

**Council Meeting: January 31, 2012****SUBJECT: Award of Contract for a Wastewater Collection System Master Plan (F1002-80)****BACKGROUND**

Approval is requested to award a contract in the amount of \$731,713 to Infrastructure Engineering Corporation (IEC) of Poway for a comprehensive Wastewater Collection System Master Plan for the City's sanitary sewer and storm drainage systems. Approval is also requested for a design contingency in the amount of \$54,587, approximately 7.5%, which will utilize remaining budgeted project funding if necessary.

DISCUSSION

Sunnyvale's wastewater collection system includes sanitary sewer and storm drainage components. A comprehensive planning study is needed to define the capital projects that will be necessary to replace this aging infrastructure, and to identify any capacity-increasing projects that may be needed as a result of in-fill development. Comprehensive master planning is a best management practice to help ensure that the wastewater collection system continues to provide reliable service to Sunnyvale residents and businesses and is utilized in the most effective manner.

Capital Project 827050 (Sanitary Sewer Collection System Master Plan) provides funding for the master plan. As one of the next steps in the Long Range Infrastructure Plan, the project will update citywide vertical control/benchmark systems; assess the physical condition, separation and maintenance of the existing systems; and use modeling to assess the current system hydraulics and potential changes to the system as a result of new capital projects. The master plan will make recommendations for improvements to provide adequate hydraulic capacity and improve the reliability of the collection system. It will include an analysis of the financial impacts of the recommendations and will recommend a schedule of capital projects needed to meet system demands. Importantly, the updated master plan will enable the City to require private developers to pay for sewer capacity increases and/or the rehabilitation of existing sewers.

Request for Proposals (RFP) No. F1002-80 for the project was prepared and distributed in April 2011 to eighteen (18) engineering firms that were pre-qualified in the Water Pollution Control Plant category of the Sunnyvale Works!

pre-qualification program. The RFP work scope included the following eight tasks:

1. Updating the Citywide Vertical Control/Benchmark System.
2. Reporting on the Systems and Their Condition (research/condition assessment/flow monitoring/report on sanitary system inflow and infiltration).
3. Dynamic Hydraulic Systems Models and Flow Projections.
4. Operations and Maintenance, Fee Assessment and Fee Schedules.
5. Mapping of the Systems.
6. Wastewater Master Plan and Capital Improvement Program.
7. Project Management/Scheduling.
8. Development of an Intranet Web Browser Based Access Tool.

Subsequently, the work scope was modified to add a Wastewater Cost of Service Utility Rate Study (Task 9).

Responsive proposals were received from five firms as follows:

Carollo Engineers of Walnut Creek	\$979,911
West Yost Associates of Pleasanton	\$983,945
Infrastructure Engineering Corporation (IEC) of Poway	
Proposal A	\$730,826
Proposal B	\$1,806,575
RMC Water and Environment of San Jose	\$2,263,646
Brown and Caldwell of Walnut Creek	
Base Proposal	\$2,027,955
Base with Proposed Options	\$2,741,352

With these types of master-planning projects, it is not unusual to see a wide range of pricing, mainly due to the state of historical data, changing sanitary sewer flow conditions over time, and in determining how many pipe segments need to be surveyed/benchmarked in order to accurately model future flows.

An evaluation team comprised of staff from the Environmental Services Department (ESD) and Public Works Engineering Division evaluated the written proposals on qualifications, experience, quality and project understanding (pricing is not initially considered in the selection of civil engineering design consultants pursuant to the Qualifications Based Selection (QBS) requirements of §4526 of the California Government Code).

Following evaluation of the written proposals, all five firms were invited for interviews. As a result of the evaluation process, RMC Water and Environment (RMC) was unanimously selected as the highest ranked proposer and negotiations commenced with RMC on work scope and their proposal fees.

Extensive negotiations reduced the fees from \$2,263,646 to \$1,256,758, but the final cost significantly exceeded the available project budget. Proposal negotiations were deemed unsuccessful by the evaluation team, and the team began negotiations with the second highest ranked proposer, Infrastructure Engineering Corporation (IEC).

Due to the extended duration of negotiations, and to ensure the timely completion of the comprehensive Wastewater Cost of Service Study, Task 9 was subsequently removed from the scope of work and awarded on a separate contract under the City Manager's award authority.

Negotiations with IEC resulted in contract pricing of \$731,713, which mainly consists of their "A" proposal with inclusion of benchmarking and mapping components from their "B" proposal specific to tasks 1 and 2 of the work scope.

Staff recommends awarding the contract to Infrastructure Engineering Corporation (IEC) for completion of the Wastewater Collection System Master Plan.

FISCAL IMPACT

Project costs are as follows:

Waste Water Collection System Master Plan	\$731,713
Project contingency (approximately 7.5%)	<u>\$54,587</u>
Total cost	\$786,300

Capital Project 827050 is budgeted a total of \$786,300 between now and the end of FY 2012/2013, including \$465,000 in FY 2011/2012 for the wastewater collection system condition assessment, and \$321,300 in FY 2012/2013 for analysis and development of alternatives for infrastructure improvements. It is anticipated that research and data collection for the comprehensive condition assessment will continue into FY 2012/2013, with analysis/development of alternatives beginning later in that fiscal year. Therefore no Budget Modification will be needed at this time to move FY 2012/2013 funding into the current fiscal year.

This project is funded by the Wastewater Management Fund.

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, at the Sunnyvale Senior Center, Community Center and Department of Public Safety; and by making the agenda and report available at the Sunnyvale Public Library, the Office of the City Clerk and on the City's Web site.

RECOMMENDATION

It is recommended that Council:

1. Award a contract, in substantially the same form as the attached draft and in the amount of \$731,713 to Infrastructure Engineering Corporation (IEC) for the subject project, and authorize the City Manager to execute the contract when all the necessary conditions have been met; and
2. Approve a 7.5% design contingency in the amount of \$54,587.

Reviewed by:

Grace K. Leung, Director of Finance
Prepared by: Pete Gonda, Purchasing Officer

Reviewed by:

Kent Steffens
Director of Public Works

Reviewed:

John Stufflebean
Director of Environmental Services

Approved by:

Gary M. Luebbers
City Manager

Attachments

- A. Consultant Services Agreement

**ATTACHMENT A
DRAFT**

**CONSULTANT SERVICES AGREEMENT BETWEEN CITY OF SUNNYVALE AND
INFRASTRUCTURE ENGINEERING CORPORATION (IEC)
FOR ENGINEERING DESIGN SERVICES
FOR A WASTEWATER COLLECTION SYSTEM MASTER PLAN**

THIS AGREEMENT dated _____ is by and between the CITY OF SUNNYVALE, a municipal corporation ("CITY"), and INFRASTRUCTURE ENGINEERING CORPORATION (IEC) ("CONSULTANT").

WHEREAS, CITY desires to secure professional services necessary for investigation, analysis, design, , consultation, and other services for a project known as the Wastewater Collection System Master Plan; and

WHEREAS, CONSULTANT represents that it, and its sub-consultants, if any, possess the professional qualifications and expertise to provide the required services and are licensed by the State of California to practice engineering in the required disciplines;

NOW, THEREFORE, THE PARTIES ENTER INTO THIS AGREEMENT.

1. Services by CONSULTANT

CONSULTANT shall provide services in accordance with Exhibit "A" entitled "Scope of Work." All exhibits referenced in this Agreement are attached hereto and are incorporated herein by reference. To accomplish that end, CONSULTANT agrees to assign Scott Humphrey, P.E. to this project, to act in the capacity of Project Manager and personally direct the professional services to be provided by CONSULTANT.

Except as specified in this Agreement, CONSULTANT shall furnish all technical and professional services, including labor, material, equipment, transportation, supervision and expertise to perform all operations necessary and required to satisfactorily complete the services required in this Agreement.

2. Notice to Proceed/Completion of Services

- (a) CONSULTANT shall commence services upon receipt of a Notice to Proceed from CITY. Notice shall be deemed to have occurred three (3) calendar days after deposit in the regular course of the United States mail.
- (b) When CITY determines that CONSULTANT has satisfactorily completed the services defined in Exhibit "A," CITY shall give CONSULTANT written Notice of Final Acceptance, and CONSULTANT shall not incur any further costs hereunder. CONSULTANT may request this determination of completion when, in its opinion, it has satisfactorily completed the Scope of Work (Exhibit "A"), and if so requested, CITY shall make this determination within fourteen (14) days of such request.

3. Project Schedule

The Project Schedule is set forth in the attached Exhibit "A-1."

4. Payment of Fees and Expenses

Payments shall be made to CONSULTANT on a monthly basis as set forth in the attached Exhibit "B" entitled "Compensation Schedule." All compensation will be based on monthly billings as provided in Exhibit "B." Compensation will not be due until said detailed billing is submitted to CITY within a reasonable time before

payment is expected to allow for normal CITY processing. An estimate of the percent of total completion associated with the various categories of the services shall be furnished by CONSULTANT with said billing. When applicable, copies of pertinent financial records will be included with the submission of billing(s) for all direct reimbursables. Compensation shall not exceed the amounts set forth in Exhibit "B" for each phase. In no event shall the total amount of compensation payable under this agreement exceed the sum of Seven Hundred Thirty One Thousand Seven Hundred Thirteen and No/100 Dollars (\$731,713.00) unless upon written modification of this Agreement. All invoices, including detailed backup, shall be sent to City of Sunnyvale, attention Accounts Payable, P.O. Box 3707, Sunnyvale, CA 94088-3707.

5. No Assignment of Agreement

CONSULTANT bind themselves, their partners, successors, assigns, executors, and administrators to all covenants of this Agreement. Except as otherwise set forth in this Agreement, no interest in this Agreement or any of the work provided for under this Agreement shall be assigned or transferred, either voluntarily or by operation of law, without the prior written approval of CITY. However, claims for money due to or to become due to CONSULTANT from CITY under this Agreement may be assigned to a bank, trust company or other financial institutions, or to a trustee in bankruptcy, provided that written notice of any such assignment or transfer shall be first furnished to CITY. In case of the death of one or more members of CONSULTANT's firm, the surviving member or members shall complete the services covered by this Agreement. Any such assignment shall not relieve CONSULTANT from any liability under the terms of this Agreement.

6. Consultant is an Independent Contractor

CONSULTANT is not an agent or employee of CITY but is an independent contractor with full rights to manage its employees subject to the requirements of the law. All persons employed by CONSULTANT in connection with this Agreement will be employees of CONSULTANT and not employees of CITY in any respect. CONSULTANT is responsible for obtaining statutory Workers' Compensation coverage for its employees.

7. Consultant's Services to be Approved by a Registered Professional

All reports, costs estimates, plans and other documents which may be submitted or furnished by CONSULTANT shall be approved and signed by a qualified registered professional in the State of California. The title sheet for calculations, specifications and reports, and each sheet of plans, shall bear the professional seal, certificate number, registration classification, expiration date of certificate and signature of the professional responsible for their preparation.

8. Standard of Workmanship

CONSULTANT represents and maintains that it is skilled in the professional calling necessary to perform the services and its duties and obligations, expressed and implied, contained herein, and CITY expressly relies upon CONSULTANT's representations regarding its skills and knowledge. CONSULTANT shall perform such services and duties in conformance to and consistent with the standards generally recognized as being employed by professionals in the same discipline in the State of California.

The plans, designs, specifications, estimates, calculations reports and other documents furnished under the Scope of Work (Exhibit "A") shall be of a quality acceptable to CITY. The criteria for acceptance of the work provided under this Agreement shall be a product of neat appearance, well-organized, technically and grammatically correct, checked and having the maker and checker identified. The minimum standard of appearance, organization and content of the drawings shall be that used by CITY for similar projects.

9. Responsibility of CONSULTANT

CONSULTANT shall be responsible for the professional quality, technical accuracy and the coordination of the services furnished by it under this Agreement. Neither CITY's review, acceptance nor payment for any of the services required under this Agreement shall be construed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement and CONSULTANT shall be and remain liable to CITY in accordance with applicable law for all damages to CITY caused by CONSULTANT's negligent performance of any of the services furnished under this Agreement.

Any acceptance by CITY of plans, specifications, calculations, construction contract documents, reports, diagrams, maps and other material prepared by CONSULTANT shall not, in any respect, absolve CONSULTANT for the responsibility CONSULTANT has in accordance with customary standards of good engineering practice in compliance with applicable Federal, State, County and/or municipal laws, ordinances, regulations, rules and orders.

10. Right of CITY to Inspect Records of CONSULTANT

CITY, through its authorized employees, representatives, or agents, shall have the right, at any and all reasonable times, to audit the books and records including, but not limited to, invoices, vouchers, canceled checks, time cards of CONSULTANT for the purpose of verifying any and all charges made by CONSULTANT in connection with this Agreement. CONSULTANT shall maintain for a minimum period of three (3) years from the date of final payment to CONSULTANT or for any longer period required by law, sufficient books and records in accordance with generally accepted accounting practices to establish the correctness of all charges submitted to CITY by CONSULTANT. Any expenses not so recorded shall be disallowed by CITY.

11. Confidentiality of Material

All ideas, memoranda, specifications, plans, calculations, manufacturing procedures, data, drawings, descriptions, documents, discussions or other information developed or received by or for CONSULTANT and all other written information submitted to CONSULTANT in connection with the performance of this Agreement shall be held confidential by CONSULTANT and shall not, without the prior written consent of CITY be used for any purposes other than the performance of the Project services, nor be disclosed to an entity not connected with the performance of the Project services. Nothing furnished to CONSULTANT which is otherwise known to CONSULTANT or is or becomes generally known to the related industry shall be deemed confidential. CONSULTANT shall not use CITY's name, insignia or distribute exploitative publicity pertaining to the services rendered under this Agreement in any magazine, trade paper, newspaper or other medium without the express written consent of CITY.

12. No Pledging of CITY's Credit

Under no circumstances shall CONSULTANT have the authority or power to pledge the credit of CITY or incur any obligation in the name of CITY.

13. Ownership of Material

All material, including information developed on computer(s), which shall include, but not be limited to, data, sketches, tracings, drawings, plans, diagrams, quantities, estimates, specifications, proposals, tests, maps, calculations, photographs, reports and other material developed, collected, prepared or caused to be prepared, under this Agreement shall be the property of CITY, but CONSULTANT may retain and use copies thereof.

CITY shall not be limited, in any way, in its use of said material, at any time, for work associated with Project. However, CONSULTANT shall not be responsible for damages resulting from the use of said material for

work other than Project, including, but not limited to the release of this material to third parties for work other than on Project.

14. Hold Harmless/Indemnification

To the extent permitted by law (including, without limitation, California Civil Code section 2782.8), CONSULTANT agrees to indemnify, defend and hold harmless CITY, its officers and employees from any and all claims, demands, actions, causes of action, losses, damages, liabilities, known or unknown, and all costs and expenses, including reasonable attorneys' fees in connection with any injury or damage to persons or property to the extent arising out of any negligence, recklessness or willful misconduct of CONSULTANT, its officers, employees, agents, contractor, subcontractors or any officer, agent or employee thereof in relation to CONSULTANT's performance under this Agreement. Such defense and indemnification shall not apply in any instance of and to the extent caused by the sole negligence, recklessness or willful misconduct of CITY, its officers, employees, agents or representatives.

15. Insurance Requirements

CONSULTANT shall take out and maintain during the life of this Agreement policies of insurance as specified in Exhibit "C" attached and incorporated by reference, and shall provide all certificates and/or endorsements as specified in Exhibit "C."

16. No Third Party Beneficiary

This Agreement shall not be construed or deemed to be an agreement for the benefit of any third party or parties and no third party or parties shall have any claim or right of action hereunder for any cause whatsoever.

17. Notices

All notices required by this Agreement, other than invoices for payment which shall be sent directly to Accounts Payable, shall be in writing, and shall be personally delivered, sent by first class with postage prepaid, or sent by commercial courier, addressed as follows:

To CITY: City Engineer
 Department of Public Works
 CITY OF SUNNYVALE
 P. O. Box 3707
 Sunnyvale, CA 94088-3707

To CONSULTANT: INFRASTRUCTURE ENGINEERING CORPORATION (IEC)
 Attn: Scott Humphrey
 301 Mission Avenue, Suite 202
 Oceanside, CA 92054

Nothing in this provision shall be construed to prohibit communication by more expedient means, such as by telephone or facsimile transmission, to accomplish timely communication. However, to constitute effective notice, written confirmation of a telephone conversation or an original of a facsimile transmission must be sent by first class mail, by commercial carrier, or hand-delivered. Each party may change the address by written notice in accordance with this paragraph. Notices delivered personally shall be deemed communicated as of actual receipt; mailed notices shall be deemed communicated as of three days after mailing, unless such date is a date on which there is no mail service. In that event communication is deemed to occur on the next mail service day.

18. Waiver

CONSULTANT agrees that waiver by CITY of any one or more of the conditions of performance under this Agreement shall not be construed as waiver(s) of any other condition of performance under this Agreement.

19. Amendments

No alterations or changes to the terms of this Agreement shall be valid unless made in writing and signed by both parties.

20. Integrated Agreement

This Agreement embodies the agreement between CITY and CONSULTANT and its terms and conditions. No verbal agreements or conversation with any officer, agent or employee of CITY prior to execution of this Agreement shall affect or modify any of the terms or obligations contained in any documents comprising this Agreement. Any such verbal agreement shall be considered as unofficial information and in no way binding upon CITY.

21. Conflict of Interest

CONSULTANT certifies that to the best of its knowledge, no CITY employee or officer of any public agency interested in this Agreement has any pecuniary interest in the business of CONSULTANT and that no person associated with CONSULTANT has any interest that would conflict in any manner or degree with the performance of this Agreement.

22. California Agreement

This Agreement has been entered into in the State of California and this Agreement shall be governed by California law.

23. Records, Reports and Documentation

CONSULTANT shall maintain complete and accurate records of its operation, including any and all additional records required by CITY in writing. CONSULTANT shall submit to CITY any and all reports concerning its performance under this Agreement that may be requested by CITY in writing. CONSULTANT agrees to assist CITY in meeting CITY's reporting requirements to the state and other agencies with respect to CONSULTANT's work hereunder. All records, reports and documentation relating to the work performed under this Agreement shall be made available to City during the term of this Agreement.

24. Termination of Agreement

If CONSULTANT defaults in the performance of this Agreement, or materially breaches any of its provisions, CITY at its option may terminate this Agreement by giving written notice to CONSULTANT. If CITY fails to pay CONSULTANT, CONSULTANT at its option may terminate this Agreement if the failure is not remedied by CITY within thirty (30) days after written notification of failure to pay.

Without limitation to such rights or remedies as CITY shall otherwise have by law, CITY also shall have the right to terminate this Agreement for any reason upon ten (10) days' written notice to CONSULTANT. In the event of such termination, CONSULTANT shall be compensated in proportion to the percentage of services performed or materials furnished (in relation to the total which would have been performed or furnished) through the date of

receipt of notification from CITY to terminate. CONSULTANT shall present CITY with any work product completed at that point in time.

25. Subcontracting

None of the services covered by this Agreement shall be subcontracted without the prior written consent of CITY. Such consent may be issued with notice to proceed if subcontract consultants are listed in the project work plan.

26. Fair Employment

CONSULTANT shall not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, condition of physical handicap, religion, ethnic background or marital status, in violation of state or federal law.

27. Changes

CITY or CONSULTANT may, from time to time, request changes in the terms and conditions of this Agreement. Such changes, which are mutually agreed upon by CITY and CONSULTANT, shall be incorporated in amendments to this Agreement.

28. Other Agreements

This Agreement shall not prevent either Party from entering into similar agreements with others.

29. Severability Clause

In case any one or more of the provisions contained herein shall, for any reason, be held invalid, illegal or unenforceable in any respect, it shall not affect the validity of the other provisions which shall remain in full force and effect.

30. Captions

The captions of the various sections, paragraphs and subparagraphs, of the contract are for convenience only and shall not be considered nor referred to for resolving questions of interpretation.

31. Entire Agreement; Amendment

This writing constitutes the entire agreement between the parties relating to the services to be performed or materials to be furnished hereunder. No modification of this Agreement shall be effective unless and until such modification is evidenced by writing signed by all parties.

32. Miscellaneous

Time shall be of the essence in this Agreement. Failure on the part of either party to enforce any provision of this Agreement shall not be construed as a waiver of the right to compel enforcement of such provision or any other provision. This Agreement shall be governed and construed in accordance with the laws of the State of California.

IN WITNESS WHEREOF, the parties have executed this Agreement.

ATTEST:

CITY OF SUNNYVALE ("CITY")

By _____
City Clerk

By _____
City Manager

INFRASTRUCTURE ENGINEERING CORPORATION (IEC)
("CONSULTANT")

By _____

APPROVED AS TO FORM:

Name/Title

City Attorney

By _____

Name/Title

Exhibit A-1

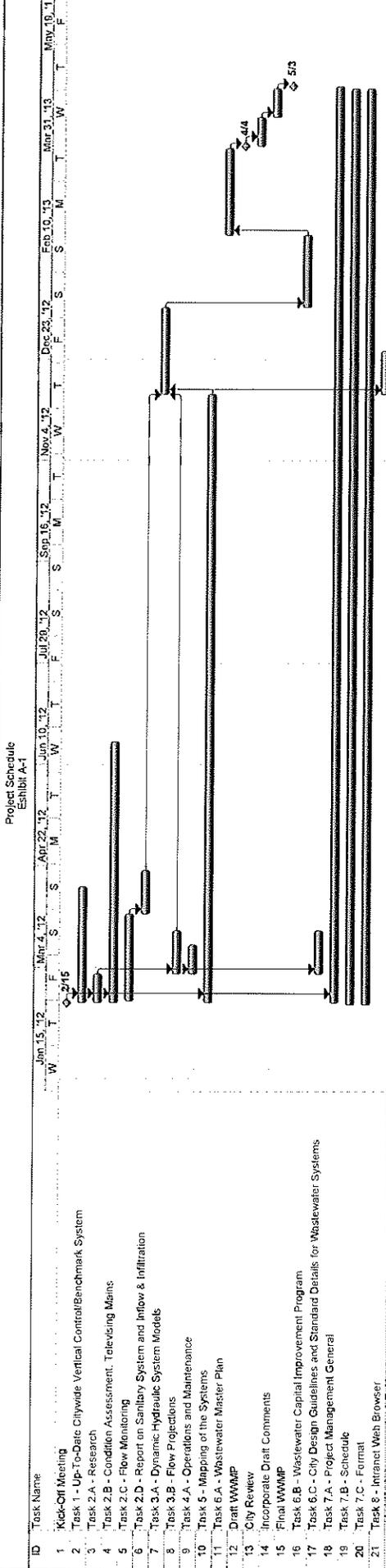


Exhibit A

Task 1 – Up-To-Date Citywide Vertical Control/Benchmark System

1. General

The Infrastructure Engineering Corporation (IEC) is preparing a proposal for the City of Sunnyvale's comprehensive Wastewater Collection System Master Plan (Project). The Project generally consists of preparing a master plan for the sanitary sewer and storm drainage collection systems within the City of Sunnyvale. The Project requires that exact topographic data be gathered for the City's existing sanitary sewer and storm drain manholes; and citywide benchmarks. This Scope of Services covers the delivery of the topographic data by LC Engineering (Consultant).

2. Topographic Data

- A. The Consultant shall coordinate with the City of Sunnyvale as necessary for the gathering of the topographic data.
- B. The Consultant shall perform a topographic survey to locate the existing data as follows:

Task No.	Task Description	Quantity*
1	Elevations of benchmarks	127
2	GPS location of Sewer Manholes	750
3	GPS Location of Storm Drain Manholes	400
4	Invert Depth of Sewer Manholes	750
5	Invert Depth of Storm Manholes	400

* If the quantity exceeds the number given, Consultant will seek authorization from Client before additional data sets are gathered.

- C. Only data points that are visible in the paved portions of the roadways shall be located. Data that is covered by pavement or other surfacing would require clearing by City before surveying. Manholes that are welded closed or bolted will be noted. City will be responsible for opening these manholes.

3. Data Accuracy

- A. Horizontal and vertical accuracy within 3/8 inch.
- B. The Consultant shall gather topographic data based on the California Coordinate System of 1983 (CCS83) and the North American Vertical Datum of 1988 (NAVD 88).

4. Work Product

- A. The topographic data shall be submitted either in progress groups or as one final completion data set.
- B. Data shall be submitted in AutoCAD and Excel Spreadsheets.
- C. Hard copies and digital files of citywide benchmarks and storm drain and sanitary sewer manholes maps.
- D. A white spray painted numbers shall be placed on each data point.

5. Schedule – Twenty six (26) Weeks

- A. Benchmark Data Points – eight (8) weeks
- B. Storm and Sewer Data Points – twelve (12) weeks
- C. Storm and Sewer Inverts – six (6) weeks
- D. Progress Groups, however, will be submitted on an on-going basis in a priority as requested by Client.
- E. Optional reduction in schedule by utilizing multiple survey crews.

6. Information Provided to Consultant by IEC or City

- A. Base map and utility maps of the City in hard copy and AutoCAD format.
- B. Caltrans Encroachment Permit for work on State Route 82.

7. Exclusions

- A. Traffic detours and lane closure plans for survey work.
- B. Traffic detours and lane closure for survey work within Caltrans right of way. This task would be negotiated upon review of Caltrans requirements after Caltrans issues the Encroachment Permit.
- C. Reproduction costs beyond budget.

Alternative B:

Scope of work is expanded to include measuring vertical invert elevations with sub-inch accuracy at 2,900 sanitary sewer manholes and 3,500 storm collection system manholes. GIS databases, and corresponding maps and Atlas Books, now include sub-inch vertical accuracy for all manhole and pipeline inverts.

Task 2 – Report on the Systems and their Condition

Task 2.A – Research

IEC will conduct a review of previous reports by the City and/or consultants to the City relating to planning, engineering, and financial data including: population, land use, GIS system information, orthographic photographs, prior master plans and model data, water billing data, pump station flows, , and existing/future system characteristics and requirements. Review will also include: the City's General Plan and population forecast data from the Association of Bay Area Governments (ABAG), existing water and sewer atlas maps, economic development plans, Specific Plans, current mapping of land use/zoning plans, specific development plans, topographic data, City standard design criteria and interagency agreements.

A review will be conducted of any data and/or reports identified by the City relating to the planning and engineering of the City's water system. IEC will prepare a Request for Information (RFI), which will clearly illustrate which documents or files IEC wishes to obtain from the City. IEC anticipates that the RFI may include, but may not be limited to, the following items:

- Relevant portions of the City's GIS database including: sewer facilities, parcels, water demands (if available), streets, topography and land use

- Documents pertaining to the City's existing wastewater systems design criteria

- Recent active water service billing records (approximately 27,650 separate accounts)

- The City's previously developed link of APN to Water Account Location ID

- Available planning documents and/or tentative tract maps from all specific plans that have been submitted to the City.

- Association of Bay Area Governments (ABAG) series population projections

- Any Operations and Maintenance and/or SCADA data available for the City's pump stations, treatment plant flows, headworks information, FOG "hot spots", and critical sub-areas.

- Available condition assessment data and/or reports pertaining to the City's pump stations for the wastewater systems.

- Any available reports and/or data related to the wastewater collection systems.

- The City's Sewer System Management Plan (if available)

- The City's stormwater management plan (if available)

A data/document inventory will be maintained that lists the data/documents received from the City, the date received, and if the data needs to be returned to City. This inventory will be updated as new information is received and supplied to the City at status meetings.

Task 2.B – Condition Assessment, Televising Mains

CCTV will be supplied as a separate scope of work with a range of alternatives.

Task 2.C – Flow Monitoring

IEC will collect flow dry and wet weather flow monitoring data at 7 representative locations within the City's wastewater collection system to support wastewater duty factor generation and hydraulic model calibration. This data will be used in conjunction with wastewater lift station data to calibrate the hydraulic model and analyze I/I.

For the storm drainage master plan flow monitoring data, Balance Hydro will evaluate data from existing SCVWD gauges: real-time flow gauge on Calabazas Creek; real time stage gage on El Camino Storm Drain; flow monitoring station on Sunnyvale East Channel; and several rain gauges. In addition, they will install 2 level logging stations in major trunk lines plus a rain gage within the tributary watershed. Scope assumes that the City will facilitate access, approvals, etc. for installation. As part of the storm drainage monitoring effort, three gauges will be maintained and operated for a full wet season (October through April) to capture data on several rainfall events.

IEC will perform an analysis of existing sewage flows by land use classification to develop unit wastewater flow factors. Wastewater flow factors will be based upon City water billing data with return-to-sewer ratios applied. Peak factors curves will be developed for peak dry and peak wet weather flows based upon existing and new flow information. I&I allowances will be estimated based on: new flow monitoring data; a correlation of recent rainfall event data with wastewater treatment plant flows and sewer pump station run time data; an assessment of sewer system age/material; operations and maintenance data, and discussions with City staff.

Sanitary sewer flows will be developed and loaded into the model with the following flow components:

- Base Sanitary Flow (also referred to as Base Wastewater Flow or BWF)
- Groundwater Infiltration (GWI)
- Rainfall Dependant Inflow and Infiltration (RDII)

For the purposes of modeling the City's Sewer System, three primary flow components will be considered. Each of these three components were developed separately and then combined to determine the total sewer flow in the collection system.

Wastewater system design criteria will be developed that address allowable d/D ratios and maximum and minimum velocities during peak dry and peak wet weather flow conditions.

Storm drainage flow will be developed to address both dry-weather and storm water flow, with particular attention paid to detention/retention ponds and pump stations. Storm drainage flows and the wet weather flow monitoring data will be analyzed to identify any cross connections between the storm and sanitary systems, as well as identify areas with potential illicit connections.

Deliverables:

- Wastewater systems flow monitoring reports.
- Sanitary sewer flows
- Stormwater flows
- WUMP Basic assumptions (i.e. WUMP design criteria, land use generation factors, peaking factors, etc...)

Task 2.D – Report on Sanitary System and Inflow & Infiltration

IEC will summarize the results and findings of Task 2 into the form of a Technical Memorandum and submit it to the City for review and comment. The TM will address inflow and infiltration (I/I) and general condition of the system. I/I will be analyzed in terms of how it affects overall wastewater operating costs, including sewer treatment costs, future capital costs due to I/I, and pump station costs. IEC will make recommendations for improvements that attempt to reduce capital, operating, and life-cycle expenditures directly related to I/I. In addition, IEC will analyze regulatory costs relating to I/I including potential violations, fines, and/or orders.

Deliverables:

- Sanitary sewer I/I analysis
- Technical Memorandum summarizing I/I analysis and associated system costs relating to I/I

Task 3 – Dynamic Hydraulic Systems Models and Flow Projections.

Task 3.A – Dynamic Hydraulic Report on Sanitary System and Inflow & Infiltration

IEC will perform a software evaluation of commercially available water system hydraulic models. A technical memorandum will be developed that contains an evaluation matrix and a recommendation of the software to be used in both the Storm Drainage and Wastewater System Master Plans. The ideal model will have a fully dynamic hydraulic engine capable of analyzing both storm and sanitary flows.

IEC will develop a wastewater system model that includes all mains 10" in diameter and greater, plus all critical sub-areas. Mains less than 10" in diameter will have horizontal topology (i.e. connectivity) for model loading purposes; however will not be evaluated as part of the model.

The Stormwater model will include 36-inch diameter and greater conduits and associated manholes and junctions and open channels which form the trunk system. Some larger lines may be excluded and some smaller lines may be included to provide more uniform and tractable sub-watershed areas. Stevens and Calabazas Creeks will not be included in the model beyond tailwater inputs to intercepted storm drain lines. Hydraulic conditions in these creeks will be established from FEMA FIS model results and interpolated as required. East and West drainage channels will not be simulated beyond tailwater inputs to intercepted storm drain lines. Hydraulic conditions in these channels will be established by either operating the models created by the SCVWD Planning Study or through interpolation of the results generated in the study. Overland flow will not be simulated. Overflows from system and storm flows not able to enter the system due to inadequate capacity will form temporary ponds in the simulations and will then flow back into the storm drain network at the same, source location when capacity is available.

Wastewater system design criteria will also be developed as part of this task. Wastewater system design criteria will address allowable d/D ratios and maximum and minimum velocities during peak dry and peak wet weather flow conditions.

Stormwater design criteria will include the following:

- The 10-year design storm will be used per Santa Clara County Drainage Manual. No other design conditions will be evaluated during this study; however, the model will be structured to readily enable changes in hydrologic conditions for future simulations.

- SCS unit hydrograph, curve number, and lag equation will be used per manual to develop hydrographs.

- Army Corps of Engineers HEC-HMS software platform will be used to develop influent hydrographs at each storm drain system inlet.

- Only existing watershed conditions will be simulated. No future build-out conditions

Both wastewater collection system hydraulic models will include the "Backbone" of the system, as well as any "Operational Hot Spots" identified by City Staff. Specifically, the "Backbone" of the sanitary sewer system includes all lift stations, force mains, gravity mains greater than or equal to 10-inch diameter, and all other pipelines required for connectivity. The "Backbone" of the storm drain system includes pipes of 36-inch and larger diameters. It will also represent other key conveyance elements such as open channels and smaller conduits as needed to simulate conveyance of the design event through the city to the creeks and drainage channels.

Deliverables:

- Wastewater systems model software evaluation technical memorandum

- Sanitary sewer hydraulic model.

- Stormwater hydraulic model.

- "Backbone" hydraulic models which are accurate, and is as simple to upkeep, maintain and calibrate for the City as possible.

- Basic support services to help analyze what-if scenarios are included for up to 2 years after the projects completed.

Task 3.B – Flow Projections

The unit wastewater flow factors developed in Task S.1 will be used to develop wastewater flow projections to the year 2035, which is the current planning horizon for the Association of Bay Area Governments (ABAG) population forecasts. Flow projections will be developed by wastewater drainage basin for existing, 5-year (2010), 15-year (2020) and planning horizon (2030) time increments. Growth rates will be based upon current ABAG series population projections. All wastewater loading data for existing and future flows will be developed at the parcel-level for use in the wastewater system hydraulic model.

Existing wastewater flows will be developed based upon water consumption records with a calibrated “return-to-sewer” ratio applied. Future flows will be based upon calibrated design-level flows (i.e. unit wastewater flow factors).

Stormwater design flows will be based upon a limited number of design alternatives that address 10-year flooding issues identified in the base model. Balance Hydro will then input changes in the storm drain system into the modeling package and simulate performance of the altered system. Three to five alternatives will be simulated, depending on the complexity of the system changes and the needs of the project. Simulation results for the proposed alternatives will be used to assess design validity and adequacy. Detailed analyses to determine component sizing will be performed by others on the team.

The stormwater and wastewater flow projections will be summarized in the form of a technical memorandum and submitted to the City for review and comment.

Task 4 – Operations and Maintenance. Fee Assessment and Fee Schedules

Task 4.A – Operations and Maintenance

IEC considers the development/refinement of a Operation and Maintenance Program of the WWMP to be critical to the success of the Master Plan as a tool for City. The Operation and Maintenance program will be updated as described below:

Preventive Maintenance Program

Using the existing Operation and Maintenance Plan Program as a starting point, IEC will document routine preventive operation and maintenance activities by the City. CCTV results, City and member agency staff knowledge, and other available data sources will be implemented into a system for scheduling regular maintenance in addition to the cleaning of the collection system with more frequent cleaning and maintenance targeted at known problem areas. IEC will document the existing O&M activities that occur, and will suggest new activities and Best Management Practices (BMP) where appropriate. IEC will work with City staff to develop the above documentation into a detailed O&M procedure manual to address sewer cleaning, sewer inspection, investigation, response to service calls, and other relevant O&M activities. IEC will work with the City to develop a maintenance tracking system that incorporates the above documentation and that is compatible with the work flow of all agencies. IEC’s experience has shown that the process of documenting and developing these activities is best served when all affected parties can collaborate directly, and IEC will work to get these parties into the meetings and conference calls necessary for the process.

The deliverable for this task will be checklists for both yearly maintenance items, and then checklists for five and ten year maintenance items. These checklists include regulatory requirements as required by the state and federal guidelines and include guidelines included in reference documents prepared by the Water Environment Federation (WEF) for maintenance. In addition a step by step process to implement the O&M plan will be developed and included in this section.

Equipment and Parts Inventory

IEC will describe the equipment and replacement part inventories, including identification of critical replacement parts. For this task, IEC will work with the City to identify equipment and replacement parts needs (including critical spare parts), describe the current activities to ensure that adequate equipment and repair parts are available, and the methods that will be used to ensure that adequate equipment and replacement parts will be available in the future.

Review of Asset Management and the City’s General Plan for Wastewater Management

The City’s Operation and Maintenance Program will be documented in a Technical Memorandum, and submitted to the City for review and comment. Upon the incorporation of all City comments, these documents will be finalized in a format suitable for an O&M Manual.

Both the Asset Management and General Plan for Wastewater Management documents will be reviewed and any recommended changes will be submitted to the City in order to incorporate guidelines prepared in this section for Operations and Maintenance guidelines. This will ensure all documents match one other and require the same processes.

IEC will also evaluate maintenance priorities and develop a recommended annual systems maintenance plans as part of this task.

Asset Management Program

Utilizing an advanced asset methodology, IEC will develop a Business Risk Estimate (BRE) for all City-owned wastewater assets, including the Consequence of Failure (CoF), Redundancy and Probability of Failure (PoF) for each asset. In addition to

Staff input, CoF and Redundancy will be based upon the hydraulic model, with PoF based on available CCTV reports, NASSCO quick scores and available condition assessments. Based on minimizing the total lifecycle costs of each asset, IEC will develop a CRP which will estimate asset replacement costs, as well as additional costs that the City may incur for monitoring these facilities over the course of their lifecycle. Order of magnitude cost estimates for repairs/replacements will be developed and an overall annual cost to maintain existing facilities will be developed to assist the City in adequately funding the scheduled replacement of existing facilities. The results and findings of the Asset Management Program will be summarized in the form of a Technical Memorandum and submitted to the City for review and comment.

Deliverables:

- Preventative maintenance program
- Equipment parts inventory
- Review of AM and General Plan for wastewater management Technical Memorandum

Asset Management Plan Deliverables:

- High quality CCTV data of the trunk collection systems, operational “hot spots” and a representative number of sample areas for the sanitary sewer and storm collection systems. Includes 65,000 ft for the sanitary sewer system and 15,000 ft for the storm drain system. Lines are not to be cleaned prior to televising. All CCTV data will be fully digitized, searchable, GIS-compatible and compliant with all relevant professional standards (i.e. NASSCO, etc.).
- Flow monitoring data to develop and validate wastewater flow duty factors (e.g. gpd/ac, gpd/ft², etc.), calibrate the hydraulic models and analyze inflow and infiltration (I/I).
- Comprehensive Inflow and Infiltration Study of the Sanitary Sewer Collection System. By identifying and removing I&I through the sanitary sewer system, the City obtains additional system capacity without the cost of upsizing facilities. Our data analysis services include a highly advanced methodology for accurately quantifying and separating Base Infiltration (BI) and Rain Dependent I&I. This gives us the distinctive ability to customize these services for the City, allowing us to provide this important data service both efficiently and cost effectively.
- Review and revise Design Standard Guidelines and Standard Details/Specifications to account for rehabilitation and renewal Best Practices.
- Develop a prioritization system for asset replacement that incorporates key City data into advanced asset management Best Management Practices (BMPs)
- Develop a Capital Replacement Program (CRP) for condition replacement based upon these priorities
- Through prioritization and collaboration with the City, develop a sequenced roadmap to completing CIP and CRP projects
- Analyze City Operations and Maintenance staffing and procedures in order to develop recommendations that optimize efficiency and ability to maintain and extend the useful life of sewer collection system assets.
- Software license and basic set-up of an internet-based tool (MapLibrary) that consolidates various types of documents and information pertaining to the wastewater collection system.

Task 5 – Mapping of the Systems

IEC had added DCSE to the project team to provide GIS/Mapping Services. DCSE’s scope of services is provided in the following Task 5 subtasks.

Task 5.A - Data Assessment and GIS Database Design – Conceptual and Logical Data Model

The database design for the City will be influenced by several factors:

- Contents of the existing datasets;
- Application demands on the database;
- Flexibility to add future data (new datasets, additional attributes on existing datasets, etc.);
- Necessity to link with external databases (hydraulic models, EDEN etc)

For wastewater collection systems, The IEC team often proposes to use a database design based on the industry-standard ArcGIS water / wastewater data model developed by a panel of water system experts and distributed by ESRI. The ArcGIS data model focuses on the needs of organizations that manage distribution/collection networks. Although in its original form this data model may slightly exceed or fall short of the needs of an agency, it provides an excellent starting point for collection system applications. The IEC team has an extensive experience to make the design as simple or as complex as necessary to meet the City’s current and future needs.

The IEC team, with its knowledgeable engineers and experienced GIS staff, is a proven leader in the water/wastewater GIS market, and has already developed Geodatabases for many of clients. It is important for system database designs to include not only feature classes, attributes, and domains, but also be constructed within the framework of a geometric network. The geometric network ensures proper topological structure, and rules / relationships can be defined to help ensure data integrity based on the attribute values of adjacent / related features. Some of the elements of our geodatabase design approach are highlighted below:

- Adopt industry standards whenever plausible
- Maintain flexibility for future expansion
- Ensure least amount of data redundancy / duplication
- Provide capability for multi-user editing
- Optimize editing and query performance
- Incorporate / utilize topological relationships, data validation, and integrity
- Optimize design for maintenance updates from internal workflows
- Maintain compatibility with the City's GIS standards and business objectives

The IEC team will first conduct data assessment and will inventory the existing datasets and will address future data needs. The data gaps, issues, and sources of data will be identified in a report. A data conversion and migration plan will be developed which will detail a strategy of developing available and future data. A plan for importing GPS data directly to the databases will be written. Preference will be given to GPS data if the same data is available on As-Build drawings too. Additional data sources, such as high resolution aerial photography and elevation data, required in developing the GIS data will be identified and acquired.

The IEC team will develop a geodatabase design for Sewer and Drainage Systems, which will accommodate all the required data fields identified during the geodatabase design task. The UML (Unified Modeling Language) diagrams will depict the linkages of participating feature classes (spatial layers) in Geometric Network. Domains and Subtypes, when integrated with a geodatabase, offer to define categories of features. Domains also allow declaring default values and a pick list for selection a right attribute to eliminate typing and spelling errors. Our GIS experts will define the right domains and subtypes based on the database needs and their experience. Metadata and QA/QC standards will be part of the database design.

Once the geodatabase is designed, the IEC GIS team will present it to the City staff for discussion. The feedback on the design will be collected, documented, and submitted to the City for final approval.

Deliverable 1: Data Assessment Report containing data inventory, data gaps, issues, and sources of data.

City Input: Provide access to existing data, participate in interviews, and review data assessment report

Deliverable 2: Database design document that accounts for the above mentioned factors and is able to support the City's both in the short term and longer term

City Input: Review database design

Task 5.B - GIS Data Capture Criteria / Database Construction

The IEC team in consultation with the City staff will develop a "Data Capture Standard" document outlining the City's mapping requirement and data capture rules. This document will act as a roadmap for data conversion/migration task. The IEC team will digitize/migrate the entire City's existing wastewater collection data into AutoCAD and ESRI's SDE format.

Deliverable: Wastewater data in AutoCAD and ESRI SDE Formats

City Input: Source data required for the sewer system

Task 5.C - GPS Wastewater Structures and Components

The IEC team will perform a physical ground survey and perform traverse controls. The ground survey will include obtaining rim elevation of selected manholes, invert elevations of pipes entering or exiting each manhole, and visual inspection of the pipe sizes and materials. We will use the City's established horizontal and vertical control points as basis of our ground survey.

The aerial topography will be utilized to accurately define the drainage areas and will be utilized as a secondary tool to define the sewer service areas.

Deliverable: GPS Wastewater Collection Structure GPS Data

City Input: Source data required for the wastewater system

Task 5.D - Project Set up - Source Data Inventory and Scrubbing (with Missing Data Report)

The primary function of the project setup step is to organize the project materials and staff workspaces to ensure the efficient start-up and smooth flow of project tasks and materials throughout the data conversion effort. Project setup encompasses the allocation of hardware, development of project specific workspaces, allocation of disk storage space, and creation of a production workflow matrix. Digital files (source scans) obtained from the City will be loaded onto The IEC team's computer system, and manipulated, as needed, to make them ready for the data conversion process.

For all the source scans received from the City, an inventory of all sources, along with Unique ID's will be established in a database. This is an extremely important task to ensure that there are no gaps or missing source materials that would hinder the overall project flow.

Scrubbing done on Sources

The record drawings data will be compared to the GPS, CCTV, aerial photo and any other available data source. Any missing or incomplete data that we find during the inventory process will be reported to the City. Indexing will help DCSE retrieve relevant sources for disparate geographical areas. A database recording specifics of sources will also help in hot-linking the scans while attributing features, using Unique ID's. The source data is then scrubbed to identify wastewater facilities and their attributes. This process will help ensure that the tabular attributes are accurately captured and assigned to the proper features.

Deliverable: Inventory list of documents and source data for the project.

City Input: Provide access to documents and staff knowledgeable on documents/source data

Task 5.E - Developing and Updating Wastewater Collection Systems' Data Layers

The IEC team will develop and/or correct the Wastewater collection system GIS data based on the record drawings, field verification, GPS data, CCTV data, and aerial photography and elevation data. Also the missing data discovered in this task will be digitized and added to the wastewater GIS data. The IEC team proposes the data development task to be done in two phases. Phase 1, the Pilot Phase, will consist of 5-10% of the total service area. The pilot area will allow the City to review and comment on the data capture/update process and make any changes needed before we proceed to capture the data for the remainder of the service area .

Deliverable: Completed/ Corrected Wastewater GIS data

City Input: Review and provide comments.

Task 5.F - Field Investigations and Verification, Gathering of Attribute Data, Populating Database, and Editing Data

The IEC team will perform additional field verification and collect additional GPS data (within the proposed Scope of Work) to resolve the data anomalies discovered during the wastewater collection system GIS data development.

Task 5.G - Annotation and Atlas Map Creation

Annotation is an essential component of atlas maps. The IEC team has the experience to develop annotation feature classes within the geodatabase environment. Existing annotation (if any) can be imported from the existing environment or new annotation can be created from scratch in the geodatabase environment. In terms of the latter, we have the experience to develop a range of label expressions in support of the annotation: from simple label expressions based upon a single attribute item to complex label expressions that utilize Visual Basic scripting to combine, trim and stack attribute items.

We will generate regular annotations for land base and street names. The annotation scale we recommend is 1:2400 (1" = 200'), as this can be used for making maps at 200-scale as well as 100-scale. The layout, symbology of features, font specs will be discussed with the City using samples provided by THE IEC TEAM.

We also have the experience to develop dimensioning classes to capture dimension information commonly shown on water atlas maps.

QA/QC cycles run in a few stages on the Geodatabase to help verify the completeness and accuracy of the geometry and attribute values. The final Geodatabase will also be run through a series of automated validation checks. The IEC team will conduct network checks to identify any disconnects in the system. Wastewater Systems will be verified for sub areas and flow directions.

Deliverable: Finalized Geodatabase with attributes of wastewater geometric systems and associated files. New "Auto-CAD" like Atlas page layout, Hard copy atlas book, Atlas book in PDF format. Linked scanned files in GIS

City Input: Review, comment, and accept delivery.

Task 5.H - Quality Assurance / Quality Control

QA/QC is an integral part of all of our data development and maintenance projects. It is also a mandatory function at the end of every process in order to minimize propagation of errors from one step to another. We have a dedicated team of QC staff that conducts thorough QC based on a comprehensive QC check list and are fully accountable for the deliverables that they approve in the QC process. Our experienced GIS team will conduct a comprehensive QA/QC effort to ensure that the final Geodatabase meets or exceeds the City's accuracy requirements for the project. Each of the grid tiles will be reviewed on an individual basis along with adjacent tiles where features cross tile boundaries. In addition, an overall check of the entire deliverable Geodatabase will be conducted. A combination of manual and automated QA methods, which are briefly described below, will be used to validate data and ensure proper topology. SQL Server tools will be used to verify database referential integrity.

The QA/QC procedures are embedded within the conversion process and hence there will be Quality Control as we move the product from one stage to the other in the conversion process. The IEC team proposes to have the City review and comment within two weeks of data delivery, to enable The IEC team to rework and re-submit. Any issue will be handled per our Resolution Tracking procedure.

- Inventory QA/QC
- Automated Data Capture QC
- Visual QA/QC (AutoCAD and hard copy sources comparison)
- Automated Geodatabase QC
- Visual Atlas Map QC
- Automated QC (Topological Verification and Edge matching of phases)

Inventory QA/QC (Atlas Maps)

The Inventory and Indexing procedure will help the Conversion team finding out any missing documents that have not been received by the City. The Online Project System will notify the Project team at the City about all such missing documents.

Automated AutoCAD QA

THE IEC Team has established routines in AutoCAD that avoid Attribute data entry errors and enable accurate graphic capture. THE IEC Team will use the routines for making the data entry process faster and error free by using these routines during the conversion.

Visual QA/QC

In this round of QA/QC the team compares plots of converted data to source documents. Also, the attributes will be part of the GIS data and will be checked by The IEC team for 100% attribution.

Positional/Graphical Accuracy

Overall positional accuracy is primarily checked by comparing the GIS deliverables against the source as-builts. In addition, we compare arc lengths with the coded lengths. If there are differences in lengths that fall outside the tolerance of the deliverable specs we will work with the City for a resolution.

Attribute Accuracy

THE IEC Team conducts a complete data verification check with source data for attribute accuracy. This is almost like a duplicate coding effort since the source data will be visited and checked against all over again, just as we did at the data capture stage. There are several layers of QC in addition to the complete check. At the edges of a tile (module), the data is checked twice to make sure there are no errors from either side.

Automated Geodatabase QC

THE IEC TEAM has developed a process to validate the attribute values for the Polygon Feature class created. To help verify the completeness and accuracy of the attribute values, the Geodatabase will be run through a series of automated validation checks. These checks will ensure that the attribute tables are complete; that the features contain valid, non-null values within an acceptable range, and that the features are consistent with adjacent/connecting features. This effort will be greatly aided through the utilization of valid domains constructed during the data modeling process.

Through this process, a report will be produced identifying feature IDs that fail and an item will be added to the feature attribute table that flags these features so that they can easily be displayed. If any errors are reported, the QA/QC specialist will interactively edit the feature class to correct the errors. Afterward, the QA tools will be run again, and this process will be repeated until the feature class is free of errors.

During the process described above, a tool will be utilized that ensures the validation of the Easement feature class by indicating which features have been reviewed. Once a feature has been reviewed and updated, the onscreen representation of that feature will change color. In this way, our GIS analysts can keep track of what has been previously reviewed and updated. This will eliminate any duplication of effort resulting from revisiting a previously updated area, and it ensures that each feature will be reviewed for completeness and accuracy.

Visual Atlas Map QC

As an additional means of QA, the IEC team will print color-coded check plots of the geodatabase based on the City's tile system. The check plots will be produced using an atlas generation tool for ArcMap, without converting the Geodatabase to another format. The annotation scale we recommend is at 1:2400, since this can be used for making maps at 200-scale as well as 100 scale. For the polygon features, ArcGIS ensures that the polygons are always closed. If any errors are discovered, the problem will be corrected and new check plot(s) generated.

Topological Verification

Topology is a set of rules about how features within a feature class would share geometry – polygons share boundaries in a geodatabase dataset. This set of rules is used to improve the user experience for editing and validating features. When feature classes are integrated in a topology, they share a common set of topological elements. The topology manages these elements including their relationships to one another and to the features in the contributing feature classes.

We will discuss with the City at the beginning of the project and set up the rules best suited for the City.

When we deliver each phase to the City, we will observe the topological rules. The Final Delivery will have all the phases merged and edge-matched, and topologically correct.

Task 5.I - Scanning of Recorded Drawings and Linking to GIS Mapping System

If the City has not scanned its record drawings, the IEC team will scan the record drawings and stored them in TIFF and PDF formats. The naming convention for the as-built sheets will be the sheet number (or other agreed upon convention), while the record drawings will be named according to a nomenclature already in use at City. Alternatively, The IEC team can assign barcodes to the drawings prior to scanning and use the barcode as the drawing and file identifier.

Once the scanning of the source documents is completed, the scanned drawings will be cataloged in a database together with metadata such as plan number, brief description, number of sheets, date scanned, date returned, etc.

As part of the data conversion/migration task, The IEC team will code each sewer line with the corresponding record drawing scan files. This will provide the required link for the web-based viewer so its users may view the scans by clicking on the selected lines.

Task 5.J - Knowledge Transfer - Documentation & Training

At the conclusion of the project, the IEC team will deliver the final, fully corrected products to the City, including a final version of the procedures manual. The procedure manual will describe in detail the process (workflow) by which the City GIS staff will edit, update, and maintain the GIS data. As part of the knowledge transfer, we will be available to assist with the installation and setup of the Wastewater collection system geodatabases and AutoCAD maintenance solutions. We will also provide documentation and necessary training for all tools installed as part of this project. The IEC team proposes to conduct a one day training program at the end of this project to share the data conversion experiences and empower the City with data maintenance procedures.

Task 5.K – Provide Printed and Mounted Display Maps of the Systems

IEC will prepare the following printed maps of the systems. Each map will be printed at 1" = 600' scale and 5 copies of each map will be provided to the City. The following System maps will be provided:

- Sanitary Sewer
- Storm Drainage
- Combined Wastewater Systems

Deliverables:

- Five (5) 1" = 600' Sanitary Sewer display maps
- Five (5) 1" = 600' Storm Drainage display maps
- Five (5) 1" = 600' Combined wastewater systems display maps

Task 6 – Wastewater Master Plan and Capital Improvement Program

Task 6.A – Wastewater Master Plan

IEC will prepare a comprehensive Wastewater Master Plan (WWMP) that summarizes the results and findings of the previous tasks. The WWMP will include a section for the sanitary sewer and a section for the storm drainage system. The WWMP report will contain an Executive summary that summarizes the key components of the Master Plan and will be designed to read well to non-technical staff, members of the board of directors, and the general public. Specifically the Water System Master Plan will address:

- Sanitary Sewer System
- Storm Drainage System
- Wastewater Capital Improvement Program
- Appendix

The WWMP will describe the alternatives developed as part of the master planning process and will contain sufficient documentation to support the alternatives analysis and final recommendations that are presented in the WWMP.

In addition, the WWMP will explore the use of new technologies relating to the sanitary and storm systems, which may include separating sanitary waste collection systems, integrating reclaimed water extensions, potential impacts of dual plumbing, SCADA for the wastewater collection system, etc... The feasibility and cost effectiveness of these potential new technologies will also be discussed in the WWMP.

Six (6) draft copies of the Master Plan report will be submitted to the City for review and comment. Upon incorporation of all City comments, Six (6) final copies and one unbound copy for reproduction purposes will be submitted to the City. In addition, one electronic copy of the Master Plan document in adobe .pdf format and MS Word format will be submitted to the City. The electronic copies will include all figures contained in the original Master Plan document.

Deliverables:

- Six (6) copies of Draft WWMP Report
- Review meeting with the City to discuss comments on draft report
- Six (6) copies of Final WWMP Report
- Electronic copies of Final WWMP Report

Task 6.B – Wastewater Capital Improvement Program

Using the results from the prior tasks, the IEC will develop a Wastewater Capital Improvement Program (CIP) through the year 2035 that clearly outlines the findings of City's deficiencies, priorities, and related sewer system costs. A comprehensive list of Capital Improvements that address both existing deficiencies and future needs based upon projected wastewater flows will be included in the CIP. The CIP will be phased and prioritized and include a 25 year summary project schedule and financing plan. The CIP will include the following time increments:

- Existing
- 5-year
- 15-year
- Planning horizon (25-Year)

IEC will establish a prioritized list of capital improvements to address hydraulic deficiencies in the collection systems based upon the design criteria developed as part of this project. Recommended system improvements will include pipeline, pump station and force main improvements necessary to meet existing flows as well as future flows to the year 2035. Engineers construction cost estimates will be developed for each capital project that includes cost for design, construction, and administration.

IEC will develop a funding plan for identified infrastructure recommendations. We will utilize our long-term experience with potential funding opportunities to match identified projects to potential sources of funding, including: water and wastewater general funds, capital improvement funds, general funds from local Cities, County Department, private organizations, as well as the local, state, and federal funding sources. We will work with City staff to establish a process for reviewing existing programs and projects. Criteria to include in the discussion will involve: how to phase projects to best meet existing funding schedules, total project cost, local cost share, quantified project benefits, whether the project meets the objectives of the current funding opportunity, environmental and regulatory compliance, and schedule for completion ("readiness to proceed").

In this manner, a process would be established for “strategic packaging” of projects for potential funding programs. Estimated levels of CEQA compliance will also be provided for each project (i.e. Categorical Exemption, Negative Declaration, etc.) Consistent with the RFP, at a minimum, the wastewater CIP will include the following elements:

- A description of the sanitary sewer and storm drainage collection systems as envisioned after all included projects are completed. (Goal Statement)
- A prioritized list of recommended projects, with each developed and described in sufficient detail to support reliable planning-level cost estimates.
- Schedule for implementation
- Funding plan for financing the identified projects, timed in coordination with the implementation schedule.

Timely, budget-conscious completion of environmental reviews and regulatory permitting can be a critical factor in the success of capital projects, and IEC views advance planning for compliance as an important part of CIP development, helping to avoid regulatory “surprises” and ensure that projects are implemented smoothly and efficiently as funding becomes available.

With that in mind, once the key aspects of the new CIP have been developed and we can evaluate individual projects and activities in a meaningful way, this subtask provides for the IEC team to review the individual projects; identify their CEQA and regulatory permitting needs and the associated costs; and work with the City to develop a preferred environmental compliance approach as a component of the WWMP. Our final CIP work product will include a section describing environmental compliance needs and approaches at the program and project levels, to assist City staff in ensuring efficient, cost-effective, and legally adequate CEQA compliance and permitting. If the City wishes, this chapter will also include an adaptive management component to assist staff in adjusting environmental strategies in the event the CIP evolves during the implementation phase.

We propose the following preliminary CEQA compliance tasks as part of this task.

- Review draft CIP to identify CEQA and regulatory permit needs on a project-by-project level
- Prepare technical memorandum presenting project-level compliance needs; identifying alternate approaches if possible, including opportunities to streamline compliance through the use of program approach, as discussed further below; and evaluating the pros and cons of alternate approaches in terms of cost, defensibility and scheduling risk/uncertainty.
- Work with City to develop a preferred environmental compliance strategy for CIP.
- Draft and revise CIP environmental compliance chapter.
- Develop estimated CEQA and regulatory compliance costs for inclusion in final CIP budget. Costs will be itemized to the project level where this is applicable.

IEC also has the “in-house” expertise to address a number of other project costs, not ordinarily addressed in a typical CIP. These include:

- Permitting
- Utility and pavement coordination
- Project administration
- Public outreach
- Design
- Geotechnical
- Preparation of bid packages
- Construction management
- Inspection
- Project close out and commissioning

Deliverables:

- Phased and prioritized Capital Improvement Plans that are constructible and feasible, with a corresponding funding plan, estimated costs and estimated CEQA compliance efforts.

Task 6.C – City Design Guidelines and Standard Details for Wastewater Systems

IEC will update the City’s existing design guidelines and standard details and specifications as they relate to the wastewater systems. IEC will compare the City’s existing guidelines and standard details with appropriate industry standards and neighboring utilities. Standard drawings will be updated using AutoCAD software and conforming to existing City AutoCAD standards.

Task 7 – Project Management

Task 7.A – Project Management General

IEC will include the use of management control tools and emphasize client communication. Prior to the implementation of the project, IEC will develop an initial project management and control plan. This plan will include: project instructions, which establish the project goals, schedule, task assignments and communication protocol; project work plan, which merges the scope of services with project milestones and individual task assignments for schedule and budget; and a project cost control program which establishes the benchmark and reporting methodology for the ongoing assessment of project completion and budget.

Client communication will be maintained by the Project Manager. The Project Manager will coordinate all project activities within the project team and will be responsible for the development of progress submittals, will attend project coordination meetings with the City, and will be responsible for the development of interim deliverables and status reports.

IEC will hold a kick-off meeting with City staff to establish the goals, needs, and desires of the WUMP, confirm project objectives, discuss approach and criteria, establish departmental contacts and lines of communication, and discuss data availability. In addition, we will decide on a mutually agreeable digital deliverable format for ease of use throughout this project. IEC will prepare meeting agendas and submit to the City Staff three (3) days prior to all meetings. In addition, the IEC will prepare a set of meeting minutes and submit to City Staff within five business days of the kick-off meeting. IEC will hold coordination meetings at key junctures during the project. Although the meetings will be flexibly scheduled according to the needs of the project as they occur, the following meetings are anticipated in addition to the kick-off meeting:

The Project Manager will be responsible for monthly status updates to City staff. These updates will take place by email and will be in addition to other deliverables required by the City. The updates will include information of tasks in progress, schedule updates, questions or concerns, and any critical path items of importance at the time of the status report. In the event that the schedule is delayed at any point during the project, the Project Manager will identify the cause for the delay, as well as recommendations to bring the project “back on track.”

Monthly invoices will be submitted to the City, clearly identifying the description of work accomplished during the invoice period and a summary of tasks and budget completed to date.

Task 7.B – Schedule

IEC will develop a complete project schedule in a Gantt chart format and deliver to the City for review and comment. The schedule will include project milestones and allow 2 weeks for City review of all deliverables. The project schedule will be updated periodically and delivered at project status meetings so that the City can monitor the overall progress of the project and ensure that the project stays on track. In addition, IEC will develop a list of project deliverables along with target dates and deliver it to the City for review and comment.

Task 7.C – Format

IEC will use the City’s standard format for all drawings, where applicable. Reports will be submitted in the following order: executive summary, table of contents, table of drawings or graphics, and date of issuance.

Hard copy submittals shall be six (6) full sized sets. Digital submittals shall be in AutoCAD and Adobe for plans, MS Word and Adobe for reports, MS Excel and Adobe for Cost Estimates, and MS Project and Adobe for time schedules.

Task 8 – Intranet Web Browser

The IEC team has implemented many of such systems for Water/Wastewater and municipalities in the recent years. IEC team is recommending a commercial software solution called MapLibrary, specifically designed and developed as an electronic repository for technical and engineering documents. The end users may search for the stored documents by a combination of multiple indices and location parameters. Searchers can choose from two different search techniques to find maps. A simple single line search is familiar to users of popular web search engines, and a powerful metadata based search that is easily customized to the needs of your organization. Searchers can also search spatially by selecting an area on a map. This spatial search can be combined with other metadata criteria for a powerful search solution. The results of a search include metadata and map images, including thumbnail previews.

Exhibit B

FEE PROPOSAL
CITY OF SUNNYVALE
WASTEWATER MASTER PLAN
SEWER MASTER PLAN

Subtask Number	Subtask Description Summary	Classification	Principal Planning & IS	Senior Project Manager	Project Manager	Engineer 2	Engineer 1	Word Processor	Subtask Labor-Hours	Subtask Labor Cost	Direct Cost	Subcontract	Total Cost
TASK NO. DESCRIPTION													
Task 1	Up-To-Date Citywide Vertical Control/Benchmark System		8	16	8	8	8	4	52	\$8,020	\$0	\$215,985	\$224,005
Task 2 A	Research		1	2	8	8	8	4	31	\$12,342	\$1,000	\$10,137	\$29,479
Task 2 B	Condition Assessment, Telesizing, Maint.		2	4	4	4	4	1	19	\$2,795	\$100		\$2,895
Task 2 C	Flow Monitoring		4	8	1	16	8	0	37	\$5,135	\$0	\$41,217	\$46,352
Task 2 D	Report on Sanitary System and Inflow & Infiltration		2	4	16	8	8	4	42	\$6,000	\$0		\$6,000
Task 3 A	Dynamic Hydraulic System Model		16		44	80	40	2	182	\$24,450	\$0	\$106,216	\$130,666
Task 3 B	Flow Projections		2	1	20	40	20	2	85	\$10,935	\$0		\$10,935
Task 4 A	Operations and Maintenance		2	32	40	32	8	40	154	\$20,840	\$1,000		\$21,840
Task 5	Mapping of the Systems		2		16				18	\$3,200	\$0	\$130,205	\$133,405
Task 5 A	Survey of additional Sewer and Storm Manholes		4		8				12	\$2,200	\$0	\$22,000	\$24,200
Task 6 A	Wastewater Master Plan		2	16	40	24	32	16	130	\$17,680	\$0	\$6,331	\$24,011
Task 6 B	Wastewater Capital Improvement Program		2	16	40	16	16	8	98	\$14,480	\$0	\$6,331	\$20,811
Task 6 C	City Design Guidelines and Standard Details for Wastewater System		2	12	16	40	24	8	102	\$13,140	\$0		\$13,140
Task 7 A	Project Management General		2	8	60	2	2	4	78	\$13,120	\$2,000	\$5,630	\$18,750
Task 7 B	Schedule				2			1	3	\$425	\$0		\$425
Task 7 C	Format				Included in all Tasks				0	\$0			\$0
Task 8	Intranet Web Browser		8	4		4			16	\$2,800	\$0	\$22,000	\$24,800
Task Subtotal - Hours													
Task Subtotal - Costs													
			\$10,200	\$22,015	\$66,525	\$31,970	\$18,680	\$7,680	1043	\$157,362	\$4,100	\$570,051	\$731,713

Exhibit "C"

INSURANCE REQUIREMENTS FOR CONSULTANTS

Consultant shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work by the Consultant, his agents, representatives, or employees.

Minimum Scope and Limits of Insurance: Consultant shall maintain limits no less than:

1. **Commercial General Liability:** \$1,000,000 per occurrence and \$2,000,000 aggregate for bodily injury, personal injury and property damage. ISO Occurrence Form CG 0001 is required.
2. **Automobile Liability:** \$1,000,000 per accident for bodily injury and property damage. ISO Form CA 0001 is required.
3. **Workers' Compensation** and **Employer's Liability:** \$1,000,000 per accident for bodily injury or disease.
4. **Errors and Omissions** Liability Insurance appropriate to the Consultants Profession: \$1,000,000 per occurrence and \$2,000,000 aggregate.

Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared and approved by the City of Sunnyvale. The consultant shall guarantee payment of any losses and related investigations, claim administration and defense expenses within the deductible or self-insured retention.

Other Insurance Provisions

The **general liability** and **automobile liability** policies are to contain, or be endorsed to contain, the following provisions:

1. The City of Sunnyvale, its officials, employees, agents and volunteers are to be covered as additional insureds with respects to liability arising out of activities performed by or on behalf of the Consultant; products and completed operations of the Consultant; premises owned, occupied or used by the Consultant; or automobiles owned, leased, hired or borrowed by the Consultant. The coverage shall contain no special limitations on the scope of protection afforded to the City of Sunnyvale, its officers, employees, agents or volunteers.
2. For any claims related to this project, the Consultant's insurance shall be primary. Any insurance or self-insurance maintained by the City of Sunnyvale, its officers, officials, employees, agents and volunteers shall be excess of the Consultant's insurance and shall not contribute with it.
3. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the City of Sunnyvale, its officers, officials, employees, agents or volunteers.

4. The Consultant's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
5. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, cancelled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City of Sunnyvale.

Claims Made Coverage

If the General Liability and/or Errors & Omissions coverages are written on a claims-made form:

1. The retroactive date must be shown, and must be before the date of the contract or the beginning of contract work.
2. Insurance must be maintained and evidence of insurance must be provided for at least five years after completion of the contract work.
3. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective date, the Consultant must purchase an extended period coverage for a minimum of five years after completion of contract work.
4. A copy of the claims reporting requirements must be submitted to the City of Sunnyvale for review.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the City of Sunnyvale.

Verification of Coverage

Consultant shall furnish the City of Sunnyvale with original a Certificate of Insurance effecting the coverage required. The certificates are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates are to be received and approved by the City of Sunnyvale prior to commencement of work.