CITY OF FRESNO

FRIANT-KERN PIPELINE PROJECT

FRESNO COUNTY, CA

APPLICATION SUBMITTED TO THE
UNITED STATES BUREAU OF RECLAMATION
FOR A WaterSMART: WATER AND ENERGY
EFFICIENCY GRANT
FOR FISCAL YEAR 2015

(FUNDING OPPORTUNITY ANNOUNCEMENT NO. R15AS00002)

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January 2015

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1. Executive Summary

(A) General Project Information

Date: January 18, 2015
Applicant Name: City of Fresno, Department of Public Utilities
City, County and State: City of Fresno, County of Fresno, California

(B) Project Summary

The City of Fresno Friant-Kern Pipeline project (Project) is primarily a water conservation project. The City of Fresno constructed the Northeast Surface Water Treatment Facility (NESWTF) in 2004 in the northeast portion of Fresno. The NESWTF is currently supplied with Kings River and Central Valley Project (CVP) water conveyed by the Fresno Irrigation District's (FID) canal system. At present, water is conveyed from the Kings River and diverted to the Gould Canal. Once the surface supply enters the Gould Canal, it is then diverted into the headworks of the Enterprise Canal, a primarily unlined open channel, approximately 2 miles downstream of the Kings River, where it travels to the NESWTF connection. The City is pursuing the construction of the remaining 4.6 miles of an ultimate 5.6 mile 60-inch diameter pipeline to deliver water from the Friant-Kern Canal to the City's NESWTF. The funds from this grant will contribute directly to the construction of the proposed pipeline. Construction of the pipeline will aid the City in water conservation by "constructing conveyance improvements, turnouts and pipelines" to convey the surface water that supplies the NESWTF; eliminate 47 miles of open channel conveyance and the Project will conserve approximately 7,528 acre-feet per year (AFY).

Table 1 2015 Funding Request Summary

Funding Source	Funding Amount
Non-Federal Entities	
City of Fresno	$16,852,020
Non-Federal Subtotal:	**$16,852,020**
Reclamation Funding:	**$1,000,000**
TOTAL PROJECT FUNDING	**$17,852,020**

Table 2 Water Summary

Annual Average Water Supply	**50,184**
Estimated Water Conserved After Project	**7,528**

(C) Project Duration and Estimated Completion Date

The preliminary work on the Project began in February 2006 and has made steady progress since then. The Project will be ready for bidding in August 2015 and should begin construction in December 2015. The duration of the construction will be approximately 14 months and will be complete by March 2017. A Gantt chart schedule for the Project is included as **Appendix A.** The schedule shows major tasks, milestones, major deliverables and linkages between tasks. The schedule tasks are consistent with those used in the Work Plan and Budget. Several items for the Project have already been completed and the Project is ready for implementation in accordance with the grant deadlines. The City continues to move forward with the Project, and it is anticipated to be ready by the anticipated 2015 grant award. The schedule is based on the time required for completion of similar projects.

(D) Federal Facility

The Project traverses northeasterly from the City's existing surface water treatment facility across rural and agricultural lands and will connect to the Bureau of Reclamation Central Valley Project Friant-Kern Canal. The City has worked cooperatively with private land owners and has been engaged with the regional Reclamation Office and the Friant Water Authority working on supporting environmental studies, reports, and regulatory compliance, as well as coordinating the physical connection to the Reclamation (Federal) channel.

(E) Project Benefits Summary

Project benefits include the following:

- Completion of this Project will realize significant Water Conservation by eliminating conveyance losses of approximately 7,528 AFY, averaged over a 50 year period.
- With this infrastructure in place it will be possible to optimize water management strategies, freeing up otherwise over burdened irrigation canal capacity for expanded intentional groundwater recharge efforts.
- Long-term energy conservation will also be realized with the completion of this Project. Presently the surface water treatment lifts water from the irrigation channel. The Project will capitalize on the elevation difference between the treatment facility and Reclamation's canal and eliminate the use of lift pumps.
- Low head power generation has been evaluated as part of a future phase of the Project and has been found feasible. Subsequent construction of a hydropower generation component further strengthens the projects economic and environmental value.
- The elimination of long open channel conveyance to a significantly shorter enclosed system improves water quality delivered to the treatment facility and reduces the risk of potential contamination. Improved water quality translates to lower chemical utilization which is healthy for the environment.

TECHNICAL PROPOSAL

2. Background Data

(A) Geographic Location

The City of Fresno, incorporated in 1885, is located in the Central Valley of California, approximately 170 miles south of the City of Sacramento, and 220 miles north of the City of Los Angeles. As the fifth largest city in California, Fresno is home to approximately 515,000 residents and encompasses nearly 110 square miles. The City is bounded on the northwest by the San Joaquin River approximately 10 miles downstream of Friant Dam, and is approximately 13 miles west of the Kings River.

The City of Fresno's NESWTF is located in the northeast portion of the city near Willow and Copper Avenues. The pipeline would extend from the Friant-Kern Canal, east of the city limits, generally west along the Garfield Avenue alignment, then south on the Auberry Avenue alignment to Copper Avenue where it would turn west again and continue to the NESWTF. Refer to **Figure 1** for a map of the City and the location of the NESWTF and **Figure 2** for a map of the Project alignment.

(B) Water Supply

At present, the City of Fresno's primary source of drinking water is groundwater. This supply is supported by 275 municipal water wells. Groundwater accounts for 88% of the City's potable water supply. Commencing in the early to mid-1970s, the City started an aggressive intentional recharging program. Groundwater remains to be a vital component of the City's water supply.

The City of Fresno receives surface water supply from the USBR Central Valley Project; the contract for 60,000 acre-feet of Class 1 water was renewed in 2005 through 2045, and subsequently converted to a Section 9(d) Contract in 2010 (see **Appendix B**). The surface water is supplied from Friant Dam (Millerton Lake) and conveyed via the Friant-Kern Canal and then through several FID owned and operated canals to the NESWTF. The Class 1 water supply has been historically fairly reliable; however, the 2013 water year saw a zero percent allocation due to extended statewide drought. Previously, the lowest allocation for this system was 25% in 1977; again due to a protracted drought.

The City's NESWTF presently operates at a capacity of 30 million gallons per day (MGD) but a future planned expansion will increase the capacity to 60 MGD. The Enterprise Canal also conveys stormwater, agriculture supplies, and other surface water uses, requiring it to operate at or near capacity which will prohibit the City from receiving its full entitlement without additional conveyance.

The City's NESWTF currently treats and supplies approximately 30 MGD (30,800 AFY) into the City's water system. Future expansion, slated for 2021, will allow the City to treat and deliver 60

MGD (61,700 AFY) at the NESWTF. Use of additional surface water supplies reduces the City's reliance on groundwater sources; the City's aquifer is in a condition of extreme overdraft and any reduction of groundwater use will aid in restoring the aquifer.

The City of Fresno is and has been self-aware of water supply challenges and been making strides to correct over-utilization of groundwater supplies by diversifying its supply portfolio to one that focuses on conjunctive use permitting the balanced use of groundwater by the target date of 2025. The City spent several years developing a thorough and comprehensive Water Resources Management Plan which was adopted by its City Council in June of 2014. The Project supports this milestone plan and positions the City to be able in the near future to have a robust and drought resilient water supply portfolio.

(C) Water Delivery System

The City's water system is comprised of nearly 1,800 miles of water mains and includes approximately 140,000 residential, commercial and industrial service connections.

(D) Energy Sources and Uses

Energy will be saved in two main areas through the construction of the Project.

1. The pipeline will utilize gravity and the natural gradient to transport the water from the Friant-Kern Canal to the NESWTF, thereby eliminating the need to lift the water into the NESWTF with the existing high capacity lift pumps that are required to convey all water through the treatment process.
2. The second energy savings will be from the reduced amount of groundwater pumping that will occur as the City is able to utilize its full surface water supply and reduce reliance on groundwater sources.

Based on these two items, the energy savings will be approximately 2,708,000 kWh/year, which and equates to a reduction in carbon dioxide emissions of 2,058 tons per year[1] (see **Appendix C** for energy savings calculations).

A third opportunity for energy efficiency is the potential for a future hydro-power generation plant to be constructed at the NESWTF. The pipeline will provide enough head pressure to operate a low-head turbine to generate power that will offset some of the operational energy consumption for the NESWTF.

(E) Past Working Relationships with Reclamation

The City of Fresno has had a Class 1 Contract for water from the Friant Division of the Central Project for decades, and has maintained a good working relationship with Reclamation for the

[1] http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results

use of its supplies. Most recently, the City renewed its contract with Reclamation and converted the supply to a Section 9(d) contract.

The City has worked closely with Reclamation staff since early in the concept stage of the project to consider alignments, prepare the required environmental documentation, finalize the required permits, and approve the proposed plans and specifications for construction of the turnout (diversion) facility within Reclamation property at the Friant-Kern Canal. The City has also coordinated the project efforts closely with the Friant Water Users Authority who operates the canal.

While the City has not been previously funded by a grant from Reclamation, this Project is in line with the fundaments associated with Reclamation. This pipeline will conserve a significant amount of water for treatment that was previously lost through evaporation and percolation through the canal system. This conserved water will contribute to overall amount of water available for recharge projects in the City of Fresno.

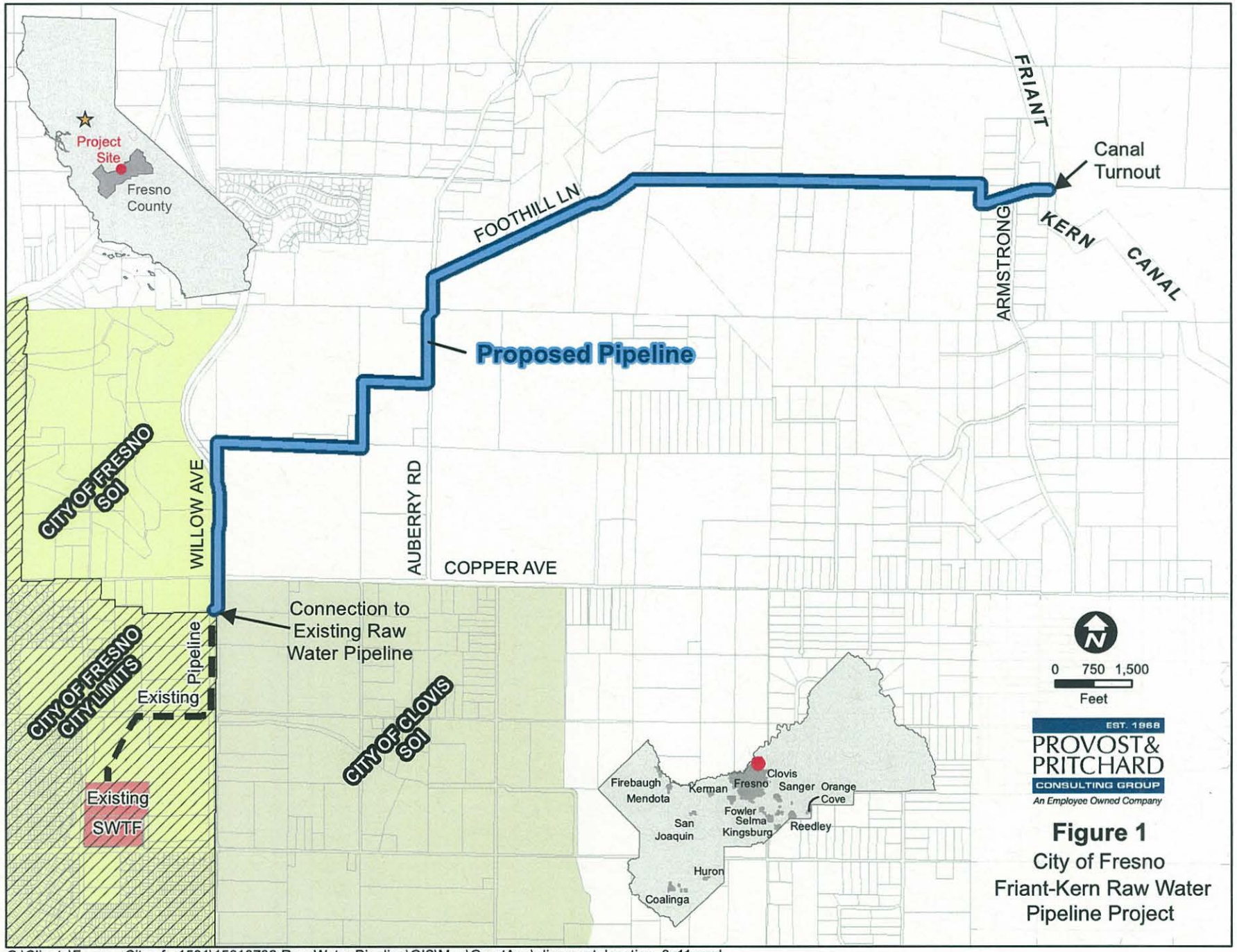

Figure 1
City of Fresno
Friant-Kern Raw Water Pipeline Project

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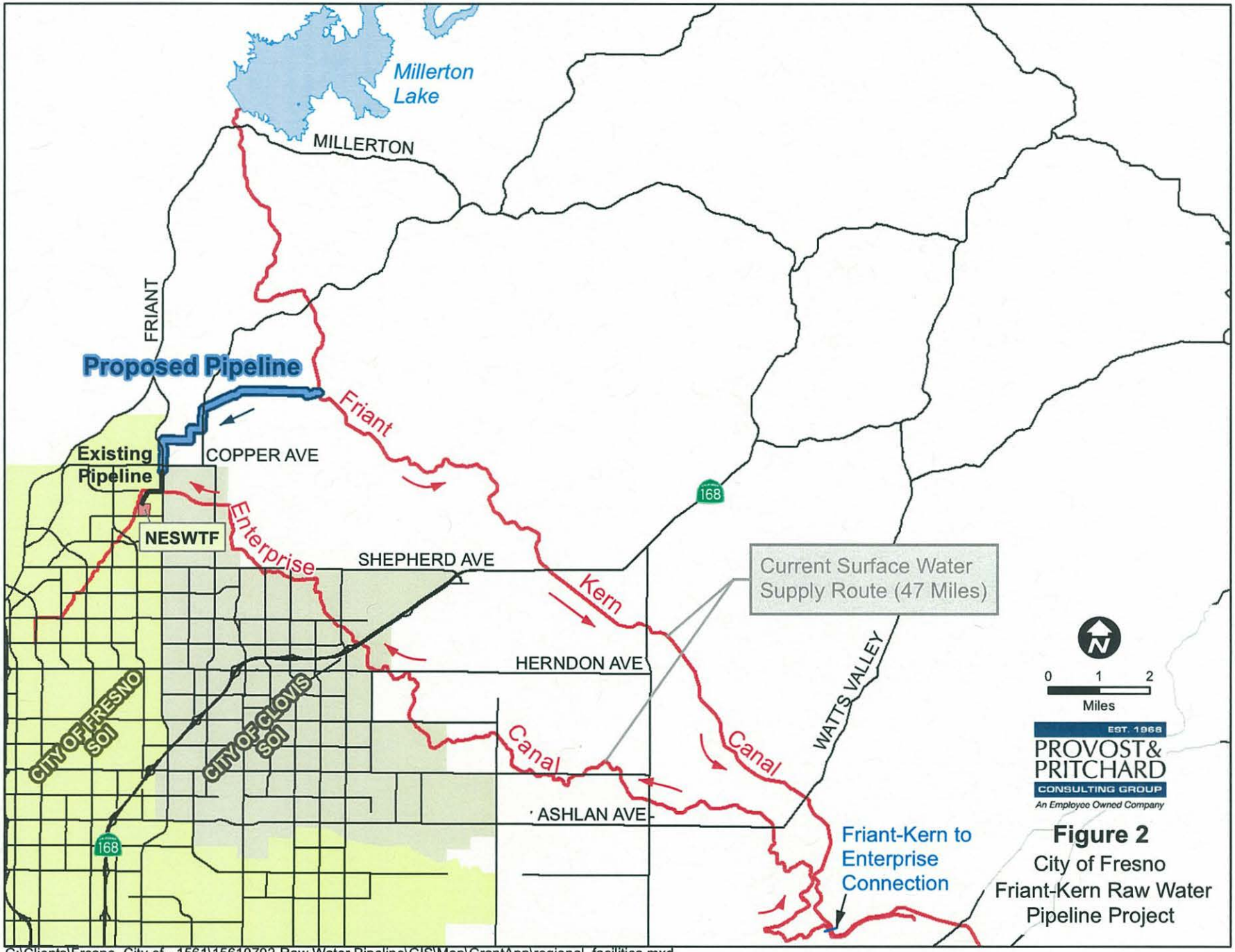

Figure 2
City of Fresno
Friant-Kern Raw Water Pipeline Project

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3 . Technical Project Description

The following scope of work has been prepared based on the City staff and their consultants' experience with completing the project. Several of the tasks are complete or nearly complete, but have been included in the overall description of work here to demonstrate that City has committed to completion of all aspects of the project. The major project tasks include the following:

Task 1: Project Administration

This task will include the project administration associated with the grant administration. This task includes items such as meetings, coordination with Reclamation and other agencies, overall project coordination, preparation of quarterly reports, final project report and all other reporting obligations in accordance with the grant contract requirements. Costs will not be sought for reimbursement under this task.

Deliverables: Meeting minutes, quarterly, draft and final reports, and other deliverables as required.

Task 2: Easement Acquisition

This task includes acquisition of the required easements for the pipeline alignment. Included in this subtask is acquisition of easements across 19 parcels. Final easement acquisitions are expected to be completed by June 2015 (see **Appendix D** for an exhibit of the status of the acquisition for each easement). The City has either entered into escrow, or has initiated the eminent domain process for all of the required easements. Easement acquisition is anticipated to be completed in July 2015. Work under this task is essentially complete; costs will not be sought for reimbursement under this task.

Deliverables: Finalized Deeds of Easement to the City of Fresno.

Task 3: Design and Engineering

This task includes the all necessary survey, design and engineering work of the project. Since the project's initiation, work associated with this task that has been completed includes the Alignment Comparison Report completed in May 2008 (see **Appendix E** for an excerpt of the report, full report text available upon request), boundary, aerial and topographic surveying work, schematic design, preliminary design and final construction plan and specification document preparation. 90% construction documents have been submitted and will be routed to all applicable agencies for review and comment. The construction documents are anticipated to be finalized and signed before the grant award date; costs will not be sought for reimbursement under this task.

Deliverables: Final Plans and Specifications

Task 4: Environmental Documentation

This task includes the required environmental processing and documentation involved in the Project for both CEQA and NEPA compliance. The CEQA process is complete. An Initial Study and the required supporting biological, cultural and other impact assessments were prepared. A Mitigated Negative Declaration and Mitigation Monitoring and Reporting Plan were prepared. Public comments were solicited for these documents in accordance CEQA requirements. All comments were addressed, and the documents were adopted by the City Council on June 14, 2012. The Notice of Determination was filed with the County of Fresno on June 19, 2012.

Through coordination with Reclamation staff at the Fresno Office, a Biological Assessment, Cultural Resources Inventory Report and Environmental Assessment (EA-07-124) were prepared for the project (see **Appendix F** for an excerpt of the EA). Reclamation is considered the lead for the work associated with the turnout (diversion) structure construction along Reclamation property for the Friant-Kern Canal. A draft Finding of No Significant Impact (FONSI) was prepared and circulated for public comment in September 2011. Minimal comments were received. Section 106 consultation was completed as of May 2012 (see **Appendix G**), as was coordination with the State Historic Preservation Office (SHPO). The FONSI will be finalized upon issuance of a Biological Opinion from the United States Fish & Wildlife which is anticipated to be received in March 2015. The NEPA process is anticipated to be completed by May 2015.

Costs will not be sought for reimbursement under this task.

Deliverables: Completed CEQA and NEPA Documents

Task 5: Permitting

This task includes the required permitting efforts to complete the Project development. Permitting for this Project will include State, Federal and Local agency permits. Each of the identified agencies have been contacted and the required permits have been initiated with some already finalized. The permits identified herein are grouped into two areas. The first are permits that are required prior to agency approval of the plans and specifications. The other group consists of permits that are required for construction. The anticipated permits for the Project are listed below.

Planning, Regulatory, and Design Phase Permits and/or Reviews:

Army Corps of Engineers – 404 "Nationwide" Permit
Regional Water Quality Control Board – 401 Certification
California Department of Fish & Wildlife – Incidental Take Permit
California Department of Fish & Wildlife – Streambed Alteration Agreement
PG&E Application Service Connection
San Joaquin Valley Air Pollution Control District (SJVAPCD) – Rule 9510 (Indirect Source Review)
Fresno Metropolitan Flood Control District – Encroachment Agreement

USBR & Friant Water Authority – Plan Approval and MP-620 Permit
Garfield Water District – Plan approval

Construction Phase Permits and/or Reviews:
Fresno County – Construction and Encroachment permits
San Joaquin Valley Air Pollution Control District – Regulation VIII Permit (Dust Control Plan)
The Project will disturb more than five acres, and will require a Dust Control Plan.
State Water Resources Control Board – DWQ Construction General Permit (Storm Water Pollution Prevention Plan)
The Project will disturb more than one acre and will require a Storm Water Pollution Prevention Plan be prepared, submitted via SMARTS to the State Water Resources Control Board, and fully implemented.

Work under this task is nearly complete; with finalizing the permits anticipated to be completed are anticipated to be finalized in advance of the grant award date. **Further information on the status of permits is available in the "Required Permits or Approvals".** Costs will not be sought for reimbursement under this task.

Deliverables: All finalize permits.

Task 6: Construction Contracting

Bidding documents will be prepared for all construction work. This task also includes public bid advertisements, pre-bid meetings, answering questions during the bidding process, and evaluating submitted bids. The deliverables for this task is bidding documents and support during bidding.

Work products for this task include:
Bid documents required to obtain contractors bids for construction.
Advertisements for bids
Pre-bid contractor's meeting
Bid canvass summary
Contract award

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract

Task 7: Construction

This task includes construction of all project improvements including labor, equipment and material costs. The selected contractor will be responsible for all site work, demolition and construction efforts under this task, including but not limited to mobilization, installation of approximately 4.6 miles of 60-inch diameter pipeline, construction of the turnout diversion

structure at the Friant-Kern Canal, connection to the NESWTF, construction of manholes and air/vacuum vent, installation of electrical equipment and controls, testing and demobilization. A complete list of the requirements of the contractor is identified in the project plans and specifications. The City will award all construction work associated with this project to one contractor who will be required to perform all activities identified in the plans and specifications. A portion of the plans and specifications is included in the Appendices. A complete set of plans and specifications can be provided if desired.

Work products for this task include: All construction activities

Task 8: Environmental Compliance/Mitigation/Enhancement

This task has been developed to mitigate any potential disturbance or impacts to protected species or communities. The Project could result in adverse impacts to certain federally and state-listed species such as vernal pool fairy shrimp, California tiger salamander, and other breeding birds, if any of these species are present during construction. As part of the proposed mitigation for possible impacts to these species, the City will either purchase mitigation credits from an approved mitigation bank or secure a conservation easement to protect the required acreage of species habitat. The City remains in final discussions with USFWS and CDFW regarding these requirements. Once finalized, this task is included to secure the required mitigation. Preventative measures will be used during construction to minimize potential impacts to wildlife, including (additional details are provided in the Project's Initial Study). Those preventative measures are required of the contractor and included as part of the Construction activities described in Task 7 Construction. Monitoring of those preventative measures is included in Task 9 Construction Inspection.

Deliverables: The required mitigation acreage or credits

Task 9: Construction Inspection

This task includes labor compliance, construction inspection and observation efforts. The City will contract with an appropriately experienced construction management consultant and geotechnical testing firm to perform construction observation duties with assistance from City of Fresno operations staff.

An expert consultant will be contracted with to perform labor compliance activities for the Project as required by USBR. The consultant will coordinate certified payroll, interview appropriate staff and report on compliance items.

The engineering consultant will provide a field engineer, geotechnical engineer, or geologist, as appropriate, to monitor construction of the concrete structures and pipelines. The consultant will make periodic visits to the Project site during construction. Other roles of the engineering consultant will include: Organize and attend kickoff meetings, attend weekly meetings with contractors, review submittals, process monthly payment requests, and review contract change orders requests. The engineering consultant will also prepare and sign record drawings for the

Project.

Work products for this task include:

Daily construction observation and reporting
Review of submittals
Contractor progress payment approval and change order review
Preparation of final record drawings

Deliverables to USBR related to this task will include:

Submission of Labor Compliance Program, Project construction status reports, Final record (as-built) drawings based on changes during construction

Project Schedule

The preliminary work on the Project began in February 2006 and has made steady progress since then. The Project will be ready for bidding in August 2015 and will begin construction in December 2015. The duration of the construction will be approximately 14 months and will be complete by March 2017. A Gantt chart schedule for the Project is included as **Appendix A**. The schedule shows the major tasks, milestones, major deliverables and linkages between tasks. The schedule tasks are consistent with those used in the Work Plan and Budget. Several items for the Project have already been completed and the Project is ready for implementation in accordance with the grant deadlines. The City continues to move forward with the Project, and it is anticipated to be ready the anticipated 2015 grant award. The schedule is based on the time required for completion of similar projects.

4 . Evaluation Criteria

(A) Evaluation Criterion A: Water Conservation

Subcriterion No. A.1: Quantifiable Water Savings

(i) Describe the amount of water saved.

The project will conserve approximately 7,528 AF/yr. The City's Northeast Surface Water Treatment Facility (NESWTF) receives water from CVP Friant Division and current conveyance system delivers water from behind Friant Dam through the Friant-Kern Canal approximately 26 miles to a delivery point to Fresno Irrigation District's (FID's) Enterprise Canal. The water is then conveyed through the unlined and open channel Enterprise Canal approximately 28 miles to the City's NESWTF. The turnout structures is approximately 7 miles downstream Friant Dam. The construction of the Project will eliminate approximately 47 miles (current miles for delivery (26+28) less the distance from the dam to the turnout (7)) of conveyance through open channel, of which nearly half of that distance is through the unlined, earthen bottom open channel Enterprise Canal. FID has conducted testing within these open channels and observed 15-20% channel conveyance losses. The

assumptions are listed in the table below, are considered conservative, and for the purposes of this estimation evaporation losses have been ignored.

Table 3 Estimation of Water Conserved

Assumptions:		
	Total Contract Supply (AF) =	60,000
	Assumed Average Annual Allocation (AF/yr) [1] =	87%
	Seepage Loss in Existing Unlined Canals [2] =	15%
Year [3]	**Volume Delivered (AF) [4]**	**Amount Conserved (15%)**
2017	27,000	4,050
2018	27,000	4,050
2019	27,000	4,050
2020	27,000	4,050
2021	52,200	7,830
⋮	⋮	⋮
2066	52,200	7,830
Average	**50,184**	**7,528**

Notes: [1] 50-yr average annual Class I allocation from CVP Friant Division has been 94% (Friant Water Authority Records), but with San Joaquin River Restoration that is estimated to be reduced to 87% (Steiner Model for San Joaquin River Restoration).

[2] The Fresno Irrigation District reports 20% seepage loss based on test performs within its unlined channels. A conservative estimate of 15% is used for this calculation.

[3] Estimate conservatively uses a 50-yr average; however the pipeline is anticipated to have a 100-yr life.

[4] Current SWTF capacity is 27,000AF, but is planned for expansion to 60,000AF capacity by 2021.

(ii) What is the average annual acre-feet of water supply?

The City's average annual surface water supply from the CVP-Friant Division is estimated to be 52,200AF/yr. This number is based on 87% of the City's 60,000AF Class I contract. The Friant Division has averaged 94%, but with the San Joaquin River Restoration, the average annual allocation has been expected to decrease to 87%. The City's total surface water supply including recharge is approximately 65,000 AF/yr and their groundwater pumping total is 128,578 AF/yr (based on the 2010 UWMP shown in **Appendix H**).

(iii) Where is the water currently going?

As described in (i) above, the water is conveyed through a combination of lined and unlined open channel canals and with considerable losses in the unlined channels. While unlined channels provide critically needed groundwater recharge to the area's overdrafted groundwater aquifer, this recharge is occurring in an area upgradient of the City, and this

water is not available for direct use by the City.

(iv) Where will the conserved water go?

The conserved water will be delivered to the NESWTF, where it will be treated, then delivered to meet domestic, potable water demands within the City of Fresno through its existing distribution system from the NESWTF.

Subcriterion No. A.1(1): Canal Lining/Piping

(i) How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

The average annual water savings was evaluated for a projected fifty year period. The evaluation considered existing utilization of the CVP water and built in increases of utilization to coincide with infrastructure expansion planned by the City. Initial calculations assume water conveyance losses associated to 27,000 ac-ft of water being conveyed to and treated annually at the NESWTF. The conveyance loss projections were then based on the expansion for the NESWTF from 30 MGD to 60 MGD, requiring 52,200 ac-ft annually. The amount of conveyance loss is based on observed measurements of 15-20% and applied to the noted flow conditions. The response in Section 4 (A) (i) above provides a detailed calculated estimated average annual water savings and lists the assumptions and supporting information.

(ii) How have average annual canal seepage losses been determined? Have ponding and/or inflow/outflow tests been conducted to determine seepage rates under varying conditions? If so, please provide detailed descriptions of testing methods and all results. If not, please provide an explanation of the method(s) used to calculate seepage losses. All estimates should be supported with multiple sets of data/measurements from representative sections of canals.

Seepage losses of 15-23% were originally identified in Technical Bulletin 38, Seepage Losses from Irrigation Channels by, Colorado A & M College (Rohwer and Van Pelt Stout, 1948) studies seepage losses within the Fresno Irrigation District as well as other Districts. In the 1980s, the Fresno Irrigation District conducted inflow/outflow (or seepage analysis) testing on several canals within the District including the Enterprise Canal. Over a series of days, the flowrate was recorded at different reaches within the canal. The tests were conducted while diversions from the canal were not occurring. During these tests, FID observed seepage losses that averaged 20% within the open bottom, unlined canals. In 2002, additional canal capacity and seepage testing was conducted along the Enterprise Canal that confirmed the seepage losses (Enterprise Canal Estimate of Capacity and Future Flow Study, P&P, 2002). A copy of this report can be made available if desired.

(iii) What are the expected post-project seepage/leakage losses and how were these estimates

determined (e.g., can data specific to the type of material being used in the project be provided)?

Seepage losses will be greatly reduced because the new conveyance will be through a closed pipeline, eliminating more than 47 miles of open channel conveyance. Construction of the pipeline includes pipeline leakage testing. The AWWA C303 standard, and the projects specifications, requires a maximum allowable leakage of 10 gallons per diameter inch per mile per 24-hour period. This equates to approximately 3.7 AF/yr for the 60-inch diameter 5.5 mile pipeline.

(iv) What are the anticipated annual transit loss reductions in terms of acre-feet per mile for the overall project and for each section of canal included in the project?

As noted above, the transit losses are anticipated to be no more than 0.7 AF per mile, or approximately 3.7 AF/yr for the entire project pipeline length. Looking at the overall realized loss savings achieved by this project, nearly 99.95% of all losses are eliminated.

(v) How will actual canal loss seepage reductions be verified?

Conveyance losses through the new pipeline will be verified through the use of flowmeters. The pipeline will include a flowmeter at the point of diversion from the Friant-Kern Canal, and there is an existing flowmeter at the point of connection at the NESWTF. The measurement at the two locations will be conveyed to determine any losses within the pipeline.

(vi) Include a detailed description of the materials being used.

The project will use Bar-Wrapped Concrete Cylinder Pipe (CCP). CCP consists of a steel cylinder lined with cement mortar, then helically wrapped with a mild steel bar and coated with dense cement mortar. Gasketed, welded, watertight joints are included. CCP is designed and manufactured in accordance with American Water Works Association (AWWA) Standard C303 and AWWA Manual M9. The pipe diameter is 60-inches. CCP can be designed to handle operating pressures up to 400 psi.

Subcriterion No. A.2 Percentage of Total Supply.

The water conserved as a percentage of the City's CVP Friant Division average annual surface water supply is 7,528AF / 52,200AF = 14.4%. If calculated as a percentage of the total delivers that City makes, using published 2010 values (see **Appendix H** for an excerpt from the City's 2010 Urban Water Management Plan) the calculation is 7,528AF / 322,670AF = 2.3%, using the total City demand plus deliveries for groundwater recharge. It is important to note that the total City deliveries include approximately 128,578AF/yr of groundwater pumping to meet

demands. With limited capacity to treat surface water to meet only a portion of the City's demands, conservation of surface water deliveries to the NESWTF provides the added benefit of reducing the amount of groundwater pumping required to meet demands. Reduction of groundwater pumping is vital in the critically overdrafted aquifer.

(B) Evaluation Criterion B: Energy-Water Nexus

Subcriterion No. B.1 Implementing Renewable Energy Projects Related to Water Management and Delivery

(i) Describe the amount of energy capacity

A study was performed by Provost & Pritchard in 2009 to evaluate the potential for hydroelectric power generation at the terminus of the pipeline at the NESWTF. A copy of the report can be provided if desired. The report identifies that the pipeline will have available head (the difference between the head available at the terminus of the Raw Water Pipeline and the head necessary to flow water into the treatment plant), occasionally referred to as excess head. The report identified that the future hydropower plant would generate about 80,000 to 90,000 kWh/month. The report considered a powerplant that would include a 130-kw turbine, generator, reinforced concrete pit, bypass line, isolation valves, and SCADA system. Estimated capital and engineering costs are $1.2 to $1.3 million. Operation and maintenance costs are estimated to be $13,000 to $18,900/year.

(ii) Describe the amount of energy generated

Energy generated is anticipated to be 80,000 to 90,000 kWh/month. From the 2009 report:

Table 4 Energy Generation Assumptions
(assumption that generation will be used to replace existing usage)

Description	Conservative Case	Less Conservative Case
Flowrate (2011- 2019)	30 MGD (46 cfs)	30 MGD (46 cfs)
Flowrate (2020+)	60 MGD (93 cfs)	60 MGD (93 cfs)
Available Head (2011-2019)	40 feet	40 feet
Available Head (2020+)	17 ft to 14 ft[1]	18 feet
Turbine Efficiency	90%	90%
Generator Efficiency	90%	95%
Powerplant Downtime	3%	2%
Water Supply Availability	94%	100%
Inflation of Energy Costs above Overall Inflation	0%	0.5%/year

1 – The available head is assumed to decline 1 foot every decade

For the purpose of this analysis, a project life of 50 years was used. However, with proper maintenance, the power plant should perform well beyond the 50-year period. The potential energy generated for the conservative scenario is about 1,000,000 kWh/year in 2011 tapering down to about 710,000 kWh/year after 50 years, due to an increase in pipe roughness. For the less conservative case, the generation is about 1,100,000 kWh/year the first ten years, and then a steady 1,040,000 kWh/year for the remaining 40 years.

(iii) Describe any other benefits of the renewable energy project

A pipeline and a future powerplant will provide the following benefits:

- The pipeline will provide enough hydraulic head pressure to eliminate the need to operated lift pumps at the NESWTF that pump water from the existing conveyance canal to the NESWTF to route water through the treatment process.
- The hydropowerplant will provide a means of load shedding from the energy grid and offset a significant cost for power purchased from their utility.
- The hydropowerplant will also provide a carbon offset due to the reduced energy consumption noted above. The carbon dioxide savings for the conservative scenario is about 760 tons[2] in 2011 tapering down to about 540 tons after 50 years; for the less conservative case, 836 tons for the first ten years and then a steady 791 tons for the remaining 40 years.

Subcriterion No. B.2 Increasing Energy Efficiency in Water Management

(i) Describe any energy efficiencies that are expected to result from implementation of the water conservation or water management project

The most significant immediate energy efficiency impact for the project is that the pipeline will provide enough hydraulic head pressure to eliminate the need to operated lift pumps at the NESWTF that pump water from the existing conveyance canal to the NESWTF to route water through the treatment process and reduction in groundwater pumping needs; these two impacts will reduce energy consumption by 2,708,000 kWh/year. At the NESWTF, the hydraulic grade line (HGL) of the water in the conveyance canal is well below the required HGL to convey water through the treatment process at the NESWTF. Once the pipeline is built, the HGL at the terminus of the pipeline will be high enough to allow for gravity flow through the treatment process, eliminating the need to operated the lift pumps at the plant that operate 24 hours per day while the NESWTF is operating. Considering hydraulic lift and system losses for the existing pump station at the NEWSTF, power use reductions will be approximately in the range of 1,300,000 kWh/year.

[2] http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results

(C) Evaluation Criterion C: Benefits to Endangered Species

The San Joaquin River Restoration Program (SJRRP) is a direct result of a Settlement reached in September 2006 on an 18-year lawsuit to provide sufficient fish habitat in the San Joaquin River below Friant Dam near Fresno, California, by the U.S. Departments of the Interior and Commerce, the Natural Resources Defense Council (NRDC), and the Friant Water Users Authority (FWUA). The Settlement received Federal court approval in October 2006. The City is a contractor for Friant Division water and a member of the Friant Water Authority. A portion of the City's Friant water supply will be used to restore the river.

The Settlement is based on two goals:

- **Restoration:** To restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.
- **Water Management:** To reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.

As noted previously, the SJRRP is anticipated to reduce the City's average annual Friant supply by 7%. This Project will help conserve 15% of all water conveyed, thereby reducing the adverse supply impacts to the City, a long-term contractor.

The project will also provide mitigation for seasonal wetland habitat that is potentially Vernal Pool Fairy Shrimp habitat and California Tiger Salamander upland and breeding habitat. The pipeline crosses territory that may be habitat for these species and will cause temporary impacts as part of construction. As part of the project, mitigation is provided at 2 to 1 ratio in terms of acreage impacted, thereby helping to increase habitat for the potentially impacted species. The mitigation will be in the form of development of a conservation easement and establishment of the required habitat area on property adjacent to the project.

(D) Evaluation Criterion D: Water Marketing

(i) Briefly describe any water marketing elements included in the proposed project.

The water conserved will be conveyed to the NESWTF, then treated and sold directly to City customers by individual sale. Based on the City's 2010 Urban Water Management Plan it projects for the Year 2015 that 121,275 single family residential units will consume about 79,800 AF. Applying this ratio of use, a water savings of 7,528AF/yr will provide supply for approximately 11,400 single family residential customers.

A focal point of the City's Metropolitan Water Resources Management Plan is to expand intentional recharge activities. This Plan calls for the construction of nearly 340 acres of

wetted basins to recharge an additional 20,500 AFY. At present the City has purchased property for a new recharge facility and is at 75% design. As was noted in Subcriterion A.1 above, about 4,050 AF will be saved annual by construction of the pipeline project. Since the existing SWTF is operating at full capacity now it provides a means to utilize the saved water for intentional recharge purposes to offset groundwater extractions. The new facility will have approximately 18 wetted acres and in a typical six month irrigation delivery season capable of recharging nearly 1,000 ac-ft annually. The City has plans to continue expanding the intentional recharge program at a rate of about 14 acres per year. The planned expansion ties well to utilizing the saved surface water supply.

There are no known legal issues or limitations. There are certain conditions of use stipulated in the City's long-term water service contract with the Bureau. Included within the long-term renewal contract is a map depicting the users' service area. With the intended use of the saved water to be used for surface water treatment for potable use and intentional recharge, both of which will take place in the noted service area, these uses meet contract requirements.

The City's CVP Class 1 water supply is secured in perpetuity through the previously mentioned Section 9(d) Contract. It is envisioned the saved water will be entirely used by the City within the defined service area for the foreseeable future.

(E) Evaluation Criterion E: Other Contributions to Water Supply Sustainability

Subcriterion No. E.1: Addressing Adaptation Strategies in a WaterSMART Basin Study

This project is consistent with adaptation strategies identified in multiple Basin studies, such as those identified in the Santa Ana Watershed Basin Study (SAWBS), the Yakima River Basin Study (YRBS), and others. The Sacramento-San Joaquin River Basin Study is not complete; however, the adaptation strategies listed in the referenced completed studies are anticipated for the basin study. Some of the adaptation strategies that this project is consistent with include:

- Improve Operational Efficiency (SAWBS): This project is fits well within this strategy. The construction of the 5.6 mile 60 inch diameter raw water pipeline meets several of the criteria associated with this strategy. Primarily completion of this project will free up system capacity of the Fresno Irrigation District conveyance system, which is at capacity now delivering CVP water to the City's NESWTF. The FID conveyance system serves several functions, such as: delivering irrigation water to in-district farms; conveying storm water to flood control detention basins, and subsequently away from the Fresno-Clovis metropolitan area; delivering water to intentional recharge facilities; and conveying water for various water market transfers. With the construction of the new raw water pipeline project, capacity is made available to improve flow quantities to

for the previously mentioned uses. This in turn will permit the development of new regional water projects.

- Increase Water Supply (SAWBS & YRBS): The intent of this strategy is to in part promote conjunctive management and groundwater storage. The City's NESWTF was the first significant step towards truly developing a diversified conjunctive use strategy. Prior to the construction and operation of the SWTF the City relied entirely on groundwater for its potable water supply. With the 2004 completion of the SWTF the City now meets 12% of it potable demand with treated surface water. The subject pipeline project furthers the City's commitment to conjunctive management by optimizing the use of limited surface water supplies, makes more water available for intentional groundwater recharge projects, and improves surface water operating efficiencies.

- Improve Water Quality (SAWBS): The focus of this strategy is to, in part, improve drinking water treatment, distribution, and groundwater use. Conveyance as it stands now requires CVP water to travel nearly 54 miles in open channels from the Friant Dam to the City's NESWTF. This exceptionally long delivery mechanism puts the raw water at risk from impacts from environmental threats, as well as malicious and accidental acts. By eliminating nearly 47 miles of open conveyance the water supply becomes highly protected and is easier and less expensive to treat. The project facilitates distribution improvements by providing a new conveyance system, making the existing one a redundant back-up , but too permitting expanded use of the existing irrigation system to move flood event waters safely away from inhabited areas, expand recharge deliveries, and remove capacity restrictions which might hinder water transfers. The project also provides otherwise lost water for recharge operations and makes conveyance capacity available for these new recharge deliveries.

- AB32 Compliance (SAWBS): Carbon emissions have a detrimental effect on the environment. Opportunities to reduce carbon emissions help to reduce causal links to climate change. The proposed project fits this strategy quite well as it will eliminate the need to operate three 100 hp pump motors presently required to lift the raw source water into the SWTF.

- Enhance Water Conservation, Agricultural Conservation (YRBS): Although this would seem to be specific to agricultural conservation, it too is applicable to municipal conservation. Specifically this strategy is has conservation measures that implement lining or piping existing canals or laterals; installing gates and automation on irrigation canals; and improving water measurement and accounting systems. The proposed project accomplishes all of these. First, the construction of a pipeline saves 7,528 AFY which is consistent with the lining or piping of canals and laterals. The subject project includes the installation of a remotely controlled slide gate and flow meter. The automated gate improves control of diverted flows and promotes conservation. The specified multi-path acoustic flow meter (Accusonic Technologies Model 8510) will measure at a much higher level of accuracy (±0.5% for full pipes, and ±2.0% for partial

full pipes) then the existing weir, and will dramatically improve accounting of water deliveries.

- Identify opportunities to restore natural systems: The water conserved by the Project will enable the City to meet its obligations to the SJRRP with reduced impact to the City's water supply...

Through its member status of the Friant Water Authority, the City of Fresno is a Cost-Share Partner of the Sacramento-San Joaquin Rivers Basin Study. The City is a participating stakeholder in the study.

Subcriterion No. E .2: Expediting Future On-Farm Irrigation Improvements

This project is not an on-farm irrigation improvement project.

Subcriterion No. E.3: Build Drought Resiliency

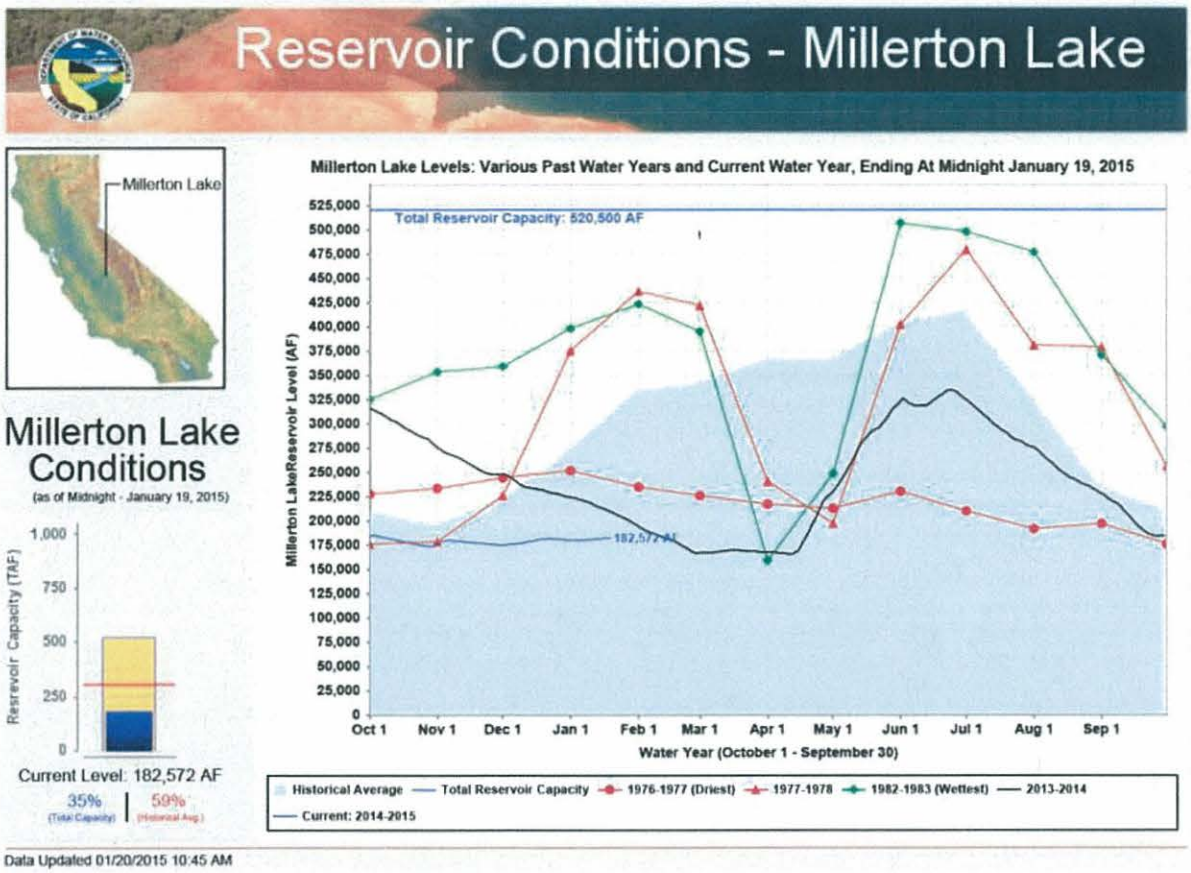
The City of Fresno has adopted a Water Resources Management Plan that premises itself on optimizing groundwater and surface water supplies so there is sufficient water during periods of sustained drought. To accomplish this, the Plan calls for an additional 110 million gallons per day of surface water treatment to be built over the next fifteen years. The basic idea is to utilize surface water when it plentiful, thus permitting the groundwater aquifer to recover and refill. Then in times of drought, the City can operate its municipal water wells to meet urban demands. The proposed project contributes to this strategy by making by constructing the necessary transmission facility which will be required when the NESWTF is expanded to 60 MGD. In the interim the project makes about 7,528 AFY available to current recharge operations and water exchanges when recharge capabilities are exceeded.

California's Water Year 2014 – overlapping with California's driest calendar year of 2013 -- was the third driest in 119 years of record, based on statewide precipitation. When Water Year 2014 ended on September 30, the state's reservoirs tracked by DWR collectively held only 60 percent of average storage for the date, or 41 percent of capacity. Cumulative reservoir storage on the same date in the deep drought year of 1977 was five million AF less, but California had 16 million fewer people in 1977.

Drought conditions persist in the region. As of January 19th, storage at Millerton Lake was about 182,572AF (up 1,424AF and at 35% capacity—unchanged from last week) and compares to 210,000AF one year ago. The current level is 59% of the historical average. Inflows for the last week averaged about 506AF/day. Total capacity of Friant is 520,500AF. On Monday, 0CFS was released into the Friant/Kern Canal, 0CFS was released into the Madera Canal, and 168CFS was released into the San Joaquin River, which is within the *critical year flow of about 150-200CFS*. The eight upstream San Joaquin River reservoirs are about 28% full, holding 169,153AF

of their 611,688AF capacity. The graph below shows the current year in relation to average and other years.

Figure 3 Reservoir Conditions – Millerton Lake



Subcriterion No. E.4: Other Water Supply Sustainability Benefits

The following additional project benefits are identified:

- The project will make water available to address a specific concern. The project will directly address a heightened competition for a finite water supply, specifically within the Friant Unit of the CVP in which water supply contracts have been reduced to restore the San Joaquin River.
- Within the San Joaquin River watershed, there is limited surface storage and climate change is expected to increase run-off earlier in the season likely encroaching on storage limitations.
- The NESWTF currently has to shut down each year for approximately 6 weeks to allow for maintenance along FID's Enterprise Canal. In years when considerable improvements are required along the Enterprise, the down period can be even longer. During these shutdown periods, the City is entirely dependent on groundwater pumping

to meet demands. The proposed project will eliminate the requirement for an annual shutdown, thereby reducing the groundwater pumping and eliminating the complications of shutting down and starting back up the NESWTF.

- The project benefits will serve the City of Fresno which, as a whole, is classified as a disadvantaged community[3]. According to the 2009-13 Census data, the City's median household income is 68.8% of the statewide MHI ($42,015 and $61,094, respectively).
- There is support for the project as evidenced by the letters of support for the project (see **Appendix I**).
- The project will help lessen the tension related to reduced supplies associated with the SJRRP and drought conditions by conserving some of the City's supply, thereby reducing their need to pump groundwater within the overdrafted basin or pursue additional surface water supplies.
- The project will reduce the risk of potential contamination of the source water by conveying the water through a closed pipeline and eliminating more than 47 miles of conveyance through open canal systems.
- The project will provide future hydropower generation at the NESWTF, which will serve as an example for future hydropower facilities at other future SWTFs. The hydropower generation is considered a "low-head" system, and the economic return will serve as a case-study for other regions to consider such installation and application.
- The Project will increase awareness of water and energy conservation and efficiency efforts as completion of such a project will be highlighted by the City. The City's Green Initiative program publicizes its accomplishments and completion of this project will definitely be recognized through various City public outreach venues, such as, utility billing news letter, and utility department and city website. The dual benefit of demonstrating efforts to conserve water and reduce operational costs to rate payers has tremendous goodwill payback.
- The Project is an ideal project for demonstrating how water and energy are so closely intertied. The reduction of energy consumption from eliminating raw water lift pumps and additionally reducing groundwater pumping from expanded use of existing infrastructure exemplify how value engineering can lead to environmental and economical benefits.

(F) Evaluation Criterion F: Implementation and Results

Complete copies of the reports reference below are available upon request.

Subcriterion No. F.1 Project Planning:

(i) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, Systems Optimization Review, or

[3] A disadvantaged community is defined as a community with an MHI of less than 80% of the statewide MHI.

other planning efforts done to determine the priority of this project in relation to other potential projects.

Integrated Regional Water Management Plan. In 2012, the most recent Kings Basin Integrated Regional Water Management Plan (IRWMP) Update was prepared and adopted in coordination with the California Department of Water Resources (DWR). The IRWMP was prepared in collusion with local agencies and districts, including the City of Fresno and FID. The IRWMP specifically discusses, from a regional standpoint, the importance of water conservation, recharge and replenishing the aquifers in the region. The cone of depression that exists below central Fresno is a major deficit in the groundwater picture for the Central Valley and is addressed specifically within this plan. Water conservation directly benefits the region and improves the condition of overdraft beneath the City specifically.

Urban Water Management Plan. The City prepared an Urban Water Management Plan in August 2008 and an update in November 2012 in compliance with DWR requirements. The plan fully addresses water conservation issues, including surface and groundwater supply. This document contains a drought contingency plan.

Groundwater Management Plan. The Fresno Area Regional Groundwater Management Plan (FARGMP) was completed in December 2006. The plan is in compliance with California State Senate Bill No. 1938, in relation to the amendments of Sections 10753 and 10795 of the California Water Code.

Metropolitan Water Resources Managementt Plan Update. The City of Fresno Metropolitan Water Resources Management Plan Update (WRMP) was updated and subsequently adopted in June 2014. The plan thoroughly outlines the status of water supplies in the City as well as measures needed to correct the current problems and achieve a better method for conservation and management. Groundwater recharge is listed as a forefront solution, in line with the project proposed herein.

(ii) Describe how the project conforms to and meets the goals of any applicable planning efforts, and identify any aspect of the project that implements a feature of an existing water plan(s).

In June of 2014, the City of Fresno adopted its Water Resources Management Plan that is based on the following goals:

Goal 1: Maximize use of available surface water supplies for direct treatment and use, and intentional groundwater recharge.

Goal 2: Balance the City's groundwater operations by 2025 (corresponding with buildout of General Plan).

Goal 3: Replenish groundwater basin storage when surplus water supplies are available.

Goal 4: Continue to implement and expand demand management/water conservation measures in compliance with the City's USBR contract and to achieve specific water conservation goals.

This project conforms to the listed goals of the City adopted WRMP. Goal 1 is met by construction of the subject pipeline which is mandatory in order for the City to maximize for direct treatment, presently and when the NESWTF is expanded. The water savings realized from project completion also increases opportunities for expanded intentional groundwater recharge operations and new projects. Goal 2 is met through the previously noted ability to improve groundwater replenishment which feeds to the balanced use of this resource. Goal 3 is met by increasing available surface water supplies for recharge operations. Goal 4 is attained through improved water diversion measurement and water supply accounting.

Subcriterion No. F.2 Readiness to Proceed

(i) Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

A detailed workplan listing each task required for implementation is included in the Technical Description, a corresponding project schedule is included as **Appendix A** and project budget is included in the Budget section of this application.

As of the award date of this grant, all components of Easement Acquisition, Design and Engineering, Environmental Documentation and Permitting are anticipated to be complete. The remaining work to be conducted includes bidding the construction project and building the Project, as outlined in the Technical Description and attached schedule.

(ii) Explain any permits that will be required, along with the process for obtaining such permits. Identify and describe any engineering or design work performed specifically in support of the proposed project.

A detailed list of permits and their statuses is included in the Technical Description and Required Permits or Approvals sections.

Subcriterion No. F.3 Performance Measures

(i) Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (i.e., water saved, marketed, or better

managed, or energy saved).

After completion of the project, the volume of seepage water lost in the pipeline will be calculated by comparing the total volume measured through the flowmeter at the diversion point at the Friant-Kern Canal with total volume measured through the flowmeter at the delivery point at the NESWTF. The volume of water is expected to be negligible. The total volume for the year will be compared to the 7,528AF/yr that is currently lost because of canal seepage through the existing conveyance. The difference between these two annual volumes will be the total annual water conserved by the project.

Subcriterion No. F.4 Reasonableness of Costs

The value of the water conserved is estimated to be $64/AF based on current costs for Friant water under the City's Reclamation contract. The total value of the project is conservatively estimated using the 7,528AF/yr and the $64 value per acre-foot, neglecting inflation costs, using a 50-year project life yields a total project value of $24,089,600.

The value of the energy conserved is estimated to be between $0.12 and $0.14 per kWh based on current energy costs through Pacific Gas and Electric. The total value of energy saved by the project is 2,708,000 kWh/year; using $0.12 per kWh, neglecting inflation costs or energy rate increases, using a 50-year project life yields a value of $16,248,000.

Based on these two items, the total project value is estimated to be $40,337,600.

(G) Evaluation Criterion G: Additional Non-Federal Funding

The City will fund its portion of the project through the Water Enterprise Fund and bond sales (an excerpt from the City's budget is included in **Appendix J**).

(H) Evaluation Criterion H: Connection to Reclamation Project Activities

(i) How is the proposed project connected to a Reclamation project activities

The City is a Contractor with Reclamation on the Friant Division of the CVP, and the project will convey the City's CVP Friant water from the Friant-Kern Canal.

(ii) Does the applicant receive Reclamation project water?

The City's primary water supply is CVP Contract (No. 14-06-200-890 ID) administered by USBR.

(iii) Is the project on Reclamation project lands or involving Reclamation facilities?

A small portion of the project occurs on Reclamation property. The project includes a

turnout (diversion structure) that will be constructed on the Reclamation property for the Friant-Kern Canal. An excerpt of the plans for the turnout is included with this application. The City has been in coordination with Reclamation for several years, and is in the process of finalizing the required permit for the construction.

(iv) Is the project in the same basin as a Reclamation project or activity?

Yes, the project is within the Friant Division of the Central Valley Project, and will receive water from the Friant-Kern Canal.

(v) Will the proposed work contribute water to a basin where a Reclamation project is located?

Yes, the project is within the Friant Division of the Central Valley Project, and the conserved water will benefit the region that receives water from the Friant-Kern Canal.

(vi) Will the project help Reclamation meet trust responsibilities to Tribes?

The project supports the overall goals of USBR, which assists in meeting the trust responsibilities to Tribes.

PERFORMANCE MEASURES

See Part 4 of Section F: Implementation and Results, for specific information on performance measures.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

(i) Will the project impact the surrounding environment (i.e., soil [dust], air, water [quality and quantity], animal habitat, etc.)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

Earth disturbing activities will occur in the preparation of the subgrade for the proposed improvements. Typical mitigation measures, such as a water truck, will be used to minimize impacts on the surrounding area, along with other suggested practices developed in the CEQA process. The dust generated during Project construction will only be temporary and will be maintained in accordance with SJVAPCD requirements. Therefore, the construction of Project facilities will not impact the environment.

(ii) Are you aware of any species listed or proposed to be listed as a Federal endangered or threatened species, or designated Critical Habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

It is not anticipated that the Project would affect any endangered or threatened species near the Project. However, since this is potential habitat for vernal pool fairy shrimp, California tiger salamander, San Joaquin kit fox, burrowing owls, and other breading birds, mitigation measures will be conducted as illustrated in the NEPA and CEQA documents for the Project.

During construction, the following protection measures will be taken:

- Existing routes of travel to and from the construction and inspection sites will be used. Cross country use of vehicles and equipment would be strictly prohibited.
- The City would designate a field contact representative (FCR) who would be responsible for overseeing compliance with protective requirements for listed species. The FCR would be on site during Project activities and would have authority to halt all activities that are in violation of the requirements or should danger to a listed or Fully Protected species arise. Work would proceed only after hazards to the listed species are removed, the species is no longer at risk, or the individual has been moved from harm's way by the authorized biologist.
- All surface-disturbing activities within the range of any listed species would be conducted in a manner that reduces, as much as possible, the potential for take of individuals of a listed species. Impacts to habitat would also be minimized to the maximum possible extent.
- The area of disturbance would be confined to the smallest practical area, considering topography, placement of facilities, location of burrows, nesting sites or dens, public health and safety, and other limiting factors. Special habitat

features, such as populations of listed plants or burrows identified by a qualified biologist, would be avoided to the extent possible.

- To the extent possible, previously disturbed areas within the Project Area would be used for the stockpiling of excavated materials, storage of equipment, locations of trailers, parking of vehicles, and any other surface-disturbing activity. The qualified biologist, in consultation with the City, would ensure compliance with these measures.
- All activities would be restricted to the pre-determined corridor. If unforeseen circumstances require expansion of this width, the potential expanded work areas would be surveyed for listed species prior to use of the area. Work outside of the original right-of-way would proceed only after receiving written approval from the USFWS, describing the exact location of the expansion.
- In grasslands and any other areas not developed or supporting crops, the City would restore disturbed areas in a manner that would assist in the reestablishment of biological values within the disturbed right-of-way.
- If impervious material is disturbed during installation of the pipeline such that flow to the vernal pools south of the Project Area could be altered, the City would replace any impervious material disturbed with engineered backfill or provide alternative measures in order to provide the surface drainage necessary to maintain pre-Project flows to those pools.
- Impacts to habitat for listed vernal pool branchiopods, California tiger salamander, or any special-status plant populations associated with seasonal wetlands will be mitigated by the purchase of equivalent habitat credits at an accredited mitigation bank.
- Additional measures that would be implemented to avoid and minimize adverse effects to the California tiger salamander are:
    - Trash and food items would be contained in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes (Canis latrans), and feral dogs.
    - Employees would not bring pets to the Project site.
    - Upon completion of each activity on the right-of-way all unused material and equipment would be removed from the site.
    - Only personnel authorized by the USFWS may handle federally listed species, and only personnel authorized by the CDFW may handle state-listed species

(iii) Are there wetlands or other surface waters inside the project boundaries that potentially fall under Federal Clean Water Act jurisdiction as "Waters of the United States?" If so, please describe and estimate any impact the project will have.

The project will result in 0.44 acres of disturbance to seasonal wetland habitat (wetland swales, vernal pools, and a small reach of the Big Dry Creek Diversion Channel) from the excavation of a trench within which the pipeline will be constructed. Of this disturbance,

588 square feet (0.01 acre) represents a permanent impact to potential breeding habitat of the (CTS). This permanent impact would result from the installation of an unvegetated aggregate road at grade through one vernal pool. Another 4,578 ft.^{2} (0.11 acre) of disturbance represents a temporary impact to potential CTS breeding habitat in the form of one vernal pool that will be restored to its pre-project condition (no aggregate road will be constructed through this pool). The remaining seasonal wetlands to be affected by the project (0.32 acres) are not considered CTS breeding habitat.

The City will mitigate permanent impact to 0.01 acre of seasonal wetland habitat through the construction of replacement wetland habitat on an off-site mitigation parcel approved by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), or the purchase of credits from an approved mitigation bank, whichever option is available and acceptable to the USFWS and CDFW. The City will restore the remaining disturbed vernal pool wetlands considered to be potential CTS breeding habitat within the construction alignment to pre-project conditions.

(iv) When was the water delivery system constructed?

The City of Fresno was established in the late 1800s; construction of the City's water system dates back to the early 1900s in some areas of town. However; the NESWTF was constructed in 2004 and the connecting water main in Willow Avenue was constructed in 2006. The Friant-Kern Canal was completed in 1951.

(v) Will the project result in any modification of, or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

The Project will result in modifications to Friant-Kern Canal, which was constructed in 1951. The modifications will be to construct new concrete turnout structure. For more information on improvements, refer to the plan excerpts in **Appendix K** (due to plan set length of 62 pages and the page limitation of this document, the entire plan set is not included and can be provided upon request). Regular maintenance is performed on the Friant-Kern Canal by the Friant Water Users Authority. This reach of the Friant-Kern Canal is concrete lined and has had limited modification other than routine canal maintenance since the Canal was constructed.

(vi) Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

Archaeological and historical investigations for the Project were conducted for purposes of Reclamation's NHPA Section 106 evaluation of the Project. These investigations

complied with regulations and following criteria presented in 36 CFR Part 63, and Section 106 of the NHPA of 1966, as amended. Section 106 consultation was completed as of May 2012 (see **Appendix G**), as was coordination with the State Historic Preservation Office (SHPO).

The Friant-Kern Canal is part of the CVP and is eligible for inclusion in the National Register of Historic Places (NRHP) but Project construction will not affect any of the characteristics of the canal that make it eligible for the NRHP. The Enterprise Canal was constructed in the late 1800s and has not been evaluated for inclusion in the NRHP; it will not be affected by the Project construction.

Historical investigations identified three previously recorded sites, historic sites P-10-000630 and P-10-000868 and prehistoric site P-10-001391. Only historic site P-10-000868 (CA-FRE-868H) is located along or adjacent to the Project. Site P-10-000868 is a section of historic railroad grade located along approximately 600-feet of the alignment and will be effected by the Project construction; however, it has been determined that the site is not eligible for inclusion in the NRHP.

(vii) Are there any known archeological sites in the proposed project area?

See note above.

(viii) Will the project have a disproportionately high and adverse effect on low income or minority populations?

The project will not have a disproportionately high or adverse effect on low income or minority populations. The Project will provide benefits to the entire population of the Fresno area by providing an increased reliability in the water supply and energy cost savings to the City and therefore residents.

(ix) Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

There are no known Indian sacred sites in the proposed Project area; no adverse impacts to tribal lands are anticipated.

(x) Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

No.

REQUIRED PERMITS OR APPROVALS

Permits and approvals anticipated for the Project are discussed below. Both City of Fresno and their engineering consultants, have experience in securing these permits for other projects.

National Environmental Policy Act (NEPA). Through coordination with Reclamation staff at the Fresno Office, a Biological Assessment, Cultural Resources Inventory Report and Environmental Assessment (EA-07-124) were prepared for the Project (see **Appendix F** for an excerpt of the EA, a full copy is available upon request). Reclamation is considered the lead for the work associated with the turnout (diversion) structure construction along Reclamation property for the Friant-Kern Canal. A draft Finding of No Significant Impact (FONSI) was prepared and circulated for public comment in September 2011. Minimal comments were received. Section 106 consultation was completed as of May 2012, as was coordination with the State Historic Preservation Office (SHPO). The FONSI will be finalized upon issuance of a Biological Opinion from the United States Fish & Wildlife which is anticipated to be received in March 2015. The NEPA process is anticipated to be completed by May 2015.

California Environmental Quality Act (CEQA). A CEQA Initial Study and Mitigated Negative Declaration have been completed, adopted and the Notice of Determination was filed in August 2011 for this Project.

Army Corps of Engineers – 404 Permit. The Nationwide Permit application form with supporting environmental documentation and wetland delineation was prepared and submitted in December 2013. Approval is anticipated in advance of the grant award date.

RWQCB – 401 Water Quality Certification. The 401 application form with supporting environmental documentation and wetland delineation was prepared and submitted in May 2013. Review has been completed and is in the process of being approved by the RWQCB. Approval is anticipated in advance of the grant award date.

California Department of Fish and Wildlife (CDFW) – Incidental Take Permit. The Incidental Take Permit application was prepared and submitted in March 2014. It is being updated and resubmitted based on comments received from CDFW; approval is anticipated in advance of the grant award date.

CDFW – Streambed Alteration Agreement. The Streambed Alteration Agreement has been finalized as of May 11, 2013.

FMFCD – Encroachment Agreement. The preliminary drawings of the crossing were submitted to the Army Corps of Engineers and approval was received in July 2014; FMFCD has initiated preparation of the final encroachment agreement with the most recent plan submittal

information. Approval is anticipated before plan approval, which is in advance of the grant award date.

Construction Document Approvals. The construction documents will be reviewed and signed by the City of Fresno, FMFCD, Garfield WD, Friant Water Authority and USBR.

Grading Permit. The contractor will need to obtain a grading permit for the earthwork.

Indirect Source Review. The Project prepared and submitted an Air Impact Assessment to the San Joaquin Valley Air Pollution Control District (SJVAPCD) in September 2013 and received approval in November 2013.

Dust Control Plan. A Dust Control Plan will be needed for the earthwork. The plan will be submitted to the SJVAPCD at least one month before construction. The Contractor will be required to prepare the plan.

Storm Water Pollution Prevention Plan. A Storm Water Pollution Prevention Plan will be needed for the basin earthwork. The Contractor will be required to prepare and submit the plan before construction.

County of Fresno Encroachment Permit. The contractor will need to obtain an encroachment permit.

LETTERS OF PROJECT SUPPORT

The Project has received letters of support from the City of Clovis, Fresno Irrigation District, Fresno Metropolitan Flood Control District, San Luis Water District, Kings River Conservation District, Friant Water Authority and the (see **Appendix I** for copies of the letters).

OFFICIAL RESOLUTION

Appendix L includes Draft Resolution authorizing the preparation of this application and funding for the City's cost share. This resolution has been approved by City staff and will be voted on at the February 5, 2015 Council meeting.

PROJECT BUDGET

1. Funding Plan and Letters of Commitment

(i) How you will make your contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments).

The City will make its contributions to the cost-share requirement through their existing Water Enterprise Fund and bond sales, so no financing plan is required for the Project. The City has sufficient reserves to pay for their cost share. An excerpt from the City's current budget is included in **Appendix J** showing the committed funding for the Project. Final authorization for release of construction funding will come upon completion of the plan preparation and project bidding when the construction contract award is made.

(ii) Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs. Include:

The City will not request reimbursement for any in-kind costs as part of this Project.

(iii) What project expenses have been incurred?

The City has incurred expenses in Tasks 1 thru 5, Project Administration, Easement Acquisition, Design and Engineering, Environmental Documentation and Permitting, respectively. The City will not seek reimbursement for any of these costs.

a. How have they benefited the project?

This work has benefited the Project by continue to move it forward towards construction by completing the environmental, engineering and permitting, therefore allowing the Project to be ready for construction.

b. The amount of the expense:

The expenses incurred for each of these tasks are summarized in Table 4 below.

c. The date of cost incurrence:

The dates of cost incurrence for each of these tasks are summarized in Table 4 below.

Table 5 Incurred Project Expenses Summary

Expense Description	Expense	Date of Incurrence
Task 1: Project Administration	$80,000	February 2006 – June 2015
Task 2: Easement Acquisition		June 2009 – June 2015
Title Research, Easement Preparation Appraisals, Offer Packet Preparation, Property Negotiations	$250,000	
Easement Acquisition Costs	$750,000	
Task 3: Design and Engineering	$915,000	April 2008 – June 2015
Task 4: Environmental Documentation	$390,000	February 2009 – June 2015
Task 5: Permitting	$275,000	February 2009 – June 2015
Total Past Incurred Expenses[4]	**$2,660,000**	

(iv) Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.

The City has not secured funding from any funding partners for the Project; the funding will be provided entirely by the City and Reclamation if the grant is awarded.

(v) Describe any funding requested or received from other Federal partners.

The City has not received or requested funding from other Federal partners for the Project.

(vi) Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied

The City does not have any pending funding requests for the Project.

[4] Past incurred expenses are provided for information and reference only; these costs will not be submitted for reimbursement under this grant, if awarded.

Table 6 Summary of non-Federal and Federal Funding Sources

Funding Sources	Funding Amount	Percentage
Non-Federal Entities		
City of Fresno	$16,852,020	94%
Non-Federal Subtotal:	**$16,852,020**	**94%**
Other Federal Entities	N/A	
Requested Reclamation Funding:	**$1,000,000**	**6%**
Total Project Funding:	**$17,852,020**	

Table 7 Funding Group II Funding Request

	Funding Group II Request		
	Year 1 (FY2015)	Year 2 (FY2016)	Year 3 (FY2017)
Funding Request		$500,000	$500,000

2 . Budget Proposal

Below is a budget proposal for the Project. The past incurred costs have not been included in the budget proposal as they are in being sought for reimbursement. Detailed cost estimates are included in **Appendix M**.

Table 8 Funding Sources

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Recipient Funding	94%	$16,852,020
Reclamation Funding	6%	$1,000,000
Other Federal Funding	N/A	
Totals	100%	$17,852,020

Table 9 Budget Proposal

Budget Item Description	Computation		Recipient Funding	Reclamation Funding	Total Cost
	$/Unit	Qty			
Salaries/Wages		0			
Fringe Benefits		0			
Travel		0			
Equipment		0			
Supplies/Materials		0			
Contractual/Construction					
Project Administration	$41,000	1	$41,000	$0	$41,000
Construction Contracting	$40,900		$40,900	0	$40,900
Construction	$15,222,600	1	$14,222,600	$1,000,000	$15,222,600
Construction Inspection	$645,560	1	$645,560	$0	$645,560
Environmental and Regulatory Compliance	$379,700	1	$379,700	0	$379,700
Other					
Contingencies	$1,522,260		$1,522,260	0	$1,522,260
Total Direct Costs			**$16,852,020**	**$1,000,000**	**$17,852,020**
Indirect Costs – 0.0%					
Total Project Costs			**$16,852,020**	**$1,000,000**	**$17,852,020**

3 . Budget Narrative

Detailed cost estimates for the Project can be found in **Appendix M.**

Salaries and Wages – Since it is anticipated that the City will not perform the construction, there will be no City Salaries and Wages accrued.

Fringe Benefits – Since it is anticipated that the City will not perform the construction, there will be no City Fringe Benefits accrued.

Travel – Since it is anticipated that the City will not perform the construction, there will be no City travel expenses accrued.

Equipment – It is anticipated that all the heavy equipment that will be used in this Project will be supplied by the awarded contractor.

Materials and Supplies – All Material and Supply costs associated with the Project are included in the contractual category. All material and supplies will be included under the awarded contract. All office supplies associated with the Geotechnical and Civil Engineering companies will be covered under their contracts associated with this Project.

Contractual – It is anticipated that the Project will be accomplished through several contracts with the City of Fresno. The contractual budget item is described in relation to the work identified in the task discussed above:

Task 1 and 6 – A contract will be executed between the City and an engineering consultant to perform the items of work in described in these two tasks. The budget includes an allowance for print costs associated with the Project construction bidding. These costs are to be paid by the City and will not be submitted for reimbursement under this grant.

Task 7 – Once the City bids the Project, a construction contract will be executed with the selected Contractor. The grant, if awarded, will help to fund this Task.

Task 8 – The costs associated with Task 8 are divided into two main categories – a contract with a biologist for environmental compliance during construction and the purchase of mitigation credits as discussed in the Project's Initial Study. These costs are to be paid by the City and will not be submitted for reimbursement under this grant.

Task 9 – The costs associated with this task will entail contracting with at least three separate entities; the first contract will be with and engineering consultant to perform construction inspection of the Project, the second will be with a Labor Compliance consultant and the third will be with a Geotechnical firm to perform required sampling during construction. These costs are to be paid by the City and will not be submitted for reimbursement under this grant.

Other – A 10% contingency was added for the construction of the Project primarily for uncertainty of costs at the time of construction, but also for uncertainty in quantities, neglected items and unforeseen circumstances. Contingency costs were only applied to the contractual construction efforts of the Project (Task 7).

Indirect Costs – The Project will not have indirect costs.

Total Cost – Total Project Cost is estimated to be $17,852,020. The Federal share will be $1,000,000 (5.6% of the Total Project cost); and the applicant share will be $16,852,020 (94.4% of the Total Project Cost).

4 . Budget Form

Budget Form SF-424C is included in **Appendix M.**

REFERENCES

Alignment Comparison Report. Provost & Prichard Consulting Group. May 2008.

City of Fresno Adopted Budget, Fiscal Year 2015. City of Fresno. September 2014.

City of Fresno Final Urban Water Management Plan. West Yost Associates. August 2008.

City of Fresno USBR Water Management Plan. West Yost Associate. May 2013.

Draft Environmental Assessment, City of Fresno Raw Water Pipeline. Bureau of Reclamation. August 2011.

Enterprise Canal Estimate of Capacity and Future Flow Study. Provost & Prichard Consulting Group. December 2002.

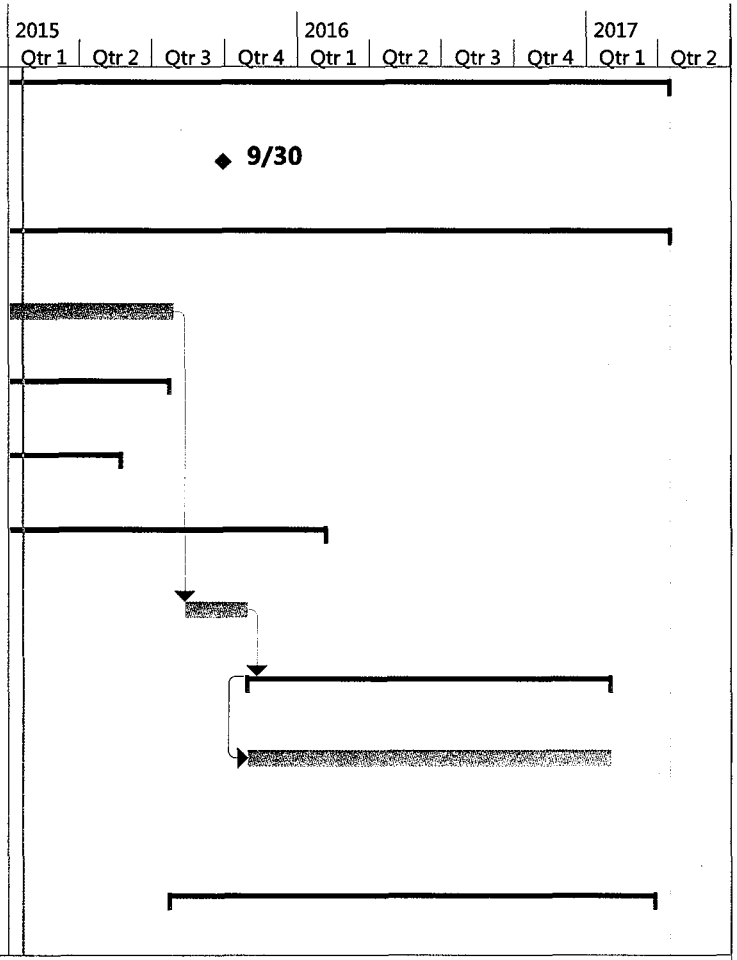
Fresno Area Regional Groundwater Management Plan (FARGMP). December 2006.

Geotechnical Investigation Report, Proposed Fresno Raw Water Pipeline, Job No. 100485.GEO. Kleinfelder. July 2009.

Integrated Regional Water Management Plan. Provost & Prichard Consulting Group. October 2012.

APPENDIX A

ID	Task Name	Duration	Start	Finish
1	**Friant-Kern Pipeline Project**	**2602 days**	**Thu 4/26/07**	**Sat 4/15/17**
2	Funding Agreement Execution	0 days	Wed 9/30/15	Wed 9/30/15
3	**Task 1: Project Administration**	**2602 days**	**Thu 4/26/07**	**Sat 4/15/17**
15	**Task 2: Easement Acquisition**	288 days	Fri 6/20/14	Tue 7/28/15
16	**Task 3: Design and Engineering**	**2150 days**	**Thu 4/26/07**	**Wed 7/22/15**
20	**Task 4: Environmental Documentation**	**1001 days**	**Fri 7/22/11**	**Fri 5/22/15**
24	**Task 5: Permitting**	**905 days**	**Mon 8/20/12**	**Fri 2/5/16**
35	Task 6: Construction Contracting	57 days	Wed 8/12/15	Thu 10/29/15
36	**Task 7: Construction**	**327 days**	**Fri 10/30/15**	**Mon 1/30/17**
39	**Task 8: Environmental Compliance/Mitigation/Enhancement**	327 days	Fri 10/30/15	Mon 1/30/17
40	**Task 9: Construction Administration**	**438 days**	**Thu 7/23/15**	**Mon 3/27/17**



Project: 20150120 FKP Grant Sc
Date: Tue 1/20/15

Task Milestone Summary

APPENDIX B

City of FRESNO **REPORT TO THE CITY COUNCIL**

AGENDA ITEM NO.	9:30am B
COUNCIL MEETING:	06/21/12
APPROVED BY	
DEPARTMENT DIRECTOR	
CITY MANAGER	

June 21, 2012

FROM: PATRICK N. WIEMILLER, Director
Department of Public Utilities

BY: MARTIN A. QUERIN, P.E., Assistant Director
Department of Public Utilities – Water Division

HENRY C. McLAUGHLIN, Management Analyst III
Department of Public Utilities – Water Division

SUBJECT: ADOPT THE 83RD AMENDMENT TO THE ANNUAL APPROPRIATION RESOLUTION NO. 2011-133 APPROPRIATING $2,205,000 IN THE WATER ENTERPRISE FUND TO FULLY FUND THE PAYMENT OF THE CENTRAL VALLEY PROJECT (CVP) 9D CONTRACT (CITYWIDE)

RECOMMENDATION

Staff recommends that the City Council adopt the 83rd Amendment to the Annual Appropriation Resolution (AAR) No. 2011-133 to appropriate $2,205,000 in the Water Enterprise Fund to fully fund the payment of the CVP 9D contract.

EXECUTIVE SUMMARY

On December 22, 2010, the City and the Bureau entered into the CVP 9D Agreement as part of implementing the San Joaquin River Restoration Settlement Act (SJRRSA). This agreement included the provision of the City to pay off the capital component of the CVP cost of service rate for contracted water delivery by January 31, 2014.

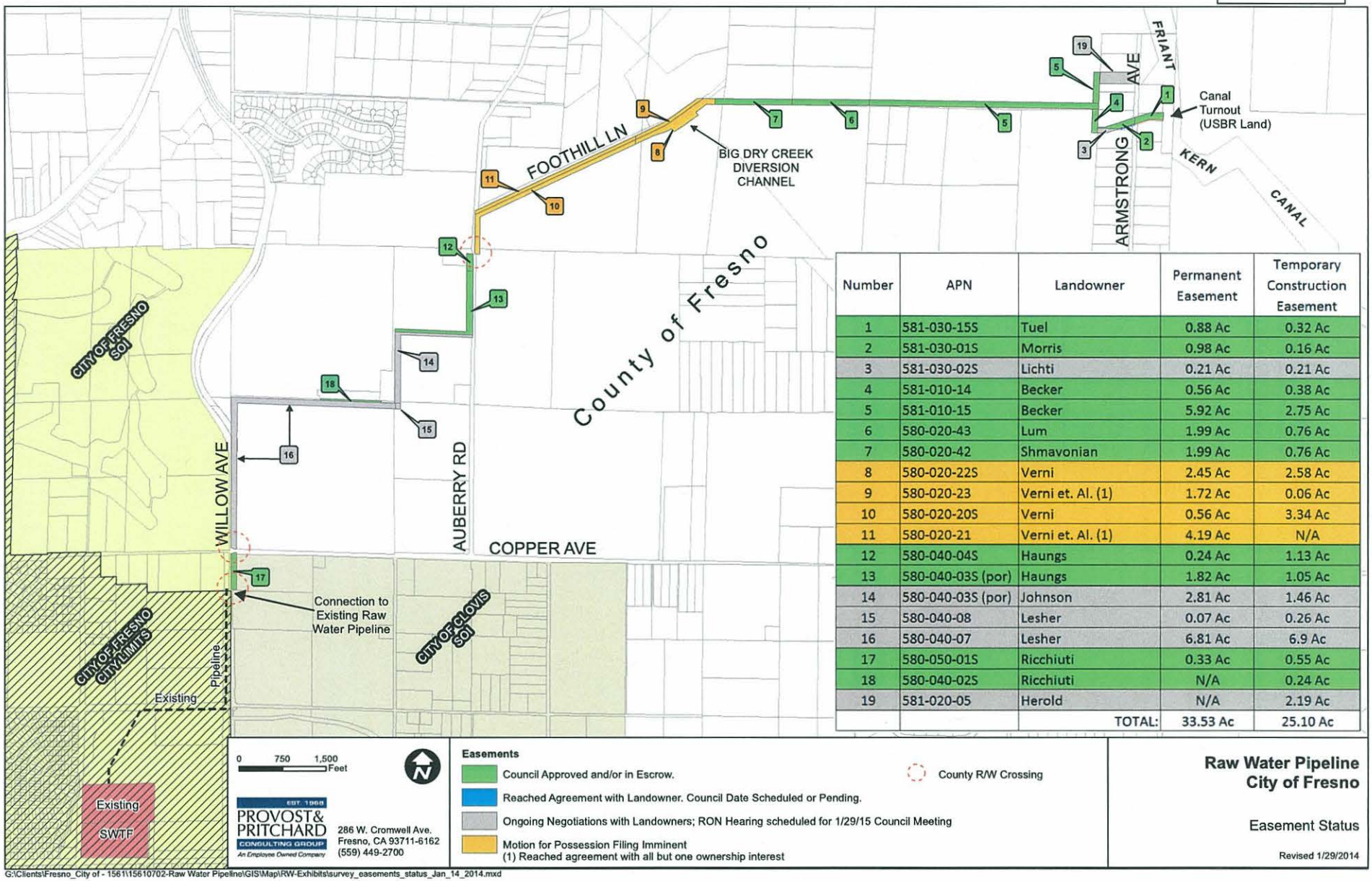
A previous AAR amendment, approved by the City Council on November 3, 2011, included funding of $16.0 million for the estimated payment amount. The actual amount of the capital component is now projected by the Bureau to be $18.2 million. This difference is primarily due to additional interest costs that had not been factored in before.

Adoption of this AAR amendment will provide an additional $2.2 million to cover the additional interest costs and fully fund the payment. This will allow the City to take advantage of the benefits of the CVP 9D contract, including a permanent water service contract, pricing benefits, and approximately $7,000,000 in interest savings.

BACKGROUND

On July 19, 2005, Council renewed the City's CVP water service delivery contract with the Bureau to receive up to 60,000 acre feet (af) of surface water every year which is equivalent to approximately 40% of the City's annual water demand. This supply, derived from the Friant Dam on the San Joaquin River, is the primary resource for the operation of the City's current (and future) surface water treatment facility.

APPENDIX D



Number	APN	Landowner	Permanent Easement	Temporary Construction Easement
1	581-030-15S	Tuel	0.88 Ac	0.32 Ac
2	581-030-01S	Morris	0.98 Ac	0.16 Ac
3	581-030-02S	Lichti	0.21 Ac	0.21 Ac
4	581-010-14	Becker	0.56 Ac	0.38 Ac
5	581-010-15	Becker	5.92 Ac	2.75 Ac
6	580-020-43	Lum	1.99 Ac	0.76 Ac
7	580-020-42	Shmavonian	1.99 Ac	0.76 Ac
8	580-020-22S	Verni	2.45 Ac	2.58 Ac
9	580-020-23	Verni et. Al. (1)	1.72 Ac	0.06 Ac
10	580-020-20S	Verni	0.56 Ac	3.34 Ac
11	580-020-21	Verni et. Al. (1)	4.19 Ac	N/A
12	580-040-04S	Haungs	0.24 Ac	1.13 Ac
13	580-040-03S (por)	Haungs	1.82 Ac	1.05 Ac
14	580-040-03S (por)	Johnson	2.81 Ac	1.46 Ac
15	580-040-08	Lesher	0.07 Ac	0.26 Ac
16	580-040-07	Lesher	6.81 Ac	6.9 Ac
17	580-050-01S	Ricchiuti	0.33 Ac	0.55 Ac
18	580-040-02S	Ricchiuti	N/A	0.24 Ac
19	581-020-05	Herold	N/A	2.19 Ac
		TOTAL:	33.53 Ac	25.10 Ac

Raw Water Pipeline
City of Fresno

Easement Status

Revised 1/29/2014

G:\Clients\Fresno_City of - 1561\15610702-Raw Water Pipeline\GIS\Map\RW-Exhibits\survey_easements_status_Jan_14_2014.mxd

APPENDIX C

Energy Savings Calculation Jan. 2015

Northeast Surface Water (NESWTF) Production	
SWTF Operational Capacity (MGD)	28
Operational Duration (Days)	335
Water Utilized (AF/yr)	28,786

Annual Energy Utilization of NESWTF Raw Water Lift Pumps	
SWTF Rated Capacity (GPM)	19,444
Lift to Headworks (ft of head)	35
Pump Efficiency (%)	75
Motor Efficiency (%)	95
Input Power (kW)	180
Operational Duration (Days)	335
Power Utilization (kWh)	1,446,700

roundwater Pumping Reduction Attributed to Full Operations Capacity Use of NESWT	
Present Annual SWTF Production (AF)	20,000
Post-Project Annual SWTF Production (AF)	28,786
Groundwater Pumping Reduction (AF)	8,786
Equivalent Annual Averaged Production Rate (GPM)	5,935

Annual Energy Utilization Reduction from Offset Groundwater Pumping	
Offset GW Pumping (GPM)	5,935
Lift to Headworks (ft of head)[1]	100
Pump Efficiency (%)	75
Motor Efficiency (%)	95
Input Power (kW)	157
Operational Duration (Days)	335
Power Utilization (kWh)	1,261,616

Total Combined Power Reduction	
NESWTF Power Utilization Reduction (kWh)	1,446,700
GW Pumping Power Utilization Reduction (kWh)	1,261,616
Total Power Utilization Reduction (kWh)	**2,708,316**

Notes:

[1] Assumes pumping requirement to meet system pressure equal for both SWTF and GW Pumps so differential realized is lifting groundwater to surface.

APPENDIX E

TABLE 7-1
FRIANT RAW WATER SUPPLY PIPELINE - ALIGNMENT COMPARISON TABLE

Alignment	App. Length (ft) (miles)	Opinion of Conceptual Cost[1] ($M)	Pipe Size (60mgd) (w/GWD Flows)	# of Parcels	# of Landowners	Pros	Cons
1	26,000 4.9	$18.2	60"	23	20	Reduced frequency of canal downtime Primarily along road r/w Seasonal wetland impacts not likely	Rolling Terrain Auberry Road R/W OPL not yet defined Crossing of Lower Dry Creek Potential for mitigable impacts to archaeological resources Potential for mitigable impacts to riparian vegetation Need to avoid Landfill site upstream
2	24,300 4.6	$16.0	60" 66"	14	11	Least number of landowners Possible cost share with GWD	Requires New Check to reduce canal downtime frequency Lengthy section across private property Potential for mitigable impacts to seasonal wetlands Potential for mitigable impacts to historical resources
3	22,300 4.2	N/A	60" 66"	19	16	Shortest length alignment Possible cost share with GWD Cultural impacts not likely	Insurmountable Problems with Biological Resource Impacts Requires New Check to reduce canal downtime frequency Existing GWD easements narrow, not held by GWD
4	24,500 4.6	$17.8	60"	51	43	Cultural impacts not likely Least likely to have biological concerns Primarily along road r/w	Requires New Check to reduce canal downtime frequency Significantly more landowners/parcels with improvements Utility poles along both sides of Copper Avenue
North Willow	No significant difference between Copper/Auberry Alignment					Avoids potential Copper Avenue utility concerns Avoids possible Minnewawa/Auberry alignment	Adds approx 4000 feet of alignment across private r/w Willow Avenue OPL not yet defined

Notes: 1) Conceptual cost estimate. Does not include costs for environmental mitigation.

7.2 Recommendation

Based on the information considered, Alternative Alignment Corridor 2 is recommended. It is believed that an alignment within this corridor can be located to have little, if any, biological resource impacts along the alignment corridor. Environmental documentation, including a Biological Assessment (BA) should be initiated to determine possible centerline alternatives.

The cost for Alignment Corridor 2 is significantly less than the other alignment corridors, pending a better understanding of any environmental mitigation costs. There are fewer private landowner improvements impacted. Landowners within this corridor should be contacted to determine a centerline alignment and discuss any impacts not considered as part of this comparison.

Additional recommendations for consideration of a pipeline along this alignment corridor include:

1. Continue discussions with GWD for a shared pipeline along Alignment Corridor 2. Although further north than the existing alignment, this alignment may still work for GWD.

2. Consider construction of check structure at location of Big Dry Creek Reservoir to allow future water delivery to Reservoir, and discuss possible cost sharing with other stakeholders. A new check structure is required for Alignment Corridor 2, but a location further downstream will provide the needed reliability and may provide additional benefit to FWA and other stakeholders.

3. Review the North Willow Alternative with the appropriate landowners to determine viability of an alignment corridor that avoids paralleling Copper Avenue.

APPENDIX F

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

City of Fresno Raw Water Pipeline

EA-07-124

U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
Fresno, California

August, 2011

APPENDIX F

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

APPENDIX F

Table of Contents

List of Tables and Figures

APPENDIX G

From: Overly, Stephen A
Sent: Wednesday, May 30, 2012 4:32 PM
To: Siek, Charles R
Cc: McDonald, Shauna A; Perry, Laureen (Laurie) M; Soule, William E; Fogerty, John A; Bruce, Brandee E; Barnes, Amy J; Goodsell, Joanne E; Nickels, Adam M; Williams, Scott A
Subject: Section 106 Compliance Status for the Fresno Raw Water Pipeline Project, Fresno County, California (Project #08-SCAO-132)

Chuck,

Reclamation proposes to issue a permit to the City of Fresno (City) for a new turnout on the Friant-Kern Canal (FKC) to connect a new pipeline serving the City. The issuance of a permit constitutes an undertaking as defined in Section 301(7) of the NHPA (16 U.S.C. 470). Reclamation determined this permit issuance was the type of action that could cause effects to historic properties and initiated the Section 106 process pursuant to 36 CFR Part 800.

Two alignments were considered under NEPA but Reclamation plans to move forward with the permitting process on the more southerly 4.6 mile long alignment. The Area of Potential Effects (APE) was therefore defined to involve a 200 foot wide corridor on this alignment. The APE includes the pipeline corridor and associated construction right-of-way along and is located in sec. 4, 5, 6, 7, 18, T. 12 S., R. 21 E., Mount Diablo Meridian, as depicted on the Friant 7.5' USGS topographic quadrangle.

A cultural resources inventory report covering the APE was prepared by a consultant hired by the City of Fresno. Based on archival studies, letters of inquiry, and field investigations, only three resources were identified within the APE. Reclamation consulted with several federally recognized Indian tribes to invite their assistance in identifying sites of religious and cultural significance in the APE pursuant to the regulations at 36 CFR § 800.3(f)(2) and 36 CFR § 800.4(a)(4). Reclamation also contacted other groups potentially having information regarding historic properties in the area and requested information from these organizations pursuant to 36 CFR § 800.4(a)(3). These efforts did not disclose any sites of religious and cultural significance within the APE.

Of the three cultural resources in the APE, only the FKC was determined to be a historic property. Reclamation applied the criteria of adverse effect, pursuant to 36 CFR § 800.5, and determined that the current action to install a new take-out on the FKC does not comprise an adverse effect. In short, the new installation on the FKC, the new pipeline, and the new hydropower plant do not alter any of the characteristics that make the FKC a contributing element to the eligibility of the CVP for inclusion on the National Register of Historic Places.

In a letter dated February 14, 2012, Reclamation initiated consultation with the California State Historic Preservation Officer (SHPO), inviting the SHPO's comments regarding our delineation of a project APE and the appropriateness of our identification efforts and evaluation of historic properties within that APE. Reclamation also requested the SHPO's concurrence on our finding of no adverse effect, made pursuant to 36 CFR § 800.5(b). Our records show that the SHPO received our consultation package on February 15, 2012 via certified/registered mail. Since that time, SHPO has followed up via e-mail with additional minor information requests. Reclamation supplied all requested information, the last of which was supplied to SHPO on March 2, 2012. The SHPO has not provided additional comment or objection since that time as prescribed in 36 CFR § 800.3(c)(4).

As a result, Reclamation has fulfilled its Section 106 responsibilities for this undertaking. We will continue to seek the SHPO's concurrence on the finding and in the event that the SHPO re-enters consultation, Reclamation shall attempt to resolve any objection while the project is allowed to proceed. This email conveys the conclusion of the Section 106 process for this undertaking. Please retain a copy in the administrative record for this project. Thank you for providing the opportunity to comment. Be aware that additional consultation may be necessary pursuant to 36 CFR § 800.13 if historic properties are discovered or unanticipated effects to historic properties are found after the completion of the Section 106 process.

APPENDIX G

Sincerely,

Stephen (Tony) Overly, M.A. Archaeologist
U.S. Bureau of Reclamation, Mid-Pacific Region
2800 Cottage Way, MP-153
Sacramento, CA 95825
916-978-5552

Table 4-15. Water Supplies – Current and Projected, AFY (DWR Table 16)

Water Supply Sources Water Purchased From	Wholesaler Supply Volume (YES or NO)	2010 (actual)	2015	2020	2025	2030	2035
Fresno Irrigation District — Kings River Entitlement	YES	132,541	103,600	109,400	115,100	120,800	126,500
Fresno Irrigation District — Wastewater Recycle Exchange	YES	0	13,800	13,800	13,800	13,800	13,800
United States Bureau of Reclamation -- Central Valley Project (CVP) Class 1	YES	61,375	58,200	58,200	58,200	58,200	58,200
Supplier-produced groundwater		128,578	76,100	61,800	53,500	69,200	85,000
Supplier-produced surface water		0	0	0	0	0	0
Transfers In		0	0	0	0	0	0
Exchanges In		0	0	0	0	0	0
Recycled Water		176	1,000	1,000	25,000	25,000	25,000
Desalinated Water		0	0	0	0	0	0
Other		0	0	0	0	0	0
Total		322,670	252,700	244,200	265,600	287,000	308,500

Table 4-16 shows the City's available wholesale supply sources through 2035.

Table 4-16. Wholesale Supplies – Existing and Planned Sources of Water, AFY (DWR Table 17)

Wholesale Sources	Contracted Volume	2015	2020	2025	2030	2035
Fresno Irrigation District — Kings River Entitlement	See Footnote[a]	103,600	109,400	115,100	120,800	126,500
Fresno Irrigation District— Wastewater Recycled Exchange	13,800	13,800	13,800	13,800	13,800	13,800
United States Bureau of Reclamation-- Central Valley Project (CVP) Class 1	60,000	58,200	58,200	58,200	58,200	58,200

[a] The actual water supply available to the City is a percentage of FID's diversion from the Kings River. The percentage is based on the ratio of the total area annexed by the City, compared to the total area within FID's water service area, including the area served by the City. Hence, the water available to the City through its contract with FID will increase over time as the City annexes additional lands within FID's water service area.

APPENDIX I

City of Clovis
Public Utilities Department

155 N. Sunnyside Avenue, Clovis, CA 93611 (559) 324-2600

January 21, 2015

Thomas C. Esqueda, Director
City of Fresno, Department of Public Utilities
2600 Fresno Street, Room 4019
Fresno, CA 93721

Subject: Endorsement of City of Fresno's WaterSMART Grant Application

Dear Mr. Esqueda:

The City of Clovis supports the City of Fresno in their pursuit of a WaterSMART Grant, which will aid in funding the construction a conveyance pipeline from the Bureau of Reclamation's, Central Valley Project, Friant-Kern Canal to the City's Northeast Surface Water Treatment Facility. There are several benefits realized from the construction of this pipeline, such as: eliminating water loss to canal seepage; reducing energy costs by utilizing gravity to feed water to the facility thus eliminating the use of raw water lift pumps; and improving water quality protection by conveying supplies in an enclosed conduit.

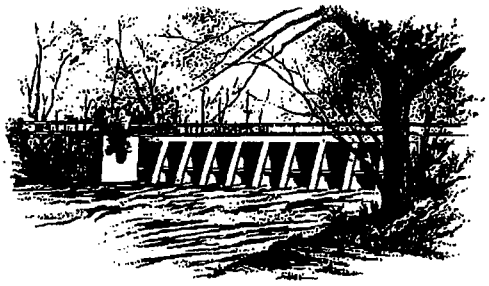
The City of Clovis recognizes the importance of investing in water management and conservation projects, and the critical role they play in strengthening water supply reliability. The City of Clovis is confident this project will provide an immediate benefit to the City of Fresno and aid the entire region by optimizing available resources and ensuring avoidable losses are eliminated, thus stretching limited supplies as far as possible. A project such as this one is admirable and essential to ensuring there is a sustainable and viable long-term water supply for the Central Valley. The City of Clovis strongly encourages the Bureau of Reclamation to provide funding to the City of Fresno for this imperative project.

Sincerely,

Lisa Koehn

Lisa Koehn
Assistant Public Utilities Director

APPENDIX I



YOUR MOST VALUABLE RESOURCE - WATER

OFFICE OF

FRESNO IRRIGATION DISTRICT

TELEPHONE (559) 233-7161
FAX (559) 233-8227
2907 S. MAPLE AVENUE
FRESNO, CALIFORNIA 93725-2208

January 21, 2015

Thomas C. Esqueda, Director
City of Fresno, Department of Public Utilities
2600 Fresno Street, Room 4019
Fresno, CA 93721

Subject: Endorsement of City of Fresno's WaterSMART Grant Application

Dear Mr. Esqueda:

The Fresno Irrigation District supports the City of Fresno in their pursuit of a WaterSMART Grant, which will aid in funding the construction a conveyance pipeline from the Bureau of Reclamation's, Central Valley Project, Friant-Kern Canal to the City's Northeast Surface Water Treatment Facility. There are several benefits realized from the construction of this pipeline.

Fresno Irrigation District recognizes the importance of investing in water management and conservation projects, and the critical role they play in strengthening water supply reliability. The Fresno Irrigation District is confident this project will provide an immediate benefit to the City of Fresno and aid the entire region by optimizing available resources and ensuring avoidable losses are eliminated, thus stretching limited supplies as far as possible. A project such as this one is admirable and essential to ensuring there is a sustainable and viable long-term water supply for the Central Valley. Fresno Irrigation District strongly encourages the Bureau of Reclamation to provide funding to the City of Fresno for this imperative project.

Sincerely,

Gary R. Serrato
General Manager

APPENDIX I

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

File 170.242

January 22, 2015

Thomas C. Esqueda, Director
City of Fresno, Department of Public Utilities
2600 Fresno Street, Room 4019
Fresno, CA 93721

Dear Mr. Esqueda:

Endorsement of the City of Fresno's WaterSMART Grant Application

The Fresno Metropolitan Flood Control District (District) supports the City of Fresno in their pursuit of a WaterSMART Grant, which will aid in funding the construction of a conveyance pipeline from the Bureau of Reclamation's, Central Valley Project, Friant-Kern Canal to the City's Northeast Surface Water Treatment Facility. There are several benefits realized from the construction of this pipeline, such as: eliminating water loss to canal seepage; reducing energy costs by utilizing gravity to feed water to the facility thus eliminating the use of raw water lift pumps; and improving water quality protection by conveying supplies in an enclosed conduit. The District additionally benefits in its flood control system as the current use of the Enterprise Canal for conveyance to the Treatment Facility has impacts on our flood operations when their delivery impacts the ability to pump and transport flood waters from the urban community.

The District recognizes the importance of investing in water management and conservation projects, and the critical role they play in strengthening water supply reliability. The District is confident this project will provide an immediate benefit to the City of Fresno, assist in our operational needs, and aid the entire region in optimization of the available resources. The project will also ensure that avoidable losses are eliminated and stretch our limited water supplies as far as possible. A project such as this one is important and essential to ensuring there is a sustainable and viable long-term water supply for our Central Valley community. The District strongly encourages the Bureau of Reclamation to provide funding to the City of Fresno for this imperative project.

Very Truly Yours,

Alan Hofmann
General Manager-Secretary
Fresno Metropolitan Flood Control District

AH/sy

j:\wprocess\alanh (aeh)\2015\esqueda - cityoffresno - watersmart grant

APPENDIX I

SAN LUIS WATER DISTRICT

January 21, 2015

Thomas C. Esqueda, Director
City of Fresno, Department of Public Utilities
2600 Fresno Street, Room 4019
Fresno, CA 93721

Subject: Endorsement of City of Fresno's WaterSMART Grant Application

Dear Mr. Esqueda:

The San Luis Water District supports the City of Fresno in their pursuit of a WaterSMART Grant, to aid in funding the construction of a conveyance pipeline from the Bureau of Reclamation's Central Valley Project, Friant-Kern Canal, to the City's Northeast Surface Water Treatment Facility. There are numerous benefits realized from the construction of this pipeline.

San Luis Water District recognizes the importance of investing in water management and conservation projects, and the critical role they play in strengthening water supply reliability. We are certain it will provide an immediate benefit to the City of Fresno and aid the entire region by optimizing available resources and eliminating avoidable water losses. Such projects are essential to ensuring a sustainable and viable long-term water supply for the Central Valley. San Luis Water District strongly encourages the Bureau of Reclamation to provide funding to the City of Fresno for this important project.

Sincerely,

Martin R. McIntyre
General Manager
San Luis Water District

Office: 1015 Sixth Street • Mail: P.O. Box 2135 Los Banos, CA 93635 • Telephone: (209) 826-4043 • Fax: (209) 826-0524

APPENDIX I

KRCD
Kings River Conservation District

4886 East Jensen Avenue
Fresno, California 93725

Tel: 559-237-5567
Fax: 559-237-5560

www.krcd.org

January 22, 2015

Thomas C. Esqueda, Director
City of Fresno, Department of Public Utilities
2600 Fresno Street, Room 4019
Fresno, CA 93721

Subject: Endorsement of City of Fresno's WaterSMART Grant Application

Dear Mr. Esqueda:

The Kings River Conservation District supports the City of Fresno in their pursuit of a WaterSMART Grant, which will aid in funding the construction a conveyance pipeline from the Bureau of Reclamation's, Central Valley Project, Friant-Kern Canal to the City's Northeast Surface Water Treatment Facility.

Kings River Conservation District recognizes the importance of investing in water management and conservation projects, and the critical role they play in strengthening water supply reliability. The Kings River Conservation District is confident this project will provide an immediate benefit to the City of Fresno and aid the entire region by optimizing available resources and ensuring avoidable losses are eliminated, thus stretching limited supplies as far as possible. A project such as this one is admirable and essential to ensuring there is a sustainable and viable long-term water supply for the Central Valley. Kings River Conservation District strongly encourages the Bureau of Reclamation to provide funding to the City of Fresno for this imperative project.

Sincerely,

David Orth
General Manager
Kings River Conservation District

APPENDIX I

FRIANT
WATER AUTHORITY

Main Office
854 N. Harvard Avenue
Lindsay, CA 93247
559.562.6305
559.562.3496 Fax
Sacramento Office
1107 9th Street, Ste. 640
Sacramento, CA 95814
916.346.5165
916.346.4165 Fax

www.friantwater.org

January 21, 2015

Thomas C. Esqueda, Director
City of Fresno, Department of Public Utilities
2600 Fresno Street, Room 4019
Fresno, CA 93721

Subject: Endorsement of City of Fresno's WaterSMART Grant Application

Dear Mr. Esqueda:

The Friant Water Authority supports the City of Fresno in their pursuit of a WaterSMART Grant, which will aid in funding the construction a conveyance pipeline from the Bureau of Reclamation's, Central Valley Project, Friant-Kern Canal to the City's Northeast Surface Water Treatment Facility. There are several benefits realized from the construction of this pipeline.

Friant Water Authority recognizes the importance of investing in water management and conservation projects, and the critical role they play in strengthening water supply reliability. The Friant Water Authority is confident this project will provide an immediate benefit to the City of Fresno and aid the entire region by optimizing available resources and ensuring avoidable losses are eliminated, thus stretching limited supplies as far as possible. A project such as this one is admirable and essential to ensuring there is a sustainable and viable long-term water supply for the Central Valley. Friant Water Authority strongly encourages the Bureau of Reclamation to provide funding to the City of Fresno for this imperative project.

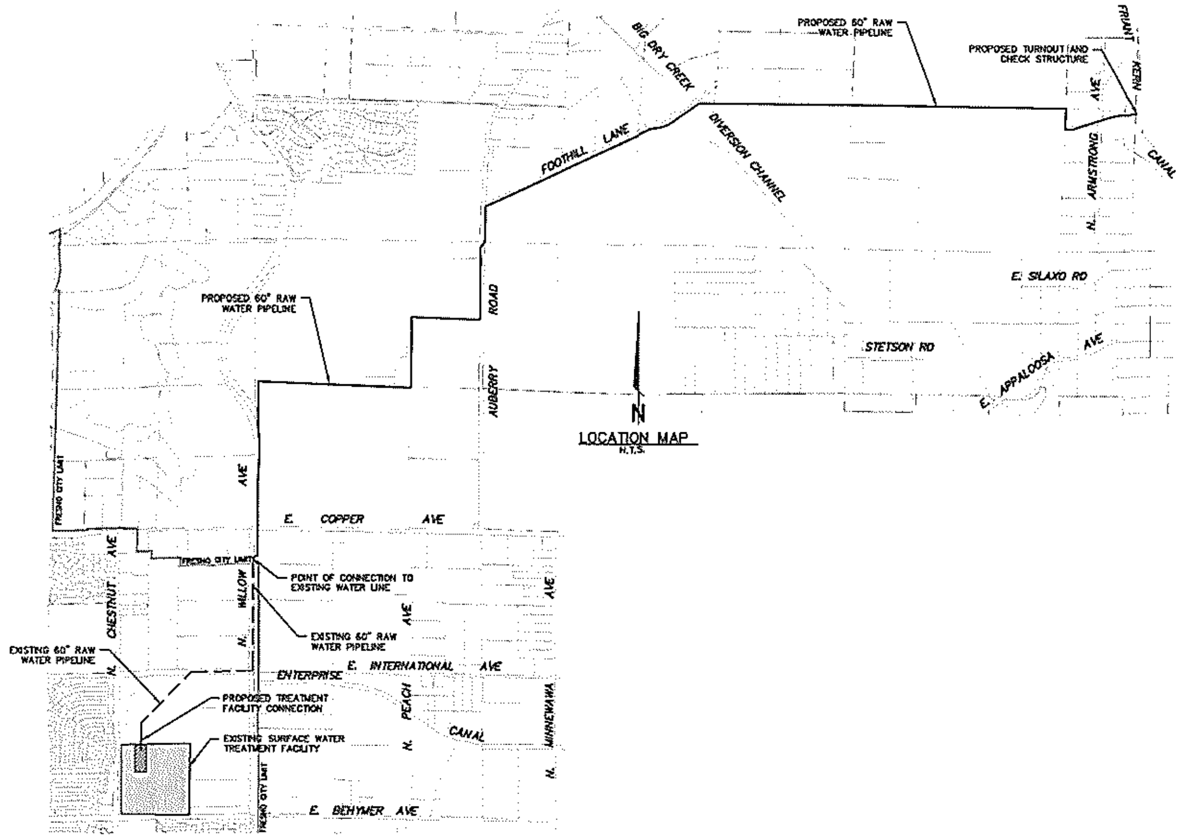
Sincerely,

Ronald D. Jacobsma
General Manager

APPENDIX K

WARNING
POWER LINES OVERHEAD

Know what's below. Call before you dig.


PROPOSED 60" RAW WATER PIPELINE
PROPOSED TURNOUT AND CHECK STRUCTURE
FRIANT KERN CANAL
BIG DRY CREEK
FOOTHILL LANE
DIVERSION CHANNEL
N. ARMSTRONG AVE
E. SILAXO RD
STETSON RD
E. APPALOOSA AVE
AUBERRY ROAD
LOCATION MAP
N.T.S.
FRESNO CITY LIMIT
N. WILLOW AVE
E. COPPER AVE
POINT OF CONNECTION TO EXISTING WATER LINE
EXISTING 60" RAW WATER PIPELINE
N. CHESTNUT AVE
N. PEACH AVE
ENTERPRISE CANAL
E. INTERNATIONAL AVE
PROPOSED TREATMENT FACILITY CONNECTION
EXISTING SURFACE WATER TREATMENT FACILITY
N. MINNEWAWA AVE
E. BEHYMER AVE

No.	REVISION	BY	DATE

VERIFY SCALES

NOT FOR CONSTRUCTION
11/26/14 - 90% SUBMITTAL

PROVOST& PRITCHARD CONSULTING GROUP
An Employee Owned Company

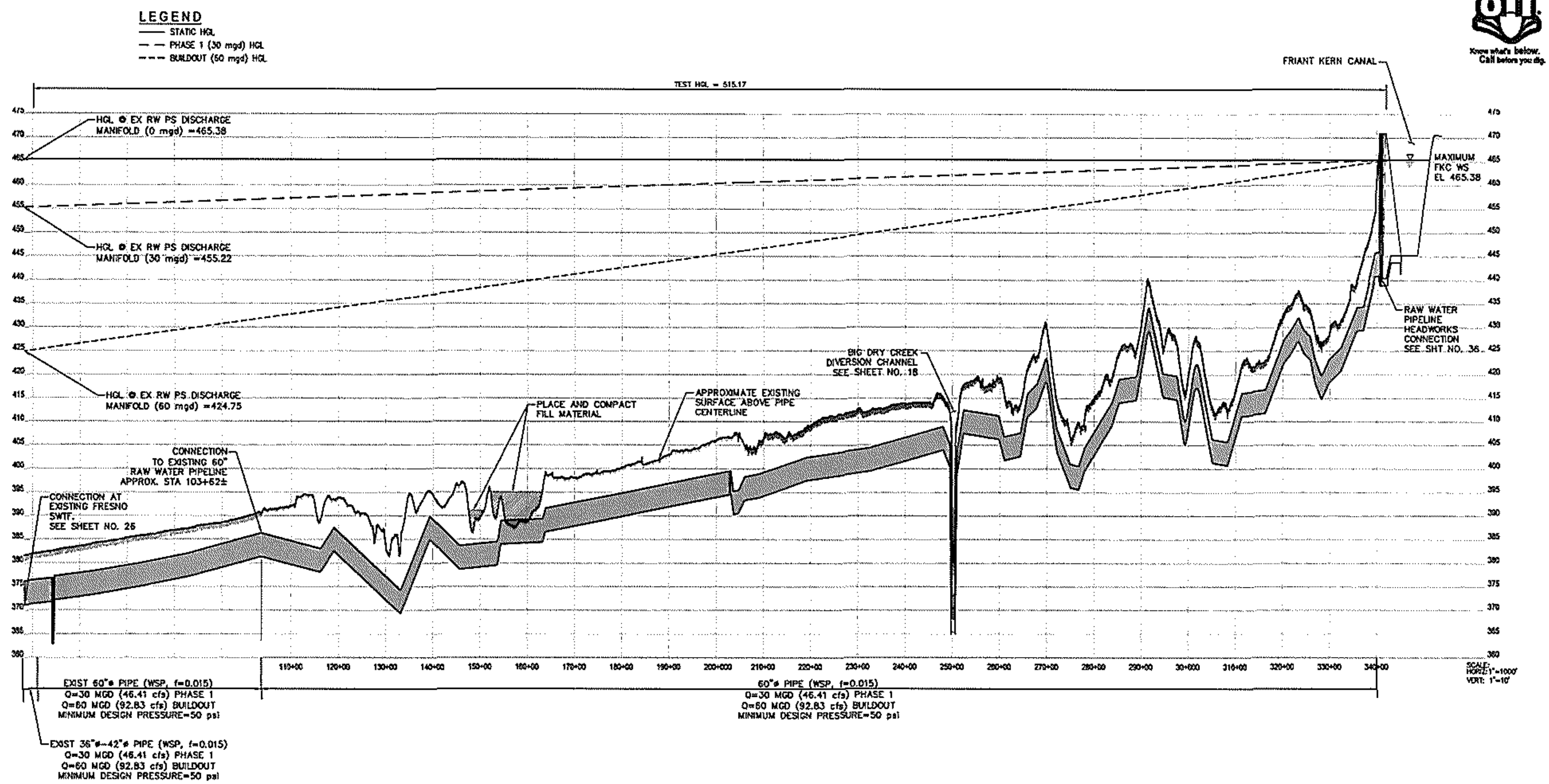
DEPARTMENT OF PUBLIC UTILITIES
WATER DIVISION
1910 E. UNIVERSITY AVE
FRESNO, CALIFORNIA 93703
(559) 621-5300

PLAT
XXXX

CITY OF FRESNO
DEPARTMENT OF PUBLIC UTILITIES

RAW WATER PIPELINE
LOCATION MAP

APPENDIX K


LEGEND
STATIC HGL
PHASE 1 (30 mgd) HGL
BUILDOUT (60 mgd) HGL
TEST HGL = 515.17
HGL @ EX RW PS DISCHARGE MANIFOLD (0 mgd) =465.38
HGL @ EX RW PS DISCHARGE MANIFOLD (30 mgd) =455.22
HGL @ EX RW PS DISCHARGE MANIFOLD (60 mgd) =424.75
CONNECTION TO EXISTING 60" RAW WATER PIPELINE APPROX. STA 103+62±
CONNECTION AT EXISTING FRESNO SWTF. SEE SHEET NO. 26
PLACE AND COMPACT FILL MATERIAL
APPROXIMATE EXISTING SURFACE ABOVE PIPE CENTERLINE
BIG DRY CREEK DIVERSION CHANNEL SEE SHEET NO. 18
FRIANT KERN CANAL
MAXIMUM FKC WS EL 465.38
RAW WATER PIPELINE HEADWORKS CONNECTION SEE SHT NO. 36
811 Know what's below. Call before you dig.
SCALE: HORIZ: 1"=1000' VERT: 1"=10'
EXIST 60"ø PIPE (WSP, f=0.015) Q=30 MGD (46.41 cfs) PHASE 1 Q=60 MGD (92.83 cfs) BUILDOUT MINIMUM DESIGN PRESSURE=50 psi
60"ø PIPE (WSP, f=0.015) Q=30 MGD (46.41 cfs) PHASE 1 Q=60 MGD (92.83 cfs) BUILDOUT MINIMUM DESIGN PRESSURE=50 psi
EXIST 36"ø-42"ø PIPE (WSP, f=0.015) Q=30 MGD (46.41 cfs) PHASE 1 Q=60 MGD (92.83 cfs) BUILDOUT MINIMUM DESIGN PRESSURE=50 psi

f=0.015 = PIPE FRICTION FOR DARCY-WEISBACH EQUATION

No.	REVISION	BY	DATE

VERIFY SCALES

NOT FOR CONSTRUCTION
11/26/2014 - 90% SUBMITTAL

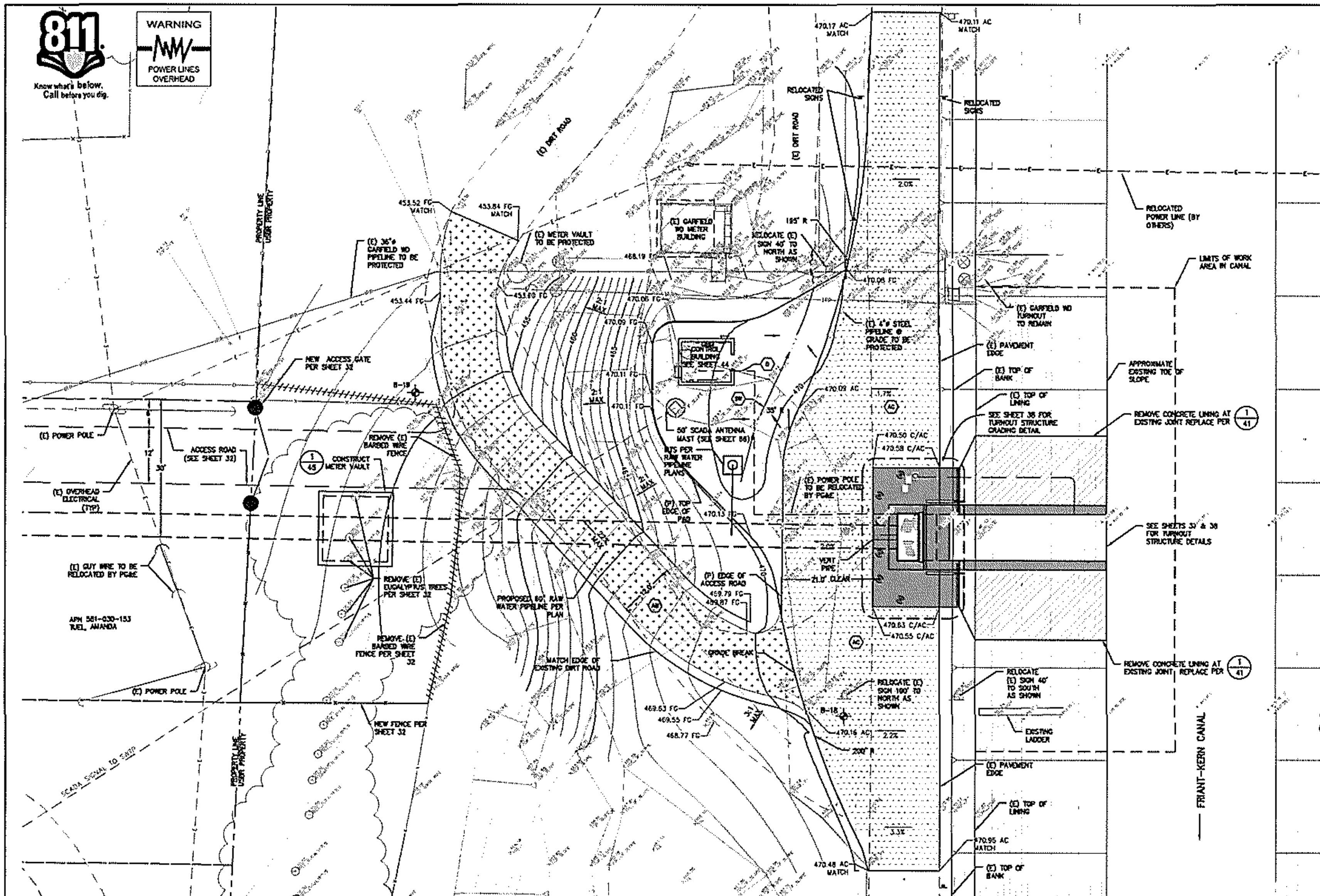
AECOM

DEPARTMENT OF PUBLIC UTILITIES
WATER DIVISION
1910 E. UNIVERSITY AVE
FRESNO, CALIFORNIA 93703
(559) 621-5300

CITY OF FRESNO

HYDRAULIC PROFILE

DEPARTMENT OF PUBLIC UTILITIES
MARTIN QUERIN - WATER DIVISION MANAGER


811
Know what's below. Call before you dig.
WARNING
POWER LINES OVERHEAD
(E) DIRT ROAD
(E) GARFIELD WD METER BUILDING
(E) METER VAULT TO BE PROTECTED
(E) 36"ø GARFIELD WD PIPELINE TO BE PROTECTED
NEW ACCESS GATE PER SHEET 32
(E) POWER POLE
ACCESS ROAD (SEE SHEET 32)
CONSTRUCT METER VAULT
(E) OVERHEAD ELECTRICAL (TYP)
(E) GUY WIRE TO BE RELOCATED BY PG&E
REMOVE (E) EUCALYPTUS TREES PER SHEET 32
APN 561-030-153 TUEL, AMANDA
REMOVE (E) BARBED WIRE FENCE PER SHEET 32
NEW FENCE PER SHEET 32
SCADA SIGNAL TO SWTP
PROPOSED 60" RAW WATER PIPELINE PER PLAN
MATCH EDGE OF EXISTING DIRT ROAD
GRADE BREAK
(P) EDGE OF ACCESS ROAD
50' SCADA ANTENNA MAST (SEE SHEET 88)
RELOCATED SIGNS
RELOCATE (E) SIGN 40' TO NORTH AS SHOWN
(E) 4"ø STEEL PIPELINE @ GRADE TO BE PROTECTED
(E) POWER POLE TO BE RELOCATED BY PG&E
RELOCATE (E) SIGN 100' TO NORTH AS SHOWN
RELOCATED POWER LINE (BY OTHERS)
LIMITS OF WORK AREA IN CANAL
(E) GARFIELD WD TURNOUT TO REMAIN
(E) PAVEMENT EDGE
(E) TOP OF BANK
(E) TOP OF LINING
SEE SHEET 38 FOR TURNOUT STRUCTURE GRADING DETAIL
APPROXIMATE EXISTING TOE OF SLOPE
REMOVE CONCRETE LINING AT EXISTING JOINT REPLACE PER 1/41
SEE SHEETS 37 & 38 FOR TURNOUT STRUCTURE DETAILS
RELOCATE (E) SIGN 40' TO SOUTH AS SHOWN
EXISTING LADDER
FRIANT-KERN CANAL
N
SCALE IN FEET

NOTES

1. REMOVE AND DISPOSE OF EXISTING O&M ROAD PAVEMENT WITHIN LIMITS OF NEW O&M ROAD SHOWN SAWCUT PAVEMENT AND MATCH EXISTING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY DISPOSING OF ALL EQUIPMENT AND MATERIALS REMOVED.
3. SAWCUT LINING AT EXISTING CANAL LINER PANEL JOINT AND REMOVE AND REPLACE ENTIRE PANEL.
4. ELECTRICAL CONDUIT IS NOT SHOWN. REFER TO ELECTRICAL PLANS.
5. REFER TO SECTION 011100 OF THE SPECIFICATIONS FOR LIMITATIONS ON CONSTRUCTION PERIOD FOR WORK WITHIN THE FRIANT-KERN CANAL. THE CONTRACTOR SHALL SCHEDULE TURNOUT CONSTRUCTION WORK WITHIN TIME PERIOD SPECIFIED.

ESTIMATED GRADING QUANTITIES

CUT: 21 ± CU. YDS.
FILL: 523 ± CU. YDS.

NOTE:

1. ESTIMATED EARTHWORK QUANTITIES ARE PROVIDED TO THE CONTRACTOR FOR REFERENCE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ESTIMATING EARTHWORK QUANTITIES AS BASIS FOR DETERMINATION OF LUMP SUM BID.
2. ESTIMATED EARTHWORK QUANTITIES LISTED ABOVE DO NOT ACCOUNT FOR SHRINKAGE, STRUCTURE AND PIPE EXCAVATION EXCESS MATERIAL, OR STRIPPING OF TOPSOIL ASSOCIATED WITH CLEARING AND GRUBBING ACTIVITIES.
3. ESTIMATED EARTHWORK QUANTITIES LISTED ACCOUNT FOR EXCAVATION TO SUBGRADE OF ASPHALT CONCRETE AND AGGREGATE BASE ACCESS ROADS.
4. REFER TO THE GEOTECHNICAL REPORT FOR APPROXIMATE DEPTHS OF BIOTITE SCHIST AT THE BORING LOCATIONS.
5. CONTRACTOR IS RESPONSIBLE FOR EXPORTING AND LEGALLY DISPOSING OF UNSUITABLE MATERIAL AND IMPORTING MATERIAL FOR TRENCH BACKFILL AND ENGINEERING FILL.

LEGEND	
SYMBOL	DESCRIPTION
AB	CONSTRUCT 6" AB OVER 6" CNS (95% RELATIVE COMPACTION)
AC	CONSTRUCT 4" AC OVER 6" AB OVER 6" CNS (95% RELATIVE COMPACTION)
B-XX	BOREHOLE LOCATION. SEE GEOTECH REPORT FOR BORING INFORMATION
SW	GRADED SWALE. S=0.0050 MIN
D	2" SCH. 80 PVC DRAIN PIPE. 1% MIN. SLOPE TO TURNOUT STRUCTURE.

No.	REVISION	BY	DATE

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

NOT FOR CONSTRUCTION
11/26/14 - 90% SUBMITTAL

PROVOST & PRITCHARD CONSULTING GROUP
An Employee Owned Company

DEPARTMENT OF PUBLIC UTILITIES
WATER DIVISION
1910 E. UNIVERSITY AVE.
FRESNO, CALIFORNIA 93703
(559) 621-5300

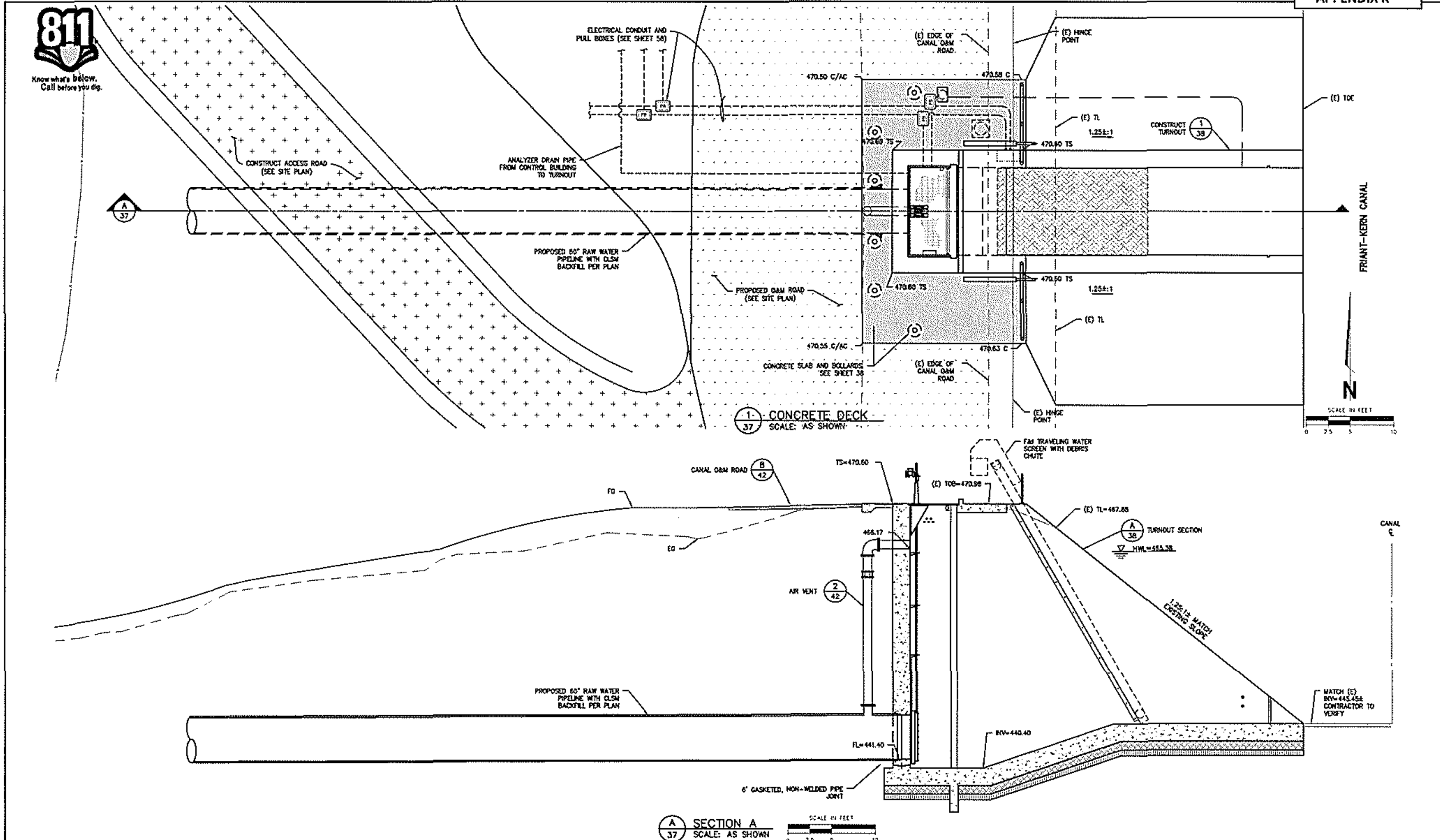
PLAT
XXXX

CITY OF FRESNO
DEPARTMENT OF PUBLIC UTILITIES
MARTIN QUERIN - WATER DIVISION MANAGER

RAW WATER PIPELINE
TURNOUT SITE PLAN

DRAWING NO.
XXXXX

APPENDIX K


811
Know what's below. Call before you dig.
ELECTRICAL CONDUIT AND PULL BOXES (SEE SHEET 58)
(E) EDGE OF CANAL O&M ROAD
(E) HINGE POINT
470.50 C/AC
470.58 C
(E) TOE
(E) TL
1.25±:1
CONSTRUCT TURNOUT 1/38
470.60 TS
CONSTRUCT ACCESS ROAD (SEE SITE PLAN)
ANALYZER DRAIN PIPE FROM CONTROL BUILDING TO TURNOUT
A/37
FRIANT-KERN CANAL
PROPOSED 60" RAW WATER PIPELINE WITH CLSM BACKFILL PER PLAN
PROPOSED O&M ROAD (SEE SITE PLAN)
470.55 C/AC
470.63 C
CONCRETE SLAB AND BOLLARDS SEE SHEET 38
N
SCALE IN FEET
0 2.5 5 10
1/37 CONCRETE DECK
SCALE: AS SHOWN
F&I TRAVELING WATER SCREEN WITH DEBRIS CHUTE
TS=470.60
CANAL O&M ROAD 8/42
(E) TOB=470.98
FG
(E) TL=467.88
A/38 TURNOUT SECTION
HWL=465.38
CANAL ℄
466.17
EG
AIR VENT 2/42
1.25±:1 MATCH EXISTING SLOPE
PROPOSED 60" RAW WATER PIPELINE WITH CLSM BACKFILL PER PLAN
MATCH (E) INV=445.45± CONTRACTOR TO VERIFY
INV=440.40
FL=441.40
6" GASKETED, NON-WELDED PIPE JOINT
A/37 SECTION A
SCALE: AS SHOWN
SCALE IN FEET
0 2.5 5 10

No.	REVISION	BY	DATE

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

NOT FOR CONSTRUCTION
11/26/14 - 90% SUBMITTAL

PROVOST& PRITCHARD CONSULTING GROUP
An Employee Owned Company

DEPARTMENT OF PUBLIC UTILITIES
WATER DIVISION
1910 E. UNIVERSITY AVE
FRESNO, CALIFORNIA 93703
(559) 621-5300

PLAT XXXX

CITY OF FRESNO
DEPARTMENT OF PUBLIC UTILITIES
MARTIN QUERIN — WATER DIVISION MANAGER

RAW WATER PIPELINE
TURNOUT PLAN & SECTION

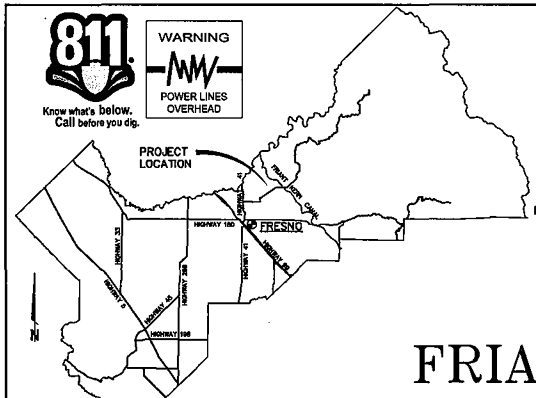
SHEET NO. 37
DRAWING NO. XXXXX

City of Fresno
FY 2015-2019 CAPITAL IMPROVEMENT PROGRAM
by Department/Project

Department	Project	Name	District	Capital Projects FY 2015	Capital Projects FY 2016	Capital Projects FY 2017	Capital Projects FY 2018	Capital Projects FY 2019	5 Year Project Total
Public Utilities (cont)	WC00014	Combined/Multiple Installation	M	304,600	313,800	323,200	332,900	342,900	1,617,400
	WC00015	Water Well Evaluation and Deve	M	53,800	55,500	56,800	58,100	59,600	283,800
	WC00016	Water Well Construction	M	8,384,600	12,019,600	11,133,100	8,448,700	8,706,500	48,692,500
	WC00017	Well Rehabilitation	M	2,921,400	1,450,400	1,501,600	1,524,400	1,581,900	8,979,700
	WC00018	Pump Rehabilitation	M	1,363,600	838,500	851,900	882,400	916,400	4,852,800
	WC00020	Granular Activated Carbon	M	1,971,200	2,817,300	3,000,700	3,090,000	3,182,600	14,061,800
	WC00021	Surface Water Treatment Plant	6	3,011,500	8,338,400	577,900	162,200	21,000	12,111,000
	WC00022	Leaky Acres	4	1,078,800	312,300	115,400	232,700	116,500	1,855,700
	WC00023	Water Telemetry System	M	1,391,500	967,300	947,000	63,200	65,100	3,434,100
	WC00024	Water Yard-Expansion/Improvement	7	55,500	56,900	59,100	60,200	62,600	294,300
	WC00025	Water Well Abandonment/Destruction	M	107,800	112,900	114,700	118,900	121,200	575,500
	WC00027	Inventory - Materials	M	100,000	103,000	106,100	109,300	112,600	531,000
	WC00030	Transmission Pipelines	M	1,194,700	0	0	6,487,300	68,162,200	75,844,200
	WC00033	Recharge Facilities - Basins	M	162,400	162,900	162,400	161,800	179,400	828,900
	WC00038	SWTP/Friant Kern Canal Pipeline	6	22,670,400	631,600	41,200	0	0	23,343,200
	WC00050	City Recharge Basins	M	3,412,900	1,830,300	2,010,500	1,500,000	2,783,700	11,537,400
	WC00051	Metro Resources Plan Update	M	261,900	0	0	0	0	261,900
	WC00053	Emergency Generator Sets	M	403,500	0	0	0	0	403,500
	WC00054	T-3 (3MG Tank in SE Fresno)	5	58,800	0	0	0	0	58,800
	WC00057	SE Fresno Surface Wtr Treatment	5	14,749,800	281,281,300	4,241,900	32,480,500	1,737,400	334,490,900
	WC00061	T-4 Downtown Tank and Well	3	10,202,700	95,900	6,800	0	0	10,305,400
	WC00062	Nitrate Treatment	5	802,200	1,812,400	5,900	0	0	2,620,500
	WC00064	UGM Water Fees Update Study	M	17,700	0	0	0	0	17,700
	WC00065	SE/SWTP Transmission Pipelines	5	9,034,800	33,278,500	64,099,800	392,200	20,500	106,825,800
	WC00067	Renewable Energy Feasibility	M	159,000	0	0	0	0	159,000
	WC00072	Downtown Water Supply Main	3	267,000	0	0	0	0	267,000
	WC00074	Water Facilities Security Impr	M	259,500	254,300	259,600	270,700	289,400	1,333,500
	WC00076	Downtown Water System Upgrades	3	720,800	354,400	4,626,100	80,800	7,700	5,789,800
	WC00078	NE SWTF Expansion	6	0	0	1,320,700	10,442,100	67,615,200	79,378,000
	WC00081	Commercial Meter Retrofit	M	1,204,100	0	0	0	0	1,204,100
	WC00083	Program Management	M	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	15,000,000
	WC15001	Program Initiatives	M	1,500,000	500,000	200,000	200,000	200,000	2,600,000
	WC15002	Transmission Grid Main	M	6,491,700	6,517,300	6,491,700	6,466,100	6,466,100	32,432,900
Public Utilities Total				**176,276,500**	**516,073,500**	**126,252,700**	**181,677,600**	**304,512,200**	**1,304,792,500**
Public Works	CM00002	General	M	343,800	311,300	274,500	243,800	294,700	1,468,100
	PW00044	Minor Public Improvements	M	705,500	468,500	173,300	173,300	173,300	1,693,900
	PW00080	Miscellaneous Bike Routes	1	303,700	254,800	254,800	279,800	279,800	1,372,900
	PW00085	Sale/Purchse-Real Proprty	M	14,800	14,800	14,800	14,800	14,800	74,000
	PW00086	UGM General Administration	M	458,700	458,700	458,700	458,700	458,700	2,293,500

811 Know what's below. Call before you dig.

WARNING POWER LINES OVERHEAD



FRESNO COUNTY VICINITY MAP
N.T.S.

CITY OF FRESNO
DEPARTMENT OF PUBLIC UTILITIES
THOMAS C. ESQUEDA – DIRECTOR OF PUBLIC UTILITIES
RAW WATER PIPELINE IMPROVEMENTS
FRIANT–KERN CANAL TO TREATMENT FACILITY

SPECIAL NOTE

Where underground and surface structures are shown on the plans, the locations, depth and dimensions of structures are believed to be reasonably correct, but are not guaranteed. Such structures are shown for the information of the Contractor, but information so given is not to be construed as a representation that such structures will, in all cases, be found where shown, or that they represent all of the structures which may be encountered.

APPENDIX K

SHEET INDEX

GENERAL NOTES:

1. ALL WORK ON THIS PROJECT SHALL CONFORM WITH THE PROJECT SPECIFICATIONS AND THE CITY OF FRESNO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION, AND ANY MODIFICATIONS THERETO BY THE CITY. ALL DETAILS NOT SHOWN HEREON SHALL CONFORM TO ALL CURRENT STANDARD DRAWINGS OF THE CITY OF FRESNO.
2. THE CONTRACTOR SHALL NOTIFY AND COORDINATE ALL WORK WITH THE AGENCIES LISTED UNDER AGENCY CONTACTS ON THIS SHEET IN CONFORMANCE WITH SECTION 011100 OF THE SPECIFICATIONS.
3. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS REQUIRED FOR CONSTRUCTION AND SATISFY ALL PERMIT REQUIREMENTS.
4. THE CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS PRIOR TO ENTERING EASEMENTS ACROSS PRIVATE PROPERTY IN CONFORMANCE WITH SECTION 011100 OF THE SPECIFICATIONS. REFER TO SHEET 27 FOR SITE ACCESS MAP AND DESIGNATED TEMPORARY CONSTRUCTION STAGING AREAS.
5. THE CONTRACTOR SHALL COMPLY WITH THE ENVIRONMENTAL MITIGATION REQUIREMENTS SPECIFIED IN SECTION 010610 OF THE SPECIFICATIONS.
6. THE CONTRACTOR SHALL PROVIDE ADEQUATE DUST CONTROL AT ALL TIMES IN CONFORMANCE WITH THE SPECIAL CONDITIONS IN DIVISION IV OF THE SPECIFICATIONS.
7. THE CONTRACTOR SHALL IMPLEMENT THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN CONFORMANCE WITH THE SPECIAL CONDITIONS IN DIVISION IV OF THE SPECIFICATIONS.
8. THE LOCATION OF THE EXISTING UNDERGROUND STRUCTURES AND UTILITIES HAVE BEEN LOCATED IN THE FIELD OR OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR SHALL ASSUME THE SOLE RESPONSIBILITY FOR DETERMINING OR CONFIRMING THE EXACT LOCATIONS OF THESE FACILITIES AND PROTECTING SAME FROM DAMAGE.
9. AT LEAST TWO (2) WORKING DAYS BEFORE BEGINNING WORK, THE CONTRACTOR SHALL REQUEST UTILITY OWNERS TO MARK OR OTHERWISE INDICATE THE LOCATION OF SUBSURFACE FACILITIES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LOCATION AND DEPTH OF ALL SUBSURFACE FACILITIES WHICH HAVE BEEN MARKED BY THE RESPECTIVE OWNERS AND WHICH MAY AFFECT OR BE AFFECTED BY THEIR CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL TAKE DUE PRECAUTIONARY MEASURES TO PROTECT UTILITIES OR STRUCTURES FOUND AT THE SITE.
10. UTILITIES: REFERENCE IS MADE TO SECTION 5 OF THE CITY STANDARD SPECIFICATIONS CONTAINED HEREIN AS PART OF THESE SPECIFICATIONS WITH THE FOLLOWING ADDITIONS:
    A. AS DIRECTED BY THE ENGINEER, AND AS SET FORTH IN THESE SPECIFICATIONS, THE CONTRACTOR SHALL EXPOSE, PRIOR TO CONSTRUCTION STAKING, ALL EXISTING UTILITIES WHICH MAY CONTROL PROPOSED FACILITY GRADES, SO THAT THE ENGINEER MAY VERIFY THE GRADES PRIOR TO STAKING. TWO WORKING DAYS NOTICE SHALL BE GIVEN THE ENGINEER.
    B. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL UTILITY SERVICES AND FACILITIES WITHIN THE LIMITS OF WORK. RESPONSIBLE DILIGENCE HAS BEEN EXERCISED IN LOCATING ALL LINES, BUT THE CONTRACTOR IS RESPONSIBLE FOR CHECKING IN THE FIELD THE LOCATIONS AS SHOWN AND IS FURTHER RESPONSIBLE FOR ANY AND ALL UTILITIES WHOSE PRESENCE OR LOCATION IS UNKNOWN.
    C. ALL EXISTING UTILITY MAINS AND SERVICE LINES SHALL BE KEPT IN CONSTANT SERVICE DURING THE CONSTRUCTION OF THIS PROJECT. HAND EXCAVATING SHALL BE EMPLOYED WHERE NECESSARY TO SAFELY EXPOSE EXISTING UTILITIES.
    D. ALL UTILITY SERVICES AND FACILITIES DAMAGED OR BROKEN BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER OF SAID UTILITY. THE CONTRACTOR WILL BE. PERMITTED TO SEVER A SANITARY SEWER HOUSE BRANCH, PROVIDED AND APPROVED TEMPORARY CONDUIT FOR THE MISSING PORTION IS INSTALLED IMMEDIATELY.
11. ALL CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH APPLICABLE HEALTH AND SAFETY LAWS OF THE STATE OF CALIFORNIA AND CAL/OSHA STANDARDS.
12. ALL EXCESS MATERIALS AND/OR DEBRIS SHALL BE REMOVED FROM THE PROJECT SITE AFTER CONSTRUCTION IS COMPLETE.
13. THE CONTRACTOR SHALL OBTAIN A CITY OF FRESNO ENCROACHMENT PERMIT FOR WORK WITHIN THE CITY RIGHT–OF WAY IN WILLOW AVENUE. CONTRACTOR SHALL SUBMIT THE TRAFFIC CONTROL PLAN FOR WILLOW AVENUE TO THE CITY AND OBTAIN APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING.

AGENCY CONTACTS:

CITY OF FRESNO, CONSTRUCTION MANAGEMENT	(559) 621–5600
CITY OF FRESNO, WATER DIVISION, (PAUL MARAGONI)	(559) 621–1626
CITY OF FRESNO, SWTF CHIEF OF OPERATIONS (KEN HEARD)	(559) 621–5355
COUNTY OF FRESNO (PERMIT ENGINEER)	(559) 262–4107
PACIFIC GAS AND ELECTRIC (CALL CENTER)	(800) 743–5000
FRIANT WATER USERS AUTHORITY (ERIC QUINLEY)	(559) 333–5454
GARFIELD WATER DISTRICT (NICK KELLER)	(559) 732–7938
U.S. BUREAU OF RECLAMATION (ROBERT CAMPBELL)	(559) 487–5530
U.S. FISH & WILDLIFE (JUSTIN SLOAN)	(559) 221–7878
CALIFORNIA FISH & WILDLIFE (SARAH PAULSON)	(559) 243–4014
FRESNO METROPOLITAN FLOOD CONTROL DISTRICT (VERLYN NEUFELD)	(559) 456–3292

COUNTY NOTES:

AN ENCROACHMENT PERMIT IS REQUIRED FOR ANY WORK TO BE PERFORMED IN THE COUNTY OF FRESNO ROAD RIGHT–OF WAY. CONTACT THE COUNTY PERMIT ENGINEER AT (559) 262–4107 TO OBTAIN THE PERMIT. IF AN ENCROACHMENT PERMIT HAS NOT BEEN OBTAINED WITHIN 12 MONTHS OF THE APPROVAL DATE OF THESE PLANS, ADDITIONAL REVIEW AND REVISIONS TO THE PLANS MAY BE REQUIRED BEFORE THE PERMIT IS ISSUED.

CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE COUNTY OF FRESNO AND OBTAIN AN APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING.

ALL CONTRACTORS ARE REQUIRED TO HAVE A $6000.00 PERFORMANCE BOND ON FILE WITH THE COUNTY OF FRESNO MAINTENANCE & OPERATIONS DIVISION PRIOR TO OBTAINING AN ENCROACHMENT PERMIT.

COUNTY OF FRESNO PERMIT FEE: $________

(FEES SHALL BE PAID BY CONTRACTOR)

APPROVALS

APPROVED ______________________ DATE ______
CITY OF FRESNO– WATER DIVISION
MARTIN QUERIN, WATER DIVISION MANAGER

APPROVED ______________________ DATE ______
CITY OF FRESNO
SCOTT MOZIER, CITY ENGINEER

APPROVED ______________________ DATE ______
FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
DISTRICT ENGINEER

APPROVED ______________________ DATE ______
GARFIELD WATER DISTRICT
DISTRICT ENGINEER

APPROVED ______________________ DATE ______
FRIANT WATER AUTHORITY

APPROVED ______________________ DATE ______
UNITED STATES BUREAU OF RECLAMATION

No.	REVISION	BY	DATE

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

NOT FOR CONSTRUCTION
11/26/14 - 90% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER MATTHEW W. KEMP No. 66089 Civil STATE OF CALIFORNIA

EST 1968
PROVOST & PRITCHARD CONSULTING GROUP
An Employee Owned Company
286 W. CROMWELL AVE. FRESNO, CA 93711

DEPARTMENT OF PUBLIC UTILITIES
WATER DIVISION
1910 E. UNIVERSITY AVE.
FRESNO, CALIFORNIA 93703
(559) 621–5300

REF. & REV.
PLAT
XXXX

CITY OF FRESNO
DEPARTMENT OF PUBLIC UTILITIES
MARTIN QUERIN – WATER DIVISION MANAGER

RAW WATER PIPELINE
COVER SHEET

– APPROVED –
CONST.ENG. ________ OFFICE ENG. ________
CITY ENG. ________
DR. BY: CYU
CH. BY: MAH
DATE: 12/1/14
SCALE: AS NOTED
SHEET NO. 1 OF 66 SHEETS
XXXX
XXXXX

APPENDIX L

PRESOLUTION NO. _____

RESOLUTION OF THE COUNCIL OF THE CITY OF FRESNO, CALIFORNIA AUTHORIZING AN APPLICATION TO THE DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION FOR A WATERSMART: WATER AND ENERGY EFFICIENCY GRANT FOR FY 2015 FOR THE FRIANT KERN RAW WATER PIPELINE PROJECT AND THE DIRECTOR OF PUBLIC UTILITIES/DESIGNEE(S) TO EXECUTE ALL APPLICATION DOCUMENTS ON BEHALF OF THE CITY

WHEREAS, the City of Fresno retains a current contract with the Bureau of Reclamation Contract No. 14-06-200-890 ID for providing project water service from the Friant Division; and

WHEREAS, the Department of the Interior, Bureau of Reclamation has issued a funding opportunity under the WaterSMART: Water and Energy Efficiency Grants for Fiscal Year (FY) 2015; and

WHEREAS, the Fresno Metropolitan Water Resource Management Plan calls for reducing the use of groundwater, using direct surface water treatment for potable consumption and the implementation of recharge systems to offset the current condition of overdraft and to reach groundwater equilibrium by 2025; and

WHEREAS, the Friant-Kern Raw Water Pipeline Project is consistent with the objectives of the Fresno Metropolitan Water Resource Management Plan and will convey water from the Friant-Kern Canal to the Northeast Surface Water Treatment Facility to improve the efficient use of existing surface water supplies, reduce the threat of source water contamination, and provide energy cost savings by eliminating the need to operate lift pumps at the Northeast; and

WHEREAS, the City of Fresno's capital improvement plan anticipates the construction of the pipeline through the Water Enterprise Fund and has the full capability to provide the amount of funding specified in the funding plan; and

WHEREAS, the City of Fresno Department of Public Utilities is desirous of submitting a WaterSMART Grant application to fund said project.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Fresno as follows:

1. The City of Fresno submits a WaterSMART: Water and Energy Efficiency Grant for Fiscal Year (FY) 2015 to the Bureau of Reclamation.
2. The City of Fresno Public Utilities Director designee(s) thereof are authorized and empowered to execute the Application.
3. The Friant Kern Raw Water Pipeline Project is being submitted as both a Group I and Group II project which awards up to $300,000 and $1,000,000 respectively, and the City of Fresno is prepared to fund 50% or more of the Project.
3. The City Attorney is authorized to execute program related certifications, assurances and opinions.
4. Subject to the foregoing provisions, the City certifies it has legal authority to participate in the grant program with the Bureau of Reclamation.

BE IT FINALLY RESOLVED, that nothing in this Resolution binds or obligates that City's general fund, taxing authority, or borrowing power.

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APPENDIX L

CLERK'S CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF FRESNO) ss.
CITY OF FRESNO)

I, REBECCA E. KLISCH, City Clerk of the City of Fresno, certify that the foregoing Resolution was adopted by the Council of the City of Fresno, California, at a regular meeting thereof, held on the _____ day of _____, 2015.

AYES :
NOES :
ABSENT :
ABSTAIN :

Mayor Approval:_____, 2015
Mayor Approval/No Return:_____, 2015
Mayor Veto:_____, 2015
Council Override Veto:_____, 2015

YVONNE SPENCE
City Clerk

BY: _____
Deputy

APPROVED AS TO FORM:
DOUGLAS T. SLOAN
City Attorney

BY:_____
Deputy

APPENDIX M

Detailed Project Budget by Task

Task No.	Task Description	Project Manager (hrs)	Senior Prof (hrs)	Asst. Prof. (hrs)	Tech (hrs)	Admin (hrs)	Labor Total	Consultant Costs	Contractor Award	Other Costs	Requested USBR Grant Funding	Non-Federal Funding	Total	% Funding Match
	Billing Rate	$160	$150	$115	$90	$60								
1	Project Administration	120	60	80	0	60	$41,000					$41,000	$41,000	100%
6	Construction Contracting [1]	60	120	80	0	60	$40,400			$500		$40,900	$40,900	100%
7	Construction (See Engineer's Opinion of Probable Construction Cost)	0	0	0	0	0	$0	$0	$15,222,600	$0	$1,000,000	$14,222,600	$15,222,600	93.4%
8	Environmental Compliance/ Mitigation/Enhancement [2]	0	0	0	0	0	$0	$288,000		$91,700		$379,700	$379,700	100%
9	Construction Inspection [3]	970	1920	240	0	180	$481,600	$163,960				$645,560	$645,560	100%
	Construction Contingency (10%)									$1,522,260		$1,522,260	$1,522,260	100%
	TOTAL										**$ 1,000,000**	**$ 16,852,020**	**$ 17,852,020**	**94.4%**

Notes:

[1] Other costs include printing bid packages.

[2] Consultant costs include a biological construction observation consultant; Other costs include purchasing mitigation credits

[3] Consultant costs include a Labor Compliance Consultant and a Geotechnical firm to perform sampling during construction

[4] Detailed budget provided for tasks with remaining work; however, grant funding is only requested for the Task 6: Construction

APPENDIX M

ENGINEER'S OPINION OF PROBABLE PROJECT COST
for
CITY OF FRESNO
RAW WATER PIPELINE FROM FRIANT-KERN CANAL TO THE NORTHEAST SURFACE WATER TREATMENT PLANT

January 19, 2015

ITEM NO.	ESTIMATED QUANTITY	BID ITEM DESCRIPTION	UNIT PRICE	SUBTOTAL
CONSTRUCTION				
1	Lump Sum	Mobilization and Demobilization	$ 450,000 / LS	$ 450,000
2	Lump Sum	Mediator (Owner's 50% share)	$ 50,000 / LS	$ 50,000
3	Lump Sum	Trench Shoring	$ 90,000 / LS	$ 90,000
4	Lump Sum	Trench Protection	$ 25,000 / LS	$ 25,000
5	Lump Sum	Traffic Control	$ 170,000 / LS	$ 170,000
6	Lump Sum	Dust Control Plan Implementation	$ 160,000 / LS	$ 160,000
7	Lump Sum	SWPPP Implementation	*$ 150,000 / LS*	*$ 150,000*
8	26942 LF	Environmental Mitigation Exclusion Fencing	$ 5 / LF	$ 134,710
9	Lump Sum	Pothole Existing Utilities	$ 17,500 / LS	$ 17,500
10	Lump Sum	Clearing and Grubbing	$ 250,000 / LS	$ 250,000
11	9922 LF	Remove & Replace Barbed Wire Fence	$ 10 / LF	$ 99,220
12	100 LF	Remove & Replace 36" Irrigation Pipe (Garfield Water District)	$ 180 / LF	$ 18,000
13	23709 LF	60-Inch Diameter Raw Water Pipeline	$ 415 / LF	$ 9,839,235
14	Lump Sum	SWTF Yard Piping and Appurtenances	$ 260,000 / LS	$ 260,000
15	14 EA	Access Vault	$ 25,000 / EA	$ 350,000
16	10 EA	Access Manhole	$ 15,000 / EA	$ 150,000
17	14 EA	Combination Air Relief Valve Assembly (Type 1 Installation)	$ 10,000 / EA	$ 140,000
18	1 EA	Combination Air Relief Valve Assembly (Type 2 Installation)	$ 6,485 / EA	$ 6,485
19	9 EA	12-Inch Diameter Permanent Blow Off Assembly	$ 25,000 / EA	$ 225,000
20	Lump Sum	Corrosion Protection and Monitoring System	*$ 500,000 / LS*	*$ 500,000*
21	Lump Sum	Soil Cement Backfill in Big Dry Creek Diversion Channel	$ 130,000 / LS	$ 130,000
22	11860 CY	Earthwork (APN 580-040-07)	$ 10 / CY	$ 118,600
23	Lump Sum	Temporary Water Diversion Structure in the Friant-Kern Canal	$ 100,000 / LS	$ 100,000
24	Lump Sum	Turnout Site Grading, Access Road and Ramp	$ 60,000 / LS	$ 60,000
25	Lump Sum	Reinforced Concrete Turnout Structure and Appurtenances (F-K Canal)	$ 520,000 / LS	$ 520,000
26	Lump Sum	Travelling Screen (Friant-Kern Canal Turnout Structure)	$ 100,000 / LS	$ 100,000
27	Lump Sum	Turnout Meter and Vault	$ 140,000 / LS	$ 140,000
28	Lump Sum	Precast Concrete Control Building (Turnout Site)	$ 45,000 / LS	$ 45,000
29	Lump Sum	Electrical, Lighting & PG&E Rule 16 (Turnout Site)	$ 20,000 / LS	$ 20,000
30	Lump Sum	Instrumentation, Control and Antenna Mast (Turnout Site)	$ 150,000 / LS	$ 150,000
31	Lump Sum	Electrical (Surface Water Treatment Facility)	$ 10,000 / LS	$ 10,000
32	Lump Sum	Pressure Testing	$ 75,000 / LS	$ 75,000
33	Lump Sum	Connect to Existing 60-Inch Diameter Raw Water Pipeline	$ 50,000 / LS	$ 50,000
34	14792 LF	Permanent Pipeline Access Road	$ 12 / LF	$ 177,500
35	17 EA	Access Gate for Barbed Wire Fence	$ 1,500 / EA	$ 25,500
36	4 EA	Access Gate for Chain Link Fence	$ 2,500 / EA	$ 10,000
37	30 LF	Temporary Trench Resurfacing	$ 160 / LF	$ 4,800
38	270 LF	Type A Permanent Trench Resurfacing (Public Street R/W)	$ 90 / LF	$ 24,300
39	3450 LF	Type B Permanent Trench Resurfacing (Private Roads)	$ 15 / LF	$ 51,750
40	Lump Sum	Miscellaneous Facilities & Operations	$ 250,000 / LS	$ 250,000
41	Lump Sum	Supplemental Work Allowance	$ 75,000 / LS	$ 75,000
		CONSTRUCTION SUBTOTAL, ITEMS 1 THROUGH 41 INCLUSIVE		**$ 15,222,600**
		Contingency: 10%		1,522,260
		TOTAL		**$ 16,744,860**

PRELIMINARY

NOT FOR CONSTRUCTION

NOTES:
1) Lump sum pricing based on 14 month construction period. Detailed quantity lists, including labor and equipment, have been prepared for each bid item but not included due to page limitations. The detailed cost estimate can be provided upon request.
2) Cost opinion does not include costs paid by the City (i.e. - permit fees, mitigation and easement acquisition).
3) SWPPP implementation unit cost to be updated after SWPPP is developed.
4) Corrosion protection preliminary budget number provided by Corrpro.
5) Temporary diversion cost in Friant-Kern Canal is preliminary. Need to verify requirements.

7 SUMMARY AND RECOMMENDATIONS

7.1 Summary of Alternative Alignment Corridors

Table 7-1 provides a comparison of the primary concerns for each alignment corridor. Included in the table are the lengths, opinion of conceptual cost, required pipeline size, number of parcels and landowners impacted, and a listing of the pros and cons of each alignment corridor. A 60-inch diameter pipeline for each alignment will provide the needed capacity to deliver the required 60 MGD to the SWTF. All four alignment corridors have habitat for special-status species and special habitats (riparian vegetation or seasonal wetlands (including vernal pools).

The primary concerns along Alignment Corridor 1 are the constructability and additional pipeline configuration cost associated with the rolling terrain, additional right-of-way required for construction along Auberry Road, and the crossing of Little Dry Creek. Alignment Corridor 1 has the highest potential of the four alignment corridors of encountering significant cultural resources in the area along Little Dry Creek. If significant archaeological remains are found within the right-of-way, mitigation measures including avoidance or data recovery excavations would need to be implemented.

The primary concern along Alignment Corridor 2 is possible impact to biological resources along the eastern portion of the alignment. Review of mitigation alternatives and further survey of the areas of concern are needed.

Alignment Corridor 3 should not be considered a viable option because of the significant impact and concerns regarding impact to biological resources.

Alignment Corridor 4 has a significantly greater number of parcels impacted than any other alignment. The costs associated with landowner improvements and delays associated with negotiating right-of-way acquisition with so many landowners are significant concerns along this alignment. Alignment Corridor 4 has a low potential of encountering significant cultural resources.