

Council Meeting of
March 7, 2006

Honorable Mayor and Members
of the City Council
City Hall
Torrance, California

Members of the Council:

SUBJECT: Recommendation to Approve a Consulting Services Agreement with Tetra Tech, Inc., for the Hydraulic Model Update, Analyses and Annual Services

Expenditure: \$100,000

Recommendation

The Public Works Director recommends that the City Council:

1. Approve a Consulting Services Agreement with Tetra Tech, Inc., to update the City's Water System Computer Model, perform seven specific water system analyses and provide annual services in the amount of \$100,000; and
2. Authorize the Mayor to execute and the City Clerk to attest to the Agreement on behalf of the City; and
3. Appropriate \$100,000 from the Water Enterprise Fund to Water System Studies, I-52.

Funding

Funding for this project (\$100,000) is to be appropriated from the Water Enterprise Fund, and transferred to the Water System Studies, I-52.

BACKGROUND

The City had a computer model of the water system (hydraulic model) created using the H₂O Net software in 2002 for the Water System Master Plan. The hydraulic model was used to analyze various scenarios in the system for new water main replacement sizes, water demands, water pressures, pump capacities and water quality. With the replacement of new water mains each year via capital improvement projects and developer projects, the hydraulic model has become outdated and needs

to be updated and recalibrated. Presently the Public Works Department does not have staff who are experienced enough to run the H₂O Net hydraulic model software.

In addition to updating the model to include new installations, the Public Works Department has identified new water tasks/projects that need hydraulic analysis for pipe and pump sizing and cost estimates. This analysis will allow the Department to plan future projects including potential new groundwater pumping facilities and reservoir enhancements. Listed below are the various hydraulic analysis/tasks that are needed:

- Update and calibrate the City's hydraulic model. New water mains are to be added to the existing model in order to get accurate data.
- Analysis of Metropolitan Water District shut downs that are projected for next year to determine the impact on the City's water system during the shut downs.
- Analysis of proposed water well field in North Torrance to determine the effect of new well sites on the water distribution system in North Torrance.
- Analysis of proposed reservoir and booster pumps in South Torrance to determine the sizing of reservoir, water flow and age, and pump capacity.
- Analysis of Water Replenishment District Desalter expansion to determine the effect of more ground water on the City's water system in Central Torrance.
- Analysis of water mains adjacent to the Walnut Transmission Main, CIP No. I-83 to determine the effects of increased water flows to the surrounding system.
- Analysis of water main replacements at Kent\Galva to determine the sizes and cost estimate of proposed water mains.
- Analysis of water main replacements on an as-need basis for future developer projects for fire flow demands and water age.

Please refer to Attachment B for a Location Map for the aforementioned proposed projects.

ANALYSIS

The Public Works Department sought proposals from five consultants to update the City's hydraulic model and run analysis as described above. Tetra Tech, Inc., (\$90,115), Carollo and ID Modeling, Inc. (joint submittal) (\$104,342) were the only consultants that submitted a proposal. One consultant declined to quote and another did not reply to the proposal.

Tetra Tech, Inc. has done work for the City before and is presently the consulting engineers for the North Torrance Water Replacement Project, CIP No. I-25 and I-73. As part of the design process Tetra Tech utilized the City's hydraulic model to evaluate new pipe sizes and water quality for these projects. Tetra Tech has also done water modeling work for the City of Huntington Beach, City of Tustin, and Laguna Beach County Water District.

The Public Works Department has negotiated a fee proposal of \$85,000 from Tetra Tech, Inc. for the above listed hydraulic analysis. An additional \$15,000 is requested for extra hydraulic analysis to be done on an as-needed basis, bringing the not to exceed amount to \$100,000.

Work will begin immediately and is needed to determine infrastructure requirements and cost estimates in time for the next Capital Improvement Program update.

Respectfully submitted,

Robert J. Beste
Public works Director



By John Dettle, P.E.
Project Manager

CONCUR:



Robert J. Beste
Public Works Director



LeRoy J. Jackson
City Manager

Attachment: A. Consultant Services Agreement
B. Location Map for Proposed Projects

CONSULTING SERVICES AGREEMENT

This CONSULTING SERVICES AGREEMENT (“Agreement”) is made and entered into as of March 7, 2006, by and between the CITY OF TORRANCE, a municipal corporation (“CITY”), and Tetra Tech, Inc., a California Corporation (“CONSULTANT”).

RECITALS:

- A. The CITY wishes to retain the services of an experienced and qualified CONSULTANT to do Hydraulic Model Update, Analyses and Annual Services.
- B. In order to obtain the desired services, the CITY has circulated its Request for Proposal to perform Hydraulic Model Analyses for recalibrating and updating the City's hydraulic model and an annual as-needed contract for hydraulic modeling analysis.
- C. CONSULTANT has submitted a Proposal (the “Proposal”) in response to the RFP. In its Proposal CONSULTANT represents that it is qualified to perform those services requested in the RFP. Based upon its review of all proposals submitted in response to the RFP, the CITY is willing to award the contract to CONSULTANT.

AGREEMENT:

1. SERVICES TO BE PERFORMED BY CONSULTANT

CONSULTANT will provide the services and install those materials listed in CONSULTANT’s Proposal submitted in response to the RFP. A copy of the Scope of Services is attached as Exhibit A. A copy of the Compensation Schedule is attached as Exhibit B.

2. TERM

Unless earlier terminated in accordance with Paragraph 4 below, this Agreement will continue in full force and effect from the Effective Date through February 28, 2008.

3. COMPENSATION

- A. CONSULTANT’s Fee.

For services rendered pursuant to this Agreement, CONSULTANT will be paid in accordance with the compensation schedule set forth in the Proposal; provided, however, that in no event will the total amount of money paid the CONSULTANT, for services initially contemplated by this Agreement, exceed the sum of \$100,000.00 (“Agreement Sum”), unless otherwise first approved in writing by the CITY.

B. Schedule of Payment.

Provided that the CONSULTANT is not in default under the terms of this Agreement, upon presentation of an invoice, CONSULTANT will be paid monthly, within 30 days after the date of the monthly invoice.

4. **TERMINATION OF AGREEMENT**

A. Termination by CITY for Convenience.

1. CITY may, at any time, terminate the Agreement for CITY's convenience and without cause.
2. Upon receipt of written notice from CITY of such termination for CITY's convenience, CONSULTANT will:
 - a. cease operations as directed by CITY in the notice;
 - b. take actions necessary, or that CITY may direct for the protection and preservation of the work; and
 - c. except for work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.
3. In case of such termination for CITY's convenience, CONSULTANT will be entitled to receive payment for work executed; and costs incurred by reason of such termination, along with reasonable overhead and profit on the work not executed.

B. Termination for Cause.

1. If either party fails to perform any term, covenant or condition in this Agreement and that failure continues for 15 calendar days after the nondefaulting party gives the defaulting party notice of the failure to perform, this Agreement may be terminated for cause; provided, however, that if during the notice period the defaulting party has promptly commenced and continues diligent efforts to remedy the default, the defaulting party will have such additional time as is reasonably necessary to remedy the default.
2. In the event this Agreement is terminated for cause by the default of the CONSULTANT, the CITY may, at the expense of the CONSULTANT and its surety, complete this Agreement or cause it to be completed. Any check or bond delivered to the CITY in connection with this Agreement, and the money payable thereon, will be forfeited to and remain the property of the CITY. All moneys due the CONSULTANT under the terms of this Agreement will be retained by the CITY, but the retention

will not release the CONSULTANT and its surety from liability for the default. Under these circumstances, however, the CONSULTANT and its surety will be credited with the amount of money retained, toward any amount by which the cost of completion exceeds the Agreement Sum and any amount authorized for extra services.

4. Termination for cause will not affect or terminate any of the rights of the CITY as against the CONSULTANT or its surety then existing, or which may thereafter accrue because of the default; this provision is in addition to all other rights and remedies available to the CITY under law.

C. Termination for Breach of Law.

In the event the CONSULTANT or any of its officers, directors, shareholders, employees, agents, subsidiaries or affiliates is convicted (i) of a criminal offense as an incident to obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of a contract or subcontract; (ii) under state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity or business honesty which currently, seriously, and directly affects responsibility as a public consultant or contractor; (iii) under state or federal antitrust statutes arising out of the submission of bids or proposals; or (iv) of violation of Paragraph 19 of this Agreement; or for any other cause the City determines to be so serious and compelling as to affect CONSULTANT's responsibility as a public consultant or contractor, including but not limited to, debarment by another governmental agency, then the CITY reserves the unilateral right to terminate this Agreement or to impose such other sanctions (which may include financial sanctions, temporary suspensions or any other condition deemed appropriate short of termination) as it deems proper. The CITY will not take action until CONSULTANT has been given notice and an opportunity to present evidence in mitigation.

5. **FORCE MAJEURE**

If any party fails to perform its obligations because of strikes, lockouts, labor disputes, embargoes, acts of God, inability to obtain labor or materials or reasonable substitutes for labor or materials, governmental restrictions, governmental regulations, governmental controls, judicial orders, enemy or hostile governmental action, civil commotion, fire or other casualty, or other causes beyond the reasonable control of the party obligated to perform, then that party's performance shall be excused for a period equal to the period of such cause for failure to perform.

6. **RETENTION OF FUNDS**

CONSULTANT authorizes the CITY to deduct from any amount payable to CONSULTANT (whether or not arising out of this Agreement) any amounts the payment of which may be in dispute or that are necessary to compensate the CITY for any losses, costs, liabilities, or damages suffered by the CITY, and all amounts for which the CITY

may be liable to third parties, by reason of CONSULTANT's acts or omissions in performing or failing to perform CONSULTANT's obligations under this Agreement. In the event that any claim is made by a third party, the amount or validity of which is disputed by CONSULTANT, or any indebtedness exists that appears to be the basis for a claim of lien, the CITY may withhold from any payment due, without liability for interest because of the withholding, an amount sufficient to cover the claim. The failure of the CITY to exercise the right to deduct or to withhold will not, however, affect the obligations of CONSULTANT to insure, indemnify, and protect the CITY as elsewhere provided in this Agreement.

7. THE CITY'S REPRESENTATIVE

Robert J. Beste, Public Works Director, is designated as the "City Representative," authorized to act in its behalf with respect to the work and services specified in this Agreement and to make all decisions in connection with this Agreement. Whenever approval, directions, or other actions are required by the CITY under this Agreement, those actions will be taken by the City Representative, unless otherwise stated. The City Manager has the right to designate another City Representative at any time, by providing notice to CONSULTANT.

8. CONSULTANT REPRESENTATIVE(S)

The following principal(s) of CONSULTANT are designated as being the principal(s) and representative(s) of CONSULTANT authorized to act in its behalf with respect to the work specified in this Agreement and make all decisions in connection with this Agreement:

1. Tom Epperson, P.E., Divisional Vice President
2. Bob Brandom, P.E., Project Manager

9. INDEPENDENT CONTRACTOR

The CONSULTANT is, and at all times will remain as to the CITY, a wholly independent contractor. Neither the CITY nor any of its agents will have control over the conduct of the CONSULTANT or any of the CONSULTANT's employees, except as otherwise set forth in this Agreement. The CONSULTANT may not, at any time or in any manner, represent that it or any of its agents or employees are in any manner agents or employees of the CITY.

10. BUSINESS LICENSE

The CONSULTANT must obtain a City business license prior to the start of work under this Agreement, unless CONSULTANT is qualified for an exemption.

11. OTHER LICENSES AND PERMITS

CONSULTANT warrants that it has all professional, contracting and other permits and licenses required to undertake the work contemplated by this Agreement.

12. FAMILIARITY WITH WORK

By executing this Agreement, CONSULTANT warrants that CONSULTANT (a) has thoroughly investigated and considered the scope of services to be performed, (b) has carefully considered how the services should be performed, and (c) fully understands the facilities, difficulties and restrictions attending performance of the services under this Agreement. If the services involve work upon any site, CONSULTANT warrants that CONSULTANT has or will investigate the site and is or will be fully acquainted with the conditions there existing, prior to commencement of services set forth in this Agreement. Should CONSULTANT discover any latent or unknown conditions that will materially affect the performance of the services set forth in this Agreement, CONSULTANT must immediately inform the CITY of that fact and may not proceed except at CONSULTANT's risk until written instructions are received from the CITY.

13. CARE OF WORK

CONSULTANT must adopt reasonable methods during the term of the Agreement to furnish continuous protection to the work, and the equipment, materials, papers, documents, plans, studies and other components to prevent losses or damages, and will be responsible for all damages, to persons or property, until acceptance of the work by the CITY, except those losses or damages as may be caused by the CITY's own negligence.

14. CONSULTANT'S ACCOUNTING RECORDS; OTHER PROJECT RECORDS

Records of the CONSULTANT's time pertaining to the project, and records of accounts between the CITY and the CONSULTANT, will be kept on a generally recognized accounting basis. CONSULTANT will also maintain all other records, including without limitation specifications, drawings, progress reports and the like, relating to the project. All records will be available to the CITY during normal working hours. CONSULTANT will maintain these records for three years after final payment.

15. INDEMNIFICATION

CONSULTANT will indemnify, pay for cost of defense, and hold harmless CITY, the City Council, each member thereof, present and future, its officers, agents and employees from and against any and all liability, expenses, including defense costs and legal fees, and claims for damages whatsoever, including, but not limited to, those arising from breach of contract, bodily injury, death, personal injury, property damage, loss of use, or property loss. The obligation to indemnify, pay for cost of defense, and hold harmless includes, but is not limited to, any liability or expense, including defense costs and legal fees, arising from the negligent acts or omissions, or willful misconduct of CONSULTANT, its officers, employees, agents, subconsultants or vendors. It is further agreed, CONSULTANT's obligations to indemnify, defend and hold harmless will apply, but only to the extent covered by Consultant's negligence, even in the event of concurrent negligence on the party of CITY, the City Council, each member thereof, present and future, or its officers, agents and employees, except for liability resulting from the negligence or willful misconduct of CITY, its officers, employees or agents. Payment by CITY is not a condition precedent to enforcement of this indemnity.

16. NON-LIABILITY OF THE CITY'S OFFICERS AND EMPLOYEES

No officer or employee of the CITY will be personally liable to CONSULTANT, in the event of any default or breach by the CITY or for any amount that may become due to CONSULTANT.

17. INSURANCE

A. CONSULTANT must maintain at its sole expense the following insurance, which will be full coverage not subject to self insurance provisions:

- (1) Automobile Liability, including owned, non-owned and hired vehicles, with at least the following limits of liability:
 - (a) Primary Bodily Injury with limits of at least \$500,000 per person, \$1,000,000 per occurrence; and
 - (b) Primary Property Damage of at least \$250,000 per occurrence; or
 - (c) Combined single limits of \$1,000,000 per occurrence.
- (2) General Liability including coverage for premises, products and completed operations, independent contractors/vendors, personal injury and contractual obligations with combined single limits of coverage of at least \$1,000,000 per occurrence.
- (3) Professional liability insurance with limits of at least \$1,000,000 per occurrence.
- (4) Workers' Compensation with limits as required by the State of California and Employers Liability with limits of at least \$1,000,000.

B. The insurance provided by CONSULTANT will be primary and non-contributory.

C. CITY, the City Council and each member thereof, members of boards and commissions, every officer, agent, official, employee and volunteer must be named as additional insured under the automobile and general liability policies.

D. CONSULTANT must provide certificates of insurance and/or endorsements to the City Clerk of the City of Torrance before the commencement of work.

E. Each insurance policy required by this Paragraph must contain a provision that no termination, cancellation or change of coverage can be made without thirty days notice to CITY.

18. SUFFICIENCY OF INSURERS

Insurance required by this Agreement will be satisfactory only if issued by companies admitted to do business in California, rated “B+” or better in the most recent edition of Best’s Key Rating Guide, and only if they are of a financial category Class VII or better, unless these requirements are waived by the Risk Manager of the CITY (“Risk Manager”) due to unique circumstances. In the event the Risk Manager determines that the work or services to be performed under this Agreement creates an increased or decreased risk of loss to the CITY, the CONSULTANT agrees that the minimum limits of any insurance policies and/or performance bond required by this Agreement may be changed accordingly upon receipt of written notice from the Risk Manager; provided that CONSULTANT will have the right to appeal a determination of increased coverage by the Risk Manager to the City Council of the CITY within 10 days of receipt of notice from the Risk Manager.

19. CONFLICT OF INTEREST

- A. No officer or employee of the CITY may have any financial interest, direct or indirect, in this Agreement, nor may any officer or employee participate in any decision relating to the Agreement that effects the officer or employee’s financial interest or the financial interest of any corporation, partnership or association in which the officer or employee is, directly or indirectly interested, in violation of any law, rule or regulation.
- B. No person may offer, give, or agree to give any officer or employee or former officer or employee, nor may any officer or employee solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation or any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any way pertaining to any program requirement, contract or subcontract, or to any solicitation or proposal.

20. NOTICE

- A. All notices, requests, demands, or other communications under this Agreement will be in writing. Notice will be sufficiently given for all purposes as follows:
- (1) Personal delivery. When personally delivered to the recipient: notice is effective on delivery.
 - (2) First Class mail. When mailed first class to the last address of the recipient known to the party giving notice: notice is effective three mail delivery days after deposit in an United States Postal Service office or mailbox.

- (3) Certified mail. When mailed certified mail, return receipt requested: notice is effective on receipt, if delivery is confirmed by a return receipt.
- (4) Overnight delivery. When delivered by an overnight delivery service, charges prepaid or charged to the sender's account: notice is effective on delivery, if delivery is confirmed by the delivery service.
- (5) Facsimile transmission. When sent by fax to the last fax number of the recipient known to the party giving notice: notice is effective on receipt. Any notice given by fax will be deemed received on the next business day if it is received after 5:00 p.m. (recipient's time) or on a non-business day.

Addresses for purpose of giving notice are as follows:

CONSULTANT: Tom Epperson, Division Vice President
Tetra Tech, Inc.
16241 Laguna Canyon Road
Ste. 200
Irvine, CA 92618
Fax: (949) 727-7097

CITY: City Clerk
City of Torrance
3031 Torrance Boulevard
Torrance, CA 90509-2970
Fax: (310) 618-2931

- B. Any correctly addressed notice that is refused, unclaimed, or undeliverable because of an act or omission of the party to be notified, will be deemed effective as of the first date the notice was refused, unclaimed or deemed undeliverable by the postal authorities, messenger or overnight delivery service.
- C. Either party may change its address or fax number by giving the other party notice of the change in any manner permitted by this Agreement.

21. PROHIBITION AGAINST ASSIGNMENT AND SUBCONTRACTING

This Agreement and all exhibits are binding on the heirs, successors, and assigns of the parties. The Agreement may not be assigned or subcontracted by either the CITY or CONSULTANT without the prior written consent of the other.

22. INTEGRATION; AMENDMENT

This Agreement represents the entire understanding of the CITY and CONSULTANT as to those matters contained in it. No prior oral or written understanding will be of any

force or effect with respect to the terms of this Agreement. The Agreement may not be modified or altered except in writing signed by both parties.

23. INTERPRETATION

The terms of this Agreement should be construed in accordance with the meaning of the language used and should not be construed for or against either party by reason of the authorship of this Agreement or any other rule of construction that might otherwise apply.

24. SEVERABILITY

If any part of this Agreement is found to be in conflict with applicable laws, that part will be inoperative, null and void insofar as it is in conflict with any applicable laws, but the remainder of the Agreement will remain in full force and effect.

25. TIME OF ESSENCE

Time is of the essence in the performance of this Agreement.

26. GOVERNING LAW; JURISDICTION

This Agreement will be administered and interpreted under the laws of the State of California. Jurisdiction of any litigation arising from the Agreement will be in Los Angeles County, California.

27. COMPLIANCE WITH STATUTES AND REGULATIONS

CONSULTANT will be knowledgeable of and will comply with all applicable federal, state, county and city statutes, rules, regulations, ordinances and orders.

28. WAIVER OF BREACH

No delay or omission in the exercise of any right or remedy by a nondefaulting party on any default will impair the right or remedy or be construed as a waiver. A party's consent or approval of any act by the other party requiring the party's consent or approval will not be deemed to waive or render unnecessary the other party's consent to or approval of any subsequent act. Any waiver by either party of any default must be in writing and will not be a waiver of any other default concerning the same or any other provision of this Agreement.

29. ATTORNEY'S FEES

Except as set forth in Paragraph 15, in any dispute, litigation, arbitration, or other proceeding by which one party either seeks to enforce its rights under this Agreement (whether in contract, tort or both) or seeks a declaration of any rights or obligations under this Agreement, the prevailing party will be awarded reasonable attorney's fees, together with any costs and expenses, to resolve the dispute and to enforce any judgment.

30. **EXHIBITS**

All exhibits identified in this Agreement are incorporated into the Agreement by this reference.

31. **CONSULTANT'S AUTHORITY TO EXECUTE**

The person(s) executing this Agreement on behalf of the CONSULTANT warrant that (i) the CONSULTANT is duly organized and existing; (ii) they are duly authorized to execute this Agreement on behalf of the CONSULTANT; (iii) by so executing this Agreement, the CONSULTANT is formally bound to the provisions of this Agreement; and (iv) the entering into this Agreement does not violate any provision of any other Agreement to which the CONSULTANT is bound.

CITY OF TORRANCE,
a Municipal Corporation

Tetra Tech Inc.
a California Corporation

Dan Walker, Mayor

By: _____
Tom Epperson, P.E., Divisional Vice President

ATTEST:

Sue Herbers, City Clerk

APPROVED AS TO FORM:

JOHN L. FELLOWS III
City Attorney

By: _____

Attachments: Exhibit A: Scope of Services
 Exhibit B: Compensation Schedule

Revised..: 1/30/01

EXHIBIT A
SCOPE OF SERVICES

EXHIBIT A - SCOPE OF SERVICES

City of Torrance, Hydraulic Model Update, Analyses & Annual Services

Task 1. Project Management and Meetings

Tom Epperson will serve as Project Director and will provide quality assurance and quality control reviews to ensure compliance with standard engineering practice and project criteria set forth by the City. Tetra Tech will arrange and conduct a project kick-off meeting at the start of the project to meet with City Staff. Tetra Tech will conduct one review meeting with the City to go over the results of hydraulic model development and calibration.

Seven hydraulic analyses and reports will be developed as part of the project. Each report developed will include:

- Fire flows, pressures/velocities reads for average and peak hour demand
- Pipeline improvements and quantities
- Water age
- Recommendations to improve the system including pump requirements
- Format all output tables
- Prepare draft analyses
- Meet with City to review draft analyses
- Finalize analyses based on City comments
- Report and analyses will be digitally provided to the City
- Cost Estimates for recommended improvements

A sample water model analysis report developed by Tetra Tech for the Water Analysis for Pacific City for the City of Huntington Beach is included in the Appendix.

Task 2. Updating and Calibrating Hydraulic Model

Instantaneous and time varied customer demands were imported into the City's existing H2ONet model and globally adjusted based on calendar year 2000 water production records as part of the City's 2002 Water System Master Plan. In performing the hydraulic and water age analysis as part of Phases 1, 2, and 3 of the Water Main Replacement Project, CIP No. I-25, we noted that demands for junction groups had been allocated to single junctions in that grouping and that over 75 percent of the junctions had a zero demand. This type of demand allocation is not conducive for accurate water age or hydraulic modeling because there is zero flow in many of the pipes.

We propose to allocate demands already in the model to all junctions in the Existing System model. Global adjustments would then be made to project future demands in the Ultimate System model. It is understood that the City will provide characteristic and demand information for developments that have occurred since the City's existing model was developed. Model junctions in the development areas will be populated with demands based on the provided development information. It is understood that the City will also provide demands sites that have switched to recycled water use. These demands will be removed from the model.

New water main and facilities improvements that are currently not in the model will be input into the model. It is understood that approximately 12 miles of water mains need to be input into the model in order to update the model. Tetra Tech has done this on many previous hydraulic model projects, most recently for the City of Huntington Beach where as-built drawings dating back to 1999 were used to

EXHIBIT A - SCOPE OF SERVICES

City of Torrance, Hydraulic Model Update, Analyses & Annual Services

update their model to the year 2005. It is assumed that the City will provide all as-built drawings that need to be input into the model.

H2ONet 6.0 software has a network review/fix tool that allows for the identification of network topology problems. The feature can be used to identify and correct model disconnections. These types of disconnections include duplicate nodes, split pipes, crossing pipes that should intersect, and orphan pipes that are missing a connecting node. We propose to use this tool in conjunction with the City's atlas maps to identify model disconnections and then correct these disconnections for better model performance.

Tetra Tech will prepare a memorandum detailing the model calibration and field hydrant testing procedures, staffing, and equipment recommended. The memorandum will detail simultaneous SCADA data of facilities operation to be collected. A map of the recommended 8 to 10 hydrants to be tested will be included. A Tetra Tech engineer will be present during the testing. Tetra Tech will utilize the field hydrant and SCADA data results to calibrate the model. Typically a calibration of between 5 to 8 percent for dynamic pressure and zero to 5 percent for static pressure is strived for.

Task 3. Hydraulic Analysis of MWD Shutdowns

Hydraulic analyses for the shut down of the City's MWD connections (4 connections) and shutdown of two MWD feed lines servicing Torrance will be conducted with the City's updated and calibrated hydraulic model. A total of six scenarios will be evaluated and a report will be submitted to the City by July 2006.

Task 4. Hydraulic Analysis for Well Field Creation

The City is planning a well field of 2 to 4 new water wells feeding into one treatment plant and booster pump station in North Torrance. A hydraulic analysis of the creation of the well field incorporating five scenarios will be prepared. The report will be submitted by April 2006.

Task 5. Hydraulic Analysis for New Reservoir and Booster Pumps

The sizing and location of a new reservoir and booster pumps will be evaluated. One site and scenario will be run. The report will be submitted by April 2006.

Task 6. Hydraulic Analysis for WRD Desalter Expansion and Transmission Main Sizing

A hydraulic analysis for the expansion of the existing WRD desalter plant and the sizing of a new transmission main from the well site will be conducted. One scenario will be evaluated. The report will be submitted by April 2006.

Task 7. Hydraulic Analysis for Walnut Transmission Main Sizing

A hydraulic analysis for the sizing of the Walnut transmission main and connecting distribution mains and pressure fluctuations will be conducted. Two scenarios will be evaluated: peak demand and average demand. The report will be submitted by February 2006.

EXHIBIT A - SCOPE OF SERVICES

City of Torrance, Hydraulic Model Update, Analyses & Annual Services

Task 8. Hydraulic Analysis for New Raised Reservoir in South Torrance

A hydraulic analysis for a new raised reservoir to float in the high pressure zone in South Torrance, pump sizing, and transmission main sizing will be conducted. Two scenarios will be evaluated. Dividing the high pressure zone into two pressure zones will be evaluated. The report will be submitted by April 2006.

Task 9. Hydraulic Analysis for Pipe Sizing at Kent/Galva

A hydraulic analysis for sizing of distribution mains at Kent/Galva in South Torrance will be conducted. One scenario for average flow and water age will be evaluated. The report will be submitted by February 2006.

Task 10. Hydraulic Model Training

One day of hydraulic model training will be provided to two City personnel on the City's premises using the City's hydraulic model and software.

Task 11. Annual As-Needed Hydraulic Model Services

The annual as-needed contract will include analyses for future Capital Improvement Projects, developer projects, distribution system improvements, and GIS integration of completed projects coordinated with the City's GIS Division. As part of the contract the City's model will be updated and calibrated annually. Two water main projects and six developer projects are anticipated each year.

The proposed Tetra Tech Project Team of Tom Epperson (Senior Project Manager), Bob Brandom (Project Manager), Lisa Amador (Project Engineer), and Simon Lee (Engineer II) will be assigned to this work. Our 2006 hourly rate fee schedule is attached.

EXHIBIT B
COMPENSATION SCHEDULE

EXHIBIT B

City of Torrance Hydraulic Model Update, Analyses, and Annual Services
AMENDED Person Hour/Fee Estimate

Task	Sub Task	Task Description	Labor Hours by Staff Classification										Total Hours	Labor	Reimb. Expenses	Totals					
			SPM (\$173/hr)	PM (\$158/hr)	PE (\$135/hr)	Eng II (\$110/hr)	Eng I (\$95/hr)	CAD (\$85/hr)	Admin (\$65/hr)												
1	a	Project Meetings/Presentations/QA/QC	6	6	6								2				20	\$ 2,926	\$ 50	\$ 2,976	
	b	Attend project kickoff meeting and model development/calibration meeting		12	6								4				28	\$ 3,626	\$ 150	\$ 3,776	
	c	Attend four water analysis review meetings for Tasks 3 thru 9	16														16	\$ 2,768		\$ 2,768	
Subtotal																				\$ 9,520	
2	a	Update and Calibrate Hydraulic Model																			
	b	DELETED																			
	c	Allocate demands to all junctions in year 2006 model		6	8													54	\$ 5,828		\$ 5,828
	d	AMENDED: Enter development demands and remove demands that switched to recycled water		6	18			40										24	\$ 3,378	\$ 27	\$ 3,405
	e	Make global adjustments and develop demands in ultimate system model		4	4													8	\$ 1,172		\$ 1,172
	f	Input approx 12 miles of water main and other facilities improvements		8	4			80										92	\$ 9,404		\$ 9,404
	g	Utilize network review/fix tool and correct model disconnections		8	8													40	\$ 4,984		\$ 4,984
	h	Write hydrant testing/model calibration procedures memorandum		4	4								2					10	\$ 1,362		\$ 1,362
	i	Assist in field tests, take data and run simulations to calibrate model		1	6			16										31	\$ 3,961	\$ 50	\$ 4,011
Subtotal																				\$ 30,166	
3	a	Hydraulic Analysis of MWD Shurdowns																			
	b	Collect and analyze project data		1	2													5	\$ 648		\$ 648
	c	Setup model for analyses		1	3													7	\$ 893		\$ 893
	d	Run and analyze 6 hydraulic scenarios		1	5													11	\$ 1,383		\$ 1,383
	e	Analyze water age		1	5													11	\$ 1,383		\$ 1,383
	f	Develop output tables and cost estimates		1	3													6	\$ 783		\$ 783
	g	Write draft report		5	1													13	\$ 1,638	\$ 50	\$ 1,688
	h	Address City comments and submit final report		2														5	\$ 626		\$ 626
	Subtotal																				\$ 7,404
4	a	Hydraulic Analysis for Wellfield Creation																			
	b	Collect and analyze project data		1	2													5	\$ 648		\$ 648
	c	Setup model for analyses		1	3													7	\$ 893		\$ 893
	d	Run and analyze 5 hydraulic scenarios		1	5													11	\$ 1,383		\$ 1,383
	e	Analyze water age		1	5													11	\$ 1,383		\$ 1,383
	f	Develop output tables and cost estimates		1	3													6	\$ 783		\$ 783
	g	Write draft report		5	1													13	\$ 1,638	\$ 50	\$ 1,688
	h	Address City comments and submit final report		2														5	\$ 626		\$ 626
	Subtotal																				\$ 7,404
5	a	Hydraulic Analysis for New Reservoir and Booster Pumps																			
	b	Collect and analyze project data		1	1													3	\$ 403		\$ 403
	c	Setup model for analyses		1	2													5	\$ 648		\$ 648
	d	Run and analyze 1 site/hydraulic scenario		1	2													5	\$ 648		\$ 648
	e	Analyze water age		1	2													5	\$ 648		\$ 648
	f	Develop output tables and cost estimates		1	2													5	\$ 648		\$ 648
	g	Write draft report		4	1													10	\$ 1,290	\$ 50	\$ 1,340
	h	Address City comments and submit final report		1														4	\$ 468		\$ 468
	Subtotal																				\$ 4,893

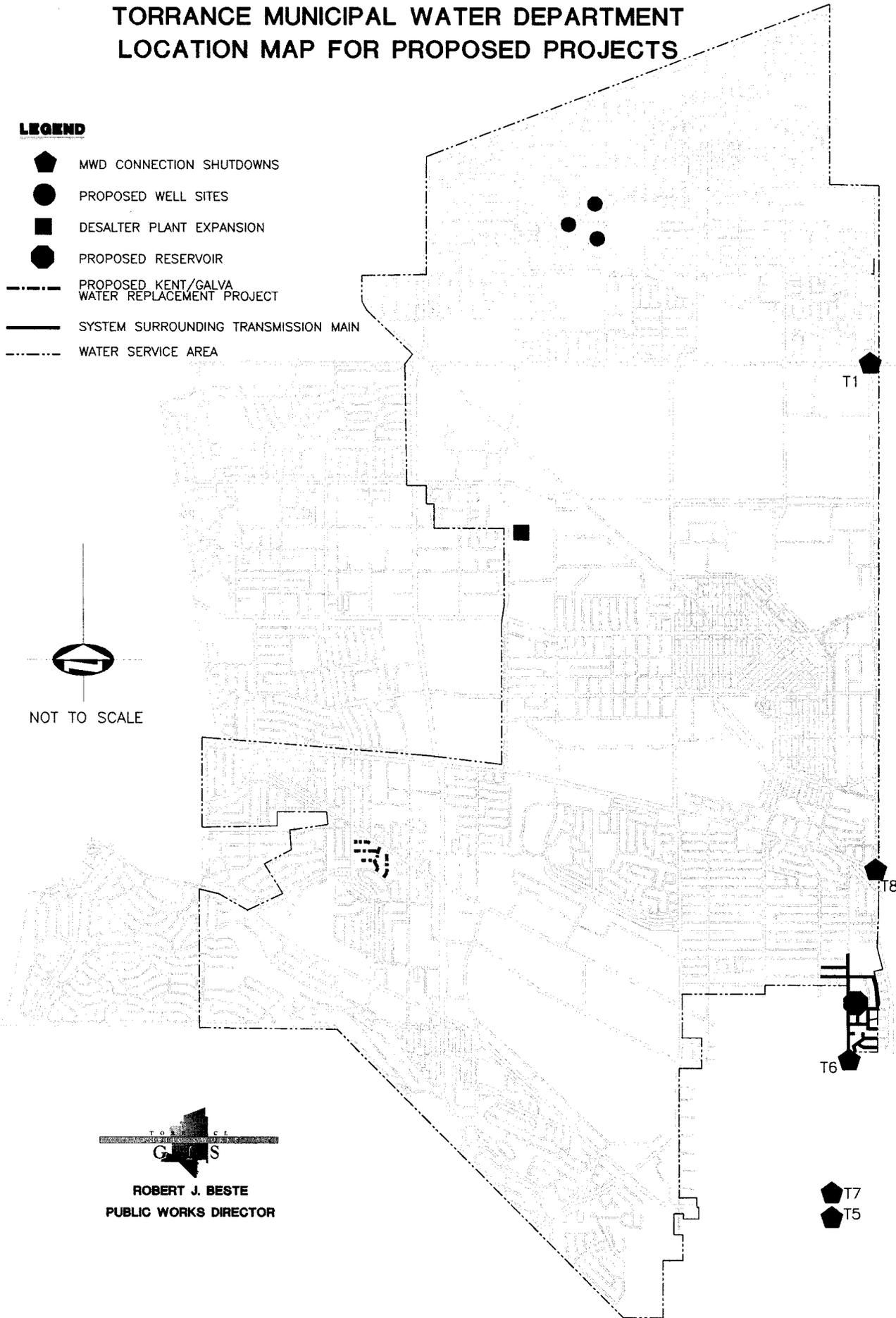
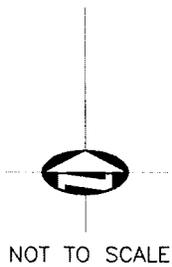
**City of Torrance Hydraulic Model Update, Analyses, and Annual Services
AMENDED Person Hour/Fee Estimate**

Task	Sub Task	Task Description	Labor Hours by Staff Classification							Total Hours	Labor	Reimb. Expenses	Totals
			SPM (\$173/hr)	PM (\$158/hr)	PE (\$155/hr)	Eng II (\$110/hr)	Eng I (\$95/hr)	CAD (\$95/hr)	Admin (\$65/hr)				
6		Hydraulic Analysis for WRD Desalter Expansion & Transmission Main Sizing											
	a	Collect and analyze project data	1		1								\$ 403
	b	Setup model for analyses	1		2								\$ 648
	c	Run and analyze 1 hydraulic scenario	1		2								\$ 648
	d	Analyze water age	1		2								\$ 648
	e	Develop output tables and cost estimates	1		2								\$ 648
	f	Write draft report	1		4			3					\$ 1,340
	g	Address City comments and submit final report	1		1								\$ 468
		Subtotal											
7		Hydraulic Analysis for Walnut Transmission Main Sizing											
	a	Collect and analyze project data	1		2								\$ 648
	b	Setup model for analyses	1		2								\$ 648
	c	Run and analyze 2 hydraulic scenarios	1		3								\$ 893
	d	Analyze water age	1		3								\$ 893
	e	Develop output tables and cost estimates	1		2								\$ 648
	f	Write draft report	1		4			3					\$ 1,450
	g	Address City comments and submit final report	2		1								\$ 626
		Subtotal											
8		Hydraulic Analysis for New Raised Reservoir in South Torrance											
	a	Collect and analyze project data	1		2								\$ 648
	b	Setup model for analyses	1		3								\$ 893
	c	Run and analyze 2 hydraulic scenarios - divide high zone into 2 zones	2		6								\$ 1,786
	d	Analyze water age	1		3								\$ 893
	e	Develop output tables and cost estimates	1		2								\$ 648
	f	Write draft report	1		4			5					\$ 1,640
	g	Address City comments and submit final report	2		1								\$ 626
		Subtotal											
9		Hydraulic Analysis for Pipe Sizing at Kent/Gaiva											
	a	Collect and analyze project data	1		1								\$ 403
	b	Setup model for analyses	1		2								\$ 648
	c	Run and analyze 1 hydraulic scenario	1		2								\$ 648
	d	Analyze water age	1		2								\$ 648
	e	Develop output tables and cost estimates	1		2								\$ 648
	f	Write draft report	1		4			3					\$ 1,340
	g	Address City comments and submit final report	1		1								\$ 468
		Subtotal											
10		Hydraulic Model Training											
	a	Develop training agenda, hand outs, and methods	1		4								\$ 1,345
	b	Conduct one day of training at City's office	4		8								\$ 1,712
	Subtotal												\$ 3,157
		Total Water Rate Study/Financing Plan Update Hours	31	145	183	144	120	29	20	672			
		Total Water Rate Study/Financing Plan Update Dollars	\$ 5,363	\$ 22,910	\$ 24,705	\$ 15,840	\$ 11,400	\$ 2,755	\$ 1,300		\$ 84,273	\$ 727	\$ 85,000

TORRANCE MUNICIPAL WATER DEPARTMENT LOCATION MAP FOR PROPOSED PROJECTS

LEGEND

-  MWD CONNECTION SHUTDOWNS
-  PROPOSED WELL SITES
-  DESALTER PLANT EXPANSION
-  PROPOSED RESERVOIR
-  PROPOSED KENT/GALVA WATER REPLACEMENT PROJECT
-  SYSTEM SURROUNDING TRANSMISSION MAIN
-  WATER SERVICE AREA



ROBERT J. BESTE
PUBLIC WORKS DIRECTOR