Element 8:
System Evaluation and Capacity Assurance Plan

This section of the SSMP discusses the District's capacity management measures, including the most recent Master Sewer Plan (and related Master Sewer Plan Addendums) and recommended capacity improvement projects. This section fulfills the System Evaluation and Capacity Assurance Plan SSMP requirement for the SWRCB.

8.1 Regulatory Requirements for Capacity Management

The requirements for the System Evaluation and Capacity Assurance Plan element of the SSMP are summarized below.

SWRCB Requirement:

The wastewater collection system agency shall prepare and implement a capital improvement plan that will provide hydraulic capacity of key sewer system elements under peak flow conditions. This plan must include:

(a) Evaluation: The agency must identify actions needed to evaluate those portions of the sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows, estimates of the capacity of key system components, hydraulic deficiencies, and the major sources that contribute to the peak flows associated with overflow events.

(b) Design Criteria: Where design criteria do not exist or are deficient, the agency should undertake the evaluation identified in (a) above to establish appropriate design criteria.

(c) Capacity Enhancement Measures: The agency must identify the steps needed to establish a short- and long-term capital improvement plan (CIP) to address identified hydraulic deficiencies including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.

(d) Schedule: The agency shall develop a schedule of completion dates for all portions of the CIP developed in (a) through (c) above. This schedule shall be reviewed and updated at least every five years.

8.2 Element 8 Attachments

Supporting information for Element 8 is included in Attachments E8. The attachment includes the following documents:

Attachment E8-A: Table of Contents of the District's Master Sewer Plan (September, 2004)
Attachment E8-B: Table of Contents of the District's Eastvale Master Sewer Plan Update (February 2004) and Eastvale Master Sewer Plan Update Addendum No. 1 (September 2004)
Attachment E8-C: Plate 16 of District's Master Sewer Plan Proposed Improvements (August 30, 2004)
Attachment E8-D: Plate 3 of District's Master Sewer Plan Tributary Area Map (December 9, 2003)
Attachment E8-E: Table 8-4 JCSD Sewer On-Call Projects Listing (FY 2018 – 2019)
Attachment E8-F: Table 8-5 Capital Projects Budget Summary (FYE 2020)
Attachment E8-G: Webb Master Sewer Plan Proposal (November 2018)

8.3 Capacity Evaluation Discussion

The District contracted with Albert A. Webb & Associates in March 2019 to perform a comprehensive update the District's Master Sewer Plan with anticipated completion in April 2020 (See Attachment E8-G for Proposal).

The District last completed a comprehensive Sanitary Master Sewer Plan in September 2004. Most of the work designated in the 2004 Master Sewer Plan has been completed, with some work still in progress of design and construction.

The purpose of the existing Master Sewer Plan was to provide the District with a planning document that would outline a program to provide for the construction of "backbone" trunk sewer facilities for areas within the District, excluding the Eastvale Area, which was prepared under separate cover. The cover and table of contents for the original report was well as the cover and first page of the addendum is provided in Attachment E8-A.

In order to accomplish the objectives of the Master Sewer Plan report, the scope of the study included the following:

1. Research and data collection;
2. Review of existing and projected study area characteristics;
3. Development of design criteria and basis of cost estimates;
4. Evaluation of existing facilities;
5. Determination of projected wastewater flows;
6. Hydraulic analysis of existing system
7. Hydraulic analysis of design year system
8. Development of capital improvements required and estimated costs associated therewith.

The Table of Contents of the District's Master Sewer Plan is provided in Attachment E8-A.

A Master Sewer Plan Addendum was completed in October 2007. The purpose of the Addendum was to re-evaluate the wastewater generation factors based on current District flow records and re-calculate the wastewater generation factors using the recorded data. New "build-out" average daily flows were calculated using the new wastewater generation factors. These updated flow projections were used primarily for the purposes of predicting ultimate treatment plant capacity and the resulting amount of plant expansion and/or purchase that will be required. Additionally, all project costs were updated to October 2007 from the 2004 Master Sewer Plan and were presented in the Addendum. Wastewater quality was also reviewed based on recorded data.

Since the publication of the 2004 Master Sewer Plan and subsequent October, 2007 Addendum, significant changes concerning the District's sewer system occurred. As a result, the District prepared a second Master Sewer Plan Addendum dated May 25, 2010. The purpose of the second Addendum was to address potential system changes. The analysis focused on the following elements:

1. Reviewed the concept of transporting wastewater flows across the Santa Ana River via a new force main within the new Van Buren Boulevard bridge to the City of Riverside for treatment. Currently, wastewater flows under the Santa Ana River to the City of Riverside's WQCP via an inverted siphon.
2. Evaluated the required infrastructure to transport flows currently directly tributary to the inverted siphon referenced in Item 1 across the new Van Buren Boulevard bridge crossing the Santa Ana River.
3. Reviewed the possible renovation of the Indian Hills WWTP that was previously decommissioned.
4. Reviewed an alternative method (sub-regional lift station and force main) of accommodating the growth of flows tributary to the regional lift station.
5. Reviewed an alternative of constructing a new regional force main to the City of Riverside and expanding the regional lift station.
6. Evaluated the expansion of wastewater storage ponds at Plant 1.

The Master Sewer Plan Addendum No. 2 provided the following findings:

1. The concept of transporting wastewater flows across the Santa Ana River via a force main in the Van Buren Bridge to the City of Riverside's Water Quality Control Plant was determined to be the best method of transporting flows to the City. As such the District constructed a new force main, that is presently "dry" until other infrastructure is in place, from the Clay Street/Van Buren Blvd. intersection across the bridge to the westerly side of the City of Riverside's WQCP in Van Buren Blvd.

2. As a result of Item 1, the Clay/Van Buren Lift Station and Clay Lift Station, currently being reconstructed as the Linares Lift Station, will ultimately pump to the Van Buren Bridge crossing instead of the District's existing 18" dia. regional force main.

3. With the implementation of Items 1 and 2 above, the idea of renovating the Indian Hills WWTP was deferred.

4. Addendum No. 2 and an additional report entitled "Feasibility and Planning Study for the Felspar Lift Station Site and Force main Alignment" concluded that a sub-regional lift station was not the most cost effective alternative and the construction of additional capacity at Plant 1 is the selected alternative.

5. The alternative of constructing a new regional force main to the City of Riverside and constructing a new regional lift station at Plant 1 is the District's current plan.

6. With the construction of a second regional force main a certain amount of pipeline redundancy is obtained and additional pumping capacity is achieved. As such, the expansion of the wastewater storage ponds have been deferred.

The Master Sewer Plan and Addendums are separate documents from this SSMP; this section of the SSMP summarizes key capacity-related portions of the Master Sewer Plan and Addendums.

The capacity assessment completed as part of the District's Master Sewer Plan was based on hydraulic modeling of the District's sewer system under current and ultimate design flows. The following subsections provide a brief summary of the modeled system, flow estimates, and evaluation criteria used for the District's sewer system capacity evaluation.

The District has not experienced any sanitary sewer overflows due to hydraulic deficiencies in the sewer system. Likewise, modeling of the District's sewer system conducted during the preparation of the 2004 Master Sewer Plan also showed that under current development conditions no hydraulic deficiencies exist.

Hydraulic Model

Based on tributary drainage areas developed in the September 2004 Master Sewer Plan (Attachment E8-C) and pipeline layouts, a hydraulic model was developed to determine the adequacy of the existing trunk sewer lines to convey wastewater generated under ultimate buildout conditions. The sewer system was modeled by utilizing SewerCAD computer software. This software has the capabilities to analyze the system as a whole and to provide an efficient means of calculating the complex hydraulics that is attributed to sewer systems of this magnitude.

The program also calculates the depth of flow and the hydraulic grade line by using the standard step energy balance, an iterative procedure based on the Bernoulli equation. The ratio of the depth of flow to the diameter of the pipe can also indicate if the pipe is flowing above its capacity. Pipelines that convey flows exceeding their capacity are identified by the software.

Using the SewerCAD software, a hydraulic model of the existing trunk system was prepared. Pipes with diameters 10 inches and larger were considered part of the trunk system. Eight (8) inch diameter pipes were not modeled unless they served as a main flow path within the system. It is difficult to ascertain the percentage of the system that was modeled because the model was

based upon the sewer system in the year 2000 and inventory records have been updated so that the exact footage of pipeline at that time is unknown. Additionally, since the year 2000 almost all of the sewer lines added occurred in the Eastvale annexation area of the District which increased the size of the District about 40% to and added a substantial increase to the District's pipeline totals because of the explosive growth from 2000 to the present.

Input for the model consisted of pipeline data, manhole (nodal) elevations and locations, pipeline slopes, wet weather infiltration rates, peaking factors and wastewater input locations and quantities. In addition to the trunk system, pipelines with minimum slopes were modeled in order to evaluate possible constrictions within the system.

Manual input of the model was required. Information utilized for modeling input was derived from the District's Sewer Atlas Maps. These maps provided vital information such as pipe diameters, slopes, pipe material, manhole depths, etc… Though the maps provided a gamut of useful and vital information, they did not provide flowline elevations at the manholes (nodes).

Flowline elevations at the nodes are a required input parameter for the SewerCAD Modeling Software. The software utilizes input parameter such as the length of pipe in conjunction with the upstream and downstream nodal flowline elevations to calculate the slope of the respective pipe. Direct input of the slope values of the respective pipes is not permitted by the software.

The software calculations are based on a slope of pipe, Manning's "n" value and D/d ratio; therefore, the flowline elevations are irrelevant. An arbitrary flowline elevation at the downstream node of a pipe may be utilized in conjunction with a known length and slope to manually calculate the upstream nodal flowline elevation. Once downstream and upstream nodal elevations have been established, these values along with the length may be inputted into the software, thus allowing the software to calculate the slope.

The flowline data of the Jurupa Trunk System was entered first because it is essentially the backbone trunk system of the District. The starting node or manhole of the Jurupa Trunk System is located at the Regional Wastewater Pump Station (Plant 1). The flowline elevation at this node will be utilized to establish a base elevation for the entire model. Using the slope and length values as shown in the District's Atlas Maps, the flowline elevations of the upstream manholes were calculated for each run of pipe to be modeled. This calculation was conducted to the furthest upstream node of the system.

To input other trunk systems connecting to the Jurupa Trunk System, the starting downstream point or node of those systems were the corresponding nodes located at various points along the Jurupa Trunk Line.

Not all the manholes and pipes of the trunk sewer systems were inputted into the model. If there was a long stretch of trunk sewer and manholes with consistent slopes and pipe diameters, it was modeled as one long pipe.

The pipe and nodal identifying numbers utilized in the model (Plate 12) corresponds to the identifying numbers utilized in the current District Sewer Atlas Maps. For modeled pipes

consisting of multiple pipes and nodes, the most downstream pipe number and upstream node number was utilized in the model. These numbers were utilized in the model with the addition of a prefix to identify the trunk system in which it is part of:

Prefix	Trunk System
J	Jurupa Trunk System
G	Glen Avon Trunk System
B	Bain Trunk System
P	Pedley Trunk System
I	Indian Hills Overflow Line (Indian Hills WRF Area)
H	Hamner Avenue Trunk (CFD Area)
W	Wineville road Trunk (CFD Area)
E	Etiwanda Avenue Trunk (CFD Area)
PC	Pyrite Creek Interceptor

A model of the existing JCSD Trunk Systems was inputted based on the above methodology. The model consisted of 186 pipes (115,810 feet of pipe), 186 nodes (manholes) and 4 outlets (wastewater discharge points). Physical characteristics of the model consisted of pipe diameters, lengths, slopes, flowline elevations and nodal locations. Hydraulic characteristics of the model consisted of Manning's "n" value and D/d ratio.

The flow inputs at these nodes were based on wastewater generation values tabulated in Appendix I of the Master Sewer Plan, which provided average daily flow generation for Ultimate Buildout Conditions. Utilizing the SewerCAD software, the peaking factors as well as wet weather infiltration rates were applied to the flow inputs to determine the adequacy of each pipeline to convey the Ultimate Wastewater flows. Refer to Section 6 of the Master Sewer Plan for a complete discussion of the model development.

The District's ten (10) lift stations were not included in the model, but the lift station capacities were compared to estimated flows to determine whether or not the lift stations had adequate capacity.

Infiltration/Inflow

The District's sewer system consists of three distinct areas with very different infiltration/inflow (I/I) characteristics. Two of the areas (CFD No. 1 and Eastvale) are relatively new with the majority of the sewer system being less than 20 years old. Therefore, these systems are designed with the latest material standards and manholes are typically located within improved street sections where storm water inflow is minimized.

The third District sewer area ("Plant 1" Tributary Area) is more problematic with regards to I/I because the system is nearly 50 years old, the major trunk sewer in the area (Pyrite Creek) is located in a water course, and several manholes are located in sump conditions and are routinely used by private and public entities to dewater flooded road sections. The District's methodology in reducing I/I consists of the following activities:

1. Use of water tight manhole covers in locations subject to flooding.
2. An aggressive CIP Trunk Sewer Replacement program that is currently replacing the Pyrite Creek Trunk Sewer and the Jurupa Road Trunk Sewer.
3. Perform ongoing video inspection of pipelines and determine if full or partial lining is required or if full replacement is necessary.
4. Maintain a continuous program for detecting and eliminating sources of I/I consisting of the following elements:
    A. Conduct flow monitoring at key locations in the system to determine if I/I is excessive.
    B. Conduct smoke and dye testing to locate I/I sources.

The District is currently re-evaluating its I/I Program based upon current flow records and the results will be available by September of this year (2014).

Flow Estimates

All flows transported by District sewer systems are generated within the District's boundaries. Refer to Section 4 of the Master Sewer Plan for a complete discussion of the projected wastewater flows.

Future flows were estimated from tributary areas based on the Riverside County Integrated Project (RCIP) Jurupa Area Land Use Plan and the RCIP Eastvale Area Land Use Plan. Flows were based on flow factors for the land use characteristics described in the RCIP Jurupa Area and Eastvale Area Land Use Plan for the 86 tributary areas in the District. Existing flows were recorded with flow monitors at strategic locations throughout the District's sewer system. "Build-Out" flows were calculated based on the new wastewater generation factors developed in the October 2007 Master Sewer Plan Addendum.

Capacity Evaluation Criteria

The capacity evaluation criteria used in the Master Sewer Plan is summarized below. Refer to Section 3 of the Master Sewer Plan report for a complete discussion of the capacity evaluation criteria.

Flow Criteria. Consideration was given to both dry weather and wet weather flows in order to design the proposed trunk sewer system. Since most of the sewers in the study area will lie above the groundwater table, infiltration during dry weather periods is assumed to be negligible. However, wet weather infiltration plus direct storm inflow must be added to dry weather flows to obtain the total wet weather flow. Wet weather flows determine the hydraulic capacity of pipelines and other facilities such as lift stations and inlet and outlet structures.

Six elements were considered in formulating the projected flows that will be associated with the tributary sewage flow areas and land use. The six elements of wastewater flow examined were: dry weather flows, infiltration/inflow, wet weather flows, wastewater generation, peak flow factors, and large point sources and related peaking factors.

Gravity Pipe Criteria. Pipelines are sized on the principle of conducting wastewater at a minimum velocity of 2 ft/sec when flowing with a maximum depth to diameter ratio (D/d of 0.5 for 8-inch and D/d of 0.75 for 10-inch and greater) and are sized to carry peak flows without surcharge. A mean roughness coefficient (n) of 0.013 is used for new pipe sizing. A safety factor should be included in the design of all gravity flow pipelines to account for errors due to the variability of the initial approximation of flow and partial clogging of the sewer. The method of accounting for the inherent variables is to limit the depth of flow.

Force Main Criteria. Force mains are designed to flow full with minimum velocities required to prevent deposition of suspended solids. Velocities normally fall within a range of from 3 to 5 fps. A velocity of 2 fps is considered to be sufficient to prevent settling of solids, but velocities of between 2.5 and 3 fps are required to re-suspend those which already have accumulated in the force main. If flushing velocities are attained once or twice a day, excessive deposits are not likely to occur.

Material that would be considered for force mains are polyvinyl chloride (PVC), mortar-lined or specially lined ductile iron pipe and HDPE. Final selection of pipe materials would be made during the detailed design phase. Diameters are calculated using the Hazen-Williams formula with a roughness coefficient (C) of 110.

Lift Station Criteria. Small sewage pump stations should have two pumping units, with each unit sized to pump the peak design flow. One pumping unit operates during each pumping cycle with the other acting as standby. These units alternate in operation so that equal wear can occur. Typically, the pumping units are a submersible design with the units placed in a manhole or precast vault structure.

Intermediate sized sewage pump stations should be planned to have three units of usually equal size. One or two units can operate during a pumping cycle with the third unit acting as a standby in case one of the primary units fails. Two pumping units operating at the same time should be sized to handle the peak design flow. Intermediate sized sewage lift stations can have submersible pumping units or be of a wet well / dry well design.

Large sewage pump stations should be designed so ready expansion can occur when necessary. Thus, mechanical equipment may be installed at various stages of development. Large sewage pump stations typically provide for complete separation of wet and dry wells with easy access to both.

In all cases, standby drives or power units should be provided in cases where bypassing cannot be allowed around the sewage pump station.

Capacity Evaluation Results

The capacity evaluation identified twelve (12) gravity sewer sections with insufficient hydraulic capacity under ultimate average daily flow conditions. These limitations are summarized below in Table 8-1. For a complete discussion, refer to Section 7 of the Master Sewer Plan report.

Gravity Pipe Capacity Limitations. As a result of loading ultimate wastewater flows on the existing trunk sewer system, various sewers required replacement, relief or rerouting to provide for adequate flow conveyance and minimize hydraulic deficiencies.

Table 8-1 Trunk Sewer System Improvements

Project Designation No.	Project Description
P-J-1	Jurupa Trunk Sewer – Felspar St & Limonite Ave, Sewer Pipe Rerouting (36, 39 & 42-inch) – **Status – complete.**
P-J-2	Jurupa Trunk Sewer – Adjacent to UPRR between Jurupa Rd & 54th St, Sewer Pipe Replacement (30 & 36-inch) – **Status – complete.**
P-J-3	Jurupa Trunk Sewer – Jurupa Rd between Felspar St & Tyrolite St, Sewer Pipe Replacement (18, 21 & 24-inch) - **Status – complete**
P-J-4	Jurupa Trunk Sewer – Valley Way between Soto Rd & 34th St, Sewer Pipe Replacement (12 & 15-inch) - **Status – complete.**
P-J-5	Jurupa Trunk Sewer – Armstrong Rd., Sewer Pipe Replacement (10-inch) - **Status – complete.**
P-PC-1	New Pyrite Creek Interceptor – Slip line of a existing portion of Jurupa Trunk Sewer and new pipe starting on 59th St at Tumbleweed to Rutile St at 60th St (15-inch, 21-inch) – **Status – complete.**
P-G-1	Glen Avon Relief Sewer – Campbell St & Bellegrave Av, Relief Sewer (12 & 15-inch) **Status – Evaluating in New Master Sewer Plan, 60 Freeway Crossing at Campbell planning complete, construction in 2020.**
P-G-2	Glen Avon Trunk Sewer – Mission Blvd to Galena St, Felspar St & Jurupa Rd, Sewer Pipe Replacement (15, 18 & 21-inch) - **Status – Evaluating in New Master Sewer Plan**
P-B-1	Bain Street Trunk Sewer – Realignment of Bain Street Trunk Sewer at lower end of sewer (18 & 27-inch) - **Status – Complete.**
P-P-1	Pedley Trunk Sewer – Replacement of sewers along the Pedley Trunk Sewer (12 & 15-inch) - **Status – Evaluating in New Master Sewer Plan**
P-LS-1	Proposed Expansion of the Regional Lift Station Facility (8.6 mgd peak flow, 3 Pump Configuration) - **Status – Currently at 90% Design**
P-FM-1	Proposed 24-inch Parallel Regional Sewer Force main parallel to the existing Regional Force main (16,000 feet) - **Status – Mostly Complete. Final Segment is at 90% Design, Construction completion anticipated in 2020.**

Lift Station Capacity Limitations. With the renovation of the Lakeside Lift Station currently in construction, the District will operate ten (10) lift stations. Also, the District has two (2) standby lift stations (Archibald/Chandler, and Hamner) to divert flows to the SARI line should circumstances dictate. A capacity status of the ten (10) operational lift stations are summarized in Table 8-2:

Table 8-2: Status of Active Lift Stations

Item No.	Lift Station Name	Station Capacity (gpm)	Standby Power Capabilities	Current Capacity Status
1	Linares	750	Stationary	Became operational in June 2014 and is able to accommodate build out flows.
2	Clay/Van Buren	400	Stationary	The renovated lift station is able accommodate build out flows.
3	Emergency Bypass at Plant 1	3000	Stationary	The lift station is able to accommodate build out flows.
4	Florine	500	Stationary	Replacement lift station construction completed to increase capacity to build out flows
5	44th Street	?	Mobile	Small lift station sized for build out flows
6	Regional at Plant 1	3500	Stationary	Reviewing 90% plans for reconstruction to accommodate build out flows
7	Sky Country 1	?	Mobile	Demolished – converted to gravity flow to WRCRWA.
8	Sky Country 2	?	Mobile	Planned for conversion to gravity flow in 2020
	Sky Country 3	?	Mobile	Demolished – converted to gravity flow to WRCRWA
10	Lakeside	350	Mobile	Reconstructed and sized for build out flows.

Force Mains. The District operates ten (10) force mains. Also, the District has two (2) standby force mains (Archibald/Chandler, and Hamner). A capacity status of the remaining ten (10) operating force mains are summarized in Table 8-3.

Table 8-3: Status of Active Force mains

Item No.	Force main Name	Diameter (in.)	Length (ft.)	Current Capacity Status
1	Linares (Formerly Clay)	10	3650	A new force main has been constructed to allow this lift station to ultimately pump to the Van Buren Bridge crossing the Santa Ana River. Both the existing and new force mains will accommodate build out flows.
2	Clay/Van Buren	8	100	The existing force main will accommodate built out flows. In the future, a new force main crossing the Van Buren Bridge Santa Ana River will also accommodate build out flows.
3	Emergency Bypass at Plant 1	18	460	Will accommodate design flow
4	Florine	8	2300	Replacement force main has been constructed to increase capacity for build out flows
5	44th Street	4)	0(1)	Force main sized for build out flows
6	Regional at Plant 1	18	14,700	Portions of a new force main has been constructed and a key segment is ready to advertise for bids. The new force main will accommodate build out flows.
7	Sky Country1	10	6400	LS Demolished. Force Main preserved for possible future use.
8	Sky Country 2	6	50	Sized for build out flows
9	Sky Country 3	6	800	Demolished
10	Lakeside	6	210	New force main accommodates build out flows.

(1) No force main as pumps lift wastewater to gravity pipeline manhole outlet.

8.4 Recommended Capacity Projects

This section discusses criteria used to size replacement facilities and summarizes the recommended capacity improvement projects. Refer to Section 8 of the Master Sewer Plan for a complete discussion of the capacity evaluation recommendations.

Design Criteria

For pipeline projects, the minimum size for a main line sewer is 8-inch diameter. Under ultimate peak wet weather flow conditions new sewers 8-inches in diameter are sized to flow with D/d ≤ 0.5 (maximum) full and 10-inches and lager are sized to flow with D/d ≤ 0.75 (maximum).

For sewage force mains, the preferred minimum velocities are 2.5 – 3.0 fps with the maximum velocity being 5 fps.

For lift stations the pumping capacity is the peak wet weather flow conditions either at a future design year or ultimate build out conditions.

Recommended Capacity Improvements

As previously indicated the District has taken on an aggressive program to implement the recommended capacity improvements to meet ultimate build out conditions. To accomplish this improvement implementation the District issued Certificates of Participation Build America Bonds that provided nearly $30 million to finance the majority of the required capacity improvement projects. Further, the District has initiated an "on call" contractor localized system repair program and lift station improvement program (Table 8-4), and a Capital Pipeline Replacement Program – Sewer (shown in Table 8-5) to mitigate existing deficiencies in the collection system.

Finally, the District has developed a thorough pipeline rehabilitation and repair evaluation program. The program being used is based upon the Cues Granite Net Scoring Module Software that is performed during CCTV inspection which evaluates numerous aspects of the existing pipeline being evaluated. Based upon the existing pipelines evaluated thus far, the District has identified and prioritized the four (4) projects shown under "Capital Pipeline Replacement Program – Sewer" shown on Table 8-5.

8.5 CIP Schedule

Refer to Table 8-5 recommended Capital Projects Budget Summary (FYE 2020) for the long-term schedule of proposed sewer capital improvement projects.

Attachment E8-A: Table of Contents of the District's Master Sewer Plan (September, 2004)

MASTER SEWER PLAN

Prepared for:

Jurupa
COMMUNITY SERVICES DISTRICT

September, 2004

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

APPENDICES (SEPARATE BOUND DOCUMENT)

Attachment E8-B: Table of Contents of the District's Eastvale Master Sewer Plan Update (February 2004) and Eastvale Master Sewer Plan Update Addendum No. 1 (September 2004)

EASTVALE MASTER SEWER PLAN UPDATE

February, 2004

Prepared By
Albert A. Webb Associates

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

APPENDICES

EASTVALE MASTER SEWER PLAN UPDATE

ADDENDUM NO. 1

September, 2004

Prepared by
Albert A. Webb Associates

INTRODUCTION

Due to the strength of the local economy, recent construction bids have been higher than expected. This is especially true for sewer projects. As a result, the District has increased the unit construction and project costs for the February, 2004 Eastvale Master Sewer Plan Update. The updated cost estimates are approximately 25 percent higher than the referenced reports' costs. The updated unit construction costs that are shown on Table 1, were based on recent publicly bid projects. Recent bids have been from 14 to 42 percent higher than anticipated. The 42 percent figure was for an extremely deep sewer (Citrus Street trunk sewer), which for the most part, will not be constructed in the District after the Citrus Street Trunk Sewer is completed. It was therefore determined that a 25 percent increase to the previous used Master Plan unit costs would be appropriate.

It should be noted that unlike water pipeline projects that normally have a relatively consistent and shallow depth, and therefore a fairly predictable construction cost, sewer pipeline construction costs can vary significantly due to the unknown depths of the sewerlines at the project planning stage. Construction costs for sewerlines can increase rapidly with increased depth due to additional shoring costs, larger volume of excavation, larger volumes of pavement removals and replacements and the increased possibility of encountering groundwater and rock material. As such, in order to ensure the District will collect adequate funds to construct future master planned trunk sewers, relatively conservative costs should be used in the concept stage of planning studies such as the subject report. As additional engineering facts are obtained, refinement in the cost estimates can occur.

COST ANALYSIS

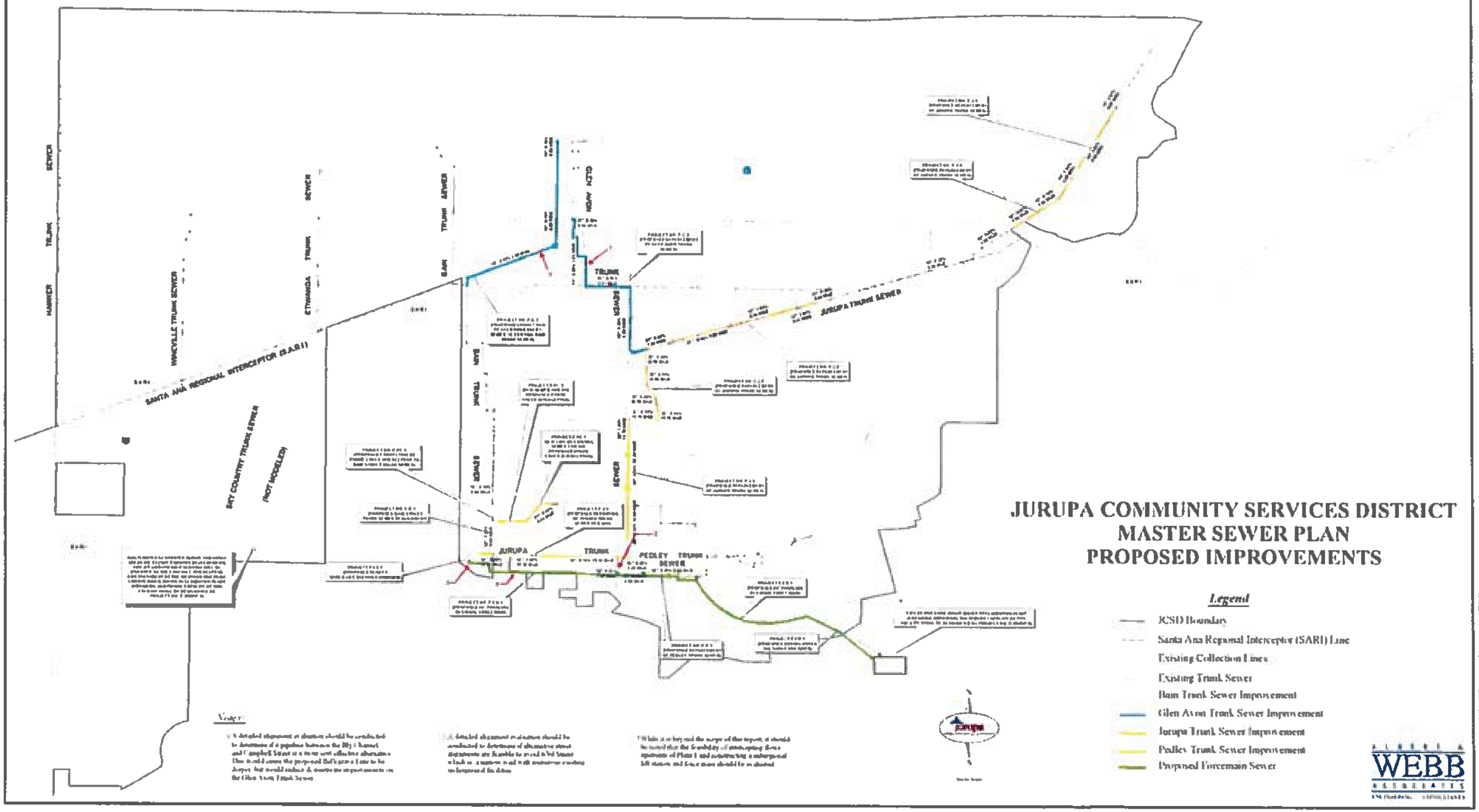
Pipelines

The unit costs for sewerlines include pipeline material and installation, manholes, asphalt concrete removal, disposal, and replacement. Construction costs were determined by reviewing historical bids of similar projects and through a cost study where a "generic bid" was sent to three prominent contractors in the area. The generic bid was based on the assumptions that an average project for the District would consist of 2,500 linear feet of pipe, and that asphalt concrete roads would be removed, disposed of, and replaced. Road reconstruction was assumed to be 25 feet wide with 4 inches of AC pavement over 8 inches of Class II base. The average depth of the pipe was assumed to be 20 ft and would require B-2 bedding. It was assumed nine, 5 ft diameter manholes would be installed for each project. These costs were then updated to correlate with recent bid results and are about 25 percent higher than the previously used data. Not included in the unit cost estimates are extraordinary construction items such as bore casings, dewatering, rock removal, etc... A summary of these estimated unit costs are as shown on Table 1.

Attachment E8-C: Plate 16 of District's Master Sewer Plan Proposed Improvements (August 30, 2004)

PLATE 16

JURUPA COMMUNITY SERVICES DISTRICT
MASTER SEWER PLAN
PROPOSED IMPROVEMENTS



Legend

- JCSD Boundary
- Santa Ana Regional Interceptor (SARI) Line
- Existing Collection Lines
- Existing Trunk Sewer
- Bain Trunk Sewer Improvement
- Glen Avon Trunk Sewer Improvement
- Jurupa Trunk Sewer Improvement
- Pedley Trunk Sewer Improvement
- Proposed Forcemain Sewer

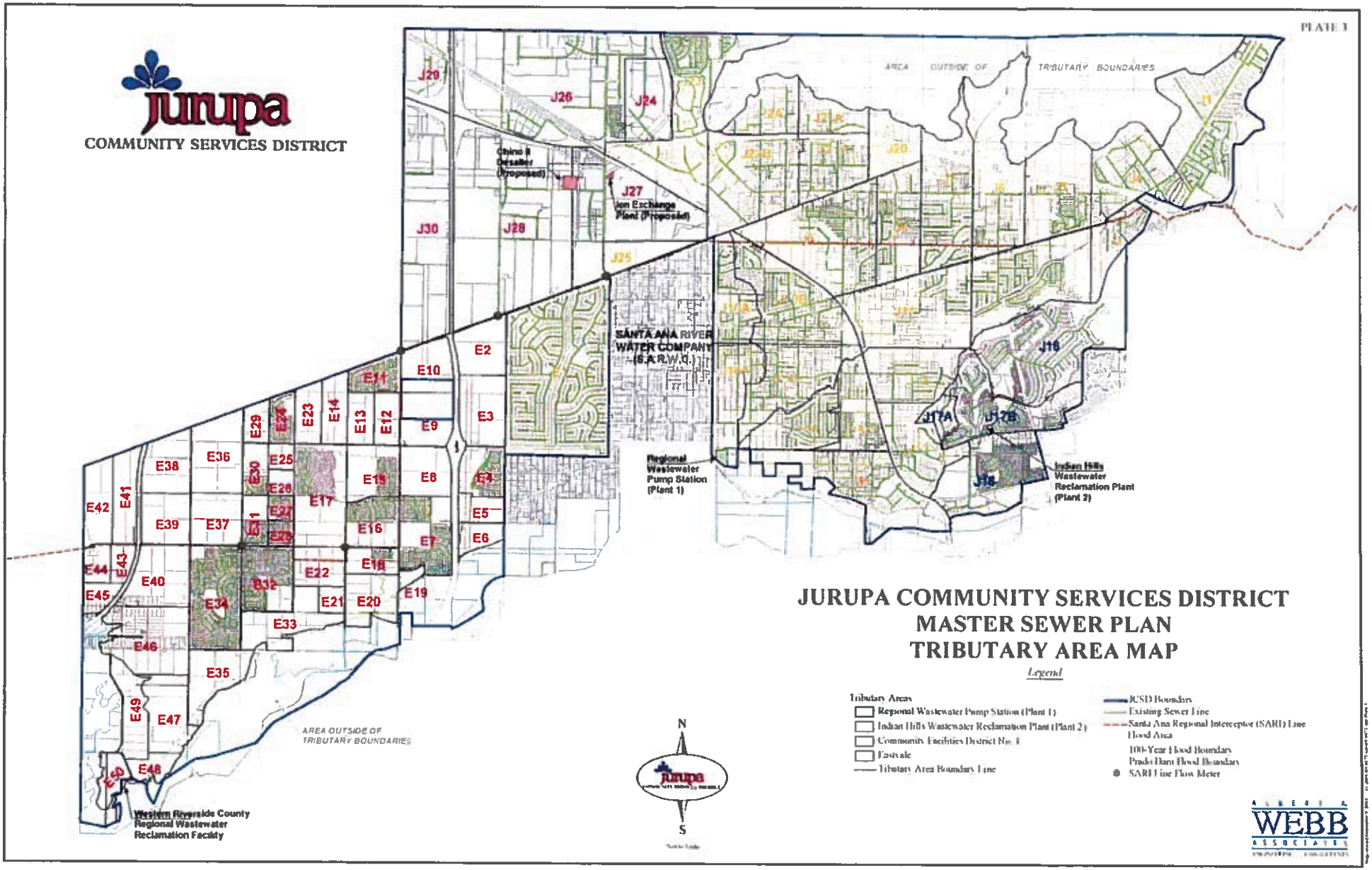
Notes:

WEBB ASSOCIATES

Attachment E8-D: Plate 3 of District's Master Sewer Plan Tributary Area Map (December 9, 2003)

PLATE 3

JURUPA
COMMUNITY SERVICES DISTRICT



JURUPA COMMUNITY SERVICES DISTRICT
MASTER SEWER PLAN
TRIBUTARY AREA MAP

Legend

Tributary Areas
- Regional Wastewater Pump Station (Plant 1)
- Indian Hills Wastewater Reclamation Plant (Plant 2)
- Community Facilities District No. 1
- Eastvale
- Tributary Area Boundary Line

- JCSD Boundary
- Existing Sewer Line
- Santa Ana Regional Interceptor (SARI) Line
- Flood Area
- 100-Year Flood Boundary
- Prado Dam Flood Boundary
- SARI Line Flow Meter

ALBERT A. WEBB ASSOCIATES

Attachment E8-E: Table 8-4 JCSD Sewer On-Call Projects Listing FY 2018 - 2019

JCSD SEWER ON-CALL PROJECTS LISTING FY 2018 - 2019

	Project Name/Description	Task Order Number	Source of Funds	Contractor	Task Order Construction Cost	Final Construction Cost
Approved Sewer Project(s)						
1	Etiwanda Manhole Ring and Cover Repair	19S004	Localized System Repairs (M191014)	Gm Sager	$49,500.00	$52,500.00
2	Cliff Valley Lift Station	19S005	Lift Station Improvements M191011	Gm Sager	$34,100.00	TBD
3	Lift Station HVAC Upgrades	Short form contract	Lift Station Improvements M191012	Tesco Controls	$25,850.00	TBD
Approved Sewer Project(s) Subtotal					**$109,450.00**	**$52,500.00**
Pending Sewer Project(s)						
1	Citrus, Forecast lift station (manhole on Hamner), and 65th Street Lift Station Demolition	TBD	Lift Station Improvement Plans	TBD	$ -	$ -
2	Hamner Avenue Manholes	TBD	Localized System Repair	TBD	$ -	$ -
Pending Sewer Project(s) Subtotal					**$0.00**	**$0.00**
Localized System Repairs Planned Sewer Project(s)						
1	Manhole at Country Village - retaining wall, pad, raise 6'-8', remove and replace internal drop	TBD	Localized System Repairs	TBD	$ -	$ -
2	Jewel Street Area Manhole Modifications and Additions	TBD	Localized System Repairs	TBD	$ -	$ -
3	Filly Lane Sag Repair	TBD	Localized System Repairs	TBD	$ -	$ -
Lift Station Improvements Planned Sewer Project(s)						
1	Chandler Lift Station Improvements - Paving and Diversion Structure	TBD	Lift Station Improvement Plans (M181010)	TBD	$ -	$ -
2	Pond C Piping	TBD	Lift Station Improvement Plans (M181010)	TBD	$ -	$ -
Planned Sewer Project(s) Subtotal					**$0.00**	**$0.00**
Completed Sewer Project(s)						
1	Jurupa Road and Poinsetta - 2 sag repairs and internal drop installation	18S003	Localized System Repairs (M191014)	Merlin Johnson	$46,800.00	$46,800.00
2	De Anza Shopping Center - Truss Pipe Repair	19S001	Localized System Repairs (M191014)	CP Construction	$29,500.00	$29,500.00
3	Farley Drive Repair	19S002	Localized System Repairs (M191014)	Merlin Johnson	$10,000.00	$10,000.00
4	Mission Blvd. Sewer Repair	19S003	Localized System Repairs (M191014)	TK Construction	$96,500.00	$96,500.00
5	Chino II sewer replacement	19S001-1	Localized System Repairs (M191014)	WEKA Construction	$57,000.00	$57,000.00
6	River Road Lift Station Platform Work	19S006	Lift Station Improvements M191011	Schuler Construction	$39,194.78	$39,194.78
7	River Road Sink Hole Repair	19S007	Localized System Repairs (M191014)	Gm Sager	$21,493.00	$21,493.00
Completed Sewer Project(s) Subtotal					**$300,487.78**	**$300,487.78**
FY 2017 - 2018 Subtotal					**$409,937.78**	**$409,937.78**

Black Text - Task Order Approved/Under Construction
Red Text - Task Order Authorization Phase
Blue Text - Task Order Pending
Green Text - Task Order Complete

Sewer On-Call Rollup FY 2018 - 2019

	Localized System Repairs Sewer M191014	Lift Station Improvements M191011
Budget	$600,000.00	$350,000.00
Approved Projects	$52,500.00	$59,950.00
Pending Projects	$ -	$ -
Planned Projects	$ -	$ -
Completed Projects	$261,293.00	$39,194.78
Total Encumbered	$313,793.00	$99,144.78
Remaining Budget	$286,207.00	$250,855.22
% Remaining	48%	72%

Attachment E8-F: Table 8-5 Capital Projects Budget Summary (FYE 2020)

Sewer CIP Schedule

CAPITAL PROJECTS BUDGET
FY 2019-2020 Budget

J.C.S.D. Work Order	Description	Total Proposed Project Costs	Expenditures thru 3/31/19	Planned 2019-2020	Planned 2020-2021	Planned 2021-2022	Planned 2022-2023	Beyond 2023	Total Remaining Project Requests
Capital Projects - Trunk Sewer									
C175037	Glen Avon Trunk Sewer	$ 6,800,000	$ 239	$ -	$ 799,000	$ 6,000,000	$ -	$ -	$ 6,799,000
	Pedley Trunk Sewer	1,560,000	-	-	300,000	1,260,000	-	-	1,560,000
Total Trunk Sewer		**$ 8,360,000**	**$ 239**	**$ -**	**$ 1,099,000**	**$ 7,260,000**	**$ -**	**$ -**	**$ 8,359,000**
Capital Projects - Lift Station and Force Main									
C133530	Regional Lift (Plant 1) Station Expansion ($14.85M FY 28/29 - 30/31)	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,850,000	$ 14,850,000
C155008	Regional Lift Station Facility Upgrades	7,600,000	907,467	5,600,000	-	-	-	-	5,600,000
C165036	Regional Force Main Segment 3	6,500,000	216,704	6,200,000	-	-	-	-	6,200,000
C165030	River Rd Lift Station Phase 1 Cell 2	1,700,000	544,346	400,000	-	-	-	-	$ 400,000
C155009	River Rd Lift Station Phase 2 Expansion	1,800,000	4,397	790,000	1,000,000	-	-	-	1,790,000
Total Lift Station and Forcemain		**$ 17,600,000**	**$ 1,672,914**	**$12,990,000**	**$ 1,000,000**	**$ -**	**$ -**	**$14,850,000**	**$ 28,840,000**
Treatment Plant Capital Improvements									
C195062	WRCRWA Annual Capital Improvements	Annual	$ 131,181	$ 2,694,208	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 5,694,208
C195063	Riverside Capital Improvements	Annual	-	287,500	287,500	287,500	287,500	287,500	1,437,500
Total - Treatment Plant Capital Improvements		**$ -**	**$ 131,181**	**$ 2,981,708**	**$ 1,037,500**	**$ 1,037,500**	**$ 1,037,500**	**$ 1,037,500**	**$ 7,131,708**
Capital Projects - Pipeline Replacement Program - Sewer									
C195064	UPRR Crossings and Glen Avon Trunk Sewer Phase 1	$ 4,000,000	$ 123,950	$ 3,800,000	$ -	$ -	$ -	$ -	$ 3,800,000
C165031	Foxtail - Mapleton Area Etiwanda / Inland MH/SM	800,000	-	800,000	-	-	-	-	800,000
C195061	Sky 2 Conversion	3,200,000	1,608	3,150,000	-	-	-	-	3,150,000
C195065	Future Annual Pipeline Replacement Program	Annual	-	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	10,000,000
Total Pipeline Replacement		**$ 8,000,000**	**$ 125,558**	**$ 9,750,000**	**$ 2,000,000**	**$ 2,000,000**	**$ 2,000,000**	**$ 2,000,000**	**$ 17,750,000**

CAPITAL PROJECTS BUDGET
FY 2019-2020 Budget

J.C.S.D. Work Order	Description	Total Proposed Project Costs	Expenditures thru 3/31/19	Planned 2019-2020	Planned 2020-2021	Planned 2021-2022	Planned 2022-2023	Beyond 2023	Total Remaining Project Requests
Capital Projects - Sewer Operations and Maintenance									
M191009	Sewer Subsidence	Annual	$ -	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 1,250,000
M20xxxx	Asphalt Patching - Various Locations	Annual	-	50,000	55,000	55,000	55,000	55,000	270,000
M20xxxx	Lift Station Program	Annual	-	600,000	600,000	600,000	600,000	600,000	3,000,000
M20xxxx	Localized System Repairs	Annual	-	600,000	600,000	600,000	600,000	600,000	3,000,000
ALLOC	IT Equipment	Annual	-	24,150	-	-	-	-	24,150
ALLOC	District Wide Shared Projects	Annual	-	64,400	-	-	-	-	64,400
Total Sewer Operations and Maintenance		**$ -**	**$ -**	**$ 1,588,550**	**$ 1,505,000**	**$ 1,505,000**	**$ 1,505,000**	**$ 1,505,000**	**$ 7,608,550**
Third Party Projects									
M191015	Third Party JCSD Relocations	Annual	$ 58	$ 100,000	$ 100,000	$ 105,000	$ 105,000	$ 105,000	$ 515,000
M20xxxx	Limonite Widening (Bain to Homestead) - New	New	-	2,000,000	-	-	-	-	2,000,000
Total Sewer Third Party		**$ -**	**$ 58**	**$ 2,100,000**	**$ 100,000**	**$ 105,000**	**$ 105,000**	**$ 105,000**	**$ 2,515,000**
Total Capital Projects - Sewer		**$ 33,960,000**	**$ 1,929,950**	**$29,410,258**	**$ 6,741,500**	**$11,907,500**	**$ 4,647,500**	**$19,497,500**	**$ 72,204,258**

Attachment E8-G: Webb Master Sewer Plan Proposal (November 2018)

ALBERT A. WEBB ASSOCIATES

Master Sewer Plan

Proposal for Planning and Engineering Services

Prepared for:

Jurupa COMMUNITY SERVICES DISTRICT

October 24, 2018

www.webbassociates.com

ALBERT A. WEBB ASSOCIATES

Corporate Headquarters
3788 McCray Street
Riverside, CA 92506
951.686.1070

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Palm Desert, CA 92211
760.568.5005

Murrieta Office
41391 Kalmia Street #320
Murrieta, CA 92562
951.686.1070

OFFICE OF THE DISTRICT ENGINEER

W.O. No.: Proposal 013267

October 24, 2018

Mr. Eddie Rhee, P.E. Senior Engineer
JURUPA COMMUNITY SERVICES DISTRICT
11201 Harrel Street
Jurupa Valley, California 91752

RE: Request for Proposal Master Sewer Plan

Dear Mr. Rhee:

Enclosed is Albert A. Webb Associates (Webb) response to your Request for Proposal for preparation of a Master Sewer Plan. Webb has consistently provided engineering planning services to public sector clients throughout California since 1945. Furthermore, Webb has served as the Jurupa Community Services District (District) engineering consultant for over 58 years providing the same master sewer planning services to the District. Webb will commit the level of resources and expertise to provide a quality, responsive, and effectively managed project to meet the District's expectations.

We have assembled a project team of highly experienced professional engineers and planners selected specifically for this project due to their wealth of experience with the District's wastewater system. All project team members are invested in providing the District the highest quality work products to achieve your goals and strategic vision to *"Provide superior sanitary service and operate an industrial waste system that results in no Sewer System Overflows, meets best practices in protecting the environment and reliably recovers water resources for the beneficial uses of our customers."*

If you need to talk to me at any time or have any questions or require additional information, please call me at 951-686-1070.

Sincerely

ALBERT A. WEBB ASSOCIATES

William L. Malone

William T. Malone, PE / PMP
Vice President

TABLE OF CONTENTS

SECTION 1 - PROJECT UNDERSTANDING

The Jurupa Community Services District (JCSD or District) is requesting a proposal for the preparation of a Master Sewer Plan for the District's wastewater system. The District's goal is to develop and update the 2004 Master Sewer Plan to provide a comprehensive Master Sewer Plan that enables the District to strategize planning and budgeting efforts to implement sewer system enhancements in order to maintain a high level of collection reliability and efficiency for current and future flows in compliance with regulatory guidelines.

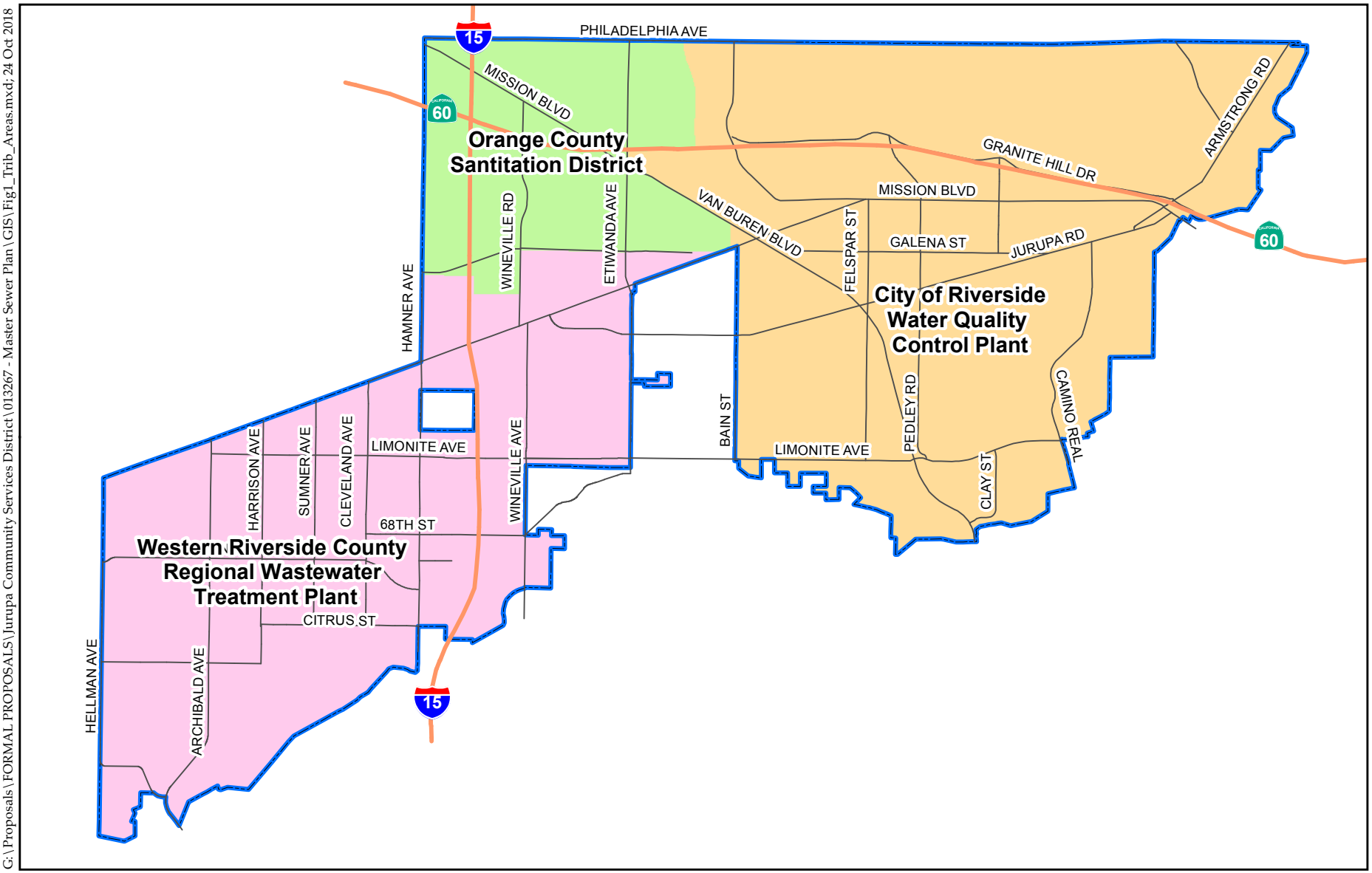
The JCSD service area covers approximately 40.8 square miles of northwest Riverside County and includes the city of Eastvale and a majority of the city of Jurupa Valley. JCSD serves approximately 110,000 people and is governed by five elected representatives from both cities. The Board of Directors consists of representatives from each of the five Divisions within the District's service area. JCSD's elevation varies from a low of 560 feet to a high of 2,230 feet. Additionally approximately 80 percent of the land within the District's service area has a slope of less than 12 percent.

JCSD's sewer system consists of approximately 385 miles of gravity and forcemain pipe ranging from 6-inches to 42-inches in diameter, eight (8) active lift stations and three (3) standby lift stations. Wastewater generated in the District's service area drains to one of three treatment facilities; thus the District's sewer system can be divided into three tributary areas. **(Please see Figure 1)** The older portion of the District, which consists of lands within the City of Jurupa Valley discharges to the City of Riverside Water Quality Control Plant. The newer portion of the District, generally in the City of Eastvale, discharges to the Western Riverside County Regional Wastewater Authority treatment plant. The area within Community Facilities District No. 1 (CFD No. 1) discharges to the Inland Empire Brine Line (IEBL). The IEBL is owned and operated by the Santa Ana Watershed Project Authority and discharges to Orange County Sanitation District for treatment and ocean discharge. The IEBL is for non-reclaimable and industrial waste.

Items to be addressed in the development of the Master Sewer Plan include: updating the District's 2004 Master Sewer Plan including addenda; preparation of a sanitary sewer system master plan, including detailed maps and exhibits; analysis and evaluation of the existing system for existing and future development conditions; create a sewer system hydraulic model; reviewing existing, new, and upcoming sewer system laws and regulations; development of a Capital Improvement Program (CIP) and phasing schedule, incorporation of the Cities of Jurupa Valley and Eastvale projected land use designation to determine sewer generation information; SCADA automation and energy efficiency, and planning cost estimates for recommended improvements.

Following completion of the Master Sewer Plan next level efforts will consist of:

1) CEQA Documentation
2) Financial Planning for O&M and Rehab/Replacement of Existing Facilities
3) Review of Sewer Connection Fees for future developments
4) Analysis of Sewer Rates for all customers



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Source: Riverside Co. GIS, 2018.

Figure 1 - JCSD Sewer System Tributary Areas

Jurupa Community Services District

ALBERT A. WEBB ASSOCIATES

SECTION 2 - SCOPE OF WORK

GENERAL

Our proposed Scope of Work for the Master Sewer Plan is organized with a detailed breakdown and description of the tasks. The Scope of Work has been prepared in accordance with the RFP. We acknowledge the requested scope of work, deliverables, and District services requested in the RFP and have enhanced and expanded on the requested services where appropriate. Assumptions are included in the scope and identifies information and input required from the District and anticipated deliverables. All engineering work will be performed by a professional engineer registered in the State of California. The final report will be stamped and signed by the Civil Engineer responsible for the work.

Our services are performed in compliance with applicable laws, rules, regulations, and standards in effect on the date of our agreement. During each phase, we maintain our QA/QC program to provide reliable results as detailed in this section. Webb's QA/QC program is constantly evolving and being updated to address and minimize challenges that arise through the course of similar projects and to address specific agency requirements. Webb will provide Master Sewer Plan documentation for the complete project.

TASK 1. PROJECT MANAGEMENT AND MEETINGS

Webb will manage and coordinate all components of the Project and take a proactive role in keeping all tasks on schedule and budget to ensure timely completion of the Project. Webb will fully coordinate with District staff and be responsive to any email and telephone discussions. Webb will be in contact with the District frequently to ensure a timely District review of deliverables. We will similarly work with all stakeholders in a responsible manner.

A- Project Administration

Webb will update the project design and construction schedule provided in our proposal monthly throughout the project. In addition monthly status reports will be provided addressing project status and critical issues. Overall administration of the project and coordination with the District is included.

Deliverable: Updated project schedule and status report monthly to District

B- Engineering Phase Progress Meetings

Webb will attend one (1) kick-off meeting, five (5) review meetings, and seven (7) progress/milestone meetings with the District throughout the project. We will prepare meeting minutes and a list of action items after each meeting.

Deliverable: Meeting Agendas, Meeting Summary, and Action Items.

C- Board of Directors Workshop

Webb will attend one (1) Board meeting workshop with the District and assist District staff in presenting the Master Sewer Plan to the Board members.
Deliverable: Presentation Materials and exhibits.

TASK 2. LAND USE AND EXISTING DATA REVIEW

Webb will collect and review the cities of Eastvale and Jurupa Valley's relevant planning documents and District's planning data related to the sewer system.

A- Meetings with City Planning Departments

Webb will attend one (1) meeting with each City's Planning Department to establish a planning basis for future land use and development changes anticipated through year 2040. We will prepare meeting minutes and a list of action items after the meeting.
Deliverable: Meeting Agendas, Meeting Summary and Action Items.

B- Research City of Eastvale and Jurupa Valley

Webb will research the available planning documents and general plan information from the Cities. In addition, documents such as the District's 2014 Sewer System Management Plan as well as other pertinent planning documents will be obtained. Current available aerial mapping along with Riverside County Assessor's land use information will be secured. The current District development tracking map and information will also be utilized.
Deliverable: Copies of research information in PDF format.

C- Population Projections and Growth Rate

Webb will review and update the population projections through the near-term (year 2020) and long-term planning horizon (year 2040) within the District's service area. We anticipate the service area to include the area within the Santa Ana River Water Company on septic systems that is currently annexing to JCSD as development occurs.
Deliverable: Item F.

D- Existing Land Use Analysis

Webb will utilize the aerial mapping and Riverside County Assessor's land use information to determine and describe the current land use within the District's service area and identify vacant property. A summary of the findings will be displayed graphically in GIS format for each of the three tributary areas.
Deliverable: Item F.

E- Projected Land Use Analysis

Webb will utilize the planning information and Cities' General Plan information to determine and describe the projected land use within the District's service area. This analysis will include areas of redevelopment from current land use and vacant property. For purposes of this analysis, property that may be redeveloped will include developed property for which the Assessor's land use information is inconsistent with the Land Use designated in the City's General Plan Land Use Element. A summary of the findings will be displayed graphically in

GIS format for each of the three treatment plant tributary areas.
Deliverable: Item F.

F- Technical Memorandum

Webb will prepare a technical memorandum summarizing the population projections and growth rate, the existing land use, and projected land use determined in Task 2 along with GIS exhibits.
Deliverable: Technical Memorandum in PDF format.

TASK 3. SEWER FLOW PROJECTIONS

Wastewater flow projections for the existing system and future flows will be determined through historical data, current flow monitoring and metering and targeted flow monitoring. This information will be used to allow determination of wastewater generation and peaking factors. The future wastewater flow projections will be separated into each of the three treatment plant tributary areas. Utilization of District's tracking information on conditions of the wastewater system infrastructure will be incorporated in the documentation.

A- Detailed Request for Information

Webb will prepare a detailed request for information pertaining to the District's wastewater collections system and pressure system. Request will include sewer atlas maps, facilities inventory, GIS shape files, existing flow monitoring and meter information and all condition assessment information that is currently maintained by the District on the existing infrastructure.
Deliverable: Request for Information.

B- Analyze Historical and Current Flows

The District will provide flow monitoring and meter data that Webb will analyze to summarize existing system flows for both dry and wet weather conditions and to estimate sewer return ratios and existing flows in the wastewater system. Commercial, industrial, and/or institutional users, which may contribute significantly to wastewater flows will be identified and investigated individually through discussions with District staff.
Deliverable: See Item H.

C- Existing System Description

Webb will describe the existing sewer system characteristics. This description shall include trunk/interceptor system, pressure systems consisting of lift stations and force mains, diversion structures, and existing sewer system flows and the current contracted treatment capacity for each of the three treatment plant tributary areas and pipeline capacity for the IEBL.
Deliverable: See Item H.

D- Current System Deficiencies

Beyond currently known flow capacity issues in the existing system, detailed flow evaluation and hydraulic deficiencies of the existing system will be identified in the sewer modeling task. Based on the RFP the District has indicated extensive collection system condition assessment data in Cues Granite Net CCTV Inspection Scoring Data, especially in regards to the older Jurupa Valley area is available. We will summarize any problem areas such as surcharging, pipe- size deficiencies, sags, cracks, roots and other deficiencies. It is noted that the District has approximately 80,000 feet of 6-inch or less VCP that was installed in the early 1960's still needs to be evaluated for replacement. No field investigation of existing facilities is included in the Master Sewer Plan effort and Webb will rely on the District's existing data at time of the request for data.

Deliverable: See Item H.

E- Targeted Flow Monitoring

A flow monitoring plan shall be prepared and presented to District staff, which shall list flow monitoring locations to best understand key areas and areas of similar land use. Upon the District's approval of the plan, the District shall perform flow monitoring for up to a two week period at the selected sites. We will use the flow monitoring data to develop land-use specific diurnal loading patterns for the base wastewater inflows tributary to each flow monitoring location. In addition data will be used in Task 4 to assist in calibrating the model.

Deliverable: See Item H.

F- Determine Wastewater Generation Factors

Webb will review and update the current flow generation data for the various land uses (residential, commercial/industrial, infiltration/inflow, miscellaneous uses) in the District. In addition based upon the targeted flow monitoring a review and update of the District's wastewater peaking factors will be performed. The wastewater generation and peaking factors will also take into account the three distinct tributary areas in the District.

Deliverable: See Item H.

G- Future Wastewater Flow Projections

Based upon the determination of the wastewater generation factors for various land use categories and the future land uses planned by the Cities of Eastvale and Jurupa Valley the future projected wastewater flows will be determined under the near-term and long-term scenario identified in the RFP.

Deliverable: See Item H.

H- Technical Memorandum

Webb will prepare a technical memorandum summarizing the historical and current flows, system description and deficiencies, targeted flow monitoring results, wastewater generation factors, peak factors and future wastewater flow projections determined in Task 3 along with supporting Tables and GIS exhibits.

Deliverable: Technical Memorandum in PDF format.

TASK 4. SEWER MODEL DEVELOPMENT

Webb will develop a sewer system model on a GIS platform to interface with the District's GIS database and atlas maps.

A- Selection of Sewer Modeling Software

The District does not currently operate or maintain a hydraulic model of the entire wastewater system. Previous hydraulic models addressed the main sewer trunk line systems. Webb will research available software and conduct a workshop with District staff to determine the appropriate modeling software to best fit District needs and intended uses. The District requests the selected model be capable of performing risk-based analysis of the sewer system to support operational, maintenance, repair / replacement, and CIP decisions. The District also wants a model that will account for such factors including, but not limited to: pipe / manhole / infrastructure size, material, age, condition, current and projected flows, potential for inflow and infiltration, proximity to environmentally sensitive areas, historical issues, difficult maintenance access, capacity assurance, and currently planned CIP's. The proposed model should allow for the continuous update of sewer system infrastructure components and operational parameters by staff as system improvements and extensions are made. The District anticipates purchasing appropriate modeling software, such as InfoSewer, directly from a vendor after reviewing Webb's recommendation.

Deliverable: Workshop and summary memo.

B- Create Model Pipeline Network and Facilities from GIS data

The District will provide a complete GIS shapefile to Webb in order to develop the sewer system hydraulic model. In addition all supplemental information, atlas maps, record drawings, etc. to support the task is anticipated to be provided by the District. The District wants to create a dynamic, customizable, interactive model of the sewer collection system using sewer system asset information from the District's GIS map and sewer system operational data to be provided by the District. Webb will deliver a completed and fully functional model of the sewer collection system for District use. The model shall include all sewers 4-inches in diameter and larger, excluding service laterals. Sewer attributes such as manhole invert and rim elevations, pipeline invert elevations and diameters, materials, and age shall be fully populated using GIS and as-built drawings. We have assumed all the information will be correctly provided in the GIS shape file and have assumed three days of effort to fix any deficiencies or supplement the District supplied information. It is important that all the information requested to be attributes in the model are complete and correctly formatted.

Deliverable: Operational Model.

C- Calibrate Model

Webb will utilize the targeted flow monitoring information from Task 3 to assist in model calibration. The accuracy of the calibration results shall be summarized in tabular and graphical format for each of the metered sites. The results shall be presented for both dry and wet weather, average and peak flows to indicate the accuracy to the model.

Deliverable: Model accuracy in tabular and graphical form in PDF format.

D- Perform Sewer System scenario runs

Webb will prepare the pipe design and system operation parameters for the evaluation guidelines for the analysis of the wastewater system. The criteria will include the generation and peaking factors, wet weather requirements, definition of hydraulic deficiencies for each pipe size, and pipe full flow failure points. Utilizing the approved evaluation criteria, the following analysis shall be performed for existing (near term), 20-year (long term) and ultimate build-out conditions:

- ✓ *Gravity and Force Main Capacity Evaluation under Peak Dry-Weather and Wet-Weather Conditions*
- ✓ *Lift Station Capacity Evaluation under Peak Dry- Weather and Wet-Weather Conditions*

Any capacity deficiencies will be identified and the model will be used to identify and size improvements to meet the criteria. Potential rerouting of sewers will also be considered for use of relief sewers with capacity.
Deliverable: Evaluation Criteria in PDF format.

E- Provide Training to District Staff on model

We assume that the District will train their staff on the selected software through the provider's available training programs if they have not used the selected software previously. No budget is included for Webb to fund software providers training or any hardware or software required for the District to access the program. Webb has budgeted 40 hours of time to familiarize and train District staff on the District's model to be developed and operated at the completion of the project.
Deliverable: Onsite training.

F- Technical Memorandum

Webb will prepare a technical memorandum summarizing the model selection, creation, calibration, evaluation criteria, proposed scenarios and runs and results.
Deliverable: Technical Memorandum in PDF format.

TASK 5. MASTER SEWER CIP

Webb will work with District staff to review existing District sewer projects and development activity in progress to set the foundation for the development of a short term and long term CIP and sewer line replacement program. Preliminary phasing of proposed system improvements will be proposed.

A- Review Completed, in progress and planned CIP projects

Webb will review the recently completed CIP projects, such as the Sky Country Trunk Sewer, current projects in design and the proposed projects from the previous Master Sewer Plan, such as the Glen Avon Trunk Sewer, to determine the projects to be reviewed, updated and potentially carried over as part of the updated plan.
Deliverable: See Item F.

B- Develop 5-year (short term) and 20-year (long term) CIP

Webb will prepare a 20-year major capital improvements plan focused on lift stations, major trunk lines and collection mains as a result of the system modeling. The existing system, under 5-year and 20-year growth projections and the ultimate build out scenarios improvement will be determined and documented. The CIP will identify all the necessary improvements in each of the time frames. The short term horizon will heavily consider current development activity in the District. No detailed absorption analysis will be performed to identify areas with the highest probability of development for the 20-year period. All improvements will be identified and summarized. Wastewater Treatment Plant capacities for each of the three tributary areas will also be projected for each of the time periods against the current contracted capacities for any deficiencies and potential need to acquire additional treatment plant capacity.

Deliverable: See Item F.

C- Develop Sewer line Replacement Program

Webb will prepare a sewer line replacement program as a result of the system modeling identifying hydraulic deficiencies and based upon the condition assessment information of cracks, roots, sags, pipe age, sub-standard pipe size, cleaning frequency, joint offsets, accessibility, pipe criticality, high flow rates, and potential additional flows due to planned developments upstream. The sewer line replacement program will also be correlated to CIP improvements for any overlap. The criteria for replacement will be placed in a matrix and Webb will work with the District to establish the importance criteria to each of the criteria to establish priorities. The highest priority improvements will be determined and based upon the District's proposed annual budget for sewer line rehabilitation and replacement the final program will be established. The District may also want to include a manhole replacement program in the sewer line program if there is one in place.

Deliverable: See Item F.

D- Cost Estimates of CIP and Replacement program

Webb will develop construction and project costs for proposed sewer system facility improvements for both the CIP and replacement program. Construction cost estimates will be based on current industry bidding prices and project cost will included a 40% factor of construction costs for soft costs. Typical soft costs included construction contingencies, design engineering, surveying and mapping, geotechnical evaluation and report, project contract administration, field inspection and nominal environmental documentation. Costs will be based on Engineering News Record (ENR) construction cost index for Los Angeles. Escalation, financing, interest during construction, legal, EIR, land acquisition costs are not included.

Deliverable: See Item F.

E- Prioritization and phased approach

As indicated the CIP and Sewer line Replacement programs will be determined and the improvements will be prioritized. Based upon District input on the funding available for each program and the project costs determined in Task D a phasing plan for wastewater system improvements will be developed

Deliverable: See Item F.

F- Technical Memorandum

Webb will prepare a technical memorandum summarizing the proposed short and long term CIP improvements and Replacement Program with accompanying cost estimates.
Deliverable: Technical Memorandum in PDF format.

TASK 6. MASTER SEWER PLAN REPORT

Webb will prepare a Draft Master Sewer Plan compiling the information from Tasks 2 through 5 for District review and comments. A Final Master Plan will be prepared incorporating comments on the Draft Master Sewer Plan.

A- Draft Master Sewer Plan

Webb will prepare a Draft Master Plan summarizing the study and all work tasks. The Draft Master Plan will include drawings, maps and graphics, reflecting the information gathered and prepared. A draft of the report will be provided to the District for initial staff review. The contents of the plan will consist of the following:

1) Executive Summary
2) Introduction
3) Existing and Projected Land Use and Population Growth
4) Sewer System Analysis Criteria
5) Existing Facilities description
6) Projected Wastewater Flows
7) System Hydraulic Analysis
8) CIP Program
9) Replacement Program
10) Cost Analysis

Deliverable: Draft Master Sewer Plan.

B- Exhibits / Maps / Figures

Color graphics will be used for the Master Sewer Plan to support the work performed on the project.
Deliverable: Exhibits.

C- Final Master Sewer Plan

A Final Master Plan will be prepared incorporating comments on the Draft Master Plan. Color copies will be used for any graphics in the Final Master Plan. In addition to the complete Final Master Plan, a short, stand-alone Executive Summary will be prepared and provided. This Executive Summary will summarize the overall goals, direction, meanings, and implications of the Master Plan. The Executive Summary will be written in simple, plain language directed at the layperson. Color copies will be used for any graphics in the Executive Summary. The District will review a draft of the document and any comments will be incorporated into the final Executive Summary.
Deliverable: Final Master Sewer Plan and Executive Summary.

DELIVERABLES

- Comprehensive meetings minutes/agendas
- Technical Memorandums (1 digital file in PDF)
- Draft Master Plan (3 hard copies & 1 digital file in PDF)
- Final Master Plan (6 hard copies, 1 digital file in PDF, and all native digital files)
- One Digital Hydraulic model in native format
- Scalable system maps in PDFs
- All digital files on Flash drive

ADDITIONAL SERVICES

Services which are not specifically identified herein as services to be performed by Webb Associates are considered Additional Services for the purposes of this Proposal. The District may request that Webb Associates perform services which are additional services. Webb Associates will perform such additional services upon execution of an amendment to this Agreement setting forth the scope, schedule and fee for such additional services. Webb will also provide prior notice to the District, and obtain acceptance from same, before performing work outside the contract work scope and thereby contract budget amount.

EXCLUSIONS

Any work relating to the following is specifically excluded for the services proposed herein and, if required, must be contracted for under a separate contract or as an addendum to this contract:

1. Flow Monitoring (by District)
2. Condition Assessment of Sewer beyond District information
3. CEQA Documentation
4. Financial Plan
5. Review or update to Sewer Fees and Sewer Rates
6. Any District Standards updates
7. Purchase of any equipment, hardware or software for the District to run the sewer system hydraulic model
8. Additional Meetings

SECTION 3 - PROJECT TEAM

The WEBB primary project team members are as follows:

Project Manager – William T. Malone, PE/PMP

Bill will be the prime point of contact and oversee and manage the Master Sewer Plan efforts. Bill has been involved in the planning, design and construction of JCSD CIP Sewer projects for over 30 years and oversees the Webb development services support team provided to the District. Bill has a handle on the overall sewer system, current and planned development and recent Sewer Bond Improvements project.

Project Engineer – Sinnaro Yos, PE

Sinnaro has nearly 20 years of engineering experience in the wastewater field. Sinnaro was responsible for preparation and running the sewer model for the previous District Master Sewer Plan and is active in the design of sewer CIP projects for the District. Sinnaro's primary role is design of the mechanical pumping facilities and understands the District's pressure system of lift stations and force mains operated in the system.

Assistant Engineer – Gustavo Gomez, PE

Gus currently is supporting the District's development services in the preparation of water and sewer availability letters, discretionary reviews of projects in the City of Jurupa Valley and Eastvale and the plan check of water and sewer improvement plans. Gus has prepared several sewer studies to evaluate the best method of service to meet District standards for multiple developments.

Planner - Cheryl DeGano

Cheryl has been involved in the planning and environmental documentation of multiple JCSD CIP and planning projects. Cheryl led the CEQA for the previous Master Sewer Plan and subsequent addendums required for the construction of the Sewer Bond Improvements project. Cheryl also supports the District's development services in the review of CEQA documents for the developments and for the many recent sewer area annexations to the District's service area.

GIS Specialist – Nanette Pratini, GISP

Nanette was responsible for preparing the District's water and sewer atlas maps in GIS format that have been utilized in the planning, and design on many projects. Nanette will provide the technical support in the use of GIS in the City of Jurupa Valley and Eastvale planning and land use information and interface of information for the model.

Technical Adviser – Sam I. Gershon, PE

Sam has been involved in the planning, design and construction of JCSD Sewer projects and will provide technical assistance and advice as it relates to the project and the District's expectations.

Support Staff

Webb has significant engineering and planning support staff for the project to assist the lead WEBB Team members.

SECTION 4 - PROJECT SCHEDULE

PROJECT APPROACH

WEBB's basic approach to project scheduling centers on determining each project's critical path items, allocating the necessary time and resources to complete them on time and thereby meet the baseline completion timeframe. Critical path items for the Master Plan typically include the codependency and reliance of timely completion of prior tasks to allow completion of the follow on tasks and move the project forward.

The preliminary design schedule for the Master Sewer Plan projects include the milestone tasks and provided the District a three week time-frame for review for each technical memorandum submittal and the Master Sewer Plan Document. Based upon our experience on similar projects we have established a schedule goal as shown in the preliminary project schedule. The schedule presented reflect the realistic schedule for the project understanding.

Key components of maintaining the project schedule revolve around the following actions between WEBB and the District:

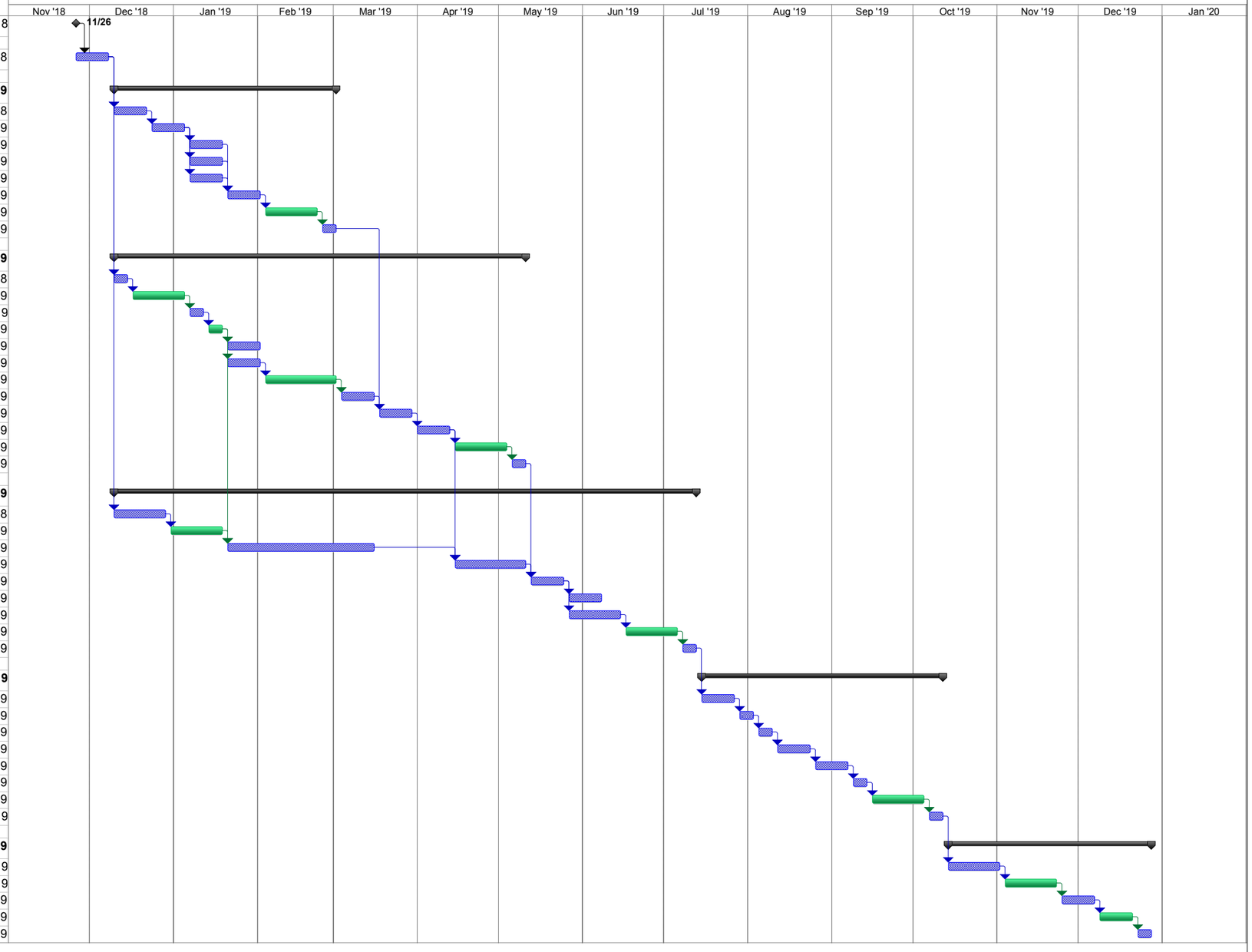
1) Completion of key elements of each task, projected land use, District provide complete information, selection of generation factors, and calibration of the model
2) Close coordination and communication with the District (including operations and engineering personnel) during the planning and evaluation tasks.
3) Coordinating early on with the City of Jurupa Valley and Eastvale on the land use and population estimates
4) Effectively and thoroughly addressing District comments and concerns throughout the project.
5) Addressing the critical issues with the District

WEBB's assembled team is prepared to resolve these items with the District. WEBB will perform coordination through the course of the project which establishes the basis for completion of these items through each phase. The Project Manager continually reviews the project schedule, project budget, and work completed to date. The Project Manager will then discuss the results of this review with the District and provide updates every month. If necessary, corrective measures will be implemented and the project schedule updated.

Detailed Project Schedule
Jurupa Community Services District

Master Sewer Plan

ID	Task Name	Duration	Start	Finish
1	**DISTRICT AUTHORIZATION**	0 days	Mon 11/26/18	Mon 11/26/18
2				
3	**KICK-OFF MEETING**	2 wks	Mon 11/26/18	Fri 12/7/18
4				
5	**LAND USE AND EXISITNG DATA REVIEW**	**12 wks**	**Mon 12/10/18**	**Fri 3/1/19**
6	Meetings with City of Eastvale and Jurupa Valley	2 wks	Mon 12/10/18	Fri 12/21/18
7	Research Planning Data	2 wks	Mon 12/24/18	Fri 1/4/19
8	Population Projections and Growth Rate	2 wks	Mon 1/7/19	Fri 1/18/19
9	Existing Land Use Analysis	2 wks	Mon 1/7/19	Fri 1/18/19
10	Projected Land Use Analysis	2 wks	Mon 1/7/19	Fri 1/18/19
11	Technical Memorandum	2 wks	Mon 1/21/19	Fri 2/1/19
12	District Review of TM	3 wks	Mon 2/4/19	Fri 2/22/19
13	Final Technical Memorandum	1 wk	Mon 2/25/19	Fri 3/1/19
14				
15	**SEWER FLOW PROJECTIONS**	**22 wks**	**Mon 12/10/18**	**Fri 5/10/19**
16	Detailed Request for Information	1 wk	Mon 12/10/18	Fri 12/14/18
17	District provide all data and information	3 wks	Mon 12/17/18	Fri 1/4/19
18	Webb review of Data	1 wk	Mon 1/7/19	Fri 1/11/19
19	Supplemetal Data from District	1 wk	Mon 1/14/19	Fri 1/18/19
20	Analyze Historical and Current Flows	2 wks	Mon 1/21/19	Fri 2/1/19
21	Current System Deficiencies	2 wks	Mon 1/21/19	Fri 2/1/19
22	Targeted Flow Monitoring	4 wks	Mon 2/4/19	Fri 3/1/19
23	Determine Wastewater Generation Factors	2 wks	Mon 3/4/19	Fri 3/15/19
24	Future Wastewater Flow Projections	2 wks	Mon 3/18/19	Fri 3/29/19
25	Technical Memorandum	2 wks	Mon 4/1/19	Fri 4/12/19
26	District Review of TM	3 wks	Mon 4/15/19	Fri 5/3/19
27	Final Technical Memorandum	1 wk	Mon 5/6/19	Fri 5/10/19
28				
29	**SEWER MODEL DEVELOPMENT**	**31 wks**	**Mon 12/10/18**	**Fri 7/12/19**
30	Determine Sewer Modeling Software	3 wks	Mon 12/10/18	Fri 12/28/18
31	District Approval of Modeling Software	3 wks	Mon 12/31/18	Fri 1/18/19
32	Create Model Pipeline Network/Facilities from GIS data	8 wks	Mon 1/21/19	Fri 3/15/19
33	Calibrate Model	4 wks	Mon 4/15/19	Fri 5/10/19
34	Perform Sewer System scenario runs	2 wks	Mon 5/13/19	Fri 5/24/19
35	Provide Training to District Staff on model	2 wks	Mon 5/27/19	Fri 6/7/19
36	Technical Memorandum	3 wks	Mon 5/27/19	Fri 6/14/19
37	District Review of TM	3 wks	Mon 6/17/19	Fri 7/5/19
38	Final Technical Memorandum	1 wk	Mon 7/8/19	Fri 7/12/19
39				
40	**MASTER SEWER CIP**	**13 wks**	**Mon 7/15/19**	**Fri 10/11/19**
41	Review Completed, in progress and planned CIP	2 wks	Mon 7/15/19	Fri 7/26/19
42	Develop 5-year and 20-year CIP	1 wk	Mon 7/29/19	Fri 8/2/19
43	Develop Sewer line Replacement Program	1 wk	Mon 8/5/19	Fri 8/9/19
44	Cost Estimates of CIP and Replacement program	2 wks	Mon 8/12/19	Fri 8/23/19
45	Prioritization and phased approach	2 wks	Mon 8/26/19	Fri 9/6/19
46	Technical Memorandum	1 wk	Mon 9/9/19	Fri 9/13/19
47	District Review of TM	3 wks	Mon 9/16/19	Fri 10/4/19
48	Final Technical Memorandum	1 wk	Mon 10/7/19	Fri 10/11/19
49				
50	**MASTER SEWER PLAN REPORT**	**11 wks**	**Mon 10/14/19**	**Fri 12/27/19**
51	Prepare Draft Master Sewer Plan	3 wks	Mon 10/14/19	Fri 11/1/19
52	District Review of Draft MSP	3 wks	Mon 11/4/19	Fri 11/22/19
53	Prepare Final MSP and Executive Summary	2 wks	Mon 11/25/19	Fri 12/6/19
54	District Review of MSP	2 wks	Mon 12/9/19	Fri 12/20/19
55	Deliver Final Master Sewer Plan	1 wk	Mon 12/23/19	Fri 12/27/19



Project: Project1
Date: Tue 10/23/18

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Progress | Deadline

SECTION 5 - PROJECT FEE

FEE SUMMARY

WEBB is committed to providing the highest quality service to the District and to provide quality engineering services for the Sewer Master Plan as specified in the RFP. After preparing a detailed scope of work for this project, we have included all the necessary items required to successfully complete it and believe our team experience will generate an efficient processing of the project deliverables. Based upon the project's scope of work a summary of our engineering services budget is as follows:

	ENGINEERING SERVICES TASK	TOTAL ESTIMATED SERVICES BUDGET
I.	Project Management and Meetings	$ 39,680
II.	Land Use and Existing Data Review	$ 24,800
III.	Sewer Flow Projections	$ 35,960
IV.	Sewer Model Development	$ 99,100
V.	Master Sewer CIP	$ 45,660
VI.	Master Sewer Plan Report	$ 44,800
	Total Fee Engineering Services =	$ 290,000

Unforeseen additional work activities may arise as the project progresses. As Such, the District may wish to allocate an additional 10-15 percent of the total engineering services budget allocation purposes only. A detailed man-hour breakdown of the engineering services budget is included.

Jurupa Community Services District

Master Sewer Plan

		Malone, William T.	Yos, Sinnaro	Gomez, Gustavo A	DeGano, Cheryl	Tobias, Monica	Pratini, Nanette	DeShazer, Teresa M.	Gershon, Sam I.	Total Hours	Subtotal - Labor	Expenses	Total Task
Fee Schedule 2017	Classification	Principal II	Senior II	Assistant V	Senior III	Assistant I	Associate I	Project Coordinator	Principal II				
	Billout Rate	$ 265	$ 208	$ 150	$ 224	$ 87	$ 161	$ 101	$ 265		Sub total - labor	Expenses	Total Task
I	**Project Management and Meetings**	**92**	**21**		**21**		**3**	**38**	**6**	**181**	**$ 39,363**	**$ 320**	**$ 39,680**
	Project Administration, Coordination, Schedule, Status Reports	60	12		12			20		**104**	$ 23,104	$ -	**$ 23,100**
	Kick-off, Review and Progress Meetings (12)	24	9		6			12	6	**57**	$ 12,378	$ 300	**$ 12,680**
	Board Meeting Workshop / Study Session (1 Each)	8			3		3	6		**20**	$ 3,881	$ 20	**$ 3,900**
II	**Land Use and Exisitng Data Review**	**12**		**4**	**34**	**48**	**40**	**6**	**2**	**146**	**$ 23,148**	**$ 1,660**	**$ 24,800**
	Meetings with City of Eastvale and Jurupa Valley Planning	6			8			2		**16**	$ 3,584	$ 60	**$ 3,640**
	City of Jurupa Valley and Eastvale Research				4	8	16			**28**	$ 4,168	$ -	**$ 4,170**
	Popultation Projections and Growth Rate				8	12	8			**28**	$ 4,124	$ 1,600	**$ 5,720**
	Exisitng Land Use analysis				4	8	8			**20**	$ 2,880	$ -	**$ 2,880**
	Projected Land Use Analysis	2		4	4	12	4			**26**	$ 3,714	$ -	**$ 3,710**
	Technical Memorandum	4			6	8	4	4	2	**28**	$ 4,678	$ -	**$ 4,680**
III	**Sewer Flow Projections**	**20**	**56**	**76**	**8**	**8**	**14**	**18**	**4**	**204**	**$ 35,968**	**$ -**	**$ 35,960**
	Detailed Request for Information	2	4	4				2		**12**	$ 2,164	$ -	**$ 2,160**
	Analyze Historical and Current Flows	2	8	16						**26**	$ 4,594	$ -	**$ 4,590**
	Exisitng System Description	2	8	16				4		**30**	$ 4,998	$ -	**$ 5,000**
	Current System deficiencies	2	8	16						**26**	$ 4,594	$ -	**$ 4,590**
	Targeted Flow Monitoring	4	8					4		**16**	$ 3,128	$ -	**$ 3,130**
	Determine Wastewater Generation Facors	2	8	16			4			**30**	$ 5,238	$ -	**$ 5,240**
	Future Wastewater Flow Projections	2	4	8	4	8	8			**34**	$ 5,442	$ -	**$ 5,440**
	Technical Memorandum	4	8		4		2	8	4	**30**	$ 5,810	$ -	**$ 5,810**
IV	**Sewer Model Development**	**58**	**186**	**256**			**32**	**8**	**2**	**542**	**$ 98,948**	**$ 150**	**$ 99,100**
	Selection of Sewer Modeling Software	6	8							**14**	$ 3,254	$ 20	**$ 3,270**
	Create Model Pipeline Network and Facilities from GIS data	20	100	160			32			**312**	$ 55,252	$ -	**$ 55,250**
	Calibrate model	8	10	20						**38**	$ 7,200	$ -	**$ 7,200**
	Perform Sewer system scenario runs	16	32	40						**88**	$ 16,896	$ -	**$ 16,900**
	Provide Training to District staff on model		20	20						**40**	$ 7,160	$ 130	**$ 7,290**
	Technical Memorandum	8	16	16				8	2	**50**	$ 9,186	$ -	**$ 9,190**
V	**Master Sewer CIP**	**48**	**84**	**68**			**12**	**12**	**8**	**232**	**$ 45,656**	**$ -**	**$ 45,660**
	Review completed, in progress and planned CIP projects	4	8				2			**14**	$ 3,046	$ -	**$ 3,050**
	Develop 5-year and 20-year CIP	16	24	16			2		2	**60**	$ 12,484	$ -	**$ 12,480**
	Sewerline Replacement Program	8	20	16			2		2	**48**	$ 9,532	$ -	**$ 9,530**
	Cost Estimates	4	8	16				4		**32**	$ 5,528	$ -	**$ 5,530**
	Prioritization and Phasing Approach	8	8	4			2		2	**24**	$ 5,236	$ -	**$ 5,240**
	Technical Memorandum	8	16	16			4	8	2	**54**	$ 9,830	$ -	**$ 9,830**
VI	**Master Sewer Plan Report**	**22**	**24**		**40**	**32**	**88**	**40**	**8**	**254**	**$ 42,894**	**$ 1,900**	**$ 44,800**
	Draft Master Sewer Plan	12	8		24	24		32	4	**104**	$ 16,600	$ 400	**$ 17,000**
	Exhibits/Maps/Figures	4	8		8		80			**100**	$ 17,396	$ -	**$ 17,400**
	Final Master Sewer Plan and Executive Summary	6	8		8	8	8	8	4	**50**	$ 8,898	$ 1,500	**$ 10,400**
Total		252	371	404	103	88	189	122	30	1559	**$ 285,977**	**$ 4,030**	**$ 290,000**