | \$ 413,483 | \$ 413,483 |

Table 8.8 - Annual Capital Improvement Budget - CSJC

| Year | Fiscal Year | PC 02 | | | PC 02 Total | PC 05 | PC 05 Total | Grand Total |
|-----------------------|-------------|----------------------|---------------------|----------------------|----------------------|-------------------|-------------------|----------------------|
| | | Liquids | Common | Solids | | | | |
| 1 | 2020 | \$ 1,299,139 | \$ 361,173 | \$ 1,524,216 | \$ 3,184,528 | \$ 8,391 | \$ 8,391 | \$ 3,192,919 |
| 2 | 2021 | \$ 1,521,474 | \$ 385,115 | \$ 1,625,832 | \$ 3,532,421 | \$ 60,073 | \$ 60,073 | \$ 3,592,494 |
| 3 | 2022 | \$ 1,453,643 | \$ 178,707 | \$ 1,444,917 | \$ 3,077,267 | | | \$ 3,077,267 |
| 4 | 2023 | \$ 2,179,620 | \$ 88,898 | \$ 70,068 | \$ 2,338,586 | \$ 19,786 | \$ 19,786 | \$ 2,358,372 |
| 5 | 2024 | \$ 420,353 | \$ 98,584 | \$ 1,306,876 | \$ 1,825,813 | \$ 4,314 | \$ 4,314 | \$ 1,830,127 |
| 6 | 2025 | \$ 1,447,688 | \$ 2,103,742 | \$ 245,996 | \$ 3,797,426 | \$ 64,465 | \$ 64,465 | \$ 3,861,892 |
| 7 | 2026 | \$ 1,178,530 | \$ 716,046 | \$ 1,601,039 | \$ 3,495,615 | \$ 9,971 | \$ 9,971 | \$ 3,505,586 |
| 8 | 2027 | \$ 332,415 | \$ 258,281 | \$ 4,351,652 | \$ 4,942,348 | | | \$ 4,942,348 |
| 9 | 2028 | \$ 99,760 | \$ 1,072,630 | \$ 82,020 | \$ 1,254,409 | \$ 108,656 | \$ 108,656 | \$ 1,363,064 |
| 10 | 2029 | \$ 1,932,150 | \$ 88,957 | \$ 391,181 | \$ 2,412,288 | | | \$ 2,412,288 |
| 11 | 2030 | \$ 589,860 | \$ 684,584 | \$ 87,353 | \$ 1,361,797 | | | \$ 1,361,797 |
| 12 | 2031 | \$ 109,646 | \$ 94,741 | \$ 1,650,980 | \$ 1,855,367 | | | \$ 1,855,367 |
| 13 | 2032 | \$ 1,268,561 | \$ 97,773 | \$ 93,033 | \$ 1,459,367 | | | \$ 1,459,367 |
| 14 | 2033 | \$ 395,885 | \$ 100,902 | \$ 96,010 | \$ 592,797 | | | \$ 592,797 |
| 15 | 2034 | \$ 389,896 | \$ 607,373 | \$ 99,082 | \$ 1,096,351 | | | \$ 1,096,351 |
| Grand Total | | \$ 14,618,620 | \$ 6,937,506 | \$ 14,670,254 | \$ 36,226,381 | \$ 275,655 | \$ 275,655 | \$ 36,502,036 |
| Ten Year Total | | \$ 11,864,772 | \$ 5,352,133 | \$ 12,643,797 | \$ 29,860,702 | \$ 275,655 | \$ 275,655 | \$ 30,136,358 |

Table 8.9 - Annual Capital Improvement Budget - SMWD

| Year | Fiscal Year | PC 02 | | | PC 02 Total | PC 05 | PC 05 Total | Grand Total |
|-----------------------|-------------|---------------------|--------------------|---------------------|---------------------|--------------------|--------------------|---------------------|
| | | Liquids | Common | Solids | | | | |
| 1 | 2020 | \$ 730,766 | \$ 271,529 | \$ 1,441,826 | \$ 2,444,120 | \$ 33,564 | \$ 33,564 | \$ 2,477,684 |
| 2 | 2021 | \$ 855,829 | \$ 289,528 | \$ 1,537,949 | \$ 2,683,306 | \$ 240,293 | \$ 240,293 | \$ 2,923,600 |
| 3 | 2022 | \$ 817,674 | \$ 134,351 | \$ 1,366,814 | \$ 2,318,839 | | | \$ 2,318,839 |
| 4 | 2023 | \$ 1,226,036 | \$ 66,833 | \$ 66,280 | \$ 1,359,150 | \$ 79,142 | \$ 79,142 | \$ 1,438,292 |
| 5 | 2024 | \$ 236,449 | \$ 74,115 | \$ 1,236,234 | \$ 1,546,798 | \$ 17,256 | \$ 17,256 | \$ 1,564,054 |
| 6 | 2025 | \$ 814,325 | \$1,581,585 | \$ 232,699 | \$ 2,628,609 | \$ 257,861 | \$ 257,861 | \$ 2,886,470 |
| 7 | 2026 | \$ 662,923 | \$ 538,321 | \$ 1,514,496 | \$ 2,715,740 | \$ 39,882 | \$ 39,882 | \$ 2,755,623 |
| 8 | 2027 | \$ 186,984 | \$ 194,174 | \$ 4,116,428 | \$ 4,497,586 | | | \$ 4,497,586 |
| 9 | 2028 | \$ 56,115 | \$ 806,399 | \$ 77,586 | \$ 940,100 | \$ 434,623 | \$ 434,623 | \$ 1,374,722 |
| 10 | 2029 | \$ 1,086,835 | \$ 66,877 | \$ 370,036 | \$ 1,523,748 | | | \$ 1,523,748 |
| 11 | 2030 | \$ 331,796 | \$ 514,668 | \$ 82,631 | \$ 929,095 | | | \$ 929,095 |
| 12 | 2031 | \$ 61,676 | \$ 71,226 | \$ 1,561,738 | \$ 1,694,640 | | | \$ 1,694,640 |
| 13 | 2032 | \$ 713,566 | \$ 73,505 | \$ 88,004 | \$ 875,075 | | | \$ 875,075 |
| 14 | 2033 | \$ 222,685 | \$ 75,857 | \$ 90,820 | \$ 389,363 | | | \$ 389,363 |
| 15 | 2034 | \$ 219,316 | \$ 456,620 | \$ 93,726 | \$ 769,663 | | | \$ 769,663 |
| Grand Total | | \$ 8,222,974 | \$5,215,590 | \$13,877,268 | \$27,315,832 | \$1,102,622 | \$1,102,622 | \$28,418,454 |
| Ten Year Total | | \$ 6,673,935 | \$4,023,713 | \$11,960,348 | \$22,657,996 | \$1,102,622 | \$1,102,622 | \$23,760,618 |

Table 8.10 - Annual Capital Improvement Budget - SCWD

| Year | Fiscal Year | PC 02 | | | PC 02 Total | PC 05 | PC 05 Total | PC 15 | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 24 | PC 24 Total | Grand Total |
|----------------|-------------|---------------|-------------|-------------|--------------|-----------|-------------|--------------|-------------|--------------|---------|-------------|-------------|-----|-------------|-------------|-------------|--------------|
| | | Liquids | Common | Solids | | | | Liquids | AWT | | Liquids | Common | Solids | AWT | | | | |
| 1 | 2020 | \$ 1,217,943 | \$ 290,310 | \$1,016,144 | \$ 2,524,397 | \$ 9,444 | \$ 9,444 | \$ 3,678,016 | \$ 40,000 | \$ 3,718,016 | \$ - | \$ 23,686 | \$ 176,884 | \$- | \$ 200,570 | \$ 13,080 | \$ 13,080 | \$ 6,465,507 |
| 2 | 2021 | \$ 1,426,381 | \$ 309,554 | \$1,083,888 | \$ 2,819,824 | \$ 67,610 | \$ 67,610 | \$ 2,390,787 | | \$ 2,390,787 | \$ - | \$ 65,510 | \$ 38,532 | \$- | \$ 104,041 | \$ 6,242 | \$ 6,242 | \$ 5,388,504 |
| 3 | 2022 | \$ 1,362,790 | \$ 143,644 | \$ 963,278 | \$ 2,469,712 | | | \$ 1,352,225 | \$ 67,080 | \$ 1,419,305 | \$ - | \$ 120,647 | \$ 294,817 | \$- | \$ 415,464 | | | \$ 4,304,481 |
| 4 | 2023 | \$ 2,043,394 | \$ 71,456 | \$ 46,712 | \$ 2,161,562 | \$ 22,268 | \$ 22,268 | \$ 424,298 | \$ 69,227 | \$ 493,524 | \$ - | \$ 103,712 | \$ 39,165 | \$- | \$ 142,877 | \$ 8,243 | \$ 8,243 | \$ 2,828,474 |
| 5 | 2024 | \$ 394,081 | \$ 79,242 | \$ 871,250 | \$ 1,344,573 | \$ 4,855 | \$ 4,855 | \$ 1,138,843 | \$ 71,442 | \$ 1,210,285 | \$ - | \$ 286,756 | \$ 51,776 | \$- | \$ 338,533 | | | \$ 2,898,246 |
| 6 | 2025 | \$ 1,357,208 | \$1,690,983 | \$ 163,997 | \$ 3,212,188 | \$ 72,553 | \$ 72,553 | \$ 1,037,036 | \$ 325,719 | \$ 1,362,755 | \$ - | \$ 9,678 | \$1,464,160 | \$- | \$1,473,838 | \$ 21,305 | \$ 21,305 | \$ 6,142,639 |
| 7 | 2026 | \$ 1,104,872 | \$ 575,556 | \$1,067,359 | \$ 2,747,788 | \$ 11,221 | \$ 11,221 | \$ 955,395 | \$ 76,087 | \$ 1,031,482 | \$ - | \$ 206,091 | \$ 108,500 | \$- | \$ 314,591 | \$ 299 | \$ 299 | \$ 4,105,381 |
| 8 | 2027 | \$ 311,639 | \$ 207,605 | \$2,901,102 | \$ 3,420,346 | | | \$ 927,753 | \$1,632,435 | \$ 2,560,188 | \$ - | \$ 209,072 | \$ 24,575 | \$- | \$ 233,647 | \$ 72,681 | \$ 72,681 | \$ 6,286,862 |
| 9 | 2028 | \$ 93,525 | \$ 862,177 | \$ 54,680 | \$ 1,010,381 | \$122,287 | \$ 122,287 | \$ 970,821 | \$ 81,035 | \$ 1,051,856 | \$ - | \$ 46,565 | \$ 237,365 | \$- | \$ 283,929 | | | \$ 2,468,453 |
| 10 | 2029 | \$ 1,811,391 | \$ 71,503 | \$ 260,787 | \$ 2,143,681 | | | \$ 1,819,633 | \$ 83,628 | \$ 1,903,260 | \$ - | \$ 205,644 | \$ 26,173 | \$- | \$ 231,817 | \$ 972,042 | \$ 972,042 | \$ 5,250,801 |
| 11 | 2030 | \$ 552,993 | \$ 550,267 | \$ 58,235 | \$ 1,161,496 | | | \$ 1,306,172 | \$3,296,310 | \$ 4,602,482 | \$ - | \$ 11,329 | \$ 66,501 | \$- | \$ 77,831 | | | \$ 5,841,809 |
| 12 | 2031 | \$ 102,793 | \$ 76,153 | \$1,100,653 | \$ 1,279,599 | | | \$ 914,931 | \$ 89,066 | \$ 1,003,997 | \$ - | \$ 11,692 | \$1,951,467 | \$- | \$1,963,159 | | | \$ 4,246,755 |
| 13 | 2032 | \$ 1,189,276 | \$ 78,590 | \$ 62,022 | \$ 1,329,888 | | | \$ 1,552,982 | \$ 91,916 | \$ 1,644,898 | \$ - | \$ 12,066 | \$ 136,183 | \$- | \$ 148,249 | | | \$ 3,123,035 |
| 14 | 2033 | \$ 371,142 | \$ 81,105 | \$ 64,007 | \$ 516,253 | | | \$ 998,711 | \$ 94,857 | \$ 1,093,568 | \$ - | \$ 12,452 | \$ 29,687 | \$- | \$ 42,139 | | | \$ 1,651,960 |
| 15 | 2034 | \$ 365,527 | \$ 488,205 | \$ 66,055 | \$ 919,787 | | | \$ 2,437,798 | \$ 513,132 | \$ 2,950,930 | \$ - | \$ 201,153 | \$ 30,637 | \$- | \$ 231,790 | \$ 18,627 | \$ 18,627 | \$ 4,121,133 |
| Grand Total | | \$ 13,704,957 | \$5,576,350 | \$9,780,170 | \$29,061,476 | \$310,237 | \$ 310,237 | \$21,905,401 | \$6,531,933 | \$28,437,334 | \$ - | \$1,526,053 | \$4,676,422 | \$- | \$6,202,474 | \$1,112,518 | \$1,112,518 | \$65,124,039 |
| Ten Year Total | | \$ 11,123,224 | \$4,302,031 | \$8,429,198 | \$23,854,453 | \$310,237 | \$ 310,237 | \$14,694,807 | \$2,446,652 | \$17,141,458 | \$ - | \$1,277,362 | \$2,461,946 | \$- | \$3,739,307 | \$1,093,891 | \$1,093,891 | \$46,139,347 |

GENERAL

The capital improvement budget for any given fiscal year is rarely expended within that fiscal year. Larger projects require multiple years for design and construction. Years 1 (2019/20) and 2 (2020/21) are already based on cost loading as set forth in the Fiscal Year 2029/20 Budget. Several of the larger projects in the Ten Year Plan have already been divided between multiple years to reflect the multiple years of expenditures. The remaining projects in Years 3 through 15 are based in the cost loading assumptions presented in Table 9.1.

Table 9.2 presents the anticipated expenditures for each year of the fifteen span for each project committee cost center. The table also includes a bar chart showing the shift of budget numbers that can be expected with the cost loading.

Tables 9.3 through 9.11 show the anticipated annual expenditures for each of the participating member agencies.

Table 9.1 - Cost Loading Basis

| Project Type | First Fiscal Year | Second Fiscal Year | Third Fiscal Year |
|------------------------------|--------------------------|---------------------------|--------------------------|
| Condition Assessment | 100% | 0% | 0% |
| Construction | 25% | 50% | 25% |
| Construction with Permitting | 10% | 10% | 80% |
| Design | 50% | 50% | 0% |
| Study | 100% | 0% | 0% |

Table 9.2 - Annual Capital Improvement Budget with Cost Loading

| Year | Values | PC 02 | | | PC 02 Total | PC 05 | | PC 05 Total | PC 15 | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 21 | | PC 21 Total | PC 24 | PC 24 Total | Grand Total |
|----------------|--------|---------------|---------------|---------------|----------------|--------------|--------------|---------------|--------------|---------------|---------------|---------------|---------------|------------|----------------|--------------|--------------|---------------|--------------|--------------|----------------|-------------|
| | | Liquids | Common | Solids | | Liquids | AWT | | Liquids | Common | | Solids | AWT | B/C/D | E | | | | | | | |
| 1 | 2020 | \$ 4,222,203 | \$ 1,188,671 | \$ 5,080,720 | \$ 10,491,594 | \$ 75,730 | \$ 75,730 | \$ 12,321,354 | \$ 40,000 | \$ 12,361,354 | \$ 6,793,536 | \$ 472,696 | \$ 1,974,150 | \$ 35,000 | \$ 9,275,382 | \$ 226,011 | \$ 103,673 | \$ 329,684 | \$ 106,253 | \$ 106,253 | \$ 32,639,997 | |
| 2 | 2021 | \$ 4,944,789 | \$ 1,267,467 | \$ 5,419,441 | \$ 11,631,697 | \$ 542,178 | \$ 542,178 | \$ 8,009,136 | \$ - | \$ 8,009,136 | \$ 3,945,308 | \$ 1,307,355 | \$ 430,040 | \$ 36,120 | \$ 5,718,823 | \$ 172,288 | \$ 105,640 | \$ 277,927 | \$ 50,703 | \$ 50,703 | \$ 26,230,465 | |
| 3 | 2022 | \$ 1,496,825 | \$ 323,166 | \$ 1,373,836 | \$ 3,193,827 | \$ - | \$ - | \$ 1,707,080 | \$ 67,080 | \$ 1,774,160 | \$ 2,064,517 | \$ 844,228 | \$ 998,321 | \$ 37,276 | \$ 3,944,341 | \$ 241,652 | \$ - | \$ 241,652 | \$ - | \$ - | \$ 9,153,979 | |
| 4 | 2023 | \$ 4,130,348 | \$ 469,231 | \$ 2,528,597 | \$ 7,128,176 | \$ 149,274 | \$ 149,274 | \$ 2,754,544 | \$ 69,227 | \$ 2,823,771 | \$ 3,472,848 | \$ 1,771,102 | \$ 1,965,145 | \$ 38,469 | \$ 7,247,563 | \$ 483,304 | \$ - | \$ 483,304 | \$ 66,964 | \$ 66,964 | \$ 17,899,052 | |
| 5 | 2024 | \$ 5,343,977 | \$ 412,783 | \$ 2,417,357 | \$ 8,174,116 | \$ 38,999 | \$ 38,999 | \$ 2,785,390 | \$ 71,442 | \$ 2,856,832 | \$ 2,623,408 | \$ 3,024,771 | \$ 1,095,636 | \$ 39,700 | \$ 6,783,514 | \$ 413,223 | \$ - | \$ 413,223 | \$ - | \$ - | \$ 18,266,684 | |
| 6 | 2025 | \$ 3,433,453 | \$ 1,924,511 | \$ 2,449,166 | \$ 7,807,129 | \$ 87,415 | \$ 87,415 | \$ 2,997,306 | \$ 136,726 | \$ 3,134,032 | \$ 1,656,333 | \$ 3,382,161 | \$ 4,442,572 | \$ 40,970 | \$ 9,522,036 | \$ 904,237 | \$ - | \$ 904,237 | \$ 86,535 | \$ 86,535 | \$ 21,541,383 | |
| 7 | 2026 | \$ 3,558,010 | \$ 4,121,729 | \$ 4,111,176 | \$ 11,790,915 | \$ 80,678 | \$ 80,678 | \$ 3,088,335 | \$ 202,083 | \$ 3,290,418 | \$ 3,889,233 | \$ 2,629,719 | \$ 8,625,912 | \$ 42,281 | \$ 15,187,144 | \$ 902,252 | \$ 401,942 | \$ 1,304,194 | \$ 87,143 | \$ 87,143 | \$ 31,740,492 | |
| 8 | 2027 | \$ 3,371,111 | \$ 3,130,199 | \$ 6,507,923 | \$ 13,009,233 | \$ 510,447 | \$ 510,447 | \$ 3,748,931 | \$ 529,998 | \$ 4,278,929 | \$ 7,002,865 | \$ 3,100,158 | \$ 4,767,741 | \$ 43,634 | \$ 14,914,399 | \$ 1,284,911 | \$ 397,611 | \$ 1,682,522 | \$ 296,426 | \$ 296,426 | \$ 34,691,956 | |
| 9 | 2028 | \$ 1,588,760 | \$ 1,905,443 | \$ 7,393,692 | \$ 10,887,895 | \$ 1,003,144 | \$ 1,003,144 | \$ 2,796,008 | \$ 857,991 | \$ 3,653,999 | \$ 7,563,502 | \$ 3,326,263 | \$ 1,110,867 | \$ 45,030 | \$ 12,045,663 | \$ 1,600,775 | \$ 795,222 | \$ 2,395,997 | \$ 295,818 | \$ 295,818 | \$ 30,282,515 | |
| 10 | 2029 | \$ 2,012,363 | \$ 2,059,796 | \$ 4,097,741 | \$ 8,169,901 | \$ - | \$ - | \$ 4,425,180 | \$ 472,106 | \$ 4,897,286 | \$ 5,983,618 | \$ 2,540,464 | \$ 1,475,161 | \$ 46,471 | \$ 10,045,714 | \$ 1,546,455 | \$ 397,611 | \$ 1,944,066 | \$ 789,636 | \$ 789,636 | \$ 25,846,603 | |
| 11 | 2030 | \$ 3,710,684 | \$ 1,601,490 | \$ 802,071 | \$ 6,114,244 | \$ - | \$ - | \$ 5,291,205 | \$ 888,806 | \$ 6,180,010 | \$ 5,359,667 | \$ 2,347,782 | \$ 1,003,168 | \$ 47,958 | \$ 8,758,576 | \$ 1,348,961 | \$ - | \$ 1,348,961 | \$ 789,636 | \$ 789,636 | \$ 23,191,427 | |
| 12 | 2031 | \$ 2,628,445 | \$ 1,287,269 | \$ 1,856,634 | \$ 5,772,348 | \$ - | \$ - | \$ 4,480,638 | \$ 1,694,069 | \$ 6,174,707 | \$ 4,740,324 | \$ 1,204,547 | \$ 5,898,642 | \$ 49,493 | \$ 11,893,006 | \$ 674,481 | \$ - | \$ 674,481 | \$ 6,317,086 | \$ 6,317,086 | \$ 30,831,628 | |
| 13 | 2032 | \$ 1,699,457 | \$ 809,515 | \$ 2,911,496 | \$ 5,420,468 | \$ - | \$ - | \$ 3,595,942 | \$ 894,417 | \$ 4,490,359 | \$ 2,693,589 | \$ 240,791 | \$ 11,465,288 | \$ 51,077 | \$ 14,450,746 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 24,361,573 | |
| 14 | 2033 | \$ 2,483,833 | \$ 332,081 | \$ 1,620,726 | \$ 4,436,641 | \$ - | \$ - | \$ 4,229,469 | \$ 94,857 | \$ 4,324,326 | \$ 3,020,580 | \$ 248,496 | \$ 6,297,919 | \$ 52,711 | \$ 9,619,706 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 18,380,673 | |
| 15 | 2034 | \$ 2,002,860 | \$ 756,768 | \$ 330,274 | \$ 3,089,902 | \$ - | \$ - | \$ 5,041,485 | \$ 201,702 | \$ 5,243,187 | \$ 4,493,971 | \$ 1,195,918 | \$ 641,643 | \$ 54,398 | \$ 6,385,930 | \$ - | \$ - | \$ - | \$ 37,829 | \$ 37,829 | \$ 14,756,849 | |
| 16 | 2035 | \$ 664,524 | \$ 828,120 | \$ - | \$ 1,492,644 | \$ - | \$ - | \$ 4,283,671 | \$ 207,620 | \$ 4,491,290 | \$ 2,251,986 | \$ 1,878,940 | \$ - | \$ - | \$ 4,130,925 | \$ - | \$ - | \$ - | \$ 75,657 | \$ 75,657 | \$ 10,190,517 | |
| 17 | 2036 | \$ 218,874 | \$ 414,060 | \$ - | \$ 632,934 | \$ - | \$ - | \$ 1,827,421 | \$ 103,810 | \$ 1,931,231 | \$ 254,660 | \$ 939,470 | \$ - | \$ - | \$ 1,194,129 | \$ - | \$ - | \$ - | \$ 37,829 | \$ 37,829 | \$ 3,796,123 | |
| Grand Total | | \$ 47,510,517 | \$ 22,832,298 | \$ 48,900,848 | \$ 119,243,663 | \$ 2,487,865 | \$ 2,487,865 | \$ 73,383,093 | \$ 6,531,933 | \$ 79,915,026 | \$ 67,809,943 | \$ 30,454,860 | \$ 52,192,205 | \$ 660,589 | \$ 151,117,598 | \$ 9,798,549 | \$ 2,201,700 | \$ 12,000,249 | \$ 9,037,514 | \$ 9,037,514 | \$ 373,801,915 | |
| Ten Year Total | | \$ 34,101,839 | \$ 16,802,995 | \$ 41,379,648 | \$ 92,284,482 | \$ 2,487,865 | \$ 2,487,865 | \$ 44,633,264 | \$ 2,446,652 | \$ 47,079,915 | \$ 44,995,167 | \$ 22,398,916 | \$ 26,885,545 | \$ 404,951 | \$ 94,684,579 | \$ 7,775,108 | \$ 2,201,700 | \$ 9,976,807 | \$ 1,779,477 | \$ 1,779,477 | \$ 248,293,126 | |

Table 9.3 - Annual Capital Improvement Budget with Cost Loading - ETWD

| Year | Fiscal Year | PC 17 | | | | PC 17 Total | PC 21 | | PC 21 Total | PC 24 | | PC 24 Total | Grand Total |
|-----------------------|-------------|---------|--------------|---------------|------|---------------|--------------|------------|--------------|--------------|--------------|--------------|---------------|
| | | Liquids | Common | Solids | AWT | | B/C/D | E | | | | | |
| 1 | 2020 | \$ - | \$ 48,499 | \$ 402,924 | \$ - | \$ 451,423 | \$ 113,006 | \$ 24,145 | \$ 137,151 | \$ 17,319 | \$ 17,319 | \$ 17,319 | \$ 605,893 |
| 2 | 2021 | \$ - | \$ 134,135 | \$ 87,771 | \$ - | \$ 221,906 | \$ 86,144 | \$ 24,604 | \$ 110,747 | \$ 8,265 | \$ 8,265 | \$ 8,265 | \$ 340,918 |
| 3 | 2022 | \$ - | \$ 86,618 | \$ 203,757 | \$ - | \$ 290,375 | \$ 120,826 | \$ - | \$ 120,826 | \$ - | \$ - | \$ - | \$ 411,201 |
| 4 | 2023 | \$ - | \$ 181,715 | \$ 401,086 | \$ - | \$ 582,801 | \$ 241,652 | \$ - | \$ 241,652 | \$ 10,915 | \$ 10,915 | \$ 10,915 | \$ 835,368 |
| 5 | 2024 | \$ - | \$ 310,341 | \$ 223,619 | \$ - | \$ 533,961 | \$ 206,611 | \$ - | \$ 206,611 | \$ - | \$ - | \$ - | \$ 740,572 |
| 6 | 2025 | \$ - | \$ 347,010 | \$ 906,729 | \$ - | \$ 1,253,739 | \$ 452,118 | \$ - | \$ 452,118 | \$ 14,105 | \$ 14,105 | \$ 14,105 | \$ 1,719,962 |
| 7 | 2026 | \$ - | \$ 269,809 | \$ 1,760,549 | \$ - | \$ 2,030,358 | \$ 451,126 | \$ 93,612 | \$ 544,738 | \$ 14,204 | \$ 14,204 | \$ 14,204 | \$ 2,589,300 |
| 8 | 2027 | \$ - | \$ 318,076 | \$ 973,096 | \$ - | \$ 1,291,172 | \$ 642,456 | \$ 92,604 | \$ 735,059 | \$ 48,317 | \$ 48,317 | \$ 48,317 | \$ 2,074,549 |
| 9 | 2028 | \$ - | \$ 341,275 | \$ 226,728 | \$ - | \$ 568,003 | \$ 800,387 | \$ 185,207 | \$ 985,595 | \$ 48,218 | \$ 48,218 | \$ 48,218 | \$ 1,601,816 |
| 10 | 2029 | \$ - | \$ 260,652 | \$ 301,080 | \$ - | \$ 561,732 | \$ 773,228 | \$ 92,604 | \$ 865,831 | \$ 128,711 | \$ 128,711 | \$ 128,711 | \$ 1,556,274 |
| 11 | 2030 | \$ - | \$ 240,882 | \$ 204,747 | \$ - | \$ 445,629 | \$ 674,481 | \$ - | \$ 674,481 | \$ 128,711 | \$ 128,711 | \$ 128,711 | \$ 1,248,820 |
| 12 | 2031 | \$ - | \$ 123,587 | \$ 1,203,913 | \$ - | \$ 1,327,499 | \$ 337,240 | \$ - | \$ 337,240 | \$ 1,029,685 | \$ 1,029,685 | \$ 1,029,685 | \$ 2,694,425 |
| 13 | 2032 | \$ - | \$ 24,705 | \$ 2,340,065 | \$ - | \$ 2,364,771 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 2,364,771 |
| 14 | 2033 | \$ - | \$ 25,496 | \$ 1,285,405 | \$ - | \$ 1,310,901 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 1,310,901 |
| 15 | 2034 | \$ - | \$ 122,701 | \$ 130,959 | \$ - | \$ 253,660 | \$ - | \$ - | \$ - | \$ 6,166 | \$ 6,166 | \$ 6,166 | \$ 259,827 |
| Grand Total | | \$ - | \$ 2,835,500 | \$ 10,652,429 | \$ - | \$ 13,487,929 | \$ 4,899,275 | \$ 512,776 | \$ 5,412,050 | \$ 1,454,617 | \$ 1,473,390 | \$ 1,473,390 | \$ 20,354,596 |
| Ten Year Total | | \$ - | \$ 2,298,129 | \$ 5,487,340 | \$ - | \$ 7,785,468 | \$ 3,887,554 | \$ 512,776 | \$ 4,400,330 | \$ 290,055 | \$ 290,055 | \$ 290,055 | \$ 12,475,853 |

Table 9.4 - Annual Capital Improvement Budget with Cost Loading - EBSD

| Year | Fiscal Year | PC 15 | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 24 | | Grand Total |
|-----------------------|-------------|---------------------|-------------|---------------------|-------------|------------------|-------------------|-------------|-------------------|------------------|------------------|---------------------|
| | | Liquids | AWT | | Liquids | Common | Solids | AWT | | PC 24 | PC 24 Total | |
| 1 | 2020 | \$ 367,802 | \$ - | \$ 367,802 | \$ - | \$ 1,560 | \$ 11,647 | \$ - | \$ 13,207 | \$ 829 | \$ 829 | \$ 381,838 |
| 2 | 2021 | \$ 239,079 | \$ - | \$ 239,079 | \$ - | \$ 4,314 | \$ 2,537 | \$ - | \$ 6,852 | \$ 395 | \$ 395 | \$ 246,326 |
| 3 | 2022 | \$ 50,958 | \$ - | \$ 50,958 | \$ - | \$ 2,786 | \$ 5,890 | \$ - | \$ 8,676 | \$ - | \$ - | \$ 59,634 |
| 4 | 2023 | \$ 82,225 | \$ - | \$ 82,225 | \$ - | \$ 5,845 | \$ 11,594 | \$ - | \$ 17,439 | \$ 522 | \$ 522 | \$ 100,187 |
| 5 | 2024 | \$ 83,146 | \$ - | \$ 83,146 | \$ - | \$ 9,982 | \$ 6,464 | \$ - | \$ 16,446 | \$ - | \$ - | \$ 99,592 |
| 6 | 2025 | \$ 89,472 | \$ - | \$ 89,472 | \$ - | \$ 11,161 | \$ 26,211 | \$ - | \$ 37,372 | \$ 675 | \$ 675 | \$ 127,519 |
| 7 | 2026 | \$ 92,189 | \$ - | \$ 92,189 | \$ - | \$ 8,678 | \$ 50,893 | \$ - | \$ 59,571 | \$ 680 | \$ 680 | \$ 152,440 |
| 8 | 2027 | \$ 111,908 | \$ - | \$ 111,908 | \$ - | \$ 10,231 | \$ 28,130 | \$ - | \$ 38,360 | \$ 2,312 | \$ 2,312 | \$ 152,581 |
| 9 | 2028 | \$ 83,463 | \$ - | \$ 83,463 | \$ - | \$ 10,977 | \$ 6,554 | \$ - | \$ 17,531 | \$ 2,307 | \$ 2,307 | \$ 103,301 |
| 10 | 2029 | \$ 132,095 | \$ - | \$ 132,095 | \$ - | \$ 8,384 | \$ 8,703 | \$ - | \$ 17,087 | \$ 6,159 | \$ 6,159 | \$ 155,341 |
| 11 | 2030 | \$ 157,946 | \$ - | \$ 157,946 | \$ - | \$ 7,748 | \$ 5,919 | \$ - | \$ 13,666 | \$ 6,159 | \$ 6,159 | \$ 177,772 |
| 12 | 2031 | \$ 133,750 | \$ - | \$ 133,750 | \$ - | \$ 3,975 | \$ 34,802 | \$ - | \$ 38,777 | \$ 49,273 | \$ 49,273 | \$ 221,801 |
| 13 | 2032 | \$ 107,342 | \$ - | \$ 107,342 | \$ - | \$ 795 | \$ 67,645 | \$ - | \$ 68,440 | \$ - | \$ - | \$ 175,781 |
| 14 | 2033 | \$ 126,253 | \$ - | \$ 126,253 | \$ - | \$ 820 | \$ 37,158 | \$ - | \$ 37,978 | \$ - | \$ - | \$ 164,231 |
| 15 | 2034 | \$ 150,492 | \$ - | \$ 150,492 | \$ - | \$ 3,947 | \$ 3,786 | \$ - | \$ 7,732 | \$ 295 | \$ 295 | \$ 158,519 |
| Grand Total | | \$ 2,008,119 | \$ - | \$ 2,008,119 | \$ - | \$ 91,200 | \$ 307,934 | \$ - | \$ 399,134 | \$ 69,607 | \$ 69,607 | \$ 2,476,861 |
| Ten Year Total | | \$ 1,332,336 | \$ - | \$ 1,332,336 | \$ - | \$ 73,916 | \$ 158,625 | \$ - | \$ 232,541 | \$ 13,880 | \$ 13,880 | \$ 1,578,757 |

Table 9.5 - Annual Capital Improvement Budget with Cost Loading - IRWD

| Year | Fiscal Year | PC 21 | | PC 21 Total | PC 24 | | Grand Total |
|-----------------------|-------------|---------------------|-------------------|---------------------|---------------------|---------------------|---------------------|
| | | B/C/D | E | | | PC 24 Total | |
| 1 | 2020 | \$ 113,006 | \$ 24,145 | \$ 137,151 | \$ 16,745 | \$ 16,745 | \$ 153,896 |
| 2 | 2021 | \$ 86,144 | \$ 24,604 | \$ 110,747 | \$ 7,991 | \$ 7,991 | \$ 118,738 |
| 3 | 2022 | \$ 120,826 | \$ - | \$ 120,826 | \$ - | \$ - | \$ 120,826 |
| 4 | 2023 | \$ 241,652 | \$ - | \$ 241,652 | \$ 10,554 | \$ 10,554 | \$ 252,206 |
| 5 | 2024 | \$ 206,611 | \$ - | \$ 206,611 | \$ - | \$ - | \$ 206,611 |
| 6 | 2025 | \$ 452,118 | \$ - | \$ 452,118 | \$ 13,638 | \$ 13,638 | \$ 465,756 |
| 7 | 2026 | \$ 451,126 | \$ 93,612 | \$ 544,738 | \$ 13,734 | \$ 13,734 | \$ 558,472 |
| 8 | 2027 | \$ 642,456 | \$ 92,604 | \$ 735,059 | \$ 46,717 | \$ 46,717 | \$ 781,776 |
| 9 | 2028 | \$ 800,387 | \$ 185,207 | \$ 985,595 | \$ 46,621 | \$ 46,621 | \$ 1,032,216 |
| 10 | 2029 | \$ 773,228 | \$ 92,604 | \$ 865,831 | \$ 124,447 | \$ 124,447 | \$ 990,278 |
| 11 | 2030 | \$ 674,481 | \$ - | \$ 674,481 | \$ 124,447 | \$ 124,447 | \$ 798,927 |
| 12 | 2031 | \$ 337,240 | \$ - | \$ 337,240 | \$ 995,573 | \$ 995,573 | \$ 1,332,813 |
| 13 | 2032 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 14 | 2033 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 15 | 2034 | \$ - | \$ - | \$ - | \$ 5,962 | \$ 5,962 | \$ 5,962 |
| Grand Total | | \$ 4,899,275 | \$ 512,776 | \$ 5,412,050 | \$ 1,406,427 | \$ 1,406,427 | \$ 6,818,477 |
| Ten Year Total | | \$ 3,887,554 | \$ 512,776 | \$ 4,400,330 | \$ 280,446 | \$ 280,446 | \$ 4,680,775 |

Table 9.6 - Annual Capital Improvement Budget with Cost Loading - CLB

| Year | Fiscal Year | PC 15 | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 24 | | Grand Total |
|-----------------------|-------------|----------------------|-------------|----------------------|-------------|---------------------|---------------------|-------------|---------------------|-------------------|-------------------|----------------------|
| | | Liquids | AWT | | Liquids | Common | Solids | AWT | | PC 24 | PC 24 Total | |
| 1 | 2020 | \$ 4,671,080 | \$ - | \$ 4,671,080 | \$ - | \$ 29,638 | \$ 221,500 | \$ - | \$ 251,138 | \$ 11,688 | \$ 11,688 | \$ 4,933,906 |
| 2 | 2021 | \$ 3,036,299 | \$ - | \$ 3,036,299 | \$ - | \$ 81,971 | \$ 48,250 | \$ - | \$ 130,222 | \$ 5,577 | \$ 5,577 | \$ 3,153,651 |
| 3 | 2022 | \$ 647,162 | \$ - | \$ 647,162 | \$ - | \$ 52,933 | \$ 112,012 | \$ - | \$ 164,945 | \$ - | \$ - | \$ 2,237,472 |
| 4 | 2023 | \$ 1,044,260 | \$ - | \$ 1,044,260 | \$ - | \$ 111,048 | \$ 220,489 | \$ - | \$ 331,537 | \$ 7,366 | \$ 7,366 | \$ 724,914 |
| 5 | 2024 | \$ 1,055,954 | \$ - | \$ 1,055,954 | \$ - | \$ 189,653 | \$ 122,930 | \$ - | \$ 312,583 | \$ - | \$ - | \$ 1,866,999 |
| 6 | 2025 | \$ 1,136,292 | \$ - | \$ 1,136,292 | \$ - | \$ 212,061 | \$ 498,457 | \$ - | \$ 710,518 | \$ 9,519 | \$ 9,519 | \$ 3,181,653 |
| 7 | 2026 | \$ 1,170,802 | \$ - | \$ 1,170,802 | \$ - | \$ 164,883 | \$ 967,827 | \$ - | \$ 1,132,711 | \$ 9,586 | \$ 9,586 | \$ 1,607,363 |
| 8 | 2027 | \$ 1,421,237 | \$ - | \$ 1,421,237 | \$ - | \$ 194,380 | \$ 534,941 | \$ - | \$ 729,320 | \$ 32,607 | \$ 32,607 | \$ 1,536,562 |
| 9 | 2028 | \$ 1,059,979 | \$ - | \$ 1,059,979 | \$ - | \$ 208,557 | \$ 124,639 | \$ - | \$ 333,196 | \$ 32,540 | \$ 32,540 | \$ 1,588,444 |
| 10 | 2029 | \$ 1,677,605 | \$ - | \$ 1,677,605 | \$ - | \$ 159,287 | \$ 165,513 | \$ - | \$ 324,800 | \$ 86,860 | \$ 86,860 | \$ 3,469,506 |
| 11 | 2030 | \$ 2,005,919 | \$ - | \$ 2,005,919 | \$ - | \$ 147,206 | \$ 112,555 | \$ - | \$ 259,761 | \$ 86,860 | \$ 86,860 | \$ 1,756,290 |
| 12 | 2031 | \$ 1,698,630 | \$ - | \$ 1,698,630 | \$ - | \$ 75,525 | \$ 661,828 | \$ - | \$ 737,353 | \$ 694,879 | \$ 694,879 | \$ 3,620,282 |
| 13 | 2032 | \$ 1,363,238 | \$ - | \$ 1,363,238 | \$ - | \$ 15,098 | \$ 1,286,405 | \$ - | \$ 1,301,503 | \$ - | \$ - | \$ 2,156,038 |
| 14 | 2033 | \$ 1,603,411 | \$ - | \$ 1,603,411 | \$ - | \$ 15,581 | \$ 706,627 | \$ - | \$ 722,207 | \$ - | \$ - | \$ 1,321,119 |
| 15 | 2034 | \$ 1,911,250 | \$ - | \$ 1,911,250 | \$ - | \$ 74,984 | \$ 71,992 | \$ - | \$ 146,976 | \$ 4,161 | \$ 4,161 | \$ 2,518,948 |
| Grand Total | | \$ 25,503,117 | \$ - | \$ 25,503,117 | \$ - | \$ 1,732,805 | \$ 5,855,965 | \$ - | \$ 7,588,771 | \$ 981,643 | \$ 981,643 | \$ 35,673,145 |
| Ten Year Total | | \$ 16,920,670 | \$ - | \$ 16,920,670 | \$ - | \$ 1,404,412 | \$ 3,016,558 | \$ - | \$ 4,420,970 | \$ 195,743 | \$ 195,743 | \$ 24,300,468 |

Table 9.7 - Annual Capital Improvement Budget with Cost Loading - MNWD

| Year | Fiscal Year | PC 02 | | | PC 02 Total | PC 05 | PC 05 Total | PC 15 | | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 21 | | | PC 21 Total | PC 24 | PC 24 Total | Grand Total |
|----------------|-------------|---------------|--------------|---------------|---------------|------------|-------------|---------------|------|---------------|---------------|---------------|---------------|------------|----------------|-------------|--------------|--------------|--------------|--------------|----------------|-------------|-------------|
| | | Liquids | Common | Solids | | | | Liquids | AWT | Liquids | | Common | Solids | AWT | B/C/D | | E | | | | | | |
| 1 | 2020 | \$ 974,355 | \$ 265,659 | \$ 1,098,534 | \$ 2,338,548 | \$ 11,746 | \$ 11,746 | \$ 3,604,456 | \$ - | \$ 3,604,456 | \$ 6,793,536 | \$ 369,313 | \$ 1,161,195 | \$ 35,000 | \$ 8,359,044 | \$ - | \$ 55,382 | \$ 55,382 | \$ 46,592 | \$ 46,592 | \$ 14,415,767 | | |
| 2 | 2021 | \$ 1,141,105 | \$ 283,270 | \$ 1,171,771 | \$ 2,596,146 | \$ 84,092 | \$ 84,092 | \$ 2,342,971 | \$ - | \$ 2,342,971 | \$ 3,945,308 | \$ 1,021,425 | \$ 252,950 | \$ 36,120 | \$ 5,255,803 | \$ - | \$ 56,433 | \$ 56,433 | \$ 22,233 | \$ 22,233 | \$ 10,357,677 | | |
| 3 | 2022 | \$ 345,421 | \$ 72,225 | \$ 297,046 | \$ 714,692 | \$ - | \$ - | \$ 499,384 | \$ - | \$ 499,384 | \$ 2,064,517 | \$ 659,588 | \$ 587,212 | \$ 37,276 | \$ 3,348,593 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 4,562,669 | | |
| 4 | 2023 | \$ 953,157 | \$ 104,870 | \$ 546,724 | \$ 1,604,751 | \$ 23,152 | \$ 23,152 | \$ 805,807 | \$ - | \$ 805,807 | \$ 3,472,848 | \$ 1,383,746 | \$ 1,155,898 | \$ 38,469 | \$ 6,050,961 | \$ - | \$ - | \$ - | \$ 29,364 | \$ 29,364 | \$ 8,514,035 | | |
| 5 | 2024 | \$ 1,233,225 | \$ 92,254 | \$ 522,672 | \$ 1,848,151 | \$ 6,049 | \$ 6,049 | \$ 814,830 | \$ - | \$ 814,830 | \$ 2,623,408 | \$ 2,363,227 | \$ 644,453 | \$ 39,700 | \$ 5,670,788 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 8,339,818 | | |
| 6 | 2025 | \$ 792,335 | \$ 430,114 | \$ 529,549 | \$ 1,751,999 | \$ 13,558 | \$ 13,558 | \$ 876,824 | \$ - | \$ 876,824 | \$ 1,656,333 | \$ 2,642,453 | \$ 2,613,121 | \$ 40,970 | \$ 6,952,877 | \$ - | \$ - | \$ - | \$ 37,946 | \$ 37,946 | \$ 9,633,203 | | |
| 7 | 2026 | \$ 821,079 | \$ 921,176 | \$ 888,903 | \$ 2,631,159 | \$ 12,513 | \$ 12,513 | \$ 903,453 | \$ - | \$ 903,453 | \$ 3,889,233 | \$ 2,054,576 | \$ 5,073,761 | \$ 42,281 | \$ 11,059,852 | \$ - | \$ 214,717 | \$ 214,717 | \$ 38,212 | \$ 38,212 | \$ 14,859,906 | | |
| 8 | 2027 | \$ 777,949 | \$ 699,577 | \$ 1,407,118 | \$ 2,884,644 | \$ 79,170 | \$ 79,170 | \$ 1,096,702 | \$ - | \$ 1,096,702 | \$ 7,002,865 | \$ 2,422,126 | \$ 2,804,385 | \$ 43,634 | \$ 12,273,011 | \$ - | \$ 212,404 | \$ 212,404 | \$ 129,983 | \$ 129,983 | \$ 16,675,914 | | |
| 9 | 2028 | \$ 366,637 | \$ 425,853 | \$ 1,598,636 | \$ 2,391,126 | \$ 155,588 | \$ 155,588 | \$ 817,937 | \$ - | \$ 817,937 | \$ 7,563,502 | \$ 2,598,781 | \$ 653,412 | \$ 45,030 | \$ 10,860,725 | \$ - | \$ 424,808 | \$ 424,808 | \$ 129,716 | \$ 129,716 | \$ 14,779,899 | | |
| 10 | 2029 | \$ 464,392 | \$ 460,349 | \$ 885,998 | \$ 1,810,739 | \$ - | \$ - | \$ 1,294,530 | \$ - | \$ 1,294,530 | \$ 5,983,618 | \$ 1,984,843 | \$ 867,690 | \$ 46,471 | \$ 8,882,622 | \$ - | \$ 212,404 | \$ 212,404 | \$ 346,255 | \$ 346,255 | \$ 12,546,550 | | |
| 11 | 2030 | \$ 856,312 | \$ 357,921 | \$ 173,421 | \$ 1,387,654 | \$ - | \$ - | \$ 1,547,875 | \$ - | \$ 1,547,875 | \$ 5,359,667 | \$ 1,834,301 | \$ 590,064 | \$ 47,958 | \$ 7,831,991 | \$ - | \$ - | \$ - | \$ 346,255 | \$ 346,255 | \$ 11,113,775 | | |
| 12 | 2031 | \$ 606,564 | \$ 287,695 | \$ 401,434 | \$ 1,295,694 | \$ - | \$ - | \$ 1,310,754 | \$ - | \$ 1,310,754 | \$ 4,740,324 | \$ 941,102 | \$ 3,469,581 | \$ 49,493 | \$ 9,200,501 | \$ - | \$ - | \$ - | \$ 2,770,042 | \$ 2,770,042 | \$ 14,576,990 | | |
| 13 | 2032 | \$ 392,182 | \$ 180,921 | \$ 629,513 | \$ 1,202,616 | \$ - | \$ - | \$ 1,051,947 | \$ - | \$ 1,051,947 | \$ 2,693,589 | \$ 188,128 | \$ 6,743,883 | \$ 51,077 | \$ 9,676,677 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 11,931,240 | | |
| 14 | 2033 | \$ 573,192 | \$ 74,218 | \$ 350,427 | \$ 997,837 | \$ - | \$ - | \$ 1,237,277 | \$ - | \$ 1,237,277 | \$ 3,020,580 | \$ 194,148 | \$ 3,704,436 | \$ 52,711 | \$ 6,971,875 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 9,206,990 | | |
| 15 | 2034 | \$ 462,199 | \$ 169,132 | \$ 71,411 | \$ 702,741 | \$ - | \$ - | \$ 1,474,822 | \$ - | \$ 1,474,822 | \$ 4,493,971 | \$ 934,360 | \$ 377,414 | \$ 54,398 | \$ 5,860,144 | \$ - | \$ - | \$ - | \$ 16,588 | \$ 16,588 | \$ 8,054,295 | | |
| Grand Total | | \$ 10,760,104 | \$ 4,825,234 | \$ 10,573,156 | \$ 26,158,495 | \$ 385,868 | \$ 385,868 | \$ 19,679,571 | \$ - | \$ 19,679,571 | \$ 65,303,298 | \$ 21,592,119 | \$ 30,699,455 | \$ 660,589 | \$ 118,255,462 | \$ - | \$ 1,176,148 | \$ 1,176,148 | \$ 3,913,186 | \$ 3,913,186 | \$ 169,568,729 | | |
| Ten Year Total | | \$ 7,869,655 | \$ 3,755,347 | \$ 8,946,951 | \$ 20,571,953 | \$ 385,868 | \$ 385,868 | \$ 13,056,895 | \$ - | \$ 13,056,895 | \$ 44,995,167 | \$ 17,500,079 | \$ 15,814,077 | \$ 404,951 | \$ 78,714,274 | \$ - | \$ 1,176,148 | \$ 1,176,148 | \$ 780,301 | \$ 780,301 | \$ 114,685,439 | | |

Table 9.8 - Annual Capital Improvement Budget with Cost Loading - CSC

| Year | Fiscal Year | PC 05 | PC 05 Total | Grand Total |
|----------------|-------------|------------|-------------|-------------|
| 1 | 2020 | \$ 12,586 | \$ 12,586 | \$ 12,586 |
| 2 | 2021 | \$ 90,110 | \$ 90,110 | \$ 90,110 |
| 3 | 2022 | \$ - | \$ - | \$ - |
| 4 | 2023 | \$ 24,809 | \$ 24,809 | \$ 24,809 |
| 5 | 2024 | \$ 6,482 | \$ 6,482 | \$ 6,482 |
| 6 | 2025 | \$ 14,528 | \$ 14,528 | \$ 14,528 |
| 7 | 2026 | \$ 13,409 | \$ 13,409 | \$ 13,409 |
| 8 | 2027 | \$ 84,836 | \$ 84,836 | \$ 84,836 |
| 9 | 2028 | \$ 166,723 | \$ 166,723 | \$ 166,723 |
| 10 | 2029 | \$ - | \$ - | \$ - |
| Grand Total | | \$ 413,508 | \$ 413,508 | \$ 413,508 |
| Ten Year Total | | \$ 413,483 | \$ 413,483 | \$ 413,483 |

Table 9.9 - Annual Capital Improvement Budget with Cost Loading - CSJC

| Year | Fiscal Year | PC 02 | | | PC 02 Total | PC 05 | | Grand Total |
|-----------------------|-------------|----------------------|---------------------|----------------------|----------------------|-------------------|-------------------|----------------------|
| | | Liquids | Common | Solids | | | PC 05 Total | |
| 1 | 2020 | \$ 1,299,139 | \$ 361,173 | \$ 1,524,216 | \$ 3,184,528 | \$ 8,391 | \$ 8,391 | \$ 3,192,919 |
| 2 | 2021 | \$ 1,521,474 | \$ 385,115 | \$ 1,625,832 | \$ 3,532,421 | \$ 60,073 | \$ 60,073 | \$ 3,592,494 |
| 3 | 2022 | \$ 460,562 | \$ 98,193 | \$ 412,151 | \$ 970,905 | \$ - | \$ - | \$ 970,905 |
| 4 | 2023 | \$ 1,270,876 | \$ 142,574 | \$ 758,579 | \$ 2,172,029 | \$ 16,540 | \$ 16,540 | \$ 2,188,569 |
| 5 | 2024 | \$ 1,644,300 | \$ 125,423 | \$ 725,207 | \$ 2,494,930 | \$ 4,321 | \$ 4,321 | \$ 2,499,251 |
| 6 | 2025 | \$ 1,056,447 | \$ 584,755 | \$ 734,750 | \$ 2,375,952 | \$ 9,686 | \$ 9,686 | \$ 2,385,637 |
| 7 | 2026 | \$ 1,094,772 | \$ 1,252,372 | \$ 1,233,353 | \$ 3,580,496 | \$ 8,939 | \$ 8,939 | \$ 3,589,436 |
| 8 | 2027 | \$ 1,037,265 | \$ 951,099 | \$ 1,952,377 | \$ 3,940,741 | \$ 56,558 | \$ 56,558 | \$ 3,997,298 |
| 9 | 2028 | \$ 488,849 | \$ 578,961 | \$ 2,218,108 | \$ 3,285,918 | \$ 111,148 | \$ 111,148 | \$ 3,397,067 |
| 10 | 2029 | \$ 619,189 | \$ 625,861 | \$ 1,229,322 | \$ 2,474,372 | \$ - | \$ - | \$ 2,474,372 |
| 11 | 2030 | \$ 1,141,749 | \$ 486,606 | \$ 240,621 | \$ 1,868,977 | \$ - | \$ - | \$ 1,868,977 |
| 12 | 2031 | \$ 808,752 | \$ 391,132 | \$ 556,990 | \$ 1,756,874 | \$ - | \$ - | \$ 1,756,874 |
| 13 | 2032 | \$ 522,910 | \$ 245,968 | \$ 873,449 | \$ 1,642,327 | \$ - | \$ - | \$ 1,642,327 |
| 14 | 2033 | \$ 764,256 | \$ 100,902 | \$ 486,218 | \$ 1,351,376 | \$ - | \$ - | \$ 1,351,376 |
| 15 | 2034 | \$ 616,265 | \$ 229,941 | \$ 99,082 | \$ 945,288 | \$ - | \$ - | \$ 945,288 |
| Grand Total | | \$ 14,346,806 | \$ 6,560,074 | \$ 14,670,254 | \$ 35,577,135 | \$ 275,655 | \$ 275,655 | \$ 35,852,790 |
| Ten Year Total | | \$ 10,492,874 | \$ 5,105,525 | \$ 12,413,894 | \$ 28,012,293 | \$ 275,655 | \$ 275,655 | \$ 28,287,949 |

Table 9.10 - Annual Capital Improvement Budget with Cost Loading - SMWD

| Year | Fiscal Year | PC 02 | | | PC 02 Total | PC 05 | PC 05 Total | Grand Total |
|-----------------------|-------------|---------------------|---------------------|----------------------|----------------------|---------------------|---------------------|----------------------|
| | | Liquids | Common | Solids | | | | |
| 1 | 2020 | \$ 730,766 | \$ 271,529 | \$ 1,441,826 | \$ 2,444,120 | \$ 33,564 | \$ 33,564 | \$ 2,477,684 |
| 2 | 2021 | \$ 855,829 | \$ 289,528 | \$ 1,537,949 | \$ 2,683,306 | \$ 240,293 | \$ 240,293 | \$ 2,923,600 |
| 3 | 2022 | \$ 259,066 | \$ 73,821 | \$ 389,872 | \$ 722,759 | \$ - | \$ - | \$ 722,759 |
| 4 | 2023 | \$ 714,868 | \$ 107,187 | \$ 717,575 | \$ 1,539,629 | \$ 66,158 | \$ 66,158 | \$ 1,605,787 |
| 5 | 2024 | \$ 924,919 | \$ 94,292 | \$ 686,007 | \$ 1,705,218 | \$ 17,284 | \$ 17,284 | \$ 1,722,502 |
| 6 | 2025 | \$ 594,251 | \$ 439,617 | \$ 695,033 | \$ 1,728,902 | \$ 38,742 | \$ 38,742 | \$ 1,767,644 |
| 7 | 2026 | \$ 615,809 | \$ 941,528 | \$ 1,166,685 | \$ 2,724,022 | \$ 35,757 | \$ 35,757 | \$ 2,759,779 |
| 8 | 2027 | \$ 583,462 | \$ 715,032 | \$ 1,846,843 | \$ 3,145,337 | \$ 226,230 | \$ 226,230 | \$ 3,371,567 |
| 9 | 2028 | \$ 274,978 | \$ 435,261 | \$ 2,098,210 | \$ 2,808,449 | \$ 444,593 | \$ 444,593 | \$ 3,253,042 |
| 10 | 2029 | \$ 348,294 | \$ 470,520 | \$ 1,162,873 | \$ 1,981,686 | \$ - | \$ - | \$ 1,981,686 |
| 11 | 2030 | \$ 642,234 | \$ 365,829 | \$ 227,615 | \$ 1,235,677 | \$ - | \$ - | \$ 1,235,677 |
| 12 | 2031 | \$ 454,923 | \$ 294,051 | \$ 526,883 | \$ 1,275,857 | \$ - | \$ - | \$ 1,275,857 |
| 13 | 2032 | \$ 294,137 | \$ 184,918 | \$ 826,235 | \$ 1,305,290 | \$ - | \$ - | \$ 1,305,290 |
| 14 | 2033 | \$ 429,894 | \$ 75,857 | \$ 459,936 | \$ 965,687 | \$ - | \$ - | \$ 965,687 |
| 15 | 2034 | \$ 346,649 | \$ 172,869 | \$ 93,726 | \$ 613,244 | \$ - | \$ - | \$ 613,244 |
| Grand Total | | \$ 8,070,078 | \$ 4,931,838 | \$ 13,877,268 | \$ 26,879,184 | \$ 1,102,622 | \$ 1,102,622 | \$ 27,981,806 |
| Ten Year Total | | \$ 5,902,241 | \$ 3,838,314 | \$ 11,742,873 | \$ 21,483,429 | \$ 1,102,622 | \$ 1,102,622 | \$ 22,586,050 |

Table 9.11 - Annual Capital Improvement Budget with Cost Loading - SCWD

| Year | Fiscal Year | PC 02 | | | PC 02 Total | PC 05 | PC 05 Total | PC 15 | | PC 15 Total | PC 17 | | | | PC 17 Total | PC 24 | PC 24 Total | Grand Total |
|----------------|-------------|---------------|--------------|--------------|---------------|------------|-------------|---------------|--------------|---------------|---------|--------------|--------------|------|--------------|--------------|--------------|-----------------|
| | | Liquids | Common | Solids | | | | Liquids | AWT | | Liquids | Common | Solids | AWT | | | | |
| 1 | 2020 | \$ 1,217,943 | \$ 290,310 | \$ 1,016,144 | \$ 2,524,397 | \$ 9,444 | \$ 9,444 | \$ 3,678,016 | \$ 40,000 | \$ 3,718,016 | \$ - | \$ 23,686 | \$ 176,884 | \$ - | \$ 200,570 | \$ 13,080 | \$ 13,080 | \$ 6,465,506.55 |
| 2 | 2021 | \$ 1,426,381 | \$ 309,554 | \$ 1,083,888 | \$ 2,819,824 | \$ 67,610 | \$ 67,610 | \$ 2,390,787 | \$ - | \$ 2,390,787 | \$ - | \$ 65,510 | \$ 38,532 | \$ - | \$ 104,041 | \$ 6,242 | \$ 6,242 | \$ 5,388,503.58 |
| 3 | 2022 | \$ 431,776 | \$ 78,927 | \$ 274,767 | \$ 785,471 | \$ - | \$ - | \$ 509,576 | \$ 67,080 | \$ 576,656 | \$ - | \$ 42,303 | \$ 89,450 | \$ - | \$ 131,753 | \$ - | \$ - | \$ 1,493,879.30 |
| 4 | 2023 | \$ 1,191,447 | \$ 114,601 | \$ 505,719 | \$ 1,811,767 | \$ 18,614 | \$ 18,614 | \$ 822,252 | \$ 69,227 | \$ 891,479 | \$ - | \$ 88,748 | \$ 176,077 | \$ - | \$ 264,825 | \$ 8,243 | \$ 8,243 | \$ 2,994,927.39 |
| 5 | 2024 | \$ 1,541,532 | \$ 100,814 | \$ 483,471 | \$ 2,125,817 | \$ 4,863 | \$ 4,863 | \$ 831,460 | \$ 71,442 | \$ 902,902 | \$ - | \$ 151,567 | \$ 98,169 | \$ - | \$ 249,736 | \$ - | \$ - | \$ 3,283,318.18 |
| 6 | 2025 | \$ 990,419 | \$ 470,025 | \$ 489,833 | \$ 1,950,277 | \$ 10,901 | \$ 10,901 | \$ 894,718 | \$ 136,726 | \$ 1,031,444 | \$ - | \$ 169,476 | \$ 398,054 | \$ - | \$ 567,530 | \$ 10,652 | \$ 10,652 | \$ 3,570,804.00 |
| 7 | 2026 | \$ 1,026,349 | \$ 1,006,653 | \$ 822,235 | \$ 2,855,237 | \$ 10,061 | \$ 10,061 | \$ 921,891 | \$ 202,083 | \$ 1,123,974 | \$ - | \$ 131,772 | \$ 772,882 | \$ - | \$ 904,653 | \$ 10,727 | \$ 10,727 | \$ 4,904,652.25 |
| 8 | 2027 | \$ 972,436 | \$ 764,491 | \$ 1,301,585 | \$ 3,038,511 | \$ 63,653 | \$ 63,653 | \$ 1,119,084 | \$ 529,998 | \$ 1,649,082 | \$ - | \$ 155,345 | \$ 427,190 | \$ - | \$ 582,534 | \$ 36,490 | \$ 36,490 | \$ 5,370,270.46 |
| 9 | 2028 | \$ 458,296 | \$ 465,368 | \$ 1,478,738 | \$ 2,402,402 | \$ 125,092 | \$ 125,092 | \$ 834,629 | \$ 857,991 | \$ 1,692,620 | \$ - | \$ 166,675 | \$ 99,534 | \$ - | \$ 266,208 | \$ 36,415 | \$ 36,415 | \$ 4,522,738.06 |
| 10 | 2029 | \$ 580,489 | \$ 503,066 | \$ 819,548 | \$ 1,903,103 | \$ - | \$ - | \$ 1,320,949 | \$ 472,106 | \$ 1,793,055 | \$ - | \$ 127,299 | \$ 132,174 | \$ - | \$ 259,474 | \$ 97,204 | \$ 97,204 | \$ 4,052,836.32 |
| 11 | 2030 | \$ 1,070,390 | \$ 391,133 | \$ 160,414 | \$ 1,621,937 | \$ - | \$ - | \$ 1,579,464 | \$ 888,806 | \$ 2,468,270 | \$ - | \$ 117,644 | \$ 89,884 | \$ - | \$ 207,528 | \$ 97,204 | \$ 97,204 | \$ 4,394,938.71 |
| 12 | 2031 | \$ 758,205 | \$ 314,391 | \$ 371,327 | \$ 1,443,923 | \$ - | \$ - | \$ 1,337,504 | \$ 1,694,069 | \$ 3,031,573 | \$ - | \$ 60,358 | \$ 528,518 | \$ - | \$ 588,877 | \$ 777,633 | \$ 777,633 | \$ 5,842,005.46 |
| 13 | 2032 | \$ 490,228 | \$ 197,709 | \$ 582,299 | \$ 1,270,236 | \$ - | \$ - | \$ 1,073,415 | \$ 894,417 | \$ 1,967,833 | \$ - | \$ 12,066 | \$ 1,027,290 | \$ - | \$ 1,039,356 | \$ - | \$ - | \$ 4,277,424.04 |
| 14 | 2033 | \$ 716,490 | \$ 81,105 | \$ 324,145 | \$ 1,121,740 | \$ - | \$ - | \$ 1,262,528 | \$ 94,857 | \$ 1,357,385 | \$ - | \$ 12,452 | \$ 564,294 | \$ - | \$ 576,745 | \$ - | \$ - | \$ 3,055,870.49 |
| 15 | 2034 | \$ 577,748 | \$ 184,826 | \$ 66,055 | \$ 828,629 | \$ - | \$ - | \$ 1,504,921 | \$ 201,702 | \$ 1,706,623 | \$ - | \$ 59,926 | \$ 57,491 | \$ - | \$ 117,417 | \$ 4,657 | \$ 4,657 | \$ 2,657,326.12 |
| Grand Total | | \$ 13,450,130 | \$ 5,272,971 | \$ 9,780,170 | \$ 28,503,271 | \$ 310,237 | \$ 310,237 | \$ 20,081,195 | \$ 6,220,503 | \$ 26,301,698 | \$ - | \$ 1,384,826 | \$ 4,676,422 | \$ - | \$ 6,061,247 | \$ 1,098,548 | \$ 1,098,548 | \$ 62,275,001 |
| Ten Year Total | | \$ 9,837,069 | \$ 4,103,808 | \$ 8,275,930 | \$ 22,216,807 | \$ 310,237 | \$ 310,237 | \$ 13,323,362 | \$ 2,446,652 | \$ 15,770,014 | \$ - | \$ 1,122,380 | \$ 2,408,945 | \$ - | \$ 3,531,325 | \$ 219,054 | \$ 219,054 | \$ 42,047,436 |

Appendix A
Cost Escalation Analysis



South Orange County Wastewater Authority

COST ESCALATION ANALYSIS

2019 UPDATE

Technical Memorandum

July 2019

Summary and Results

Background

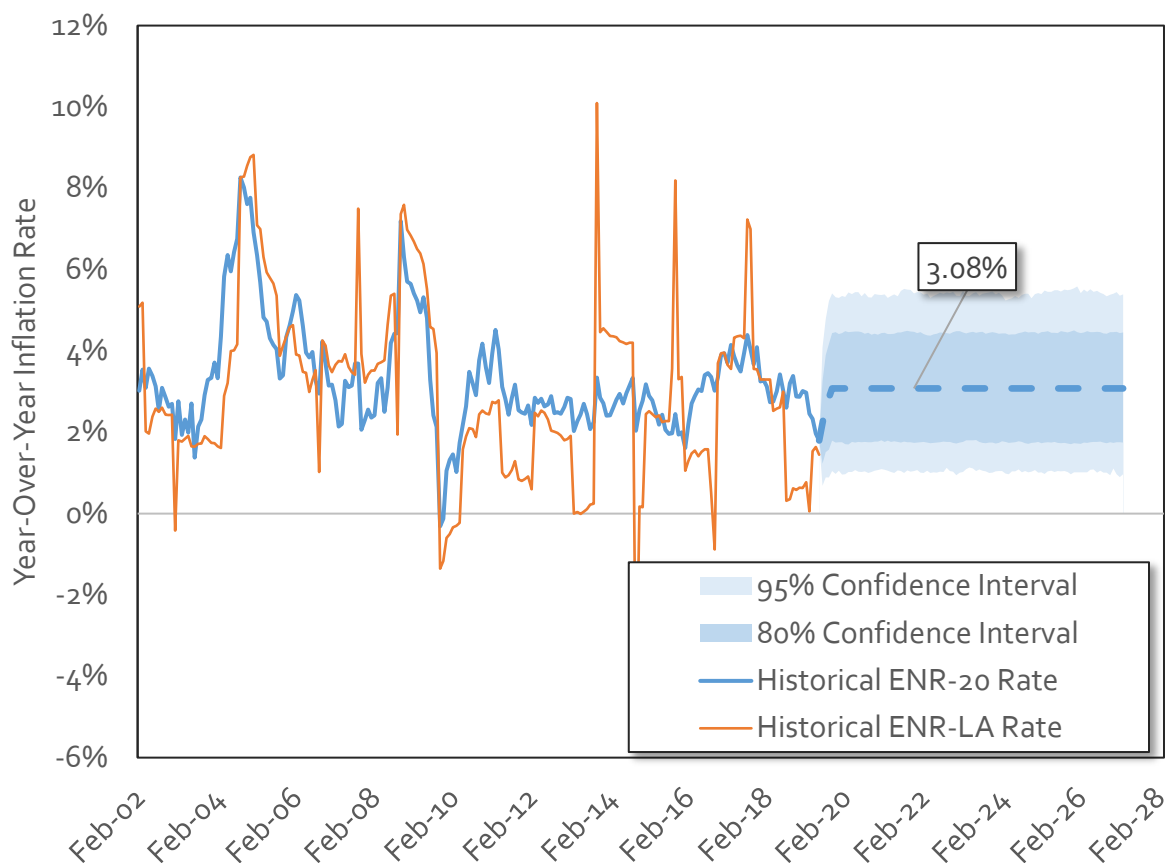
In 2017, South Orange County Wastewater Authority (SOCWA) retained Carollo Engineers, Inc. (Carollo) to analyze the cost escalation factors available for SOCWA to forecast operational and capital costs. This technical memorandum updates that analysis based on the latest data available as of June 2019 and provides revised recommendations of inflation factors for SOCWA to use going forward.

Results and Recommendations

Over the past two decades, the nationwide average of construction cost indices has shown a median of 2.8 percent year-over-year growth, and a mean of 3.1 percent. From 1997 to 2017, the compound annual growth rate (CAGR) for this index was 3.2 percent. This was unchanged when including data through June 2019.

Year-over-year escalation has consistently returned to approximately 3 percent, with the inflation rate falling between 2 and 4 percent during nearly 70 percent of all months in the past twenty years. Forecasting models of both this benchmark cost value and the escalation rate of this value, resulted in 3.1 percent annual escalation, as shown in Figure 1. This forecast is unchanged when including data through June 2019.

Figure 1 Historical and Forecasted Inflation Rates



Cost forecasting also requires the application of conservative assumptions to safeguard against improper budgeting. For example, should actual cost escalation outpace assumed escalation, the utility could fail to achieve positive cash flows and would thus be unable to implement its capital program. **Therefore, it is recommended that annual cost forecasts continue to utilize a minimum of 3.2 percent based on the CAGR of inflation observed since 1997.** This measure is the highest of the average measures calculated here, both historical and forecasted. Given that this figure exceeded historical year-over-year growth rates 64 percent of the time, it would have covered the majority of actual escalation scenarios over the past two decades.

Historical Inflation Analysis

Escalation Indices

Carollo's analysis commenced with a review of the last several decades of cost escalation data, utilizing a number of benchmarks available. Carollo collected available cost inflation data from two sources.

ENR

Engineering News-Record publishes a **Construction Cost Index (ENR-CCI)** each month for a list of twenty major U.S. cities. For many cost analyses, the ENR-CCI for the metropolitan area is appropriate. However, if none of the twenty cities apply to a specific utility, the 20-city average is best to use (ENR-20). Los Angeles (ENR-LA) is the nearest city to SOCWA in the 20-city index, approximately 50 miles north. This index will likely track closely with SOCWA's cost drivers, but given the single data point of LA cost data, this analysis looks at both the LA index and the 20-city average.

Local costs are driven by a handful of factors, 80% of which is a labor estimate, followed by lumber, Portland cement, and structural steel. ENR gets quotes from various suppliers in each market and calculates their index. A labor increase as a result of a new union deal or some other localized cause that results in a significant step change to one of these four components will cause more volatility to a local index than a the 20-cities average. For those reasons, the 20-city average can help smooth out fluctuations based on localized factors.

CPI

The U.S. Bureau of Labor Statistics publishes a monthly **Consumer Price Index (CPI)** specific to water, sewer, and trash collection for urban areas. The CPI tracks "changes in prices paid by urban consumers for a representative basket of goods and services."¹ Water, sewer, and trash collection services is one of the services that figures into the calculation of the CPI.

The Water, Sewer, and Trash CPI tracks consumer prices—the actual rates and fees assessed by service providers. This often can correlate with utility cost changes, but it does not have to. Deferred maintenance and bond funded capital are two factors that can inflate the CPI above a typical cost escalation for capital projects. The capital costs increase, but utilities may not immediately pass these increases on to consumers. This comes at the cost of greater increases later. While this measure does not track construction or capital costs and measures the change in retail water and sewer service, it may still serve as a useful comparison to show the overall trend in costs over time. It is also helpful when considering rate increases and customer bill

¹ "Consumer Price Index", US Department of Labor, Bureau of Labor Statistics. <https://www.bls.gov/cpi/>

impact. The CPI is available at both national and regional scales; the national water and sewer CPI was utilized for this analysis

Historical Analysis and Discussion

Cumulative Escalation

Carollo compiled twenty years of data for each of these three indices. Looking at the growth of each of these indices (Figure 2), the water and sewer national CPI has substantially outpaced the two ENR indices, particularly over the past decade (likely as most agencies have increased their rates to fund capital replacement). The CPI has increased by 120 percent since January 1999, while the LA and 20-city average ENR indices have increased by approximately 69 and 71 percent, respectively.

These indices are outlined in Table 1. The compound annual growth rate for each of these indices in the original 2017 analysis was 2.9, 3.2, and 4.4 percent for the ENR-LA, ENR-20, and CPI, respectively. These figures have decreased slightly once including data through June 2019, falling to 2.8, 3.1, and 4.2 percent, respectively.

Figure 2

Historical Escalation Benchmark Values

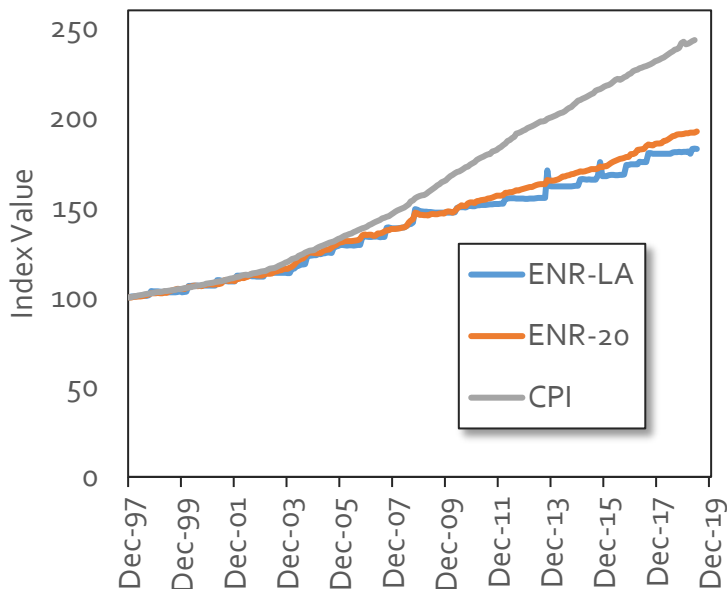


Table 1 Summary of Historical Escalation Rates for Three Major Indices

| | ENR-LA | ENR-20 | CPI |
|--|--------|--------|------|
| Min | -5.1% | -0.3% | 1.9% |
| First Quartile | 1.6% | 2.3% | 3.2% |
| Median | 2.5% | 2.8% | 4.5% |
| Third Quartile | 3.9% | 3.5% | 5.3% |
| Max | 10.1% | 8.3% | 6.8% |
| Standard Deviation | 2.1% | 1.3% | 1.2% |
| Notes: | | | |
| (1) Calculated from monthly year-over-year escalation rates for each index, from December 1997 to March 2017. | | | |
| (2) Year-over-year escalation is measured as the percent change between a given month, and that same month in the prior year (i.e. April 2017 compared with April 2016). | | | |

Year-over-Year Escalation

These indices are useful for observing the year-over-year trend in cost—comparing a given month’s costs with cost’s in the same month in the prior year. Carollo reviewed the year-over-year escalation for each month of the available data, and found that the median value for ENR-LA, ENR-20, and CPI to be 2.5, 2.8, and 4.5 percent, respectively. CPI fell slightly once including 2019 data, from 4.7 percent in 2017. The ENR-LA and ENR-20 were unchanged in this update.

Discussion

Comparing the three indices, CPI is consistently higher by most measures reviewed. The median year-over-year inflation rate during the period of review is nearly twice as high as both ENR measures. Based on a review of the historical growth under each indices, the CPI factor appears to have a higher growth rate over the past decade compared with the first decade of the analysis. Looking at the histograms shown in Figure 5, this index appears to have a distribution that is almost bimodal, suggesting that there may be two distinct historical trends.

While it is the lowest of the three indices, the ENR-LA index is the most volatile, with a standard deviation of 2.1 percent. Additionally, ENR-LA has the largest range of the three measures, with the greatest maximum rate (10.1 percent) and the lowest minimum rate (-5.1 percent).

Given the volatility of the ENR-LA and the higher escalation of the CPI, the ENR-20 may be the best rate for benchmarking escalation rates, regardless of location. Looking again at the histograms for each index, this index is rather closely clustered between 2 and 4 percent, in contrast with the ENR-LA, which has longer tails and therefore greater variance, and CPI, which has a less well-defined measure of central tendency, aside from tracking consumer prices rather than producer/utility costs.

Another consideration that supports the use of the ENR-20 is the comparison of historical growth between this index and the ENR-LA. Figure 2 above shows the growth of a baseline value of 100 under each index, and Figure 1 also shows the year-over-year rate for ENR-LA. Notably, both ENR-LA and ENR-20 approach the same ending value, but the trend line of the ENR-LA displays a number of spikes. Therefore, the ENR-20 is a valuable benchmark because it tends to smooth out local and regional cost drivers that impact city-specific ENR figures. These local-level cost impacts could be short-lived, and driven by forces such as weather or labor disputes, things that cannot be reasonably predicted.

Additionally, SOCWA is approximately 50 miles to the south of Los Angeles. While the region will largely be driven by costs in LA, it could be far enough from the city to have its own independent cost drivers. Furthermore, SOCWA is approximately 75 miles from the City of San Diego, and 20 miles from San Diego County. Cost drivers from this major metropolitan area could also impact SOCWA’s costs (ENR does not produce an index for San Diego). As a result, the national ENR figure is recommended to adjust for these geographic factors and the apparent volatility shown by ENR-LA.

Figure 3 Distribution of Year-Over-Year Escalation Rates for Three Major Indices

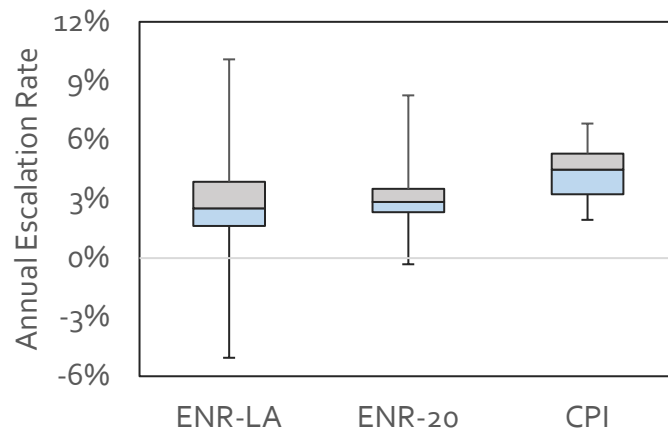
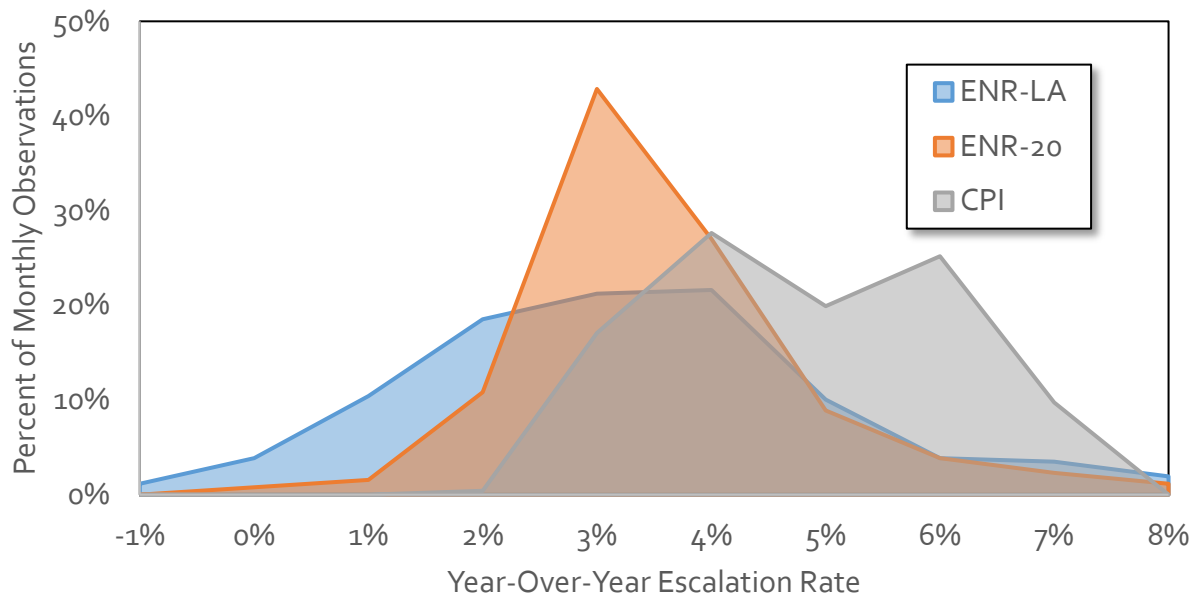


Figure 4 Comparative Histograms for Three Major Indices



Forecasting Cost Escalation Rates

Predicting cost escalation brings uncertainty, particularly as projections go beyond five and ten years. At these time scales, the range of potential outcomes substantially increases due to the array of permutations as time goes on. For this reason, when developing a forecast model, it is just as important to look at the confidence intervals of the predicted value as the predicted value itself.

Model Selection and Methodology

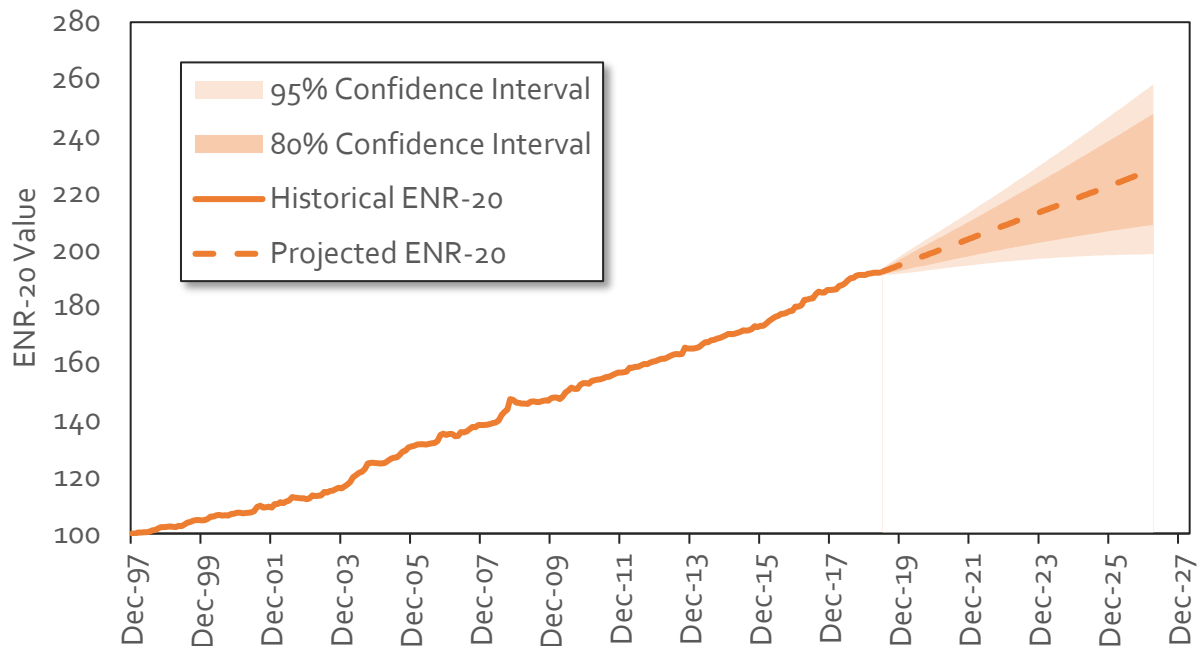
This analysis utilized both Holt-Winters and autoregressive integrated moving average (ARIMA) forecasting models to estimate future cost escalation. The Holt-Winters model is a triple-exponential smoothing method that looks at both seasonality of a measure, and a weighted moving average, with greater weight placed on recent values than “older” values. Similarly, the ARIMA model uses moving average approach, but also allows greater parameter selection for lagged terms. For these reasons, the Holt-Winters model was used for the growth of a baseline value into the future, and the ARIMA model was used for estimating future year-over-year escalation rates.

Results and Discussion

Forecasting ENR Values

The Holt-Winters model was used to forecast the ENR-20 value ten years into the future. This forecast is shown in Figure 6. Taking the forecasted values and calculating a year-over-year escalation rate, the median escalation rate is 2.8 percent. The median year-over-year rate for the upper and lower 95 percent confidence intervals is 3.4 and 0.5 percent, respectively. This is a decrease from the 2017 analysis that placed the 95 percent confidence interval between 0.8 and 4.3 percent.

Figure 5 Historical and Forecasted ENR-20 Values



Forecasting ENR Escalation Rates

Forecasting the escalation rate is an alternative approach to forecasting the benchmark index itself. Using the year-over-year growth rates of the ENR-20 for the past two decades, and developing an ARIMA forecasting model, this analysis estimates the mean escalation rate going forward to 3.1 percent annually, with the upper- and lower-95 percent confidence intervals at 1.0 and 5.4 percent annually. The forecast is shown in Figure 1.

Discussion

While both of these two forecasting approaches converged at approximately 3 percent, the bounds of these forecasts differ significantly. This is due in large part to the higher variance exhibited by the escalation rate used in the ARIMA model, as shown in Figure 1. This variance will increase the potential errors (which in turn impacts the confidence intervals) assumed by the model, and shows a broader range of likely escalation rates. However, given that both of these models converge upon approximately 3 percent at the mean, this supports the recommendation of 3.2 percent annually based on the CAGR of the past twenty years. This trend is unchanged given the additional data from 2017 to 2019, despite a modest decrease in year-over-year inflation rates in that time.

When forecasting costs, underestimating inflation has more negative impacts for a utility than overestimating. For this reason, the highest of the historical and forecasted inflation rates is recommended. Taking this conservative approach and using a slightly higher inflation rate could cover more potential scenarios, while still being based on a reasonable methodology.

Appendix B
J.B. Latham Treatment Plant Ten Year Plan

BACKGROUND

The J. B. Latham Treatment Plant is a conventional activated sludge treatment plant with a secondary treatment design capacity of 13 mgd. The liquid handling portion of the treatment plant is normally operated as two separate plants referred to as Plant No.1 (the 9 mgd or East side) and Plant No.2 (the 4 mgd or West side). The main wastewater treatment processes are screening, aerated grit removal, primary sedimentation, activated sludge aeration and secondary sedimentation. The plant has sodium hypochlorite feed facilities that are used in-plant biological control and disinfection of the non-potable plant water (however, the main effluent discharge from the plant is not chlorinated).

All of the secondary treated effluent is discharged into the San Juan Creek Ocean Outfall. The effluent typically flows through the outfall under gravity; under certain flow and tide conditions the effluent is pumped through the outfall.

Solids treatment at the Latham Treatment Plant consists of dissolved air flotation thickening, anaerobic digestion and mechanical dewatering. Dewatered solids are removed from the facility by plant staff to the County of Orange Prima Deshecha Landfill or by a private contractor to a composting facility. Screenings and grit are transported by a private contractor to a sanitary landfill.

FACILITY HISTORY

The first portion of the modern J. B. Latham Treatment Plant was constructed in 1964 as a 1 mgd secondary

treatment plant with aerobic digestion and solar drying in sludge beds. The project was subsequently expanded and modified. Key projects at the plant included the following:

- 1971: The plant was expanded to 6 mgd. The first two anaerobic digesters were constructed. Centrifuges were installed outdoors for solids dewatering.
- 1974: Plant expanded to 9 mgd. Third and fourth digesters constructed. Dissolved air flotation system added.
- 1978: Plant No.2 (4mgd) plant constructed.
- 1985: Energy Recovery Building constructed to house dewatering equipment, sludge-hauling truck loading bay, cogeneration equipment and maintenance shop. Centrifuges replaced with belt filter presses that are installed in the Energy Recovery Building.
- 1989: Aeration blower driven by digester gas powered engine installed in the Energy Recovery Building.
- 1991: Digester system piping revamped to match system at the Regional Treatment Plant.
- 1992: Operations Building constructed on parcel adjacent to the J. B. Latham Treatment site.
- 1992: New effluent pump station constructed.

- 1998: First centrifuge and solids conveyor system installed in the Energy Recovery Building through a design-build project.
- 1998: Existing headworks equipment was enclosed by constructing two new structures. Odor control systems upgraded with chemical scrubber.
- 2001: Expansion of the Operations Building completed. Administration staff relocated to the newly expanded facility.
- 2003: Construction completed on the modification of the Energy Recovery Building that included the replacement of the last two belt filter presses with centrifuges.
- 2005: Plant SCADA system upgrade completed.
- 2006: Rehabilitation of Digesters No. 1 and No.2 completed.
- 2008: Conversion of chlorine handling to a sodium hypochlorite feed system.
- 2010: Construction of Plant No.1 Electrical Building (prefabricated) and replacement of Plant No.1 switchgear.
- 2012: Rehabilitation of Digester No.3 and retrofit of Plant No.2 headworks.
- 2017: Package 'A/C' Improvements completed including installation of new aeration system, upgrade of Plant No.2 secondary sedimentation basins, installation of new co-generation system, rebuilding of electrical gear in

Plant No.2 Blower Building, construction of new Plant No.2 Electrical Building, and replacement of the Plant No.2 switchgear.

FACILITY OWNERSHIP

The J. B. Latham Treatment Plant is owned and operated by SOCWA on behalf of four member agencies:

- Moulton Niguel Water District
- City of San Juan Capistrano
- Santa Margarita Water District
- South Coast Water District

The collective group within SOCWA that owns capacity in the J. B. Latham Treatment Plant is called Project Committee 2. The percentage of ownership held by each of the agencies is shown in Table B.1.

Table B.1
Current Percent Ownership at the J. B. Latham Treatment Plant

| | % Liquids | % Common | % Solids |
|--------------------------------|-----------|----------|----------|
| Moulton Niguel Water District | 23.08% | 22.35% | 21.62% |
| City of San Juan Capistrano | 30.77% | 30.38% | 30.00% |
| Santa Margarita Water District | 17.31% | 22.85% | 28.38% |
| South Coast Water District | 28.84% | 24.42% | 20.00% |
| Total | 100.00% | 100.00% | 100.00% |

CAPACITY UTILIZATION

The J. B. Latham Treatment Plant (JBLTP) has a capacity of 13 million gallons per day (mgd). The plant operates far below that capacity. Flows have steadily decreased over time as a function of both water conservation and upstream water reclamation. Plant 1 flows have dropped from an average 7.5 mgd in 2014 to 4.7 mgd in 2018. Plant 2 flows have decreased from an average 1.4 mgd in 2014 to 1.1 mgd in 2018. Decreased plant utilization may have an impact on capital investment. Over the recent years the SOCWA Operations staff has been periodically able to operate the JBLTP while using only Plant 1. This would suggest a future approach where either Plant 2 is abandoned (or portions of Plant 1 and Plant 2 are abandoned). This would both decrease the capital investment for

rehabilitation of existing facilities and increase space for other uses. Spatial restrictions at the JBLTP impact both potential future water reclamation and modified solids handling.

There are two factors that require the maintenance of the existing capacity at the JBLTP:

- The periodic shutdown of upstream water reclamation plants during which sewage flows are sent downstream to the Latham Plant.
- Peak wet weather events which appear to exceed the original design criteria for the treatment plant.

As part of the planning for the Package 'B' Facilities Improvements, SOCWA retained Carollo Engineers to perform both process and hydraulic modeling to further evaluate utilization of the JBLTP capacity.

PROCESS MODELING

Process modeling done for the Package 'B' Facilities Improvements Project was done with a goal of identifying the number of basins needed under different operating scenarios. Four flow scenarios were considered:

- Current Operating Flow: 8.4 mgd (based on flows at the time of the modeling in 2016).
- Reduced Operating Flow: 6.2 mgd based on 6 mgd extended operation at Plant 3A (assuming a future expansion of Plant 3A).

- Increased Flow: 12.2 mgd based on bypass of upstream Oso and Plant 3A plants.
- Plant Capacity: 13 mgd.

The two latter scenarios are considered effectively the same. The process modeling was also performed for three treatment scenarios:

- Carbonaceous biochemical oxygen demand (CBOD) only, current mixed liquor suspended solids (MLSS), no enhanced primary treatment (EPT).
- CBOD only, increased MLSS, no EPT.
- CBOD only, current MLSS, include EPT.

The scenarios for increased mixed liquor suspended solids and enhanced primary treatment were not utilized in the development of the current version of the Ten Year Plan.

The current Ten Year Plan focuses on the existing scenario with the treatment scheme of carbonaceous biochemical oxygen demand only, current mixed liquor suspended solids concentration, and no enhanced primary treatment (EPT). Plant 1 can be expected to handle the influent flow effectively at a plant flow rate of 6.2 mgd as shown in Figure B.1. Plant 1 could also handle the loadings at 8.5 mgd although there would be no spare basins available to allow periodic maintenance or failures. These issues underpinned the development of the Package 'B' Facility Improvements Project which largely focuses on improvements to the Plant 1 basins with only limited improvements for Plant 2.

HYDRAULIC MODELING

Figure B.2 shows the current flow pattern through the treatment plant. A limited hydraulic model was prepared for the Package 'B' Facility Improvements project. The Excel-based model looked at the hydraulic profile from the primary influent channel to the chlorine contact basins. The model was run for multiple conditions including a peak storm event with a flow of 29.9 mgd. The 29.9 mgd flow value was based on the plant capacity multiplied by a peak factor of 2.3. This model was initially run to match the existing situation where it is not possible to control the flow split between Plant 1 and Plant 2. The model predicted 23 mgd flowing into Plant 1 with the following results:

- Hydraulic level exceeds the top of concrete in Plant 1.
- Weirs submerged and less than 6 inches of freeboard in Plant 2.

Another model scenario was conducted with the ability to control the split of the flow between Plant 1 and Plant 2. This model run showed a uniform condition across Plants 1 and 2:

- Weirs submerged and less than 6 inches of freeboard in Plants 1 and 2.

This modeling indicates the importance of implementing the Bypass Control Project in the Ten Year Plan (Project 2052). The hydraulic modeling also identified a potential bottleneck at the Plant 1 secondary effluent pipe.

After the completion of the Package 'B' planning effort the Latham Plant was subjected to a series of storm events during the winter of 2017. Flow into the treatment plant reach levels of approximately 35 mgd (effluent flow metering is uncertain at these levels). Those storm events were marked by the following conditions in the treatment plant:

- Weirs submerged and less than 6 inches of freeboard in Plant 1 (at points the water level came close to overtopping the basins).
- The capacity in Plant 2 was underutilized.

There are ongoing discussions between SOCWA and the member agencies regarding the source of the high wet weather peak flows. Based on the 2017 storm event it appears that SOCWA may not have the option of removing basins from long term operation. The evaluation of basin utilization will be expanded as part of the Hydraulic Modeling and Peak Flow Management Plan in the Ten Year Plan (Project 2103).

WET WEATHER EVENTS

The intensity of peak wet weather events over the past ten years has increased. SOCWA facilities have experience significant winter storm events in 2010, 2017, and 2019. The ratio of peak flow to average daily flow during a ten-year period during these events has ranged between 4:1 to 5:1 (the accuracy of these estimates are limited by the plant flow metering capability) over a three hour period.

The current version of the Ten Year Plan includes relatively few improvements related to the handling of the peak wet weather flow events at the JBLTP. The general approach of SOCWA and its member agencies is to evaluate ways of limiting storm flows within the member agency collection systems. When those options have been exhausted there will be additional planning to determine in-plant improvements to handle storm events.

BASIN IMPROVEMENTS

The hydraulic and process modeling indicate that the number of basins needed for operation is controlled by the hydraulic requirements of peak wet weather events. Without some modification of flow events, the Package 'D' Improvements will need to complete the basin upgrades begun in Packages 'A/C' and 'B'. Alternative approaches to equipping the Plant 2 basins was addressed in the Package 'B' planning work. These issues are to be reviewed as part of the Hydraulic Modeling and Peak Flow Management Plan project prior to embarking on the Package 'D' Facility Improvements design.

PROJECT COMMITTEE 2 AGREEMENT

The fifty year term of the Project Committee (PC) 2 agreement expires in 2023. That expiration date falls within the fifteen-year planning span used in this document. Both the Moulton Niguel Water District (MNWD) and the Santa Margarita Water District (SMWD) are reviewing their need for capacity within the Latham Plant. The development of

Facility Improvements Package 'D' and subsequent projects depends on the changed ownership that may result from the negotiation of the new PC 2 agreement. As identified in the prior sections the modified agreement should address wet weather capacity.

WATER RECLAMATION STUDIES PRIOR TO 2010

The SOCWA J. B. Latham Treatment is the only one of the three SOCWA treatment plants that does not have water reclamation capability. There have been several aborted attempts to develop Title 22 water recycling in the past. These plans largely focused on the potential utilization of recycled water within the City of San Juan Capistrano. Past evaluations included a study prepared by CGvL Engineers in 2000. This effort focused on the development of facilities similar to the tertiary treatment processes at the Regional and Coastal Treatment Plants. Plan development was stopped due to the anticipated cost of the recycled water.

In 2006, CH2M HILL performed a study on technologies for advanced water treatment (AWT) and evaluated membrane bioreactors, cloth media filters, and pressurized membrane filters as potential technologies for producing Title 22 effluent. Both cloth media filtration and pressurized membrane filters were further evaluated due to similar cost and relatively small footprint. This study noted that little information existed at the time on how cloth media filters would perform at a facility operating under non-nitrifying solids retention times (SRTs). Subsequently, CH2MHILL recommended that pilot testing of cloth media and pressurized membrane

filters be done at JBLTP.

Pilot tests were performed in 2008 and showed definitively that cloth media filters did not perform well at JBLTP. However, pressurized membranes worked well during pilot testing, which led to a second technical memo where CH2MHILL updated their 2006 study based on pilot testing results. This 2009 memo further investigated the feasibility of producing Title 22 effluent with pressurized membrane filters (microfiltration) with low-pressure, high-intensity ultraviolet (UV) disinfection. This effort was eventually ended due to projected costs.

SALINITY

Studies conducted prior to 2010 did not address the high total dissolved solids (TDS) in JBLTP's secondary effluent. Plant 1 typically produces secondary effluent with 1,000 mg/L to 1,100 mg/L TDS, and Plant 2 normally produces 2,000 mg/L TDS. A non-potable effluent level of 900 mg/L TDS is considered to be an appropriate goal for SOCWA. This goal necessitates the use of microfiltration /ultrafiltration (MF/UF) with side-stream reverse osmosis (RO) to reduce overall TDS in Title 22 effluent to 900 mg/L.

PACKAGE 'B' PLANNING FOR REUSE

A study on effluent management was prepared in 2017 by Carollo Engineers as part of the plant development for the Package 'B' Facility Improvements project. It was not

anticipated that Package 'B' would include any improvements related to water recycling. However, planning for a future AWT was performed to determine the spatial and process issues that might have an impact on the Package 'B' Facility Improvements Project (or subsequent rehabilitation projects). The planning effort considered different options for providing Title 22 quality effluent for non-potable reuse and direct potable reuse (DPR). Indirect potable reuse was not considered due to the lack of groundwater recharge basins or surface water basins in the area.

TITLE 22 RECYCLING ALTERNATIVES

The Latham Plant site is very limited on space which greatly limits options for implementation of an Advanced water Treatment (AWT) facility. The Package 'B' planning effort considered the following options:

- Plant operating at 13 mgd (full capacity).
- Plant operating at 8.4 mgd (plant operating rate at time of Package 'B' study).
- Plant operating at 6.2 mgd (plant operating with more upstream diversions to Plant 3A).

Based on the CH2MHill study for the AWT and on the needed TDS reduction, the evaluation of the Title 22 effluent process focused on pressurized membrane filtration (MF/UF) in combination with UV disinfection. This approach would also reverse osmosis for a portion of the side stream. A schematic of this treatment

stream is present in Figure B.3.

The site plan presented in Figure B.4 shows the spatial requirements for a facility that could produce 6.2 mgd of Title 22 treatment effluent. This scenario is based on maximum utilization of Plant 3A (or other upstream water reclamation facilities). This scenario was favored in that only one of the existing basins is used for the AWT. One aeration basin is retrofit with MF/UF equipment. This approach provides the maximum flexibility in utilizing the existing basins for the handling of wet weather events or the temporary shutdowns of upstream water reclamation facilities. This approach does have three shortcomings:

- Engineering trailer eliminated; requires relocation of staff.
- Significant construction along the south side of the treatment plan adjacent to the new development.
- Facility construction may impact utilization of site by sludge trucks.

DIRECT POTABLE REUSE ALTERNATIVES

While Direct Potable Reuse (DPR) is an important potential future option for California, it is not yet regulated in the state. This makes the development of long-term scenarios for the implementation of DPR highly speculative. Several process trains for DPR were considered as part of the Package 'B' planning effort. The recommended process train for further development is presented in Figure B.5. This process train would use membrane

bioreactors followed by pasteurization, RO, granular activated carbon (GAC) filtration, UV advanced oxidation, and engineered storage.

Figure B.6 shows a site layout for a 6.2 mgd DPR facility following the process set forth in Figure B.5. The consideration of this approach involves the following factors:

- The plant flow is limited to 6.2 mgd; there are no basins for handling major wet weather events and upstream reclamation plant diversions.
- The engineered storage is located off-site.
- Engineering trailer eliminated; requires relocation of staff.
- The process train depends on future regulatory development.

CURRENT BIOSOLIDS HANDLING

The South Orange County Wastewater Authority (SOCWA) performs solids treatment at two of its treatment plants: the J.B. Latham Treatment Plant (JBLTP) and the Regional Treatment Plant (RTP). The biosolids are anaerobically digested at each of the plants. The digested biosolids are then dewatered by centrifuges and disposed of off-site.

Solids processing at the JBLTP includes dissolved air flotation thickeners (DAFTs), anaerobic digesters, and dewatering centrifuges. The centrifuges typically produce a biosolids cake that is 23% to 26% solids concentration. Dewatered solids from the centrifuges drop into one of

the truck trailers inside the Energy Building. The dewatered solids are hauled away and disposed of off-site. A hauling truck trailer can hold approximately 25 wet tons of sludge. One truckload is typically hauled from the JBLTP each day. Dewatered solids are trucked to one of the following systems/locations:

- Synagro South Kern County Composting Facility.
- Nursery Products Composting Facility (located near Adelanto).
- County of Orange Prima Deshecha Landfill.

The JBLTP also treats waste activated sludge (WAS) from the Santa Margarita Water District's Oso Water Reclamation Plant (Oso). The sludge is discharged to the collection system tributary to Plant 1. The JBLTP may also receive all or some portion of the sewage tributary to Oso when that facility is off-line.

ALTERNATIVE BIOSOLIDS HANDLING OPTIONS

SOCWA will need to make a significant capital investment in the solids handling system at the J. B. Latham Treatment Plant over the next ten years. The need for this investment comes at a time when other factors may make it appropriate to consider alternatives methods for handling solids at the JBLTP. These factors include the following issues:

- A potential future ban on the disposal of wastewater biosolids in landfills in

the State of California.

- Changed regulations and public perception regarding the land application of biosolids.
- The evolution of technologies that offer advantages in energy efficiency.
- The JBLTP has no fixed storage; only the space available in trailers. This becomes problematic if a problem arises with services with one of the contracted haulers.
- Neighborhood concerns regarding odors and truck noise associated with solids.

Another potential driver to an alternative means of handling biosolids is the possible avoidance in capital investment in the existing solids processes at the JBLTP.

SOCWA has done past evaluations of alternative methods of handling biosolids. SOCWA has developed conceptual plans for the implementation of heat drying at both the J. B. Latham and the Regional Treatment Plants. SOCWA also investigated participation in the Irvine Ranch Water District (IRWD) Michelson Water Reclamation Plant Heat Drying Facility in 2010. SOCWA elected not to pursue these approaches due to the higher biosolids unit costs that would result.

In the spring of 2019 SOCWA issued a Request for Proposals (RFP's) to vendors of innovative biosolids technologies. Six proposals were received. These proposals will be reviewed by a Technical Advisory Committee (TAC) through the summer of 2019. This version of the Ten Year Plan does not reflect the implementation of an

innovative biosolids technology. The only proposed project involved with this item is the Solids Management Plan (Project 2538) included in Fiscal Year 2019/20. This plan is meant to reevaluate needed capital improvements to the solids handling systems.

ASSET PLANNING FOR SOLIDS HANDLING

The current version of the Ten Year Plan focuses on the asset replacement aspect of the solids handling system. The primary functional areas of the solids handling system are the dissolved air flotation thickeners (the DAFT's), the anaerobic digesters, and the dewatering centrifuges. A fourth area involves the co-generation system that utilizes digester gas in the production of electricity. The existing co-generation system was installed as part of Facility Improvement Package 'A/C' in 2017. No improvements to the co-generation system are anticipated as part of the Ten Year Plan. However, the co-generation system operation is sensitive to other changes within the treatment plant.

THICKENING

The existing DAFTs are in need of major rehabilitation to continue operation into the foreseeable future. Condition assessments have been performed by Carollo and Lee & Ro. The Package 'B' planning study analyzed alternative approaches to thickening at the Latham Plant. Retrofit of the two existing DAFT's was found to be the most cost effect approach. Recommended upgrades to the DAFT's include the following:

- New sludge collection mechanisms and drives.
- New covers and walkway.
- Concrete repair and recoating.
- New thickened sludge pumps.
- New pressurization skid and recirculation pump.

These improvements are included as part of the Package 'B' Improvements. The contract for the Package 'B' Improvements was awarded by the SOCWA Board of Directors on April 4, 2019.

SOCWA ASSETS

The original listing of SOCWA assets was prepared by TetraTech in 2005 as part of an Asset Management Study. This listing provided a comprehensive list of mechanical items and systems. SOCWA has expanded the list with structural, structural appurtenances, electrical and instrumentation components, site facilities and buried piping. The list was also amended to include structures and equipment associated with new projects. The current asset list for the J. B. Latham Treatment Plant includes over 470 items. The SOCWA asset listing is maintained in an Excel spreadsheet.

BASIS FOR EXPECTED LIFE

The current version of the Ten Year Plan is largely based on targeting assets for replacement that have exceeded their useful lives or are expected to exceed their useful life during the 15 year span of the

capital improvement program. The 'expected life' can be defined as that point in time when (1) the asset can no longer reliably serve its function, (2) the asset deteriorates to the point that it poses a safety risk, (3) the asset deteriorates to the point that continued maintenance is more expensive than replacement, or (4) the asset is no longer supported by vendors (e.g. can no longer obtain replacement parts). There is no single source defining the expected lives for all of the components in a wastewater treatment plant. The 2005 Asset Management Study prepared by Tetra Tech identified expected lives for many components. During the preparation of this report Carollo Engineers transmitted a list of expected lives typically used in their analyses. These values were comparable to the numbers 2005 numbers utilized by TetraTech. The Carollo expected life values are presented in Table B.2 in the column titled 'Life as Recommended by Consultant'. SOCWA staff expanded this listing and modified some of the values. Some of these values were provided at the recommendation of suppliers and installers. However, this list largely reflects the experience of SOCWA staff based on the local conditions found at SOCWA facilities. These values are presented in Table B.2 in the column 'Life Utilized, Modified or Added by SOCWA Staff'. The values presented in this column are used in this analysis.

CONDITION ASSESSMENTS

Condition assessments are conducted either informally by the SOCWA Operations staff (through their observations of visual condition,

performance, and maintenance history) or by external consultants. SOCWA began a program of contracting condition assessments in 2016. The assessments conducted thus far include the following:

- Plant 1 Basins and Channels
- Plant 2 Basins and Channels
- Dewatering System

The listing of projects in Appendices C and D note where additional condition assessments are anticipated in the future.

COST ALLOCATION

The capital project costs are allocated based on the appropriate cost center. The three cost centers for the J. B. Latham Treatment Plant are as follows:

- Liquids
- Common
- Solids

Many items that are listed as 'Common' projects reflect a blend of Liquids, Common, and Solid attributes. For instance, a motor control center may have breakers that feed devices that are associated with different cost centers. When these projects are formally budgeted, they should undergo a more thorough allocation of costs. Projects that have these blended cost centers include but are not limited to the following project types:

- Motor Control Centers
- SCADA
- Electrical Manhole Repair
- Buried Piping

It should also be noted that some uses in the Latham Plant have changed cost

centers since the original plant construction. An example would be the Chlorine Building. Costs associated with the chlorine handling portion of the building were traditionally allocated to Liquids. However, the chlorine handling has been eliminated. This portion of the building is now used for storage which would be appropriately allocated to common. These issues of changed usage should be reviewed with the Engineering Committee.

PACKAGE 'B' FACILITY IMPROVEMENTS

A significant portion of the capital improvement cost for Years 1 and 2 are associated with the construction of the Package 'B' Facility Improvements Project. This project includes the following elements:

- Rehabilitation of piping and valves at the Effluent Pump Station.
- Limited equipment rehabilitation of Plant 2 Secondary Sedimentation Basins (Scum Skimmers and Telescoping Valve replacement).
- Structural and equipment rehabilitation of the Plant 1 Secondary Sedimentation Basins.
- Structural and equipment rehabilitation of the Primary Effluent Channel (Plant 1 portion).
- Structural and equipment rehabilitation of the Plant 1 Primary Influent Channel and Sedimentation Basins.
- Structural and equipment rehabilitation of the Plant 2 Primary Influent Channel Basins.

- Structural and equipment rehabilitation of Dissolved Air Flotation Thickener Nos. 1 and 2.
- Construction of a new Thickened Waste Activated Sludge Pump Station.
- Cleaning and equipment rehabilitation of the Digester 1 and 2 mixing and heating systems.
- Structural rehabilitation of the Digesters 1 and 2 Control Building roof.
- Equipment rehabilitation of the Digester 3 and Digester 4 heating systems.
- Replacement of the Digesters 3 and 4 Control Building roof stairs.
- Construction of a new boiler inside of the Energy Recovery Building.
- Removal of the existing boiler within the Digesters 1/2 Control Building.
- Seismic improvements to the Energy Building.
- Structural rehabilitation of the Dewatering Building and Energy Recovery Building roof including the replacement of the skylights.
- Construction of a new monorail system inside of the Energy Building.
- Demolition of the existing Laboratory Building.
- Miscellaneous plant-wide safety improvements for fall protection.
- Structural and coating repair within Digester 4; also, mechanical, electrical and instrumentation improvements.

Work on the Plant 2 basins was limited pending further review of member agency utilization.

A contract for the construction of the Package 'B' Facility Improvements was awarded to Olsson Construction on April 4, 2019.

PACKAGE 'D' FACILITY

IMPROVEMENTS

The follow-up project to the Package 'B' Facility Improvements project is the Package 'D' Facility Improvements Project. The design for the Package 'D' is programmed in Year 2 (2020/2021) of the Ten Year Plan. There are two predecessor projects in Year 1 (2019/2020): The Plant Hydraulic Model and Flow Management Plan (Project 4203-000) and the Solids Management Plan (Project 4214-000). The discussions between the member agencies regarding the PC 2 agreement will also have an impact on the Package 'D' scope. The key elements of Package 'D' are as follows:

- Plant 2 Primary Sedimentation Basin Upgrade (including sludge collectors, scum collectors, troughs and basin covers).
- Plant 2 Secondary Sedimentation Basin Upgrade (including launders, sludge collectors and drain valves).
- MCC M Replacement.
- Improvements to Centrifuge System.
- Replace of screws in Solids Conveyors.
- Replacement of Trailer Load Cells and other improvements in Truck Bay.
- Replacement of the Gas Flare.
- Modification of MCC CF and removal of MCC 2.

The replacement of the gas flare is contingent upon new air quality regulations.

ADDRESSING UNCERTAINTY

There has been a significant level in capital investment in the replacement and rehabilitation of systems at the J. B. Latham Treatment Plant over the past 20 years. Some systems and devices are recently reconstructed and not projected for replacement within the 15-year span of the draft Ten Year Plan. Examples of these systems include the following:

- Plant 1 and Plant 2 Switchgear
- Co-Generation System
- Primary Aeration Blowers (located in the Plant 1 Blower Building)
- Aeration Basin Diffusers

The Ten Year Plan for the Latham Treatment Plant also does not contemplate the reconstruction of major concrete structures. The anticipated live of concrete structures in a wastewater environment is 50 years. The majority of concrete structures were completed between 1965 and 1983 which would indicate an anticipated end of life ranging from 2015 to 2033. However, visual inspections of concrete structure have only identified superficial deficiencies. No projects have been identified for the replacement of major structures.

TEN YEAR PLAN PROJECTS

Table B.3 summarizes the proposed capital improvement projects and costs. This table identifies projects in the fiscal year that they would be added to the SOCWA capital improvement budget. Descriptions of each of the projects in Table B.3 are provided in Appendix C. Tables showing the derivation of project costs are shown in Appendix D.

The current version of the Ten Year Plan marks a significant increase in the capital investment for the J. B. Latham Treatment (and for other SOCWA facilities) from the 2010 version of the Ten Year Plan. The reasons for this increase are based on the following factors:

- More assets were evaluated in the current plan.
- Projects were more rigorously based on the anticipated “book” life.
- More detailed cost estimating was done for the current plan.
- Existing assets have aged over the past ten years (unless replaced or rehabilitated during that period).

The result is what is believed to be a very conservative cost estimate. For example, Table B.3 shows over \$7.4 million (inflation based) in improvements in Fiscal Year 2022/23. This cost includes over \$5.5 million in improvements association with Blower Building No.1 and the systems it houses. The structure itself dates to 1965. However, a condition assessment is included in Fiscal Year 2019/20 (Project 2058) that will provide more information on the scope, cost, and timing of improvements. Not all condition assessments are included in the first year of the Ten Year Plan; work is spread out based on the anticipated condition and risk associated with the area of the plant. The Ten Year Plan can then be updated on annual basis.

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------------|--|-------------------|-----------------------------|--------------------------|
| 1 | Preliminary Treatment | Diversion Structure | 1979 | 50 | 2029 |
| 2 | Preliminary Treatment | Diversion Structure Gate No.1 | 1978 | 30 | 2008 |
| 3 | Preliminary Treatment | Diversion Structure Gate No.2 | 2005 | 30 | 2035 |
| 4 | Preliminary Treatment | Gate No.1 Electric Actuator | 2005 | 20 | 2025 |
| 5 | Preliminary Treatment | Gate No.2 Electric Actuator | 2005 | 20 | 2025 |
| 6 | Preliminary Treatment | Plant 1 Headworks Building Structure | 1999 | 50 | 2049 |
| 7 | Preliminary Treatment | Plant 1 Headworks Building Roof | 1999 | 30 | 2029 |
| 8 | Preliminary Treatment | Plant 1 Headworks Building Architectural Hardware | 1999 | 35 | 2034 |
| 9 | Preliminary Treatment | Plant 1 Headworks Building Electrical | 1999 | 35 | 2034 |
| 10 | Preliminary Treatment | Plant 1 Headworks Building Concrete Ramp and Terrace | 2009 | 50 | 2059 |
| 11 | Preliminary Treatment | Plant No.1 Electrical Building | 2009 | 40 | 2049 |
| 12 | Preliminary Treatment | Plant No.1 Electrical Building Power and Lighting | 2009 | 35 | 2044 |
| 13 | Preliminary Treatment | Plant No.1 Electrical Building Mechanical | 2009 | 20 | 2029 |
| 14 | Preliminary Treatment | Main Panel "MA"-9 MGD | 2009 | 30 | 2039 |
| 15 | Preliminary Treatment | EMCC - BL | 2009 | 30 | 2039 |
| 16 | Preliminary Treatment | EMCC - DR | 2009 | 30 | 2039 |
| 17 | Preliminary Treatment | PLC - EEB | 2009 | 20 | 2029 |
| 18 | Preliminary Treatment | MCC-EAI | 1997 | 20 | 2017 |
| 19 | Preliminary Treatment | Plant 1 Headworks Building Mechanical | 1999 | 20 | 2019 |
| 20 | Preliminary Treatment | Plant 1 Bar Screens | 2005 | 20 | 2025 |
| 21 | Preliminary Treatment | Plant 1 Screenings Conveyor | 2005 | 20 | 2025 |
| 22 | Preliminary Treatment | Plant 1 Screenings Compactor | 2005 | 10 | 2015 |
| 23 | Preliminary Treatment | Plant 1 Grit Classifier | 2005 | 10 | 2015 |
| 24 | Preliminary Treatment | Plant 1 Aerated Grit Removal Tank Structure1 | 1964 | 50 | 2014 |
| 25 | Preliminary Treatment | Plant 1 Aerated Grit Removal Tank Covers | 1995 | 25 | 2020 |
| 26 | Preliminary Treatment | Plant 1 Aerated Grit Removal Tank Mechanical | 1964 | 20 | 1984 |
| 27 | Preliminary Treatment | Plant 1 Grit Basin Channel Slide Gates | 1974 | 30 | 2004 |
| 28 | Preliminary Treatment | Plant 1 Grit Pump Drywell Structure | 1978 | 50 | 2028 |
| 29 | Preliminary Treatment | Plant 1 Grit Pump Drywell Handrail | 1978 | 40 | 2018 |
| 30 | Preliminary Treatment | Plant 1 Grit Pumps | 1978 | 5 | 1983 |
| 31 | Preliminary Treatment | Plant 1 Grit Pump Mechanical | 1978 | 15 | 1993 |
| 32 | Preliminary Treatment | Plant 1 Grit Pump Electrical | 2002 | 25 | 2027 |
| 33 | Preliminary Treatment | Plant 1 RSPS/Blower Building Structure | 1965 | 40 | 2005 |
| 34 | Preliminary Treatment | Plant 1 RSPS/Blower Building Crane | 1964 | 40 | 2004 |
| 35 | Preliminary Treatment | Plant 1 RSPS/Blower Building Mechanical | 1992 | 15 | 2007 |
| 36 | Preliminary Treatment | Plant 1 RSPS/Blower Building Air Conditioner | 1995 | 8 | 2003 |
| 37 | Preliminary Treatment | Plant 1 RSPS/Blower Building Electrical | 1988 | 25 | 2013 |
| 38 | Preliminary Treatment | MCC-A-1 | 1997 | 20 | 2017 |
| 39 | Preliminary Treatment | EMCC-B | 2007 | 30 | 2037 |
| 40 | Preliminary Treatment | Plant 1 ATS | 2007 | 30 | 2037 |
| 41 | Preliminary Treatment | Plant 1 Raw Sewage Wetwell | 1964 | 50 | 2014 |
| 42 | Preliminary Treatment | Plant 1 Raw Sewage Pumps | 1989 | 10 | 1999 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------------|---|-------------------|-----------------------------|--------------------------|
| 43 | Preliminary Treatment | Plant 1 Raw Sewage Pumps VFD | 2007 | 5 | 2012 |
| 44 | Preliminary Treatment | Plant 1 Standby Power Generator # 1 | 1989 | 20 | 2009 |
| 45 | Preliminary Treatment | Plant 1 Emergency Standby Pumps | 2010 | 25 | 2035 |
| 46 | Preliminary Treatment | Plant 1 Emergency Standby Pump Control Valves | 2010 | 20 | 2030 |
| 47 | Preliminary Treatment | Plant 2 Headworks Building Structure | 1997 | 50 | 2047 |
| 48 | Preliminary Treatment | Plant 2 Headworks Building Roof | 1997 | 30 | 2027 |
| 49 | Preliminary Treatment | Plant 2 Headworks Building Architectural Hardware | 1997 | 35 | 2032 |
| 50 | Preliminary Treatment | Plant 2 Headworks Building Electrical | 1997 | 15 | 2012 |
| 51 | Preliminary Treatment | Plant 2 Power Building Structure | 2016 | 50 | 2066 |
| 52 | Preliminary Treatment | Plant 2 Power Building Roof | 2016 | 30 | 2046 |
| 53 | Preliminary Treatment | Plant 2 Power Building Architectural Hardware | 2016 | 35 | 2051 |
| 54 | Preliminary Treatment | Plant 2 Power Building Mechanical | 2016 | 20 | 2036 |
| 55 | Preliminary Treatment | Plant 2 Power Building Electrical | 2016 | 35 | 2051 |
| 56 | Preliminary Treatment | Main Panel "MA"- 4 MGD | 2016 | 20 | 2036 |
| 57 | Preliminary Treatment | Plant 2 Headworks Building Mechanical | 1998 | 15 | 2013 |
| 58 | Preliminary Treatment | Plant 2 Bar Screen | 2012 | 12 | 2024 |
| 59 | Preliminary Treatment | Plant 2 Bar Rack | 1999 | 20 | 2019 |
| 60 | Preliminary Treatment | Plant 2 Screenings Conveyor | 1988 | 10 | 1998 |
| 61 | Preliminary Treatment | Plant 2 Grit Classifier | 1995 | 12 | 2007 |
| 62 | Preliminary Treatment | Plant 2 Aerated Grit Removal Tank Structures | 1978 | 50 | 2028 |
| 63 | Preliminary Treatment | Plant 2 Aerated Grit Removal Tank Covers | 1995 | 15 | 2010 |
| 64 | Preliminary Treatment | Plant 2 Aerated Grit Removal Tank Mechanical | 1995 | 10 | 2005 |
| 65 | Preliminary Treatment | Plant 2 Grit Pump Drywell Structure | 1978 | 50 | 2028 |
| 66 | Preliminary Treatment | Plant 2 Grit Pump Drywell Handrail | 1978 | 40 | 2018 |
| 67 | Preliminary Treatment | Plant 2 Grit Pumps | 1978 | 5 | 1983 |
| 68 | Preliminary Treatment | Plant 2 Grit Pump Mechanical | 1988 | 15 | 2003 |
| 69 | Preliminary Treatment | Plant 2 Grit Pump Electrical | 1988 | 25 | 2013 |
| 70 | Preliminary Treatment | EMCC-J1 | 1997 | 30 | 2027 |
| 71 | Preliminary Treatment | Plant 2 Grit Tank Bypass Valve 1&2 | 1978 | 30 | 2008 |
| 72 | Preliminary Treatment | Plant 2 RSPS/Blower Building Structure | 1979 | 40 | 2019 |
| 73 | Preliminary Treatment | Plant 2 RSPS/Blower Building Crane | 1979 | 30 | 2009 |
| 74 | Preliminary Treatment | Plant 2 RSPS/Blower Building Mechanical | 1978 | 15 | 1993 |
| 75 | Preliminary Treatment | Plant 2 RSPS/Blower Building Electrical | 1988 | 25 | 2013 |
| 76 | Preliminary Treatment | MCC-J | 2016 | 30 | 2046 |
| 77 | Preliminary Treatment | ESBD-J | 2016 | 30 | 2046 |
| 78 | Preliminary Treatment | Plant 2 Raw Sewage Wetwell | 1978 | 50 | 2028 |
| 79 | Preliminary Treatment | Plant 2 Raw Sewage Pumps | 1978 | 20 | 1998 |
| 80 | Preliminary Treatment | Plant 2 Raw Sewage Pumps VFD's | 2016 | 5 | 2021 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------------|---|-------------------|-----------------------------|--------------------------|
| 81 | Preliminary Treatment | Plant 2 Standby Power Generator # 2 | 1979 | 28 | 2007 |
| 82 | Primary Treatment | Plant 1 Primary Influent Channel | 1974 | 50 | 2024 |
| 83 | Primary Treatment | Plant 1 Primary Influent Channel Cover Diamond Plate | 1974 | 25 | 1999 |
| 84 | Primary Treatment | Plant 1 Primary Sedimentation Basin Structural | 1964 | 50 | 2014 |
| 85 | Primary Treatment | Plant 1 Primary Hopper Valves (1 to 12) | 1964 | 15 | 1979 |
| 86 | Primary Treatment | Pneumatic Actuators (Plant 1) | 1964 | 10 | 1974 |
| 87 | Primary Treatment | Plant 1 Primary Sedimentation Basin Covers | 1995 | 25 | 2020 |
| 88 | Primary Treatment | Plant 1 Primary Sedimentation Sludge Collectors | 2010 | 10 | 2020 |
| 89 | Primary Treatment | Plant 1 Primary Sedimentation Sludge Collector Drives | 2010 | 35 | 2045 |
| 90 | Primary Treatment | Plant 1 Primary Sedimentation Scum Collectors- Skimmers | 1990 | 18 | 2008 |
| 91 | Primary Treatment | Plant 1 Primary Sedimentation Basin Electrical | 1988 | 25 | 2013 |
| 92 | Primary Treatment | Scum Pump Station | 1979 | 50 | 2029 |
| 93 | Primary Treatment | Scum Pump Station Wetwell | 1979 | 50 | 2029 |
| 94 | Primary Treatment | Scum Pump Station Architectural Hardware | 1979 | 35 | 2014 |
| 95 | Primary Treatment | Scum Pump Station Mechanical | 1979 | 20 | 1999 |
| 96 | Primary Treatment | Scum Pump Station Electrical | 1979 | 35 | 2014 |
| 97 | Primary Treatment | Scum Pump | 1979 | 6 | 1985 |
| 98 | Primary Treatment | MCC-G | 1971 | 20 | 1991 |
| 99 | Primary Treatment | Plant 1 Primary Sedimentation Launderers | 1971 | 35 | 2006 |
| 100 | Primary Treatment | Plant 1 Primary Sludge Pumps | 2000 | 6 | 2006 |
| 101 | Primary Treatment | Plant 1 Primary Sludge Flow Meter | 2002 | 15 | 2017 |
| 102 | Primary Treatment | Plant 1 Primary Sedimentation Basin Influent Gates | 1964 | 30 | 1994 |
| 103 | Primary Treatment | Plant 1 Primary Effluent Channel | 1974 | 50 | 2024 |
| 104 | Primary Treatment | Plant 1 Primary Effluent Channel Diamond Plate | 1974 | 25 | 1999 |
| 105 | Primary Treatment | Plant 2 Primary Influent Channel | 1980 | 50 | 2030 |
| 106 | Primary Treatment | Plant 2 Primary Influent Channel Cover Diamond Plate | 1980 | 25 | 2005 |
| 107 | Primary Treatment | Plant 2 Primary Sedimentation Basin Structures | 1978 | 50 | 2028 |
| 108 | Primary Treatment | Plant 2 Primary Hopper Valves (# 13 -18) | 1978 | 15 | 1993 |
| 109 | Primary Treatment | Pneumatic Actuators (Plant 2) | 1978 | 10 | 1988 |
| 110 | Primary Treatment | Plant 2 Primary Sedimentation Basin Covers | 1995 | 15 | 2010 |
| 111 | Primary Treatment | Plant 2 Primary Sedimentation Sludge Collectors # 7-9 | 1995 | 10 | 2005 |
| 112 | Primary Treatment | Plant 2 Primary Sedimentation Sludge Collectors Drives | 1978 | 25 | 2003 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|---------------------|--|-------------------|-----------------------------|--------------------------|
| 113 | Primary Treatment | Plant 2 Primary Sedimentation Scum Collectors-Skimers | 1990 | 15 | 2005 |
| 114 | Primary Treatment | Plant 2 Primary Sedimentation Launderers | 1978 | 35 | 2013 |
| 115 | Primary Treatment | Plant 2 Primary Sedimentation Basin Electrical | 1990 | 25 | 2015 |
| 116 | Primary Treatment | Plant 2 Primary Sludge Pumps | 2001 | 6 | 2007 |
| 117 | Primary Treatment | Plant 2 Primary Sludge Flow Meter | 2002 | 15 | 2017 |
| 118 | Primary Treatment | Plant 2 Primary Sedimentation Basin Influent Gates | 1978 | 30 | 2008 |
| 119 | Primary Treatment | Plant 2 Primary Effluent Channel | 1974 | 50 | 2024 |
| 120 | Primary Treatment | Plant 2 Primary Effluent Channel Diamond Plate | 1974 | 25 | 1999 |
| 121 | Secondary Treatment | East Aeration Basin Structure | 1989 | 50 | 2039 |
| 122 | Secondary Treatment | Plant No.1 Aeration Basin Handrail | 1974 | 40 | 2014 |
| 123 | Secondary Treatment | Plant 1 Aeration Basin Air Piping | 2016 | 20 | 2036 |
| 124 | Secondary Treatment | Plant 1 Aeration Air Flow Meters | 2016 | 20 | 2036 |
| 125 | Secondary Treatment | Plant 1 Aeration Dissolved Oxygen Analyzers, sensors, data recorders | 2016 | 20 | 2036 |
| 126 | Secondary Treatment | Plant 1 Aeration Control Valves | 2016 | 20 | 2036 |
| | Secondary Treatment | Plant 1 Aeration Basin Control Valve Actuators | 2016 | 20 | 2036 |
| 127 | Secondary Treatment | Plant 1 Aeration Air Diffusion System | 2016 | 20 | 2036 |
| 128 | Secondary Treatment | Plant 1 Aeration Basin Influent Gates | 2016 | 20 | 2036 |
| 129 | Secondary Treatment | Plant 1 Aeration Basin Effluent Gates | 2016 | 20 | 2036 |
| 130 | Secondary Treatment | Plant 1 Aeration Basin Mechanical | 1989 | 20 | 2009 |
| 131 | Secondary Treatment | Aeration Tank Sump Pumps | 1989 | 15 | 2004 |
| 132 | Secondary Treatment | Plant 1 Aeration Basin Electrical | 1989 | 25 | 2014 |
| 133 | Secondary Treatment | Plant 2 Aeration Basin Structure | 1989 | 50 | 2039 |
| 134 | Secondary Treatment | Plant 2 Aeration Basin Handrail | 1978 | 40 | 2018 |
| 135 | Secondary Treatment | Plant 2 Aeration Basin Air Piping | 2016 | 20 | 2036 |
| 136 | Secondary Treatment | Plant 2 Aeration Air Flow Meters | 2016 | 20 | 2036 |
| 137 | Secondary Treatment | Plant 2 Aeration Dissolved Oxygen Analyzers, sensors, data recorders | 2016 | 20 | 2036 |
| 138 | Secondary Treatment | Plant 2 Aeration Control Valves | 2016 | 20 | 2036 |
| 139 | Secondary Treatment | Plant 2 Aeration Control Valve Actuators | 2016 | 20 | 2036 |
| 140 | Secondary Treatment | Plant 2 Aeration Air Diffusion System | 2016 | 20 | 2036 |
| 141 | Secondary Treatment | Plant 2 Aeration Basin Influent Gates | 2016 | 20 | 2036 |
| 142 | Secondary Treatment | Plant 2 Aeration Basin Effluent Gates | 2016 | 20 | 2036 |
| 143 | Secondary Treatment | Plant 2 Aeration Basin Mechanical | 1989 | 20 | 2009 |
| 144 | Secondary Treatment | Plant 2 Aeration Basin Electrical | 1989 | 25 | 2014 |
| 145 | Secondary Treatment | Plant 1 Blower Building Multistage Blowers | 1984 | 25 | 2009 |
| 146 | Secondary Treatment | Plant 1 Blower Building Air Compressors | 2000 | 15 | 2015 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|---------------------|--|-------------------|-----------------------------|--------------------------|
| 147 | Secondary Treatment | Plant 1 Blower Building Aeration Piping | 1989 | 25 | 2014 |
| 148 | Secondary Treatment | Plant 2 Blower Building Multistage Blowers | 2016 | 32 | 2048 |
| 149 | Secondary Treatment | Plant 2 Blower Building Air Compressors | 1995 | 15 | 2010 |
| 150 | Secondary Treatment | Plant 2 Blower Building Aeration Piping | 2016 | 25 | 2041 |
| 151 | Secondary Treatment | Plant 1 Mixed Liquor Channel | 1974 | 50 | 2024 |
| 152 | Secondary Treatment | Plant 1 Mixed Liquor Channel Grating | 1974 | 40 | 2014 |
| 153 | Secondary Treatment | Plant 2 Mixed Liquor Channel | 1978 | 50 | 2028 |
| 154 | Secondary Treatment | Plant 2 Mixed Liquor Channel Grating | 1978 | 40 | 2018 |
| 155 | Secondary Treatment | Mixed Liquor Channel Isolation Gate | 1978 | 30 | 2008 |
| 156 | Secondary Treatment | Plant 1 Secondary Sedimentation Basin Structures | 1964 | 50 | 2014 |
| 157 | Secondary Treatment | Plant 1 Secondary Sedimentation Basin Handrails | 1974 | 40 | 2014 |
| 158 | Secondary Treatment | Plant 1 Secondary Sedimentation Basin Sludge Collectors | 1964 | 25 | 1989 |
| 159 | Secondary Treatment | Plant 1 Secondary Sedimentation Basin Sludge Collectors Drives | 2016 | 25 | 2041 |
| 160 | Secondary Treatment | Plant 1 Secondary Sedimentation Basin Effluent Weirs | 2016 | 35 | 2051 |
| 161 | Secondary Treatment | Plant 1 Secondary Sedimentation Basin Mechanical | 1988 | 20 | 2008 |
| 162 | Secondary Treatment | Plant 1 Secondary Sedimentation Basin Influent Gates | 2016 | 45 | 2061 |
| 163 | Secondary Treatment | Plant 1 Secondary Sedimentation Basin Electrical | 1978 | 25 | 2003 |
| 164 | Secondary Treatment | Plant 2 Secondary Sedimentation Basin Structures | 1978 | 50 | 2028 |
| 165 | Secondary Treatment | Plant 2 Secondary Sedimentation Basin Handrail | 1978 | 40 | 2018 |
| 166 | Secondary Treatment | Plant 2 Secondary Sedimentation Basin Sludge Collectors | 1978 | 25 | 2003 |
| 167 | Secondary Treatment | Plant 2 Secondary Sedimentation Basin Sludge Collectors Drives | 1978 | 25 | 2003 |
| 168 | Secondary Treatment | Plant 2 Secondary Sedimentation Basin Scum Collectors | 1978 | 20 | 1998 |
| 169 | Secondary Treatment | Plant 2 Secondary Sedimentation Basin Effluent Weirs | 1978 | 35 | 2013 |
| 170 | Secondary Treatment | Plant 2 Secondary Sedimentation Basin Mechanical | 1978 | 20 | 1998 |
| 171 | Secondary Treatment | Plant 2 Secondary Sedimentation Basin Influent Gates | 1978 | 30 | 2008 |
| 172 | Secondary Treatment | Plant 2 Secondary Sedimentation Basin Electrical | 1978 | 25 | 2003 |
| 173 | Secondary Treatment | Plant 1 Basins Perimeter Handrail | 1974 | 40 | 2014 |
| 174 | Secondary Treatment | Plant 2 Basins Perimeter Handrail | 1978 | 40 | 2018 |
| 175 | Secondary Treatment | Plant 1 RAS Scope Valves | 1992 | 20 | 2012 |
| 176 | Secondary Treatment | Plant 1 RAS Pumps | 1984 | 20 | 2004 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------------------------|--|-------------------|-----------------------------|--------------------------|
| 177 | Secondary Treatment | Plant 1 RAS Pump Station Mechanical | 1984 | 20 | 2004 |
| 178 | Secondary Treatment | Plant 1 RAS Pump Station Electrical | 1984 | 25 | 2009 |
| 179 | Secondary Treatment | Plant 1 RAS Pump Flow Meters | 2002 | 15 | 2017 |
| 180 | Secondary Treatment | Plant 2 RAS Scope Valves | 1992 | 20 | 2012 |
| 181 | Secondary Treatment | Plant 2 RAS Pumps | 1978 | 20 | 1998 |
| 182 | Secondary Treatment | Plant 2 RAS Pump Station Mechanical | 1979 | 20 | 1999 |
| 183 | Secondary Treatment | Plant 2 RAS Pump Station Electrical | 1979 | 25 | 2004 |
| 184 | Secondary Treatment | Plant 2 RAS Pump Flow Meters | 2002 | 15 | 2017 |
| 185 | Secondary Treatment | Plant 1 WAS Pumps | 1999 | 10 | 2009 |
| 186 | Secondary Treatment | Plant 1 WAS Flow Meters | 1998 | 15 | 2013 |
| 187 | Secondary Treatment | Plant 1 WAS Pumping Mechanical | 1998 | 20 | 2018 |
| 188 | Secondary Treatment | Plant 1 WAS Pumping Electrical | 1998 | 25 | 2023 |
| 189 | Secondary Treatment | Plant 2 WAS Pumps | 1999 | 10 | 2009 |
| 190 | Secondary Treatment | Plant 2 WAS Flow Meters | 1998 | 15 | 2013 |
| 191 | Secondary Treatment | Plant 2 WAS Pumping Mechanical | 1998 | 20 | 2018 |
| 192 | Secondary Treatment | Plant 2 WAS Pumping Electrical | 1998 | 25 | 2023 |
| 193 | Secondary Treatment | Auxiliary RAS PS Building | 1974 | 50 | 2024 |
| 194 | Secondary Treatment | Auxiliary RAS PS Building Architectural Hardware | 1974 | 35 | 2009 |
| 195 | Secondary Treatment | Auxiliary RAS PS Building RAS Pump | 1974 | 20 | 1994 |
| 196 | Secondary Treatment | Auxiliary RAS PS Building Mechanical | 1974 | 20 | 1994 |
| 197 | Secondary Treatment | Auxiliary RAS PS Building Electrical | 1974 | 35 | 2009 |
| 198 | Ferric Chloride System | Ferric Chloride Storage Tanks | 1988 | 20 | 2008 |
| 199 | Ferric Chloride System | Ferric Chloride Tanks Level Indicator | 2003 | 5 | 2008 |
| 200 | Ferric Chloride System | Ferric Chloride Metering Pumps | 2004 | 8 | 2012 |
| 201 | Ferric Chloride System | Ferric Chloride Containment System | 1988 | 25 | 2013 |
| 202 | Ferric Chloride System | Ferric Chloride Mechanical | 2004 | 10 | 2014 |
| 203 | Ferric Chloride System | Ferric Chloride Electrical | 1988 | 25 | 2013 |
| 204 | Sodium Hydroxide (Caustic) System | Scrubber 1 Caustic Storage Tank | 1998 | 15 | 2013 |
| 205 | Sodium Hydroxide (Caustic) System | Scrubber 1 Caustic Pump and Piping | 1998 | 15 | 2013 |
| 206 | Sodium Hydroxide (Caustic) System | Scrubber 2 Caustic Storage Tank | 2003 | 15 | 2018 |
| 207 | Sodium Hydroxide (Caustic) System | Scrubber 2 Caustic Pump and Piping | 2003 | 15 | 2018 |
| 208 | Sodium Hypochlorite System | Scrubber 1 NaOCl Storage Tank | 1998 | 15 | 2013 |
| 209 | Sodium Hypochlorite System | Scrubber 1 NaOCl Storage Pump and Piping | 1998 | 15 | 2013 |
| 210 | Sodium Hypochlorite System | Scrubber 2 NaOCl Storage Tank | 2003 | 15 | 2018 |
| 211 | Sodium Hypochlorite System | Scrubber 2 NaOCl Pump and Piping | 2003 | 15 | 2018 |
| 212 | Sodium Hypochlorite System | Scrubber No 1 Containment Structure | 1998 | 50 | 2048 |
| 213 | Sodium Hypochlorite System | Scrubber No2 Containment Structure | 2003 | 50 | 2053 |
| 214 | Sodium Hypochlorite System | NaOCl Containment Area | 2008 | 50 | 2058 |
| 215 | Sodium Hypochlorite System | NaOCl Containment Area Shade | 2008 | 50 | 2058 |
| 216 | Sodium Hypochlorite System | NaOCl Storage Tank | 2008 | 30 | 2038 |
| 217 | Sodium Hypochlorite System | NaOCl Metering Pumps | 2008 | 15 | 2023 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|----------------------------|--|-------------------|-----------------------------|--------------------------|
| 218 | Sodium Hypochlorite System | NaOCl Piping and Valves | 2008 | 15 | 2023 |
| 219 | Sodium Hypochlorite System | NaOCl Containment Mechanical | 2008 | 15 | 2023 |
| 220 | Sodium Hypochlorite System | NaOCl Containment Electrical | 2008 | 30 | 2038 |
| 221 | Chlorine System | Chlorine Contact Tank Isolation Gates | 1988 | 30 | 2018 |
| 222 | Chlorine System | Chlorine Building | 1972 | 50 | 2022 |
| 223 | Chlorine System | Chlorine Building Roof | 1972 | 30 | 2002 |
| 224 | Chlorine System | Chlorine Building Architectural Hardware | 1972 | 35 | 2007 |
| 225 | Chlorine System | Chlorine Mechanical | 1971 | 15 | 1986 |
| 226 | Chlorine System | Chlorine Electrical | 1971 | 25 | 1996 |
| 227 | Effluent Management | Effluent Pump Station Structure | 1993 | 40 | 2033 |
| 228 | Effluent Management | Effluent Pump Station Structure Roof | 1993 | 30 | 2023 |
| 229 | Effluent Management | Effluent Pump Station Structure Architectural Hardware | 1993 | 35 | 2028 |
| 230 | Effluent Management | Effluent Pumps | 1993 | 20 | 2013 |
| 231 | Effluent Management | Effluent Pump Acoustic Enclosure | 2001 | | 2001 |
| 232 | Effluent Management | Effluent Flow Meter (Plant 1 and Plant 2) | 2006 | 15 | 2021 |
| 233 | Effluent Management | Effluent Meter No.2 (Outfall Meter) | 1991 | 15 | 2006 |
| 234 | Effluent Management | Outfall/EPS Data Recorder & Data Flow RTU | 1999 | 15 | 2014 |
| 235 | Effluent Management | Effluent Pumps Station Engine | 1993 | 20 | 2013 |
| 236 | Effluent Management | Effluent Pump Station Standby Power Generator | 1993 | 20 | 2013 |
| 237 | Effluent Management | Effluent Pump Station Mechanical: | 1993 | 15 | 2008 |
| 238 | Effluent Management | Effluent Pump Station Blower | 1993 | 15 | 2008 |
| 239 | Effluent Management | Effluent Pump Station Fans | 1993 | 15 | 2008 |
| 240 | Effluent Management | Effluent Pump Station Electrical | 1993 | 25 | 2018 |
| 241 | Effluent Management | MCC-M | 1991 | 20 | 2011 |
| 242 | Effluent Management | SC-1 | 1991 | 20 | 2011 |
| 243 | Administration | Administration Building | 1994 | 40 | 2034 |
| 244 | Administration | Air Conditioners | 1995 | 8 | 2003 |
| 245 | Administration | Furnaces | 1995 | 15 | 2010 |
| 246 | Administration | Document Storage Building | 1964 | 40 | 2004 |
| 247 | Administration | Lab Building | 1965 | 40 | 2005 |
| 248 | | Lab Building Roof | 1972 | | 1972 |
| 249 | | Lab Building Architectural Hardware | 1972 | 35 | 2007 |
| 250 | Administration | Lab Building Mechanical | 2004 | 10 | 2014 |
| 251 | Administration | Lab Building Electrical | 1964 | 25 | 1989 |
| 252 | Administration | MCC-C | 2002 | 20 | 2022 |
| 253 | Administration | Laboratory Benchwork | 1964 | 15 | 1979 |
| 254 | Administration | Laboratory Equipment | 1987 | 7 | 1994 |
| 255 | Solids | Energy Building Structural | 1987 | 40 | 2027 |
| 256 | Solids | Energy Building Roof | 1987 | | 1987 |
| 257 | Solids | Energy Building Skylights | 2002 | | 2002 |
| 258 | Solids | Energy Building Architectural Hardware | 1987 | 35 | 2022 |
| 259 | Solids | Energy Building Mechanical | 1987 | 20 | 2007 |
| 260 | Solids | Energy Building Electrical | 1987 | 25 | 2012 |
| 261 | Solids | DAF Bulk Polymer Storage Tanks | 1974 | 15 | 1989 |
| 262 | Solids | Bulk Polymer Storage Tank Level Meter | 2003 | 15 | 2018 |
| 263 | Solids | DAF Bulk Polymer Transfer Pumps | 1999 | 8 | 2007 |
| 264 | Solids | DAF Polymer Day Tanks | 1974 | 33 | 2007 |
| 265 | Solids | DAF Polymer Mixer | 1974 | 10 | 1984 |
| 266 | Solids | Polymer Mixers DAFS | 2003 | 10 | 2013 |
| 267 | Solids | DAF Polymer Feeders | 1990 | 8 | 1998 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------|--|-------------------|-----------------------------|--------------------------|
| 268 | Solids | DAF Polymer Mechanical | 1990 | 10 | 2000 |
| 269 | Solids | DAF Polymer Electrical | 1990 | 25 | 2015 |
| 270 | Solids | DW Bulk Polymer Storage Tank | 2003 | 15 | 2018 |
| 271 | Solids | DW Bulk Polymer Level Meter | 2003 | 5 | 2008 |
| 272 | Solids | DW Bulk Polymer Structural Containment | 2003 | 30 | 2033 |
| 273 | Solids | DW Polymer Recirculation Pump | 2003 | 8 | 2011 |
| 274 | Solids | DW Polymer Feeders | 2003 | 8 | 2011 |
| 275 | Solids | DW Polymer Mechanical | 2003 | 10 | 2013 |
| 276 | Solids | DW Polymer Electrical | 2003 | 25 | 2028 |
| 277 | Solids | DAF Structures 1&2 | 1971 | 35 | 2006 |
| 278 | Solids | DAF Covers | 1995 | 15 | 2010 |
| 279 | Solids | DAF Collectors | 1971 | 25 | 1996 |
| 280 | Solids | DAF Compressors | 1971 | 15 | 1986 |
| 281 | Solids | DAF Recirculation Pumps | 2003 | 15 | 2018 |
| 282 | Solids | DAF Dissolution Tanks | 1971 | 25 | 1996 |
| 283 | Solids | DAF Flow Meter (1&2) | 1993 | 15 | 2008 |
| 284 | Solids | TWAS Pumps | 1995 | 8 | 2003 |
| 285 | Solids | TWAS Flow Meter | 1995 | 15 | 2010 |
| 286 | Solids | DAF Mechanical | 1971 | 20 | 1991 |
| 287 | Solids | DAF Electrical | 1995 | 25 | 2020 |
| 288 | Solids | MCC-D | 2000 | 20 | 2020 |
| 289 | Solids | MCC-L | 2009 | 30 | 2039 |
| 290 | Solids | Digester Structures (1 and 2) | 1971 | 50 | 2021 |
| 291 | Solids | Digester Supernate Gates (1 and 2) | 1991 | 20 | 2011 |
| 292 | Solids | Digester Domes (1 and 2) | 2006 | 35 | 2041 |
| 293 | Solids | Digester Pump Mixing System (1and 2) | 2006 | 20 | 2026 |
| 294 | Solids | Digester Circulation Pumps (1 and 2) | 2000 | 15 | 2015 |
| 295 | Solids | Digester Heat Loops (1 and 2) | 1980 | 10 | 1990 |
| 296 | Solids | Digester Mechanical (1 and 2) | 1980 | 20 | 2000 |
| 297 | Solids | Digester Electrical (1 and 2) | 1980 | 25 | 2005 |
| 298 | Solids | MCC-F | 2002 | 20 | 2022 |
| 299 | Solids | Digester Control Building (1 and 2) | 1975 | 50 | 2025 |
| 300 | Solids | Digester Control Building (1 and 2) Roof | 1975 | 40 | 2015 |
| 301 | Solids | Digester Control Building (1 and 2) Architectural Hardware | 1975 | 35 | 2010 |
| 302 | Solids | Digester Control Building Mechanical (1 and 2) | 1975 | 20 | 1995 |
| 303 | Solids | Digester Control Building (1 and 2) Electrical | 1975 | 25 | 2000 |
| 304 | Solids | Digester Gas Flow Meters (1 and 2) | 1990 | 20 | 2010 |
| 305 | Solids | Digester Boiler (1 and 2) | 1989 | 25 | 2014 |
| 306 | Solids | Digester Structure (3) | 1972 | 50 | 2022 |
| 307 | Solids | Digester Structure (4) | 1972 | 50 | 2022 |
| 308 | Solids | Digester Dome (4) | 1972 | 35 | 2007 |
| 309 | Solids | Digester Supernate Gates (4) | 1991 | 20 | 2011 |
| 310 | Solids | Digester Gas Mixing System (3and 4) | 1998 | 20 | 2018 |
| 311 | Solids | Digester Gas Circulation Units (3 and 4) | 1998 | 20 | 2018 |
| 312 | Solids | Digester Circulation Pumps (3 and 4) | 2000 | 15 | 2015 |
| 313 | Solids | Digester Heat Loops (3 and 4) | 1980 | 10 | 1990 |
| 314 | Solids | Digester Mechanical (3 and 4) | 1980 | 20 | 2000 |
| 315 | Solids | Digester Electrical (3 and 4) | 1980 | 25 | 2005 |
| 316 | Solids | MCC-B | 2002 | 20 | 2022 |
| 317 | Solids | Digester Control Building (3 and 4) | 1972 | 40 | 2012 |
| 318 | Solids | Digester Control Building (3 and 4) Roof | 1972 | 40 | 2012 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------|---|-------------------|-----------------------------|--------------------------|
| 319 | Solids | Digester Control Building (3 and 4) Architectural Hardware | 1972 | | |
| 320 | Solids | Digester Control Building Mechanical (3 and 4) | 1980 | 20 | 2000 |
| 321 | Solids | Digester Control Building (3 and 4) Electrical | 1980 | 25 | 2005 |
| 322 | Solids | Digester Gas Flow Meters (3 and 4) | 1990 | 15 | 2005 |
| 323 | Solids | Digester Total Gas Meter | 1990 | 15 | 2005 |
| 324 | Solids | Digester Boiler (3 and 4) | 1974 | 35 | 2009 |
| 325 | Solids | Digested Sludge Pumps | 1998 | 6 | 2004 |
| 326 | Solids | Digested Sludge Flow Meters (Centrifuge Flow Meters 1-3) | 2003 | 15 | 2018 |
| 327 | Solids | Sludge Grinder | 2002 | 7 | 2009 |
| 328 | Solids | Centrifuges - D5LL | 2003 | 15 | 2018 |
| 329 | Solids | Centrifuge - D5L | 1999 | 15 | 2014 |
| 330 | Solids | Diversers Gates | 2002 | 30 | 2032 |
| 331 | Solids | Conveyor 1 | 1999 | 15 | 2014 |
| 332 | Solids | Conveyor 2 | 1999 | 15 | 2014 |
| 333 | Solids | Conveyor 3 | 1999 | 15 | 2014 |
| 334 | Solids | Conveyor 4 | 1999 | 15 | 2014 |
| 335 | Solids | Truck Loads Cells | 2001 | 40 | 2041 |
| 336 | Solids | Dewatering System Mechanical | 1999 | 20 | 2019 |
| 337 | Solids | Dewatering System Electrical | 1999 | 25 | 2024 |
| 338 | Solids | MCC-CF | 2003 | 20 | 2023 |
| 339 | Solids | Dewatering Room Hoist | 2003 | 30 | 2033 |
| 340 | Odor Control | Odor Control Transfer Fan | 1998 | 10 | 2008 |
| 341 | Odor Control | Fresh Air Fans | 1984 | 30 | 2014 |
| 342 | Odor Control | Foul Air Fan | 1984 | 30 | 2014 |
| 343 | Odor Control | Odor Control Scrubber No.1 | 1998 | 15 | 2013 |
| 344 | Odor Control | Odor Control Scrubber No.1 Ducting & Exhaust Fan | 1998 | 15 | 2013 |
| 345 | Odor Control | Odor Control Scrubber No.1 Electrical | 1998 | 20 | 2018 |
| 346 | Odor Control | Odor Control Scrubber No.2 | 2002 | 15 | 2017 |
| 347 | Odor Control | Odor Control Scrubber No.2 Ducting & Exhaust Fan | 2002 | 15 | 2017 |
| 348 | Odor Control | Odor Control Scrubber No.2 Electrical | 2002 | 20 | 2022 |
| 349 | Odor Control | MCC 1&2 | 1985 | 30 | 2015 |
| 350 | Energy | Hot Water Circulation Pumps | 1986 | 15 | 2001 |
| 351 | Energy | Waste Gas Burner | 1983 | 20 | 2003 |
| 352 | Energy | Waste Heat Boilers | 1990 | 15 | 2005 |
| 353 | Energy | Air Compressor Equipment | 2004 | 15 | 2019 |
| 354 | Energy | Energy Area Mechanical | 1987 | 20 | 2007 |
| 355 | Energy | Energy Area Electrical | 1987 | 25 | 2012 |
| 356 | Energy | Service Air System/compressors | 2000 | 10 | 2010 |
| 357 | Energy | Natural Gas Thermal Flow Meter | 2017 | 20 | 2037 |
| 358 | Energy | Digester Gas Thermal Flow Meter | 2017 | 20 | 2037 |
| 359 | Energy | Digester Gas PIT | 2017 | 20 | 2037 |
| 360 | Energy | Digester Gas TIT | 2017 | 20 | 2037 |
| 361 | Energy | Digester Gas Solenoid Valve | 2017 | 20 | 2037 |
| 362 | Energy | Digester Gas Motorized Valve | 2017 | 20 | 2037 |
| 363 | Energy | Digester Gas Piping and Valving (Gas Treatment Skid to Energy Building) | 2017 | 30 | 2047 |
| 364 | Energy | Natural Gas Solenoid Valve | 2017 | 20 | 2037 |
| 365 | Energy | Natural Gas Motorized Valve | 2017 | 20 | 2037 |
| 366 | Energy | Natural Gas Piping and Valving (Energy Building) | 2017 | 30 | 2047 |
| 367 | Energy | Lube Oil Solenoid Valve | 2017 | 20 | 2037 |
| 368 | Energy | Lube Oil Piping and Valving | 2017 | 30 | 2047 |
| 369 | Energy | Cogen Water Regulating Valve | 2017 | 20 | 2037 |
| 370 | Energy | Cogen Jacket Water Inlet Strainer | 2017 | 30 | 2047 |
| 371 | Energy | Cogen Jacket Water Pump | 2017 | 25 | 2042 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|------------------|---|-------------------|-----------------------------|--------------------------|
| 372 | Energy | Cogen Jacket Water Piping and Valving | 2017 | 25 | |
| 373 | Energy | Cogen Jacket Water Heat Exchanger | 2017 | 25 | |
| 374 | Energy | Cogen Jacket Water Decoupling Heat Exchanger Pump | 2017 | 25 | |
| 375 | Energy | Engine Generator | 2017 | 40 | |
| 376 | Energy | Urea Storage Tank | 2017 | 25 | |
| 377 | Energy | Urea Injection Pump | 2017 | 15 | |
| 378 | Energy | Urea Piping and Valving | 2017 | 20 | |
| 379 | Energy | Exhaust Piping | 2017 | 25 | |
| 380 | Energy | Cogen Exhaust Heat Recovery Unit | 2017 | 25 | 2042 |
| 381 | Energy | Cogen Exhaust Thermal Flow Meter | 2017 | 20 | 2037 |
| 382 | Energy | Hot Water Supply Flow Meter | 2017 | 20 | 2037 |
| 383 | Energy | Hot Water Supply Temperature Indicator | 2017 | 20 | 2037 |
| 384 | Energy | Hot Water Supply Piping and Valving | 2017 | 25 | 2042 |
| 385 | Energy | Cogeneration Heat Exchanger | 2017 | 25 | 2042 |
| 386 | Energy | Jacket Water High Piping and Valving | 2017 | 25 | 2042 |
| 387 | Energy | Jacket Water High Pressure Regulating Valves | 2017 | 25 | 2042 |
| 388 | Energy | Cogen Waste Heat Radiator | 2017 | 25 | 2042 |
| 389 | Energy | Cogen Jacket Water High Inlet Strainer | 2017 | 30 | 2047 |
| 390 | Energy | Cogen Jacket Water High Pump | 2017 | 25 | 2042 |
| 391 | Energy | Hot Water Return Regulating Valve | 2017 | 25 | 2042 |
| 392 | Energy | Hot Water Return Inlet Strainer | 2017 | 30 | 2047 |
| 393 | Energy | Hot Water Return System Pump | 2017 | 25 | 2042 |
| 394 | Energy | Hot Water Return Piping and Valving | 2017 | 25 | 2042 |
| 395 | Energy | Clean Lube Oil Tank | 2017 | 30 | 2047 |
| 396 | Energy | Clean Lube Oil Pump | 2017 | 25 | 2042 |
| 397 | Energy | Clean Oil Lube Day Tank | 2017 | 30 | 2047 |
| 398 | Energy | Clean Lube Oil Flow Meter | 2017 | 20 | 2037 |
| 399 | Energy | Clean Lube Oil Piping and Valving | 2017 | 25 | 2042 |
| 400 | Energy | Waste Lube Oil Piping and Valving | 2017 | 25 | 2042 |
| 401 | Energy | Waste Lube Oil Storage Tank | 2017 | 30 | 2047 |
| 402 | Energy | Waste Lube Oil Pump | 2017 | 25 | 2042 |
| 403 | Energy | Waste Coolant Tank | 2017 | 30 | 2047 |
| 404 | Energy | Waste Coolant Pump | 2017 | 25 | 2042 |
| 405 | Energy | Waste Coolant Piping and Valving | 2017 | 25 | 2042 |
| 406 | Energy | Gas Treatment System | 2017 | 20 | 2037 |
| 407 | Energy | Cogeneration System Electrical | 2017 | 25 | 2042 |
| 408 | Energy | Switchgear CG | 2017 | 30 | 2047 |
| 409 | Energy | Solids Area PLC | 2017 | 15 | 2032 |
| 410 | Plant Water | Plant Water Pumps | 2007 | 20 | 2027 |
| 411 | Plant Water | Plant Water Strainers | 1988 | 20 | 2008 |
| 412 | Plant Water | Plant Water Pump Mechanical | 2004 | 15 | 2019 |
| 413 | Plant Water | Plant Water Pump Electrical | 2004 | 25 | 2029 |
| 414 | Plant Water | MCC-M | 1988 | 20 | 2008 |
| 415 | Plant Water | Air Gap System-Mechanical | 2003 | 15 | 2018 |
| 416 | Maintenance Shop | Bench Work | 1988 | 20 | 2008 |
| 417 | Maintenance Shop | Crane | 1988 | 30 | 2018 |
| 418 | Maintenance Shop | Equipment | 1988 | 25 | 2013 |
| 419 | Maintenance Shop | Electrical | 1988 | 25 | 2013 |
| 420 | Storage | Storage Building 1 (East) | 1990 | 20 | 2010 |
| 421 | Storage | Container Unit | 2005 | 30 | 2035 |
| 422 | Storm Water | Storm Water Pump Station Structure | 1985 | 40 | 2025 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|--------------------|---|-------------------|-----------------------------|--------------------------|
| 423 | Storm Water | Storm Water Pump Station Engine | 1982 | 25 | 2007 |
| 424 | Storm Water | Storm Water Pump Station Pump | 1993 | 15 | 2008 |
| 425 | Storm Water | Storm Water Pump Station Structure Gates | 1982 | 20 | 2002 |
| 426 | Storm Water | Storm Water Pump Station Mechanical | 1993 | 15 | 2008 |
| 427 | Underground Piping | Dana Point Metering Structure | 1978 | 50 | 2028 |
| 428 | Underground Piping | Dana Point Parshall Flume | 1978 | 50 | 2028 |
| 429 | Underground Piping | Influent Sewer from Dana Point Metering Structure to Plant 2 Headworks | 1978 | 75 | 2053 |
| 430 | Underground Piping | Influent Sewer from Diversion Structure to Plant 1 Headworks | 1974 | 75 | 2049 |
| 431 | Underground Piping | Influent Sewer Bypass from Diversion Structure to Plant 2 Headworks | 1986 | 75 | 2061 |
| 432 | Underground Piping | Capistrano Beach Influent Sewer Force Main | 1990 | 50 | 2040 |
| 433 | Underground Piping | Influent Sewer from Plant 1 Grit Chamber to Plant 1 Raw Wetwell | 1974 | 75 | 2049 |
| 434 | Underground Piping | Suction Pipeline from Plant 1 Grit Basins to Emergency Pumps | 2010 | 50 | 2060 |
| 435 | Underground Piping | Discharge Pipe from Emergency Pumps to Plant 1 Primary Influent Channel | 2010 | 50 | 2060 |
| 436 | Underground Piping | Influent Sewer from Plant 2 Headworks to Plant 2 Raw Wetwell | 1978 | 75 | 2053 |
| 437 | Underground Piping | Scum Piping | 1978 | 50 | 2028 |
| 438 | Underground Piping | Plant 1 Waste Activate Sludge Piping | 1974 | 50 | 2024 |
| 439 | Underground Piping | Plant 2 Waste Activated Sludge Piping | 1978 | 50 | 2028 |
| 440 | Underground Piping | Thickened Waste Activate Sludge Piping | 1974 | 50 | 2024 |
| 441 | Underground Piping | Plant 1 Primary Sludge Piping | 1974 | 50 | 2024 |
| 442 | Underground Piping | Plant 2 Primary Sludge Piping | 1978 | 50 | 2028 |
| 443 | Underground Piping | Digester Transfer Piping | 1992 | 50 | 2042 |
| 444 | Underground Piping | Digested Sludge Piping (Below Ground) | 1988 | 50 | 2038 |
| 445 | Underground Piping | Digested Sludge Piping (Above Ground) | 1988 | 50 | 2038 |
| 446 | Underground Piping | Centrate Pipe | 2007 | 100 | 2107 |
| 447 | Underground Piping | DAF Overflow Pipe | 1974 | 75 | 2049 |
| 448 | Underground Piping | Drainage Piping | 1978 | 75 | 2053 |
| 449 | Underground Piping | Process Water Piping | 1988 | 75 | 2063 |
| 450 | Underground Piping | Potable Water Piping | 1988 | 75 | 2063 |
| | Underground Piping | Effluent Pipe | 1980 | 75 | 2055 |
| 451 | Underground Piping | Underground Electrical: Cable | 1978 | 29 | 2007 |
| 452 | Underground Piping | Underground Electrical: Conduit | 1978 | 29 | 2007 |
| 453 | Underground Piping | Underground Electrical: Manholes | 1978 | 30 | 2008 |
| 454 | Instrumentation | PLC WRAS | 2003 | 15 | 2018 |
| 455 | Instrumentation | PLC WRSP | 2003 | 15 | 2018 |
| 456 | Instrumentation | PLC WPSP | 2003 | 15 | 2018 |
| 457 | Instrumentation | PLC EPSP | 2003 | 15 | 2018 |
| 458 | Instrumentation | PLC ERSP | 2003 | 15 | 2018 |
| 459 | Instrumentation | PLC EHW | 2005 | 15 | 2020 |
| 460 | Instrumentation | PLC Digester 1/2 | 2003 | 15 | 2018 |
| 461 | Instrumentation | PLC Digester 3/4 | 2003 | 15 | 2018 |
| 462 | Instrumentation | PLC Master Centrifuge | 2003 | 15 | 2018 |
| 463 | Site | Paving | 1986 | 40 | 2026 |
| 464 | Site | Gate 1 | 2010 | 40 | 2050 |
| 465 | Site | Gate 2 | 2010 | 40 | 2050 |
| 466 | Site | Administration Building Parking Paving | 1992 | 40 | 2032 |

Table B.2
J. B. Latham Treatment Plant Asset Listing

| Item No. | System/Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------|---|-------------------|-----------------------------|--------------------------|
| 467 | Site | West Wall | 2003 | 40 | 2043 |
| 468 | Site | South Wall | 2017 | 50 | 2067 |
| 469 | Site | East Fence | 1986 | 40 | 2026 |
| 470 | Site | North Fence | 1986 | 40 | 2026 |
| 471 | Site | Abandoned Effluent Pump Station Wetwell and Structure | 1965 | 50 | 2015 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|------------------|--------------|--|----------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 1 ('19/'20) | | | | | | | | |
| | 3216-000 | Package B Common II | \$ 877,000 | \$ 877,000 | \$ 196,000 | \$ 267,000 | \$ 200,000 | \$ 214,000 |
| | 3220-000 | Package B Liquids II | \$ 3,657,000 | \$ 3,657,000 | \$ 844,000 | \$ 1,125,000 | \$ 633,000 | \$ 1,055,000 |
| | 3287-000 | Package B Solids II | \$ 4,767,000 | \$ 4,767,000 | \$ 1,031,000 | \$ 1,430,000 | \$ 1,353,000 | \$ 953,000 |
| | 4201-000 | Plant 1 Blower Building Condition Assessment | \$ 86,000 | \$ 86,000 | \$ 20,000 | \$ 26,000 | \$ 15,000 | \$ 25,000 |
| | 4202-000 | Pipeline Condition Assessment Methodology Evaluation | \$ 50,000 | \$ 50,000 | \$ 12,000 | \$ 16,000 | \$ 9,000 | \$ 15,000 |
| | 4203-000 | Plant Hydraulic Model and Flow Management Plan | \$ 177,000 | \$ 177,000 | \$ 41,000 | \$ 54,000 | \$ 31,000 | \$ 51,000 |
| | 4204-000 | Electrical Manhole Condition Assessment | \$ 91,000 | \$ 91,000 | \$ 20,000 | \$ 28,000 | \$ 21,000 | \$ 22,000 |
| | 4214-000 | Solids Management Plan | \$ 101,000 | \$ 101,000 | \$ 22,000 | \$ 30,000 | \$ 29,000 | \$ 20,000 |
| | | Small Cap Liquids | \$ 252,000 | \$ 252,000 | \$ 58,000 | \$ 78,000 | \$ 44,000 | \$ 73,000 |
| | | Small Cap Solids | \$ 213,000 | \$ 213,000 | \$ 46,000 | \$ 64,000 | \$ 60,000 | \$ 43,000 |
| | | Small Cap Common | \$ 221,000 | \$ 221,000 | \$ 49,000 | \$ 67,000 | \$ 50,000 | \$ 54,000 |
| | | TOTALS | \$ 10,492,000 | \$ 10,492,000 | \$ 2,339,000 | \$ 3,185,000 | \$ 2,444,000 | \$ 2,524,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|-----------------------------|--------------|---|----------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 2 ('20/'21) | | | | | | | | |
| | 3216-000 | Package B Common III | \$ 587,000 | \$ 587,000 | \$ 131,000 | \$ 178,000 | \$ 134,000 | \$ 143,000 |
| | 3220-000 | Package B Liquids III | \$ 3,740,000 | \$ 3,740,000 | \$ 863,000 | \$ 1,151,000 | \$ 647,000 | \$ 1,079,000 |
| | 3227-000 | Package D Design Liquids | \$ 305,000 | \$ 305,000 | \$ 70,000 | \$ 94,000 | \$ 53,000 | \$ 88,000 |
| | 3229-000 | Drainage Pump Station Reconstruction | \$ 179,000 | \$ 179,000 | \$ 40,000 | \$ 54,000 | \$ 41,000 | \$ 44,000 |
| | 3234-000 | Centrate Piping Reconstruction | \$ 199,000 | \$ 199,000 | \$ 43,000 | \$ 60,000 | \$ 56,000 | \$ 40,000 |
| | 3235-000 | Package D Solids Design | \$ 916,000 | \$ 916,000 | \$ 198,000 | \$ 275,000 | \$ 260,000 | \$ 183,000 |
| | 3285-000 | Main Plant Drain Line Reconstruction | \$ 279,000 | \$ 279,000 | \$ 64,000 | \$ 86,000 | \$ 48,000 | \$ 80,000 |
| | 3287-000 | Package B Solids III | \$ 4,085,000 | \$ 4,085,000 | \$ 883,000 | \$ 1,226,000 | \$ 1,159,000 | \$ 817,000 |
| | 4205-000 | Influent Flow Metering Evaluation | \$ 51,000 | \$ 51,000 | \$ 12,000 | \$ 16,000 | \$ 9,000 | \$ 15,000 |
| | 4206-000 | Plant 1 Grit Handling Evaluation | \$ 51,000 | \$ 51,000 | \$ 12,000 | \$ 16,000 | \$ 9,000 | \$ 15,000 |
| | 4207-000 | Chlorine Contact Basin/Effluent Pump Station Condition Assessment | \$ 66,000 | \$ 66,000 | \$ 15,000 | \$ 20,000 | \$ 11,000 | \$ 19,000 |
| | 4208-000 | Dana Point Influent Sewer Condition Assessment | \$ 66,000 | \$ 66,000 | \$ 15,000 | \$ 20,000 | \$ 11,000 | \$ 19,000 |
| | 4209-000 | Plant 1 Influent Sewer Condition Assessment | \$ 86,000 | \$ 86,000 | \$ 20,000 | \$ 27,000 | \$ 15,000 | \$ 25,000 |
| | 4210-000 | Plant 1 Bypass Sewer Condition Assessment | \$ 41,000 | \$ 41,000 | \$ 9,000 | \$ 12,000 | \$ 7,000 | \$ 12,000 |
| | 4211-000 | Site Storage Evaluation | \$ 61,000 | \$ 61,000 | \$ 14,000 | \$ 19,000 | \$ 14,000 | \$ 15,000 |
| | 4212-000 | Buried Utility Master Plan | \$ 152,000 | \$ 152,000 | \$ 34,000 | \$ 46,000 | \$ 35,000 | \$ 37,000 |
| | 4213-000 | Electrical Conduit and Cable Master Plan | \$ 61,000 | \$ 61,000 | \$ 14,000 | \$ 19,000 | \$ 14,000 | \$ 15,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 260,000 | \$ 60,000 | \$ 80,000 | \$ 45,000 | \$ 75,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 219,000 | \$ 47,000 | \$ 66,000 | \$ 62,000 | \$ 44,000 |
| | | Small Cap Common | \$ 228,000 | \$ 228,000 | \$ 51,000 | \$ 69,000 | \$ 52,000 | \$ 56,000 |
| | | TOTALS | \$ 11,632,000 | \$ 11,632,000 | \$ 2,596,000 | \$ 3,532,000 | \$ 2,683,000 | \$ 2,820,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|-----------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 3 ('21/'22) | | | | | | | | |
| | 2054 | Plant 1 Headworks Condition Assessment | \$ 45,000 | \$ 47,000 | \$ 11,000 | \$ 15,000 | \$ 8,000 | \$ 14,000 |
| | 2095 | Capistrano Beach Influent Sewer Condition Assessment | \$ 100,000 | \$ 105,000 | \$ 24,000 | \$ 32,000 | \$ 18,000 | \$ 30,000 |
| | 2098 | Plant 2 Primary Sedimentation Upgrade | \$ 2,076,000 | \$ 2,185,000 | \$ 504,000 | \$ 672,000 | \$ 378,000 | \$ 630,000 |
| | 2099 | Plant 2 Secondary Sedimentation Upgrade | \$ 2,013,000 | \$ 2,119,000 | \$ 489,000 | \$ 652,000 | \$ 367,000 | \$ 611,000 |
| | 2334 | MCC M Replacement | \$ 336,000 | \$ 353,000 | \$ 79,000 | \$ 107,000 | \$ 81,000 | \$ 86,000 |
| | 2530 | Dewatering System Reconstruction | \$ 950,000 | \$ 1,000,000 | \$ 216,000 | \$ 300,000 | \$ 284,000 | \$ 200,000 |
| | 2531 | Solids Conveyor Replacement | \$ 167,000 | \$ 176,000 | \$ 38,000 | \$ 53,000 | \$ 50,000 | \$ 35,000 |
| | 2532 | Storage and Truck loading Rehabilitation | \$ 853,000 | \$ 898,000 | \$ 194,000 | \$ 269,000 | \$ 255,000 | \$ 180,000 |
| | 2533 | Gas Flare Replacement | \$ 1,668,000 | \$ 1,756,000 | \$ 380,000 | \$ 527,000 | \$ 498,000 | \$ 351,000 |
| | 2536 | MCC 2 and CF Replacement | \$ 723,000 | \$ 761,000 | \$ 165,000 | \$ 228,000 | \$ 216,000 | \$ 152,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 268,000 | \$ 62,000 | \$ 83,000 | \$ 46,000 | \$ 77,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 226,000 | \$ 49,000 | \$ 68,000 | \$ 64,000 | \$ 45,000 |
| | | Small Cap Common | \$ 228,000 | \$ 235,000 | \$ 52,000 | \$ 71,000 | \$ 54,000 | \$ 57,000 |
| | | TOTALS | \$ 9,638,000 | \$ 10,129,000 | \$ 2,263,000 | \$ 3,077,000 | \$ 2,319,000 | \$ 2,470,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|-----------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 4 ('22/'23) | | | | | | | | |
| | 2057 | Plant 1 Grit Handling Upgrade | \$ 253,000 | \$ 283,000 | \$ 65,000 | \$ 87,000 | \$ 49,000 | \$ 82,000 |
| | 2059 | Plant 1 Blower Building Structural and Infrastructure Upgrade | \$ 614,000 | \$ 685,000 | \$ 158,000 | \$ 211,000 | \$ 119,000 | \$ 198,000 |
| | 2060 | Plant 1 Raw Sewage Pump Station Upgrade | \$ 1,596,000 | \$ 1,781,000 | \$ 411,000 | \$ 548,000 | \$ 308,000 | \$ 514,000 |
| | 2061 | Plant 1 Raw Sewage Pump VFD Upgrade | \$ 157,000 | \$ 175,000 | \$ 40,000 | \$ 54,000 | \$ 30,000 | \$ 51,000 |
| | 2062 | Plant 1 RAS and WAS Pump System Upgrade | \$ 1,099,000 | \$ 1,226,000 | \$ 283,000 | \$ 377,000 | \$ 212,000 | \$ 354,000 |
| | 2063 | Plant 1 Primary Sludge Pumping Upgrade | \$ 639,000 | \$ 713,000 | \$ 164,000 | \$ 219,000 | \$ 123,000 | \$ 206,000 |
| | 2065 | MCC-A-1 Replacement | \$ 521,000 | \$ 581,000 | \$ 134,000 | \$ 179,000 | \$ 101,000 | \$ 168,000 |
| | 2066 | Plant 1 Emergency Generator | \$ 564,000 | \$ 630,000 | \$ 145,000 | \$ 194,000 | \$ 109,000 | \$ 182,000 |
| | 2079 | Aeration Basin Drainage Pumps | \$ 423,000 | \$ 472,000 | \$ 109,000 | \$ 145,000 | \$ 82,000 | \$ 136,000 |
| | 2083 | Chlorine Contact Basin Isolation Gates and Structural Rehabilitation | \$ 297,000 | \$ 331,000 | \$ 76,000 | \$ 102,000 | \$ 57,000 | \$ 96,000 |
| | 2322 | Chlorine Building and Storm Water Pump Station Condition Assessment | \$ 45,000 | \$ 50,000 | \$ 11,000 | \$ 15,000 | \$ 11,000 | \$ 12,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 277,000 | \$ 64,000 | \$ 85,000 | \$ 48,000 | \$ 80,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 234,000 | \$ 50,000 | \$ 70,000 | \$ 66,000 | \$ 47,000 |
| | | Small Cap Common | \$ 228,000 | \$ 242,000 | \$ 54,000 | \$ 74,000 | \$ 55,000 | \$ 59,000 |
| | | TOTALS | \$ 6,915,000 | \$ 7,680,000 | \$ 1,767,000 | \$ 2,360,000 | \$ 1,371,000 | \$ 2,182,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|-----------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 5 ('23/'24) | | | | | | | | |
| | 2067 | Plant 2 Headworks Condition Assessment | \$ 45,000 | \$ 51,000 | \$ 12,000 | \$ 16,000 | \$ 9,000 | \$ 15,000 |
| | 2069 | Plant 2 Blower Building Condition Assessment | \$ 55,000 | \$ 63,000 | \$ 15,000 | \$ 19,000 | \$ 11,000 | \$ 18,000 |
| | 2078 | Scum Pump Station Upgrade | \$ 584,000 | \$ 669,000 | \$ 154,000 | \$ 206,000 | \$ 116,000 | \$ 193,000 |
| | 2088 | Effluent Pipeline Condition Assessment | \$ 200,000 | \$ 229,000 | \$ 53,000 | \$ 70,000 | \$ 40,000 | \$ 66,000 |
| | 2089 | Effluent Flow Metering Evaluation | \$ 60,000 | \$ 69,000 | \$ 16,000 | \$ 21,000 | \$ 12,000 | \$ 20,000 |
| | 2335 | Administration Building Condition Assessment | \$ 25,000 | \$ 29,000 | \$ 6,000 | \$ 9,000 | \$ 7,000 | \$ 7,000 |
| | 2336 | Administration Building Spatial Evaluation | \$ 40,000 | \$ 46,000 | \$ 10,000 | \$ 14,000 | \$ 10,000 | \$ 11,000 |
| | 2522 | DAF Polymer System Upgrade | \$ 648,000 | \$ 741,000 | \$ 160,000 | \$ 222,000 | \$ 210,000 | \$ 148,000 |
| | 2526 | Anaerobic Digester No.3 and No.4 Mechanical Upgrade | \$ 1,449,000 | \$ 1,657,000 | \$ 358,000 | \$ 497,000 | \$ 470,000 | \$ 331,000 |
| | 2527 | Anaerobic Digester No.3 and No.4 Control Building Upgrade | \$ 816,000 | \$ 934,000 | \$ 202,000 | \$ 280,000 | \$ 265,000 | \$ 187,000 |
| | 2534 | Buried Digester Piping Reconstruction | \$ 685,000 | \$ 783,000 | \$ 169,000 | \$ 235,000 | \$ 222,000 | \$ 157,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 286,000 | \$ 66,000 | \$ 88,000 | \$ 49,000 | \$ 82,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 241,000 | \$ 52,000 | \$ 72,000 | \$ 68,000 | \$ 48,000 |
| | | Small Cap Common | \$ 228,000 | \$ 250,000 | \$ 56,000 | \$ 76,000 | \$ 57,000 | \$ 61,000 |
| | | TOTALS | \$ 5,314,000 | \$ 6,047,000 | \$ 1,330,000 | \$ 1,826,000 | \$ 1,547,000 | \$ 1,345,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|-----------------------------|--------------|---|----------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 6 ('24/'25) | | | | | | | | |
| | 2080 | Odor Control Scrubber No.3 Installation | \$ 565,000 | \$ 652,000 | \$ 150,000 | \$ 201,000 | \$ 113,000 | \$ 188,000 |
| | 2090 | Odor Control Scrubber No.1 Replacement | \$ 3,257,000 | \$ 3,758,000 | \$ 867,000 | \$ 1,156,000 | \$ 650,000 | \$ 1,084,000 |
| | 2321 | Odor Control Scrubber No.2 Replacement | \$ 5,777,000 | \$ 6,666,000 | \$ 1,490,000 | \$ 2,025,000 | \$ 1,523,000 | \$ 1,628,000 |
| | 2521 | Odor Control Scrubber No.4 Installation | \$ 495,000 | \$ 571,000 | \$ 124,000 | \$ 171,000 | \$ 162,000 | \$ 114,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 295,000 | \$ 68,000 | \$ 91,000 | \$ 51,000 | \$ 85,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 249,000 | \$ 54,000 | \$ 75,000 | \$ 71,000 | \$ 50,000 |
| | | Small Cap Common | \$ 228,000 | \$ 258,000 | \$ 58,000 | \$ 78,000 | \$ 59,000 | \$ 63,000 |
| | | TOTALS | \$ 10,801,000 | \$ 12,449,000 | \$ 2,810,000 | \$ 3,797,000 | \$ 2,629,000 | \$ 3,212,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|--------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 7 (25/26) | | | | | | | | |
| | 2051 | Influent Diversion Structure Upgrade | \$ 394,000 | \$ 473,000 | \$ 109,000 | \$ 146,000 | \$ 82,000 | \$ 136,000 |
| | 2055 | Plant 1 Headworks Upgrade | \$ 1,672,000 | \$ 2,006,000 | \$ 463,000 | \$ 617,000 | \$ 347,000 | \$ 579,000 |
| | 2081 | Sodium Hypochlorite System Reconstruction | \$ 600,000 | \$ 720,000 | \$ 166,000 | \$ 222,000 | \$ 125,000 | \$ 208,000 |
| | 2101 | Effluent Pump VFD Replacement | \$ 272,000 | \$ 327,000 | \$ 75,000 | \$ 101,000 | \$ 57,000 | \$ 94,000 |
| | 2337 | Administration Building Roof Reconstruction | \$ 345,000 | \$ 414,000 | \$ 93,000 | \$ 126,000 | \$ 95,000 | \$ 101,000 |
| | 2338 | Administration Building HVAC Reconstruction | \$ 167,000 | \$ 200,000 | \$ 45,000 | \$ 61,000 | \$ 46,000 | \$ 49,000 |
| | 2342 | Maintenance Shop Rehabilitation | \$ 203,000 | \$ 244,000 | \$ 55,000 | \$ 74,000 | \$ 56,000 | \$ 60,000 |
| | 2350 | Buried Water Pipe Reconstruction | \$ 1,027,000 | \$ 1,232,000 | \$ 275,000 | \$ 374,000 | \$ 281,000 | \$ 301,000 |
| | 2540 | Dewatering System Replacement | \$ 4,234,000 | \$ 5,080,000 | \$ 1,098,000 | \$ 1,524,000 | \$ 1,442,000 | \$ 1,016,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 304,000 | \$ 70,000 | \$ 94,000 | \$ 53,000 | \$ 88,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 257,000 | \$ 56,000 | \$ 77,000 | \$ 73,000 | \$ 51,000 |
| | | Small Cap Common | \$ 228,000 | \$ 266,000 | \$ 60,000 | \$ 81,000 | \$ 61,000 | \$ 65,000 |
| | | TOTALS | \$ 9,622,000 | \$ 11,524,000 | \$ 2,564,000 | \$ 3,496,000 | \$ 2,716,000 | \$ 2,748,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|------------------|--------------|--------------------------------------|----------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 8 ('26/'27) | | | | | | | | |
| | 2052 | Bypass Flow Installation | \$ 623,000 | \$ 767,000 | \$ 177,000 | \$ 236,000 | \$ 133,000 | \$ 221,000 |
| | 2346 | Storage Building Replacement | \$ 468,000 | \$ 576,000 | \$ 129,000 | \$ 175,000 | \$ 131,000 | \$ 141,000 |
| | 2523 | Dewatering Polymer System Upgrade | \$ 277,000 | \$ 341,000 | \$ 74,000 | \$ 102,000 | \$ 97,000 | \$ 68,000 |
| | 2524 | MCC D Replacement | \$ 372,000 | \$ 457,000 | \$ 99,000 | \$ 137,000 | \$ 130,000 | \$ 91,000 |
| | 2528 | Digested Sludge Pump Station Upgrade | \$ 375,000 | \$ 461,000 | \$ 100,000 | \$ 138,000 | \$ 131,000 | \$ 92,000 |
| | 2529 | MCC B Replacement | \$ 406,000 | \$ 500,000 | \$ 108,000 | \$ 150,000 | \$ 142,000 | \$ 100,000 |
| | 2537 | Digester 5 Construction | \$ 10,148,000 | \$ 12,493,000 | \$ 2,701,000 | \$ 3,748,000 | \$ 3,545,000 | \$ 2,499,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 314,000 | \$ 72,000 | \$ 97,000 | \$ 54,000 | \$ 91,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 265,000 | \$ 57,000 | \$ 79,000 | \$ 75,000 | \$ 53,000 |
| | | Small Cap Common | \$ 228,000 | \$ 275,000 | \$ 61,000 | \$ 84,000 | \$ 63,000 | \$ 67,000 |
| | | TOTALS | \$ 13,375,000 | \$ 16,448,000 | \$ 3,578,000 | \$ 4,946,000 | \$ 4,501,000 | \$ 3,423,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|-----------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 9 ('27/'28) | | | | | | | | |
| | 2333 | Chlorine Building Rehabilitation | \$ 240,000 | \$ 314,000 | \$ 70,000 | \$ 95,000 | \$ 72,000 | \$ 77,000 |
| | 2340 | Plant Water Pump Station Reconstruction | \$ 648,000 | \$ 847,000 | \$ 189,000 | \$ 257,000 | \$ 193,000 | \$ 207,000 |
| | 2341 | Non-Potable Water Pump Station Reconstruction | \$ 634,000 | \$ 829,000 | \$ 185,000 | \$ 252,000 | \$ 189,000 | \$ 202,000 |
| | 2343 | SCADA System Upgrade Project/1st Phase | \$ 584,000 | \$ 764,000 | \$ 171,000 | \$ 232,000 | \$ 174,000 | \$ 186,000 |
| | 2347 | Storm Water Pump Station Reconstruction | \$ 377,000 | \$ 493,000 | \$ 110,000 | \$ 150,000 | \$ 113,000 | \$ 120,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 324,000 | \$ 75,000 | \$ 100,000 | \$ 56,000 | \$ 94,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 273,000 | \$ 59,000 | \$ 82,000 | \$ 78,000 | \$ 55,000 |
| | | Small Cap Common | \$ 228,000 | \$ 284,000 | \$ 63,000 | \$ 86,000 | \$ 65,000 | \$ 69,000 |
| | | TOTALS | \$ 3,190,000 | \$ 4,128,000 | \$ 923,000 | \$ 1,254,000 | \$ 940,000 | \$ 1,010,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|------------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 10 ('28/'29) | | | | | | | | |
| | 2070 | Plant 2 Blower Building Structural and Infrastructure Upgrade | \$ 496,000 | \$ 652,000 | \$ 150,000 | \$ 201,000 | \$ 113,000 | \$ 188,000 |
| | 2071 | Plant 2 Raw Sewage Pump Station Upgrade | \$ 983,000 | \$ 1,293,000 | \$ 298,000 | \$ 398,000 | \$ 224,000 | \$ 373,000 |
| | 2072 | Plant 2 Raw Sewage Pump VFD Upgrade | \$ 190,000 | \$ 249,000 | \$ 58,000 | \$ 77,000 | \$ 43,000 | \$ 72,000 |
| | 2073 | Plant 2 RAS and WAS Pump System Upgrade | \$ 870,000 | \$ 1,145,000 | \$ 264,000 | \$ 352,000 | \$ 198,000 | \$ 330,000 |
| | 2074 | Plant 2 Primary Sludge Pumping Upgrade | \$ 514,000 | \$ 676,000 | \$ 156,000 | \$ 208,000 | \$ 117,000 | \$ 195,000 |
| | 2075 | Plant 2 Emergency Generator | \$ 490,000 | \$ 645,000 | \$ 149,000 | \$ 198,000 | \$ 112,000 | \$ 186,000 |
| | 2076 | Plant 2 Meter Vault Upgrade | \$ 326,000 | \$ 429,000 | \$ 99,000 | \$ 132,000 | \$ 74,000 | \$ 124,000 |
| | 2077 | Plant 2 Grit Handling Upgrade | \$ 649,000 | \$ 854,000 | \$ 197,000 | \$ 263,000 | \$ 148,000 | \$ 246,000 |
| | 2520 | Ferric Chloride System Reconstruction | \$ 776,000 | \$ 1,022,000 | \$ 221,000 | \$ 307,000 | \$ 290,000 | \$ 204,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 335,000 | \$ 77,000 | \$ 103,000 | \$ 58,000 | \$ 97,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 282,000 | \$ 61,000 | \$ 85,000 | \$ 80,000 | \$ 56,000 |
| | | Small Cap Common | \$ 228,000 | \$ 293,000 | \$ 65,000 | \$ 89,000 | \$ 67,000 | \$ 72,000 |
| | | TOTALS | \$ 6,001,000 | \$ 7,876,000 | \$ 1,796,000 | \$ 2,412,000 | \$ 1,524,000 | \$ 2,144,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

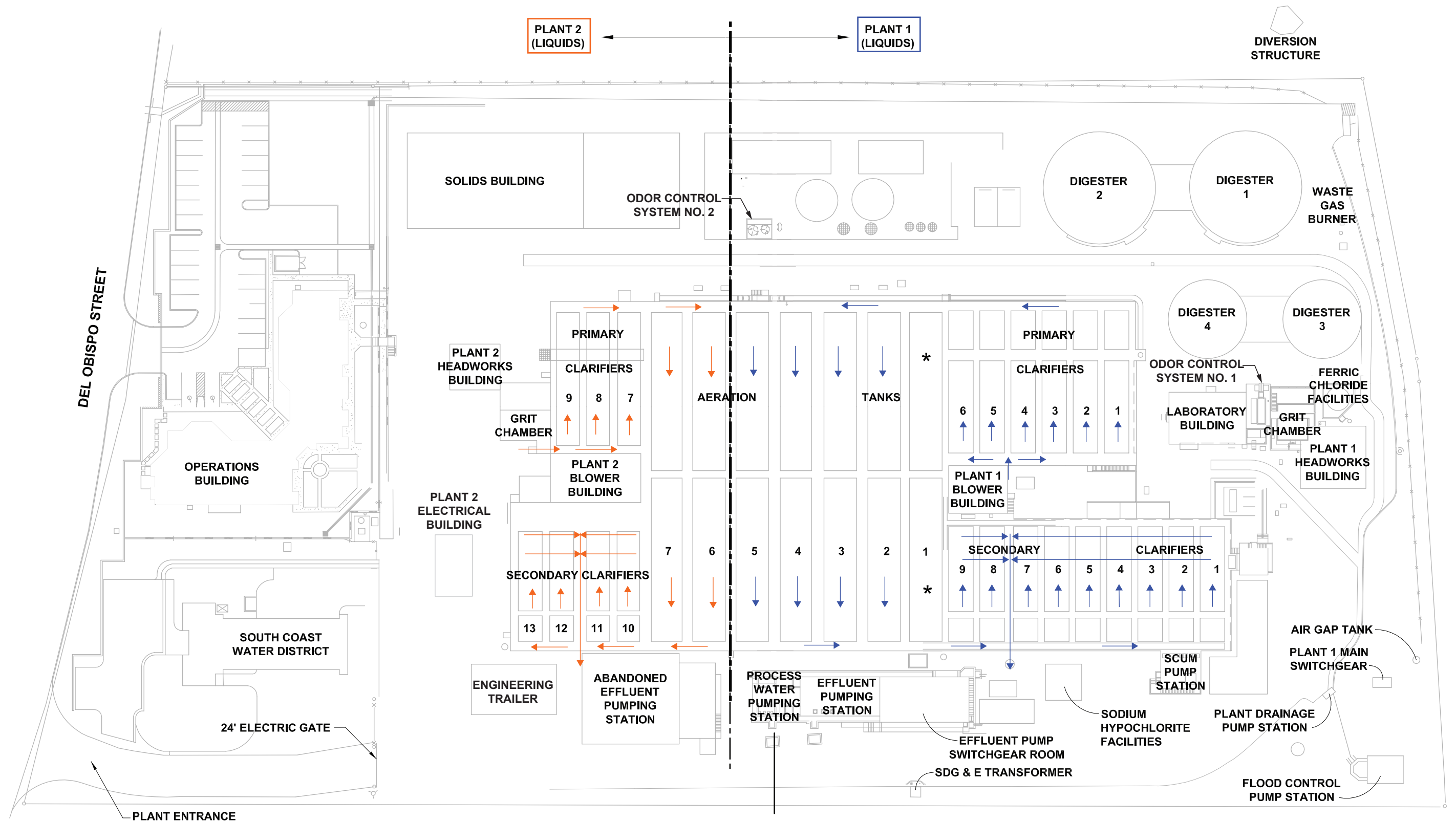
| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|------------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 11 ('29/'30) | | | | | | | | |
| | 2096 | Plant 1 Liquids Buried Piping Reconstruction | \$ 442,000 | \$ 614,000 | \$ 142,000 | \$ 189,000 | \$ 106,000 | \$ 177,000 |
| | 2097 | Plant 2 Liquids Buried Piping Reconstruction | \$ 689,000 | \$ 958,000 | \$ 221,000 | \$ 295,000 | \$ 166,000 | \$ 276,000 |
| | 2351 | Buried Drainage Pipe Reconstruction | \$ 632,000 | \$ 878,000 | \$ 196,000 | \$ 267,000 | \$ 201,000 | \$ 214,000 |
| | 2354 | Natural Gas Pipeline Replacement | \$ 772,000 | \$ 1,073,000 | \$ 240,000 | \$ 326,000 | \$ 245,000 | \$ 262,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 345,000 | \$ 80,000 | \$ 106,000 | \$ 60,000 | \$ 100,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 291,000 | \$ 63,000 | \$ 87,000 | \$ 83,000 | \$ 58,000 |
| | | Small Cap Common | \$ 228,000 | \$ 302,000 | \$ 68,000 | \$ 92,000 | \$ 69,000 | \$ 74,000 |
| | | TOTALS | \$ 3,243,000 | \$ 4,461,000 | \$ 1,009,000 | \$ 1,362,000 | \$ 929,000 | \$ 1,161,000 |
| YEAR 12 ('30/'31) | | | | | | | | |
| | 2525 | Anaerobic Digester No.1 and No.2 Mechanical Upgrade | \$ 3,702,000 | \$ 5,203,000 | \$ 1,125,000 | \$ 1,561,000 | \$ 1,476,000 | \$ 1,041,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 356,000 | \$ 82,000 | \$ 110,000 | \$ 62,000 | \$ 103,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 300,000 | \$ 65,000 | \$ 90,000 | \$ 85,000 | \$ 60,000 |
| | | Small Cap Common | \$ 228,000 | \$ 312,000 | \$ 70,000 | \$ 95,000 | \$ 71,000 | \$ 76,000 |
| | | TOTALS | \$ 4,409,000 | \$ 6,171,000 | \$ 1,342,000 | \$ 1,855,000 | \$ 1,695,000 | \$ 1,280,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|-------------------|--------------|---|--------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| | | | | | | | | |
| YEAR 13 ('31/'32) | | | | | | | | |
| | 2085 | Effluent Pump Station Rehabilitation | \$ 354,000 | \$ 541,000 | \$ 125,000 | \$ 166,000 | \$ 94,000 | \$ 156,000 |
| | 2086 | Effluent Pump Reconstruction | \$ 1,493,000 | \$ 2,282,000 | \$ 527,000 | \$ 702,000 | \$ 395,000 | \$ 658,000 |
| | 2087 | Effluent Pump Station Standby Power Generator Replacement | \$ 611,000 | \$ 933,000 | \$ 215,000 | \$ 287,000 | \$ 161,000 | \$ 269,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 368,000 | \$ 85,000 | \$ 113,000 | \$ 64,000 | \$ 106,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 310,000 | \$ 67,000 | \$ 93,000 | \$ 88,000 | \$ 62,000 |
| | | Small Cap Common | \$ 228,000 | \$ 322,000 | \$ 72,000 | \$ 98,000 | \$ 74,000 | \$ 79,000 |
| | | TOTALS | \$ 3,164,000 | \$ 4,755,000 | \$ 1,090,000 | \$ 1,459,000 | \$ 875,000 | \$ 1,330,000 |
| | | | | | | | | |
| YEAR 14 ('32/'33) | | | | | | | | |
| | 2068 | Plant 2 Headworks Upgrade | \$ 574,000 | \$ 907,000 | \$ 209,000 | \$ 279,000 | \$ 157,000 | \$ 262,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 380,000 | \$ 88,000 | \$ 117,000 | \$ 66,000 | \$ 109,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 320,000 | \$ 69,000 | \$ 96,000 | \$ 91,000 | \$ 64,000 |
| | | Small Cap Common | \$ 228,000 | \$ 332,000 | \$ 74,000 | \$ 101,000 | \$ 76,000 | \$ 81,000 |
| | | TOTALS | \$ 1,281,000 | \$ 1,939,000 | \$ 440,000 | \$ 593,000 | \$ 389,000 | \$ 516,000 |

Table B.3 - J.B. Latham Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|------------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 15 ('33/'34) | | | | | | | | |
| | 2064 | Plant 1 Aeration Blower System Replacement | \$ 550,000 | \$ 875,000 | \$ 202,000 | \$ 269,000 | \$ 152,000 | \$ 253,000 |
| | 2345 | Site Pavement Reconstruction | \$ 932,000 | \$ 1,484,000 | \$ 332,000 | \$ 451,000 | \$ 339,000 | \$ 362,000 |
| | 2353 | Perimeter Fencing Replacement | \$ 108,000 | \$ 173,000 | \$ 39,000 | \$ 52,000 | \$ 39,000 | \$ 42,000 |
| | | Small Cap Liquids | \$ 260,000 | \$ 392,000 | \$ 90,000 | \$ 121,000 | \$ 68,000 | \$ 113,000 |
| | | Small Cap Solids | \$ 219,000 | \$ 330,000 | \$ 71,000 | \$ 99,000 | \$ 94,000 | \$ 66,000 |
| | | Small Cap Common | \$ 228,000 | \$ 343,000 | \$ 77,000 | \$ 104,000 | \$ 78,000 | \$ 84,000 |
| | | TOTALS | \$ 2,296,000 | \$ 3,596,000 | \$ 811,000 | \$ 1,096,000 | \$ 770,000 | \$ 920,000 |

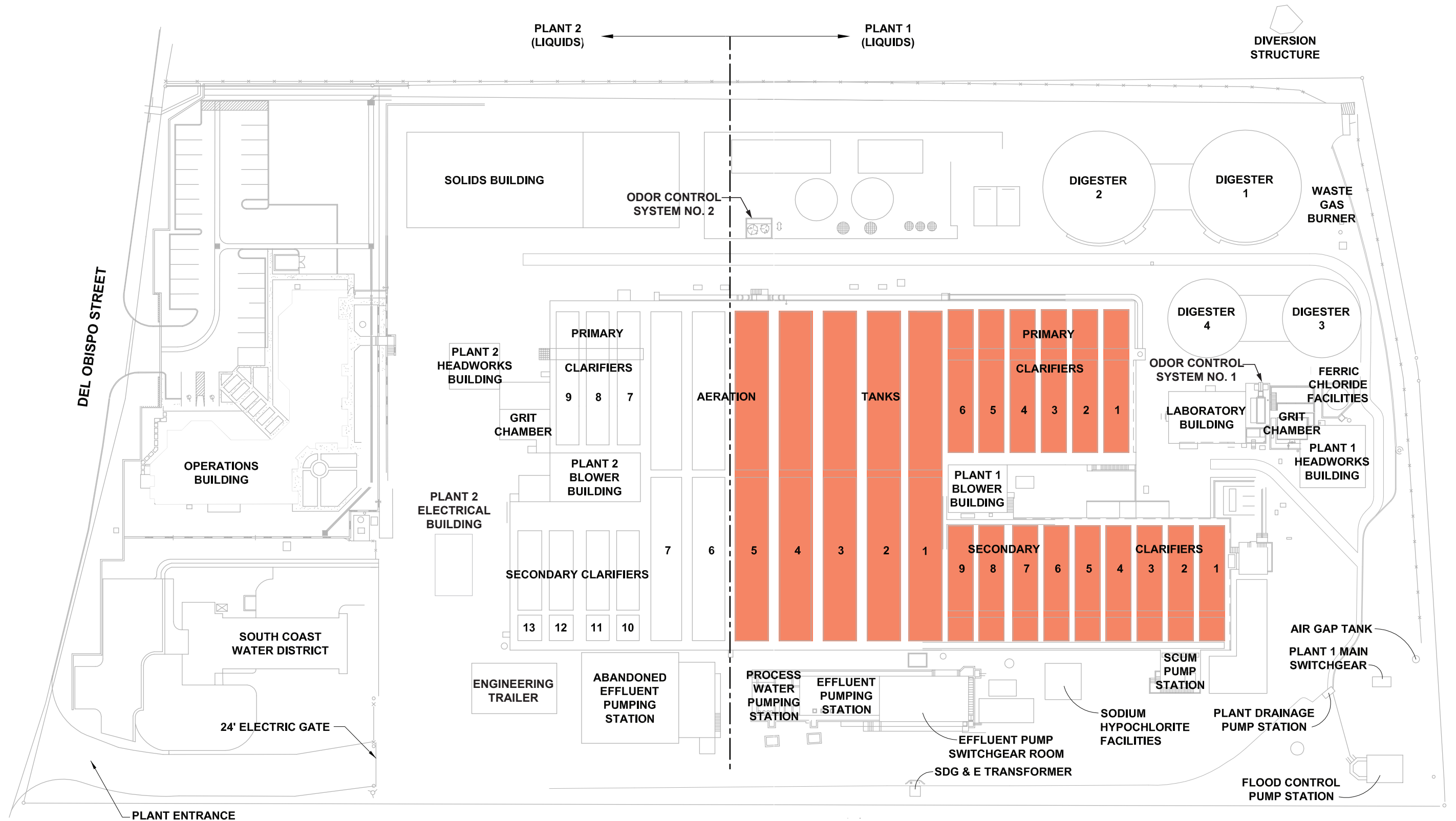


SITE PLAN



*Aeration Tank No.1 will be Permanently Taken Out of Service

Figure B.2
Overall Site Plan and Flow Path



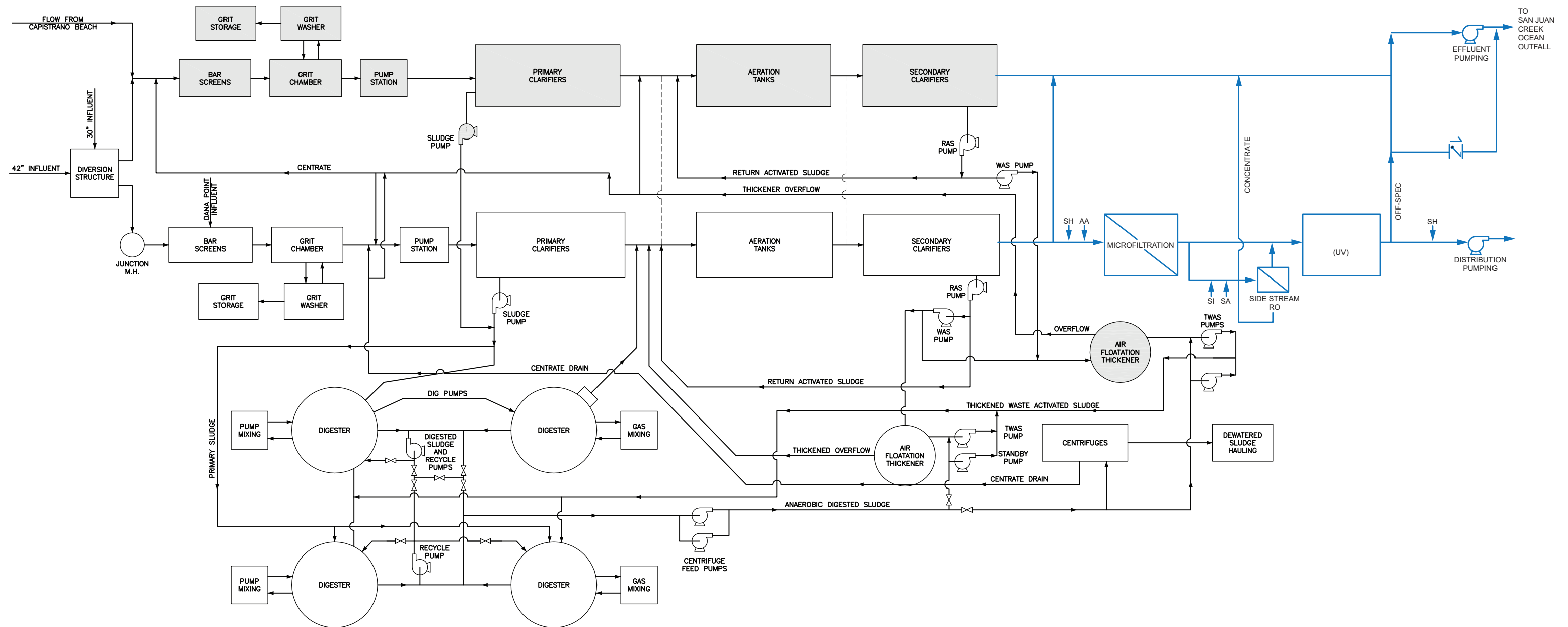
Legend

Indicates Required Basins under Specified Operating Condition

SITE PLAN



Figure B.1
 Basin Requirement at 6.2 MGD
 Average Annual Daily Flow



Chemicals

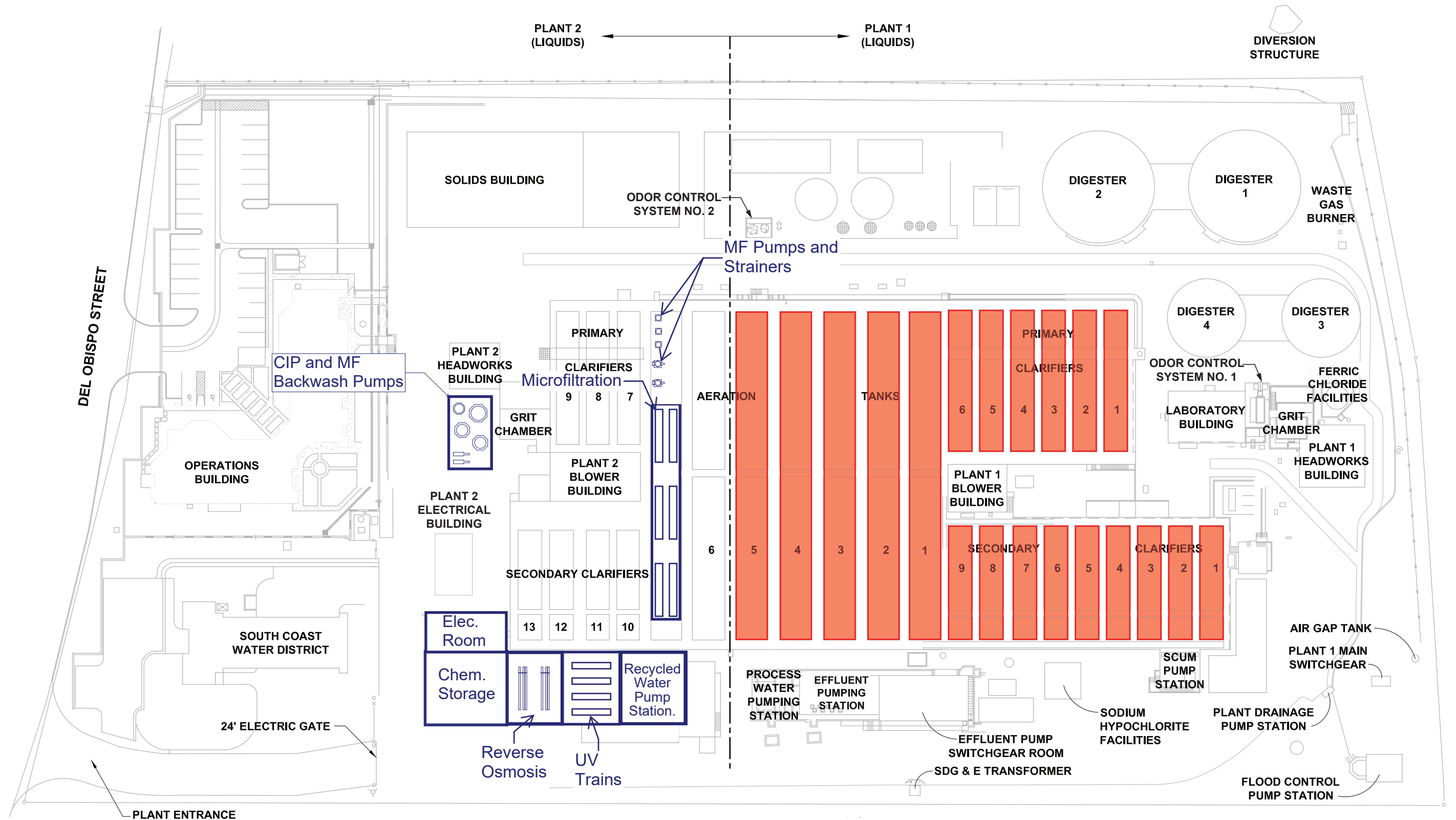
AA - AQUA AMMONIA
 SA - SULFURIC ACID
 SH - SODIUM HYPOCHLORITE
 SI - SCALE INHIBITOR

Legend

Plant 2
 Plant 1

Figure B.3
 Title 22 Effluent - Alternative:
 Existing Secondary Treatment

Prepared By:



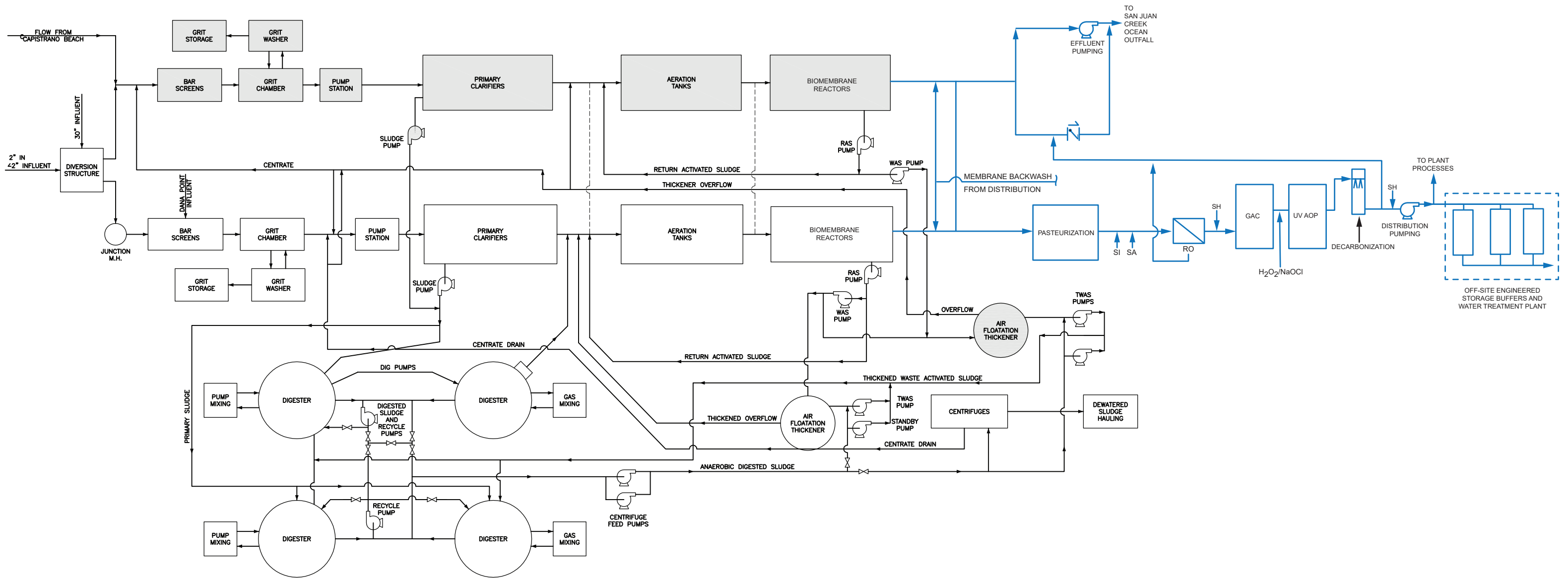
Legend

Indicates Required Basins under Specified Operating Condition

SITE PLAN



Figure B.4
 Site Layout - 6.2 MGD Title 22
 Effluent Treatment System with
 Existing Secondary Treatment
 Recommended Configuration



Chemicals

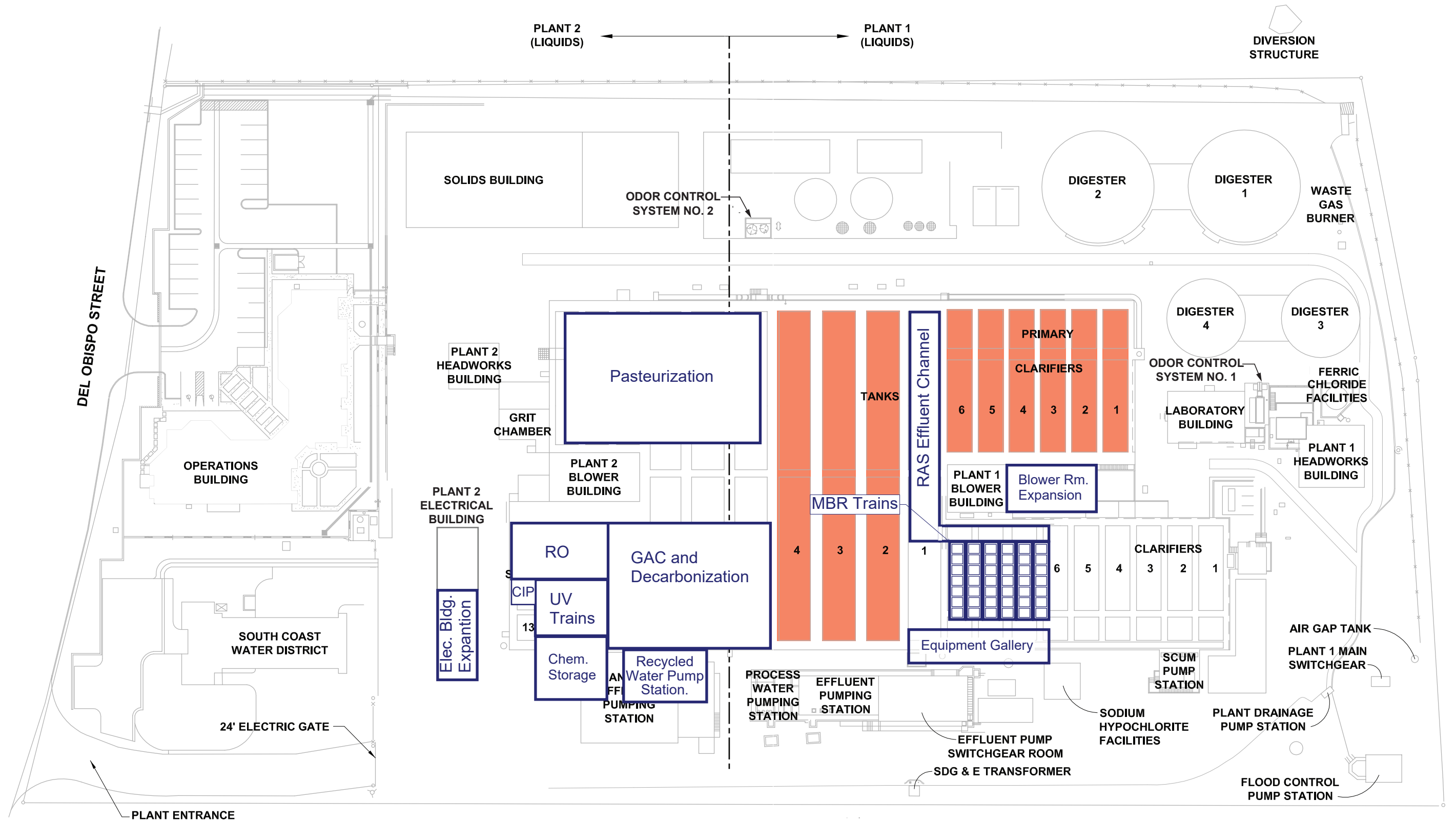
AA - AQUA AMMONIA
 SA - SULFURIC ACID
 SH - SODIUM HYPOCHLORITE
 SI - SCALE INHIBITOR

Legend

Plant 2
 Plant 1

Prepared By:

Figure B.5
 Direct Potable Reuse
 Alternative: Submerged
 Membranes



Legend

Indicates Required Basins under Specified Operating Condition

Notes

1. MBR equipment gallery contains WAS pumps, process pumps, and piping.

SITE PLAN



Figure B.6
Site Layout - 6.2 MGD DPR with
MBR Secondary Treatment

Appendix C
J.B. Latham Treatment Plant Project Descriptions

Capital Improvement Program – Project Description

Project No.: 2051
Project Name: Influent Diversion Structure Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2026
Project Status: Short Term Planning

Project Description: Project involves the replacement of two actuated gates and the access hatch at the diversion gate. Scope also includes replacement of lining within the structure as well replacement of the fencing around the Diversion Structure.



Project Need: The Diversion Structure was constructed in 1978 as part of the Oso Trabuco Sewer Project. One isolation gate was replaced and concrete repairs were performed in 2004.

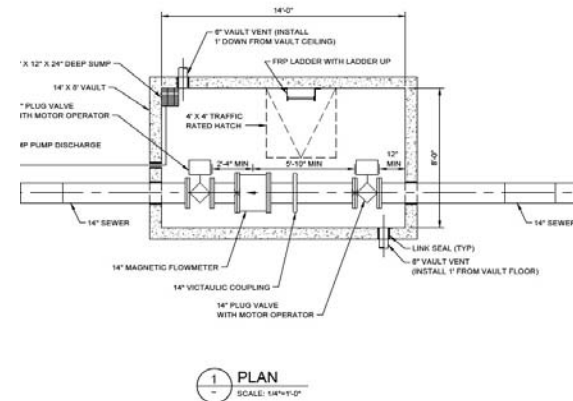
Key Issues: This facility will be included as part of the Plant 1 Headworks Condition Assessment (Project 02054). It is believed that the work in the Diversion Structure can be done without a major flow bypass based on the experiences with replacement of the one structure gates in 2004.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 8,000 |
| Design: | \$ | 17,000 |
| Construction: | \$ | 336,000 |
| Construction Support: | \$ | 34,000 |
| Total Budget: | \$ | 394,000 |

Capital Improvement Program – Project Description

| | |
|--------------------------|--------------------------|
| Project No.: | 2052 |
| Project Name: | Bypass Flow Installation |
| Facility: | JB Latham |
| Cost Center: | PC 2 Liquids |
| Anticipated Fiscal Year: | 2027 |
| Project Status: | Short Term Planning |



Project Description: Project involves the construction of two new vaults on the existing bypass pipeline between Plants 1 and 2. One vault would contain a control gate; the second vault would include a flow meter.

Project Need: The Latham Plant's ability to handle changed flow conditions would be enhanced by the ability to control diversions between Plant 1 and Plant 2.

Key Issues: This project was defined in a study by TetraTech prepared in 2012. The project has not been implemented to avoid potential interference with a future project to construct Digester No.5.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 51,000 |
| Construction: | \$ | 508,000 |
| Construction Support: | \$ | 64,000 |
| Total Budget: | \$ | 623,000 |

Capital Improvement Program – Project Description

Project No.: 2054
Project Name: Plant 1 Headworks Condition Assessment
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: This condition assessment would evaluate all structures and systems associated with Plant 1 Headworks Building, the Plant 1 Grit Pumping Drywell, and the Diversion Structure.

Project Need: Each of the involved systems involves either a corrosive atmosphere or a system handling abrasives. The Plant 1 Grit Pump Drywell dates to 1971 and is showing signs of wear.

Key Issues: Project should include isolation and investigation of conditions in raw sewage channels within the Headworks Building.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 45,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 0 |
| Construction Support: | \$ | 0 |
| Total Budget: | \$ | 45,000 |



Capital Improvement Program – Project Description

Project No.: 2055
Project Name: Plant 1 Headworks Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2026
Project Status: Short Term Planning

Project Description: Project includes the replacement of two bar screens, two screenings conveyors, one screenings compactor and associated discharge tube and one grit classifier. The project also includes reconstruction of the power feed to the main devices, replacement of channel level sensors and building gas monitors.

Project Need: Most of the Plant 1 Headworks equipment was replaced in 2005. Equipment in the harsh headworks environment is typically expected to have a life between 15 to 20 years.

Key Issues: The scope of this project will largely be dictated by the Plant 1 Headworks condition assessment (Project 02054). This project may result in additional upgrades of architectural, structural and HVAC components of the Headworks Building. This project may also be impacted if SOCWA determines to proceed with the construction of a consolidated headworks.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 107,000 |
| Construction: | \$ | 1,423,000 |
| Construction Support: | \$ | 142,000 |
| Total Budget: | \$ | 1,672,000 |



Capital Improvement Program – Project Description

Project No.: 2057
Project Name: Plant 1 Grit Handling Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2023
Project Status: Short Term Planning

Project Description: Project entails the replacement of two grit pumps and the associated piping and valving located in the Plant 1 Grit Pump drywell.

Project Need: In 2019 SOCWA staff undertook reconstruction of the existing pumps and replacement of several valves. Other components of the system date back to the original construction in the 1970's.

Key Issues: The scope of this project will largely be defined by the Plant 1 Headworks condition assessment (Project 02054). The aeration equipment within the grit basins is being replaced as part of the 2018/2019 Grit Basin Upgrade project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 20,000 |
| Construction: | \$ | 203,000 |
| Construction Support: | \$ | 30,000 |
| Total Budget: | \$ | 253,000 |



Capital Improvement Program – Project Description

Project No.: 2059

Project Name: Plant 1 Blower Building Structural and Infrastructure Upgrade

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2023

Project Status: Short Term Planning

Project Description: The project includes repairs to the building roof, miscellaneous concrete upgrades, replacement of the single and double doors, replacement of the ladder to the lower level, installation of a new monorail and hoist, replacement of the HVAC system and installation of a new lighting system. The project also includes improvements to the Plant 1 Primary Gallery.

Project Need: The Plant 1 Blower Building was constructed in 1965. Many of the components have been replaced or upgraded; many other components are over 40 years old.

Key Issues: The scope for this project will be refined by the Plant 1 Blower Building condition assessment (Project 02058). A key element of this project will be how to complete the upgrade while keeping the systems within the building in operation.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 74,000 |
| Construction: | \$ | 491,000 |
| Construction Support: | \$ | 49,000 |
| Total Budget: | \$ | 614,000 |



Capital Improvement Program – Project Description

Project No.: 2060

Project Name: Plant 1 Raw Sewage Pump Station Upgrade

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2023

Project Status: Short Term Planning

Project Description: This project will replace the three Plant 1 raw sewage pumps along with the associate piping and valving. The VFD's for the pumps are to be addressed in a separate project (Project 02061). The pump wetwell will also be repair and recoated as part of this project.

Project Need: The raw sewage pumps are all over 30 years old. Some components of the system date to the original building construction in the 1960's.

Key Issues: The scope for this project will be further developed by the Plant 1 Blower Building Condition assessment (Project 02058). The relining of the wetwell will require a bypass pumping operation.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 133,000 |
| Construction: | \$ | 1,330,000 |
| Construction Support: | \$ | 133,000 |
| Total Budget: | \$ | 1,596,000 |



Capital Improvement Program – Project Description

Project No.: 2061
Project Name: Plant 1 Raw Sewage Pump VFD Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2023
Project Status: Short Term Planning

Project Description: This project will replace the three variable frequency drives (VFD's) for the Plant 1 raw sewage pumps. The existing VFD cabinets are not included in the proposed replacement.

Project Need: The raw sewage pumps VFD's and cabinets were replaced in 2005. The units appear to be relatively good condition.

Key Issues: The scope for this project will be further defined by the Plant 1 Blower Building Condition assessment (Project 02058). Even if the units are found to be in good condition their replacement may be made necessary by the raw sewage pump replacement (Project 02060) if the pump characteristics change.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 13,000 |
| Construction: | \$ | 131,000 |
| Construction Support: | \$ | 13,000 |
| Total Budget: | \$ | 157,000 |



Capital Improvement Program – Project Description

Project No.: 2062
Project Name: Plant 1 RAS and WAS Pump System Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2023
Project Status: Short Term Planning

Project Description: The project entails the replace of three return activated sludge (RAS) pumps and two waste activated sludge (WAS) pumps along with the associated piping, valves and variable frequency drives. The project also includes recoating of the RAS wetwell.



Project Need: The Plant 1 RAS and WAS systems were reconstructed in 1998. Portions of the system date back to the original construction in the 1970's.

Key Issues: The scope and timing for this project will be further developed by the Plant 1 Blower Building Condition assessment (Project 02058). A key factor in delivering the project will be identifying how to bypass the RAS system while the wetwell is being recoated.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 70,000 |
| Construction: | \$ | 935,000 |
| Construction Support: | \$ | 94,000 |
| Total Budget: | \$ | 1,099,000 |

Capital Improvement Program – Project Description

Project No.: 2063

Project Name: Plant 1 Primary Sludge Pumping Upgrade

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2023

Project Status: Short Term Planning

Project Description: Project includes the replacement of two primary sludge pumps, associated piping and valving, pump VFD's, ten actuated sludge withdrawal valves and the primary sludge flow meter.

Project Need: The primary sludge pumps have been replaced in the past 20 years. However, most of the piping and valving dates to the early 1980's.

Key Issues: The scope for this project will be defined by the Plant 1 Blower Building Condition assessment (Project 02058). The project cost is based on replacing the sludge withdrawal valves pneumatic actuators in kind. If electric actuators are to be used an increase in cost will be necessary to account for the added electrical distribution system.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 47,000 |
| Construction: | \$ | 472,000 |
| Construction Support: | \$ | 71,000 |
| Total Budget: | \$ | 589,000 |



Capital Improvement Program – Project Description

Project No.: 2064
Project Name: Plant 1 Aeration Blower System Replacement
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2034
Project Status: Short Term Planning

Project Description: Project would replace the three multistage aeration blowers located in the Plant 1 Blower Building.

Project Need: The three blowers were installed between 1974 and 1986. Although SOCWA Operations and Maintenance staff have had success reconstructing the blowers, the units have exceeded their anticipated lives.

Key Issues: The Plant 1 Blowers serve as back-up units to the high efficiency turbo blowers located in the Plant 2 Blower Building. The scope and timing for this project will be defined by the Plant 1 Blower Building Condition Assessment (Project 02058).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 11,000 |
| Design: | \$ | 34,000 |
| Construction: | \$ | 458,000 |
| Construction Support: | \$ | 46,000 |
| Total Budget: | \$ | 550,000 |



Capital Improvement Program – Project Description

Project No.: 2065
Project Name: MCC-A-1 Replacement
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2023
Project Status: Short Term Planning

Project Description: The project involves the replacement of MCC-A-1 located in the Plant 1 Blower Building.

Project Need: The motor control center was installed in 1974 and has exceeded its anticipated lives.

Key Issues: The scope and timing for this project will be defined by the Plant 1 Blower Building Condition Assessment (Project 02058).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 43,000 |
| Construction: | \$ | 425,000 |
| Construction Support: | \$ | 43,000 |
| Total Budget: | \$ | 510,000 |



Capital Improvement Program – Project Description

Project No.: 2066
Project Name: Plant 1 Emergency Generator
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2023
Project Status: Short Term Planning

Project Description: This project entails the replacement of the Plant 1 Standby Power Generator.

Project Need: The existing generator is over 30 years old. It was scheduled for replacement as part of the Fiscal Year 2017/18 budget. However, the plant staff requested that the unit be upsized to handle a greater portion of the Plant 1 load.

Key Issues: The sizing of the generator and associated improvements are being reviewed as part of an Electrical System Evaluation in the Fiscal Year 2018/19 budget.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 47,000 |
| Construction: | \$ | 470,000 |
| Construction Support: | \$ | 47,000 |
| Total Budget: | \$ | 564,000 |



Capital Improvement Program – Project Description

Project No.: 2067
Project Name: Plant 2 Headworks Condition Assessment
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: This condition assessment would evaluate all structures and systems associated with Plant 2 Headworks Building, the Plant 2 Grit Basins, and the Plant 2 Grit Pumping Drywell.

Project Need: Each of the involved systems involves either a corrosive atmosphere or a system handling abrasives.

Key Issues: Project should include isolation and investigation of conditions in raw sewage channels within the Headworks Building.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 45,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 0 |
| Construction Support: | \$ | 0 |
| Total Budget: | \$ | 45,000 |



Capital Improvement Program – Project Description

Project No.: 2068
Project Name: Plant 2 Headworks Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2033
Project Status: Short Term Planning

Project Description: Project includes the replacement of one bar screen, one manual rack, one screenings compactor, one conveyor, one screenings compactor and associated discharge tube and one grit classifier. The project also includes reconstruction of the power feed to the main devices, replacement of channel level sensors and building gas monitors.

Project Need: The Plant 2 Influent bar screen was replaced in 2012 along with the four channel isolation gates. Other elements have been periodically changed out by the Operations and Maintenance staff. Equipment within the headworks has a relatively short life due to

Key Issues: The scope of this project will largely be dictated by the Plant 2 Headworks condition assessment (Project 02067). This project may result in additional upgrades of architectural, structural and HVAC components of the Headworks Building. This project may also be impacted if SOCWA determines to proceed with the construction of a consolidated headworks.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 37,000 |
| Construction: | \$ | 488,000 |
| Construction Support: | \$ | 49,000 |
| Total Budget: | \$ | 574,000 |



Capital Improvement Program – Project Description

Project No.: 2069

Project Name: Plant 2 Blower Building Condition Assessment

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2024

Project Status: Short Term Planning

Project Description: This condition assessment will address the Plant 2 Blower Building along with the associated Raw Sewage Pump Station, Return Activated Sludge Pump Station, Waste Activated Pump Station, and Primary Sludge Pump Station.

Project Need: The Plant 2 Blower Building was constructed in 1983. Many of the components have been replaced or upgraded; many other components are over 30 years old.

Key Issues: This condition assessment will help to define several rehabilitation projects. For this assessment to be effective the evaluation must be comprehensive enough to address minor systems such as lighting, 120 volt power distribution, and water piping. These systems have not historically received as much attention as the large pumps, blowers and control panels.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 55,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 0 |
| Construction Support: | \$ | 0 |
| Total Budget: | \$ | 55,000 |



Capital Improvement Program – Project Description

Project No.: 2070

Project Name: Plant 2 Blower Building Structural and Infrastructure Upgrade

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2029

Project Status: Short Term Planning



Project Description: The project includes repairs to the building roof, miscellaneous concrete upgrades, replacement of doors (two single, one double, and one roll-up), replacement of the ladder to the roof, replacement of the HVAC system and installation of a new lighting system.

Project Need: The Plant 2 Blower Building was constructed in 1982. Many of the components have been replaced or upgraded; many other components are over 30 years old.

Key Issues: The scope for this project will be refined by the Plant 2 Blower Building condition assessment (Project 02069). A key element of this project will be how to complete the upgrade while keeping the systems within the building in operation.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 41,000 |
| Construction: | \$ | 413,000 |
| Construction Support: | \$ | 41,000 |
| Total Budget: | \$ | 496,000 |

Capital Improvement Program – Project Description

Project No.: 2071

Project Name: Plant 2 Raw Sewage Pump Station Upgrade

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2029

Project Status: Short Term Planning

Project Description: This project will replace the four Plant 2 raw sewage pumps along with the associate piping and valving. The VFD's for the pumps are to be addressed in a separate project (Project 02072). The pump wetwell will also be repair and recoated as part of this project.

Project Need: The raw sewage pumps are all over 30 years old.

Key Issues: The scope for this project will be further developed by the Plant 2 Blower Building Condition assessment (Project 02070). Relining of the wetwell can probably be done while plant flows are diverted to Plant 1.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 63,000 |
| Construction: | \$ | 836,000 |
| Construction Support: | \$ | 84,000 |
| Total Budget: | \$ | 983,000 |



Capital Improvement Program – Project Description

Project No.: 2072

Project Name: Plant 2 Raw Sewage Pump VFD Upgrade

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2029

Project Status: Short Term Planning

Project Description: This project will replace the four variable frequency drives (VFD's) for the Plant 2 raw sewage pumps. The existing VFD cabinets are not included in the proposed replacement.

Project Need: The raw sewage pumps VFD's and cabinets were replaced in 2017.

Key Issues: The scope for this project will be further defined by the Plant 2 Blower Building Condition assessment (Project 02070). Even if the units are found to be in good condition their replacement may be made necessary by the raw sewage pump replacement (Project 02071) if the pump characteristics change.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 16,000 |
| Construction: | \$ | 158,000 |
| Construction Support: | \$ | 16,000 |
| Total Budget: | \$ | 190,000 |



Capital Improvement Program – Project Description

Project No.: 2073

Project Name: Plant 2 RAS and WAS Pump System Upgrade

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2029

Project Status: Short Term Planning



Project Description: The project entails the replace of three return activated sludge (RAS) pumps and two waste activated sludge (WAS) pumps along with the associated piping, valves and variable frequency drives. The project also includes recoating of the RAS wetwell.

Project Need: Portions of the Plant 2 RAS and WAS systems have been replaced by the Operations and Maintenance staff. The remaining system components date to the 1980's.

Key Issues: The scope and timing for this project will be further developed by the Plant 2 Blower Building Condition assessment (Project 02070). Work in the wet well may be accomplished while flows to Plant 2 or bypassed to Plant 1.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 56,000 |
| Construction: | \$ | 741,000 |
| Construction Support: | \$ | 74,000 |
| Total Budget: | \$ | 870,000 |

Capital Improvement Program – Project Description

Project No.: 2074

Project Name: Plant 2 Primary Sludge Pumping Upgrade

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2029

Project Status: Short Term Planning

Project Description: Project includes the replacement of two primary sludge pumps, associated piping and valving, pump VFD's, six actuated sludge withdrawal valves and the primary sludge flow meter.

Project Need: The primary sludge pumps have been replaced in the past 20 years. However, most of the piping and valving dates to the early 1980's.

Key Issues: The scope for this project will be defined by the Plant 2 Blower Building Condition assessment (Project 02070). The project cost is based on replacing the sludge withdrawal valves pneumatic actuators in kind. If electric actuators are to be used an increase in cost will be necessary to account for the added electrical distribution system.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 38,000 |
| Construction: | \$ | 379,000 |
| Construction Support: | \$ | 57,000 |
| Total Budget: | \$ | 474,000 |



Capital Improvement Program – Project Description

Project No.: 2075
Project Name: Plant 2 Emergency Generator
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2029
Project Status: Short Term Planning

Project Description: The Plant 2 Standby Power Generator will be replaced as part of this project.

Project Need: The existing generator is approximately 30 years old.

Key Issues: The cost estimate for this replacement assumes that the new generator would handle the loads for the Plant 2 Headworks and Raw Sewage Pumping Station. The load requirements for the generator will need to be reviewed before budgeting for the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 10,000 |
| Design: | \$ | 31,000 |
| Construction: | \$ | 408,000 |
| Construction Support: | \$ | 41,000 |
| Total Budget: | \$ | 490,000 |



Capital Improvement Program – Project Description

Project No.: 2076
Project Name: Plant 2 Meter Vault Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2029
Project Status: Short Term Planning

Project Description: The project will replace the venturi insert within the meter vault, repair concrete as needed and replace the vault hatch. The project will also replace the level instrumentation used in calculation of the flow.

Project Need: The Plant 2 Meter Vault was constructed in 1982. Portions of the vault have deteriorated through exposure to raw sewage and the associated atmosphere. The range of flow has changed since the original construction.

Key Issues: The project will be defined as part of the Condition Assessment (Project 02093). Information regarding the anticipated flow range will be developed during the Hydraulic Modeling (Project 02103). The project would require a temporary bypass of influent sewage while the upgrade work is being done.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 7,000 |
| Conceptual Study: | \$ 7,000 |
| Design: | \$ 26,000 |
| Construction: | \$ 261,000 |
| Construction Support: | \$ 26,000 |
| Total Budget: | \$ 326,000 |



Capital Improvement Program – Project Description

Project No.: 2077
Project Name: Plant 2 Grit Handling Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2029
Project Status: Short Term Planning

Project Description: Project entails the replacement of two grit pumps and the associated piping and valving located in the Plant 2 Grit Pump drywell, concrete and coating repairs within the Grit Basins, replacement of the basin aluminum covers and installation of a new air diffuser system in the basins.

Project Need: The Plant 2 Grit Handling system components are over 30 years old and have exceeded their expected lives.

Key Issues: The scope of this project will largely be defined by the Plant 2 Headworks condition assessment (Project 02067).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 54,000 |
| Construction: | \$ | 541,000 |
| Construction Support: | \$ | 54,000 |
| Total Budget: | \$ | 649,000 |



Capital Improvement Program – Project Description

Project No.: 2078
Project Name: Scum Pump Station Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: The project involves the replacement of two scum pumps, one grinder along with the associated piping and valving. The existing level system will be replaced with a new bubbler system. A new Motor Control Center G will installed in the Chlorine Building.

Project Need: The scum handling equipment is over 30 years old. The electrical gear is vulnerable to the flooding of the drywell.

Key Issues: The scum wetwell was relined in 2015. The existing pump consist of one progressive cavity pump and one centrifugal pump. The equipment layout would need to be reconfigured to accommodate two progressive cavity pumps.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 12,000 |
| Conceptual Study: | \$ 12,000 |
| Design: | \$ 47,000 |
| Construction: | \$ 468,000 |
| Construction Support: | \$ 47,000 |
| Total Budget: | \$ 584,000 |



Capital Improvement Program – Project Description

Project No.: 2079
Project Name: Aeration Basin Drainage Pumps
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2023
Project Status: Short Term Planning

Project Description: Project includes removal of the existing aeration basin sump pumps and installation of new submersible sump pumps

Project Need: The aeration sump pumps were installed in 1989. There is one sump pump per aeration basin. The nominal useful life for these sump pumps is 15 years. Therefore, these pumps have gone beyond the useful life.

Key Issues: Need to take the aeration basin down during pump replacement. Therefore, improvements need to be done in stages.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 16,000 |
| Construction: | \$ | 313,000 |
| Construction Support: | \$ | 31,000 |
| Total Budget: | \$ | 359,000 |



Capital Improvement Program – Project Description

Project No.: 2080
Project Name: Odor Control Scrubber No.3 Installation
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2025
Project Status: Short Term Planning

Project Description: Foul air collected from the scum wetwell and the RAS channels are currently handled by existing Chemical Scrubber No.1. These odor sources would be isolated and handled by a new bio scrubber identified as Scrubber No.3.

Project Need: Scrubber No.1 is over 30 years old. The system has performed effectively. However, a new technology may remove a broader range of compounds.

Key Issues: The concept for Scrubber No.3 was developed in 2017 as part of the Foul Air System Evaluation developed by DHK Engineers. The proposed plan met the goals identified by SOCWA staff; however, the capital cost of the proposed system was significant. The proposed program should be reviewed prior to initiating design. This project must be completed prior to replacement of Scrubber No.1.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 12,000 |
| Design: | \$ | 35,000 |
| Construction: | \$ | 471,000 |
| Construction Support: | \$ | 47,000 |
| Total Budget: | \$ | 565,000 |



Capital Improvement Program – Project Description

Project No.: 2081

Project Name: Sodium Hypochlorite System Reconstruction

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2026

Project Status: Short Term Planning

Project Description: This project will replace the four sodium hypochlorite along with the associate piping and valves. This project will also replace the coating system in the containment area.

Project Need: The existing sodium hypochlorite system was installed in 2007.

Key Issues: A condition assessment should be completed before beginning this project. It likely that the fiberglass bulk storage tanks will last longer than the current extent of the Ten Year Plan.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 37,000 |
| Construction: | \$ | 490,000 |
| Construction Support: | \$ | 74,000 |
| Total Budget: | \$ | 600,000 |



Capital Improvement Program – Project Description

Project No.: 2083

Project Name: Chlorine Contact Basin Isolation Gates and Structural Rehabilitation

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2023

Project Status: Short Term Planning



Project Description: Project includes the replacement of five slide gates and concrete repair within the basins.

Project Need: The Contact Basins were installed in the early 1970's. Deterioration of the concrete is visible in locations

Key Issues: The timing and scope for the project will be defined by the Contact Basin Condition Assessment (Project 02082).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 25,000 |
| Construction: | \$ | 248,000 |
| Construction Support: | \$ | 25,000 |
| Total Budget: | \$ | 297,000 |

Capital Improvement Program – Project Description

Project No.: 2085
Project Name: Effluent Pump Station Rehabilitation
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2032
Project Status: Short Term Planning

Project Description: Project includes replacement of the Effluent Pump Station roof, structural and architectural hardware

Project Need: The Effluent Pump Station was constructed in 1993. There have been deteriorations related to structural and architectural elements.

Key Issues: The timing and scope for the project will be defined by the Effluent Pump Station Condition Assessment (Project 02082).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 29,000 |
| Construction: | \$ | 289,000 |
| Construction Support: | \$ | 36,000 |
| Total Budget: | \$ | 354,000 |



Capital Improvement Program – Project Description

Project No.: 2086
Project Name: Effluent Pump Reconstruction
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2032
Project Status: Short Term Planning

Project Description: Project includes replacement of the effluent pumps, control valves, air conditioner, drainage sump pump, liquid propane storage tanks, blower, fans and electrical.

Project Need: The effluent pump system was installed in 1993.

Key Issues: The timing and scope for the project will be defined by the Effluent Pump Station Condition Assessment (Project 02082). The effluent pumps run every day during high tide, therefore replacement will need to be coordinated according to the tides.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 122,000 |
| Construction: | \$ | 1,219,000 |
| Construction Support: | \$ | 152,000 |
| Total Budget: | \$ | 1,493,000 |



Capital Improvement Program – Project Description

Project No.: 2087

Project Name: Effluent Pump Station Standby Power Generator Replacement

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2032

Project Status: Short Term Planning

Project Description: Project includes replacement of the Effluent Pump Station standby power generator

Project Need: The Effluent Pump Station standby power generator was installed in 1993.

Key Issues: There should be backup power during the replacement of the standby power generator.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 51,000 |
| Construction: | \$ | 509,000 |
| Construction Support: | \$ | 51,000 |
| Total Budget: | \$ | 611,000 |



Capital Improvement Program – Project Description

Project No.: 2088
Project Name: Effluent Pipeline Condition Assessment
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: This project is intended to provided a condition assessment for the Effluent Pipeline from the Effluent Pump Station to the San Juan Creek crossing.

Project Need: The existing pipeline was installed in 1979. The Effluent Pipeline represents a significant vulnerability for the Latham Plant.

Key Issues: The cost of the condition assessment will be determined to a great degree of accuracy by the Condition Assessment Methodology Evaluation. (Project 02091). An assessment of the Effluent Pipeline will be challenging as there is no way to reroute the effluent.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 200,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 0 |
| Construction: | \$ 0 |
| Construction Support: | \$ 0 |
| Total Budget: | \$ 200,000 |



Capital Improvement Program – Project Description

Project No.: 2089
Project Name: Effluent Flow Metering Evaluation
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: This study will address the addition of an effluent flow meter to the effluent pipeline in the southside plant access road.

Project Need: The plant uses two existing propeller flow meters to measure Plant 1 and Plant 2 effluent flow within the Chlorine Contact Basins. The accuracy of these meters is uncertain for both high wet weather peak flows and low late night/early morning flows.

Key Issues: A prior evaluation by Hazen & Sawyer indicated that there was no effective way of improving flow metering accuracy between the main basins and the Chlorine Contact Basins. The only effective approach appears to be to locate a meter in a longer stretch of straight effluent pipe.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 60,000 |
| Design: | \$ | 0 |
| Construction: | \$ | 0 |
| Construction Support: | \$ | 0 |
| Total Budget: | \$ | 60,000 |



Capital Improvement Program – Project Description

Project No.: 2090
Project Name: Odor Control Scrubber No.1 Replacement
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2025
Project Status: Short Term Planning

Project Description: Existing Scrubber No.1 handling the Plant 1 Headworks and Primary Basins would be replaced in this project with a combination biotower and chemical scrubber system. Project would include new chemical storage system, foul airs and fans.



Project Need: Scrubber No.1 is over 30 years old. The system has performed effectively. However, a new approach may treat a broader range of odor causing compounds while providing more system redundancy for maintenance.

Key Issues: The concept for Scrubber No.1 was developed in 2017 as part of the Foul Air System Evaluation developed by DHK Engineers. The proposed plan met the goals identified by SOCWA staff; however, the capital cost of the proposed system was significant. The proposed program should be reviewed prior to initiating design.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 68,000 |
| Design: | \$ | 204,000 |
| Construction: | \$ | 2,714,000 |
| Construction Support: | \$ | 271,000 |
| Total Budget: | \$ | 3,257,000 |

Capital Improvement Program – Project Description

Project No.: 2095

Project Name: Capistrano Beach Influent Sewer Condition Assessment

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2022

Project Status: Short Term Planning



Project Description: This project involves the condition assessment of the force main beneath San Juan Creek between the Victoria Lift Station and the J. B. Latham Treatment Plant.

Project Need: It is believed that this pipeline was constructed in the 1970's to convey effluent from the Capistrano Beach Sanitary District Treatment Plant to the Latham Plant. This pipeline was converted to raw sewage use in the late 1990's when the Capistrano Beach

Key Issues: This pipeline is the property of the South Coast Water District. It may be more appropriate for the project to be conducted by that agency.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 100,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 0 |
| Construction: | \$ 0 |
| Construction Support: | \$ 0 |
| Total Budget: | \$ 100,000 |

Capital Improvement Program – Project Description

Project No.: 2096

Project Name: Plant 1 Liquids Buried Piping Reconstruction

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2030

Project Status: Short Term Planning

Project Description: This project includes replacing underground piping for Plant 1. Utilities included in this phase are the Hot Water Supply and Return, Natural Gas, Low-pressure Sludge Gas, and Waste Activated Sludge.

Project Need: The below grade piping at the facility is largely direct buried steel and ductile iron installed over various phases of the construction of the plant.

Key Issues: Much of the underground piping is buried under access roads at the facility and traffic flow will be a large part of the coordination of this project. In addition, key utilities may require temporary bypasses and other considerations to keep the facility operational during the project. The full extent of these impacts have not been reviewed and may have further cost implications to the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 11,000 |
| Construction: | \$ | 375,000 |
| Construction Support: | \$ | 56,000 |
| Total Budget: | \$ | 442,000 |



Capital Improvement Program – Project Description

Project No.: 2097

Project Name: Plant 2 Liquids Buried Piping Reconstruction

Facility: JB Latham

Cost Center: PC 2 Liquids

Anticipated Fiscal Year: 2030

Project Status: Short Term Planning

Project Description: This project includes replacing underground piping for Plant 2. Utilities included in this phase are the Hot Water Supply and Return, Natural Gas, Low-pressure Sludge Gas, and Waste Activated Sludge.

Project Need: The below grade piping at the facility is largely direct buried steel and ductile iron installed over various phases of the construction of the plant.

Key Issues: Much of the underground piping is buried under access roads at the facility and traffic flow will be a large part of the coordination of this project. In addition, key utilities may require temporary bypasses and other considerations to keep the facility operational during the project. The full extent of these impacts have not been reviewed and may have further cost implications to the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 18,000 |
| Construction: | \$ | 584,000 |
| Construction Support: | \$ | 88,000 |
| Total Budget: | \$ | 689,000 |



Capital Improvement Program – Project Description

Project No.: 2098
Project Name: Plant 2 Primary Sedimentation Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: Project includes Plant 2 primary sedimentation concrete repair, sludge collectors, drives, scum skimmers, launders and electrical; in addition, primary effluent channel concrete and diamond plates will be repaired/replaced



Project Need: Plant 2 primary sedimentation equipment was installed in 1995, therefore operating beyond its useful life.

Key Issues: The improvements will most likely to be part of Package "D". During the improvement, flow will be diverted to Plant 1.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 169,000 |
| Construction: | \$ | 1,695,000 |
| Construction Support: | \$ | 212,000 |
| Total Budget: | \$ | 2,076,000 |

Capital Improvement Program – Project Description

Project No.: 2099
Project Name: Plant 2 Secondary Sedimentation Upgrade
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: Project includes Plant 2 secondary sedimentation basins concrete repair, sludge collectors, drives, effluent weirs, and electrical

Project Need: Plant 2 secondary sedimentation equipment was installed around 1978, therefore operating beyond its useful life.

Key Issues: The improvements will most likely to be part of Package “D”. During the improvement, flow will be diverted to Plan 1.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 164,000 |
| Construction: | \$ | 1,643,000 |
| Construction Support: | \$ | 205,000 |
| Total Budget: | \$ | 2,013,000 |



Capital Improvement Program – Project Description

Project No.: 2101
Project Name: Effluent Pump VFD Replacement
Facility: JB Latham
Cost Center: PC 2 Liquids
Anticipated Fiscal Year: 2026
Project Status: Short Term Planning

Project Description: Project would replace the four Effluent Pump variable frequency drives (VFD's) within the existing unit cabinets.

Project Need: The existing VFD's were installed in 1992 and have exceeded the anticipated 15 year lives. The VFD cabinets appear to remain in good condition.

Key Issues: The scope and timing for this project will be defined by the Effluent Pump Station Condition Assessment (Project 02100).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 11,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 22,000 |
| Construction: | \$ | 218,000 |
| Construction Support: | \$ | 22,000 |
| Total Budget: | \$ | 272,000 |



Capital Improvement Program – Project Description

Project No.: 2321
Project Name: Odor Control Scrubber No.2 Replacement
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2025
Project Status: Short Term Planning

Project Description: Existing Scrubber No.2 handling the Plant 2 Headworks and Primary Basins, the DAF's and the Energy Building would be replaced in this project with a combination biotower and chemical scrubber system. Project would include new chemical storage system, foul airs and fans.



Project Need: Scrubber No.2 is over 15 years old. The system has performed effectively. However, a new approach may address a broader range of odor causing compounds while providing more system redundancy for maintenance.

Key Issues: The concept for Scrubber No.2 was developed in 2017 as part of the Foul Air System Evaluation developed by DHK Engineers. The proposed plan met the goals identified by SOCWA staff; however, the capital cost of the proposed system was significant. The proposed program should be reviewed prior to initiating design.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 120,000 |
| Design: | \$ | 361,000 |
| Construction: | \$ | 4,814,000 |
| Construction Support: | \$ | 481,000 |
| Total Budget: | \$ | 5,777,000 |

Capital Improvement Program – Project Description

Project No.: 2322

Project Name: Chlorine Building and Storm Water Pump Station Condition Assessment

Facility: JB Latham

Cost Center: PC 2 Common

Anticipated Fiscal Year: 2023

Project Status: Short Term Planning



Project Description: This project includes a condition assessment of the structure, the roof, the architectural hardware, the HVAC system, the electrical panels, the 120 volt power distribution system and the lighting in both the Chlorine Building and the Storm Water Pump Station. The project will also involve evaluation of the pump station wetwell, pump/generator set, pump controls and instrumentation, and gas storage.

Project Need: The Chlorine Building was constructed in 1971. The building is no longer used to handle chlorine gas; it is now used for storage. Many of the components have deteriorated through 45 years of use. The Storm Water Pump Station was constructed in the early

Key Issues: The Storm Water Pump Station has been the subject of discussion over the past five years due to its joint use by the property on the south side of the Latham Treatment Plant.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 45,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 0 |
| Construction Support: | \$ | 0 |
| Total Budget: | \$ | 45,000 |

Capital Improvement Program – Project Description

Project No.: 2333
Project Name: Chlorine Building Rehabilitation
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2028
Project Status: Short Term Planning



Project Description: The project includes repairs to the building roof, miscellaneous concrete upgrades, replacement of doors (two single and one roll-up), installation of a new monorail hoist, replacement of a window and a louver, and reconstruction of the lighting and power system.

Project Need: The Chlorine Building was constructed in 1971. The building is no longer used to handle chlorine gas; it is now used for storage. Many of the components have deteriorated through 45 years of use.

Key Issues: The scope for this project will be further refined by the Chlorine Building and Storm Water Pump Station condition assessment (Project 02322). The project may also be impacted by the Site Storage Evaluation (Project 02344).

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 9,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 23,000 |
| Construction: | \$ 189,000 |
| Construction Support: | \$ 19,000 |
| Total Budget: | \$ 240,000 |

Capital Improvement Program – Project Description

Project No.: 2334
Project Name: MCC M Replacement
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: This project will replace Motor Control Center M with a new facility to be located inside the Chlorine Building for better environmental control.

Project Need: Motor Control Center M was installed in 1989 large to distribute power to the Non-Potable Water Pumps. The gear shows signs of deterioration due to the outdoor location near the ocean.

Key Issues: This project is being further defined as part of an Electrical Service Evaluation being conducted through Fiscal Year 2018/19 budget.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 305,000 |
| Construction Support: | \$ | 31,000 |
| Total Budget: | \$ | 336,000 |



Capital Improvement Program – Project Description

Project No.: 2335
Project Name: Administration Building Condition Assessment
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: Project involves a condition assessment of the Administration Building including the overall structure, roof, locker room facilities, fire suppression system, plumbing, HVAC system, electrical panels, standby power generator, and lighting.



Project Need: The Administration Building was constructed in 1993 and expanded in 2001. The building sees heavy use due to both its occupancy and its role as the central meeting place for SOCWA.

Key Issues: It may appropriate to perform the Condition Assessment in conjunction with the Administration Building Spatial Evaluation (Project 02336).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 25,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 0 |
| Construction Support: | \$ | 0 |
| Total Budget: | \$ | 25,000 |

Capital Improvement Program – Project Description

Project No.: 2336
Project Name: Administration Building Spatial Evaluation
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: The Administration Building Spatial Evaluation will update the 2003 spatial analysis prepared by Malcolm Pirnie. The evaluation will consider needs for offices, meeting space, work space, and operator utilization.

Project Need: The Administration Building at the Latham Plant is fully utilized. There is no space available on the Latham Plan site to accommodate any spatial expansion.

Key Issues: The ability to expand or to modify the Administration Building is in part impacted by City of Dana Point building permit requirements. Spatial requirements are also tied to long term planning initiatives regarding staffing levels.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 40,000 |
| Design: | \$ | 0 |
| Construction: | \$ | 0 |
| Construction Support: | \$ | 0 |
| Total Budget: | \$ | 40,000 |



Capital Improvement Program – Project Description

Project No.: 2337
Project Name: Administration Building Roof Reconstruction
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2026
Project Status: Short Term Planning

Project Description: This project involves reconstruction of the Administration Building roof including gutters and vents. The project will also include a significant condition assessment to address potential repairs needed for roof sheathing.



Project Need: The Administration Building roof exists largely as it was constructed in 1993. Portions of the roof were added and modified as part of the Building expansion in 2001. Operations and Maintenance staff have periodically dealt with the roof leaks.

Key Issues: The scope and the timing of the roof reconstruction are to be tied to the Administration Building Condition Assessment (Project 02335). It may be appropriate for the roof reconstruction project to be timed with the HVAC Upgrade (Project 02338).

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 14,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 28,000 |
| Construction: | \$ 276,000 |
| Construction Support: | \$ 28,000 |
| Total Budget: | \$ 345,000 |

Capital Improvement Program – Project Description

Project No.: 2338
Project Name: Administration Building HVAC Reconstruction
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2026
Project Status: Short Term Planning

Project Description: Project involves reconstruction of the Administration Building HVAC system including three condenser/fan coil/heat pump units. The basis of design for the HVAC system will be reevaluated with potential changes to the ducting system.

Project Need: The existing HVAC system is largely as reconstructed in 2001. Portions of the system have since been replaced by the Operations and Maintenance staff.

Key Issues: The scope and the timing of the HVAC reconstruction are to be defined in the Administration Building Condition Assessment (Project 02335).

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 7,000 |
| Conceptual Study: | \$ 7,000 |
| Design: | \$ 16,000 |
| Construction: | \$ 131,000 |
| Construction Support: | \$ 7,000 |
| Total Budget: | \$ 167,000 |



Capital Improvement Program – Project Description

Project No.: 2340
Project Name: Plant Water Pump Station Reconstruction
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2028
Project Status: Short Term Planning

Project Description: Project includes pumps, strainers, air gap control valve, air gap tank, piping, valves and appurtenances and instrumentation upgrades.

Project Need: The existing plant potable water pump station dates to the 1980's. Portions of the system have been replaced in the interim by SOCWA Operations and Maintenance staff.

Key Issues: A conceptual design for the reconstructed plant potable water system needs to address (a) uses, (b) diurnal requirements, and (c) regulatory restriction for potable water systems on wastewater treatment plant sites.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 53,000 |
| Construction: | \$ | 529,000 |
| Construction Support: | \$ | 66,000 |
| Total Budget: | \$ | 648,000 |



Capital Improvement Program – Project Description

Project No.: 2341
Project Name: Non-Potable Water Pump Station Reconstruction
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2028
Project Status: Short Term Planning

Project Description: This project will include the replacement of the two main pumps, the two jockey pumps, and the associated strainers, above ground piping and valves. The electrical feed is largely be constructed with the replacement of Motor Control Center M (Project 02334).

Project Need: The original non-potable pumps were installed in 1989. Two of the four pumps were replace with smaller jockey pumps in 2008. Valves, strainers and pump bases show signs of deterioration.

Key Issues: The Non-Potable Water Pump Station may evolve into two separate project depending on need: (a) strainers and valves, and (b) pumps.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 13,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 40,000 |
| Construction: | \$ 528,000 |
| Construction Support: | \$ 53,000 |
| Total Budget: | \$ 634,000 |



Capital Improvement Program – Project Description

Project No.: 2342
Project Name: Maintenance Shop Rehabilitation
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2026
Project Status: Short Term Planning

Project Description: Project includes new benchwork, cabinetry, ventilation, lighting and plumbing.

Project Need: The JB Latham maintenance shop has not been the subject of a major reconstruction project since the facility construction in 1986.

Key Issues: The project has significant component for condition and needs assessment prior to beginning design.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 5,000 |
| Construction: | \$ | 180,000 |
| Construction Support: | \$ | 18,000 |
| Total Budget: | \$ | 203,000 |



Capital Improvement Program – Project Description

Project No.: 2343

Project Name: SCADA System Upgrade Project/1st Phase

Facility: JB Latham

Cost Center: PC 2 Common

Anticipated Fiscal Year: 2028

Project Status: Short Term Planning

Project Description: Project includes the replacement of seven PLC's and three PLC cabinets.



Project Need: This project is based on the future obsolescence of the Allen Bradley ControlLogix and CompactLogix PLC's currently in use.

Key Issues: A condition assessment should be completed at least two years prior to the budgeting of this project.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 12,000 |
| Conceptual Study: | \$ 12,000 |
| Design: | \$ 47,000 |
| Construction: | \$ 467,000 |
| Construction Support: | \$ 47,000 |
| Total Budget: | \$ 584,000 |

Capital Improvement Program – Project Description

Project No.: 2345
Project Name: Site Pavement Reconstruction
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2034
Project Status: Short Term Planning



Project Description: Project includes reconstruction of asphalt pavement throughout the plant including the main loop around the plant perimeter. Work includes saw cutting and removing AC pavement, installing new AC pavement (4 inches of AC over 8 inches of AB) and AC overlay (1-1/2 inches).

Project Need: The. J. B. Latham Treatment Plant has been the subject of many localized repairs and overlay projects over the past 30 years.

Key Issues: Project should be coordinated with buried piping replacement project to avoid tearing up new pavement system directly after completion. Need to perform the work in sections to keep the plant accessible. The cost estimate is based on a 2004 analysis by TetraTech. This evaluation needs to be updated. Note that this estimate does not address concrete pavement, curbs and gutters; nor does the estimate include manhole covers and hatches.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 20,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 41,000 |
| Construction: | \$ | 810,000 |
| Construction Support: | \$ | 61,000 |
| Total Budget: | \$ | 932,000 |

Capital Improvement Program – Project Description

Project No.: 2346
Project Name: Storage Building Replacement
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2027
Project Status: Short Term Planning

Project Description: Project includes a new storage building that is 25 feet wide by 40 feet long. Building fits roughly into space where existing laboratory is to be demolished.

Project Need: Projected building is estimated to replace storage facility to be removed by potential Digester No.5 project.

Key Issues: This project will be preceded by Project 02344 Site Storage Evaluation which will do the conceptual design for the new storage building.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 44,000 |
| Construction: | \$ | 368,000 |
| Construction Support: | \$ | 55,000 |
| Total Budget: | \$ | 468,000 |



Capital Improvement Program – Project Description

Project No.: 2347

Project Name: Storm Water Pump Station Reconstruction

Facility: JB Latham

Cost Center: PC 2 Common

Anticipated Fiscal Year: 2028

Project Status: Short Term Planning

Project Description: This project includes reconstruction of the building roof, repair of concrete surfaces, replacement of the wetwell grating and supports, installation of new architectural hardware, replacement of pump/engine combination, retrofit of slide gate, replacement of piping and valving, and installation of new pump controls. Project also entails replacement of building HVAC, power supply and lighting.

Project Need: The Storm Water Pump Station was constructed in the early 1980's by the County of Orange. The facility has only been lightly used.

Key Issues: The timing and scope for this project will be further refined through the Chlorine Building and Storm Water Pump Station Condition Assessment (Project 02322). The impact of the joint use of the facility by the adjoining property must be developed as part of this project.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 7,000 |
| Conceptual Study: | \$ 15,000 |
| Design: | \$ 30,000 |
| Construction: | \$ 296,000 |
| Construction Support: | \$ 30,000 |
| Total Budget: | \$ 377,000 |



Capital Improvement Program – Project Description

Project No.: 2350
Project Name: Buried Water Pipe Reconstruction
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2026
Project Status: Long Term Planning

Project Description: Project includes replacement of the process and potable water pipelines.

Project Need: The potable and process water pipelines were constructed in 1998, possibly approaching the end of the useful life.

Key Issues: Condition assessment should be performed prior to replacement.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|--------------|
| Condition Assessment: | \$ 21,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 82,000 |
| Construction: | \$ 821,000 |
| Construction Support: | \$ 103,000 |
| Total Budget: | \$ 1,027,000 |



Capital Improvement Program – Project Description

Project No.: 2351
Project Name: Buried Drainage Pipe Reconstruction
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2030
Project Status: Long Term Planning

Project Description: Project includes replacement of the buried drainage pipe

Project Need: The buried drainage pipe was installed in 1988 and possibly reaching the end of its useful life

Key Issues: Condition assessment and actual location of pipe.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 52,000 |
| Construction: | \$ | 516,000 |
| Construction Support: | \$ | 65,000 |
| Total Budget: | \$ | 632,000 |



Capital Improvement Program – Project Description

Project No.: 2353
Project Name: Perimeter Fencing Replacement
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2034
Project Status: Short Term Planning

Project Description: Project includes the replacement of 1,200 linear feet of chain link fencing along the perimeter of the plant.

Project Need: Most of the fence dates to the late 1970's and early 1980's. This project has been included as a project based on the anticipated life of the fencing.

Key Issues: The cost estimate does not include temporary fencing during construction.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 9,000 |
| Construction: | \$ | 92,000 |
| Construction Support: | \$ | 7,000 |
| Total Budget: | \$ | 108,000 |



Capital Improvement Program – Project Description

Project No.: 2354
Project Name: Natural Gas Pipeline Replacement
Facility: JB Latham
Cost Center: PC 2 Common
Anticipated Fiscal Year: 2030
Project Status: Long Term Planning

Project Description: Project includes replacement of the natural gas pipeline

Project Need: The natural gas pipeline was installed in 1988, possibly reaching its end of useful life.

Key Issues: Condition assessment and actual location of pipe, and continue to supply natural gas.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 63,000 |
| Construction: | \$ | 630,000 |
| Construction Support: | \$ | 79,000 |
| Total Budget: | \$ | 772,000 |



Capital Improvement Program – Project Description

Project No.: 2520
Project Name: Ferric Chloride System Reconstruction
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2029
Project Status: Short Term Planning

Project Description: The project includes the replacement of the ferric chloride system including bulk storage tank, chemical metering pumps, associated piping and valves, system controls and instrumentation. The project also includes recoating of the concrete containment area.



Project Need: The existing Ferric Chloride feed system was installed over 30 years ago. Some components of the system have been replaced in recent years.

Key Issues: A condition assessment should be completed on this system two years prior to the budgeting of the project. The cost for the project is based on the assumptions that the containment structure can be reused with a new coating system. The installation of the new system will require the use of a temporary system.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 16,000 |
| Conceptual Study: | \$ 16,000 |
| Design: | \$ 62,000 |
| Construction: | \$ 621,000 |
| Construction Support: | \$ 62,000 |
| Total Budget: | \$ 776,000 |

Capital Improvement Program – Project Description

Project No.: 2521
Project Name: Odor Control Scrubber No.4 Installation
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2025
Project Status: Short Term Planning



Project Description: Foul air collected from the DAF thickeners is currently handled by existing Chemical Scrubber No.2. These odor sources would be isolated and handled by a new bio scrubber identified as Scrubber No.4.

Project Need: Scrubber No.2 is over 15 years old. The system has performed effectively. However, a new technology may remove a broader range of compounds.

Key Issues: The concept for Scrubber No.4 was developed in 2017 as part of the Foul Air System Evaluation developed by DHK Engineers. The proposed plan met the goals identified by SOCWA staff; however, the capital cost of the proposed system was significant. The proposed program should be reviewed prior to initiating design. This project must be completed prior to replacement of Scrubber No.2.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 10,000 |
| Design: | \$ | 31,000 |
| Construction: | \$ | 413,000 |
| Construction Support: | \$ | 41,000 |
| Total Budget: | \$ | 495,000 |

Capital Improvement Program – Project Description

Project No.: 2522
Project Name: DAF Polymer System Upgrade
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: Project includes the replacement of the bulk emulsion polymer storage tank, the transfer pump, the mixing pump and the associated piping.

Project Need: The fiberglass storage tank was replaced in 2011. The pump and piping system is in poor condition; the Operations staff has been replacing components on as-needed basis.

Key Issues: The concrete containment area remains in good condition and does not appear to require replacement. This project is separated from the proposed shade construction (Project 17541).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 52,000 |
| Construction: | \$ | 518,000 |
| Construction Support: | \$ | 78,000 |
| Total Budget: | \$ | 648,000 |



Capital Improvement Program – Project Description

Project No.: 2523
Project Name: Dewatering Polymer System Upgrade
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2027
Project Status: Short Term Planning

Project Description: This project includes the replacement of the bulk chemical storage tank, the system piping, valves and instrumentation and the power supply for the emulsion polymer feeder system in the truck bay of the Energy Building.



Project Need: The existing polymer system was installed in 2003. The emulsion polymer feeders are being replaced in 2019 and 2020.

Key Issues: A condition assessment should be completed on this system two years prior to the budgeting of the project. Replacement of the storage tank will require the use of chemical totes tied to the existing feeders to maintain the system in operation.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 6,000 |
| Conceptual Study: | \$ 6,000 |
| Design: | \$ 17,000 |
| Construction: | \$ 231,000 |
| Construction Support: | \$ 17,000 |
| Total Budget: | \$ 277,000 |

Capital Improvement Program – Project Description

Project No.: 2524
Project Name: MCC D Replacement
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2027
Project Status: Short Term Planning

Project Description: Project includes the installation of a new MCC D in a new electrical building that will be included as part of the Digester No.5 construction (Project 02537).

Project Need: MCC D was installed in 2002. The MCC would need to be relocated to allow for the construction of Digester 5.

Key Issues: The existing MCC D must be kept on line until the installation of the new unit to maintain the associated solids equipment in operation.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 31,000 |
| Construction: | \$ | 310,000 |
| Construction Support: | \$ | 31,000 |
| Total Budget: | \$ | 372,000 |



Capital Improvement Program – Project Description

Project No.: 2525

Project Name: Anaerobic Digester No.1 and No.2 Mechanical Upgrade

Facility: JB Latham

Cost Center: PC 2 Solids

Anticipated Fiscal Year: 2031

Project Status: Short Term Planning

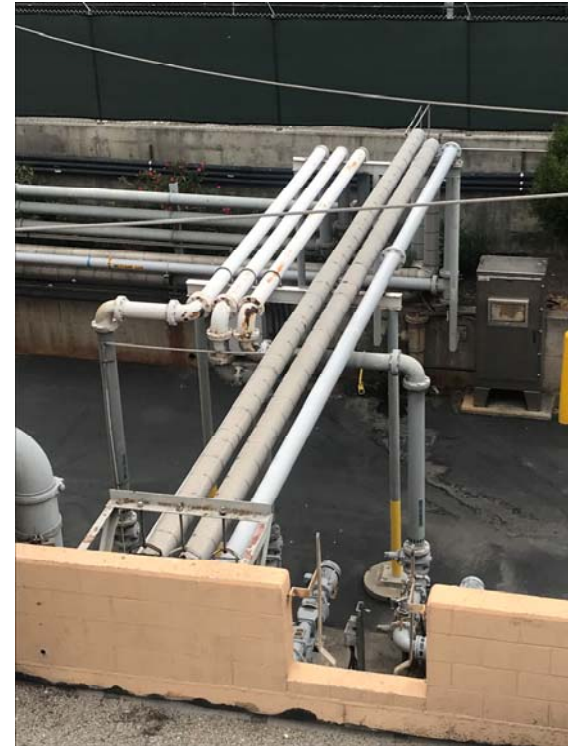
Project Description: This project includes rehabilitating the domes on each digester, upgrading the mix system, upgrading the heat exchanger and rehabilitating the digesters and associated piping.

Project Need: The components in this project will be upgraded during the 2019 Package B project and will be at or near their expected end of useful life for this project.

Key Issues: The plant cannot currently run with only two digesters online and the time to take one digester down (drain and clean) and start one up can be lengthy. It is likely that this project will span multiple years in order to reduce disruptions to plant operations.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 308,000 |
| Construction: | \$ | 3,085,000 |
| Construction Support: | \$ | 308,000 |
| Total Budget: | \$ | 3,702,000 |



Capital Improvement Program – Project Description

Project No.: 2526

Project Name: Anaerobic Digester No.3 and No.4 Mechanical Upgrade

Facility: JB Latham

Cost Center: PC 2 Solids

Anticipated Fiscal Year: 2024

Project Status: Short Term Planning



Project Description: This project includes rehabilitating the domes on each digester, upgrading the mix system, upgrading the heat exchanger and rehabilitating the digesters and associated piping.

Project Need: Some of the components in this project will be upgraded during the 2019 Package B project and will be at or near their expected end of useful life for this project.

Key Issues: The plant cannot currently run with only two digesters online and the time to take one digester down (drain and clean) and start one up can be lengthy. It is likely that this project will span multiple years in order to reduce disruptions to plant operations.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 121,000 |
| Construction: | \$ | 1,207,000 |
| Construction Support: | \$ | 121,000 |
| Total Budget: | \$ | 1,449,000 |

Capital Improvement Program – Project Description

Project No.: 2527

Project Name: Anaerobic Digester No.3 and No.4 Control Building Upgrade

Facility: JB Latham

Cost Center: PC 2 Solids

Anticipated Fiscal Year: 2024

Project Status: Short Term Planning



Project Description: This project includes roof upgrades, boiler demolition and various piping, valving, and electrical improvements in the control building.

Project Need: The building roof is in need of replacement and structural upgrades. A replacement boiler will be installed prior to this project and the existing boiler can be demolished. The boiler is well beyond its useful life. Electrical upgrades will bring the syst

Key Issues: The roof supports stairs and a walkway and may require additional structural and seismic considerations. The boiler insulation could contain asbestos which will need to be sampled to verify prior to demolition.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 67,000 |
| Construction: | \$ | 667,000 |
| Construction Support: | \$ | 83,000 |
| Total Budget: | \$ | 816,000 |

Capital Improvement Program – Project Description

Project No.: 2528
Project Name: Digested Sludge Pump Station Upgrade
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2027
Project Status: Short Term Planning

Project Description: This project will upgrade the three current sludge pumps to chopper pumps as well as replacement of valving and piping.

Project Need: The current pumps will be past their current useful life at the time of this project. The chopper pumps will also add additional benefit to operation of the solids system by helping to avoid ragging of pumps and valves.

Key Issues: Plant operations will need to be considered during the replacement if the new pumps will have a different footprint than the current pumps.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 31,000 |
| Construction: | \$ | 306,000 |
| Construction Support: | \$ | 38,000 |
| Total Budget: | \$ | 375,000 |



Capital Improvement Program – Project Description

Project No.: 2529
Project Name: MCC B Replacement
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2027
Project Status: Short Term Planning

Project Description: Project includes the installation of a new MCC B in a new electrical building that will be included as part of the Digester No.5 construction (Project 02537).

Project Need: MCC B was installed in 2002. The MCC has shown deterioration in the outdoor location due to the coastal atmosphere.

Key Issues: The existing MCC B must be kept on line until the installation of the new unit to maintain the associated digester equipment in operation.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 34,000 |
| Construction: | \$ | 338,000 |
| Construction Support: | \$ | 34,000 |
| Total Budget: | \$ | 406,000 |



Capital Improvement Program – Project Description

Project No.: 2530
Project Name: Dewatering System Reconstruction
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: This project addresses the major elements of a Carollo condition assessment conducted on the dewatering system in 2017. The project will conduct limited mechanical upgrades to the centrifuges to improve longevity as well as upgrading the diverter gates and centrate piping.

Project Need: The Carollo condition assessment found some improvements and upgrades that will assist operations and increase the life of the current system.

Key Issues: This project should have minimal impacts on operations. The centrate work should be in line with the current plans to upgrade the centrate drainage system.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 367,000 |
| Construction Support: | \$ | 46,000 |
| Total Budget: | \$ | 950,000 |



Capital Improvement Program – Project Description

Project No.: 2531
Project Name: Solids Conveyor Replacement
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

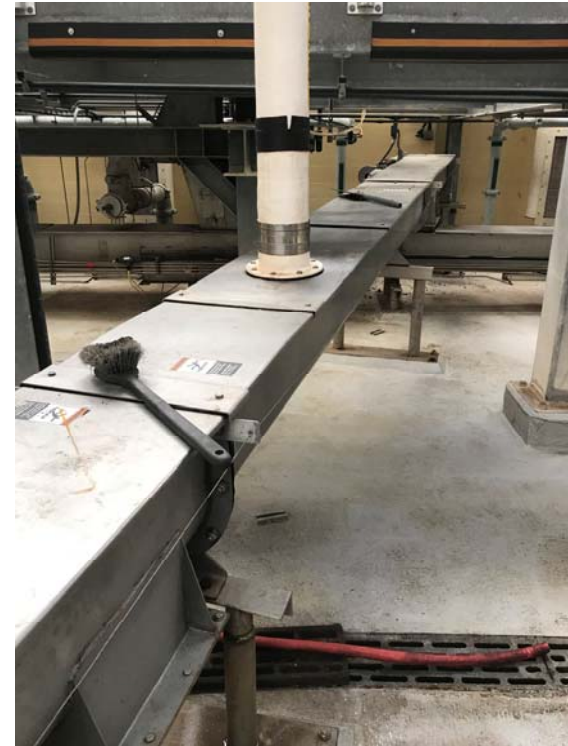
Project Description: This project addresses the major elements of a Carollo condition assessment conducted on the dewatering system in 2017. The project will replace the screws, covers, and add additional safety functions to the dewatering conveyance system.

Project Need: The Carollo condition assessment found some improvements and upgrades that will assist operations and increase the life of the current system.

Key Issues: This project should have minimal impacts on operations. Impacts on solids storage and handling should be reviewed prior to the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 148,000 |
| Construction Support: | \$ | 19,000 |
| Total Budget: | \$ | 167,000 |



Capital Improvement Program – Project Description

Project No.: 2532
Project Name: Storage and Truck Loading Rehabilitation
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: This project addresses the major elements of a Carollo condition assessment conducted on the dewatering system in 2017. This project will upgrade the current truck scales, repair the concrete floor and provide additional electrical and room upgrades.

Project Need: The current scales are sensitive to moisture and problematic for staff to operate and maintain. The proposed options will increase accuracy and ease of operation.

Key Issues: During construction of new scales, solids handling will be impacted and trailer deliveries will need to be carefully managed possibly requiring off-hours support from operations staff.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 758,000 |
| Construction Support: | \$ | 95,000 |
| Total Budget: | \$ | 853,000 |



Capital Improvement Program – Project Description

Project No.: 2533
Project Name: Gas Flare Replacement
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: This project will address upcoming South Coast AQMD regulations for flares. The current flare will likely not meet these new regulations.

Project Need: The current flare is an integral part in energy management as well as air quality. If the current flare will not meet the new regulations, the flare will need to be replaced in order to support operation of the cogeneration system and maintain compliance

Key Issues: The current cost includes only one flare. It may be beneficial to have a dual flare system installed for reliability. The new flares have a much larger footprint and require large offsets from other buildings and property lines. The siting for the new flare may impact other projects and available real estate at the facility.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 196,000 |
| Construction: | \$ | 1,309,000 |
| Construction Support: | \$ | 164,000 |
| Total Budget: | \$ | 1,668,000 |



Capital Improvement Program – Project Description

Project No.: 2534
Project Name: Buried Digester Piping Reconstruction
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: This project will replace the buried digester gas piping between the digesters and to the flare.

Project Need: A portion of the gas piping was replaced with the installation of the new cogeneration system, but the remaining underground portions of piping have not been replaced since originally installed. Valve maintenance, pipe integrity, and redundancy will all b

Key Issues: The replacement of the flare should be considered in the design of this project. A backup option to the flare will be needed during construction in the event the cogeneration system is not available.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 56,000 |
| Construction: | \$ | 559,000 |
| Construction Support: | \$ | 70,000 |
| Total Budget: | \$ | 685,000 |



Capital Improvement Program – Project Description

Project No.: 2536
Project Name: MCC 2 and CF Replacement
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: Project entails replacement of MCC 2 and MCC CF in the Solids Building.

Project Need: MCC 2 dates to the construction of the Solids Building in 1986. The unit is in poor condition; many of the loads have removed from the unit. MCC CF dates from 2002. Several loads have also been removed from this unit.

Key Issues: A temporary MCC may be needed to maintain the associated equipment in the Solids Building in operation.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 15,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 59,000 |
| Construction: | \$ 590,000 |
| Construction Support: | \$ 59,000 |
| Total Budget: | \$ 723,000 |



Capital Improvement Program – Project Description

Project No.: 2537
Project Name: Digester 5 Construction
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2028
Project Status: Long Term Planning

Project Description: Project includes construction of Digester No. 5, heating, electrical and instrumentation

Project Need: Provide operational flexibility when one of the large digester is out of service for cleaning

Key Issues: Project includes construction of Digester No. 5, heating, electrical and instrumentation

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 828,000 |
| Construction: | \$ | 8,284,000 |
| Construction Support: | \$ | 1,036,000 |
| Total Budget: | | \$10,148,000 |



Capital Improvement Program – Project Description

Project No.: 2540
Project Name: Dewatering System Replacement
Facility: JB Latham
Cost Center: PC 2 Solids
Anticipated Fiscal Year: 2027
Project Status: Long Term Planning

Project Description: This project includes the replacement of the three centrifuges based on a condition assessment conducted by Carollo in 2017. The project also includes replacing the VFDs, control panels, and various upgrades and repairs to the solids dewatering system.



Project Need: The projecting timing is based on life expectancy provided in the Carollo report.

Key Issues: Project timing and solids handling will need to be considered during the planning for this project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 353,000 |
| Construction: | \$ | 3,528,000 |
| Construction Support: | \$ | 353,000 |
| Total Budget: | \$ | 4,234,000 |

Appendix D
J.B. Latham Treatment Plant Project Cost Tables

J. B. Latham Treatment Plant**Project Number** 02051**Influent Diversion Structure Rehabilitation****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|-------------------------------|---|----|-----------|-----------|------|-----------|-----------|
| Demo | 1 | LS | \$ - | \$ - | 0% | \$ 30,000 | \$ 30,000 |
| Isolation Gates | 2 | EA | \$ 15,000 | \$ 30,000 | 50% | \$ 15,000 | \$ 45,000 |
| Replacement of Coating System | 1 | LS | \$ 12,000 | \$ 12,000 | 200% | \$ 24,000 | \$ 36,000 |
| Fencing | 1 | LS | \$ - | \$ - | 0% | \$ 20,000 | \$ 20,000 |
| Replacement of Access Manway | 1 | LS | \$ 5,000 | \$ 5,000 | 200% | \$ 50,000 | \$ 55,000 |
| Electrical | 1 | LS | \$ 20,000 | \$ 20,000 | 50% | \$ 10,000 | \$ 30,000 |

Subtotal

\$ 216,000

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 58,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 5,000

Project Contingency@

20% \$ 56,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 336,000 |
| Current Estimate | 2019 Dollars | \$ 336,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 2.5% | \$ 8,390 | 0% | \$ - | \$ - | \$ 8,000 |
| Design | 5.0% | \$ 16,781 | 0% | \$ - | \$ - | \$ 17,000 |
| Engr. During Construction | 5.0% | \$ 16,781 | 0% | \$ - | \$ - | \$ 17,000 |
| Construction Mgt. | 5.0% | \$ 16,781 | 0% | \$ - | \$ - | \$ 17,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 394,000 |

Notes:

J. B. Latham Treatment Plant**Project Number** 02052**Bypass Control Flow Meter Installation****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

Apr-19

Estimate Update

Apr-19

Prepared By

BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | | |
|---|-----------------------------------|--------------|-------|---------------|--------|------------|--------|------------|--------|--------|--------|---------|----------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | | |
| Project Task Elements | | | | | | | | | | | | | |
| Total Construction Cost | | | | | | | | | | | | | |
| | Demo | 1 | LS | \$ | - | \$ | 0% | \$ | 15,000 | \$ | 15,000 | | |
| | Sitework | 1 | LS | \$ | - | \$ | 0% | \$ | 45,000 | \$ | 45,000 | | |
| | Vaults | 2 | EA | \$ | 6,000 | \$ | 12,000 | 75% | \$ | 9,000 | \$ | 21,000 | |
| | Sluice Gate w/Motor Op | 1 | EA | \$ | 15,000 | \$ | 15,000 | 40% | \$ | 6,000 | \$ | 21,000 | |
| | Flow Meter | 1 | EA | \$ | 3,500 | \$ | 3,500 | 25% | \$ | 875 | \$ | 4,000 | |
| | Miscellaneous Piping | 1 | LS | \$ | - | \$ | - | 0% | \$ | 50,000 | \$ | 50,000 | |
| | Relocate Utilities/Retaining Wall | 1 | LS | \$ | 10,000 | \$ | 10,000 | 0% | \$ | 10,000 | \$ | 20,000 | |
| | Electrical | 1 | LS | \$ | 75,000 | \$ | 75,000 | 100% | \$ | 75,000 | \$ | 150,000 | |
| Subtotal | | | | | | | | | | | \$ | 326,000 | |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | | | | | |
| and Bonds and Insurance @ | | | | | | | | | | | 27% | \$ | 88,000 |
| Shipping Rate | | | | | | | | | | | 0% | | included |
| Sale Tax | | | | | | | | | | | 8.00% | \$ | 9,000 |
| Project Contingency@ | | | | | | | | | | | 20% | \$ | 85,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | | | \$ | 508,000 |
| Current Estimate | | 2019 Dollars | | | | | | | | | | \$ | 508,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 50,848 | 0% | \$ - | \$ - | \$ 51,000 |
| Engr. During Construction | 5.0% | \$ 25,424 | 0% | \$ - | \$ - | \$ 25,000 |
| Construction Mgt. | 7.5% | \$ 38,136 | 0% | \$ - | \$ - | \$ 38,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 623,000 |

Notes:

- Based on Alternative 2 from Tetra Tech technical memorandum on dated 4/12/2012.

J. B. Latham Treatment Plant**Project Number** 02054**Plant 1 Headworks Condition Assessment****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

Subtotal

\$ -

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$ -

Current Estimate 2019 Dollars \$ -

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|------|--------------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ 45,000.00 | 0% | \$ - | \$ - | \$ 45,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Construction Mgt. | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars) \$ 45,000

Notes:

- 1 Assume no bypass pumping cost; channel investigation to be done during night while flows diverted to Plant 2

J. B. Latham Treatment Plant

Project Number 02055

Plant 1 Headworks Upgrade

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|------------------------------------|---|----|------------|------------|-----|------------|------------|
| Total Construction Cost | Bar Screens ¹ | 2 | Ea | \$ 200,000 | \$ 400,000 | 25% | \$ 100,000 | \$ 500,000 |
| | Grit Classifiers ² | 1 | LS | - | - | - | - | \$ 95,000 |
| | Screenings Compactors ² | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 50,000 |
| | Conveyors ³ | 1 | LS | - | - | - | - | \$ 190,000 |
| | Power Supply Upgrade | 1 | LS | - | - | - | - | \$ 75,000 |
| | Instrumentation Upgrade | 1 | LS | - | - | - | - | \$ 45,000 |
| | Other | 1 | LS | - | - | - | - | \$ 50,000 |
| | | | | | \$ 400,000 | | | |

Subtotal

| | | |
|--|-------|------------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | \$ 149,000 |
| Shipping Rate | 0% | included |
| Sale Tax | 8.00% | \$ 32,000 |
| Project Contingency@ | 20% | \$ 237,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2019 Dollars | \$ 1,423,000 |
| Current Estimate | 2019 Dollars | \$ 1,423,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ 106,695 | 0% | \$ - | \$ 107,000 |
| Engr. During Construction | 5.0% | \$ 71,130 | 0% | \$ - | \$ 71,000 |
| Construction Mgt. | 5.0% | \$ 71,130 | 0% | \$ - | \$ 71,000 |

| | |
|---|---------------------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ 1,672,000 |
|---|---------------------|

Notes:

- 1 Based on 2011 Plant 2 Headworks Upgrade Project.
- 2 Based on prior replacement by SOCWA Operations Department.
- 3 Based on bids for equipment as installed in 2005.

J. B. Latham Treatment Plant**Project Number** 02057**Plant 1 Grit Handling Upgrade****Main Project Type****Key Dates**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Initial Estimate

Apr-19

Estimate Update

Apr-19

Prepared By

BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | | |
|---|---------------------------|--------------|-------|---------------|--------|------------|--------|------------|----|--------|---------|----------|--------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | | |
| Project Task Elements | | | | | | | | | | | | | |
| Total Construction Cost | Demolition | 1 | LS | \$ | - | | \$ | - | \$ | 15,000 | | | |
| | Installation of Grit Pump | 2 | Ea | \$ | 22,000 | \$ | 44,000 | 25% | \$ | 11,000 | \$ | 55,000 | |
| | Misc. Piping and Valves | 1 | LS | | | | | | | \$ | 50,000 | | |
| Subtotal | | | | | | | | | | \$ | 120,000 | | |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | | | | | |
| and Bonds and Insurance @ | | | | | | | | | | 27% | | \$ | 32,400 |
| Shipping Rate | | | | | | | | | | 0% | | included | |
| Sale Tax | | | | | | | | | | 8.00% | | \$ | 3,520 |
| Project Contingency@ | | | | | | | | | | 30% | | \$ | 46,776 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | \$ | 202,696 | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 20,270 | 0% | \$ - | \$ 20,270 |
| Engr. During Construction | 10.0% | \$ 20,270 | 0% | \$ - | \$ 20,270 |
| Construction Mgt. | 5.0% | \$ 10,135 | 0% | \$ - | \$ 10,135 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 253,370 |

Notes:

J. B. Latham Treatment Plant

Project Number 02059

Plant 1 Blower Building Structural and Infrastructure Upgrade

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost¹

| | | | | | | | |
|--|---|----|----|---|--|----|--------|
| Demolition | 1 | LS | \$ | - | | \$ | 50,000 |
| Roof Reconstruction | 1 | LS | \$ | - | | \$ | 55,000 |
| Concrete Repairs | 1 | LS | \$ | - | | \$ | 50,000 |
| Replace Single Door | 1 | LS | \$ | - | | \$ | 9,000 |
| Replace Double Door | 1 | LS | \$ | - | | \$ | 12,000 |
| Install Monorail and Hoist | 1 | LS | \$ | - | | \$ | 25,000 |
| Replace Ladder | 1 | LS | \$ | - | | \$ | 10,000 |
| Replace HVAC System | 1 | LS | \$ | - | | \$ | 40,000 |
| Replace Lighting and Power Receptacles | 1 | LS | \$ | - | | \$ | 55,000 |
| Other | 1 | LS | \$ | - | | \$ | 50,000 |

Subtotal

\$ 356,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 96,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 135,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 491,000 |
| Current Estimate | 2019 Dollars | \$ | 491,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 15.0% | \$ 73,642 | 0% | \$ - | \$ - | \$ 74,000 |
| Engr. During Construction | 5.0% | \$ 24,547 | 0% | \$ - | \$ - | \$ 25,000 |
| Construction Mgt. | 5.0% | \$ 24,547 | 0% | \$ - | \$ - | \$ 25,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 614,000 |

Notes:

- 1 Architectural hardware costs based on unit values provided by Hazen & Sawyer

J. B. Latham Treatment Plant

Project Number 02060

Plant 1 Raw Sewage Pump Station Upgrade

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|---|---|----|----|---|----|----|----|---------|
| Total Construction Cost | Plant 1 Raw Sewage Pumping ¹ | 1 | LS | - | - | - | - | \$ | 602,000 |
| | Temporary Pumping System | 1 | LS | \$ | - | 0% | \$ | - | 125,000 |
| | Wetwell Recoating | 1 | LS | - | - | - | - | \$ | 40,000 |
| | Power | 1 | LS | - | - | - | - | \$ | 75,000 |
| | Instrumentation | 1 | LS | - | - | - | - | \$ | 20,000 |
| | Other | 1 | LS | - | - | - | - | \$ | 50,000 |
| | | | | \$ | - | | | | |

Subtotal \$ 912,000

| | | | | | | | | | |
|---|-------|--|--|--|--|--|--|----------|---------|
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | |
| and Bonds and Insurance @ | 27% | | | | | | | \$ | 196,000 |
| Shipping Rate | 0% | | | | | | | included | |
| Sale Tax | 8.00% | | | | | | | \$ | - |
| Project Contingency@ | 20% | | | | | | | \$ | 222,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2019 Dollars | \$ | 1,330,000 |
| Current Estimate | 2019 Dollars | \$ | 1,330,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 133,003 | 0% | \$ - | \$ 133,000 |
| Engr. During Construction | 5.0% | \$ 66,502 | 0% | \$ - | \$ 67,000 |
| Construction Mgt. | 5.0% | \$ 66,502 | 0% | \$ - | \$ 67,000 |

Total Project Cost (Present Value in 2019 Dollars) \$ 1,596,000

Notes:

- 1 Based on Hazen and Sawyer estimate.

J. B. Latham Treatment Plant

Project Number 02061

Plant 1 Raw Sewage Pump Variable Frequency Drive Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|------------|---|----|-----------|-----------|-----|----------|----|--------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 10,000 |
| | VFD | 3 | Ea | \$ 12,500 | \$ 37,500 | 25% | \$ 9,375 | \$ | 47,000 |
| | Electrical | 1 | LS | - | - | - | - | \$ | 20,000 |
| | | | | \$ | - | | | | |

Subtotal \$ 77,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @ 27% \$ 20,756.25

Shipping Rate 0% included

Sale Tax 8.00% \$ 3,000

Project Contingency@ 30% \$ 30,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 131,000 |
| Current Estimate | 2019 Dollars | \$ | 131,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 13,082 | 0% | \$ - | \$ 13,000 |
| Engr. During Construction | 5.0% | \$ 6,541 | 0% | \$ - | \$ 7,000 |
| Construction Mgt. | 5.0% | \$ 6,541 | 0% | \$ - | \$ 7,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 157,000 |

Notes:

J. B. Latham Treatment Plant

Project Number 02062

Plant 1 RAS and WAS Pump Station Upgrade

Main Project Type

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

Apr-19

Estimate Update

Apr-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|---|---|----|----|---|----|----|----|-----------|
| Total Construction Cost | Plant 1 RAS Pumping System ¹ | 1 | LS | - | - | - | - | \$ | 276,000 |
| | Plant 1 WAS Pumping System ¹ | 1 | LS | - | - | - | - | \$ | 112,000 |
| | Temporary Pumping System | 1 | LS | \$ | - | 0% | \$ | - | \$ 75,000 |
| | Wetwell Recoating | 1 | LS | - | - | - | - | \$ | 40,000 |
| | VFD Replacement ² | 1 | LS | - | - | - | - | \$ | 38,000 |
| | Power | 1 | LS | - | - | - | - | \$ | 75,000 |
| | Instrumentation | 1 | LS | - | - | - | - | \$ | 20,000 |
| | Other | 1 | LS | - | - | - | - | \$ | 50,000 |
| | | | | \$ | - | | | | |

Subtotal

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 95,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ 156,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 935,000 |
| Current Estimate | 2019 Dollars | \$ | 935,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ 70,137 | 0% | \$ - | \$ 70,000 |
| Engr. During Construction | 5.0% | \$ 46,758 | 0% | \$ - | \$ 47,000 |
| Construction Mgt. | 5.0% | \$ 46,758 | 0% | \$ - | \$ 47,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 1,099,000 |

Notes:

- 1 Based on Hazen and Sawyer estimate.
- 2 Assumes reuse of existing cabinets.

J. B. Latham Treatment Plant**Project Number** 02063**Plant 1 Primary Sludge Pump System Rehabilitation****Main Project Type****Key Dates**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | | |
|--|---|-------|----|-----------|-----------|-----|----|--------|----------|---------|
| Total Construction Cost | Demolition of Existing System | 1 | LS | \$ | - | 0% | \$ | - | \$ | 25,000 |
| | Primary Sludge Pump and Piping | 2 | Ea | \$ 25,000 | \$ 50,000 | 25% | \$ | 12,500 | \$ | 62,500 |
| | Primary Sludge Pump Bases | 1 | LS | \$ | - | 0% | \$ | - | \$ | 10,000 |
| | Primary Sludge Removal Valve and Actuator | 6 | Ea | \$ 9,000 | \$ 54,000 | 25% | \$ | 13,500 | \$ | 67,500 |
| | Piping and Valving Inside Blower Bldg | 1 | LS | \$ | - | 0% | \$ | - | \$ | 50,000 |
| | Primary Sludge Flow Meter | 1 | LS | \$ 6,000 | \$ 6,000 | 25% | \$ | 1,500 | \$ | 7,500 |
| | Pumps Power and Controls ¹ | 1 | LS | \$ | - | 0% | \$ | - | \$ | 75,000 |
| | Programming | 1 | LS | \$ | - | 0% | \$ | - | \$ | 5,000 |
| Subtotal | | | | | | | | | \$ | 302,500 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | | \$ | 81,675 |
| Shipping Rate | | 0% | | | | | | | included | |
| Sale Tax | | 8.00% | | | | | | | \$ | 8,800 |
| Project Contingency@ | | 20% | | | | | | | \$ | 78,595 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 471,570 |
| Current Estimate | 2019 Dollars | \$ | 471,570 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 47,157 | 0% | \$ - | \$ 47,157 |
| Engr. During Construction | 10.0% | \$ 47,157 | 0% | \$ - | \$ 47,157 |
| Construction Mgt. | 5.0% | \$ 23,579 | 0% | \$ - | \$ 23,579 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 589,463 |

Notes:

1 Assumes New Panel, VFD and PLC

J. B. Latham Treatment Plant**Project Number** 02064**Plant 1 Aeration Blower System Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|--------------------|---|----|-----------|------------|-----|-----------|------------|
| Demo | 1 | LS | \$ - | \$ - | 0% | \$ 25,000 | \$ 25,000 |
| Multistage Blowers | 2 | EA | \$ 60,000 | \$ 120,000 | 50% | \$ 60,000 | \$ 180,000 |
| Piping and Valves | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 25,000 |
| Blower Pads | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 10,000 |
| Electrical | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 50,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 3,000 |

Subtotal

\$ 293,000

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ 79,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 10,000

Project Contingency@

20%

\$ 76,000

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$ 458,000

Current Estimate 2019 Dollars

\$ 458,000

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 2.5% | \$ 11,451 | 0% | \$ - | \$ - | \$ 11,000 |
| Design | 7.5% | \$ 34,354 | 0% | \$ - | \$ - | \$ 34,000 |
| Engr. During Construction | 5.0% | \$ 22,903 | 0% | \$ - | \$ - | \$ 23,000 |
| Construction Mgt. | 5.0% | \$ 22,903 | 0% | \$ - | \$ - | \$ 23,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 550,000 |

Notes:

1 Based on RTP Sodium Hypochlorite Upgrade bids

J. B. Latham Treatment Plant**Project Number** 02065**MCC A1 Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|------------------------|--------------|-------|---------------|------------|------------|-----------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost | | | | | | | | |
| | Demolition | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 20,000 |
| | Motor Control Center¹ | 1 | EA | \$ 118,000 | \$ 118,000 | 40% | \$ 47,200 | \$ 165,000 |
| | Temporary Power Supply | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 35,000 |
| | Conduit and Cable | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 30,000 |
| Subtotal | | | | | | | | \$ 250,000 |
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 68,000 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 9,000 |
| Project Contingency@ | | 30% | | | | | | \$ 98,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 425,000 |
| Current Estimate | | 2019 Dollars | | | | | | \$ 425,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 42,535 | 0% | \$ - | \$ - | \$ 43,000 |
| Engr. During Construction | 5.0% | \$ 21,268 | 0% | \$ - | \$ - | \$ 21,000 |
| Construction Mgt. | 5.0% | \$ 21,268 | 0% | \$ - | \$ - | \$ 21,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 510,000 |

Notes:

1 Based on review with Maddox Electric.

J. B. Latham Treatment Plant**Project Number** 02066**Plant 1 Standby Power Generator Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | |
|---|-------------------------|--------------|-------|---------------|---------|------------|---------|------------|----|--------|----|---------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | |
| Project Task Elements | | | | | | | | | | | | |
| Total Construction Cost | | | | | | | | | | | | |
| | Demo | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 10,000 |
| | Standby Power Generator | 1 | EA | \$ | 200,000 | \$ | 200,000 | 25% | \$ | 50,000 | \$ | 250,000 |
| | Auto Transfer Switch | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 25,000 |
| | Electrical | 1 | LS | \$ | 25,000 | \$ | 25,000 | 50% | \$ | 12,500 | \$ | 38,000 |
| Subtotal | | | | | | | | | | | \$ | 323,000 |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | | | | |
| and Bonds and Insurance @ | | 27% | | | | | | | | | | |
| Shipping Rate | | 0% | | | | | | | | | | |
| Sale Tax | | 8.00% | | | | | | | | | | |
| Project Contingency@ | | 10% | | | | | | | | | | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | | | |
| Current Estimate | | 2019 Dollars | | | | | | | | | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 47,033 | 0% | \$ - | \$ - | \$ 47,000 |
| Engr. During Construction | 5.0% | \$ 23,517 | 0% | \$ - | \$ - | \$ 24,000 |
| Construction Mgt. | 5.0% | \$ 23,517 | 0% | \$ - | \$ - | \$ 24,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 564,000 |

Notes:

J. B. Latham Treatment Plant**Project Number** 02067**Plant 2 Headworks Condition Assessment****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

Subtotal

\$ -

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$ -

Current Estimate 2019 Dollars

\$ -

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|------|--------------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ 45,000.00 | 0% | \$ - | \$ - | \$ 45,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Construction Mgt. | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars)

\$ 45,000

Notes:

- 1 Assume no bypass pumping cost; channel investigation to be done during night while flows diverted to Plant 1

J. B. Latham Treatment Plant

Project Number 02068

Plant 2 Headworks Upgrade

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|-----------------------------------|---|----|----|----|----|----|----|--------|
| Total Construction Cost | Grit Classifiers ¹ | 1 | LS | - | - | - | - | \$ | 95,000 |
| | Screenings Compactor ¹ | 1 | LS | \$ | - | \$ | 0% | \$ | 50,000 |
| | Conveyor | 1 | LS | - | - | - | - | \$ | 60,000 |
| | Manual Rack | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Power Supply Upgrade | 1 | LS | - | - | - | - | \$ | 45,000 |
| | Instrumentation Upgrade | 1 | LS | - | - | - | - | \$ | 35,000 |
| | Other | 1 | LS | - | - | - | - | \$ | 50,000 |
| | | | | | \$ | - | | | |

Subtotal

| | | | | |
|--|-------|--|----------|--------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ | 42,000 |
| Shipping Rate | 0% | | included | |
| Sale Tax | 8.00% | | \$ | - |
| Project Contingency@ | 20% | | \$ | 81,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 488,000 |
| Current Estimate | 2019 Dollars | \$ | 488,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ 36,617 | 0% | \$ - | \$ 37,000 |
| Engr. During Construction | 5.0% | \$ 24,411 | 0% | \$ - | \$ 24,000 |
| Construction Mgt. | 5.0% | \$ 24,411 | 0% | \$ - | \$ 24,000 |

| | |
|---|-------------------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ 574,000 |
|---|-------------------|

Notes:

- 1 Based on prior replacement by SOCWA Operations Department.

J. B. Latham Treatment Plant**Project Number** 02069**Plant 2 Blower Building Condition Assessment****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

Subtotal

\$ -

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$ -

Current Estimate 2019 Dollars

\$ -

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|------|--------------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ 55,000.00 | 0% | \$ - | \$ - | \$ 55,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Construction Mgt. | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars)

\$ 55,000

Notes:

J. B. Latham Treatment Plant

Project Number 02070

Plant 1 Blower Building Structural and Infrastructure Upgrade

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost¹

| | | | | | | | |
|--|---|----|----|---|--|----|--------|
| Demolition | 1 | LS | \$ | - | | \$ | 15,000 |
| Roof Reconstruction | 1 | LS | \$ | - | | \$ | 65,000 |
| Reflective Ceiling Replacement | 1 | LS | \$ | - | | \$ | 8,000 |
| Concrete Repairs | 1 | LS | \$ | - | | \$ | 10,000 |
| Replace Single Doors (2) | 1 | LS | \$ | - | | \$ | 17,000 |
| Replace Double Door | 1 | LS | \$ | - | | \$ | 12,000 |
| Replace Roll Up Door | 1 | LS | \$ | - | | \$ | 14,000 |
| Replace Windows (2) | 1 | LS | \$ | - | | \$ | 16,000 |
| Replace Ladder | 1 | LS | \$ | - | | \$ | 13,000 |
| Replace HVAC System | 1 | LS | \$ | - | | \$ | 45,000 |
| Replace Lighting and Power Receptacles | 1 | LS | \$ | - | | \$ | 35,000 |
| Other | 1 | LS | \$ | - | | \$ | 50,000 |

Subtotal

| | | | | |
|---|-------|--|----------|---------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ | 81,000 |
| Shipping Rate | 0% | | included | |
| Sale Tax | 8.00% | | \$ | - |
| Project Contingency@ | 30% | | \$ | 114,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 413,000 |
| Current Estimate | 2019 Dollars | \$ | 413,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 41,292 | 0% | \$ - | \$ - | \$ 41,000 |
| Engr. During Construction | 5.0% | \$ 20,646 | 0% | \$ - | \$ - | \$ 21,000 |
| Construction Mgt. | 5.0% | \$ 20,646 | 0% | \$ - | \$ - | \$ 21,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 496,000 |

Notes:

- 1 Architectural hardware costs based on unit values provided by Hazen & Sawyer

J. B. Latham Treatment Plant

Project Number 02071

Plant 2 Raw Sewage Pump Station Upgrade

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|---|---|----|----|---|----|----|----|---------|
| Total Construction Cost | Plant 2 Raw Sewage Pumping ¹ | 1 | LS | - | - | - | - | \$ | 410,000 |
| | Wetwell Manhole Cover Replace | 1 | LS | \$ | - | 0% | \$ | - | 13,000 |
| | Wetwell Recoating | 1 | LS | - | - | - | - | \$ | 40,000 |
| | Power | 1 | LS | - | - | - | - | \$ | 75,000 |
| | Instrumentation | 1 | LS | - | - | - | - | \$ | 20,000 |
| | Other | 1 | LS | - | - | - | - | \$ | 25,000 |
| | | | | \$ | - | | | | |

Subtotal \$ 583,000

| | | | | | | | | | |
|---|-------|--|--|--|--|--|--|----------|---------|
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | |
| and Bonds and Insurance @ | 27% | | | | | | | \$ | 114,000 |
| Shipping Rate | 0% | | | | | | | included | |
| Sale Tax | 8.00% | | | | | | | \$ | - |
| Project Contingency@ | 20% | | | | | | | \$ | 139,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | | | | | | |
|-------------------|--------------|--|--|--|--|--|--|----|---------|
| Original Estimate | 2019 Dollars | | | | | | | \$ | 836,000 |
| Current Estimate | 2019 Dollars | | | | | | | \$ | 836,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ 62,730 | 0% | \$ - | \$ 63,000 |
| Engr. During Construction | 5.0% | \$ 41,820 | 0% | \$ - | \$ 42,000 |
| Construction Mgt. | 5.0% | \$ 41,820 | 0% | \$ - | \$ 42,000 |

Total Project Cost (Present Value in 2019 Dollars) \$ 983,000

Notes:

- 1 Based on Hazen and Sawyer estimate.

J. B. Latham Treatment Plant

Project Number 02072

Plant 2 Raw Sewage Pump Variable Frequency Drive Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|------------|---|----|-----------|-----------|-----|-----------|----|--------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 10,000 |
| | VFD | 4 | Ea | \$ 12,500 | \$ 50,000 | 25% | \$ 12,500 | \$ | 63,000 |
| | Electrical | 1 | LS | - | - | - | - | \$ | 20,000 |
| | | | | \$ | - | | | | |

Subtotal \$ 93,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @ 27% \$ 24,975.00

Shipping Rate 0% included

Sale Tax 8.00% \$ 4,000

Project Contingency@ 30% \$ 36,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 158,000 |
| Current Estimate | 2019 Dollars | \$ | 158,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 15,792 | 0% | \$ - | \$ 16,000 |
| Engr. During Construction | 5.0% | \$ 7,896 | 0% | \$ - | \$ 8,000 |
| Construction Mgt. | 5.0% | \$ 7,896 | 0% | \$ - | \$ 8,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 190,000 |

Notes:

- 1 Assume cabinets installed in 2006 remain in good condition.

J. B. Latham Treatment Plant

Project Number 02073

Plant 2 RAS and WAS Pump Station Upgrade

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|---|---|----|----|---|----|----|----|---------|
| Total Construction Cost | Plant 2 RAS Pumping System ¹ | 1 | LS | - | - | - | - | \$ | 232,000 |
| | Plant 2 WAS Pumping System ¹ | 1 | LS | - | - | - | - | \$ | 110,000 |
| | Wetwell Manhole Cover Replace | 1 | LS | \$ | - | \$ | 0% | \$ | 13,000 |
| | Wetwell Recoating | 1 | LS | - | - | - | - | \$ | 40,000 |
| | VFD Replacement ² | 1 | LS | - | - | - | - | \$ | 38,000 |
| | Power | 1 | LS | - | - | - | - | \$ | 75,000 |
| | Instrumentation | 1 | LS | - | - | - | - | \$ | 20,000 |
| | Other | 1 | LS | - | - | - | - | \$ | 25,000 |
| | | | | \$ | - | | | | |

Subtotal

| | | | |
|--|-------|----------|---------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | \$ | 66,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | \$ | - |
| Project Contingency@ | 20% | \$ | 123,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 741,000 |
| Current Estimate | 2019 Dollars | \$ | 741,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ 55,540 | 0% | \$ - | \$ 56,000 |
| Engr. During Construction | 5.0% | \$ 37,027 | 0% | \$ - | \$ 37,000 |
| Construction Mgt. | 5.0% | \$ 37,027 | 0% | \$ - | \$ 37,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 870,000 |

Notes:

- 1 Based on Hazen and Sawyer estimate.
- 2 Assumes reuse of existing cabinets.

J. B. Latham Treatment Plant**Project Number** 02074**Plant 2 Primary Sludge Pump System Rehabilitation****Main Project Type****Key Dates**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | | |
|-------------------------|---|---|----|-----------|-----------|-----|----|--------|----|---------|
| Total Construction Cost | Demolition of Existing System | 1 | LS | \$ | - | 0% | \$ | - | \$ | 20,000 |
| | Primary Sludge Pump and Piping | 2 | Ea | \$ 25,000 | \$ 50,000 | 25% | \$ | 12,500 | \$ | 62,500 |
| | Primary Sludge Pump Bases | 1 | LS | \$ | - | 0% | \$ | - | \$ | 10,000 |
| | Primary Sludge Removal Valve and Actuator | 3 | Ea | \$ 9,000 | \$ 27,000 | 25% | \$ | 6,750 | \$ | 33,750 |
| | Piping and Valving Inside Blower Bldg | 1 | LS | \$ | - | 0% | \$ | - | \$ | 30,000 |
| | Primary Sludge Flow Meter | 1 | LS | \$ 6,000 | \$ 6,000 | 25% | \$ | 1,500 | \$ | 7,500 |
| | Pumps Power and Controls ¹ | 1 | LS | \$ | - | 0% | \$ | - | \$ | 75,000 |
| | Programming | 1 | LS | \$ | - | 0% | \$ | - | \$ | 5,000 |
| Subtotal | | | | | | | | | \$ | 243,750 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 65,813

Shipping Rate

0% included

Sale Tax

8.00% \$ 6,640

Project Contingency@

20% \$ 63,241

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 379,443 |
| Current Estimate | 2019 Dollars | \$ | 379,443 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 37,944 | 0% | \$ - | \$ 37,944 |
| Engr. During Construction | 10.0% | \$ 37,944 | 0% | \$ - | \$ 37,944 |
| Construction Mgt. | 5.0% | \$ 18,972 | 0% | \$ - | \$ 18,972 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 474,304 |

Notes:

1 Assumes New Panel, VFD and PLC

J. B. Latham Treatment Plant**Project Number** 02075**Plant 2 Standby Power Generator Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | | |
|---|-------------------------|--------------|-------|---------------|---------|------------|---------|------------|----|--------|----------|---------|---------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | | |
| Project Task Elements | | | | | | | | | | | | | |
| Total Construction Cost | | | | | | | | | | | | | |
| | Demo | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 10,000 | |
| | Standby Power Generator | 1 | EA | \$ | 150,000 | \$ | 150,000 | 25% | \$ | 37,500 | \$ | 188,000 | |
| | Auto Transfer Switch | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 22,000 | |
| | Electrical | 1 | LS | \$ | 25,000 | \$ | 25,000 | 50% | \$ | 12,500 | \$ | 38,000 | |
| Subtotal | | | | | | | | | | | \$ | 257,000 | |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | | | | | |
| and Bonds and Insurance @ | | 27% | | | | | | | | | \$ | 69,000 | |
| Shipping Rate | | 0% | | | | | | | | | included | | |
| Sale Tax | | 8.00% | | | | | | | | | \$ | 14,000 | |
| Project Contingency@ | | 20% | | | | | | | | | \$ | 68,000 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | | | \$ | 408,000 |
| Current Estimate | | 2019 Dollars | | | | | | | | | | \$ | 408,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 2.5% | \$ 10,212 | 0% | \$ - | \$ - | \$ 10,000 |
| Design | 7.5% | \$ 30,635 | 0% | \$ - | \$ - | \$ 31,000 |
| Engr. During Construction | 5.0% | \$ 20,423 | 0% | \$ - | \$ - | \$ 20,000 |
| Construction Mgt. | 5.0% | \$ 20,423 | 0% | \$ - | \$ - | \$ 20,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 490,000 |

Notes:

J. B. Latham Treatment Plant

Project Number 02076

Plant 2 (Dana Point) Influent Flow Meter Upgrade

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|-----------------|---|----|----|---|----|----|----|---------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 15,000 |
| | Replace Insert | 1 | LS | \$ | - | 0% | \$ | - | 25,000 |
| | Concrete Repair | 1 | LS | - | - | - | - | \$ | 10,000 |
| | Replace Hatch | 1 | LS | - | - | - | - | \$ | 10,000 |
| | Instrumentation | 1 | LS | - | - | - | - | \$ | 5,000 |
| | Bypass Pumping | 1 | LS | - | - | - | - | \$ | 125,000 |
| | | | | \$ | - | | | | |

Subtotal \$ 190,000

| | | | | | | | | | |
|---|-------|--|--|--|--|--|--|----------|--------|
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | |
| and Bonds and Insurance @ | 27% | | | | | | | \$ | 11,000 |
| Shipping Rate | 0% | | | | | | | included | |
| Sale Tax | 8.00% | | | | | | | \$ | - |
| Project Contingency@ | 30% | | | | | | | \$ | 60,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 261,000 |
| Current Estimate | 2019 Dollars | \$ | 261,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 2.5% | \$ 6,526 | 0% | \$ - | \$ 7,000 |
| Conceptual Study | 2.5% | \$ 6,526 | 0% | \$ - | \$ 7,000 |
| Design | 10.0% | \$ 26,104 | 0% | \$ - | \$ 26,000 |
| Engr. During Construction | 5.0% | \$ 13,052 | 0% | \$ - | \$ 13,000 |
| Construction Mgt. | 5.0% | \$ 13,052 | 0% | \$ - | \$ 13,000 |

Total Project Cost (Present Value in 2019 Dollars) \$ 326,000

Notes:

J. B. Latham Treatment Plant**Project Number** 02077**Plant 2 Grit Handling Upgrade****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | |
|---|---|--------------|-------|---------------|-------|------------|-------|------------|-------|------------|---------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | |
| Project Task Elements | | | | | | | | | | | |
| Total Construction Cost | Demolition | 1 | LS | | \$ | - | \$ | - | \$ | 40,000 | |
| | Concrete Repairs ¹ | 1 | LS | | \$ | - | \$ | - | \$ | 40,000 | |
| | Recoating ¹ | 1 | LS | | \$ | - | \$ | - | \$ | 55,000 | |
| | Aluminum Cover Replacement ¹ | 1 | LS | | \$ | - | \$ | - | \$ | 45,000 | |
| | Air Diffuser Replacement ¹ | 1 | LS | | \$ | - | \$ | - | \$ | 40,000 | |
| | Installation of Grit Pump | 2 | Ea | \$ 22,000 | \$ | 44,000 | 25% | \$ 11,000 | \$ | 55,000 | |
| | Misc. Piping and Valves | 1 | LS | | | | | | \$ | 50,000 | |
| Subtotal | | | | | | | | | \$ | 325,000 | |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | | | |
| and Bonds and Insurance @ | | | | | | | | | 27% | \$ 87,750 | |
| Shipping Rate | | | | | | | | | 0% | included | |
| Sale Tax | | | | | | | | | 8.00% | \$ 3,520 | |
| Project Contingency@ | | | | | | | | | 30% | \$ 124,881 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | \$ | 541,151 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 54,115 | 0% | \$ - | \$ 54,115 |
| Engr. During Construction | 5.0% | \$ 27,058 | 0% | \$ - | \$ 27,058 |
| Construction Mgt. | 5.0% | \$ 27,058 | 0% | \$ - | \$ 27,058 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 649,381 |

Notes:

1. Based on 2019 Plant 1 Grit Basin Upgrade Project bid

J. B. Latham Treatment Plant**Project Number** 02078**Scum Pumping System Replacement****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | | |
|---|--------------------|--------------|----------|-------|---------------|-------|------------|-------|------------|--------|----|----------|---------|---------|
| | | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | | |
| Project Task Elements | | | | | | | | | | | | | | |
| Total Construction Cost | | | | | | | | | | | | | | |
| | Demo | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 20,000 | | |
| | New Scum Pumps | 2 | EA | \$ | 25,000 | \$ | 50,000 | 25% | \$ | 12,500 | \$ | 63,000 | | |
| | New Grinder | 1 | EA | \$ | 25,000 | \$ | 25,000 | 25% | \$ | 6,250 | \$ | 31,000 | | |
| | Piping and Valving | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 20,000 | | |
| | New Pump Pads | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 15,000 | | |
| | MCC G | 1 | EA | \$ | 34,000 | \$ | 34,000 | 40% | \$ | 13,600 | \$ | 48,000 | | |
| | Electrical | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 70,000 | | |
| | Bubbler Panel | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 10,000 | | |
| | Programming | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | - | | |
| Subtotal | | | | | | \$ | 109,000 | | | \$ | | 276,000 | | |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | | | | | \$ | 75,000 | |
| Shipping Rate | | 0% | | | | | | | | | | included | | |
| Sale Tax | | 8.00% | | | | | | | | | | \$ | 9,000 | |
| Project Contingency@ | | 30% | | | | | | | | | | \$ | 108,000 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | | | | \$ | 468,000 |
| Current Estimate | | 2019 Dollars | | | | | | | | | | | \$ | 468,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 2.5% | \$ 11,690 | 0% | \$ - | \$ - | \$ 12,000 |
| Conceptual Study | 2.5% | \$ 11,690 | 0% | \$ - | \$ - | \$ 12,000 |
| Design | 10.0% | \$ 46,759 | 0% | \$ - | \$ - | \$ 47,000 |
| Engr. During Construction | 5.0% | \$ 23,379 | 0% | \$ - | \$ - | \$ 23,000 |
| Construction Mgt. | 5.0% | \$ 23,379 | 0% | \$ - | \$ - | \$ 23,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 584,000 |

Notes:

- 1 Equipment Cost estimate provided by TetraTech
- 2 New MCC G to be located in Chlorine Building.

J. B. Latham Treatment Plant**Project Number** 02079**Aeration Basin Drainage Pumps****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | |
|---|----------------------------------|--------------|-------|---------------|--------|------------|---------|------------|-----------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | |
| Project Task Elements | | | | | | | | | | |
| Total Construction Cost | | | | | | | | | | |
| | Demolition of Existing System | 1 | LS | \$ | - | \$ | - | 0% | \$ 30,000 | \$ 30,000 |
| | Drainage Pumps Piping and Valves | 7 | EA | \$ | 15,000 | \$ | 105,000 | 25% | \$ 26,250 | \$ 131,000 |
| | Pumps Power and Controls | 1 | LS | \$ | 35,000 | \$ | 35,000 | 0% | \$ - | \$ 35,000 |
| Subtotal | | | | | \$ | 140,000 | | | \$ | 196,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | | | \$ 53,000 |
| Shipping Rate | | 0% | | | | | | | | included |
| Sale Tax | | 8.00% | | | | | | | | \$ 11,000 |
| Project Contingency@ | | 20% | | | | | | | | \$ 52,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | \$ 313,000 |
| Current Estimate | | 2019 Dollars | | | | | | | | \$ 313,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 5.0% | \$ 15,626 | 0% | \$ - | \$ - | \$ 16,000 |
| Engr. During Construction | 5.0% | \$ 15,626 | 0% | \$ - | \$ - | \$ 16,000 |
| Construction Mgt. | 5.0% | \$ 15,626 | 0% | \$ - | \$ - | \$ 16,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 359,000 |

Notes:

J. B. Latham Treatment Plant

Project Number 02080

Odor Control Scrubber No.3 Replacement (Handling Scum Wetwell)

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|----------------------------------|---|----|---|----|---|---|----|---------|
| Total Construction Cost | Odor Control System ¹ | 1 | LS | - | - | - | - | \$ | 248,000 |
| | Electrical and Inst ² | 1 | LS | - | - | - | - | \$ | 37,000 |
| | | | | | \$ | - | | | |

Subtotal \$ 285,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @ 27% \$ 77,000

Shipping Rate 0% included

Sale Tax 8.00% \$ -

Project Contingency@ 30% \$ 109,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 471,000 |
| Current Estimate | 2019 Dollars | \$ | 471,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | |
| Conceptual Study | 2.5% | \$ 11,772 | 0% \$ - | \$ - | \$ 12,000 |
| Design | 7.5% | \$ 35,315 | 0% \$ - | \$ - | \$ 35,000 |
| Engr. During Construction | 5.0% | \$ 23,543 | 0% \$ - | \$ - | \$ 24,000 |
| Construction Mgt. | 5.0% | \$ 23,543 | 0% \$ - | \$ - | \$ 24,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 565,000 |

Notes:

- 1 Foul Air System Evaluation J. B. Latham Treatment Plant -DHK Engineers (12/17)
- 2 Electrical and instrumentation cost is taken as 15% of balance of construction costs.

J. B. Latham Treatment Plant**Project Number** 02081**Sodium Hypochlorite System Reconstruction****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|--------------------------------|---|----|-----------|-----------|------|-----------|------------|
| Demo | 1 | EA | \$ - | \$ - | 0% | \$ 30,000 | \$ 30,000 |
| Metering Pumps | 4 | EA | \$ 17,500 | \$ 70,000 | 50% | \$ 35,000 | \$ 105,000 |
| Replacement of Coating System | 1 | LS | \$ 25,000 | \$ 25,000 | 100% | \$ 25,000 | \$ 50,000 |
| Temporary Chemical Feed System | 1 | LS | \$ - | \$ - | 0% | \$ 50,000 | \$ 50,000 |
| Electrical | 1 | LS | \$ 50,000 | \$ 50,000 | 50% | \$ 25,000 | \$ 75,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 2,500 | \$ 3,000 |

Subtotal

\$ 313,000

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 84,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 12,000

Project Contingency@

20% \$ 82,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 490,000 |
| Current Estimate | 2019 Dollars | \$ 490,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 7.5% | \$ 36,763 | 0% | \$ - | \$ - | \$ 37,000 |
| Engr. During Construction | 7.5% | \$ 36,763 | 0% | \$ - | \$ - | \$ 37,000 |
| Construction Mgt. | 7.5% | \$ 36,763 | 0% | \$ - | \$ - | \$ 37,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 600,000 |

Notes:

- 1 Based on RTP Sodium Hypochlorite Upgrade bids

J.B. Latham Treatment Plant**Project Number** 02083**Chlorine Contact Basin Isolation Gates and Structural Rehabilitation****Main Project Type****Key Dates**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Initial Estimate Sep-18
 Estimate Update Sep-18
 Const. Year

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|---|----------|-------|---------------|--------|------------|--------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | |
| | Demolition | 1 | LS | \$ | 10,000 | \$ | 10,000 | \$ 20,000 |
| | Structural rehabilitation of the chlorine contact basir | 1 | LS | \$ | 50,000 | \$ | 50,000 | \$ 100,000 |
| | Replacement of 24-inch sluice gates | 1 | LS | \$ | 20,000 | \$ | 10,000 | \$ 30,000 |
| Subtotal | | | | | | | | \$ 150,000 |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | |
| and Bonds and Insurance @ | | 27% | | | | | | \$ 40,500 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 12,000 |
| Project Contingency@ | | 30% | | | | | | \$ 45,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | 2019 Dollars | | | | | | | \$ 247,500 |
| Current Estimate | 2019 Dollars | | | | | | | \$ 247,500 |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 24,750 | 0% | \$ - | \$ - | \$ 24,750 |
| Engr. During Construction | 5.0% | \$ 12,375 | 0% | \$ - | \$ - | \$ 12,375 |
| Construction Mgt. | 5.0% | \$ 12,375 | 0% | \$ - | \$ - | \$ 12,375 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 297,000 |

Notes:

1 Cost estimate provided by Hazen for CTP TYP

J.B. Latham Treatment Plant**Project Number** 02085**Effluent Pump Station Rehabilitation****Main Project Type****Key Dates**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Sep-18
 Estimate Update Sep-18
 Const. Year

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|---|--------------|-------|---------------|-----------|------------|----------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | |
| | Demolition | 1 | LS | | | \$ | 5,000 | \$ 5,000 |
| | Effluent Pump Station Roof | 1 | LS | | \$ 20,000 | \$ | 5,000 | \$ 25,000 |
| | Effluent Pump Station Structural Rehabilitation | 1 | LS | | \$ 50,000 | \$ | 25,000 | \$ 75,000 |
| | Effluent Pump Station Architectural Hardware | 1 | LS | | \$ 50,000 | \$ | 25,000 | \$ 75,000 |
| Subtotal | | | | | | | | \$ 175,000 |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | |
| and Bonds and Insurance @ | | 27% | | | | | \$ | 47,250 |
| Shipping Rate | | 0% | | | | | included | |
| Sale Tax | | 8.00% | | | | | \$ | 14,000 |
| Project Contingency@ | | 30% | | | | | \$ | 52,500 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 288,750 |
| Current Estimate | | 2019 Dollars | | | | | | \$ 288,750 |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 28,875 | 0% | \$ - | \$ - | \$ 28,875 |
| Engr. During Construction | 5.0% | \$ 14,438 | 0% | \$ - | \$ - | \$ 14,438 |
| Construction Mgt. | 7.5% | \$ 21,656 | 0% | \$ - | \$ - | \$ 21,656 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 353,719 |

Notes:

1 Cost Estimate provided by Hazen from CTP TYP

J.B. Latham Treatment Plant
Project Number 02086

Effluent Pump Reconstruction
Main Project Type
Key Dates

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Sep-18
 Estimate Update Sep-18
 Const. Year

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|--|--------------|-------|---------------|------------|------------|---------|--------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | |
| | Demolition | 1 | LS | | | \$ | 50,000 | \$ 50,000 |
| | Temporary bypass | 1 | LS | | \$ 25,000 | \$ | 50,000 | \$ 75,000 |
| | Effluent Pumps | 1 | LS | | \$ 160,000 | \$ | 104,000 | \$ 264,000 |
| | Mechanical equipment and appurtenances | 1 | LS | | \$ 40,000 | \$ | 65,000 | \$ 105,000 |
| | Mechanical Piping and Fittings | 1 | LS | | \$ 91,150 | \$ | 138,600 | \$ 229,750 |
| | Electrical | 1 | LS | | \$ 25,000 | \$ | 37,650 | \$ 62,650 |
| Subtotal | | | | | | | | \$ 786,400 |
| General Conditions. Contractor Overhead and Profit, | | 27% | | | | | | \$ 212,328 |
| and Bonds and Insurance @ | | 0% | | | | | | \$ - |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 62,912 |
| Project Contingency@ | | 20% | | | | | | \$ 157,280 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 1,218,920 |
| Current Estimate | | 2019 Dollars | | | | | | \$ 1,218,920 |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|------------|-------------|----------|---------|--------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 121,892 | 0% | \$ - | \$ - | \$ 121,892 |
| Engr. During Construction | 5.0% | \$ 60,946 | 0% | \$ - | \$ - | \$ 60,946 |
| Construction Mgt. | 7.5% | \$ 91,419 | 0% | \$ - | \$ - | \$ 91,419 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 1,493,177 |

Notes:

- 1 Cost Estimate provided by Hazen in August 2018

J. B. Latham Treatment Plant**Project Number** 02087**Effluent Pump Station Standby Power Generator Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | | |
|---|--------------------------|--------------|-------|---------------|---------|------------|---------|------------|----|--------|----------|---------|---------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | | |
| Project Task Elements | | | | | | | | | | | | | |
| Total Construction Cost | | | | | | | | | | | | | |
| | Demo | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 15,000 | |
| | Standby Power Generator | 1 | EA | \$ | 175,000 | \$ | 175,000 | 25% | \$ | 43,750 | \$ | 219,000 | |
| | Mechanical Appurtenances | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 50,000 | |
| | Electrical | 1 | LS | \$ | 25,000 | \$ | 25,000 | 50% | \$ | 12,500 | \$ | 38,000 | |
| Subtotal | | | | | | | | | | | \$ | 321,000 | |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | | | | \$ | 87,000 | |
| Shipping Rate | | 0% | | | | | | | | | included | | |
| Sale Tax | | 8.00% | | | | | | | | | \$ | 16,000 | |
| Project Contingency@ | | 20% | | | | | | | | | \$ | 85,000 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | | | \$ | 509,000 |
| Current Estimate | | 2019 Dollars | | | | | | | | | | \$ | 509,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 50,879 | 0% | \$ - | \$ - | \$ 51,000 |
| Engr. During Construction | 5.0% | \$ 25,439 | 0% | \$ - | \$ - | \$ 25,000 |
| Construction Mgt. | 5.0% | \$ 25,439 | 0% | \$ - | \$ - | \$ 25,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 611,000 |

Notes:

J. B. Latham Treatment Plant**Project Number** 02089**Effluent Flow Meter Evaluation****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

Subtotal

\$ -

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$ -

Current Estimate 2019 Dollars

\$ -

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|------|--------------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ 60,000.00 | 0% | \$ - | \$ - | \$ 60,000 |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Construction Mgt. | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars)

\$ 60,000

Notes:

J. B. Latham Treatment Plant

Project Number 02090

Odor Control Scrubber No.1 Replacement (Handling Plant 1 Liquids Stream)

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|----------------------------------|---|----|----|---|---|---|--------------|
| Total Construction Cost | Odor Control System ¹ | 1 | LS | - | - | - | - | \$ 1,549,000 |
| | Electrical and Inst ² | 1 | LS | - | - | - | - | \$ 232,000 |
| | | | | \$ | - | | | |

Subtotal \$ 1,781,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 481,000

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

20% \$ 452,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2019 Dollars | \$ 2,714,000 |
| Current Estimate | 2019 Dollars | \$ 2,714,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|------------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 2.5% | \$ 67,856 | 0% | \$ - | \$ 68,000 |
| Design | 7.5% | \$ 203,569 | 0% | \$ - | \$ 204,000 |
| Engr. During Construction | 5.0% | \$ 135,713 | 0% | \$ - | \$ 136,000 |
| Construction Mgt. | 5.0% | \$ 135,713 | 0% | \$ - | \$ 136,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 3,257,000 |

Notes:

- 1 Foul Air System Evaluation J. B. Latham Treatment Plant -DHK Engineers (12/17)
- 2 Electrical and instrumentation cost is taken as 15% of balance of construction costs.

J. B. Latham Treatment Plant**Project Number** 02096**Pant 1 Burried Pipe Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|----------------------------------|-----|----|-----------|-----------|-----|-----------|-----------|
| Mobilization/Demobilization | 1 | EA | \$ 75,000 | \$ 75,000 | | \$ - | \$ 75,000 |
| Primary Sludge | 100 | LF | \$ 100 | \$ 10,000 | 50% | \$ 5,000 | \$ 15,000 |
| Primary Scum | 100 | LF | \$ 100 | \$ 10,000 | 50% | \$ 5,000 | \$ 15,000 |
| Waste Activated Sludge | 450 | LF | \$ 100 | \$ 45,000 | 50% | \$ 22,500 | \$ 68,000 |
| Thickened Waste Activated Sludge | 100 | LF | \$ 100 | \$ 10,000 | 50% | \$ 5,000 | \$ 15,000 |
| Other | 250 | LF | \$ 125 | \$ 31,250 | 50% | \$ 15,625 | \$ 47,000 |

Subtotal

\$ 234,000

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 63,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 15,000

Project Contingency@

20% \$ 62,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 375,000 |
| Current Estimate | 2019 Dollars | \$ 375,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 3.0% | \$ 11,238 | 0% | \$ - | \$ - | \$ 11,000 |
| Engr. During Construction | 10.0% | \$ 37,459 | 0% | \$ - | \$ - | \$ 37,000 |
| Construction Mgt. | 5.0% | \$ 18,729 | 0% | \$ - | \$ - | \$ 19,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 442,000 |

Notes:

1 Unit costs provided by Lee and Ro

J. B. Latham Treatment Plant**Project Number** 02097**Plant 2 Burried Pipe Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|-----------------------------|-----|----|-----------|-----------|-----|-----------|------------|
| Mobilization/Demobilization | 1 | EA | \$ 75,000 | \$ 75,000 | 0% | \$ 75,000 | \$ 150,000 |
| Primary Sludge | 350 | LF | \$ 100 | \$ 35,000 | 50% | \$ 17,500 | \$ 53,000 |
| Primary Scum | 350 | LF | \$ 100 | \$ 35,000 | 50% | \$ 17,500 | \$ 53,000 |
| Waste Activated Sludge | 450 | LF | \$ 100 | \$ 45,000 | 50% | \$ 22,500 | \$ 68,000 |
| Other | 250 | LF | \$ 125 | \$ 31,250 | 50% | \$ 15,625 | \$ 47,000 |
| | | | | \$ - | | \$ - | \$ - |

Subtotal

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 100,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 18,000

Project Contingency@

20% \$ 97,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 584,000 |
| Current Estimate | 2019 Dollars | \$ 584,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 3.0% | \$ 17,525 | 0% | \$ - | \$ - | \$ 18,000 |
| Engr. During Construction | 10.0% | \$ 58,417 | 0% | \$ - | \$ - | \$ 58,000 |
| Construction Mgt. | 5.0% | \$ 29,208 | 0% | \$ - | \$ - | \$ 29,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 689,000 |

Notes:

1 Equipment Cost estimate provided by Lee and Ro

J.B. Latham Treatment Plant**Project Number** 02098**Plant 2 Primary Sedimentation Upgrade****Main Project Type****Key Dates**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Sep-18
 Estimate Update Sep-18
 Const. Year

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|---|--------------|-------|---------------|------------|------------|------------|--------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | |
| | Demolition | 1 | LS | | | | \$ 50,000 | \$ 50,000 |
| | Temporary Bypass | 1 | LS | | \$ 50,000 | | \$ 150,000 | \$ 200,000 |
| | Primary sedimentation basin concrete repairs | 1 | LS | | \$ 70,000 | | \$ 80,000 | \$ 150,000 |
| | Primary sedimentation basin concrete coating | 1 | LS | | \$ 25,000 | | \$ 40,000 | \$ 65,000 |
| | Primary sedimentation basin sludge collectors | 1 | LS | | \$ 120,000 | | \$ 100,000 | \$ 220,000 |
| | Primary sedimentation basin sludge collector drives | 1 | LS | | \$ 30,000 | | \$ 20,000 | \$ 50,000 |
| | Primary sedimentation basin scum skimmers | 1 | LS | | \$ 50,000 | | \$ 50,000 | \$ 100,000 |
| | Primary sedimentation basin launders | 1 | LS | | \$ 50,000 | | \$ 25,000 | \$ 75,000 |
| | Primary sedimentation basin electrical upgrades | 1 | LS | | \$ 50,000 | | \$ 50,000 | \$ 100,000 |
| | Primary Effluent Channel concrete repair | 1 | LS | | \$ 20,000 | | \$ 10,000 | \$ 30,000 |
| | Primary Effluent Channel concrete coating | 1 | LS | | \$ 10,000 | | \$ 10,000 | \$ 20,000 |
| | Primary Effluent Channel diamond plate Replacement | 1 | LS | | \$ 30,000 | | \$ 20,000 | \$ 50,000 |
| Subtotal | | | | | | | | \$ 1,110,000 |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | |
| and Bonds and Insurance @ | | 27% | | | | | | \$ 299,700 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 2,400 |
| Project Contingency@ | | 20% | | | | | | \$ 282,420 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| | Original Estimate | 2019 Dollars | | | | | | \$ 1,694,520 |
| | Current Estimate | 2019 Dollars | | | | | | \$ 1,694,520 |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|------------|-------------|----------|---------|--------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 169,452 | 0% | \$ - | \$ - | \$ 169,452 |
| Engr. During Construction | 5.0% | \$ 84,726 | 0% | \$ - | \$ - | \$ 84,726 |
| Construction Mgt. | 7.5% | \$ 127,089 | 0% | \$ - | \$ - | \$ 127,089 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 2,075,787 |

Notes:

- 1 Cost estimate provided by Carollo as part of Package 'B' design

J.B. Latham Treatment Plant
Project Number 02099

Plant 2 Secondary Sedimentation Upgrade
Main Project Type
Key Dates

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate May-18
 Estimate Update May-18
 Const. Year

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|---|----------|-------|---------------|---------|------------|----------|--------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | |
| | Demolition | 1 | LS | \$ | - | \$ | 70,000 | \$ 70,000 |
| | Temporary bypass | 1 | LS | \$ | 70,000 | \$ | 190,000 | \$ 260,000 |
| | Secondary sedimentation basin concrete repair | 1 | LS | \$ | 90,000 | \$ | 110,000 | \$ 200,000 |
| | Secondary sedimentation basin concrete coating | 1 | LS | \$ | 50,000 | \$ | 50,000 | \$ 100,000 |
| | Secondary sedimentation sludge collectors | 1 | LS | \$ | 160,000 | \$ | 130,000 | \$ 290,000 |
| | Secondary sedimentation sludge collector drives | 1 | LS | \$ | 70,000 | \$ | 70,000 | \$ 140,000 |
| | Secondary sedimentation effluent weirs | 1 | LS | \$ | 90,000 | \$ | 50,000 | \$ 140,000 |
| | Secondary sedimentation electrical upgrades | 1 | LS | \$ | 100,000 | \$ | 90,000 | \$ 190,000 |
| Subtotal | | | | | | | | \$ 1,060,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 286,200 |
| Shipping Rate | | 0% | | | | | included | |
| Sale Tax | | 8.00% | | | | | | \$ 84,800 |
| Project Contingency@ | | 20% | | | | | | \$ 212,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate 2019 Dollars | | | | | | | | \$ 1,643,000 |
| Current Estimate 2019 Dollars | | | | | | | | \$ 1,643,000 |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | |

| Project Phases Cost | | Rate ² | Amount | | Contingency | | Subtotal | | Minimum | Total |
|---|---------------------------|-------------------|--------|---------|-------------|----|----------|----|---------|--------------|
| | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ | - | \$ - |
| | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ | - | |
| | Design | 10.0% | \$ | 164,300 | 0% | \$ | - | \$ | - | \$ 164,300 |
| | Engr. During Construction | 5.0% | \$ | 82,150 | 0% | \$ | - | \$ | - | \$ 82,150 |
| | Construction Mgt. | 7.5% | \$ | 123,225 | 0% | \$ | - | \$ | - | \$ 123,225 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | | \$ 2,012,675 |

Notes:

- 1 Cost estimate based on Package "B" bid from Olsson Construction

J.B. Latham Treatment Plant**Project Number** 02101**Effluent Pump VFD Replacement****Main Project Type****Key Dates**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Sep-18
Estimate Update Sep-18

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | |
|---|---------------------------|-------------------|--------|---------------|-------------|------------|-----------|------------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | |
| Project Task Elements | | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | | |
| | Demolition | 1 | LS | \$ | - | | \$ 10,000 | \$ 10,000 | |
| | VFD | 4 | EA | \$ 17,500 | \$ 70,000 | 25% | \$ 17,500 | \$ 87,500 | |
| | Electrical | 1 | LS | \$ | - | | \$ - | \$ 30,000 | |
| Subtotal | | | | | | | | \$ 127,500 | |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | | 27% | | | | | \$ 34,425 | |
| Shipping Rate | | | 0% | | | | | included | |
| Sale Tax | | | 8.00% | | | | | \$ 5,600 | |
| Project Contingency@ | | | 30% | | | | | \$ 50,258 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | |
| Original Estimate | 2019 Dollars | | | | | | | \$ 217,783 | |
| Current Estimate | 2019 Dollars | | | | | | | \$ 217,783 | |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | | |
| | | | | | | | | | |
| Project Phases Cost | | Rate ² | Amount | | Contingency | | Subtotal | Minimum | Total |
| | Condition Assessment | 5.0% | \$ | 10,889 | 0% | \$ | - | \$ - | \$ 10,889 |
| | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Design | 10.0% | \$ | 21,778 | 0% | \$ | - | \$ - | \$ 21,778 |
| | Engr. During Construction | 5.0% | \$ | 10,889 | 0% | \$ | - | \$ - | \$ 10,889 |
| | Construction Mgt. | 5.0% | \$ | 10,889 | 0% | \$ | - | \$ - | \$ 10,889 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 272,228 |

Notes:

J. B. Latham Treatment Plant

Project Number 02321

Odor Control Scrubber No.2 Replacement (Handling Plant 2 Liquid Stream and Energy Building)

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|----------------------------------|---|----|---|----|---|---|----|-----------|
| Total Construction Cost | Odor Control System ¹ | 1 | LS | - | - | - | - | \$ | 2,536,000 |
| | Electrical and Inst ² | 1 | LS | - | - | - | - | \$ | 380,000 |
| | | | | | \$ | - | | | |

Subtotal \$ 2,916,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @ 27% \$ 787,000

Shipping Rate 0% included

Sale Tax 8.00% \$ -

Project Contingency@ 30% \$ 1,111,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2019 Dollars | \$ | 4,814,000 |
| Current Estimate | 2019 Dollars | \$ | 4,814,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|------------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | |
| Conceptual Study | 2.5% | \$ 120,355 | 0% \$ - | \$ - | \$ 120,000 |
| Design | 7.5% | \$ 361,066 | 0% \$ - | \$ - | \$ 361,000 |
| Engr. During Construction | 5.0% | \$ 240,711 | 0% \$ - | \$ - | \$ 241,000 |
| Construction Mgt. | 5.0% | \$ 240,711 | 0% \$ - | \$ - | \$ 241,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 5,777,000 |

Notes:

- 1 Foul Air System Evaluation J. B. Latham Treatment Plant -DHK Engineers (12/17)
- 2 Electrical and instrumentation cost is taken as 15% of balance of construction costs.

J. B. Latham Treatment Plant**Project Number** 02322**Plant 2 Chlorine Contact Basin and Effluent Pump Station Condition Assessment****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

Subtotal

\$ -

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$ -

Current Estimate 2019 Dollars

\$ -

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|------|--------------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ 45,000.00 | 0% | \$ - | \$ - | \$ 45,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Construction Mgt. | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars)

\$ 45,000

Notes:

- Note significant confined space entry to evaluate wetwell of Storm Water PS

J. B. Latham Treatment Plant

Project Number 02333

[Go To Projects Sheet](#)

Chlorine Building Rehabilitation

Main Project Type

Key Dates

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost¹

| | | | | | | | |
|--|---|----|----|---|--|----|--------|
| Roof Reconstruction | 1 | LS | \$ | - | | \$ | 45,000 |
| Replace Single Doors (2) | 1 | LS | \$ | - | | \$ | 17,000 |
| Replace Roll Up Door | 1 | LS | \$ | - | | \$ | 12,000 |
| Replace Window | 1 | LS | \$ | - | | \$ | 8,000 |
| Replace Monorail Hoist | 1 | LS | \$ | - | | \$ | 15,000 |
| Replace Louver (1) | 1 | LS | \$ | - | | \$ | 10,000 |
| Replace Lighting and Power Receptacles | 1 | LS | \$ | - | | \$ | 30,000 |

Subtotal

\$ 137,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 37,000

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ 52,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 189,000 |
| Current Estimate | 2019 Dollars | \$ | 189,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 5.0% | \$ 9,460 | 0% \$ - | \$ - | \$ - | \$ 9,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | \$ - | \$ - |
| Design | 12.0% | \$ 22,704 | 0% \$ - | \$ - | \$ - | \$ 23,000 |
| Engr. During Construction | 5.0% | \$ 9,460 | 0% \$ - | \$ - | \$ - | \$ 9,000 |
| Construction Mgt. | 5.0% | \$ 9,460 | 0% \$ - | \$ - | \$ - | \$ 9,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 240,000 |

Notes:

- 1 Architectural hardware costs based on unit values provided by Hazen & Sawyer

J. B. Latham Treatment Plant**Project Number** 02334**MCC M Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | | |
|---|-----------------------------------|--------------|-------|---------------|--------|------------|--------|------------|----|--------|-------|----------|---------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | | |
| Project Task Elements | | | | | | | | | | | | | |
| Total Construction Cost | | | | | | | | | | | | | |
| | Demolition | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 10,000 | |
| | Motor Control Center ¹ | 1 | EA | \$ | 58,000 | \$ | 58,000 | 40% | \$ | 23,200 | \$ | 81,000 | |
| | Conduit and Cable ² | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 90,000 | |
| Subtotal | | | | | | | | | | | \$ | 181,000 | |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | | | | | | | | | | 27% | \$ | 49,000 |
| Shipping Rate | | | | | | | | | | | 0% | included | |
| Sale Tax | | | | | | | | | | | 8.00% | \$ | 5,000 |
| Project Contingency@ | | | | | | | | | | | 30% | \$ | 70,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | | | \$ | 305,000 |
| Current Estimate | | 2019 Dollars | | | | | | | | | | \$ | 305,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 5.0% | \$ 15,260 | 0% | \$ - | \$ - | \$ 15,000 |
| Construction Mgt. | 5.0% | \$ 15,260 | 0% | \$ - | \$ - | \$ 15,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 336,000 |

Notes:

- 1 Based on review with Maddox Electric.
- 2 Based on location of new unit within existing Chlorine Building

J. B. Latham Treatment Plant**Project Number** 02335**Administration Building Condition Assessment****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

Subtotal

\$ -

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$ -

Current Estimate 2019 Dollars

\$ -

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|------|--------------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ 25,000.00 | 0% | \$ - | \$ - | \$ 25,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Construction Mgt. | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars)

\$ 25,000

Notes:

- 1 Assuming that a seismic evaluation of structure is not needed
- 2 Original construction was ADA compliant but this should be review to address changes in code

J. B. Latham Treatment Plant**Project Number** 02336**Administration Building Spatial Analysis****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | |
|-------------------------|---|----|---|------|---|---|------|
| Total Construction Cost | 1 | LS | - | - | - | - | \$ - |
| | | | | \$ - | - | | |

Subtotal

| | | | |
|--|-------|--|----------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ - |
| Shipping Rate | 0% | | included |
| Sale Tax | 8.00% | | \$ - |
| Project Contingency@ | 20% | | \$ - |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------|
| Original Estimate | 2019 Dollars | \$ - |
| Current Estimate | 2019 Dollars | \$ - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|--------|-------------|----------|------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ 40,000 |
| Design | 7.5% | \$ - | 0% | \$ - | \$ - |
| Engr. During Construction | 5.0% | \$ - | 0% | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 40,000 |

Notes:

J. B. Latham Treatment Plant**Project Number** 02337**Administration Building Roof Reconstruction****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|---------------------|--------------|-------|---------------|-------|------------|----------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ¹ | | | | | | | | |
| | Roof Reconstruction | 1 | LS | | \$ | - | | \$ 150,000 |
| | Gutters | 1 | LS | | \$ | - | | \$ 10,000 |
| | Vents | 1 | LS | | \$ | - | | \$ 15,000 |
| | Other | 1 | LS | | \$ | - | | \$ 25,000 |
| Subtotal | | | | | | | | \$ 200,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 54,000 |
| Shipping Rate | | 0% | | | | | included | |
| Sale Tax | | 8.00% | | | | | | \$ - |
| Project Contingency@ | | 30% | | | | | | \$ 76,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 276,000 |
| Current Estimate | | 2019 Dollars | | | | | | \$ 276,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 5.0% | \$ 13,810 | 0% \$ - | \$ - | \$ - | \$ 14,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 27,620 | 0% \$ - | \$ - | \$ - | \$ 28,000 |
| Engr. During Construction | 5.0% | \$ 13,810 | 0% \$ - | \$ - | \$ - | \$ 14,000 |
| Construction Mgt. | 5.0% | \$ 13,810 | 0% \$ - | \$ - | \$ - | \$ 14,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 345,000 |

Notes:

- 1 Based on bid tabulation for RTP Operations Building Roof Reconstruction

J. B. Latham Treatment Plant

Project Number 02338

Administration Building HVAC Rehabilitation

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | |
|---|----------------------|--------------|-------|---------------|-------|------------|----------|------------|---------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | |
| Project Task Elements | | | | | | | | | |
| Total Construction Cost ¹ | | | | | | | | | |
| | Fan Coils/Heat Pumps | 1 | LS | \$ | - | | \$ | 40,000 | |
| | System Ducting | 1 | LS | \$ | - | | \$ | 25,000 | |
| | Restroom Fans | 1 | LS | \$ | - | | \$ | 5,000 | |
| | Power and Controls | 1 | LS | \$ | - | | \$ | 25,000 | |
| Subtotal | | | | | | | | \$ 95,000 | |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | \$ | 26,000 | |
| Shipping Rate | | 0% | | | | | included | | |
| Sale Tax | | 8.00% | | | | | \$ | - | |
| Project Contingency@ | | 30% | | | | | \$ | 36,000 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ | 131,000 |
| Current Estimate | | 2019 Dollars | | | | | | \$ | 131,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 5.0% | \$ 6,560 | 0% \$ - | \$ - | \$ - | \$ 7,000 |
| Conceptual Study | 5.0% | \$ 6,560 | 0% \$ - | \$ - | \$ - | \$ 7,000 |
| Design | 12.0% | \$ 15,743 | 0% \$ - | \$ - | \$ - | \$ 16,000 |
| Engr. During Construction | 2.5% | \$ 3,280 | 0% \$ - | \$ - | \$ - | \$ 3,000 |
| Construction Mgt. | 2.5% | \$ 3,280 | 0% \$ - | \$ - | \$ - | \$ 3,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 167,000 |

Notes:

- 1 Based on bid tabulation for RTP Operations Building HVAC Reconstruction

J.B. Latham Treatment Plant**Project Number** 02340**Plant Water Pump Station Reconstruction****Main Project Type****Key Dates**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Sep-18
Estimate Update Sep-18
Const. Year

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|-------------------------|----------|-------|---------------|---------|------------|----------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost | | | | | | | | |
| | Replacement of Strainer | 1 | LS | \$ | 66,000 | \$ | 24,000 | \$ 90,000 |
| | Replacement of Pumps | 1 | LS | \$ | 159,000 | \$ | 52,000 | \$ 211,000 |
| | Replacement of Piping | 1 | LS | \$ | 500 | \$ | 200 | \$ 700 |
| | Equipment Pad | 1 | LS | \$ | 1,280 | | | \$ 1,280 |
| | Electrical Upgrades | 1 | LS | \$ | 7,200 | \$ | 16,200 | \$ 23,400 |
| Subtotal | | | | | | | | \$ 326,380 |
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 88,123 |
| Shipping Rate | | 0% | | | | | included | |
| Sale Tax | | 8.00% | | | | | | \$ 26,110 |
| Project Contingency@ | | 20% | | | | | | \$ 88,123 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | 2019 Dollars | | | | | | | \$ 528,736 |
| Current Estimate | 2019 Dollars | | | | | | | \$ 528,736 |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 52,874 | 0% | \$ - | \$ - | \$ 52,874 |
| Engr. During Construction | 5.0% | \$ 26,437 | 0% | \$ - | \$ - | \$ 26,437 |
| Construction Mgt. | 7.5% | \$ 39,655 | 0% | \$ - | \$ - | \$ 39,655 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 647,701 |

Notes:

- 1 Cost estimate provided by Hazen in August 2018

J. B. Latham Treatment Plant**Project Number** 02341**Non Potable Water Pump Station Reconstruction****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | | | | | |
|---|---|----|----|---|----|---|----|----|---|----|---------|
| Demolition | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 20,000 |
| Non Potable Water Pumps and Appurt ¹ | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 327,000 |
| Electrical and Instrumentation | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 20,000 |
| Subtotal | | | | | | | | | | \$ | 367,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 88,000

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

20% \$ 73,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 528,000 |
| Current Estimate | 2019 Dollars | \$ | 528,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|------|--------------|-------------|----------|---------|-----------|
| Condition Assessment | 2.5% | \$ 13,202.95 | 0% \$ | - \$ | - \$ | \$ 13,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ | - \$ | - \$ | - \$ |
| Design | 7.5% | \$ 39,609 | 0% \$ | - \$ | - \$ | \$ 40,000 |
| Engr. During Construction | 5.0% | \$ 26,406 | 0% \$ | - \$ | - \$ | \$ 26,000 |
| Construction Mgt. | 5.0% | \$ 26,406 | 0% \$ | - \$ | - \$ | \$ 26,000 |

Total Project Cost (Present Value in 2019 Dollars)

\$ 634,000

Notes:

- 1 Based on Hazen and Sawyer estimate.

Regional Treatment Plant

Project Number 02342

Primary Gallery Upgrade Phase II

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|-------------------------|---|----|-----------|-----------|------|-----------|-----------|
| Upgraded Equipment | 1 | LS | \$ 25,000 | \$ 25,000 | | \$ - | \$ 25,000 |
| Storage | 1 | LS | \$ 10,000 | \$ 10,000 | 25% | \$ 2,500 | \$ 13,000 |
| Rehab Office Space | 1 | LS | \$ 10,000 | \$ 10,000 | 100% | \$ 10,000 | \$ 20,000 |
| Electrical upgrades | 1 | LS | \$ 25,000 | \$ 25,000 | 50% | \$ 12,500 | \$ 38,000 |
| Concrete Rehabilitation | 1 | LS | \$ 12,000 | \$ 12,000 | 50% | \$ 6,000 | \$ 18,000 |
| | | | \$ - | \$ - | | \$ - | \$ - |

Subtotal

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 31,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 7,000

Project Contingency@

20% \$ 30,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 180,000 |
| Current Estimate | 2018 Dollars | \$ 180,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 3.0% | \$ 5,403 | 0% | \$ - | \$ - | \$ 5,000 |
| Engr. During Construction | 10.0% | \$ 18,008 | 0% | \$ - | \$ - | \$ 18,000 |
| Construction Mgt. | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 203,000 |

Notes:

Project Number 02343

SCADA System Upgrade

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|--------------|---|----|-----------|------------|------|------------|------------|
| Total Construction Cost | PLC's | 7 | EA | \$ 15,000 | \$ 105,000 | 100% | \$ 105,000 | \$ 210,000 |
| | PLC Cabinets | 3 | EA | \$ 12,500 | \$ 37,500 | 50% | \$ 18,750 | \$ 56,000 |
| | Programming | 1 | LS | | \$ - | | \$ - | \$ 25,000 |
| Subtotal | | | | | | | | \$ 291,000 |

| | | | |
|--|-------|----------|------------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 57,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 11,000 |
| Project Contingency@ | 30% | | \$ 108,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 467,000 |
| Current Estimate | 2019 Dollars | \$ 467,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 2.5% | \$ 11,679 | 0% \$ - | \$ - | \$ 12,000 |
| Conceptual Study | 2.5% | \$ 11,679 | 0% \$ - | \$ - | \$ 12,000 |
| Design | 10.0% | \$ 46,716 | 0% \$ - | \$ - | \$ 47,000 |
| Engr. During Construction | 5.0% | \$ 23,358 | 0% \$ - | \$ - | \$ 23,000 |
| Construction Mgt. | 5.0% | \$ 23,358 | 0% \$ - | \$ - | \$ 23,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 584,000 |

Notes:

J. B. Latham Treatment Plant

Project Number 02345

Site Pavement Reconstruction

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--|------------------|-------|----|----|---|----|---|----|----------|
| Total Construction Cost ¹ | Asphalt Pavement | 1 | LS | \$ | - | \$ | - | \$ | 675,000 |
| Subtotal | | | | | | | | \$ | 675,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | | included |
| Shipping Rate | | 0% | | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ | - |
| Project Contingency@ | | 20% | | | | | | \$ | 135,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 810,000 |
| Current Estimate | 2019 Dollars | \$ | 810,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|-----------|-------------|----------|-----------|
| Condition Assessment | 2.5% | \$ 20,250 | 0% | \$ - | \$ 20,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 5.0% | \$ 40,500 | 0% | \$ - | \$ 41,000 |
| Engr. During Construction | 2.5% | \$ 20,250 | 0% | \$ - | \$ 20,000 |
| Construction Mgt. | 5.0% | \$ 40,500 | 0% | \$ - | \$ 41,000 |

| | | |
|---|----|---------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ | 932,000 |
|---|----|---------|

Notes:

1 Cost estimate derived from 2004 Study by TetraTech.

J. B. Latham Treatment Plant**Project Number** 02346**New Storage Building****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| X |
| |
| |
| |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|------------------------|---|----|---|------|---|---|------------|
| Total Construction Cost | Foundation | 1 | LS | - | - | - | - | \$ 15,000 |
| | Pavement Modifications | 1 | LS | - | - | - | - | \$ 10,000 |
| | Building | 1 | LS | - | - | - | - | \$ 148,000 |
| | Plumbing | 1 | LS | - | - | - | - | \$ 15,000 |
| | Finishes | 1 | LS | - | - | - | - | \$ 20,000 |
| | Skylights | 1 | LS | - | - | - | - | \$ 15,000 |
| | | | | | \$ - | | | |

Subtotal \$ 223,000

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 60,000

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ 85,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 368,000 |
| Current Estimate | 2019 Dollars | \$ 368,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 12.0% | \$ 44,181 | 0% | \$ - | \$ 44,000 |
| Engr. During Construction | 5.0% | \$ 18,409 | 0% | \$ - | \$ 18,000 |
| Construction Mgt. | 10.0% | \$ 36,817 | 0% | \$ - | \$ 37,000 |

Total Project Cost (Present Value in 2019 Dollars) \$ 468,000

Notes:

- 1 Assumes building to fit location of existing laboratory

J. B. Latham Treatment Plant

Project Number 02347

Storm Water Pump Station Reconstruction

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | | |
|--|---|----|-----------|----|--------|-----|----------|-----------|
| Demolition | 1 | LS | | \$ | - | | \$ | 20,000 |
| Roof Reconstruction | 1 | LS | | \$ | - | | \$ | 15,000 |
| Wetwell Grating Replacement | 1 | LS | | \$ | - | | \$ | 8,000 |
| Concrete Repairs | 1 | LS | | \$ | - | | \$ | 10,000 |
| Replace Single Doors | 1 | LS | | \$ | - | | \$ | 9,000 |
| Replace Double Door | 1 | LS | | \$ | - | | \$ | 12,000 |
| Replace Ladder | 1 | LS | | \$ | - | | \$ | 13,000 |
| Pump | 1 | EA | \$ 10,000 | \$ | 10,000 | 25% | \$ 2,500 | \$ 13,000 |
| Engine | 1 | EA | \$ 25,000 | \$ | 25,000 | 25% | \$ 6,250 | \$ 31,000 |
| Slide Gate | 2 | EA | \$ 12,000 | \$ | 24,000 | 25% | \$ 6,000 | \$ 30,000 |
| Piping and Valving | 1 | LS | \$ - | \$ | - | 0% | \$ - | \$ 15,000 |
| Replace HVAC System | 1 | LS | | \$ | - | | \$ | 5,000 |
| Replace Lighting and Power Receptacles | 1 | LS | | \$ | - | | \$ | 10,000 |
| Power | 1 | LS | | \$ | - | | \$ | 15,000 |
| Instrumentation | 1 | LS | | \$ | - | | \$ | 10,000 |

Subtotal

\$ 214,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 58,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 82,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 296,000 |
| Current Estimate | 2019 Dollars | \$ | 296,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 2.5% | \$ 7,397 | 0% | \$ - | \$ - | \$ 7,000 |
| Conceptual Study | 5.0% | \$ 14,794 | 0% | \$ - | \$ - | \$ 15,000 |
| Design | 10.0% | \$ 29,588 | 0% | \$ - | \$ - | \$ 30,000 |
| Engr. During Construction | 5.0% | \$ 14,794 | 0% | \$ - | \$ - | \$ 15,000 |
| Construction Mgt. | 5.0% | \$ 14,794 | 0% | \$ - | \$ - | \$ 15,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 377,000 |

Notes:

J.B. Latham Treatment Plant**Project Number** 02350**Buried Water Pipe Reconstruction****Main Project Type****Key Dates**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Sep-18
 Estimate Update Sep-18
 Const. Year

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|--|---|--------------|-------|---------------|-----------|------------|------------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | |
| | Demolition | | | | | | \$ 200,000 | \$ 200,000 |
| | Excavation | | | | | | \$ 100,000 | \$ 100,000 |
| | Asphalt | | | | \$ 50,000 | | \$ 50,000 | \$ 100,000 |
| | 1-inch process water pipeline replacement | 1 | LS | | \$ 400 | | \$ 320 | \$ 720 |
| | 2-inch process water pipeline replacement | 1 | LS | | \$ 1,200 | | \$ 960 | \$ 2,160 |
| | 2.5-inch process water pipeline replacement | 1 | LS | | \$ 1,250 | | \$ 1,000 | \$ 2,250 |
| | 3-inch process water pipeline replacement | 1 | LS | | \$ 7,750 | | \$ 4,650 | \$ 12,400 |
| | 4-inch process water pipeline replacement | 1 | LS | | \$ 6,150 | | \$ 4,100 | \$ 10,250 |
| | 6-inch process water pipeline replacement | 1 | LS | | \$ 24,500 | | \$ 17,500 | \$ 42,000 |
| | 10-inch process water pipeline replacement | 1 | LS | | \$ 2,000 | | \$ 800 | \$ 2,800 |
| | 12-inch process water pipeline replacement | 1 | LS | | \$ 8,000 | | \$ 3,200 | \$ 11,200 |
| | 1.5-inch potable water pipeline replacement | 1 | LS | | \$ 3,800 | | \$ 3,040 | \$ 6,840 |
| | 2-inch potable water pipeline replacement | 1 | LS | | \$ 1,500 | | \$ 1,200 | \$ 2,700 |
| | 4-inch Potable water pipeline replacement | 1 | LS | | \$ 3,000 | | \$ 1,500 | \$ 4,500 |
| Subtotal | | | | | | | | \$ 497,820 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 134,411 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 39,826 |
| Project Contingency@ | | 30% | | | | | | \$ 149,346 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 821,403 |
| Current Estimate | | 2019 Dollars | | | | | | \$ 821,403 |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|--------------|
| Condition Assessment | 2.5% | \$ 20,535 | 0% | \$ - | \$ - | \$ 20,535 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 82,140 | 0% | \$ - | \$ - | \$ 82,140 |
| Engr. During Construction | 5.0% | \$ 41,070 | 0% | \$ - | \$ - | \$ 41,070 |
| Construction Mgt. | 7.5% | \$ 61,605 | 0% | \$ - | \$ - | \$ 61,605 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 1,026,754 |

Notes:

1 Cost estimate provided by Hazen for CTP TYP

J.B. Latham Treatment Plant
Project Number 02351

Buried Drainage Pipe Reconstruction
Main Project Type
Key Dates

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

| | |
|------------------|--------|
| Initial Estimate | Jul-18 |
| Estimate Update | Jul-18 |
| Const. Year | |

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|--------------------------------|--------------|-------|---------------|--------|------------|------------|--------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | |
| | Demolition | 1 | LS | \$ | - | | \$ 50,000 | \$ 50,000 |
| | Excavation | 1 | LS | \$ | - | \$ - | \$ 100,000 | \$ 100,000 |
| | Asphalt | 1 | LS | \$ | - | \$ - | \$ 100,000 | \$ 100,000 |
| | 4-inch drain pipe replacement | 1 | LS | \$ | 1,500 | \$ - | \$ 750 | \$ 2,250 |
| | 6-inch drain pipe replacement | 1 | LS | \$ | 8,750 | \$ - | \$ 6,250 | \$ 15,000 |
| | 10-inch drain pipe replacement | 1 | LS | \$ | 7,500 | \$ - | \$ 3,000 | \$ 10,500 |
| | 12-inch drain pipe replacement | 1 | LS | \$ | 25,000 | \$ - | \$ 10,000 | \$ 35,000 |
| Subtotal | | | | | | | | \$ 312,750 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 84,442.50 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 25,020 |
| Project Contingency@ | | 30% | | | | | | \$ 93,825 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 516,038 |
| Current Estimate | | 2019 Dollars | | | | | | \$ 516,038 |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 51,604 | 0% | \$ - | \$ - | \$ 51,604 |
| Engr. During Construction | 5.0% | \$ 25,802 | 0% | \$ - | \$ - | \$ 25,802 |
| Construction Mgt. | 7.5% | \$ 38,703 | 0% | \$ - | \$ - | \$ 38,703 |
| Total Project Contingency ⁵ | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 632,146 |

Notes:

- 1 Cost estimate provided by Hazen for CTP TYP

J. B. Latham Treatment Plant**Project Number** 2353**Perimeter Fence Replacement****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

Apr-19

Estimate Update

Apr-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|--|---|----|---|---|---|---|----|--------|
| Total Construction Cost ³ | Perimeter Fence Removal ¹ | 1 | LS | - | - | - | - | \$ | 19,000 |
| | Perimeter Fence Replacement ² | 1 | LS | - | - | - | - | \$ | 47,000 |

Subtotal

\$ 66,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 18,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

10%

\$ 8,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|--------|
| Original Estimate | 2019 Dollars | \$ | 92,000 |
| Current Estimate | 2019 Dollars | \$ | 92,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|----------|-------------|----------|----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 9,220 | 0% | \$ - | \$ 9,000 |
| Engr. During Construction | 2.5% | \$ 2,305 | 0% | \$ - | \$ 2,000 |
| Construction Mgt. | 5.0% | \$ 4,610 | 0% | \$ - | \$ 5,000 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

| | | |
|---|-----------|----------------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ | 108,000 |
|---|-----------|----------------|

Notes:

- 1 Cost estimate provided by Hazen & Sawyer; \$16/lf of fence removal
- 2 Cost estimate provided by Hazen & Sawyer; \$39/lf of fence installation
- 3 Based on 1200 liner feet of perimeter fencing

J.B. Latham Treatment Plant**Project Number** 02354**Natural Gas Pipeline Replacement****Main Project Type****Key Dates**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

X

X

Initial Estimate

Sep-18

Estimate Update

Sep-18

Const. Year

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|---|----------|-------|---------------|-----------|------------|---------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | |
| | Demolition | 1 | LS | | | \$ | 100,000 | \$ 100,000 |
| | Alternative supply of natural gas | 1 | LS | | \$ 48,000 | \$ | 50,000 | \$ 98,000 |
| | Excavation | 1 | LS | | | \$ | 100,000 | \$ 100,000 |
| | 2-inch natural gas pipeline replacement | 1 | LS | | \$ 48,000 | \$ | 36,000 | \$ 84,000 |
| Subtotal | | | | | | | | \$ 382,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 103,140 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 30,560 |
| Project Contingency@ | | 30% | | | | | | \$ 114,600 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | 2019 Dollars | | | | | | | \$ 630,300 |
| Current Estimate | 2019 Dollars | | | | | | | \$ 630,300 |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | |

| Project Phases Cost | Rate ² | Amount | | Contingency | | Subtotal | | Minimum | Total |
|---|-------------------|--------|--------|-------------|----|----------|----|---------|------------|
| Condition Assessment | | \$ | - | 0% | \$ | - | \$ | - | \$ - |
| Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ | - | |
| Design | 10.0% | \$ | 63,030 | 0% | \$ | - | \$ | - | \$ 63,030 |
| Engr. During Construction | 5.0% | \$ | 31,515 | 0% | \$ | - | \$ | - | \$ 31,515 |
| Construction Mgt. | 7.5% | \$ | 47,273 | 0% | \$ | - | \$ | - | \$ 47,273 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 772,118 |

Notes:

1 Cost estimate provided by Hazen for CTP TYP

J. B. Latham Treatment Plant

Project Number 02520

Ferric Chloride System Reconstruction

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|----------------------------------|---|----|-----------|-----------|-----|-----------|----|---------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 25,000 |
| | Storage Tank | 1 | Ea | \$ 60,000 | \$ 60,000 | 25% | \$ 15,000 | \$ | 75,000 |
| | Metering Pump | 3 | Ea | \$ 20,000 | \$ 60,000 | 25% | \$ 15,000 | \$ | 75,000 |
| | Piping, Valves and Appurtenances | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Coating | 1 | LS | - | - | - | - | \$ | 50,000 |
| | Metal Appurtenances | 1 | LS | - | - | - | - | \$ | 5,000 |
| | Electrical and Instrumentation | 1 | LS | - | - | - | - | \$ | 100,000 |
| | Temporary System | 1 | LS | - | - | - | - | \$ | 40,000 |

\$ 120,000

Subtotal

\$ 400,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 108,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 10,000

Project Contingency@

20%

\$ 104,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 621,000 |
| Current Estimate | 2019 Dollars | \$ | 621,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 2.5% | \$ 15,528 | 0% | \$ - | \$ 16,000 |
| Conceptual Study | 2.5% | \$ 15,528 | 0% | \$ - | \$ 16,000 |
| Design | 10.0% | \$ 62,112 | 0% | \$ - | \$ 62,000 |
| Engr. During Construction | 5.0% | \$ 31,056 | 0% | \$ - | \$ 31,000 |
| Construction Mgt. | 5.0% | \$ 31,056 | 0% | \$ - | \$ 31,000 |

| | | |
|---|----|---------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ | 776,000 |
|---|----|---------|

Notes:

- 1 Assumes that existing concrete containment area can be reused with new coating system.

J. B. Latham Treatment Plant

Project Number 02521

Odor Control Scrubber No.3 Replacement (Handling DAF System)

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|----------------------------------|---|----|---|----|---|---|----|---------|
| Total Construction Cost | Odor Control System ¹ | 1 | LS | - | - | - | - | \$ | 217,000 |
| | Electrical and Inst ² | 1 | LS | - | - | - | - | \$ | 33,000 |
| | | | | | \$ | - | | | |

Subtotal \$ 250,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @ 27% \$ 67,000

Shipping Rate 0% included

Sale Tax 8.00% \$ -

Project Contingency@ 30% \$ 95,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 413,000 |
| Current Estimate | 2019 Dollars | \$ | 413,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | |
| Conceptual Study | 2.5% | \$ 10,314 | 0% \$ - | \$ - | \$ 10,000 |
| Design | 7.5% | \$ 30,943 | 0% \$ - | \$ - | \$ 31,000 |
| Engr. During Construction | 5.0% | \$ 20,629 | 0% \$ - | \$ - | \$ 21,000 |
| Construction Mgt. | 5.0% | \$ 20,629 | 0% \$ - | \$ - | \$ 21,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 495,000 |

Notes:

- 1 Foul Air System Evaluation J. B. Latham Treatment Plant -DHK Engineers (12/17)
- 2 Electrical and instrumentation cost is taken as 15% of balance of construction costs.

J.B. Latham Treatment Plant**Project Number** 02522**DAF Polymer System upgrade****Main Project Type****Key Dates**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Initial Estimate

Feb-19

Estimate Update

Feb-19

Prepared By

JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost³

Demo

1

LS

\$

-

\$

-

\$40,000

Mechanical Upgrades

1

LS

\$

-

\$

-

\$50,000

Metering Pumps and VFDs

1

LS

\$

-

\$

-

\$75,000

PLC, HMI, and Programming

1

LS

\$

-

\$

-

\$150,000

Bulk Tanks

1

EA

\$

37,500

\$

37,500

\$

-

\$37,500

Subtotal

\$

-

\$

-

\$352,500

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$95,175

Shipping Rate

0%

included

Sale Tax

8.00%

\$0

Project Contingency@

20%

\$70,500

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$518,175

Current Estimate 2019 Dollars

\$518,175

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate | Amount | | Contingency | | Subtotal | Minimum | Total |
|---|-------|--------|--------|-------------|----|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| Design | 10.0% | \$ | 51,818 | 0% | \$ | - | \$ | 51,818 |
| Engr. During Construction | 10.0% | \$ | 51,818 | 0% | \$ | - | \$ | 51,818 |
| Construction Mgt. | 5.0% | \$ | 25,909 | 0% | \$ | - | \$ | 25,909 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | \$ 647,719 |

Notes:

J. B. Latham Treatment Plant

Project Number 02523

Dewatering Polymer System Upgrade

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Apr-19
Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|----------------------------------|---|----|-----------|-----------|-----|-----------|----|--------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 15,000 |
| | Storage Tank | 1 | Ea | \$ 60,000 | \$ 60,000 | 25% | \$ 15,000 | \$ | 75,000 |
| | Piping, Valves and Appurtenances | 1 | LS | - | - | - | - | \$ | 25,000 |
| | Metal Appurtenances | 1 | LS | - | - | - | - | \$ | 3,000 |
| | Electrical and Instrumentation | 1 | LS | - | - | - | - | \$ | 20,000 |
| | Temporary System | 1 | LS | - | - | - | - | \$ | 10,000 |
| | | | | \$ | 60,000 | | | | |

Subtotal \$ 148,000

| | | |
|--|-------|-----------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | \$ 40,000 |
| Shipping Rate | 0% | included |
| Sale Tax | 8.00% | \$ 5,000 |
| Project Contingency@ | 20% | \$ 38,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 231,000 |
| Current Estimate | 2019 Dollars | \$ 231,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|-----------|-------------|----------|-----------|
| Condition Assessment | 2.5% | \$ 5,764 | 0% | \$ - | \$ 6,000 |
| Conceptual Study | 2.5% | \$ 5,764 | 0% | \$ - | \$ 6,000 |
| Design | 7.5% | \$ 17,291 | 0% | \$ - | \$ 17,000 |
| Engr. During Construction | 2.5% | \$ 5,764 | 0% | \$ - | \$ 6,000 |
| Construction Mgt. | 5.0% | \$ 11,528 | 0% | \$ - | \$ 12,000 |

Total Project Cost (Present Value in 2019 Dollars) \$ 277,000

Notes:

- 1 Assumes that existing concrete containment area can be reused.
- 2 Assumes that polymer feeders replacement units installed in 2019 and 2020 are still in good operating condition.

J. B. Latham Treatment Plant**Project Number** 02524**MCC D Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|-----------------------------------|---|----|-----------|-----------|-----|-----------|------------|
| Demolition | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 5,000 |
| Motor Control Center ¹ | 1 | EA | \$ 94,000 | \$ 94,000 | 40% | \$ 37,600 | \$ 132,000 |
| Conduit and Cable ² | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 45,000 |
| Subtotal | | | | | | | \$ 182,000 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 49,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 8,000

Project Contingency@

30% \$ 71,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 310,000 |
| Current Estimate | 2019 Dollars | \$ 310,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------|-----------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 30,960 | 0% | \$ - | \$ - | \$ 31,000 |
| Engr. During Construction | 5.0% | \$ 15,480 | 0% | \$ - | \$ - | \$ 15,000 |
| Construction Mgt. | 5.0% | \$ 15,480 | 0% | \$ - | \$ - | \$ 15,000 |

Total Project Cost (Present Value in 2019 Dollars)

\$ 372,000

Notes:

- 1 Based on review with Maddox Electric.
- 2 Based on location of new unit within existing Chlorine Building

J.B. Latham Treatment Plant**Project Number** 02525**Anaerobic Digester No.1 and No. 2 Mechanical Upgrades****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jan-19
 Estimate Update Jan-19

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost³

| | | | | | | | |
|----------------------------|---|----|------------|--------------|------|------------|-------------|
| Mixing Pump | 2 | EA | \$ 50,000 | \$ 100,000 | 50% | \$ 25,000 | \$125,000 |
| Piping, Valves, & Supports | 1 | LS | \$ 200,000 | \$ 200,000 | 100% | \$ 200,000 | \$400,000 |
| Heat Exchanger | 2 | EA | \$ 60,000 | \$ 120,000 | 100% | \$ 60,000 | \$180,000 |
| Dome Upgrades | 2 | EA | \$ 200,000 | \$ 400,000 | | \$ - | \$400,000 |
| Stairs | 2 | EA | \$ 250,000 | \$ 500,000 | | \$ - | \$500,000 |
| Other | 1 | LS | \$ 400,000 | \$ 400,000 | | \$ - | \$400,000 |
| Subtotal | | | | \$ 1,720,000 | | \$ 285,000 | \$2,005,000 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$541,350

Shipping Rate

0% included

Sale Tax

8.00% \$137,600

Project Contingency@

20% \$401,000

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$3,084,950

Current Estimate 2019 Dollars \$3,084,950

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | Minimum | Total |
|---|--|-------|--------|---------|-------------|----|----------|---------|--------------|
| 1.1.005 CA | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| 1.1.005 DS | Design | 10.0% | \$ | 308,495 | 0% | \$ | - | \$ | 308,495 |
| 1.1.005 EDC | Engr. During Construction | 5.0% | \$ | 154,248 | 0% | \$ | - | \$ | 154,248 |
| 1.1.005 CM | Construction Mgt. | 5.0% | \$ | 154,248 | 0% | \$ | - | \$ | 154,248 |
| 1.1.005 CY | Total Project Contingency ⁵ | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 3,701,940 |

Notes:

J.B. Latham Treatment Plant**Project Number** 02526**Anaerobic Digesters NO. 3 and No. 4 Mechanical Upgrades****Main Project Type****Key Dates**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Initial Estimate Jan-19
 Estimate Update Jan-19

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost³

| | | | | | | | |
|----------------------------|---|----|------------|------------|------|------------|-----------|
| Mixing Pump | 2 | EA | \$ 40,000 | \$ 80,000 | 50% | \$ 20,000 | \$100,000 |
| Piping, Valves, & Supports | 1 | LS | \$ 150,000 | \$ 150,000 | 100% | \$ 150,000 | \$300,000 |
| Heat Exchanger | 1 | EA | \$ 45,000 | \$ 45,000 | 100% | \$ 45,000 | \$90,000 |
| Dome Upgrades | 2 | EA | \$ 150,000 | \$ 300,000 | | \$ - | \$300,000 |
| Stairs | 0 | EA | \$ 200,000 | \$ - | | \$ - | \$0 |
| Other | 0 | LS | \$ 200,000 | \$ - | | \$ - | \$0 |
| Subtotal | | | | \$ 575,000 | | \$ 215,000 | \$790,000 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$213,300

Shipping Rate

0% included

Sale Tax

8.00% \$46,000

Project Contingency@

20% \$158,000

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$1,207,300

Current Estimate 2019 Dollars \$1,207,300

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | | Rate ² | Amount | | Contingency | | Subtotal | Minimum | Total |
|---|--|-------------------|--------|---------|-------------|----|----------|---------|--------------|
| 1.1.005 CA | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| 1.1.005 DS | Design | 10.0% | \$ | 120,730 | 0% | \$ | - | \$ | 120,730 |
| 1.1.005 EDC | Engr. During Construction | 5.0% | \$ | 60,365 | 0% | \$ | - | \$ | 60,365 |
| 1.1.005 CM | Construction Mgt. | 5.0% | \$ | 60,365 | 0% | \$ | - | \$ | 60,365 |
| 1.1.005 CY | Total Project Contingency ⁵ | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 1,448,760 |

Notes:

J.B. Latham Treatment Plant**Project Number** 02527**Anaerobic Digester No. 3 and No. 4 Control Building Upgrades****Main Project Type****Key Dates**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Jan-19
Estimate Update Jan-19

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost³

| | | | | | | |
|---------------------|---|----|------------|------------|------|-----------|
| Roof Upgrades | 1 | LS | \$ 80,000 | \$ 80,000 | \$ - | \$80,000 |
| Boiler Demo | 1 | LS | \$ 50,000 | \$ 50,000 | \$ - | \$50,000 |
| Piping and Valving | 1 | LS | \$ 150,000 | \$ 150,000 | \$ - | \$150,000 |
| Electrical Upgrades | 1 | EA | \$ 150,000 | \$ 150,000 | \$ - | \$150,000 |

Subtotal \$ 430,000 \$ - \$430,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$116,100

Shipping Rate

0% included

Sale Tax

8.00% \$34,400

Project Contingency@

20% \$86,000

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$666,500

Current Estimate 2019 Dollars \$666,500

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 66,650 | 0% | \$ - | \$ - | \$ 66,650 |
| Engr. During Construction | 5.0% | \$ 33,325 | 0% | \$ - | \$ - | \$ 33,325 |
| Construction Mgt. | 7.5% | \$ 49,988 | 0% | \$ - | \$ - | \$ 49,988 |
| Total Project Contingency ⁵ | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 816,463 |

Notes:

J.B. Latham Treatment Plant**Project Number** 02528**Digested Sludge Pump Station Upgrade****Main Project Type****Key Dates**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Sep-18
Estimate Update Sep-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost³

| | | | | | | | |
|--------------------------------|---|----|-----------|------------|------|-----------|-----------|
| Replace Sludge Pumps (chopper) | 3 | EA | \$ 14,000 | \$ 42,000 | 50% | \$ 7,000 | \$49,000 |
| Replace Piping/Valves | 1 | LS | \$ 30,000 | \$ 30,000 | 75% | \$ 22,500 | \$52,500 |
| Electrical | 1 | LS | \$ 50,000 | \$ 50,000 | 100% | \$ 50,000 | \$100,000 |
| | 1 | LS | \$ - | \$ - | | \$ - | \$0 |
| | 1 | LS | \$ - | \$ - | | \$ - | |
| | 1 | LS | \$ - | \$ - | | \$ - | |
| Subtotal | | | | \$ 122,000 | | \$ 79,500 | \$201,500 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$54,405

Shipping Rate

0% included

Sale Tax

8.00% \$9,760

Project Contingency@

20% \$40,300

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$305,965

Current Estimate 2019 Dollars \$305,965

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 30,597 | 0% | \$ - | \$ - | \$ 30,597 |
| Engr. During Construction | 5.0% | \$ 15,298 | 0% | \$ - | \$ - | \$ 15,298 |
| Construction Mgt. | 7.5% | \$ 22,947 | 0% | \$ - | \$ - | \$ 22,947 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 374,807 |

Notes:

J. B. Latham Treatment Plant**Project Number** 02529**MCC B Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Apr-19
 Estimate Update Apr-19

Prepared By BP

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | | |
|---|-----------------------------------|--------------|-------|---------------|--------|------------|--------|------------|----|--------|-------|----------|---------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | | |
| Project Task Elements | | | | | | | | | | | | | |
| Total Construction Cost | | | | | | | | | | | | | |
| | Demolition | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 10,000 | |
| | Motor Control Center ¹ | 1 | EA | \$ | 82,000 | \$ | 82,000 | 40% | \$ | 32,800 | \$ | 115,000 | |
| | Conduit and Cable ² | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 75,000 | |
| Subtotal | | | | | | | | | | | \$ | 200,000 | |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | | | | | |
| and Bonds and Insurance @ | | | | | | | | | | | 27% | \$ | 54,000 |
| Shipping Rate | | | | | | | | | | | 0% | included | |
| Sale Tax | | | | | | | | | | | 8.00% | \$ | 7,000 |
| Project Contingency@ | | | | | | | | | | | 30% | \$ | 78,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | | | \$ | 338,000 |
| Current Estimate | | 2019 Dollars | | | | | | | | | | \$ | 338,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 33,840 | 0% | \$ - | \$ - | \$ 34,000 |
| Engr. During Construction | 5.0% | \$ 16,920 | 0% | \$ - | \$ - | \$ 17,000 |
| Construction Mgt. | 5.0% | \$ 16,920 | 0% | \$ - | \$ - | \$ 17,000 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 406,000 |

Notes:

- 1 Based on review with Maddox Electric.
- 2 Based on location of new unit within proposed Digester 5 Utility Building

J.B. Latham Treatment Plant**Project Number** 02530**Dewatering System Reconstruction****Main Project Type****Key Dates**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Initial Estimate

Sep-17

Estimate Update

Sep-17

Prepared By

JM

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | |
|---|---|--------------|-------|---------------|------------|------------|-----------|------------|--|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | |
| Project Task Elements | | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | | |
| | Mechanical Upgrades to existing Centrifuges | 3 | EA | \$ 35,000 | \$ 105,000 | 75% | \$ 26,250 | \$131,250 | |
| | Replace Diverter Gates | 1 | LS | \$ 30,000 | \$ 30,000 | 100% | \$ 30,000 | \$60,000 | |
| | Replace Centrate Piping | 1 | LS | \$ 25,000 | \$ 25,000 | 100% | \$ 25,000 | \$50,000 | |
| | | | | | \$ - | | \$ - | \$0 | |
| | | | | | \$ - | | \$ - | | |
| | | | | | \$ - | | \$ - | | |
| Subtotal | | | | | \$ 160,000 | | \$ 81,250 | \$241,250 | |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | |
| and Bonds and Insurance @ | | 27% | | | | | | \$65,138 | |
| Shipping Rate | | 0% | | | | | included | | |
| Sale Tax | | 8.00% | | | | | | \$12,800 | |
| Project Contingency@ | | 20% | | | | | | \$48,250 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$367,438 | |
| Current Estimate | | 2019 Dollars | | | | | | \$367,438 | |
| Total Main Project Cost (CAMP Report Year) | | | | | | | | | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|------|-----------|-------------|----------|---------|---------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 5.0% | \$ 18,372 | 0% | \$ - | \$ - | \$ 18,372 |
| Construction Mgt. | 7.5% | \$ 27,558 | 0% | \$ - | \$ - | \$ 27,558 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 950,216.19 |

Notes:

- Values based on Carollo September 2017 Dewatering and Digester Gas Control and Heating Condition Assessment

J.B. Latham Treatment Plant**Project Number** 02531**Solids Conveyor Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Sep-17
 Estimate Update Sep-17

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost³

| | | | | | | | |
|-----------------------------|---|----|-----------|-----------|-----|-----------|----------|
| Replace Screws | 1 | LS | \$ 45,000 | \$ 45,000 | 75% | \$ 33,750 | \$78,750 |
| Repair Conveyor Covers | 1 | LS | \$ 7,500 | \$ 7,500 | 50% | \$ 3,750 | \$11,250 |
| Install Safety Wire Shutoff | 1 | LS | \$ 6,000 | \$ 6,000 | 25% | \$ 1,500 | \$7,500 |
| | 1 | LS | \$ - | \$ - | | \$ - | \$0 |
| | 1 | LS | \$ - | \$ - | | \$ - | |
| | 1 | LS | \$ - | \$ - | | \$ - | |
| Subtotal | | | | \$ 58,500 | | \$ 39,000 | \$97,500 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$26,325

Shipping Rate

0% included

Sale Tax

8.00% \$4,680

Project Contingency@

20% \$19,500

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

Current Estimate 2019 Dollars

\$148,005

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 5.0% | \$ 7,400 | 0% | \$ - | \$ - | \$ 7,400 |
| Construction Mgt. | 7.5% | \$ 11,100 | 0% | \$ - | \$ - | \$ 11,100 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 166,506 |

Notes:

- 1 Values based on Carollo September 2017 Dewatering and Digester Gas Control and Heating Condition Assessment

J.B. Latham Treatment Plant
Project Number 02532

Storage and Truck Loading Rehabilitation
Main Project Type
Key Dates

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Initial Estimate Sep-17
Estimate Update Sep-17

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

 Total Construction Cost³

| | | | | | | |
|-----------------------|---|----|------------|------------|------|-----------|
| Install Truck Scales | 1 | LS | \$ 356,000 | \$ 356,000 | \$ - | \$356,000 |
| Room Repairs | 1 | LS | \$ 73,000 | \$ 73,000 | \$ - | \$73,000 |
| Repair Concrete Floor | 1 | LS | \$ 45,000 | \$ 45,000 | \$ - | \$45,000 |
| Electrical Upgrades | 1 | LS | \$ 15,000 | \$ 15,000 | \$ - | \$15,000 |
| | 1 | LS | | \$ - | \$ - | |
| | 1 | LS | | \$ - | \$ - | |
| Subtotal | | | | \$ 489,000 | \$ - | \$489,000 |

 General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$132,030

Shipping Rate

0% included

Sale Tax

8.00% \$39,120

Project Contingency@

20% \$97,800

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$757,950

Current Estimate 2019 Dollars \$757,950

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Engr. During Construction | 5.0% | \$ 37,898 | 0% | \$ - | \$ - | \$ 37,898 |
| Construction Mgt. | 7.5% | \$ 56,846 | 0% | \$ - | \$ - | \$ 56,846 |
| Total Project Contingency ⁵ | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 852,694 |

Notes:

1 Values based on Carollo September 2017 Dewatering and Digester Gas Control and Heating Condition Assessmen

J.B. Latham Treatment Plant**Project Number** 02533**Gas Flare Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Mar-07
 Estimate Update Sep-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost³

| | | | | | | | |
|-----------------------|---|----|------------|------------|------|------------|-----------|
| Flare | 1 | EA | \$ 400,000 | \$ 400,000 | 50% | \$ 200,000 | \$600,000 |
| Replace Piping/Valves | 1 | LS | \$ 50,000 | \$ 50,000 | 75% | \$ 37,500 | \$87,500 |
| Electrical | 1 | LS | \$ 60,000 | \$ 60,000 | 100% | \$ 60,000 | \$120,000 |
| | 1 | LS | \$ - | \$ - | | \$ - | \$0 |
| | 1 | LS | \$ - | \$ - | | \$ - | |
| | 1 | LS | \$ - | \$ - | | \$ - | |
| Subtotal | | | | \$ 510,000 | | \$ 297,500 | \$807,500 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$218,025

Shipping Rate

0% included

Sale Tax

8.00% \$40,800

Project Contingency@

30% \$242,250

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

Current Estimate 2019 Dollars

\$1,308,575

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|------------|-------------|----------|---------|--------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 15.0% | \$ 196,286 | 0% | \$ - | \$ - | \$ 196,286 |
| Engr. During Construction | 5.0% | \$ 65,429 | 0% | \$ - | \$ - | \$ 65,429 |
| Construction Mgt. | 7.5% | \$ 98,143 | 0% | \$ - | \$ - | \$ 98,143 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 1,668,433 |

Notes:

- 1 Costs based on DHK Engineers 2013 Estimate. Upcoming SCAQMD regulations could impact the cost of this project.

J.B. Latham Treatment Plant**Project Number** 02534**Buried Digester Piping Reconstruction****Main Project Type****Key Dates**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Initial Estimate

Mar-07

Estimate Update

Sep-18

Prepared By

JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost³

Install Above Ground Piping and Supports

1 LS \$ 175,000 \$ 175,000 75% \$ 131,250 \$306,250

Moisture Traps

1 LS \$ 30,000 \$ 30,000 75% \$ 22,500 \$52,500

Electrical

1 LS \$ 5,000 \$ 5,000 100% \$ 5,000 \$10,000

1 LS \$ - \$ - \$ - \$0

1 LS \$ - \$ - \$ -

1 LS \$ - \$ - \$ -

Subtotal

\$ 210,000 \$ 158,750 \$368,750

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$99,563

Shipping Rate

0%

included

Sale Tax

8.00%

\$16,800

Project Contingency@

20%

\$73,750

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$558,863

Current Estimate 2019 Dollars

\$558,863

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------|-----------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 55,886 | 0% | \$ - | \$ - | \$ 55,886 |
| Engr. During Construction | 5.0% | \$ 27,943 | 0% | \$ - | \$ - | \$ 27,943 |
| Construction Mgt. | 7.5% | \$ 41,915 | 0% | \$ - | \$ - | \$ 41,915 |

Total Project Cost (Present Value in 2019 Dollars)

\$ 684,607

Notes:

- This project should coincide with the flare replacement project

J.B. Latham Treatment Plant**Project Number** 02537**Digester No. 5 Construction****Main Project Type****Key Dates**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| X |
| |
| |
| |
| |

Initial Estimate Mar-17
 Estimate Update Sep-18
 Const. Year

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost³

| | | | | | | | |
|---------------------------------|---|----|--|--|--|--|--------------|
| Site Work | 1 | LS | | | | | \$ 1,110,000 |
| Concrete | 1 | LS | | | | | \$ 1,065,000 |
| Masonry | 1 | LS | | | | | \$ 100,000 |
| Metal | 1 | LS | | | | | \$ 615,000 |
| Thermal and Moisture Protection | 1 | LS | | | | | \$ 70,000 |
| Doors and Windows | 1 | LS | | | | | \$ 21,000 |
| Finishes | 1 | LS | | | | | \$ 196,000 |
| Specialties | 1 | LS | | | | | \$ 4,000 |
| Equipment | 1 | LS | | | | | \$ 396,000 |
| Mechanical | 1 | LS | | | | | \$ 514,000 |
| Electrical | 1 | LS | | | | | \$ 613,000 |
| Instrumentation | 1 | LS | | | | | \$ 409,000 |
| Subtotal | | | | | | | \$ 5,113,000 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 1,380,510

Shipping Rate

0% included

Sale Tax

0.00% \$ -

Project Contingency@

30% \$ 1,533,900

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2017 Dollars \$ 8,027,410

Current Estimate 2019 Dollars \$ 8,284,287

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|------------|-------------|----------|---------|---------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 828,429 | 0% | \$ - | \$ - | \$ 828,429 |
| Engr. During Construction | 5.0% | \$ 414,214 | 0% | \$ - | \$ - | \$ 414,214 |
| Construction Mgt. | 7.5% | \$ 621,322 | 0% | \$ - | \$ - | \$ 621,322 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 10,148,252 |

Notes:¹ Cost estimate provided by Carollo Engineers as part of Package 'B' Planning

J.B. Latham Treatment Plant**Project Number** 02540**Dewatering System replacement****Main Project Type****Key Dates**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Initial Estimate

Sep-17

Estimate Update

Sep-17

Prepared By

JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost | | |
|--------------------------------------|----------|----------------------------------|---------------|-------|--------------|--------------|------------|------------|-------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | |
| Project Task Elements | | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | | |
| | | Centrifuge Piping Modifications | 1 | LS | \$ 75,000 | \$ 75,000 | 100% | \$ 75,000 | \$150,000 |
| | | Replace Centrifuges | 3 | EA | \$ 450,000 | \$ 1,350,000 | 50% | \$ 225,000 | \$1,575,000 |
| | | Replace Centrifuge VFDs | 6 | EA | \$ 15,000 | \$ 90,000 | 50% | \$ 7,500 | \$97,500 |
| | | Replace Centrifuge Control Panel | 3 | EA | \$ 20,000 | \$ 60,000 | 50% | \$ 10,000 | \$70,000 |
| | | Centrifuge Floor Repairs | 1 | LS | \$ 25,000 | \$ 25,000 | 200% | \$ 50,000 | \$75,000 |
| | | Electrical | 1 | LS | \$ 150,000 | \$ 150,000 | 75% | \$ 112,500 | \$262,500 |
| | | Programming | 1 | LS | \$ - | \$ - | 0% | \$ 75,000 | \$75,000 |
| | | | | | \$ - | \$ - | | \$ - | \$0 |
| Subtotal | | | | | \$ 1,750,000 | | \$ 555,000 | | \$2,305,000 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$622,350

Shipping Rate

0%

included

Sale Tax

8.00%

\$140,000

Project Contingency@

20%

\$461,000

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$3,528,350

Current Estimate 2019 Dollars

\$3,528,350

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------|------------|-------------|----------|---------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 352,835 | 0% | \$ - | \$ - | \$ 352,835 |
| Engr. During Construction | 5.0% | \$ 176,418 | 0% | \$ - | \$ - | \$ 176,418 |
| Construction Mgt. | 5.0% | \$ 176,418 | 0% | \$ - | \$ - | \$ 176,418 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 4,234,020 |

Notes:

1 Values based on Carollo September 2017 Dewatering and Digester Gas Control and Heating Condition Assessmen

Appendix E
San Juan creek Ocean Outfall Ten Year Plan

BACKGROUND

The San Juan Creek Land and Ocean Outfall was constructed in 1978. The system carries treated secondary effluent from five upstream water reclamation plants. The San Juan Creek Outfall facilities are shown in Figure E.1. There are three visible landmarks for the outfall system along the east side of San Juan Creek: the Surge Tower, the Meter Station and the Junction Structure. The land and ocean outfalls begin at the Surge Tower. The Junction Structure is the dividing point between the land and the ocean outfall sections. The pipelines were constructed of 57-inch diameter reinforced concrete pipe (RCP) except for a portion of the land section crossing under the Pacific Coast Highway. This section is a cement mortar lined and coated steel pipe. The steel pipe joints are single gasket Carnegie joints. The ocean outfall extends approximately 10,334 feet off shore into the Pacific Ocean. As shown in Figure E.1 a diffuser section of the outfall continues at a right angle from the main ocean outfall. The diffuser section is 1,488 feet long with 125 diffuser ports, sixteen at 2.65 inches in diameter one hundred seven at 3.03 inches in diameter, and two at 5.0 inches in diameter. The outfall discharges at depths ranging from 94.5 to 97.5 feet below mean sea level (MSL).

The outfall system was modified in the early 1990's with rising outfall flows and the construction of the new J. B. Latham Treatment Plant Effluent Pump Station. These modifications include the following:

- The Surge Tower (which originally had a grated open top) was converted into a pressure structure including the addition of an air/vacuum valve and a surge relief valve.
- The Junction Structure (which originally had a four-foot square bolted steel access hatch at the top) had a reinforced concrete cap built over the top of the structure.

OUTFALL CAPACITY

The capacity of the San Juan Creek Outfall became a point of discussion in 2005-2006 at which time the potential use of the outfall to receive flows from a future desalination facility was initially discussed. Although several hydraulic studies were conducted in the early 1990's there lacked a definitive statement of the capacity. Carollo Engineers was retained in 2006 to analyze both system hydraulics and pipe/structure strengths. The evaluation recommended a conservative capacity of 85 mgd for the outfall. However, the capacity evaluation and a subsequent structural evaluation identified a potential weakness in the concrete openings of the Junction Structure where the 57-inch pipe entered and exited. This portion of the structure would only become stressed when flows in the system exceeded 60 mgd. A repair project was recommended.

JUNCTION STRUCTURE UPGRADE

The San Juan Creek Ocean Outfall Junction Structure is located inside the Doheny State Beach as shown in Figure E.2. A profile of the existing original ten-foot diameter reinforced concrete Junction Structure is presented in Figure E.3. The original concept for the rehabilitation of the structure was to excavate to the foundation of the structure and install a concrete collar around the pipe openings. A constructability review indicated that this approach might not be feasible due to potential destabilization of the Junction Structure. Black & Veatch was retained to develop an alternative approach that could be implemented while keeping the system in operation without destabilizing the structure. Black & Veatch developed a two-step process involving internal modifications to the structure:

1. Create an access opening in the top of the Junction Structure during a low-flow, low-tide period. Enter the Junction Structure to make measurements. Install a new access hatch that could be pressurized to handle periods of higher hydraulic grade through the structure. This step is shown in Figure E.4.
2. Insert a series of fabricated pipe sleeves connecting the entering and exiting 57-inch pipelines. This approach would remove all hydrostatic pressure associated with the effluent flow thus removing the structural vulnerability. The inserted sleeve is shown in section view in Figure E.5.

The steps would be split across two seasons (spring – fall or fall – spring) to allow time for the custom fabrication of the sleeves after measurements have been taken in Step 1. The project is currently being designed and permitted with funds already collected from the member agencies. The Ten Year Plan anticipates construction of the project in Year 2 (Step 1 in the fall of 2020 and Step 2 in the spring of 2021).

DIFFUSER MODIFICATIONS

SOCWA retained Michael Baker Inc. (MBI) in 2018 and then again in 2019 to evaluate potential modifications to the Ocean Outfall diffuser system. The proposals would be necessary if SOCWA sought to obtain a 200:1 dilution credit for the San Juan Creek Outfall. The initial evaluation by MBI indicated that the desired dilution could be achieved by retrofitting 175 diffuser ports with duckbill check valves. Further modeling of the system indicated that the target dilution could be obtained by adding the duckbill check valves to only 17 of the ports.

There is no timetable to reach a dilution credit of 200:1. This Ten Year Plan is based on the assumed installation of the valves in Year 6 of the Plan.

INSPECTIONS AND ASSESSMENTS

The San Juan Creek Ocean Outfall is a relatively static system. The Junction Structure rehabilitation is a unique project to address a reliability issue. The diffuser modifications reflect a potential regulatory

issue. The remainder of the projects in the Ten Year Plan for the outfall represent inspections, condition assessments and small asset replacements.

The San Juan Creek Ocean Outfall undergoes an external inspection with a remotely operated vehicle every three to four years. The external inspection is typically followed by a port cleaning project. The outfalls diffuser ports tend to become partially obstructed over time by plant growth and/or shifting sands. The external inspections and the port cleanings have historically been included in the SOCWA Operations budget.

The San Juan Creek Outfall does not have any mechanism for internal inspections (which is different from the Aliso Creek Ocean Outfall). The ability to perform internal inspections has been a quandary for California wastewater utilities with ocean outfalls over the past decade. Ocean outfalls are operated under leases with the California State Lands Commission. These leases come up for periodic renewal. In recent lease renewals the Lands Commission has been presenting agencies with a lease requirement to conduct internal and external inspections. Most agencies have conducted periodic external inspections; however, there is little available technology to allow remote inspections of the interiors of the submerged or partially submerged outfalls. Many agencies do not have a ready point of access to the interior of outfalls. This is the situation with the San Juan Outfall. During the concept development of the Junction Structure Rehabilitation Project Black & Veatch

identified the construction of a new hatch at the Surge Tower as the simplest point of access into the San Juan Creek Ocean Outfall. This is not optimal for diver access as there is a long distance from the Surge Tower to even the surf zone of the Outfall. A project is included in Year 1 for the review of options for access and internal monitoring. It is possible that this review may identify a new capital project in a subsequent version of the Ten Year Plan (prior to lease renewal in 2023).

Year 4 of the Ten Year Plan includes an added dimension to the periodic external inspection of the outfall. The scope would be expanded to include taking and analyzing a core sample from the wall of the submerged outfall. It is reported that other agencies (including the Encina Wastewater Authority) have done similar corings that have revealed a concrete strength higher than after placing the outfall into service (through the lengthy extended cure time). However, the assessment is a prudent precautionary process in identifying any needed improvements.

Years 7 and 9 include the concept development and the implementation of an internal inspection of the land portion of the San Juan Creek Ocean Outfall. This work has been included late in the Ten Year Plan based on the potential for augmented water recycling at the upstream plants tributary to the outfall. Water recycling would provide a short window to allow access into the outfall in a low- or no-flow condition. This work would also be contingent upon the development of an access point which is included in the \$750,000

base cost estimate in Year 9.

TEN YEAR PLAN PROJECTS

The project capital projects for Project Committee 5 are presented in Table E.1. The projects identified in Years 5 to 10 are highly speculative including the installation of the diffuser port duckbill check valves. Condition assessments programmed into the Ten Year Plan may identify additional needed improvements. The values presented in Table E.1 do not include administration costs. These costs are added to the costs presented in Chapter 8 of the Ten Year Plan.

Table E.1
San Juan Creek Ocean Outfall Capital Improvement Program

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) CSC | Project cost (adjusted) CSJC | Project cost (adjusted) SMWD | Project cost (adjusted) SCWD |
|--------------------------|--------------|---|------------------|---------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 1 (19/20) | | | | | | | | | |
| | 4601-000 | Monitoring Evaluations Options | \$75,730 | \$75,730 | \$11,746 | \$12,586 | \$8,391 | \$33,564 | \$9,444 |
| | | TOTALS | \$75,730 | \$75,730 | \$11,746 | \$12,586 | \$8,391 | \$33,564 | \$9,444 |
| YEAR 2 (20/21) | | | | | | | | | |
| | 3605-000 | Junction Structure Construction - Access Way | \$104,057 | \$104,057 | \$16,139 | \$17,294 | \$11,530 | \$46,118 | \$12,976 |
| | 3606-000 | Junction Structure Construction - Sleeve Insert | \$365,000 | \$376,680 | \$58,423 | \$62,604 | \$41,736 | \$166,945 | \$46,972 |
| | 4602-000 | Land Outfall Facility Condition Assessment | \$52,326 | \$52,326 | \$8,116 | \$8,697 | \$5,798 | \$23,191 | \$6,525 |
| | | TOTALS | \$156,383 | \$156,383 | \$24,255 | \$25,991 | \$17,327 | \$69,309 | \$19,501 |
| YEAR 4 (22/23) | | | | | | | | | |
| | 05055 | Surge System Air Valve Replacement | \$35,000 | \$38,469 | \$5,966 | \$6,393 | \$4,262 | \$17,049 | \$4,797 |
| | 05056 | Marine Outfall Core Sample and Condition Assessment | \$125,000 | \$137,388 | \$21,309 | \$22,834 | \$15,223 | \$60,890 | \$17,132 |
| | | TOTALS | \$160,000 | \$175,857 | \$27,275 | \$29,227 | \$19,485 | \$77,940 | \$21,929 |

Table E.1
San Juan Creek Ocean Outfall Capital Improvement Program

[illegible]



Prepared by



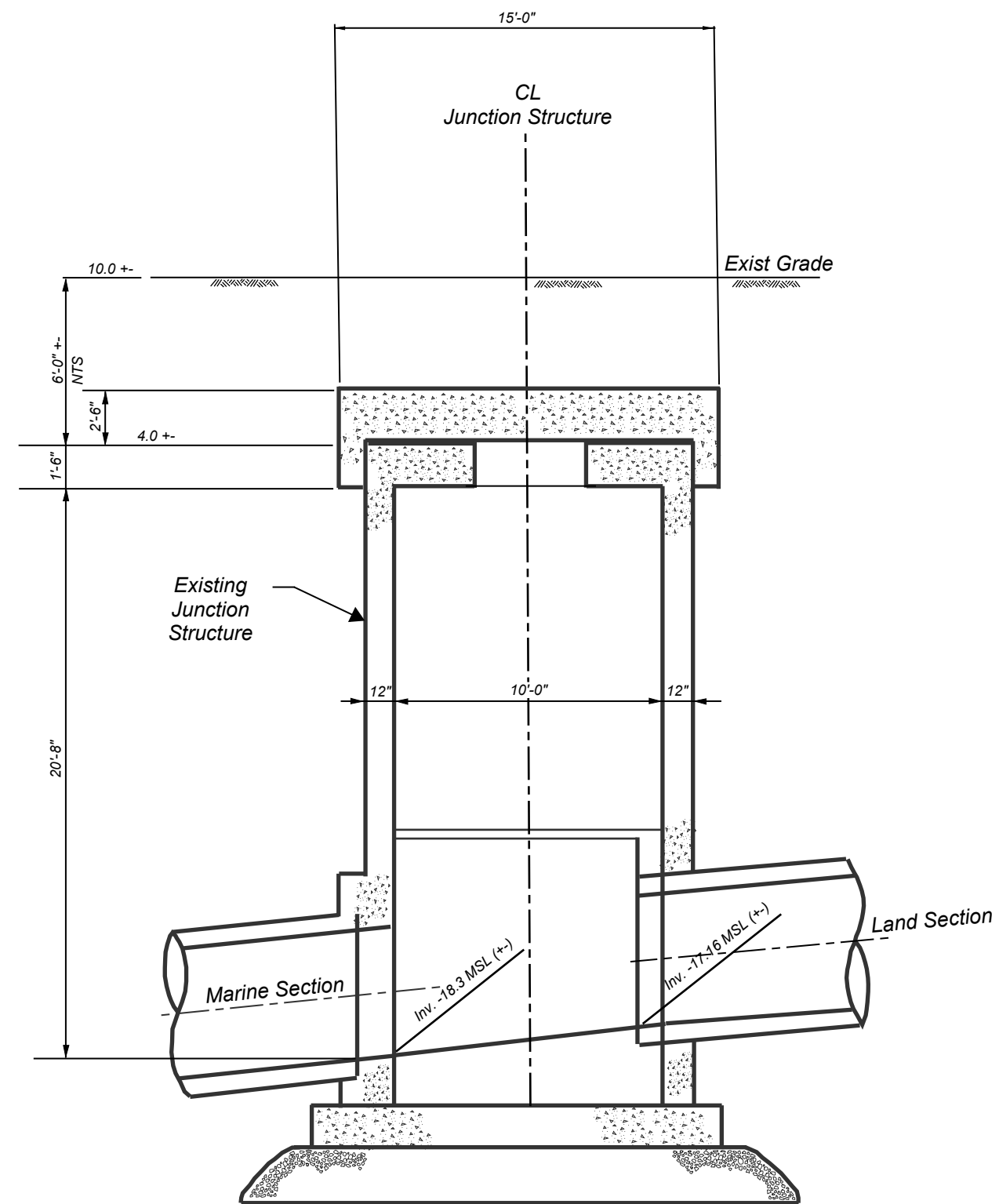
Figure E.1
San Juan Creek Ocean Outfall



Prepared by



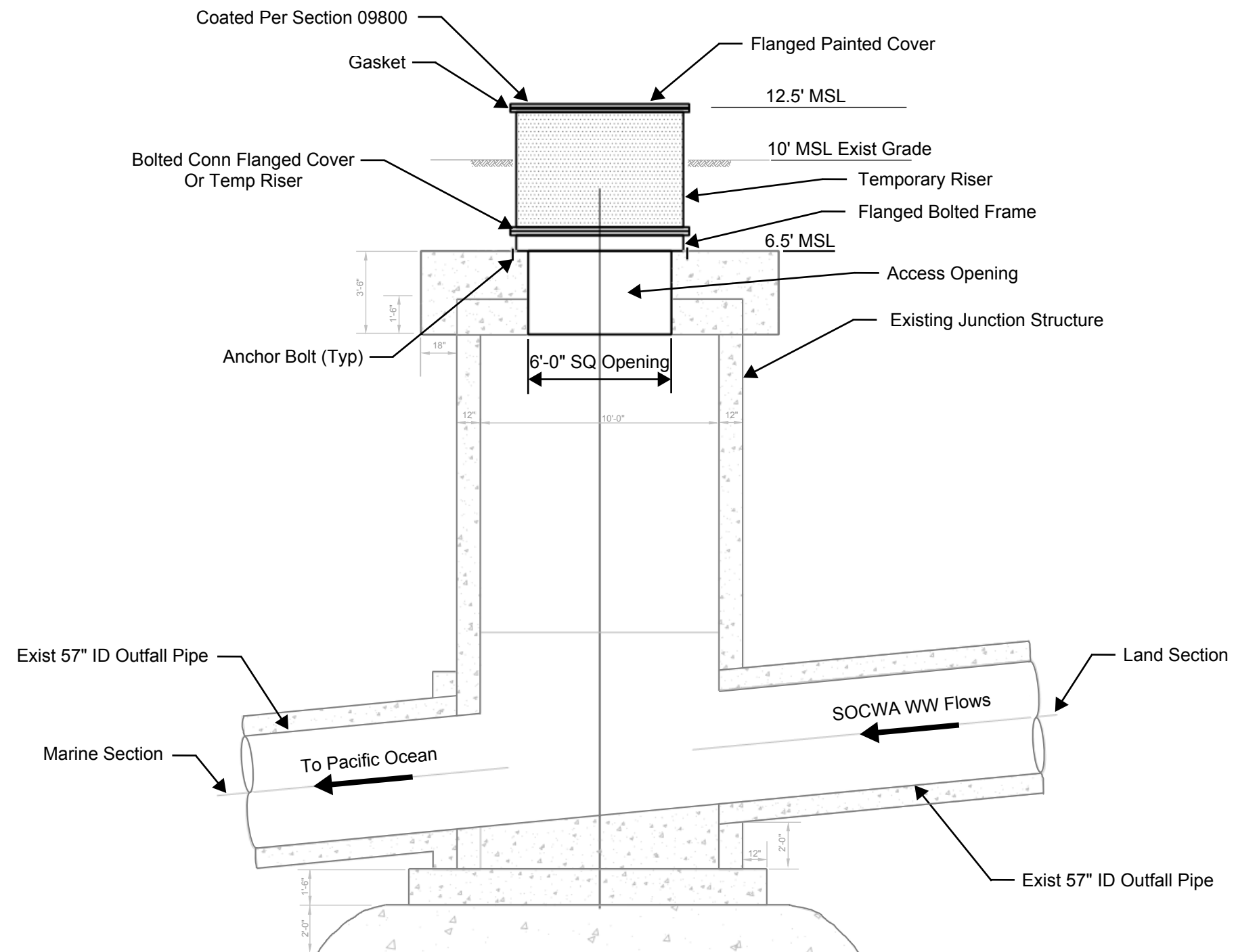
Figure E.2
Facilities at Doheny Beach



Prepared by

Figure E.3
Junction Structure - Existing Profile

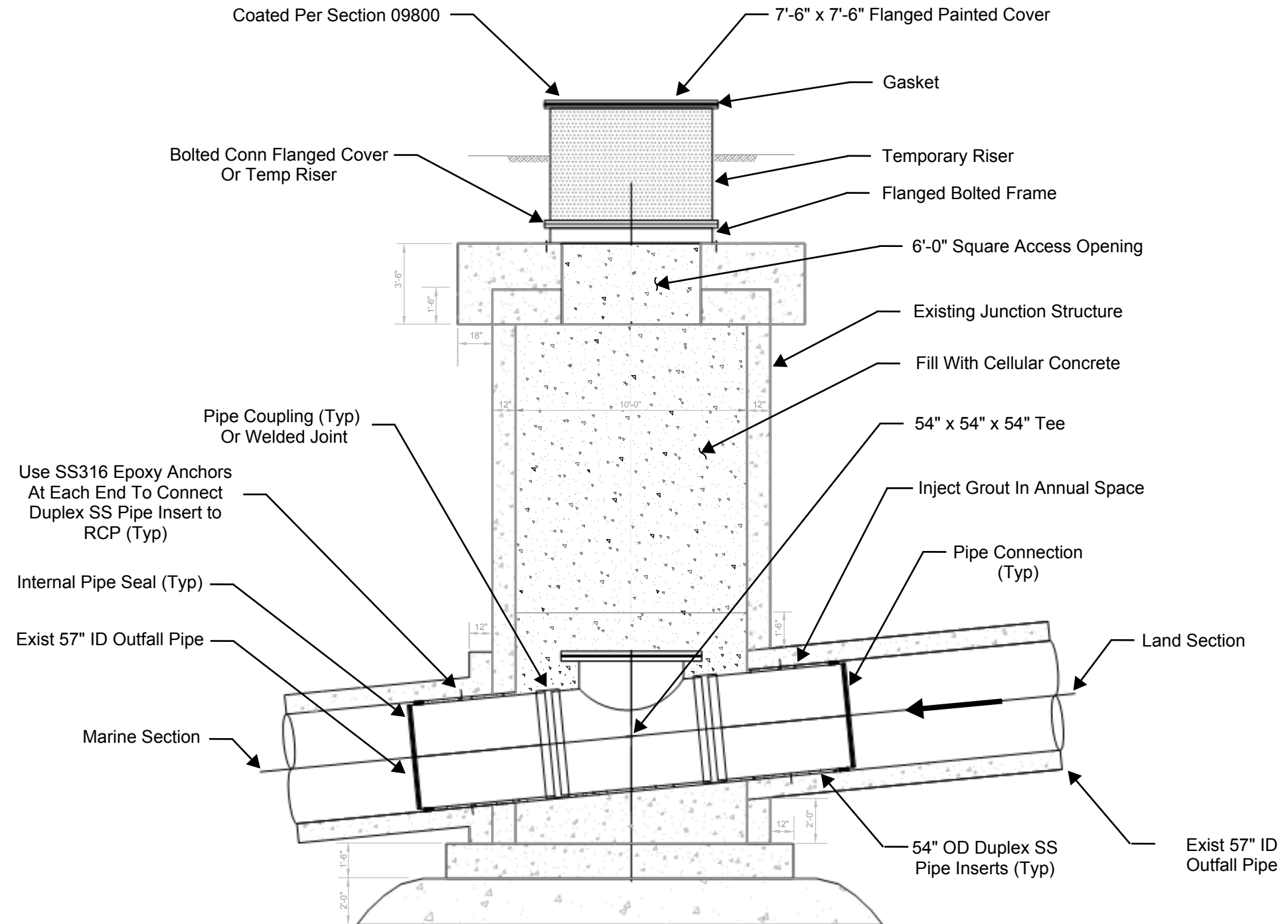




Prepared by



Figure E.4
Junction Structure Entry



Prepared by

Figure E.5
Junction Structure
Sleeve and Closure

Appendix F
Coastal Treatment Plant Ten Year Plan

BACKGROUND

The Coastal Treatment Plant (CTP) is a conventional activated sludge treatment plant with a secondary treatment design capacity of 6.7 mgd. The main wastewater treatment processes are screening, aerated grit removal, primary sedimentation, activated sludge aeration and secondary sedimentation. A schematic of the CTP process flow diagram is presented in Figure F.1.

A portion of secondary treated effluent is reclaimed through an advanced water treatment (AWT) facility consisting of chemical addition, coagulation (with mechanical mixing), filtration and chlorine disinfection. The remaining portion of the secondary effluent is discharged into the Aliso Creek Ocean Outfall.

Primary sludge and thickened waste activated sludge (TWAS) from the Coastal Treatment Plant are pumped through a force main to the Regional Treatment Plant (RTP) solids facility for treatment and disposal. Screenings and grit are transported from the Coastal Treatment Plant by a private contractor to a sanitary landfill.

The current plant site plan is shown in Figure F.2.

FACILITY HISTORY

The Coastal Treatment Plant site has been in use for municipal wastewater handling since the late 1940's.

The 1940's

The site of the existing Coastal Treatment

Plant was initially used for a treatment plant serving the southern portion of Laguna Beach. This original facility included two Imhoff tanks. Only one of the Imhoff tanks currently remains. This tank is now utilized as the Effluent Equalization Tank which serves as the source of supply for the Advanced Wastewater Treatment Facility (AWT).

The 1960's

A project in 1967 initiated the modern form of the CTP. This project was done under the auspices of the South Coast County Water District (now the South Coast Water District). The project constructed one grit basin (a second was added in the 1970's), two primary sedimentation basins, three aeration basins (one was initially used as an aerobic digester), four secondary sedimentation basins and a chlorine contact basin. These structures remain intact and are generally referred to as the East Plant. The plant also included a package filter system, a belt press, an incinerator, sludge drying beds, and a reclaimed water storage tank. All of these facilities have been removed with the exception of the reclaimed water storage tank (which has been out of service for over 20 years). Several structures from this construction remain including the Personnel Building (originally the Administration Building), the Maintenance Shop (originally housed the sludge incinerator) and the Auxiliary Blower Building.

The plant also provided sewage treatment for the Moulton Niguel Water District (MNWD). In the late 1960's the MNWD constructed an 18-inch diameter vitrified clay pipe gravity sewer from

Alicia Parkway to the CTP adjacent to the east embankment of Aliso Creek. A pump station was also constructed on the CTP site to lift the MNWD flow into the plant. Over time this pump station was modified to receive drain and process waste flows from the plant; the pump station would receive the name of “Drainage Pump Station (DPS)”.

The 1980's

The treatment plant would expand to the current capacity in the early 1980's. This work would be done as part of the Clean Water Act program. A construction project beginning in 1982 added one grit basin, three primary sedimentation basins, two aeration basins, and three secondary sedimentation basins. These structures are referred to as the West Plant. Most of the mechanical equipment in the East Plant was also replaced at that time. The plant also added a new headworks facility (including three rotary screens), a return activated sludge (RAS)/waste activated sludge (WAS) pump station, a new electrical building (complete with switchboard fed from Southern California Edison (SCE) and standby power generator), and a new Operations Building (including full service laboratory). The project also modified the way the sludge was handled at the treatment plant. Two dissolved air flotation (DAF) thickeners were constructed for the handling of waste activated sludge. An Export Sludge Pump Station was constructed to send waste sludge to the Regional Treatment Plant.

Another major project was constructed at the site in the mid-1980's. The project provided a new tertiary process. The facility included coagulation, flocculation, sand filtration and chlorination. The

coagulation and flocculation processes have not been utilized since the original installation. The filters were expanded in 1989 to bring the facility to a tertiary capacity of 2.82 mgd.

Subsequent projects added a recycled water pump station, a recycle water storage tank, and a pre-fabricated metal storage building to the CTP.

The early 1980's also saw the construction of the infrastructure supporting the CTP (and other facilities in the Aliso Creek watershed). Raw sewage was moved from the City of Laguna Beach to the CTP through the new North Coast Interceptor. Secondary effluent flows were moved from the CTP (and other facilities in the Aliso Creek watershed) through the Effluent Transmission Main (ETM) on the way to the new Aliso Creek Ocean Outfall. Sludge from the CTP was moved to the Regional Treatment Plant through two new 4-inch diameter ductile iron pipe force mains. A new paved road (termed the AWMA Road) along the west side of Aliso Creek connected the CTP to Alicia Parkway. The new roadway included two bridges across Aliso Creek including one at the CTP site. This latter bridge was destroyed by a 1992 storm and was subsequently rebuilt.

The early 1980's project established the capacity of the Coastal Treatment Plant at 6.70 mgd. This is set forth in both the amended Project Committee 15 agreement and the NPDES permit for the Aliso Creek Ocean Outfall (the most recent approved permit is the Region 9 Regional Water Quality Control Board Order R9-2012-0013. Amendment No.2 to the Project Committee 15 agreement

divided the capacity ownership between the City of Laguna Beach, the South Coast Water District, and the Emerald Bay Service District. Provisions were also made for a future expansion to accommodate the Irvine Ranch Water District (IRWD). IRWD would subsequently withdraw from PC 15 in the 1990's. Amendment No.2 also reflected that the Moulton Niguel Water District (MNWD) elected to not participate in the CTP as its flow would be redirected to the newly constructed Regional Treatment Plant.

The 1980's also brought an institutional change to the area surrounding the CTP. In the mid-1980's the Mission Viejo Company transferred its property in Aliso Canyon to the County of Orange. This area was then dedicated as the County of Orange Aliso and Wood Canyons Wilderness Park.

Capacity Ownership in the 1990's

During the late 1990's the ownership agreement for Project Committee 15 was amended. The modified agreement resulted in the acquisition of 1.96 mgd in capacity by the Moulton Niguel Water District (MNWD). This led to the current ownership of capacity at the CTP as shown in Table F.1.

Table F.1
Current Capacity Ownership at the Coastal Treatment Plant

| | % Ownership | Capacity Ownership (mgd) |
|-------------------------------|-------------|--------------------------|
| Emerald Bay Service District | 2.99% | 0.20 |
| City of Laguna Beach | 37.91% | 2.54 |
| Moulton Niguel Water District | 29.25% | 1.96 |
| South Coast Water District | 29.85% | 2.00 |
| Total | 100.00% | 6.70 |

The capacity ownership identified in Table F.1 refers to ownership in the liquids portion of the treatment plant including preliminary treatment, primary treatment, secondary treatment, RAS chlorination, thickening and export sludge handling. The AWT portion of the CTP including secondary effluent equalization, applied water pumping, filtration, recycled water disinfection, chlorine contact, and reclaimed water pumping are owned completely by the South Coast Water District.

Facility Rehabilitation in the 2000's

The CTP has been subject to a series of projects since the year 2000. These projects have focused on rehabilitation; the projects have not modified the capacity or the form of the treatment plant. Upgrade facilities have included (1) reconstructed headworks screens, (2) replacement and relocation of the headworks motor control center (MCC),

(3) rehabilitation of the primary sedimentation basins, (4) replacement of aeration diffusers and blowers, (5) upgrade of the RAS/WAS pumps station controls, (6) reconstruction of the plant Supervisory Control and Data Acquisition (SCADA) system, (7) improvements to the plant storm water system, (8) retrofit of the filters, (9) reconstruction of the plant sodium hypochlorite system, (10) installation of a new plant influent flow meter, (11) installation of a new Effluent Equalization Tank cover, (12) miscellaneous structural repairs, (13) improved fire proofing of buildings and (14) a new foul air treatment system. A new Export Sludge Equalization Tank was also constructed on the site.

CTP ASSET REVIEW

The current version of the CTP Ten Year Plan focuses on the replacement of existing assets as opposed to facility expansion or process replacement. Table F.2 presents a listing of SOCWA assets at the Coastal Treatment Plant. Each listing includes a year of installation, an expected life and a replacement (or rehabilitation) year. This table serves as the basis for the upgrade projects identified in this Ten Year Plan.

CTP FACILITY IMPROVEMENTS PLAN

The Coastal Treatment Plant has been the subject to a series of evaluations over the past six years. CH2MHill was retained to prepare the Coastal Treatment Plant (CTP) Facility Plan in 2013. This evaluation proposed a large project for the upgrade of the treatment plant simply identified as the Facility Improvements

Project. This project was intended to upgrade existing assets to preserve the value of the facility and to improve operating efficiency.

Facility Improvements Project originally included the following elements:

- Aeration System Upgrades
- Secondary Sedimentation Basins
- Drainage Pump Station
- Ferric Chloride System
- Screenings Compaction Facility
- Switchgear and Electrical System Improvements
- Structural Improvements
- Safety Improvements

The recommendations of the Facility Improvements Plan were not immediately implemented to allow a series of additional issues to be reviewed. These issues include the following:

- The California drought lasted over five years. California utilities including SOCWA's member agencies embarked on stringent conservation plans. This has resulted in a reduction in flow which impacts plant utilization.
- The Moulton Niguel Water District (MNWD) does not currently utilize its capacity in the CTP. The MNWD does not intend to renew its participation in the PC 15 Agreement when it expires.

- The level of treatment provided by the CTP was raised in a series of focus group meetings conducted by the City of Laguna Beach.
- The drought has also raised questions regarding new sources of water supply. Approximately half the treated secondary effluent from the CTP is discharged to the Pacific Ocean. This flow is a potential resource for reclamation.

PLANT UTILIZATION

The Annual average flow rate in the five years from 2014 to 2018 ranged between 2.83 and 3.12 mgd. The operation of the plant at less than half of its rated capacity has created operational issues. The most significant of these issues has been the operation of the aeration system. The oxygen demand in the wastewater can fall to a point below which the existing multistage blowers cannot effectively supply air. This can have one of two negative impacts: (1) the system overfeeds air causing the system to slip into nitrification, or (2) the system must blow off air during which the process becomes very energy inefficient.

Improvements at the CTP are impacted by facility utilization. The original concept for the Facility Improvements Project evaluation was updated by CH2MHill to consider improvement costs at two different plant capacities: the original design capacity of 6.7 mgd and a reduced capacity that would reflect the departure of the Moulton Niguel Water District (MNWD) from Project Committee 15. The MNWD owns 1.96 mgd capacity at the CTP. The

most straight forward approach would be to reset the facility capacity at 4.74 mgd (6.70 mgd less 1.96 mgd). However, the 4.74 mgd appears to be more capacity than needed by the remaining three Project Committee 15. A reduced capacity of 4.0 mgd was set based on review of historical data and in consultation with the Project Committee 15 member agencies.

Hydraulic and process modeling was completed to determine the number of basins needed for both the current capacity of 6.7 mgd and the reduced capacity of 4.0 mgd. The modeling confirmed that the entire facility is needed to handle the original 6.7 mgd capacity. The modeling for the 4.0 mgd scenario identified the basin utilization as shown in Figure F.3.

The unutilized structures may serve a modified role if the function of the facility changes in the future. Aeration Basin W2 may serve as an equalization facility if needed in the future. Secondary Sedimentation Basins E3 and E4 could be retrofit with submerged membrane filters as part of a future upgrade or expansion of the Advanced Water Treatment (AWT) system.

PROJECT COMMITTEE 15 AGREEMENT

The fifty year term of the Project Committee 15 agreement expires in 2030. That expiration date falls within the fifteen-year planning span used in this document. The agreement expiration date could have a significant impact on capital investment at the Coastal Treatment Plant. If the treatment

plant were to be either demolished or repurposed in 2030 this would create a goal of extending equipment life through modifications over the next ten years. The continued operation of the plant in its existing form beyond the 2030 agreement expiration date would require ongoing replacement of assets. The City of Laguna Beach (CLB), the South Coast Water District (SCWD), and the Emerald Bay Service District (EBSD) have tentatively indicated their intent for utilization of the treatment plant past 2030; as noted previously the MNWD has signaled that it will not participate in Project Committee 15 beyond the expiration of the agreement.

The currently proposed Ten Year Plan is based on asset replacement based on expected life as identified in Table F.2. A series of condition assessments are planned over the next ten years to verify the need for various replacement projects. The goal is asset replacement to avoid increased risk of failure that might impact facility operations.

It is recommended that the Project Committee 15 members meet to review plant capacity utilization, long term wastewater treatment needs, and the disposition of assets after the end of the current project committee agreement.

PROCESS SELECTION

The Evaluation of treatment processes at the CTP focuses on re-using the existing concrete basins as, with some repairs, these facilities are believed to have a remaining life of at least 20 to 25 years. The key treatment process in this configuration is secondary treatment. It was assumed for this evaluation that only

those treatment processes that had been effectively and widely used in the municipal wastewater industry over the past ten years would be considered.

Five scenarios were initially considered in the evaluation by CH2MHill for the CTP:

- Conventional Activated Sludge (CAS) with Short Solids Retention Time (SRT<2 days) (current mode of operation)
- CAS (Current Process) with Chemically Enhanced Primary Treatment (CEPT) (SRT<2 days)
- CAS with Nitrification
- CAS with Nitrification/Denitrification (N/deN)
- Membrane Bioreactor (MBR)

The Facility Improvements evaluation concluded that the most cost-effective current option for the Coastal Treatment Plant was to continue operating in the CAS mode.

FACILITY IMPROVEMENTS PROJECT

The Facility Improvements Project is the largest project included in the current version of the Ten Year Plan. As previously indicated the 2013 Plan identified the following elements:

- Aeration System Upgrades
- Secondary Sedimentation Basins
- Drainage Pump Station
- Ferric Chloride System

- Screenings Compaction Facility
- Switchgear and Electrical System Improvements
- Structural Improvements
- Safety Improvements

The scope of the Ten Year Plan was reviewed with regard to the issues identified regarding plant utilization and long term asset replacement. It was determined that the elements to be included in the project would meet the following criteria:

- Implementation needed to provide for staff and public safety
- Implementation required to improve facility efficiency and reliability
- Implementation not a function of capacity

Two elements of the original scope were ultimately removed:

- Aeration System Upgrades: The aeration upgrade was removed from the scope to allow member agency discussion regarding capacity utilization to progress. This item is discussed in a separate section below.
- Screenings Compaction Facility: The screening compaction facility was a very difficult project element to implement where the project benefits were not immediately needed. It was determined to schedule this project later in the duration of the Ten Year Plan.

One element was added to the Facility Improvements Project:

- Headworks Valves Replacement: A prior construction project in the Screenings and Grit Building encountered problems due to leakage past three knife gate valves; the replacement of the valves was deemed necessary to allow future maintenance activities.

The remaining elements of the Facility Improvements Project are described below.

Secondary Sedimentation Basins Upgrades

The secondary sedimentation basins are the only unit process at the Coastal Treatment Plant (CTP) that have not been the subject of a rehabilitation project in over 20 years. The proposed overhaul of the basins includes the following:

- Replacement of the chain and flight sludge collectors
- Replacement of the sludge collector drives
- Installation of new scum skimmers, scum beaches and drives
- Modification of the baffles within the tanks
- Replacement of the launders and weirs
- Installation of new mud valves along the basin floor
- Replacement of the telescoping valves (for removal of sludge from the basins)
- Replacement of conduit and wire to each of the drive units

There are seven secondary sedimentation basins at the CTP. The three larger West Basins have been the workhorses for the facility. The four smaller East Basins have been used only when one of the West Basins needs to be removed from service. The process modeling by CH2MHill has indicated that at a 4 mgd flow rate only the three West Basins and two of the four East Basins are needed; at a 6.7 mgd flow rate all seven secondary sedimentation basins are needed. The assumption for the 4 mgd scenario is that two of the East Basins will be left out of service without demolition. SOCWA staff determined that the Facility Improvements Project include the rehabilitation of the three West Basins and two of the four East Basins. This would allow facility to operate at current rates while maintaining the long-term capacity to handle the full plant capacity.

Drainage Pump Station

The existing Drainage Pump Station (DPS) was originally built in the 1960's to handle flow discharged into a Moulton Niguel Water District (MNWD) 18-inch gravity sewer along the east bank of Aliso Creek, which had been discharged to the Coastal Treatment Plant. It is located west of the headworks and primaries in an enclosed building. The station location is within the flood zone of Aliso Creek. The station was modified in the 1980's to handle flows from several CTP processes, including filter backwash waste flow, Dissolved Air Flotation Thickener (DAFT) overflow, and drainage flow from primary clarifiers, aeration basins, secondary clarifiers, or tertiary filters (when these tanks are drained). In the absence of regular flow from the MNWD the DPS was intended to handle emergency overflow from MNWD's Alicia Parkway Lift Station.

The objective of constructing a new the DPS is to move the majority of the pumping function out of the flood zone and to gain the ability to return the process recycles and plant drains to the primary clarify influent channel, without interfering with the plant influent sampling. It should be noted that the MNWD has indicated that it does not intend to send sewage to the existing DPS or to the CTP. The proposed location of the new DPS is on the west side of the West Primary Sedimentation Basins.

Ferric Chloride System Reconstruction

Ferric chloride is used at the Coastal Treatment Plant (CTP) to (a) reduce sulfide levels (which aids in the operation of the odor control system and (b) to aid in settling in the primary sedimentation basins. The ferric chloride system was installed in the 1990's by CTP staff. The existing system does not have automated control to allow pacing of the chemical feed with the rate of influent plant flow. The containment area is constructed with masonry block walls which is not compliant with the appropriate codes. A coating system was installed in the 1990's to provide more adequate containment. The coating system has failed in several locations. The existing pumping equipment, valves and piping are in poor condition after over 20 years of service.

A new ferric chloride system will be constructed on the existing chemical containment slab. New pumps, tankage and piping will be constructed in a modified containment structure. The system will be equipped with a new

Programmable Logic Controller (PLC) for automated system control.

Electrical System Improvements

Much of the power supply system for the Coastal Treatment Plant (CTP) dates to the 1983 expansion of the treatment plant. Many of the existing panels are showing corrosion with exposed cables showing minor deterioration of the insulation. However, the key concern is the inability to obtain replacement parts for key components such as the main breaker in the Main Switchgear. The Electrical System Improvements includes the following items:

- Replacement of the Plant Main Switchgear. The intent is to put a full frame switchgear into a modified Chlorine Building.
- Replacement of Motor Control Center 8 (MCC-8) at the Operations Building with a small distribution panel.
- Replacement of MCC-E15M and MCC-15M in the DAF Utility Building. Work includes replacement of doors and the installation of an air conditioning system.

The project will also include the completion of the 2014 Electrical Distribution System Upgrade. That project contemplated the replacement of all 480-volt cable between the existing main switchgear and the motor control centers. The 2014 project included the installation of a new duct bank extending from the Switchgear Building to the northern Headworks Power Building. The earlier project also included the new cable from the switchgear to MCC-1 and MCC-E1. The Facility Improvements

Project will complete the purpose of the 2014 project with the following items:

- Installation of new 480-volt cable from the switchgear to MCC-E13M in the Auxiliary Blower Building.
- Installation of new 480-volt cable from the switchgear to MCC-15M and MCC-E15M in the DAF Utility Building.
- Installation of new 480-volt cable from the switchgear to MCC-E8M in the Operations Building.

Structural and Safety Improvements

The structures at the Coastal Treatment Plant largely date to either the 1967 or the 1983 construction projects. Engineering evaluation of the structures has found the concrete to be in largely good condition for its age. However, there are areas of deterioration that require remediation to prevent these areas from becoming either safety issues or developing more severe degradation. In addition, an independent evaluation by the engineering firm Arcadis identified specific safety issues to be addressed. The structural upgrade elements of the Facility Improvements Project are as listed below:

- Replacement of grating rebate that has corroded to the point of damaging the adjoining rebate.
- Removal of joint material that was initially installed in 1982 for a future expansion of the facility; this material has deteriorated along the west side of the basin complex.

- Addressing cracking concrete and exposed rebar at miscellaneous locations throughout the treatment plant.
- Removal of abandoned piping, pipe supports and metal fasteners. These items are subject to ongoing corrosion that can result in failure of the adjacent concrete.
- The existing concrete roof of the Headworks Building has suffered from hairline fractures that result in leakage into the upper floor of the building during wet weather events. The proposed improvement is the installation of a membrane over the roof. In addition, the three skylights have deteriorated and require replacement.
- Replacement of rotting baffles within the aeration basins.
- Replacement of deteriorating roll-up door at the Headworks Building.
- Replacement of the pipe connecting the East and West Aeration Basin Inlet Channels. The entry of the pipe into each side of the channel is subject to cracking and leakage.
- Modification of the return activated sludge (RAS) channel along the East Secondary Sedimentation Basins. The foundation below the existing channel has eroded so that the originally buried channel bottom is now exposed. In addition, the channel floor is too low to allow it to freely flow through piping to the RAS pump station. The proposed

modification involves removing and reconstructing portions of the channel.

The Arcadis facility safety evaluation identified the need for fall protection systems at the following buildings: Operations Building, Drainage Pump Station, Maintenance Shop, Blower Building, Personnel Building, Disinfection Facility and AWT Building. The evaluation also identified the need for modification to 21 hatches for easier access and opening at the following locations: Operations Building, Headworks Building, Drainage Pump Station, Scum Sump Wetwell, East Aeration Gallery, and Generator Building. The Headworks Building and Scum Sump Wetwell need fixed ladder modifications to meet the minimum ladder length and clearance requirements. Handrailing also needs to be modified on all the basins the RAS Pump Station.

AERATION SYSTEM UPGRADE

The secondary treatment process at the Coastal Treatment Plant (CTP) includes aeration and secondary clarifiers. The aeration system at the CTP has undergone several iterations. Conventional activated sludge (CAS) was included as part of the original late 1960's construction. The plant was subsequently modified to mechanical aerators as part of the 1982 project. The mechanical aerators were switched back to fine bubble aeration as part of an upgrade project completed in 2004. The goal of the 2004 upgrade was to improve energy efficiency at the treatment plant.

The 2004 upgrade retrofitted the East and West aeration basins with Parkson panel air diffusers. There are three East aeration basins (one without diffusers), each with a side water depth (SWD) of approximately 15 feet and two West aeration basins, each with a SWD of approximately 25 feet. Air is provided by three multistage centrifugal blowers, two of which are provided with a speed increasing gear drive that requires cooling water to operate. A pneumatically actuated valve is located on the suction pipe to each blower to allow the blower to operate in its low air flow range without surging. Even with this feature, the turndown for these blowers is between 70 and 80 percent of maximum capacity. One of the blowers is dedicated and sized for the East aeration basins, another is dedicated and sized for the West aeration basins and the third blower is the standby for the other two blowers according to the original design of the facility. The standby blower has a 2-speed motor to allow the air supply at the pressure required for either the East or West aeration basins.

The existing aeration system also has the components to automatically control the blowers based on the amount of air supplied to each basin to maintain each basin's dissolved oxygen (DO) to a predetermined set point (typically between 1.5 and 2 milligrams per liter [mg/L]). Accordingly, each of the aeration systems (East and West) has a dedicated blower with a pneumatically modulating valve on the suction side, a pressure transmitter in its main air header, a pneumatically modulating valve on the main pipe feeding air to each of its basins, and a DO probe in each of its corresponding basins. In addition, the East air header has a pneumatically modulating valve to control

the pressure if one blower is used to supply the two aeration systems. In the automatic mode, the DO in the basin would control the position of the valve feeding air to that basin and the pressure transmitter in the air header would control the position of the valve on the suction of the blower feeding the aeration system. If one blower is used, to serve both sets of basins, the pneumatically modulating valve would be controlled to maintain the pressure in the main East air header.

While the DO probes and transmitters are in working condition, the majority of the pneumatic actuators and butterfly valves have not been in operation for a few years and are not functional currently, hindering automatic control of the blowers. One other hindrance to automatic control of the aeration system at CTP is that the existing blowers cannot be operated much lower than 1,000 scfm without going into surge. To protect against this condition, each blower typically has a shutdown command before a surge condition occurs. This shutdown may be triggered if a blower is dedicated to each aeration system during low air demands.

Because the blowers cannot be operated automatically, Operations staff currently runs one of the blowers in manual mode to supply air to both sets of aeration basins. They set valve positions manually and run the blower based on the electrical current drawn. The blower supplies a constant air flow regardless of the process air demand. By running only one blower, Operations staff limits the power consumption at CTP, but cannot optimize the power consumption or supplied air. Running only one blower

also minimizes cooling water consumption. The aeration is manually controlled, with an operator set point established for the weekday and weekend day operation mode.

The primary operational issue with the aeration system relates to the equipment sizing provided with the 2003 upgrade. That upgrade was constructed with the expectation that the plant would be operating closer to the 6.7 mgd capacity. The challenge with the current scenario is providing a system with the flexibility to treat the existing flow while maintaining the ability to handle a flow closer to the full capacity of the plant.

The originally proposed modification for maintaining the 6.7 mgd capacity involved constructing a new blower building (in place of the demolished Auxiliary Blower Building) which would contain four new high efficiency turbo blowers. The high number of blowers is necessary to achieve the necessary turn-down given the current influent flow rates to the treatment plant. These blowers would service the shallower east aeration basins. Two of the existing multistage blowers in the existing Blower Building would be either replaced or reconstructed. These units would provide service to the deeper west aeration basins. New circular membrane diffusers would be installed in all five of the aeration basins. The project would also include the replacement of the pneumatically operated control valves, sections of piping and the system instrumentation. This option would provide the flexibility to allow the effective handling of flows at plant flow rates of 4.0 mgd and below as well as handling the higher flows approximating the 6.7 mgd capacity. However, this approach involves a significant capital investment to provide

aeration capacity for flow that seems unlikely to ever be transmitted to the Coastal Treatment Plant.

A separate option was developed to handling a facility only at the lower 4.0 mgd capacity. This alternative involves the replacement of the multi-stage blowers in the existing Blower Building with four new high efficiency turbo blowers. These units would provide air to the three east aeration basins which would be retrofitted with the new circular membrane diffusers. This option would also include the addition of a new false floor in the Aeration Basin W1 prior to the installation of the new diffusers. This would make the operation of this basin comparable to the three east aeration basins. The retrofitted west basin could then serve as a back-up to the east aeration basins. Aeration Basin W2 would be gutted and remain available for a future use. The cost estimate for this option is utilized in this version of the Ten Year Plan.

A schematic of the aeration system configuration for the both the 4.0 and 6.7 mgd operating scenarios is presented in Figure F.4

Further discussion is needed between the Project Committee 15 member agencies prior to embarking on the design for this project.

EXISTING RECYCLED WATER PRODUCTION

The California drought from 2013 to 2018 increased the already significant emphasis on water reclamation in Southern California.

SOCWA operates a water recycling system at the Coastal Treatment Plant on the behalf of the South Coast Water District (SCWD). This tertiary treatment system utilizes sand filtration and chlorine disinfection (using sodium hypochlorite) to meet Title 22 requirements. The tertiary treatment system was enhanced when the SCWD constructed the Aliso Creek Water Harvesting Facility in 2014. The system was intended to augment the SCWD water supply with Aliso Creek water. However, the treatment system has principally been used to lower the total dissolved solids (TDS) level in the recycled water supply.

The main tertiary system dates to the 1980's. The filters were reconstructed in 2007 and 2019. SOCWA has used Earl Gehringer, an original technician with the HydroClear (the supplier of the package sand filters at the CTP), to perform a site investigation of the filters every couple of years. Separation inspections by Mr. Gehringer and V&A Consultants indicated that with repairs and recoating the filtration structure should remain in service for another ten years. This expected life roughly coincides with the end of the Project Committee 15 agreement in 2030.

The SCWD has developed its recycled water system to the point that is largely able to reclaim all of its influent flow to the CTP as needed. The influent flow from the City of Laguna Beach and the Emerald Bay Service District is not reused and is discharged to the Pacific Ocean through the Aliso Creek Ocean Outfall.

WATER RECYCLING AND THE FACILITY IMPROVEMENTS PLAN

The Facility Improvements Updated Evaluation by CH2MHill in 2017 considered the future replacement of the existing Advanced Wastewater Treatment (AWT) facilities based on the following:

- The long-term goal for the CTP is to recycle as much of the secondary effluent as possible.
- Recycled water production of the SCWD flow is fully subscribed for Title 22 irrigation; it is unlikely that the SCWD would elect to change usage of reclaimed water to direct or indirect potable use in the future.
- Based on the evaluations by Evoqua (the manufacturer of HydroClear filters) and by V&A it is assumed that the existing filter facility has an additional ten years of remaining life.
- It is assumed that sand filtration technology will not be used in the future replacement of the existing filtration system.
- Total dissolved solids (TDS) will continue to be an important component of the production of Title 22 recycled water at the CTP. This role is currently being fulfilled by the SCWD Aliso Creek Water Harvesting Facility. This evaluation does not include a future replacement cost for the SCWD facility.

- Based on evaluations by V&A it is expected that the chlorine contact basins have at least another remaining 20 years of life.

The Facility Improvement Updated Evaluation considered filtration technologies for the future replacement of the existing tertiary filtration system. Technologies reviewed included cloth media filtration, compressible filtration, pressurized microfiltration, and submerged microfiltration/ultrafiltration. The ultimate selection of a replacement filtration technology will depend on whether the plant continues to operate with conventional activated sludge (CAS) process, converts to nitrification, or is replaced with a more sophisticated membrane bioreactor system. The CH2MHill evaluation indicated that the most cost-effective means of expanding and replacing tertiary filtration would be the installation of microfiltration in pressure vessels or in submerged units (possibly using unused tankage as shown in Figure F.3). This approach would continue to use the secondary treatment process as it is currently configured at the Coastal Treatment Plant.

The City of Laguna Beach (CLB) has expressed interest in the future recovery of the resource value of the secondary effluent derived from the CLB/Emerald Bay Service District (EBSD) influent flows. The method in which that resource is to be used is under consideration. Options including the following:

- Production of Title 22 irrigation water at the CTP and construction of a recycled water distribution within the boundaries of the CLB.
- Production of Title 22 irrigation water at the CTP and the sale and transfer of the recycled water to another entity.
- Production of recycled water at the CTP for potable reuse.

The development of a Title 22 water supply at the CTP for CLB/EBSD would be similar to that for the reconstruction of the SCWD system (with added facilities for applied water pumping, backwashing handling, disinfection, clear well pumping, storage, and recycled water system pumping). There are two options for potable reuse:

- Indirect Potable Reuse (IPR) is the augmentation of a drinking water source (surface water or groundwater) with recycled water followed by an environmental buffer that precedes normal drinking water treatment.
- Direct Potable Reuse (DPR) is defined as the planned introduction of recycled water either directly into a public water system, as defined in Section 116275 of the Health and Safety Code, or into a raw water supply immediately upstream of a water treatment plant (no environmental buffer).

IPR is not a viable option at the CTP due to the lack of either a surface water reservoir or a groundwater basin. The regulations for DPR are currently under development. It is expected that it will take approximately ten years for these regulations to be implemented. The CH2MHill evaluation proposed a system using ozonation, microfiltration, reverse osmosis, ultraviolet radiation, and engineered storage to achieve DPR.

WATER RECYCLING AND THE TEN YEAR PLAN

This edition of the Ten Year Plan is based on the following assumptions:

- The existing tertiary treatment system at the CTP servicing the SCWD has at least ten years of remaining life. Therefore, the current plan includes only projects to extend the life of the existing facility.
- No short-term projects in the Ten Year Plan addressing the reclamation of CLB/EBSD flows are identified. It is expected that CLB/EBSD will be assessing the potential for water recycling within their own districts.

Modification of the tertiary treatment system is not anticipated until approximately 2030 as this date would coincide with (a) the end of the Project Committee 15 agreement and (b) the potential implementation of rules regarding DPR. The goal of the current Ten Year Plan is to avoid commitment of capital to areas that might be needed in a future expansion and upgrade of the tertiary treatment system. Figure F.4 shows how one scenario to expand tertiary treatment would be accommodated. This scenario involves the implementation of submerged microfiltration and UV radiation. The plan in Figure F.5 shows the following:

- Utilization of Secondary Sedimentation Basin E-3 and E-4 for submerged microfilters. The proposed Facility Improvements Project will not include a process upgrade to these basins.
- Support systems for the microfiltration system would be housed in a new

building located at the current site of the Personnel Building.

- New ultraviolet radiation facilities would be located at the southwest corner of the plant site where there are no other currently planned capital projects.

EXPORT SLUDGE SYSTEM

Project Committee 15 is unique among the treatment plant project committees in that two of the facilities are located outside the boundaries of the treatment plant: the AWMA Road (Coastal Treatment Plant access road) and the Export Sludge piping system. The replacement of the Export Sludge piping system has been an ongoing issue for SOCWA for 20 years. These facilities are shown on Figure F.6.

The expansion of the Coastal Treatment Plant (CTP) in 1982 included the two 4-inch cast iron pipes for the pumping of primary sludge and thickened waste activated sludge (TWAS) to the Regional Treatment Plant for solids processing. These pipelines were installed along the east side of Aliso Creek near the alignment of the Effluent Transmission Main (ETM). This system was termed the Export Sludge System. The piping experienced problems in the early years of operation through a combination of corrosion and internal deposition. The replacement of the sludge piping has been planned since the early 1990's. The South Coast Water District (SCWD), at that time responsible for the administration of the Export Sludge System, planned a three-phase replacement of the Export Sludge piping

system. Phase I involved the construction of a new 6-inch pipeline through the County of Orange Laguna Niguel Regional Park; Phase II involved the installation of a new 6-inch pipeline under a new roadway built by the Aliso Viejo Community Association (AVCA) along the west side of Aliso Creek in the Aliso and Wood Canyon Wilderness Park. The construction of both of these pipelines was completed in 2000. These pipelines have yet to be placed into operation. Phase III of the Export Sludge System was to install the final link of piping along the west side of Aliso Creek in the Wilderness Park in close proximity to the AWMA Road. A decision was made in 2000 to combine Phase III with the planned Aliso Creek Emergency Sewer (ACES) project. The ACES project was to be constructed by the Moulton Niguel Water District (MNWD). The central feature of this project was a new sewer line replacing the MNWD 18-inch sewer along the east side of Aliso Creek. The ACES project proceeded through final design and permitting. However, the project was canceled due to unfavorable economics prior to bidding.

In 2005, SOCWA hired Dudek and Associates to evaluate five alternative sludge pipeline alignments on both the east and west sides of Aliso Creek. Based on the recommendation of the Dudek report and the subsequent review by the SOCWA Engineering Committee the decision was made to construct a new Export sludge pipeline on the east side of Aliso Creek close to the alignment of the existing Export Sludge force mains.

Dudek was hired under separate contracts in 2011 to prepare a preliminary design report and to prepare the Environmental Impact Report (EIR). The EIR process

extended over twenty-one months. The recommended alternative involves the construction of a 6-inch high density polyethylene pipe along the east side of Aliso Creek through the Aliso and Wood Canyons Wilderness Park. The EIR was adopted by the SOCWA Board of Directors on March 7, 2013.

A related project to the replacement of the force main was the construction of a new Export Sludge Equalization Basin on the Coastal Treatment Plant site. This basin holds approximately three days of Export Sludge flow. This storage will allow for periodic flushing of the force main. The basin also supports a trucking operation for the Export Sludge in emergency circumstances when the Export Sludge pipelines must be temporarily shut down.

The proposed Export Sludge system project will replace approximately 3 miles of two 4-inch diameter ductile iron pipelines with one new 6-inch diameter high density polyethylene pipeline. The design firm Dudek has completed preliminary plans and specifications. The proposed project received the approval of the California Coastal Commission in June, 2016. Implementation of the project is pending approval by the United States Army Corps of Engineers and the United States Fish and Wildlife Service. The Ten Year Plan is predicated on the construction of the replacement of the Export Sludge System beginning in Year 1 (Fiscal Year 2019/20).

One of the alternatives considered in the development of the Ten Year was construction of a solids handling system at the Coastal Treatment Plant. This option was rejected in favor the new

pipeline on the east side of Aliso Creek. The expiration of the project committee agreements (Project Committee 17 in 2029; Project Committee 15 in 2030) might merit future consideration of solids handling at the Coastal Plant.

ALISO CREEK

Erosion along Aliso Creek has been a significant issue since the 1980's. The down-cutting impacts facilities along the east side of Aliso Creek including the Coastal Treatment Plant, the Export Sludge system, and the Effluent Transmission Main (Project Committee 21). The winter storms of 1997 triggered an emergency project to place rip-rap along several hundred feet of the east embankment near Alicia Parkway.

The routing of the new Export Sludge system was developed based on an evaluation of erosion vulnerability prepared by Tetra Tech in 2012. A small feature was added to the Export Sludge project during design. Three rock groins or dikes at selected locations were configured to redirect flows along the channel bank away from the Aliso Creek bank to the south of the ACHWEP structure.

The AWMA Road on the west side of Aliso Creek has also been vulnerable to erosion. Significant embankment failures in 2006 resulted in a rerouting of the roadway south of the ACHWEP structure. Winter storms in 2017 and 2019 have revealed the exposure not just to erosion in the main channel but also to overflows from the Wood Creek system.

Erosion in Aliso Creek has been the subject of evaluation by the United States

Army Corps of Engineers (USACOE). The USACOE in conjunction with the County of Orange has developed two versions of an Aliso Creek project:

- Stabilization, Utility Protection, Environmental Restoration (SUPER) Project: The County of Orange Watersheds group embarked upon this ambitious project for reshaping Aliso Creek through the Wilderness Park. The County has been successful in securing \$5 million in funding from the State of California; the County has been trying to secure additional funding from the Federal government.
- Environmental Restoration Project (ERP): The SUPER Project has been modified and redesignated as ERP.

The concept plan that the USACOE unveiled for the ERP failed to gain local support. The future of a large Federal rehabilitation project in Aliso Creek is uncertain.

The Ten Year Plan includes three project related to embankment protection:

- Project 3542-000 South Section Embankment Protection: This entails repairs to the embankment between the CTP Bridge and the southwest corner of the CTP site.
- Project 15713 North Section Embankment Protection: This project would add rip-rap to the slope between the CTP Bridge and the northwest corner of the CTP site.
- Project 15714 Aliso – Sulfur Creek Confluence Protection: This is a multi-benefit project which would address

the area to the south of Aliso Creek; this is a joint project with Project Committee 21.

In the absence of a long term Federal and/or County program for Aliso Creek it is likely that more projects will need to be included in the SOCWA Capital Improvement Plan for embankment protection in the future.

TEN YEAR PLAN PROJECTS

Table F.3 summarizes the proposed capital improvement projects and costs. This table identifies projects in the fiscal year that they would be added to the SOCWA capital improvement budget. Costs for SOCWA administration are added to each project in the summary sheets in the main body of the Ten Year Plan.

Table F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------------|-----------------------------------|-------------------|-----------------------------|--------------------------|
| 1 | Electrical | Main Normal Switchboard | 1982 | 30 | 2012 |
| 2 | Preliminary Treatment | SCWD Influent Flow Meter | 2009 | 20 | 2029 |
| 3 | Preliminary Treatment | CLB Influent Flow Meter | 2009 | 20 | 2029 |
| 4 | Preliminary Treatment | Headworks Building Structure | 1982 | 50 | 2032 |
| 5 | Preliminary Treatment | Headworks Building Structure Roof | 1982 | 30 | 2012 |
| 6 | Preliminary Treatment | Headworks Building Roll-Up Doors | 2001 | 40 | 2041 |
| 7 | Preliminary Treatment | Headworks Building Access Ladder | 1982 | 40 | 2022 |
| 8 | Preliminary Treatment | Headworks Electrical Building | 2009 | 50 | 2059 |
| 9 | Preliminary Treatment | Headworks Building Electrical | 1982 | 30 | 2012 |
| 10 | Preliminary Treatment | MCC-1M | 2012 | 30 | 2042 |
| 11 | Preliminary Treatment | Headworks Building Mechanical | 1982 | 25 | 2007 |
| 12 | Preliminary Treatment | Main Process Gate Valves | 2011 | 30 | 2041 |
| 13 | Preliminary Treatment | Headworks Roto Screen | 2011 | 30 (15) | 2041 |
| 14 | Preliminary Treatment | Hoppers | 2011 | 40 | 2051 |
| 15 | Preliminary Treatment | Headworks Grit Gate Valves | 1982 | 30 | 2012 |
| 16 | Preliminary Treatment | Grit Classifier | 2010 | 30 | 2040 |

Red: Upgrade of asset included In Facility Improvements Project; Blue: Upgrade of other asset included in other project in Ten Year Plan.

TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------------|--|-------------------|-----------------------------|--------------------------|
| 17 | Preliminary Treatment | Grit Pumps | 2008 | 20 | 2028 |
| 18 | Preliminary Treatment | Aerated Grit Removal Tank Structures | 1982 | 50 | 2032 |
| 19 | Preliminary Treatment | Aerated Grit Removal Tank Covers | 2012 | 25 | 2037 |
| 20 | Preliminary Treatment | Outdoor Metals at Grit Basins/ Grating | 1982 | 30 | 2012 |
| 21 | Preliminary Treatment | Primary Influent Channel | 1982 | 50 (30) | 2032 |
| 22 | Preliminary Treatment | Overflow Channel | 1982 | 50 (30) | 2032 |
| 23 | Preliminary Treatment | Aerated Grit Removal Tank Mechanical | 1999 | 25 | 2024 |
| 24 | Preliminary Treatment | Foul Air Fans Inside Headworks Building | 2001 | 20 | 2021 |
| 25 | Preliminary Treatment | Aerated Grit Removal Tank Withdrawal Valves | 1990 | 20 | 2010 |
| 26 | Preliminary Treatment | Aerated Grit Removal Tank Withdrawal Valves-Electric Actuators | 2009 | 20 | 2029 |
| 27 | Primary Treatment | West Primary Sedimentation Basin Structural | 1982 | 50 | 2032 |
| 28 | Primary Treatment | West Primary Sedimentation Basin Covers | 2012 | 25 | 2037 |
| 29 | Primary Treatment | West Primary Effluent Channel | 1982 | 50 (30) | 2032 |
| 30 | Primary Treatment | West Primary Sedimentation Sludge Collectors | 2012 | 20 | 2032 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-------------------|---|-------------------|-----------------------------|--------------------------|
| 31 | Primary Treatment | West Primary Sedimentation Scum Collectors | 2012 | 30 (20) | 2042 |
| 32 | Primary Treatment | West Primary Sedimentation Weirs | 1982 | 30 | 2012 |
| 33 | Primary Treatment | West Primary Sedimentation Basin Electrical | 2012 | 35 | 2047 |
| 34 | Primary Treatment | West Primary Sludge Pumps | 2012 | 20 | 2032 |
| 35 | Primary Treatment | West Primary Sludge Removal Valves | 2012 | 20 | 2032 |
| 36 | Primary Treatment | West Primary Sludge Removal Valves - Electric Actuators | 2012 | 20 | 2032 |
| 37 | Primary Treatment | West Primary Sludge Flow Meter | 2012 | 20 | 2032 |
| 38 | Primary Treatment | East Primary Sedimentation Basin Structural | 1968 | 50 | 2018 |
| 39 | Primary Treatment | East Primary Sedimentation Basin Covers | 2014 | 40 | 2054 |
| 40 | Primary Treatment | East Primary Effluent Channel | 1968 | 50 (30) | 2018 |
| 41 | Primary Treatment | East Primary Sedimentation Sludge Collectors | 2012 | 30 (20) | 2042 |
| 42 | Primary Treatment | East Primary Sedimentation Scum Collectors | 2012 | 20 | 2032 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|---------------------|---|-------------------|-----------------------------|--------------------------|
| 43 | Primary Treatment | East Primary Sedimentation Weirs | 1968 | 30 | 1998 |
| 44 | Primary Treatment | East Primary Sedimentation Basin Electrical | 2007 | 35 | 2042 |
| 45 | Primary Treatment | East Primary Sludge Pumps | 2011 | 20 | 2031 |
| 46 | Primary Treatment | East Primary Sludge Removal Valves | 2011 | 20 | 2031 |
| 47 | Primary Treatment | East Primary Sludge Removal Valves-Electric Actuators | 2011 | 20 | 2031 |
| 48 | Primary Treatment | East Primary Sludge Flow Meter | 2011 | 20 | 2031 |
| 49 | Primary Treatment | Primary Effluent Channel Crossover Pipe | 1982 | 40 | 2022 |
| 50 | Secondary Treatment | West Aeration Basin Structure | 1982 | 50 | 2032 |
| 51 | Secondary Treatment | Structural Metals on West Aeration Basins | 1982 | 30 | 2012 |
| 52 | Secondary Treatment | Metals Between West Aeration Basins and Primaries/ Grating | 1982 | 30 | 2012 |
| 53 | Secondary Treatment | Structural Metals Between West Aeration Basins and Secondaries/ Grating | 1982 | 30 | 2012 |
| 54 | Secondary Treatment | West Aeration Basin Air Piping | 2004 | 40 | 2044 |
| 55 | Secondary Treatment | West Aeration Air Flow Meters | 2004 | 20 | 2024 |
| 56 | Secondary Treatment | West Aeration Dissolved Oxygen Meters | 2004 | 20 | 2024 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|---------------------|---|-------------------|-----------------------------|--------------------------|
| 57 | Secondary Treatment | West Aeration Control Valves | 2005 | 25 | 2030 |
| 58 | Secondary Treatment | West Aeration Control Valves-Pneumatic Actuators | 2005 | 20 | 2025 |
| 59 | Secondary Treatment | West Coarse Bubble Aeration Diffusion System | 2004 | 20 | 2024 |
| 60 | Secondary Treatment | West Basin Baffle System | 2004 | 30 | 2034 |
| 61 | Secondary Treatment | West Aeration Fine Air Diffusion System | 2004 | 20 | 2024 |
| 62 | Secondary Treatment | West Aeration Basin Influent Gates | 2004 | 30 | 2034 |
| 63 | Secondary Treatment | West Aeration Basin Effluent Gates | 2004 | 30 | 2034 |
| 64 | Secondary Treatment | West Aeration Basin Electrical | 2004 | 30 | 2034 |
| 65 | Secondary Treatment | West Aeration Basin Drainage Pumps | 2004 | 2550 | 4554 |
| 66 | Secondary Treatment | East Aeration Basin Structure | 1967 | 30 | 1997 |
| 67 | Secondary Treatment | Structural Metals on East Aeration Basins | 1968 | 30 | 1998 |
| 68 | Secondary Treatment | Metals Between East Aeration Basins and Primaries/ Grating | 1968 | 30 | 1998 |
| 69 | Secondary Treatment | Structural Metals Between East Aeration Basins and Secondaries/ Grating | 1968 | 30 | 1998 |
| 70 | Secondary Treatment | East Aeration Basin Air Piping | 2004 | 40 | 2044 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|---------------------|--|-------------------|-----------------------------|--------------------------|
| 71 | Secondary Treatment | East Aeration Air Flow Meters | 2004 | 20 | 2024 |
| 72 | Secondary Treatment | East Aeration Dissolved Oxygen Meters | 2004 | 20 | 2024 |
| 73 | Secondary Treatment | East Aeration Control Valves | 2004 | 25 | 2029 |
| 74 | Secondary Treatment | East Aeration Control Valves-Pneumatic Actuators | 2005 | 20 | 2025 |
| 75 | Secondary Treatment | East Coarse Bubble Aeration Diffusion System | 2004 | 20 | 2024 |
| 76 | Secondary Treatment | East Basin Baffle System | 2004 | 30 | 2034 |
| 77 | Secondary Treatment | East Aeration Fine Air Diffusion System | 2004 | 20 | 2024 |
| 78 | Secondary Treatment | East Aeration Basin Influent Gates | 2004 | 30 | 2034 |
| 79 | Secondary Treatment | East Aeration Basin Effluent Gates | 2004 | 30 | 2034 |
| 80 | Secondary Treatment | East Aeration Basin Electrical | 2004 | 30 | 2034 |
| 81 | Secondary Treatment | Blower Building | 2004 | 50 | 2054 |
| 82 | Secondary Treatment | Blower Building Roof | 2004 | 30 | 2034 |
| 83 | Secondary Treatment | Multistage Blowers | 2004 | 30 | 2034 |
| 84 | Secondary Treatment | Multistage Blowers with Speed Increasers | 2004 | 30 | 2034 |
| 85 | Secondary Treatment | Blower Building Aeration Control Valves | 2004 | 25 | 2029 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|---------------------|--|-------------------|-----------------------------|--------------------------|
| 86 | Secondary Treatment | Blower Building Aeration Piping | 2004 | 40 | 2044 |
| 87 | Secondary Treatment | Blower Building Mechanical | 2004 | 25 | 2029 |
| 88 | Secondary Treatment | LP Blowers (Channel Air) | 1983 | 30 | 2013 |
| 89 | Secondary Treatment | Blower Building Electrical | 2004 | 35 | 2039 |
| 90 | Secondary Treatment | MCC-13001 | 2004 | 30 | 2034 |
| 91 | Secondary Treatment | MCC-13M & E13M | 1983 | 30 | 2013 |
| 92 | Secondary Treatment | West Secondary Sedimentation Basin Structures | 1983 | 50 | 2033 |
| 93 | Secondary Treatment | Structural Metals After West Secondaries/ Grating | 1983 | 30 | 2013 |
| 94 | Secondary Treatment | West Secondary Sedimentation Basin Sludge Collectors | 1992 | 30 | 2022 |
| 95 | Secondary Treatment | West Secondary Sedimentation Basin Effluent Weirs | 1992 | 30 | 2022 |
| 96 | Secondary Treatment | West Secondary Sedimentation Basin Effluent Launderers | 1992 | 30 | 2022 |
| 97 | Secondary Treatment | West Secondary Sedimentation Basin Mechanical | 1983 | 25 | 2008 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|---------------------|--|-------------------|-----------------------------|--------------------------|
| 98 | Secondary Treatment | West Secondary Sedimentation Basin Telescoping Valves | 1992 | 30 | 2022 |
| 99 | Secondary Treatment | West Secondary Sedimentation Basin Electrical | 1992 | 30 | 2022 |
| 100 | Secondary Treatment | East Secondary Sedimentation Basin Structures | 1968 | 50 | 2018 |
| 101 | Secondary Treatment | Structural Metals after East Secondaries/ Grating | 1968 | 30 | 1998 |
| 102 | Secondary Treatment | East Secondary Sedimentation Basin Sludge Collectors | 1992 | 30 | 2022 |
| 103 | Secondary Treatment | East Secondary Sedimentation Basin Effluent Weirs | 1992 | 30 | 2022 |
| 104 | Secondary Treatment | East Secondary Sedimentation Basin Effluent Launderers | 1968 | 30 | 1998 |
| 105 | Secondary Treatment | East Secondary Sedimentation Basin Mechanical | 1968 | 25 | 1993 |
| 106 | Secondary Treatment | East Secondary Sedimentation Basin Influent Gates | 2001 | 30 | 2031 |
| 107 | Secondary Treatment | East Secondary Sedimentation Basin Telescoping Valves | 1968 | 30 | 1998 |
| 108 | Secondary Treatment | East Secondary Sedimentation Basin Electrical | 1968 | 30 | 1998 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|---------------------|---|-------------------|-----------------------------|--------------------------|
| 109 | Secondary Treatment | RAS/WAS Pump Station Structure | 1983 | 50 | 2033 |
| 110 | Secondary Treatment | RAS/WAS Pump Station Doors | 1983 | 40 | 2023 |
| 111 | Secondary Treatment | RAS/WAS Pump Station Grating | 1983 | 30 | 2013 |
| 112 | Secondary Treatment | RAS Pumps | 2003 | 20 | 2023 |
| 113 | Secondary Treatment | RAS Pump VFD's | 2011 | 15 | 2026 |
| 114 | Secondary Treatment | RAS/WAS Pump Station Mechanical | 1983 | 25 | 2008 |
| 115 | Secondary Treatment | RAS Valves- Gallery | 2008 | 20 | 2028 |
| 116 | Secondary Treatment | RAS Valves-Electric Actuators- Gallery | 2008 | 30 | 2038 |
| 117 | Secondary Treatment | RAS Piping and Supports - Gallery | 1983 | 30 | 2013 |
| 118 | Secondary Treatment | RAS Piping and Supports- RAS/WAS Pump Station | 1983 | 30 | 2013 |
| 119 | Secondary Treatment | RAS Pump Station Knife Gate Valves | 2008 | 20 | 2028 |
| 120 | Secondary Treatment | RAS/WAS Pump Station Electrical | 2008 | 30 | 2038 |
| 121 | Secondary Treatment | West RAS Flow Meter | 2011 | 20 | 2031 |
| 122 | Secondary Treatment | East RAS Flow Meter | 2011 | 20 | 2031 |
| 123 | Secondary Treatment | West Aeration RAS Flow Meters | 2011 | 20 | 2031 |
| 124 | Secondary Treatment | East Aeration RAS Flow Meters | 2011 | 20 | 2031 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|------------------------|------------------------------------|-------------------|-----------------------------|--------------------------|
| 125 | Secondary Treatment | WAS Pumps | 2003 | 20 | 2023 |
| 126 | Secondary Treatment | WAS Pump VFD's | 2011 | 15 | 2026 |
| 127 | Secondary Treatment | WAS Flow Meters | 2011 | 20 | 2031 |
| 128 | Secondary Treatment | WAS Pumping Mechanical | 1983 | 25 | 2008 |
| 129 | Secondary Treatment | WAS Pumping Electrical | 2008 | 35 | 2043 |
| 130 | Secondary Treatment | Secondary Scum Wet Well | 1983 | 50 (30) | 2033 |
| 131 | Secondary Treatment | Secondary Scum Pumps | 2001 | 25 | 2026 |
| 132 | Secondary Treatment | Secondary Scum Mechanical | 1983 | 30 | 2013 |
| 133 | Secondary Treatment | Secondary Scum Electrical | 1983 | 2 | 1985 |
| 134 | Secondary Treatment | Handrail on basin deck | 1983 | 35 | 2018 |
| 135 | Secondary Treatment | Stairways to basin deck | 1983 | 35 | 2018 |
| 136 | Ferric Chloride System | Ferric Chloride Storage Tank | 1992 | 20 | 2012 |
| 137 | Ferric Chloride System | Ferric Chloride Metering Pumps | 2000 | 15 | 2015 |
| 138 | Ferric Chloride System | Ferric Chloride Containment System | 1992 | 25* | 2017 |
| 139 | Ferric Chloride System | Ferric Chloride Mechanical | 1992 | 20 | 2012 |
| 140 | Ferric Chloride System | Ferric Chloride Electrical | 1992 | 30 | 2022 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-------------------------------|-------------------------------------|-------------------|-----------------------------|--------------------------|
| 141 | Chlorine System | Chlorine Building /Storage Building | 1968 | 50 | 2018 |
| 142 | Chlorine System | Chlorine Building Roof | 1968 | 25 | 1993 |
| 143 | Chlorine System | Chlorine Building Hoist | 1968 | 40 | 2008 |
| 144 | Chlorine System | Chlorine Building Electrical | 1968 | 30 | 1998 |
| 145 | Hypochlorite System | Containment Structure | 2016 | 50 | 2066 |
| 146 | Hypochlorite System | Containment Structure/ Pumps | 2016 | 50 | 2066 |
| 147 | Hypochlorite System | Hypochlorite Bleach Tank | 2016 | 30 | 2046 |
| 148 | Hypochlorite System | Metering Pumps | 2016 | 15 | 2031 |
| 149 | Hypochlorite System | RAS Hypo Metering Pumps | 2016 | 15 | 2031 |
| 150 | Hypochlorite System | Hypo System Mechanical | 2016 | 20 | 2036 |
| 151 | Hypochlorite System | Hypo System Electrical | 2016 | 30 | 2046 |
| 152 | Hypochlorite System | Hypo System Control Panel | 2016 | 30 | 2046 |
| 153 | Hypochlorite System | Chlorine Residual Analyzers | 2003 | 20 | 2023 |
| 154 | Advanced Wastewater Treatment | Chlorine Contact Basin Structure | 1983 | 50 | 2033 |
| 155 | Advanced Wastewater Treatment | Chlorine Contact Basin Mixers | 1983 | 20 | 2003 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-------------------------------|---|-------------------|-----------------------------|--------------------------|
| 156 | Advanced Wastewater Treatment | Chlorine Contact Basin Mechanical | 1983 | 25 | 2008 |
| 157 | Advanced Wastewater Treatment | Chlorine Contact Basin Electrical | 1983 | 25 | 2008 |
| 158 | Advanced Wastewater Treatment | Chlorine Contact Basin Sluice Gates | 1983 | 25 | 2008 |
| 159 | Advanced Wastewater Treatment | Chlorine Contact Basin Drain Gates | 1983 | 30 | 2013 |
| 160 | Advanced Wastewater Treatment | AWT Clearwell Level Indicator & Transmitter | 2004 | 20 | 2024 |
| 161 | Advanced Wastewater Treatment | AWT Building | 1983 | 50 | 2033 |
| 162 | Advanced Wastewater Treatment | AWT Building Roof | 1983 | 25 | 2008 |
| 163 | Advanced Wastewater Treatment | Applied Water Pumps | 1983 | 25 | 2008 |
| 164 | Advanced Wastewater Treatment | Applied Water Pumps Mechanical | 1983 | 30 | 2013 |
| 165 | Advanced Wastewater Treatment | Applied Water Pumps Electrical | 1983 | 30 | 2013 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-------------------------------|--------------------------------|-------------------|-----------------------------|--------------------------|
| 166 | Advanced Wastewater Treatment | AWT Polymer System | 1999 | 15 | 2014 |
| 167 | Advanced Wastewater Treatment | AWT Chem Clean System | 2009 | 30 | 2039 |
| 168 | Advanced Wastewater Treatment | Chemical Mixers | 1983 | 30 | 2013 |
| 169 | Advanced Wastewater Treatment | AWT Building Mechanical | 1983 | 30 | 2013 |
| 170 | Advanced Wastewater Treatment | AWT Building Electrical | 1983 | 35 | 2018 |
| 171 | Advanced Wastewater Treatment | AWT Flocculators | 1983 | 30 | 2013 |
| 172 | Advanced Wastewater Treatment | AWT Filter Structure | 1983 | 50 | 2033 |
| 173 | Advanced Wastewater Treatment | AWT Filter Components | 2007 | 30 | 2037 |
| 174 | Advanced Wastewater Treatment | Grating System Between Filters | 1983 | 30 | 2013 |
| 175 | Advanced Wastewater Treatment | Mudwell | 1983 | 50 | 2033 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-------------------------------|---|-------------------|-----------------------------|--------------------------|
| 176 | Advanced Wastewater Treatment | Splitter Box Influent Valves | 1983 | 35 | 2018 |
| 177 | Advanced Wastewater Treatment | Splitter Box Effluent Valves | 1983 | 35 | 2018 |
| 178 | Advanced Wastewater Treatment | AWT Influent Turbidity Meter | 2004 | 20 | 2024 |
| 179 | Advanced Wastewater Treatment | AWT Effluent Turbidity Meter | 2002 | 20 | 2022 |
| 180 | Advanced Wastewater Treatment | AWT Influent Flowmeter | 1983 | 20 | 2003 |
| 181 | Advanced Wastewater Treatment | AWT Mechanical | 1983 | 30 | 2013 |
| 182 | Advanced Wastewater Treatment | AWT Inlet Valves | 2007 | 35 | 2042 |
| 183 | Advanced Wastewater Treatment | AWT Inlet Valves Pneumatic Actuators | 2007 | 20 | 2027 |
| 184 | Advanced Wastewater Treatment | AWT Filtrate Valves | 2007 | 35 | 2042 |
| 185 | Advanced Wastewater Treatment | AWT Filtrate Valves Pneumatic Actuators | 2007 | 20 | 2027 |

Red: Upgrade of asset included In Facility Improvements Project; Blue: Upgrade of other asset included in other project in Ten Year Plan.

TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-------------------------------|---|-------------------|-----------------------------|--------------------------|
| 186 | Advanced Wastewater Treatment | AWT Backwash Water Valves | 2007 | 35 | 2042 |
| 187 | Advanced Wastewater Treatment | AWT Backwash Water Valve Pneumatic Actuators | 2007 | 20 | 2027 |
| 188 | Advanced Wastewater Treatment | Backwash Pumps | 1983 | 25 | 2008 |
| 189 | Advanced Wastewater Treatment | Backwash Pump Piping & Valves | 1983 | 30 | 2013 |
| 190 | Advanced Wastewater Treatment | Contact Basin Sampler | 1983 | 20 | 2003 |
| 191 | Advanced Wastewater Treatment | AWT Backwash Waste Valves | 2007 | 35 | 2042 |
| 192 | Advanced Wastewater Treatment | AWT Backwash Waste Valves Pneumatic Actuators | 2007 | 20 | 2027 |
| 193 | Advanced Wastewater Treatment | AWT Backwash Flowmeter | 2002 | 20 | 2022 |
| 194 | Advanced Wastewater Treatment | AWT Electrical | 1983 | 30 | 2013 |
| 195 | Advanced Wastewater Treatment | MCC-A | 1983 | 30 | 2013 |
| 196 | Effluent Management | Effluent Equalization Basin | 1952 | 50 | 2002 |

Red: Upgrade of asset included In Facility Improvements Project; Blue: Upgrade of other asset included in other project in Ten Year Plan.

TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|---------------------|-------------------------------|-------------------|-----------------------------|--------------------------|
| 197 | Effluent Management | Basin Cover | 2009 | 25 | 2034 |
| 198 | Effluent Management | Effluent Meter Structure | 1989 | 50 | 2039 |
| 199 | Effluent Management | Effluent Basin Weir Structure | 2009 | 30 | 2039 |
| 200 | Effluent Management | Effluent Meter | 1989 | 20 | 2009 |
| 201 | Effluent Management | Effluent Basin Meter | 2009 | 20 | 2029 |
| 202 | Effluent Management | Effluent Basin Sample | 2009 | 20 | 2029 |
| 203 | Effluent Management | Effluent Control Valve 1 | 1989 | 35 | 2024 |
| 204 | Effluent Management | Effluent Control Valve 2 | 1989 | 35 | 2024 |
| 205 | Effluent Management | Effluent Control Valve 3 | 1989 | 35 | 2024 |
| 206 | Effluent Management | Effluent Control Valve 4 | 1989 | 35 | 2024 |
| 207 | Administration | Operations Building | 1982 | 50 | 2032 |
| 208 | Administration | Operations Building Roof | 2009 | 30 | 2039 |
| 209 | Administration | Operations Building Mech. | 2011 | 20 | 2031 |
| 210 | Administration | Operations Building Elect. | 1982 | 35 | 2017 |
| 211 | Administration | Operations Building MCCE8M | 1982 | 30 | 2012 |
| 212 | Administration | Laboratory Benchwork | 1982 | 30 | 2012 |
| 213 | Administration | Laboratory Equipment | 1982 | 30 | 2012 |
| 214 | Administration | Personnel Building | 1968 | 50 | 2018 |
| 215 | Administration | Personnel Building Roof | 1968 | 25 | 1993 |
| 216 | Administration | Personnel Building Mechanical | 1968 | 20 | 1988 |

Red: Upgrade of asset included In Facility Improvements Project; Blue: Upgrade of other asset included in other project in Ten Year Plan.

TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|------------------|---------------------------------|-------------------|-----------------------------|--------------------------|
| 217 | Administration | Personnel Building Electrical | 1968 | 35 | 2003 |
| 218 | Solids | DAF Control Building Structural | 1982 | 50 | 2032 |
| 219 | Solids | DAF Control Building Roof | 1982 | 25 | 2007 |
| 220 | Solids | DAF Control Building Mechanical | 1982 | 25 | 2007 |
| 221 | Solids | DAF Control Building Electrical | 1982 | 35 | 2017 |
| 222 | Solids | Polymer Feeders | 2000 | 15 | 2015 |
| 223 | Solids | Polymer Mechanical | 1991 | 30 | 2021 |
| 224 | Solids | Polymer Pumps | 1991 | 15 | 2006 |
| 225 | Solids | Polymer Electrical | 1991 | 35 | 2026 |
| 226 | Solids | DAF Structures | 1968 | 50 | 2018 |
| 227 | Solids | DAF Collectors | 2007 | 30 (15) | 2037 |
| 228 | Solids | DAF Compressors | 2004 | 20 | 2024 |
| 229 | Solids | DAF Dissolution Tanks | 1968 | 20 | 1988 |
| 230 | Solids | TWAS Pumps | 1983 | 20 | 2003 |
| 231 | Solids | DAF Recirculation Pumps | 1982 | 20 | 2002 |
| 232 | Solids | DAF Drain Pump | 1968 | 30 | 1998 |
| 233 | Solids | DAF Piping & Valves | 1983 | 20 | 2003 |
| 234 | Solids | DAF Electrical | 1968 | 25 | 1993 |
| 235 | Solids | Air Control Panels | 2009 | 30 | 2039 |
| 236 | Solids | MCC-15M | 1982 | 30 | 2012 |
| 237 | Solids | DAF Flow Meter | 1982 | 20 | 2002 |
| 238 | Solids | TWAS Flow Meter | 2009 | 20 | 2029 |
| 239 | Solids | Export Sludge System Structure | 1983 | 50 | 2033 |

Red: Upgrade of asset included In Facility Improvements Project; Blue: Upgrade of other asset included in other project in Ten Year Plan.

TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|------------------|---|-------------------|-----------------------------|--------------------------|
| 240 | Solids | Export Sludge System Doors & Miscellaneous Metals | 1983 | 35 | 2018 |
| 241 | Solids | Monorail & Hoist | 1983 | 40 | 2023 |
| 242 | Solids | Export Sludge Wetwell Structure | 1983 | 50 (30) | 2033 |
| 243 | Solids | Export Wetwell-Sludge Sampler and Level | 2002 | 20 | 2022 |
| 244 | Solids | Export Sludge Pumps | 2009 | 20 | 2029 |
| 245 | Solids | Export Sludge Pump VFDs | 2009 | 15 | 2024 |
| 246 | Solids | Export Sludge Flow Meter | 2004 | 20 | 2024 |
| 247 | Solids | Export Sludge Mechanical | 1983 | 20 | 2003 |
| 248 | Solids | Sludge Grinder | 2001 | 20 | 2021 |
| 249 | Solids | Chopper Pump | 1983 | 20 | 2003 |
| 250 | Solids | Export Sludge Mixer | 2001 | 20 | 2021 |
| 251 | Solids | Export Sludge Electrical | 1983 | 35 | 2018 |
| 252 | Solids | Export Sludge Equalization Basin Structure | 2014 | 50 | 2064 |
| 253 | Solids | Export Sludge Equalization Basin Ultrasonic Level Transmitter | 2014 | 20 | 2034 |
| 254 | Solids | Sludge Mixing Piping, Supports, Fittings and Valves | 2014 | 20 | 2034 |
| 255 | Solids | Sludge Inlet Valve Vault | 2014 | 50 | 2064 |
| 256 | | Sludge Inlet Piping, Supports, Fitting and Valves | 2014 | 20 | 2034 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|--------------------------------|---|-------------------|-----------------------------|--------------------------|
| 256 | Solids | Sludge Outlet Valve Vault | 2014 | 50 | 2064 |
| 257 | Solids | Sludge Outlet Piping, Supports, Fittings and Valves | 2014 | 20 | 2034 |
| 258 | Odor Control | Odor Control Structural | 2002 | 50 | 2052 |
| 259 | Odor Control | Odor Control Scrubber | 2002 | 30 (15) | 2032 |
| 260 | Odor Control | Odor Control Scrubber-Sodium Hydroxide Tank | 2006 | 30 | 2036 |
| 261 | Odor Control | Odor Control Scrubber-Bleach Tank | 2006 | 30 | 2036 |
| 262 | Odor Control | Odor Control Scrubber Ducting | 2002 | 25 | 2027 |
| 263 | Odor Control | Odor Control Scrubber Fans | 2002 | 15 | 2017 |
| 264 | Odor Control | Odor Control Scrubber Electrical | 2002 | 25 | 2027 |
| 265 | Old Blower Building (Bldg. 13) | Auxiliary Blower Building Structure | 1968 | 50 | 2018 |
| 266 | Old Blower Building (Bldg. 13) | Auxiliary Blower Building No. 2 Roof | 1982 | 25 | 2007 |
| 267 | Old Blower Building (Bldg. 13) | Auxiliary Blower Building Architectural Metals. | 1968 | 35 | 2003 |
| 268 | Old Blower Building (Bldg. 13) | Crane | 1983 | 40 | 2023 |
| 269 | Old Blower Building (Bldg. 13) | Auxiliary BB Mechanical | 1982 | 25 | 2007 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|------------------------------------|--|-------------------|-----------------------------|--------------------------|
| 270 | Old Blower Building (Bldg. 13) | Auxiliary BB Electrical | 1982 | 35 | 2017 |
| 271 | Old Blower Building (Bldg. 13) | MCC-2 | 2004 | 30 | 2034 |
| 272 | Old Blower Building (Bldg. 13) | Instrument Air System (Ingersoll Rand) | 2004 | 20 | 2024 |
| 273 | Old Blower Building (Bldg. 13) | Service Air Compressor (Sullair) | 1985 | 20 | 2005 |
| 274 | Old Blower Building (Bldg. 13) | Process Air Blowers | 1985 | 30 | 2015 |
| 275 | Plant Water | Plant Service Water Pumps | 2008 | 25 | 2033 |
| 276 | Plant Water | Plant Service Water Mechanical | 2005 | 30 | 2035 |
| 277 | Plant Water | Plant Service Water Strainer | 2013 | 30 | 2043 |
| 278 | Plant Water | Plant Service Water Electrical | 2005 | 25 | 2030 |
| 279 | Plant Water | Plant Service Water Jockey Pump | 2001 | 30 | 2031 |
| 280 | Maintenance Shop & Misc. Buildings | Maintenance Shop | 1970 | 50 | 2020 |
| 281 | Maintenance Shop & Misc. Buildings | Maintenance Shop Roof | 1970 | 25 | 1995 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|------------------------------------|---|-------------------|-----------------------------|--------------------------|
| 282 | Maintenance Shop & Misc. Buildings | Maintenance Shop Bench Work | 1970 | 30 | 2000 |
| 283 | Maintenance Shop & Misc. Buildings | Maintenance Shop Crane | 1985 | 40 | 2025 |
| 284 | Maintenance Shop & Misc. Buildings | Maintenance Shop Equipment | 1970 | 30 | 2000 |
| 285 | Maintenance Shop & Misc. Buildings | Maintenance Shop Electrical | 1970 | 35 | 2005 |
| 286 | Maintenance Shop & Misc. Buildings | Vehicle Storage Building | 1983 | 40 | 2023 |
| 287 | Maintenance Shop & Misc. Buildings | Vehicle Storage Building Mezzanine Platform | 1983 | 35 | 2018 |
| 288 | Maintenance Shop & Misc. Buildings | Vehicle Storage Building Electrical | 1983 | 35 | 2018 |
| 289 | Maintenance Shop & Misc. Buildings | Mechanical Building | 1968 | 50 | 2018 |
| 290 | Potable Water | Air Gap System | 1990 | 30 | 2020 |
| 291 | Potable Water | Hydropneumatic Tank | 1983 | 30 | 2013 |
| 292 | Potable Water | Potable Water Pumps | 1990 | 25 | 2015 |
| 293 | Standby Power | Generator Building | 1982 | 50 | 2032 |
| 294 | Standby Power | Generator Building Roof | 2009 | 30 | 2039 |
| 295 | Standby Power | Standby Power Generator Set | 1982 | 40 | 2022 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-----------------------|--|-------------------|-----------------------------|--------------------------|
| 296 | Standby Power | Standby Power Building Mechanical | 1982 | 30 | 2012 |
| 297 | Standby Power | Standby Power Building Electrical | 1982 | 35 | 2017 |
| 298 | Standby Power | Main Emergency Switchboard | 1982 | 30 | 2012 |
| 299 | Standby Power | Standby Power Building-Diesel Tank | 1983 | 30 | 2013 |
| 300 | Standby Power | MCC-E1M | 2009 | 30 | 2039 |
| 301 | Standby Power | MCC-E15M | 1982 | 30 | 2012 |
| 302 | Drainage Pump Station | Drainage Pump Station Structure | 1967 | 50 | 2017 |
| 303 | Drainage Pump Station | Drainage Pump Station Roof | 1967 | 25 | 1992 |
| 304 | Drainage Pump Station | Drainage Pump Station Structure Architectural Metals | 1967 | 25 | 1992 |
| 305 | Drainage Pump Station | Drainage Pump Station Wet Well | 1967 | 50 (25) | 2017 |
| 306 | Drainage Pump Station | Drainage Pumps | 1990 | 25 | 2015 |
| 307 | Drainage Pump Station | Submersible Pump | 2011 | 25 | 2036 |
| 308 | Drainage Pump Station | Drainage Pump Station Mechanical | 1967 | 30 | 1997 |
| 309 | Drainage Pump Station | Drainage Pump Station Electrical | 1990 | 35 | 2025 |
| 310 | Drainage Pump Station | Control Panel | 1988 | 30 | 2018 |
| 311 | Drainage Pump Station | Drainage Pump Station Flowmeter | 1988 | 20 | 2008 |
| 312 | Drainage Pump Station | Regional Moulton Niguel Lift Station Flowmeter | 1988 | 20 | 2008 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|--------------------|---|-------------------|-----------------------------|--------------------------|
| 313 | Underground Piping | Underground Electrical: Cable | 1983 | 25 | 2008 |
| 314 | Underground Piping | Underground Electrical: Conduit | 1968 | 50 | 2018 |
| 315 | Underground Piping | Underground Electrical: Manholes | 1970 | 40 | 2010 |
| 316 | Underground Piping | SCWD Influent Force Main | 1983 | 50 | 2033 |
| 317 | Underground Piping | CLB Influent Force Main | 1983 | 50 | 2033 |
| 318 | Underground Piping | Chemical Injection Manhole | 1983 | 50 | 2033 |
| 319 | Underground Piping | Main Plant Drain Pipeline | 1983 | 70 | 2053 |
| 320 | Underground Piping | AWT Supply Pipeline | 1983 | 70 | 2053 |
| 321 | Underground Piping | Non-Potable Water Pipeline | 1983 | 70 | 2053 |
| 322 | Underground Piping | Potable Water Pipeline | 1983 | 70 | 2053 |
| 323 | Underground Piping | WAS Pipeline | 1983 | 50 | 2033 |
| 324 | Underground Piping | Primary Scum Pipeline | 1983 | 50 | 2033 |
| 325 | Underground Piping | Secondary Scum Pipeline | 1983 | 50 | 2033 |
| 326 | Underground Piping | Export Pipeline (to North Fence Line) | 1983 | 50 | 2033 |
| 327 | Underground Piping | Effluent Pipeline (to West Property Line) | 1983 | 75 | 2058 |
| 328 | Underground Piping | Sodium Hypochlorite Pipe (to AWT) | 2016 | 50 | 2066 |

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TABLE F.2
Coastal Treatment Plant Asset Listing

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|--------------------|--|-------------------|-----------------------------|--------------------------|
| 329 | Underground Piping | Sodium Hypochlorite Pipe (to RAS) | 2016 | 50 | 2066 |
| 330 | Underground Piping | Ferric Chloride Pipeline (to Feed Point) | 1995 | 50 | 2045 |
| 331 | Underground Piping | Miscellaneous Small Buried Pipeline | 1983 | 50 | 2033 |
| 332 | Instrumentation | Aeration PLC | 2004 | 15 | 2019 |
| 333 | Instrumentation | PLC at Headwork (TC 1) | 2004 | 15 | 2019 |
| 334 | Instrumentation | PLC at Mechanical Bldg (TC 2) | 2004 | 15 | 2019 |
| 335 | Instrumentation | PLC at DAF Building (TC 3) | 2004 | 15 | 2019 |
| 336 | Instrumentation | PLC at Reclaimed Water Building (TC 4) | 2004 | 15 | 2019 |
| 337 | Site | Creek Slope Protection-South Property Line to Bridge | - | - | - |
| 338 | Site | Creek Slope Protection-Bridge to North Property Line | - | - | - |
| 339 | Site | Bridge | 1994 | 50 | 2044 |
| 340 | Site | Plant Road System | 1983 | 35 | 2018 |
| 341 | Site | Storm Drain- Headworks | 2002 | 40 | 2042 |
| 342 | Site | Storm Water Pumps-Effluent Basin | 2002 | 25 | 2027 |
| 343 | Site | Storm Water Drain- AWT | 2010 | 40 | 2050 |
| 344 | Site | Primary Storm Channel | 1983 | 50 | 2033 |
| 345 | Site | Primary Storm Water Detention Basin | 2003 | 5 | 2008 |
| 346 | Site | Perimeter Fence & Gates | 1983 | 40 | 2023 |

Red: Upgrade of asset included In Facility Improvements Project; Blue: Upgrade of other asset included in other project in Ten Year Plan.

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|------------------|--------------|---|----------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 1 ('19/'20) | | | | | | | | |
| | 3525-000 | Personnel Building Reconstruction | \$ 69,000 | \$ 69,000 | \$ 20,000 | \$ 21,000 | \$ 26,000 | \$ 2,000 |
| | 3539-000 | Facility Improvements Construction Part I | \$ 6,972,000 | \$ 6,972,000 | \$ 2,040,000 | \$ 2,081,000 | \$ 2,643,000 | \$ 208,000 |
| | 3541-000 | Export Sludge System Reconstruction | \$ 4,522,000 | \$ 4,522,000 | \$ 1,323,000 | \$ 1,350,000 | \$ 1,714,000 | \$ 135,000 |
| | 3553-000 | Plant Drainage Improvements | \$ 81,000 | \$ 81,000 | \$ 24,000 | \$ 24,000 | \$ 31,000 | \$ 2,000 |
| | 4501-000 | Electrical Manhole/Cable Assessment | \$ 61,000 | \$ 61,000 | \$ 18,000 | \$ 18,000 | \$ 23,000 | \$ 2,000 |
| | 4502-000 | Building Roof Condition Assessment | \$ 35,000 | \$ 35,000 | \$ 10,000 | \$ 11,000 | \$ 13,000 | \$ 1,000 |
| | | Small Cap Liquids | \$ 581,000 | \$ 581,000 | \$ 170,000 | \$ 173,000 | \$ 220,000 | \$ 17,000 |
| | | Small Cap AWT | \$ 40,000 | \$ 40,000 | \$ - | \$ 40,000 | \$ - | \$ - |
| | | TOTALS | \$ 12,361,000 | \$ 12,361,000 | \$ 3,604,000 | \$ 3,718,000 | \$ 4,671,000 | \$ 368,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 2 ('20/'21) | | | | | | | | |
| | 15137 | Foul Air System Condition Assessment | \$ 75,000 | \$ 76,000 | \$ 22,000 | \$ 23,000 | \$ 29,000 | \$ 2,000 |
| | 15138 | Scum Pump Station Condition Assessment | \$ 50,000 | \$ 51,000 | \$ 15,000 | \$ 15,000 | \$ 19,000 | \$ 2,000 |
| | 15139 | Buried Utility Master Plan | \$ 75,000 | \$ 76,000 | \$ 22,000 | \$ 23,000 | \$ 29,000 | \$ 2,000 |
| | 3542-000 | South Section Embankment Protection | \$ 105,000 | \$ 105,000 | \$ 31,000 | \$ 31,000 | \$ 40,000 | \$ 3,000 |
| | 3544-000 | Aeration Upgrade Construction - Part I | \$ 2,352,000 | \$ 2,352,000 | \$ 688,000 | \$ 702,000 | \$ 892,000 | \$ 70,000 |
| | 3545-000 | Facility Improvements Construction Part II | \$ 4,665,000 | \$ 4,665,000 | \$ 1,365,000 | \$ 1,392,000 | \$ 1,768,000 | \$ 139,000 |
| | 4503-000 | Site Storage Evaluation | \$ 50,000 | \$ 50,000 | \$ 15,000 | \$ 15,000 | \$ 19,000 | \$ 1,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 569,000 | \$ 166,000 | \$ 170,000 | \$ 216,000 | \$ 17,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 65,000 | \$ 19,000 | \$ 19,000 | \$ 25,000 | \$ 2,000 |
| | | TOTALS | \$ 8,005,000 | \$ 8,009,000 | \$ 2,343,000 | \$ 2,391,000 | \$ 3,036,000 | \$ 239,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|--------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 3 (21/22) | | | | | | | | |
| | 15103 | Auxiliary Blower and Maintenance Building Roofs | \$ 157,000 | \$ 165,000 | \$ 48,000 | \$ 49,000 | \$ 63,000 | \$ 5,000 |
| | 15137 | Headworks Condition Assessment | \$ 95,000 | \$ 100,000 | \$ 29,000 | \$ 30,000 | \$ 38,000 | \$ 3,000 |
| | 15138 | Spatial Utilization Analysis | \$ 75,000 | \$ 79,000 | \$ 23,000 | \$ 24,000 | \$ 30,000 | \$ 2,000 |
| | 15140 | Aeration Upgrade Construction - Part II | \$ 2,864,000 | \$ 3,014,000 | \$ 882,000 | \$ 900,000 | \$ 1,143,000 | \$ 90,000 |
| | 15818 | Contact Basin Gate | \$ 221,000 | \$ 232,000 | \$ 68,000 | \$ 69,000 | \$ 88,000 | \$ 7,000 |
| | 3543-000 | Export Sludge Pipeline Replacement at RTP | \$ 335,000 | \$ 353,000 | \$ 103,000 | \$ 105,000 | \$ 134,000 | \$ 11,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 587,000 | \$ 172,000 | \$ 175,000 | \$ 223,000 | \$ 18,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 67,000 | \$ - | \$ 67,000 | \$ - | \$ - |
| | | TOTALS | \$ 4,380,000 | \$ 4,597,000 | \$ 1,325,000 | \$ 1,419,000 | \$ 1,717,000 | \$ 135,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|-----------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 4 ('22/'23) | | | | | | | | |
| | 15102 | Odor Control Scrubber/Foul Air System Reconstruction | \$ 329,000 | \$ 367,000 | \$ 107,000 | \$ 110,000 | \$ 139,000 | \$ 11,000 |
| | 15108 | Scum Pump Station and Wet Well | \$ 268,000 | \$ 299,000 | \$ 87,000 | \$ 89,000 | \$ 113,000 | \$ 9,000 |
| | 15125 | Vehicle Storage Building Mezzanine Upgrades | \$ 59,000 | \$ 65,000 | \$ 19,000 | \$ 20,000 | \$ 25,000 | \$ 2,000 |
| | 15143 | RAS/WAS Pump Station Condition Assessment | \$ 75,000 | \$ 84,000 | \$ 24,000 | \$ 25,000 | \$ 32,000 | \$ 2,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 606,000 | \$ 177,000 | \$ 181,000 | \$ 230,000 | \$ 18,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 69,000 | \$ - | \$ 69,000 | \$ - | \$ - |
| | | TOTALS | \$ 1,365,000 | \$ 1,490,000 | \$ 416,000 | \$ 493,000 | \$ 539,000 | \$ 42,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|--------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 5 (23/24) | | | | | | | | |
| | 15102 | Odor Control Scrubber/Foul Air System Reconstruction | \$ 1,448,000 | \$ 1,653,000 | \$ 483,000 | \$ 493,000 | \$ 627,000 | \$ 49,000 |
| | 15105 | Headworks Screen Drum Replacement | \$ 630,000 | \$ 719,000 | \$ 210,000 | \$ 215,000 | \$ 273,000 | \$ 21,000 |
| | 15119 | Maintenance Building Upgrade | \$ 646,000 | \$ 737,000 | \$ 216,000 | \$ 220,000 | \$ 280,000 | \$ 22,000 |
| | 15144 | Standby Power Condition Assessment | \$ 65,000 | \$ 74,000 | \$ 22,000 | \$ 22,000 | \$ 28,000 | \$ 2,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 625,000 | \$ 183,000 | \$ 187,000 | \$ 237,000 | \$ 19,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 71,000 | \$ - | \$ 71,000 | \$ - | \$ - |
| | | TOTALS | \$ 3,423,000 | \$ 3,881,000 | \$ 1,114,000 | \$ 1,209,000 | \$ 1,444,000 | \$ 114,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|-----------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 6 ('24/'25) | | | | | | | | |
| | 15102 | Odor Control Scrubber/Foul Air System Reconstruction | \$ 1,448,000 | \$ 1,670,000 | \$ 489,000 | \$ 499,000 | \$ 633,000 | \$ 50,000 |
| | 15147 | Pavement and Surface Drainage Master Plan | \$ 75,000 | \$ 87,000 | \$ 25,000 | \$ 26,000 | \$ 33,000 | \$ 3,000 |
| | 15713 | North Section Embankment Protection | \$ 929,000 | \$ 1,072,000 | \$ 314,000 | \$ 320,000 | \$ 406,000 | \$ 32,000 |
| | 15813 | AWT Building Modifications | \$ 218,000 | \$ 252,000 | \$ - | \$ 252,000 | \$ - | \$ - |
| | | Small Cap Liquids | \$ 569,000 | \$ 645,000 | \$ 189,000 | \$ 193,000 | \$ 245,000 | \$ 19,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 74,000 | \$ - | \$ 74,000 | \$ - | \$ - |
| | | TOTALS | \$ 3,304,000 | \$ 3,800,000 | \$ 1,016,000 | \$ 1,363,000 | \$ 1,317,000 | \$ 104,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|-----------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 7 ('25/'26) | | | | | | | | |
| | 15101 | Grit Handling Upgrade | \$ 795,000 | \$ 954,000 | \$ 279,000 | \$ 285,000 | \$ 362,000 | \$ 28,000 |
| | 15106 | DAF Polymer and DAF Control Building Upgrade | \$ 403,000 | \$ 483,000 | \$ 141,000 | \$ 144,000 | \$ 183,000 | \$ 14,000 |
| | 15132 | Channel Lining | \$ 840,000 | \$ 1,008,000 | \$ 295,000 | \$ 301,000 | \$ 382,000 | \$ 30,000 |
| | 15148 | Instrumentation Master Plan | \$ 75,000 | \$ 90,000 | \$ 26,000 | \$ 27,000 | \$ 34,000 | \$ 3,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 666,000 | \$ 195,000 | \$ 199,000 | \$ 253,000 | \$ 20,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 76,000 | \$ - | \$ 76,000 | \$ - | \$ - |
| | | TOTALS | \$ 2,746,000 | \$ 3,277,000 | \$ 936,000 | \$ 1,031,000 | \$ 1,213,000 | \$ 96,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|-----------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 8 ('26/'27) | | | | | | | | |
| | 15126 | Personnel Building Modification | \$ 305,000 | \$ 375,000 | \$ 110,000 | \$ 112,000 | \$ 142,000 | \$ 11,000 |
| | 15133 | Operations Building Rehab | \$ 932,000 | \$ 1,147,000 | \$ 335,000 | \$ 342,000 | \$ 435,000 | \$ 34,000 |
| | 15145 | Export Sludge System Condition Assessment | \$ 85,000 | \$ 105,000 | \$ 31,000 | \$ 31,000 | \$ 40,000 | \$ 3,000 |
| | 15714 | Aliso - Sulfur Creek Confluence Protection | \$ 647,000 | \$ 796,000 | \$ 233,000 | \$ 238,000 | \$ 302,000 | \$ 24,000 |
| | 15815 | Effluent Equalization Basin Valve Replacement - Common (AWT) | \$ 810,000 | \$ 997,000 | \$ - | \$ 997,000 | \$ - | \$ - |
| | 15817 | AWT Instrumentation | \$ 453,000 | \$ 558,000 | \$ - | \$ 558,000 | \$ - | \$ - |
| | | Small Cap Liquids | \$ 569,000 | \$ 687,000 | \$ 201,000 | \$ 205,000 | \$ 261,000 | \$ 21,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 79,000 | \$ - | \$ 79,000 | \$ - | \$ - |
| | | TOTALS | \$ 3,865,000 | \$ 4,744,000 | \$ 910,000 | \$ 2,562,000 | \$ 1,179,000 | \$ 93,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|-----------------------------|--------------|-------------------------------------|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 9 ('27/'28) | | | | | | | | |
| | 15115 | RAS and WAS Pump Station | \$ 189,000 | \$ 247,000 | \$ 72,000 | \$ 74,000 | \$ 93,000 | \$ 7,000 |
| | 15122 | West Corridor Piping Reconstruction | \$ 1,651,000 | \$ 2,158,000 | \$ 631,000 | \$ 644,000 | \$ 818,000 | \$ 64,000 |
| | 15123 | Piping Between RAS/WAS PS and AWT | \$ 106,000 | \$ 138,000 | \$ 40,000 | \$ 41,000 | \$ 52,000 | \$ 4,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 709,000 | \$ 208,000 | \$ 212,000 | \$ 269,000 | \$ 21,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 81,000 | \$ - | \$ 81,000 | \$ - | \$ - |
| | | TOTALS | \$ 2,579,000 | \$ 3,333,000 | \$ 951,000 | \$ 1,052,000 | \$ 1,233,000 | \$ 97,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|------------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 10 ('28/'29) | | | | | | | | |
| | 15110 | Potable Water System Relocation | \$ 592,000 | \$ 778,000 | \$ 228,000 | \$ 232,000 | \$ 295,000 | \$ 23,000 |
| | 15115 | RAS and WAS Pump Station | \$ 1,037,000 | \$ 1,365,000 | \$ 399,000 | \$ 407,000 | \$ 517,000 | \$ 41,000 |
| | 15121 | Auxiliary Blower Bldg Upgrade | \$ 691,000 | \$ 909,000 | \$ 266,000 | \$ 271,000 | \$ 345,000 | \$ 27,000 |
| | 15124 | Central Corridor Piping | \$ 1,691,000 | \$ 2,226,000 | \$ 651,000 | \$ 664,000 | \$ 844,000 | \$ 66,000 |
| | 15146 | Primary Sedimentation System Condition Assessment | \$ 65,000 | \$ 86,000 | \$ 25,000 | \$ 26,000 | \$ 32,000 | \$ 3,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 732,000 | \$ 214,000 | \$ 219,000 | \$ 278,000 | \$ 22,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 84,000 | \$ - | \$ 84,000 | \$ - | \$ - |
| | | TOTALS | \$ 4,710,000 | \$ 6,179,000 | \$ 1,783,000 | \$ 1,903,000 | \$ 2,311,000 | \$ 182,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

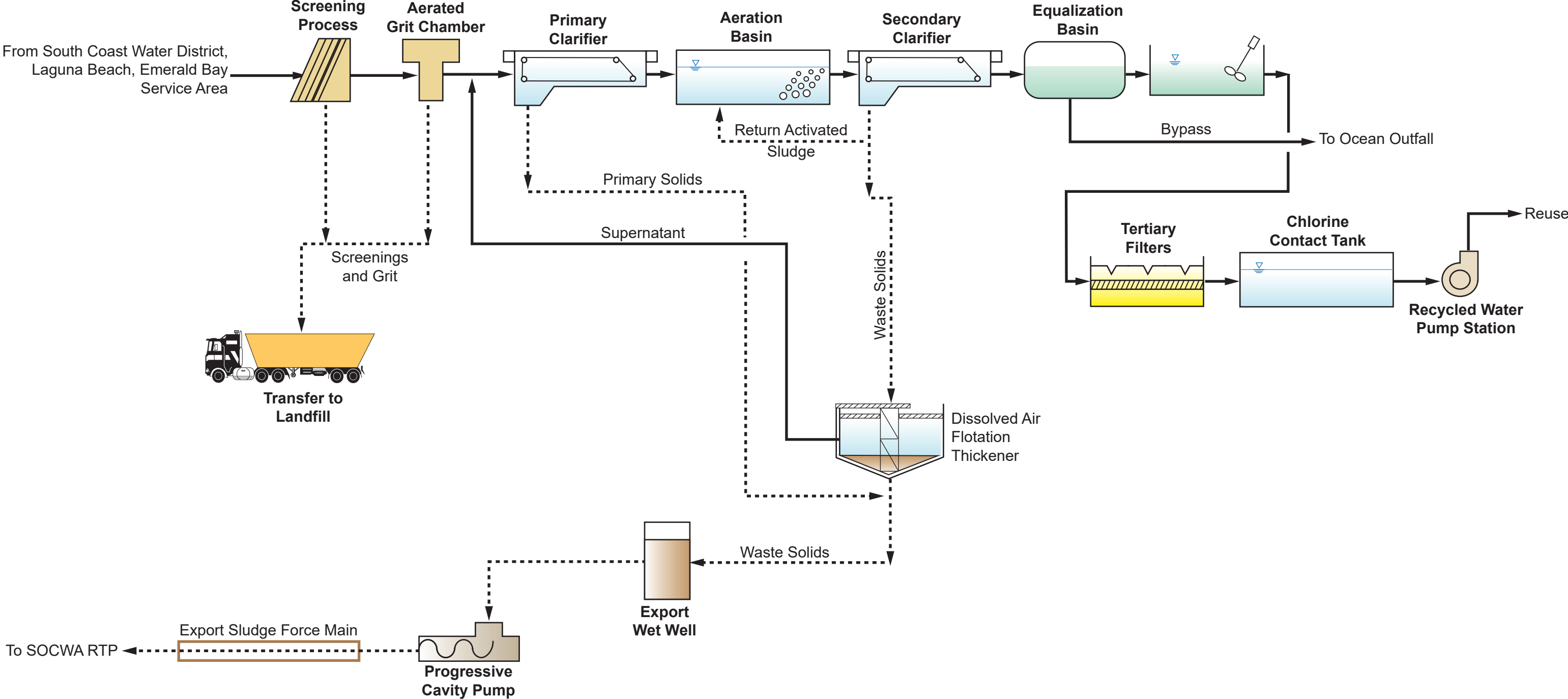
| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|-------------------|--------------|-----------------------------------|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| | | | | | | | | |
| YEAR 11 ('29/'30) | | | | | | | | |
| | 15113 | Pave Road System | \$ 132,000 | \$ 183,000 | \$ 54,000 | \$ 55,000 | \$ 69,000 | \$ 5,000 |
| | 15115 | RAS and WAS Pump Station | \$ 1,037,000 | \$ 1,441,000 | \$ 421,000 | \$ 430,000 | \$ 546,000 | \$ 43,000 |
| | 15116 | Primary Sludge Pump System Design | \$ 682,000 | \$ 947,000 | \$ 277,000 | \$ 283,000 | \$ 359,000 | \$ 28,000 |
| | 15127 | Headworks Valve Replacement | \$ 343,000 | \$ 476,000 | \$ 139,000 | \$ 142,000 | \$ 181,000 | \$ 14,000 |
| | 15150 | Screening Washer/Compactor System | \$ 413,000 | \$ 573,000 | \$ 168,000 | \$ 171,000 | \$ 217,000 | \$ 17,000 |
| | 15812 | AWT Filter Valve Upgrade | \$ 541,000 | \$ 752,000 | \$ - | \$ 752,000 | \$ - | \$ - |
| | 15819 | AWT Support Equipment | \$ 759,000 | \$ 1,054,000 | \$ - | \$ 1,054,000 | \$ - | \$ - |
| | 15821 | AWT Buried Piping | \$ 1,011,000 | \$ 1,404,000 | \$ - | \$ 1,404,000 | \$ - | \$ - |
| | | Small Cap Liquids | \$ 569,000 | \$ 755,000 | \$ 221,000 | \$ 226,000 | \$ 286,000 | \$ 23,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 86,000 | \$ - | \$ 86,000 | \$ - | \$ - |
| | | TOTALS | \$ 5,550,000 | \$ 7,672,000 | \$ 1,280,000 | \$ 4,602,000 | \$ 1,659,000 | \$ 131,000 |
| | | | | | | | | |
| YEAR 12 ('30/'31) | | | | | | | | |
| | 15104 | DAF System Rehabilitation | \$ 1,300,000 | \$ 1,827,000 | \$ 535,000 | \$ 546,000 | \$ 693,000 | \$ 55,000 |
| | 15117 | SCADA System Reconstruction | \$ 147,000 | \$ 206,000 | \$ 60,000 | \$ 62,000 | \$ 78,000 | \$ 6,000 |
| | 15129 | Standby Power Reconstruction | \$ 179,000 | \$ 251,000 | \$ 74,000 | \$ 75,000 | \$ 95,000 | \$ 8,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 780,000 | \$ 228,000 | \$ 233,000 | \$ 296,000 | \$ 23,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 89,000 | \$ - | \$ 89,000 | \$ - | \$ - |
| | | TOTALS | \$ 2,260,000 | \$ 3,154,000 | \$ 897,000 | \$ 1,004,000 | \$ 1,162,000 | \$ 91,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|------------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 13 ('31/'32) | | | | | | | | |
| | 15111 | Non-Potable Water System Relocation | \$ 333,000 | \$ 508,000 | \$ 149,000 | \$ 152,000 | \$ 193,000 | \$ 15,000 |
| | 15117 | SCADA System Reconstruction | \$ 1,150,000 | \$ 1,756,000 | \$ 514,000 | \$ 524,000 | \$ 666,000 | \$ 52,000 |
| | 15128 | Existing Export Sludge PS Upgrade | \$ 836,000 | \$ 1,276,000 | \$ 373,000 | \$ 381,000 | \$ 484,000 | \$ 38,000 |
| | 15129 | Standby Power Reconstruction | \$ 559,000 | \$ 853,000 | \$ 250,000 | \$ 255,000 | \$ 324,000 | \$ 25,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 805,000 | \$ 235,000 | \$ 240,000 | \$ 305,000 | \$ 24,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 92,000 | \$ - | \$ 92,000 | \$ - | \$ - |
| | | TOTALS | \$ 3,512,000 | \$ 5,290,000 | \$ 1,521,000 | \$ 1,644,000 | \$ 1,971,000 | \$ 155,000 |
| | | | | | | | | |
| YEAR 14 ('32/'33) | | | | | | | | |
| | 15112 | West Primary Sedimentation System Upgrade | \$ 1,032,000 | \$ 1,631,000 | \$ 477,000 | \$ 487,000 | \$ 618,000 | \$ 49,000 |
| | 15129 | Standby Power Reconstruction | \$ 559,000 | \$ 884,000 | \$ 259,000 | \$ 264,000 | \$ 335,000 | \$ 26,000 |
| | | Small Cap Liquids | \$ 569,000 | \$ 830,000 | \$ 243,000 | \$ 248,000 | \$ 315,000 | \$ 25,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 95,000 | \$ - | \$ 95,000 | \$ - | \$ - |
| | | TOTALS | \$ 2,225,000 | \$ 3,441,000 | \$ 979,000 | \$ 1,094,000 | \$ 1,268,000 | \$ 100,000 |

Table F.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD |
|------------------------------|--------------|------------------------------------|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| YEAR 15 ('33/'34) | | | | | | | | |
| | 15114 | East Primary Sedimentation Upgrade | \$ 677,000 | \$ 1,079,000 | \$ 316,000 | \$ 322,000 | \$ 409,000 | \$ 32,000 |
| | 15118 | Aeration Basin Gates | \$ 1,499,000 | \$ 2,388,000 | \$ 699,000 | \$ 713,000 | \$ 905,000 | \$ 71,000 |
| | 15120 | RAS Hypo Pumps | \$ 98,000 | \$ 155,000 | \$ 45,000 | \$ 46,000 | \$ 59,000 | \$ 5,000 |
| | 15131 | Headworks Miscellaneous Upgrades | \$ 505,000 | \$ 805,000 | \$ 235,000 | \$ 240,000 | \$ 305,000 | \$ 24,000 |
| | 15134 | Perimeter Fence Replacement | \$ 857,000 | \$ 1,365,000 | \$ 399,000 | \$ 408,000 | \$ 518,000 | \$ 41,000 |
| | 15135 | Blower Building Roof | \$ 106,000 | \$ 169,000 | \$ 49,000 | \$ 50,000 | \$ 64,000 | \$ 5,000 |
| | 15136 | Export Sludge Pumps | \$ 847,000 | \$ 1,349,000 | \$ 395,000 | \$ 403,000 | \$ 511,000 | \$ 40,000 |
| | 15816 | AWT Hypo Pumps | \$ 261,000 | \$ 415,000 | \$ - | \$ 415,000 | \$ - | \$ - |
| | | Small Cap Liquids | \$ 569,000 | \$ 857,000 | \$ 251,000 | \$ 256,000 | \$ 325,000 | \$ 26,000 |
| | | Small Cap AWT | \$ 65,000 | \$ 98,000 | \$ - | \$ 98,000 | \$ - | \$ - |
| | | TOTALS | \$ 5,484,000 | \$ 8,680,000 | \$ 2,389,000 | \$ 2,951,000 | \$ 3,096,000 | \$ 244,000 |



| Legend | |
|--------|--------|
| — | Liquid |
| | Solids |

Figure F.1
CTP Process Flow Diagram



Figure F.2
Coastal Treatment Plant Site

Prepared By:



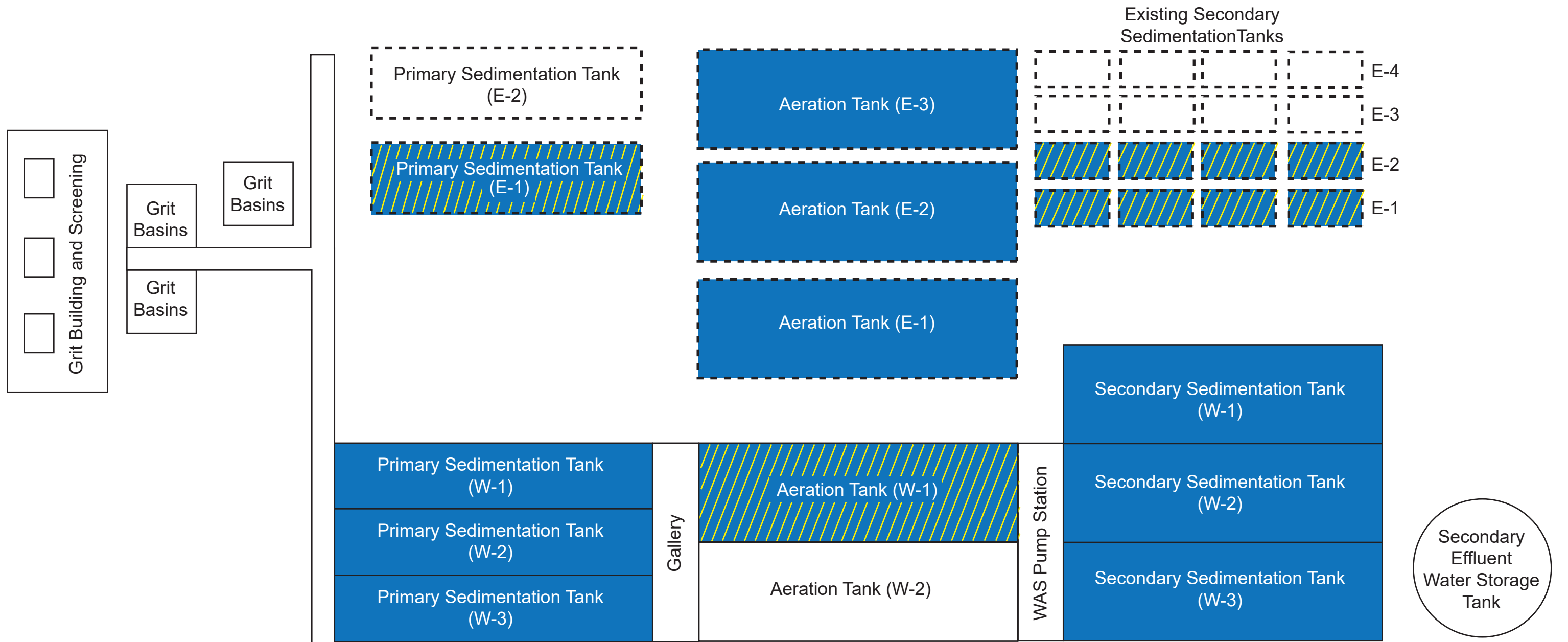
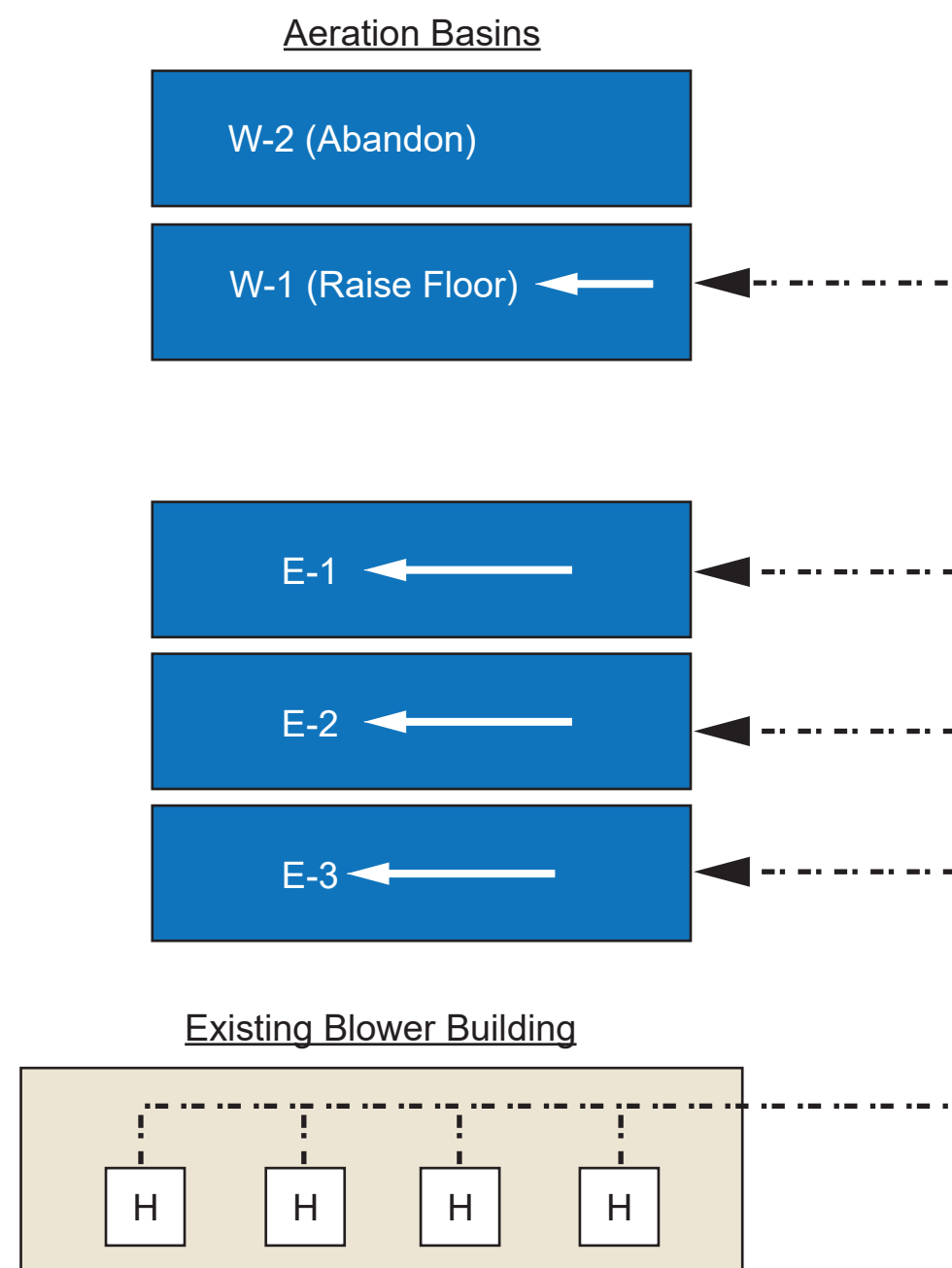
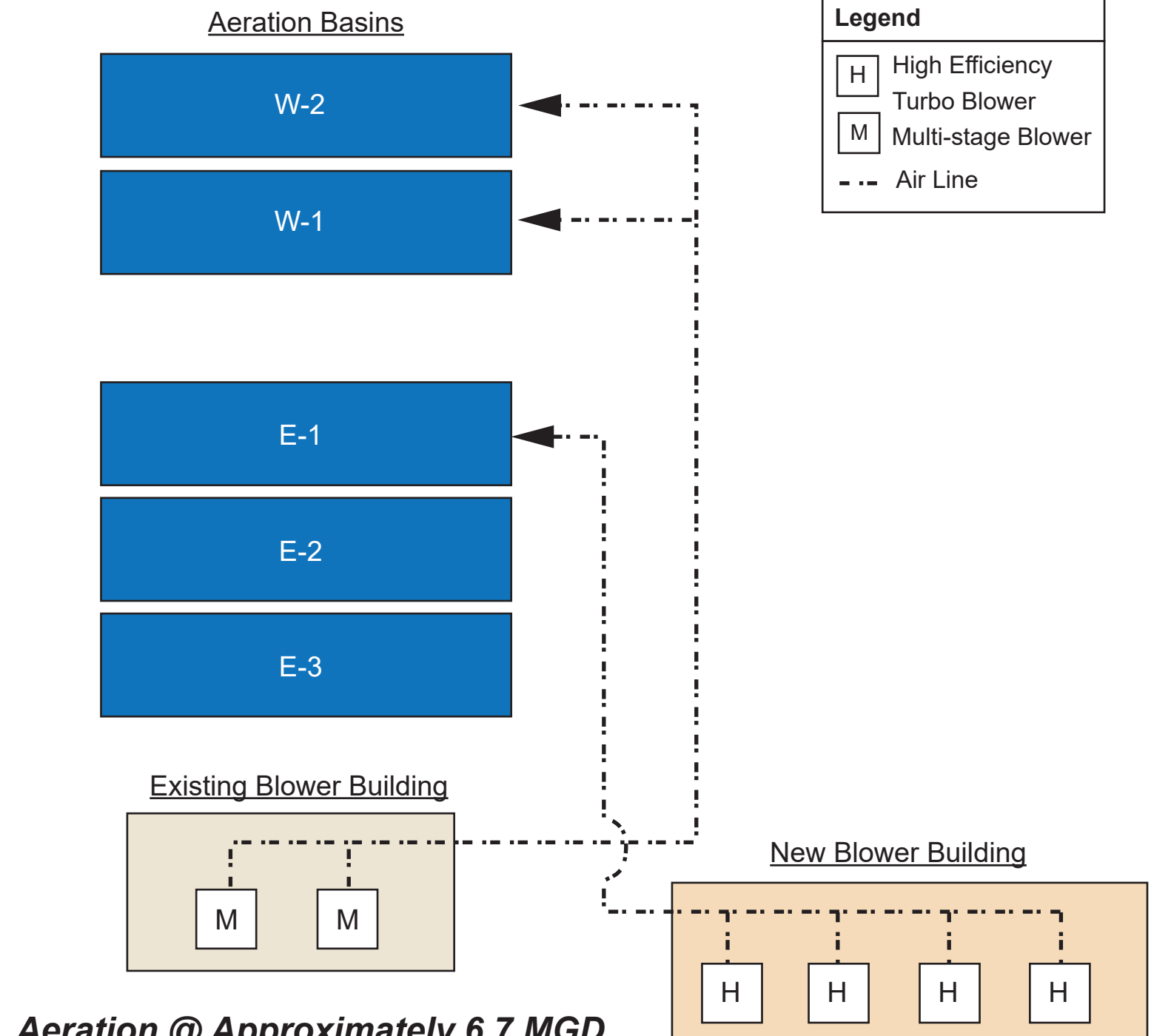


Figure F.3
Basin Utilization at 4 MGD



Aeration @ Approximately 4.0 MGD



Aeration @ Approximately 6.7 MGD

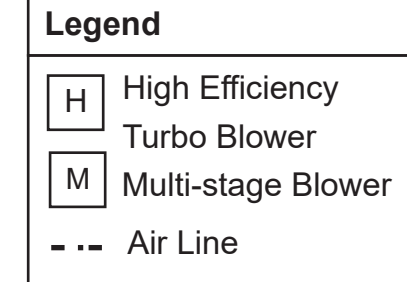
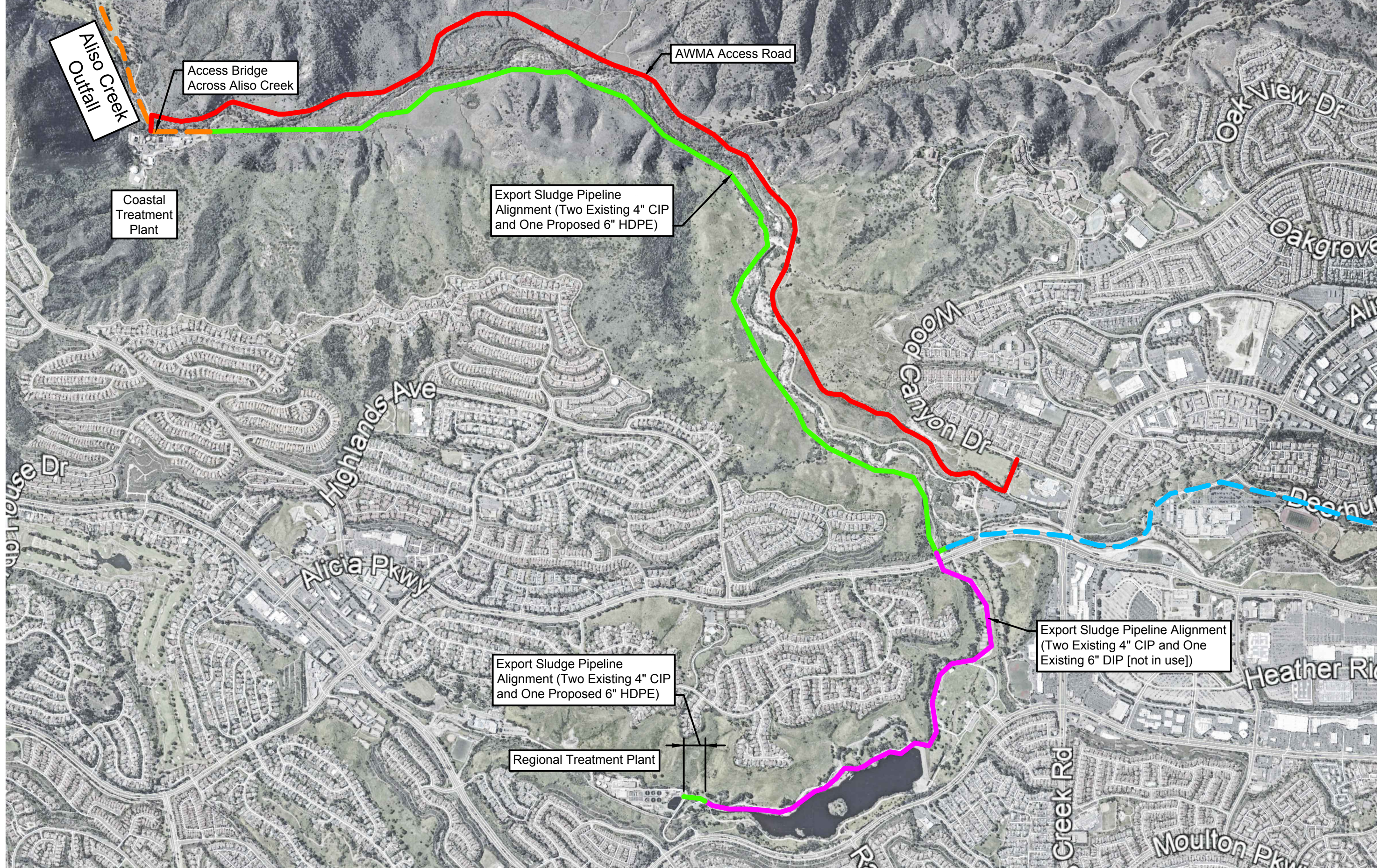


Figure F.4
Aeration System Options



Figure F.5
Potential Facility Modifications
for Future Title 22 Reclamation
Scenario

Prepared By:



Prepared by:

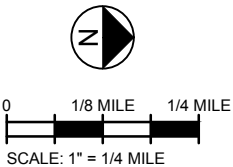


Figure F.6
Coastal Treatment Plant Export
Pipeline and AWMA Access Road

Appendix G
Coastal Treatment Plant Project Descriptions

Capital Improvement Program – Project Description

Project No.: 3542-000
Project Name: South Section Embankment Project
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '20/'21
Project Status: Conceptual Analysis/Short Term Planning

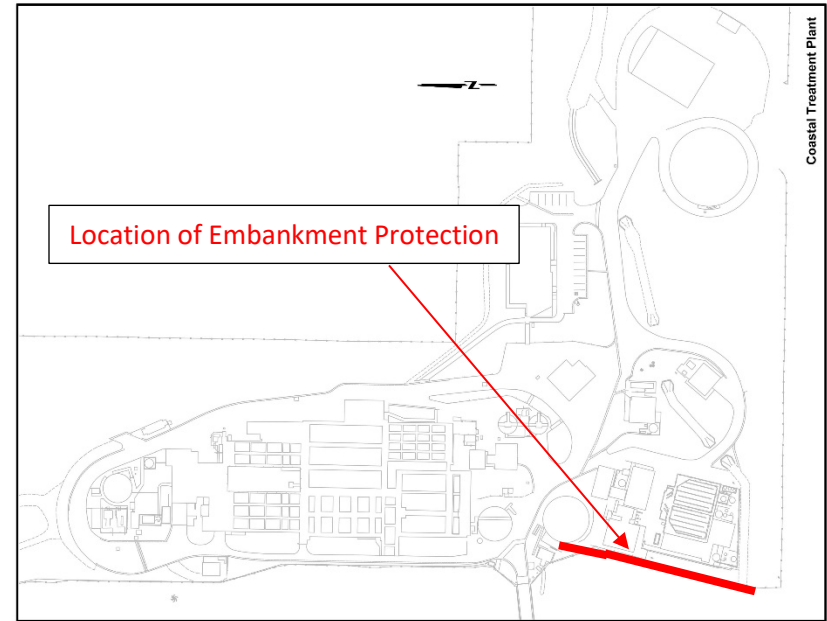
Project Description: Project involves (1) installation of gabion project along between access bridge and southwest corner of plant site; (2) installation of rip-rap apron below storm channel, (3) repair of cracking in storm channel; and (4) replacement of damaged sections of fencing.

Project Need: Southwest side of the treatment plant vulnerable to erosion damage during wet weather events along Aliso Creek. Some damage occurred during storm event of January 2017.

Key Issues: Improvements defined by conceptual analysis by TetraTech in April 2016 and February 2017. Resource agencies rejected this site as a candidate for emergency work in spring, 2017.

Estimated Project Amount (in 2019 \$):

| | |
|-----------------------|-------------------|
| Permitting: | \$ 60,241 |
| Design: | \$ 45,180 |
| Construction: | \$ 301,204 |
| Construction Support: | \$ 75,300 |
| Total Budget: | \$ 481,925 |



Capital Improvement Program – Project Description

Project No.: 3543-000

Project Name: Export Sludge Line Replacement at Regional Treatment Plant

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '21/'22

Project Status: Short Term Planning

Project Description: The currently designed Export Sludge System project replace the pipelines up to the Regional Treatment Plant site boundary. The proposed project will replace the piping on the Regional Plant site from the boundary to the Sludge Equalization Tanks.

Project Need: This project is based on the poor condition of the existing pipelines.

Key Issues: The routing of the new pipeline on the Regional Treatment Plant site is pending the completion of the Lee & Ro underground piping study.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Conceptual Study: | \$ 12,883 |
| Design: | \$ 26,766 |
| Construction: | \$ 256,655 |
| <u>Construction Support:</u> | <u>\$ 38,649</u> |
| Total Budget: | \$ 334,953 |

Capital Improvement Program – Project Description

Project No.: 3544-000
Project Name: Aeration System
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '20/'21 and '21/'22
Project Status: Short Term Planning



Project Description: The project includes replacing the existing panel diffusers with disc diffusers and appurtenances, raising the floor in Aeration Basin W-1, replace the aeration blowers with four multistage blowers with VFDs in the existing building.

Project Need: This project is based on the need to upgrade the existing system due to capacity, automation and membrane nearing end of useful life.

Key Issues: Keeping the system running during the project implementation

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|-------------------|
| Design: | \$ 453,549 |
| Construction: | \$ 4,533,488 |
| <u>Construction Support:</u> | <u>\$ 680,324</u> |
| Total Budget: | \$ 5,669,359 |

Capital Improvement Program – Project Description

Project No.: 15101
Project Name: Grit Handling Upgrade
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '25/'26
Project Status: Long Term Planning
Project Description: Replacement of grit pumps and grit classifiers in Headworks Building.



Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: A nominal amount has been set aside for additional mechanical work (e.g. piping and valves). Additional work needed to determine needed improvement to the surrounding system including structural, mechanical and electrical.

Estimated Project Amount (in 2019 \$):
Design: \$ 64,884
Construction: \$648,837
Construction Support: \$ 81,105
Total Budget: \$794,825

Capital Improvement Program – Project Description

Project No.: 15102

Project Name: Odor Control Scrubber and Foul Air System
Reconstruction

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '22/'23 through '24/'25

Project Status: Short Term Planning

Project Description: The project includes the replacement of the odor control scrubber, foul air ducting and ancillary fans.



Project Need: Both the concrete pad and the foul air ducting are deteriorating. Foul air fans are nearing the end of their useful lives.

Key Issues: The DHK evaluation of the scrubber was based on replacement in place. Alternative locations need to be considered to minimize the unit downtime. The proposed project also includes the replacement of the physical scrubber although the fiberglass vessel is in relatively good condition. The current cost is based on reusing the existing chemical storage. This should also be evaluated in further detail.

Estimated Project Amount (in 2019 \$):

| | |
|-----------------------|--------------|
| Conceptual Study: | \$ 65,799 |
| Design: | \$ 263,196 |
| Construction: | \$ 2,631,961 |
| Construction Support: | \$ 263,196 |
| Total Budget: | \$ 3,224,152 |

Capital Improvement Program – Project Description

Project No.: 15103
Project Name: Auxiliary Blower and Maintenance Building Roofs
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '21/'22
Project Status: Short Term Planning

Project Description: Reconstruction of Headworks, Auxiliary Blower, Chlorine and DAF Building Roofs.

Project Need: All of these building roofs are over 35 years old. Project has been identified based on exceedance of life of key components.

Key Issues: Design needed to reflect different types of roofs.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 18,848 |
| Construction: | \$125,652 |
| <u>Construction Support:</u> | <u>\$ 12,566</u> |
| Total Budget: | \$157,065 |



Capital Improvement Program – Project Description

Project No.: 15104

Project Name: Dissolved Air Flotation (DAF) System Rehabilitation

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '30/'31

Project Status: Long Term Planning

Project Description: Rehabilitation includes DAF structural, compressor and piping, dissolution tank, Thicken Activated Waste (TWAS) pumps, recirculation pumps, drain pump, DAF piping, DAF flow meter, TWAS flow meter and electrical. Collectors should not require replacement; however, collectors will be recoated.



Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Much of the existing system was installed in 2006. Current operating conditions appear good. The need for this project should be reevaluated in the future. A scheme for construction sequence will be needed to maintain one DAF operational at all time.

Estimated Project Amount (in 2019 \$):

| | |
|-----------------------|-------------|
| Design: | \$ 56,533 |
| Construction: | \$1,130,659 |
| Construction Support: | \$ 113,066 |
| Total Budget: | \$1,300,258 |

Capital Improvement Program – Project Description

Project No.: 15105

Project Name: Headworks Rotary Screen Drum Replacement

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '23/'24

Project Status: Short Term Planning

Project Description: The project includes the replacement of the drums and the level sensors in the Headworks rotary screens.

Project Need: Three new rotary screens were installed in 2011. The screen drum is expected to last for ten years.



Key Issues: Both equipment and structures deteriorate more rapidly in the headworks than in any other part of the treatment. The areas and systems around the rotary screens should be evaluated before the project to refine both scope and cost. Work on the rotary screens should not be performed during the wet weather portion of the year.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 50,414 |
| Construction: | \$ 504,141 |
| <u>Construction Support:</u> | <u>\$ 75,621</u> |
| Total Budget: | \$ 630,176 |

Capital Improvement Program – Project Description

Project No.: 15106

Project Name: Dissolved Air Flotation (DAF) Polymer System and Building Upgrade

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '25/'26

Project Status: Long Term Planning

Project Description: Upgrades include DAF polymer storage tank and mixer, metering and transfer pumps, piping and valves, building doors, mechanical and electrical system.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: The existing DAF polymer system has not been used in over 10 years as the Operations staff has maintained a dilute thickened waste activated sludge (TWAS) due to concerns regarding Export Sludge piping system. The need for this project should be reevaluated after the new Export Sludge pipeline is completed.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 32,198 |
| Construction: | \$ 321,977 |
| <u>Construction Support:</u> | <u>\$ 48,297</u> |
| Total Budget: | \$ 402,472 |



Capital Improvement Program – Project Description

Project No.: 15108
Project Name: Scum Pump Station and Wetwell
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '22/'23
Project Status: Short Term Planning

Project Description: Rehabilitation includes scum wetwell, scum pump, mechanical, electrical and miscellaneous repairs.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Evaluation needed to more clearly define the scope of this project. Keeping the existing scum pump station running during the repair.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 21,435 |
| Construction: | \$ 214,350 |
| <u>Construction Support:</u> | <u>\$ 32,152</u> |
| Total Budget: | \$ 267,937 |



Capital Improvement Program – Project Description

Project No.: 15110

Project Name: Potable Water Pump Station Relocation

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '28/'29

Project Status: Long Term Planning

Project Description: The project involves the replacement and relocation of the potable water pump station including the air-gap and hydropneumatics tanks.



Project Need: This project involves the replacement of the potable water pump station based on the exceedance of anticipated life. An additional goal is to relocate the system further away from the Aliso Creek boundary.

Key Issues: The amount of potable water required for the facility will need to be reconsidered. Evaluation of the site for relocation of the pump station is needed.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Conceptual Study | \$ 22,750 |
| Design: | \$ 45,500 |
| Construction: | \$ 455,000 |
| <u>Construction Support:</u> | <u>\$ 68,250</u> |
| Total Budget: | \$ 591,500 |

Capital Improvement Program – Project Description

Project No.: 15111

Project Name: Non-Potable Water Pump
Station Reconstruction

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '31/'32

Project Status: Long Term Planning

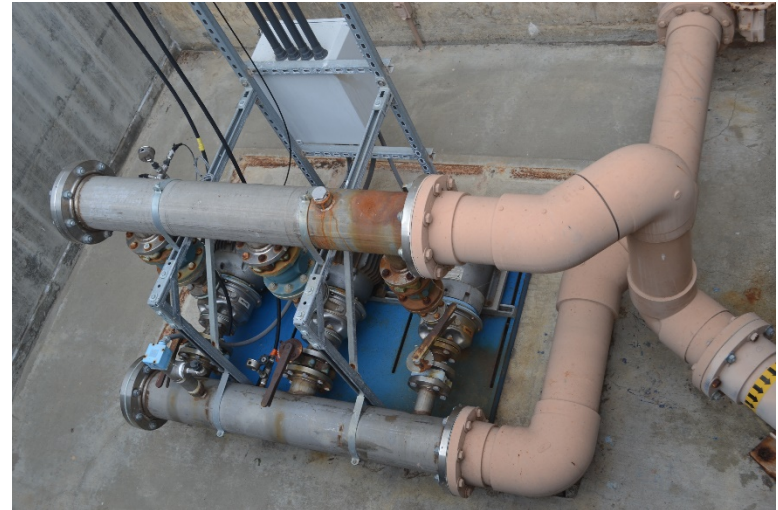
Project Description: The project involves the replacement of the non-potable water pump skid.

Project Need: This project involves the replacement of the pump skid system based on the exceedance of anticipated life.

Key Issues: The amount of non-potable water required for the facility will need to be considered prior to embarking on this project.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design | \$ 13,000 |
| Design: | \$ 20,800 |
| Construction: | \$ 260,000 |
| <u>Construction Support:</u> | <u>\$ 39,000</u> |
| Total Budget: | \$ 332,800 |



Capital Improvement Program – Project Description

Project No.: 15112
Project Name: West Primary Sedimentation System Upgrade
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '32/'33
Project Status: Long Term Planning

Project Description: Upgrade includes primary clarifier sludge collector (chain and flight), scum collector and drive, weir and electrical.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Key Issues: Rehabilitation project has been completed in 2012. The need for this project should be reevaluated in the future. Replacement timeframe needs to be coordinated to rely on operating East primary sedimentation basins only.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|-------------------|
| Design: | \$ 84,217 |
| Construction: | \$ 842,171 |
| <u>Construction Support:</u> | <u>\$ 105,217</u> |
| Total Budget: | \$ 1,031,659 |



Capital Improvement Program – Project Description

Project No.: 15113
Project Name: Pave Road System
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '29/'30
Project Status: Long Term Planning

Project Description: Project includes asphalt pavement throughout the plant.



Project Need: Coastal Treatment Plant has been the subject to many localized repairs and overlay projects over the past 30 years. This project is a comprehensive reconstruction based on exceedance of life.

Key Issues: Project should be coordinated with buried piping replacement projects to avoid tearing up new pavement system directly after completion. Need to perform the work in sections to keep the plant accessible. The cost estimate is based on a 2003 analysis by TetraTech; this evaluation needs to be updated.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Condition Assessment: | \$ 9,750 |
| Design: | \$ 9,750 |
| Construction: | \$ 97,500 |
| <u>Construction Support:</u> | <u>\$ 14,625</u> |
| Total Budget: | \$ 131,625 |

Capital Improvement Program – Project Description

Project No.: 15114

Project Name: East Primary
Sedimentation System
Upgrade

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '33/'34

Project Status: Long Term Planning

Project Description: Upgrade includes primary clarifier sludge collector (chain and flight), scum collector and drive, weir and electrical.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Rehabilitation project has been recently competed. The need for this project should be reevaluated in the future.
Replacement timeframe needs to be coordinated to rely on operating West primary sedimentation basins only.

Estimated Project Amount (in 2019 \$):

| | |
|-----------------------|------------|
| Design: | \$ 55,278 |
| Construction: | \$ 552,776 |
| Construction Support: | \$ 69,097 |
| Total Budget: | \$ 677,151 |



Capital Improvement Program – Project Description

Project No.: 15115
Project Name: RAS and WAS Pump Station
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '27/'28 through '29/'30
Project Status: Long Term Planning

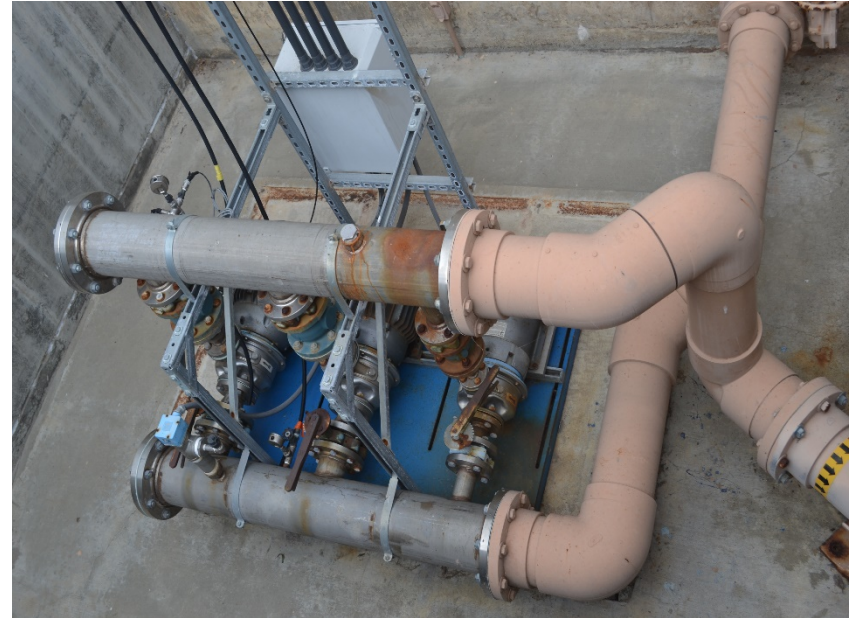
Project Description: Reconstruction of RAS and WAS pumping systems including pumps, valves and piping. Project also includes replacement of doors and monorail crane inside the RAS/WAS Pump Station.

Project Need: The RAS and WAS pumping systems have undergone limited rehabilitation over the past 10 years. A comprehensive reconstruction will be needed based on exceedance of life of key components.

Key Issues: Sequence work to maintain the existing RAS and WAS pumping systems in operations during the replacement.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|-------------------|
| Design: | \$ 188,520 |
| Construction: | \$1,885,200 |
| <u>Construction Support:</u> | <u>\$ 188,520</u> |
| Total Budget: | \$2,262,240 |



Capital Improvement Program – Project Description

Project No.: 15116

Project Name: Primary Sludge Pump
System Design

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '29/'30

Project Status: Long Term Planning

Project Description: Project includes demolition, East and West Primary Sludge pumps and piping, valves and actuators, flow meters, power and controls.



Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Both the East and West Primary Sludge Pump Stations have been reconstructed within the past 10 years. The need for this project should be evaluated further in the future. Need to sequence the work to keep the plant operational.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 55,656 |
| Construction: | \$ 543,719 |
| <u>Construction Support:</u> | <u>\$ 69,570</u> |
| Total Budget: | \$ 681,789 |

Capital Improvement Program – Project Description

Project No.: 15117
Project Name: SCADA System Reconstruction
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '30/'31 and '31/'32
Project Status: Long Term Planning

Project Description: Project involves installation of seven new programmable logic controllers (PLC's) and cabinets. Project also includes the installation of new fiber optic cable through existing the existing conduit as well as the installation of new fiber optic patch panels.



Project Need: The existing SCADA system was installed in 2004. The system utilizes Allen Bradley ControlLogix and CompactLogix PLC's. The replacement of the system is based on reaching a period of time when these units are no longer supported by the manufacturer. The replacement of the fiber optic system is based on reaching data transfer capacity of the existing system.

Key Issues: This project will require a future condition assessment to determine the scope and need for the proposed work.

Estimated Project Amount (in 2019 \$):

| | |
|-----------------------|---------------------|
| Condition Assessment: | \$ 48,938 |
| Preliminary Design: | \$ 48,938 |
| Design: | \$ 97,875 |
| Construction: | \$ 978,749 |
| Construction Support: | \$ 122,344 |
| Total Budget: | \$ 1,296,844 |

Capital Improvement Program – Project Description

Project No.: 15118
Project Name: Aeration Basin Gates
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '33/'34
Project Status: Long Term Planning

Project Description: Each of the five aeration basins has two influent and two effluent aluminum gates. These gates are manually operated. The gates were installed in 2003 and remain in good condition. The need and timing for this project will be reevaluated in the future. Project includes replacement of west influent and effluent gates, and east influent and effluent gates.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Study may be needed to determine if using the gates for flow splitting control is necessary.

Estimated Project Amount (in 2019 \$):

| | |
|-----------------------|-------------|
| Design: | \$ 120,770 |
| Construction: | \$1,257,700 |
| Construction Support: | \$ 120,770 |
| Total Budget: | \$1,499,240 |



Capital Improvement Program – Project Description

Project No.: 15119
Project Name: Maintenance Building
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '23/'24
Project Status: Short Term Planning

Project Description: Project includes new benchwork, monorail system, HVAC and plumbing, doors and frames, windows, electrical, removal and replacement of roof.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Evaluation needed to determine true utilization of building. Need to find a temporary location for maintenance activities and storage during the improvement.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Condition Assessment: | \$ 47,838 |
| Conceptual Study | \$ 47,838 |
| Design: | \$ 47,838 |
| Construction: | \$ 430,548 |
| <u>Construction Support:</u> | <u>\$ 71,757</u> |
| Total Budget: | \$ 645,819 |



Capital Improvement Program – Project Description

Project No.: 15120
Project Name: RAS Hypochlorite Pumps
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '33/'34
Project Status: Long Term Planning

Project Description: Project includes removal of existing RAS hypochlorite pumps and installation of new RAS hypochlorite pumps.

Project Need: New chemical feed pumps have been recently installed. The experience at SOCWA facilities is that a Sodium Hypochlorite pump has a life of approximately 15 years.

Key Issues: Chemical feed pump technology is evolving, the type of pump for replacement should be reviewed in the future. The goal of the replacement is to keep the AWT running during the replacement.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 7,800 |
| Construction: | \$ 78,000 |
| <u>Construction Support:</u> | <u>\$ 11,700</u> |
| Total Budget: | \$ 97,500 |



Capital Improvement Program – Project Description

Project No.: 15121

Project Name: Auxiliary Blower Building Upgrade

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '28/'29

Project Status: Long Term Planning

Project Description: The project involves the replacement of architectural hardware in the Auxiliary Blower Building. Project also involves replacement of compressors and blowers within the building.

Project Need: This project is based on the replacement of assets that have exceeded their useful lives.

Key Issues: Air requirements and energy efficiency need to be reevaluated for blower and compressors.

Estimated Project Amount (in 2019 \$):

| | | |
|------------------------------|-----------|----------------|
| Conceptual Study: | \$ | 51,171 |
| Design: | \$ | 51,171 |
| Construction: | \$ | 511,706 |
| <u>Construction Support:</u> | <u>\$</u> | <u>76,756</u> |
| Total Budget: | \$ | 690,804 |



Capital Improvement Program – Project Description

Project No.: 15122
Project Name: West Corridor Piping Reconstruction
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '27/'28
Project Status: Long Term Planning

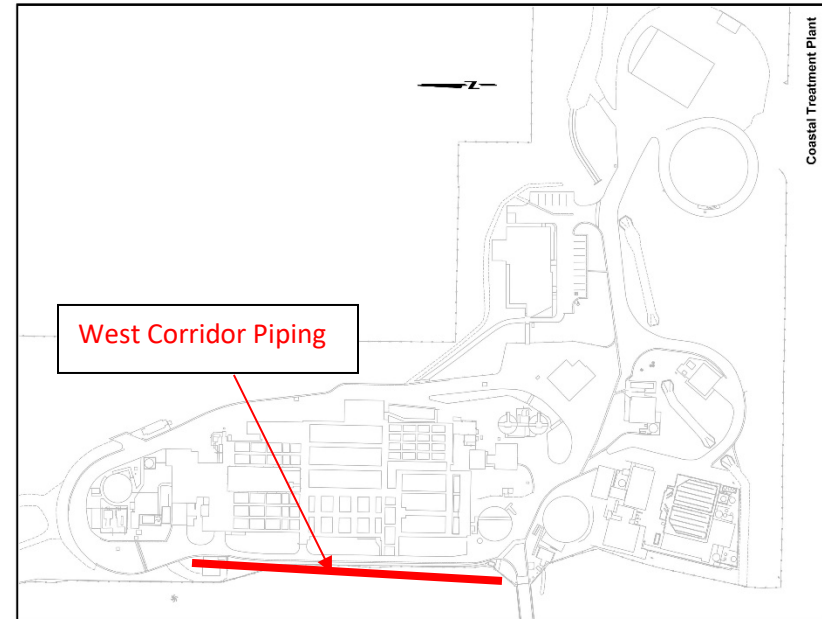
Project Description: Project includes replacement of the 8-inch drain, 20-inch force main and 6-inch non-potable water pipes.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Use existing trench or new trench for the pipe, and if temporary piping is needed during the replacement.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|-------------------|
| Conceptual Design: | \$ 126,966 |
| Design: | \$ 126,966 |
| Construction: | \$ 1,269,654 |
| <u>Construction Support:</u> | <u>\$ 126,966</u> |
| Total Budget: | \$ 1,650,552 |



Capital Improvement Program – Project Description

Project No.: 15123

Project Name: Piping between DAF and Export Sludge Equalization Basin

Facility: Coastal Treatment Plant

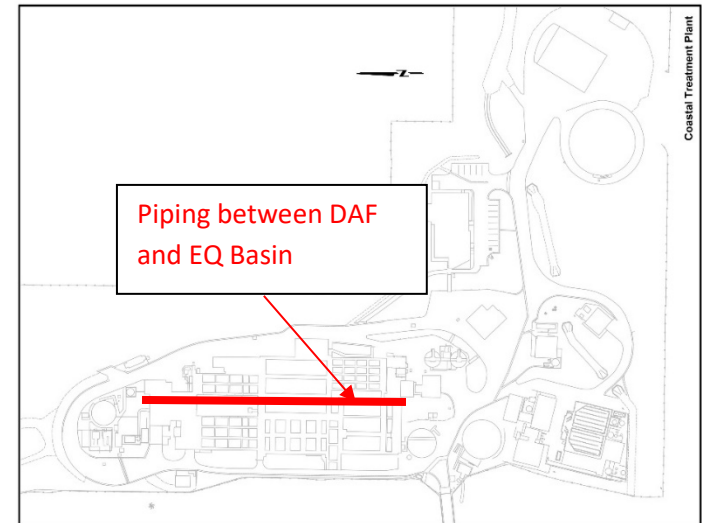
Cost Center: PC 15

Anticipated Fiscal Year: '27/'28

Project Status: Long Term Planning

Project Description: Project includes replacement of the 6-inch primary sludge pipe and 4-inch WAS pipe.

Project Need: Project has been identified based on exceedance of life of key components.



Key Issues: Use existing trench or new trench for the pipe, and if temporary piping is needed during the replacement.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|---------|
| Conceptual Design: | \$ | 7,819 |
| Design: | \$ | 7,819 |
| Construction: | \$ | 78,190 |
| Construction Support: | \$ | 11,729 |
| Total Budget: | \$ | 105,557 |

Capital Improvement Program – Project Description

Project No.: 15124
Project Name: Central Corridor Piping
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '28/'29
Project Status: Long Term Planning

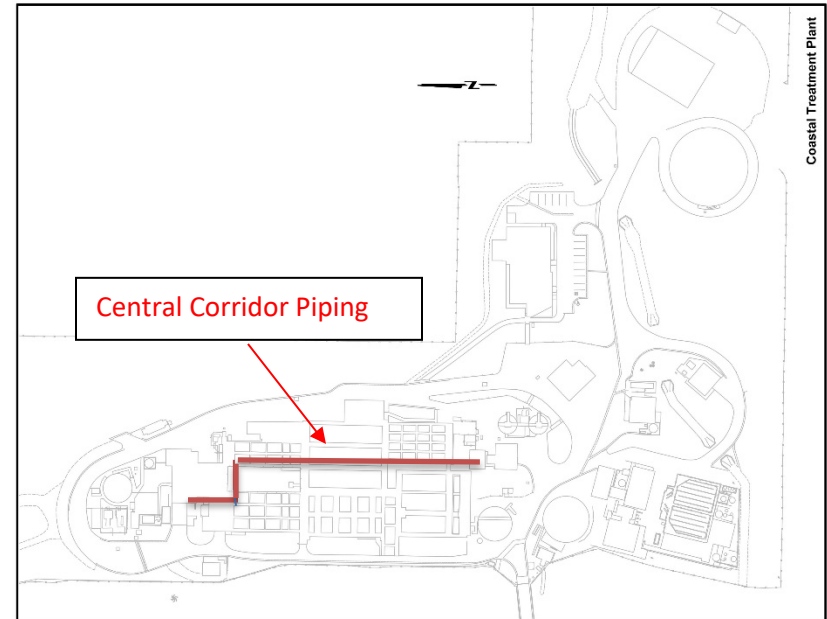
Project Description: Project includes replacement of low pressure air, drains, MLSS, scum, primary sludge, RAS and WAS piping from DAF to Headworks in the middle of the plant.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Use existing trench or new trench for the pipe, and if temporary piping is needed during the replacement to keep the plant running.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|---------------------|
| Conceptual Design: | \$ 67,655 |
| Design: | \$ 135,310 |
| Construction: | \$ 1,353,097 |
| <u>Construction Support:</u> | <u>\$ 135,310</u> |
| Total Budget: | \$ 1,691,372 |



Capital Improvement Program – Project Description

Project No.: 15125
Project Name: Vehicle Storage Building Rehabilitation
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '22/'23
Project Status: Short Term Planning

Project Description: Project includes upgrading to the mezzanine system inside the building.

Project Need: Wooden mezzanine constructed by Plant staff in 1990s does not meet building code.

Key Issues: Discussion with staff to determine if building still meets current needs.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|--------|
| Design: | \$ | 4,686 |
| Construction: | \$ | 46,859 |
| Construction Support: | \$ | 7,029 |
| Total Budget: | \$ | 58,573 |



Capital Improvement Program – Project Description

Project No.: 15126

Project Name: Personnel Building
Modification

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '26/'27

Project Status: Long Term Planning

Project Description: Project includes removal of existing roof, replacement of roof, windows and doors.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Project needed to evaluate demolition of building and relocation of functions to Operations Building.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|---------|
| Conceptual Design: | \$ | 22,553 |
| Design: | \$ | 22,553 |
| Construction: | \$ | 225,530 |
| Construction Support: | \$ | 33,829 |
| Total Budget: | \$ | 304,465 |



Capital Improvement Program – Project Description

Project No.: 15127
Project Name: Headworks Valve Replacement
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '29/'30
Project Status: Long Term Planning

Project Description: Project includes replacement of plug valves, effluent valves, bypass valves and primary sludge valves.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Need detailed bypass plan to ensure isolations and flow diversions.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|-------------------|
| Design: | \$ 27,420 |
| Construction: | \$ 274,205 |
| <u>Construction Support:</u> | <u>\$ 41,130</u> |
| Total Budget: | \$ 342,755 |



Capital Improvement Program – Project Description

Project No.: 15128

Project Name: Existing Export Sludge Pump Station Rehabilitation

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '31/'32

Project Status: Long Term Planning

Project Description: The project involves the replacement of the two original Export Sludge Pumps along with the ancillary equipment. The project also involves the replacement of the architectural hardware for the pump room.



Project Need: This project involves the replacement of asset which have exceeded their anticipated lives.

Key Issues: This system currently serves as the back-up to the new Export Sludge Pump Station and Equalization Basin. An analysis is needed to show whether the added reliability provided by the existing pump station merits a project for rehabilitation.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 68,251 |
| Construction: | \$ 682,513 |
| <u>Construction Support:</u> | <u>\$ 85,314</u> |
| Total Budget: | \$ 836,078 |

Capital Improvement Program – Project Description

Project No.: 15129

Project Name: Standby Power System Reconstruction

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '30/'31 through '32/'33

Project Status: Long Term Planning

Project Description: The project involves the replacement of the standby power engine generator and diesel storage tank.

Project Need: This project involves the replacement of assets that are beyond their anticipated lives.

Key Issues: The power load to be served by the standby power generator needs to be reevaluated. Code impacts should also be considered. Construction sequencing will be a key issue to make sure that the plant has a continuous source of standby power.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|---------------------|
| Conceptual Study: | \$ 97,876 |
| Design: | \$ 97,875 |
| Construction: | \$ 978,750 |
| <u>Construction Support:</u> | <u>\$ 122,344</u> |
| Total Budget: | \$ 1,296,844 |



Capital Improvement Program – Project Description

Project No.: 15131

Project Name: Headworks Building Miscellaneous Improvements

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '33/'34

Project Status: Long Term Planning



Project Description: The project primarily involves the replacement of architectural components of the Headworks Building including doors, window, and roll-up doors. The project also involves the replacement of the inflow meters that were installed in 2009.

Project Need: This project is based on the exceedance of the anticipated life of the components involved in this project.

Key Issues: Conceptual analysis should include a condition assessment to verify the need for each of the project components.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Conceptual Study: | \$ 19,435 |
| Design: | \$ 38,870 |
| Construction: | \$ 388,700 |
| <u>Construction Support:</u> | <u>\$ 58,305</u> |
| Total Budget: | \$ 505,310 |

Capital Improvement Program – Project Description

Project No.: 15132
Project Name: Channel Lining
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '25/'26
Project Status: Long Term Planning

Project Description: The project involves the relining of the the overflow channel, the primary influent and effluent channels.

Project Need: This project is based both on the exceedance of the anticipated life of the lining and the observed condition of the lining systems.

Key Issues: An approach to construction sequencing needs to be developed to minimize the project impact on plant operations.

Estimated Project Amount (in 2019 \$):

| | | |
|------------------------------|-----------|---------------|
| Condition Assessment: | \$ | 53,492 |
| Design: | \$ | 33,433 |
| Construction: | \$ | 668,655 |
| <u>Construction Support:</u> | <u>\$</u> | <u>83,582</u> |
| Total Budget: | \$ | 839,162 |



Capital Improvement Program – Project Description

Project No.: 15133
Project Name: Operations Building Rehabilitation
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '26/'27
Project Status: Long Term Planning

Project Description: The project involves the replacement of architectural hardware at the Operations Building. The project involves the remodeling of the laboratory into office space.

Project Need: The proposed project is driven both by the expected life of the building components and the need to modify space utilization.

Key Issues: An evaluation of the utilization of both the Personnel Building and Operations Building is needed in order to implement this project.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|---------|
| Conceptual Study: | \$ | 36,530 |
| Design: | \$ | 73,060 |
| Construction: | \$ | 730,600 |
| Construction Support: | \$ | 91,325 |
| Total Budget: | \$ | 931,515 |



Capital Improvement Program – Project Description

Project No.: 15134
Project Name: Perimeter Fence Replacement
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '33/'34
Project Status: Long Term Planning

Project Description: The project involves the replacement of the perimeter fence around the entirety of the treatment plant.



Project Need: This project has been included in the Ten Year Plan based on the expected life of the fence.

Key Issues: Conceptual analysis needed due to the difficulty in access some of the areas where the perimeter fence has been installed. This project should be coordinated with OC Parks.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|---------|
| Conceptual Study: | \$ | 35,709 |
| Design: | \$ | 35,709 |
| Construction: | \$ | 749,894 |
| Construction Support: | \$ | 35,709 |
| Total Budget: | \$ | 857,021 |

Capital Improvement Program – Project Description

Project No.: 15135
Project Name: Blower Building Roof
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '33/'34
Project Status: Long Term Planning

Project Description: Project includes removal of the existing blower building roof and installation of new roof.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Note that the existing roof and skylights are showing no signs of deterioration. Condition of roof should be evaluated after completion of the aeration upgrade as part of the Facility Improvements Project.



Estimated Project Amount (in 2019 \$):

| | | |
|------------------------------|-----------|---------------|
| Design: | \$ | 12,237 |
| Construction: | \$ | 81,582 |
| <u>Construction Support:</u> | <u>\$</u> | <u>12,237</u> |
| Total Budget: | \$ | 106,056 |

'Capital Improvement Program – Project Description

Project No.: 15136
Project Name: Export Sludge Pumps
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '33/'34
Project Status: Long Term Planning

Project Description: Project includes removal of the existing pumps, installation of Export Sludge mixing pump and Export Sludge pumps, and modifications to the power and controls.

Project Need:
Project has been identified based on exceedance of life of key components.

Key Issues: The Export Sludge Equalization system was constructed in 2013. A second Export Sludge pump will be added in 2017. The need for this project should be evaluated in the future. Limited shutdown windows for replacement of pumps and electrical modifications.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 69,113 |
| Construction: | \$ 691,129 |
| <u>Construction Support:</u> | <u>\$ 86,391</u> |
| Total Budget: | \$ 846,633 |



'Capital Improvement Program – Project Description

Project No.: 15137

Project Name: Foul Air System Condition Assessment

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '20/'21

Project Status: Short Term Planning

Project Description: Project includes condition assessment of the odor scrubber, fans and ducts, and the condition of the slab.

Project Need:
Project has been identified based on exceedance of life of key components.

Key Issues: The foul air system was installed in 2001, therefore approaching nominal useful life of 20 years.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 75,000 |
| Total Budget: | \$ | 75,000 |

'Capital Improvement Program – Project Description

Project No.: 15138
Project Name: Scum Pump Station Condition Assessment
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '20/'21
Project Status: Short Term Planning

Project Description: Project includes condition assessment of the scum pump station including the mechanical, electrical and instrumentation, and safety access around the pumps.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: The scum wet well, mechanical and electrical were installed in 1983, the pumps were installed in 2001, which might exceed the nominal useful life.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 50,000 |
| Total Budget: | \$ | 50,000 |

'Capital Improvement Program – Project Description

Project No.: 15139
Project Name: Buried Utility Master Plan
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '20/'21
Project Status: Short Term Planning

Project Description: Project includes developing a master plan including a map to show all the buried utility. The master plan would help to prioritize the improvements and identify design packages.

Project Need:
Project has been identified based on exceedance of life of key components.

Key Issues: Prior to investing large capital funding in underground piping replacement, a buried utility master plan should be developed.

Estimated Project Amount (in 2019 \$):
Conceptual Study: \$ 75,000
Total Budget: \$ 75,000

'Capital Improvement Program – Project Description

Project No.: 15141
Project Name: Headworks Condition Assessment
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '21/'22
Project Status: Short Term Planning

Project Description: Project includes condition assessment of the Headworks system including the screens, unloading facility and classifiers.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: The headworks system installed in 1982, therefore might approach the nominal useful life.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 95,000 |
| Total Budget: | \$ | 95,000 |

'Capital Improvement Program – Project Description

Project No.: 15142

Project Name: Spatial Utilization Analysis

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '21/'22

Project Status: Short Term Planning

Project Description: Project includes conceptual study of the spatial utilization

Project Need: Project has been identified based on potential to utilize the space at CTP more efficiently

Key Issues: Prior to renovation of the Operations Building, a spatial utilization study would help to identify the needs for improvements.

Estimated Project Amount (in 2019 \$):

| | | |
|-------------------|----|--------|
| Conceptual Study: | \$ | 75,000 |
| Total Budget: | \$ | 75,000 |

'Capital Improvement Program – Project Description

Project No.: 15143

Project Name: RAS/WAS Pump Station Condition Assessment

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '22/'23

Project Status: Short Term Planning

Project Description: Project includes condition assessment of the RAS/WAS Pump Station

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: The RAS/WAS Pump Station was constructed in 1983, mechanical, electrical and structural components might be reaching the nominal useful life.

Estimated Project Amount (in 2019 \$):

Conceptual Study: \$ 75,000

Total Budget: \$ 75,000

'Capital Improvement Program – Project Description

Project No.: 15144
Project Name: Standby Power Condition Assessment
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '23/'24
Project Status: Short Term Planning

Project Description: Project includes condition assessment of the standby power system including load sizing, load shedding and on-site fuel storage.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: The standby power system was installed in 1982, mechanical, electrical and structural components might be reaching the nominal useful life.

Estimated Project Amount (in 2019 \$):

| | |
|-------------------|-----------|
| Conceptual Study: | \$ 65,000 |
| Total Budget: | \$ 65,000 |

'Capital Improvement Program – Project Description

Project No.: 15145

Project Name: Export Sludge System Condition Assessment

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '26/'27

Project Status: Long Term Planning

Project Description: Project includes condition assessment of the Export Sludge System including the Export Sludge pumps, grinders and the Export Sludge Equalization Basin.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: The Export Sludge System was installed in 2012, and components might exceed the nominal useful life.

Estimated Project Amount (in 2019 \$):

| | | |
|-------------------|----|--------|
| Conceptual Study: | \$ | 85,000 |
| Total Budget: | \$ | 85,000 |

'Capital Improvement Program – Project Description

Project No.: 15146

Project Name: Primary Sedimentation System Condition Assessment

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '28/'29

Project Status: Long Term Planning

Project Description: Project includes condition assessment of the primary sedimentation system including covers, launders, sludge collection system and coating.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: The primary sedimentation system was installed in 2012, and components might exceed the nominal useful life.

Estimated Project Amount (in 2019 \$):

Conceptual Study: \$ 65,000

Total Budget: \$ 65,000

'Capital Improvement Program – Project Description

Project No.: 15147

Project Name: Pavement and Surface Drainage Master Plan

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '24/'25

Project Status: LongTerm Planning

Project Description: Project includes conceptual study of the pavement and surface drainage system.

Project Need: Project has been identified based on the need to correct localized drainage issues.

Key Issues: Localized drainage issues should be correct to allow proper drainage during storm events.

Estimated Project Amount (in 2019 \$):

Conceptual Study: \$ 75,000

Total Budget: \$ 75,000

'Capital Improvement Program – Project Description

Project No.: 15148
Project Name: Instrumentation Master Plan
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '25/'26
Project Status: Long Term Planning

Project Description: Project includes conceptual study of the instrumentation system including assessments of the PLC, PLC cabinets and PLC technology.

Project Need: Project has been identified based on the need to implement newer technology and potential for cost and energy savings on the instrumentation system.

Key Issues: Aging PLC, cabinets and instruments.

Estimated Project Amount (in 2019 \$):

| | | |
|-------------------|----|--------|
| Conceptual Study: | \$ | 75,000 |
| Total Budget: | \$ | 75,000 |

'Capital Improvement Program – Project Description

Project No.: 15149
Project Name: Site Storage Evaluation
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '20/'21
Project Status: Short Term Planning

Project Description: Project includes conceptual study of the site storage evaluation to identify if the current storage meets the function and capacity.

Project Need: Project has been identified to determine if the current storage meets the Operation's needs.

Key Issues: With all the project implementations, site storage functions might change or expand.

Estimated Project Amount (in 2019 \$):

| | | |
|-------------------|----|--------|
| Conceptual Study: | \$ | 50,000 |
| Total Budget: | \$ | 50,000 |

Capital Improvement Program – Project Description

Project No.: 15150
Project Name: Washer/Compactor System
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '29/'30
Project Status: Long Term Planning



Project Description: Project includes installation of a washer/compactor system at the Headworks Building.

Project Need: Project has been identified based on providing operation an easier and cleaner way to handle the sludge.

Key Issues: Keeping the existing system running while installing the new system. In addition, space could be a potential issue.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|---------|
| Design: | \$ | 33,680 |
| Construction: | \$ | 336,804 |
| Construction Support: | \$ | 42,100 |
| Total Budget: | \$ | 412,585 |

Capital Improvement Program – Project Description

Project No.: 15713
Project Name: North Section Embankment Project
Facility: Coastal Treatment Plant
Cost Center: PC 15
Anticipated Fiscal Year: '24/'25
Project Status: Long Term Planning

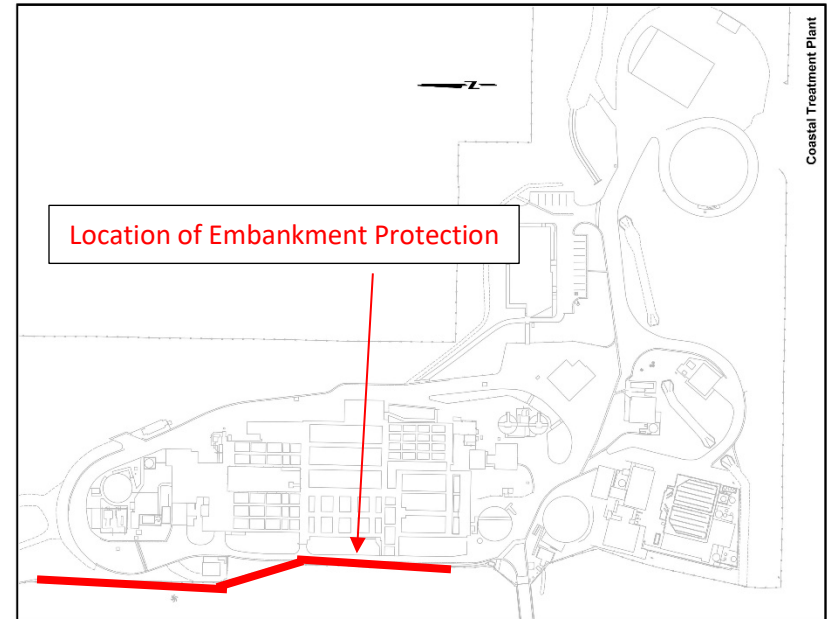
Project Description: Project involves installation of gabions for select sections between the north property line of the plant and the access bridge.

Project Need: The completion of the County's arrundo removal project in 2014 revealed the very sharp drop in the embankment slope from the west plant access road to Aliso Creek. This area has not been subject to the same degree of erosion as the area to the south of the access bridge. However, the area remains vulnerable to future erosion.

Key Issues: This project requires further evaluation regarding both need and scope. The cost estimate for the proposed project was based on extrapolation of the TetraTech work for the south section embankment.

Estimated Project Amount (in 2019 \$):

| | | |
|-----------------------|----|---------|
| Permitting | \$ | 97,780 |
| Design: | \$ | 65,187 |
| Construction: | \$ | 651,869 |
| Construction Support: | \$ | 114,077 |
| Total Budget: | \$ | 928,913 |



Capital Improvement Program – Project Description

Project No.: 15714

Project Name: Aliso Sulfur Creek Confluence Protection

Facility: Coastal Treatment Plant

Cost Center: PC 15

Anticipated Fiscal Year: '26/'27

Project Status: Long Term Planning

Project Description: Project involves protection of existing channel geometry against erosion by providing milder invert slope, reducing flow velocity, and combination of fill and riprap along banks to stabilize the confluence of Sulphur and Aliso Creeks.

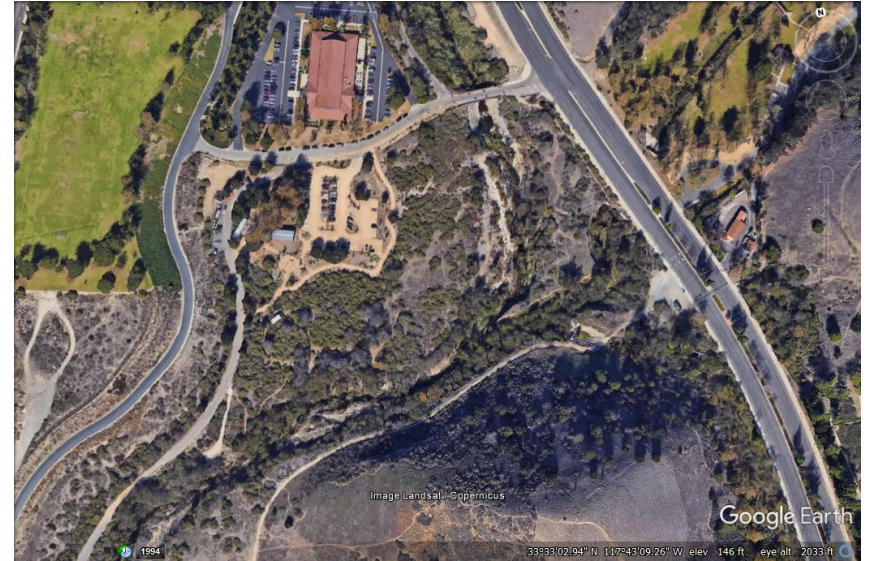
Project Need: The steep existing banks appeared to lack stability and are likely to be subjected to slope failure if no remediation or improvement is provided. Stabilization is needed in order to protect the existing banks and overbank facilities including roadway, underground utilities, and culturally sensitive area against potential future erosion and bank failure.

Key Issues: This project requires further evaluation regarding both need and scope. The cost estimate for the proposed project was based on extrapolation of the TetraTech conceptual study for the stabilization of confluence of Sulphur and Aliso Creeks.

Note that the cost below represents 50% of the project cost; the remaining 50% would be allocated to Project Committee 21 Reach E.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|-------------------|
| Permitting | \$ 138,582 |
| Design: | \$ 92,388 |
| Construction: | \$ 923,882 |
| <u>Construction Support:</u> | <u>\$ 138,582</u> |
| Total Budget: | \$ 1,293,434 |



Capital Improvement Program – Project Description

Project No.: 15812
Project Name: AWT Filter Upgrade
Facility: Coastal Treatment Plant
Cost Center: PC 15 AWT
Anticipated Fiscal Year: '29/'30
Project Status: Long Term Planning

Project Description: Project includes replacement of the filter sand media and the filter valves (influent, effluent, backwash and backwash waste). Project also involves the repair and recoating of corrosion areas on the meta vessel if needed.

Project Need: The filters were last upgraded in 2019. The filter media is scheduled for replacement every 10 years.

Key Issues: The scheduling of the project needs to be arranged to minimize needed AWT production.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 43,307 |
| Construction: | \$ 433,075 |
| <u>Construction Support:</u> | <u>\$ 64,961</u> |
| Total Budget: | \$ 541,343 |



Capital Improvement Program – Project Description

Project No.: 15813
Project Name: AWT Building Modifications
Facility: Coastal Treatment Plant
Cost Center: PC 15 AWT
Anticipated Fiscal Year: '24/'25
Project Status: Long Term Planning

Project Description: Project includes removal of existing AWT building roof, door and frame replacement and AWT building roof replacement.

Project Need: Building doors have already shown the sign of deterioration. Project has been identified based on exceedance of life of key components.

Key Issues: The space utilization of the building should be considered before beginning this work. It may be desirable to expand the electrical room into the existing process room. Timing of project should be scheduled to minimize downtime of AWT operation.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 17,470 |
| Construction: | \$ 174,703 |
| <u>Construction Support:</u> | <u>\$ 26,205</u> |
| Total Budget: | \$ 218,378 |



Capital Improvement Program – Project Description

Project No.: 15815
Project Name: Effluent Equalization Basin Valve Replacement
Facility: Coastal Treatment Plant
Cost Center: PC 15 AWT
Anticipated Fiscal Year: '26/'27
Project Status: Long Term Planning

Project Description: This project would involve the replacement of three underground and one above ground valve that are used to isolate flow to and from the Effluent Equalization Basin.



Project Need: There is very little available documentation regarding the existing valves. Some of the valves date to the mid 1980's; some valves were installed at an earlier date. The as-built documentation is very poor.

Key Issues: This project would involve a complicated scheme to bypass effluent flow while the work is being performed. A conceptual analysis should be performed as early as possible to confirm scope and cost.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Conceptual Study: | \$ 60,000 |
| Design: | \$ 60,000 |
| Construction: | \$ 681,000 |
| <u>Construction Support:</u> | <u>\$ 90,000</u> |
| Total Budget: | \$ 810,000 |

Capital Improvement Program – Project Description

Project No.: 15816

Project Name: AWT Sodium Hypochlorite Pumps Replacement

Facility: Coastal Treatment Plant

Cost Center: PC 15 AWT

Anticipated Fiscal Year: '33/'34

Project Status: Long Term Planning

Project Description: Project includes removal of the existing AWT Hypochlorite pumps and install new Hypochlorite pumps.

Project Need: New chemical feed pumps have been recently installed. The experience at SOCWA facilities is that a Sodium Hypochlorite pump has a life of approximately 15 years.

Key Issues: Chemical feed pump technology is evolving, the type of pump for replacement should be reviewed in the future. The goal of the replacement is to keep the AWT running during the replacement.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 10,863 |
| Construction: | \$ 217,249 |
| <u>Construction Support:</u> | <u>\$ 32,588</u> |
| Total Budget: | \$ 260,700 |



Capital Improvement Program – Project Description

Project No.: 15817
Project Name: AWT Instrumentation
Facility: Coastal Treatment Plant
Cost Center: PC 15 AWT
Anticipated Fiscal Year: '26/'27
Project Status: Long Term Planning

Project Description: Project includes replacement of three chlorine residual analyzers, two turbidimeters and three level sensors associated with AWT system. The project also includes the replacement of the backwash control valve and meter.



Project Need: This project has been identified as the equipment will have reached the end of its' anticipated lives.

Key Issues: Water quality instrumentation has undergone significant evolutions in recent years. This equipment should be researched with the SOCWA Operations and Environmental Compliance Departments prior to finalizing the scope and cost for this project.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 18,886 |
| Construction: | \$ 377,714 |
| <u>Construction Support:</u> | <u>\$ 56,658</u> |
| Total Budget: | \$ 453,258 |

Capital Improvement Program – Project Description

Project No.: 15818
Project Name: Contact Basin Gates Replacement
Facility: Coastal Treatment Plant
Cost Center: PC 15 AWT
Anticipated Fiscal Year: '21/'22
Project Status: Short Term Planning

Project Description: Each contact basin has two sluice gates and two drain gates. Project includes replacement of the contact basins sluice gates and drain gates.

Project Need: Project has been identified based on exceedance of life of key components. The guiderails for the slide gates are showing signs of corrosion.

Key Issues: Construction work should be planned during winter months when one chlorine contact basin can be taken out of service at a time due to low AWT demand.

Estimated Project Amount (in 2019 \$):

| | |
|------------------------------|------------------|
| Design: | \$ 17,632 |
| Construction: | \$ 176,325 |
| <u>Construction Support:</u> | <u>\$ 26,448</u> |
| Total Budget: | \$ 220,405 |



Capital Improvement Program – Project Description

Project No.: 15819
Project Name: AWT Support Equipment Replacement
Facility: Coastal Treatment Plant
Cost Center: PC 15 AWT
Anticipated Fiscal Year: '29/'30
Project Status: Long Term Planning



Project Description: Project includes removal of the existing AWT flocculators, installation of new flocculators, chem clean system, mechanical system, and chlorine mixers.

Project Need: Project has been identified based on exceedance of life of key components.

Key Issues: Note that Operations staff has not typically operated flocculators. This system is maintained to comply with the Operating permit. Timing of project should be scheduled to minimize downtime of AWT operation.

Estimated Project Amount (in 2019 \$):

| | |
|-----------------------|------------|
| Design: | \$ 60,691 |
| Construction: | \$ 606,905 |
| Construction Support: | \$ 91,036 |
| Total Budget: | \$ 758,631 |

Capital Improvement Program – Project Description

Project No.: 15821
Project Name: AWT Buried Piping Replacement
Facility: Coastal Treatment Plant
Cost Center: PC 15 AWT
Anticipated Fiscal Year: '29/'30
Project Status: Long Term Planning

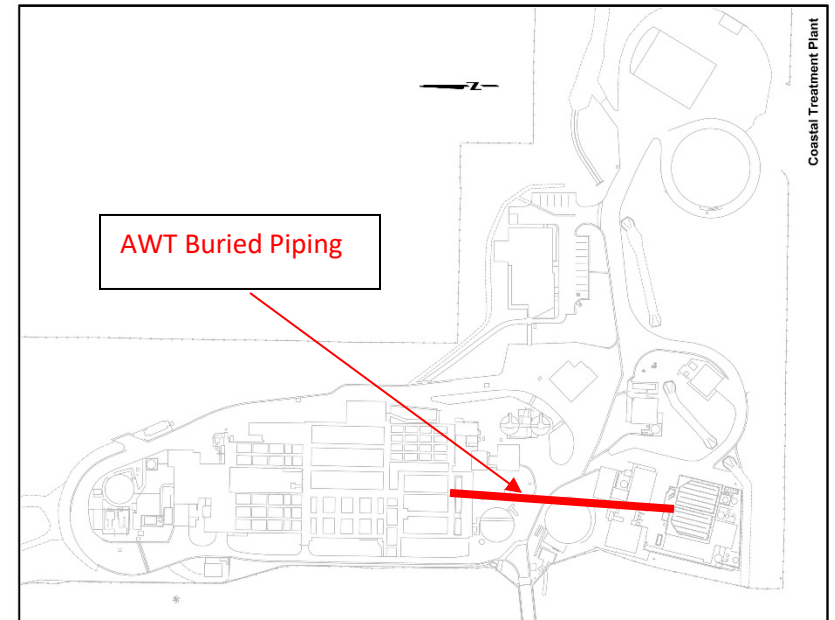
Project Description: Project includes site work and replacement of effluent, backwash waste, reclaimed, non-potable, filter supply, tertiary effluent and drain piping. Note that this project does not include replacement of the pipe from the recycled water pumps to the SCWD reclaimed water storage tank.

Project Need: No problems have been identified with the existing buried piping. The life of the key piping components will not be exceeded during the 15-year span of this edition of the Ten Year Plan. The replacement of piping has been included based on buried piping failure at other SOCWA facilities.

Key Issues: Identify pipe routing and sequencing to minimize AWT downtime.

Estimated Project Amount (in 2019 \$):

| | |
|-----------------------|---------------------|
| Design: | \$ 82,488 |
| Construction: | \$ 824,856 |
| Construction Support: | \$ 103,130 |
| Total Budget: | \$ 1,010,474 |



Appendix H
Coastal Treatment Plant Proposed Project Cost Tables

Coastal Treatment Plant

Project Number 15101

Grit Handling Upgrade

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate May-17
Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | | | | |
|---|--|-------|----|----|--------|----|---------|-----|--------|----------|---------|---------|
| Total Construction Cost ¹ | Demolition of Existing Pump | 1 | LS | | \$ | - | | \$ | 10,000 | \$ | 10,000 | |
| | Installation of Grit Pump | 3 | LS | \$ | 22,000 | \$ | 66,000 | 25% | \$ | 16,500 | \$ | 82,500 |
| | Demolition of Existing Grit Classifier | 1 | LS | | \$ | - | | \$ | 10,000 | \$ | 10,000 | |
| | Installation of Grit Classifier | 3 | LS | \$ | 60,000 | \$ | 180,000 | 25% | \$ | 45,000 | \$ | 225,000 |
| | Misc. Piping and Valves | 1 | LS | | | | | | | \$ | 50,000 | |
| Subtotal | | | | | | | | | | \$ | 377,500 | |
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | | | \$ | 101,925 | |
| Shipping Rate | | 0% | | | | | | | | included | | |
| Sale Tax | | 8.00% | | | | | | | | \$ | 19,680 | |
| Project Contingency@ | | 30% | | | | | | | | \$ | 149,732 | |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | |
|-------------------|--------------|--|----|---------|
| Original Estimate | 2019 Dollars | | \$ | 648,837 |
| Current Estimate | 2019 Dollars | | \$ | 648,837 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 64,884 | 0% | \$ - | \$ 64,884 |
| Engr. During Construction | 7.5% | \$ 48,663 | 0% | \$ - | \$ 48,663 |
| Construction Mgt. | 5.0% | \$ 32,442 | 0% | \$ - | \$ 32,442 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars)

| | | |
|--|----|---------|
| | \$ | 794,825 |
|--|----|---------|

Notes:

- 1 Cost estimate provided by Hazen & Sawyer

\$ 81,105

Coastal Treatment Plant
Project Number 15102

Odor Control System Replacement
Main Project Type

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--------------------------------------|-------------------------------|---|----|------------|------------|------|------------|------------|
| Total Construction Cost ¹ | Odor Control System | 1 | LS | \$ 515,000 | \$ 515,000 | - | \$ 232,500 | \$ 747,500 |
| | Booster Fans and Ductwork | 1 | LS | \$ 425,750 | \$ 425,750 | - | \$ 195,375 | \$ 621,125 |
| | Supply Air System | 1 | LS | \$ 38,000 | \$ 38,000 | - | \$ 19,000 | \$ 57,000 |
| | Demolition of Structural Pad | 1 | LS | \$ - | \$ - | - | - | \$ 20,000 |
| | Temporary Odor Control System | 1 | LS | \$ - | \$ - | - | - | \$ 75,000 |
| | Structural Pad | 1 | LS | \$ 20,000 | \$ 20,000 | 25% | \$ 5,000 | \$ 25,000 |
| | Coating of Structural Pad | 1 | LS | \$ 10,000 | \$ 10,000 | 50% | \$ 5,000 | \$ 15,000 |
| | Power Supply | 1 | LS | \$ 15,000 | \$ 15,000 | 50% | \$ 7,500 | \$ 22,500 |
| | Instrumentation Connection | 1 | LS | \$ 5,000 | \$ 5,000 | 100% | \$ 5,000 | \$ 10,000 |
| | | | | \$ - | \$ - | | \$ - | \$ - |

Subtotal

 General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 430,144

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 82,300

Project Contingency@

25%

\$ 526,392

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2019 Dollars | \$ 2,631,961 |
| Current Estimate | 2019 Dollars | \$ 2,631,961 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 2.5% | \$ 65,799 | 0% | \$ - | \$ 65,799 |
| Design | 10.0% | \$ 263,196 | 0% | \$ - | \$ 263,196 |
| Engr. During Construction | 5.0% | \$ 131,598 | 0% | \$ - | \$ 131,598 |
| Construction Mgt. | 5.0% | \$ 131,598 | 0% | \$ - | \$ 131,598 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

| | |
|---|---------------------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ 3,224,152 |
|---|---------------------|

Notes:

- 1 Odor Control System, Booster Fans and Supply Air System Based on DHK Engineers evaluation (4/17)

Coastal Treatment Plant**Project Number**

15103

Auxiliary Blower and Maint Building Roofs**Main Project Type****Key Dates**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

X

X

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|---|----------|-------|---------------|-----------|------------|-----------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ¹ | | | | | | | | |
| | Remove Aux Blower Building Existing Roof System | 1 | LS | | | | \$ 5,805 | \$ 5,805 |
| | Hazardous Material Removal | 1 | LS | | | | \$ 16,850 | \$ 16,850 |
| | Original Blower Building Roof Replacement | 1 | LS | \$ 23,000 | \$ 23,000 | 25% | \$ 5,750 | \$ 28,750 |
| | Remove Maintenance Building Roof System | 1 | LS | | \$ - | | \$ 3,200 | \$ 3,200 |
| | Hazardous Material Removal | 1 | LS | | \$ - | | \$ 12,700 | \$ 12,700 |
| | Maintenance Building Roof Placement | 1 | LS | \$ 5,600 | \$ 5,600 | 25% | \$ 1,400 | \$ 7,000 |
| Subtotal | | | | | | | | \$ 74,305 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | | 27% | | | | | \$ 20,062 |
| Shipping Rate | | | 0% | | | | | included |
| Sale Tax | | | 8.00% | | | | | \$ 2,288 |
| Project Contingency@ | | | 30% | | | | | \$ 28,997 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | 2019 Dollars | | | | | | | \$ 125,652 |
| Updated Estimate | 2019 Dollars | | | | | | | \$ 125,652 |

| Project Phases Cost | | Rate | Amount | Contingency | | Subtotal | | Total |
|---|--|-------|-----------|-------------|------|----------|--|-------------------|
| Condition Assessment | | 0.0% | \$ - | 0% | \$ - | \$ - | | |
| Conceptual Study | | 0.0% | \$ - | 0% | \$ - | \$ - | | |
| Design | | 15.0% | \$ 18,848 | 0% | \$ - | \$ - | | \$ 18,848 |
| Engr. During Construction | | 5.0% | \$ 6,283 | 0% | \$ - | \$ - | | \$ 6,283 |
| Construction Mgt. | | 5.0% | \$ 6,283 | 0% | \$ - | \$ - | | \$ 6,283 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | \$ 157,065 |

Notes:

- 1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant
Project Number

15104

DAF System Rehabilitation
Main Project Type

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | Material Cost | Labor Cost | Total Cost |
|-------------------|----------|---------------|------------|------------|
| | No. | Units | Unit Cost | Total |
| | | | % of Mat'l | Total |

Project Task Elements

| | | | | | | | | | | | | |
|-------------------------|---|---|----|----|---------|----|---------|-----|----|--------|----|---------|
| Total Construction Cost | DAFT Structural ¹ | 1 | LS | \$ | 165,000 | \$ | 165,000 | 25% | \$ | 41,250 | \$ | 206,250 |
| | DAFT Collector Recoating ² | 1 | LS | | | \$ | - | | \$ | - | \$ | 150,000 |
| | DAFT Compressor and Piping ¹ | 1 | LS | \$ | 11,000 | \$ | 11,000 | 25% | \$ | 2,750 | \$ | 13,750 |
| | DAFT Dissolution Tank ¹ | 1 | LS | \$ | 29,000 | \$ | 29,000 | 25% | \$ | 7,250 | \$ | 36,250 |
| | DAFT TWAS Pumps ¹ | 1 | LS | \$ | 35,000 | \$ | 34,000 | 25% | \$ | 8,500 | \$ | 42,500 |
| | DAFT Recirculation Pumps ¹ | 1 | LS | \$ | 52,500 | \$ | 52,500 | 25% | \$ | 13,125 | \$ | 65,625 |
| | DAFT Drain Pump ¹ | 1 | LS | \$ | 25,000 | \$ | 25,000 | 25% | \$ | 6,250 | \$ | 31,250 |
| | DAFT Piping | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 75,000 |
| | DAFT Flow Meter ¹ | 1 | LS | \$ | 9,500 | \$ | 9,500 | 25% | \$ | 2,375 | \$ | 11,875 |
| | TWAS Flow Meter ¹ | 1 | LS | \$ | 7,000 | \$ | 7,000 | 25% | \$ | 1,750 | \$ | 8,750 |
| | DAFT Electrical | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 50,000 |

Subtotal

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 186,638

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 26,640

Project Contingency@

25%

\$ 226,132

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2019 Dollars | \$ | 1,130,659 |
| Updated Estimate | 2019 Dollars | \$ | 1,130,659 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 5.0% | \$ 56,533 | 0% | \$ - | \$ 56,533 |
| Engr. During Construction | 5.0% | \$ 56,533 | 0% | \$ - | \$ 56,533 |
| Construction Mgt. | 5.0% | \$ 56,533 | 0% | \$ - | \$ 56,533 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 1,300,258 |

Notes:

- 1 Cost estimate provided by Hazen & Sawyer
- 2 Cost estimate based on recoating of DAF collector mechanisms at RTP in 2015.

Coastal Treatment Plant**Project Number** 15105**Headworks Rotary Screen Drum Replacement****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-------------------------------|---|----|------------|------------|------|-----------|------------|
| Total Construction Cost | Drum Replacement ¹ | 3 | EA | \$ 58,236 | \$ 174,708 | 25% | \$ 43,677 | \$ 218,385 |
| | Miscellaneous Piping /Valves | 1 | LS | \$ 25,000 | \$ 25,000 | 25% | \$ 6,250 | \$ 31,250 |
| | Miscellaneous Structural Rep. | 1 | LS | \$ 5,000 | \$ 5,000 | 100% | \$ 5,000 | \$ 10,000 |
| | Miscellaneous Electrical | 1 | LS | \$ 10,000 | \$ 10,000 | 25% | \$ 2,500 | \$ 12,500 |
| | Level Instrumentation | 3 | EA | \$ 5,000 | \$ 15,000 | 25% | \$ 3,750 | \$ 18,750 |
| | | | | \$ 229,708 | | | | |

Subtotal

\$ 290,885

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 78,539

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 18,377

Project Contingency@

30%

\$ 116,340

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 504,141 |
| Current Estimate | 2019 Dollars | \$ 504,141 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 50,414 | 0% | \$ - | \$ 50,414 |
| Engr. During Construction | 10.0% | \$ 50,414 | 0% | \$ - | \$ 50,414 |
| Construction Mgt. | 5.0% | \$ 25,207 | 0% | \$ - | \$ 25,207 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars) \$ 630,176**Notes:**

- 1 Drum replacement cost based on estimate provided by the Coombs Hopkins Company

Coastal Treatment Plant**Project Number** 15106**DAF Polymer System & DAF Bldg Repair****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost¹

DAFT Polymer Storage Tank and Mixer
 DAFT Polymer Metering and Transfer Pump
 DAFT Polymer Piping and Valves
 DAF Polymer Bldg Doors (3)
 DAF Polymer Bldg Mechanical
 DAFT Polymer Electrical

| | | | | | | |
|---|----|-----------|-----------|-----|----------|------------|
| 1 | LS | \$ 30,000 | \$ 30,000 | 25% | \$ 7,500 | \$ 37,500 |
| 1 | LS | \$ 10,000 | \$ 10,000 | 25% | \$ 2,500 | \$ 12,500 |
| 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 75,000 |
| 1 | LS | - | - | - | - | \$ 30,000 |
| 1 | LS | - | - | - | - | \$ 30,000 |
| 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 7,500 |
| | | | | | | \$ 192,500 |

Subtotal

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 51,975

Shipping Rate

0% included

Sale Tax

8.00% \$ 3,200

Project Contingency@

30% \$ 74,303

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 321,978 |
| Updated Estimate | 2019 Dollars | \$ 321,978 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 32,198 | 0% | \$ - | \$ 32,198 |
| Engr. During Construction | 10.0% | \$ 32,198 | 0% | \$ - | \$ 32,198 |
| Construction Mgt. | 5.0% | \$ 16,099 | 0% | \$ - | \$ 16,099 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 402,472 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15108**Scum Pump Station and Wetwell****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--------------------------------------|----------------------|---|----|-----------|-----------|-----|----------|------------|
| Total Construction Cost ¹ | Scum Wetwell | 1 | LS | \$ 22,000 | \$ 22,000 | 25% | \$ 5,500 | \$ 27,500 |
| | Scum Pump | 1 | LS | \$ 15,000 | \$ 15,000 | 25% | \$ 3,750 | \$ 18,750 |
| | Scum Mechanical | 1 | LS | \$ 21,000 | \$ 21,000 | 25% | \$ 5,250 | \$ 26,250 |
| | Scum Electrical | 1 | LS | \$ 2,800 | \$ 2,800 | 25% | \$ 700 | \$ 3,500 |
| | Miscellaneous Repair | 1 | LS | | \$ - | | \$ - | \$ 50,000 |
| Subtotal | | | | | | | | \$ 126,000 |

SubtotalGeneral Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 34,020

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 4,864

Project Contingency@

30%

\$ 49,465

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 214,349 |
| Updated Estimate | 2019 Dollars | \$ 214,349 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 21,435 | 0% | \$ - | \$ 21,435 |
| Engr. During Construction | 10.0% | \$ 21,435 | 0% | \$ - | \$ 21,435 |
| Construction Mgt. | 5.0% | \$ 10,717 | 0% | \$ - | \$ 10,717 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 267,937 |

Notes:

- 1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15110**Potable Water Pump Station****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| X |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Const. Year

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost¹ Potable PS Relocated 1 LS - - - - \$ 350,000

\$ - \$ - \$ -

Subtotal

\$ 350,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

30%

\$ 105,000.00

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$ 455,000.00

Current Estimate 2019 Dollars \$ 455,000

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Permitting | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 5.0% | \$ 22,750 | 0% | \$ - | \$ 22,750 |
| Design | 10.0% | \$ 45,500 | 0% | \$ - | \$ 45,500 |
| Engr. During Construction | 10.0% | \$ 45,500 | 0% | \$ - | \$ 45,500 |
| Construction Mgt. | 5.0% | \$ 22,750 | 0% | \$ - | \$ 22,750 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars) \$ 591,500

Notes:

1 Cost Estimate Developed by TetraTech

Coastal Treatment Plant**Project Number** 15111**Non-Potable Water Pump Station****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | X |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost¹ Non-Potable PS 1 LS - - - - \$ 200,000

\$ - \$ - \$ -

Subtotal

\$ 200,000

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

30%

60,000

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars 260,000

Current Estimate 2019 Dollars \$ 260,000

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Permitting | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 5.0% | \$ 13,000 | 0% | \$ - | \$ 13,000 |
| Design | 8.0% | \$ 20,800 | 0% | \$ - | \$ 20,800 |
| Engr. During Construction | 10.0% | \$ 26,000 | 0% | \$ - | \$ 26,000 |
| Construction Mgt. | 5.0% | \$ 13,000 | 0% | \$ - | \$ 13,000 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars) \$ 332,800

Notes:

1 Cost Estimate Developed by TetraTech

Coastal Treatment Plant**Project Number** 15112**West Primary Sedimentation System Upgrade****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | |
|---|---|--------------|-------|---------------|------------|------------|-----------|------------|--|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | |
| Project Task Elements | | | | | | | | | |
| Total Construction Cost ¹ | Primary Clarifier Sludge Collector (Chain and Flight) | 1 | LS | \$ 200,000 | \$ 200,000 | 25% | \$ 50,000 | \$ 250,000 | |
| | Primary Clarifier Scum Collector and Drive | 1 | LS | \$ 140,000 | \$ 140,000 | 25% | \$ 35,000 | \$ 175,000 | |
| | Primary Clarifier Weir | 1 | LS | \$ 41,000 | \$ 41,000 | 25% | \$ 10,250 | \$ 51,250 | |
| | Primary Clarifier Electrical | 1 | LS | \$ 7,500 | \$ 7,500 | 25% | \$ 1,875 | \$ 9,375 | |
| Subtotal | | | | | | | | \$ 485,625 | |
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 131,119 | |
| Shipping Rate | | 0% | | | | | | included | |
| Sale Tax | | 8.00% | | | | | | \$ 31,080 | |
| Project Contingency@ | | 30% | | | | | | \$ 194,347 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 842,171 | |
| Current Estimate | | 2019 Dollars | | | | | | \$ 842,171 | |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | |
| Design | 10.0% | \$ 84,217 | 0% \$ - | \$ - | \$ 84,217 |
| Engr. During Construction | 7.5% | \$ 63,163 | 0% \$ - | \$ - | \$ 63,163 |
| Construction Mgt. | 5.0% | \$ 42,109 | 0% \$ - | \$ - | \$ 42,109 |
| Total Project Contingency | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 1,031,659 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15113**Pave Road System****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost¹

Asphalt Pavement

1

LS

\$

-

\$

-

\$ 75,000

Subtotal

\$ 75,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

included

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 22,500

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate

2019 Dollars

\$ 97,500

Current Estimate

2019 Dollars

\$ 97,500

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|--|-------|--------|-------|-------------|----|----------|------|-------------------|
| Condition Assessment | | 10.0% | \$ | 9,750 | 0% | \$ | - | \$ - | \$ 9,750 |
| Conceptual Study | | 0.0% | \$ | - | 0% | \$ | - | \$ - | \$ - |
| Design | | 10.0% | \$ | 9,750 | 0% | \$ | - | \$ - | \$ 9,750 |
| Engr. During Construction | | 10.0% | \$ | 9,750 | 0% | \$ | - | \$ - | \$ 9,750 |
| Construction Mgt. | | 5.0% | \$ | 4,875 | 0% | \$ | - | \$ - | \$ 4,875 |
| Total Project Contingency | | 0.0% | \$ | - | 0% | \$ | - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 131,625 |

Notes:

1 Cost estimate derived from 2003 Study by TetraTech.

Coastal Treatment Plant**Project Number** 15114**East Primary Sedimentation System Upgrade****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | |
|---|---|--------------|-------|---------------|------------|------------|-----------|------------|--|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | |
| Project Task Elements | | | | | | | | | |
| Total Construction Cost ¹ | Primary Clarifier Sludge Collector (Chain and Flight) | 1 | LS | \$ 130,000 | \$ 130,000 | 25% | \$ 32,500 | \$ 162,500 | |
| | Primary Clarifier Scum Collector and Drive | 1 | LS | \$ 92,000 | \$ 92,000 | 25% | \$ 23,000 | \$ 115,000 | |
| | Primary Clarifier Weir | 1 | LS | \$ 28,000 | \$ 28,000 | 25% | \$ 7,000 | \$ 35,000 | |
| | Primary Clarifier Electrical | 1 | LS | \$ 5,000 | \$ 5,000 | 25% | \$ 1,250 | \$ 6,250 | |
| Subtotal | | | | | | | | \$ 318,750 | |
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 86,063 | |
| Shipping Rate | | 0% | | | | | | included | |
| Sale Tax | | 8.00% | | | | | | \$ 20,400 | |
| Project Contingency@ | | 30% | | | | | | \$ 127,564 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 552,776 | |
| Current Estimate | | 2019 Dollars | | | | | | \$ 552,776 | |

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|---------------------------|-------|--------|--------|-------------|----|----------|----|------------|
| | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| | Design | 10.0% | \$ | 55,278 | 0% | \$ | - | \$ | - |
| | Engr. During Construction | 7.5% | \$ | 41,458 | 0% | \$ | - | \$ | - |
| | Construction Mgt. | 5.0% | \$ | 27,639 | 0% | \$ | - | \$ | - |
| | Total Project Contingency | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 677,151 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15115**RAS and WAS Pump Stations****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | |
|---|---|----|--|--|--|--|--------------|
| Construction of RAS Pump Station ¹ | 1 | LS | | | | | \$ 800,000 |
| Replacement of Doors (2) ² | 1 | LS | | | | | \$ 21,000 |
| Replacement of Monorail Crane | 1 | LS | | | | | \$ 50,000 |
| Construction of WAS Pump Station ¹ | 1 | LS | | | | | \$ 700,000 |
| Subtotal | | | | | | | \$ 1,571,000 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ 314,200

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2019 Dollars | \$ 1,885,200 |
| Current Estimate | 2019 Dollars | \$ 1,885,200 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|------------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 188,520 | 0% | \$ - | \$ 188,520 |
| Engr. During Construction | 5.0% | \$ 94,260 | 0% | \$ - | \$ 94,260 |
| Construction Mgt. | 5.0% | \$ 94,260 | 0% | \$ - | \$ 94,260 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 2,262,240 |

Notes:

1 Cost estimate provided by Tetra Tech

2 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant
Project Number 15116

Primary Sludge Pump System Design
Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | |
|---|--|--------------|-------|---------------|-------|------------|-------|------------|-----------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | |
| Project Task Elements | | | | | | | | | |
| Total Construction Cost ¹ | Demolition of Existing System | 1 | LS | | \$ | - | 25% | \$ 30,000 | \$ 30,000 |
| | East Primary Sludge Pump and Piping | 1 | LS | \$ 67,000 | \$ | 67,000 | 25% | \$ 16,750 | \$ 83,750 |
| | East Primary Sludge Removal Valve and Actuator | 1 | LS | \$ 72,000 | \$ | 72,000 | 25% | \$ 18,000 | \$ 90,000 |
| | East Primary Sludge Flow Meter | 1 | LS | \$ 7,000 | \$ | 7,000 | 25% | \$ 1,750 | \$ 8,750 |
| | West Primary Sludge Pump and Piping | 1 | LS | \$ 68,000 | \$ | 68,000 | 25% | \$ 17,000 | \$ 85,000 |
| | West Primary Sludge Removal Valve and Actuator | 1 | LS | \$ 50,000 | \$ | 50,000 | 25% | \$ 12,500 | \$ 62,500 |
| | West Primary Sludge Flow Meter | 1 | LS | \$ 9,500 | \$ | 9,500 | 25% | \$ 2,375 | \$ 11,875 |
| | Pumps Power and Controls | 1 | LS | \$ 45,000 | \$ | 45,000 | 25% | \$ 11,250 | \$ 56,250 |
| | | | | | | | | \$ | 428,125 |
| Subtotal | | | | | | | | | |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | | 0% | | | | | \$ | - |
| Shipping Rate | | | 0% | | | | | included | |
| Sale Tax | | | 0.00% | | | | | \$ | - |
| Project Contingency@ | | | 30% | | | | | \$ | 128,438 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ | 556,563 |
| Current Estimate | | 2019 Dollars | | | | | | \$ | 556,563 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 55,656 | 0% | \$ - | \$ 55,656 |
| Engr. During Construction | 7.5% | \$ 41,742 | 0% | \$ - | \$ 41,742 |
| Construction Mgt. | 5.0% | \$ 27,828 | 0% | \$ - | \$ 27,828 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 681,789 |

Notes:

1 Cost estimate came from CTP Primary Treatment Upgrade Phase I Bids (2009)

Coastal Treatment Plant**Project Number** 15117**SCADA System Upgrade****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| X |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost³ PLC's¹ 7 EA - - - - \$ 630,000

Fiber Optic System² 1 LS - - - - \$ 95,000

Subtotal

\$ 725,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

35% \$ 253,750

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$ 978,750

Current Estimate 2019 Dollars \$ 978,750

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|---------------------|
| Condition Assessment | 5.0% | \$ 48,938 | 0% \$ - | \$ - | \$ 48,938 |
| Conceptual Study | 5.0% | \$ 48,938 | 0% \$ - | \$ - | \$ 48,938 |
| Design | 10.0% | \$ 97,875 | 0% \$ - | \$ - | \$ 97,875 |
| Engr. During Construction | 7.5% | \$ 73,406 | 0% \$ - | \$ - | \$ 73,406 |
| Construction Mgt. | 5.0% | \$ 48,938 | 0% \$ - | \$ - | \$ 48,938 |
| Total Project Contingency | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 1,296,844 |

Notes:

- 1 Replacement of seven PLC's and cabinets. Costs based on cost of new PLCs and cabinets for the JBLTP Package A/C Facility Improvement Project.
- 2 Includes replacement of fiber optic and fiber optic patch panels; assumes use of existing conduit.
- 3 High contingency based on uncertainties including location of new panels and demolition of existing panels.

Coastal Treatment Plant**Project Number** 15118**Aeration Tank Gates****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--------------------------------------|-----------------------------|----|----|-----------|------------|-----|------------|------------|
| Total Construction Cost ¹ | West Influent Gate | 4 | EA | \$ 28,000 | \$ 112,000 | 40% | \$ 44,800 | \$ 156,800 |
| | West Effluent Gate | 4 | EA | \$ 24,000 | \$ 96,000 | 40% | \$ 38,400 | \$ 134,400 |
| | East Influent/Effluent Gate | 12 | EA | \$ 26,000 | \$ 312,000 | 40% | \$ 124,800 | \$ 436,800 |

Subtotal

| | | | | | | | | |
|--|-------|--|--|--|--|--|----------|------------|
| | | | | | | | | \$ 728,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | | | | | | \$ 196,560 |
| Shipping Rate | 0% | | | | | | included | |
| Sale Tax | 8.00% | | | | | | | \$ 41,600 |
| Project Contingency@ | 25% | | | | | | | \$ 241,540 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | | | | | |
|-------------------|--------------|--|--|--|--|--|--|--------------|
| Original Estimate | 2019 Dollars | | | | | | | \$ 1,207,700 |
| Current Estimate | 2019 Dollars | | | | | | | \$ 1,207,700 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 120,770 | 0% | \$ - | \$ 120,770 |
| Engr. During Construction | 5.0% | \$ 60,385 | 0% | \$ - | \$ 60,385 |
| Construction Mgt. | 5.0% | \$ 60,385 | 0% | \$ - | \$ 60,385 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

| | | | | | |
|---|--|--|--|--|---------------------|
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 1,449,240 |
|---|--|--|--|--|---------------------|

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15119**Maintenance Building****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| X |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|--|---|----|-----------|-----------|-----|-----------|------------|
| New Benchwork | 1 | LS | \$ | - | | \$ | 60,000 |
| Monorail System | 1 | LS | \$ | - | | \$ | 75,000 |
| HVAC/Plumbing | 1 | LS | \$ | - | | \$ | 30,000 |
| Replace Doors and Frames (3) ¹ | 1 | LS | \$ | - | | \$ | 30,000 |
| Replace Windows (2) ¹ | 1 | LS | \$ | - | | \$ | 22,000 |
| Electrical | 1 | LS | \$ | - | | \$ | 35,000 |
| Remove Maintenance Shop Roof ¹ | 1 | LS | \$ | - | | \$ 5,805 | \$ 5,805 |
| Hazardous Material Removal ¹ | 1 | LS | \$ | - | | \$ 16,850 | \$ 16,850 |
| Maintenance Shop Roof Replacement ¹ | 1 | LS | \$ 11,500 | \$ 11,500 | 25% | \$ 2,875 | \$ 14,375 |
| Subtotal | | | | | | | \$ 289,030 |

Subtotal

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 78,038

Shipping Rate

0% included

Sale Tax

8.00% \$ 920

Project Contingency@

30% \$ 110,396

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 478,385 |
| Current Estimate | 2019 Dollars | \$ | 478,385 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 10.0% | \$ 47,838 | 0% | \$ - | \$ 47,838 |
| Design | 10.0% | \$ 47,838 | 0% | \$ - | \$ 47,838 |
| Engr. During Construction | 10.0% | \$ 47,838 | 0% | \$ - | \$ 47,838 |
| Construction Mgt. | 5.0% | \$ 23,919 | 0% | \$ - | \$ 23,919 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2017 Dollars) | | | | | \$ 645,819 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number**

15120

RAS Hypochlorite Pumps**Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | |
|---|--|--------------|-------|---------------|--------|------------|--------|------------|----|--------|----------|--------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | |
| Project Task Elements | | | | | | | | | | | | |
| Total Construction Cost ¹ | | | | | | | | | | | | |
| | Remove existing RAS Hypochlorite Pumps | 1 | LS | | \$ | - | \$ | 10,000 | \$ | 10,000 | | |
| | Install new RAS Hypochlorite pumps | 2 | LS | \$ | 20,000 | \$ | 40,000 | 25% | \$ | 10,000 | \$ | 50,000 |
| Subtotal | | | | | | | | | | \$ | 60,000 | |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | | | | |
| and Bonds and Insurance @ | | | 0% | | | | | | | \$ | - | |
| Shipping Rate | | | 0% | | | | | | | | included | |
| Sale Tax | | | 0.00% | | | | | | | \$ | - | |
| Project Contingency@ | | | 30% | | | | | | | \$ | 18,000 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | | \$ | 78,000 |
| Current Estimate | | 2019 Dollars | | | | | | | | | \$ | 78,000 |

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|---------------------------|-------|--------|-------|-------------|----|----------|------|-----------|
| | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Design | 10.0% | \$ | 7,800 | 0% | \$ | - | \$ - | \$ 7,800 |
| | Engr. During Construction | 10.0% | \$ | 7,800 | 0% | \$ | - | \$ - | \$ 7,800 |
| | Construction Mgt. | 5.0% | \$ | 3,900 | 0% | \$ | - | \$ - | \$ 3,900 |
| | Total Project Contingency | 0.0% | \$ | - | 0% | \$ | - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 97,500 |

Notes:

1 Cost estimate based on bids from CTP Miscellaneous Improvements 2015

Coastal Treatment Plant**Project Number** 15121**Auxilliary Blower Building Upgrade****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---|---|----|-----------|-----------|-----|-----------|-----------|
| Replace Sound Louver ¹ | 1 | LS | | \$ - | | | \$ 28,500 |
| Replace Blowers | 2 | EA | \$ 30,000 | \$ 60,000 | 50% | \$ 15,000 | \$ 75,000 |
| Replace Compressors | 2 | EA | \$ 20,000 | \$ 40,000 | 50% | \$ 10,000 | \$ 50,000 |
| Replace Doors and Frames (5) ¹ | 1 | LS | | \$ - | | | \$ 52,000 |
| Replace Windows (1) ¹ | 1 | LS | | \$ - | | | \$ 11,000 |
| Electrical | 1 | LS | | \$ - | | | \$ 35,000 |
| Mechanical Upgrade | 1 | LS | - | - | - | - | \$ 30,000 |

SubtotalGeneral Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

Shipping Rate

0%

Sale Tax

8.00%

Project Contingency@

40%

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 511,707 |
| Current Estimate | 2019 Dollars | \$ 511,707 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | |
| Conceptual Study | 10.0% | \$ 51,171 | 0% \$ - | \$ - | \$ 51,171 |
| Design | 10.0% | \$ 51,171 | 0% \$ - | \$ - | \$ 51,171 |
| Engr. During Construction | 10.0% | \$ 51,171 | 0% \$ - | \$ - | \$ 51,171 |
| Construction Mgt. | 5.0% | \$ 25,585 | 0% \$ - | \$ - | \$ 25,585 |
| Total Project Contingency | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 690,804 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant 15122
Project Number

West Corridor Piping Reconstruction

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate May-17
Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|--------------|---|----|----|---------|----|---------|-----|----------------------|
| Total Construction Cost ¹ | Site Work | 1 | LS | \$ | - | \$ | 64,158 | \$ | 64,158 |
| | 8-Inch Drain | 1 | LS | \$ | 32,500 | \$ | 32,500 | 25% | \$ 8,125 \$ 40,625 |
| | Site Work | 1 | LS | | | \$ | 206,746 | | \$ 206,746 |
| | 20-Inch FM | 1 | LS | \$ | 222,000 | \$ | 222,000 | 25% | \$ 55,500 \$ 277,500 |
| | Site Work | 1 | LS | | | \$ | 136,951 | | \$ 136,951 |
| | 6-Inch NPW | 1 | LS | \$ | 44,000 | \$ | 44,000 | 25% | \$ 11,000 \$ 55,000 |

Subtotal

\$ 780,980

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 210,865

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 23,880

Project Contingency@

25%

\$ 253,931

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2019 Dollars | \$ | 1,269,656 |
| Current Estimate | 2019 Dollars | \$ | 1,269,656 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 10.0% | \$ 126,966 | 0% | \$ - | \$ 126,966 |
| Design | 10.0% | \$ 126,966 | 0% | \$ - | \$ 126,966 |
| Engr. During Construction | 5.0% | \$ 63,483 | 0% | \$ - | \$ 63,483 |
| Construction Mgt. | 5.0% | \$ 63,483 | 0% | \$ - | \$ 63,483 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars) \$ 1,650,552

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15123**Piping between RAS/WAS Pump Station to AWT****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost¹

| | | | | | | | |
|-----------------------|---|----|----------|----------|-----|-----------|-----------|
| Site Work | 1 | LS | | | | \$ 11,758 | \$ 11,758 |
| 6-Inch Primary Sludge | 1 | LS | \$ 6,500 | \$ 6,500 | 25% | \$ 1,625 | \$ 8,125 |
| Site Work | 1 | LS | | | | \$ 13,180 | \$ 13,180 |
| 4-inch WAS | 1 | LS | \$ 8,000 | \$ 8,000 | 25% | \$ 2,000 | \$ 10,000 |
| Subtotal | | | | | | | \$ 43,063 |

SubtotalGeneral Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27%

Shipping Rate

0%

Sale Tax

8.00%

Project Contingency@

40%

\$ 11,627

included

\$ 1,160

\$ 22,340

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|-----------|
| Original Estimate | 2019 Dollars | \$ 78,190 |
| Current Estimate | 2019 Dollars | \$ 78,190 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 10.0% | \$ 7,819 | 0% | \$ - | \$ 7,819 |
| Design | 10.0% | \$ 7,819 | 0% | \$ - | \$ 7,819 |
| Engr. During Construction | 10.0% | \$ 7,819 | 0% | \$ - | \$ 7,819 |
| Construction Mgt. | 5.0% | \$ 3,910 | 0% | \$ - | \$ 3,910 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 105,557 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant

Project Number

15124

Piping from DAF to Headworks in the Middle of the Plant

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate
 Estimate Update

May-17
 Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | Material Cost | Labor Cost | Total Cost |
|-------------------|----------|---------------|------------|------------|
| | No. | Units | Unit Cost | Total |
| | | | % of Mat'l | Total |

Project Task Elements

Total Construction Cost¹

| | | | | | | | | | | | |
|-----------------------|---|----|----|--------|----|--------|-----|----|---------|----|---------|
| Site Work | 1 | LS | | | | | | \$ | 59,094 | \$ | 59,094 |
| 6-Inch LLP Air | 1 | LS | \$ | 46,500 | \$ | 46,500 | 25% | \$ | 11,625 | \$ | 58,125 |
| Site Work | 1 | LS | | | \$ | - | | \$ | 115,301 | \$ | 115,301 |
| 6-Inch Drain | 1 | LS | \$ | 40,700 | \$ | 40,700 | 25% | \$ | 10,175 | \$ | 50,875 |
| Site Work | 1 | LS | | | | | | \$ | 3,225 | \$ | 3,225 |
| 3-Inch Drain | 1 | LS | \$ | 2,100 | \$ | 2,100 | 25% | \$ | 525 | \$ | 2,625 |
| Site Work | 1 | LS | | | | | | \$ | 26,430 | \$ | 26,430 |
| 6-Inch MLSS | 1 | LS | \$ | 12,800 | \$ | 12,800 | 25% | \$ | 3,200 | \$ | 16,000 |
| Site Work | 1 | LS | | | | | | \$ | 25,362 | \$ | 25,362 |
| 4-Inch Scum | 1 | LS | \$ | 11,000 | \$ | 11,000 | 25% | \$ | 2,750 | \$ | 13,750 |
| Site Work | 1 | LS | | | | | | \$ | 26,397 | \$ | 26,397 |
| 6-Inch Scum | 1 | LS | \$ | 12,000 | \$ | 12,000 | 25% | \$ | 3,000 | \$ | 15,000 |
| Site Work | 1 | LS | | | | | | \$ | 66,116 | \$ | 66,116 |
| 4-Inch Primary Sludge | 1 | LS | \$ | 16,500 | \$ | 16,500 | 25% | \$ | 4,125 | \$ | 20,625 |
| Site Work | 1 | LS | | | | | | \$ | 49,705 | \$ | 49,705 |
| 4-Inch Drain | 1 | LS | \$ | 10,000 | \$ | 10,000 | 25% | \$ | 2,500 | \$ | 12,500 |
| Site Work | 1 | LS | | | | | | \$ | 1,096 | \$ | 1,096 |
| 4-Inch Sludge | 1 | LS | \$ | 3,100 | \$ | 3,100 | 25% | \$ | 775 | \$ | 3,875 |
| Site Work | 1 | LS | | | | | | \$ | 12,357 | \$ | 12,357 |
| 6-Inch Primary Sludge | 1 | LS | \$ | 6,500 | \$ | 6,500 | 25% | \$ | 1,625 | \$ | 8,125 |
| Site Work | 1 | LS | | | \$ | - | | \$ | 52,274 | \$ | 52,274 |
| 10-inch RAS | 1 | LS | \$ | 18,500 | \$ | 18,500 | 25% | \$ | 4,625 | \$ | 23,125 |
| Site Work | 1 | LS | | | | | | \$ | 28,189 | \$ | 28,189 |
| 8-inch RAS | 1 | LS | \$ | 2,100 | \$ | 2,100 | 25% | \$ | 525 | \$ | 2,625 |
| Site Work | 1 | LS | | | | | | \$ | 28,913 | \$ | 28,913 |
| 16-inch RAS | 1 | LS | \$ | 26,500 | \$ | 26,500 | 25% | \$ | 6,625 | \$ | 33,125 |
| Site Work | 1 | LS | | | | | | \$ | 8,186 | \$ | 8,186 |
| 12-inch RAS | 1 | LS | \$ | 40,000 | \$ | 40,000 | 25% | \$ | 10,000 | \$ | 50,000 |
| Site Work | 1 | LS | | | | | | \$ | 13,180 | \$ | 13,180 |
| 4-inch WAS | 1 | LS | \$ | 8,000 | \$ | 8,000 | 25% | \$ | 2,000 | \$ | 10,000 |
| Subtotal | | | | | | | | | | \$ | 836,200 |

Subtotal

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ 225,774

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 20,504

Project Contingency@

25%

\$ 270,620

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2019 Dollars | \$ | 1,353,098 |
| Current Estimate | 2019 Dollars | \$ | 1,353,098 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|------------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 5.0% | \$ 67,655 | 0% | \$ - | \$ 67,655 |
| Design | 10.0% | \$ 135,310 | 0% | \$ - | \$ 135,310 |
| Engr. During Construction | 5.0% | \$ 67,655 | 0% | \$ - | \$ 67,655 |
| Construction Mgt. | 5.0% | \$ 67,655 | 0% | \$ - | \$ 67,655 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 1,691,372 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15125**Vehicle Storage Building Rehabilitation****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | | | | |
|--------------------------------------|--------------------------------|---|----|----|-------|----|-------|-----|--------|-------|--------|--------|
| Total Construction Cost ¹ | Demolition and Dismantling | 1 | LS | | \$ | - | | \$ | 10,000 | \$ | 10,000 | |
| | Structural System Installation | 1 | LS | \$ | 8,000 | \$ | 8,000 | 25% | \$ | 2,000 | \$ | 10,000 |
| | Guardrail | 1 | LS | \$ | 6,000 | \$ | 6,000 | 25% | \$ | 1,500 | \$ | 7,500 |
| total | | | | | | | | | | \$ | 27,500 | |

SubtotalGeneral Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27%

Shipping Rate

0%

Sale Tax

8.00%

Project Contingency@

30%

| | | | | | | | | | | | |
|--|--------------|--|--|--|--|--|--|--|--|----|--------|
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | |
| Original Estimate | 2019 Dollars | | | | | | | | | \$ | 46,859 |
| Current Estimate | 2019 Dollars | | | | | | | | | \$ | 46,859 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|----------|-------------|----------|------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 4,686 | 0% | \$ - | \$ 4,686 |
| Engr. During Construction | 10.0% | \$ 4,686 | 0% | \$ - | \$ 4,686 |
| Construction Mgt. | 5.0% | \$ 2,343 | 0% | \$ - | \$ 2,343 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 58,573 |

Notes:

1 Cost estimate provided by AECOM

Coastal Treatment Plant**Project Number** 15126**Personnel Building Modification****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | X |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|--|--------------------------------------|-----------------|--------------|----------------------|--------------|-------------------|--------------|-------------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ¹ | | | | | | | | |
| | Remove Existing Roof | 1 | LS | \$ | - | | \$ 5,805 | \$ 5,805 |
| | Hazardous Material Removal | 1 | LS | | | | \$ 16,850 | \$ 16,850 |
| | Personnel Building Roof Installation | 1 | LS | \$ 19,000 | \$ 19,000 | 25% | \$ 4,750 | \$ 23,750 |
| | Replace Doors (8) | 1 | LS | | | | | \$ 67,000 |
| | Replace Windows (2) | 1 | LS | | | | | \$ 22,000 |
| Subtotal | | | | | | | | \$ 135,405 |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | |
| and Bonds and Insurance @ | | 27% | | | | | | \$ 36,559 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 1,520 |
| Project Contingency@ | | 30% | | | | | | \$ 52,045 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 225,530 |
| Current Estimate | | 2019 Dollars | | | | | | \$ 225,530 |

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|---------------------------|-------------|---------------|--------|--------------------|----|-----------------|------|--------------|
| | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Conceptual Study | 10.0% | \$ | 22,553 | 0% | \$ | - | \$ - | \$ 22,553 |
| | Design | 10.0% | \$ | 22,553 | 0% | \$ | - | \$ - | \$ 22,553 |
| | Engr. During Construction | 10.0% | \$ | 22,553 | 0% | \$ | - | \$ - | \$ 22,553 |
| | Construction Mgt. | 5.0% | \$ | 11,276 | 0% | \$ | - | \$ - | \$ 11,276 |
| | Total Project Contingency | 0.0% | \$ | - | 0% | \$ | - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 304,465 |

Notes:

- 1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15127**Headworks Valve Replacement****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--------------------------------------|------------------------------|----|----|-----------|-----------|-----|-----------|------------|
| Total Construction Cost ¹ | 12" Inlet Valve from SCWD FM | 1 | EA | \$ 5,000 | \$ 5,000 | 20% | \$ 1,000 | \$ 6,000 |
| | 12" Inlet Valve from CLB FM | 1 | EA | \$ 5,000 | \$ 5,000 | 20% | \$ 1,000 | \$ 6,000 |
| | 4" Downstairs Plug Valve | 12 | EA | \$ 1,000 | \$ 12,000 | 20% | \$ 2,400 | \$ 14,400 |
| | 24" Effluent Valve | 3 | EA | \$ 25,000 | \$ 75,000 | 20% | \$ 15,000 | \$ 90,000 |
| | 16" FM Bypass Valve | 1 | EA | \$ 7,500 | \$ 7,500 | 20% | \$ 1,500 | \$ 9,000 |
| | 4" Upstairs Plug Valve | 3 | EA | \$ 1,000 | \$ 3,000 | 20% | \$ 600 | \$ 3,600 |
| | E. Primary Sludge 6" Valve | 14 | EA | \$ 1,500 | \$ 21,000 | 20% | \$ 4,200 | \$ 25,200 |
| | W. Primary Sludge 6" Valve | 2 | EA | \$ 1,500 | \$ 3,000 | 20% | \$ 600 | \$ 3,600 |
| Subtotal | | | | | | | | \$ 157,800 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 42,606

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 10,520

Project Contingency@

30%

\$ 63,278

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 274,204 |
| Current Estimate | 2019 Dollars | \$ 274,204 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 27,420 | 0% | \$ - | \$ 27,420 |
| Engr. During Construction | 10.0% | \$ 27,420 | 0% | \$ - | \$ 27,420 |
| Construction Mgt. | 5.0% | \$ 13,710 | 0% | \$ - | \$ 13,710 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

| | |
|---|-------------------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ 342,755 |
|---|-------------------|

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant

Project Number 15128

Original Export Sludge PS Rehab

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate May-17
Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---|---|----|-----------|-----------|-----|-----------|------------|
| Replace Monorail and Hoist | 1 | LS | | \$ - | | | \$ 50,000 |
| Replace Pumps | 2 | EA | \$ 45,000 | \$ 90,000 | 50% | \$ 22,500 | \$ 112,500 |
| Replace Chopper Pump | 1 | EA | \$ 35,000 | \$ 35,000 | 50% | \$ 17,500 | \$ 52,500 |
| Replace Grinder | 1 | EA | \$ 40,000 | \$ 40,000 | 50% | \$ 20,000 | \$ 60,000 |
| Replace Doors and Frames (1) ¹ | 1 | LS | | \$ - | | | \$ 9,000 |
| Replace Roll-up Door ¹ | 1 | LS | | \$ - | | | \$ 24,000 |
| Electrical | 1 | LS | | \$ - | | | \$ 45,000 |
| Mechanical Upgrade | 1 | LS | - | - | - | - | \$ 50,000 |

Subtotal

| | | | |
|--|-------|----------|------------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 108,810 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 13,200 |
| Project Contingency@ | 30% | | \$ 157,503 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 682,513 |
| Current Estimate | 2019 Dollars | \$ 682,513 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 68,251 | 0% | \$ - | \$ 68,251 |
| Engr. During Construction | 7.5% | \$ 51,188 | 0% | \$ - | \$ 51,188 |
| Construction Mgt. | 5.0% | \$ 34,126 | 0% | \$ - | \$ 34,126 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 836,078 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15129**Standby Power Reconstruction****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | X |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|--|---|----|------------|------------|-----|------------|------------|
| Total Construction Cost | Emergency Generator & Support ¹ | 1 | LS | \$ 320,000 | \$ 320,000 | - | \$ 184,000 | \$ 504,000 |
| | Replace Doors (5) ³ | 1 | LS | - | - | - | - | \$ 48,000 |
| | Replace Window (1) ³ | 1 | LS | - | - | - | - | \$ 11,000 |
| | Replace Accoustic Louvers (2) ³ | 1 | LS | - | - | - | - | \$ 56,000 |
| | Upgrade Mechanical System | 1 | LS | - | - | - | - | \$ 30,000 |
| | Upgrade Electrical System | 1 | LS | - | - | - | - | \$ 35,000 |
| | Temporary Power Supply System | 1 | LS | \$ 30,000 | \$ 30,000 | 50% | \$ 15,000 | \$ 45,000 |
| | | | | \$ 350,000 | | | | |

Subtotal

| | | |
|--|-------|------------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | \$ 196,830 |
| Shipping Rate | 0% | included |
| Sale Tax | 8.00% | \$ 28,000 |
| Project Contingency@ | 25% | \$ 238,458 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2019 Dollars | \$ 1,192,288 |
| Current Estimate | 2019 Dollars | \$ 1,192,288 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 5.0% | \$ 59,614 | 0% | \$ - | \$ 59,614 |
| Design | 10.0% | \$ 119,229 | 0% | \$ - | \$ 119,229 |
| Engr. During Construction | 5.0% | \$ 59,614 | 0% | \$ - | \$ 59,614 |
| Construction Mgt. | 5.0% | \$ 59,614 | 0% | \$ - | \$ 59,614 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars) \$ 1,490,359

Notes:

- 1 Emergency Generator and Diesel Tank on DHK Engineers evaluation (4/17)
- 2 Assume AST (installed in 2009) are adequate.
- 3 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15131**Headworks Building Upgrade****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| X |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|--------------------------------|---|----|---|---|---|---|----|--------|
| Total Construction Cost ¹ | Replacement of Flow Meters (2) | 1 | LS | - | - | - | - | \$ | 95,000 |
| | Replace Door (6) | 1 | LS | - | - | - | - | \$ | 54,000 |
| | Replace Window (5) | 1 | LS | - | - | - | - | \$ | 60,000 |
| | Replace Roll Up Doors (1) | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Upgrade Mechanical System | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Upgrade Electrical System | 1 | LS | - | - | - | - | \$ | 30,000 |

Subtotal

\$ 299,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 89,700

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 388,700 |
| Current Estimate | 2019 Dollars | \$ | 388,700 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 5.0% | \$ 19,435 | 0% | \$ - | \$ 19,435 |
| Design | 10.0% | \$ 38,870 | 0% | \$ - | \$ 38,870 |
| Engr. During Construction | 10.0% | \$ 38,870 | 0% | \$ - | \$ 38,870 |
| Construction Mgt. | 5.0% | \$ 19,435 | 0% | \$ - | \$ 19,435 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2017 Dollars) | | | | | \$ 505,310 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15132

Channel Lining

Main Project Type

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| X |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--------------------------------------|---------------------------------|---|----|---|---|---|---|------------|
| Total Construction Cost ³ | Overflow Channel Lining | 1 | LS | - | - | - | - | \$ 30,000 |
| | Bypass Pumping | 1 | LS | - | - | - | - | \$ 225,000 |
| | Primary Influent Channel Lining | 1 | LS | - | - | - | - | \$ 60,000 |
| | Primary Effluent Channel Lining | 1 | LS | | | | | \$ 90,000 |
| Subtotal | | | | | | | | \$ 405,000 |

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27%

Shipping Rate

0%

Sale Tax

8.00%

Project Contingency@

30%

| | | | | | | | |
|--|--------------|--|--|--|--|--|------------|
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | |
| Original Estimate | 2019 Dollars | | | | | | \$ 668,655 |
| Current Estimate | 2019 Dollars | | | | | | \$ 668,655 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|-------------------|
| Condition Assessment | 8.0% | \$ 53,492 | 0% \$ - | \$ - | \$ 53,492 |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | |
| Design | 5.0% | \$ 33,433 | 0% \$ - | \$ - | \$ 33,433 |
| Engr. During Construction | 7.5% | \$ 50,149 | 0% \$ - | \$ - | \$ 50,149 |
| Construction Mgt. | 5.0% | \$ 33,433 | 0% \$ - | \$ - | \$ 33,433 |
| Total Project Contingency | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 839,162 |

Notes:

1 Based On Unit Factors Provided by Sancon

Coastal Treatment Plant**Project Number** 15133**Administration Building Rehab****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| X |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|----------------------------------|---|----|---|---|---|---|----|---------|
| Total Construction Cost | Demolish Laboratory | 1 | LS | - | - | - | - | \$ | 80,000 |
| | Replace Doors (18) ¹ | 1 | LS | - | - | - | - | \$ | 166,000 |
| | Replace Window (16) ¹ | 1 | LS | - | - | - | - | \$ | 176,000 |
| | Remodel Lab to Office Space | 1 | LS | - | - | - | - | \$ | 75,000 |
| | Upgrade Mechanical System | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Upgrade Electrical System | 1 | LS | - | - | - | - | \$ | 35,000 |
| Subtotal | | | | | | | | \$ | 562,000 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 168,600

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 730,600 |
| Current Estimate | 2019 Dollars | \$ | 730,600 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 5.0% | \$ 36,530 | 0% | \$ - | \$ 36,530 |
| Design | 10.0% | \$ 73,060 | 0% | \$ - | \$ 73,060 |
| Engr. During Construction | 7.5% | \$ 54,795 | 0% | \$ - | \$ 54,795 |
| Construction Mgt. | 5.0% | \$ 36,530 | 0% | \$ - | \$ 36,530 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 931,515 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15134**Perimeter Fence Replacement****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--|-----------------------------|-------|----|---|---|---|---|----------|---------|
| Total Construction Cost ¹ | Perimeter Fence Replacement | 1 | LS | - | - | - | - | \$ | 489,000 |
| Subtotal | | | | | | | | \$ | 489,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ | 132,030 |
| Shipping Rate | | 0% | | | | | | included | |
| Sale Tax | | 8.00% | | | | | | \$ | - |
| Project Contingency@ | | 15% | | | | | | \$ | 93,155 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 714,185 |
| Current Estimate | 2019 Dollars | \$ | 714,185 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 5.0% | \$ 35,709 | 0% | \$ - | \$ 35,709 |
| Design | 5.0% | \$ 35,709 | 0% | \$ - | \$ 35,709 |
| Engr. During Construction | 5.0% | \$ 35,709 | 0% | \$ - | \$ 35,709 |
| Construction Mgt. | 5.0% | \$ 35,709 | 0% | \$ - | \$ 35,709 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 857,021 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15135**Blower Building Roof****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | | | | |
|---|---------------------------------|--------------|-------|---------------|--------|------------|--------|------------|----|--------|--------|----------|--------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | | | | |
| Project Task Elements | | | | | | | | | | | | | |
| Total Construction Cost ¹ | | | | | | | | | | | | | |
| | Remove New Blower Building Roof | 1 | LS | | \$ | - | \$ | 5,400 | \$ | 5,400 | | | |
| | Hazardous Material Removal | 1 | LS | | \$ | - | \$ | 16,850 | \$ | 16,850 | | | |
| | Blower Building Roof Placement | 1 | LS | \$ | 18,000 | \$ | 18,000 | 25% | \$ | 4,500 | \$ | 22,500 | |
| Subtotal | | | | | | | | | | \$ | 44,750 | | |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | | | | | |
| and Bonds and Insurance @ | | | | | | | | | | 27% | | \$ | 12,083 |
| Shipping Rate | | | | | | | | | | 0% | | included | |
| Sale Tax | | | | | | | | | | 8.00% | | \$ | 1,440 |
| Project Contingency@ | | | | | | | | | | 40% | | \$ | 23,309 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | | | | \$ | 81,582 |
| Current Estimate | | 2019 Dollars | | | | | | | | | | \$ | 81,582 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 15.0% | \$ 12,237 | 0% | \$ - | \$ 12,237 |
| Engr. During Construction | 10.0% | \$ 8,158 | 0% | \$ - | \$ 8,158 |
| Construction Mgt. | 5.0% | \$ 4,079 | 0% | \$ - | \$ 4,079 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 106,056 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15136**Export Sludge Mixing and Sludge Pumps****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | | |
|---|--|--------------|-------|---------------|-------|------------|-------|------------|------------|---------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | | |
| Project Task Elements | | | | | | | | | | |
| Total Construction Cost ³ | Demolition of Existing Pumps | 1 | LS | | \$ | - | 25% | \$ 30,000 | \$ 30,000 | |
| | Installation of Export Sludge Mixing Pumps | 2 | EA | \$ 70,000 | \$ | 140,000 | | \$ | 140,000 | |
| | Installation of Export Sludge Pumps | 2 | EA | \$ 85,000 | \$ | 170,000 | | \$ - | 170,000 | |
| | Pumps Power and Controls | 1 | LS | \$ 45,000 | \$ | 45,000 | 25% | \$ 11,250 | \$ 56,250 | |
| Subtotal | | | | | | | | \$ | 396,250 | |
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | | \$ 106,988 | |
| Shipping Rate | | 0% | | | | | | | included | |
| Sale Tax | | 8.00% | | | | | | \$ | 28,400 | |
| Project Contingency@ | | 30% | | | | | | \$ | 159,491 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | \$ | 691,129 |
| Current Estimate | | 2019 Dollars | | | | | | | \$ | 691,129 |

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|---------------------------|-------|--------|--------|-------------|----|----------|------|------------|
| | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Design | 10.0% | \$ | 69,113 | 0% | \$ | - | \$ - | \$ 69,113 |
| | Engr. During Construction | 7.5% | \$ | 51,835 | 0% | \$ | - | \$ - | \$ 51,835 |
| | Construction Mgt. | 5.0% | \$ | 34,556 | 0% | \$ | - | \$ - | \$ 34,556 |
| | Total Project Contingency | 0.0% | \$ | - | 0% | \$ | - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 846,633 |

Notes:

- Cost estimate came from Coastal Treatment Plant Export Equalization Basin and Miscellaneous Improvements 2017 Bids

Coastal Treatment Plant**Project Number** 15137**Foul Air System Condition Assessment****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | X |

Key Dates

| | |
|------------------|--------|
| Initial Estimate | Jul-19 |
| Estimate Update | Jul-19 |

| | |
|-------------|----|
| Prepared By | BP |
|-------------|----|

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

Subtotal

| | | | | | | | |
|---|-------|--|--|--|--|----------|---|
| General Conditions. Contractor Overhead and Profit, | | | | | | \$ | - |
| and Bonds and Insurance @ | 27% | | | | | \$ | - |
| Shipping Rate | 0% | | | | | included | |
| Sale Tax | 8.00% | | | | | \$ | - |
| Project Contingency@ | 30% | | | | | \$ | - |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | | | | |
|-------------------|--------------|--|--|--|--|----|---|
| Original Estimate | 2019 Dollars | | | | | \$ | - |
| Current Estimate | 2019 Dollars | | | | | \$ | - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|--------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ 75,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ - | 0% | \$ - | |
| Engr. During Construction | 7.5% | \$ - | 0% | \$ - | |
| Construction Mgt. | 5.0% | \$ - | 0% | \$ - | |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | |

| | | | | | |
|---|--|--|--|--|-----------|
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 75,000 |
|---|--|--|--|--|-----------|

Notes:

Coastal Treatment Plant
Project Number 15138

Scum Pump Station Condition Assessment

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | X |

Key Dates

Initial Estimate Jul-19
Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

\$ -
\$ -
\$ -
\$ -
\$ -
\$ -

Subtotal

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

25%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$ -
Current Estimate 2019 Dollars \$ -

| Project Phases Cost | Rate | Amount | | Contingency | | Subtotal | | Total |
|---------------------------|-------|--------|---|-------------|----|----------|----|--------|
| Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ | 50,000 |
| Conceptual Study | 2.5% | \$ | - | 0% | \$ | - | \$ | - |
| Design | 10.0% | \$ | - | 0% | \$ | - | \$ | - |
| Engr. During Construction | 5.0% | \$ | - | 0% | \$ | - | \$ | - |
| Construction Mgt. | 5.0% | \$ | - | 0% | \$ | - | \$ | - |
| Total Project Contingency | 0.0% | \$ | - | 0% | \$ | - | \$ | - |

Total Project Cost (Present Value in 2019 Dollars) \$ 50,000

Notes:

Coastal Treatment Plant**Project Number** 15139**Buried Utility Master Plan****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| |
| |
| |
| X |

Key Dates

Initial Estimate Jul-19
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

\$ -
 \$ -
 \$ -
 \$ -
 \$ -
 \$ -
 \$ -

Subtotal

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$ -

Updated Estimate 2019 Dollars

\$ -

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|--------|-------------|----------|------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ 75,000 |
| Design | 15.0% | \$ - | 0% | \$ - | \$ - |
| Engr. During Construction | 5.0% | \$ - | 0% | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Contingency ⁵ | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 75,000 |

Coastal Treatment Plant

Project Number 3544-000

Aeration System with Multistage Blowers with VFDs

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jan-19
Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|---|--------------|-------|---------------|-------|------------|-------|--------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ¹ | Raising the Floor of Aeration Basin W-1 | 1 | LS | | \$ | - | | \$ 572,000 |
| | Diffusers, Droplegs and Valves | 1 | LS | | \$ | - | | \$ 505,000 |
| | Aeration Blowers (Multistage with VFDs) | 1 | LS | | \$ | - | | \$ 705,000 |
| | Aeration Piping, Valves and Actuators | 1 | LS | - | - | - | - | \$ 278,000 |
| | Sitework, Demolition and Electrical | 1 | LS | | \$ | - | \$ - | \$ 797,000 |
| Subtotal | | | | | | | | \$ 2,857,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 771,390 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ - |
| Project Contingency@ | | 25% | | | | | | \$ 907,098 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 4,535,488 |
| Current Estimate | | 2019 Dollars | | | | | | \$ 4,535,488 |

| Project Phases Cost | | Rate | Amount | Contingency | Subtotal | Total |
|---|--|-------|------------|-------------|----------|--------------|
| Condition Assessment | | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | | 0.0% | \$ - | 0% | \$ - | |
| Design | | 10.0% | \$ 453,549 | 0% | \$ - | \$ 453,549 |
| Engr. During Construction | | 7.5% | \$ 340,162 | 0% | \$ - | \$ 340,162 |
| Construction Mgt. | | 7.5% | \$ 340,162 | 0% | \$ - | \$ 340,162 |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | \$ 5,669,359 |

Notes:

- 1 Cost estimate provided by Hazen & Sawyer

Construction in FY 20/21 \$2,352,057.00
Construction in FY 21/22 \$2,863,753.63
\$5,215,810.63

Coastal Treatment Plant**Project Number** 15141**Headworks Condition Assessment****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | X |

Key Dates

| | |
|------------------|--------|
| Initial Estimate | Jul-19 |
| Estimate Update | Jul-19 |

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | |
|-------------------------|----|---|
| Total Construction Cost | \$ | - |
|-------------------------|----|---|

\$ -

\$ -

\$ -

\$ -

\$ -

\$ -

\$ -

Subtotal

\$ -

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

25%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---|
| Original Estimate | 2019 Dollars | \$ | - |
|-------------------|--------------|----|---|

| | | | |
|------------------|--------------|----|---|
| Updated Estimate | 2019 Dollars | \$ | - |
|------------------|--------------|----|---|

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|--------|-------------|----------|------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ 95,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 5.0% | \$ - | 0% | \$ - | |
| Engr. During Construction | 5.0% | \$ - | 0% | \$ - | |
| Construction Mgt. | 5.0% | \$ - | 0% | \$ - | |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 95,000 |

Notes:

Coastal Treatment Plant**Project Number** 15142**Spatial Utilization Analysis****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | X |

Key Dates

| | |
|------------------|--------|
| Initial Estimate | Jul-19 |
| Estimate Update | Jul-19 |

| | |
|-------------|----|
| Prepared By | BP |
|-------------|----|

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|--|--|--|--|--|--|----|---|
| Total Construction Cost | | | | | | | \$ | - |
| | | | | | | | \$ | - |
| | | | | | | | \$ | - |
| | | | | | | | \$ | - |
| | | | | | | | \$ | - |

Subtotal

| | | | | | | | | |
|---|-------|--|--|--|--|----------|----|---|
| General Conditions. Contractor Overhead and Profit, | | | | | | | \$ | - |
| and Bonds and Insurance @ | 27% | | | | | | \$ | - |
| Shipping Rate | 0% | | | | | included | | |
| Sale Tax | 8.00% | | | | | | \$ | - |
| Project Contingency@ | 30% | | | | | | \$ | - |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | | | | | |
|-------------------|--------------|--|--|--|--|--|----|---|
| Original Estimate | 2019 Dollars | | | | | | \$ | - |
| Current Estimate | 2019 Dollars | | | | | | \$ | - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|--|-------|--------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ 75,000 |
| Design | 10.0% | \$ - | 0% | \$ - | \$ - |
| Engr. During Construction | 10.0% | \$ - | 0% | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 75,000 |

Notes:

Coastal Treatment Plant**Project Number** 15143**RAS/WAS Pump Station Condition Assessment****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | X |

Key Dates

| | |
|------------------|--------|
| Initial Estimate | Jul-19 |
| Estimate Update | Jul-19 |

| | |
|-------------|----|
| Prepared By | BP |
|-------------|----|

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | |
|-------------------------|----|---|
| Total Construction Cost | \$ | - |
| | \$ | - |

SubtotalGeneral Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

| | | |
|-----|----|---|
| 27% | \$ | - |
|-----|----|---|

Shipping Rate

| | |
|----|----------|
| 0% | included |
|----|----------|

Sale Tax

| | | |
|-------|----|---|
| 8.00% | \$ | - |
|-------|----|---|

Project Contingency@

| | | |
|-----|----|---|
| 30% | \$ | - |
|-----|----|---|

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---|
| Original Estimate | 2019 Dollars | \$ | - |
| Updated Estimate | 2019 Dollars | \$ | - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|--|-------|--------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ 75,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ - | 0% | \$ - | \$ - |
| Engr. During Construction | 10.0% | \$ - | 0% | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 75,000 |

Notes:

Coastal Treatment Plant**Project Number** 15144**Standby Power Condition Assessment****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | X |

Key Dates

Initial Estimate Jul-19
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | |
|-------------------------|---|---|----|---|---|----|---|
| Total Construction Cost | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - |
| | | | \$ | - | | \$ | - |
| | | | | | | \$ | - |

Subtotal

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---|
| Original Estimate | 2019 Dollars | \$ | - |
| Current Estimate | 2019 Dollars | \$ | - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|--------|-------------|----------|------------------|
| Condition Assessment | 10.0% | \$ - | 0% | \$ - | \$ 65,000 |
| Conceptual Study | 5.0% | \$ - | 0% | \$ - | |
| Design | 7.5% | \$ - | 0% | \$ - | |
| Engr. During Construction | 7.5% | \$ - | 0% | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 65,000 |

Coastal Treatment Plant**Project Number** 15145**Export Sludge System Condition Assessment****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | X |

Key Dates

Initial Estimate Jul-19
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | |
|-------------------------|--|--|--|--|--|--|------|
| Total Construction Cost | | | | | | | \$ - |
| | | | | | | | \$ - |
| | | | | | | | \$ - |
| | | | | | | | \$ - |

Subtotal

| | | | | | | | |
|---|-------|--|--|--|--|----------|------|
| General Conditions. Contractor Overhead and Profit, | | | | | | | \$ - |
| and Bonds and Insurance @ | 27% | | | | | | \$ - |
| Shipping Rate | 0% | | | | | included | |
| Sale Tax | 8.00% | | | | | | \$ - |
| Project Contingency@ | 30% | | | | | | \$ - |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | | | | |
|-------------------|--------------|--|--|--|--|--|------|
| Original Estimate | 2019 Dollars | | | | | | \$ - |
| Updated Estimate | 2019 Dollars | | | | | | \$ - |

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|--|-------|--------|---|-------------|----|----------|----|------------------|
| Condition Assessment | | 0.0% | \$ | - | 0% | \$ | - | \$ | 85,000 |
| Conceptual Study | | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| Design | | 10.0% | \$ | - | 0% | \$ | - | \$ | - |
| Engr. During Construction | | 10.0% | \$ | - | 0% | \$ | - | \$ | - |
| Construction Mgt. | | 5.0% | \$ | - | 0% | \$ | - | \$ | - |
| Total Project Contingency | | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 85,000 |

Notes:

Coastal Treatment Plant**Project Number** 15146**Primary Sedimentation Condition Assessment****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | X |

Key Dates

Initial Estimate Jul-19
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

- \$ - - \$ - \$ -

SubtotalGeneral Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

25%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars \$ -
 Current Estimate 2019 Dollars \$ -

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|--------|-------------|----------|------------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | \$ 65,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Design | 10.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Engr. During Construction | 10.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Contingency | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 65,000 |

Notes:

- 1 Based on Tom Epperson E-Mail Dated 5/16/17.

Coastal Treatment Plant**Project Number** 15147**Pavement and Surface Drainage Master Plan****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | X |

Key Dates

| | |
|------------------|--------|
| Initial Estimate | Jul-19 |
| Estimate Update | Jul-19 |
| Const. Year | |
| Prepared By | BP |

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | |
|----|---|---|----|---|----|---|
| - | - | - | - | - | - | - |
| \$ | - | - | \$ | - | \$ | - |
| | | | | | | |

SubtotalGeneral Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

30%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---|
| Original Estimate | 2019 Dollars | \$ | - |
| Current Estimate | 2019 Dollars | \$ | - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|--------|-------------|----------|------------------|
| Permitting | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Conceptual Study | 5.0% | \$ - | 0% \$ - | \$ - | \$ 75,000 |
| Design | 10.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Engr. During Construction | 10.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Contingency | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 75,000 |

Notes:

Coastal Treatment Plant**Project Number** 15148**Instrumentation Master Plan****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| |
| |
| |
| X |

Key Dates

Initial Estimate

Jul-19

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

1 LS

-

\$ -

-

\$ -

-

\$ -

SubtotalGeneral Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

30%

0

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

0

Current Estimate 2019 Dollars

\$ -

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|--------|-------------|----------|------------------|
| Permitting | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Conceptual Study | 5.0% | \$ - | 0% \$ - | \$ - | \$ 75,000 |
| Design | 8.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Engr. During Construction | 10.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Contingency | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 75,000 |

Notes:

1 Cost Estimate Developed by TetraTech

Coastal Treatment Plant**Project Number** 15149**Site Storage Evaluation****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| |
| |
| X |

Key Dates

Initial Estimate

Jul-19

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

\$ -

\$ -

\$ -

\$ -

\$ -

SubtotalGeneral Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ -

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$ -

Current Estimate 2019 Dollars

\$ -

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|--|-------|--------|---|-------------|----|----------|----|------------------|
| Condition Assessment | | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| Conceptual Study | | 0.0% | \$ | - | 0% | \$ | - | \$ | 50,000 |
| Design | | 10.0% | \$ | - | 0% | \$ | - | \$ | - |
| Engr. During Construction | | 7.5% | \$ | - | 0% | \$ | - | \$ | - |
| Construction Mgt. | | 5.0% | \$ | - | 0% | \$ | - | \$ | - |
| Total Project Contingency | | 0.0% | \$ | - | 0% | \$ | - | \$ | - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 50,000 |

Notes:

Coastal Treatment Plant**Project Number** 15150**Screening Washer/Compactor System****Main Project Type**

| | |
|-------------------------|---|
| New Facility | X |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | |

Key Dates

Initial Estimate Jul-19
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | Quantity | Material Cost | Labor Cost | Total Cost |
|-------------------|----------|---------------|------------|------------|
| | No. | Units | Unit Cost | Total |

Project Task Elements

| | | | | | | | |
|--|------------------|-------|----|----|---|----------|---------|
| Total Construction Cost ¹ | Washer/Compactor | 1 | LS | \$ | - | \$ | 100,000 |
| | Conveyor | 1 | LS | \$ | - | \$ | 83,000 |
| | Electrical | 1 | LS | \$ | - | \$ | 21,000 |
| Subtotal | | | | | | \$ | 204,000 |
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | \$ | 55,080 |
| Shipping Rate | | 0% | | | | included | |
| Sale Tax | | 8.00% | | | | \$ | - |
| Project Contingency@ | | 30% | | | | \$ | 77,724 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 336,804 |
| Current Estimate | 2019 Dollars | \$ | 336,804 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 33,680 | 0% | \$ - | \$ 33,680 |
| Engr. During Construction | 7.5% | \$ 25,260 | 0% | \$ - | \$ 25,260 |
| Construction Mgt. | 5.0% | \$ 16,840 | 0% | \$ - | \$ 16,840 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

| | | |
|---|----|---------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ | 412,585 |
|---|----|---------|

Notes:

- 1 Cost estimate provided by CH2MHill from the Facility Plan

Coastal Treatment Plant**Project Number** 3543-000**Export Sludge Line Replacement at RTP****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | X |

Key Dates

Initial Estimate Apr-17
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--------------------------------------|---------------------------------|------|----|----------|-----------|---|-----------|------------|
| Total Construction Cost ¹ | Export Sludge Line HDPE | 2400 | LF | \$ 25 | \$ 60,000 | - | \$ 48,000 | \$ 108,000 |
| | Plug Valves | 4 | EA | \$ 2,500 | \$ 10,000 | - | \$ 6,000 | \$ 16,000 |
| | Export Sludge Line Improvements | 1 | LS | \$ 8,000 | \$ 8,000 | - | \$ 8,000 | \$ 16,000 |
| Subtotal | | | | | | | | \$ 140,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 37,800

Shipping Rate

0% included

Sale Tax

8.00% \$ 6,240

Project Contingency@

40% \$ 73,616

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 257,656 |
| Current Estimate | 2019 Dollars | \$ 257,656 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 5.0% | \$ 12,883 | 0% | \$ - | \$ 12,883 |
| Design | 10.0% | \$ 25,766 | 0% | \$ - | \$ 25,766 |
| Engr. During Construction | 10.0% | \$ 25,766 | 0% | \$ - | \$ 25,766 |
| Construction Mgt. | 5.0% | \$ 12,883 | 0% | \$ - | \$ 12,883 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 334,953 |

Notes:

1 Costs from Lee & Ro Draft Technical Memo on Underground Piping Reconstruction at the Regional Treatment Plant

Coastal Treatment Plant**Project Number** 3542-000**South Section Embankment Protection****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| X |
| |
| |
| |
| |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|--|---|----|---|----|---|----|----|---------|
| Total Construction Cost ³ | Gabion Protection System ¹ | 1 | LS | - | - | - | - | \$ | 112,040 |
| | Protection at Storm Channel ² | 1 | LS | - | - | - | - | \$ | 103,105 |
| | | | | | \$ | - | \$ | - | \$ - |
| Subtotal | | | | | | | | \$ | 215,145 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

40%

\$ 86,058

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|------------|
| Original Estimate | 2019 Dollars | \$ | 301,203.00 |
| Current Estimate | 2019 Dollars | \$ | 301,203 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Permitting | 20.0% | \$ 60,241 | 0% | \$ - | \$ 60,241 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 15.0% | \$ 45,180 | 0% | \$ - | \$ 45,180 |
| Engr. During Construction | 10.0% | \$ 30,120 | 0% | \$ - | \$ 30,120 |
| Construction Mgt. | 15.0% | \$ 45,180 | 0% | \$ - | \$ 45,180 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

| | | |
|---|-----------|----------------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ | 481,925 |
|---|-----------|----------------|

Notes:

- 1 Based on Alternative 2 "Aliso Creek at SOCWA CTP Erosion Risk Reduction Measures and Alternative Development Memorandum" April 2016 by TetraTech.
- 2 Based on Site East 3 "Aliso Creek Storm Repairs" February 2017 by TetraTech.
- 3 Based on a 165 foot length to be protected in addition to area at storm channel discharge point.

Coastal Treatment Plant**Project Number** 15713**North Section Embankment Protection****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| X |
| |
| |
| |
| |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|--------------------------|---|----|---|----|---|---|----|---------|
| Total Construction Cost ³ | Gabion Protection System | 1 | LS | - | - | - | - | \$ | 434,579 |
| | | | | | \$ | - | | \$ | - |

Subtotal

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

50%

\$ 217,290

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 651,869 |
| Current Estimate | 2019 Dollars | \$ | 651,869 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Permitting | 15.0% | \$ 97,780 | 0% | \$ - | \$ 97,780 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 65,187 | 0% | \$ - | \$ 65,187 |
| Engr. During Construction | 7.5% | \$ 48,890 | 0% | \$ - | \$ 48,890 |
| Construction Mgt. | 10.0% | \$ 65,187 | 0% | \$ - | \$ 65,187 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

| | | |
|---|-----------|----------------|
| Total Project Cost (Present Value in 2019 Dollars) | \$ | 928,913 |
|---|-----------|----------------|

Notes:

- Based on Alternative 2 "Aliso Creek at SOCWA CTP Erosion Risk Reduction Measures and Alternative Development Memorandum" April 2016 by TetraTech.
- Protection based on use of gabions.
- Based on a 640 foot length to be protected
- Shown as a ratio of 640 feet to 165 feet (165 feet being basis for protection south embankment in reference in Note 1).

Coastal Treatment Plant**Project Number** 15714**Aliso and Sulfur Creek Confluence Proection****Main Project Type**

| | |
|-------------------------|---|
| New Facility | X |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|------------------------------|---|----|----|---|---|----|----|------------|
| Total Construction Cost ³ | Drop Stucture | 1 | LS | - | - | - | - | \$ | 323,656 |
| | Bank Protection (North Bank) | 1 | LS | - | - | - | - | \$ | 50,960 |
| | Bank Protection (South Bank) | 1 | LS | - | - | - | - | \$ | 187,260 |
| | Storm Drain Modifications | 1 | LS | - | - | - | - | \$ | 39,800 |
| | Surface Runoff Remediation | 1 | LS | - | - | - | - | \$ | 14,245 |
| | | | | \$ | - | | \$ | - | \$ |
| Subtotal | | | | | | | | | \$ 615,921 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

50%

\$ 307,961

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 923,882 |
| Current Estimate | 2019 Dollars | \$ | 923,882 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|------------|-------------|----------|---------------------|
| Permitting | 15.0% | \$ 138,582 | 0% | \$ - | \$ 138,582 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 92,388 | 0% | \$ - | \$ 92,388 |
| Engr. During Construction | 5.0% | \$ 46,194 | 0% | \$ - | \$ 46,194 |
| Construction Mgt. | 10.0% | \$ 92,388 | 0% | \$ - | \$ 92,388 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 1,293,434 |

Notes:

- 1 Based on Alternative 3 "Stabilization of Confluence of Sulphur and Aliso Creeks Conceptual Alternatives Report October 2012 by TetraTech.
- 2 To be split evenly between Project Committee 15 and 21.
- 3 Assume AST (installed in 2009) are adequate.

Coastal Treatment Plant**Project Number** 15812**AWT Filter Upgrade****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|----------------------------|---|----|-----------|-----------|------|-----------|------------|
| Total Construction Cost | Filter Valves ¹ | 1 | LS | \$ 32,160 | \$ 32,160 | 100% | \$ 32,160 | \$ 64,320 |
| | Media Replacement | 1 | LS | \$ 30,000 | \$ 30,000 | 100% | \$ 30,000 | \$ 60,000 |
| | Coating Repair | 1 | LS | - | - | - | - | \$ 95,000 |
| | Fabric Shade | 1 | EA | \$ 25,000 | \$ 25,000 | 50% | \$ 12,500 | \$ 37,500 |
| | | | | \$ - | \$ - | | \$ - | \$ - |
| Subtotal | | | | | | | | \$ 256,820 |

SubtotalGeneral Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 69,341

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 6,973

Project Contingency@

30%

\$ 99,940

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2019 Dollars | \$ 433,074 |
| Current Estimate | 2019 Dollars | \$ 433,074 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | |
| Design | 10.0% | \$ 43,307 | 0% \$ - | \$ - | \$ 43,307 |
| Engr. During Construction | 10.0% | \$ 43,307 | 0% \$ - | \$ - | \$ 43,307 |
| Construction Mgt. | 5.0% | \$ 21,654 | 0% \$ - | \$ - | \$ 21,654 |
| Total Project Contingency | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 541,343 |

Notes:

- 1 Evoqua Letter Proposal for Valve Replacement

Coastal Treatment Plant**Project Number** 15813**AWT Building Roof****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | | |
|--------------------------------------|-----------------------------------|---|----|----|--------|----|--------|--------|----|--------|
| Total Construction Cost ¹ | Remove Existing AWT Building Roof | 1 | LS | | \$ | - | \$ | 5,400 | \$ | 5,400 |
| | Hazardous Material Removal | 1 | LS | | \$ | - | \$ | 16,850 | \$ | 16,850 |
| | Door and Frame Replacement | 1 | LS | - | | - | | - | \$ | 55,000 |
| | AWT Building Roof Placement | 1 | LS | \$ | 16,000 | \$ | 16,000 | 25% | \$ | 4,000 |
| | | | | | | | | | \$ | 20,000 |
| | | | | | | | | | | 97,250 |

SubtotalGeneral Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

Shipping Rate

0%

Sale Tax

8.00%

Project Contingency@

40%

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | | | | | | | |
|-------------------|--------------|--|--|--|--|--|--|--|----|---------|
| Original Estimate | 2019 Dollars | | | | | | | | \$ | 174,703 |
| Current Estimate | 2019 Dollars | | | | | | | | \$ | 174,703 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 17,470 | 0% | \$ - | \$ 17,470 |
| Engr. During Construction | 10.0% | \$ 17,470 | 0% | \$ - | \$ 17,470 |
| Construction Mgt. | 5.0% | \$ 8,735 | 0% | \$ - | \$ 8,735 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars)

\$ 218,378

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number** 15815**Equalization Basin Valve Replacement****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | X |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|----------------------------------|---|----|---|----|---|----|----|---------|
| Total Construction Cost ¹ | Buried 36" Valves (2) and Piping | 1 | LS | - | - | - | - | \$ | 360,000 |
| | Buried 24" Valves (2) and Piping | 1 | LS | - | - | - | - | \$ | 120,000 |
| | | | | | \$ | - | \$ | - | \$ - |
| Subtotal | | | | | | | | \$ | 480,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

25% \$ 120,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 600,000 |
| Current Estimate | 2019 Dollars | \$ | 600,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 10.0% | \$ 60,000 | 0% | \$ - | \$ 60,000 |
| Design | 10.0% | \$ 60,000 | 0% | \$ - | \$ 60,000 |
| Engr. During Construction | 10.0% | \$ 60,000 | 0% | \$ - | \$ 60,000 |
| Construction Mgt. | 5.0% | \$ 30,000 | 0% | \$ - | \$ 30,000 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 810,000 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number**

15816

AWT Hypochlorite Pumps**Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|--|--------------|----------|-----------|---------------|---------|------------|-----------|------------|
| | | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | | |
| Total Construction Cost ¹ | | | | | | | | | |
| | Remove existing AWT Hypochlorite Pumps | 1 | LS | | \$ | - | \$ | 10,000 | \$ 10,000 |
| | Install new AWT Hypochlorite pumps | 3 | LS | \$ 50,000 | \$ | 150,000 | 25% | \$ 37,500 | \$ 187,500 |
| Subtotal | | | | | | | | | \$ 197,500 |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | |
| and Bonds and Insurance @ | | | 0% | | | | | | \$ - |
| Shipping Rate | | | 0% | | | | | | included |
| Sale Tax | | | 0.00% | | | | | | \$ - |
| Project Contingency@ | | | 10% | | | | | | \$ 19,750 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | | \$ 217,250 |
| Current Estimate | | 2019 Dollars | | | | | | | \$ 217,250 |

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|---------------------------|-------|--------|--------|-------------|----|----------|------|------------|
| | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Design | 5.0% | \$ | 10,863 | 0% | \$ | - | \$ - | \$ 10,863 |
| | Engr. During Construction | 10.0% | \$ | 21,725 | 0% | \$ | - | \$ - | \$ 21,725 |
| | Construction Mgt. | 5.0% | \$ | 10,863 | 0% | \$ | - | \$ - | \$ 10,863 |
| | Total Project Contingency | 0.0% | \$ | - | 0% | \$ | - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 260,700 |

Notes:

1 Cost estimate based on bids from CTP Miscellaneous Improvements 2015

Coastal Treatment Plant
Project Number 15817

AWT Instrumentation
Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|--|---|----|-----------|-----------|-----|-----------|----|--------|
| Total Construction Cost | Turbidimeters (2) ¹ | 1 | LS | - | - | - | - | \$ | 40,000 |
| | Miscellaneous Piping /Valves | 1 | LS | \$ 15,000 | \$ 15,000 | 25% | \$ 3,750 | \$ | 18,750 |
| | Chlorine Residual Analyzers (3) ¹ | 1 | LS | - | - | - | - | \$ | 60,000 |
| | Backwash Control Meter and Valve | 1 | LS | - | - | - | - | \$ | 50,000 |
| | Level Instrumentation | 9 | EA | \$ 5,000 | \$ 45,000 | 25% | \$ 11,250 | \$ | 56,250 |
| | | | | \$ | - | | \$ | - | \$ |

Subtotal

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 60,750

Shipping Rate

0% included

Sale Tax

8.00% \$ 4,800

Project Contingency@

30% \$ 87,165

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2019 Dollars | \$ | 377,715 |
| Current Estimate | 2019 Dollars | \$ | 377,715 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 5.0% | \$ 18,886 | 0% | \$ - | \$ 18,886 |
| Engr. During Construction | 10.0% | \$ 37,772 | 0% | \$ - | \$ 37,772 |
| Construction Mgt. | 5.0% | \$ 18,886 | 0% | \$ - | \$ 18,886 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2017 Dollars) | | | | | \$ 453,258 |

Notes:

1 Cost Based on Bids for the Regional Treatment Plant Miscellaneous Improvements 2016 Project.

Coastal Treatment Plant**Project Number** 15818**Chlorine Contact Tank Gates****Main Project Type**

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate

May-17

Estimate Update

Jul-19

Prepared By

RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost¹

CCT Sluice Gate

2

EA

\$

23,500

\$

42,000

40%

\$

16,800

\$

58,800

CCT Drain Gate

2

EA

\$

17,500

\$

31,000

40%

\$

12,400

\$

43,400

Subtotal

\$ 102,200

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 27,594

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 5,840

Project Contingency@

30%

\$ 40,690

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars

\$ 176,324

Current Estimate 2019 Dollars

\$ 176,324

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 17,632 | 0% | \$ - | \$ 17,632 |
| Engr. During Construction | 10.0% | \$ 17,632 | 0% | \$ - | \$ 17,632 |
| Construction Mgt. | 5.0% | \$ 8,816 | 0% | \$ - | \$ 8,816 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

Total Project Cost (Present Value in 2019 Dollars)

\$ 220,405

Notes:

1 Cost estimate provided by Hazen & Sawyer

Coastal Treatment Plant**Project Number**

15819

AWT Support Equipment**Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate May-17
 Estimate Update Jul-19

Prepared By RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|--|--------------|-------|---------------|------------|------------|-----------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost | | | | | | | | |
| | Remove existing AWT Flocculators | 1 | LS | | | | \$ 10,000 | \$ 10,000 |
| | Install new Flocculators ¹ | 2 | EA | \$ 50,000 | \$ 100,000 | 25% | \$ 25,000 | \$ 125,000 |
| | Replace Chem Clean System | 1 | LS | - | - | - | - | \$ 50,000 |
| | Replace Mechanical Systems | 1 | LS | - | - | - | - | \$ 35,000 |
| | Remove existing AWT Chlorine Mixers | 1 | LS | | \$ - | | \$ 10,000 | \$ 10,000 |
| | Install new Chlorine Mixers ¹ | 2 | EA | \$ 50,000 | \$ 100,000 | 25% | \$ 25,000 | \$ 125,000 |
| Subtotal | | | | | \$ 200,000 | | | \$ 355,000 |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | |
| and Bonds and Insurance @ | | 27% | | | | | | \$ 95,850 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 16,000 |
| Project Contingency@ | | 30% | | | | | | \$ 140,055 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2019 Dollars | | | | | | \$ 606,905 |
| Current Estimate | | 2019 Dollars | | | | | | \$ 606,905 |

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|---------------------------|-------|--------|--------|-------------|----|----------|------|------------|
| | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| | Design | 10.0% | \$ | 60,691 | 0% | \$ | - | \$ - | \$ 60,691 |
| | Engr. During Construction | 10.0% | \$ | 60,691 | 0% | \$ | - | \$ - | \$ 60,691 |
| | Construction Mgt. | 5.0% | \$ | 30,345 | 0% | \$ | - | \$ - | \$ 30,345 |
| | Total Project Contingency | 0.0% | \$ | - | 0% | \$ | - | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | | | | | \$ 758,631 |

Notes:

- 1 Cost estimate based on bids from CTP Miscellaneous Improvements 2015

Coastal Treatment Plant

Project Number 15821

Piping from AWPS to Filters and Surge Tank to DPS

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate
 Estimate Update

May-17
 Jul-19

Prepared By RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost¹

| | | | | | | | | | | | |
|---------------------------|---|----|----|--------|----|--------|-----|--------|-------|--------|---------|
| Site Work | 1 | LS | | | | | \$ | 12,357 | \$ | 12,357 | |
| 14-Inch Effluent | 1 | LS | \$ | 12,000 | \$ | 12,000 | 25% | \$ | 3,000 | \$ | 15,000 |
| Site Work | 1 | LS | | | | | \$ | 4,300 | \$ | 4,300 | |
| 20-Inch Effluent | 1 | LS | \$ | 6,500 | \$ | 6,500 | 25% | \$ | 1,625 | \$ | 8,125 |
| Site Work | 1 | LS | | | | | \$ | 11,473 | \$ | 11,473 | |
| 14-Inch Backwash Waste | 1 | LS | \$ | 12,000 | \$ | 12,000 | 25% | \$ | 3,000 | \$ | 15,000 |
| Site Work | 1 | LS | | | | | \$ | 11,100 | \$ | 11,100 | |
| 12-Inch Backwash Waste | 1 | LS | \$ | 10,000 | \$ | 10,000 | 25% | \$ | 2,500 | \$ | 12,500 |
| Site Work | 1 | LS | | | | | \$ | 33,254 | \$ | 33,254 | |
| 12-Inch Reclaimed | 1 | LS | \$ | 27,000 | \$ | 27,000 | 25% | \$ | 6,750 | \$ | 33,750 |
| Site Work | 1 | LS | | | | | \$ | 16,250 | \$ | 16,250 | |
| 4-Inch PW | 1 | LS | \$ | 4,800 | \$ | 4,800 | 25% | \$ | 1,200 | \$ | 6,000 |
| Site Work | 1 | LS | | | | | \$ | 39,671 | \$ | 39,671 | |
| 4-Inch NPW | 1 | LS | \$ | 21,000 | \$ | 21,000 | 25% | \$ | 5,250 | \$ | 26,250 |
| Site Work | 1 | LS | | | | | \$ | 33,336 | \$ | 33,336 | |
| 12-Inch Filter Supply | 1 | LS | \$ | 26,000 | \$ | 26,000 | 25% | \$ | 6,500 | \$ | 32,500 |
| Site Work | 1 | LS | | | | | \$ | 23,938 | \$ | 23,938 | |
| 12-Inch Tertiary Effluent | 1 | LS | \$ | 21,500 | \$ | 21,500 | 25% | \$ | 5,375 | \$ | 26,875 |
| Site Work | 1 | LS | | | | | \$ | 25,000 | \$ | 25,000 | |
| 6-inch NPW | 1 | LS | \$ | 8,800 | \$ | 8,800 | 25% | | | \$ | 8,800 |
| Site Work | 1 | LS | | | | | \$ | 10,000 | \$ | 10,000 | |
| 6-inch Drain | 1 | LS | \$ | 5,000 | \$ | 5,000 | 25% | | | \$ | 5,000 |
| Site Work | 1 | LS | | | | | \$ | 60,000 | \$ | 60,000 | |
| 8-inch Drain | 1 | LS | \$ | 30,000 | \$ | 30,000 | 25% | \$ | 7,500 | \$ | 37,500 |
| | | | | | | | | | | \$ | 507,979 |

Subtotal

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ 137,154

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 14,768

Project Contingency@

25%

\$ 164,975

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2019 Dollars
 Current Estimate 2019 Dollars

\$ 824,877
 \$ 824,877

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 82,488 | 0% | \$ - | \$ 82,488 |
| Engr. During Construction | 7.5% | \$ 61,866 | 0% | \$ - | \$ 61,866 |
| Construction Mgt. | 5.0% | \$ 41,244 | 0% | \$ - | \$ 41,244 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |
| Total Project Cost (Present Value in 2019 Dollars) | | | | | \$ 1,010,474 |

Notes:

1 Cost estimate provided by Hazen & Sawyer

Appendix I
Regional Treatment Plant Ten Year Plan

BACKGROUND

The Regional Treatment Plant is a conventional activated sludge treatment plant with a secondary treatment design capacity of 12 mgd. The main wastewater treatment processes are screening, aerated grit removal, primary sedimentation, activated sludge aeration and secondary sedimentation. A schematic of the Regional Treatment Plant (RTP) process flow diagram is presented in Figure I.1.

A portion of secondary treated effluent is reclaimed on the site and pumped into the Moulton Niguel Water District reclaimed water system for distribution for irrigation use. Each of the reclamation, or advanced wastewater treatment (AWT), facilities consists of chemical addition, coagulation (with mechanical mixing), filtration and chlorine disinfection. The remaining portion of the secondary effluent is discharged through the Aliso Creek Ocean Outfall.

The RTP treats solids produced at the plant, thickened solids trucked from the El Toro Water Reclamation Plant, and thickened solids pumped from the Coastal Treatment Plant. Solids treatment at the Regional Treatment Plant consists of dissolved air flotation thickening of the RTP waste activated sludge, anaerobic digestion and centrifuge dewatering. Dewatered solids are removed from the facility by a private contractor for composting or land application. Screenings and grit are transported by a private contractor to a sanitary landfill.

FACILITY HISTORY

The Regional Treatment Plant was constructed in the early 1980's and began operation in 1983. The original construction project included the liquid stream portion of the plant, the thickeners, the digesters, the effluent equalization pond and the Energy Recovery Building. The Energy Recovery Building included the cogeneration equipment as well as belt filter presses for dewatering. Key subsequent projects at the plant included the following:

- 1989: The first AWT facilities were expanded (this facility is known as AWT No. 1) to a current capacity of 2.4 mgd.
- 1992: The anaerobic digester covers were fixed at a set level.
- 1994: New Odor Control Scrubber No. 1 installed.
- 1998: New Odor Control Scrubber No. 2 installed.
- 1997: Original cogeneration engines replaced to meet AQMD rules.
- 1998: Solids handling expansion included the construction of a truck loading bay adjoining the Energy Recovery Building and the replacement of the belt filter presses with centrifuges.
- 1996: Construction of AWT No.2 (with a current capacity of 9.0 mgd) along with an underground reclaimed water storage tank.

- 2003: New Odor Control Scrubber No.3 installed.
- 2004: Rehabilitation of aeration system completed.
- 2005: Upgrade of SCADA system completed.
- 2008: Reconstruction of the DAF collector mechanisms, TWAS and WAS pumping systems.
- 2011: Rehabilitation of plant headworks including reconstruction of Headworks Building roof completed.
- 2012: Failure of the two influent sewage force mains with subsequent repair.
- 2012: Reconstruction of Administration Building Roof completed.
- 2016: Recoating work in secondary sedimentation basins and anaerobic digesters completed.
- 2018: The replacement of the cogeneration system to comply with amended AQMD Rule 1110.2 was completed.

- South Coast Water District

The collective group within SOCWA that owns capacity in the Regional Treatment Plant is called Project Committee 17. The percentage of ownership held by each of the agencies is shown in Table I.1.

Table I.1
Current Percent Ownership at the Regional Treatment Plant

| | % Liquids | % Common | % Solids |
|-------------------------------|-----------|----------|----------|
| El Toro Water District | 0.00% | 10.26% | 20.41% |
| Emerald Bay Service District | 0.00% | 0.33% | 0.59% |
| City of Laguna Beach | 0.00% | 6.27% | 11.22% |
| Moulton Niguel Water District | 100.00% | 78.13% | 58.82% |
| South Coast Water District | 0.00% | 5.01% | 8.96% |
| Total | 100.00% | 100.00% | 100.00% |

FACILITY OWNERSHIP

The Regional Treatment Plant is owned and operated by SOCWA on behalf of five member agencies:

- El Toro Water District
- Emerald Bay Service District
- City of Laguna Beach
- Moulton Niguel Water District

The Moulton Niguel Water District (MNWD) owns the whole capacity of the AWT in addition to the liquid stream for the plant.

PLANT UTILIZATION

Table I.2 shows the average annual influent flows into the Regional Treatment Plant over the past ten years.

Table I.2
Regional Treatment Plant Utilization

| Year | Average Annual Daily Influent Flow (mgd) | Peak Month Average Daily Influent Flow (mgd) | Average Annual Daily Recycled Water Production (mgd) | Peak Month Average Daily Recycled Water Production (mgd) |
|------|--|--|--|--|
| 2018 | 7.54 | 7.95 | 5.16 | 7.07 |
| 2017 | 7.78 | 8.78 | 5.09 | 6.95 |
| 2016 | 7.60 | 8.06 | 5.05 | 7.19 |
| 2015 | 7.85 | 8.25 | 5.81 | 7.56 |
| 2014 | 8.32 | 8.78 | 6.58 | 8.16 |
| 2013 | 8.77 | 9.13 | 6.00 | 7.85 |
| 2012 | 9.07 | 9.30 | 5.50 | 7.87 |
| 2011 | 9.32 | 9.82 | 5.04 | 8.03 |
| 2010 | 9.22 | 11.14 | 5.35 | 8.04 |
| 2009 | 9.44 | 9.78 | 6.30 | 8.51 |

All raw sewage flowing into the RTP originates from within the MNWD. Influent flow has steadily decreased over the past ten years. This is a function of MNWD's effective water conservation program. The six-year California drought from 2012 to 2017 was one of the drivers for reduced flows. There has not appeared to a significant rebound in influent flows over the past two years. The MNWD is in the process of updating its Wastewater Master Plan. One of the options that may be considered is the transfer of raw sewage flows from other tributary basins to the RTP. However, the existing raw sewage flow at the RTP is expected to continue into the near future.

The operation of the RTP has effectively handled the reduced flows. This is due in

part to the flexibility at the RTP to remove basins from operation to handle reduced flows. The turn-down ratio of the single stage blower at RTP has aided the aeration system in handling the lower plant flow rates.

The 2013 Facility Plan for the Regional Treatment Plant included a brief evaluation of the ability of the RTP to handle the flow from the CTP (in the event that the latter facility would be abandoned). The assessment contemplated the conversion to an MBR process to allow the recycling of the imported CTP flows. The concept was not recommended for additional development due to the following issues:

- The need for a raw sewage force main from the CTP to the RTP.
- The potential for increased odors at the RTP.
- Limitations on the configuration of the existing RTP Headworks.
- Concerns about wet weather events at the RTP.

The existing flow utilization has some impact on the Ten Year Plan. No need for expanded facilities has been identified. The lower level of plant utilization means that basins will be cycled on or off at a comparatively high rate. The accelerated wetting/drying cycles will have a tendency to accelerate corrosion. The impact of this cycle should be monitored through ongoing condition assessments. The short-term upgrade of the aeration system should also address the needed turn-down ratios.

WET WEATHER EVENTS

The intensity of peak wet weather events over the past ten years has increased. SOCWA facilities have experienced significant winter storm events in 2010, 2017, and 2019. The ratio of peak flow to average daily flow during a ten-year period during these events has ranged between 4:1 to 5:1 (the accuracy of these estimates are limited by the plant flow metering capability) over a three hour period. The January 22, 2017, storm event resulted in an overflow of the Secondary Effluent Equalization Pond.

The design of the effluent handling system depends on a combination of the 33-inch effluent pipeline and the tertiary treatment/pumping system. The capacity of the gravity effluent pipeline is limited to approximately 19 mgd with the tertiary treatment/pumping system to convey the remaining flows. However, during a long-term series of storms the transmission capability of the tertiary treatment/pumping system becomes limited by available storage in the MNWD reclaimed water system. Large storm events can also create treatment problems within the RTP that can limit the capacity of the RTP tertiary treatment system. The MNWD is currently evaluating potential projects to increase the transmission capacity of the plant effluent system.

The current version of the Ten Year Plan includes relatively few improvements related to the handling of the peak wet weather flow events at the RTP. The general approach of SOCWA and its member agencies is to evaluate ways of limiting storm flows within the member agency collection systems. When those

options have been exhausted there will be additional planning to determine in-plant improvements to handle storm events. However, the overall impact of the storm flows is to indicate the need to maintain the overall facility capacity at the Regional Treatment Plant.

PROJECT COMMITTEE 17 AGREEMENT

The fifty year term of the Project Committee 17 agreement expires in 2029. That expiration date falls within the fifteen-year planning span used in this document. The Regional Treatment Plant is unique in that the liquids capacity has only one owner, the MNWD. Therefore, the project agreement is not seen as having a significant impact on capital expenditures at the treatment plant. However, the expiration could have a more significant impact on Commons and Solids capacity shared among the five participating member agencies. The Project Committee 15 members could determine to construct solids facilities at the Coastal Plant; the El Toro Water District (ETWD) could investigate alternative options for the handling of its solids. These potential actions would tend to cause a delay to Common and Solids improvements at the RTP. However, the currently proposed Ten Year Plan is based on asset replacement based on expected life. A series of condition assessments are planned over the next ten years to verify the need for various replacement projects. The goal is asset replacement to avoid increased risk of failure that might impact facility operations.

EXISTING RECYCLED WATER PRODUCTION

The original construction of the Regional Treatment Plant in 1983 included a tertiary treatment system with sand filtration and chlorine disinfection referred to as Advanced Wastewater Treatment Facility (AWT) No. 1. This facility was expanded in 1989. The applied water pumps for this system draw water from the Secondary Effluent Equalization Pond. AWT No. 1 has not been operated since the early 2000's.

AWT No. 2 was constructed in 1998. The facility includes two applied water pumps (delivering secondary effluent), six sand filters (complete with rapid mix and flocculation systems), and a chlorine contact basin. The chlorine contact basin was configured for a future conversion to ultraviolet radiation disinfection. The six filters have a rated loading capacity of 9.5 mgd (based on the Title 22 filter loading rate of 5.0 gpm/sq.ft. with one filter out of service) and a maximum production rate of 9 mgd.

A 2005 study ("Tertiary Filter Evaluation", Carollo Engineers) identified a modified operating approach that would allow the maximum production rate to increase from 9.0 mgd to 11.0 mgd. This increased production rate was based on the following two actions:

- Modifying the control sequence to maintain a loading of 5.0 gpm/sq.ft. when all six filters are in operation.
- Increasing the water depth in the chlorine contact basin from 15.6 feet to 17.1 feet.

The modifications were not implemented at the Regional Treatment Plant due to the decreasing levels of influent flow.

The AWT capacity at the Regional Treatment Plant is completely owned by the MNWD.

FUTURE AWT PLANNING

Water reclamation at the Regional Treatment Plant is unique compared to the other two SOCWA treatment facilities. The effluent at the Regional Treatment Plant is fully utilized by the MNWD for used in the recycled water system for turf irrigation. Therefore, there are no plans at the RTP to either expand or modify the treatment process for AWT No. 2. This scenario might change if the MNWD elects to shift sewage flows from other parts of its collection system to the Regional Treatment Plant. This is not addressed in the current Ten Year Plan.

SOCWA's capital improvement planning for the AWT is focused on the preservation of the existing assets. SOCWA has used Earl Gehringer, an original technician with the Evoqua (the supplier of the package filtration equipment at the RTP) to perform a site investigation of the filters every couple of years. This inspection was last completed in November 2016. The evaluation indicated that the filtration system remained in good condition. The inspections indicated that with upgrades the filtration structure should remain in service for another fifteen years. The current capital improvement budget includes a project for the upgrade of the AWT No. 2 filters. The Ten Year Plan

includes limited additional rehabilitation for the filter system over the next 15 years.

There is currently no plan for conversion of the disinfection system from chlorination (with sodium hypochlorite) to ultraviolet radiation.

The MNWD is currently reviewing potential changes to their recycled water system. The potential outcomes of this study have not been addressed in this Ten Year Plan.

CURRENT BIOSOLIDS HANDLING

Primary sludge and thickened waste activate sludge from the Regional Treatment Plant are combined with trucked sludge from the El Toro Water District Reclamation Facility and pumped sludge from the Coastal Treatment Plant in one of two sludge equalization tanks. The mixed sludge is then digested anaerobically and dewatered by any of the four centrifuges. The centrifuges typically produce a biosolids cake that is 23% to 26% solids concentration. The centrifuges are located on the second story of the Energy Recovery Building. The dewatered solids are then conveyed directed to one of two elevated hoppers. These hoppers can then discharge to a single truck bay on the building's first floor. A hauling truck trailer can hold approximately 25 wet tons of sludge. Two truckloads are typically hauled from the Regional Treatment Plant each day.

The dewatered cake solids at the Regional Treatment Plant can be stored within the sludge hoppers. However, each hopper can only hold approximately twenty tons of cake. This is equivalent to approximately

one day of solids storage. This plant has also used available volume within the digesters during disruptions of the dewatering operation as a means of solids storage. These digesters can hold approximately two to three days of sludge storage.

Dewatered biosolids are trucked to one of the following systems/locations:

- Synagro South Kern County Composting Facility.
- Synagro Nursery Products Composting Facility (located near Adelanto).
- County of Orange Prima Deshecha Landfill.

Table I.3 presents the solids generation at the Regional Plant based on flow source and on type of disposal. The wet tons of generated biosolids has remained roughly the same over a five-year period.

SOLIDS ASSET PLANNING

The current version of the Ten Year Plan focuses on the asset replacement aspect of the solids management system and dewatering. The four anaerobic digesters at the RTP were all constructed and placed into operation in 1983. The system was modified in the early 1990's when the floating covers on the digesters were fixed into stationary levels. SOCWA has recently completed a program of cleaning and recoating the internal concrete walls (only those portions of the walls exposed due to the rising and falling liquid levels in the digesters) and the internal portion

of the metallic domes. The recoating of the digesters was intended to extend the life of the system by at least another ten years. The projected project is then to replace the covers and the digester mixing systems. Ancillary projects will include the replacement of the digester heating systems, the digested sludge pumps and the associated piping systems.

The solids dewatering system at the Regional Treatment Plant was reconstructed in 1998 (the original belt filter presses were replaced with centrifuges). A recent condition assessment completed by Carollo Engineers indicated that the main components of the dewatering system should be replaced in five to ten years. However, the procurement of replacement parts for the dewatering centrifuges has been an ongoing issue for the Operations staff.

ALTERNATIVE BIOSOLIDS HANDLING OPTIONS

SOCWA has done past evaluations of alternative methods of handling biosolids. SOCWA has developed conceptual plans for the implementation of heat drying at both the J. B. Latham and the Regional Treatment Plants. SOCWA also investigated participation in the Irvine Ranch Water District (IRWD) Michelson Water Reclamation Plant Heat Drying Facility in 2010. SOCWA has not adopted these approaches due to higher unit costs for handling.

SOCWA issued Requests for Proposals (RFPs) in the spring of 2019 for the evaluation of innovative biosolids technologies. This action is being taken

for the following reasons:

- **Potential Biosolids Land Ban.** This ban has been a regulatory discussion point for over ten years. A future potential ban remains uncertain; however, its impact should be considered as the diversion of biosolids to the composting market may exceed the current market demand.
- **Deferral of Capital Investments.** Significant capital investments are expected at the Regional Treatment Plant in the next ten years to reconstruct the digestion and dewatering systems. A portion of these costs may be avoided through the use of an innovative biosolids handling technology.
- **Neighborhood Impacts.** Biosolids hauling has an impact on the surroundings in terms of both odors and noise. A technology that would significantly reduce hauling may aid SOCWA staff in its relationship with the residential area surrounding the treatment plant.
- **Facility Reliability.** The RTP only has the equivalent of 1 to 1-1/2 days of storage of dewatered solids. This becomes problematic if a problem arises with services with one of the contracted haulers.

Six innovative biosolids technology proposals were received. These proposals will be reviewed by a technical advisory committee through the summer and early fall of 2019. This process may have an impact on a future version of the Ten Year Plan; however, the current

version of the plan does not reflect the implementation of an innovative biosolids technology.

SOCWA ASSETS AT RTP

The original listing of SOCWA assets was prepared by Tetra Tech in 2005 as part of an Asset Management Study. This listing provided a comprehensive list of mechanical items and systems. SOCWA has expanded the list with structural, structural appurtenances, electrical and instrumentation components, site facilities and buried piping. The list was also amended to include structures and equipment associated with new projects. The current asset list for the Regional Treatment Plant includes over 430 items. The SOCWA asset listing is maintained in an Excel spreadsheet. Table I.4 presents a listing of SOCWA assets at the Regional Treatment Plant. Each listing includes a year of installation, an expected life and a replacement (or rehabilitation year).

There has been a significant level in capital investment in the replacement and rehabilitation of systems at the Regional Treatment Plant over the past 20 years. Some systems and devices are recently reconstructed and not projected for replacement within the 15-year span of the draft Ten Year Plan. Examples of these systems include the following:

- Standby Power Generator and Associated Automatic Transfer Switches
- Emergency Interstage Pumps (the trailer mounted Godwin Pumps)
- Plant Switchgear

- 480 Volt Conductors Between Switchgear and Motor Control Centers D, E, and F
- Co-Generation Engine
- Digester Gas Treatment System

The Ten Year Plan for the Regional Treatment Plant also does not contemplate the reconstruction of major concrete structures. The anticipated life of concrete structures in a wastewater environment is 50 years. The majority of concrete structures were completed in 1983 which would indicate an anticipated end of life in 2033. However, visual inspections of concrete structure have only identified superficial deficiencies. No projects have been identified for the replacement of major structures.

The Access Bridge into the Regional Treatment Plant bears special attention as this is currently the only method of access into the treatment plant. A recent evaluation of the bridge only identified minor improvements. These improvements were addressed in a 2017 project.

Projects that were completed during the past 20 years may require additional rehabilitation during the fifteen-year span of the proposed Capital Improvement Plan. This is due to the anticipated life span of some assets. These projects tend to appear in the latter part of the fifteen-year span. These projects include the following:

- Replacement of the preliminary treatment systems in the Headworks Building.
- Rehabilitation of the primary treat-

ment sludge collectors and basin covers.

- Reconstruction of the Administration Building roof.
- Replacement of AWT No.2 filter media (given the ten year cycle for doing this work this project occurs twice within the fifteen year span of the Capital Improvement Plan).

CONDITION ASSESSMENTS

The level of uncertainty of some long term rehabilitation projects at the RTP reflects the importance of condition assessments through the course of the Ten Year Plan cycle. SOCWA began a program of contracting condition assessments in 2016. The assessments conducted thus far include the following:

- Influent Junction Structure
- Access Road Bridge
- Energy Building HVAC System
- Plant Outdoor Lighting System
- Electrical System Manholes
- Solids Dewatering System
- AWT No. 2 Filtration System

A condition assessment of the Secondary Effluent Equalization Pond and the associated slide gates is scheduled for the spring of 2020.

Additional condition assessments are included through the Ten Year Plan. In general, a condition assessment for a major system is scheduled two to five years prior to the scheduled date for the rehabilitation project.

KEY ISSUES

Various issues have a significant impact on both the projects and the project costs for the Regional Treatment Plant capital improvement program. Some of these issues are addressed below.

Property Perimeter

There are a number of projects in the plan that address the perimeter of the property. One of the most significant projects relates to a recent Tetra Tech condition assessment of the storm channels along the north and west side of the treatment plant. This assessment identified structural deficiencies; the correction of these deficiencies involves a significant cost.

Another potentially significant site project involves a study to address the stability of the hillside on the west side of the treatment plant. It is not certain whether this issue will require a significant capital investment.

Structures – Seismic

Only one structure at the Regional Treatment Plant has been subject to a detailed evaluation of seismic safety: the Energy Management Building. A study performed in 1998 identified needed improvements. These improvements were completed in 2000. There are cracks appearing in the Energy Building. These are not major cracks but they do merit evaluation. Project 17330 will include a structural evaluation of the building.

There are no other seismic evaluations or improvements included in the Ten Year Plan.

Buried Piping

Buried infrastructure has been an important issue at the RTP due to the history of piping failures. Lee & Ro completed the development of a plan for the reconstruction of the buried piping in 2018. This plan identified a cost of reconstruction of over \$4 million. The approach taken in the current plan was to prioritize the replacement of three piping systems that had been the most prone to failure:

- Digester Gas (currently budgeted)
- Hot Water Supply and Return
- 2W, 3W Low Pressure, and 3W High Pressure Piping

These projects have all been scheduled in the first three years of the proposed Capital Improvement Plan.

A separate piping project that does not appear in this volume – the replacement of the Export Sludge piping on the Regional Treatment Plant – is identified in the draft plan for Project Committee 15 (the Coastal Treatment Plant).

The Moulton Niguel Water District recently completed a design for the rehabilitation of the sewer piping that enters the treatment plant from the south property line. The Ten Year Plan will need to be updated when the estimate and schedule for that project are identified.

There are currently no plans for upgrades

to the secondary effluent piping on the plant site. A plan needs to be developed to provide a condition assessment for this system.

Dewatering System

The single most expensive capital improvement plan identified is the reconstruction of the Dewatering System. This proposed project has a cost of over \$7 million. This project resulted from a Carollo Engineers condition assessment that asserted a remaining life of 5 to 10 years for the centrifuges (as well as the conveyors). This is supported by increasing frequency of maintenance projects on the centrifuges. This project has been placed in Year 6 of the draft Ten Year Plan. Further investigation is needed to determine if the correct approach is to replace the centrifuges with like equipment.

The reconstruction of the dewatering system may also be impacted by the outcome of the Innovative Biosolids Technology investigation.

Actual Life Versus “Book” Life

There are a series of projects identified in Years 6 through 15 of the proposed plan that have been the subject of rehabilitation or reconstruction projects within the past 20 years. A few of these systems include the following:

- Headworks Bar Screens
- Primary Sedimentation Covers and Sludge Collectors
- Secondary Sedimentation Sludge Collectors

- Polymer and Sodium Hypochlorite Chemical Feed Systems
- Dissolved Air Flotation Thickener Sludge Collectors
- Thickened Waste Activate Sludge Pumps
- Digester Domes

These systems are included in the later years of the draft Ten Year Plan where they exceed the identified “book” lives. However, it has been SOCWA’s experience that these systems have an actual life that exceeds “book” life. These systems should undergo future condition assessments to verify the need for a project.

timing has been built around either the life of the longest asset or the asset that was deemed to be the most vulnerable. The timing of projects does not typically coincide with the effective useful life. The intent of the current edition of the Ten Year Plan was to address the replacement of all assets that exceed their life within the 15 year span of the evaluation. However, projects within the Ten Year Plan have been prioritized according to the current understanding of the asset condition as well as the critical nature of that asset.

TEN YEAR PLAN PROJECTS

Table I.5 summarizes the proposed capital improvement projects and costs for the Regional Treatment Plant. This table identifies projects in the fiscal year that they would be added to the SOCWA capital improvement budget. Descriptions of each of the projects in Table I.5 are provided in Appendix J. Tables showing the derivation of project costs are shown in Appendix K. The values in Table I.5 do not include project administration costs. These values are added to the annual costs in Chapter 8 of the main Ten Year Plan report.

The projects identified in Table I.5 largely focus on the replacement of assets as they reach the end of their useful life. Different components within an area or process may have varied expected lives. The project

TABLE I.4
REGIONAL TREATMENT PLANT ASSET LISTING

| Item No. | System /Location | Asset Description | Installation Year | Nominal Useful Life (Years) | Nominal Replacement Year |
|----------|-------------------------|---|-------------------|-----------------------------|--------------------------|
| 1 | Preliminary Treatment | Manhole A | 1983 | 50 | 2033 |
| 2 | Preliminary Treatment | Manhole B | 1983 | 50 | 2033 |
| 3 | Preliminary Treatment | Manhole C | 1983 | 50 | 2033 |
| 4 | Preliminary Treatment | Vault (MHC) | 1983 | 50 | 2033 |
| 5 | Preliminary Treatment | Manhole 5 | 1983 | 50 | 2033 |
| 6 | Preliminary Treatment | Manhole 1 | 1983 | 50 | 2033 |
| 7 | Preliminary Treatment | Manhole 2 | 1983 | 50 | 2033 |
| 8 | Preliminary Treatment | Manhole 3 | 1983 | 50 | 2033 |
| 9 | Preliminary Treatment | Manhole 3A | 1983 | 50 | 2033 |
| 10 | Preliminary Treatment | Manhole 4 | 1983 | 50 | 2033 |
| 11 | Preliminary Treatment | Bypass Vault (MH4) | 1983 | 50 | 2033 |
| 12 | Preliminary Treatment | Headworks Building Structure | 1983 | 50 | 2033 |
| 13 | Preliminary Treatment | Headworks Building Architectural Hardware | 1983 | 35 | 2018 |
| 14 | Preliminary Treatment | Headworks Building Roof | 2009 | 25 | 2034 |
| 15 | Preliminary Treatment | Headworks Building Electrical | 2009 | 30 | 2039 |
| 16 | Preliminary Treatment | MCC-A | 1983 | 30 | 2013 |
| 17 | Preliminary Treatment | Headworks Building Mechanical | 1983 | 30 | 2013 |
| 18 | Preliminary Treatment | Headworks Building Bin Floor Sump Pump | 2009 | 25 | 2034 |
| 19 | Preliminary Treatment | Headworks Bldg Gas Detection | 2009 | 20 | 2029 |
| 20 | Preliminary Treatment | Headworks Building Supply Fan | 1983 | 30 | 2013 |
| 21 | Preliminary Treatment | Headworks Gates | 2009 | 30 | 2039 |
| 22 | Preliminary Treatment | Influent Structure Gates | 2017 | 30 | 2047 |
| 23 | Preliminary Treatment | Influent Junction Structure | 1983 | 50 | 2033 |
| 24 | Preliminary Treatment | Influent Structure Drainage Drywell | 1983 | 50 | 2033 |
| 25 | Preliminary Treatment | Influent Structure Drainage Pump | 1983 | 20 | 2003 |
| 26 | Preliminary Treatment | Bar Screen | 2009 | 20 | 2029 |
| 27 | Preliminary Treatment | Screenings Compactor | 2009 | 15 | 2024 |
| 28 | Preliminary Treatment | Screenings Conveyor | 2009 | 20 | 2029 |
| 29 | Preliminary Treatment | Grit Classifier | 2009 | 20 | 2029 |
| 30 | Preliminary Treatment | Aerated Grit Removal Tank Structures | 1983 | 50 | 2033 |
| 31 | Preliminary Treatment | Aerated Grit Removal Tank Covers | 1995 | 25 | 2020 |
| 32 | Preliminary Treatment | Aerated Grit Removal Tank Mechanical | 1983 | 25 | 2008 |
| 33 | Primary Treatment | Primary Sedimentation Basin Structural | 1983 | 50 | 2033 |
| 34 | Primary Treatment | Primary Sedimentation Basin Covers | 1994 | 25 | 2019 |
| 35 | Primary Treatment | Primary Sedimentation Sludge Collectors | 2007 | 20 | 2027 |
| 36 | Primary Treatment | Primary Sedimentation Cross Collectors | 1995 | 20 | 2015 |
| 37 | Primary Treatment | Primary Sedimentation Scum Collectors | 1983 | 20 | 2003 |
| 38 | Primary Treatment | Primary Tank Level Controller | 2007 | 20 | 2027 |
| 39 | Primary Treatment | Level Indicator: Primary Tank Level | 1983 | 20 | 2003 |
| 40 | Primary Treatment | Scum Trough Bubbler Panel | 2002 | 20 | 2022 |
| 41 | Primary Treatment | Primary Sedimentation Scum Pumps | 1983 | 25 | 2008 |
| 42 | Primary Treatment | Primary Sedimentation Submerged Effluent Collectors | 1983 | 30 | 2013 |
| 43 | Primary Treatment | Primary Sedimentation Basin Electrical | 1983 | 30 | 2013 |
| 44 | Primary Treatment | Primary Gallery Structure | 1983 | 50 | 2033 |
| 45 | | Primary Gallery Architectural Hardware | 1983 | 50 | 2033 |
| 46 | Primary Treatment | Primary Gallery Mechanical | 1983 | 30 | 2013 |
| 47 | Primary Treatment | Primary Gallery Roof Fan | 1983 | 20 | 2003 |
| 48 | Primary Treatment | Primary Gallery Air Handling Unit | 1983 | 20 | 2003 |
| 49 | Primary Treatment | Primary Gallery Sump Pump | 1987 | 20 | 2007 |
| 50 | Primary Treatment | Primary Gallery Tank Drainage Pump | 2013 | 20 | 2033 |
| 51 | Primary Treatment | Primary Gallery Electrical | 1983 | 25 | 2008 |
| 52 | Primary Treatment | Primary Sludge Pumps | 2011 | 20 | 2031 |
| 53 | Primary Treatment | Primary Sludge Flowmeter | 2003 | 20 | 2023 |
| 54 | Primary Treatment | Grit Pumps | 1983 | 20 | 2003 |
| 55 | Interstage Pump Station | Interstage Structural | 1983 | 50 | 2033 |
| 56 | Interstage Pump Station | Interstage Pumps - Size 1 | 1983 | 25 | 2008 |
| 57 | Interstage Pump Station | Interstage Pumps - Size 2 | 1983 | 25 | 2008 |
| 58 | Interstage Pump Station | Interstage Pump Station Piping and Valves | 1983 | 30 | 2013 |
| 59 | Interstage Pump Station | Interstage Pump Station Electrical | 2006 | 25 | 2031 |
| 60 | Interstage Pump Station | Interstage Pump Station Emergency MCC | 2011 | 30 | 2041 |
| 61 | Interstage Pump Station | Emergency Interstage Pumps | 2011 | 30 | 2041 |
| 62 | Interstage Pump Station | Emergency Interstage Pump Station Piping and Valves | 2011 | 35 | 2046 |
| 63 | Interstage Pump Station | Emergency Interstage Electrical | 2011 | 30 | 2041 |
| 64 | Interstage Pump Station | MCC-H | 2017 | 20 | 2037 |
| 65 | Secondary Treatment | Aeration Basin Structure | 1983 | 50 | 2033 |
| 66 | Secondary Treatment | Aeration Basin Handrails | | 40 | 40 |
| 67 | Secondary Treatment | Aeration Basin Air Piping | 2003 | 40 | 2043 |
| 68 | Secondary Treatment | Aeration Air Flow Meters | 2003 | 20 | 2023 |
| 69 | Secondary Treatment | Aeration Dissolved Oxygen Meters | 2003 | 20 | 2023 |
| 70 | Secondary Treatment | Aeration Control Valves | 2003 | 20 | 2023 |
| 71 | Secondary Treatment | Pneumatic Actuator -Aeration Control Valves | 2003 | 20 | 2023 |
| 72 | Secondary Treatment | Aeration Air Diffusion System | 2003 | 20 | 2023 |
| 73 | Secondary Treatment | Aeration Basin Influent Gates | 1983 | 20 | 2003 |

| | | | | | |
|-----|-----------------------------|--|------|----|------|
| 74 | Secondary Treatment | Aeration Basin Effluent Weirs | 1983 | 30 | 2013 |
| 75 | Secondary Treatment | Aeration Basin Mechanical | 1983 | 30 | 2013 |
| 76 | Secondary Treatment | Aeration Basin Electrical | 2003 | 35 | 2038 |
| 77 | Secondary Treatment | Blower Building | 2003 | 50 | 2053 |
| 78 | Secondary Treatment | Blower Building Roof | 2003 | 25 | 2028 |
| 79 | Secondary Treatment | Blower Building Architectural Hardware | 2003 | 35 | 2038 |
| 80 | Secondary Treatment | Single Stage Blower | 2003 | 30 | 2033 |
| 81 | Secondary Treatment | Multistage Blowers | 2003 | 30 | 2033 |
| 82 | Secondary Treatment | Aeration Building Air Compressor | 2003 | 20 | 2023 |
| 83 | Secondary Treatment | Blower Building Aeration Control Valves | 2003 | 25 | 2028 |
| 84 | Secondary Treatment | Electric Actuator (Blower Bldg Aeration Valve) | 2003 | 20 | 2023 |
| 85 | Secondary Treatment | Pneumatic Actuator (Blower Bldg Aeration Control Valve) | 2003 | 20 | 2023 |
| 86 | Secondary Treatment | Blower Building Aeration Butterfly Valves | 2003 | 25 | 2028 |
| 87 | Secondary Treatment | Blower Building Aeration Check Valves | 2003 | 25 | 2028 |
| 88 | Secondary Treatment | Blower Building Aeration Piping | 2003 | 40 | 2043 |
| 89 | Secondary Treatment | Aeration Data Recorder | 2003 | 20 | 2023 |
| 90 | Secondary Treatment | Pressure Transmitter: Aeration | 2003 | 20 | 2023 |
| 91 | Secondary Treatment | Blower Building Mechanical | 2003 | 25 | 2028 |
| 92 | Secondary Treatment | Blower Building Electrical | 2003 | 35 | 2038 |
| 93 | Secondary Treatment | MCC-30310 | 2003 | 30 | 2033 |
| 94 | Secondary Treatment | MCC-B | 2017 | 30 | 2047 |
| 95 | Secondary Treatment | Secondary Sedimentation Basin Structures | 1983 | 50 | 2033 |
| 96 | Secondary Treatment | Secondary Sedimentation Basin Sludge Collectors | 1983 | 25 | 2008 |
| 97 | Secondary Treatment | Secondary Sedimentation Bridges | 1983 | 40 | 2023 |
| 98 | Secondary Treatment | Secondary Sedimentation Basin Effluent Weirs | 1983 | 15 | 1998 |
| 99 | Secondary Treatment | Secondary Sedimentation Drop Gates | 1983 | 30 | 2013 |
| 100 | Secondary Treatment | Secondary Sedimentation Basin Mechanical | 1983 | 20 | 2003 |
| 101 | Secondary Treatment | Secondary Sedimentation Basin Electrical | 1983 | 25 | 2008 |
| 102 | Secondary Treatment | RAS Pump Station Structures | 1983 | 50 | 2033 |
| 103 | Secondary Treatment | RAS Pumps | 1983 | 20 | 2003 |
| 104 | Secondary Treatment | RAS Pump Station Mechanical | 1983 | 30 | 2013 |
| 105 | Secondary Treatment | RAS Pump Station Electrical | 1983 | 25 | 2008 |
| 106 | Secondary Treatment | RAS Pump Flow Meters | 1983 | 20 | 2003 |
| 107 | Secondary Treatment | RAS Pump Valves | 1983 | 20 | 2003 |
| 108 | Secondary Treatment | Secondary Scum Pumps | 1983 | 25 | 2008 |
| 109 | Secondary Treatment | Secondary Scum Mechanical | 1983 | 20 | 2003 |
| 110 | Secondary Treatment | Secondary Scum Electrical | 1983 | 25 | 2008 |
| 111 | Secondary Treatment | WAS Pumps | 2008 | 20 | 2028 |
| 112 | Secondary Treatment | WAS Flow Meters | 2008 | 20 | 2028 |
| 113 | Secondary Treatment | WAS Pumping Mechanical | 2008 | 20 | 2028 |
| 114 | Secondary Treatment | WAS Pumping Electrical | 2008 | 25 | 2033 |
| 115 | Secondary Treatment | Drain Gates | 1983 | 30 | 2013 |
| 116 | Ferric Chloride System | Ferric Chloride Storage Tanks | 2007 | 30 | 2037 |
| 117 | Ferric Chloride System | Ferric Chloride Metering Pumps | 2002 | 15 | 2017 |
| 118 | Ferric Chloride System | Ferric Chloride Containment System | 1988 | 20 | 2008 |
| 119 | Ferric Chloride System | Ferric Chloride Mechanical | 1988 | 25 | 2013 |
| 120 | Ferric Chloride System | Ferric Chloride Electrical | 1988 | 30 | 2018 |
| 121 | Chlorine System | Chlorine Building | 1983 | 50 | 2033 |
| 122 | Chlorine System | Chlorine Building Roof | 2014 | 25 | 2039 |
| 123 | Chlorine System | Chlorine Building Architectural Hardware | 1983 | 50 | 2033 |
| 124 | Chlorine System | Chlorine Bldg Air Handling Unit & Fans | 1983 | 20 | 2003 |
| 125 | Chlorine System | Chlorine Building-2 W Pumps | 1983 | 15 | 1998 |
| 126 | Chlorine System | Chlorine Crane | 1983 | 20 | 2003 |
| 127 | Chlorine System | Air Break Tank | 1983 | 20 | 2003 |
| 128 | Chlorine System | Process Water CCT Flash Mixer | 1983 | 15 | 1998 |
| 129 | Chlorine System | Water Champ - AWT No. 1 & AWT No. 2 | 2004 | 15 | 2019 |
| 130 | Chlorine System | Chlorine Building Electrical | 1983 | 25 | 2008 |
| 131 | Chlorine System | MCC-E | 1983 | 20 | 2003 |
| 132 | NaOCl System | AWT NaOCl Containment Area | 2016 | 50 | 2066 |
| 133 | NaOCl System | AWT NaOCl Containment Area Architectural Hardware | 2016 | 30 | 2046 |
| 134 | NaOCl System | AWT NaOCl Bulk Storage Tanks | 2016 | 30 | 2046 |
| 135 | NaOCl System | AWT NaOCl Bulk Storage Tank Level Measurement Primary Elements | 2016 | 20 | 2036 |
| 136 | NaOCl System | AWT NaOCl Pumps | 2016 | 15 | 2031 |
| 137 | NaOCl System | AWT NaOCl Mechanical | 2016 | 15 | 2031 |
| 138 | NaOCl System | AWT NaOCl Electrical | 2016 | 30 | 2046 |
| 139 | NaOCl System | PW NaOCl Containment | 2016 | 50 | 2066 |
| 140 | NaOCl System | PW NaOCl Storage Tank | 2016 | 30 | 2046 |
| 141 | NaOCl System | PW NaOCl Tank Level Measurement Primary Element | 2016 | 20 | 2036 |
| 142 | NaOCl System | PW NaOCl Pumps | 2016 | 15 | 2031 |
| 143 | NaOCl System | PW NaOCl Mechanical | 2016 | 15 | 2031 |
| 144 | NaOCl System | PW NaOCl Electrical | 2016 | 30 | 2046 |
| 145 | NaOCl System | RAS NaOCl Containment | 1983 | 50 | 2033 |
| 146 | NaOCl System | RAS NaOCl Pumps | 2016 | 15 | 2031 |
| 147 | NaOCl System | RAS NaOCl Mechanical | 2016 | 15 | 2031 |
| 148 | NaOCl System | RAS NaOCl Electrical | 2016 | 30 | 2046 |
| 149 | Advanced Treatment/AWT No.1 | Chlorine Contact Basin Structure | 1988 | 50 | 2038 |
| 150 | Advanced Treatment/AWT No.1 | CCT Gate - Drain | 1983 | 25 | 2008 |
| 151 | Advanced Treatment/AWT No.1 | CCT Gate - Size 1 | 1983 | 25 | 2008 |
| 152 | Advanced Treatment/AWT No.1 | CCT Gate - Size 2 | 1983 | 25 | 2008 |
| 153 | Advanced Treatment/AWT No.1 | AWT No.1 Applied Water Pumps - Type 1 | 1989 | 20 | 2009 |
| 154 | Advanced Treatment/AWT No.1 | AWT No.1 Applied Water Pumps-Type 2 | 1989 | 20 | 2009 |

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|-----|-----------------------------|---|------|----|------|
| 155 | Advanced Treatment/AWT No.1 | AWT No. 1 Applied Water Pump Valves | 1997 | 20 | 2017 |
| 156 | Advanced Treatment/AWT No.1 | AWT No. 1 Applied Water Flowmeter | 1987 | 15 | 2002 |
| 157 | Advanced Treatment/AWT No.1 | AWT No.1 RWR Pumps-Size 1 | 1989 | 20 | 2009 |
| 158 | Advanced Treatment/AWT No.1 | AWT No.1 RWR Pumps-Size 2 | 1989 | 20 | 2009 |
| 159 | Advanced Treatment/AWT No.1 | AWT No.1 RWR Pumps-Size 3 | 1989 | 20 | 2009 |
| 160 | Advanced Treatment/AWT No.1 | AWT No. 1 Reclaim Water Flowmeter | 2005 | 15 | 2020 |
| 161 | Advanced Treatment/AWT No.1 | AWT No.1 Back Wash Pump | 1989 | 15 | 2004 |
| 162 | Advanced Treatment/AWT No.1 | AWT No.1 Flocculators | 1988 | 15 | 2003 |
| 163 | Advanced Treatment/AWT No.1 | AWT No.1 Filters | 1988 | 15 | 2003 |
| 164 | Advanced Treatment/AWT No.1 | AWT No.1 Chem Clean System | 1989 | 15 | 2004 |
| 165 | Advanced Treatment/AWT No.1 | AWT No.1 Turbidity Analyzer | 2002 | 20 | 2022 |
| 166 | Advanced Treatment/AWT No.1 | Level Indicator: Mudwell Level | 2004 | 20 | 2024 |
| 167 | Advanced Treatment/AWT No.1 | Data Recorder: RAS Effluent & AWT No. 1 | 2001 | 15 | 2016 |
| 168 | Advanced Treatment/AWT No.1 | AWT No.1 Mechanical | 1988 | 20 | 2008 |
| 169 | Advanced Treatment/AWT No.1 | AWT No. 1 Butterfly Valves | 1987 | 20 | 2007 |
| 170 | Advanced Treatment/AWT No.1 | AWT No. 1 Pneumatic Actuators | 1987 | 20 | 2007 |
| 171 | Advanced Treatment/AWT No.1 | AWT No.1 Electrical | 1988 | 25 | 2013 |
| 172 | Advanced Treatment/AWT No.1 | MSC-I | 1988 | 20 | 2008 |
| 173 | Advanced Treatment/AWT No.1 | MCC-J | 1988 | 20 | 2008 |
| 174 | Advanced Treatment/AWT No.1 | CCT 1 Gates | 1997 | 30 | 2027 |
| 175 | Advanced Treatment/AWT No.1 | CCT3 Gates | 1989 | 30 | 2019 |
| 176 | Advanced Treatment/AWT No.2 | Chlorine Contact Basin Structure | 1997 | 50 | 2047 |
| 177 | Advanced Treatment/AWT No.2 | Chlorine Contact Basin Covers | 1997 | 30 | 2027 |
| 178 | Advanced Treatment/AWT No.2 | AWT Building | 1997 | 50 | 2047 |
| 179 | | AWT Building Roof | 1997 | 25 | 2022 |
| 180 | | AWT Building Architectural Hardware | 1997 | 35 | 2032 |
| 181 | Advanced Treatment/AWT No.2 | AWT Building Mechanical | 1997 | 20 | 2017 |
| 182 | Advanced Treatment/AWT No.2 | AWT Building Electrical | 1997 | 35 | 2032 |
| 183 | Advanced Treatment/AWT No.2 | MSC-2 | 1997 | 30 | 2027 |
| 184 | Advanced Treatment/AWT No.2 | MCC-K | 1997 | 30 | 2027 |
| 185 | Advanced Treatment/AWT No.2 | MCC-L | 1997 | 30 | 2027 |
| 186 | Advanced Treatment/AWT No.2 | AWT No.2 Applied Water Pumps | 1997 | 20 | 2017 |
| 187 | Advanced Treatment/AWT No.2 | AWT No. 2 Waste Backwash Pump | 1997 | 25 | 2022 |
| 188 | Advanced Treatment/AWT No.2 | AWT No. 2 Flash Mixer | 1997 | 20 | 2017 |
| 189 | Advanced Treatment/AWT No.2 | AWT No.2 Flocculators | 1997 | 20 | 2017 |
| 190 | Advanced Treatment/AWT No.2 | Filter Structure | 1997 | 50 | 2047 |
| 191 | Advanced Treatment/AWT No.2 | AWT No.2 Filters | 1997 | 50 | 2047 |
| 192 | Advanced Treatment/AWT No.2 | Alum Storage Tanks | 1997 | 30 | 2027 |
| 193 | Advanced Treatment/AWT No.2 | Alum Feeders | 1997 | 15 | 2012 |
| 194 | Advanced Treatment/AWT No.2 | Alum Containment Area | 1997 | 35 | 2032 |
| 195 | Advanced Treatment/AWT No.2 | AWT No.2 Chem Clean System | 1997 | 15 | 2012 |
| 196 | Advanced Treatment/AWT No.2 | AWT No.2 Turbidity Analyzer | 2017 | 20 | 2037 |
| 197 | Advanced Treatment/AWT No.2 | Data Recorder: Turbidity, Residual & AWT 2 Applied Flow | 2003 | 15 | 2018 |
| 198 | Advanced Treatment/AWT No.2 | Data Recorder: AWT No. 2 | 2000 | 15 | 2015 |
| 199 | Advanced Treatment/AWT No.2 | Level Indicator: Mudwell Level | 2003 | 20 | 2023 |
| 200 | Advanced Treatment/AWT No.2 | Chlorine Residual Controller | 2016 | 20 | 2036 |
| 201 | Advanced Treatment/AWT No.2 | Res. Level Controller | 1997 | 20 | 2017 |

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|-----|-----------------------------|---|------|----|------|
| 202 | Advanced Treatment/AWT No.2 | Panel Level Controller | 2000 | 20 | 2020 |
| 203 | Advanced Treatment/AWT No.2 | AWT No. 2 Backwash Flow Meter | 1994 | 20 | 2014 |
| 204 | Advanced Treatment/AWT No.2 | AWT No. 2 Applied Flow Meter | 1999 | 20 | 2019 |
| 205 | Advanced Treatment/AWT No.2 | AWT No.2 Mechanical | 1997 | 20 | 2017 |
| 206 | Advanced Treatment/AWT No.2 | AWT No. 2 Butterfly Valves | 1997 | 20 | 2017 |
| 207 | Advanced Treatment/AWT No.2 | AWT No. 2 Pneumatic Actuators | 1997 | 20 | 2017 |
| 208 | Advanced Treatment/AWT No.2 | AWT No. 2 Backwash Pressure Reducing Valve | 2003 | 30 | 2033 |
| 209 | Advanced Treatment/AWT No.2 | AWT No. 2 CCT Gates - Size 1 | 1997 | 30 | 2027 |
| 210 | Advanced Treatment/AWT No.2 | AWT No. 2 CCT Gates - Size 2 | 1997 | 30 | 2027 |
| 211 | Advanced Treatment/AWT No.2 | AWT No. 2 CCT Gates - Size 3 | 1997 | 30 | 2027 |
| 212 | Advanced Treatment/AWT No.2 | Storm Water Pump | 1997 | 25 | 2022 |
| 213 | Advanced Treatment/AWT No.2 | Storm Runoff Pump | 1997 | 25 | 2022 |
| 214 | Advanced Treatment/AWT No.2 | CCT Feed Pump | 1983 | 25 | 2008 |
| 215 | Advanced Treatment/AWT No.2 | AWT No. 2 Low Pressure Blower | 1997 | 30 | 2027 |
| 216 | Advanced Treatment/AWT No.2 | AWT No. 2 Surge Tank Air Compressor | 1997 | 20 | 2017 |
| 217 | Advanced Treatment/AWT No.2 | AWT No. 2 High Pressure Air Compressor | 1997 | 20 | 2017 |
| 218 | Advanced Treatment/AWT No.2 | AWT No. 2 Air Dryer | 1997 | 20 | 2017 |
| 219 | Effluent Management | Effluent Equalization Basin | 1997 | 35 | 2032 |
| 220 | Effluent Management | Level Indicator: Effluent Equalization Basin (Pond) | 1997 | 20 | 2017 |
| 221 | Effluent Management | Effluent Junction Structure | 1983 | 50 | 2033 |
| 222 | Effluent Management | Final Effluent Weir Flowmeter | 2005 | 20 | 2025 |
| 223 | Effluent Management | Effluent Meter Manhole | 1983 | 50 | 2033 |
| 224 | Effluent Management | Effluent Meter No.1 | 1983 | 20 | 2003 |
| 225 | Effluent Management | Backflow Preventer | 1992 | 35 | 2027 |
| 226 | Effluent Management | Level Indicator: Storm Water Pump station | 1983 | 20 | 2003 |
| 227 | Administration | Administration Building | 1983 | 50 | 2033 |
| 228 | Administration | Administration Building Roof | 2010 | 25 | 2035 |
| 229 | Administration | Administration Building Architectural Hardware | 1983 | 35 | 2018 |
| 230 | Administration | Administration Building Mech. | 2011 | 20 | 2031 |
| 231 | Administration | Administration Building Elect. | 1983 | 35 | 2018 |
| 232 | Administration | MCC-F | 1983 | 30 | 2013 |
| 233 | Administration | Laboratory Benchwork | 2003 | 30 | 2033 |
| 234 | Administration | Laboratory Equipment | 1983 | 20 | 2003 |
| 235 | Solids | Energy Building Structural | 1983 | 50 | 2033 |
| 236 | Solids | Energy Building Structural - Addition | 1996 | 50 | 2046 |
| 237 | Solids | Energy Building Roof | 1983 | 25 | 2008 |
| 238 | Solids | Energy Building Mechanical | 1983 | 20 | 2003 |
| 239 | Solids | Energy Bldg - Air Handling Units | 1983 | 20 | 2003 |
| 240 | Solids | Energy Building Electrical | 1983 | 25 | 2008 |
| 241 | Solids | MSG-1 | 2017 | 30 | 2047 |
| 242 | Solids | MCC-C | 1983 | 30 | 2013 |
| 243 | Solids | MCC-G | 1983 | 30 | 2013 |
| 244 | Solids | Polyme Booster Water System | 2007 | 15 | 2022 |
| 245 | Solids | Bulk Polymer Storage Tanks | 1983 | 25 | 2008 |
| 246 | Solids | Bulk Polymer Storage Containment | 1983 | 30 | 2013 |
| 247 | Solids | Bulk Polymer Transfer Pumps | 1983 | 15 | 1998 |
| 248 | Liquids | Polymer Day Tanks | 1983 | 30 | 2013 |
| 249 | Liquids | Level Indicator: Polymer Tank #1 | 1999 | 20 | 2019 |
| 250 | Liquids | Polymer Mixers | 1983 | 20 | 2003 |
| 251 | Liquids | Polymer Metering Pumps- DAF | 1983 | 15 | 1998 |
| 252 | Liquids | Mannich Polymer Piping and Valving | 1983 | 25 | 2008 |
| 253 | Solids | Emulsion Polymer Feeders | 2011 | 15 | 2026 |
| 254 | Solids | Emulsion Polymer Piping and Valving | 2011 | 25 | 2036 |
| 255 | Solids | Polymer Mixing Pumps | 1997 | 15 | 2012 |
| 256 | Solids | Polymer Mechanical | 1983 | 20 | 2003 |
| 257 | Solids | Polymer Electrical | 2011 | 25 | 2036 |
| 258 | Liquids | DAF Structures | 1983 | 50 | 2033 |
| 259 | Liquids | DAF Covers | 1998 | 25 | 2023 |
| 260 | Liquids | DAF Collectors | 2007 | 30 | 2037 |
| 261 | Liquids | DAF Compressors | 2002 | 20 | 2022 |
| 262 | Liquids | DAF Dissolution Tanks | 1983 | 25 | 2008 |
| 263 | Liquids | TWAS Pumps | 2007 | 20 | 2027 |
| 264 | Liquids | TWAS Flowmeter | 2002 | 20 | 2022 |
| 265 | Liquids | DAF Mechanical | 1983 | 20 | 2003 |
| 266 | Liquids | DAF Electrical | 2007 | 25 | 2032 |
| 267 | Solids | Sludge Flow Meters | 1983 | 20 | 2003 |
| 268 | Solids | Sludge Equalization Tanks | 1983 | 50 | 2033 |
| 269 | Solids | Level Control: SET Tanks | 2007 | 20 | 2027 |
| 270 | Solids | Equalized Sludge Circulation Pumps | 1983 | 25 | 2008 |
| 271 | Solids | Equalized Sludge Pumps | 2010 | 20 | 2030 |
| 272 | Solids | Equalized Sludge Mechanical | 1987 | 25 | 2012 |
| 273 | Solids | Equalization Dry Pit Structure | 1983 | 50 | 2033 |
| 274 | Solids | Equalization Dry Pit Structure Handrail | 1983 | 40 | 2023 |
| 275 | Solids | Equalization Dry Pit Structure Architectural Hardware | 1983 | 50 | 2033 |
| 276 | Solids | Equalized Sludge Flow Meter | 2002 | 20 | 2022 |
| 277 | Solids | Equalized Sludge Grinder | 1986 | 20 | 2006 |

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|-----|-----------------|---|------|----|------|
| 278 | Solids | Equalized Sludge Electrical | 1983 | 25 | 2008 |
| 279 | Solids | Solids Building | 1983 | 50 | 2033 |
| 280 | Solids | Solids Building Roof | 1983 | 25 | 2008 |
| 281 | Solids | Solids Building Architectural Hardware | 1983 | 50 | 2033 |
| 282 | Solids | Solids Building Mechanical | 1983 | 30 | 2013 |
| 283 | Solids | Solids Building Electrical | 1983 | 25 | 2008 |
| 284 | Solids | MCC-D | 1983 | 20 | 2003 |
| 285 | Solids | Digester Structures | 1983 | 50 | 2033 |
| 286 | Solids | Digester Architectural Hardware | 1983 | 50 | 2033 |
| 287 | Solids | Digester Hand rails | 1983 | 40 | 2023 |
| 288 | Solids | Level Indicator: Digester Tank | 2004 | 20 | 2024 |
| 289 | Solids | Digester Domes | 1983 | 30 | 2013 |
| 290 | Solids | Digester Gas Circulation/Mixing System | 2002 | 20 | 2022 |
| 291 | Solids | Digester Sludge Circulation Pumps | 2001 | 25 | 2026 |
| 292 | Solids | Digester Bldg - YMCA Pump | 1991 | 25 | 2016 |
| 293 | Solids | Digester Heat Loops | 1983 | 20 | 2003 |
| 294 | Solids | Digester Hot Water Valves | 1983 | 20 | 2003 |
| 295 | Solids | Pneumatic Actuators - Digester Hot Water Valves | 1983 | 20 | 2003 |
| 296 | Solids | Digester Mechanical | 1983 | 20 | 2003 |
| 297 | Solids | Digester Electrical | 1983 | 25 | 2008 |
| 298 | Solids | Digester Bldg Gas Detection | 1979 | 20 | 1999 |
| 299 | Solids | Gas Management Building (Digester Building) | 1983 | 50 | 2033 |
| 300 | Solids | Gas Management Building Roof | 1983 | 25 | 2008 |
| 301 | Solids | Gas Management Building Architectural Hardware | 1983 | 50 | 2033 |
| 302 | Solids | Gas Management Building Mechanical | 1983 | 20 | 2003 |
| 303 | Solids | Gas Management Building Electrical | 1983 | 25 | 2008 |
| 304 | Solids | Digested Sludge Pumps | 1997 | 20 | 2017 |
| 305 | Solids | Digested Sludge Flow Meters | 1997 | 20 | 2017 |
| 306 | Solids | Centrifuges | 1998 | 30 | 2028 |
| 307 | Solids | MCC-M | 1999 | 20 | 2019 |
| 308 | Solids | DP-1 | 1999 | 20 | 2019 |
| 309 | Solids | Conveyors - Type 1 | 1998 | 20 | 2018 |
| 310 | Solids | Conveyors - Type 2 | 1998 | 20 | 2018 |
| 311 | Solids | Conveyors - Type 3 | 1998 | 20 | 2018 |
| 312 | Solids | Conveyors - Type 4 | 1998 | 20 | 2018 |
| 313 | Solids | Sludge Hoppers | 1998 | 40 | 2038 |
| 314 | Solids | Hopper Room Crane | 1998 | 30 | 2028 |
| 315 | Solids | Dewatering System Platform and Stairways | 1998 | 40 | 2038 |
| 316 | Solids | Dewating Roof Roll Up Door | 1983 | 35 | 2018 |
| 317 | Solids | Dewatering System Mechanical | 1998 | 20 | 2018 |
| 318 | Solids | Dewatering System Gates | 1998 | 20 | 2018 |
| 319 | Solids | Pneumatic Actuators | 1998 | 20 | 2018 |
| 320 | Solids | Dewatering System Electrical | 1998 | 25 | 2023 |
| 321 | Solids | Truck Loads Cells | 1998 | 40 | 2038 |
| 322 | Solids | El Toro Truck Station Sludge Flowmeter | 1994 | 20 | 2014 |
| 323 | Solids | Dewatering Room Crane | 1998 | 20 | 2018 |
| 324 | Odor Control | Odor Control Scrubber No.1 | 1997 | 20 | 2017 |
| 325 | Odor Control | Scrubber No. 1 Chemical Tanks | 1997 | 30 | 2027 |
| 326 | Odor Control | Odor Control Scrubber No.1 Ducting & Supply Fan | 1997 | 20 | 2017 |
| 327 | Odor Control | Odor Control Scrubber No.1 Electrical | 1997 | 20 | 2017 |
| 328 | Odor Control | Odor Control Scrubber No.2 | 1999 | 20 | 2019 |
| 329 | Odor Control | Odor Control Scrubber No.2 Containment Area | 1999 | 50 | 2049 |
| 330 | Odor Control | Scrubber No. 2 Chemical Tanks | 1999 | 30 | 2029 |
| 331 | Odor Control | Odor Control Scrubber No.2 Ducting & Supply Fan | 1999 | 20 | 2019 |
| 332 | Odor Control | Odor Control Scrubber No.2 Electrical | 1999 | 20 | 2019 |
| 333 | Odor Control | Odor Control Scrubber No.3 | 2002 | 20 | 2022 |
| 334 | Odor Control | Scrubber No. 3 Chemical Tanks | 2002 | 30 | 2032 |
| 335 | Odor Control | Odor Control Scrubber No.3 Ducting & Supply Fan | 2002 | 20 | 2022 |
| 336 | Odor Control | Odor Control Scrubber No.3 Electrical | 2002 | 20 | 2022 |
| 337 | Odor Control | ORT Recirculation Pump | 1983 | 25 | 2008 |
| 338 | Odor Control | ORT Transfer Fan from Solids Dewatering - Size 1 | 1998 | 30 | 2028 |
| 339 | Odor Control | ORT Transfer Fan from Solids Dewatering - Size 2 | 1998 | 30 | 2028 |
| 340 | Odor Control | ORT Transfer Fan from Solids Dewatering - Size 3 | 1998 | 30 | 2028 |
| 341 | Odor Control | ORT Transfer Fan from Solids Dewatering - Size 4 | 1983 | 30 | 2013 |
| 342 | Odor Control | ORT Transfer Fan from DAF | 1992 | 30 | 2022 |
| 343 | Odor Control | ORT Transfer Fan from Influent Structure | 1983 | 30 | 2013 |
| 344 | Odor Control | ORT Supply Fan - Size 1 | 1983 | 20 | 2003 |
| 345 | Odor Control | ORT Supply Fan - Size 2 | 1983 | 20 | 2003 |
| 346 | Plant Heat Loop | Plant Heat Loop Pumps | 1983 | 25 | 2008 |
| 347 | Plant Heat Loop | Plant Heat Loops | 1983 | 20 | 2003 |
| 348 | Plant Heat Loop | Waste Heat Loop Control Valve | 1983 | 35 | 2018 |
| 349 | Plant Heat Loop | Pneumatic Actuator -Waste Heat Loop Control Valve | 1983 | 20 | 2003 |
| 350 | Energy | Digester Gas Conditioning System | 2017 | 20 | 2037 |
| 351 | Energy | DGCS - Carbon Vessels | 2017 | 30 | 2047 |
| 352 | Energy | DGCS - H2S Vessels | 2017 | 30 | 2047 |
| 353 | Energy | Engine Generator Unit | 2017 | 20 | 2037 |
| 354 | Energy | Cogen Hot Water Pump | 2017 | 20 | 2037 |
| 355 | Energy | Heat Exchange Package Units | 2004 | 20 | 2024 |
| 356 | Energy | Sludge Heat Exchanger | 1983 | 30 | 2013 |
| 357 | Energy | Waste Gas Burner | 1983 | 20 | 2003 |
| 358 | Energy | Gas Control Valves | 2017 | 20 | 2037 |
| 359 | Energy | Pneumatic Actuator - Gas Control Valves | 1983 | 20 | 2003 |
| 360 | Energy | Generator Room Crane | 1983 | 30 | 2013 |
| 361 | Energy | Boiler | 2016 | 25 | 2041 |
| 362 | Energy | Boiler Hot Water Pump | 2017 | 20 | 2037 |
| 363 | Energy | Air Compressor Equipment | 1983 | 20 | 2003 |
| 364 | Energy | Instrument Air System | 1983 | 20 | 2003 |
| 365 | Energy | Service Air System | 2013 | 20 | 2033 |
| 366 | Energy | Clean Lube Oil Transfer Pump | 1983 | 15 | 1998 |
| 367 | Energy | Waste Lube Oil Transfer Pump | 1983 | 15 | 1998 |
| 368 | Energy | Waste HEX Cooling Water Pumps | 1983 | 25 | 2008 |
| 369 | Energy | Cogen Waste/Cube OK Tank | 1995 | 30 | 2025 |
| 370 | Energy | Engine Room Exhaust Fan - Size 1 | 1983 | 20 | 2003 |

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|-----|--------------------|--|------|----|------|
| 371 | Energy | Engine Room Exhaust Fan - Size 2 | 1983 | 30 | 2013 |
| 372 | Energy | Ventilation Room Air Handling Unit | 1983 | 20 | 2003 |
| 373 | Energy | Ventilation Room- Blower Room Exhaust Fan | 1983 | 30 | 2013 |
| 374 | Energy | Ventilation Room - Transfer Fan | 1983 | 30 | 2013 |
| 375 | Energy | Generator Room Supply Fan | 1983 | 30 | 2013 |
| 376 | Plant Water | 3WLP Pumps | 1983 | 20 | 2003 |
| 377 | Plant Water | 3WLP Auto Screen | 1983 | | 1983 |
| 378 | Plant Water | 3WLP Flow Meter | 2003 | 20 | 2023 |
| 379 | Plant Water | Pressure Transmitter: 3 WLP | 1983 | 20 | 2003 |
| 380 | Plant Water | 3WLP Waste flow Control Valve | 2002 | 35 | 2037 |
| 381 | Plant Water | Pneumatic Actuator - 3WLP Waste flow Control Valve | 2002 | 20 | 2022 |
| 382 | Plant Water | 3WHP Pumps | 1983 | 25 | 2008 |
| 383 | Plant Water | 3WHP Auto Screen | 1983 | | 1983 |
| 384 | Plant Water | 3WHP Flow Meter | 1983 | 20 | 2003 |
| 385 | Maintenance Shop | Bench Work | 1983 | 30 | 2013 |
| 386 | Maintenance Shop | Roll Up Door | 2008 | 35 | 2043 |
| 387 | Maintenance Shop | Crane | 1983 | 40 | 2023 |
| 388 | Maintenance Shop | Equipment | 1983 | 25 | 2008 |
| 389 | Maintenance Shop | Electrical | 1983 | 20 | 2003 |
| 390 | Underground Piping | Heat Reservoir Return | 1983 | 30 | 2013 |
| 391 | Underground Piping | Heat Reservoir Supply | 1983 | 30 | 2013 |
| 392 | Underground Piping | Natural Gas | 1983 | 30 | 2013 |
| 393 | Underground Piping | 3W High pressure | 1983 | 30 | 2013 |
| 394 | Underground Piping | 2W | 1983 | 30 | 2013 |
| 395 | Underground Piping | Waste Activated Sludge | 1983 | 30 | 2013 |
| 396 | Underground Piping | Process Drainage | 1983 | 30 | 2013 |
| 397 | Underground Piping | Thickened Waste Activated Sludge | 1983 | 30 | 2013 |
| 398 | Underground Piping | Pumped Sludge | 1983 | 30 | 2013 |
| 399 | Underground Piping | Gas Circulation | 1983 | 30 | 2013 |
| 400 | Underground Piping | Circulation Sludge | 1983 | 30 | 2013 |
| 401 | Underground Piping | Tank Drain | 1983 | 30 | 2013 |
| 402 | Underground Piping | Low Pressure Sludge Gas | 1983 | 30 | 2013 |
| 403 | Underground Piping | Primary Scum | 1983 | 30 | 2013 |
| 404 | Underground Piping | Primary Effluent | 1983 | 30 | 2013 |
| 405 | Underground Piping | Underground Electrical: Cable | 1983 | 25 | 2008 |
| 406 | Underground Piping | Underground Electrical: Conduit | 1983 | 50 | 2033 |
| 407 | Underground Piping | Underground Electrical: Manholes | 1983 | 25 | 2008 |
| 408 | VFD's | Interstage Pump Station VFD's | 2006 | 15 | 2021 |
| 409 | VFD's | RAS Pump VFD's | 2002 | 15 | 2017 |
| 410 | VFD's | WAS Pump VFD's | 2009 | 15 | 2024 |
| 411 | VFD's | Digested Sludge Pump VFD's | 2010 | 15 | 2025 |
| 412 | VFD's | Centrifuge VFD's | 1998 | 15 | 2013 |
| 413 | VFD's | AWT No.1 VFD's | 1989 | 15 | 2004 |
| 414 | VFD's | AWT No.2 VFD' | 1998 | 15 | 2013 |
| 415 | Instrumentation | PLC ACP | 1995 | 15 | 2010 |
| 416 | Instrumentation | PLC E | 1995 | 15 | 2010 |
| 417 | Instrumentation | PLC AWT-1 | 1995 | 15 | 2010 |
| 418 | Instrumentation | PLC Aeration | 2004 | 15 | 2019 |
| 419 | Instrumentation | PLC Centrifuge 1 | 2012 | 30 | 2042 |
| 420 | Instrumentation | PLC Centrifuge 2 | 2012 | 30 | 2042 |
| 421 | Instrumentation | PLC Centrifuge 3 | 2012 | 30 | 2042 |
| 422 | Instrumentation | PLC Centrifuge 4 | 2012 | 30 | 2042 |
| 423 | Instrumentation | PLC ECP | 2004 | 15 | 2019 |
| 424 | Instrumentation | PLC SCP | 2004 | 15 | 2019 |
| 425 | Instrumentation | PLC AWT-2 | 2004 | 15 | 2019 |
| 426 | Instrumentation | PLC Interstage Pumps | | 15 | 15 |
| 427 | Instrumentation | PLC Emergency Interstage Pumps | | 15 | 15 |
| 428 | Instrumentation | PLC NaOCI | 2016 | 15 | 2031 |
| 429 | Storage Building | Storage Building | 1997 | 20 | 2017 |
| 430 | Site | Pavement | 1983 | 40 | 2023 |
| 431 | Site | Gate No.1 | 2005 | 40 | 2045 |
| 432 | Site | Gate No.2 | 2017 | 40 | 2057 |
| 433 | Site | Access Bridge | 1983 | 50 | 2033 |
| 434 | Site | Perimeter Fencing | 1983 | 40 | 2023 |
| 435 | Site | Storm Channel - North and East | 1983 | 50 | 2033 |
| 436 | Site | Storm Channel - East Central | 1983 | 50 | 2033 |
| 437 | Site | Storm Channels - East South | 1983 | 50 | 2033 |
| 438 | Site | Storm Drain Inlet No.1 | 1998 | 40 | 2038 |
| 439 | Site | Storm Drain Inlet No.2 | 1998 | 40 | 2038 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|------------------|--------------|---|--------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 1 ('19/'20) | | | | | | | | | |
| | 3701-000 | Secondary Electrical System Rerouting | \$ 702,000 | \$ 702,000 | \$ 702,000 | \$ - | \$ - | \$ - | \$ - |
| | 3702-000 | Waste Activated Sludge VFD Control Panel | \$ 242,000 | \$ 242,000 | \$ 242,000 | \$ - | \$ - | \$ - | \$ - |
| | 3741-000 | Southwest Influent Sewer and MH Repair Design | \$ 71,000 | \$ 71,000 | \$ 71,000 | \$ - | \$ - | \$ - | \$ - |
| | 3742-000 | Aeration System Upgrade | \$ 1,007,000 | \$ 1,007,000 | \$ 1,007,000 | \$ - | \$ - | \$ - | \$ - |
| | 3743-000 | Aeration Gate Replacement | \$ 435,000 | \$ 435,000 | \$ 435,000 | \$ - | \$ - | \$ - | \$ - |
| | 3749-000 | Phase I Solids Piping Upgrade | \$ 179,000 | \$ 179,000 | \$ 105,000 | \$ 16,000 | \$ 20,000 | \$ 1,000 | \$ 37,000 |
| | 3751-000 | Energy Building Roof and Breezeway | \$ 168,000 | \$ 168,000 | \$ 99,000 | \$ 15,000 | \$ 19,000 | \$ 1,000 | \$ 34,000 |
| | 3753-000 | Aeration Diffuser Upgrade | \$ 807,000 | \$ 807,000 | \$ 807,000 | \$ - | \$ - | \$ - | \$ - |
| | 3755-000 | SE Sewer Rehabilitation | \$ 572,000 | \$ 572,000 | \$ 572,000 | \$ - | \$ - | \$ - | \$ - |
| | 3756-000 | Secondary Clarifier Safety Repairs | \$ 77,000 | \$ 77,000 | \$ 77,000 | \$ - | \$ - | \$ - | \$ - |
| | 3757-000 | Miscellaneous Safety Imps - Liquids | \$ 142,000 | \$ 142,000 | \$ 142,000 | \$ - | \$ - | \$ - | \$ - |
| | 3758-000 | AWT No. 2 Reconstruction | \$ 1,263,000 | \$ 1,263,000 | \$ 1,263,000 | \$ - | \$ - | \$ - | \$ - |
| | 3759-000 | AWT No. 2 Electrical Upgrades | \$ 177,000 | \$ 177,000 | \$ 177,000 | \$ - | \$ - | \$ - | \$ - |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|-------------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 1 Cont. ('19/'20) | | | | | | | | | |
| | 3761-000 | External lighting Upgrade | \$ 90,000 | \$ 90,000 | \$ 70,000 | \$ 5,000 | \$ 6,000 | \$ - | \$ 9,000 |
| | 3766-000 | AWT Hypochlorite Tanks Shade | \$ 284,000 | \$ 284,000 | \$ 284,000 | \$ - | \$ - | \$ - | \$ - |
| | 3769-000 | Trailer Drain Line | \$ 56,000 | \$ 56,000 | \$ 44,000 | \$ 3,000 | \$ 3,000 | \$ - | \$ 6,000 |
| | 3771-000 | Miscellaneous Safety Imps - Solids | \$ 142,000 | \$ 142,000 | \$ 83,000 | \$ 13,000 | \$ 16,000 | \$ 1,000 | \$ 29,000 |
| | 3772-000 | Hot Water Piping Reconstruction | \$ 625,000 | \$ 625,000 | \$ 368,000 | \$ 56,000 | \$ 70,000 | \$ 4,000 | \$ 128,000 |
| | 3773-000 | Cogeneration System Modifications | \$ 640,000 | \$ 640,000 | \$ 376,000 | \$ 57,000 | \$ 72,000 | \$ 4,000 | \$ 131,000 |
| | 3784-000 | Replace DAF (Mannich) Polymer System | \$ 76,000 | \$ 76,000 | \$ 76,000 | \$ - | \$ - | \$ - | \$ - |
| | 3785-000 | Replace DAF Dissolution Tank System and Compressors | \$ 101,000 | \$ 101,000 | \$ 101,000 | \$ - | \$ - | \$ - | \$ - |
| | 3786-000 | Primary Gallery Mechanical and Electrical Upgrade | \$ 521,000 | \$ 521,000 | \$ 521,000 | \$ - | \$ - | \$ - | \$ - |
| | 4703-000 | Laboratory Reconstruction Evaluation | \$ 71,000 | \$ 71,000 | \$ 55,000 | \$ 4,000 | \$ 4,000 | \$ - | \$ 7,000 |
| | 4704-000 | Evaluate Plant and Storm Water Drainage System | \$ 91,000 | \$ 91,000 | \$ 71,000 | \$ 5,000 | \$ 6,000 | \$ - | \$ 9,000 |
| | | Small Cap Liquids | \$ 316,000 | \$ 316,000 | \$ 316,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 220,000 | \$ 220,000 | \$ 129,000 | \$ 20,000 | \$ 25,000 | \$ 1,000 | \$ 45,000 |
| | | Small Cap Common | \$ 165,000 | \$ 165,000 | \$ 129,000 | \$ 8,000 | \$ 10,000 | \$ 1,000 | \$ 17,000 |
| | | Small Cap AWT | \$ 35,000 | \$ 35,000 | \$ 35,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 9,275,000 | \$ 9,275,000 | \$ 8,359,000 | \$ 201,000 | \$ 251,000 | \$ 13,000 | \$ 451,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|--------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 2 (20/21) | | | | | | | | | |
| | 17087 | Odor Control Chemical Tank | \$ 270,000 | \$ 275,000 | \$ 275,000 | \$ - | \$ - | \$ - | \$ - |
| | 17088 | Primary Sedimentation Condition Assessment | \$ 65,000 | \$ 66,000 | \$ 66,000 | \$ - | \$ - | \$ - | \$ - |
| | 17093 | AWT #2 Rehab 2021 | \$ 1,439,000 | \$ 1,439,000 | \$ 1,439,000 | \$ - | \$ - | \$ - | \$ - |
| | 37001-000 | MCC A, C, G, H Replacement (Solids) | \$ 203,000 | \$ 203,000 | \$ 119,000 | \$ 18,000 | \$ 23,000 | \$ 1,000 | \$ 41,000 |
| | 37002-000 | West Slope Protection | \$ 184,000 | \$ 184,000 | \$ 144,000 | \$ 9,000 | \$ 12,000 | \$ 1,000 | \$ 19,000 |
| | 37003-000 | Admin Building Door & Window Repair | \$ 133,000 | \$ 133,000 | \$ 104,000 | \$ 7,000 | \$ 8,000 | \$ - | \$ 14,000 |
| | 3774-000 | MCC A, C, G, H Replacement (Liquids) | \$ 457,000 | \$ 457,000 | \$ 457,000 | \$ - | \$ - | \$ - | \$ - |
| | 3775-000 | Aeration Basin Handrail Upgrade | \$ 154,000 | \$ 154,000 | \$ 154,000 | \$ - | \$ - | \$ - | \$ - |
| | 3776-000 | Effluent Pond Gate Replacement | \$ 528,000 | \$ 528,000 | \$ 528,000 | \$ - | \$ - | \$ - | \$ - |
| | 3777-000 | Site Lighting Upgrade - Liquids | \$ 647,000 | \$ 647,000 | \$ 647,000 | \$ - | \$ - | \$ - | \$ - |
| | 3778-000 | Site Lighting Upgrade - Common | \$ 450,000 | \$ 450,000 | \$ 352,000 | \$ 23,000 | \$ 28,000 | \$ 1,000 | \$ 46,000 |
| | 3779-000 | MCC A, C, G, H Replacement (Common) | \$ 289,000 | \$ 289,000 | \$ 226,000 | \$ 14,000 | \$ 18,000 | \$ 1,000 | \$ 30,000 |
| | 4701-000 | Interstage Pump Station Condition Assessment | \$ 52,000 | \$ 52,000 | \$ 52,000 | \$ - | \$ - | \$ - | \$ - |
| | 4702-000 | Site Storage Evaluation | \$ 81,000 | \$ 81,000 | \$ 64,000 | \$ 4,000 | \$ 5,000 | \$ - | \$ 8,000 |
| | | Small Cap Liquids | \$ 326,000 | \$ 326,000 | \$ 326,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 227,000 | \$ 134,000 | \$ 20,000 | \$ 25,000 | \$ 1,000 | \$ 46,000 |
| | | Small Cap Common | \$ 170,000 | \$ 170,000 | \$ 133,000 | \$ 9,000 | \$ 11,000 | \$ 1,000 | \$ 17,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 36,000 | \$ 36,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 5,712,000 | \$ 5,719,000 | \$ 5,256,000 | \$ 104,000 | \$ 130,000 | \$ 7,000 | \$ 222,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|--------------------------|--------------|---|----------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 3 (21/22) | | | | | | | | | |
| | 17057 | Aeration Single Stage Blower Replacement | \$ 1,763,000 | \$ 1,855,000 | \$ 1,855,000 | \$ - | \$ - | \$ - | \$ - |
| | 17061 | Mixed Liquor Channel Condition Assessment | \$ 270,000 | \$ 284,000 | \$ 284,000 | \$ - | \$ - | \$ - | \$ - |
| | 17082 | Secondary Effluent Conveyance Evaluation | \$ 50,000 | \$ 53,000 | \$ 53,000 | \$ - | \$ - | \$ - | \$ - |
| | 17083 | Grit Handling Evaluation | \$ 60,000 | \$ 63,000 | \$ 63,000 | \$ - | \$ - | \$ - | \$ - |
| | 17084 | Mannich Polymer Shade | \$ 195,000 | \$ 205,000 | \$ 205,000 | \$ - | \$ - | \$ - | \$ - |
| | 17086 | Aeration Basin Upgrade | \$ 3,090,000 | \$ 3,252,000 | \$ 3,252,000 | \$ - | \$ - | \$ - | \$ - |
| | 17330 | Energy Building Seismic Analysis | \$ 80,000 | \$ 84,000 | \$ 66,000 | \$ 4,000 | \$ 5,000 | \$ - | \$ 9,000 |
| | 17333 | SCADA System Upgrade Project/1st Phase | \$ 368,000 | \$ 387,000 | \$ 302,000 | \$ 19,000 | \$ 24,000 | \$ 1,000 | \$ 40,000 |
| | 17338 | West Side Storm Channel Reconstruction - Phase II | \$ 68,000 | \$ 72,000 | \$ 56,000 | \$ 4,000 | \$ 4,000 | \$ - | \$ 7,000 |
| | 17346 | Buried Water Pipe Reconstruction | \$ 1,545,000 | \$ 1,626,000 | \$ 1,270,000 | \$ 81,000 | \$ 102,000 | \$ 5,000 | \$ 167,000 |
| | 17354 | Energy Building Condition Assessment | \$ 60,000 | \$ 63,000 | \$ 49,000 | \$ 3,000 | \$ 4,000 | \$ - | \$ 6,000 |
| | 17536 | Flare Replacement Project | \$ 2,709,000 | \$ 2,851,000 | \$ 1,677,000 | \$ 255,000 | \$ 320,000 | \$ 17,000 | \$ 582,000 |
| | 17541 | Emulsion Tank Cover | \$ 195,000 | \$ 205,000 | \$ 121,000 | \$ 18,000 | \$ 23,000 | \$ 1,000 | \$ 42,000 |
| | | Small Cap Liquids | \$ 326,000 | \$ 337,000 | \$ 337,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 234,000 | \$ 138,000 | \$ 21,000 | \$ 26,000 | \$ 1,000 | \$ 48,000 |
| | | Small Cap Common | \$ 170,000 | \$ 176,000 | \$ 137,000 | \$ 9,000 | \$ 11,000 | \$ 1,000 | \$ 18,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 37,000 | \$ 37,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 11,212,000 | \$ 11,784,000 | \$ 9,902,000 | \$ 415,000 | \$ 520,000 | \$ 27,000 | \$ 919,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|-----------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 4 ('22/'23) | | | | | | | | | |
| | 17060 | Secondary Scum Pump Station Reconstruction | \$ 578,000 | \$ 646,000 | \$ 646,000 | \$ - | \$ - | \$ - | \$ - |
| | 17081 | Primary Sedimentation Collectors and Gates | \$ 904,000 | \$ 1,009,000 | \$ 1,009,000 | \$ - | \$ - | \$ - | \$ - |
| | 17090 | RAS System Condition Assessment | \$ 50,000 | \$ 56,000 | \$ 56,000 | \$ - | \$ - | \$ - | \$ - |
| | 17342 | Electrical Box Reconstruction/Phase I | \$ 1,602,000 | \$ 1,788,000 | \$ 1,397,000 | \$ 90,000 | \$ 112,000 | \$ 6,000 | \$ 183,000 |
| | 17356 | Instrumentation Plan | \$ 90,000 | \$ 100,000 | \$ 78,000 | \$ 5,000 | \$ 6,000 | \$ - | \$ 10,000 |
| | 17542 | Solids Area Overhaul Plan | \$ 90,000 | \$ 100,000 | \$ 59,000 | \$ 9,000 | \$ 11,000 | \$ 1,000 | \$ 21,000 |
| | 17543 | Digester System Condition Assessment | \$ 85,000 | \$ 95,000 | \$ 56,000 | \$ 8,000 | \$ 11,000 | \$ 1,000 | \$ 19,000 |
| | | Small Cap Liquids | \$ 326,000 | \$ 347,000 | \$ 347,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 242,000 | \$ 142,000 | \$ 22,000 | \$ 27,000 | \$ 1,000 | \$ 49,000 |
| | | Small Cap Common | \$ 170,000 | \$ 181,000 | \$ 142,000 | \$ 9,000 | \$ 11,000 | \$ 1,000 | \$ 19,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 38,000 | \$ 38,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 4,159,000 | \$ 4,603,000 | \$ 3,970,000 | \$ 143,000 | \$ 179,000 | \$ 9,000 | \$ 302,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|--------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 5 (23/24) | | | | | | | | | |
| | 17074 | WAS Pump VFD Panel Reconstruction | \$ 144,000 | \$ 164,000 | \$ 164,000 | \$ - | \$ - | \$ - | \$ - |
| | 17091 | Secondary Sedimentation Condition Assessment | \$ 60,000 | \$ 69,000 | \$ 69,000 | \$ - | \$ - | \$ - | \$ - |
| | 17329 | Laboratory Reconstruction | \$ 1,042,000 | \$ 1,192,000 | \$ 932,000 | \$ 60,000 | \$ 75,000 | \$ 4,000 | \$ 122,000 |
| | 17331 | Energy Building Repair and Rehabilitation | \$ 1,646,000 | \$ 1,882,000 | \$ 1,471,000 | \$ 94,000 | \$ 118,000 | \$ 6,000 | \$ 193,000 |
| | 17332 | Maintenance Shop Rehabilitation | \$ 316,000 | \$ 361,000 | \$ 282,000 | \$ 18,000 | \$ 23,000 | \$ 1,000 | \$ 37,000 |
| | 17337 | West Side Storm Channel Reconstruction - Phase I | \$ 999,000 | \$ 1,143,000 | \$ 893,000 | \$ 57,000 | \$ 72,000 | \$ 4,000 | \$ 117,000 |
| | 17345 | Energy Building HVAC Upgrade | \$ 473,000 | \$ 541,000 | \$ 423,000 | \$ 27,000 | \$ 34,000 | \$ 2,000 | \$ 56,000 |
| | 17348 | Secondary Access Road | \$ 319,000 | \$ 364,000 | \$ 285,000 | \$ 18,000 | \$ 23,000 | \$ 1,000 | \$ 37,000 |
| | 17357 | MCC D, E, & F Condition Assessment | \$ 45,000 | \$ 51,000 | \$ 40,000 | \$ 3,000 | \$ 3,000 | \$ - | \$ 5,000 |
| | 17538 | Digested and Eq Sludge Pump VFD Replacement | \$ 287,000 | \$ 328,000 | \$ 193,000 | \$ 29,000 | \$ 37,000 | \$ 2,000 | \$ 67,000 |
| | | Small Cap Liquids | \$ 326,000 | \$ 358,000 | \$ 358,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 250,000 | \$ 147,000 | \$ 22,000 | \$ 28,000 | \$ 1,000 | \$ 51,000 |
| | | Small Cap Common | \$ 170,000 | \$ 187,000 | \$ 146,000 | \$ 9,000 | \$ 12,000 | \$ 1,000 | \$ 19,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 40,000 | \$ 40,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 6,090,000 | \$ 6,931,000 | \$ 5,442,000 | \$ 339,000 | \$ 424,000 | \$ 22,000 | \$ 705,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|-----------------------------|--------------|---|----------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 6 ('24/'25) | | | | | | | | | |
| | 17055 | Primary Gallery Upgrade Phase II | \$ 1,289,000 | \$ 1,487,000 | \$ 1,487,000 | \$ - | \$ - | \$ - | \$ - |
| | 17080 | Primary Scum Skimmer | \$ 1,453,000 | \$ 1,676,000 | \$ 1,676,000 | \$ - | \$ - | \$ - | \$ - |
| | 17525 | Solids Building Structural Rehabilitation | \$ 306,000 | \$ 352,000 | \$ 207,000 | \$ 32,000 | \$ 40,000 | \$ 2,000 | \$ 72,000 |
| | 17526 | MCC D Replacement | \$ 520,000 | \$ 600,000 | \$ 353,000 | \$ 54,000 | \$ 67,000 | \$ 4,000 | \$ 122,000 |
| | 17528 | Heating System Reconstruction | \$ 1,778,000 | \$ 2,052,000 | \$ 1,207,000 | \$ 184,000 | \$ 230,000 | \$ 12,000 | \$ 419,000 |
| | 17529 | Digester Gas Management Building Rehabilitation | \$ 372,000 | \$ 429,000 | \$ 253,000 | \$ 38,000 | \$ 48,000 | \$ 3,000 | \$ 88,000 |
| | 17532 | Dewatering System Reconstruction | \$ 7,154,000 | \$ 8,254,000 | \$ 4,855,000 | \$ 740,000 | \$ 926,000 | \$ 49,000 | \$ 1,685,000 |
| | 17533 | Solids Conveyor Replacement | \$ 3,810,000 | \$ 4,396,000 | \$ 2,586,000 | \$ 394,000 | \$ 493,000 | \$ 26,000 | \$ 897,000 |
| | | Small Cap Liquids | \$ 326,000 | \$ 370,000 | \$ 370,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 258,000 | \$ 151,000 | \$ 23,000 | \$ 29,000 | \$ 2,000 | \$ 53,000 |
| | | Small Cap Common | \$ 170,000 | \$ 193,000 | \$ 151,000 | \$ 10,000 | \$ 12,000 | \$ 1,000 | \$ 20,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 41,000 | \$ 41,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 17,440,000 | \$ 20,108,000 | \$ 13,336,000 | \$ 1,474,000 | \$ 1,846,000 | \$ 97,000 | \$ 3,355,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|--------------------------|--------------|---|----------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 7 (25/26) | | | | | | | | | |
| | 17052 | Odor Control Scrubber No.1 Replacement | \$ 5,878,000 | \$ 7,052,000 | \$ 7,052,000 | \$ - | \$ - | \$ - | \$ - |
| | 17089 | Headworks Condition Assessment | \$ 50,000 | \$ 60,000 | \$ 60,000 | \$ - | \$ - | \$ - | \$ - |
| | 17320 | Plant Drainage Pump Station Reconstruction | \$ 603,000 | \$ 723,000 | \$ 565,000 | \$ 36,000 | \$ 45,000 | \$ 2,000 | \$ 74,000 |
| | 17323 | PW Hypochlorite Pump and Instrument Replacement | \$ 161,000 | \$ 194,000 | \$ 151,000 | \$ 10,000 | \$ 12,000 | \$ 1,000 | \$ 20,000 |
| | 17349 | Underground Piping Reconstruction Area A | \$ 560,000 | \$ 671,000 | \$ 525,000 | \$ 34,000 | \$ 42,000 | \$ 2,000 | \$ 69,000 |
| | 17350 | Underground Piping Reconstruction Area B | \$ 1,848,000 | \$ 2,218,000 | \$ 1,733,000 | \$ 111,000 | \$ 139,000 | \$ 7,000 | \$ 228,000 |
| | 17355 | Pavement and Surface Drainage Master Plan | \$ 90,000 | \$ 108,000 | \$ 84,000 | \$ 5,000 | \$ 7,000 | \$ - | \$ 11,000 |
| | 17534 | Storage and Truck loading Rehabilitation | \$ 788,000 | \$ 945,000 | \$ 556,000 | \$ 85,000 | \$ 106,000 | \$ 6,000 | \$ 193,000 |
| | 17720 | AWT Hypochlorite Pump and Instrument | \$ 206,000 | \$ 248,000 | \$ 248,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Liquids | \$ 326,000 | \$ 382,000 | \$ 382,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 266,000 | \$ 156,000 | \$ 24,000 | \$ 30,000 | \$ 2,000 | \$ 54,000 |
| | | Small Cap Common | \$ 170,000 | \$ 199,000 | \$ 156,000 | \$ 10,000 | \$ 12,000 | \$ 1,000 | \$ 20,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 42,000 | \$ 42,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 10,943,000 | \$ 13,108,000 | \$ 11,710,000 | \$ 315,000 | \$ 394,000 | \$ 21,000 | \$ 669,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|--------------------------|--------------|--|----------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 8 (26/27) | | | | | | | | | |
| | 17056 | Interstage Pump Station Reconstruction | \$ 2,567,000 | \$ 3,158,000 | \$ 3,158,000 | \$ - | \$ - | \$ - | \$ - |
| | 17062 | Mixed Liquor Channel Rehabilitation | \$ 719,000 | \$ 885,000 | \$ 885,000 | \$ - | \$ - | \$ - | \$ - |
| | 17071 | Odor Control Scrubber No.2 Replacement | \$ 2,928,000 | \$ 3,601,000 | \$ 3,601,000 | \$ - | \$ - | \$ - | \$ - |
| | 17079 | MCC E Replacement | \$ 354,000 | \$ 436,000 | \$ 436,000 | \$ - | \$ - | \$ - | \$ - |
| | 17092 | DAF System Condition Assessment | \$ 60,000 | \$ 74,000 | \$ 74,000 | \$ - | \$ - | \$ - | \$ - |
| | 17325 | Process Water Contact Basin Gate and Valve Replacement | \$ 247,000 | \$ 304,000 | \$ 238,000 | \$ 15,000 | \$ 19,000 | \$ 1,000 | \$ 31,000 |
| | 17327 | MCC F Replacement | \$ 448,000 | \$ 551,000 | \$ 430,000 | \$ 28,000 | \$ 35,000 | \$ 2,000 | \$ 56,000 |
| | 17340 | Plant Water Pump Screen Replacement | \$ 214,000 | \$ 263,000 | \$ 206,000 | \$ 13,000 | \$ 17,000 | \$ 1,000 | \$ 27,000 |
| | 17341 | Lube Oil Tank Replacement | \$ 105,000 | \$ 130,000 | \$ 101,000 | \$ 6,000 | \$ 8,000 | \$ - | \$ 13,000 |
| | 17347 | Electrical Box Reconstruction/Phase II | \$ 2,210,000 | \$ 2,719,000 | \$ 2,124,000 | \$ 136,000 | \$ 170,000 | \$ 9,000 | \$ 279,000 |
| | 17721 | AWT No.2 Contact Basin Upgrades | \$ 243,000 | \$ 299,000 | \$ 299,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Liquids | \$ 326,000 | \$ 394,000 | \$ 394,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 274,000 | \$ 161,000 | \$ 25,000 | \$ 31,000 | \$ 2,000 | \$ 56,000 |
| | | Small Cap Common | \$ 170,000 | \$ 206,000 | \$ 161,000 | \$ 10,000 | \$ 13,000 | \$ 1,000 | \$ 21,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 44,000 | \$ 44,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 10,855,000 | \$ 13,335,000 | \$ 12,310,000 | \$ 234,000 | \$ 292,000 | \$ 15,000 | \$ 484,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 9 ('27/'28) | | | | | | | | | |
| | 17053 | Headworks Process Equipment Replacement | \$ 2,896,000 | \$ 3,787,000 | \$ 3,787,000 | \$ - | \$ - | \$ - | \$ - |
| | 17064 | RAS Hypochlorite Pump and Instrument Replacement | \$ 161,000 | \$ 211,000 | \$ 211,000 | \$ - | \$ - | \$ - | \$ - |
| | 17066 | Replace Effluent Flow Meter Weir and Level Transmitter | \$ 94,000 | \$ 122,000 | \$ 122,000 | \$ - | \$ - | \$ - | \$ - |
| | 17068 | TWAS System Reconstruction | \$ 346,000 | \$ 453,000 | \$ 453,000 | \$ - | \$ - | \$ - | \$ - |
| | 17322 | Plant Water Pumping System Reconstruction | \$ 548,000 | \$ 717,000 | \$ 560,000 | \$ 36,000 | \$ 45,000 | \$ 2,000 | \$ 74,000 |
| | 17523 | Sludge Equalization System Mechanical and Electrical Rehabilitation | \$ 1,810,000 | \$ 2,366,000 | \$ 1,392,000 | \$ 212,000 | \$ 265,000 | \$ 14,000 | \$ 483,000 |
| | | Small Cap Liquids | \$ 326,000 | \$ 407,000 | \$ 407,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 283,000 | \$ 166,000 | \$ 25,000 | \$ 32,000 | \$ 2,000 | \$ 58,000 |
| | | Small Cap Common | \$ 170,000 | \$ 212,000 | \$ 166,000 | \$ 11,000 | \$ 13,000 | \$ 1,000 | \$ 22,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 45,000 | \$ 45,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 6,615,000 | \$ 8,603,000 | \$ 7,309,000 | \$ 284,000 | \$ 356,000 | \$ 19,000 | \$ 636,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|------------------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 10 ('28/'29) | | | | | | | | | |
| | 17059 | RAS Pump Station Reconstruction | \$ 2,884,000 | \$ 3,796,000 | \$ 3,796,000 | \$ - | \$ - | \$ - | \$ - |
| | 17321 | Chlorine Building Rehabilitation | \$ 229,000 | \$ 302,000 | \$ 236,000 | \$ 15,000 | \$ 19,000 | \$ 1,000 | \$ 31,000 |
| | 17334 | Storage Building Project | \$ 899,000 | \$ 1,184,000 | \$ 925,000 | \$ 59,000 | \$ 74,000 | \$ 4,000 | \$ 121,000 |
| | 17335 | Site Pavement Reconstruction | \$ 1,007,000 | \$ 1,325,000 | \$ 1,035,000 | \$ 66,000 | \$ 83,000 | \$ 4,000 | \$ 136,000 |
| | 17351 | Underground Piping Reconstruction Area C | \$ 525,000 | \$ 691,000 | \$ 540,000 | \$ 35,000 | \$ 43,000 | \$ 2,000 | \$ 71,000 |
| | 17352 | Underground Piping Reconstruction Area D | \$ 291,000 | \$ 383,000 | \$ 299,000 | \$ 19,000 | \$ 24,000 | \$ 1,000 | \$ 39,000 |
| | 17722 | AWT Control Building Structural, Mechanical and Electrical Upgrade | \$ 500,000 | \$ 658,000 | \$ 658,000 | \$ - | \$ - | \$ - | \$ - |
| | 17723 | AWT No.2 Applied Water Pump System | \$ 212,000 | \$ 279,000 | \$ 279,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Liquids | \$ 326,000 | \$ 420,000 | \$ 420,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 292,000 | \$ 172,000 | \$ 26,000 | \$ 33,000 | \$ 2,000 | \$ 60,000 |
| | | Small Cap Common | \$ 170,000 | \$ 219,000 | \$ 171,000 | \$ 11,000 | \$ 14,000 | \$ 1,000 | \$ 22,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 46,000 | \$ 46,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 7,308,000 | \$ 9,595,000 | \$ 8,577,000 | \$ 232,000 | \$ 290,000 | \$ 15,000 | \$ 481,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|------------------------------|--------------|---|----------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| | | | | | | | | | |
| YEAR 11 ('29/'30) | | | | | | | | | |
| | 17058 | Secondary Sedimentation Basin Reconstruction | \$ 4,080,000 | \$ 5,668,000 | \$ 5,668,000 | \$ - | \$ - | \$ - | \$ - |
| | 17522 | Emulsion Polymer Feed System Replacement | \$ 317,000 | \$ 441,000 | \$ 259,000 | \$ 39,000 | \$ 49,000 | \$ 3,000 | \$ 90,000 |
| | | Small Cap Liquids | \$ 326,000 | \$ 433,000 | \$ 433,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 301,000 | \$ 177,000 | \$ 27,000 | \$ 34,000 | \$ 2,000 | \$ 62,000 |
| | | Small Cap Common | \$ 170,000 | \$ 226,000 | \$ 177,000 | \$ 11,000 | \$ 14,000 | \$ 1,000 | \$ 23,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 48,000 | \$ 48,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 5,156,000 | \$ 7,117,000 | \$ 6,762,000 | \$ 78,000 | \$ 97,000 | \$ 5,000 | \$ 175,000 |
| | | | | | | | | | |
| YEAR 12 ('30/'31) | | | | | | | | | |
| | 17067 | DAF Collector Recoating and Cover Replacement | \$ 786,000 | \$ 1,105,000 | \$ 1,105,000 | \$ - | \$ - | \$ - | \$ - |
| | 17520 | Ferric Chloride System Reconstruction | \$ 764,000 | \$ 1,073,000 | \$ 631,000 | \$ 96,000 | \$ 120,000 | \$ 6,000 | \$ 219,000 |
| | 17527 | Anaerobic Digester System Reconstruction | \$ 12,408,000 | \$ 17,438,000 | \$ 10,257,000 | \$ 1,562,000 | \$ 1,957,000 | \$ 103,000 | \$ 3,559,000 |
| | 17530 | Digested Sludge Pump System Reconstruction | \$ 545,000 | \$ 766,000 | \$ 451,000 | \$ 69,000 | \$ 86,000 | \$ 5,000 | \$ 156,000 |
| | 17535 | Odor Control Scrubber No.3 Replacement | \$ 1,559,000 | \$ 2,191,000 | \$ 1,289,000 | \$ 196,000 | \$ 246,000 | \$ 13,000 | \$ 447,000 |
| | | Small Cap Liquids | \$ 326,000 | \$ 447,000 | \$ 447,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 311,000 | \$ 183,000 | \$ 28,000 | \$ 35,000 | \$ 2,000 | \$ 63,000 |
| | | Small Cap Common | \$ 170,000 | \$ 233,000 | \$ 182,000 | \$ 12,000 | \$ 15,000 | \$ 1,000 | \$ 24,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 49,000 | \$ 49,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 16,822,000 | \$ 23,615,000 | \$ 14,595,000 | \$ 1,963,000 | \$ 2,458,000 | \$ 129,000 | \$ 4,469,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|------------------------------|--------------|---|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| | | | | | | | | | |
| YEAR 13 ('31/'32) | | | | | | | | | |
| | 17075 | Polymer Storage Tank - Mannich Replacement | \$ 252,000 | \$ 385,000 | \$ 385,000 | \$ - | \$ - | \$ - | \$ - |
| | 17521 | Bulk Polymer Storage and Transfer System Reconstruction | \$ 294,000 | \$ 449,000 | \$ 264,000 | \$ 40,000 | \$ 50,000 | \$ 3,000 | \$ 92,000 |
| | 17531 | MCC M Replacement | \$ 491,000 | \$ 750,000 | \$ 441,000 | \$ 67,000 | \$ 84,000 | \$ 4,000 | \$ 153,000 |
| | 17727 | MCC L Replacement | \$ 436,000 | \$ 666,000 | \$ 666,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Liquids | \$ 326,000 | \$ 461,000 | \$ 461,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 321,000 | \$ 189,000 | \$ 29,000 | \$ 36,000 | \$ 2,000 | \$ 66,000 |
| | | Small Cap Common | \$ 170,000 | \$ 241,000 | \$ 188,000 | \$ 12,000 | \$ 15,000 | \$ 1,000 | \$ 25,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 51,000 | \$ 51,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 2,232,000 | \$ 3,324,000 | \$ 2,646,000 | \$ 148,000 | \$ 186,000 | \$ 10,000 | \$ 335,000 |
| | | | | | | | | | |
| YEAR 14 ('32/'33) | | | | | | | | | |
| | 17054 | Primary Sedimentation Basin Upgrade | \$ 1,692,000 | \$ 2,675,000 | \$ 2,675,000 | \$ - | \$ - | \$ - | \$ - |
| | 17063 | WAS Pump Station Reconstruction | \$ 469,000 | \$ 741,000 | \$ 741,000 | \$ - | \$ - | \$ - | \$ - |
| | 17072 | Grit Management Facility | \$ 1,781,000 | \$ 2,817,000 | \$ 2,817,000 | \$ - | \$ - | \$ - | \$ - |
| | 17078 | MCC 30310 Replacement | \$ 466,000 | \$ 737,000 | \$ 737,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Liquids | \$ 326,000 | \$ 476,000 | \$ 476,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 331,000 | \$ 195,000 | \$ 30,000 | \$ 37,000 | \$ 2,000 | \$ 68,000 |
| | | Small Cap Common | \$ 170,000 | \$ 248,000 | \$ 194,000 | \$ 12,000 | \$ 16,000 | \$ 1,000 | \$ 25,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 53,000 | \$ 53,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 5,168,000 | \$ 8,079,000 | \$ 7,888,000 | \$ 42,000 | \$ 53,000 | \$ 3,000 | \$ 93,000 |

Table I.5 - Regional Treatment Plant Capital Improvement Plan

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD | Project cost (adjusted) CLB | Project cost (adjusted) EBSD | Project cost (adjusted) ETWD |
|-------------------|--------------|--|---------------------|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 15 ('33/'34) | | | | | | | | | |
| | 17336 | Perimeter Fence Replacement | \$ 334,000 | \$ 532,000 | \$ 416,000 | \$ 27,000 | \$ 33,000 | \$ 2,000 | \$ 55,000 |
| | 17353 | SCADA System Upgrade Project/2nd Phase | \$ 2,025,000 | \$ 3,226,000 | \$ 2,520,000 | \$ 162,000 | \$ 202,000 | \$ 11,000 | \$ 331,000 |
| | 17725 | AWT SCADA System Upgrade | \$ 147,000 | \$ 234,000 | \$ 234,000 | \$ - | \$ - | \$ - | \$ - |
| | 17726 | AWT No.2 Filter Sand Replacement and Underdrain Rehabilitation | \$ 358,000 | \$ 571,000 | \$ 571,000 | \$ - | \$ - | \$ - | \$ - |
| | 17728 | AWT WQ Instrumentation Replacement | \$ 135,000 | \$ 214,000 | \$ 214,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Liquids | \$ 326,000 | \$ 491,000 | \$ 491,000 | \$ - | \$ - | \$ - | \$ - |
| | | Small Cap Solids | \$ 227,000 | \$ 342,000 | \$ 201,000 | \$ 31,000 | \$ 38,000 | \$ 2,000 | \$ 70,000 |
| | | Small Cap Common | \$ 170,000 | \$ 256,000 | \$ 200,000 | \$ 13,000 | \$ 16,000 | \$ 1,000 | \$ 26,000 |
| | | Small Cap AWT | \$ 36,000 | \$ 54,000 | \$ 54,000 | \$ - | \$ - | \$ - | \$ - |
| | | TOTALS | \$ 3,758,000 | \$ 5,920,000 | \$ 4,902,000 | \$ 232,000 | \$ 290,000 | \$ 15,000 | \$ 482,000 |

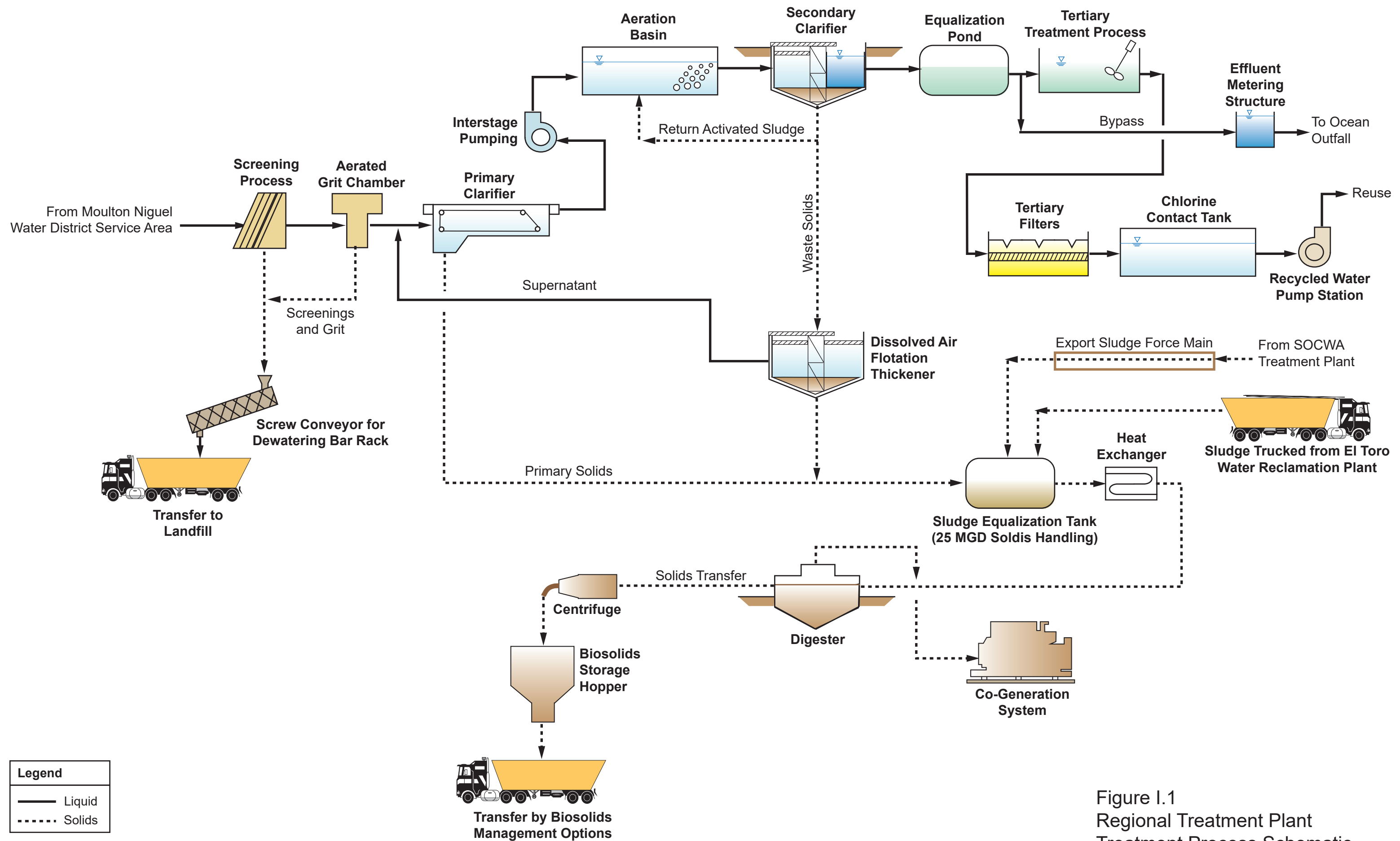


Figure I.1
Regional Treatment Plant
Treatment Process Schematic

Appendix J
Regional Treatment Plant Project Descriptions

Capital Improvement Program – Project Description

Project No.: 17051
Project Name: MCC A, C, G, and H Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2021
Project Status: Short Term Planning



Project Description: The project includes the replacement of the Motor Control Centers 'A', 'C', 'G', and 'H' in the Energy Building.

Project Need: The original motor control centers date to the original plant construction in 1983. Deficiencies in the units were noted in the electrical coordination study performed for the Cogeneration and Switchgear Upgrade.

Key Issues: The replacement of the motor control centers will need to address other near future projects such as the replacement of the odor control systems.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 0 |
| Construction: | \$ | 825,000 |
| Construction Support: | \$ | 124,000 |
| Total Budget: | \$ | 949,000 |

Capital Improvement Program – Project Description

Project No.: 17052

Project Name: Odor Control Scrubber No.1 Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Liquids

Anticipated Fiscal Year: 2026

Project Status: Long Term Planning

Project Description: The project includes the replacement of the existing chemical scrubber with a new biotower and chemical scrubber combination for Odor Control System No.1. The new system will be located on the west side of the Primary Sedimentation Basins in the approximate location of the existing prefabricated metal storage building.



Project Need: The existing scrubber system was installed in 1995. With the periodic replacement of fans, recirculation pumps, and chemical feed pumps the system remains functional. The fiberglass unit itself remains in good condition as the system nears 25 years in operation.

Key Issues: The odor control system proposed in the DHK evaluation in 2017 is a robust system meant to achieve BACT. This system is also proposed to provide greater redundancy for maintenance shutdowns. However, the proposed system is both more complex and more expensive than a simple replacement of the existing system. The proposed relocation to the current storage building location will require the development of a new storage approach.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 120,000 |
| Design: | \$ | 480,000 |
| Construction: | \$ | 4,798,000 |
| Construction Support: | \$ | 480,000 |
| Total Budget: | \$ | 5,878,000 |

Capital Improvement Program – Project Description

Project No.: 17053

Project Name: Headworks Process Equipment Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Liquids

Anticipated Fiscal Year: 2028

Project Status: Long Term Planning

Project Description: This project includes the replacement of three bar screens, two conveyors, two screenings compressors, and two grit classifiers. The work also includes the replacement of push button stations and system alarms.



Project Need: The bars screens were originally installed in 1998 and then refurbished in 2010. The remaining process equipment was replaced in 2010. The process equipment is expected to have a 20 year life.

Key Issues: The Headworks underwent a major reconstruction in 2010 including the replacement of the roof, HVAC ducting and lighting as well as rehabilitation of the bar screen channels. A condition assessment should prior to the budgeting of this project.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|--------------|
| Condition Assessment: | \$ 60,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 181,000 |
| Construction: | \$ 2,413,000 |
| Construction Support: | \$ 241,000 |
| Total Budget: | \$ 2,896,000 |

Capital Improvement Program – Project Description

Project No.: 17054
Project Name: Primary Sedimentation Basin Upgrade
Facility: Regional Treatment Plant
Cost Center: PC 17 (Common)
Anticipated Fiscal Year: 2033
Project Status: Long Term Planning

Project Description: Project includes the rehabilitation of the six primary sedimentation basins including replacement of the chain and flight sludge collectors and the aluminum basin covers.

Project Need: The chain and flight collectors were replaced in 2011 and are expected to have a 20 year life. The aluminum covers were installed in the 1990's and remain in condition. The cross collectors were removed from the operation in the 1990's. The scum collectors are to be replaced in a separate project.

Key Issues: The estimated cost for the project does not include concrete repair or liner replacement. The primary sedimentation system should undergo a detailed condition assessment in approximately 5 years.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|--------------|
| Condition Assessment: | \$ 35,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 141,000 |
| Construction: | \$ 1,410,000 |
| Construction Support: | \$ 141,000 |
| Total Budget: | \$ 1,727,000 |



Capital Improvement Program – Project Description

Project No.: 17055
Project Name: Primary Gallery Upgrade Phase II
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2025
Project Status: Long Term Planning



Project Description: This project includes the replacement of the three helical scum skimmers, scum boxes, sludge pumps, grit pumps, and associated piping. The project includes replacement of piping, valves and power supply connections.

Project Need: The helical skimmers have been rebuilt several times by SOCWA maintenance and are past their useful life. This replacement project has been identified based on the expected 20 year life of the scum skimmers, scum boxes, and associated piping.

Key Issues:

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 33,000 |
| Construction: | \$ | 1,092,000 |
| Construction Support: | \$ | 164,000 |
| Total Budget: | \$ | 1,289,000 |

Capital Improvement Program – Project Description

Project No.: 17056
Project Name: Interstage Pump Station Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2027
Project Status: Long Term Planning

Project Description: This project includes the replacement of the five interstage syphon pumps. The project includes replacement of piping, valves, VFDs, and power supply connections.

Project Need: The five pumps were essentially installed when the plant was initially brought online. The pumps have been maintained and serviced to keep them in operation but the style of pump is no longer available. A viable replacement for the interstage pumps is needed as they are past their useful life.

Key Issues: Part of the pump is encased on concrete and a new pumping system may be difficult to install without modifications to the concrete structure. In addition, the power requirements for different style pumps may be increased from the current style and therefore power consumption should be included in the cost analysis.



Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 205,000 |
| Construction: | \$ | 2,054,000 |
| Construction Support: | \$ | 308,000 |
| Total Budget: | \$ | 2,567,000 |

Capital Improvement Program – Project Description

Project No.: 17057
Project Name: Secondary Aeration Phase II
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: This project includes the replacement of the Turblex blower with two Aerzen Blowers similar to what is now installed at the JB Latham Treatment Plant.



Project Need: Although the blower has not reached the end of its expected 30-year life (installed in 2003), the manufacturer is no longer supporting this model and parts are becoming increasingly difficult to find.

Key Issues: The blower building is limited in space. An initial conceptual design by Lee and Ro has placed the two blowers near each other while allowing access to all areas. If further analysis finds that this conceptual design cannot be used, modifications to the building may need to be made increasing the cost of the project significantly.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 147,000 |
| Construction: | \$ | 1,469,000 |
| Construction Support: | \$ | 147,000 |
| Total Budget: | \$ | 1,763,000 |

Capital Improvement Program – Project Description

Project No.: 17058

Project Name: Secondary Sedimentation Basin Reconstruction

Facility: Regional Treatment Plant

Cost Center: PC 17 Liquids

Anticipated Fiscal Year: 2030

Project Status: Long Term Planning

Project Description: Project includes the replacement retrofit of all mechanical equipment within the secondary clarifiers.

Project Need: The coating of all metallic equipment in the secondary clarifiers was completed in 2015. It was assumed that this would extend the equipment life by approximately 10 years.

Key Issues: The cost estimate is based on the replacement of the mechanical equipment with steel collectors; additional evaluation is needed if the stainless-steel units are to be considered. The process of isolating the clarifiers should be considered before replacing the stop gate structures.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 174,000 |
| Construction: | \$ | 3,472,000 |
| Construction Support: | \$ | 434,000 |
| Total Budget: | \$ | 4,080,000 |



Capital Improvement Program – Project Description

Project No.: 17059
Project Name: RAS Pump Station Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2029
Project Status: Long Term Planning

Project Description: This project includes the replacement of the ten RAS pumps, ten VFDs, six slide gates/frames, and associated piping and electrical.



Project Need: The pumps were originally installed in 1983 and this replacement project has been identified based on the expected 20-year life of the pumps.

Key Issues: The RAS system is comprised of four separate stations that service six basins with ten pumps. The separated locations and complexity of connections between the stations may increase some design and construction costs.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 240,000 |
| Construction: | \$ | 2,403,000 |
| Construction Support: | \$ | 240,000 |
| Total Budget: | \$ | 2,884,000 |

Capital Improvement Program – Project Description

Project No.: 17060
Project Name: Secondary Scum Pump Station Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2023
Project Status: Short Term Planning

Project Description: This project includes the replacement of the ten RAS pumps, ten VFDs, six slide gates/frames, and associated piping and electrical.

Project Need: The pumps and gates were originally installed in 1983 and this replacement project has been identified based on the expected 20-year life of the pumps and the gates are beyond their expected 30-year life.

Key Issues: The RAS system is comprised of four separate stations that service six basins with ten pumps. The separated locations and complexity of connections between the stations and basins may increase some design and construction costs.



Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 48,000 |
| Construction: | \$ | 482,000 |
| Construction Support: | \$ | 48,000 |
| Total Budget: | \$ | 578,000 |

Capital Improvement Program – Project Description

Project No.: 17061
Project Name: Mixed Liquor Channel Condition Assessment
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: The project involves a condition assessment of the Mixed Liquor Channel from the Aeration Basins to the Secondary Sedimentation Basins.



Project Need: The channel has not been removed from service for inspection and cleaning since the original construction in 1983. There is no fixed method for bypassing the channel.

Key Issues: A portion of the channel was removed from service in 2008 for the installation of new suction connections for the waste activated sludge pumps. This work highlighted the challenges of installing bulkheads in the Mixed Liquor Channel due to the presence of agitation air piping along the bottom of the channel.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 270,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 0 |
| Construction: | \$ 0 |
| Construction Support: | \$ 0 |
| Total Budget: | \$ 270,000 |

Capital Improvement Program – Project Description

Project No.: 17062
Project Name: Mixed Liquor Channel Rehabilitation
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2027
Project Status: Long Term Planning



Project Description: The project includes the rehabilitation of the Mixed Liquor Channel from the Aeration Basins to the Secondary Sedimentation Basins including reconstruction of the agitation air system and repair of the concrete surfaces.

Project Need: The channel has not been removed from service for inspection and cleaning since the original construction in 1983. There is no fixed method for bypassing the channel.

Key Issues: This work is to be preceded by the condition assessment work in Project 17061.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 46,000 |
| Construction: | \$ | 612,000 |
| Construction Support: | \$ | 61,000 |
| Total Budget: | \$ | 719,000 |

Capital Improvement Program – Project Description

Project No.: 17063
Project Name: WAS Pump Station Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2033
Project Status: Long Term Planning

Project Description: This project includes the replacement of the four Waste Activated Sludge Pumps along with the associated above ground piping, valves and flow meters. The project also includes the replacement of the associated variable frequency drives (although the replacement of the cabinets is addressed in another project).



Project Need: The existing WAS system was constructed in 2008. Based on estimated 20 year life for sludge pumps this system would be scheduled for replacement in approximately 2020. It is possible that the life of the existing system will extend beyond the life of the current Ten Year Plan.

Key Issues: The condition of the system should be assessed in approximately 5 years to determine the need for reconstruction. The process requirements should be compared with the quantity of WAS required at that time.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 30,000 |
| Construction: | \$ | 399,000 |
| Construction Support: | \$ | 40,000 |
| Total Budget: | \$ | 469,000 |

Capital Improvement Program – Project Description

Project No.: 17064

Project Name: RAS Hypochlorite Pump and Instrumentation Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17

Anticipated Fiscal Year: 2028

Project Status: Long Term Planning

Project Description: Project includes removal of existing RAS hypochlorite pumps and installation of new RAS hypochlorite pumps and instrumentation

Project Need: New chemical pumps were installed in 2015. The experience at SOCWA facilities is that a chemical pump has a life of approximately 15 years.

Key Issues: Chemical feed pump technology is evolving, the type of pump for replacement should be reviewed in the future.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 13,000 |
| Construction: | \$ | 135,000 |
| Construction Support: | \$ | 13,000 |
| Total Budget: | \$ | 161,000 |



Capital Improvement Program – Project Description

Project No.: 17066
Project Name: Effluent Flow Meter Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 (Liquids)
Anticipated Fiscal Year: 2028
Project Status: Long Term Planning

Project Description: Project includes the replacement of the contraction plate, weir, sonic level/flow meter and the composite sampler at the effluent junction box.

Project Need: The original project for the effluent flow meter was installed in 2004. Components for the system including the sonic level/flow meter and the composite sampler may be replaced on an as-needed basis. The contraction plate and weir within the effluent structure should be replaced after approximately 25 years.

Key Issues: The development of the original project in 2004 identified a low technology, low cost project to provide a needed effluent flow meter. A conceptual study should be performed to consider long term options for effluent flow metering. A condition assessment should also be performed to evaluate the conditions within the Effluent Junction Box. This cost estimate is based on the assumption that the conduit and wiring to the Effluent Junction Box can be reused.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|-----------|
| Condition Assessment: | \$ 6,000 |
| Conceptual Study: | \$ 18,000 |
| Design: | \$ 6,000 |
| Construction: | \$ 59,000 |
| Construction Support: | \$ 6,000 |
| Total Budget: | \$ 94,000 |



Capital Improvement Program – Project Description

Project No.: 17068
Project Name: TWAS System Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 (Liquids)
Anticipated Fiscal Year: 2030
Project Status: Long Term Planning

Project Description: Project includes the replacement of the three thickened waste activated sludge (TWAS) pumps, the associated piping and valves and a variable frequency drives (VFD) for each individual pump.



Project Need: The existing TWAS pumping system was installed in 2008. The proposed replacement project is based on the expected 20-year life of the sludge pumps.

Key Issues: The VFD's are located in Motor Control Center (MCC) "C". The VFD's should not be replaced prior to the replacement of MCC "C". The underground piping from the TWAS pump discharge to the Sludge Equalization Tanks (SET's) is addressed in a separate reconstruction project. The piping from the TWAS pump suction to the DAF structure has not been addressed in the current version of the Ten Year Plan.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 29,000 |
| Construction: | \$ | 289,000 |
| Construction Support: | \$ | 29,000 |
| Total Budget: | \$ | 346,000 |

Capital Improvement Program – Project Description

Project No.: 17072
Project Name: Grit Management Facility
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2033
Project Status: Short Term Planning

Project Description: This project involves the construction of a new Grit Handling Building to be constructed adjacent to the existing Headworks Building. The building would include new grit classifiers located above grit bins. The floor level of the building would match the approximate grade of the access road. A new screenings compactor would include a long discharge tube to access the new bins.



Project Need: The proposed project would eliminate the double handling of screenings and grit.

Key Issues: Key Issues: This project will be preceded by Project 17083 Grit Handling Evaluation which will do the conceptual design for the new grit handling facility.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 142,000 |
| Construction: | \$ | 1,425,000 |
| Construction Support: | \$ | 214,000 |
| Total Budget: | \$ | 1,781,000 |

Capital Improvement Program – Project Description

Project No.: 17074
Project Name: WAS Pump VFD Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: This project includes the replacement of the four Waste Activated Sludge Pump variable frequency drives.

Project Need: The existing WAS variable frequency drives were installed in 2008. This project is included in the Ten Year Plan based on exceedance of expected life.

Key Issues: The existing cabinets remain in good condition; the proposed project includes only the replacement of the cabinet doors.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 12,000 |
| Construction: | \$ | 120,000 |
| Construction Support: | \$ | 12,000 |
| Total Budget: | \$ | 144,000 |



Capital Improvement Program – Project Description

Project No.: 17075

Project Name: Mannich Polymer Storage System Upgrade Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Liquids

Anticipated Fiscal Year: 2032

Project Status: Long Term Planning

Project Description: Project includes the replacement of the bulk mannich polymer storage tank, the transfer pump, and the associated piping.



Project Need: The fiberglass storage tank was replaced in 2011. The pump and piping system is in poor condition; the Operations staff has been replacing components on as-needed basis.

Key Issues: The concrete containment area remains in good condition and does not appear to require replacement. This project is separated from the proposed shade construction (Project 17084).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 21,000 |
| Construction: | \$ | 210,000 |
| Construction Support: | \$ | 21,000 |
| Total Budget: | \$ | 252,000 |

Capital Improvement Program – Project Description

Project No.: 17078
Project Name: MCC 30310 Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 (Liquids)
Anticipated Fiscal Year: 2033
Project Status: Long Term Planning

Project Description: Project includes the replacement of Motor Control Center '30310' in the Blower Building.

Project Need: MCC '30310' was installed in 2003. Project is included in Ten Year Plan based on anticipated 30 year life of motor control center.

Key Issues: The scheduling of this project may be impacted by Project 17057 relative to the replacement of the single stage blower.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 9,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 37,000 |
| Construction: | \$ 373,000 |
| Construction Support: | \$ 47,000 |
| Total Budget: | \$ 466,000 |



Capital Improvement Program – Project Description

Project No.: 17071

Project Name: Odor Control Scrubber No.2 Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Liquids

Anticipated Fiscal Year: 2027

Project Status: Long Term Planning

Project Description: The project includes the replacement of the existing chemical scrubber with a new chemical scrubber and carbon scrubber combination for Odor Control System No.2. The new system will be located on the west side of the Aeration Basins in the current location of the grassy knoll.



Project Need: The existing scrubber system was installed in 1998. With the periodic replacement of fans, recirculation pumps, and chemical feed pumps the system remains functional. The fiberglass unit itself remains in good condition as the system has reached 20 years in operation.

Key Issues: The odor control system proposed in the DHK evaluation in 2017 is a robust system meant to achieve BACT. This system is also proposed to provide greater redundancy for maintenance shutdowns. However, the proposed system is both more complex and more expensive than a simple replacement of the existing system.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|--------------|
| Condition Assessment: | \$ 0 |
| Conceptual Study: | \$ 60,000 |
| Design: | \$ 239,000 |
| Construction: | \$ 2,390,000 |
| Construction Support: | \$ 239,000 |
| Total Budget: | \$ 2,928,000 |

Capital Improvement Program – Project Description

Project No.: 17080
Project Name: Primary Scum Skimmer Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2025
Project Status: Long Term Planning

Project Description: Project includes the rehabilitation of the six primary helical scum skimmers and the three associated scum troughs. Associated electrical controls and piping are included.

Project Need: The scum skimmers have been maintained past their expected useful life of 20 years and are currently run in manual mode because of the failure of the electronic controls. The skimmers and troughs were installed in 1983.

Key Issues: The estimated cost for the project does not include concrete repair.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 37,000 |
| Construction: | \$ | 1,231,000 |
| Construction Support: | \$ | 185,000 |
| Total Budget: | \$ | 1,453,000 |



Capital Improvement Program – Project Description

Project No.: 17081

Project Name: Primary Sedimentation Collectors and Gates Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Liquids

Anticipated Fiscal Year: 2025

Project Status: Long Term Planning

Project Description: Project includes the replacement of the influent drop gates, the effluent drop gates, and the effluent collector pipes in the six primary sedimentation basins.



Project Need: The drop gates and the effluent collectors are all as originally constructed in 1983.

Key Issues: The estimated cost is based on the replacement of the existing drop gates with new drop gates. The plant operations staff have requested that the drop gates be replaced with slide gates. The technical and cost impacts of this request should be analyzed prior to the project design.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 18,000 |
| Design: | \$ | 74,000 |
| Construction: | \$ | 738,000 |
| Construction Support: | \$ | 74,000 |
| Total Budget: | \$ | 904,000 |

Capital Improvement Program – Project Description

Project No.: 17082

Project Name: Secondary Effluent Conveyance
Evaluation Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Liquids

Anticipated Fiscal Year: 2022

Project Status: Short Term Planning



Project Description: Evaluation of secondary effluent conveyance capacity through the piping system between the Regional Treatment Plant and the Effluent Transmission Main. Study shall also consider ability of system to store effluent during wet weather events. Study to develop alternative to enhance effluent conveyance and storage capacity.

Project Need: Recent winter storm events have exceeded capacity of secondary effluent system narrowly avoiding overflow of the Secondary Effluent Equalization Pond.

Key Issues: Project requires coordination with Moulton Niguel Water District (in terms of ability of reclaimed water system to handle flow) and OC Parks (if additional conveyance through the Laguna Niguel Regional Park is to be considered). It may be appropriate to perform this study in conjunction with an analysis of the sources of wet weather influent flow.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 50,000 |
| Design: | \$ | 0 |
| Construction: | \$ | 0 |
| Construction Support: | \$ | 0 |
| Total Budget: | \$ | 50,000 |

Capital Improvement Program – Project Description

Project No.: 17083
Project Name: Grit Handling Evaluation
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: This project is to evaluate the construction of a new Grit Handling Building to be constructed adjacent to the existing Headworks Building. The building would include new grit classifiers located above grit bins. The floor level of the building would match the approximate grade of the access road. A new screenings compactor would include a long discharge tube to access the new bins. The odor control system would need to be extended to handle the foul air from the new Grit Handling Building.



Project Need: The proposed project would eliminate the double handling of screenings and grit.

Key Issues: Study would include both an economic and reliability of evaluation to determine the relative merit of the project. A separate project (17072) includes the design and construction of the proposed facility.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 60,000 |
| Design: | \$ | 0 |
| Construction: | \$ | 0 |
| Construction Support: | \$ | 0 |
| Total Budget: | \$ | 60,000 |

Capital Improvement Program – Project Description

Project No.: 17084
Project Name: Mannich Polymer Tank Shade
Facility: Regional Treatment Plant
Cost Center: PC 17 Liquids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: Project includes the installation of a removable fabric cover over the mannich polymer bulk storage tank.

Project Need: This project is based on a request by the SOCWA Operations Department as a means of decreasing the degradation of the mannich polymer in storage.



Key Issues: The estimated construction cost for this project is based on the cost of the aluminum cover installed over the sodium hypochlorite storage tank at the Latham Plant in 2007. An evaluation should be done in Fiscal Year 2018/2019 (as part of the Miscellaneous Engineering budget) to verify the technical approach and cost for the fabric covers. This project should be done in conjunction with the covering of the emulsion polymer storage tank (see Project 17541).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 16,000 |
| Construction: | \$ | 163,000 |
| Construction Support: | \$ | 16,000 |
| Total Budget: | \$ | 195,000 |

Capital Improvement Program – Project Description

Project No.: 17086

Project Name: Aeration Control Valves, Gates, and Flow Meter Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Solids

Anticipated Fiscal Year: 2022

Project Status: Short Term Planning



Project Description: This project includes replacing all influent, effluent, RAS feed, and step-feed gates on the six aeration basins. It also includes as the final (third) phase of aeration upgrades the replacement of the air flow control valves, air flow meters, and dissolved oxygen meters and controllers for all six basins.

Project Need: The gates were originally installed in 1983 and have been repaired and maintained past their expected useful life of 20 years. The aeration control valves, air flow meters, DO meters and DO controllers are near the end of their expected useful life and will also provide increased control and efficiency along with the Phase I and Phase II new diffusers and blowers.

Key Issues: Because of the aeration feed system, bulkheading and bypassing will be required for this project and in some locations may be difficult. The project costs could be significantly increased depending on how much bypass pumping will be required during the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 247,000 |
| Construction: | \$ | 2,472,000 |
| Construction Support: | \$ | 371,000 |
| Total Budget: | \$ | 3,090,000 |

Capital Improvement Program – Project Description

Project No.: 17320
Project Name: Plant Drainage Pump Station Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2026
Project Status: Long Term Planning

Project Description: This project includes the reconstruction of the Drainage Pump Station including the construction of a shade over the facility.



Project Need: The Drainage Pump Station remains largely as constructed in 1983. Piping and valves show signs of corrosion. Shade need to reduce the amount of debris that falls in pump drywell.

Key Issues: The review of the storm water and drainage systems (Project 17326) should be completed prior to starting this project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 48,000 |
| Construction: | \$ | 482,000 |
| Construction Support: | \$ | 72,000 |
| Total Budget: | \$ | 603,000 |

Capital Improvement Program – Project Description

Project No.: 17321
Project Name: Chlorine Building Rehabilitation Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2029
Project Status: Long Term Planning

Project Description: This project includes the replacement of architectural hardware on the existing building.

Project Need: Most of the architectural hardware dates to the original plant construction.

Key Issues: An internal condition assessment should be performed for this building prior to budgeting.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 19,000 |
| Construction: | \$ | 187,000 |
| Construction Support: | \$ | 23,000 |
| Total Budget: | \$ | 229,000 |



Capital Improvement Program – Project Description

Project No.: 17322

Project Name: Plant Water Pumping System Reconstruction

Facility: Regional Treatment Plant

Cost Center: PC 17 Common

Anticipated Fiscal Year: 2028

Project Status: Long Term Planning

Project Description: This project includes the replacement of three 3W High Pressure pumps, three 3W Low Pressure pumps, two 2W pumps and the air gap system.



Project Need: The process water system has not undergone a comprehensive reconstruction since its original construction.

Key Issues: A condition assessment should be conducted at least two years prior to the budgeting of this project. Assessment should include reevaluation of water demands and pump sizing.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 11,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 45,000 |
| Construction: | \$ 448,000 |
| Construction Support: | \$ 45,000 |
| Total Budget: | \$ 548,000 |

Capital Improvement Program – Project Description

Project No.: 17323

Project Name: Non-Potable Hypochlorite Pump and Instrumentation Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Common

Anticipated Fiscal Year: 2026

Project Status: Long Term Planning

Project Description: Project includes removal of existing Non-Potable hypochlorite pumps and installation of new Non-Potable hypochlorite pumps and instrumentation

Project Need: New chemical pumps were installed in 2015. The experience at SOCWA facilities is that a chemical pump has a life of approximately 15 years.

Key Issues: Chemical feed pump technology is evolving, the type of pump for replacement should be reviewed in the future.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 13,000 |
| Construction: | \$ | 135,000 |
| Construction Support: | \$ | 13,000 |
| Total Budget: | \$ | 161,000 |



Capital Improvement Program – Project Description

Project No.: 17325

Project Name: Process Water Contact Basin Gate and Valve Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Common

Anticipated Fiscal Year: 2027

Project Status: Long Term Planning

Project Description: This project includes the replacement of the four slide gates, modification of small piping systems, and rehabilitation of the concrete.



Project Need: The Process Water Contact Basins have remained largely unmodified since the original construction in 1983.

Key Issues: This work should be preceded by a condition assessment at least two years prior to the budgeting of the work.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 5,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 20,000 |
| Construction: | \$ 202,000 |
| Construction Support: | \$ 20,000 |
| Total Budget: | \$ 247,000 |

Capital Improvement Program – Project Description

Project No.: 17327

Project Name: MCC F Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Common

Anticipated Fiscal Year: 2027

Project Status: Long Term Planning

Project Description: Project includes the replacement of Motor Control Center 'F'.

Project Need: Motor Control Center 'F' was installed in 1983; the unit has exceeded its anticipated life.

Key Issues: The conduit and conductors between MCC 'F' and its associated loads will largely be replaced as part of the Miscellaneous Improvements 2018 project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 37,000 |
| Construction: | \$ | 365,000 |
| Construction Support: | \$ | 46,000 |
| Total Budget: | \$ | 448,000 |



Capital Improvement Program – Project Description

Project No.: 17329
Project Name: Laboratory Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: Project addresses the reconstruction of Regional Treatment Plant Laboratory.



Project Need: The Regional Treatment Plant laboratory has not been the subject of a major reconstruction project since the facility construction in 1983. Portions of the casework were replaced in 2005 with units relocated from Plant 3A (when that laboratory was demolished). The laboratory air conditioning system was rebuilt in 2011.

Key Issues: The cost estimate for the reconstruction of the laboratory is based on Option 4 for the reconstruction of the J. B. Latham Treatment Plant Laboratory Study published in 2010. The take-off for the Regional Plant laboratory and Option 4 are similar. However, a study specific to the Regional Plant should be undertaken in the near term. Project development will be based on project evaluation developed in Project 17343.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 87,000 |
| Construction: | \$ | 869,000 |
| Construction Support: | \$ | 87,000 |
| Total Budget: | \$ | 1,042,000 |

Capital Improvement Program – Project Description

Project No.: 17330

Project Name: Energy Building Seismic Analysis and Structural Condition Assessment

Facility: Regional Treatment Plant

Cost Center: PC 17 Commons

Anticipated Fiscal Year: 2022

Project Status: Short Term Planning

Project Description: This project entails a structural condition assessment and a seismic evaluation of the multi-story Energy Building.

Project Need: In 1999, the Energy Building underwent a seismic evaluation due to cracking noted in the building after the completion of the dewatering system expansion. Seismic improvements were completed in 2000. The current project is intended to update the seismic evaluation. The Energy Building, constructed in 1983, shows minor signs of deterioration. The purpose on the condition assessment is intended to provide a more detailed review of the building status.

Key Issues: The budget for the work is based on approximately 320 hours of engineering time. The estimate does not include provision for high level access or fall protection on the building roof.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|-----------|
| Condition Assessment: | \$ 80,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 0 |
| Construction: | \$ 0 |
| Construction Support: | \$ 0 |
| Total Budget: | \$ 80,000 |



Capital Improvement Program – Project Description

Project No.: 17331

Project Name: Energy Building Repair and Rehabilitation

Facility: Regional Treatment Plant

Cost Center: PC 17 Common

Anticipated Fiscal Year: 2024

Project Status: Short Term Planning

Project Description: Project includes the metal deck, concrete fill, and other roof elements located above the roof framing. Demolition and replacement of the HVAC mezzanine located along the building ridge above the Generator Room.

Project Need: The Energy Building was constructed in the early 1980s, and the life expectancy is 20 to 30 years. There are corrosion issues observed with the building roof frame and metal deck.

Key Issues: Temporary protection of equipment and temporary support electrical and mechanical items supported from the roof structure.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 134,000 |
| Construction: | \$ | 1,344,000 |
| Construction Support: | \$ | 168,000 |
| Total Budget: | \$ | 1,646,000 |



Capital Improvement Program – Project Description

Project No.: 17332
Project Name: Maintenance Shop Rehabilitation
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: Project includes new benchwork, cabinetry, lighting and plumbing.

Project Need: The Regional Treatment Plant maintenance shop has not been the subject of a major reconstruction project since the facility construction in 1983.

Key Issues: Project should be coordinated with Project 17344 Site Storage Evaluation to determine if the existing maintenance shop will stay in its current location.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 6,000 |
| Design: | \$ | 26,000 |
| Construction: | \$ | 258,000 |
| Construction Support: | \$ | 26,000 |
| Total Budget: | \$ | 316,000 |



Capital Improvement Program – Project Description

Project No.: 17333

Project Name: SCADA System Upgrade – Phase I

Facility: Regional Treatment Plant

Cost Center: PC 17 Common

Anticipated Fiscal Year: 2022

Project Status: Short Term Planning

Project Description: Project includes the replacement of the last six old model PLC's.



Project Need: This project would complete the conversion of all of the PLC's at the Regional Treatment Plant to Allen Bradley ControlLogix/Compact Logix models.

Key Issues: Project cost estimate assumes that all cabinets for all six PLC's may be reused.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 31,000 |
| Construction: | \$ | 307,000 |
| Construction Support: | \$ | 31,000 |
| Total Budget: | \$ | 368,000 |

Capital Improvement Program – Project Description

Project No.: 17334
Project Name: Storage Building Project
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2029
Project Status: Long Term Planning



Project Description: Project includes a new storage building that is 30 feet wide by 50 feet long. Split masonry block walls are approximately 25 foot high. The building has two roll up doors; one double leaf door, and two regular doors. The building would have a clay tile roof. The building is approximately located in the current position of AWT No.1.

Project Need: The Regional Treatment Plant has been chronically short of storage. This shortage will be exacerbated by the future removal of the prefabricated metal storage building adjacent to the primary sedimentation basins.

Key Issues: This project will be preceded by Project 17344 Site Storage Evaluation which will do the conceptual design for the new storage building.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 72,000 |
| Construction: | \$ | 719,000 |
| Construction Support: | \$ | 108,000 |
| Total Budget: | \$ | 899,000 |

Capital Improvement Program – Project Description

Project No.: 17335
Project Name: Site Pavement Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2029
Project Status: Long Term Planning

Project Description: Project includes reconstruction of asphalt pavement throughout the plant including access road from bridge to LaPaz Road. Work includes sawcutting and removing AC pavement, installing new AC pavement (4 inches of AC over 8" AB) and AC overlay (1-1/2").



Project Need: Regional Treatment Plant has been the subject to many localized repairs and overlay projects over the past 30 years. This project is a comprehensive reconstruction based on exceedance of life.

Key Issues: Project should be coordinated with buried piping replacement projects to avoid tearing up new pavement system directly after completion. Need to perform the work in sections to keep the plant accessible. The cost estimate is based on a 2004 analysis by TetraTech; this evaluation needs to be updated. Note that this estimate does not address concrete pavement, curbs and gutters; nor does the estimate include manhole covers and box hatches.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|--------------|
| Condition Assessment: | \$ 21,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 43,000 |
| Construction: | \$ 857,000 |
| Construction Support: | \$ 86,000 |
| Total Budget: | \$ 1,007,000 |

Capital Improvement Program – Project Description

Project No.: 17336
Project Name: Perimeter Fence Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2034
Project Status: Long Term Planning

Project Description: Project includes the replacement of 3,700 linear feet of chain link fencing along the perimeter of the treatment plant.



Project Need: Most of the fencing dates to the original 1983 construction of the facility. This project has been included in list based on anticipated age of pipe.

Key Issues: Areas of perimeter fencing on the west side of the plant are difficult to reach due to hillside slope. The cost estimate does not include temporary fencing during construction.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 28,000 |
| Construction: | \$ | 284,000 |
| Construction Support: | \$ | 21,000 |
| Total Budget: | \$ | 334,000 |

Capital Improvement Program – Project Description

Project No.: 17337
Project Name: West Side Storm Channel Reconstruction Phase I
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning



Project Description: Project includes reconstruction of asphalt pavement throughout the plant including access road from bridge to LaPaz Road. Work includes sawcutting and removing AC pavement, installing new AC pavement (4 inches of AC over 8" AB) and AC overlay (1-1/2").

Project Need: Regional Treatment Plant has been the subject to many localized repairs and overlay projects over the past 30 years. This project is a comprehensive reconstruction based on exceedance of life.

Key Issues: Project should be coordinated with buried piping replacement projects to avoid tearing up new pavement system directly after completion. Need to perform the work in sections to keep the plant accessible. The cost estimate is based on a 2004 analysis by TetraTech; this evaluation needs to be updated. Note that this estimate does not address concrete pavement, curbs and gutters; nor does the estimate include manhole covers and box hatches.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 40,000 |
| Design: | \$ | 80,000 |
| Construction: | \$ | 799,000 |
| Construction Support: | \$ | 80,000 |
| Total Budget: | \$ | 999,000 |

Capital Improvement Program – Project Description

Project No.: 17338
Project Name: West Side Storm Channel Reconstruction Phase II
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning



Project Description: Project includes erosion repairs around the terrace drain system on the hillside on the west side of the treatment plant. Work also includes repairs to down drains between the main terrace drains connecting to the main storm channel.

Project Need: Repairs needed as identified in condition assessment prepared by TetraTech in 2018.

Key Issues: Project should not be performed until potential mitigation to hillside erosion has been addressed.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|--------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 10,000 |
| Construction: | \$ | 50,000 |
| Construction Support: | \$ | 8,000 |
| Total Budget: | \$ | 68,000 |

Capital Improvement Program – Project Description

Project No.: 17340
Project Name: Plant Water Pump Screen Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2027
Project Status: Long Term Planning

Project Description: Project includes replacement of two auto strainers on the plant water piping system.



Project Need: The water strainers were installed in 1983 and are prone to clogging.

Key Issues: The installation of the drain pipe from the strainers to the sanitary sewer is located over a congested underground route.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 18,000 |
| Construction: | \$ | 179,000 |
| Construction Support: | \$ | 18,000 |
| Total Budget: | \$ | 214,000 |

Capital Improvement Program – Project Description

Project No.: 17341
Project Name: Lube Oil Tank Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2027
Project Status: Long Term Planning



Project Description: Project includes replacement of combined lube oil/waste oil tank, access stair and platform, and piping between tank and Energy Building. Project also includes new level instrumentation to be connected to plant SCADA system.

Project Need: Existing double wall containment tank was installed in 1998. There are no known issues with the existing tank and piping system.

Key Issues: The cost estimate for the tank is based on an estimate developed for the diesel fuel storage tank at the Coastal Treatment Plant. A more specific quote should be obtained for the Regional Treatment Plant project.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 4,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 16,000 |
| Construction: | \$ 78,000 |
| Construction Support: | \$ 8,000 |
| Total Budget: | \$ 105,000 |

Capital Improvement Program – Project Description

Project No.: 17342
Project Name: Electrical Box Reconstruction Phase I
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2023
Project Status: Short Term Planning

Project Description: Project includes the replacement of four electrical manholes and four electrical hand holes.

Project Need: Project need was identified in "Condition Assessment and Evaluation of Electrical Manholes", February, 2015 by Lee & Ro.

Key Issues: Final design to identify how to perform work while maintaining necessary systems in operation.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 128,000 |
| Construction: | \$ | 1,282,000 |
| Construction Support: | \$ | 192,000 |
| Total Budget: | \$ | 1,602,000 |



Capital Improvement Program – Project Description

Project No.: 17345

Project Name: Energy Building HVAC Upgrade

Facility: Regional Treatment Plant

Cost Center: PC 17 Common

Anticipated Fiscal Year: 2024

Project Status: Short Term Planning

Project Description: Project includes the reconstruction of the Energy Building HVAC system.



Project Need: Improvements identified in a condition assessment prepared by DHK Engineering.

Key Issues: The DHK evaluation was completed prior to the start-up of the new cogeneration system. The HVAC system should be modified to address any issues identified due to issues raised during the cogeneration project.

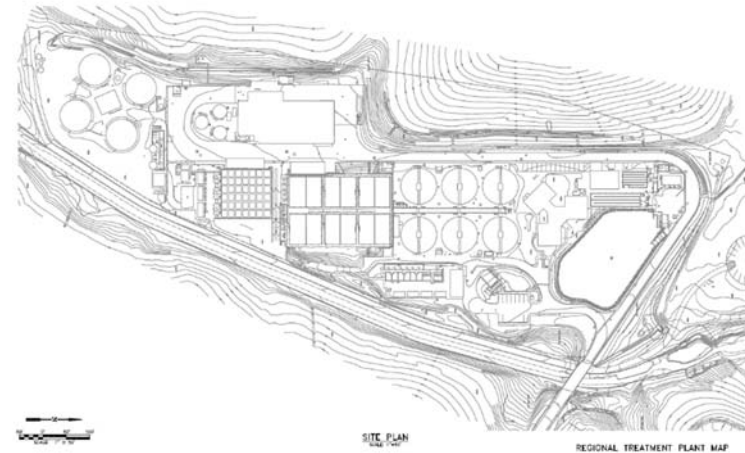
Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 39,000 |
| Construction: | \$ | 394,000 |
| Construction Support: | \$ | 39,000 |
| Total Budget: | \$ | 473,000 |

Capital Improvement Program – Project Description

Project No.: 17346
Project Name: Buried Water Pipe Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: This project includes replacing underground water distribution piping for the 2-Water, 3-Water Low Pressure, and 3-Water High Pressure systems.



Project Need: The below grade piping at the facility is largely direct buried steel and ductile iron originally installed in 1983. Multiple significant failures have occurred in the RTP underground piping system accelerated by highly corrosive soils (CH2MHill 2013) especially near the vicinity of the Energy Building.

Key Issues: Much of the underground piping is buried under access roads at the facility and traffic flow will be a large part of the coordination of this project. In addition, key utilities may require temporary bypasses and other considerations to keep the facility operational during the project. The full extent of these impacts have not been reviewed and may have further cost implications to the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 129,000 |
| Construction: | \$ | 1,287,000 |
| Construction Support: | \$ | 129,000 |
| Total Budget: | \$ | 1,545,000 |

Capital Improvement Program – Project Description

Project No.: 17347
Project Name: Electrical Box Reconstruction Phase II
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2027
Project Status: Long Term Planning

Project Description: Project includes the replacement of three electrical manholes.



Project Need: Project need was identified in "Condition Assessment and Evaluation of Electrical Manholes", February, 2015 by Lee & Ro.

Key Issues: Final design to identify how to perform work while maintaining necessary systems in operation.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 184,000 |
| Construction: | \$ | 1,842,000 |
| Construction Support: | \$ | 184,000 |
| Total Budget: | \$ | 2,210,000 |

Capital Improvement Program – Project Description

Project No.: 17348
Project Name: Secondary Access Road
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2024
Project Status: Short Term Planning

Project Description: Project involves the construction of a secondary access road into the Laguna Niguel Regional Park.

Project Need: A secondary access route into the plant is proposed to improve facility reliability.

Key Issues: Coordination with OC Parks is necessary to obtain needed approval for access through the Laguna Niguel Regional Park. This project should be coordinated with Project 17337 as the secondary access route impacts the storm drain channel.

Estimated Project Amount (in 2018 \$):

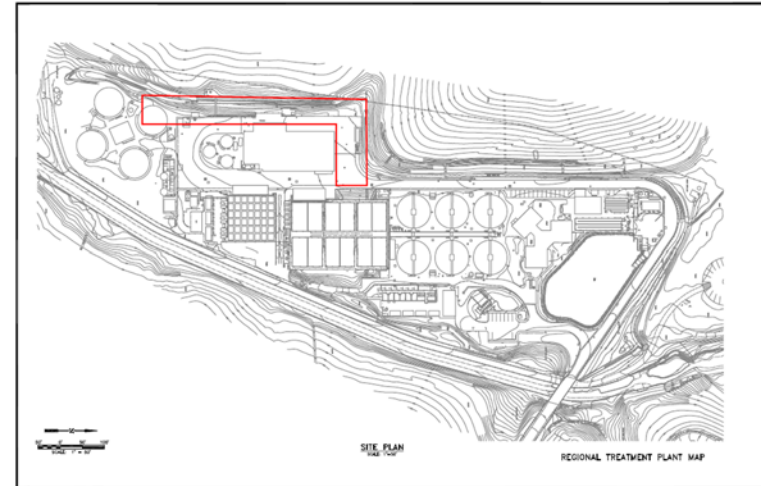
| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 7,000 |
| Construction: | \$ | 283,000 |
| Construction Support: | \$ | 28,000 |
| Total Budget: | \$ | 319,000 |



Capital Improvement Program – Project Description

Project No.: 17349
Project Name: Underground Piping Phase I
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2026
Project Status: Long Term Planning

Project Description: This project includes replacing underground piping in the north and west portions around the Energy Building. Utilities included in this phase are the remaining portions of the Hot Water Supply and Return, Natural Gas, Low-pressure Sludge Gas, and Waste Activated Sludge.



Project Need: The below grade piping at the facility is largely direct buried steel and ductile iron originally installed in 1983. Multiple significant failures have occurred in the RTP underground piping system accelerated by highly corrosive soils (CH2MHill 2013) especially near the vicinity of the Energy Building.

Key Issues: Much of the underground piping is buried under access roads at the facility and traffic flow will be a large part of the coordination of this project. In addition, key utilities may require temporary bypasses and other considerations to keep the facility operational during the project. The full extent of these impacts have not been reviewed and may have further cost implications to the project.

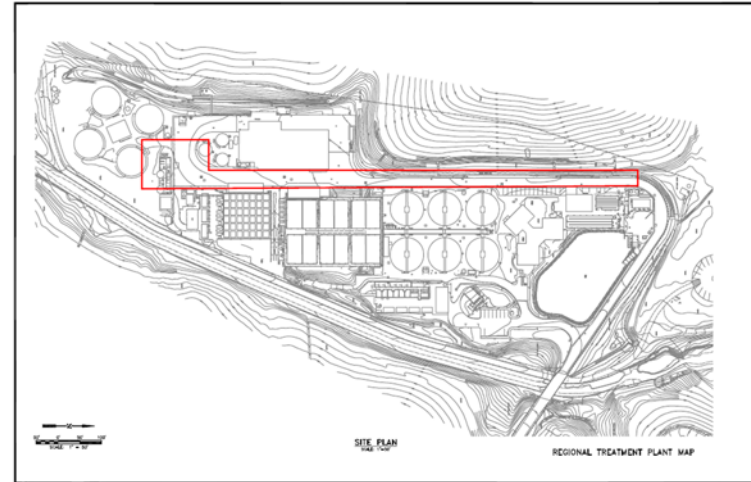
Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 45,000 |
| Construction: | \$ | 448,000 |
| Construction Support: | \$ | 67,000 |
| Total Budget: | \$ | 560,000 |

Capital Improvement Program – Project Description

Project No.: 17350
Project Name: Underground Piping Phase II
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2026
Project Status: Long Term Planning

Project Description: This project includes replacing underground piping down the main north/south access road through the middle of the facility and solids transfer lines near the SET and DAFTS. Utilities included in this phase are the Natural Gas, Pumped Sludge, Digested Sludge, Thickened Waste Activated Sludge, Waste Activated Sludge, Primary Sludge, Primary Scum, Waste Activated Sludge, 2-Water, 3-Water Low Pressure, 3-Water High Pressure piping, and two spare lines.



Project Need: The below grade piping at the facility is largely direct buried steel and ductile iron originally installed in 1983. Multiple significant failures have occurred in the RTP underground piping system accelerated by highly corrosive soils (CH2MHill 2013) especially near the vicinity of the Energy Building.

Key Issues: Much of the underground piping is buried under access roads at the facility and traffic flow will be a large part of the coordination of this project. In addition, key utilities may require temporary bypasses and other considerations to keep the facility operational during the project. The full extent of these impacts have not been reviewed and may have further cost implications to the project with this phase likely having the greatest impact to plant traffic.

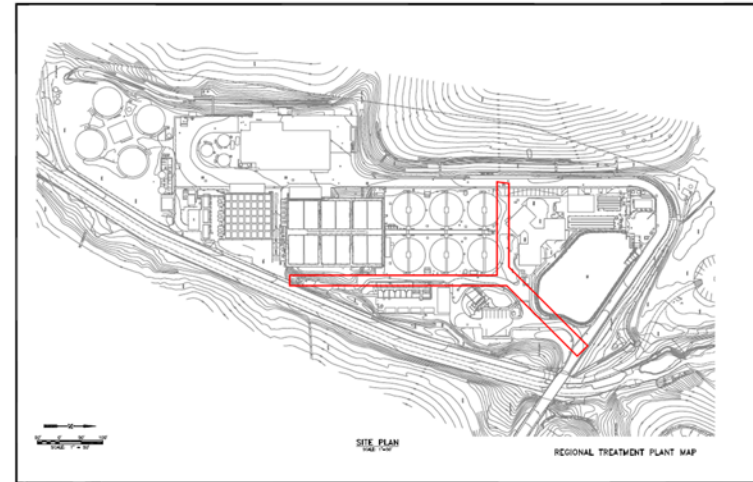
Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|--------------|
| Condition Assessment: | \$ 0 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 148,000 |
| Construction: | \$ 1,479,000 |
| Construction Support: | \$ 222,000 |
| Total Budget: | \$ 1,848,000 |

Capital Improvement Program – Project Description

Project No.: 17351
Project Name: Underground Piping Phase III
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2029
Project Status: Long Term Planning

Project Description: This project includes replacing underground piping around the north and east sides of the secondary clarifiers and east of the Reclaimed Water Storage Basin. Utilities included in this phase are the Natural Gas, 2-Water, 3-Water Low Pressure, 3-Water High Pressure piping, and one spare line.



Project Need: The below grade piping at the facility is largely direct buried steel and ductile iron originally installed in 1983. Multiple significant failures have occurred in the RTP underground piping system accelerated by highly corrosive soils (CH2MHill 2013) especially near the vicinity of the Energy Building.

Key Issues: Much of the underground piping is buried under access roads at the facility and traffic flow will be a large part of the coordination of this project. In addition, key utilities may require temporary bypasses and other considerations to keep the facility operational during the project. The full extent of these impacts have not been reviewed and may have further cost implications to the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 42,000 |
| Construction: | \$ | 420,000 |
| Construction Support: | \$ | 63,000 |
| Total Budget: | \$ | 525,000 |

Capital Improvement Program – Project Description

Project No.: 17352

Project Name: Underground Piping Phase IV

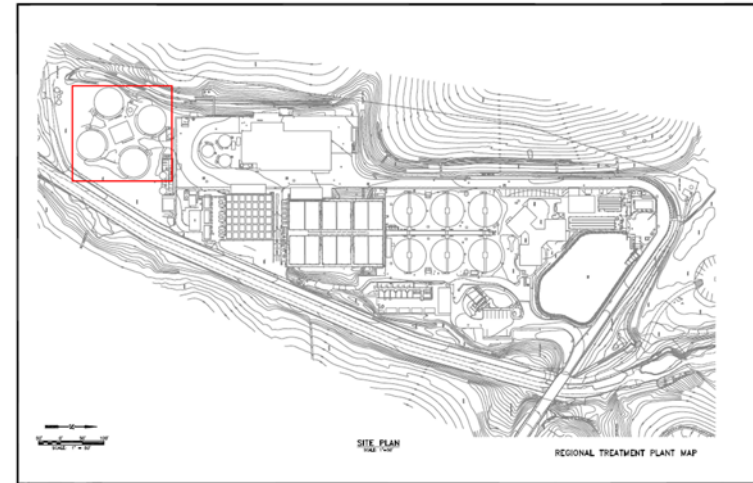
Facility: Regional Treatment Plant

Cost Center: PC 17 Common

Anticipated Fiscal Year: 2029

Project Status: Long Term Planning

Project Description: This project includes replacing underground piping around the digesters and Digester Control Building. Utilities included in this phase are the digester gas and natural gas lines.



Project Need: The below grade piping at the facility is largely direct buried steel and ductile iron originally installed in 1983. Multiple significant failures have occurred in the RTP underground piping system accelerated by highly corrosive soils (CH2MHill 2013) especially near the vicinity of the Energy Building.

Key Issues: Much of the underground piping is buried under access roads at the facility and traffic flow will be a large part of the coordination of this project. In addition, key utilities may require temporary bypasses and other considerations to keep the facility operational during the project. The full extent of these impacts have not been reviewed and may have further cost implications to the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 23,000 |
| Construction: | \$ | 233,000 |
| Construction Support: | \$ | 35,000 |
| Total Budget: | \$ | 291,000 |

Capital Improvement Program – Project Description

Project No.: 17353
Project Name: SCADA System Upgrade – Phase II
Facility: Regional Treatment Plant
Cost Center: PC 17 Common
Anticipated Fiscal Year: 2034
Project Status: Long Term Planning

Project Description: Project includes the replacement of 16 PLC's and all fiber optic cable (assuming that the conduits can be reused).



Project Need: This project is based on the future obsolescence of the Allen Bradley ControlLogix and CompactLogix currently in use.

Key Issues: A condition assessment should be performed at least two years prior to the budgeting of the project.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|--------------|
| Condition Assessment: | \$ 78,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 156,000 |
| Construction: | \$ 1,558,000 |
| Construction Support: | \$ 234,000 |
| Total Budget: | \$ 2,025,000 |

Capital Improvement Program – Project Description

Project No.: 17520
Project Name: Ferric Chloride System Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2031
Project Status: Long Term Planning

Project Description: Project includes the demolition of the existing system and containment area while a temporary system operates. New system is installed with three chemical feed pumps, storage tank, piping and valving, instrumentation, and power. New system includes PLC in a shaded cabinet.



Project Need: The fiberglass storage tank was replaced in 2009. The pump and piping system is in poor condition; the Operations staff has been replacing components on as-needed basis. The containment area concreted shows chipping and chemical staining but otherwise remains in good condition.

Key Issues: The ferric chloride system should undergo a condition assessment prior to budgeting a replacement project.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 16,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 62,000 |
| Construction: | \$ 624,000 |
| Construction Support: | \$ 62,000 |
| Total Budget: | \$ 764,000 |

Capital Improvement Program – Project Description

Project No.: 17521

Project Name: Emulsion Polymer Storage System Upgrade

Facility: Regional Treatment Plant

Cost Center: PC 17 Solids

Anticipated Fiscal Year: 2032

Project Status: Long Term Planning

Project Description: Project includes the replacement of the bulk emulsion polymer storage tank, the transfer pump, the mixing pump and the associated piping.



Project Need: The fiberglass storage tank was replaced in 2011. The pump and piping system is in poor condition; the Operations staff has been replacing components on as-needed basis.

Key Issues: The concrete containment area remains in good condition and does not appear to require replacement. This project is separated from the proposed shade construction (Project 17541).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 24,000 |
| Construction: | \$ | 245,000 |
| Construction Support: | \$ | 24,000 |
| Total Budget: | \$ | 294,000 |

Capital Improvement Program – Project Description

Project No.: 17522

Project Name: Emulsion Polymer Feed System Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Solids

Anticipated Fiscal Year: 2030

Project Status: Long Term Planning



Project Description: This project includes the replacement of the four Emulsion Polymer Feeders that meter emulsion polymer to the centrifuges. The project includes replacement of piping, valves and power supply connections.

Project Need: Three of the original emulsion feeders were installed in 2006 in the outdoor polymer containment area. These feeders were refurbished and relocated inside the Energy Building (along with the installation of one new emulsion polymer feeder) as part of the Miscellaneous Improvements 2011 project. This replacement project has been identified based on the expected 15 year life of the emulsion feeders. However, further impetus for this project may result from the replacement of the solids dewatering equipment.

Key Issues: The Fluid Dynamics polymer feeders have worked effectively with the current emulsion polymer that has been procured by SOCWA. The effectiveness of the polymer activation – as well as the overall basis of design - should be reviewed prior to the budgeting for the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 20,000 |
| Construction: | \$ | 270,000 |
| Construction Support: | \$ | 27,000 |
| Total Budget: | \$ | 317,000 |

Capital Improvement Program – Project Description

Project No.: 17523

Project Name: Sludge Equalization System Mechanical and Electrical Rehabilitation Project

Facility: Regional Treatment Plant

Cost Center: PC 17 Liquids

Anticipated Fiscal Year: 2028

Project Status: Long Term Planning

Project Description: This project includes the rehabilitation of the two sludge equalization tanks, reconfiguring the sludge transfer manifold, replacement of 48 valves, ten check valves, six sludge pumps, two circulation pumps, the replacement of one grinder and the addition of a second grinder.

Project Need: The Sludge Equalization Tanks have not been rehabilitated during their service life (installed in 1983). The two circulation pumps originally installed in 1983 have exceeded their expected life of 25 years. The piping and valve manifolds are also past their expected useful life and also need to be reconfigured to accommodate changes made to the facility.

Key Issues: A condition assessment should be performed at least two years before budgeting the project/

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 217,000 |
| Construction: | \$ | 1,448,000 |
| Construction Support: | \$ | 145,000 |
| Total Budget: | \$ | 1,810,000 |



Capital Improvement Program – Project Description

Project No.: 17525
Project Name: Solids Building Rehabilitation
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2025
Project Status: Long Term Planning



Project Description: This project includes the replacement of architectural hardware and the reconstruction of the roof on the existing building.

Project Need: Most of the architectural hardware dates to the original plant construction.

Key Issues: A condition assessment should be performed for this building prior to budgeting.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 6,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 24,000 |
| Construction: | \$ | 244,000 |
| Construction Support: | \$ | 31,000 |
| Total Budget: | \$ | 306,000 |

Capital Improvement Program – Project Description

Project No.: 17526
Project Name: MCC D Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2025
Project Status: Long Term Planning
Project Description: Project includes the replacement of Motor Control Center 'D'.

Project Need: Motor Control Center 'D' was installed in 1983; the unit has exceeded its anticipated life.

Key Issues: Modified power distribution may allow downsizing of the motor control center.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 42,000 |
| Construction: | \$ | 425,000 |
| Construction Support: | \$ | 53,000 |
| Total Budget: | \$ | 520,000 |



Capital Improvement Program – Project Description

Project No.: 17527

Project Name: Anaerobic Digester System Reconstruction

Facility: Regional Treatment Plant

Cost Center: PC 17 Solids

Anticipated Fiscal Year: 2031

Project Status: Long Term Planning

Project Description: This project includes replacing the domes on each digester, removing the gas mix system and replacing it with a chopper pump system, and rehabilitating the digesters and associated piping.



Project Need: The domes are original and were changed from floating domes to fix domes in 1992. The domes have an expected life of 30 years and are past their current expected useful life. Chopper pumps should provide more reliable mixing and mastication of rags in the digester system. The current gas mix system was installed in 1983 with the pumps replaced in 2002. The mix tubes and other components of the gas mix system have not been updated since 1983.

Key Issues: The plant cannot currently run with only two digesters online and the time to take one digester down (drain and clean) and start one up can be lengthy. It is likely that this project will span multiple years in order to reduce disruptions to plant operations.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|------------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 792,000 |
| Construction: | \$ | 10,560,000 |
| Construction Support: | \$ | 1,056,000 |
| Total Budget: | \$ | 12,408,000 |

Capital Improvement Program – Project Description

Project No.: 17528
Project Name: Heating System Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2025
Project Status: Long Term Planning



Project Description: This project includes replacing the four heat exchangers originally installed in 1983, removing the gas mix system and replacing each of the four gas blowers with chopper recirculation pumps. In addition, the four hot water pumps and associated electrical will all be updated as well.

Project Need: The digester heating system has not had any major updates outside of changes in the Energy Building since it was originally installed and all components are past their expected useful life. Updates will allow for more efficient energy use and control of digester temperatures.

Key Issues: The Digester Control Building (60) is rated as an NFPA 70 Class I Div I location and therefore all work done inside of this building requires appropriately rated equipment for demolition and construction. The new equipment installed must also be appropriately rated for an explosive environment. Costs for construction could be greatly increased due to the safety requirements for the work environment. There is also the opportunity to look at design changes to the building to de-rate it which could also increase design and construction costs.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 148,000 |
| Construction: | \$ | 1,482,000 |
| Construction Support: | \$ | 148,000 |
| Total Budget: | \$ | 1,778,000 |

Capital Improvement Program – Project Description

Project No.: 17529
Project Name: Digester Gas Management Building Rehabilitation
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2025
Project Status: Long Term Planning



Project Description: This project includes the replacement of architectural hardware and the reconstruction of the roof on the existing building.

Project Need: Most of the architectural hardware dates to the original plant construction.

Key Issues: An internal condition assessment should be performed for this building prior to budgeting.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 7,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 29,000 |
| Construction: | \$ | 292,000 |
| Construction Support: | \$ | 44,000 |
| Total Budget: | \$ | 372,000 |

Capital Improvement Program – Project Description

Project No.: 17530
Project Name: Digested Sludge Pump System Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2031
Project Status: Longa Term Planning

Project Description: This project includes replacing the four digested sludge pumps and associated piping and electrical inside of the Digester Control Building that pump digested sludge to the centrifuges.



Project Need: The digested sludge pumps were replaced in 1997 and are beyond their expected useful life of 20 years.

Key Issues: The Digester Control Building (60) is rated as an NFPA 70 Class I Div I location and therefore all work done inside of this building requires appropriately rated equipment for demolition and construction. The new equipment installed must also be appropriately rated for an explosive environment. Costs for construction could be greatly increased due to the safety requirements for the work environment. There is also the opportunity to look at design changes to the building to de-rate it which could also increase design and construction costs.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 45,000 |
| Construction: | \$ | 454,000 |
| Construction Support: | \$ | 45,000 |
| Total Budget: | \$ | 545,000 |

Capital Improvement Program – Project Description

Project No.: 17531
Project Name: MCC M Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2032
Project Status: Long Term Planning
Project Description: Project includes the replacement of Motor Control Center 'M'.



Project Need: MCC 'M' was installed in 1998. Project is included in Ten Year Plan based on anticipated 30 year life of motor control center.

Key Issues: The scheduling of this project may be impacted by Project 17532 relative to the replacement of the dewatering equipment.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 10,000 |
| Design: | \$ | 39,000 |
| Construction: | \$ | 393,000 |
| Construction Support: | \$ | 49,000 |
| Total Budget: | \$ | 491,000 |

Capital Improvement Program – Project Description

Project No.: 17532
Project Name: Dewatering System Reconstruction
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2025
Project Status: Long Term Planning



Project Description: This project includes replacing the four centrifuges, VFDs, control panels, odor control, polymer system, and various piping repairs inside the centrifuge room.

Project Need: The centrifuges were installed in 1998 and although they are performing well and still within their expected useful life of 30 years, the manufacturer has indicated that parts for these units will be discontinued and difficult to source within the next few years.

Key Issues: This project description is based on replacing the existing centrifuges with new centrifuges. A conceptual study would be needed if alternative dewatering technologies were to be evaluated.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 596,000 |
| Construction: | \$ | 5,961,000 |
| Construction Support: | \$ | 596,000 |
| Total Budget: | \$ | 7,154,000 |

Capital Improvement Program – Project Description

Project No.: 17533
Project Name: Solids Conveyor Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2025
Project Status: Long Term Planning

Project Description: This project includes replacing a total of five conveyors (two horizontal, two elevated, and one cross).

Project Need: The conveyors were installed in 1998 and are past their expected useful life of 20 years.

Key Issues: The current conveyors use shafted screw conveyors with each section of different length. SOCWA maintenance staff would prefer shaftless screw conveyors with similar length sections to allow for easier maintenance and portability between the conveyor sections.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 318,000 |
| Construction: | \$ | 3,175,000 |
| Construction Support: | \$ | 318,000 |
| Total Budget: | \$ | 3,810,000 |



Capital Improvement Program – Project Description

Project No.: 17534
Project Name: Storage and Truck Loading Rehabilitation
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2026
Project Status: Long Term Planning

Project Description: This project includes recoating and repairing the two sludge hoppers, replacing the truck scale, and various improvements to the truck bay solids transfer equipment.

Project Need: The hoppers were installed in 1998 and are still within their expected useful life of 40 years. In order to keep them in service, the hoppers should be recoated and updated as needed. Similarly, the load cells were installed in 1998 and have an expected useful life of 40 years.

Key Issues: The latest condition assessment (2018 Carollo) rates the hoppers and load cells as being in good condition but some of the minor updates may be needed prior to rehabilitation of the hoppers and load cells.



Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 66,000 |
| Construction: | \$ | 656,000 |
| Construction Support: | \$ | 66,000 |
| Total Budget: | \$ | 788,000 |

Capital Improvement Program – Project Description

Project No.: 17535

Project Name: Odor Control Scrubber No. 3 Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Solids

Anticipated Fiscal Year: 2031

Project Status: Long Term Planning

Project Description: Project includes the replacement of the odor control scrubber and the associated chemical feed systems.

Project Need: Original unit installed in 2003. Unit benefits from protection offered by overhead roof. Operation and Maintenance reports the unit as being in good condition.

Key Issues: Cost estimate based on chemical scrubber replacement cost developed for similar sized unit for the Coastal Treatment Plant. Unlike Odor Control Scrubbers No.1 and No.2 it is assumed that this system will continue to utilize only a wet chemical scrubber. This estimate does not address the cost of replacing ducting or fans.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|--------------|
| Condition Assessment: | \$ 32,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 127,000 |
| Construction: | \$ 1,273,000 |
| Construction Support: | \$ 127,000 |
| Total Budget: | \$ 1,559,000 |



Capital Improvement Program – Project Description

Project No.: 17536

Project Name: Gas Flare Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Solids

Anticipated Fiscal Year: 2022

Project Status: Short Term Planning

Project Description: Project includes replacement of the digester gas flare system.



Project Need: The existing dual flare system was placed into operation in 1983. Various components of the flare system have been replaced in the intervening years. New AQMD regulations are anticipated in the next five years which will necessitate replacement of the flare.

Key Issues: The cost estimate for the replacement of the flare system is based on a 2013 evaluation by DHK Engineering. This evaluation did not identify a relocation site for the flare. This may have a significant impact on project cost.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|-----------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 55,000 |
| Design: | \$ | 221,000 |
| Construction: | \$ | 2,211,000 |
| Construction Support: | \$ | 221,000 |
| Total Budget: | \$ | 2,709,000 |

Capital Improvement Program – Project Description

Project No.: 17538

Project Name: Digested and Equalized Sludge Pump VFD Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 Solids

Anticipated Fiscal Year: 2024

Project Status: Short Term Planning



Project Description: This project includes the replacement of the four Equalized Sludge Pump variable frequency drives and the four Digested Sludge Pump variable frequency drives.

Project Need: The existing variable frequency drives have been replaced by the Operations staff between 2000 and 2010.

Key Issues: The existing cabinets remain in good condition; the proposed project includes only the replacement of the cabinet doors.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 24,000 |
| Construction: | \$ | 239,000 |
| Construction Support: | \$ | 24,000 |
| Total Budget: | \$ | 287,000 |

Capital Improvement Program – Project Description

Project No.: 17541
Project Name: Emulsion Polymer Tanks Shade
Facility: Regional Treatment Plant
Cost Center: PC 17 Solids
Anticipated Fiscal Year: 2022
Project Status: Short Term Planning

Project Description: Project includes the installation of a removable fabric cover over the emulsion polymer bulk storage tank.



Project Need: This project is based on a request by the SOCWA Operations Department as a means of decreasing the degradation of the emulsion polymer in storage.

Key Issues: The estimated construction cost for this project is based on the cost of the aluminum cover installed over the sodium hypochlorite storage tank at the Latham Plant in 2007. An evaluation should be done in Fiscal Year 2018/2019 (as part of the Miscellaneous Engineering budget) to verify the technical approach and cost for the fabric covers. This project should be done in conjunction with the covering of the mannich polymer storage tank (see Project 17084).

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 16,000 |
| Construction: | \$ | 163,000 |
| Construction Support: | \$ | 16,000 |
| Total Budget: | \$ | 195,000 |

Capital Improvement Program – Project Description

Project No.: 17720

Project Name: AWT Hypochlorite Pump and Instrumentation Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 AWT

Anticipated Fiscal Year: 2029

Project Status: Long Term Planning

Project Description: Project includes removal of existing AWT hypochlorite pumps and installation of new AWT hypochlorite pumps and instrumentation

Project Need: New chemical pumps were installed in 2015. The experience at SOCWA facilities is that a chemical pump has a life of approximately 15 years.

Key Issues: Chemical feed pump technology is evolving, the type of pump for replacement should be reviewed in the future.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 17,000 |
| Construction: | \$ | 172,000 |
| Construction Support: | \$ | 17,000 |
| Total Budget: | \$ | 206,000 |



Capital Improvement Program – Project Description

Project No.: 17721
Project Name: AWT No.2 Contact Basin Upgrades
Facility: Regional Treatment Plant
Cost Center: PC 17 AWT
Anticipated Fiscal Year:
2027

Project Status: Long Term Planning

Project Description: Project includes the replacement of the sluice gates (inside the Control Building), the chemical clean system (inside the Control Building), the fiberglass covers over the contact basins, miscellaneous structural repairs.

Project Need: All systems date to the original construction in 1998.

Key Issues: A condition assessment should be performed at least two years prior to the budgeting of the project. The condition assessment should take in the full structure located below the filter complex.

Estimated Project Amount (in 2018 \$):

Condition Assessment:

\$ 26,000

Conceptual Study:

\$ 0

Design:

\$ 26,000

Construction:

\$ 173,000

Construction Support:



\$ 17,000
Total Budget:
\$ 243,000

Capital Improvement Program – Project Description

Project No.: 17722
Project Name: AWT Control Building Rehabilitation
Facility: Regional Treatment Plant
Cost Center: PC 17 AWT
Anticipated Fiscal Year: 2031
Project Status: Long Term Planning

Project Description: This project includes the replacement of architectural hardware and the reconstruction of the roof on the existing building.

Project Need: The roof and the architectural hardware are as installed in 1998.

Key Issues: A condition assessment should be performed for this building prior to budgeting.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 10,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 40,000 |
| Construction: | \$ 400,000 |
| Construction Support: | \$ 50,000 |
| Total Budget: | \$ 500,000 |



Capital Improvement Program – Project Description

Project No.: 17723
Project Name: AWT No. 2 Applied Water Pump System
Facility: Regional Treatment Plant
Cost Center: PC 17 AWT
Anticipated Fiscal Year: 2031
Project Status: Long Term Planning

Project Description: Project includes the replacement of the two AWT No.2 Applied Water Pumps and structural improvements to the pump bay.

Project Need: Applied Water Pumps were installed in 1998. Project is included in Ten Year Plan based on anticipated 30 year life of pumps.

Key Issues: Pump bay to be inspected during the draining of the Secondary Effluent Equalization Pond in the spring of 2019.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 18,000 |
| Construction: | \$ | 177,000 |
| Construction Support: | \$ | 18,000 |
| Total Budget: | \$ | 212,000 |



Capital Improvement Program – Project Description

Project No.: 17725
Project Name: AWT SCADA System Upgrade
Facility: Regional Treatment Plant
Cost Center: PC 17 AWT
Anticipated Fiscal Year: 2034
Project Status: Long Term Planning

Project Description: Project includes the replacement of the cabinet and PLC inside the AWT Control Building.



Project Need: The AWT PLC was installed in 2003. This unit will have exceeded it's anticipated life during the span of the current Ten Year Plan.

Key Issues: This project would be performed in conjunction with Project 17353 SCADA System Upgrade Phase II. A condition assessment should be conducted at least two years prior to budgeting the project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 3,000 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 12,000 |
| Construction: | \$ | 120,000 |
| Construction Support: | \$ | 12,000 |
| Total Budget: | \$ | 147,000 |

Capital Improvement Program – Project Description

Project No.: 17726

Project Name: AWT No.2 Filter Sand Replacement and Underdrain Replacement

Facility: Regional Treatment Plant

Cost Center: PC 17 AWT

Anticipated Fiscal Year: 2034

Project Status: Long Term Planning

Project Description: Project includes the replacement of media and filter support mesh. An allowance is included for additional repairs on the filters.



Project Need: AWT No.2 will be the subject of a significant rehabilitation in the winter of 2019/2020. Media replacement should take place every 10 years. This provides the opportunity for the evaluation of the underdrain condition.

Key Issues: A condition assessment should be performed two years in advance of the anticipated budgeting of the project.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 7,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 29,000 |
| Construction: | \$ 293,000 |
| Construction Support: | \$ 29,000 |
| Total Budget: | \$ 358,000 |

Capital Improvement Program – Project Description

Project No.: 17727
Project Name: MCC L Replacement
Facility: Regional Treatment Plant
Cost Center: PC 17 AWT
Anticipated Fiscal Year: 2032
Project Status: Long Term Planning
Project Description: Project includes the replacement of Motor Control Center 'L'.

Project Need: MCC 'L' was installed in 1998. Project is included in Ten Year Plan based on anticipated 30 year life of motor control center.

Key Issues: Arc Flash Study should be performed for unit.

Estimated Project Amount (in 2018 \$):

| | |
|-----------------------|------------|
| Condition Assessment: | \$ 9,000 |
| Conceptual Study: | \$ 0 |
| Design: | \$ 35,000 |
| Construction: | \$ 349,000 |
| Construction Support: | \$ 44,000 |
| Total Budget: | \$ 436,000 |



Capital Improvement Program – Project Description

Project No.: 17728

Project Name: AWT Water Quality Instrumentation Upgrade

Facility: Regional Treatment Plant

Cost Center: PC 17 AWT

Anticipated Fiscal Year: 2034

Project Status: Long Term Planning

Project Description: Project includes the replacement of two turbidimeters and two chlorine residual analyzers located in the AWT Control Building.



Project Need: The four water quality analyzers were replaced in 2016. This project is based on an estimated 15 year life for the devices.

Key Issues: Evaluation of both equipment condition and available technology should be considered prior to budgeting this project.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 6,000 |
| Construction: | \$ | 117,000 |
| Construction Support: | \$ | 12,000 |
| Total Budget: | \$ | 135,000 |

Capital Improvement Program – Project Description

Project No.: 17729
Project Name: AWT Hypochlorite Storage Tank Shade
Facility: Regional Treatment Plant
Cost Center: PC 17 AWT
Anticipated Fiscal Year: 2020
Project Status: Short Term Planning

Project Description: Project includes the installation of a removable fabric cover over the sodium hypochlorite storage tanks.



Project Need: This project is based on a request by the SOCWA Operations Department as a means of decreasing the degradation of the sodium hypochlorite in storage.

Key Issues: The estimated construction cost for this project is based on the cost of the aluminum cover installed over the sodium hypochlorite storage tank at the Latham Plant in 2007. An evaluation should be done in Fiscal Year 2018/2019 (as part of the Miscellaneous Engineering budget) to verify the technical approach and cost for the fabric covers.

Estimated Project Amount (in 2018 \$):

| | | |
|-----------------------|----|---------|
| Condition Assessment: | \$ | 0 |
| Conceptual Study: | \$ | 0 |
| Design: | \$ | 23,000 |
| Construction: | \$ | 234,000 |
| Construction Support: | \$ | 23,000 |
| Total Budget: | \$ | 281,000 |

Appendix K
Regional Treatment Plant Project Cost Tables

Regional Treatment Plant

Project Number 17051

Motor Control Centers A, C, G and H Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-------------------------------------|---|----|------------|------------|-----|-----------|------------|
| Total Construction Cost | Motor Control Center A ¹ | 1 | Ea | \$ 127,248 | \$ 127,248 | 40% | \$ 50,899 | \$ 178,000 |
| | Motor Control Center C ¹ | 1 | Ea | \$ 63,624 | \$ 63,624 | 40% | \$ 25,450 | \$ 89,000 |
| | Motor Control Center G ¹ | 1 | Ea | \$ 52,056 | \$ 52,056 | 40% | \$ 20,822 | \$ 73,000 |
| | Motor Control Center H ¹ | 1 | Ea | \$ 52,056 | \$ 52,056 | 40% | \$ 20,822 | \$ 73,000 |
| | Wiring | 1 | LS | - | - | - | - | \$ 43,000 |
| | Demolition | 1 | LS | - | - | - | - | \$ 29,000 |
| | Temporary Power Supply | 1 | LS | - | - | - | - | \$ 43,000 |
| | Electrical Study | 1 | LS | - | - | - | - | \$ 24,000 |
| | | | | \$ - | - | | | |

Subtotal

| | | | |
|--|-------|----------|------------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 112,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 24,000 |
| Project Contingency@ | 20% | | \$ 138,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 825,000 |
| Current Estimate | 2018 Dollars | \$ 825,000 |

| Project Phases Cost | | | Amount | | Contingency | | Subtotal | | Total | |
|---------------------------|-------|-----------|--------|------|-------------|------|----------|--|-----------|--|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - | | | | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - | | | \$ - | |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - | | | \$ - | |
| Engr. During Construction | 5.0% | \$ 41,272 | 0% | \$ - | \$ - | \$ - | | | \$ 41,000 | |
| Construction Mgt. | 10.0% | \$ 82,543 | 0% | \$ - | \$ - | \$ - | | | \$ 83,000 | |

| | | |
|---|--|------------|
| Total Project Cost (Present Value in 2018 Dollars) | | \$ 949,000 |
|---|--|------------|

Notes:

- 1 Based on review with Maddox Electric.

Regional Treatment Plant

Project Number 17052

Odor Control Scrubber No.1 Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|--|---|----|---|------|---|---|--------------|
| Total Construction Cost | Biotower & Nutrient Storage ¹ | 1 | LS | - | - | - | - | \$ 1,163,000 |
| | Chemical Odor Scrubber ¹ | 1 | LS | - | - | - | - | \$ 566,000 |
| | Demo Storage Building ¹ | 1 | LS | - | - | - | - | \$ 39,000 |
| | Demo Existing Scrubber ¹ | 1 | LS | - | - | - | - | \$ 62,000 |
| | New Containment Structure ¹ | 1 | LS | - | - | - | - | \$ 155,000 |
| | Other Civil and Mech Imps ¹ | 1 | LS | - | - | - | - | \$ 754,000 |
| | Electrical and Inst ² | 1 | LS | - | - | - | - | \$ 411,000 |
| | | | | | \$ - | | | |

Subtotal \$ 3,148,000

| | | |
|--|-------|------------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | \$ 850,000 |
| Shipping Rate | 0% | included |
| Sale Tax | 8.00% | \$ - |
| Project Contingency@ | 20% | \$ 800,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 4,798,000 |
| Current Estimate | 2018 Dollars | \$ 4,798,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|------------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | |
| Conceptual Study | 2.5% | \$ 119,957 | 0% \$ - | \$ - | \$ 120,000 |
| Design | 10.0% | \$ 479,827 | 0% \$ - | \$ - | \$ 480,000 |
| Engr. During Construction | 5.0% | \$ 239,913 | 0% \$ - | \$ - | \$ 240,000 |
| Construction Mgt. | 5.0% | \$ 239,913 | 0% \$ - | \$ - | \$ 240,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 5,878,000 |

Notes:

- 1 Foul Air System Evaluation Regional Treatment Plant -DHK Engineers (4/18)
- 2 Electrial and instrumentation cost is taken as 15% of balance of construction costs

Regional Treatment Plant

Project Number 17053

Headworks Process Equipment Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|--------------------------------------|---|----|------------|------------|-----|------------|------------|
| Total Construction Cost | Bar Screens ¹ | 3 | Ea | \$ 225,000 | \$ 675,000 | 25% | \$ 168,750 | \$ 844,000 |
| | Grit Classifiers ² | 1 | LS | - | - | - | - | \$ 150,000 |
| | Screenings Compactors ¹ | 1 | Ea | \$ 140,000 | \$ 140,000 | 10% | \$ 14,000 | \$ 154,000 |
| | Conveyors ³ | 1 | LS | - | - | - | - | \$ 190,000 |
| | Power Supply Upgrade ³ | 1 | LS | - | - | - | - | \$ 75,000 |
| | Instrumentation Upgrade ³ | 1 | LS | - | - | - | - | \$ 45,000 |
| | Other ³ | 1 | LS | - | - | - | - | \$ 230,000 |
| | | | | \$ 815,000 | | | | |

Subtotal \$ 1,688,000

| | | |
|--|-------|------------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | \$ 269,000 |
| Shipping Rate | 0% | included |
| Sale Tax | 8.00% | \$ 54,000 |
| Project Contingency@ | 20% | \$ 402,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 2,413,000 |
| Current Estimate | 2018 Dollars | \$ 2,413,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|------------|-------------|----------|---------------------|
| Condition Assessment | 2.5% | \$ 60,334 | 0% | \$ - | \$ 60,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ 181,003 | 0% | \$ - | \$ 181,000 |
| Engr. During Construction | 5.0% | \$ 120,669 | 0% | \$ - | \$ 121,000 |
| Construction Mgt. | 5.0% | \$ 120,669 | 0% | \$ - | \$ 121,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 2,896,000 |

Notes:

- 1 Based on quotation provided by the Coombs Hopkins Company.
- 2 Based on prior replacement by SOCWA Operations Department.
- 3 Based on bids for the Regional Treatment Plant Headworks Upgrade from 2010

Regional Treatment Plant

Project Number 17054

Primary Sedimentation Basin Upgrade

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|--|---|----|---|---|---|---|------------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ 75,000 |
| | Aluminum Basin Covers ¹ | 1 | LS | - | - | - | - | \$ 500,000 |
| | Chain and Flight Collectors ² | 1 | LS | - | - | - | - | \$ 525,000 |
| | Spray Nozzles | 1 | LS | - | - | - | - | \$ 15,000 |
| | Electrical | 1 | LS | - | - | - | - | \$ 60,000 |

\$ -

Subtotal

\$ 1,175,000

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

20% \$ 235,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,410,000 |
| Current Estimate | 2018 Dollars | \$ 1,410,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|------------|-------------|----------|---------------------|
| Condition Assessment | 2.5% | \$ 35,250 | 0% \$ - | \$ - | \$ 35,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 141,000 | 0% \$ - | \$ - | \$ 141,000 |
| Engr. During Construction | 5.0% | \$ 70,500 | 0% \$ - | \$ - | \$ 71,000 |
| Construction Mgt. | 5.0% | \$ 70,500 | 0% \$ - | \$ - | \$ 71,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 1,727,000 |

Notes:

- 1 Based on a cost estimate provided by Hallsten.
- 2 Based on bids for RTP Clarifier Upgrade Phase I 2010.

Regional Treatment Plant

Project Number 17055

Primary Gallery Upgrade Phase II

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---------------------------|---|----|------------|------------|------|------------|------------|
| Demo | 1 | EA | \$ - | \$ - | 0% | \$ 75,000 | \$ 75,000 |
| Sludge Pumps | 6 | EA | \$ 10,000 | \$ 60,000 | 200% | \$ 120,000 | \$ 180,000 |
| Grit Pumps | 6 | EA | \$ 10,000 | \$ 60,000 | 300% | \$ 180,000 | \$ 240,000 |
| Replace Housekeeping Pads | 5 | EA | \$ 302 | \$ 1,510 | 400% | \$ 6,040 | \$ 8,000 |
| Electrical | 1 | LS | \$ 100,000 | \$ 100,000 | 50% | \$ 50,000 | \$ 150,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 50,000 | \$ 50,000 |

Subtotal

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 190,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 18,000

Project Contingency@

20% \$ 182,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,092,000 |
| Current Estimate | 2018 Dollars | \$ 1,092,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|------------|-------------|----------|---------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 3.0% | \$ 32,759 | 0% | \$ - | \$ - | \$ 33,000 |
| Engr. During Construction | 10.0% | \$ 109,195 | 0% | \$ - | \$ - | \$ 109,000 |
| Construction Mgt. | 5.0% | \$ 54,598 | 0% | \$ - | \$ - | \$ 55,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | \$ 1,289,000 |

Notes:

1 Equipment Cost estimate provided by Lee and Ro

Regional Treatment Plant**Project Number** 17056**Interstage Pump Station Reconstruction****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---------------------------|---|----|------------|------------|------|------------|------------|
| Demo | 1 | EA | \$ - | \$ - | 0% | \$ 100,000 | \$ 100,000 |
| Replace Interstage Pumps | 5 | EA | \$ 100,000 | \$ 500,000 | 50% | \$ 250,000 | \$ 750,000 |
| Install new VFD | 5 | EA | \$ 20,000 | \$ 100,000 | 50% | \$ 50,000 | \$ 150,000 |
| Replace Housekeeping Pads | 5 | EA | \$ 1,000 | \$ 5,000 | 400% | \$ 20,000 | \$ 25,000 |
| Electrical | 1 | LS | \$ 150,000 | \$ 150,000 | 50% | \$ 75,000 | \$ 225,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 50,000 | \$ 50,000 |

Subtotal

\$ 1,300,000

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ 351,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 60,000

Project Contingency@

20%

\$ 342,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 2,054,000 |
| Current Estimate | 2018 Dollars | \$ 2,054,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|------------|-------------|----------|---------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 205,368 | 0% | \$ - | \$ - | \$ 205,000 |
| Engr. During Construction | 10.0% | \$ 205,368 | 0% | \$ - | \$ - | \$ 205,000 |
| Construction Mgt. | 5.0% | \$ 102,684 | 0% | \$ - | \$ - | \$ 103,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | \$ 2,567,000 |

Notes:

1 Equipment Cost estimate provided by TetraTech

Regional Treatment Plant

Project Number 17057

Secondary Aeration Phase II - Blower Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|------------------------|---|----|------------|------------|------|------------|------------|
| Demo | 1 | EA | \$ - | \$ - | 0% | \$ 50,000 | \$ 50,000 |
| New Aerzen AT 400-0.8T | 2 | EA | \$ 200,000 | \$ 400,000 | 50% | \$ 200,000 | \$ 600,000 |
| PLC | 2 | EA | \$ 20,000 | \$ 40,000 | 150% | \$ 60,000 | \$ 100,000 |
| Electrical | 1 | LS | \$ 100,000 | \$ 100,000 | 30% | \$ 30,000 | \$ 130,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 50,000 | \$ 50,000 |
| Subtotal | | | | | | | \$ 930,000 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 251,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 43,000

Project Contingency@

20% \$ 245,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,469,000 |
| Current Estimate | 2018 Dollars | \$ 1,469,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|------------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 146,916 | 0% | \$ - | \$ - | \$ 147,000 |
| Engr. During Construction | 5.0% | \$ 73,458 | 0% | \$ - | \$ - | \$ 73,000 |
| Construction Mgt. | 5.0% | \$ 73,458 | 0% | \$ - | \$ - | \$ 73,000 |

| | | |
|---|--|--------------|
| Total Project Cost (Present Value in 2018 Dollars) | | \$ 1,763,000 |
|---|--|--------------|

Notes:

1 Equipment Cost estimate provided by MISCOWater

Regional Treatment Plant

Project Number 17058

Secondary Clarifier Reconstruction

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|---|----|----|------------|--------------|------|------------|--------------|
| Total Construction Cost | Collector Replacement ¹ | 6 | Ea | \$ 180,000 | \$ 1,080,000 | 20% | \$ 216,000 | \$ 1,296,000 |
| | Launder/Baffle Replacement ² | 6 | Ea | \$ 60,000 | \$ 360,000 | 20% | \$ 72,000 | \$ 432,000 |
| | Drain Gate Replacement ³ | 6 | Ea | \$ 10,000 | \$ 60,000 | 25% | \$ 15,000 | \$ 75,000 |
| | Drop Gates | 12 | Ea | \$ 2,000 | \$ 12,000 | 150% | \$ 18,000 | \$ 30,000 |
| | Coating ⁴ | 1 | LS | - | - | - | - | \$ 350,000 |
| | | | | | \$ 1,512,000 | | | |

Subtotal

| | | |
|--|-------|------------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | \$ 589,000 |
| Shipping Rate | 0% | included |
| Sale Tax | 8.00% | \$ 121,000 |
| Project Contingency@ | 20% | \$ 579,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 3,472,000 |
| Current Estimate | 2018 Dollars | \$ 3,472,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|------------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Design | 5.0% | \$ 173,602 | 0% \$ - | \$ - | \$ 174,000 |
| Engr. During Construction | 5.0% | \$ 173,602 | 0% \$ - | \$ - | \$ 174,000 |
| Construction Mgt. | 7.5% | \$ 260,403 | 0% \$ - | \$ - | \$ 260,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 4,080,000 |

Notes:

- 1 Based on quotation from Amir Soltaneih/Walker Process
- 2 Based on information provided by Rashi Gupta, Carollo Engineers
- 3 Based on a quotation from Jeremy Neill/Whipps
- 4 Based on bids for Miscellaneous Improvements 2014 Project.

Regional Treatment Plant
Project Number 17059

RAS Pump Station Reconstruction
Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|----------------|----|----|------------|------------|------|------------|------------|
| Demo | 1 | EA | \$ - | \$ - | 0% | \$ 75,000 | \$ 75,000 |
| New RAS Pumps | 10 | EA | \$ 35,000 | \$ 350,000 | 40% | \$ 140,000 | \$ 490,000 |
| New Drop Gates | 6 | EA | \$ 40,000 | \$ 240,000 | 50% | \$ 120,000 | \$ 360,000 |
| New VFD | 10 | EA | \$ 15,000 | \$ 150,000 | 140% | \$ 210,000 | \$ 360,000 |
| Electrical | 1 | LS | \$ 125,000 | \$ 125,000 | 50% | \$ 62,500 | \$ 188,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 50,000 | \$ 50,000 |

Subtotal

\$ 1,523,000

 General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 411,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 69,000

Project Contingency@

20% \$ 401,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 2,403,000 |
| Current Estimate | 2018 Dollars | \$ 2,403,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|------------|-------------|----------|---------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 240,333 | 0% | \$ - | \$ - | \$ 240,000 |
| Engr. During Construction | 5.0% | \$ 120,167 | 0% | \$ - | \$ - | \$ 120,000 |
| Construction Mgt. | 5.0% | \$ 120,167 | 0% | \$ - | \$ - | \$ 120,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | \$ 2,884,000 |

Notes:

1 Equipment Cost estimate provided by TetraTech

Regional Treatment Plant**Project Number** 17060**Secondary Scum Pump Station Reconstruction****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|------------------|---|----|-----------|-----------|-----|-----------|------------|
| Demo | 1 | EA | \$ - | \$ - | 0% | \$ 25,000 | \$ 25,000 |
| New Scum Pumps | 2 | EA | \$ 30,000 | \$ 60,000 | 50% | \$ 30,000 | \$ 90,000 |
| New Scum Skimmer | 1 | EA | \$ 50,000 | \$ 50,000 | 75% | \$ 37,500 | \$ 88,000 |
| Electrical | 1 | LS | \$ 40,000 | \$ 40,000 | 50% | \$ 20,000 | \$ 60,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 20,000 | \$ 20,000 |
| Subtotal | | | | | | | \$ 283,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 76,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 12,000

Project Contingency@

30% \$ 111,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 482,000 |
| Current Estimate | 2018 Dollars | \$ 482,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|-----------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 48,201 | 0% | \$ - | \$ - | \$ 48,000 |
| Engr. During Construction | 5.0% | \$ 24,100 | 0% | \$ - | \$ - | \$ 24,000 |
| Construction Mgt. | 5.0% | \$ 24,100 | 0% | \$ - | \$ - | \$ 24,000 |

| | | |
|---|--|------------|
| Total Project Cost (Present Value in 2018 Dollars) | | \$ 578,000 |
|---|--|------------|

Notes:

1 Equipment Cost estimate provided by TetraTech

Regional Treatment Plant**Project Number** 17061**Mixed Liquor Channel Condition Assessment****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-----------------------|---|----|----|---|---|---|------------|
| Total Construction Cost | Condition Assessment | 1 | LS | - | - | - | - | \$ 30,000 |
| | Bypass Pumping | 1 | LS | - | - | - | - | \$ 200,000 |
| | Bulkhead Installation | 1 | LS | - | - | - | - | \$ 40,000 |
| | | | | \$ | - | | | |

Subtotal

| | | | | | | | | |
|--|-------|--|--|--|--|--|--|----------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | | | | | | \$ - |
| Shipping Rate | 0% | | | | | | | included |
| Sale Tax | 8.00% | | | | | | | \$ - |
| Project Contingency@ | 0% | | | | | | | \$ - |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | | | | | |
|-------------------|--------------|--|--|--|--|--|--|------|
| Original Estimate | 2018 Dollars | | | | | | | \$ - |
| Current Estimate | 2018 Dollars | | | | | | | \$ - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|--------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ 270,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - |
| Engr. During Construction | 0.0% | \$ - | 0% | \$ - | \$ - |
| Construction Mgt. | 0.0% | \$ - | 0% | \$ - | \$ - |

Total Project Cost (Present Value in 2018 Dollars)**Notes:**

Regional Treatment Plant**Project Number** 17062**Mixed Liquor Channel Rehabilitation****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|-------------------------------|---|----|---|----|---|---|----|---------|
| Total Construction Cost | Bypass Pumping | 1 | LS | - | - | - | - | \$ | 350,000 |
| | Bulkhead Installation | 1 | LS | - | - | - | - | \$ | 60,000 |
| | Channel Cleaning | 1 | LS | - | - | - | - | \$ | 10,000 |
| | Agitation Air Piping Reconst. | 1 | LS | - | - | - | - | \$ | 40,000 |
| | Concrete Repair | 1 | LS | - | - | - | - | \$ | 50,000 |
| | | | | | \$ | - | | | |

Subtotal

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ 102,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 612,000 |
| Current Estimate | 2018 Dollars | \$ | 612,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ 45,900 | 0% | \$ - | \$ 46,000 |
| Engr. During Construction | 5.0% | \$ 30,600 | 0% | \$ - | \$ 31,000 |
| Construction Mgt. | 5.0% | \$ 30,600 | 0% | \$ - | \$ 31,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 719,000 |

Notes:

Regional Treatment Plant

Project Number 17063

Waste Activated Sludge (WAS) Pump Station Reconstruction

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--|--|---|-------|---|----|---|---|----------|---------|
| Total Construction Cost | WAS Pump Reconstruction ^{1,2,3,4,5} | 1 | LS | - | - | - | - | \$ | 333,000 |
| | | | | | \$ | - | | | |
| Subtotal | | | | | | | | \$ | 333,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | | 27% | | | | | \$ | - |
| Shipping Rate | | | 0% | | | | | included | |
| Sale Tax | | | 8.00% | | | | | \$ | - |
| Project Contingency@ | | | 20% | | | | | \$ | 67,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 399,000 |
| Current Estimate | 2018 Dollars | \$ | 399,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ 29,925 | 0% | \$ - | \$ 30,000 |
| Engr. During Construction | 5.0% | \$ 19,950 | 0% | \$ - | \$ 20,000 |
| Construction Mgt. | 5.0% | \$ 19,950 | 0% | \$ - | \$ 20,000 |

| | | |
|---|----|---------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 469,000 |
|---|----|---------|

Notes:

- 1 Based on the 2007 bids for the original reconstruction of the WAS pumping system
- 2 Work includes replacement of pumps, above ground piping and valves, flow meters, and VFD's (but not cabinets)
- 3 Work does not include modification to power feed, control wiring, or structural bases
- 4 Work does not include modification of suction lines connections
- 5 Work does not include replacement of underground pipelines to DAF thickener system

Regional Treatment Plant

Project Number 17064

RAS Sodium Hypochlorite Pumps and Instrument Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost | |
|---|--------------------------------------|--------------|-------|---------------|-------|------------|----------|------------|--|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | | |
| Project Task Elements | | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | | |
| | Remove existing RAS Hypochlorite Pur | 1 | LS | | | | | \$ 10,000 | |
| | Install new RAS Hypochlorite pumps | 1 | LS | | | | | \$ 48,000 | |
| | Electrical and Instrumentation | 1 | LS | | | | | \$ 40,000 | |
| | Other | 1 | LS | | | | | \$ 25,000 | |
| Subtotal | | | | | | | | \$ 123,000 | |
| General Conditions. Contractor Overhead and Profit, | | | | | | | | | |
| and Bonds and Insurance @ | | 0% | | | | | | \$ - | |
| Shipping Rate | | 0% | | | | | included | | |
| Sale Tax | | 0.00% | | | | | | \$ - | |
| Project Contingency@ | | 30% | | | | | | \$ 12,000 | |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | |
| Original Estimate | | 2018 Dollars | | | | | | \$ 135,000 | |
| Current Estimate | | 2018 Dollars | | | | | | \$ 135,000 | |

| Project Phases Cost | Rate ² | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|-----------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 13,450 | 0% | \$ - | \$ - | \$ 13,000 |
| Engr. During Construction | 5.0% | \$ 6,725 | 0% | \$ - | \$ - | \$ 7,000 |
| Construction Mgt. | 5.0% | \$ 6,725 | 0% | \$ - | \$ - | \$ 7,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | \$ 161,000 |

Notes:

1 Cost estimate provided by RTP Sodium Hypochlorite 2014 Project Bid

Regional Treatment Plant

Project Number 17066

Effluent Flow Meter Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|------------------------|---|----|---|---|---|---|----|--------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 5,000 |
| | Metal Plate and Weir | 1 | LS | - | - | - | - | \$ | 25,000 |
| | Sonic Level/Flow Meter | 1 | LS | - | - | - | - | \$ | 5,000 |
| | Other Improvements | 1 | LS | - | - | - | - | \$ | 10,000 |

\$ -

Subtotal

\$ 45,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ 14,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|--------|
| Original Estimate | 2018 Dollars | \$ | 59,000 |
| Current Estimate | 2018 Dollars | \$ | 59,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 10.0% | \$ 5,850 | 0% \$ - | \$ - | \$ 6,000 |
| Conceptual Study | 30.0% | \$ 17,550 | 0% \$ - | \$ - | \$ 18,000 |
| Design | 10.0% | \$ 5,850 | 0% \$ - | \$ - | \$ 6,000 |
| Engr. During Construction | 5.0% | \$ 2,925 | 0% \$ - | \$ - | \$ 3,000 |
| Construction Mgt. | 5.0% | \$ 2,925 | 0% \$ - | \$ - | \$ 3,000 |

| | | |
|---|-----------|---------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 94,000 |
|---|-----------|---------------|

Notes:

- Based on bid for installation of effluent flow meter meter in 2004

Regional Treatment Plant

Project Number 17067

DAF Cover Replacement and Internal Recoating

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|---|---|----|---|---|---|---|----|---------|
| Total Construction Cost | Concrete Recoating Recoating ¹ | 1 | LS | - | - | - | - | \$ | 90,000 |
| | Cover Replacement ^{2,3} | 1 | LS | - | - | - | - | \$ | 225,000 |
| | Metallic Surface Recoating ⁴ | 1 | LS | - | - | - | - | \$ | 180,000 |
| | Level Measurement ¹ | 1 | LS | - | - | - | - | \$ | 15,000 |
| | Other | 1 | LS | - | - | - | - | \$ | 25,000 |

Subtotal

\$ 535,000

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ 107,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 642,000 |
| Current Estimate | 2018 Dollars | \$ | 642,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|-------------------|
| Condition Assessment | 5.0% | \$ 32,100 | 0% \$ - | \$ - | \$ 32,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Design | 7.5% | \$ 48,150 | 0% \$ - | \$ - | \$ 48,000 |
| Engr. During Construction | 5.0% | \$ 32,100 | 0% \$ - | \$ - | \$ 32,000 |
| Construction Mgt. | 5.0% | \$ 32,100 | 0% \$ - | \$ - | \$ 32,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 786,000 |

Notes:

- 1 Based on the 2007 bids for the original reconstruction of the DAF system
- 2 Based on a cost estimate provided by Hallsten.
- 3 Assumes that the support system for the covers can be reused
- 4 Based on bids for Miscellaneous Improvements 2014 Project.

Regional Treatment Plant

Project Number 17068

TWAS System Reconstruction

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|--|---|----|---|---|---|---|----|--------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 15,000 |
| | TWAS Pumps ¹ | 1 | LS | - | - | - | - | \$ | 86,000 |
| | Piping, Valves and Supports ¹ | 1 | LS | - | - | - | - | \$ | 45,000 |
| | Variable Frequency Drives ¹ | 1 | LS | - | - | - | - | \$ | 26,000 |
| | Other Improvements | 1 | LS | - | - | - | - | \$ | 50,000 |

\$ -

Subtotal

\$ 222,000

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 67,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 289,000 |
| Current Estimate | 2018 Dollars | \$ | 289,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 28,860 | 0% | \$ - | \$ 29,000 |
| Engr. During Construction | 5.0% | \$ 14,430 | 0% | \$ - | \$ 14,000 |
| Construction Mgt. | 5.0% | \$ 14,430 | 0% | \$ - | \$ 14,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 346,000 |

Notes:

1 Based on Bids from the 2007 RTP Waste Activated Sludge System Upgrade Project

Regional Treatment Plant

Project Number 17071

Odor Control Scrubber No.2 Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|--|---|----|---|---|---|---|----|---------|
| Total Construction Cost | Carbon Scrubber ¹ | 1 | LS | - | - | - | - | \$ | 310,000 |
| | Chemical Odor Scrubber ¹ | 1 | LS | - | - | - | - | \$ | 271,000 |
| | Demolition ¹ | 1 | LS | - | - | - | - | \$ | 113,000 |
| | New Containment Structure ¹ | 1 | LS | - | - | - | - | \$ | 310,000 |
| | Other Civil and Mech Imps ¹ | 1 | LS | - | - | - | - | \$ | 564,000 |

\$ -

Subtotal

\$ 1,568,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 423,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ 398,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2018 Dollars | \$ | 2,390,000 |
| Current Estimate | 2018 Dollars | \$ | 2,390,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 2.5% | \$ 59,748 | 0% | \$ - | \$ 60,000 |
| Design | 10.0% | \$ 238,994 | 0% | \$ - | \$ 239,000 |
| Engr. During Construction | 5.0% | \$ 119,497 | 0% | \$ - | \$ 119,000 |
| Construction Mgt. | 5.0% | \$ 119,497 | 0% | \$ - | \$ 119,000 |

| | | |
|---|-----------|------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 2,928,000 |
|---|-----------|------------------|

Notes:

1 Foul Air System Evaluation Regional Treatment Plant -DHK Engineers (4/18)

Regional Treatment Plant

Project Number 17072

New Grit Handling Facility

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|------------------------------|---|----|---|---|---|---|------------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ 75,000 |
| | Foundation | 1 | LS | - | - | - | - | \$ 30,000 |
| | Site Modifications | 1 | LS | - | - | - | - | \$ 30,000 |
| | Building ¹ | 1 | LS | - | - | - | - | \$ 220,000 |
| | Plumbing | 1 | LS | - | - | - | - | \$ 25,000 |
| | Skylights | 1 | LS | - | - | - | - | \$ 15,000 |
| | Grit Classifiers | 1 | LS | - | - | - | - | \$ 150,000 |
| | Classifier Platform | 1 | LS | - | - | - | - | \$ 75,000 |
| | Screenings Compactor & Tube | 1 | LS | - | - | - | - | \$ 190,000 |
| | Electrical & Instrumentation | 1 | LS | - | - | - | - | \$ 125,000 |

\$ -

Subtotal

\$ 935,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 252,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ 237,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,425,000 |
| Current Estimate | 2018 Dollars | \$ 1,425,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 142,494 | 0% | \$ - | \$ 142,000 |
| Engr. During Construction | 5.0% | \$ 71,247 | 0% | \$ - | \$ 71,000 |
| Construction Mgt. | 10.0% | \$ 142,494 | 0% | \$ - | \$ 142,000 |

Total Project Cost (Present Value in 2018 Dollars) \$ 1,781,000

Notes:

Regional Treatment Plant

Project Number 17074

WAS VFD Pump Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|------------------|---|----|---|----|---|---|----|--------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 10,000 |
| | VFD | 1 | LS | - | - | - | - | \$ | 50,000 |
| | VFD Cabinet Door | 1 | LS | - | - | - | - | \$ | 12,000 |
| | Electrical | 1 | LS | - | - | - | - | \$ | 20,000 |
| | | | | | \$ | - | | | |

Subtotal \$ 92,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @ 0% \$ -

Shipping Rate 0% included

Sale Tax 8.00% \$ -

Project Contingency@ 30% \$ 28,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 120,000 |
| Current Estimate | 2018 Dollars | \$ | 120,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 11,960 | 0% | \$ - | \$ 12,000 |
| Engr. During Construction | 5.0% | \$ 5,980 | 0% | \$ - | \$ 6,000 |
| Construction Mgt. | 5.0% | \$ 5,980 | 0% | \$ - | \$ 6,000 |

Total Project Cost (Present Value in 2018 Dollars) \$ 144,000

Notes:

Regional Treatment Plant

Project Number 17075

Mannich Polymer Bulk Polymer Storage Tank Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|----------------------------------|---|----|-----------|-----------|-----|-----------|----|--------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 25,000 |
| | Storage Tank ¹ | 1 | Ea | \$ 50,000 | \$ 50,000 | 25% | \$ 12,500 | \$ | 63,000 |
| | Transfer Pump | 1 | Ea | \$ 8,500 | \$ 8,500 | 50% | \$ 4,250 | \$ | 13,000 |
| | Piping, Valves and Appurtenances | 1 | LS | - | - | - | - | \$ | 10,000 |
| | Electrical and Instrumentation | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Temporary Chemical Supply | 1 | LS | - | - | - | - | \$ | 30,000 |
| | | | | \$ | 58,500 | | | | |

Subtotal

| | | | |
|--|-------|----------|--------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 0% | \$ | - |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | \$ | 5,000 |
| Project Contingency@ | 20% | \$ | 35,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 210,000 |
| Current Estimate | 2018 Dollars | \$ | 210,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 20,992 | 0% | \$ - | \$ 21,000 |
| Engr. During Construction | 5.0% | \$ 10,496 | 0% | \$ - | \$ 10,000 |
| Construction Mgt. | 5.0% | \$ 10,496 | 0% | \$ - | \$ 10,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 252,000 |

Notes:

- 1 Based on Crowley and Company quote dated 7/27/18.

Regional Treatment Plant

Project Number 17078

Motor Control Center 30310 Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-----------------------------------|---|----|------------|------------|-----|-----------|------------|
| Total Construction Cost | Motor Control Center ¹ | 1 | Ea | \$ 106,000 | \$ 106,000 | 40% | \$ 42,400 | \$ 148,000 |
| | Wiring | 1 | LS | - | - | - | - | \$ 30,000 |
| | Demolition | 1 | LS | - | - | - | - | \$ 15,000 |
| | Temporary Power Supply | 1 | LS | - | - | - | - | \$ 25,000 |
| | Electrical Study | 1 | LS | - | - | - | - | \$ 20,000 |
| | | | | | \$ 106,000 | | | |

Subtotal

| | | | |
|--|-------|----------|-----------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 40,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 8,000 |
| Project Contingency@ | 30% | | \$ 86,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 373,000 |
| Current Estimate | 2018 Dollars | \$ 373,000 |

| Project Phases Cost | | | Amount | Contingency | | Subtotal | | Total |
|--|---------------------------|-------|-------------|-------------|------|----------|------|------------|
| | Condition Assessment | 2.5% | \$ 9,325.81 | 0% | \$ - | \$ - | \$ - | \$ 9,000 |
| | Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - | \$ - |
| | Design | 10.0% | \$ 37,303 | 0% | \$ - | \$ - | \$ - | \$ 37,000 |
| | Engr. During Construction | 5.0% | \$ 18,652 | 0% | \$ - | \$ - | \$ - | \$ 19,000 |
| | Construction Mgt. | 7.5% | \$ 27,977 | 0% | \$ - | \$ - | \$ - | \$ 28,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | | | \$ 466,000 |

Notes:

1 Based on review with Maddox Electric

Regional Treatment Plant

Project Number 17079

Motor Control Center E Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-----------------------------------|---|----|-----------|-----------|-----|-----------|------------|
| Total Construction Cost | Motor Control Center ¹ | 1 | Ea | \$ 82,000 | \$ 82,000 | 40% | \$ 32,800 | \$ 115,000 |
| | Wiring | 1 | LS | - | - | - | - | \$ 30,000 |
| | Demolition | 1 | LS | - | - | - | - | \$ 15,000 |
| | Temporary Power Supply | 1 | LS | - | - | - | - | \$ 25,000 |
| | | | | | \$ 82,000 | | | |

Subtotal

| | | | |
|--|-------|----------|-----------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 31,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 7,000 |
| Project Contingency@ | 30% | | \$ 67,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 289,000 |
| Current Estimate | 2018 Dollars | \$ 289,000 |

| Project Phases Cost | Amount | Contingency | Subtotal | Total |
|---------------------------|--------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - |
| Design | 10.0% | \$ 28,906 | 0% \$ - | \$ 29,000 |
| Engr. During Construction | 5.0% | \$ 14,453 | 0% \$ - | \$ 14,000 |
| Construction Mgt. | 7.5% | \$ 21,680 | 0% \$ - | \$ 22,000 |

| | |
|---|-------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 354,000 |
|---|-------------------|

Notes:

1 Based on review with Maddox Electric.

Regional Treatment Plant

Project Number 17080

Primary Scum Skimmer

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|--------------------------------------|---|----|-----------|------------|-----|------------|------------|
| Demo | 1 | EA | \$ - | \$ - | 0% | \$ 75,000 | \$ 75,000 |
| Replace Helical Skimmers, Drive Mech | 6 | EA | \$ 60,000 | \$ 360,000 | 50% | \$ 180,000 | \$ 540,000 |
| Replace Scum Troughs | 3 | EA | \$ 5,000 | \$ 15,000 | 80% | \$ 12,000 | \$ 27,000 |
| Electrical | 1 | LS | \$ 75,000 | \$ 75,000 | 50% | \$ 37,500 | \$ 113,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 25,000 | \$ 25,000 |
| Subtotal | | | | | | | \$ 780,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 210,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 36,000

Project Contingency@

20% \$ 205,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,231,000 |
| Current Estimate | 2018 Dollars | \$ 1,231,000 |

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|------------|-------------|----------|---------|--------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 3.0% | \$ 36,935 | 0% | \$ - | \$ - | \$ 37,000 |
| Engr. During Construction | 10.0% | \$ 123,116 | 0% | \$ - | \$ - | \$ 123,000 |
| Construction Mgt. | 5.0% | \$ 61,558 | 0% | \$ - | \$ - | \$ 62,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | \$ 1,453,000 |

Notes:

1 Equipment Cost estimate provided by Lee and Ro

Regional Treatment Plant

Project Number 17081

Primary Sedimentation Basin Collectors and Gates

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|--------------------------|---|----|---|---|---|---|------------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ 75,000 |
| | Drop Gates Inlet | 1 | LS | - | - | - | - | \$ 90,000 |
| | Effluent Collector Pipes | 1 | LS | - | - | - | - | \$ 315,000 |
| | Drop Gates Outlet | 1 | LS | - | - | - | - | \$ 135,000 |

\$ -

Subtotal

\$ 615,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ 123,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 738,000 |
| Current Estimate | 2018 Dollars | \$ 738,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 2.5% | \$ 18,450 | 0% | \$ - | \$ 18,000 |
| Design | 10.0% | \$ 73,800 | 0% | \$ - | \$ 74,000 |
| Engr. During Construction | 5.0% | \$ 36,900 | 0% | \$ - | \$ 37,000 |
| Construction Mgt. | 5.0% | \$ 36,900 | 0% | \$ - | \$ 37,000 |

| | |
|---|-------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 904,000 |
|---|-------------------|

Notes:

Regional Treatment Plant**Project Number** 17082**Secondary Effluent Conveyance Evaluation****Main Project Type**

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| |
| |
| |
| X |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|---|----|---|----|---|---|----|---|
| Total Construction Cost | 1 | LS | - | - | - | - | \$ | - |
| | | | | \$ | - | | | |

Subtotal

| | | | | |
|--|-------|--|----------|---|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ | - |
| Shipping Rate | 0% | | included | |
| Sale Tax | 8.00% | | \$ | - |
| Project Contingency@ | 20% | | \$ | - |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---|
| Original Estimate | 2018 Dollars | \$ | - |
| Current Estimate | 2018 Dollars | \$ | - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|--------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ 50,000 |
| Design | 0.0% | \$ - | 0% | \$ - | \$ - |
| Engr. During Construction | 0.0% | \$ - | 0% | \$ - | \$ - |
| Construction Mgt. | 0.0% | \$ - | 0% | \$ - | \$ - |

| | | |
|---|----|--------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 50,000 |
|---|----|--------|

Notes:

Regional Treatment Plant**Project Number** 17083**Grit Handling Evaluation****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|---|----|---|----|---|---|----|---|
| Total Construction Cost | 1 | LS | - | - | - | - | \$ | - |
| | | | | \$ | - | | | |

Subtotal

| | | | | | | | | |
|--|-------|--|--|--|--|--|----------|---|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | | | | | \$ | - |
| Shipping Rate | 0% | | | | | | included | |
| Sale Tax | 8.00% | | | | | | \$ | - |
| Project Contingency@ | 20% | | | | | | \$ | - |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | | | | | |
|-------------------|--------------|--|--|--|--|--|----|---|
| Original Estimate | 2018 Dollars | | | | | | \$ | - |
| Current Estimate | 2018 Dollars | | | | | | \$ | - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|--------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ 60,000 |
| Design | 7.5% | \$ - | 0% | \$ - | \$ - |
| Engr. During Construction | 5.0% | \$ - | 0% | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% | \$ - | \$ - |

| | | | | | |
|---|--|--|--|--|-----------|
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 60,000 |
|---|--|--|--|--|-----------|

Notes:

Regional Treatment Plant

Project Number 17084

Mannich Polumer Storage Tank Shade

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|-----------------|---|----|---|---|---|---|----|---------|
| Total Construction Cost ¹ | Foundation | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Shade Structure | 1 | LS | - | - | - | - | \$ | 80,000 |
| | Lighting | 1 | LS | - | - | - | - | \$ | 15,000 |
| Subtotal | | | | | | | | \$ | 125,000 |

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ 38,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 163,000 |
| Current Estimate | 2018 Dollars | \$ | 163,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 16,250 | 0% | \$ - | \$ 16,000 |
| Engr. During Construction | 5.0% | \$ 8,125 | 0% | \$ - | \$ 8,000 |
| Construction Mgt. | 5.0% | \$ 8,125 | 0% | \$ - | \$ 8,000 |

Total Project Cost (Present Value in 2018 Dollars) \$ 195,000

Notes:

- 1 Based on construction cost of hypochlorite tank shade at J. B. Latham Treatment Plant

Regional Treatment Plant

Project Number 17086

Aeration Control Valve, Gates, and Flow Meter Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|--|----|----|------------|------------|------|------------|------------|
| Demo | 1 | LS | \$ - | \$ - | 100% | \$ 100,000 | \$ 100,000 |
| Gates (influent, effluent, RAS, & Drain) | 42 | EA | \$ 8,700 | \$ 365,400 | 85% | \$ 310,000 | \$ 675,000 |
| Control Valves | 24 | EA | \$ 5,500 | \$ 132,000 | 64% | \$ 84,000 | \$ 216,000 |
| Air Flow Meters | 24 | EA | \$ 3,700 | \$ 88,800 | 74% | \$ 66,000 | \$ 155,000 |
| DO Meter | 12 | EA | \$ 3,000 | \$ 36,000 | 50% | \$ 18,000 | \$ 54,000 |
| DO Controller | 6 | EA | \$ 2,500 | \$ 15,000 | 68% | \$ 10,200 | \$ 25,000 |
| Electrical | 1 | LS | \$ 100,000 | \$ 100,000 | 150% | \$ 150,000 | \$ 250,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 100,000 | \$ 100,000 |

Subtotal

\$ 1,575,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 425,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 59,000

Project Contingency@

20% \$ 412,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 2,472,000 |
| Current Estimate | 2018 Dollars | \$ 2,472,000 |

| Project Phases Cost | Rate ^c | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|------------|-------------|----------|---------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 247,168 | 0% | \$ - | \$ - | \$ 247,000 |
| Engr. During Construction | 10.0% | \$ 247,168 | 0% | \$ - | \$ - | \$ 247,000 |
| Construction Mgt. | 5.0% | \$ 123,584 | 0% | \$ - | \$ - | \$ 124,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | \$ 3,090,000 |

Notes:

- 1 All Project costs provided by Lee and Rc

Regional Treatment Plant**Project Number** 17320**Plant Drainage Pump Station Reconstruction****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|-------------------|---|----|-----------|-----------|-----|-----------|------------|
| Demo | 1 | EA | \$ - | \$ - | 0% | \$ 25,000 | \$ 25,000 |
| New Pumps | 2 | EA | \$ 30,000 | \$ 60,000 | 50% | \$ 30,000 | \$ 90,000 |
| New Control Panel | 1 | EA | \$ 50,000 | \$ 50,000 | 75% | \$ 37,500 | \$ 88,000 |
| Electrical | 1 | LS | \$ 40,000 | \$ 40,000 | 50% | \$ 20,000 | \$ 60,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 20,000 | \$ 20,000 |
| Subtotal | | | | | | | \$ 283,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 76,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 12,000

Project Contingency@

30% \$ 111,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 482,000 |
| Current Estimate | 2018 Dollars | \$ 482,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|-----------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 48,201 | 0% | \$ - | \$ - | \$ 48,000 |
| Engr. During Construction | 10.0% | \$ 48,201 | 0% | \$ - | \$ - | \$ 48,000 |
| Construction Mgt. | 5.0% | \$ 24,100 | 0% | \$ - | \$ - | \$ 24,000 |

| | | |
|---|--|------------|
| Total Project Cost (Present Value in 2018 Dollars) | | \$ 603,000 |
|---|--|------------|

Notes:

1 Equipment Cost estimate provided by TetraTech

Regional Treatment Plant**Project Number** 17321**Chlorine Building Rehabilitation****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task ElementsTotal Construction Cost¹

| | | | | | | | |
|---------------------------------------|---|----|----|---|--|----|--------|
| Replace Single Doors (4) | 1 | LS | \$ | - | | \$ | 34,000 |
| Replace Double Doors (1) | 1 | LS | \$ | - | | \$ | 12,000 |
| Replace Storage Door | 1 | LS | \$ | - | | \$ | 18,000 |
| Replace Louvers (4) | 1 | LS | \$ | - | | \$ | 40,000 |
| Replace Lighting and Power Receptacle | 1 | LS | \$ | - | | \$ | 40,000 |

Subtotal

\$ 144,000

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 43,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 187,000 |
| Current Estimate | 2018 Dollars | \$ | 187,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------|-----------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 18,720 | 0% | \$ - | \$ - | \$ 19,000 |
| Engr. During Construction | 5.0% | \$ 9,360 | 0% | \$ - | \$ - | \$ 9,000 |
| Construction Mgt. | 7.5% | \$ 14,040 | 0% | \$ - | \$ - | \$ 14,000 |

| | | |
|---|-----------|----------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 229,000 |
|---|-----------|----------------|

Notes:

1 Cost estimate provided by Hazen & Sawyer

Regional Treatment Plant

Project Number 17322

Plant Water Pumping System

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|--------------------------------|---|----|-----------|-----------|-----|-----------|-----------|
| Demolition | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 35,000 |
| 3WHP Pumps | 3 | EA | \$ 12,000 | \$ 36,000 | 50% | \$ 18,000 | \$ 54,000 |
| 3WLP Pumps | 3 | EA | \$ 12,000 | \$ 36,000 | 50% | \$ 18,000 | \$ 54,000 |
| 2W Pumps | 2 | EA | \$ 7,500 | \$ 15,000 | 30% | \$ 4,500 | \$ 20,000 |
| Water Gap System | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 30,000 |
| Piping and Valving | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 40,000 |
| Electrical and Instrumentation | 1 | LS | \$ - | \$ - | 0% | \$ - | \$ 80,000 |

Subtotal

\$ 313,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 34,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 7,000

Project Contingency@

30% \$ 94,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 448,000 |
| Current Estimate | 2018 Dollars | \$ 448,000 |

| Project Phases Cost | Rate ² | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|--------------|-------------|----------|---------|-----------|
| Condition Assessment | 2.5% | \$ 11,190.88 | 0% | \$ - | \$ - | \$ 11,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 44,764 | 0% | \$ - | \$ - | \$ 45,000 |
| Engr. During Construction | 5.0% | \$ 22,382 | 0% | \$ - | \$ - | \$ 22,000 |
| Construction Mgt. | 5.0% | \$ 22,382 | 0% | \$ - | \$ - | \$ 22,000 |

Total Project Cost (Present Value in 2018 Dollars) \$ 548,000

Notes:

Regional Treatment Plant

Project Number 17323

Non-Potable Sodium Hypochlorite Pumps and Instrument Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By RYG

| Main Project Cost | | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|---|-------------------------------------|--------------|-------|---------------|-------|------------|----------|------------|
| | | No. | Units | Unit Cost | Total | % of Mat'l | Total | |
| Project Task Elements | | | | | | | | |
| Total Construction Cost ³ | | | | | | | | |
| | Remove existing NPW Hypochlorite Pu | 1 | LS | | | | | \$ 10,000 |
| | Install new NPW Hypochlorite pumps | 1 | LS | | | | | \$ 48,000 |
| | Electrical and Instrumentation | 1 | LS | | | | | \$ 40,000 |
| | Other | 1 | LS | | | | | \$ 25,000 |
| Subtotal | | | | | | | | \$ 123,000 |
| General Conditions, Contractor Overhead and Profit, | | | | | | | | |
| and Bonds and Insurance @ | | | 0% | | | | | \$ - |
| Shipping Rate | | | 0% | | | | included | |
| Sale Tax | | | 0.00% | | | | | \$ - |
| Project Contingency@ | | | 30% | | | | | \$ 12,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | |
| Original Estimate | | 2018 Dollars | | | | | | \$ 135,000 |
| Current Estimate | | 2018 Dollars | | | | | | \$ 135,000 |

| Project Phases Cost | | Rate ² | Amount | | Contingency | | Subtotal | Minimum | Total |
|---|---------------------------|-------------------|--------|--------|-------------|----|----------|---------|------------|
| 1.1.005 CA | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ - | |
| 1.1.005 DS | Design | 10.0% | \$ | 13,450 | 0% | \$ | - | \$ - | \$ 13,000 |
| 1.1.005 EDC | Engr. During Construction | 5.0% | \$ | 6,725 | 0% | \$ | - | \$ - | \$ 7,000 |
| 1.1.005 CM | Construction Mgt. | 5.0% | \$ | 6,725 | 0% | \$ | - | \$ - | \$ 7,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | | | | \$ 161,000 |

Notes:

- 1 Cost estimate provided by RTP Sodium Hypochlorite 2014 Project Bid

Regional Treatment Plant

Project Number 17325

Process Water Contact Basin Upgrades

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|------------------------------|---|----|----------|-----------|-----|----------|-----------|
| Total Construction Cost | CCT Sluice Gate ¹ | 2 | EA | \$ 9,500 | \$ 19,000 | 40% | \$ 7,600 | \$ 27,000 |
| | CCT Drain Gate ¹ | 2 | EA | \$ 7,500 | \$ 15,000 | 25% | \$ 3,750 | \$ 19,000 |
| | Concrete Rehabilitation | 1 | LS | - | - | - | - | \$ 50,000 |
| | Piping Modifications | 1 | LS | - | - | - | - | \$ 20,000 |
| | Electrical Modifications | 1 | LS | - | - | - | - | \$ 25,000 |

Subtotal \$ 140,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @ 27% \$ 12,000

Shipping Rate 0% included

Sale Tax 8.00% \$ 3,000

Project Contingency@ 30% \$ 47,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 202,000 |
| Current Estimate | 2018 Dollars | \$ 202,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 2.5% | \$ 5,048 | 0% | \$ - | \$ 5,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 10.0% | \$ 20,191 | 0% | \$ - | \$ 20,000 |
| Engr. During Construction | 5.0% | \$ 10,095 | 0% | \$ - | \$ 10,000 |
| Construction Mgt. | 5.0% | \$ 10,095 | 0% | \$ - | \$ 10,000 |

Total Project Cost (Present Value in 2018 Dollars) \$ 247,000

Notes:

- 1 Based on quote by Whipps Gates.

Regional Treatment Plant

Project Number 17327

Motor Control Center F Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-----------------------------------|---|----|------------|------------|-----|-----------|------------|
| Total Construction Cost | Motor Control Center ¹ | 1 | Ea | \$ 100,000 | \$ 100,000 | 40% | \$ 40,000 | \$ 140,000 |
| | Wiring | 1 | LS | - | - | - | - | \$ 30,000 |
| | Demolition | 1 | LS | - | - | - | - | \$ 20,000 |
| | Temporary Power Supply | 1 | LS | - | - | - | - | \$ 25,000 |
| | | | | | \$ - | | | |

Subtotal \$ 215,000

| | | | |
|--|-------|----------|-----------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 58,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 8,000 |
| Project Contingency@ | 30% | | \$ 84,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 365,000 |
| Current Estimate | 2018 Dollars | \$ 365,000 |

| Project Phases Cost | | | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|--------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 36,537 | 0% | \$ - | \$ - | \$ 37,000 |
| Engr. During Construction | 5.0% | \$ 18,268 | 0% | \$ - | \$ - | \$ 18,000 |
| Construction Mgt. | 7.5% | \$ 27,402 | 0% | \$ - | \$ - | \$ 27,000 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |

Total Project Cost (Present Value in 2018 Dollars) \$ 448,000

Notes:

1 Based on review with Maddox Electric.

**Regional Treatment Plant
Project Number
Laboratory Reconstruction**

17329

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|--------------------------------------|---|----|---|---|---|---|----|---------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 50,000 |
| | Laboratory Casework ¹ | 1 | LS | - | - | - | - | \$ | 80,000 |
| | Plumbing ¹ | 1 | LS | - | - | - | - | \$ | 114,000 |
| | Laboratory Equipment ¹ | 1 | LS | - | - | - | - | \$ | 80,000 |
| | Flooring ¹ | 1 | LS | - | - | - | - | \$ | 19,000 |
| | Woodwork ¹ | 1 | LS | - | - | - | - | \$ | 16,000 |
| | Ceiling and Wall Repair ¹ | 1 | LS | - | - | - | - | \$ | 24,000 |
| | Coating ¹ | 1 | LS | - | - | - | - | \$ | 22,000 |
| | Electrical ¹ | 1 | LS | - | - | - | - | \$ | 90,000 |
| | Temporary Lab ² | 1 | LS | - | - | - | - | \$ | 75,000 |

\$ -

Subtotal

\$ 570,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 154,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ 145,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 869,000 |
| Current Estimate | 2018 Dollars | \$ | 869,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 86,868 | 0% | \$ - | \$ 87,000 |
| Engr. During Construction | 5.0% | \$ 43,434 | 0% | \$ - | \$ 43,000 |
| Construction Mgt. | 5.0% | \$ 43,434 | 0% | \$ - | \$ 43,000 |

| | |
|---|---------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 1,042,000 |
|---|---------------------|

Notes:

Regional Treatment Plant**Project Number** 17330**Energy Building Seismic Analysis and Structural Condition Assessment****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|---|----|---|----|---|---|----|---|
| Total Construction Cost | 1 | LS | - | - | - | - | \$ | - |
| | | | | \$ | - | | | |

Subtotal

| | | | | |
|--|-------|--|----------|---|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ | - |
| Shipping Rate | 0% | | included | |
| Sale Tax | 8.00% | | \$ | - |
| Project Contingency@ | 20% | | \$ | - |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---|
| Original Estimate | 2018 Dollars | \$ | - |
| Current Estimate | 2018 Dollars | \$ | - |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|--------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ 80,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ - | 0% | \$ - | \$ - |
| Engr. During Construction | 5.0% | \$ - | 0% | \$ - | \$ - |
| Construction Mgt. | 5.0% | \$ - | 0% | \$ - | \$ - |

| | | |
|---|----|--------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 80,000 |
|---|----|--------|

Notes:

Regional Treatment Plant

Project Number 17331

Energy Building Repair and Rehabilitation

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost³

| | | | | | | | |
|--|---|----|----|---|----|----|-----------|
| Energy Building Roof Reconstruction | 1 | LS | \$ | - | | \$ | 1,002,000 |
| Diaphragm Collector Beam Retrofit | 1 | LS | \$ | - | \$ | - | \$ 9,000 |
| Repair of Concrete Spalling at Bridge C | 1 | LS | | | | \$ | 20,000 |
| Rehabilitation of Generator Room Mei | 1 | LS | | | | \$ | 33,000 |
| Retrofit of Wall Piers at Solids Loading | 1 | LS | | | | \$ | 56,000 |
| Subtotal | | | | | | \$ | 1,120,000 |

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

20% \$ 224,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2018 Dollars | \$ | 1,344,000 |
| Current Estimate | 2018 Dollars | \$ | 1,344,000 |

| Project Phases Cost | | Rate ² | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------|---------------------------|-------------------|------------|-------------|----------|---------|------------|
| 1.1.005 CA | Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| 1.1.005 DS | Design | 10.0% | \$ 134,352 | 0% | \$ - | \$ - | \$ 134,000 |
| 1.1.005 EDC | Engr. During Construction | 5.0% | \$ 67,176 | 0% | \$ - | \$ - | \$ 67,000 |
| 1.1.005 CM | Construction Mgt. | 7.5% | \$ 100,764 | 0% | \$ - | \$ - | \$ 101,000 |

Total Project Cost (Present Value in 2018 Dollars)

\$ 1,646,000

Notes:

1 Cost estimate provided by CH2MHill Facility Plan

Regional Treatment Plant

Project Number 17332

Maintenance Shop Rehabilitation

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|-------------------------|---|----|---|----|---|---|----|--------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 10,000 |
| | Benchwork ¹ | 1 | LS | - | - | - | - | \$ | 80,000 |
| | Plumbing ¹ | 1 | LS | - | - | - | - | \$ | 20,000 |
| | Electrical ¹ | 1 | LS | - | - | - | - | \$ | 35,000 |
| | | | | | \$ | - | | | |

Subtotal

| | | | | |
|--|-------|--|----------|--------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ | 39,000 |
| Shipping Rate | 0% | | included | |
| Sale Tax | 8.00% | | \$ | - |
| Project Contingency@ | 40% | | \$ | 74,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 258,000 |
| Current Estimate | 2018 Dollars | \$ | 258,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 2.5% | \$ 6,445 | 0% | \$ - | \$ 6,000 |
| Design | 10.0% | \$ 25,781 | 0% | \$ - | \$ 26,000 |
| Engr. During Construction | 5.0% | \$ 12,891 | 0% | \$ - | \$ 13,000 |
| Construction Mgt. | 5.0% | \$ 12,891 | 0% | \$ - | \$ 13,000 |

| | | |
|---|-----------|----------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 316,000 |
|---|-----------|----------------|

Notes:

Regional Treatment Plant**Project Number** 17333**SCADA System Upgrade - Phase I****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Sep-18
 Estimate Update Sep-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--|-------|-------|----|-----------|-----------|------|-----------|------------|
| Total Construction Cost | PLC's | 6 | EA | \$ 15,000 | \$ 90,000 | 100% | \$ 90,000 | \$ 180,000 |
| | | | | - | - | - | - | \$ - |
| Subtotal | | | | | | | | \$ 180,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 49,000 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 7,000 |
| Project Contingency@ | | 30% | | | | | | \$ 71,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 307,000 |
| Current Estimate | 2018 Dollars | \$ 307,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 30,654 | 0% | \$ - | \$ 31,000 |
| Engr. During Construction | 5.0% | \$ 15,327 | 0% | \$ - | \$ 15,000 |
| Construction Mgt. | 5.0% | \$ 15,327 | 0% | \$ - | \$ 15,000 |

| | |
|---|------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 368,000 |
|---|------------|

Notes:

Regional Treatment Plant

Project Number 17334

New Storage Building

Main Project Type

| | |
|-------------------------|---|
| New Facility | X |
| Facility Rehabilitation | |
| Major maintenance | |
| Asset Replacement | |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|----------------------------|---|----|---|----|---|---|----|---------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 10,000 |
| | Foundation | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Road Modifications/Parking | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Building | 1 | LS | - | - | - | - | \$ | 296,000 |
| | Plumbing | 1 | LS | - | - | - | - | \$ | 25,000 |
| | Finishes | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Skylights | 1 | LS | - | - | - | - | \$ | 15,000 |
| | | | | | \$ | - | | | |

Subtotal \$ 436,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @ 27% \$ 118,000

Shipping Rate 0% included

Sale Tax 8.00% \$ -

Project Contingency@ 30% \$ 166,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 719,000 |
| Current Estimate | 2018 Dollars | \$ | 719,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 71,945 | 0% | \$ - | \$ 72,000 |
| Engr. During Construction | 5.0% | \$ 35,972 | 0% | \$ - | \$ 36,000 |
| Construction Mgt. | 10.0% | \$ 71,945 | 0% | \$ - | \$ 72,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 899,000 |

Notes:

- 1 Based on estimate by Hazen & Sawyer.

Regional Treatment Plant

Project Number 17335

Stie Pavement Reconstruction

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BEP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--|------------------|-------|----|----|---|----|---|----------|---------|
| Total Construction Cost ¹ | Asphalt Pavement | 1 | LS | \$ | - | \$ | - | \$ | 714,000 |
| Subtotal | | | | | | | | \$ | 714,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | included | |
| Shipping Rate | | 0% | | | | | | included | |
| Sale Tax | | 8.00% | | | | | | \$ | - |
| Project Contingency@ | | 20% | | | | | | \$ | 143,000 |
| Total Main Project Cost (Year of Estimate or Estimate Update) | | | | | | | | | |
| Original Estimate | 2018 Dollars | | | | | | | \$ | 857,000 |
| Current Estimate | 2018 Dollars | | | | | | | \$ | 857,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|-----------|-------------|----------|--------------|
| Condition Assessment | 2.5% | \$ 21,420 | 0% | \$ - | \$ 21,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 5.0% | \$ 42,840 | 0% | \$ - | \$ 43,000 |
| Engr. During Construction | 5.0% | \$ 42,840 | 0% | \$ - | \$ 43,000 |
| Construction Mgt. | 5.0% | \$ 42,840 | 0% | \$ - | \$ 43,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 1,007,000 |

Notes:

- 1 Cost estimate derived from 2004 Study by TetraTech.

Regional Treatment Plant

Project Number 17336

Perimeter Fence Replacement

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|--|---|----|---|---|---|---|----|---------|
| Total Construction Cost ³ | Perimeter Fence Removal ¹ | 1 | LS | - | - | - | - | \$ | 59,000 |
| | Perimeter Fence Replacement ² | 1 | LS | - | - | - | - | \$ | 144,000 |

Subtotal

| | | | | | | | | | |
|--|-------|--|--|--|--|--|--|----|----------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | | | | | | \$ | 204,000 |
| Shipping Rate | 0% | | | | | | | | included |
| Sale Tax | 8.00% | | | | | | | \$ | - |
| Project Contingency@ | 10% | | | | | | | \$ | 26,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | | | | | | |
|-------------------|--------------|--|--|--|--|--|--|----|---------|
| Original Estimate | 2018 Dollars | | | | | | | \$ | 284,000 |
| Current Estimate | 2018 Dollars | | | | | | | \$ | 284,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 28,429 | 0% | \$ - | \$ 28,000 |
| Engr. During Construction | 2.5% | \$ 7,107 | 0% | \$ - | \$ 7,000 |
| Construction Mgt. | 5.0% | \$ 14,214 | 0% | \$ - | \$ 14,000 |
| Total Project Contingency | 0.0% | \$ - | 0% | \$ - | \$ - |

| | | | | | |
|---|--|--|--|--|-------------------|
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 334,000 |
|---|--|--|--|--|-------------------|

Notes:

- 1 Cost estimate provided by Hazen & Sawyer; \$16/lf of fence removal
- 2 Cost estimate provided by Hazen & Sawyer; \$39/lf of fence installation
- 3 Based on 3700 liner feet of perimeter fencing

Regional Treatment Plant

Project Number 17337

West Side Storm Channel Rehabilitation - Phase I

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|---|---|----|---|----|---|---|----|---------|
| Total Construction Cost | Drainage Channel Replacement ¹ | 1 | LS | - | - | - | - | \$ | 666,000 |
| | | | | | \$ | - | | \$ | - |

Subtotal

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

20%

\$ 133,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 799,000 |
| Current Estimate | 2018 Dollars | \$ | 799,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Permitting | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 5.0% | \$ 39,960 | 0% | \$ - | \$ 40,000 |
| Design | 10.0% | \$ 79,920 | 0% | \$ - | \$ 80,000 |
| Engr. During Construction | 5.0% | \$ 39,960 | 0% | \$ - | \$ 40,000 |
| Construction Mgt. | 5.0% | \$ 39,960 | 0% | \$ - | \$ 40,000 |

| | | |
|---|-----------|----------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 999,000 |
|---|-----------|----------------|

Notes:

- 1 Based on "Structural Condition Assessment of the Existing Concrete Drainage Channel at the Regional Treatment Plant" December 2017 by TetraTech

Regional Treatment Plant**Project Number** 17338**West Side Storm Channel Rehabilitation - Phase II****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|-----------------------------|---|----|---|----|---|----|----|--------|
| Total Construction Cost | Erosion Repair ¹ | 1 | LS | - | - | - | - | \$ | 13,000 |
| | Drain Repairs ¹ | 1 | LS | - | - | - | - | \$ | 13,000 |
| | Fiber Rolls ¹ | 1 | LS | - | - | - | - | \$ | 10,000 |
| | | | | | \$ | - | \$ | - | \$ - |
| Subtotal | | | | | | | | \$ | 36,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

40%

\$ 14,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|--------|
| Original Estimate | 2018 Dollars | \$ | 50,000 |
| Current Estimate | 2018 Dollars | \$ | 50,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|------------------|
| Permitting | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 20.0% | \$ 10,080 | 0% | \$ - | \$ 10,000 |
| Engr. During Construction | 10.0% | \$ 5,040 | 0% | \$ - | \$ 5,000 |
| Construction Mgt. | 5.0% | \$ 2,520 | 0% | \$ - | \$ 3,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 68,000 |

Notes:

1 Based on "'Terrace Drain Assessment At The Regional Treatment Plant" April 2018 by TetraTech

Regional Treatment Plant

Project Number 17340

Plant Water Pump Screen Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--------------------------------------|---------------------------------|-----|----|-----------|-----------|-----|-----------|------------|
| Total Construction Cost ¹ | 6-inch Hellan DA Auto Strainer | 1 | Ea | \$ 12,500 | \$ 12,500 | 100 | \$ 12,500 | \$ 25,000 |
| | Wedge Wire Drum Scraper Brush | 1 | Ea | \$ 3,700 | \$ 3,700 | 100 | \$ 3,700 | \$ 7,400 |
| | 8-inch Hellan DA Auto Strainer | 1 | Ea | \$ 14,000 | \$ 14,000 | 100 | \$ 14,000 | \$ 28,000 |
| | Wire Drum Scraper Brush | 1 | Ea | \$ 5,500 | \$ 5,500 | 100 | \$ 5,500 | \$ 11,000 |
| | Local Control Panel NEMA 4X Sst | 1 | Ea | \$ 6,500 | \$ 6,500 | 100 | \$ 6,500 | \$ 13,000 |
| | Demo of Existing Drain Piping | 1 | LS | - | - | - | - | \$ 3,000 |
| | 6-inch PVC Drain Piping | 300 | Ft | \$ 30 | \$ 9,000 | 100 | \$ 9,000 | \$ 18,000 |
| Subtotal | | | | \$ 51,200 | | | \$ 51,200 | \$ 105,000 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 28,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 4,000

Project Contingency@

30% \$ 41,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 179,000 |
| Current Estimate | 2018 Dollars | \$ 179,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 17,851 | 0% \$ - | \$ - | \$ 18,000 |
| Engr. During Construction | 5.0% | \$ 8,926 | 0% \$ - | \$ - | \$ 9,000 |
| Construction Mgt. | 5.0% | \$ 8,926 | 0% \$ - | \$ - | \$ 9,000 |

| | |
|---|-------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 214,000 |
|---|-------------------|

Notes:

Regional Treatment Plant**Project Number** 17341**Lube Oil Tank Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|----------------------------------|---|----|---|---|---|---|----|--------|
| Total Construction Cost | Replacement of Tank ¹ | 1 | LS | - | - | - | - | \$ | 20,000 |
| | Replacement of Buried Piping | 1 | LS | - | - | - | - | \$ | 15,000 |
| | Replace Access Platform | 1 | LS | - | - | - | - | \$ | 10,000 |
| | Upgrade Instrumentation | 1 | LS | - | - | - | - | \$ | 15,000 |
| Subtotal | | | | | | | | \$ | 60,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ 18,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|--------|
| Original Estimate | 2018 Dollars | \$ | 78,000 |
| Current Estimate | 2018 Dollars | \$ | 78,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|------------|
| Condition Assessment | 5.0% | \$ 3,900 | 0% \$ - | \$ - | \$ 4,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Design | 20.0% | \$ 15,600 | 0% \$ - | \$ - | \$ 16,000 |
| Engr. During Construction | 5.0% | \$ 3,900 | 0% \$ - | \$ - | \$ 4,000 |
| Construction Mgt. | 5.0% | \$ 3,900 | 0% \$ - | \$ - | \$ 4,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 105,000 |

Notes:

1 Based on "Coastal Treatment Plant Cost Estimate Odor Control & Emergency Generator Systems", DHK Engineering, April, 2017

Regional Treatment Plant**Project Number** 17342**Electrical Box Reconstruction - Phase I****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate 8/1/118
 Estimate Update Oct-17

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|-----------------------|---|----|---|---|---|---|----|---------|
| Total Construction Cost ¹ | Manhole and Handholds | 1 | LS | - | - | - | - | \$ | 498,000 |
| | Conductors | 1 | LS | - | - | - | - | \$ | 570,000 |

| | | | | | |
|----|---|----|---|----|-----------|
| \$ | - | \$ | - | \$ | - |
| | | | | | 1,068,000 |

Subtotal

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

20%

\$ 214,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2018 Dollars | \$ | 1,282,000 |
| Current Estimate | 2018 Dollars | \$ | 1,282,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|------------|-------------|----------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 128,160 | 0% | \$ - | \$ 128,000 |
| Engr. During Construction | 5.0% | \$ 64,080 | 0% | \$ - | \$ 64,000 |
| Construction Mgt. | 10.0% | \$ 128,160 | 0% | \$ - | \$ 128,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 1,602,000 |

Notes:

1 Based on "Condition Assessment and Evaluation of Electrical Manholes", February, 2015 by Lee & Ro

Regional Treatment Plant**Project Number** 17345**Energy Building HVAC Rehabilitation****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost³ HVAC Updates 1 LS - - - - \$ 303,000

Subtotal

\$ 303,000

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ 82,000

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

30%

\$ 91,000

Total Main Project Cost (Year of Estimate or Estimate Update)

Original Estimate 2018 Dollars \$ 394,000

Current Estimate 2018 Dollars \$ 394,000

| Project Phases Cost | | Rate | Amount | | Contingency | | Subtotal | | Total |
|---|-------|------|--------|----|-------------|---|----------|---|-------------------|
| Permitting | 0.0% | \$ | - | 0% | \$ | - | \$ | - | \$ - |
| Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ | - | \$ - |
| Design | 10.0% | \$ | 39,416 | 0% | \$ | - | \$ | - | \$ 39,000 |
| Engr. During Construction | 5.0% | \$ | 19,708 | 0% | \$ | - | \$ | - | \$ 20,000 |
| Construction Mgt. | 5.0% | \$ | 19,708 | 0% | \$ | - | \$ | - | \$ 20,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | | | | \$ 473,000 |

Notes:

Regional Treatment Plant**Project Number** 17346**Burried Water Pipe Reconstruction****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18

Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|-----------------|------|----|-----------|------------|------|------------|------------|
| Demo | 1 | LS | \$ - | \$ - | 0% | \$ 75,000 | \$ 75,000 |
| 3WHP | 3160 | LF | \$ 53 | \$ 167,480 | 75% | \$ 125,610 | \$ 293,000 |
| 2W | 920 | LF | \$ 44 | \$ 40,480 | 75% | \$ 30,360 | \$ 71,000 |
| 3WLP | 2140 | LF | \$ 50 | \$ 107,000 | 75% | \$ 80,250 | \$ 187,000 |
| WAS | 400 | LF | \$ 50 | \$ 20,000 | 75% | \$ 15,000 | \$ 35,000 |
| Bypass Piping | 1 | LS | \$ 6,000 | \$ 6,000 | 133% | \$ 7,980 | \$ 14,000 |
| Paving | 1 | LS | \$ 50,000 | \$ 50,000 | 60% | \$ 30,000 | \$ 80,000 |
| Subtotal | | | | | | | \$ 755,000 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 204,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 31,000

Project Contingency@

30% \$ 297,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,287,000 |
| Current Estimate | 2018 Dollars | \$ 1,287,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|------------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 128,743 | 0% | \$ - | \$ - | \$ 129,000 |
| Engr. During Construction | 5.0% | \$ 64,371 | 0% | \$ - | \$ - | \$ 64,000 |
| Construction Mgt. | 5.0% | \$ 64,371 | 0% | \$ - | \$ - | \$ 64,000 |

Total Project Cost (Present Value in 2018 Dollars) \$ 1,545,000**Notes:**

1 All Project costs provided by Lee and Rc

Regional Treatment Plant

Project Number 17347

Electrical Box Reconstruction - Phase II

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|-----------------------|---|----|---|----|---|----|----|-----------|
| Total Construction Cost ¹ | Manhole and Handholds | 1 | LS | - | - | - | - | \$ | 280,000 |
| | Conductors | 1 | LS | - | - | - | - | \$ | 1,255,000 |
| | | | | | \$ | - | \$ | - | \$ - |
| Subtotal | | | | | | | | \$ | 1,535,000 |

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0%

included

Shipping Rate

0%

included

Sale Tax

0%

included

Project Contingency@

20%

\$ 307,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2018 Dollars | \$ | 1,842,000 |
| Current Estimate | 2018 Dollars | \$ | 1,842,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 184,200 | 0% | \$ - | \$ 184,000 |
| Engr. During Construction | 5.0% | \$ 92,100 | 0% | \$ - | \$ 92,000 |
| Construction Mgt. | 5.0% | \$ 92,100 | 0% | \$ - | \$ 92,000 |

| | | |
|---|----|-----------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 2,210,000 |
|---|----|-----------|

Notes:

- 1 Based on "Condition Assessment and Evaluation of Electrical Manholes", February, 2015 by Lee & Ro

Regional Treatment Plant

Project Number 17348

Secondary Access Road

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|---------------------------------|---|----|----|---|---|---|------------|
| Total Construction Cost | Construction Water | 1 | LS | - | - | - | - | \$ 18,000 |
| | Clearing & Miscellaneous Work | 1 | LS | - | - | - | - | \$ 1,700 |
| | Dust Abatement | 1 | LS | - | - | - | - | \$ 4,850 |
| | Pollution Control | 1 | LS | - | - | - | - | \$ 4,000 |
| | Traffic Control | 1 | LS | - | - | - | - | \$ 5,000 |
| | Dewatering/Channel Diversion | 1 | LS | - | - | - | - | \$ 6,000 |
| | Erosion Control | 1 | LS | - | - | - | - | \$ 3,500 |
| | Miscellaneous Work within Park | 1 | LS | - | - | - | - | \$ 4,850 |
| | Remove Existing Traffic Barrier | 1 | LS | - | - | - | - | \$ 800 |
| | Remove 19 Existing Trees | 1 | LS | - | - | - | - | \$ 900 |
| | Emergency Access Road Imps | 1 | LS | - | - | - | - | \$ 9,500 |
| | | | | \$ | - | | | \$ 112,400 |
| Subtotal | | | | | | | | \$ 172,000 |

| | | | |
|--|-------|----------|-----------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 46,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ - |
| Project Contingency@ | 30% | | \$ 65,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 283,000 |
| Current Estimate | 2018 Dollars | \$ 283,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 2.5% | \$ 7,079 | 0% | \$ - | \$ 7,000 |
| Engr. During Construction | 5.0% | \$ 14,157 | 0% | \$ - | \$ 14,000 |
| Construction Mgt. | 5.0% | \$ 14,157 | 0% | \$ - | \$ 14,000 |

| | |
|---|-------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 319,000 |
|---|-------------------|

Notes

- 1 Based on Dudek preliminary design

Regional Treatment Plant

Project Number 17349

Underground Piping Reconstruction Area A

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Nov-17
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---------------|-----|----|-----------|-----------|------|-----------|-----------|
| Demo | 1 | LS | \$ - | \$ - | 0% | \$ 75,000 | \$ 75,000 |
| NG | 750 | LF | \$ 30 | \$ 22,500 | 75% | \$ 16,875 | \$ 39,000 |
| LSG | 140 | LF | \$ 85 | \$ 11,900 | 75% | \$ 8,925 | \$ 21,000 |
| WAS | 400 | LF | \$ 50 | \$ 20,000 | 75% | \$ 15,000 | \$ 35,000 |
| Bypass Piping | 1 | LS | \$ 6,000 | \$ 6,000 | 133% | \$ 7,980 | \$ 14,000 |
| Paving | 1 | LS | \$ 50,000 | \$ 50,000 | 60% | \$ 30,000 | \$ 80,000 |

Subtotal

| | | | |
|---|-------|----------|------------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 71,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 9,000 |
| Project Contingency@ | 30% | | \$ 103,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2017 Dollars | \$ 448,000 |
| Current Estimate | 2018 Dollars | \$ 448,000 |

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | | Rate ¹ | Amount | | Contingency | | Subtotal | Minimum | Total |
|---|--|-------------------|-----------|----|-------------|------|----------|---------|-------------------|
| 1.1.005 CA | Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - | \$ - | |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - | \$ - | |
| 1.1.005 DS | Design | 10.0% | \$ 44,764 | 0% | \$ - | \$ - | \$ - | \$ - | \$ 45,000 |
| 1.1.005 EDC | Engr. During Construction | 5.0% | \$ 22,382 | 0% | \$ - | \$ - | \$ - | \$ - | \$ 22,000 |
| 1.1.005 CM | Construction Mgt. | 10.0% | \$ 44,764 | 0% | \$ - | \$ - | \$ - | \$ - | \$ 45,000 |
| 1.1.005 CY | Total Project Contingency ² | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - | \$ - | \$ - |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | | | | \$ 560,000 |

Notes:

- 1 All Project costs provided by Lee and Rc

Regional Treatment Plant

Project Number 17350

Underground Piping Reconstruction Area B

Main Project Type

New Facility

Facility Rehabilitation

Major maintenance

Asset Replacement

Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18

Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---------------|------|----|-----------|-----------|------|------------|------------|
| Demo | 1 | LS | \$ - | \$ - | 100% | \$ 100,000 | \$ 100,000 |
| NG | 400 | LF | \$ 32 | \$ 12,800 | 75% | \$ 9,600 | \$ 22,000 |
| Pumped Sludge | 2400 | LF | \$ 33 | \$ 79,200 | 75% | \$ 59,400 | \$ 139,000 |
| DS | 1500 | LF | \$ 40 | \$ 60,000 | 75% | \$ 45,000 | \$ 105,000 |
| TWAS | 150 | LF | \$ 49 | \$ 7,350 | 75% | \$ 5,513 | \$ 13,000 |
| WAS | 500 | LF | \$ 35 | \$ 17,500 | 75% | \$ 13,125 | \$ 31,000 |
| PS | 120 | LF | \$ 59 | \$ 7,080 | 75% | \$ 5,310 | \$ 12,000 |
| PSC | 150 | LF | \$ 110 | \$ 16,500 | 75% | \$ 12,375 | \$ 29,000 |
| Spare 6" | 1200 | LF | \$ 30 | \$ 36,000 | 75% | \$ 27,000 | \$ 63,000 |
| Spare 10" | 1200 | LF | \$ 51 | \$ 61,200 | 75% | \$ 45,900 | \$ 107,000 |
| Bypass Piping | 1 | LS | \$ 45,000 | \$ 45,000 | 150% | \$ 67,500 | \$ 113,000 |
| Paving | 1 | LS | \$ 90,000 | \$ 90,000 | 50% | \$ 45,000 | \$ 135,000 |

Subtotal

| | | | |
|--|-------|----------|------------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 234,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 35,000 |
| Project Contingency@ | 30% | | \$ 341,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,479,000 |
| Current Estimate | 2018 Dollars | \$ 1,479,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|------------|-------------|----------|---------|---------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 147,864 | 0% | \$ - | \$ - | \$ 148,000 |
| Engr. During Construction | 5.0% | \$ 73,932 | 0% | \$ - | \$ - | \$ 74,000 |
| Construction Mgt. | 10.0% | \$ 147,864 | 0% | \$ - | \$ - | \$ 148,000 |
| Total I | | | | | | \$ 1,848,000 |

Notes:

- 1 All Project costs provided by Lee and Ro

Regional Treatment Plant

Project Number 17351

Underground Piping Reconstruction Area C

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---------------|-----|----|-----------|-----------|------|-----------|-----------|
| Demo | 1 | LS | \$ - | \$ - | 0% | \$ 50,000 | \$ 50,000 |
| NG | 500 | LF | \$ 34 | \$ 17,000 | 115% | \$ 19,550 | \$ 37,000 |
| Spare 8" | 700 | LF | \$ 50 | \$ 35,000 | 75% | \$ 26,250 | \$ 61,000 |
| Bypass Piping | 1 | LS | \$ 15,000 | \$ 15,000 | 167% | \$ 25,050 | \$ 40,000 |
| Paving | 1 | LS | \$ 40,000 | \$ 40,000 | 50% | \$ 20,000 | \$ 60,000 |

Subtotal

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 67,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 9,000

Project Contingency@

30% \$ 97,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 420,000 |
| Current Estimate | 2018 Dollars | \$ 420,000 |

| Project Phases Cost | | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------|--|-------------------|-----------|-------------|----------|---------|-----------|
| 1.1.005 CA | Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| 1.1.005 DS | Design | 10.0% | \$ 42,033 | 0% | \$ - | \$ - | \$ 42,000 |
| 1.1.005 EDC | Engr. During Construction | 5.0% | \$ 21,016 | 0% | \$ - | \$ - | \$ 21,000 |
| 1.1.005 CM | Construction Mgt. | 10.0% | \$ 42,033 | 0% | \$ - | \$ - | \$ 42,000 |
| 1.1.005 CY | Total Project Contingency ² | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |

| | |
|---|-------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 525,000 |
|---|-------------------|

Notes:

1 All Project costs provided by Lee and Rc

Regional Treatment Plant**Project Number** 17352**Underground Piping Reconstruction Area D****Main Project Type**

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|-----------------|-----|----|-----------|-----------|------|-----------|------------|
| Demo | 1 | LS | \$ - | \$ - | 0% | \$ 25,000 | \$ 25,000 |
| MSG | 170 | LF | \$ 80 | \$ 13,600 | 130% | \$ 17,680 | \$ 31,000 |
| NG | 400 | LF | \$ 40 | \$ 16,000 | 75% | \$ 12,000 | \$ 28,000 |
| Bypass Piping | 1 | LS | \$ 5,000 | \$ 5,000 | 167% | \$ 8,350 | \$ 13,000 |
| Paving | 1 | LS | \$ 20,000 | \$ 20,000 | 100% | \$ 20,000 | \$ 40,000 |
| Subtotal | | | | | | | \$ 138,000 |

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 37,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 4,000

Project Contingency@

30% \$ 54,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 233,000 |
| Current Estimate | 2018 Dollars | \$ 233,000 |

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|-----------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 23,291 | 0% | \$ - | \$ - | \$ 23,000 |
| Engr. During Construction | 5.0% | \$ 11,645 | 0% | \$ - | \$ - | \$ 12,000 |
| Construction Mgt. | 10.0% | \$ 23,291 | 0% | \$ - | \$ - | \$ 23,000 |

| | | |
|---|--|------------|
| Total Project Cost (Present Value in 2018 Dollars) | | \$ 291,000 |
|---|--|------------|

Notes:

1 All Project costs provided by Lee and Rc

Regional Treatment Plant

Project Number 17353

SCADA System Upgrade - Phase II

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-------------------------------|----|----|-----------|------------|------|------------|------------|
| Total Construction Cost | PLC's (In Exist Cabinets) | 12 | EA | \$ 15,000 | \$ 180,000 | 100% | \$ 180,000 | \$ 360,000 |
| | PLC's (In Exist Cabinets) | 4 | EA | \$ 40,000 | \$ 160,000 | 75% | \$ 120,000 | \$ 280,000 |
| | Demolition | 1 | LS | - | - | - | - | \$ 64,000 |
| | Track and Removal of Ab. Wire | 1 | LS | - | - | - | - | \$ 50,000 |
| | Fiber Optic System | 1 | LS | - | - | - | - | \$ 200,000 |

Subtotal

| | | | |
|--|-------|--|------------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 173,000 |
| Shipping Rate | 0% | | included |
| Sale Tax | 8.00% | | \$ 27,000 |
| Project Contingency@ | 35% | | \$ 404,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,558,000 |
| Current Estimate | 2018 Dollars | \$ 1,558,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 5.0% | \$ 77,895 | 0% | \$ - | \$ 78,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 155,790 | 0% | \$ - | \$ 156,000 |
| Engr. During Construction | 5.0% | \$ 77,895 | 0% | \$ - | \$ 78,000 |
| Construction Mgt. | 10.0% | \$ 155,790 | 0% | \$ - | \$ 156,000 |

| | |
|---|---------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 2,025,000 |
|---|---------------------|

Notes:

Regional Treatment Plant

Project Number 17520

Ferric Chloride System Reconstruction

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|---|---|----|-----------|-----------|-----|-----------|----|---------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 50,000 |
| | Concrete Containment Area ¹ | 1 | LS | - | - | - | - | \$ | 140,000 |
| | Storage Tank ² | 1 | Ea | \$ 60,000 | \$ 60,000 | 25% | \$ 15,000 | \$ | 75,000 |
| | Metering Pump ² | 3 | Ea | \$ 20,000 | \$ 60,000 | 25% | \$ 15,000 | \$ | 75,000 |
| | Piping, Valves and Appurtenances | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Electrical and Instrumentation ¹ | 1 | LS | - | - | - | - | \$ | 100,000 |
| | Temporary System | 1 | LS | - | - | - | - | \$ | 40,000 |
| | | | | \$ | 120,000 | | | | |

Subtotal

| | | | |
|--|-------|----------|---------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 0% | \$ | - |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | \$ | 10,000 |
| Project Contingency@ | 20% | \$ | 104,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 624,000 |
| Current Estimate | 2018 Dollars | \$ | 624,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 2.5% | \$ 15,588 | 0% | \$ - | \$ 16,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 62,352 | 0% | \$ - | \$ 62,000 |
| Engr. During Construction | 5.0% | \$ 31,176 | 0% | \$ - | \$ 31,000 |
| Construction Mgt. | 5.0% | \$ 31,176 | 0% | \$ - | \$ 31,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 764,000 |

Notes:

- 1 Based on 2015 bids for Coastal Treatment Plant Sodium Hypochlorite Feed System
- 2 Based on Crowley and Company quote dated 7/27/18.

Regional Treatment Plant

Project Number 17521

Emulsion Polymer Storage Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|--------------------------------|---|----|-----------|-----------|-----|-----------|----|--------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 25,000 |
| | Storage Tank ¹ | 1 | Ea | \$ 50,000 | \$ 50,000 | 25% | \$ 12,500 | \$ | 63,000 |
| | Transfer Pump | 1 | Ea | \$ 8,500 | \$ 8,500 | 50% | \$ 4,250 | \$ | 13,000 |
| | Mixing Pump | 1 | Ea | \$ 8,500 | \$ 8,500 | 50% | \$ 4,250 | \$ | 13,000 |
| | Piping, Valves and Appurtences | 1 | LS | - | - | - | - | \$ | 10,000 |
| | Electrical and Instrumentation | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Temporary Chemical Supply | 1 | LS | - | - | - | - | \$ | 30,000 |
| | | | | \$ | 67,000 | | | | |

Subtotal

| | | | |
|--|-------|----------|--------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 0% | \$ | - |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | \$ | 5,000 |
| Project Contingency@ | 30% | \$ | 57,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 245,000 |
| Current Estimate | 2018 Dollars | \$ | 245,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 24,487 | 0% | \$ - | \$ 24,000 |
| Engr. During Construction | 5.0% | \$ 12,243 | 0% | \$ - | \$ 12,000 |
| Construction Mgt. | 5.0% | \$ 12,243 | 0% | \$ - | \$ 12,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 294,000 |

Notes:

- 1 Based on Crowley and Company quote dated 7/27/18.

Regional Treatment Plant

Project Number 17522

Emulsion Polymer Feeder Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|---------------------------------------|---|----|---|---|---|---|----|---------|
| Total Construction Cost | Emulsion Polymer Feeders ¹ | 1 | LS | - | - | - | - | \$ | 118,000 |
| | Piping and Valving ¹ | 1 | LS | - | - | - | - | \$ | 36,000 |
| | Electrical Improvements ¹ | 1 | LS | - | - | - | - | \$ | 45,000 |
| | Other ¹ | 1 | LS | - | - | - | - | \$ | 27,000 |

\$ -

Subtotal

\$ 225,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

0.00%

\$ -

Project Contingency@

20%

\$ 45,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 270,000 |
| Current Estimate | 2018 Dollars | \$ | 270,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 7.5% | \$ 20,250 | 0% | \$ - | \$ 20,000 |
| Engr. During Construction | 5.0% | \$ 13,500 | 0% | \$ - | \$ 14,000 |
| Construction Mgt. | 5.0% | \$ 13,500 | 0% | \$ - | \$ 14,000 |

| | | |
|---|-----------|----------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 317,000 |
|---|-----------|----------------|

Notes:

1 Based on the 2011 bids for the relocation and replacement of the existing polymer feed system

Regional Treatment Plant

Project Number 17523

Sludge Equalization System Mechanical and Electrical Rehabilitation Project

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|-----------------------------|---|----|------------|------------|------|------------|------------|
| Repipe Manifold and Valving | 1 | LS | \$ 125,000 | \$ 125,000 | 75% | \$ 93,750 | \$ 219,000 |
| Replace Recirculation Pumps | 2 | EA | \$ 20,000 | \$ 40,000 | 50% | \$ 20,000 | \$ 60,000 |
| Add/Replace Grinder | 2 | EA | \$ 40,000 | \$ 80,000 | 150% | \$ 120,000 | \$ 200,000 |
| Replace Sludge Pumps | 6 | EA | \$ 14,000 | \$ 84,000 | 50% | \$ 42,000 | \$ 126,000 |
| Repair/Recoat SETs | 2 | EA | \$ 15,000 | \$ 30,000 | 150% | \$ 45,000 | \$ 75,000 |
| Replace Instrumentation | 1 | LS | \$ 20,000 | \$ 20,000 | 50% | \$ 10,000 | \$ 30,000 |
| Electrical | 1 | LS | \$ 100,000 | \$ 100,000 | 75% | \$ 75,000 | \$ 175,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 35,000 | \$ 35,000 |

Subtotal

\$ 920,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 248,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 38,000

Project Contingency@

20%

\$ 241,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,448,000 |
| Current Estimate | 2018 Dollars | \$ 1,448,000 |

| Project Phases Cost | | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|---------------------------|-------------------|------------|-------------|----------|---------|---------------------|
| 1.1.005 CA | Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| 1.1.005 DS | Design | 15.0% | \$ 217,152 | 0% | \$ - | \$ - | \$ 217,000 |
| 1.1.005 EDC | Engr. During Construction | 5.0% | \$ 72,384 | 0% | \$ - | \$ - | \$ 72,000 |
| 1.1.005 CM | Construction Mgt. | 5.0% | \$ 72,384 | 0% | \$ - | \$ - | \$ 72,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | | \$ 1,810,000 |

Notes:

- 1 Equipment Cost estimate provided by SOCWA

Regional Treatment Plant

Project Number 17525

Solids Building Structural Rehabilitation

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost²

| | | | | | | | |
|--|---|----|----|---|--|----|--------|
| Solids Building Roof Reconstruction ¹ | 1 | LS | \$ | - | | \$ | 55,000 |
| Replace Single Doors (2) | 1 | LS | \$ | - | | \$ | 17,000 |
| Replace Windows (6) | 1 | LS | \$ | - | | \$ | 66,000 |
| Replace Louver (1) | 1 | LS | \$ | - | | \$ | 10,000 |
| Replace Lighting and Power Receptacle | 1 | LS | \$ | - | | \$ | 40,000 |

Subtotal

\$ 188,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 56,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 244,000 |
| Current Estimate | 2018 Dollars | \$ | 244,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------|-----------|-------------|----------|---------|-----------|
| Condition Assessment | 2.5% | \$ 6,110 | 0% | \$ - | \$ - | \$ 6,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 24,440 | 0% | \$ - | \$ - | \$ 24,000 |
| Engr. During Construction | 5.0% | \$ 12,220 | 0% | \$ - | \$ - | \$ 12,000 |
| Construction Mgt. | 7.5% | \$ 18,330 | 0% | \$ - | \$ - | \$ 18,000 |

| | | | |
|---|--|----|---------|
| Total Project Cost (Present Value in 2018 Dollars) | | \$ | 306,000 |
|---|--|----|---------|

Notes:

- 1 Cost estimate provided by CH2MHill Facility Plan
- 2 Architectural hardware costs based on unit values provided by Hazen & Sawyer

Regional Treatment Plant

Project Number 17526

Motor Control Center D Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-----------------------------------|---|----|------------|------------|-----|-----------|------------|
| Total Construction Cost | Motor Control Center ¹ | 1 | Ea | \$ 130,000 | \$ 130,000 | 40% | \$ 52,000 | \$ 182,000 |
| | Wiring | 1 | LS | - | - | - | - | \$ 30,000 |
| | Demolition | 1 | LS | - | - | - | - | \$ 20,000 |
| | Temporary Power Supply | 1 | LS | - | - | - | - | \$ 35,000 |
| | | | | | \$ 130,000 | | | |

Subtotal

| | | | |
|--|-------|----------|-----------|
| General Conditions, Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 49,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 10,000 |
| Project Contingency@ | 30% | | \$ 98,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 425,000 |
| Current Estimate | 2018 Dollars | \$ 425,000 |

| Project Phases Cost | Amount | Contingency | Subtotal | Total |
|---------------------------|--------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - |
| Design | 10.0% | \$ 42,450 | 0% \$ - | \$ 42,000 |
| Engr. During Construction | 5.0% | \$ 21,225 | 0% \$ - | \$ 21,000 |
| Construction Mgt. | 7.5% | \$ 31,838 | 0% \$ - | \$ 32,000 |

| | |
|---|-------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 520,000 |
|---|-------------------|

Notes:

1 Based on review with Maddox Electric.

Regional Treatment Plant
Project Number 17527

Anerobic Digester Reconstruction
Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|------------------------|---|----|------------|--------------|------|--------------|--------------|
| Demo | 4 | LS | \$ - | \$ - | 0% | \$ 75,000 | \$ 75,000 |
| Dome Replacement | 4 | EA | \$ 890,000 | \$ 3,560,000 | 30% | \$ 1,068,000 | \$ 4,628,000 |
| Crack Repair | 4 | EA | \$ 100,000 | \$ 400,000 | 40% | \$ 160,000 | \$ 560,000 |
| Mixing System Upgrades | 4 | EA | \$ 100,000 | \$ 400,000 | 30% | \$ 120,000 | \$ 520,000 |
| Replace Piping/Valves | 4 | LS | \$ 75,000 | \$ 300,000 | 30% | \$ 90,000 | \$ 390,000 |
| Electrical | 4 | LS | \$ 50,000 | \$ 200,000 | 100% | \$ 200,000 | \$ 400,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 50,000 | \$ 50,000 |
| Subtotal | | | | | | | \$ 6,623,000 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ 1,788,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 389,000

Project Contingency@

20%

\$ 1,760,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|---------------|
| Original Estimate | 2018 Dollars | \$ 10,560,000 |
| Current Estimate | 2018 Dollars | \$ 10,560,000 |

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | | Rate ¹ | Amount | | Contingency | | Subtotal | Minimum | Total |
|---|---------------------------|-------------------|--------|---------|-------------|----|----------|---------|---------------|
| 1.1.005 CA | Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ - | \$ - |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ | - | 0% | \$ | - | \$ - | \$ - |
| 1.1.005 DS | Design | 7.5% | \$ | 792,001 | 0% | \$ | - | \$ - | \$ 792,000 |
| 1.1.005 EDC | Engr. During Construction | 5.0% | \$ | 528,001 | 0% | \$ | - | \$ - | \$ 528,000 |
| 1.1.005 CM | Construction Mgt. | 5.0% | \$ | 528,001 | 0% | \$ | - | \$ - | \$ 528,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | | | | \$ 12,408,000 |

Notes:

- Equipment Cost estimate provided by Carollo

Regional Treatment Plant

Project Number 17528

Heating System Reconstruction

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|----------------------------|---|----|------------|------------|------|------------|------------|
| Demo | 1 | LS | \$ - | \$ - | 0% | \$ 30,000 | \$ 30,000 |
| Heat Exchangers | 4 | EA | \$ 60,000 | \$ 240,000 | 50% | \$ 120,000 | \$ 360,000 |
| Hot Water Pumps | 4 | EA | \$ 8,000 | \$ 32,000 | 75% | \$ 24,000 | \$ 56,000 |
| Sludge Recirculation Pumps | 4 | EA | \$ 30,000 | \$ 120,000 | 100% | \$ 120,000 | \$ 240,000 |
| Electrical | 1 | LS | \$ 125,000 | \$ 125,000 | 75% | \$ 93,750 | \$ 219,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 35,000 | \$ 35,000 |

Subtotal

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27% \$ 254,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 41,000

Project Contingency@

20% \$ 247,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 1,482,000 |
| Current Estimate | 2018 Dollars | \$ 1,482,000 |

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|------------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 148,181 | 0% | \$ - | \$ - | \$ 148,000 |
| Engr. During Construction | 5.0% | \$ 74,091 | 0% | \$ - | \$ - | \$ 74,000 |
| Construction Mgt. | 5.0% | \$ 74,091 | 0% | \$ - | \$ - | \$ 74,000 |

| | |
|---|--------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 1,778,000 |
|---|--------------|

Notes:

- 1 Equipment Cost estimate provided by Carollo

Regional Treatment Plant
Project Number 17529

Digester Gas Management Building Rehab
Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---------------------------------------|---|----|----|---|--|----|--------|
| Roof Reconstruction ¹ | 1 | LS | \$ | - | | \$ | 55,000 |
| Replace Single Doors (1) | 1 | LS | \$ | - | | \$ | 9,000 |
| Replace Double Doors (3) | 1 | LS | \$ | - | | \$ | 36,000 |
| Replace Louver (7) | 1 | LS | \$ | - | | \$ | 70,000 |
| Replace Lighting and Power Receptacle | 1 | LS | \$ | - | | \$ | 40,000 |
| Rehabilitation Stairway | 1 | LS | \$ | - | | \$ | 15,000 |

Subtotal

\$ 225,000

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ 67,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 292,000 |
| Current Estimate | 2018 Dollars | \$ | 292,000 |

| Project Phases Cost | | Rate ² | Amount | Contingency | Subtotal | Minimum | Total |
|---|---------------------------|-------------------|-----------|-------------|----------|---------|-------------------|
| 1.1.005 CA | Condition Assessment | 2.5% | \$ 7,296 | 0% | \$ - | \$ - | \$ 7,000 |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| 1.1.005 DS | Design | 10.0% | \$ 29,185 | 0% | \$ - | \$ - | \$ 29,000 |
| 1.1.005 EDC | Engr. During Construction | 10.0% | \$ 29,185 | 0% | \$ - | \$ - | \$ 29,000 |
| 1.1.005 CM | Construction Mgt. | 5.0% | \$ 14,593 | 0% | \$ - | \$ - | \$ 15,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | | \$ 372,000 |

Notes:

- Cost estimate provided by CH2MHill Facility Plan
- Architectural hardware costs based on unit values provided by Hazen & Sawyer

Regional Treatment Plant**Project Number** 17530**Digested Sludge Pump System Reconstruction****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|--------------------------------|---|----|-----------|-----------|------|-----------|------------|
| Demo | 1 | LS | \$ - | \$ - | 0% | \$ 30,000 | \$ 30,000 |
| Replace Sludge Pumps (chopper) | 4 | EA | \$ 14,000 | \$ 56,000 | 50% | \$ 28,000 | \$ 84,000 |
| Replace Piping/Valves | 1 | LS | \$ 30,000 | \$ 30,000 | 75% | \$ 22,500 | \$ 53,000 |
| Electrical | 1 | LS | \$ 50,000 | \$ 50,000 | 100% | \$ 50,000 | \$ 100,000 |

Subtotal

\$ 267,000

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ 72,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 11,000

Project Contingency@

30%

\$ 105,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 454,000 |
| Current Estimate | 2018 Dollars | \$ 454,000 |

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 45,414 | 0% | \$ - | \$ - | \$ 45,000 |
| Engr. During Construction | 5.0% | \$ 22,707 | 0% | \$ - | \$ - | \$ 23,000 |
| Construction Mgt. | 5.0% | \$ 22,707 | 0% | \$ - | \$ - | \$ 23,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | \$ 545,000 |

Notes:

1 Equipment Cost estimate provided by Carollo

Regional Treatment Plant

Project Number 17531

Motor Control Center M Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-----------------------------------|---|----|------------|------------|-----|-----------|------------|
| Total Construction Cost | Motor Control Center ¹ | 1 | Ea | \$ 106,000 | \$ 106,000 | 40% | \$ 42,400 | \$ 148,000 |
| | Wiring | 1 | LS | - | - | - | - | \$ 30,000 |
| | Demolition | 1 | LS | - | - | - | - | \$ 20,000 |
| | Temporary Power Supply | 1 | LS | - | - | - | - | \$ 35,000 |
| | Electrical Study | 1 | LS | - | - | - | - | \$ 20,000 |
| | | | | | \$ 106,000 | | | |

Subtotal

| | | | |
|--|-------|----------|-----------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 40,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 8,000 |
| Project Contingency@ | 30% | | \$ 91,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 393,000 |
| Current Estimate | 2018 Dollars | \$ 393,000 |

| Project Phases Cost | | | Amount | | Contingency | | Subtotal | | Total |
|---|-------|----|--------|----|-------------|---|----------|---|-------------------|
| Condition Assessment | 0.0% | \$ | - | 0% | \$ | - | \$ | - | |
| Conceptual Study | 2.5% | \$ | 9,813 | 0% | \$ | - | \$ | - | \$ 10,000 |
| Design | 10.0% | \$ | 39,253 | 0% | \$ | - | \$ | - | \$ 39,000 |
| Engr. During Construction | 5.0% | \$ | 19,627 | 0% | \$ | - | \$ | - | \$ 20,000 |
| Construction Mgt. | 7.5% | \$ | 29,440 | 0% | \$ | - | \$ | - | \$ 29,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | | | | \$ 491,000 |

Notes:

1 Based on review with Maddox Electric.

Regional Treatment Plant**Project Number** 17532**Dewatering System Reconstruction****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Mar-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|--------------------------------------|---|----|------------|--------------|------|------------|--------------|
| Centrifuge Piping Modifications | 1 | LS | \$ 95,000 | \$ 95,000 | 100% | \$ 95,000 | \$ 190,000 |
| Replace Centrifuges | 4 | EA | \$ 450,000 | \$ 1,800,000 | 50% | \$ 900,000 | \$ 2,700,000 |
| Replace Centrifuge VFDs | 8 | EA | \$ 15,000 | \$ 120,000 | 50% | \$ 60,000 | \$ 180,000 |
| Replace Centrifuge Control Panel | 4 | EA | \$ 20,000 | \$ 80,000 | 50% | \$ 40,000 | \$ 120,000 |
| Odor Control/Ventilation Rebalancing | 1 | LS | \$ 15,000 | \$ 15,000 | 200% | \$ 30,000 | \$ 45,000 |
| Centrifuge Floor Repairs | 1 | LS | \$ 350,000 | \$ 350,000 | 100% | \$ 350,000 | \$ 700,000 |
| Polymer System Improvements | 1 | LS | \$ 250,000 | \$ 250,000 | 50% | \$ 125,000 | \$ 375,000 |
| Electrical | 1 | LS | \$ 200,000 | \$ 200,000 | 75% | \$ 150,000 | \$ 350,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 75,000 | \$ 75,000 |
| Subtotal | | | | | | | \$ 4,735,000 |

Subtotal

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 233,000

Project Contingency@

20%

\$ 994,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 5,961,000 |
| Current Estimate | 2018 Dollars | \$ 5,961,000 |

| Project Phases Cost | | Rate ⁴ | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------|--|-------------------|------------|-------------|----------|---------|------------|
| 1.1.005 CA | Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| 1.1.005 CS | Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| 1.1.005 DS | Design | 10.0% | \$ 596,136 | 0% | \$ - | \$ - | \$ 596,000 |
| 1.1.005 EDC | Engr. During Construction | 5.0% | \$ 298,068 | 0% | \$ - | \$ - | \$ 298,000 |
| 1.1.005 CM | Construction Mgt. | 5.0% | \$ 298,068 | 0% | \$ - | \$ - | \$ 298,000 |
| 1.1.005 CY | Total Project Contingency ² | 0.0% | \$ - | 0% | \$ - | \$ - | \$ - |

| | |
|---|--------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 7,154,000 |
|---|--------------|

Notes:

- 1 Project cost provided by Carollo. Costs include demo and other overhead cost:

Regional Treatment Plant

Project Number 17533

Solids Conveyor Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---------------------------------|---|----|------------|------------|-----|------------|--------------|
| Demo | 1 | LS | \$ - | \$ - | 0% | \$ 100,000 | \$ 100,000 |
| Centrifuge Horizontal Conveyors | 2 | LS | \$ 150,000 | \$ 300,000 | 50% | \$ 150,000 | \$ 450,000 |
| Centrifuge Elevated Conveyors | 2 | LS | \$ 350,000 | \$ 700,000 | 50% | \$ 350,000 | \$ 1,050,000 |
| Cross Conveyor | 1 | LS | \$ 150,000 | \$ 150,000 | 50% | \$ 75,000 | \$ 225,000 |
| Electrical | 1 | LS | \$ 75,000 | \$ 75,000 | 75% | \$ 56,250 | \$ 131,000 |
| Programming | 1 | LS | \$ - | \$ - | 0% | \$ 50,000 | \$ 50,000 |

Subtotal

\$ 2,006,000

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 542,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 98,000

Project Contingency@

20%

\$ 529,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 3,175,000 |
| Current Estimate | 2018 Dollars | \$ 3,175,000 |

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate ^c | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|------------|-------------|----------|---------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 317,513 | 0% | \$ - | \$ - | \$ 318,000 |
| Engr. During Construction | 5.0% | \$ 158,756 | 0% | \$ - | \$ - | \$ 159,000 |
| Construction Mgt. | 5.0% | \$ 158,756 | 0% | \$ - | \$ - | \$ 159,000 |

| | |
|---|--------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 3,810,000 |
|---|--------------|

Notes:

Regional Treatment Plant**Project Number** 17534**Storage and Truck Loading Rehabilitation****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By JM

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|------------------------|---|----|------------|------------|------|-----------|------------|
| Truck Bay Improvements | 1 | LS | \$ 25,000 | \$ 25,000 | 50% | \$ 12,500 | \$ 38,000 |
| Recoat/Repair Hopper | 1 | LS | \$ 50,000 | \$ 50,000 | 75% | \$ 37,500 | \$ 88,000 |
| Replace Truck Scale | 1 | LS | \$ 125,000 | \$ 125,000 | 40% | \$ 50,000 | \$ 175,000 |
| Electrical | 1 | LS | \$ 50,000 | \$ 50,000 | 130% | \$ 65,000 | \$ 115,000 |

Subtotal

\$ 415,000

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27%

\$ 112,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ 20,000

Project Contingency@

20%

\$ 109,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 656,000 |
| Current Estimate | 2018 Dollars | \$ 656,000 |

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate ¹ | Amount | Contingency | Subtotal | Minimum | Total |
|---|-------------------|-----------|-------------|----------|---------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 65,646 | 0% | \$ - | \$ - | \$ 66,000 |
| Engr. During Construction | 5.0% | \$ 32,823 | 0% | \$ - | \$ - | \$ 33,000 |
| Construction Mgt. | 5.0% | \$ 32,823 | 0% | \$ - | \$ - | \$ 33,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | | \$ 788,000 |

Notes:

1 Equipment Cost estimate provided by Carollo

Regional Treatment Plant

Project Number 17535

Odor Control Scrubber No.3 Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | | | |
|--------------------------------------|-------------------------------|---|----|----|----|----|---|----|---|----|---------|
| Total Construction Cost ¹ | Odor Control System | 1 | LS | \$ | - | \$ | - | - | - | \$ | 725,000 |
| | Temporary Odor Control System | 1 | LS | \$ | - | \$ | - | - | - | \$ | 75,000 |
| | Electrical | 1 | LS | \$ | - | \$ | - | - | - | \$ | 20,000 |
| | Instrumentation | 1 | LS | \$ | - | \$ | - | - | - | \$ | 15,000 |
| | | | | | \$ | - | - | \$ | - | \$ | - |
| Subtotal | | | | | | | | | | \$ | 835,000 |

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

27%

\$ 225,000

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

20%

\$ 212,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|-----------|
| Original Estimate | 2018 Dollars | \$ | 1,273,000 |
| Current Estimate | 2018 Dollars | \$ | 1,273,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|--------------|-------------|----------|------------|
| Condition Assessment | 2.5% | \$ 31,813.50 | 0% | \$ - | \$ 32,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 127,254 | 0% | \$ - | \$ 127,000 |
| Engr. During Construction | 5.0% | \$ 63,627 | 0% | \$ - | \$ 64,000 |
| Construction Mgt. | 5.0% | \$ 63,627 | 0% | \$ - | \$ 64,000 |

| | |
|---|---------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 1,559,000 |
|---|---------------------|

Notes:

1 Odor Control System based on DHK Engineers evaluation for Coastal Treatment Plant (4/17)

Regional Treatment Plant

Project Number 17536

Digester Gas Flare Replacement

Main Project Type

| | |
|-------------------------|---|
| New Facility | |
| Facility Rehabilitation | X |
| Major maintenance | |
| Asset Replacement | X |
| Special Study | |

Key Dates

Initial Estimate Jun-18
Estimate Update Jun-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|--|---|----|------------|------------|---|------------|--------------|
| Total Construction Cost | Demolition ¹ | 1 | LS | \$ 16,000 | \$ 16,000 | - | \$ 66,000 | \$ 82,000 |
| | Flares w/Base Equipment ¹ | 2 | Ea | \$ 364,590 | \$ 729,180 | - | \$ 297,820 | \$ 1,027,000 |
| | Misc. Aux. Equipment ¹ | 1 | LS | \$ 54,689 | \$ 54,689 | - | \$ 20,611 | \$ 75,000 |
| | Miscellaneous Piping/Valves ¹ | 1 | LS | \$ 36,459 | \$ 36,459 | - | \$ 14,941 | \$ 51,000 |
| | Electrical ¹ | 1 | LS | - | - | - | - | \$ 44,000 |
| | Instrumentation ¹ | 1 | LS | - | - | - | - | \$ 44,000 |
| | Source Testing ¹ | 1 | LS | - | - | - | - | \$ 25,000 |
| | Site Work | 1 | LS | - | - | - | - | \$ 50,000 |
| | | | | | \$ 836,328 | | | |

Subtotal

| | | | |
|--|-------|----------|------------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 378,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 67,000 |
| Project Contingency@ | 20% | | \$ 369,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|--------------|
| Original Estimate | 2018 Dollars | \$ 2,211,000 |
| Current Estimate | 2018 Dollars | \$ 2,211,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|------------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 2.5% | \$ 55,282 | 0% | \$ - | \$ 55,000 |
| Design | 10.0% | \$ 221,130 | 0% | \$ - | \$ 221,000 |
| Engr. During Construction | 5.0% | \$ 110,565 | 0% | \$ - | \$ 111,000 |
| Construction Mgt. | 5.0% | \$ 110,565 | 0% | \$ - | \$ 111,000 |

| | |
|---|---------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 2,709,000 |
|---|---------------------|

Notes:

- 1 Regional Treatment Plant Digester Gas Flare Upgrades/Modifications Technical Memorandum - DHK Engineers (9/13)
- 2 Siting needed to determine impact of site work

Regional Treatment Plant

Project Number 17538

Digested and Equalized Sludge Pump VFD Pump Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|-------------------------|------------------|---|----|---|---|---|---|----|---------|
| Total Construction Cost | Demolition | 1 | LS | - | - | - | - | \$ | 20,000 |
| | VFD | 1 | LS | - | - | - | - | \$ | 100,000 |
| | VFD Cabinet Door | 1 | LS | - | - | - | - | \$ | 24,000 |
| | Electrical | 1 | LS | - | - | - | - | \$ | 40,000 |

\$ -

Subtotal

\$ 184,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 55,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 239,000 |
| Current Estimate | 2018 Dollars | \$ | 239,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 23,920 | 0% | \$ - | \$ 24,000 |
| Engr. During Construction | 5.0% | \$ 11,960 | 0% | \$ - | \$ 12,000 |
| Construction Mgt. | 5.0% | \$ 11,960 | 0% | \$ - | \$ 12,000 |

| | | |
|---|-----------|----------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 287,000 |
|---|-----------|----------------|

Notes:

Regional Treatment Plant**Project Number** 17541**Emulsion Polymer Storage Tank Shade****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | |
|--------------------------------------|-----------------|---|----|---|---|---|---|----|---------|
| Total Construction Cost ¹ | Foundation | 1 | LS | - | - | - | - | \$ | 30,000 |
| | Shade Structure | 1 | LS | - | - | - | - | \$ | 80,000 |
| | Lighting | 1 | LS | - | - | - | - | \$ | 15,000 |
| Subtotal | | | | | | | | \$ | 125,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ 38,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 163,000 |
| Current Estimate | 2018 Dollars | \$ | 163,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 16,250 | 0% | \$ - | \$ 16,000 |
| Engr. During Construction | 5.0% | \$ 8,125 | 0% | \$ - | \$ 8,000 |
| Construction Mgt. | 5.0% | \$ 8,125 | 0% | \$ - | \$ 8,000 |

Total Project Cost (Present Value in 2018 Dollars) \$ 195,000

Notes:

1 Based on construction cost of hypochlorite tank shade at J. B. Latham Treatment Plant

Regional Treatment Plant

Project Number 17720

AWT Sodium Hypochlorite Pumps and Instrument Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost³

| | | | | | | | | |
|-------------------------------------|---|----|--|--|--|--|----|--------|
| Remove existing AWT Hypochlorite Pu | 1 | LS | | | | | \$ | 10,000 |
| Install new AWT Hypochlorite pumps | 1 | LS | | | | | \$ | 85,000 |
| Electrical and Instrumentation | 1 | LS | | | | | \$ | 40,000 |
| Other | 1 | LS | | | | | \$ | 25,000 |

Subtotal

\$ 160,000

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

0.00%

\$ -

Project Contingency@

30%

\$ 12,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | | |
|-------------------|--------------|--|----|---------|
| Original Estimate | 2018 Dollars | | \$ | 172,000 |
| Current Estimate | 2018 Dollars | | \$ | 172,000 |

Total Main Project Cost (CAMP Report Year)

| Project Phases Cost | Rate ² | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------------------|-----------|-------------|----------|---------|-----------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 17,200 | 0% | \$ - | \$ - | \$ 17,000 |
| Engr. During Construction | 5.0% | \$ 8,600 | 0% | \$ - | \$ - | \$ 9,000 |
| Construction Mgt. | 5.0% | \$ 8,600 | 0% | \$ - | \$ - | \$ 9,000 |

Total Project Cost (Present Value in 2018 Dollars)

\$ 206,000

Notes:

1 Cost estimate provided by RTP Sodium Hypochlorite 2014 Project Bid

Regional Treatment Plant

Project Number 17721

AWT No.2 Contact Basin Upgrades

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--------------------------------------|---------------------------|---|----|-----------|-----------|-----|----------|------------|
| Total Construction Cost ¹ | CCT Sluice Gate | 1 | EA | \$ 11,000 | \$ 11,000 | 40% | \$ 4,400 | \$ 15,000 |
| | CCT Sluice Gate | 1 | EA | \$ 9,500 | \$ 9,500 | 40% | \$ 3,800 | \$ 13,000 |
| | Replace Chem Clean System | 1 | LS | | \$ - | | | \$ 15,000 |
| | Structural Repairs | 1 | LS | | \$ - | | | \$ 15,000 |
| | Replace Fiberglass Covers | 1 | LS | | \$ - | | | \$ 45,000 |
| Subtotal | | | | | | | | \$ 104,000 |

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

27% \$ 28,000

Shipping Rate

0% included

Sale Tax

8.00% \$ 2,000

Project Contingency@

30% \$ 40,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 173,000 |
| Current Estimate | 2018 Dollars | \$ 173,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|--------------|-------------|----------|-----------|
| Condition Assessment | 15.0% | \$ 26,001.11 | 0% \$ - | \$ - | \$ 26,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | |
| Design | 15.0% | \$ 26,001 | 0% \$ - | \$ - | \$ 26,000 |
| Engr. During Construction | 5.0% | \$ 8,667 | 0% \$ - | \$ - | \$ 9,000 |
| Construction Mgt. | 5.0% | \$ 8,667 | 0% \$ - | \$ - | \$ 9,000 |

| | |
|---|-------------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 243,000 |
|---|-------------------|

Notes:

1 Sluice gate quotation provided by Whipps.

Regional Treatment Plant
Project Number
AWT Building Rehabilitation

17722

Main Project Type

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
 Estimate Update Jul-18

Prepared By RYG

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost²

| | | | | | | | |
|---|---|----|----|---|--|----|---------|
| AWT Building Roof Reconstruction ¹ | 1 | LS | \$ | - | | \$ | 121,000 |
| Replace Single Doors (5) | 1 | LS | \$ | - | | \$ | 43,000 |
| Replace Double Doors (2) | 1 | LS | \$ | - | | \$ | 24,000 |
| Replace Louver (7) | 1 | LS | \$ | - | | \$ | 70,000 |
| Replace Lighting and Power Receptacle | 1 | LS | \$ | - | | \$ | 20,000 |
| Replace Skylights (3) | 1 | LS | \$ | - | | \$ | 30,000 |

Subtotal

\$ 308,000

General Conditions, Contractor Overhead and Profit,
 and Bonds and Insurance @

0%

\$ -

Shipping Rate

0%

included

Sale Tax

8.00%

\$ -

Project Contingency@

30%

\$ 92,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 400,000 |
| Current Estimate | 2018 Dollars | \$ | 400,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Minimum | Total |
|---------------------------|-------|-----------|-------------|----------|---------|-----------|
| Condition Assessment | 2.5% | \$ 10,004 | 0% | \$ - | \$ - | \$ 10,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - | |
| Design | 10.0% | \$ 40,014 | 0% | \$ - | \$ - | \$ 40,000 |
| Engr. During Construction | 5.0% | \$ 20,007 | 0% | \$ - | \$ - | \$ 20,000 |
| Construction Mgt. | 7.5% | \$ 30,011 | 0% | \$ - | \$ - | \$ 30,000 |

| | | | |
|---|--|----|---------|
| Total Project Cost (Present Value in 2018 Dollars) | | \$ | 500,000 |
|---|--|----|---------|

Notes:

- 1 Cost estimate provided by CH2MHill Facility Plan
- 2 Architectural hardware costs provided by Hazen & Sawyer.

Regional Treatment Plant**Project Number** 17723**AWT No.2 Applied Water Pump Replacement****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

Total Construction Cost

| | | | | | | | |
|---------------------------------------|---|----|--|--|----|---|------------|
| Remove existing AWT Applied Water F | 1 | LS | | | \$ | - | \$ 15,000 |
| Install new Applied Water Pump | 1 | LS | | | \$ | - | \$ 110,000 |
| Applied Water Pump Bay Structural Irr | 1 | LS | | | \$ | - | \$ 10,000 |
| Applied Water Pump Electrical Modifi | 1 | LS | | | \$ | - | \$ 1,000 |
| Subtotal | | | | | | | \$ 136,000 |

General Conditions. Contractor Overhead and Profit,
 and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ 41,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 177,000 |
| Current Estimate | 2018 Dollars | \$ 177,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|-------|-----------|-------------|----------|------------|
| Condition Assessment | 0.0% | \$ - | 0% \$ - | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | |
| Design | 10.0% | \$ 17,680 | 0% \$ - | \$ - | \$ 18,000 |
| Engr. During Construction | 5.0% | \$ 8,840 | 0% \$ - | \$ - | \$ 9,000 |
| Construction Mgt. | 5.0% | \$ 8,840 | 0% \$ - | \$ - | \$ 9,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 212,000 |

Notes:

Regional Treatment Plant**Project Number** 17725**AWT SCADA System Upgrade****Main Project Type**

New Facility
 Facility Rehabilitation
 Major maintenance
 Asset Replacement
 Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
 Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|--|-------|-------|----|-----------|-----------|-----|-----------|-----------|
| Total Construction Cost | PLC's | 1 | EA | \$ 40,000 | \$ 40,000 | 75% | \$ 30,000 | \$ 70,000 |
| | | | | | | | | \$ - |
| Subtotal | | | | | | | | \$ 70,000 |
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | | 27% | | | | | | \$ 19,000 |
| Shipping Rate | | 0% | | | | | | included |
| Sale Tax | | 8.00% | | | | | | \$ 3,000 |
| Project Contingency@ | | 30% | | | | | | \$ 28,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 120,000 |
| Current Estimate | 2018 Dollars | \$ 120,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 2.5% | \$ 2,993 | 0% | \$ - | \$ 3,000 |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | \$ - |
| Design | 10.0% | \$ 11,973 | 0% | \$ - | \$ 12,000 |
| Engr. During Construction | 5.0% | \$ 5,987 | 0% | \$ - | \$ 6,000 |
| Construction Mgt. | 5.0% | \$ 5,987 | 0% | \$ - | \$ 6,000 |

| | |
|---|------------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ 147,000 |
|---|------------|

Notes:

Regional Treatment Plant

Project Number 17726

AWT No.2 Filter Sand Replacement and Underdrain Repair

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | | | | | |
|-------------------------|-------------------------------------|---|----|----|----|----|---|----|----|---|----|---------|
| Total Construction Cost | Media and Support Mesh ¹ | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 175,000 |
| | Other | 1 | LS | \$ | - | \$ | - | 0% | \$ | - | \$ | 50,000 |
| | | | | | \$ | | - | | \$ | - | \$ | - |
| Subtotal | | | | | | | | | | | \$ | 225,000 |

General Conditions, Contractor Overhead and Profit,
and Bonds and Insurance @

0% \$ -

Shipping Rate

0% included

Sale Tax

8.00% \$ -

Project Contingency@

30% \$ 68,000

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 293,000 |
| Current Estimate | 2018 Dollars | \$ | 293,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---------------------------|-------|-----------|-------------|----------|-----------|
| Condition Assessment | 2.5% | \$ 7,313 | 0% \$ | - \$ | \$ 7,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ | - \$ | |
| Design | 10.0% | \$ 29,250 | 0% \$ | - \$ | \$ 29,000 |
| Engr. During Construction | 5.0% | \$ 14,625 | 0% \$ | - \$ | \$ 15,000 |
| Construction Mgt. | 5.0% | \$ 14,625 | 0% \$ | - \$ | \$ 15,000 |

| | | |
|---|----|---------|
| Total Project Cost (Present Value in 2018 Dollars) | \$ | 358,000 |
|---|----|---------|

Notes:

- 1 Based on Carollo/Evoqua estimates for current projects

Regional Treatment Plant

Project Number 17727

Motor Control Center L Replacement

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Jul-18
Estimate Update Jul-18

Prepared By BP

| Main Project Cost | Quantity | | Material Cost | | Labor Cost | | Total Cost |
|-------------------|----------|-------|---------------|-------|------------|-------|------------|
| | No. | Units | Unit Cost | Total | % of Mat'l | Total | |

Project Task Elements

| | | | | | | | | |
|-------------------------|-----------------------------------|---|----|-----------|-----------|-----|-----------|------------|
| Total Construction Cost | Motor Control Center ¹ | 1 | Ea | \$ 96,000 | \$ 96,000 | 40% | \$ 38,400 | \$ 134,000 |
| | Wiring | 1 | LS | - | - | - | - | \$ 30,000 |
| | Demolition | 1 | LS | - | - | - | - | \$ 15,000 |
| | Temporary Power Supply | 1 | LS | - | - | - | - | \$ 25,000 |
| | Electrical Study | 1 | LS | - | - | - | - | \$ 20,000 |
| | | | | | \$ 96,000 | | | |

Subtotal

| | | | |
|--|-------|----------|-----------|
| General Conditions. Contractor Overhead and Profit, and Bonds and Insurance @ | 27% | | \$ 36,000 |
| Shipping Rate | 0% | included | |
| Sale Tax | 8.00% | | \$ 8,000 |
| Project Contingency@ | 30% | | \$ 81,000 |

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | |
|-------------------|--------------|------------|
| Original Estimate | 2018 Dollars | \$ 349,000 |
| Current Estimate | 2018 Dollars | \$ 349,000 |

| Project Phases Cost | | Amount | Contingency | Subtotal | Total |
|---|-------|-------------|-------------|----------|-------------------|
| Condition Assessment | 2.5% | \$ 8,721.96 | 0% \$ - | \$ - | \$ 9,000 |
| Conceptual Study | 0.0% | \$ - | 0% \$ - | \$ - | \$ - |
| Design | 10.0% | \$ 34,888 | 0% \$ - | \$ - | \$ 35,000 |
| Engr. During Construction | 5.0% | \$ 17,444 | 0% \$ - | \$ - | \$ 17,000 |
| Construction Mgt. | 7.5% | \$ 26,166 | 0% \$ - | \$ - | \$ 26,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 436,000 |

Notes:

1 Based on Review with Maddox Electric.

Regional Treatment Plant

Project Number 17728

AWT No.2 Water Quality Instrumentation

Main Project Type

New Facility
Facility Rehabilitation
Major maintenance
Asset Replacement
Special Study

| |
|---|
| |
| X |
| |
| X |
| |

Key Dates

Initial Estimate Aug-18
Estimate Update Aug-18

Prepared By BP

| Main Project Cost | Quantity | Material Cost | Labor Cost | Total Cost |
|-------------------|-----------|---------------|------------------|------------|
| | No. Units | Unit Cost | % of Mat'l Total | |

Project Task Elements

| | | | | | | | | | | |
|-------------------------|--|---|----|----|----|----|---|-----|----|--------|
| Total Construction Cost | Turbidimeters (2) ¹ | 1 | LS | - | - | - | - | - | \$ | 40,000 |
| | Miscellaneous Piping /Valves | 1 | LS | \$ | - | \$ | - | 25% | \$ | 10,000 |
| | Chlorine Residual Analyzers (2) ¹ | 1 | LS | - | - | - | - | - | \$ | 40,000 |
| | | | | | \$ | - | - | \$ | - | - |
| Subtotal | | | | | | | | | \$ | 90,000 |

General Conditions. Contractor Overhead and Profit,
and Bonds and Insurance @

0%

Shipping Rate

0%

Sale Tax

8.00%

Project Contingency@

30%

Total Main Project Cost (Year of Estimate or Estimate Update)

| | | | |
|-------------------|--------------|----|---------|
| Original Estimate | 2018 Dollars | \$ | 117,000 |
| Current Estimate | 2018 Dollars | \$ | 117,000 |

| Project Phases Cost | Rate | Amount | Contingency | Subtotal | Total |
|---|------|----------|-------------|----------|-------------------|
| Condition Assessment | 0.0% | \$ - | 0% | \$ - | |
| Conceptual Study | 0.0% | \$ - | 0% | \$ - | |
| Design | 5.0% | \$ 5,850 | 0% | \$ - | \$ 6,000 |
| Engr. During Construction | 5.0% | \$ 5,850 | 0% | \$ - | \$ 6,000 |
| Construction Mgt. | 5.0% | \$ 5,850 | 0% | \$ - | \$ 6,000 |
| Total Project Cost (Present Value in 2018 Dollars) | | | | | \$ 135,000 |

Notes:

1 Cost Based on Bids for the Regional Treatment Plant Miscellaneous Improvements 2016 Project

Appendix L
Effluent Transmission Main Ten Year Plan

DESCRIPTION

The Effluent Transmission Main (ETM) is located predominantly along the route of Aliso Creek. The ETM begins at the Irvine Ranch Water District (IRWD) Los Alisos Water Reclamation Plant on Muirlands Road in the City of Lake Forest and continues to the Coastal Treatment Plant within the County of Orange Aliso and Wood Canyons Wilderness Park. The ETM conveys treated secondary effluent from the IRWD Los Alisos Water Reclamation Plant, the El Toro Water District Reclamation Plant, the SOCWA Joint Regional Treatment Plant and the SOCWA Coastal Treatment Plant to the Aliso Creek Ocean Outfall. In 2005 the Effluent Transmission Main also began carrying reverse osmosis brine discharges from the IRWD Irvine Desalter and the Shallow Groundwater Treatment Unit.

The ETM was constructed during the period from 1978 through 1979. The pipeline consists of four separate reaches: A, B-C, D and E. The four reaches are described in Table L.1. In 2000 the Aliso Water Management Agency (AWMA) transferred ownership of Reach A to the Los Alisos Water District (which was subsequently merged into IRWD). Reach A is not addressed further in this version of the SOCWA Ten Year Plan as it is owned and managed completely by IRWD.

Figure L.1 shows the location of the Reaches B-C, D, and E. The percentage of capacity ownership for each agency is shown in Table L.2. The ownership percentages were set forth in the 'Memorandum of Understanding Regarding Allocation of Costs, Grant

Funds, and Use of Facilities Funded by Project Committee 2' from November 1989. The Effluent Transmission Main was originally identified as part of the Project Committee 2 for the Aliso Water Management Agency (AWMA) as opposed to the Southeast Regional Reclamation Authority (SERRA) Project Committee 2 covering the J. B. Latham Treatment Plant. The AWMA Project Committee 2 was subsequently changed to Project Committee 21.

Table L.1
Effluent Transmission Main – Physical Description

| REACH | DIAMETER (INCHES) | LENGTH (FEET) | MATERIAL | PEAK FLOW CAPACITY (MGD) |
|--------------|----------------------|------------------|--------------------------------------|--------------------------------|
| A (Pressure) | 21 | 1,001 | Reinforced Plastic Mortar Pipe | 7.5 |
| B (Pressure) | 27 | 4,266 | Reinforced Plastic Mortar Pipe | 15.0 |
| C (Gravity) | 24 | 5,100 | Reinforced Plastic Mortar Pipe | 15.0 |
| D (Gravity) | 24 | 18,339 | Reinforced Concrete Pipe | 15.0 |
| E (Gravity) | 39 | 9,576 | Reinforced Concrete Pipe | 32.0 |
| E (Gravity) | 36 | 7,544 | Reinforced Concrete Pipe | 32.0 |

Table L.2
Effluent Transmission Main – Agency Ownership By Percentage

| REACH | EL TORO WATER DISTRICT | IRVINE RANCH WATER DISTRICT | MOULTON NIGUEL WATER DISTRICT |
|-------|---------------------------|--------------------------------|----------------------------------|
| B | 50% | 50% | 0% |
| C | 50% | 50% | 0% |
| D | 50% | 50% | 0% |
| E | 23.29% | 23.29% | 53.42% |

UTILIZATION AND AGREEMENT LIFE

The Effluent Transmission Main has remained largely unchanged since its original construction in 1979. Annual utilization has largely decreased through the life of the system as the amount of water reclamation from the upstream treatment plant increased. This trend was not significantly impacted by the introduction

SOCWA Ten Year Capital Improvement Program
 August 5, 2019

of brine flows from IRWD facilities in the early 2000's.

The agreement for Project Committee 2 (renamed Project Committee 21) dates to 1975. This agreement established a 50-year term which will end in 2025. There have been no plans regarding utilization of the pipeline or renewal of the agreement that have an impact on the current Ten Year Plan. The projects

identified for the ETM in the Ten Year Plan are largely limited to the following:

- Life expectancy of reinforced plastic mortar (Techite) piping
- Replacement of pipeline appurtenances
- Erosion protection

TECHITE LIFE EXPECTANCY

Reaches A and B-C were constructed with a type of reinforced plastic mortar pipe that was commonly used in the 1970's. This fiberglass material had two standard suppliers and has been typically identified by the trade name "Techite". Many concerns have been raised about the structural integrity and the anticipated life of Techite due to failures experienced throughout the United States. These concerns were exacerbated after a failure of a pipe section in June, 2007, followed by a rupture in ETM caused by an independent contractor in September, 2007. Both incidents happened within Reach B inside the boundaries of the Laguna Woods Golf Course.

As part of the follow-up regulatory action to the discharge from the June 2007 break in Reach B, the Regional Water Quality Control Board (RWQCB) issued a Notice of Violation (NOV). The NOV required SOCWA to prepare a Condition Assessment and an Implementation Plan for Reaches B and C. CH2MHill was retained to prepare the Condition Assessment in November, 2007. The draft Condition Assessment has been completed. The key findings of that report

are as follows:

- The Techite pipe may be very vulnerable due to inconsistent quality control in the manufacture of the pipe. The development of small cracks within the pipe can result in the infiltration of water into the core of the wall. This causes a steady deterioration of the pipe material.
- Pictures taken of the 2000 and 2007 failures of the Techite pipe show a 'tearing' of the pipe wall which is consistent with the industry experience with Techite pipe failures.
- All of the major failures of the pipeline have occurred within Reach B. This section of pressure pipe may be exposed to a combination of conditions (including transient surges from upstream lift stations and groundwater mounding) that can accelerate the deterioration of the pipe.
- There have been no recorded failures within the gravity section Reach C.
- It was recommended that SOCWA proceed with the replacement of Reach B according to a schedule to be set as part of the Implementation Plan.

The draft Implementation Plan was completed by Kennedy/Jenks in November, 2009. The recommendation of the plan was to implement a series of monitoring manholes through the golf course section of Reach B.

Findings of previous studies were updated in an evaluation prepared by Tetra Tech in 2017. This study raised a series of

issues regarding proposed monitoring within the Reaches B and C:

- The most application methods of pipeline monitoring are using acoustical instrumentation and closed-circuit television (CCTV)
- Neither of these techniques are likely to capture the development of small cracks likely to initiate failure of the Techite pipe
- The construction of the manholes in Reaches B and C might itself be a long-term source of failures by disrupting the existing pipe material.

The 2017 Tetra Tech study updated a prior 2003 analysis of the potential replacement of Reaches B and C. This analysis focused on the use of open cut technology to replace the pipelines. The costs from this evaluation serve as the basis for the proposed project costs identified in Table L.3. The 2017 study also identified the potential costs for relining the existing Techite pipelines to serve as back-up pipelines to the new pipelines installed through the open-cut method. These relining costs are not included in the current version of the Ten Year Plan.

The projects for the replacement of Reaches B and C are identified in the current plan as beginning in Year 7 (2025/26). This allows the replacement of the pipelines to be addressed as part of the renewal of the Project Committee 21 Agreement.

REINFORCED CONCRETE PIPING

Reaches D and E of the ETM are constructed of reinforced concrete piping (RCP). The expected life of the RCP is 75 years so the replacement of these assets is not anticipated during the span of the current Ten Year Plan. However, an analysis developed by Tetra Tech in 2018 identified options for pipeline access and condition assessment. This project entails the construction of eight access manholes followed by CCTV inspection. The cost for this condition assessment program is included in Table L.3.

REPLACEMENT OF PIPELINE APPURTENANCES

The ETM system has relatively few appurtenances. These items include the following:

- Vault between Reaches B and C
- Limited number of manholes
- Combination air valves.

The Reach B/C vault was modified in 2012 as part of County of Orange project for the regrading of Moulton Parkway. This involved the replacement of the vault lid and the subsequent burial of the vault. The vault can no longer be accessed.

Reach D of the ETM was installed with four 3-inch combination air valves. The downstream Reach E was equipped with five 4-inch combination valves. The location of these valves is shown in Figure

E.2. The combination air valves for Reaches B and C are not addressed in this version of the Ten Year Plan as they are currently maintained by the El Toro Water District. The replacement of these combination air valves with lighter PVC valves was projected as part of the SOCWA Fiscal Year 2017/18 capital improvement budget. However, the design reconnaissance by Tetra Tech identified a series of issues including missing isolation valves and broken valve bases. The cost of valve replacement was recalculated; the modified projects are identified in Table L.3.

EROSION PROTECTION

The protection of the ETM against erosion along Aliso Creek has been an ongoing issue. A major slope protection project was undertaken in 1998 along the slope adjacent to Alicia Parkway. An exposed creek crossing in the Pecten Reef section of the County of Orange Aliso and Wood Canyons Wilderness Park in Reach D of the ETM was protected by rip rap addition in the autumn of 2001 (as shown in Figure L.3).

The ETM crosses beneath Aliso Creek in four locations. These locations are shown in Figure L.1. The down cutting of Aliso Creek exposes the concrete encasement of the crossings. More severe erosion can undermine the concrete encasements. Two of these projects have been identified for protection projects: the Trail Bridge Crossing and the Pecten Reef Crossing. These protection projects were the subject of preliminary designs by TetraTech in 2014. The Trail Bridge Crossing Protection Project is currently under design. The budgeting of the

construction of this project is identified in Table L.3. The future protection project for the Pecten Reef Crossing is also identified in Table L.3. The crossing near the Aliso Creek Road Bridge is believed to be well protected by the existing creek grade control structure. The crossing adjacent to the Coastal Treatment Plant should be monitored for changing conditions.

The ETM is also potentially impacted by the stability of the embankment that runs parallel to the pipeline alignment. Potential erosion risks are most significant in the area between Alicia Parkway and the Coastal Treatment Plant. This area is contained within the County of Orange Aliso and Wood Canyon Wilderness Park. The area that appears to pose the most significant risk is at the confluence of Aliso and Sulphur Creeks. A portion of this area was protected by an emergency rip-rap project after the winter storms of 1997. The remainder of the area was addressed in an evaluation by Tetra Tech in 2014. The proposed project cost from this evaluation is included in Table L.3. The remaining portions of the alignment should be subject to ongoing inspection to monitor for changing conditions leading to potential hazards.

TEN YEAR PLAN PROJECTS

Table L.3 summarizes the proposed capital improvement projects for the Effluent Transmission Main. The presented costs do not include the SOCWA administration costs. These costs are reflected in the main Ten Year Plan presentation.

Table L.3
Capital Improvement Projects for the Effluent Transmission Main

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) ETWD | Project cost (adjusted) IRWD | Project cost (adjusted) MNWD |
|--------------------------|--------------|---|------------------|---------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 1 (19/20) | | | | | | | |
| | 3105-000 | Air Valve Replacement Design and Permitting (Reach D) | \$64,004 | \$64,004 | \$32,002 | \$32,002 | \$0 |
| | 3106-000 | Air Valve Replacement Design and Permitting (Reach E) | \$103,674 | \$103,674 | \$24,146 | \$24,146 | \$55,383 |
| | 3101-000 | Trail Bridge Crossing - Design and Permitting (Reach D) | \$161,987 | \$161,987 | \$80,994 | \$80,994 | \$0 |
| TOTALS | | | \$329,665 | \$329,665 | \$137,141 | \$137,141 | \$55,383 |
| YEAR 2 (20/21) | | | | | | | |
| | 3109-000 | Trail Bridge Crossing Protection Construction Phase I (Reach D) | \$104,635 | \$104,635 | \$52,318 | \$52,318 | \$0 |
| | 3107-000 | Air Valve Replacement Construction (Reach D) | \$64,004 | \$64,004 | \$32,002 | \$32,002 | \$0 |
| | 3108-000 | Air Valve Replacement Construction (Reach E) | \$103,674 | \$103,674 | \$24,146 | \$24,146 | \$55,383 |
| TOTALS | | | \$272,313 | \$272,313 | \$108,465 | \$108,465 | \$55,383 |

Table L.3 (continued)
Capital Improvement Projects for the Effluent Transmission Main

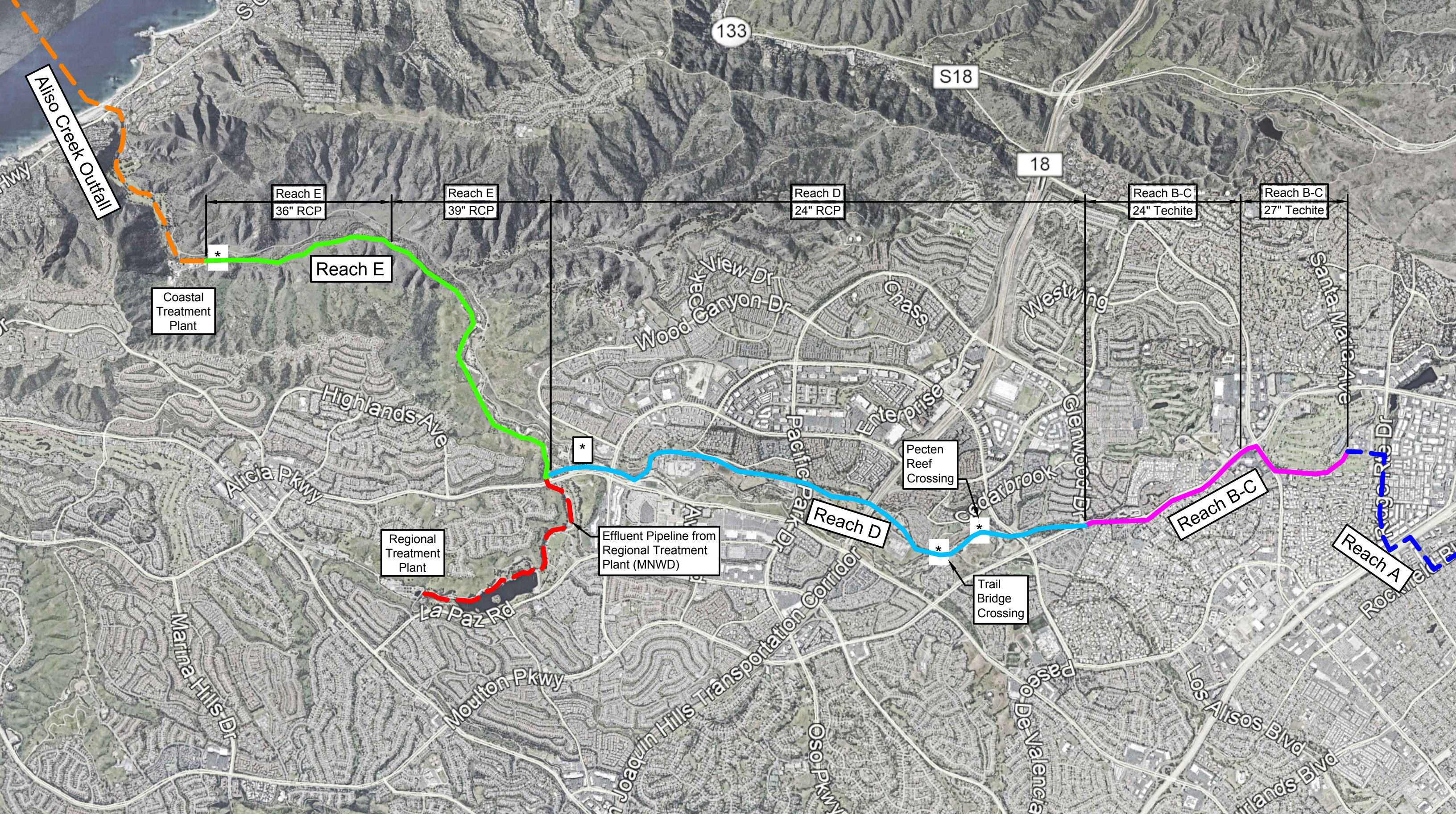
| Project date | Project code | Capital Projects | Project cost | Project cost Inflation adjusted | Project cost (adjusted) ETWD | Project cost (adjusted) IRWD | Project cost (adjusted) MNWD |
|-------------------------|--------------|--|--------------------|---------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 3 ('21/'22) | | | | | | | |
| | 21311 | Trail Bridge Crossing Protection Construction Phase II (Reach D) | \$918,461 | \$918,461 | \$459,231 | \$459,231 | \$0 |
| TOTALS | | | \$918,461 | \$918,461 | \$459,231 | \$459,231 | \$0 |
| YEAR 5 ('23/'24) | | | | | | | |
| | 21312 | Pecten Reef Crossing Protection Design (Reach D) | \$300,000 | \$337,653 | \$168,826 | \$168,826 | \$0 |
| TOTALS | | | \$300,000 | \$337,653 | \$168,826 | \$168,826 | \$0 |
| YEAR 6 ('24/'25) | | | | | | | |
| | 21313 | Pecten Reef Crossing Protection Construction (Reach D) | \$1,200,000 | \$1,391,129 | \$695,564 | \$695,564 | \$0 |
| | 21314 | Reach D CCTV Inspection (Reach D) | \$335,000 | \$388,357 | \$194,178 | \$194,178 | \$0 |
| TOTALS | | | \$1,535,000 | \$1,779,486 | \$889,743 | \$889,743 | \$0 |

Table L.3 (continued)
Capital Improvement Projects for the Effluent Transmission Main

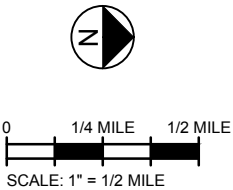
| Project date | Project code | Capital Projects | Project cost | Project cost Inflation adjusted | Project cost (adjusted) ETWD | Project cost (adjusted) IRWD | Project cost (adjusted) MNWD |
|--------------------------|--------------|--|--------------------|---------------------------------|------------------------------|------------------------------|------------------------------|
| YEAR 7 (25/26) | | | | | | | |
| | 21111 | Reach B Replacement Design (Reach B) | \$350,000 | \$417,918 | \$208,959 | \$208,959 | \$0 |
| | 21411 | Reach E CCTV Inspection (Reach E) | \$335,000 | \$400,008 | \$93,162 | \$93,162 | \$213,684 |
| | | TOTALS | \$685,000 | \$817,926 | \$302,121 | \$302,121 | \$213,684 |
| YEAR 8 (26/27) | | | | | | | |
| | 21112 | Reach B Replacement (Reach B) | \$2,370,000 | \$2,914,801 | \$1,457,401 | \$1,457,401 | \$0 |
| | 21412 | Aliso Sulfur Creek Confluence Protection (Reach E) | \$1,293,000 | \$1,590,227 | \$370,364 | \$370,364 | \$849,499 |
| | | TOTALS | \$3,663,000 | \$4,505,028 | \$1,827,764 | \$1,827,764 | \$849,499 |
| YEAR 9 (27/28) | | | | | | | |
| | 21211 | Reach C Replacement Design (Reach C) | \$219,000 | \$277,423 | \$138,711 | \$138,711 | \$0 |
| | | TOTALS | \$219,000 | \$277,423 | \$138,711 | \$138,711 | \$0 |

Table L.3 (continued)
Capital Improvement Projects for the Effluent Transmission Main

| Project date | Project code | Capital Projects | Project cost | Project cost Inflation adjusted | Project cost (adjusted) ETWD | Project cost (adjusted) IRWD | Project cost (adjusted) MNWD |
|-----------------------------|--------------|-------------------------------|--------------------|---------------------------------|------------------------------|------------------------------|------------------------------|
| | | | | | | | |
| YEAR 10 (‘28/‘29) | | | | | | | |
| | 21212 | Reach C Replacement (Reach C) | \$2,050,000 | \$2,674,785 | \$1,337,393 | \$1,337,393 | \$0 |
| | | TOTALS | \$2,050,000 | \$2,674,785 | \$1,337,393 | \$1,337,393 | \$0 |



Prepared by:



Legend
 * Effluent Transmission Main Crossing of Aliso Creek

Figure L.1
 ETM Reaches B, C, D and E



Prepared by:

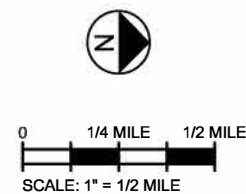


Figure L.2
ETM Air Valve Locations
Reach D and E

Appendix M
Aliso Creek Ocean Outfall Ten Year Plan

BACKGROUND

The Aliso Creek Outfall receives secondary effluent discharged from the Irvine Ranch Water District (IRWD) Los Alisos Water Reclamation Plant, the El Toro Water District Reclamation Plant, the SOCWA Regional Treatment Plant and the SOCWA Coastal Treatment Plant via the Effluent Transmission Main (ETM). The Aliso Creek Outfall also discharges reverse osmosis brine from the IRWD Irvine Desalter and the Shallow Groundwater Treatment Unit.

The Outfall was constructed during the period from December 1977 through July 1978 with 8,600 feet of 48-inch double rubber gasket reinforced concrete pipe. The land portion of the outfall begins at the Coastal Treatment Plant (CTP) discharge connection to the Effluent Transmission Main (ETM). The land outfall is buried beneath Aliso Creek through the Aliso Creek Golf Resort. The ocean portion of the outfall begins at the metering manhole in a parking lot north of Pacific Coast Highway and ends approximately 8,000 feet from the beach in 184 feet of water. The last 1,200 feet of the outfall contains approximately two hundred 2-inch diameter diffuser ports. (one hundred ports on each side of the outfall). These ports are spaced in 12 feet intervals on alternating sides. The diffuser ports are located approximately 6-inches above the centerline of the 48-inch pipe. The location of the Aliso Creek Outfall is shown in Figure M.1

The Outfall has a peak hourly hydraulic design capacity of approximately 50 million gallons per day (mgd) at high tide. The current annual average discharge

through the outfall is approximately 10 million gallons per day.

OCEAN OUTFALL SEALS

The Aliso Creek Ocean Outfall has undergone periodic analysis since the early 1990's related to damage to the Outfall. After a series of heavy rainstorms in February, 1992, an inspection found five circumferential breaks in five sections of the Outfall pipe. Five fabricated seals made from 12-inch wide stainless steel bands with neoprene foam rubber gaskets were installed. These fabricated seals were considered to be a temporary repair.

A consultant report titled "Preliminary Design of an Improved Repair of the Near Shore Section of the AWMA Ocean Outfall and Planning for Future Relocation of the Outfall" completed in early 2002 considered alternatives for the replacement. This analysis considered alternatives including the following:

- Replacement of the temporary internal seals.
- Slip lining the damaged portion of the outfall.
- Replacement and realignment of the damaged section of the outfall.

SOCWA proceeded with the installation of the replacement seals in 2003. A schematic of a typical seal replacement is shown in Figure M.2.

The seals are scheduled to be replaced in Fiscal Year 2019/2020 through a previously budgeted project. The expected life of the replacement seals

ranges from 10 to 20 years. SOCWA will continue to contract a bi-annual internal inspection of the outfall.

For planning purposes, the replacement of the seals is estimated at 15 years of life. The Ten Year Plan includes a prospective replacement project in Year 15 (Fiscal Year 2033/2034).

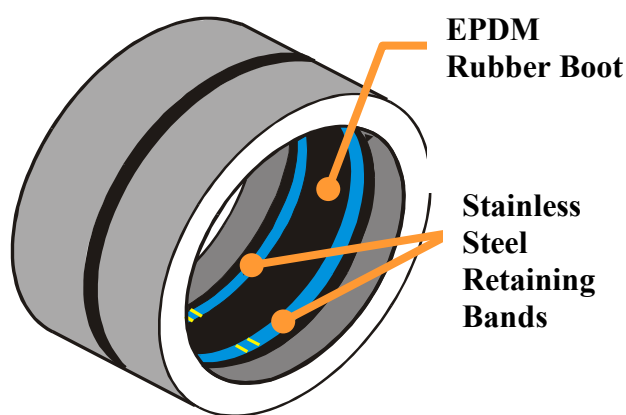


Figure M.2 Typical Detail of Boot Seal

DIFFUSER MODIFICATIONS

SOCWA retained Michael Baker Inc. (MBI) in 2018 to conduct an updated dilution modeling analysis and report for the Aliso Creek Ocean Outfall. The goals of the ACOO study were as follows:

- Assess the function of the outfall diffuser systems.
- Determine current outfall dilution capacity under varying flow volumes.

The study found that the minimum initial dilution is well above 200:1, with the smallest value being 234:1 at maximum discharge of 35 mgd (the current capacity

set forth under the NPDES permit). The analysis concluded that the ACOO has a well performing diffuser due primarily to its depth (170 feet at the inshore end of the diffuser and 195 feet at the offshore end).

The MBI evaluation did not identify any needed modifications to the diffuser system for the Aliso Creek Ocean Outfall.

INSPECTIONS AND ASSESSMENTS

The Aliso Creek Ocean Outfall undergoes an external inspection with a remotely operated vehicle every three to four years. The external inspection is typically followed by a port cleaning project. The outfall diffuser ports tend to become partially obstructed over time by plant growth and/or shifting sands. The external inspections and the port cleanings have historically been included in the SOCWA Operations budget.

The Ocean Outfall has an access point through a manhole located in the County of Orange Aliso Beach Inland Parking Lot. This manhole is used by contract dive team doing an internal inspection of the outfall biannually. The dive team travels from the manhole down to the surf zone where the outfall was cracked in 1992. The dive team performs the following tasks:

- Check seal condition.
- Tighten seals as necessary.
- Measure spacing in pipe joints to evaluate potential movement of the outfall piping.

The internal inspections have historically been included in the SOCWA Operations budget.

Ocean outfalls are operated under leases with the California State Lands Commission. These leases come up for periodic renewal. In recent lease renewals the Lands Commission has been presenting agencies with a lease requirement to conduct internal and external inspections. Most agencies have conducted periodic external inspections; however, there is little available technology to allow remote inspections of the interiors of the submerged or partially submerged outfalls. The Aliso Ocean Outfall does have the ability for internal access. However, this access has not been used for full internal inspection; the only covered area is between the access manhole and the surf zone. It is not known if this extent of internal inspection will be acceptable to the State Lands Commission. This Ten Year Plan does not include any additional projects related to internal inspection.

SAMPLING AND METERING

The same manhole located in the County of Orange Aliso Beach Inland Parking Lot is also the point of sampling for conformance to NPDES requirement. Sample is pumped from a lance in a tee flange to a sampler unit located in a small masonry building located adjacent to the Parking Lot. This sample system has been prone to periodic disruptions due to the pump suction conditions. A project is included in Year 1 (2019/2020) to address this

condition.

The NPDES permit for the Aliso Creek Ocean Outfall allows the metering of the outfall discharge to be done as a totalization of the upstream flow meters. The last couple of permit negotiations have raised the potential need for a dedicated flow meter for the outfall (similar to the requirement for the San Juan Creek Ocean Outfall). In 2012 Tetra Tech was retained to develop an option for a new meter structure on the Outfall. This structure would also be located in the County of Orange Aliso Beach Inland Parking Lot. This project has never been budgeted as the NPDES permit conditions have not been changed. The Ten Year Plan includes projects to update the metering concept, design the system, and construct the meter station in Years 4 (2022/2023), 6 (2024/2025) and 7 (2025/2026) respectively. The design and construction phases will ultimately be budgeted only to meet a regulatory requirement.

LAND OUTFALL

A significant portion of the Land Outfall lies within the course of Aliso Creek. This section is within Ben Brown's Golf Course (The Ranch at Laguna Beach) as shown in Figure M.1. This routing poses potential exposures to scour and rock fall. The potential relocation of the Land Outfall was considered by SOCWA staff and the SOCWA Engineering Committee in 2008 - 2009. There are two reasons the outfall location was reviewed:

- The planned modification of the Aliso Creek Golf Resort by the Athens

Group (the owner of the resort at that time) with integral rehabilitation of the Aliso Creek watershed within the resort boundaries).

presented in Table M.1 do not include administration costs. These costs are added to the costs presented in Chapter 8 of the Ten Year Plan.

- Potential risks to the Land Outfall due to storm event scour within Aliso Creek.

A consultant prepared a white paper regarding the vulnerability of the Land Outfall and the potential cost of relocation. The finding of the white paper indicated that the Land Outfall is vulnerable to scour in its current location. However, the consultant noted that relocation of the Land Outfall would not significantly reduce the risk of a scour event unless the Aliso Creek watershed within the golf resort was modified and protected. Subsequent to the preparation of the white paper, the plan for a significant reconfiguration of the golf resort was abandoned. No further work has been done regarding the relocation of the Land Outfall.

The Ten Year Plan includes an evaluation in Year 2 (Fiscal Year 2020/2021) to update the approach and cost of a relocation of the Land Outfall outside of the existing boundaries of Aliso Creek. The Ten Year Plan also includes projects to design and construct the relocation in Years 8 (2026/27) and 10 (2028/29) respectively. However, the scope and timing of these projects are highly speculative at this time.

TEN YEAR PROJECT

The capital projects for Project Committee 24 are presented in Table M.1. The projects identified in Years 6 to 10 are highly speculative. The values

Aliso Creek Ocean Outfall Capital Improvement Program

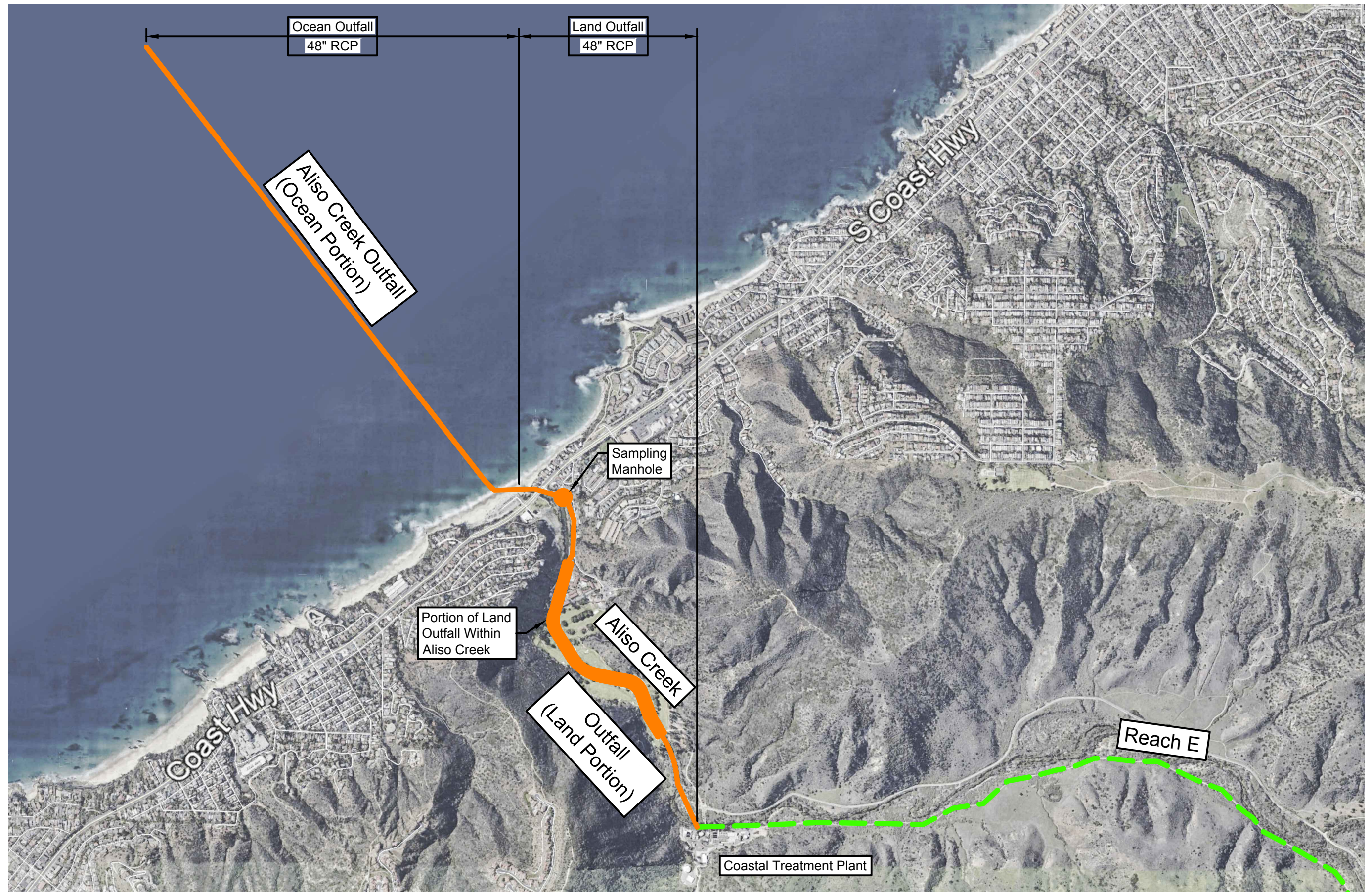
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Aliso Creek Ocean Outfall Capital Improvement Program

| Project date | Project code | Capital Projects | Project cost | Project cost inflation adjusted | Project cost (adjusted) ETWD | Project cost (adjusted) EBSD | Project cost (adjusted) IRWD | Project cost (adjusted) CLB | Project cost (adjusted) MNWD | Project cost (adjusted) SCWD |
|---------------------|--------------|---|--------------|---------------------------------|------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| YEAR 6 (2024/25) | | | | | | | | | | |
| | 24112 | Metering Station Reconstruction Design and Permitting | \$150,000 | \$175,586 | \$28,621 | \$1,370 | \$27,672 | \$19,314 | \$76,994 | \$21,615 |
| | | TOTALS | \$150,000 | \$175,586 | \$28,621 | \$1,370 | \$27,672 | \$19,314 | \$76,994 | \$21,615 |
| | | | | | | | | | | |
| YEAR 7 (2025/26) | | | | | | | | | | |
| | 24113 | Metering Station Reconstruction | \$1,250,000 | \$1,510,039 | \$246,136 | \$11,778 | \$237,982 | \$166,104 | \$662,152 | \$185,886 |
| | | TOTALS | \$1,250,000 | \$1,510,039 | \$246,136 | \$11,778 | \$237,982 | \$166,104 | \$662,152 | \$185,886 |
| | | | | | | | | | | |
| YEAR 8 (2026/27) | | | | | | | | | | |
| | 24114 | Land Outfall Realignment Design and Permitting | \$480,000 | \$598,410 | \$97,541 | \$4,668 | \$94,309 | \$65,825 | \$262,403 | \$73,664 |
| | | TOTALS | \$480,000 | \$598,410 | \$97,541 | \$4,668 | \$94,309 | \$65,825 | \$262,403 | \$73,664 |
| | | | | | | | | | | |

Aliso Creek Ocean Outfall Capital Improvement Program

[illegible]



Prepared by:

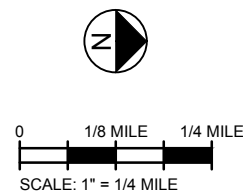


Figure M.1
Aliso Creek Land Outfall
and Ocean Outfall