



September 5, 2006  
Project No. 06-0020

Monterey Peninsula Water Management District  
Post Office Box 85  
Monterey, California 93942

Attention: Mr. Joe Oliver, Water Resources Manager

Subject: Proposal for Professional Services; Design, Construction Management, and Testing for Santa Margarita Test Injection Well No. 2

Dear Mr. Oliver:

Pursuant to your request, Pueblo Water Resources, Inc. (Pueblo) is pleased to provide this proposal to provide professional consulting services associated with the design, construction, and testing of the Santa Margarita Test Injection Well No. 2 (SMTIW No. 2) project. The SMTIW No. 2 well is part of the Monterey Peninsula Water Management District's (District) Phase 1 Aquifer Storage and Recovery (ASR) Project, which consists of expanding the successful SMTIW No. 1 project to include the addition of a second well and associated facilities in an expanded site area contiguous to the existing SMTIW site. The overall objective of the Phase 1 ASR Project is to facilitate the conjunctive use of water supplies in the Carmel River System and Seaside Groundwater Basin that will benefit the natural resources of the Carmel River and the groundwater resources of the Seaside Groundwater Basin. The addition of the SMTIW No. 2 well is intended to increase the existing injection capacity of the site from approximately 1,000 gallons per minute (gpm) (4.4 acre feet per day) to 2,500 to 3,000 gpm (11.1 to 13.2 acre feet per day).

As part of the District's overall water supply augmentation strategy, it is our understanding that the District desires to implement the Phase 1 ASR Project on a fast-track basis and to have the SMTIW No. 2 ready for injection operations in Water Year 2007 (WY2007). As currently envisioned, the Phase 1 ASR Project consists of three basic project components that must be implemented on a sequential critical-path basis to achieve the District's goals:

1. Drilling and construction of the SMTIW No. 2 and associated monitoring well.
2. Development and implementation of the WY2007 injection program for operation of both ASR wells.
3. Design, engineering, and construction of the on-site ancillary facilities (e.g., the chemical/electrical building, permanent piping, instrumentation, etc.).

As presented in greater detail later in this proposal, bidding and construction of the SMTIW No. 2 well, even considering an accelerated bidding period, will require at



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least 4 months to complete. Due to a variety of delays that were encountered during the preparation of the project's Environmental Impact Report/Environmental Assessment (EIR/EA), the project is currently several months behind the originally anticipated project schedule. Therefore, the objective of the scope of work presented in this proposal is to immediately address this critical path component of the project and to finalize the design, construction, and performance testing (baseline production and water quality only) of the SMTIW No. 2 in order to be ready for injection operations in WY2007 (i.e., January 2007).

Following additional discussions with the District and development of a detailed scope and design basis for the remaining Phase 1 ASR Project components, a separate proposal will be submitted for the final work items. It is anticipated that discussions between Pueblo and District staff will take place over the coming weeks, with Pueblo's submittal of a supplemental scope of services no later than October 6.

Pueblo has developed a scope of work for the initial portion of the SMTIW No. 2 project which is based on our extensive experience with similar ASR well construction projects, particularly the SMTIW No. 1 project, which was also conducted on a fast-track basis in 2001. The general scope of work proposed for this phase of the SMTIW No. 2 project includes the following fundamental elements:

- Finalization of the Well Design
- Preparation of Specifications and Bid Documents
- Management of Well Construction Activities
- Baseline Well Performance and Water Quality Testing
- Summary Reporting

In addition to activities associated with implementing the SMTIW No. 2 installation, the SMTIW No. 1 is scheduled to undergo rehabilitation work prior to the WY2007 injection season. Periodic rehabilitation of ASR wells is a necessary part of routine maintenance operations to maintain well efficiency and capacity. The SMTIW has been in operation for over 5 years, and is due for formal rehabilitation based on its decline in performance. While the implementation of the SMTIW No.1 rehabilitation work is included as part of a separate scope of work and contract<sup>1</sup> for WY2006 project assistance, we will closely coordinate both the SMTIW No. 1 rehabilitation and SMTIW No. 2 drilling and construction activities (i.e., the bidding processes and field activities) to maximize the efficient use of District resources and potentially reduce the overall project costs by inviting qualified bidders to submit proposals for both projects.

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<sup>1</sup> The contract for this work was originally executed with Padre Associates, Inc., but has recently been assigned to Pueblo Water Resources, Inc.



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## SCOPE OF WORK

Presented below is a detailed scope of work to oversee the implementation of the of the construction and initial production testing the SMTIW No. 2 and monitoring well to be ready for WY2007 injection operations.

### **Task 1. Project Management**

The first task within Pueblo's scope of work is for project management and administration; it includes the preparation of routine project correspondence, invoices, and monthly budget status updates. Pueblo will also establish a project email distribution list through which project status updates will be provided on a weekly basis, or as project events warrant. Effective project communication is critical for the success of this important District project, particularly with the concurrent development of other proximate drilling activities that may be occurring with California-American Water's Coastal Water Project activities.

### **Task 2. Design, Specifications, and Bidding Support**

Task 2.1 – Final Basis of Design Report. Pueblo will prepare a brief and focused Basis-of-Design report. The preliminary Basis-of-Design for the SMTIW No.2 was performed during WY2004. The purpose of the final Basis-of-Design report is to confirm the planned design features of the well, based on the recent experience provided by SMTIW No. 1 and anticipated hydrogeologic conditions at the SMTIW No. 2 site. The report will also present the design and siting recommendations for the monitoring well, as well as recommendations for the timing of monitoring well drilling (i.e., before or during SMTIW No. 2 construction activities). District staff and other interested parties (e.g., California-American Water Co.) will then have the opportunity to review and comment on the design. With concurrence of the District on the proposed well design, preparation of the technical specifications and bid documents would follow immediately.

Task 2.2 - Technical Specifications and Bid Documents. Following District review and consideration of the Basis-of-Design report, and selection of the final well design features, technical specifications for the drilling and construction of the well will be prepared. The technical specifications are intended to provide adequate detail for bidding and well construction by competent, licensed (C-57) well drilling contractors. One of the key factors in the successful completion of ASR well construction projects is efficient, delay-free field operations; therefore, the contract documents will place special emphasis on timely initiation and completion of the work.

The design and specifications documents will include the following minimum items:

- Minimum Contractor Qualifications
- Well Casing - diameter, material, depth, etc.
- Well Screen - perforation interval(s), screen type, slot aperture size, etc.



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- Gravel Pack – gradation, uniformity coefficient, etc.
  - Drilling Methods and Equipment
  - Drilling Fluid Properties and Control
  - Geophysical Logging, Velocity Logging, Water Quality Logging
  - Fluid and Cuttings Containment and Disposal
  - Noise Control
  - Work Site Lighting Control
  - Construction Debris Management
  - Well Development
  - Test Pumping
  - Discharge Water Control
  - Utility Water Supply (intertie for construction water)
  - Well Disinfection and Testing
  - NPDES Compliance and Limitations
  - Site Restoration

As part of the Contractor's scope of work for well construction, the Specifications and Bid Documents will also include provisions for Contractor compliance with the Phase 1 ASR Project EIR/EA mitigations and the conditions included in the City of Seaside Conditional Use Permit for the project.

Pueblo will incorporate the well design and specifications for the well into a bid package using existing standard District format. The package will include the following:

- Invitation to Bid
- Bid Documents and Bidding Forms
- License and Bonding Requirements
- District Standard General Conditions
- Technical Specifications
- Special Conditions
- References and Contractor Qualification Forms

An opinion of constructed cost will also be completed prior to bidding.

Pueblo will issue two draft copies of the completed contract documents for District review and comment. Pueblo will incorporate District comments and provide copies



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of the final contract package. It is assumed that the District will provide Pueblo with the District's "boiler plate", including general conditions and special insurance requirements, for incorporation into the final contract package. It is also assumed that the District will duplicate and distribute the bid packages and serve as the primary contact for response to questions from bidders.

Task 2.3 – Bidding Assistance. Pueblo will be available to assist the District throughout the bidding process. This will include responding to questions Contractors may have during the preparation of bids, preparing and distributing requisite addenda, and communicating to potential bidders other pertinent information.

### **Task 3. Construction Management and Testing**

Pueblo will serve as the primary point of contact for the District during well drilling, construction and testing. Pueblo will also coordinate and manage pre-field activities related to well construction (submittals, NPDES permitting, etc.). Once field operations commence, Pueblo will observe and document work performed, verify Contractor adherence to the well drilling specifications, oversee the collection of critical hydrogeologic data, and develop and document all testing operations. A detailed description of the work proposed by Pueblo for each of the tasks associated with the drilling, construction and testing of SMTIW No. 2 is provided below.

Task 3.1 - Submittals. Pueblo will coordinate receipt, review, and approval of all submittals required of the Contractor through the specifications and bid documents. The Contractor will be provided a list and schedule for the required submittals within the bid documents. Pueblo will maintain an update of the submittal list noting the various dates pertaining to the submittal and submittal review process (receipt, approval, request for more information, etc.). Pueblo will assist with the rapid processing of submittals in an effort to keep the project on schedule.

Task 3.2 – NPDES Support. Pueblo will assist the District by preparing the Notice-of-Intent (NOI) for project discharges. At this time, it is anticipated that discharges will be conducted under the State Water Resource Control Board Statewide General Waste Discharge Requirements (WDR) for Discharges to Land with a Low Threat to Water Quality (Order No. 2003-0003). Pueblo will also be available to prepare any other documentation that the State or Regional Board may require (project description, description of the proposed discharges, sampling and analysis plan, etc.). Pueblo will work with the District and Board staff to expeditiously complete NOI filing and requirements, and avoid delays related to NPDES/WDR issues.

Task 3.3 - Mobilization. Pueblo will be available to assist the District during the Contractors mobilization of equipment to the site. Pueblo will oversee the mobilization to ensure that permit conditions are met and logistical arrangements are consistent with those that had been planned for the project. Pueblo will also be available to answer any questions Contractor staff may have during the mobilization process.



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Task 3.4 – Conductor Casing. Pueblo will document the drilling, placement and cementing of the surface conductor casing. The importance of the surface conductor casing is often overlooked in well construction projects, as improper placement, positioning, and/or sealing of the surface conductor can lead to serious problems in subsequent phases of the work.

Task 3.5 – Pilot Drilling. A pilot hole for the well will be drilled by the Contractor. During pilot drilling, Pueblo will document Contractor activities and prepare a detailed lithologic log of the borehole. The lithologic log will include descriptions of the cutting samples, a graphical representation of the stratigraphy and potential aquifer zones, the drilling rate, drilling fluid properties, and rig activity.

Samples will be collected throughout the entire depth of the borehole. Samples of each 10-foot interval will be placed in clear plastic compartmentalized storage boxes. Two sets of sample boxes will be prepared. The sample boxes allow for easy correlation of the geophysical log and visualization of the borehole stratigraphy and aquifer materials. Bulk samples of potential aquifer zone materials will also be collected and placed in plastic bags. Samples of selected materials from the Santa Margarita Sandstone will also be collected and submitted for laboratory mineralogy analyses, which will be utilized primarily to correlate mineralogy between SMTIW Nos. 1 and 2. Pueblo will witness and direct the geophysical logging once pilot hole drilling is complete. The lithologic and geophysical data will be reviewed and evaluated with respect to the planned placement of well components (screen depths and total well completion depth).

Task 3.6 – Reaming and Well Construction. Immediately upon completion of the pilot hole, reaming of the borehole to the final diameter will commence. During reaming, Pueblo will document contractor activities and drilling fluid properties. Maintenance of appropriate drilling fluid properties during reaming is critical in minimizing damage to the aquifer and to the ultimate performance of the well and success of the project.

After reaming, Pueblo will monitor and document well construction. Placement of the well components (screen sections, blank sections, centralizers) will be recorded, along with the types of materials used for construction, and the construction methods. Once the casing is landed, the placement of the gravel pack will be documented. Pueblo will record the amount of materials added and the depth of the tremie pipe during all stages of gravel packing. The amount of gravel added will be compared to the theoretical amount of gravel required to verify that the placement of the gravel is uniform within the annulus.

Task 3.7 – Well Development. The well will be thoroughly developed by a combination of bailing, airlift/swabbing, and pumping/surging. Pueblo will oversee and document all phases of well development. Development procedures and durations will be recorded along with observations of the development water, and measurements of field water quality parameters. All discharges and NPDES monitoring results will be documented and recorded.



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During pumping and surging, Pueblo will maintain a detailed log of the pumping rate, water levels and specific capacity. Sand production and water clarity (turbidity) will also be recorded. Graphical summaries of development data will be routinely updated and used to evaluate the progress and efficacy of development operations. This will be important in evaluating the point at which development should be considered to be complete, or whether additional development efforts are warranted.

Task 3.8 – Monitoring Well Construction. A monitoring well will be constructed at the site to monitor aquifer hydraulic responses and water quality changes during ASR operations. The monitoring well will be constructed to a similar depth and perforated interval as the two SMTIW wells, and will be likely constructed of 4-inch diameter PVC casing. Pueblo will oversee the drilling, completion, and development of the monitoring well as part of this task.

Task 3.9 – Baseline Production Testing. Following completion of well development, essential baseline production and groundwater quality data will be acquired through the formal performance testing. The following tests are anticipated:

- Step discharge test (12 hour)
- Continuous rate discharge test (48 hour)
- Recovery test (24 hour)

Water levels will be monitored during the test using pressure transducers coupled to microprocessor data loggers. Pueblo will also monitor water levels in the SMTIW No. 1, the monitoring well, and other nearby wells during the test to document the response of the aquifer system to baseline testing. It is also assumed that baseline production testing will include velocity profiling (spinner surveys) during the step test to quantify the production distribution within the perforated intervals. Pueblo will oversee and document the results of such testing.

During production testing, groundwater quality will be routinely monitored using field devices. The field parameters will include; temperature, pH, turbidity, conductivity, ORP, and any other parameters that may be required by the NPDES Permit. A laboratory water quality testing program will also be developed, and Pueblo will coordinate sample collection and analysis with the laboratory.

Task 3.10 – Demobilization and Cleanup. Pueblo will oversee the demobilization of the Contractor and their equipment from the site and ensure that cleanup operations and the site conditions prior to the Contractor's final departure from the site are compliant with the specification's requirements.

#### **Task 4. Reporting**

The reporting task will consist of producing three reports; a draft Summary of Operations Report (SOR), a NPDES compliance report for submittal by the District to the RWQCB, and a final SOR. Detailed descriptions of each of these reports are presented below:



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Task 4.1 – Draft Summary of Operations Report. Pueblo will prepare a draft Summary of Operations Report (SOR) for the SMTIW No. 2 upon completion of the field activities. The report will provide comprehensive documentation of well construction details and all aspects of the work performed during the project, and will include the following:

- Field memoranda
- Lithologic and geophysical logs (including digital data)
- Sieve analyses for aquifer materials and gravel pack samples
- Documentation of well construction materials
- Well construction details
- Well development and production testing data
- Water quality data
- Project photographs

The draft report will also include a summary table of all key information related to the well, such as permit numbers, the tentative State well number, GPS coordinates, well construction details, and baseline well performance data.

Task 4.2 – NPDES Compliance Reporting. Pueblo will compile all field water quality data, laboratory analytical reports, and flow information related to NPDES associated discharges, and will prepare a brief transmittal report for submittal to the Regional Board. The report will contain all the requisite information in the specified format necessary for compliance with the Board Order and the associated Monitoring and Reporting Program.

Task 4.3 - Final Summary of Operations Report. Once the District has reviewed the draft report and provides final comments, Pueblo will prepare the final report. Ten copies of the final report will be provided to the District. Pueblo will also provide a copy of the report in digital (PDF) format for the District's use. Pueblo will also transmit to the District all digital files of collected water level data, geophysical data, water quality data, and project photographs.

## **Task 5. Meetings**

A total of five meetings are anticipated by Pueblo during the course of the project. A brief description of each of the proposed meetings is given below:

Project Kick-Off Meeting. A Project Kick-Off meeting will be conducted immediately after the District provides Pueblo with the Notice-to-Proceed (NTP). The intent of the meeting is to review the project goals, scope of work, schedule, budget, deliverables, and project administration requirements.

Preliminary Design Meeting. A brief meeting will be conducted to review the well design details developed by Pueblo. The purpose of the meeting would be to: discuss the proposed well design features and discuss possible alternatives and/or





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optional features; review permit requirements and procedures; and resolve any outstanding logistical issues related to the well construction. The primary goal of the preliminary design meeting is to establish concurrence on the final well design so that Pueblo can finalize preparation of the well specifications and bid package.

Pre-Bid Meeting. Pueblo is proposing a pre-bid meeting for interested Contractors. The purpose of the pre-bid meeting would be to: familiarize each of the potential Contractors with project logistics and details; allow the Contractors to evaluate the project requirements; and answer any questions the Contractors may have regarding the project.

Bid Review Meeting. Pueblo will be available to assist the District with review of the various bids received. The District and Pueblo will evaluate the bids for completeness and consistency with the bid requirements, and Pueblo will provide a summary of the itemized costs for each of the Contractors bids along with the Engineer's Estimate to objectively evaluate and compare project costs.

Pre-Construction Meeting. Prior to mobilization by the Contractor that is ultimately awarded the work, Pueblo will conduct a pre-construction meeting at the well site. The purpose of the pre-construction meeting is to introduce all parties that will be involved in the field work associated with the well, outline the scope of work, resolve any outstanding logistical issues, review permit requirements, and establish the schedule for the work to be performed in the field.



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### ESTIMATE OF COSTS

Pueblo's estimated costs for services related to the design, construction and testing of the SMTIW No. 2 and associated monitoring well were developed based on the proposed scope of work, our experience with similar projects, and our 2006 fee schedule (attached). The estimated labor costs for the major tasks, the costs for the equipment and other direct costs that will be required for completion of the project, and the fees associated with outside laboratory analyses, are summarized in the table below:

#### **Santa Margarita Test Injection Well No. 2 Estimated Costs for Pueblo Services**

<b>Task No./Description</b>	<b>Estimated Cost</b>
1 – Project Management	\$10,050
2 – Design, Specifications, and Bidding	\$15,375
3 – Construction Management and Testing	\$63,330
4 – Reporting	\$17,420
5 – Meetings	\$23,220
Equipment and Direct Costs	\$19,180
Laboratory Analyses	\$7,360
Contingency (10%)	\$15,594
<b>Total Estimated Cost</b>	<b>\$171,529</b>

The total cost estimate for Pueblo's services shown in the table above also includes a ten percent contingency in accordance with previous District projects; we recommend that the project contingency be held for authorization by District staff upon written notice and justification by Pueblo.

A detailed breakdown of Pueblo's estimated costs showing the various labor rates and assumed hours for the services proposed are provided on the attached spreadsheet. It should be noted that the budget provided herein compares favorably with the 2000 SMTIW No. 1 project (approximately \$108K) after compensating for the additional monitoring well construction, mineralogy analyses and updated fee schedule in the 2006 project.



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## SCHEDULE

Based on our experience with similar projects in the Seaside Basin, we have developed a tentative schedule of project activities. The estimated dates of the major project milestones are shown in the table below. The dates provided assume that the District will issue Pueblo's notice to proceed on September 22, 2006 (i.e., following the September 18, 2006 Board meeting).

### Estimated Project Schedule

Milestone	Estimated Date
Pueblo NTP	September 22, 2006
Bid Solicitation	October 9, 2006
Bid Closing	October 20, 2006
Contractor NTP	October 25, 2006
Contractor Mobilization	November 6, 2006
Completion of Well Construction	December 8, 2006
Completion of Well Testing	December 15, 2006
Contractor Demobilization	December 22, 2006
Submittal of Final Report	January 12, 2007

We estimate that approximately sixteen weeks (4 months) will be required to complete the entire project. Field activities (well drilling, construction and testing) will likely require approximately 8 weeks (two months) to complete. A detailed project schedule in Gantt Chart format is also attached for your reference.



We appreciate the opportunity to assist the District on this important project, and look forward to a timely and successful completion of the work. As always, please do not hesitate to contact us if you have any questions or require any additional information.

Sincerely,  
Pueblo Water Resources, Inc.

Robert C. Marks, P.G., C.Hg.  
Principal Hydrogeologist

Stephen P. Tanner, P.E.  
Principal Engineer

MSB.RCM.SPT

Attachments: 2006 Fee Schedule  
Cost Estimation Spreadsheet  
Detailed Anticipated Project Schedule



**PUEBLO WATER RESOURCES, INC  
2006 FEE SCHEDULE**

***Professional Services***

Principal Professional.....	\$145/hr
Senior Professional.....	\$125/hr
Project Professional.....	\$115/hr
Staff Professional.....	\$ 90/hr
Senior Technician.....	\$ 85/hr
Technician.....	\$ 75/hr
Drafting.....	\$ 50/hr
Word Processing.....	\$ 45/hr

***Other Direct Charges***

Subcontracted Services.....	Cost Plus 15%
Outside Reproduction.....	Cost Plus 15%
Travel, Subsistence, and Expenses.....	Cost Plus 15%
Vehicle .....	\$ 75/day

**MONTEREY PENINSULA WATER MANAGEMENT DISTRICT**

**Santa Margarita Test Injection Well No. 2**

Professional Services for Design, Construction Management, and Testing

Pueblo Project No.: 06-0020



**ESTIMATED FEE SUMMARY**

LABOR	Principal Professional	Senior Professional	Project Professional	Staff Professional	Technician	WP	Illustrator	Hours by Task	Estimated Task Cost
Hourly Fee	\$145	\$125	\$115	\$90	\$75	\$45	\$50		
<b>Task</b>	<b>Task Description</b>								
<b>1.0 PROJECT MANAGEMENT</b>									
1.1	20	50				20		90	\$10,050
<b>2.0 DESIGN, SPECIFICATIONS, AND BIDDING</b>									
2.1	4	4	16			3	2	29	\$3,155
2.2	10	16	40			16	12	94	\$9,370
2.3	2	8	12			4		26	\$2,850
<b>3.0 CONSTRUCTION MANAGEMENT AND TESTING</b>									
3.1	4	10	10			4		28	\$3,160
3.2		10	10			4	4	28	\$2,780
3.3			24					24	\$2,760
3.4			12					12	\$1,380
3.5		12	12	24	48			96	\$8,640
3.6		8	28	18	90			144	\$12,590
3.7		10	36	60	60			166	\$15,290
3.8		12	12	24	48			96	\$8,640
3.8			30		16			46	\$4,650
3.9		8	16		8			32	\$3,440
<b>4.0 REPORTING</b>									
4.1	8	30	40			8	16	102	\$10,670
4.2		8	16			2	2	28	\$3,030
4.3	4	8	12			8	8	40	\$3,720
<b>5.0 MEETINGS</b>									
5.1	36	72	72			16		196	\$23,220
<b>Hours by Labor Category:</b>	88	266	398	126	270	85	44		
<b>Costs by Labor Category:</b>	\$12,760	\$33,250	\$45,770	\$11,340	\$20,250	\$3,825	\$2,200		
<b>Total Labor Hours:</b>								<b>1277</b>	
<b>Total Labor Costs:</b>								<b>\$129,395</b>	

EQUIPMENT AND OTHER DIRECT COSTS	Unit Rate	Unit Price	No. of Units	Fee
Hermit Datalogger & Transducer	Weekly	\$540	2	\$1,080
Additional Transducers	Weekly	\$200		\$0
MiniTrol	Weekly	\$200	4	\$800
Field Water Quality Instrument	Weekly	\$200	3	\$600
Drilling Fluid Test Kit	Weekly	\$325	2	\$650
Vehicle	Weekly	\$375	14	\$5,250
Per Diem	Daily	\$135	80	\$10,800
<b>Subtotal Equipment and ODCs:</b>				<b>\$19,180</b>

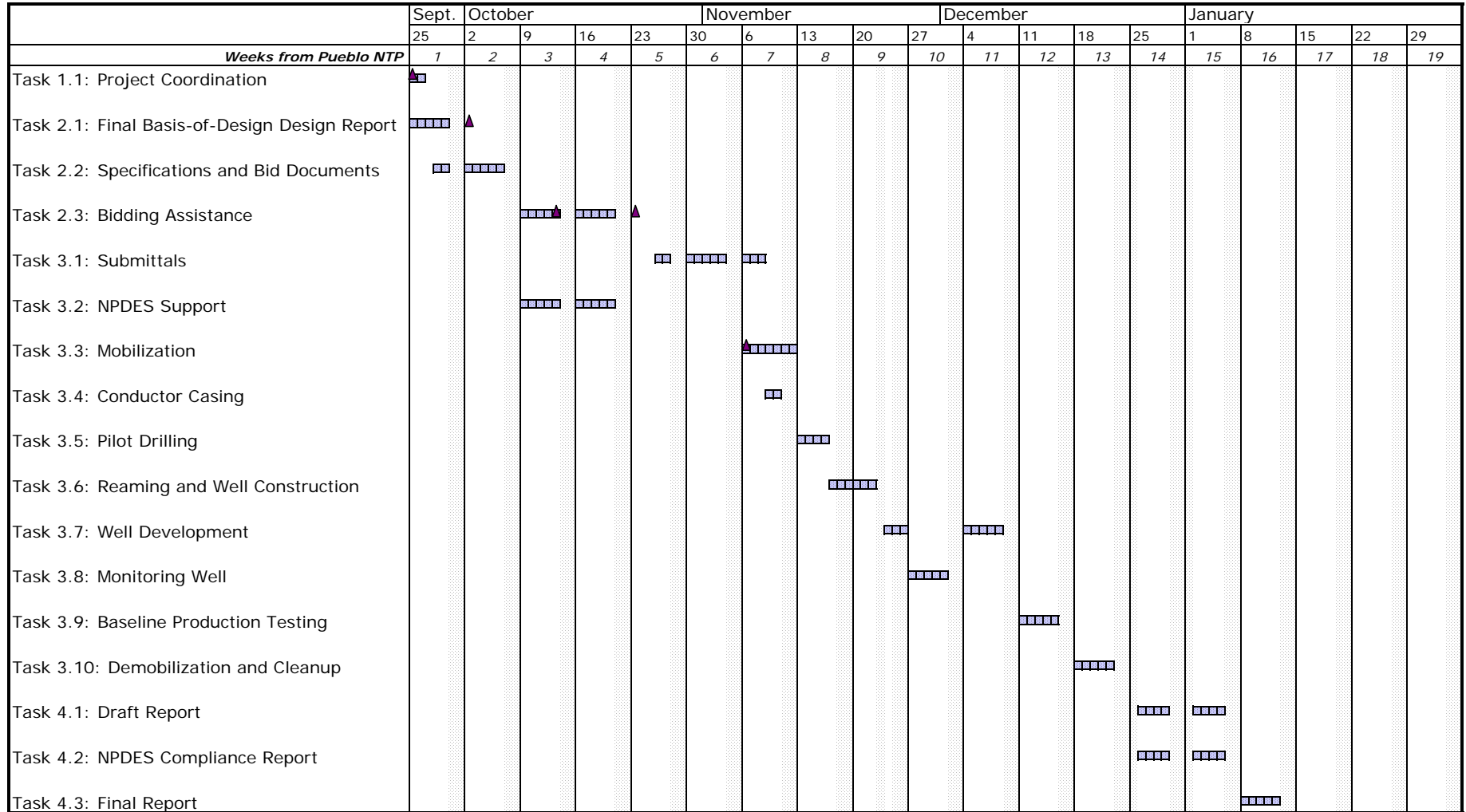
OUTSIDE SERVICES	Units	Unit Price	No. of Units	Fee
Water Quality Analyses	Lump Sum	\$4,000	1	\$4,000
Mineralogy Analyses	Per Sample	\$800	3	\$2,400
<b>Subtotal Outside Services:</b>				<b>\$6,400</b>
<b>Subtotal Outside Services w/ Markup (15%):</b>				<b>\$7,360</b>

COST SUMMARY	
Labor	\$129,395
Equipment and Other Direct Costs	\$19,180
Outside Services	\$7,360
10 % Contingency	\$15,594
<b>TOTAL ESTIMATED PROJECT COST:</b>	<b>\$171,529</b>

**Monterey Peninsula Water Management District**  
**Santa Margarita Test Injection Well No. 2 Design and Construction**



**Schedule of Operations**



Key  Anticipated task duration  
 Meeting date