

3 WORK PLAN

3.0 Introduction to Work Plan

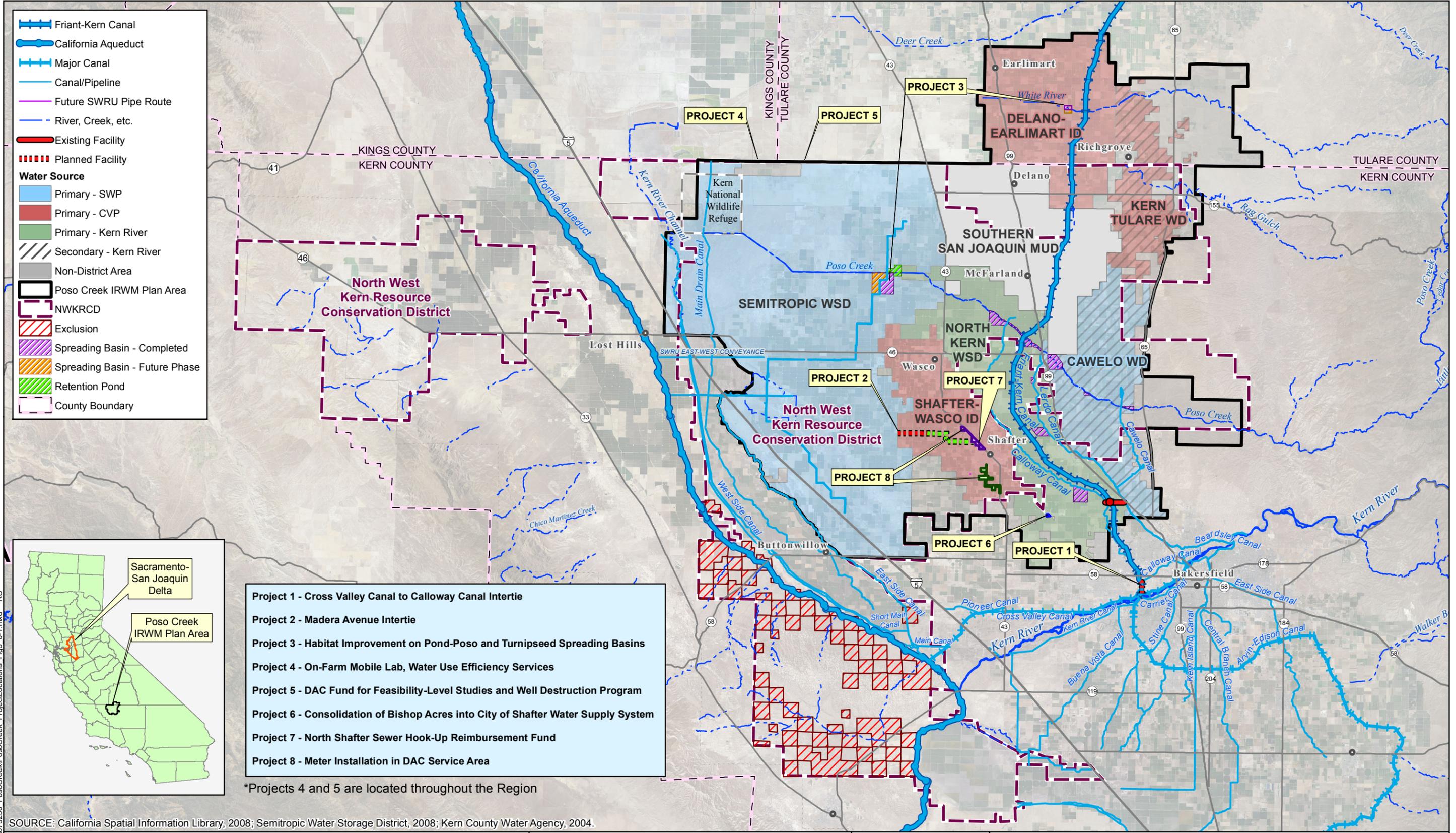
Detailed work plans have been prepared for each of the eight projects included in this Proposal, and each work plan addresses the following elements:

- Goals and Objectives
- Purpose and Need
- Project Abstract
- Integrated Elements of Projects
- Project Map
- Completed Work
- Existing Data and Studies
- Project Timing and Phasing
- Tasks

This section provides an overview and locations of the projects; summarizes their relationship to the goals and objectives set forth in the Poso Creek IRWMP; and summarizes the synergies or linkages among projects. Following this section are the project-by-project work plans that support the summary information provided herein.

3.0.1 Overview of Projects

This Proposal includes eight projects. The locations of which are indicated on Figure 3.0-1. With implementation, these Projects can increase the flexibility in timing of SWP and CVP Delta deliveries to decrease the competition for pumping water south of the Sacramento-San Joaquin Delta during droughts and other critical outages. The Projects can also enhance regional water supply reliability and interregional flood protection; drought preparedness; habitat improvements; on-farm water use efficiency; DAC drinking water quality protection and conservation; and DAC wastewater system improvements. The following Exhibit provides a brief abstract of each Project, along with its status.



- Project 1 - Cross Valley Canal to Calloway Canal Intertie**
- Project 2 - Madera Avenue Intertie**
- Project 3 - Habitat Improvement on Pond-Poso and Turnipseed Spreading Basins**
- Project 4 - On-Farm Mobile Lab, Water Use Efficiency Services**
- Project 5 - DAC Fund for Feasibility-Level Studies and Well Destruction Program**
- Project 6 - Consolidation of Bishop Acres into City of Shafter Water Supply System**
- Project 7 - North Shafter Sewer Hook-Up Reimbursement Fund**
- Project 8 - Meter Installation in DAC Service Area**

*Projects 4 and 5 are located throughout the Region

SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2004.



Poso Creek IRWMP Implementation Grant Proposal

Poso Creek IRWMP



PROJECT LOCATIONS

JANUARY 2011

FIGURE 3.0-1

06-Jan-2011 Z:\Projects\073230 PosoCreek\PosoCreek ProjectLocations Fig3 0-1.mxd RS

Exhibit 3.0-1

Summary of Proposed Projects

Project No., Title, and IMPLEMENTING AGENCY	Project Abstract	Project Status
<p>Project 1:</p> <p><i>Cross Valley Canal to Calloway Canal Intertie</i></p> <p>NKWSD and CWD</p>	<p><u>PV Costs:</u> \$13,697,701</p> <p><u>PV Benefits:</u> \$47,864,884</p> <p><u>B/C Ratio:</u> 3.49</p> <p><u>Yield:</u> 5,700 acre-feet per year</p> <p>The Intertie (about one-mile in length) would connect the Cross Valley Canal (which provides a link to the California Aqueduct 's SWP and CVP water) with North Kern Water Storage District's Calloway Canal, Water conveyed into the Calloway Canal would be delivered to irrigation or to the significant direct recharge assets of North Kern and Cawelo Water District (totaling about 2,000 acres of spreading ponds),</p> <p><u>Benefits:</u> Better use of surface water supplies when they are available, avoided energy costs and associated greenhouse gasses, increased jobs, reduced water treatment costs, facilitation of water banking and exchange arrangements within and outside the Region, reduced interregional flood damages, and ecosystem improvements.</p>	<p>Design completed at the 90-percent level; CEQA complete. Right-of Ways secure (Ready to implement upon receipt of grant).</p>
<p>Project 2:</p> <p><i>Madera Avenue Intertie</i></p> <p>SWSD and SWID</p>	<p><u>PV Costs:</u> \$7,603,199</p> <p><u>PV Benefits:</u> \$11,314,053</p> <p><u>B/C Ratio:</u> 1.49</p> <p><u>Yield:</u> 2,500 acre-feet per year</p> <p>The Intertie is a proposed pipeline connection to accommodate gravity deliveries from Shafer-Wasco ID to Semitropic WSD (east to west) and pumped deliveries from Semitropic WSD to Shafer-Wasco ID (west to east).</p> <p><u>Benefits:</u> Added flexibility in managing surface water supplies, more reliable, dry-year supply and drought protection, reduced risk of water quality degradation, avoided energy costs and associated greenhouse gasses, and increased jobs.</p>	<p>Design completed at the 30-percent level; a value engineering phase is planned prior to completion of the design; CEQA remains to be completed.</p>

Project No., Title, and IMPLEMENTING AGENCY	Project Abstract	Project Status
<p>Project 3:</p> <p><i>Habitat Improvements within Pond-Poso and Turnipseed Spreading Basins</i></p> <p>SWSD and DEID</p>	<p><u>Costs:</u> \$117,430</p> <p><u>PV Benefits:</u> Not Calculated</p> <p>This Project would add wildlife habitat at two locations within the Poso Creek IRWM Region; namely, at the Pond-Poso and Turnipseed Spreading Basins. Wetland habitat would be created in shallow pond areas; the adjacent areas would be planted with low-growing vegetation, shrubs, and trees to resemble riparian habitat along local streams.</p> <p><u>Benefits:</u> Creates 443 acres of wetlands adjacent to and within the Pond-Poso Spreading Basins and 31.3 acres of riparian habitat adjacent to the wetland habitat, creates 70 acres of wetland habitat and 2.7 acres of riparian habitat at the Turnipseed Spreading Basins, and improves water quality of recharged water.</p>	<p>Preliminary grading plans and planting plans have been developed. Final planting plans and materials lists for ordering plants will be completed by June 1, 2011. Purchase of plant materials and grading would begin upon award of the grant. This Project is categorically exempt from CEQA. Original Pond construction CEQA complete. In addition, the land for this project is already owned by the implementing agencies. The Project would be completed over a two year period.</p>
<p>Project 4:</p> <p><i>On-Farm Mobile Lab, Water Use Efficiency Services</i></p> <p>NWKRCD</p>	<p><u>Cost:</u> \$300,240</p> <p><u>PV Benefit:</u> Not Calculated</p> <p>This Project would increase Mobile Lab services to an estimated 12,000 acres of irrigated farmland primarily within the North West Kern Resource Conservation District. The Mobile Lab provides specific on-site evaluation of irrigation system performance that would enable the water user to improve water application efficiency and achieve optimum application scheduling.</p> <p><u>Benefits:</u> Improved water management, increased water use efficiency and energy savings, and reduced leaching of salts and nutrients to groundwater – improving groundwater quality.</p>	<p>This Project would expand an already existing program; accordingly, it could be implemented upon receipt of additional funding. Exempt from CEQA.</p>

Project No., Title, and IMPLEMENTING AGENCY	Project Abstract	Project Status
<p>Project 5: <i>DAC Fund for Feasibility-Level Studies and Well Destruction Program</i></p> <p>SWSD (in collaboration with cities and districts serving DACs)</p>	<p><u>Cost:</u> \$431,740</p> <p><u>PV Benefit:</u> Not Calculated</p> <p>This Project would address critical water supply needs in Disadvantaged Communities (DACs) by providing funding for water supply and water quality protection project development not available from other sources. At least five DACs would be provided with funding to develop the materials necessary to proceed with application for project construction funding. The second element of this Project involves identifying unused wells and partially funding their destruction.</p> <p><u>Benefits:</u> Improves water supply reliability and water quality objectives, protects ground water quality used as DAC source, reduces medical health costs; and increases property values.</p>	<p>Potential projects have been identified in the DAC communities, but design and feasibility needs to be completed. CEQA needs to be defined.</p> <p>Properties have been canvassed to identify unused wells and a list has been created by Kern County Environmental Health Department. Destruction procedures are in place. Exempt from CEQA.</p>
<p>Project 6: <i>Consolidation of Bishop Acres Drinking Water Distribution System</i></p> <p>CITY OF SHAFTER</p>	<p><u>Cost:</u> \$444,500</p> <p><u>PV Benefit:</u> Not Calculated</p> <p>This Project would integrate the water well and distribution system serving the neighborhood of Bishop Acres with the water supply system of the City of Shafter so as to increase the level of service and reliability to 26 households of Bishop Acres.</p> <p><u>Benefits:</u> Improves water supply reliability and quality to DAC area, provide City with additional supply well, and reduces water supply costs to DAC.</p>	<p>Preliminary engineering has been completed. Exempt from CEQA.</p>
<p>Project 7: <i>North Shafter Sewer Hook-up Reimbursement Fund</i></p> <p>CITY OF SHAFTER</p>	<p><u>Cost:</u> \$540,100</p> <p><u>PV Benefit:</u> Not Calculated</p> <p>This Project would complement construction of a wastewater collection system and trunk line that will connect North Shafter to the City of Shafter/North of the River regional wastewater system. The North Shafter area currently relies on septic systems, most of which are quite old, with failing leach fields. Specifically, the funding would be used to pay for 240 new sewer hookups to the new collection system under construction by the City of Shafter.</p> <p><u>Benefits:</u> Improves water quality by eliminating ground water contamination sources, reduced DAC homeowner maintenance costs, increases good quality groundwater recharge, and improved public health and air quality.</p>	<p>Preliminary engineering has been completed. Mainline currently under construction. CEQA complete.</p>

Project No., Title, and IMPLEMENTING AGENCY	Project Abstract	Project Status
<p>Project 8: <i>Water Meters in Severely Disadvantaged Community Service Area</i></p> <p>CITY OF SHAFTER</p>	<p><u>Cost:</u> \$579,320</p> <p><u>PV Benefit:</u> Not Calculated</p> <p>This Project would retrofit and update 600 water meters to residential and commercial customers in the North Shafter, South Shafter, and Southwest Shafter areas served by the City, but outside the City incorporation boundaries. Existing service connections will be equipped with meters and radios to transmit consumption electronically.</p> <p><u>Benefits:</u> Reduced operational costs, improved leak detection and control, conserves water supply, and improves air quality.</p>	<p>Preliminary engineering has been completed. Exempt from CEQA.</p>

3.0.2 Goals and Objectives

The projects contained in this Proposal are a direct result of the development of the Poso Creek IRWMP (Plan) and subsequent regional planning and implementation efforts. Accordingly, each project has been formulated to address one or more of the regional planning objectives, which include the following:

- *Water Supply Reliability:* Maintain and improve water supply reliability.
- *Groundwater Levels:* Maintain groundwater levels at economically viable pumping lifts.
- *Groundwater Quality:* Protect quality of groundwater and enhance where practical.
- *Water Supply Costs:* Maintain water supply costs at a level commensurate with the continued viability of the agricultural economy which has developed in the Region.
- *Environmental Resources:* Maintain and enhance environmental resources within and outside the Region.
- *Flood Control:* Enhance flood control.

The following Exhibit has been prepared to indicate the objectives which are addressed by each of the projects, while the details are presented in the individual work plans.

EXHIBIT 3.0-2

Poso Creek IRWMP Objectives Addressed by Proposed Projects

Project No. and Title	Poso Creek IRWMP Objectives					Flood Control
	Water Supply Reliability	Ground-water Levels	Ground-water Quality	Water Supply Costs	Environmental Resources	
1 <i>Cross Valley Canal to Calloway Canal Intertie</i>	✓	✓	✓	✓	✓	✓
2 <i>Madera Avenue Intertie</i>	✓	✓	✓	✓		
3 <i>Habitat Improvements within Pond-Poso and Turnipseed Spreading Basins</i>			✓		✓	
4 <i>On-Farm Mobile Lab, Water Use Efficiency Services</i>	✓	✓	✓	✓		
5 <i>DAC Fund for Feasibility-Level Studies and Well Destruction Program</i>	✓		✓	✓		
6 <i>Consolidation of Bishop Acres Drinking Water Distribution System</i>	✓		✓	✓		
7 <i>North Shafter Sewer Hook-up Reimbursement Fund</i>	✓	✓	✓	✓		
8 <i>Water Meters in Severely Disadvantaged Community Service Area</i>	✓	✓		✓		

This Proposal is designed to further the systematic and incremental implementation of projects which support the objectives of the Poso Creek IRWMP. The most critical objective is water supply reliability, which is primarily driven by regulatory and judicial actions outside of the Poso Creek Region, which have adversely affected the Region’s surface water supplies. Reduced surface water supplies result in increased reliance on the common groundwater resource, which impacts agricultural, urban, and environmental water users within the Region. For this reason, water supply reliability is a common denominator for almost all of the proposed projects. Notwithstanding this observation, the integrated planning and collaborative approach has resulted in projects which will also enhance flood

protection and create wildlife habitat, improve water metering, and assist DACs with improving and protecting drinking water supplies.

With regard to water supply reliability, construction of regional interties will allow the IRWMP participants to reduce surface water supply losses by recharging the aquifer at times when surplus surface water supplies are available. In particular, the regional interties between conveyance facilities will allow districts to coordinate water banking and exchange operations and increase the effectiveness of conjunctive use management of the common groundwater basin. The interties will add to the Region's capacity to absorb flood water during flooding events, which will help protect habitat and small communities by increasing the delivery of flood water to existing direct spreading facilities.

Implementation of this Proposal is needed to offset existing and projected losses to surface water supply reliability and to conserve groundwater that is a vital resource shared by all users within the Region. Since the Region is located at the crossroads of the California Aqueduct, Friant-Kern Canal, and the Kern River, it is an ideal location to implement and expand regional projects to enhance conjunctive management of the Region's surface water and groundwater resources.

3.0.3 Project Synergies and Linkages

Project synergies and linkages are discussed in each project work plan under the heading "Integrated Elements of Projects". Support Letters for the Grant Application are provided as Appendix 3.0-1. The support letters demonstrate the broad range of interests in the community in implementing the projects and linkages they create. The following highlight some of the linkages.

- The proposed CVC to Calloway Canal Intertie (Project 1) would enhance operation of the Calloway Canal to Lerdo Canal Intertie (which is under construction) by opening up the full capability of existing spreading assets in both North Kern and Cawelo to "surplus" SWP water that may be available from time to time.
- Interties between districts (such as Projects 1 and 2) are justified on the basis of known benefits; however, experience has shown that such facilities will be used to support water management programs and arrangements that have yet to be conceived. Very simply, additional flexibility to move water within the Region translates to additional opportunities to better manage available water resources in response to changed conditions, particularly in a Region with three different sources of surface water supplies (i.e., local, SWP, and CVP).
- As indicated in Exhibit 3.0-2, with the exception of Project 3, all projects contribute to two key regional objectives: water supply reliability and costs.
- Project 3 adds value to existing spreading ponds by integrating wildlife benefits into the facilities and their operation.

- The North West Kern RCD has operated an on-farm mobile lab for several years; accordingly, additional funding (Project 4) would add value by allowing this program to efficiently extend its reach, since program management is already in place.
- Project 5 provides for destruction of problem wells that contribute to water quality problems in nearby DAC water sources and advances a collaborative process to achieve necessary water system improvements in DAC communities throughout the Region.
- The City of Shafter would take the lead on three projects: Project 6 would consolidate the Bishop Acres community into the City-wide water supply system; Project 7 would fund connections to a new sewer line (which would result in the retirement of existing septic systems); and Project 8 would provide water meters to approximately 600 severely disadvantaged customers. Together, the three projects would allow the City of Shafter to improve water use efficiency, reduce financial hardships on severely disadvantaged customers and help to ensure a safe and reliable water supply.
- All water users within the Region --- whether irrigation or domestic (including all DACs) --- rely in whole or in part on a common groundwater basin. Accordingly, all projects that result in more water being brought into the basin (such as Projects 1 and 2) are a benefit to all water users. Similarly, water use efficiency and conservation (addressed by Projects 4 and 8) has the same effect.
- Wildlife interests within the Region include the Kern National Wildlife Refuge and many duck clubs. In addition to Project 3, the system interties (such as Projects 1 and 2) increase the opportunities for these interests to partner with the agricultural districts to convey surface water to duck clubs and to the Refuge to supplement their water needs.

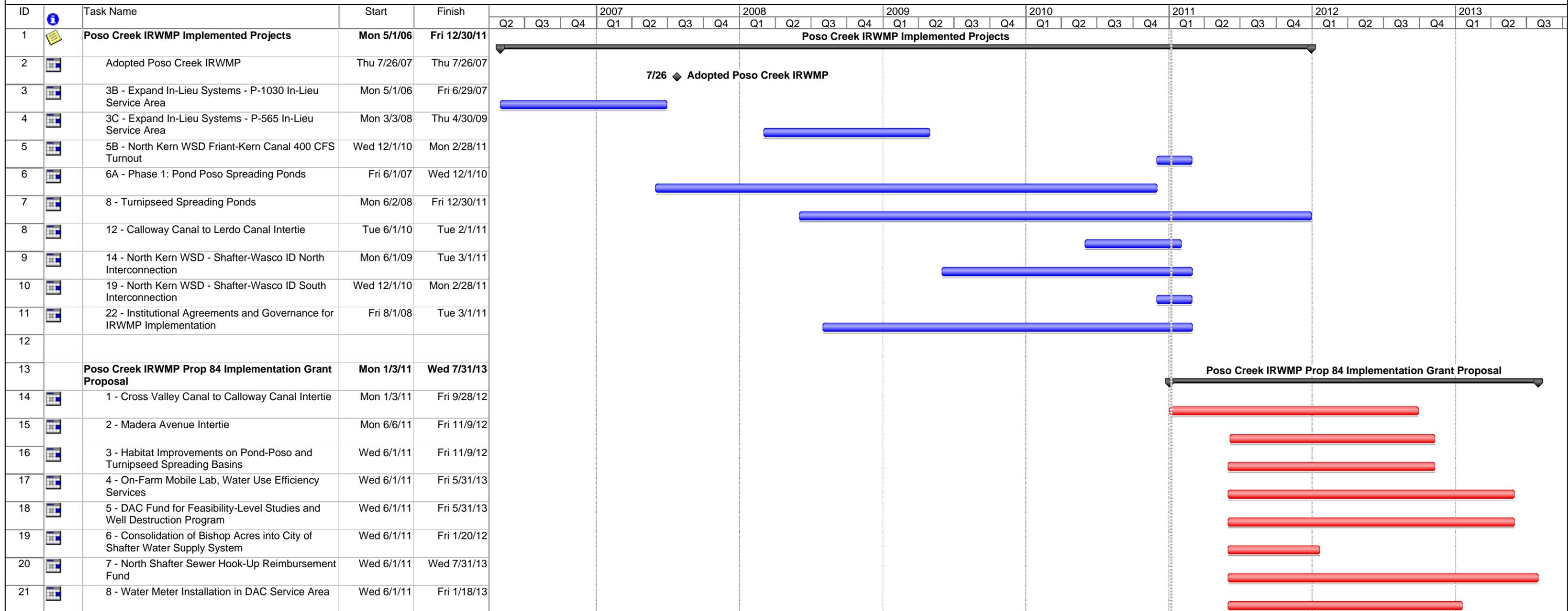
3.0.4 Implementation of IRWMP Projects

The Overall Proposal Schedule is shown on the following Gantt chart, while individual project schedules are included with the project-by-project work plans. The chart includes overall timelines for implementation of projects included in this Proposal (indicated in “red”), as well as timelines for implementation of IRWMP projects to date (indicated in “blue”). Figure 3.0-2 shows the locations of the proposed projects in relation to projects which are in some stage of implementation. Regarding the latter, Exhibit 3.0-3 provides a summary of the projects being implemented, including their status and capital costs.

3.0.5 Appendices

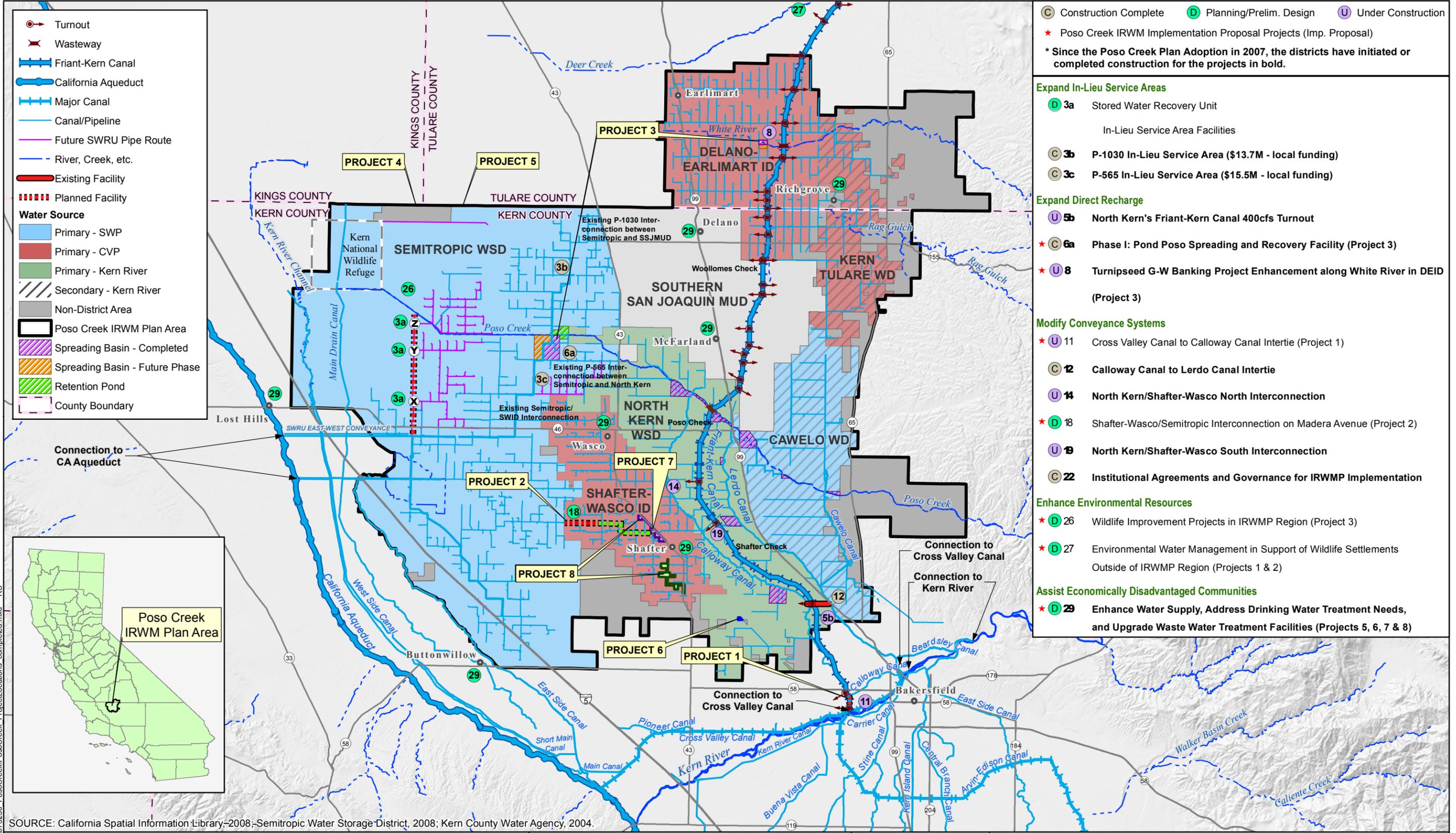
Appendix 3.0-1

Support Letters



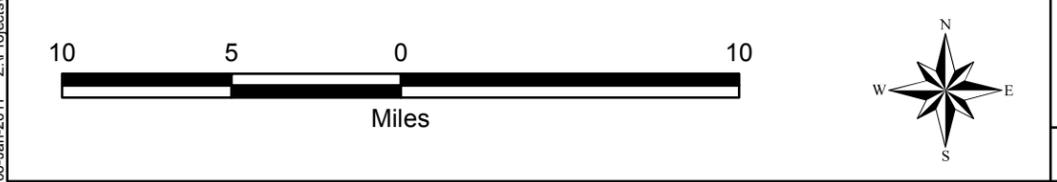
Project: Project Collection
 Date: Thu 1/6/11

Task		Progress		Summary		External Tasks		Deadline	
Split		Milestone		Project Summary		External Milestone			



- (C)** Construction Complete **(D)** Planning/Prelim. Design **(U)** Under Construction
- *** Poso Creek IRWM Implementation Proposal Projects (Imp. Proposal)
- * Since the Poso Creek Plan Adoption in 2007, the districts have initiated or completed construction for the projects in bold.**
- Expand In-Lieu Service Areas**
- (D) 3a** Stored Water Recovery Unit
In-Lieu Service Area Facilities
- (C) 3b** P-1030 In-Lieu Service Area (\$13.7M - local funding)
- (C) 3c** P-565 In-Lieu Service Area (\$15.5M - local funding)
- Expand Direct Recharge**
- (U) 5b** North Kern's Friant-Kern Canal 400cfs Turnout
- *** **(C) 6a** Phase I: Pond Poso Spreading and Recovery Facility (Project 3)
- *** **(U) 8** Turnipseed G-W Banking Project Enhancement along White River in DEID (Project 3)
- Modify Conveyance Systems**
- *** **(U) 11** Cross Valley Canal to Calloway Canal Intertie (Project 1)
- (C) 12** Calloway Canal to Lerdo Canal Intertie
- (U) 14** North Kern/Shafter-Wasco North Interconnection
- *** **(D) 18** Shafter-Wasco/Semitropic Interconnection on Madera Avenue (Project 2)
- (U) 19** North Kern/Shafter-Wasco South Interconnection
- (C) 22** Institutional Agreements and Governance for IRWMP Implementation
- Enhance Environmental Resources**
- *** **(D) 26** Wildlife Improvement Projects in IRWMP Region (Project 3)
- *** **(D) 27** Environmental Water Management in Support of Wildlife Settlements Outside of IRWMP Region (Projects 1 & 2)
- Assist Economically Disadvantaged Communities**
- *** **(D) 29** Enhance Water Supply, Address Drinking Water Treatment Needs, and Upgrade Waste Water Treatment Facilities (Projects 5, 6, 7 & 8)

SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2004.



Poso Creek IRWMP Implementation Grant Proposal

Poso Creek IRWMP

PROJECT LOCATIONS

JANUARY 2011

FIGURE 3.0-2

06-Jan-2011 Z:\Projects\PosoCreek\PosoCreek\ProjectLocations_completed.mxd RS

Exhibit 3.0-3

Implementation of Relevant IRWMP Projects

IRWMP No. ¹	Project	Description	Capital Cost	Implementation Status
14	Improvements to North Interconnection between North Kern Water Storage District and Shafter-Wasco Irrigation District (includes pumps (totaling 75 cfs), motors, VFD, and traveling water screen)	Bi-directional intertie between North Kern's Calloway Canal and Shafter-Wasco's north (main) pipeline lateral.	\$500,000	Design complete; project will go out for bid upon completion of environmental compliance
19	South Interconnection between North Kern Water Storage District and Shafter-Wasco Irrigation District (includes canal turnout, traveling water screen, ...)	Intertie between North Kern's 8-5 Canal and Shafter-Wasco's South (main) pipeline lateral; allows for gravity deliveries from North Kern to Shafter-Wasco.	\$500,000	Construction commenced in December 2010, with completion anticipated in Q1 of 2011
12	Calloway Canal to Lerdo Canal Intertie (includes 400 cfs pumping plant, one-mile of 96-inch RCP, and 96-inch steel siphon crossing of Friant-Kern Canal)	Bi-directional intertie between North Kern's Calloway Canal and North Kern's Lerdo Canal (which also serves Cawelo Water District).	\$11,000,000	Construction complete January 2011
---	North Kern Turnout No. 2 from the Friant-Kern Canal (includes 400-cfs gated canal turnout structure, 78-inch RCP, and meter vault)	In combination with an existing turnout and the Calloway Canal to Lerdo Canal Intertie, this will allow enough water to be diverted from the Friant-Kern Canal (when available) to fully supply spreading ponds in North Kern and Cawelo.	\$1,200,000	Construction ongoing, with completion expected in February 2011
6	Pond-Poso Spreading Grounds (includes interbasin flow structures for over 400 acres of spreading ponds)	Improvements complete over 400 acres of spreading ponds and allow for their full utilization.	\$2,000,000	Construction substantially complete and use is being made of some of the ponds
N/A	CEQA compliance for Groundwater Banking and Exchanges within the Poso Creek Integrated Regional Water Management Plan Area	---	N/A	Negative Declaration Complete
N/A	NEPA compliance for Poso Creek Integrated Regional Water Management Plan Area Groundwater Banking and Exchanges Among and Between Friant Division, Cross Valley Contractors, and Non-Cross Valley Project Contractors	---	N/A	EA drafted; Completion expected in early 2011

¹ Reference Table ES-2 of the Executive Summary for the 2007 Poso Creek IRWMP.

Memorandum

To: Files (073230) Appendix 3.0-1
From: Rick Iger
Re: Support Letters for Prop 84 Grant Application

Appendix 3.0-1 contains letters of support for the Poso Creek Regional Water Management Group, Proposition 84 Implementation Grant Application. The following list provides names of each supporter:

Project 1 *Cross Valley Canal to Calloway Canal Intertie*

1. Kern County Water Agency – Improvement District No. 4
2. Oildale Mutual Water Company
3. North of the River Municipal Water District
4. California Water Service Company

DAC Projects

1. Allensworth Community Services District
2. Ducor Community Services District
3. Community Water Center



Paul

RECEIVED

DEC 20 2010

S.W.S.D.

150.8 Water Conservation

Directors:

Fred L. Starrh
Division 1

Terry Rogers
Division 2

Randell Parker
Division 3

Michael Radon
Vice President
Division 4

Adrienne J. Mathews
Division 5

William W. Van Skike
Division 6

Gene A. Lundquist
President
Division 7

James M. Beck
General Manager

Amelia T. Minaberrigarai
General Counsel

December 15, 2010

Mr. Will Boschman
General Manager
Semitropic Water Storage District
P.O. Box Z
Wasco, CA 93280-0877

Subject: Poso Creek Integrated Regional Water Management Group
Application for Proposition 84 Implementation Funding for the
Cross Valley Canal to Calloway Canal Intertie

Dear Mr. Boschman:

As you are aware, the proposed Poso Creek Integrated Regional Water Management Group (Poso Creek RWMG) Proposition 84 Implementation Grant application includes, among other projects, a proposal to construct the Cross Valley Canal (CVC) Extension to Calloway Canal Intertie (Intertie). The Intertie is located within the Kern County Water Agency's (Agency) Improvement District No. 4 (ID4). ID4 and Cawelo Water District (Cawelo) are the only participants with conveyance capacity in the CVC Extension. The Intertie will increase conveyance and exchange capacity between the CVC Extension and Calloway Canal. The Intertie also offers the potential to save energy for water deliveries and improve drinking water quality through exchanges. Agency staff believes construction of the Intertie will provide regional water management improvements.

Agency staff is supportive of the Poso Creek RWMG's efforts to secure Proposition 84 implementation Grant funding from the California Department of Water Resources (DWR) for the Intertie.

If you have any questions or need additional information, please contact Lauren Bauer, of my staff, at (661) 634-1400.

Sincerely,

James M. Beck
General Manager

(661) 634-1400

Mailing Address

P.O. Box 58

Bakersfield, CA 93302-0058

cc: Rick Iger, GEI Consultants, Inc.

Street Address

3200 Rio Mirada Dr.

Bakersfield, CA 93308



INCORPORATED OCTOBER 30, 1919

Phone (661) 399-5516

Fax (661) 399-5598

2836 McCray

P.O. Box 5638
BAKERSFIELD, CA 93388

RECEIVED

DEC 20 2010

S.W.S.D.

December 14, 2010

Mr. Will Boschman
General Manager
Semitropic Water Storage District
P O Box 8043
Wasco, CA 93280-0877

Subject: Poso Creek Integrated Regional Water Management Group, Proposition 84
Grant Application

Dear Mr. Boschman:

As you are aware, the proposed Poso Creek Integrated Regional Water Management Group grant application pursuant to Proposition 84 includes, among other things, an intertie between the Cross Valley Canal and the Calloway Canal. The intertie is located within the Kern County Water Agency's Improvement District No. 4 (ID4), which is centered in the urban Bakersfield area. Oildale Mutual Water Company (Oildale) receives potable water from the Henry C. Garnett Water Purification Plant which is operated by ID4. On behalf of Oildale and others, ID4 participates in the Cross Valley Canal and, from time to time, conveys water directly or by exchange from the California Aqueduct to the Calloway Canal for recharge, and to Cawelo Water District and North Kern Water Storage District. The proposed project will increase the conveyance and exchange capacity, save energy and improve drinking water quality as compared to the use of existing facilities. Therefore, Oildale is clearly interested in and supportive of this project that improves water management in the area. In particular, we are keenly aware that it is the importation of surface water supplies from the California Aqueduct, via the Cross Valley Canal, that helps to support the water levels in the underlying groundwater system. We understand and believe that your plans to construct the *Cross Valley Canal to Calloway Canal Intertie* will provide regional water management improvements that merit our support.

Finally, we hope that our expression of support is helpful in your efforts to secure grant funding assistance to implement your plans. If the funding agency would like to discuss our interest and support for your project, we would be happy to do so.

Sincerely,

Douglas R. Nunneley
General Manager



North of the River Municipal Water District

4000 Rio Del Norte Street • Oildale, CA 93308 • Office (661) 393-5411 • FAX (661) 399-8911

Paul

RECEIVED

DEC 20 2010

S.W.S.D.

December 17, 2010

Mr. Will Boschman
General Manager
Semitropic Water Storage District
PO Box 8043
Wasco, CA 93280-0877

Subject: Poso Creek Integrated Regional Water Management Group, Proposition 84
Grant Application

Dear Mr. Boschman:

As you are aware, the proposed Poso Creek Integrated Regional Water Management Group grant application pursuant to Proposition 84 includes, among other things, an intertie between the Cross Valley Canal and the Calloway Canal. The intertie is located within the Kern County Water Agency's Improvement District No. 4 (ID4), which is centered in the urban Bakersfield area. North of the River Municipal Water District (NOR) receives potable water from Henry C. Garnett Water Purification Plant which is operated by ID4. On behalf of NOR and others, ID4 participates in the Cross Valley Canal and, from time to time, conveys water directly or by exchange from the California Aqueduct to the Calloway Canal for recharge, and to Cawelo Water District and North Kern Water Storage District. The proposed project will increase the conveyance and exchange capacity, save energy and improve drinking water quality as compared to the use of existing facilities. Therefore, NOR is clearly interested in and supportive of this project that improves water management in the area. In particular, we are keenly aware that it is the importation of surface water supplies from the California Aqueduct, via the Cross Valley Canal, that helps to support the water levels in the underlying groundwater system. We understand and believe that your plans to construct the *Cross Valley Canal to Calloway Canal Intertie* will provide regional water management improvements that merit our support.

Finally, we hope that our expression of support is helpful in your efforts to secure grant funding assistance to implement your plans. If the funding agency would like to discuss our interest and support for your project, we would be happy to do so.

Sincerely,

David Aranda
General Manager



CALIFORNIA WATER SERVICE COMPANY

3725 SOUTH H STREET • BAKERSFIELD, CA 93304-6538
{661} 396-2400 • FAX {661} 396-2411

BAKERSFIELD DISTRICT

December 14, 2010

Mr. Will Boschman
General Manager
Semitropic Water Storage District
P.O. Box 8043
Wasco, Ca. 93280-0877

Subject: Poso Creek Integrated Regional Water management Group, Proposition 84
Grant Application

Dear Mr. Boschman,

As you are aware the Poso Creek Integrated Regional Water Management Group grant application pursuant to Proposition 84 includes, among other things, an intertie between the Cross Valley Canal and the Calloway Canal. The intertie is located within the Kern County Water Agency's Improvement District No. # (ID4), which is centered in the urban Bakersfield area. California Water Service Company (Cal Water) receives potable water from the Henry C. Garnett Water Purification Plant which is operated by ID 4. On behalf of Cal Water and others, ID4 participates in the Cross Valley Canal and, from time to time, conveys water directly or by exchange from the California Aqueduct to the Calloway Canal for recharge and to Cawelo Water District and North Kern Water Storage District. The proposed project will increase the conveyance and exchange capacity, save energy and improve drinking water quality as compared to the use of existing facilities. Therefore, Cal Water is clearly interested in and supportive of this project that improves water management in the area. In particular, we are keenly aware that it is the importation of surface water supplies from the California Aqueduct, via the Cross Valley Canal, that helps to support the water levels in the underlying groundwater system. We understand and believe that your plans to construct the *Cross Valley Canal to Calloway Canal Intertie* will provide regional water management improvements that merit our support.

Finally, we hope that our expression of support is helpful in your efforts to secure grant funding assistance to implement your plans. If the funding agency would like to discuss our interest and support for your project, we would be happy to do so.

Sincerely,

A handwritten signature in black ink, appearing to read "Tim Treloar", written over a horizontal line.

Tim Treloar
District Manager

cc: Mike Rossi
Rob Guzzetta
Rudy Valles
Gary Witcher

ACSD Board Members

Valeria Contreras, President
Pastor Herrera, Vice-President
John Pope, Director
Nettie Morrison, Director
1 Vacancy

Phone: (661) 849-3894
Fax: (661) 849-2181
Email:
allensworthcsd@sbcglobal.net

RECEIVED

JAN 04 2010

S.W.S.D.

ALLENSWORTH
COMMUNITY SERVICES DISTRICT



December 29, 2010

Mr. Will Boschman
General Manager
Semitropic Water Storage District
PO Box Z
Wasco, CA 93280-0877

Subject: Poso Creek Integrated Regional Water Management Plan Implementation Grant Proposal, Proposition 84 Grant Application

Dear Mr. Boschman:

As you are aware, the proposed Poso Creek Integrated Regional Water Management Plan (IRWMP) Implementation Grant Proposal pursuant to Proposition 84 includes the opportunity for the funding of a Feasibility Study to investigate options to solve our community's water supply and water quality issues. This Feasibility Study work would also include the design of recommended system improvements to make the solution to our water system's problems shovel ready and competitive for later construction funding. We also support the other aspects of the Implementation Grant Proposal which will direct benefits to other disadvantaged communities and improve the overall water supply in the Tulare Lake Basin.

We hope that our expression of support is helpful in your efforts to secure grant funding assistance to implement these plans. If your agency or the Department of Water Resources would like to discuss our interest and support for your project, we would be happy to do so. You may contact me at our District office at 661/849-3894.

Sincerely,

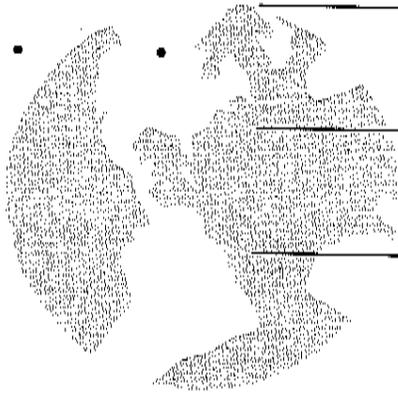
Valeria Contreras
President

Ducor Community Services District

facsimile transmittal

To: DAVE WARNER Fax: 651-3634
From: DARLENE LONG Date: 1/4/2011
Re: LETTER FOR PROP 84 Pages: 2
CC: [Click here and type name]

- Urgent
- For Review
- Please Comment
- Please Reply
- Please Recycle



.....

**DUCOR COMMUNITY SERVICES DISTRICT
P.O. BOX 187
DUCOR, CA 93218**

January 3, 2011

Mr. Will Boschman
General Manager
Semitropic Water Storage District
PO Box Z
Wasco, CA 93280-0877

Subject: Poso Creek Integrated Regional Water Management Plan Implementation Grant
Proposal, Proposition 84 Grant Application

Dear Mr. Boschman:

The Ducor Community Services District (District) supplies water to 557 residents of the low-income community of Ducor in southern Tulare County. The District is not located within any Tulare County IRWMP and needs funds to fix a well contaminated with Nitrates and fails to meet Safe Drinking Water Standards. Water rates are high, with homes paying an average \$75.50 per month. This represents 3.9% of their Median Household Income of \$23,000. Our only clean water supply is limited to a single well that cannot keep up with demands during the summer months. The District is obtaining State Revolving Funds (SRF) to design and build a new well. In the current design phase, the maximum SRF grant is limited to 80% of the preconstruction costs; forcing the District to find alternate grant funding or increase rates to borrow State loan funds.

The Poso Creek Integrated Regional Water Management Plan (IRWMP) Implementation Grant application includes funding for the Districts' 20% local match of EPA funded SRF Project costs. A \$26,000 IRWMP grant will help move our water Project to construction, bring clean water to the community and prevent a State loan from impacting users. We support the other parts of the Poso Creek IRWMP Implementation Grant Proposal for similar direct benefits to other disadvantaged communities and improvement of the Tulare Lake Basin water supply and quality.

Ducor Community Services District appreciates the opportunity to participate in this application. On behalf of the District, I hope this letter of support is helpful in your efforts to secure grant funding assistance. If anyone would like to discuss our Project and support for your application please contact me at (559) 310-0954.

Sincerely,



Darlene Long
DCSD Board Secretary



Jan. 4, 2011

Mr. Will Boschman
General Manager
Semitropic Water Storage District
PO Box Z
Wasco, CA 93280-0877

Subject: Poso Creek Integrated Regional Water Management Plan Implementation Grant Proposal,
Proposition 84 Grant Application

Dear Mr. Boschman:

This letter is to express our support for the Proposition 84 Implementation Grant application submitted by the Poso Creek IRWM Plan, which includes a number of important projects providing direct, vital benefits to disadvantaged communities.

The Community Water Center (CWC) is an environmental justice non-profit that works with severely disadvantaged communities throughout the San Joaquin Valley to ensure that all communities have access to safe, clean and affordable water. CWC works closely with residents, community based organizations, and local disadvantaged community water boards from many of the disadvantaged communities within the Poso Creek area.

We have actively participated in the development of the Poso Creek IRWM Plan and strongly support the funding for the projects included in this proposal. In particular, the *DAC Fund for Feasibility-Level Studies and Well Destruction Program* will provide a vital funding source to allow for both the development of viable, long-term solutions to the critical drinking water needs of disadvantaged communities in the region, but also the destruction of pathways for contamination of the groundwater relied on by the many disadvantaged communities in the region. This project is extremely important and will complement the other projects within this proposal by addressing the root causes of disadvantaged community water supply challenges – vulnerable supplies. Many communities in this region rely on one or a few wells that are threatened by contamination. By developing regional solutions, these communities can share sources and reduce threats. Although each area is unique, this project will serve as a model for future efforts in the region to address these issues.

Additionally, the three disadvantaged community projects surrounding the City of Shafter will address urgent and critical disadvantaged community water and wastewater needs by providing the funding needed to finish implementation of the water and sewer projects, after years of work and waiting.

In addition to addressing critical disadvantaged community water supply needs, the Poso Creek IRWMP Application will address a number of important goals for the region, including reliability of supply, water quality protection, water use efficiency, and habitat conservation. I fully support the Poso Creek IRWMP

1

application and strongly encourage funding of the projects, particularly those targeted directly at disadvantaged community needs.

Sincerely,

A handwritten signature in black ink that reads "Laurel Firestone". The signature is written in a cursive, flowing style.

Laurel Firestone
Co-Executive Director and Attorney at Law

3.1 Project 1 – Cross Valley Canal to Calloway Canal Intertie

Introduction

The Cross Valley Canal to Calloway Canal Intertie channel would be a level connection to accommodate gravity deliveries in either direction, i.e., from the Cross Valley Canal into the Calloway Canal, or from the Calloway Canal into the Cross Valley Canal. The specific activities that will be performed to construct the Cross Valley Canal to Calloway Canal Intertie (Project 1) are presented in this section of Attachment 3 of the Application. Complete plans are included as Appendix 3.1-1 to this Attachment 3. Project 1 budget and schedule are presented in the following Attachments 4 and 5, which corresponds with Attachments 4 and 5 of the application.

3.1.1 Goals and Objectives

Project 1 accomplishes numerous goals and objectives of the Poso Creek Integrated Regional Water Management (IRWM) Plan. Exhibit 3.1-1 below presents a selection of the Poso Creek IRWM Plan Objectives, and how the Project Goals and Objectives coincide with them:

EXHIBIT 3.1-1

IRWM Plan Objectives	Project 1 Goals and Objectives
<p><u>Primary:</u> Enhance Water Supply Reliability of Surface Supplies</p> <p><u>Secondary:</u> Enhance Flood Protection for the Region</p>	<p>Project 1 would enhance Water Supply Reliability by adding 5,700 acre-feet per year to the Region. Project 1 accomplishes the increase through a conveyance system modification that makes it easier to convey water from districts with available supply to districts with underutilized in-lieu service areas and direct recharge capacity.</p> <hr/> <p>Increases operational flexibility by 400 cfs and enhances flood protection for the Tulare Lake Region by an additional 340 cfs.</p> <hr/> <p>Provides additional delivery capacity to return water previously stored in groundwater banks to neighboring banking partner districts for drought protection</p>
<p>Maintain groundwater levels at economically viable pumping lifts</p>	<p>Increased in-lieu and direct recharge activities. As more areas are made available for in-lieu banking and direct recharge, less water is pumped from the shared groundwater basin. This would result in a slowing, or reversal, of groundwater level decline.</p>
<p>Protect the quality of groundwater and enhance where practical</p>	<p>Declining water levels leads to certain water quality degradation such as higher TDS and arsenic. The Project would help avoid the need for costly water treatment.</p>
<p>Maintain water supply costs at a level commensurate with the continued viability of the agricultural economy which has developed in the area</p>	<p>Ability to move water from the Cross Valley Canal directly into the Calloway Canal for delivery to North Kern, Cawelo, and Shafter–Wasco ID. Capacity restraints and added pumping costs associated with Pump Station A are avoided in delivery to Improvement District No. 4.</p>

3.1.2 Purpose and Need

North Kern Water Storage District (North Kern) and Cawelo Water District (Cawelo) are proposing to construct a bi-directional water conveyance connection, or intertie, identified as the Cross Valley Canal to Calloway Canal Intertie, and the Poso Creek Regional Water Management Group (RWMG) requests a grant to assist with funding. The intertie is intended to serve several purposes, which include the following:

- Bring more surface water into the Region;
- Avoid energy costs for (conveyance) pumping;
- Reduce water treatment costs for Improvement District No. 4 since more SWP water can be exchanged for Kern River water by Improvement District No. 4 with the Project;
- Provide a more reliable means for conveying SWP water into Cawelo (in conjunction with a project currently under construction) and Semitropic;
- Provide a means for delivering previously banked water into the Cross Valley Canal for exchange or ultimate delivery into the California Aqueduct;
- Increase operational flexibility and enhance flood protection for the Region; and
- Provide a means for delivery of water banked with Semitropic to be delivered to Shafter-Wasco ID, in order to complete banking and exchange agreements among Poso Creek RWMG districts.

The proposed Project was identified in the Integrated Regional Water Management Plan (Adopted July 2007) for the Poso Creek Region. This Region includes the Applicants and several other water districts that share a common groundwater resource. In particular, the Project was determined to be a high priority with regard to achieving the goals set forth in the Plan, where the overarching goal is improve water supply reliability for the Poso Creek Region.

Beneficiaries include, but are not limited to, North Kern Water Storage District, Cawelo Water District, Improvement District No. 4 of the Kern County Water Agency (ID4), Kern-Tulare Water District, Semitropic Water Storage District, and Shafter-Wasco Irrigation District. These entities are neighboring districts that share a common groundwater basin and a need to bank and exchange contract water supplies to effectively manage their supplies conjunctively. The above listed purposes are addressed in the context of the following beneficiaries:

Reducing dependence on the Sacramento-San Joaquin Delta (Delta) through increasing flexibility and timing of delivery to bring more surface water into the Region – The project would greatly increase the potential rate of delivery by up to 400 cfs, of wet-year and/or winter water that is available from time to time from the SWP (in particular, “Article 21” water) and it would avoid the pumping lift/cost to deliver SWP water into North Kern. The project would accomplish this by providing

a level intertie between two conveyance canal systems that will allow water to flow in either direction; the Intertie will allow for times when the increased flow can bypass a pump station and provide capacity to increase the flow, by up to 400 cfs, directly to the Region's ground-water in-lieu recharge and direct spreading grounds.

Avoid energy costs for (conveyance) pumping – The preceding item identified avoided energy costs associated with the delivery of SWP (Article 21) water to spreading. In addition, energy costs can be avoided under more normal operations to the extent that Cawelo can make or arrange exchanges that avoid the pumping lift/cost associated with PS-A. The estimated energy savings range from 1.2 gigawatt-hours to 4.6 gigawatt-hours per year depending on water supply conditions.

Reduce water treatment costs – ID4 operates a municipal water purification plant based on its SWP supply, which serves the Greater Bakersfield Metropolitan Area. However, treatment costs for Kern River water are less and it generally provides a more desirable finished drinking water product for customers. Accordingly, ID4 has engaged in mutually desirable exchanges with North Kern from time to time. The proposed Project allows for an expanded program, which would generate additional savings in energy use and water treatment costs.

Provide a more reliable means for conveying SWP water into Cawelo (in conjunction with another recently completed Poso Creek IRWM Plan project) – In the past, the only way for Cawelo to receive direct delivery of its SWP water is via PS-A. Presently, North Kern's Calloway to Lerdo Intertie project is under construction and is scheduled to become operational in early 2011. The Calloway to Lerdo Intertie adds 400 cfs conveyance capacity to lift water from the lower elevation Calloway Canal into the higher elevation Lerdo canal. Once completed, Cawelo will gain a more reliable means of taking delivery of its SWP water, a benefit that is difficult to quantify financially.

Provide a means for delivering previously banked water into the Cross Valley Canal for exchange or ultimate delivery into the California Aqueduct – To the extent that water previously banked in North Kern and Cawelo must be delivered into the California Aqueduct to accomplish the necessary return, the proposed Project, in conjunction with future low-lift pumping plants on the Calloway Canal, would provide the means to do so. This Project advances the capability of the Region to provide water banking relationships to interests outside the Region, potentially having state-wide benefits.

Increase operational flexibility and enhance flood protection for the Region – This Project will enable the Region to utilize an additional 5,700 acre-feet per year of

storage. This Project will also increase operational flexibility through the purposes discussed above including, reducing dependence on the Sacramento-San Joaquin Delta (Delta) through increasing flexibility and timing of delivery to bring more surface water into the Region, providing a more reliable means for conveying SWP water into Cawelo in conjunction with another recently completed Poso Creek IRWM Plan project. This Project will also serve to enhance flood protection by increasing the ability to divert more water off the Kern River during flood stages, thereby reducing flood damages in the Tulare Lake Bed. In addition Friant-Kern flood flows can be absorbed into spreading ponds in the region in a short time period, such as during a storm event.

Provide a means for delivery of water banked with Semitropic to be delivered to Shafter-Wasco ID, in order to complete banking and exchange agreements among Poso Creek RWMG districts – For instance, with this Project, Kern-Tulare ID could complete banking arrangements that put CVP-Delta water in Semitropic, then deliver water to Shafter-Wasco ID via the CVC to Calloway to the North and/or South Interconnections with North Kern and Shafter-Wasco (the North and South Interconnections will be completed in early 2011). The Poso Creek RWMG district recently completed a non-structural CEQA document in December, 2010 that will allow the districts to enter into banking and exchange agreements quickly.

3.1.3 Project Abstract

The CVC to Calloway Canal Intertie will provide a water supply benefit of up to 5,700 acre-feet per year based on the utilization of the 400 cfs of conveyance capacity. The Intertie adds flexibility in absorbing supplies for districts that receive SWP and CVP supplies delivered from the CA Aqueduct. The proposed intertie would be about one mile in length and would include a lined canal with pipe siphon crossings as required and tie-in structures at each end (a turn-out/turn-in at the Cross Valley Canal, and a check structure at the Calloway Canal). The intertie is designed to operate in either direction by gravity flow at rates up to 660 cfs; however, until an extension pipeline is added to the CVC, which is a separate project from the CVC Canal to Calloway Canal Intertie, this Project's benefits are based on providing an additional 400 cfs of conveyance and not the full 660 cfs design capacity. The CVC to Calloway Intertie, which is scheduled to start construction in 2011, provides synergy with, and adds value to, recently constructed improvements in North Kern that link surface water supplies with spreading facilities to help match timing of available Delta supplies with demands South of the Delta.

The CVC to Calloway Canal Intertie current status is at 90-percent completion of design. North Kern and Cawelo will lead the construction of this Intertie. The CVC to Calloway Intertie will connect the Cross Valley Canal (which provides a link to the California

Aqueduct and SWP water) with North Kern Water Storage District's (North Kern) Calloway Canal.

Although the intertie is designed to operate in either direction by gravity flow at rates up to 660 cfs, it is being evaluated as providing a benefit of 400 cfs since this Project does not include the CVC Pipeline Extension to allow for 660 cfs capacity to the intake of the CVC Canal to Calloway Canal Intertie. The Intertie channel would accommodate gravity deliveries in either direction, i.e., from the Cross Valley Canal into the Calloway Canal, or from the Calloway Canal into the Cross Valley Canal. The turn-out/turn-in structure at the point of the connection of the Cross Valley Canal would be gated to control flow, whereas flow control at the point of connection with the Calloway Canal would be accomplished with a check structure equipped with removable weir boards. Flow metering would be located at the Cross Valley Canal.

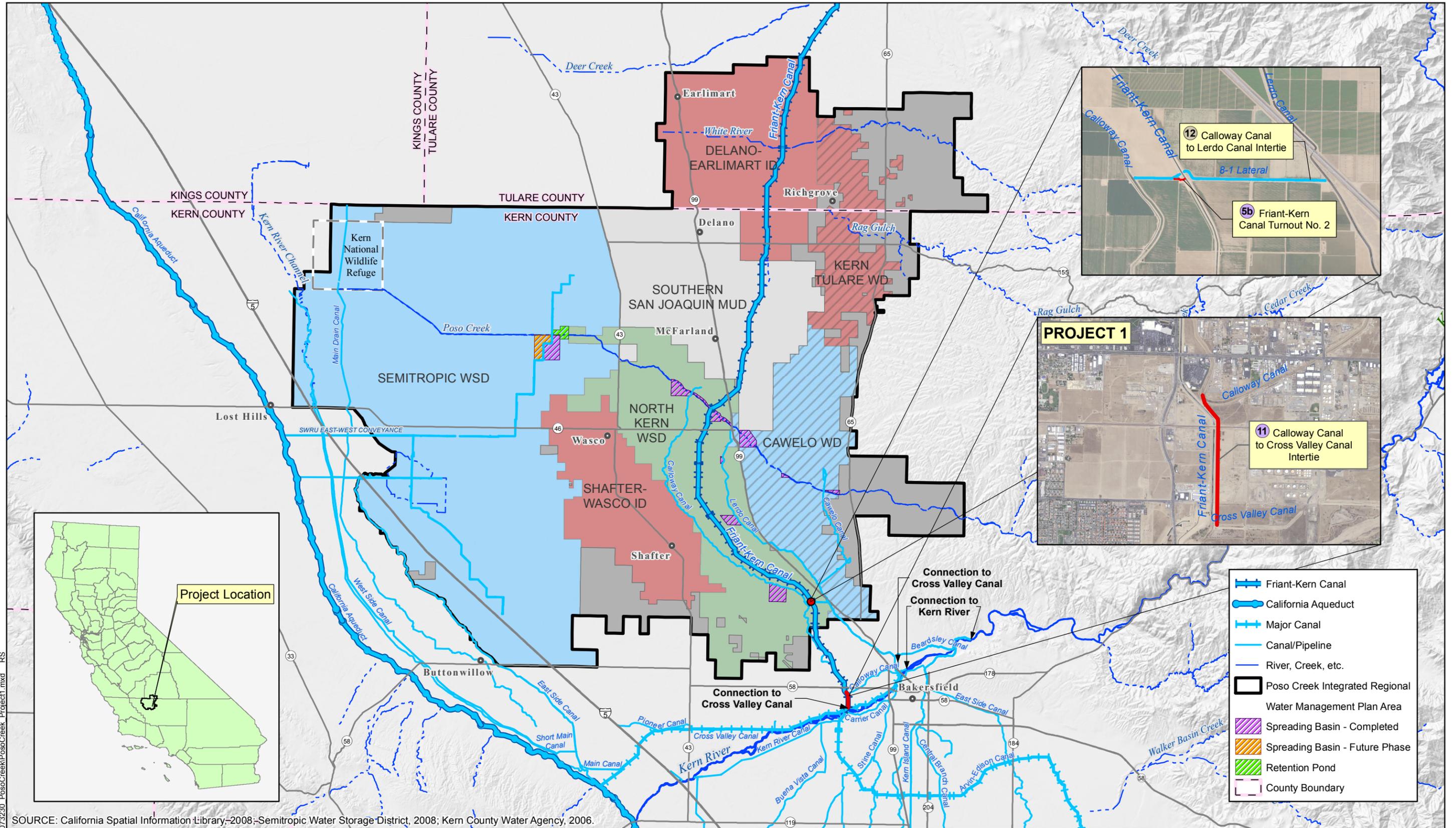
3.1.4 Integrated Elements of Project

Project 1 is an essential part of integrating regional facilities to provide operational flexibility and increase banking. Several of these identified projects, which are not part of this grant application, have been constructed since the Poso Creek Plan adoption, and a key conveyance facility that linked SWP and CVP contractor's supply to underutilized spreading capacity in NKWSD is constructed and will become operational in early 2011. This proposed Project 1 CVC to Calloway Intertie will be able to make us of the recently constructed Calloway Canal to Lerdo Canal Intertie. The proposed CVC to Calloway Canal Intertie would enhance operation of the Calloway Canal to Lerdo Canal Intertie to achieve *regional* conveyance and support State objectives of increasing groundwater recharge capacity. Specifically, the Project would increase operational capacity of both the Semitropic and North Kern in-lieu and direct spreading facilities, and add flexibility provided by the various interconnections to move water within the region from where it is available to where it is needed. The CVC to Calloway Canal Intertie is an essential component of the sequential *regional* water management system improvements identified in the Poso Creek IRWM Plan.

The *Cross Valley Canal to Calloway Canal Intertie* is one of a number of high-priority Projects, as indicated in the Poso Creek IRWM Plan Brochure and Plan Synopsis which are included in the Introduction to this Attachment 3 – Work Plan. The Poso Creek Plan identified non-structural and structural projects that focused on providing benefit towards meeting the Region's highest priority; regaining water supply reliability lost to the Region. In the future, (not part of this Project 1) check structures and reverse flow pumps are planned to be added to the Calloway Canal to allow water stored in NKWSD to be returned to the CA Aqueduct via the CVC, which has the potential to add significant drought protection to any SWP and CVP water contractor who is able to deliver water from the CA Aqueduct to banking facilities in the Poso Creek Plan Region.

3.1.5 Project Map

The CVC to Calloway Canal Intertie is a regional conveyance connection, shown on Figure 3.1-1, which allows water supplies delivered from the CA Aqueduct to the Cross Valley Canal to be connected to the 1,000 cfs Calloway Canal that runs south to north in North Kern WSD.



SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2006.



Poso Creek IRWMP Implementation Grant Proposal

Poso Creek IRWMP Region



CROSS VALLEY CANAL TO CALLOWAY CANAL INTERTIE PROJECT 1 LOCATION

JANUARY 2011

FIGURE 3.1-1

04-Jan-2011 Z:\Projects\073230 PosoCreek\PosoCreek Project1.mxd RS

3.1.6 Completed Work

Prior to September 30th, 2008, several tasks were completed which are indicated in the work plan, budget, and schedule to demonstrate steps taken in preparation of this Project, but, are not included as project costs for cost match or for reimbursement. Preliminary design and costs estimates were prepared by Zeiders Consulting. In February, 2006, an Initial Study/Negative Declaration (ND) CEQA document, entitled “2006 System Operations Improvement Project”, which included this project, was completed and adopted by the North Kern WSD Board of Directors. The ND identified no significant impacts and recommended that no mitigation was necessary.

Since September 30th, 2008, 90-percent design and construction documents have been prepared. Also, permits are in process for securing an encroachment permit for a required railroad crossing.

Work that is expected to be completed prior to the grant award date (June 1, 2011) will include:

Zeiders Consulting is to complete the engineering design with Final Drawings and Specs by June 14, 2011. North Kern WSD will work with Zeiders Consulting and GEI Consultants in providing construction management and grant oversight services.

Several key timing issues have been identified in the design process and are being addressed, which include:

1. Finalize acquisition of the necessary rights-of-way and agreements; this task has been reached and executed for the majority of the rights-of-way.
2. The “imminent” construction of a significant fill across the alignment of the Intertie to accommodate a major transportation project, which means a component of the CVC to Calloway Intertie needs to be constructed in early 2011, prior to the June 1, 2011 anticipated start date for DWR purposes. In this instance, it is planned to install the necessary piping in March, 2011, as shown in the Project Budget and Schedule. North Kern WSD intends to pay for the pipe installation work to be completed in March, 2011 under an existing contract mechanism administered by the City of Bakersfield. Project costs would increase significantly if tunneling under the fill were required, which would be the case if installation of the piping at this location is delayed.
3. Finalizing design of the Intertie Weir.
4. Developing an agreement with the Kern County Water Agency for construction and operation of the turn-in/turn-out in the Cross Valley Canal.

North Kern is engaged and working on the above items and will help to insure that planned construction schedules can be met.

Tasks identified in Section 3.1.9 Tasks are to be accomplished as Project 1 Work. The tasks are organized to track with Budget and Schedule Attachments (presented in subsequent attachments 4 and 5). Engineering plans resulting from the design work that has been completed to date are included as Appendix 3.1-1.

3.1.7 Existing Data and Studies

The following technical reports identified this Intertie in their analysis and support the sequencing of constructing this project next in relation to the recently completed projects within the Poso Plan Region.

- North Kern WSD Facility Improvement Plan
- System Optimization Review for the Poso Creek IRWM Plan Area, conducted from October 2008 through September 2010 (funded by a Reclamation WaterSMART grant)

3.1.8 Project Timing and Phasing

This project is not part of a multi-phased project; it is a standalone project and is fully functional without implementation of subsequent projects. The Project will be constructed over a 1.5-year period.

Implementing Agency and Management of Project

The proposed Project will be the responsibility of North Kern Water Storage District, with consulting services provided by Zeiders Consulting and GEI Consultants Inc. (GEI), who will provide design, construction management, administrative, and reporting assistance as needed. Role and responsibility of the NKWSD and their service providers is included in the task descriptions below. The sequencing of work is addressed in Attachment 5, which presents and discusses the Project Schedule.

3.1.9 Tasks

Task 1 –Project Administration

NKWSD will be responsible for development of the funding agreements and service contacts as well as coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration (preparation of invoices and maintenance of financial records).

Deliverables: (1) review of DWR Grant Contract; (2) project kick-off meeting with DWR personnel; (3) coordination of field visits with DWR personnel; (4) preparation of invoices and maintenance of financial records (5) preparation of Grant reimbursement requests; and (6) other deliverables as required.

Task 2 – Labor Compliance Program

NKWSD will be responsible for development of a Labor Compliance Program (LCP) which will follow the rules of the California Department of Industrial Relations. Specifically, the LCP will enforce the prevailing wage requirements as stipulated in the Labor Code Section 1771.5. The goal of the LCP will be to accomplish the following: (1) Inform contractors about their prevailing wage obligations; (2) Monitor compliance by obtaining and reviewing certified payroll records throughout the construction of the project; (3) Investigate complaints and other suspected violations; and (4) Take appropriate actions when violations are found.

Deliverables: (1) prepare a Labor Compliance Program (LCP) Plan; and (2) enforce the LCP during the construction of the project.

Task 3 – Reporting

NKWSD will be responsible for reporting on the financial status and project performance on a quarterly basis and has retained GEI Consultants to assist the District with this task. Significant development reports and a final project report will be prepared. In addition, the Project will comply with any other reporting requirements specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4 - Land Purchase/Easement

North Kern is in the process of finalizing all the necessary project rights-of-way as agreements with various interested parties (easements, common use, etc.) have been entered into.

Task 5 – Assessment and Evaluation

Starting in 2006, the District investigated the feasibility of connecting the Cross Valley Canal to the Calloway Canal via an intertie canal. A water supply assessment and benefits evaluation of the project to be constructed is complete and included within this application.

Deliverables: Water Supply Assessments and benefits evaluations were completed for this application and included as Appendices to this Attachment 3. No further action is required.

Task 6 – Design

In 2007, preliminary design, acquisition of the necessary rights-of-way, initial contact for crossing of the railroad tracks, and identification of underground utility conflict was undertaken. Since then, crossings for the proposed Westside Parkway, Big West Refinery

crossing, diversion structures, pipeline additions for the Cross Valley Canal, canal design, etc. have been designed. Engineering and design work has been completed at the 90% design stage by Zeiders Consulting. Accordingly, work under this task will include finalizing the design of the project to the final level for advertisement of the project.

Deliverables: Completion of project plans and specifications at the final level for advertising for project award.

Task 7 – Environmental Documentation

Pursuant to California Environmental Quality Act (CEQA) guidelines, an Initial Study was completed in 2006 which concluded that the Project could not have a significant effect on the environment. Environmental compliance was satisfied through approval and filing of a Negative Declaration by North Kern WSD on February, 23rd 2006. As stated in the Initial Study, a field survey will be repeated prior to construction by a qualified biologist to be sure that the construction areas remain unoccupied by sensitive species. Based on new requirements, recently put in place by the State of California, an addendum regarding climate change will be prepared for this project.

Deliverables: (1) provide confirmation of completed and approved environmental documentation; (2) report of the pre-activity biological survey at the time of construction; and (3) provide an addendum regarding Climate Change.

Task 8 – Permitting

North Kern and Cawelo have communicated with the Burlington Northern Santa Fe Railway regarding a possible encroachment permit to cross the railroad rights-of-way to enable installation of two 120-inch diameter Reinforced Concrete Pipe sections and canal sections. This encroachment permit/easement may not be needed due to the more senior easement belonging to the North Kern. Cawelo and North Kern are in progress on obtaining a decision regarding the need for this permit and expect the permit, if needed, will be granted in advance of the start of construction.

North Kern and Cawelo are in discussions with the Kern County Water Agency (KCWA) regarding approval to construct and operate a turn-in/turnout in the Cross Valley Canal. They expect the design to be approved in advance of the start of construction and have received a letter of support from the KCWA in support of this project.

Bids for construction will be solicited through the competitive bidding process on the basis of final plans and specifications. The standard specifications include language relating to the contractor obtaining local construction permits and approvals prior to construction. In particular, the standard language in the specifications states “ The Contractor is an independent contractor and shall, at his sole cost and expense, comply with all laws, rules,

ordinances and regulations of all governing bodies having jurisdiction over the work, obtain all necessary permits and licenses therefor...”.

A National Pollutant Discharge Elimination System (NPDES) permit will not be required inasmuch as any potential storm water runoff from the construction activity can be captured and controlled on the construction site. If before construction commences it is determined that potential storm water runoff cannot be captured on site by means of allowing the storm water runoff to evaporate, soak into the ground on site or used for irrigation, North Kern will apply for a Notice of Intent, NPDES permit.

No other permits as required by the United States Environmental Protection Agency or the California Department of Fish and Game are required inasmuch as the construction activities are not subject to these types of permits.

Finally, it is noted that North Kern and Cawelo are not subject to the County’s jurisdiction with regard to building and grading permits.

Deliverables: Required encroachment permit to cross the railroad rights-of-way will be obtained by North Kern WSD. North Kern WSD will ensure local construction related permits are obtained by the contractor awarded the contract for construction.

Task 9 – Construction Contracting

Once the plans and specifications for the final level design are complete, the activities related to construction contracting will commence with North Kern WSD directing individuals from Zeiders Consulting and GEI Consultants to provide the following: (1) Advertisement and solicitation of bids; (2) Responding to prospective bidders’ request for information; (3) Preparation of addendas making changes or clarifications to the Contract documents; (4) Conducting a pre-bid tour and conference; (5) Conducting the bid opening; (6) Preparation of the abstract of bids; (7) Evaluation of proposals; (8) Checking references for the apparent low bidder; (9) Awarding the contract; and (10) Issuance of the Notice to Proceed.

Deliverables: (1) advertisement and solicitation of bids; (2)conduct a pre-bid tour and conference; (3) conduct bid opening; (4) prepare bid-abstract and evaluate bids; (5) award the contract; and (6) issue the Notice to Proceed.

Task 10 – Construction

This involves the furnishing and installation of all Project works described as tasks and subtasks that are items listed in the budget and schedule. A contract for this task will be awarded to the successful bidder.

Deliverables: Project works constructed as designed and specified.

Task 11 – Environmental Compliance

Once the contract has been awarded to a contractor, North Kern will engage a certified biologist to conduct pre-construction biological surveys prior to construction commencing. Accordingly, under this task North Kern will coordinate pre-construction biological surveys and provide additional monitoring during construction in compliance with Specifications.

Deliverables: (1) conduct pre-construction biological field surveys; and (2) report on biological monitoring during construction.

Task 12 – Construction Administration and Management

North Kern WSD will direct team members from Zeiders Consulting and GEI Consultants to provide services to conduct the work items under this task that involve everything from the issuance of the Notice to Proceed to the filing of the Notice of Completion for the Project works and preparation of “As-Built” plans. The activities can generally be categorized as field inspection and contract administration, where the latter includes the following activities: (1) Attend weekly construction meetings; (2) Process technical submittals; (3) Process Requests for Information (RFI’s); (4) Review contractor schedule and cash flows; (5) Process contract change order requests; (6) evaluate and process claims; (7) Prepare the monthly progress estimate; (8) Maintain as-built drawings and photographic records; and (9) Contract close-out. Activities related to field inspection include inspection of materials and quality of work for conformance with the plans and Specifications including the following: (1) Verification of depth and invert elevations of facilities to be constructed; (2) Record quantities of materials received or used during specified periods; (3) Maintenance of daily logs of construction and inspection activities, including photographs; and (4) Coordination of concrete and earthwork testing in support of construction.

Deliverables: (1) review of construction progress submittals; (2) processing RFI’s, contract change orders and claims; (3) start-up and testing; (4) filing of the Notice of Completion; and (5) preparation of the “As-Built” plans.

Task 13 – Monitoring, Assessment, and Performance Measures

This task involves some time for the Project Manager to utilize the project specific monitoring tables as input for the Applicant, Semitropic WSD to develop and implement a proposal monitoring plan the Poso Creek RWMG and DWR can monitor.

Deliverables: (1) project implementing agency to use project specific monitoring tables to develop proposal monitoring plan with Poso RWMG; and (2) implementing agency to monitor performance measures; and (3) implementing agency to report monitoring results of project performance measures to the Poso Creek RWMG on an acceptable schedule, such as an annual basis.

3.1.10 Appendices

Appendices for this Project 1 Work Plan include:

Appendix 3.1-1 90-Percent Level Design Plans

3.1.11 Tables

There are no tables for this section.

GRADING NOTES

- ALL WORK SHALL BE IN CONFORMANCE WITH NORTH KERN WATER STORAGE DISTRICT REQUIREMENTS AND WITH THE CITY OF BAKERSFIELD STANDARDS AND SHALL CONFORM TO THE RECOMMENDATIONS CONTAINED AND MADE A PART HEREOF IN THE PRELIMINARY SOILS REPORTS BY: KLEINFELDER, INC. DATED JULY 11, 2008 AND SIGNED BY DAVID L. FEARSON P.E., GE 674.
- CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS REQUIRED BY THE CITY OF BAKERSFIELD.
- THE ENGINEER HAS SHOWN EXISTING UNDERGROUND LINES ON THIS PLAN TO THE BEST OF HIS KNOWLEDGE. THERE MAY BE OTHER LINES IN THE GROUND THAT SHOULD BE LOCATED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT THE CITY OF BAKERSFIELD AT (805) 833-0800 FOR UTILITY LOCATION 48 HOURS PRIOR TO ANY EXCAVATION OR TRENCHING.
- CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, APPLY CONTROLS, AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DESIGN, INSTALL, MAINTAIN, AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
- ALL EXISTING IMPROVEMENTS THAT ARE REMOVED, DAMAGED OR UNDERCUT SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE CITY ENGINEER, AND THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE CITY'S BUILDING OFFICIAL 48 HOURS PRIOR TO EXCAVATION OR PLACING OF ANY FILL MATERIAL.
- COMPACTION TESTS SHALL BE PROVIDED BY THE CONTRACTOR AT LOCATIONS TO BE DETERMINED BY THE CITY INSPECTORS.
- FILL MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE SOILS ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR GRADING OF ADA AREA TO WITHIN ± 0.1' TYPICAL. ALL OF DESIGN ELEVATION SHALL BE GRADABLE AND ACCEPTED BY THE CITY. THE CONTRACTOR SHALL RETURN AND CORRECT THE GRADING AT NO COST TO THE DISTRICT.
- COMPACTION IN PROPOSED PRELIMINARY PLACEMENT AREAS SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AS OBTAINED BY A.S.T.M. TEST METHOD D1557-78 METHOD A AND SHOULD EXTEND TO A MINIMUM DISTANCE OF 2' BEYOND THE COURSE EDGES OF PIPE MOST BE COMPACTED TO A MINIMUM OF 92 % USING THE SAME METHOD.
- ALL FILL SHALL CONFORM TO THE REQUIREMENTS FOR ENGINEERED FILL * AS DESCRIBED IN THE PRELIMINARY SOILS REPORT.
- FILL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING SIX (6) INCHES IN COMPACTED THICKNESS AND COMPACTED AT OPTIMUM MOISTURE CONTENT BY AN APPROVED METHOD.
- THE DESIGN ENGINEER SHALL EXERCISE SUFFICIENT SUPERVISORY CONTROL DURING GRADING AND CONSTRUCTION TO INSURE COMPLIANCE WITH THE PLANS.
- UPON COMPLETION OF GRADING, A FINAL SOILS REPORT COVERING THE SITE PREPARATION AND GRADING SHALL BE SUBMITTED BY THE SOILS ENGINEER.
- ALL OUT SLOPES SHALL NOT BE STEEPER THAN 1 HORIZONTAL TO 1 VERTICAL.
- ALL FILL AREAS SHALL NOT BE STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL.
- ALL FILL AREAS SHALL BE CLEARED OF ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FOR A STRUCTURAL FILL AND THE AREA SCARPED TO A DEPTH OF 12".
- SURFACE DRAINAGE SHALL BE 1% MINIMUM EXCEPT AS NOTED BY BUILDING OFFICIAL, UNLESS NOTED OTHERWISE ON DRAWINGS.
- GRADING WORK WILL BE SUPERVISED AS ENGINEERED GRADING IN ACCORDANCE WITH CHAPTER 70 OF UNIFORM BUILDING CODE.
- THE ENGINEER SHALL NOT BE RESPONSIBLE OR LIABLE FOR UNAUTHORIZED CHANGES TO, OR USES OF, THESE PLANS. ALL CHANGES TO THESE PLANS MUST BE APPROVED IN WRITING BY THE ENGINEER.
- DUST CONTROL:
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PREVENT A DUST NUISANCE FROM ORIGINATING FROM THE SITE OF WORK AS A RESULT OF HIS OPERATIONS DURING THE EFFECTIVE PERIOD OF THIS CONTRACT. PREVENTIVE MEASURES TO BE TAKEN BY THE CONTRACTOR SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
A. WATER SHALL BE APPLIED TO ALL UNPAVED AREAS AS REQUIRED TO PREVENT THE SURFACES FROM BECOMING DRY ENOUGH TO PERMIT DUST FORMATION.
B. PAVED SURFACES OVER WHICH VEHICULAR TRAFFIC IS PERMITTED TO TRAVEL SHALL BE KEPT FREE OF DIRT.
C. CONTRACTOR IS REQUIRED TO COMPLY WITH ALL REQUIREMENTS OF THE APPLICABLE RULES UNDER SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT REGULATION III AND THE DISTRICT'S RULES AND REGULATIONS AT ALL TIMES.
- DURING EXCAVATION, REASONABLE SEARCHING SHALL BE PERFORMED FOR CONCEALED SUBSURFACE OBSTRUCTIONS. ALL ABANDONED SUBSURFACE OBSTRUCTIONS SHALL BE REMOVED. IF THE REMAINS OF ANY ABANDONED PIPING IS OUTSIDE THE PROJECT LIMITS, THE PROJECT SHOULD BE REMOVED WITH THE PROJECT AND PROPERLY CHIPPED AT THE PROJECT BOUNDARY.
- THE STAKING AND MARKING OF THE PROJECT SHALL BE DONE ONLY ONCE BY THE ENGINEER AND ALL RESTAKING OR RE-MARKING SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
- THE CUT AND FILL QUANTITIES ARE CALCULATED USING A COMPACTION FACTOR OF 1.65. THE ENGINEER MAKES NO WARRANTY EITHER DIRECT OR IMPLIED THAT THIS WILL BE THE ACTUAL COMPACTION FACTOR. IF A DEFICIENCY OR AN EXCESS OF SOIL OCCURS, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE ENGINEER, WHO SHALL DETERMINE IF ADJUSTMENTS CAN BE MADE TO IMPROVE THE BALANCE BETWEEN CUT AND FILL.
- THE CUT AND FILL QUANTITIES SHOWN ON THIS PLAN ARE FINAL PAY QUANTITIES. THE CONTRACTOR SHALL, AFTER EXAMINING THE PLAN, SOILS REPORT AND THE SITE TERRAIN, PREPARE HIS BID PRICE FOR THE PROJECT BASED ON HIS OWN ANALYSIS OF THE WORK REQUIRED.
- THE SOILS ENGINEER MUST APPROVE ALL MATERIAL, INCLUDING IMPORT, AND ALL SOIL COMPACTION INCLUDING THE STABILITY OF ALL SLOPES, BOTH THOSE THAT ARE CREATED BY AND THOSE REMAINING AFTER GRADING OPERATIONS.
- THE ENGINEER WILL FURNISH REFERENCE LINES AND GRADE STAKES AT THE BEGINNING OF THE WORK TO ESTABLISH ALIGNMENT AND GRADE. ANY GRADE STAKES OR REFERENCES POINTS WHICH MAY BE LOST OR DESTROYED BY THE CONTRACTOR DURING THE COURSE OF HIS WORK SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. THE ENGINEER MAY REQUIRE FIELD CHECKS AT ANY STAGE OF THE WORK. THE COST OF THESE FIELD CHECKS SHALL BE BORNE BY THE OWNER. THE CONTRACTOR'S RESPONSIBILITY FOR THIS SECTION WILL NOT APPLY IN THE CASE OF MALICIOUS DAMAGE BY OTHERS.
- IF THE CONTRACTOR IS IN DOUBT AS TO THE MEANING OF ANY PART OF THE PLAN AND SPECIFICATIONS OR FINDS DISCREPANCIES IN OR OMISSIONS FROM THE DRAWING OR SPECIFICATIONS, HE SHALL SUBMIT A WRITTEN REQUEST FOR AN INTERPRETATION OR A CORRECTION THEREOF, PRIOR TO FILING HIS BID FOR THE PROJECT.
- THE CONTRACTOR SHALL PROVIDE ALL SOLE STAKING.
- UPON THE OCCURRENCE OF ACCIDENTS OR OTHER CATASTROPHIC RESPONSES ARISING FROM CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT, ALL ACTIVITY ON THAT AREA OF THE SITE SHALL BE HALTED, AND THE ENGINEER SHALL BE NOTIFIED. A QUALIFIED ARCHAEOLOGIST SHALL BE CALLED TO THE SITE TO IDENTIFY THE RESOURCE.
- ALL REQUIRED OVER-EXCAVATION SHALL BE DONE IN CONFORMANCE WITH AND SHALL CONFORM TO THE RECOMMENDATIONS CONTAINED AND MADE A PART HEREOF IN THE PRELIMINARY SOILS REPORTS BY: KLEINFELDER, INC., DATED JULY 11, 2008 AND SIGNED BY DAVID L. FEARSON P.E., GE 674.

CITY OF BAKERSFIELD - COUNTY OF KERN - STATE OF CALIFORNIA

NORTH KERN WATER STORAGE DISTRICT

CALLOWAY CANAL - CROSS VALLEY CANAL

INTER-TIE CANAL

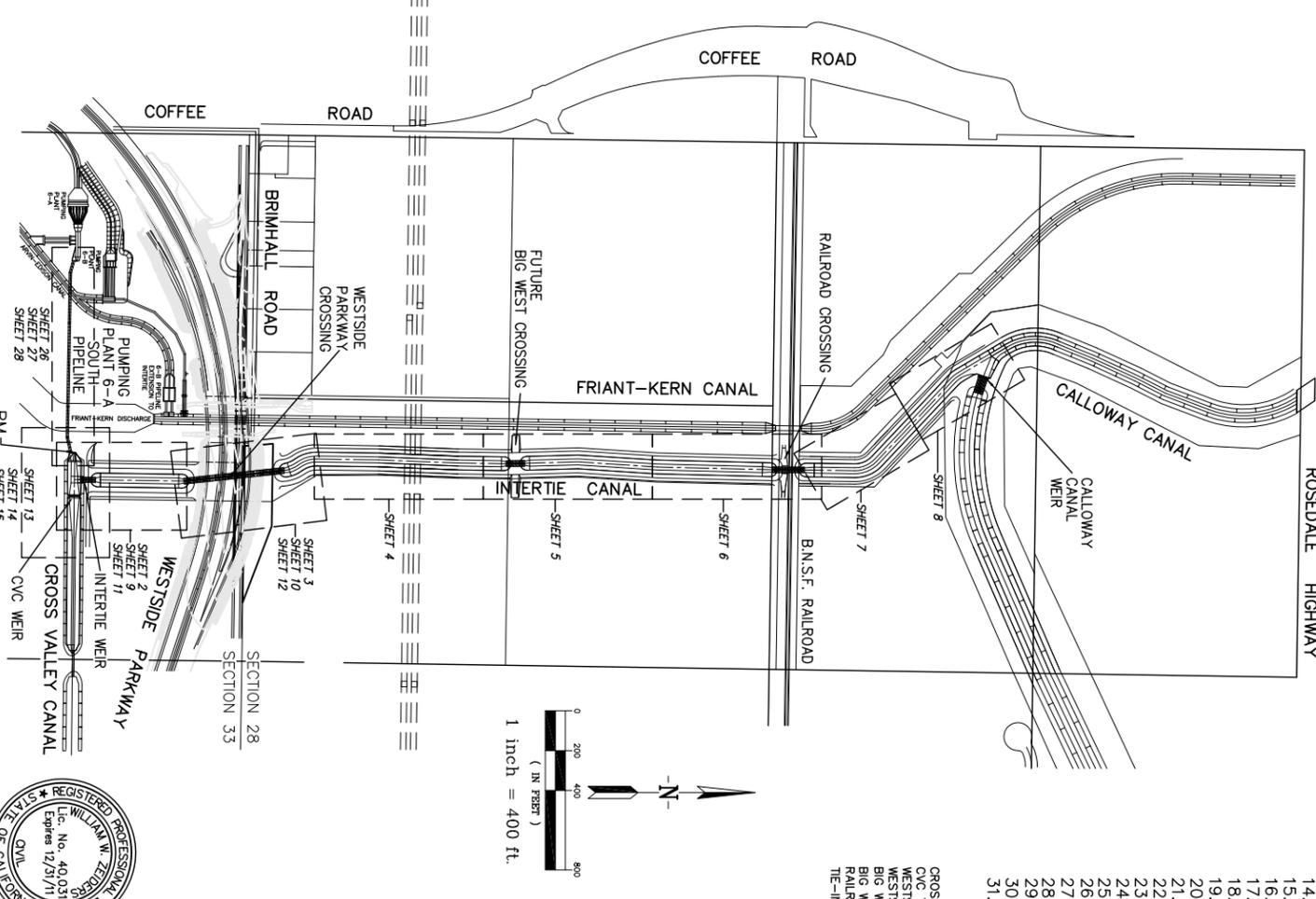
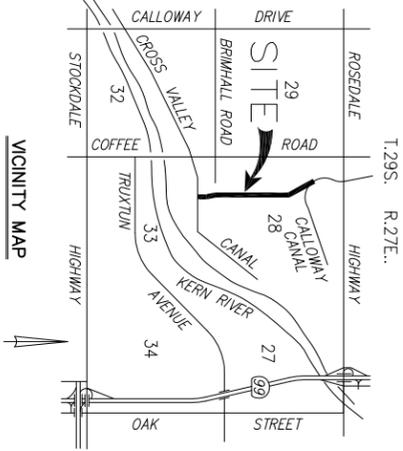
CANAL PLANS

WATER AGENCY
 CAMELO WATER DISTRICT
 17207 INDUSTRIAL FARM ROAD
 BAKERSFIELD, CA. 93308
 (661) 393-6070

WATER AGENCY
 NORTH KERN WATER STORAGE DISTRICT
 33380 CAMELO AVENUE
 BAKERSFIELD, CA. 93314
 (661) 393-2696

ENGINEER
 ZEIDERS CONSULTING
 1655 GREELEY ROAD
 BAKERSFIELD, CA. 93314
 (661) 589-8366

- PRE BEDDING:
INITIAL BACKFILL FOR 120" PIPE SHALL UTILIZE CONTROLLED LOW STRENGTH MATERIAL (CLSM) BEDDING AS FOLLOWS: CONTROLLED LOW STRENGTH MATERIAL (CLSM) BEDDING SHALL BE PLACED TO A MINIMUM DEPTH OF 12" BELOW THE INITIAL CONSISTENCY OF WATER. THAT IS HAND EXCAVATED WITH MINIMUM COMPRESSIVE STRENGTH OF 20 PSF AT 3 DAYS AND A 28 DAY COMPRESSIVE STRENGTH OF 100 TO 300 PSF PER ASTM D4832 WHEN CURED. CLSM SHALL BE A VISCOUS POURABLE OR PUMPABLE MORTAR FOR INITIAL PLACEMENT WITHOUT VARIATION WITHIN THE PIPE ZONE. CLSM SHALL BE PLACED AS SHOWN ON CLSM PRE BEDDING DETAIL, SHEET 3.
- 120" ROP PIPE SHALL BE PROVIDED F.O.B. HANSON PIPE & PRECAST - SHAFER FACILITY, 30761 SAN DIEGO STREET SHAFER, CA. 93263 (661) 746-3527. CONTRACTOR WILL BE REQUIRED TO PROVIDE FOR DELIVERY OF PIPE TO SITE AS PART OF CONTRACT. ACQUISITION OF PIPE IS NOT A PART OF CONTRACT. JOINT TESTING WILL NOT BE REQUIRED.
- PRE BEDDING USED IS DESIGNED AS PRESSURE PIPE AND SHOULD END HAS TWO (2) END JOINTS AND JOINTS ARE TO BE INSTALLED UNDER THE PIPE JOINT TESTING WILL NOT BE REQUIRED.



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2. PLAN & PROFILE - STATION 13+00 TO STA. 13+00	13+00	13+00	
3. PLAN & PROFILE - STATION 15+00 TO STA. 21+00	15+00	21+00	
4. PLAN & PROFILE - STATION 13+00 TO STA. 29+00	13+00	29+00	
5. PLAN & PROFILE - STATION 21+00 TO STA. 29+00	21+00	29+00	
6. PLAN & PROFILE - STATION 29+00 TO STA. 37+50	29+00	37+50	
7. PLAN & PROFILE - STATION 37+50 TO STA. 44+00	37+50	44+00	
8. PLAN & PROFILE - STATION 44+00 TO END	44+00	TO END	
9. CROSS-SECTIONS			
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11. PLAN VIEW - SOUTH END OF INTERTIE CANAL			
12. PROFILE - SOUTH END OF INTERTIE CANAL			
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14. PROFILE - TWIN 120" PIPELINE UNDER WESTSIDE PARKWAY			
15. INTERTIE CONNECTION TO CROSS VALLEY CANAL			
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19. BOWL DETAILS - WESTSIDE PARKWAY PIPELINE (SOUTH)			
20. BOWL DETAILS - WESTSIDE PARKWAY PIPELINE (NORTH)			
21. BOWL DETAILS - BIG WEST CROSSING (SOUTH)			
22. BOWL DETAILS - BIG WEST CROSSING (NORTH)			
23. BOWL DETAILS - B.N.S.F. RAILROAD CROSSING (SOUTH)			
24. BOWL DETAILS - B.N.S.F. RAILROAD CROSSING (NORTH)			
25. BOWL DETAILS - CALLOWAY CANAL WEIR/PIPELINES			
26. CONCRETE NOTES AND DETAILS			
27. CONCRETE BOWL REINFORCEMENT PLAN AND DETAILS			
28. WEIR & PIPELINE DETAILS - CALLOWAY CANAL			
29. PLAN & PROFILE - 6-A PIPELINE TO CROSS VALLEY CANAL			
30. DETAILS - 6-A PIPELINE CONNECTION AT 6-A CHANNEL			
31. DETAILS - 6-A PIPELINE CONNECTION AT CROSS VALLEY CANAL			

ESTIMATED EARTHWORK QUANTITIES

SEGMENT	CUT	FILL (L.65%)	IMPORT
CROSS VALLEY CANAL	4,000 C.Y.	5,000 C.Y.	4,250 C.Y.
CVC TO WESTSIDE PARKWAY	1,640 C.Y.	13,700 C.Y.	22,605 C.Y.
WESTSIDE PARKWAY (PIPELINE)	4,100 C.Y.	11,570 C.Y.	14,990 C.Y.
WESTSIDE PARKWAY TO BIG WEST X-ING	3,070 C.Y.	24,560 C.Y.	40,194 C.Y.
BIG WEST X-ING (PIPELINE)	880 C.Y.	2,490 C.Y.	3,229 C.Y.
BIG WEST X-ING TO RAILROAD	2,400 C.Y.	24,930 C.Y.	41,135 C.Y.
RAILROAD TO CALLOWAY CANAL	5,030 C.Y.	14,180 C.Y.	23,397 C.Y.
THE-IN TO CALLOWAY CANAL	2,950 C.Y.	2,230 C.Y.	3,660 C.Y.
TOTAL	24,070 C.Y.	98,460 C.Y.	162,460 C.Y.

- NOTES:**
- A COMPACTION RATE OF 1.65% WAS USED TO DETERMINE FILL AND IMPORT QUANTITIES. THE CUT AND FILL QUANTITIES SHOWN ON THIS PLAN ARE FOR PERMIT PURPOSES ONLY. THE CONTRACTOR SHALL, AFTER EXAMINING THE PLAN, SOILS REPORT AND THE SITE TERRAIN, PREPARE HIS ESTIMATED EARTHWORK INDEPENDENTLY OF THE ENGINEER'S.
- QUANTITIES**
- PIPELINE - INTERTIE CANAL**
- 60 - JOINTS 120" DIA. X 16' LONG B135 RG ROP = 960 L.F.
 - 4 - JOINTS 120" DIA. X 12' LONG B135 RG ROP = 48 L.F.
 - CONTROLLED LOW STRENGTH MATERIAL BEDDING = 526 C.Y.
- PIPELINE - INTERTIE CANAL - RAILROAD CROSSING**
- 20 - JOINTS 120" DIA. X 16' LONG CL-5 RG ROP (RR) = 320 L.F.
 - CONTROLLED LOW STRENGTH MATERIAL BEDDING = 169 C.Y.
 - 10 - JOINTS 120" DIA. X 16' LONG CL-5 RG ROP (RR) = 160 L.F.
 - 2 - JOINTS 120" DIA. X 12' LONG CL-5 RG ROP (RR) = 24 L.F.
 - CONTROLLED LOW STRENGTH MATERIAL BEDDING = 97 C.Y.
- PIPELINE - PUMPING PLANT 6-A CONNECTION**
- 54 - JOINTS 120" DIA. X 16' LONG B135 RG ROP = 864 L.F.
 - 4 - JOINTS 120" DIA. X 12' LONG B135 RG ROP = 60 L.F.
 - 4 - JOINTS 120" DIA. X 10' LONG M.L. & COATED STEEL = 40 L.F.
 - CONTROLLED LOW STRENGTH MATERIAL BEDDING = 773 C.Y.
 - REINFORCED CONCRETE LINING (BOWLS AT PIPELINES) = 21,000 S.F.
 - UNREINFORCED CONCRETE LINING = 326,300 S.F.
 - CANAL FENCING = 9,000 L.F.
 - 50' WIDE STANDARD WEIR (CROSS-VALLEY CANAL) = 1 EA.
 - 50' WIDE CULVERT WEIR (3-120" PIPES) (CALLOWAY CANAL) = 1 EA.
 - 30' WIDE CULVERT WEIR (2-120" PIPES) (CVC/INTERTIE) = 1 EA.
 - RIP-RAP (AT CALLOWAY CULVERT) = 3,800 S.F.
 - STRUCTURES (CONNECTION @ E. & W. ENDS OF 6-A PIPELINE) = 2 EA.
- PRIVATE ENGINEER'S NOTICE TO CONTRACTORS**
- THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES, CABLES, WIRES OR STRUCTURES ARE NOT SHOWN ON THESE PLANS REFER TO COUNTY OF KERN RECORDS DEPARTMENT PLANS FOR CONSTRUCTION ON SEVENTH STANDARD ROAD WHENEVER FEASIBLE TO CORREL ROAD FOR INFORMATION ON UTILITIES, UNDERGROUND PIPES, CABLES, ETC.
- THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN, AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THE REFERENCED PLANS
- ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA.
- UNDERGROUND SERVICE ALERT SHALL BE CONTACTED AT LEAST TWO WORKING DAYS PRIOR TO CONSTRUCTION. 1-800-642-2444
- DESIGNED BY:

PRELIMINARY

DATE: MAY 11, 2010
 SCALE: AS NOTED
 DRAWN BY: J. STORMONT
 CHECKED BY: W. ZEIDERS
 FILE NAME: CLWY-CVC-INTERTIE-BASE

**INTERTIE CANAL
 IMPROVEMENT PLANS**

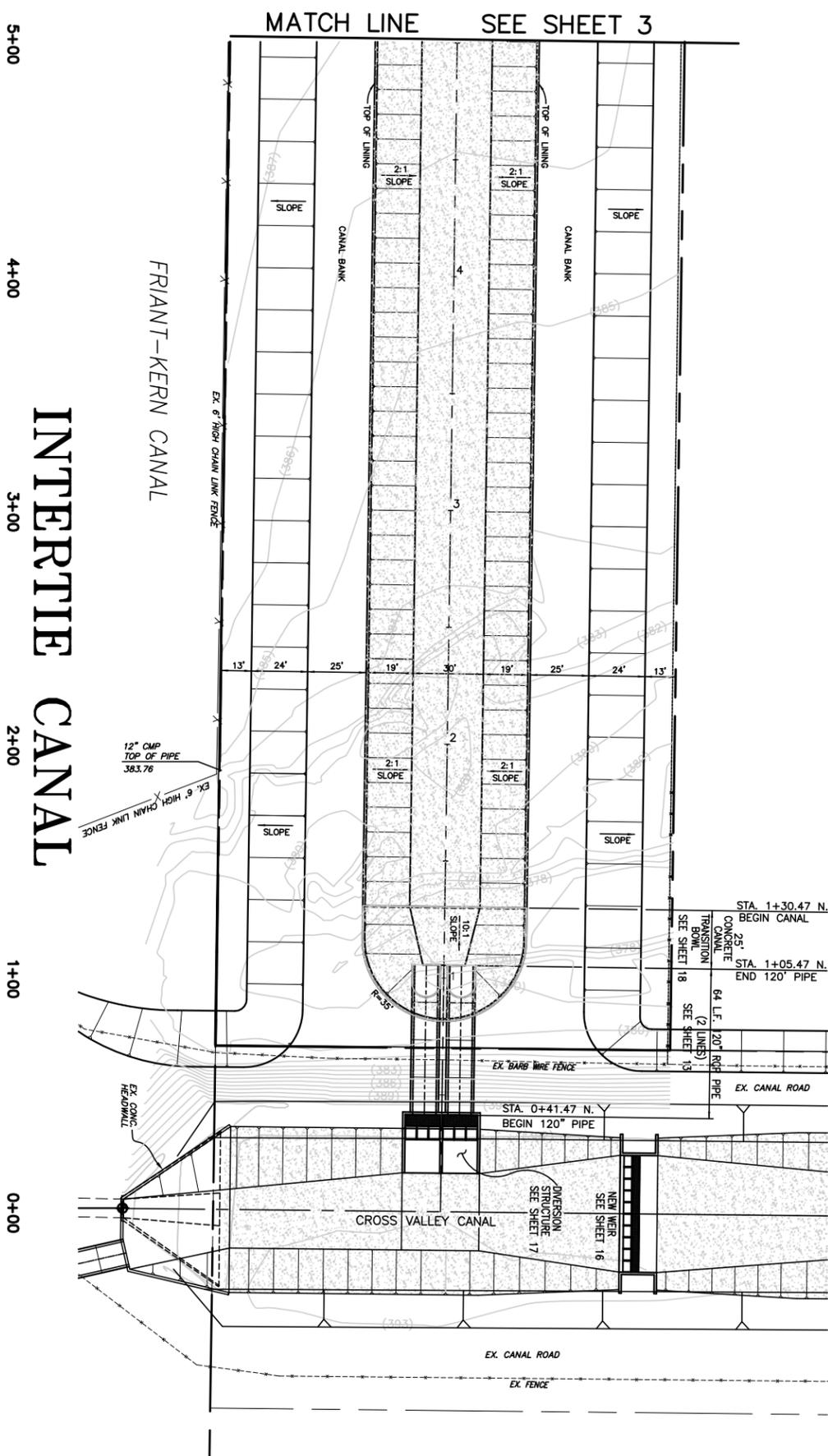
TITLE SHEET

NORTH KERN WATER STORAGE DISTRICT
 33380 CAMELO AVENUE
 BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
 1655 GREELEY ROAD
 BAKERSFIELD, CA. 93314
 (661) 589-8366

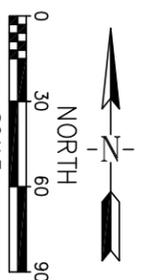
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 of 31

CROSS VALLEY CANAL
SEE SHEET 13



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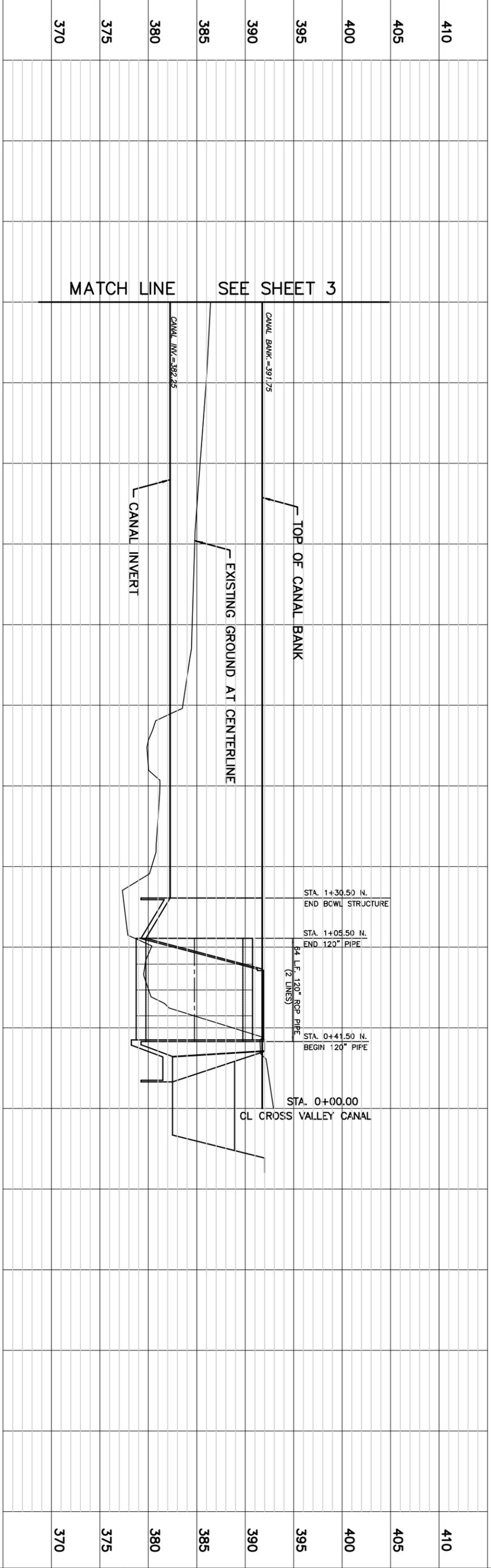
INTERTIE CANAL



SCALE:
HORIZ. 1" = 30'
VERT. 1" = 5'



PRELIMINARY



MATCH LINE SEE SHEET 3

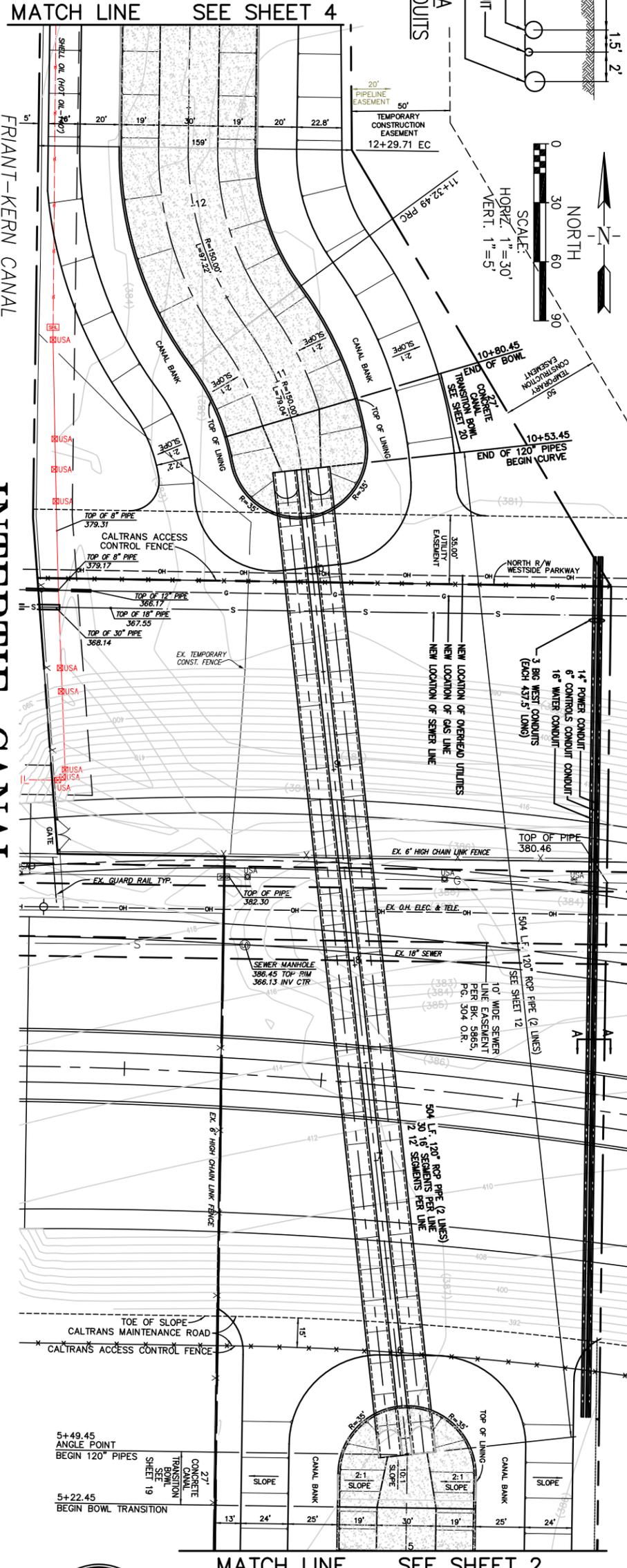
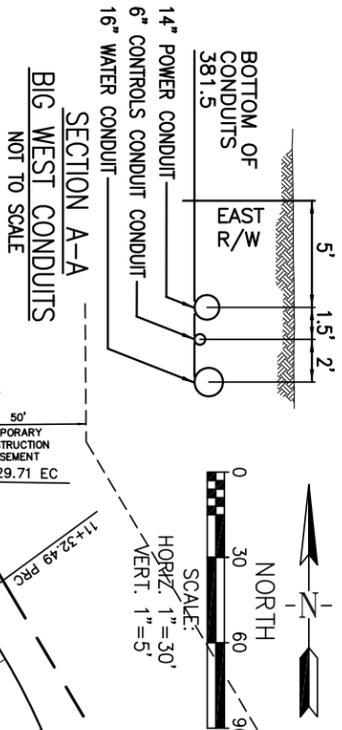
DATE: MAY, 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-BASE

INTERTIE CANAL
IMPROVEMENT PLANS
PLAN & PROFILE STA. 0+00 TO STA. 5+00

NORTH KERN WATER STORAGE DISTRICT
33380 CAWEL0 AVENUE
BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO.
2
of 31



PRELIMINARY

DRAWING NO. **3**
of 31

13+00 12+00 11+00 10+00 9+00 8+00 7+00 6+00 5+00

LEGEND:

- EXISTING OIL PIPELINE
- EXISTING SWEET OIL PIPELINE MARKER LOCATED BY SURVEY
- EXISTING USA MARKER FLAG LOCATED BY SURVEY
- EXISTING PIPELINE ELEVATION PER FIELD SURVEY (PIPELINE EXPOSED BY POT-HOLE METHOD)

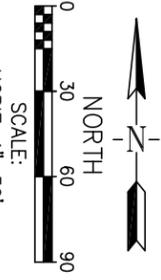
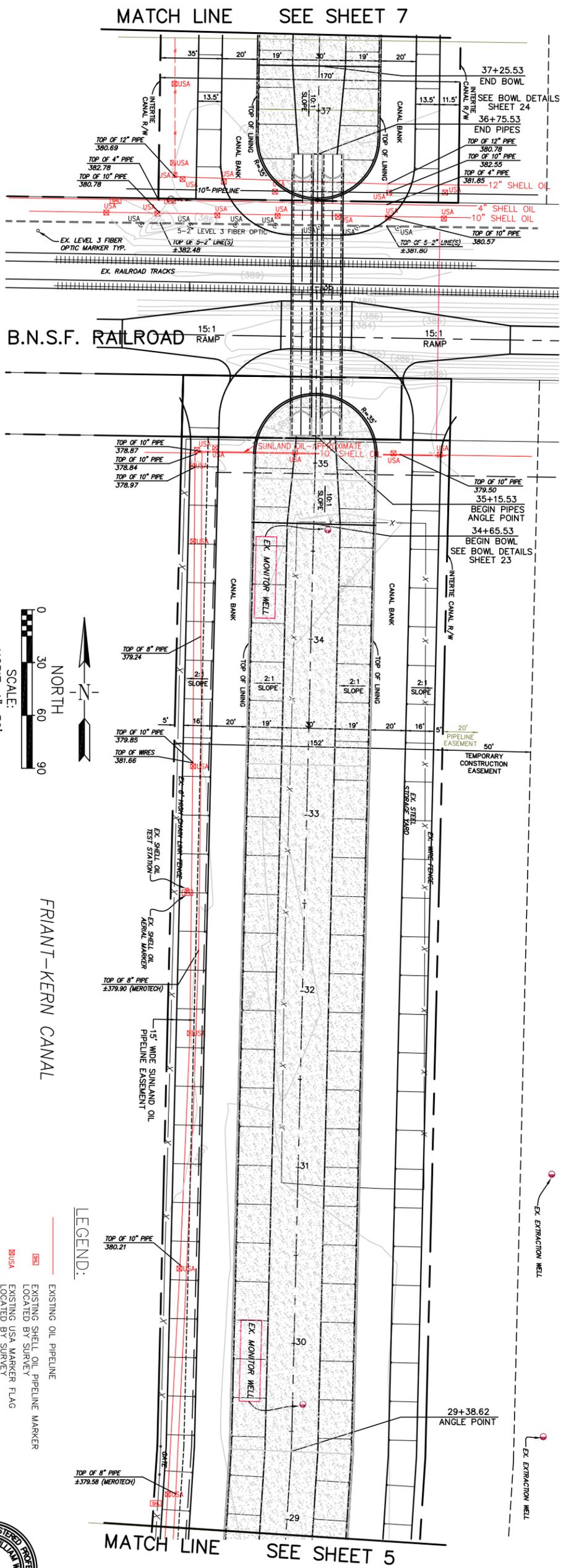
415	EXISTING OIL PIPELINE	EXISTING SWEET OIL PIPELINE MARKER LOCATED BY SURVEY	EXISTING USA MARKER FLAG LOCATED BY SURVEY	EXISTING PIPELINE ELEVATION PER FIELD SURVEY (PIPELINE EXPOSED BY POT-HOLE METHOD)
410	TOP OF 8\"/>			
405	TOP OF 8\"/>			
400	TOP OF 8\"/>			
395	TOP OF 8\"/>			
390	TOP OF 8\"/>			
385	TOP OF 8\"/>			
380	TOP OF 8\"/>			
375	TOP OF 8\"/>			
370	TOP OF 8\"/>			

DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-BASE

INTERTIE CANAL IMPROVEMENT PLANS
PLAN & PROFILE STA. 5+00 TO STA. 13+00

NORTH KERN WATER STORAGE DISTRICT
33380 CAWALO AVENUE
BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366



LEGEND:

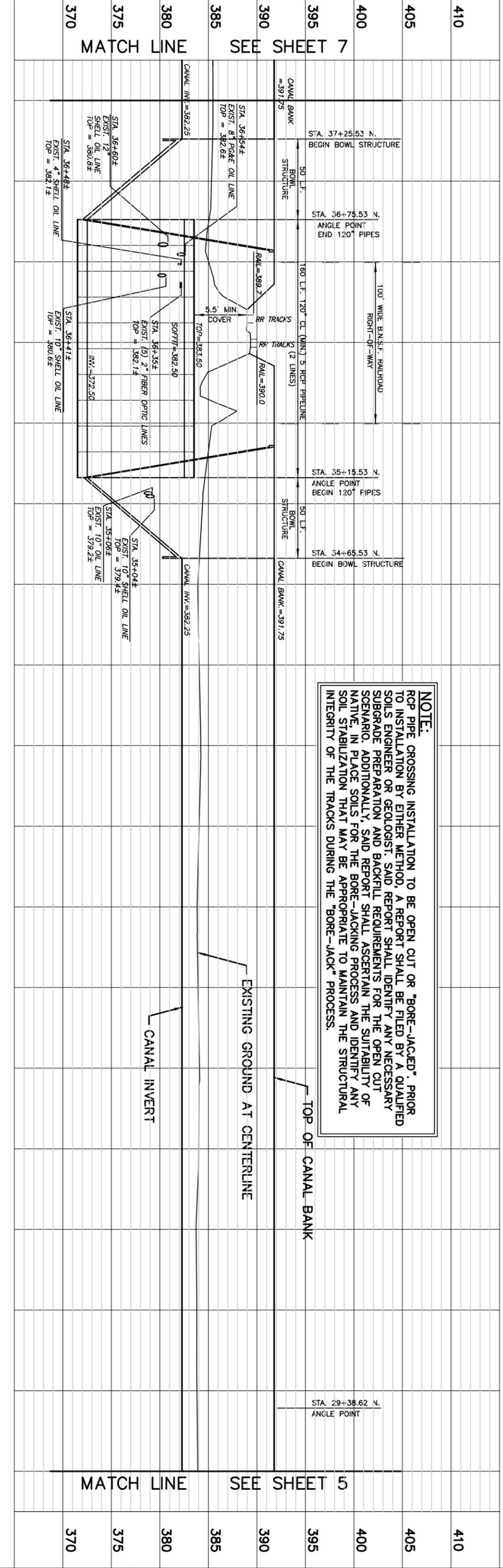
- EXISTING OIL PIPELINE
- EXISTING SHELL OIL PIPELINE MARKER LOCATED BY SURVEY
- EXISTING USA MARKER FLAG LOCATED BY SURVEY
- EXISTING PIPELINE ELEVATION PER FIELD SURVEY (PIPELINE EXPOSED BY POT-HOLE METHOD)
- EX. MONITOR WELL
- EX. EXTRACTION WELL



PRELIMINARY

INTERTIE CANAL

NOTE:
RCP PIPE CROSSING INSTALLATION TO BE OPEN CUT OR "BORE-JACKED". PRIOR TO INSTALLATION BY EITHER METHOD, A REPORT SHALL BE FILED BY A QUALIFIED SOILS ENGINEER OR GEOLOGIST. SAID REPORT SHALL IDENTIFY ANY NECESSARY SUBGRADE PREPARATION AND BACKFILL REQUIREMENTS FOR THE OPEN CUT SCENARIO. ADDITIONALLY, SAID REPORT SHALL ASCERTAIN THE SUITABILITY OF NATIVE, IN PLACE SOILS FOR THE BORE-JACKING PROCESS AND IDENTIFY ANY SOIL STABILIZATION THAT MAY BE APPROPRIATE TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE TRACKS DURING THE "BORE-JACK" PROCESS.



DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-BASE

INTERTIE CANAL
IMPROVEMENT PLANS
PLAN & PROFILE STA. 29+00 TO STA. 37+50

NORTH KERN WATER STORAGE DISTRICT
33380 CAWALO AVENUE
BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

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6
of 31

PRELIMINARY

DRAWING NO.

9

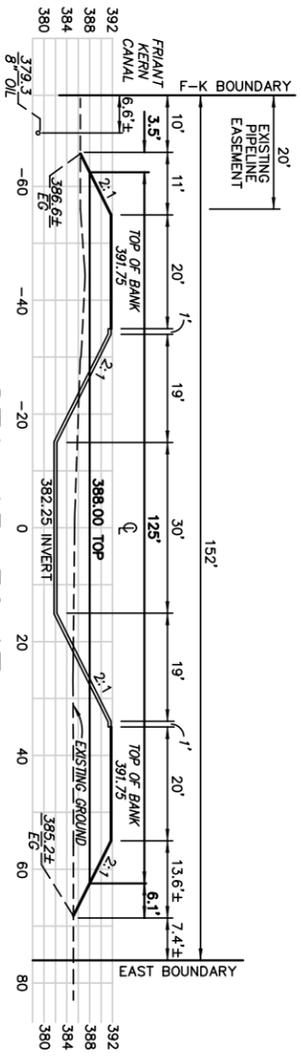
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ZEIDERS CONSULTING
 1655 GREELEY ROAD
 BAKERSFIELD, CA. 93314
 (661) 589-8366

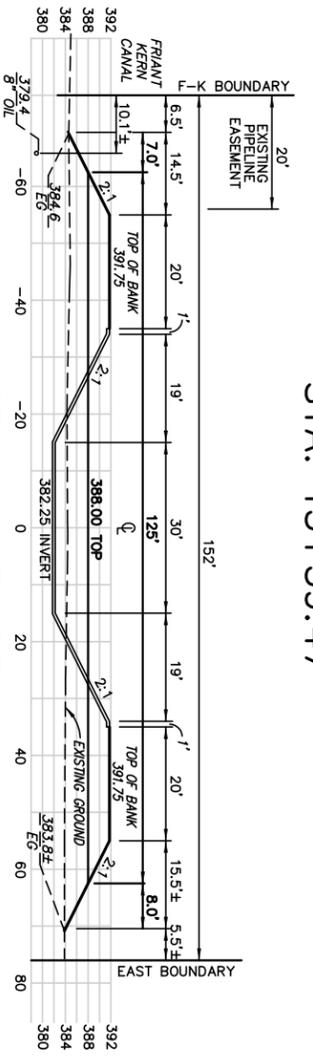
NORTH KERN WATER STORAGE DISTRICT
 33380 CAWALO AVENUE
 BAKERSFIELD, CALIFORNIA, 93380

INTERTIE CANAL
IMPROVEMENT PLANS
CROSS - SECTIONS

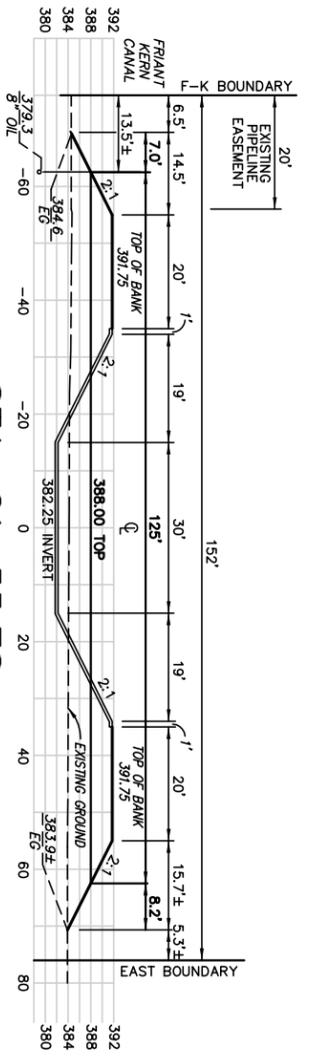
DATE: MAY 11, 2010
 SCALE: AS NOTED
 DRAWN BY: J. STORMONT
 CHECKED BY: W. ZEIDERS
 FILE NAME: CLWY-CVC-INTERTIE-BASE



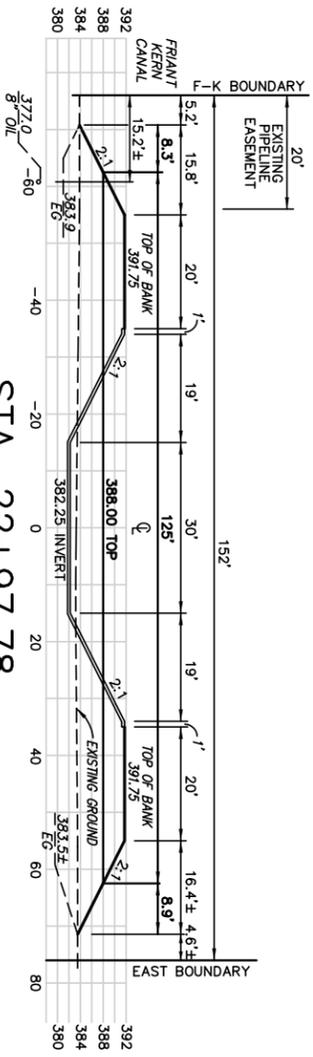
STA. 15+39.47



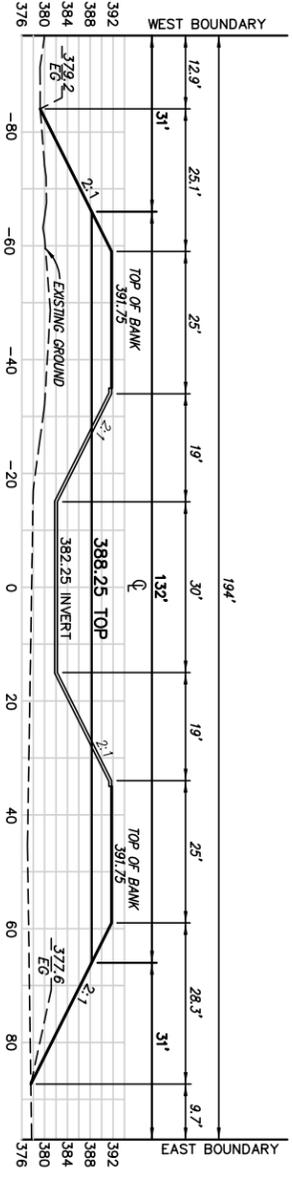
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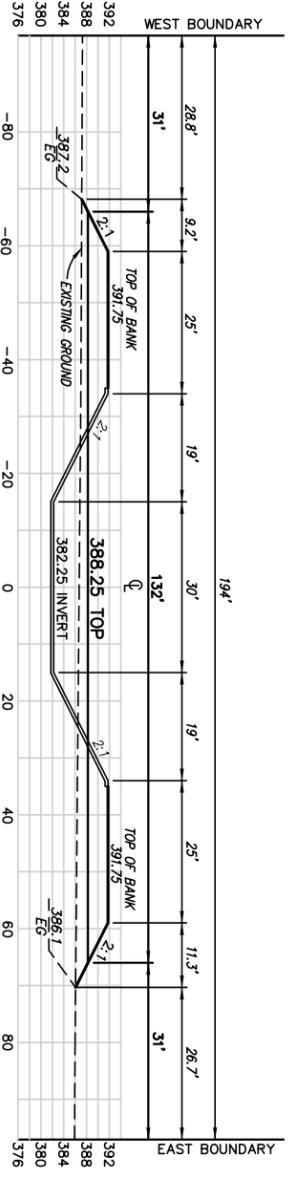
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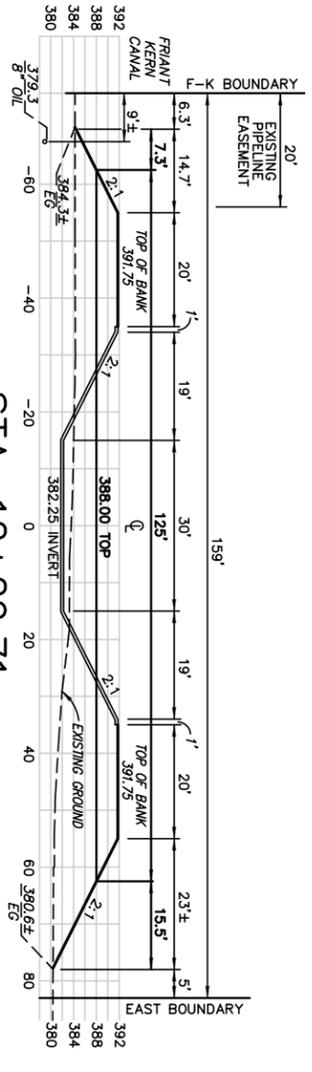
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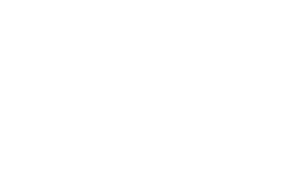
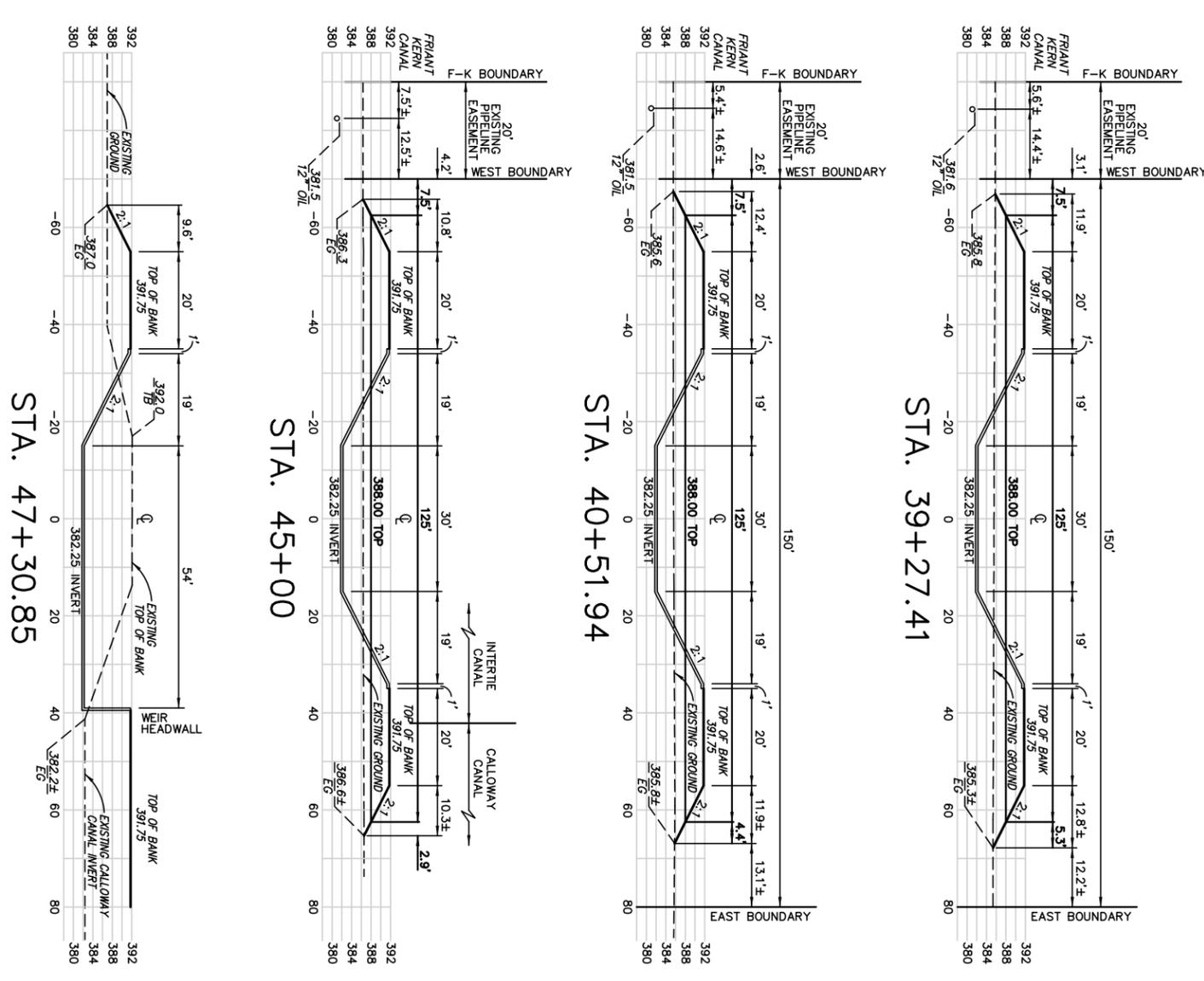
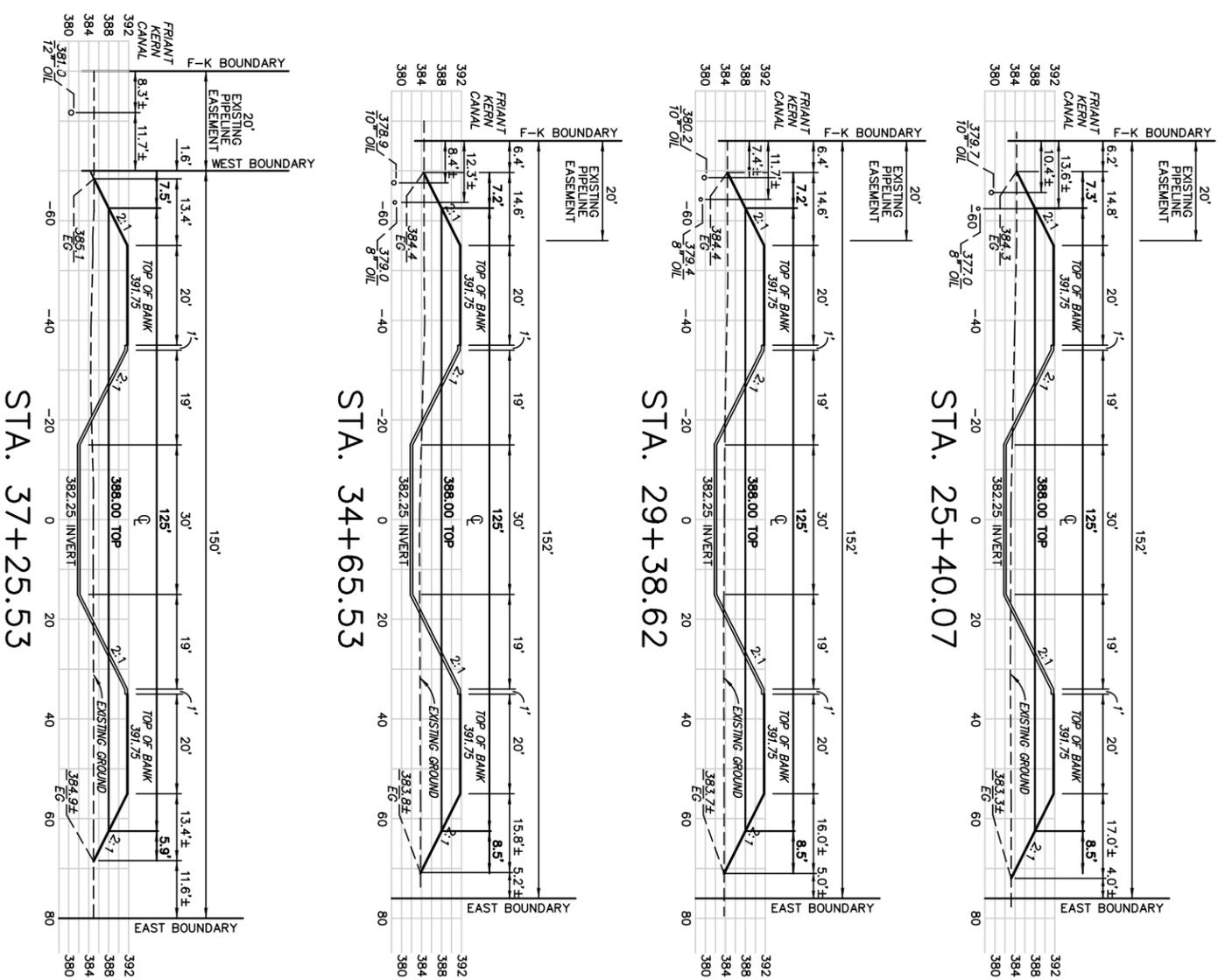
STA. 1+30.47



STA. 5+22.45



STA. 12+29.71



PRELIMINARY

DATE: MAY 11, 2010
 SCALE: AS NOTED
 DRAWN BY: J. STORMONT
 CHECKED BY: W. ZEIDERS
 FILE NAME: CLWY-CVC-INTERTIE-BASE

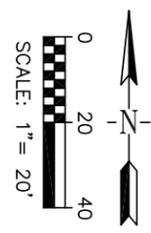
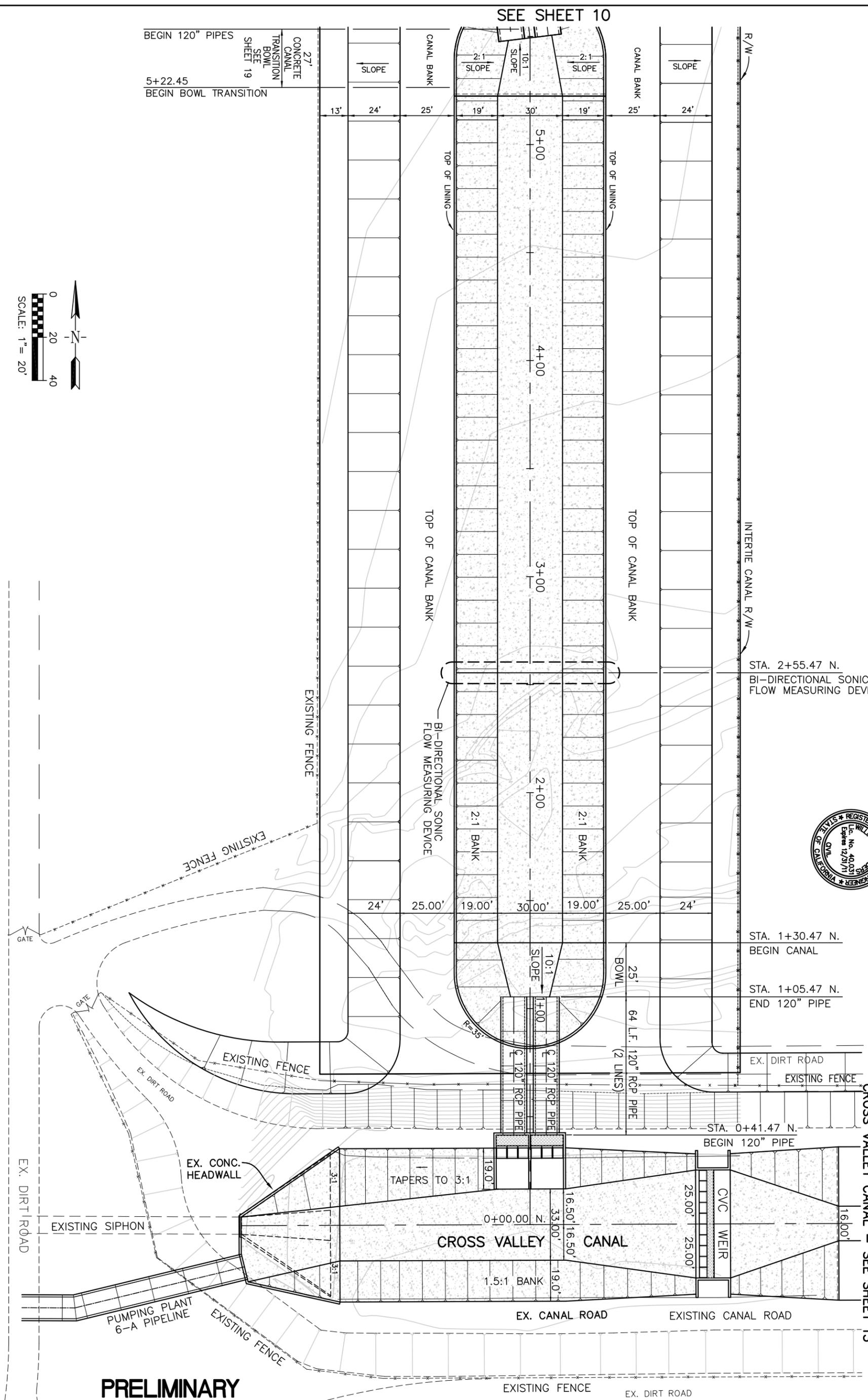
**INTERTIE CANAL
 IMPROVEMENT PLANS
 CROSS - SECTIONS**

NORTH KERN WATER STORAGE DISTRICT
 33380 CAWALO AVENUE
 BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
 1655 GREELEY ROAD
 BAKERSFIELD, CA. 93314
 (661) 589-8366

DRAWING NO. **10**
 of 31

PIPELINE CONNECTION TO CROSS VALLEY CANAL - PLAN
INTERTIE CANAL



PRELIMINARY

DATE: MAY 11, 2010
 SCALE: AS NOTED
 DRAWN BY: J. STORMONT
 CHECKED BY: W. ZEIDERS
 FILE NAME: CLWY-CVC-INTERTIE-DETAILS

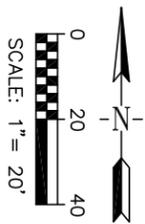
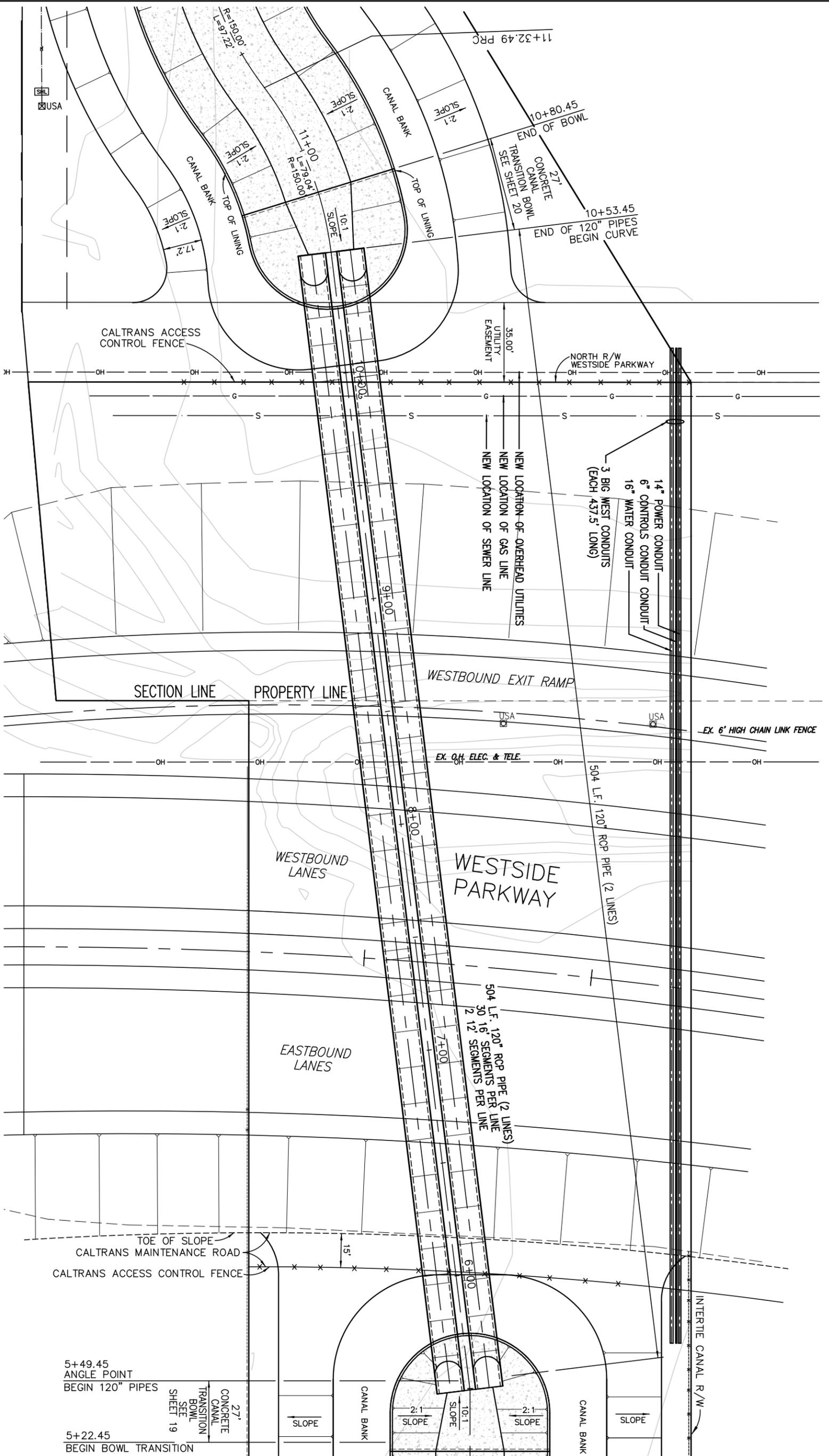
INTERTIE CANAL
 CANAL PLAN
 AT CVC CONNECTION

NORTH KERN WATER STORAGE DISTRICT
 33380 CAWEL0 AVENUE
 BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
 1655 GREELEY ROAD
 BAKERSFIELD, CA. 93314
 (661) 589-8366

DRAWING NO. **11**
 of 31

INTERTIE CANAL
PIPELINE UNDER WESTSIDE PARKWAY - PLAN



PRELIMINARY

DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

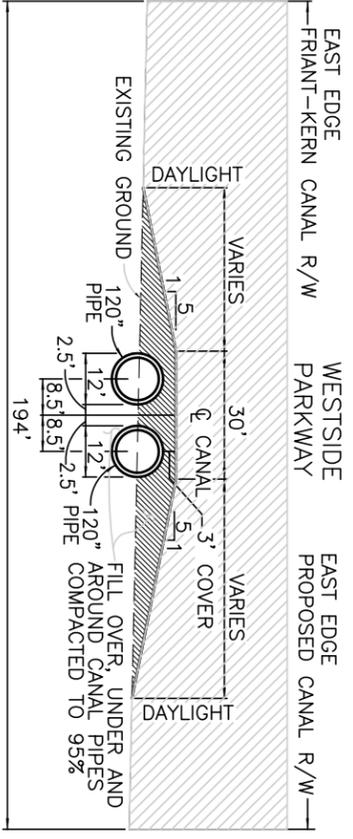
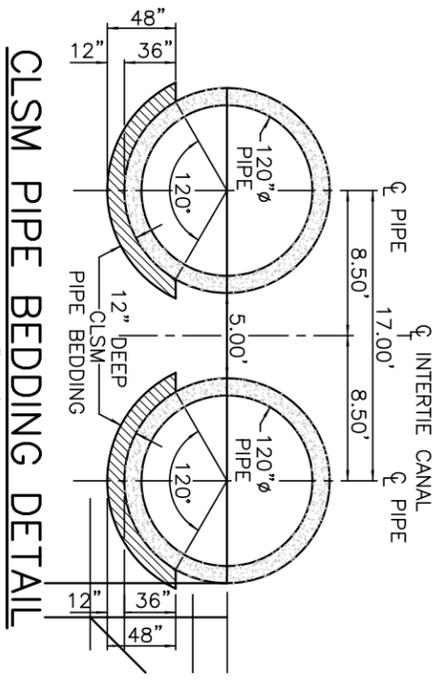
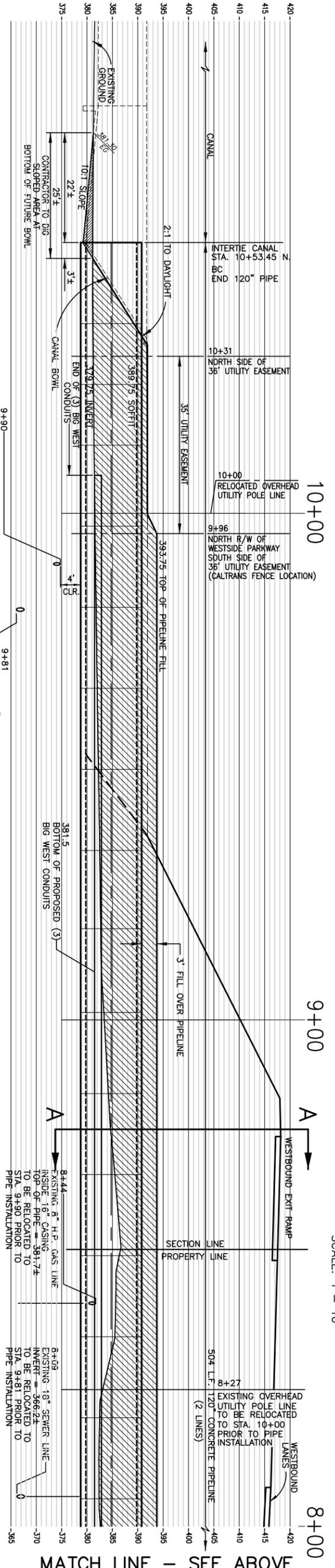
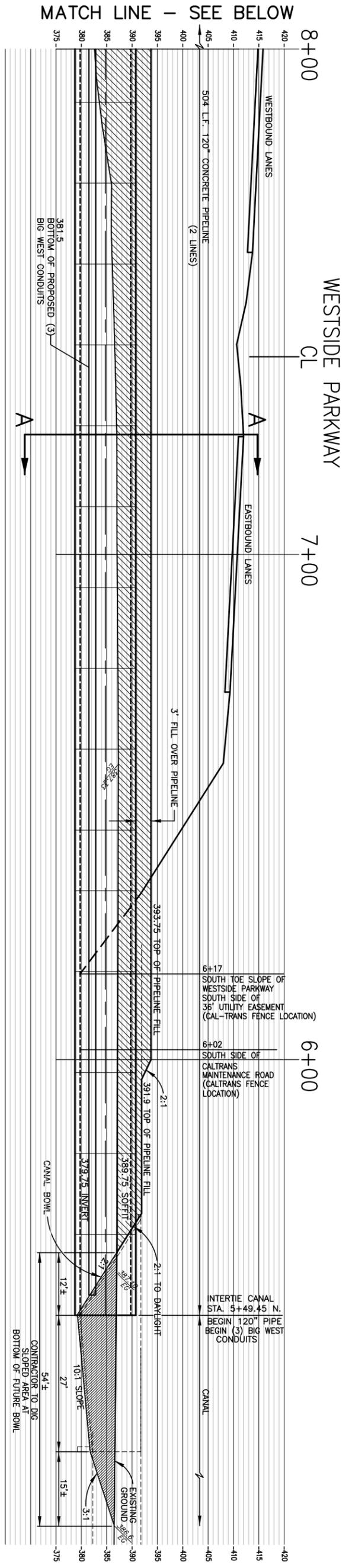
INTERTIE CANAL
PIPELINE PLAN
UNDER WESTSIDE PARKWAY

NORTH KERN WATER STORAGE DISTRICT
33380 CAWEL0 AVENUE
BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO.
12
of 31

SEE SHEET 9



PRELIMINARY

DATE: MAY 11, 2010
 SCALE: AS NOTED
 DRAWN BY: J. STORMONT
 CHECKED BY: W. ZEIDERS
 FILE NAME: INTERTIE-WESTSIDE PARKWAY

CITY OF BAKERSFIELD
 WESTSIDE PARKWAY
 INTERTIE CANAL PIPELINE PROFILE

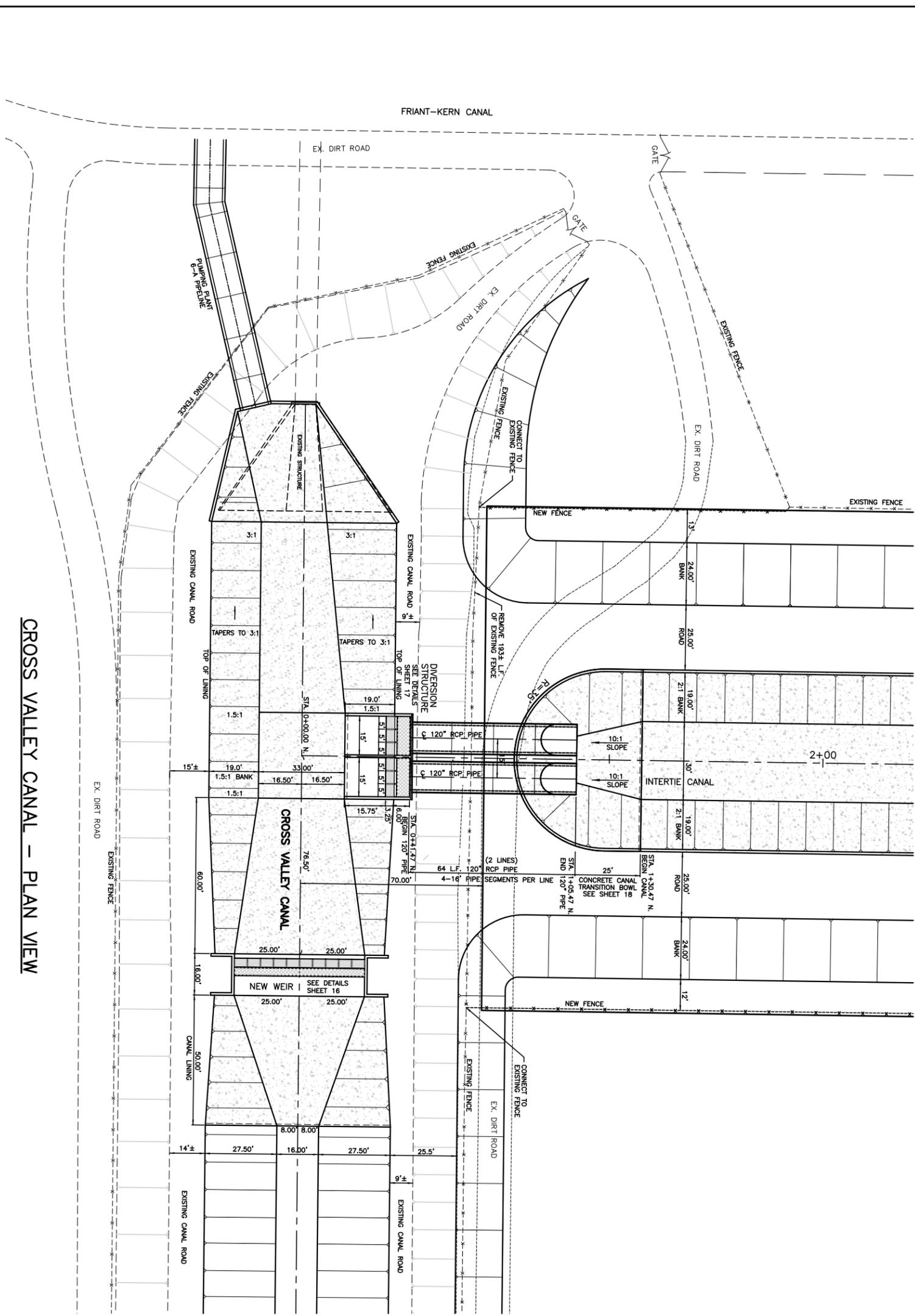
NORTH KERN WATER STORAGE DISTRICT
 33380 CAWELO AVENUE
 BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
 1655 GREELEY ROAD
 BAKERSFIELD, CA. 93314
 (661) 589-8366

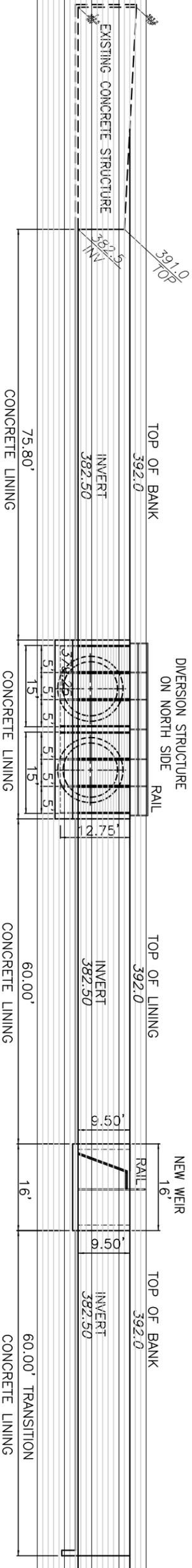
SHEET NO.
14
 of 31



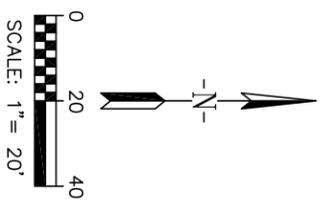
INTERTIE CANAL - SEE SHEET 2



CROSS VALLEY CANAL - PLAN VIEW



CROSS VALLEY CANAL - PROFILE



PRELIMINARY

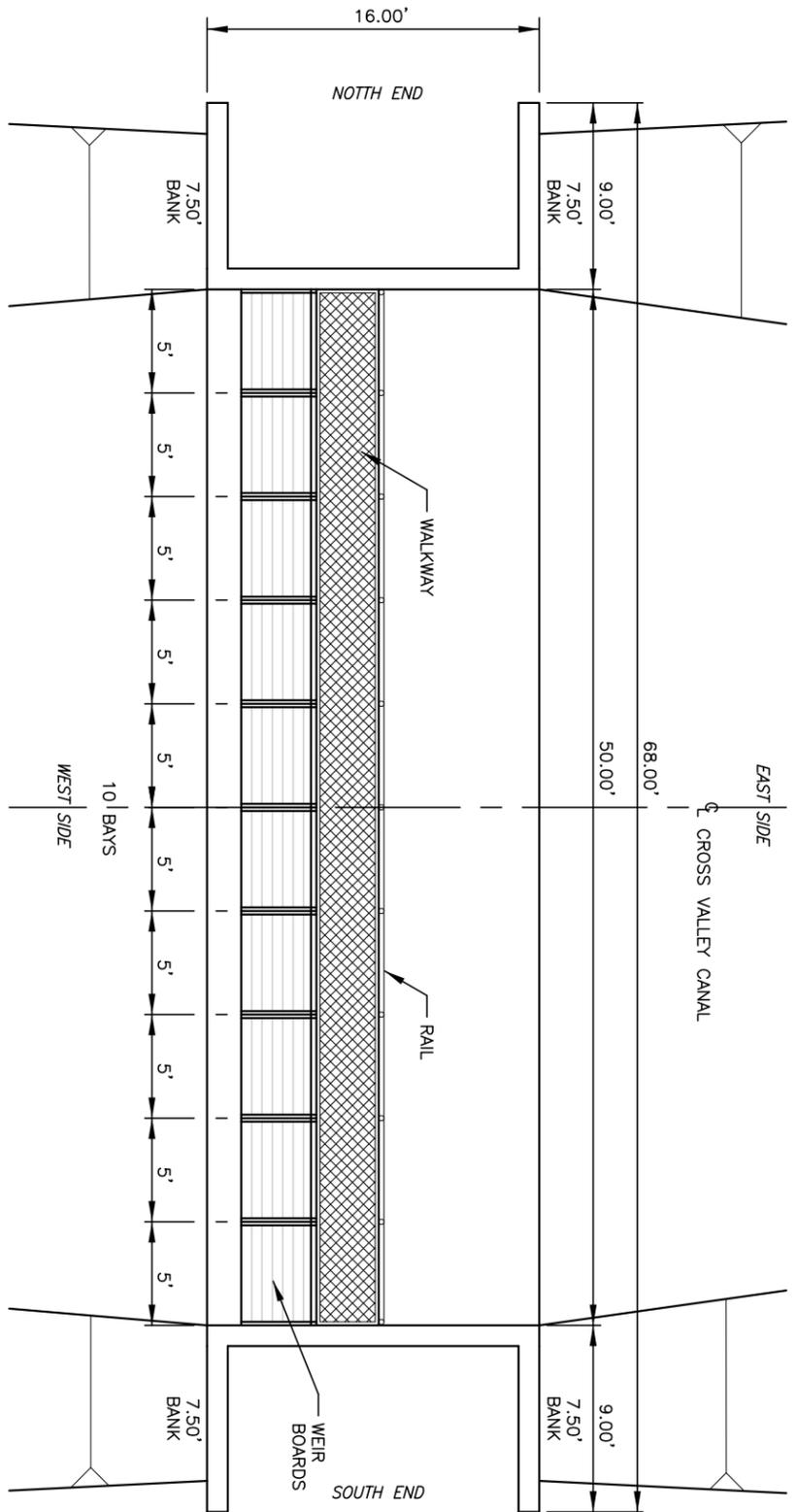
DATE: MAY 11, 2010
 SCALE: 1" = 20'
 DRAWN BY: J. STORMONT
 CHECKED BY: W. ZEIDERS
 FILE NAME: CLWY-CVC-INTERTIE-DETAILS

INTERTIE CANAL
 DETAILS

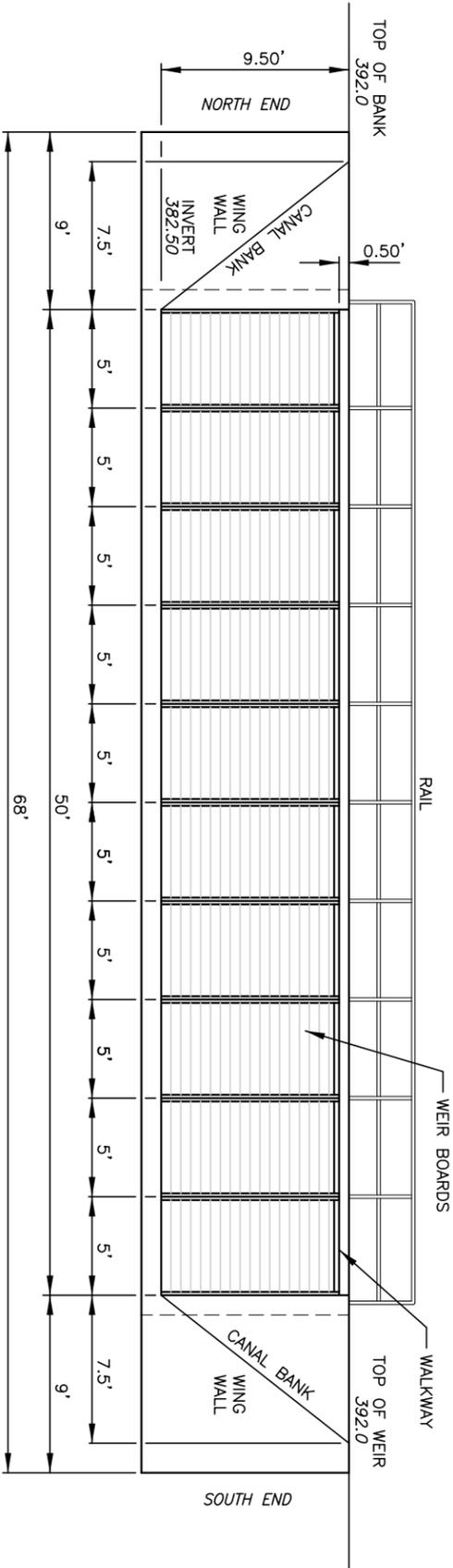
NORTH KERN WATER STORAGE DISTRICT
 33380 CAWELLO AVENUE
 BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
 1655 GREELEY ROAD
 BAKERSFIELD, CA. 93314
 (661) 589-8366

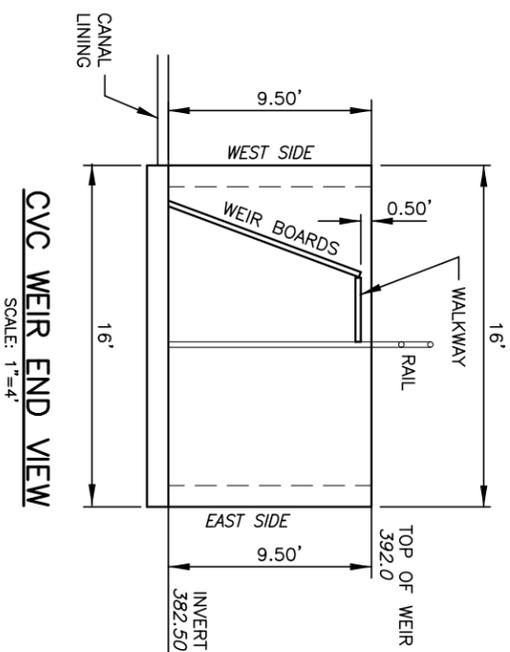
DRAWING NO.
15
 of 31



CVC WEIR PLAN
SCALE: 1"=4'



CVC WEIR LOOKING EAST
SCALE: 1"=4'



CVC WEIR END VIEW
SCALE: 1"=4'



PRELIMINARY

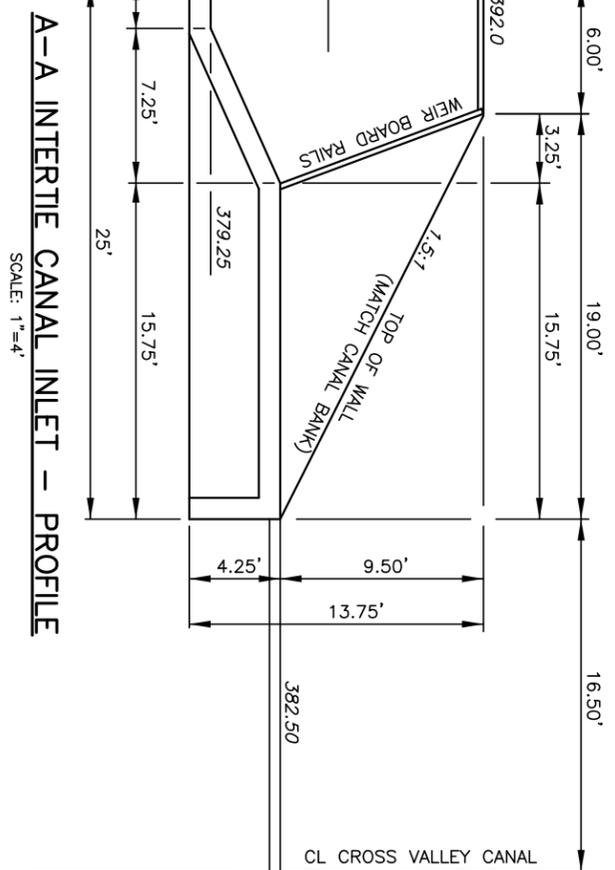
DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

INTERTIE CANAL
CVC WEIR
DETAILS

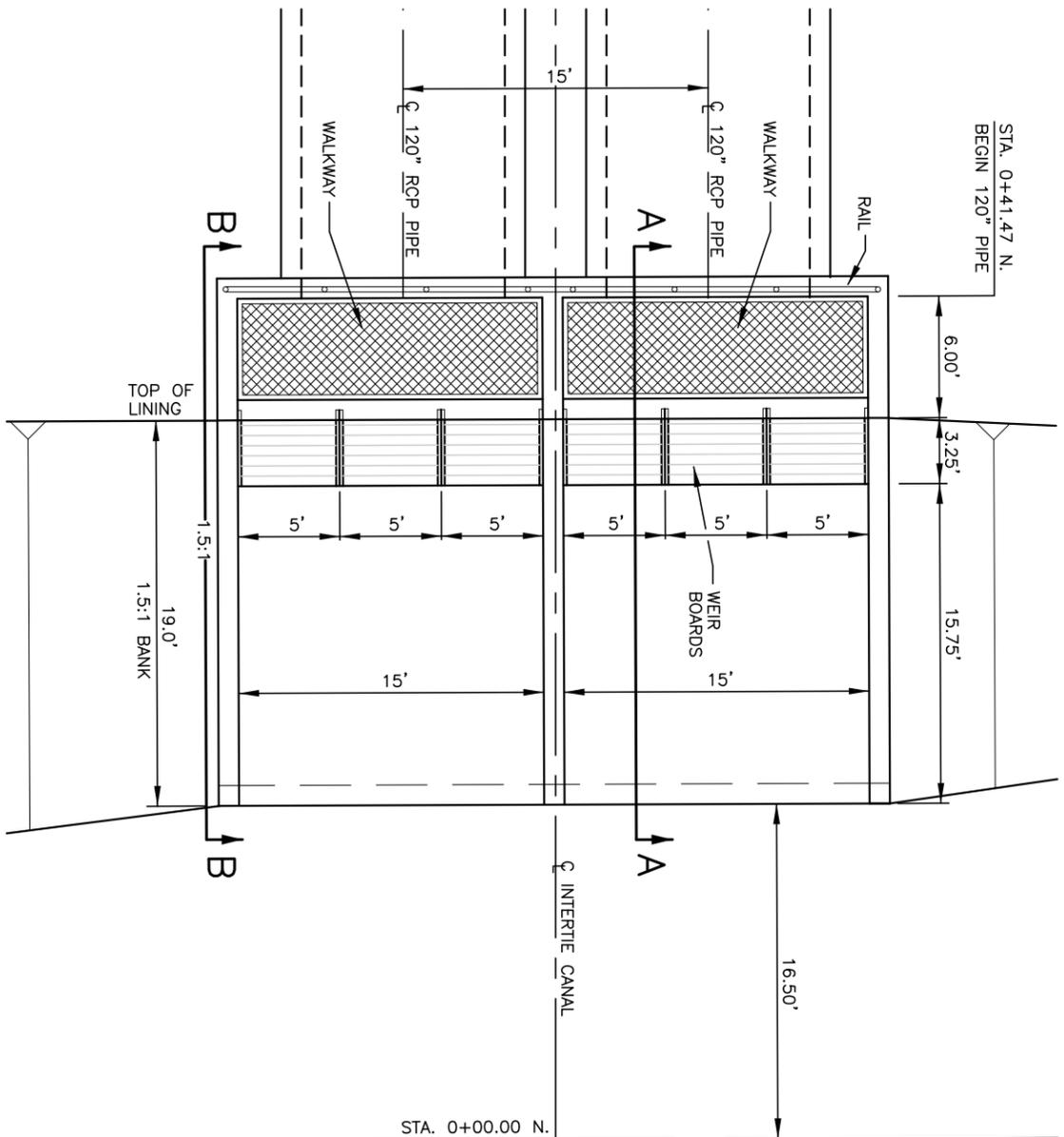
NORTH KERN WATER STORAGE DISTRICT
33380 CAWELO AVENUE
BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO.
16
of 31

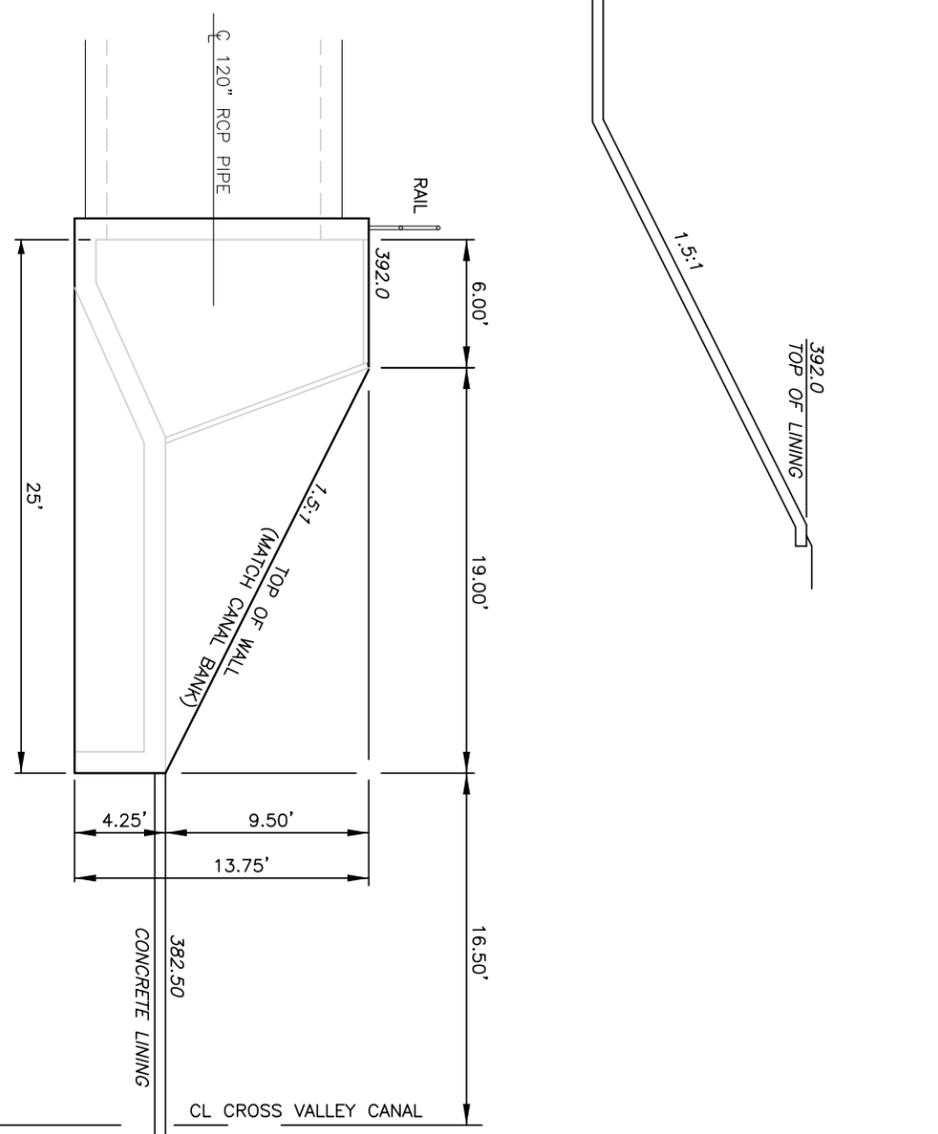


A-A INTERTIE CANAL INLET - PROFILE
SCALE: 1"=4'

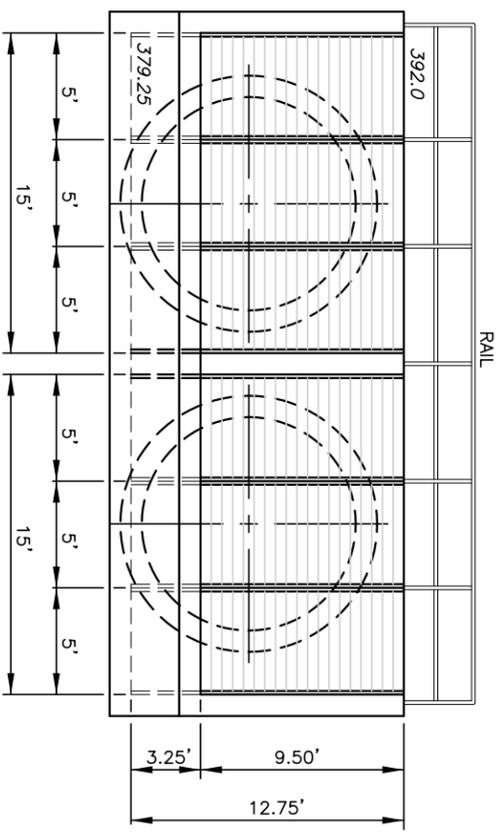


INTERTIE CANAL INLET - PLAN
SCALE: 1"=4'

CROSS VALLEY CANAL



B-B INTERTIE CANAL INLET - WALLS
SCALE: 1"=4'



INTERTIE CANAL INLET - LOOKING NORTH
SCALE: 1"=5'



PRELIMINARY

DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

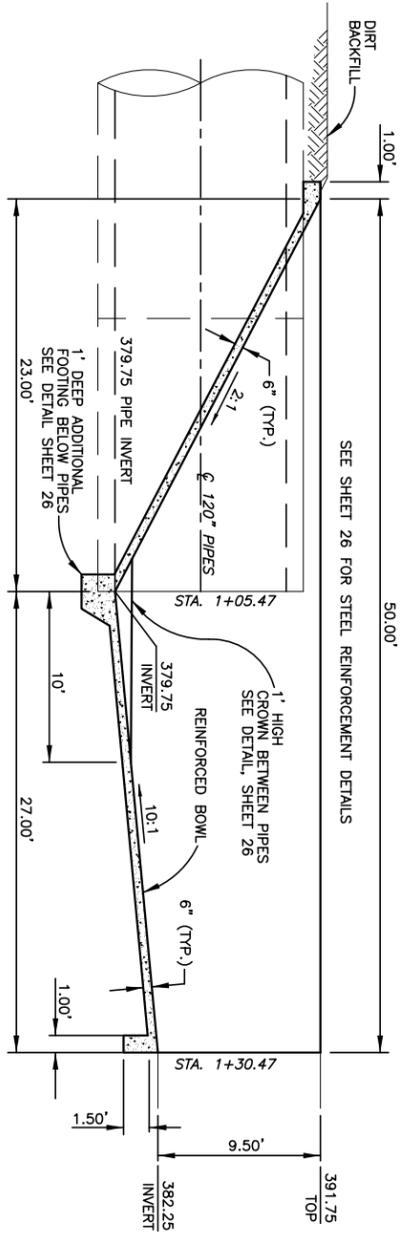
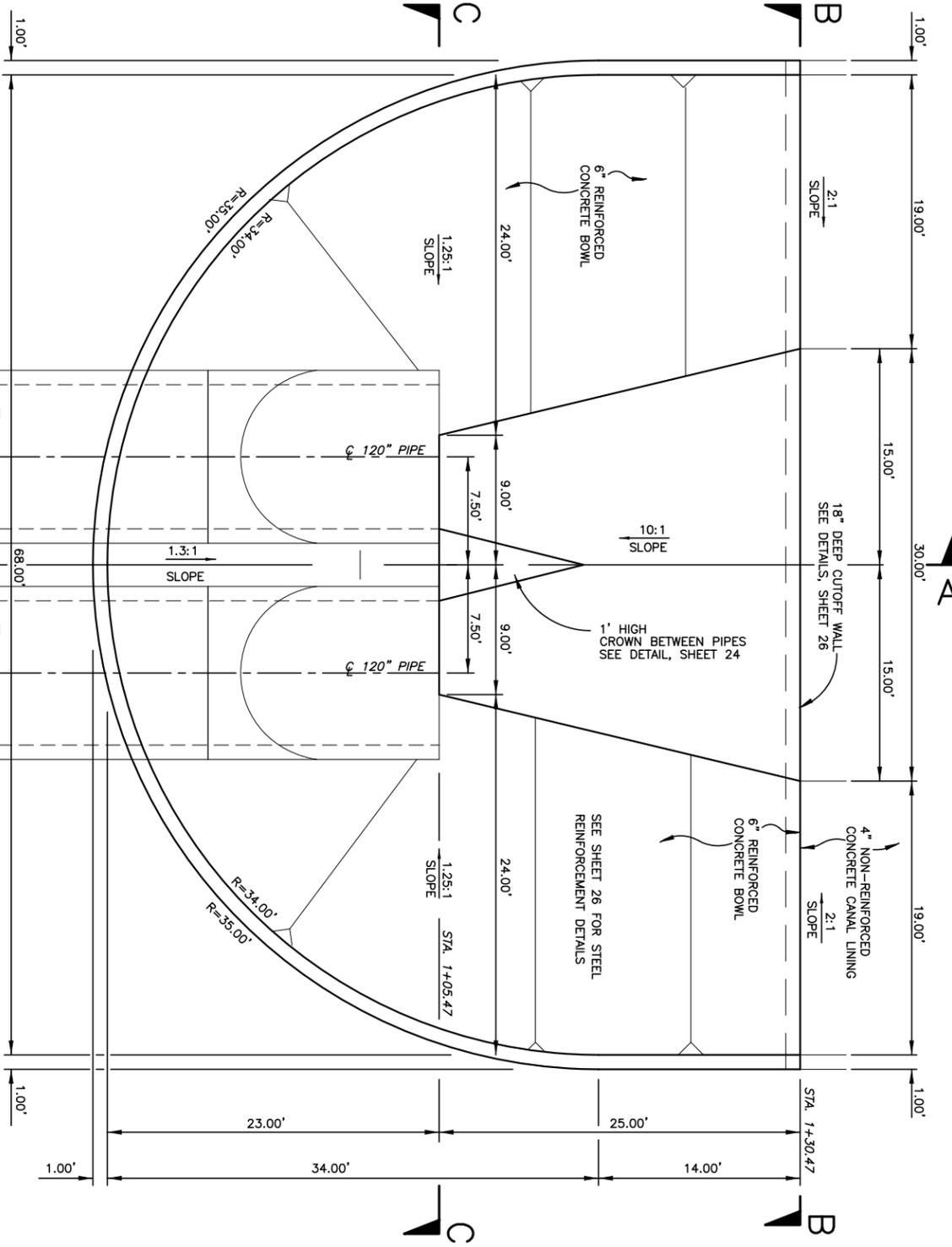
INTERTIE CANAL
INTERTIE WEIR
WEIR OUTLET TO CROSS VALLEY CANAL

NORTH KERN WATER STORAGE DISTRICT
33380 CAWELLO AVENUE
BAKERSFIELD, CALIFORNIA, 93380

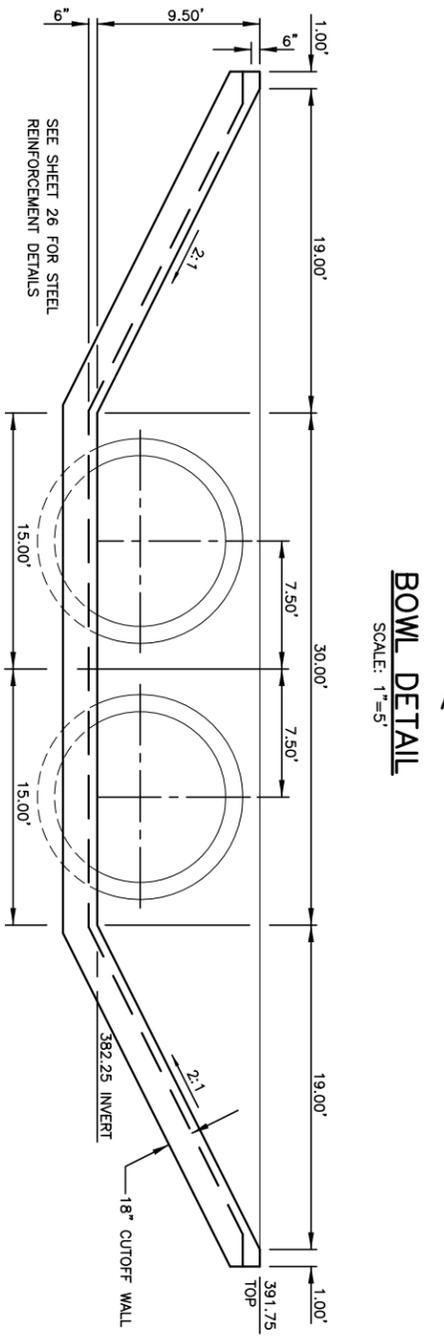
ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO. **17**
of 31

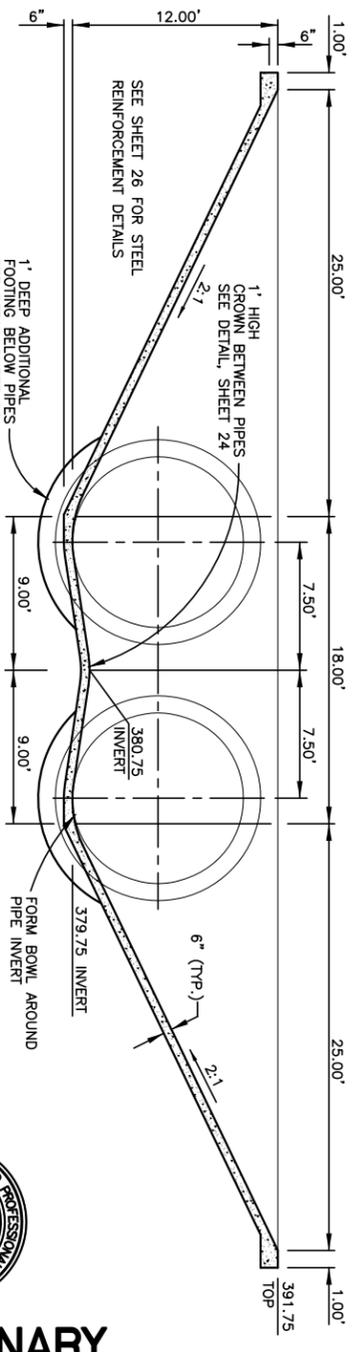
NOTE:
 SEE SHEET 26 FOR CONCRETE AND STEEL NOTES
 AND REINFORCEMENT DETAILS



SECTION A-A
 SCALE: 1"=5'



SECTION B-B
 SCALE: 1"=5'



SECTION C-C
 SCALE: 1"=5'



PRELIMINARY

DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

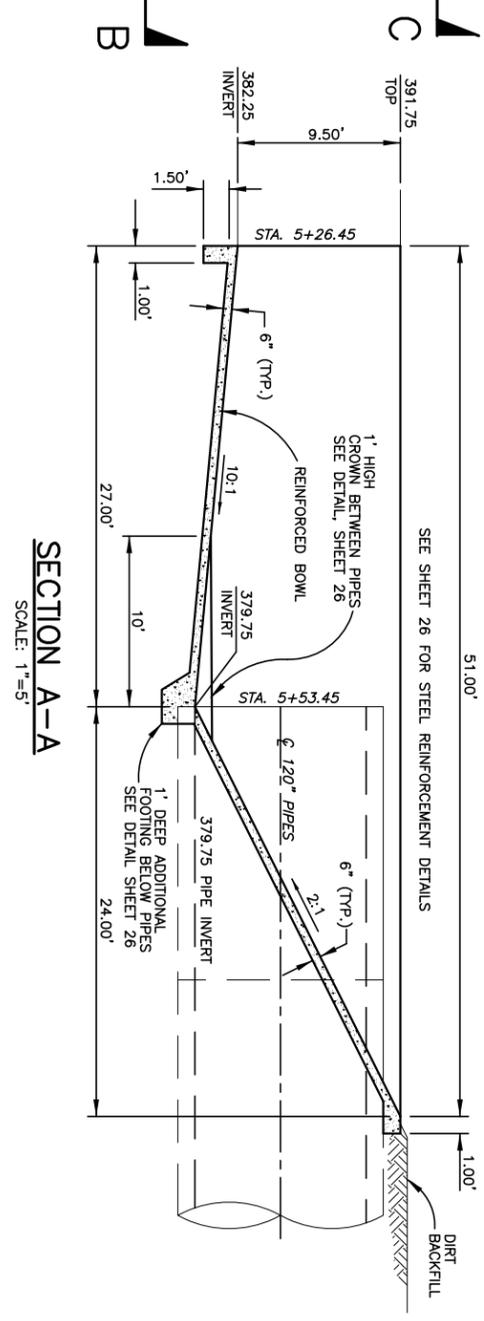
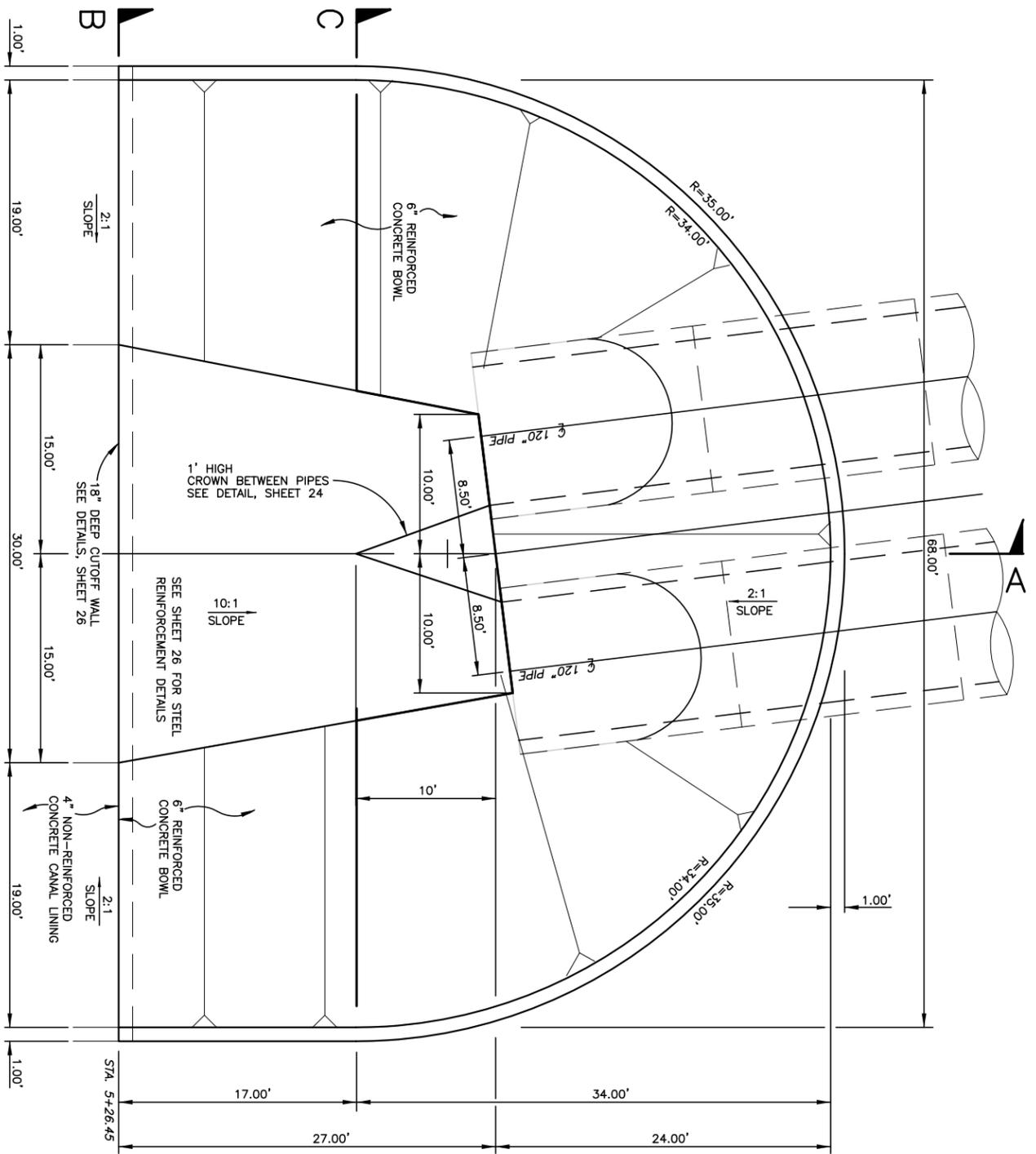
INTERTIE CANAL
 BOWL DETAILS
 WESTSIDE PARKWAY CROSSING - STA. 10+53.45

NORTH KERN WATER STORAGE DISTRICT
 33380 CAWEL0 AVENUE
 BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
 1655 GREELEY ROAD
 BAKERSFIELD, CA. 93314
 (661) 589-8366

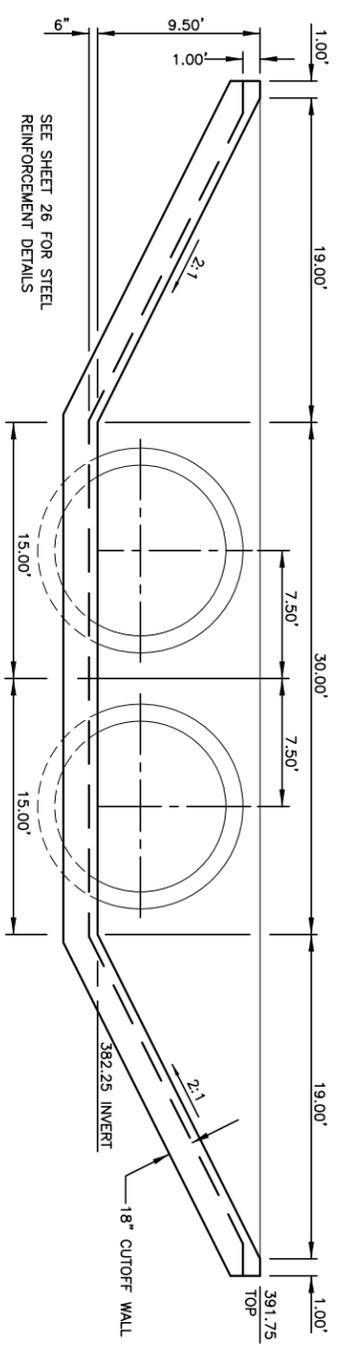
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NOTE:
SEE SHEET 26 FOR CONCRETE AND STEEL NOTES
AND REINFORCEMENT DETAILS

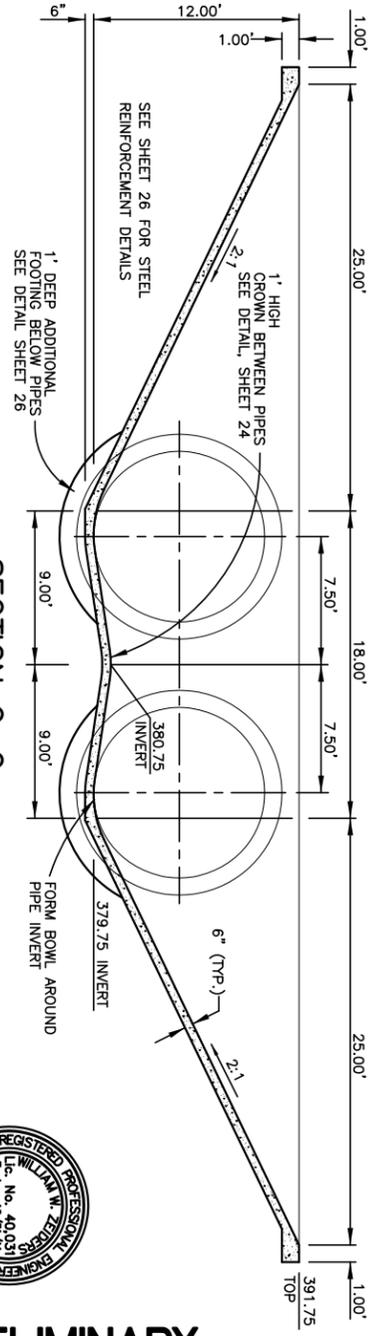


BOWL DETAIL
SCALE: 1"=5'

SECTION A-A
SCALE: 1"=5'



SECTION B-B
SCALE: 1"=5'



SECTION C-C
SCALE: 1"=5'



PRELIMINARY

DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

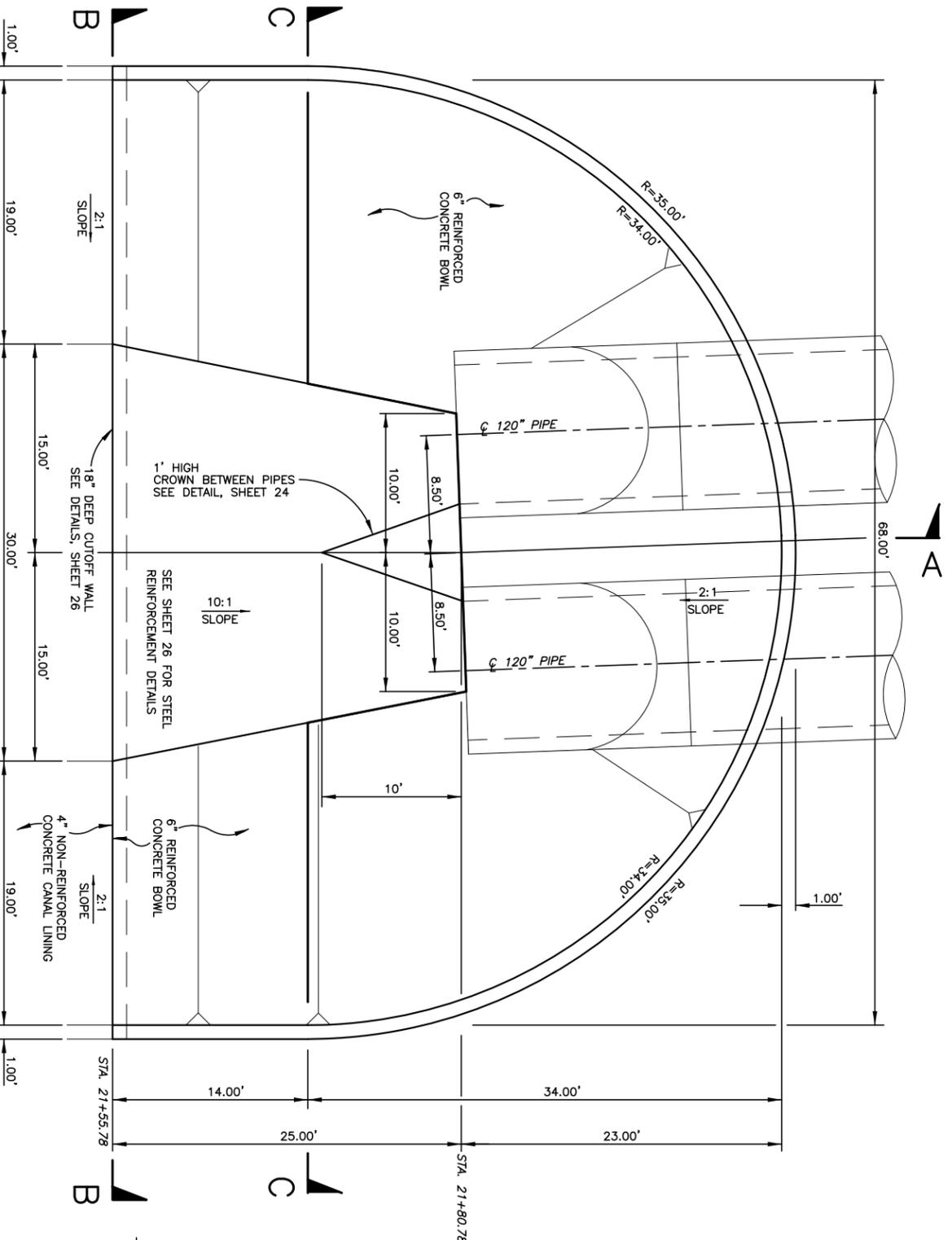
INTERTIE CANAL
BOWL DETAILS
WESTSIDE PARKWAY CROSSING - STA. 5+53.45

NORTH KERN WATER STORAGE DISTRICT
33380 CAWEL0 AVENUE
BAKERSFIELD, CALIFORNIA, 93380

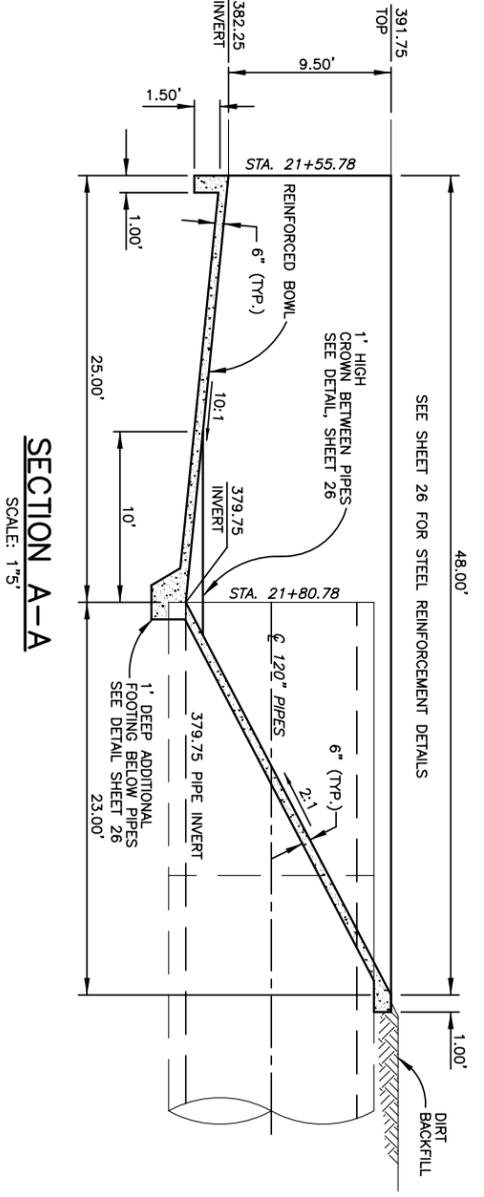
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1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO.
19
of 31

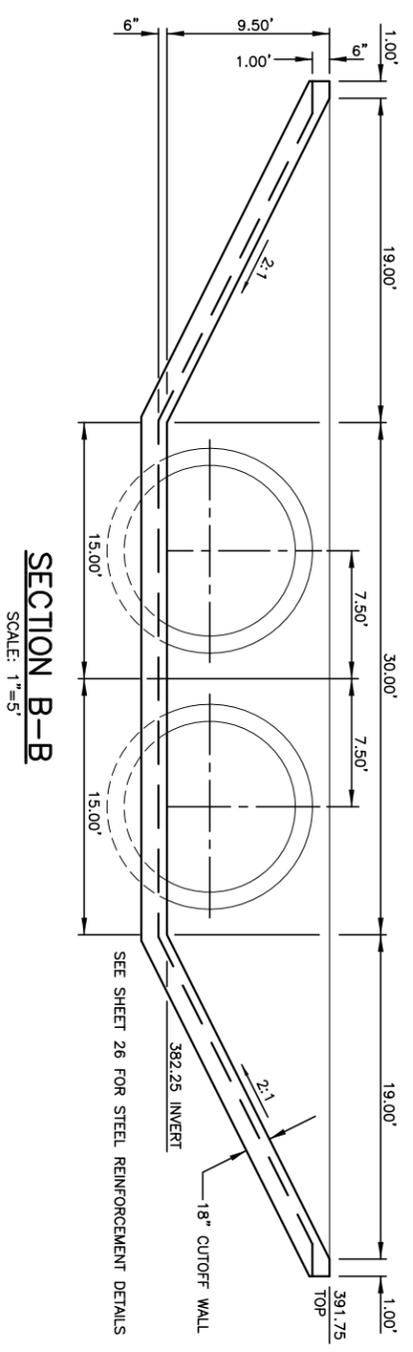
NOTE:
SEE SHEET 26 FOR CONCRETE AND STEEL NOTES
AND REINFORCEMENT DETAILS



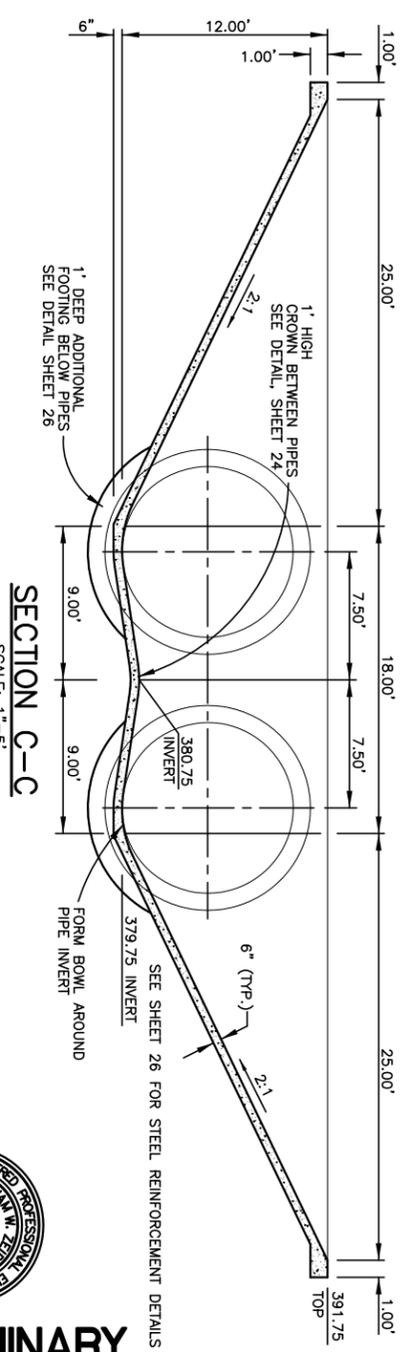
BOWL DETAIL
SCALE: 1"=5'



SECTION A-A
SCALE: 1"=5'



SECTION B-B
SCALE: 1"=5'



SECTION C-C
SCALE: 1"=5'



PRELIMINARY

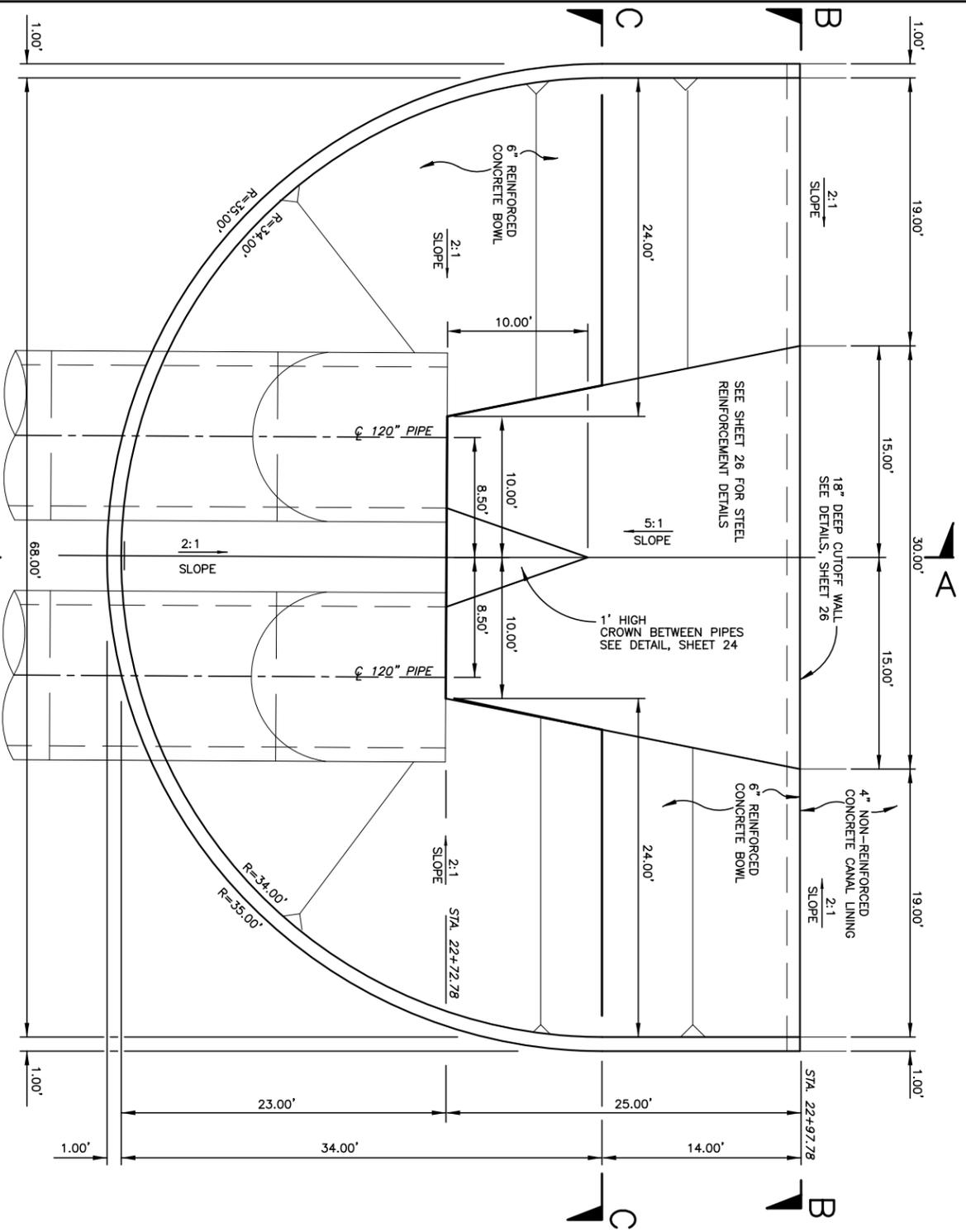
DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

INTERTIE CANAL
BOWL DETAILS
BIG WEST CROSSING - STA. 21+80.78

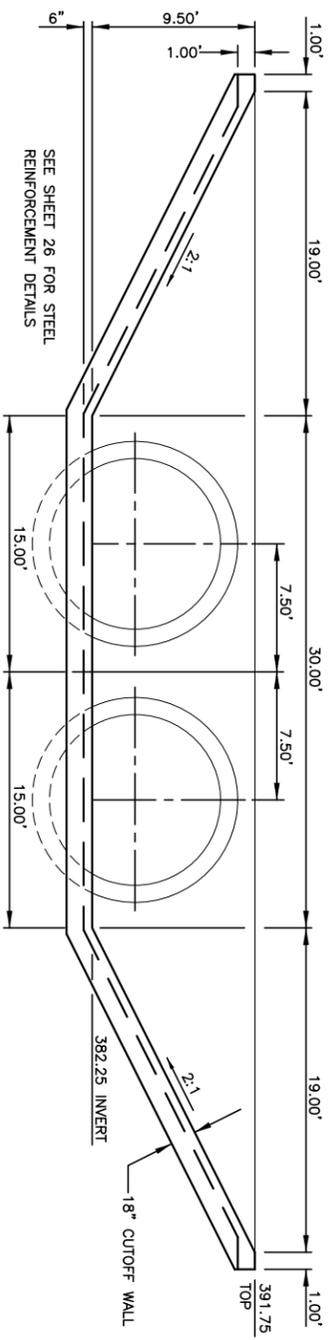
NORTH KERN WATER STORAGE DISTRICT
33380 CAWEL0 AVENUE
BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

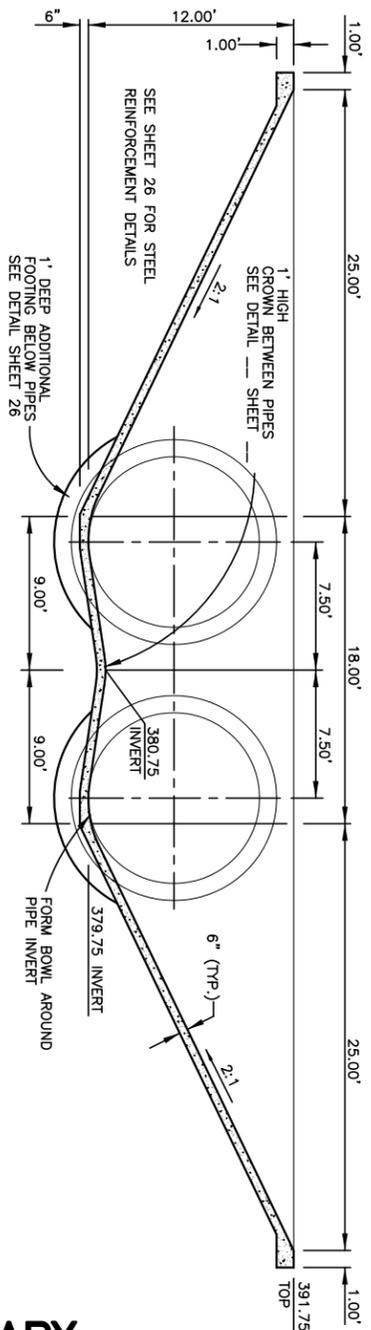
DRAWING NO.
21
of 31



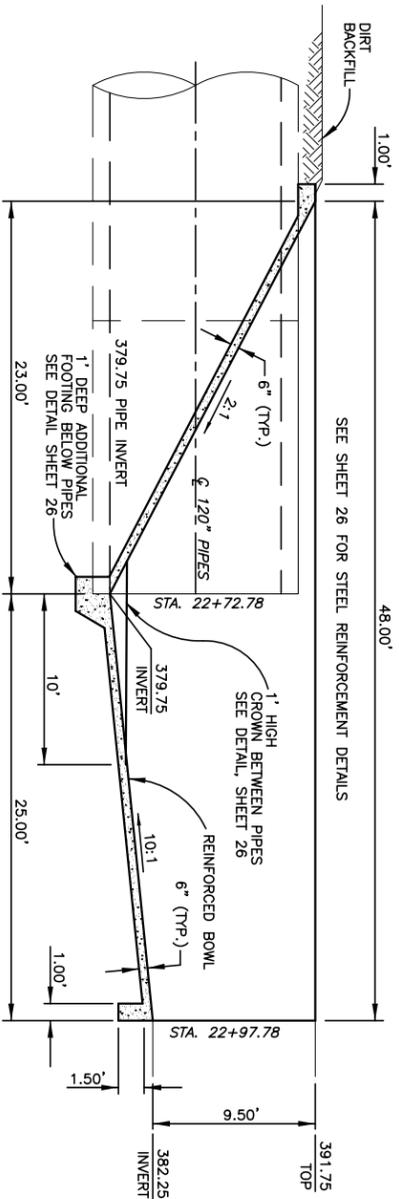
BOWL DETAIL
SCALE: 1"=5'



SECTION B-B
SCALE: 1"=5'



SECTION C-C
SCALE: 1"=5'



SECTION A-A
SCALE: 1"=5'

NOTE:
SEE SHEET 26 FOR CONCRETE AND STEEL NOTES
AND REINFORCEMENT DETAILS



PRELIMINARY

INTERTIE CANAL
BOWL DETAILS

BIG WEST CROSSING - STA. 22+72.78

NORTH KERN WATER STORAGE DISTRICT
33380 CAWEL0 AVENUE
BAKERSFIELD, CALIFORNIA, 93380

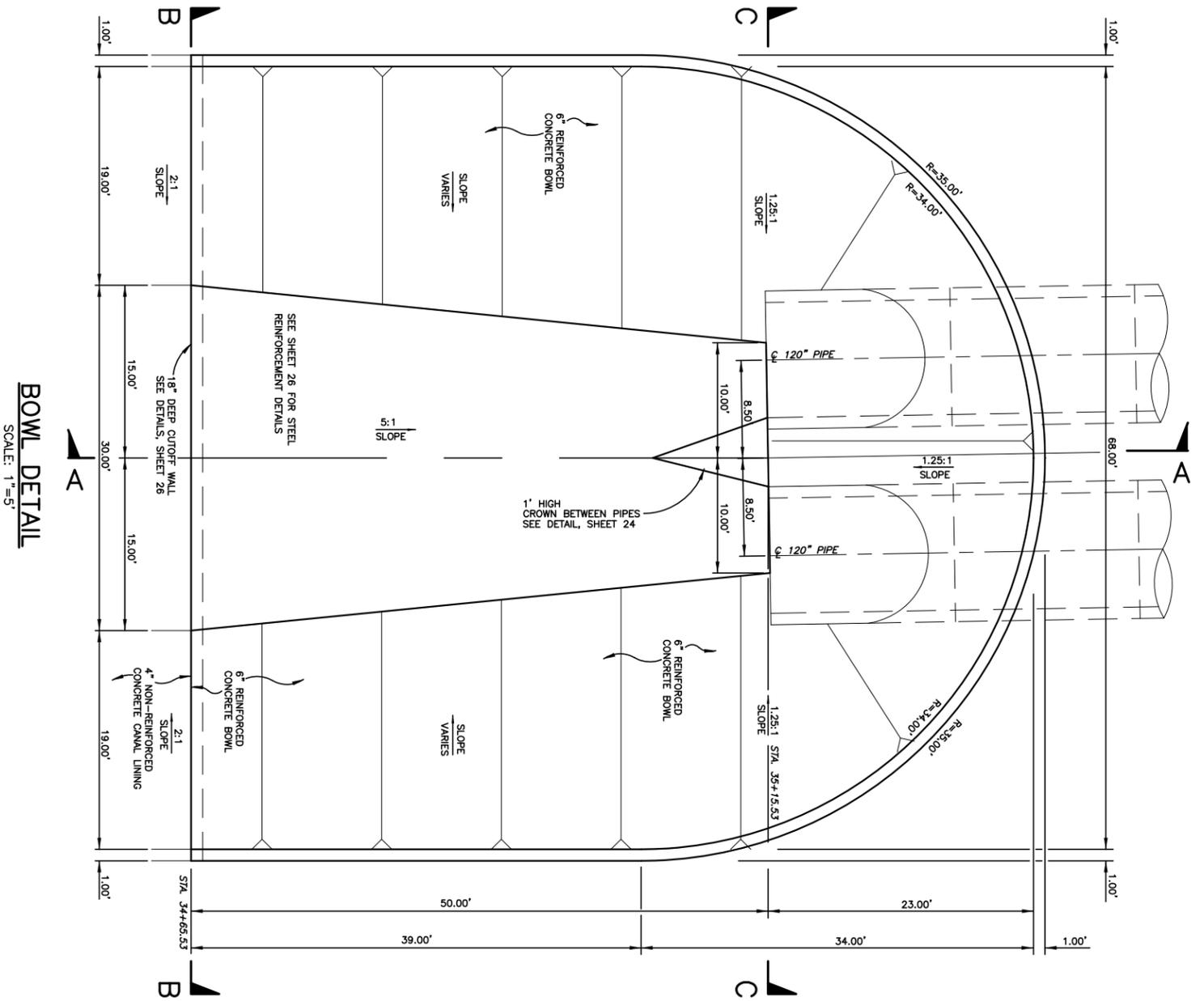
ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO.

22

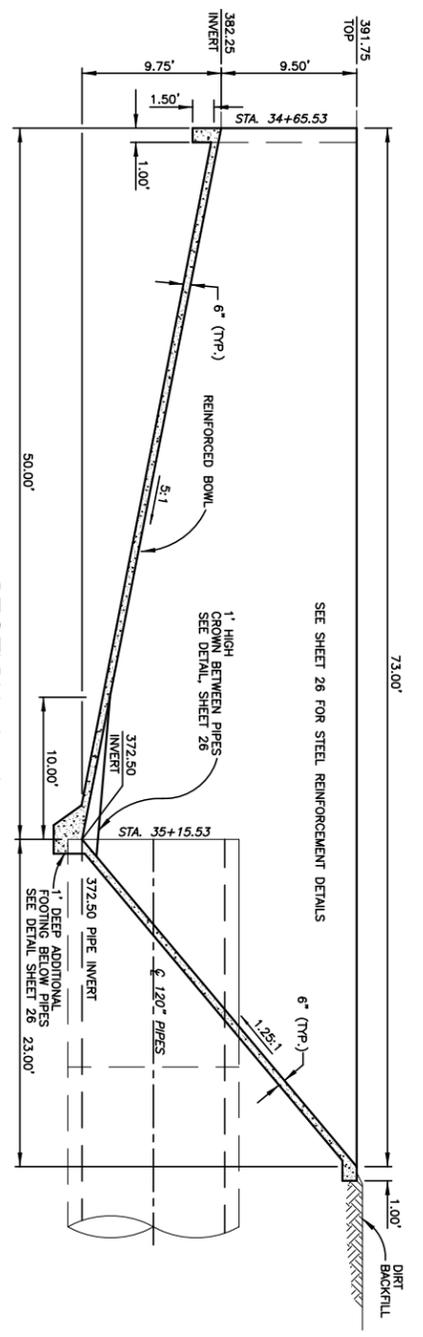
of 31

DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

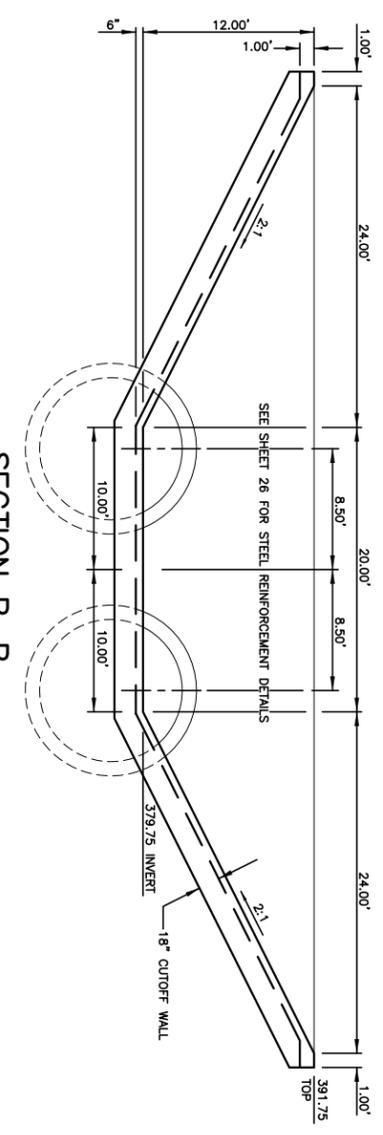


BOWL DETAIL
SCALE: 1"=5'

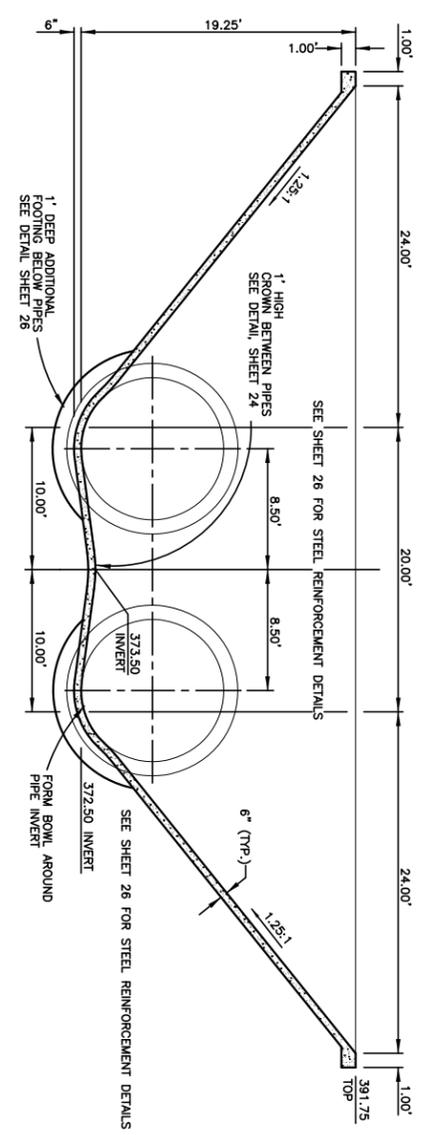
NOTE:
SEE SHEET 26 FOR CONCRETE AND STEEL NOTES
AND REINFORCEMENT DETAILS



SECTION A-A
SCALE: 1"=6'



SECTION B-B
SCALE: 1"=6'



SECTION C-C
SCALE: 1"=6'



PRELIMINARY

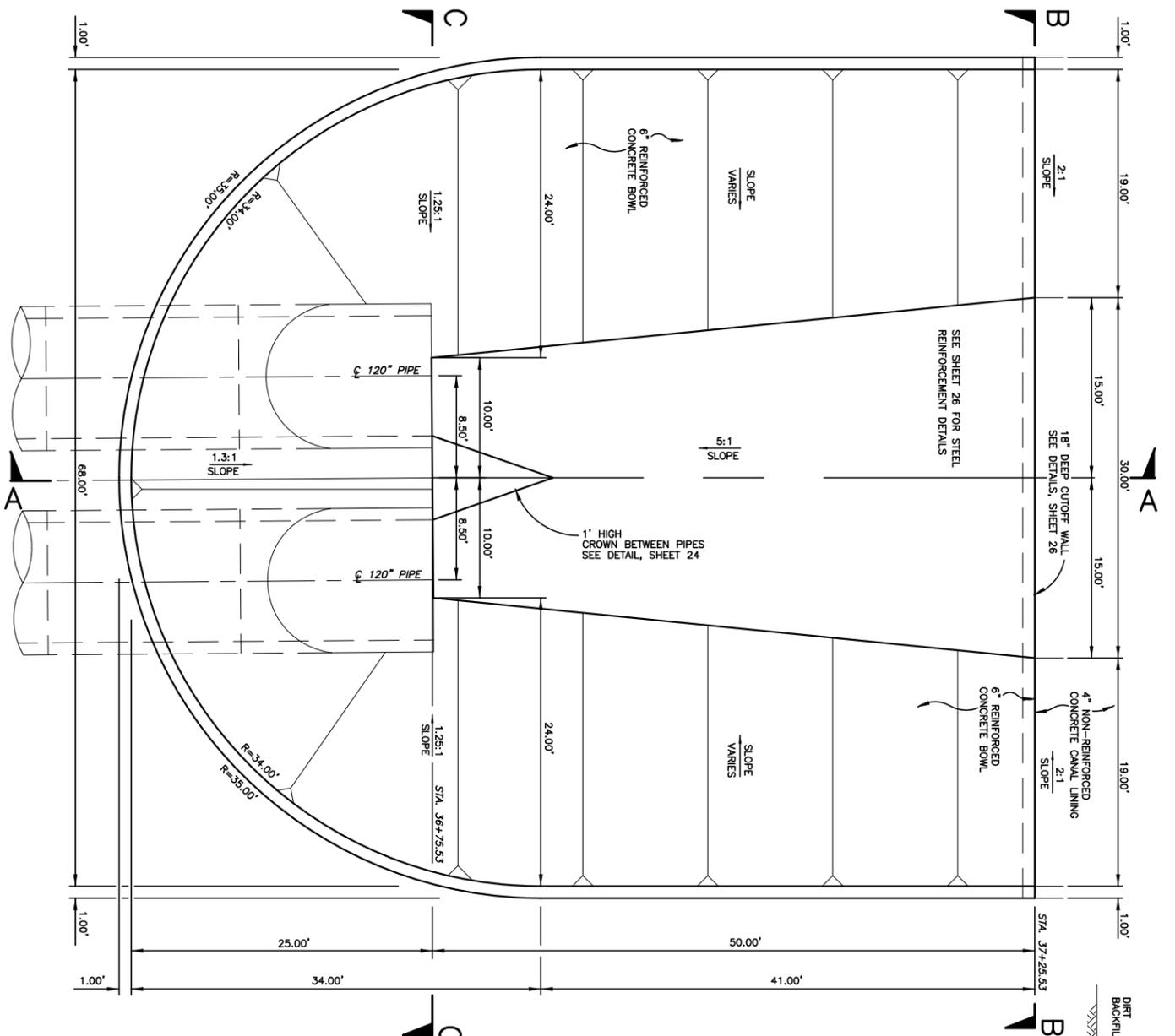
DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

INTERTIE CANAL
BOWL DETAILS
B.N.S.F. RAILROAD CROSSING - STA. 35+13.53

NORTH KERN WATER STORAGE DISTRICT
33380 CAWELO AVENUE
BAKERSFIELD, CALIFORNIA, 93380

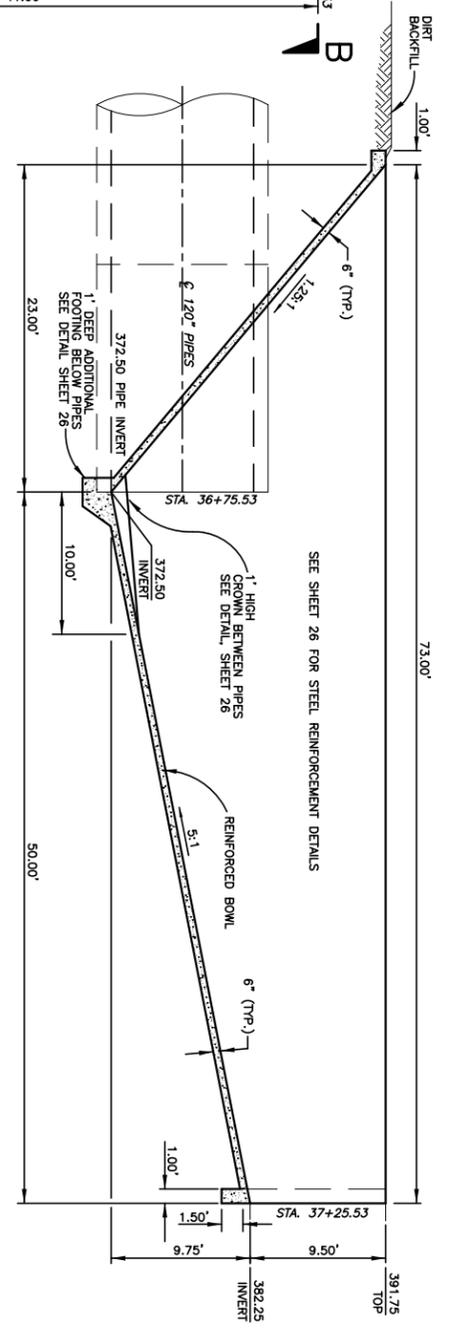
ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO. **23**
of 31

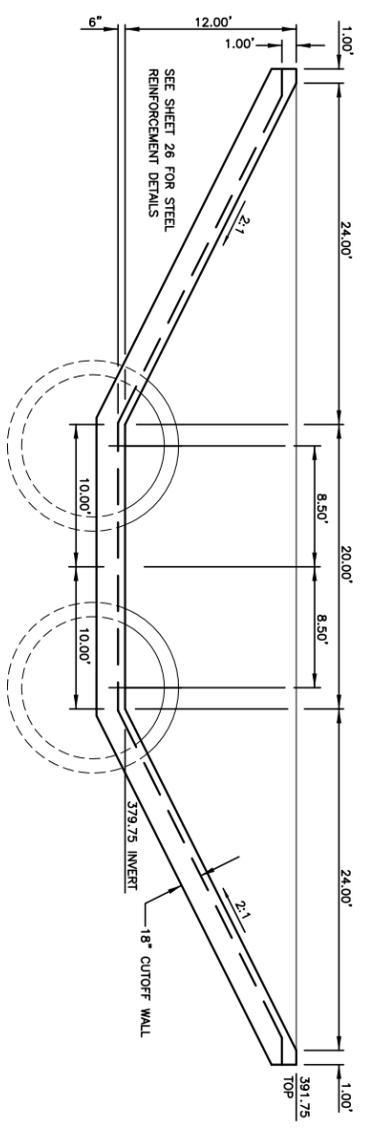


BOWL DETAIL
SCALE: 1"=5'

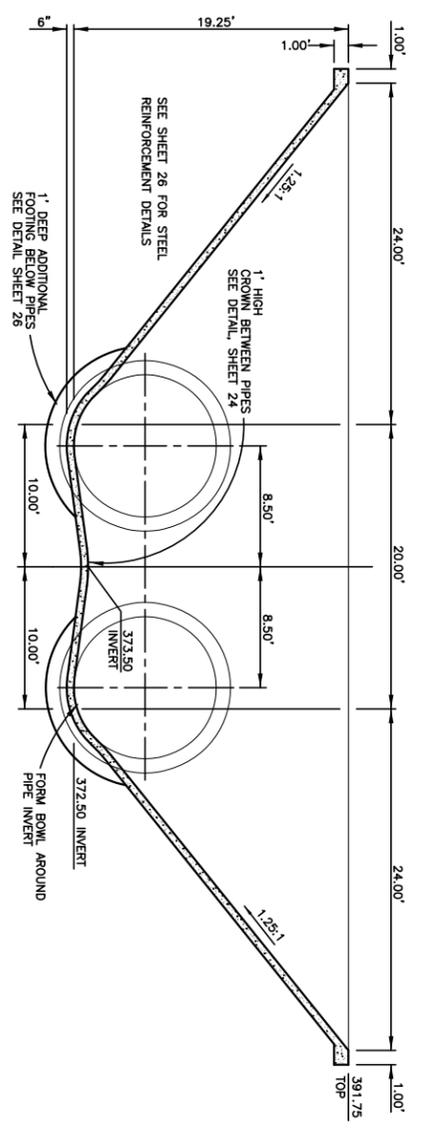
NOTE:
SEE SHEET 26 FOR CONCRETE AND STEEL NOTES
AND REINFORCEMENT DETAILS



SECTION A-A
SCALE: 1"=6'



SECTION B-B
SCALE: 1"=6'



SECTION C-C
SCALE: 1"=6'



PRELIMINARY

DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

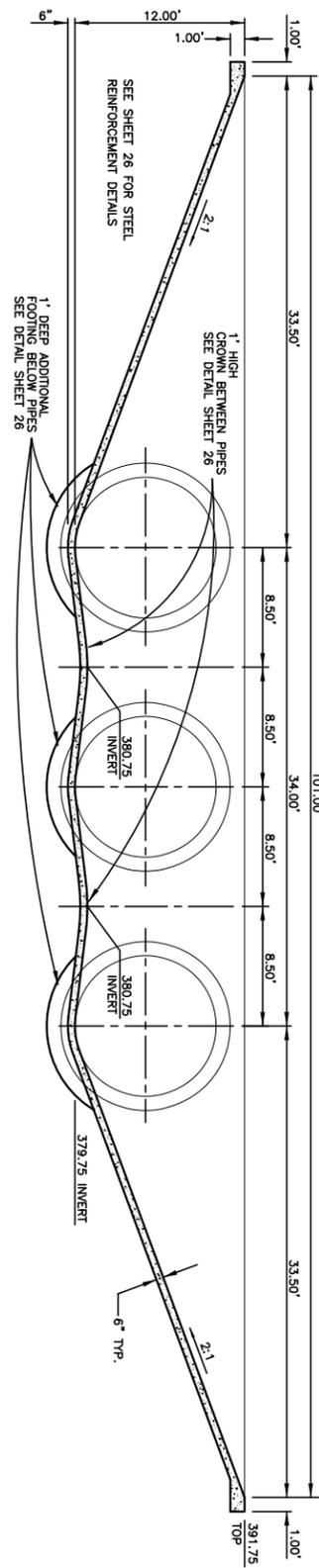
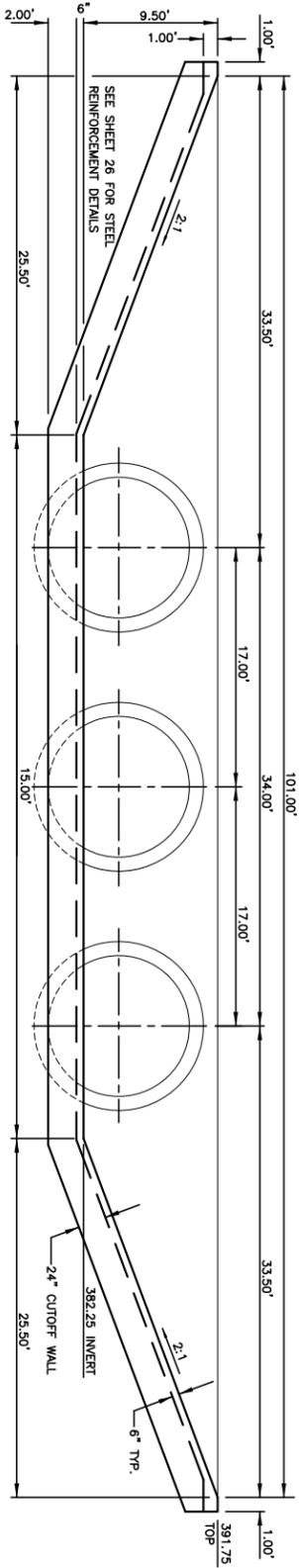
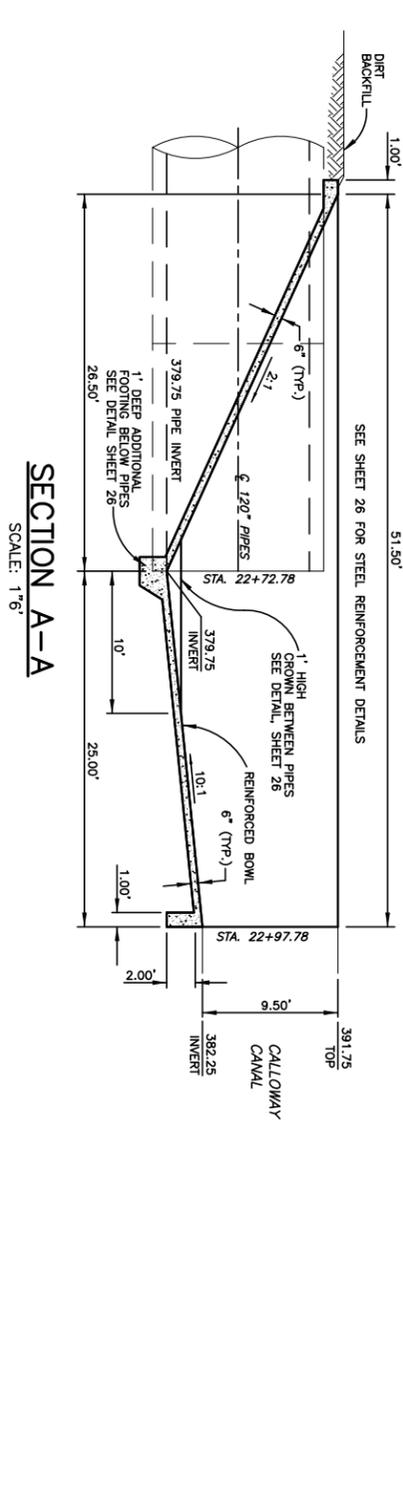
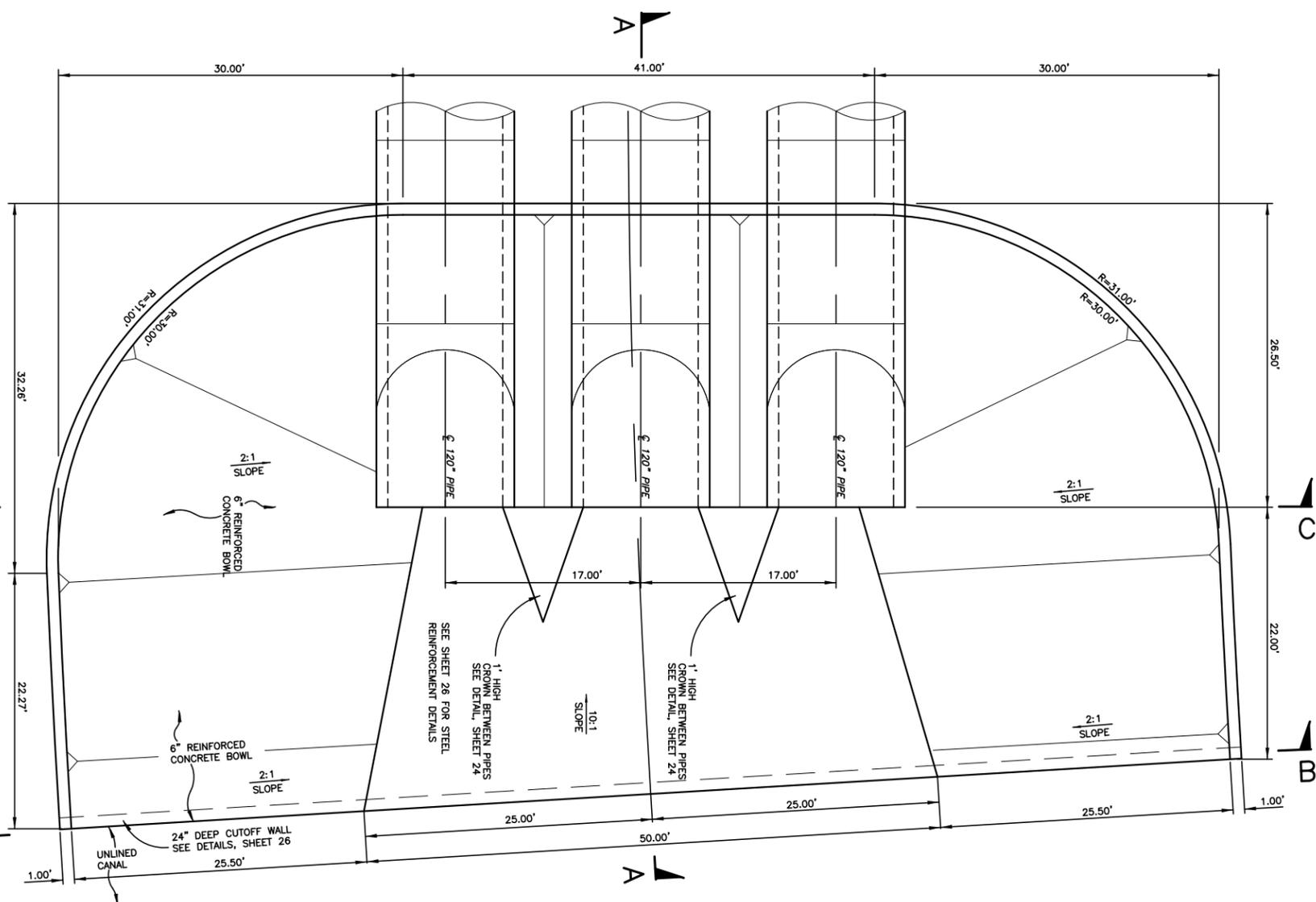
INTERTIE CANAL
BOWL DETAILS
B.N.S.F. RAILROAD CROSSING - STA. 36+75.53

NORTH KERN WATER STORAGE DISTRICT
33380 CAWEL0 AVENUE
BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO. **24**
of 31

NOTE:
SEE SHEET 26 FOR CONCRETE AND STEEL NOTES
AND REINFORCEMENT DETAILS



BOWL DETAIL
SCALE: 1"=6'



PRELIMINARY

DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

INTERTIE CANAL
BOWL DETAILS
CALLOWAY CANAL PIPELINE BOWL

NORTH KERN WATER STORAGE DISTRICT
33380 CAWEL0 AVENUE
BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO. **25**
of 31

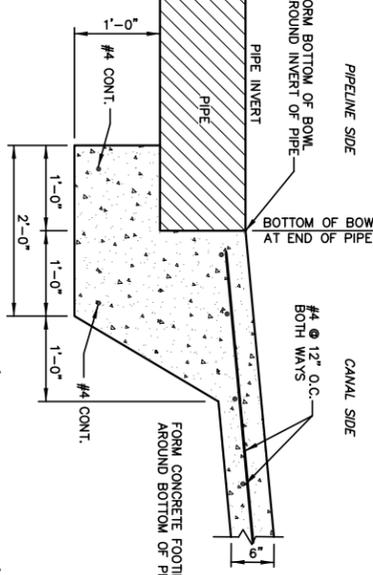
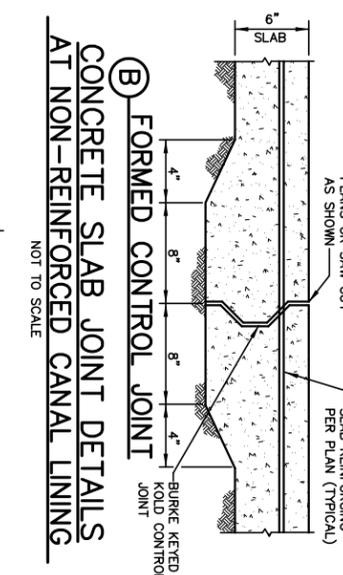
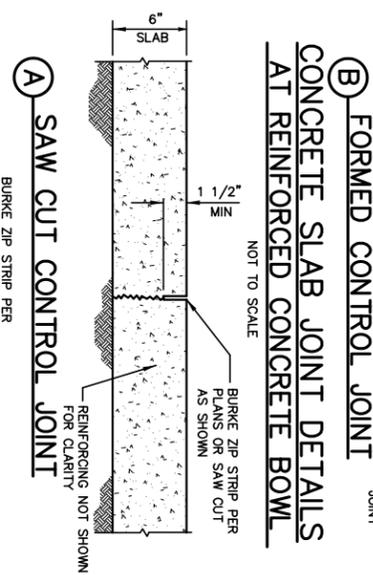
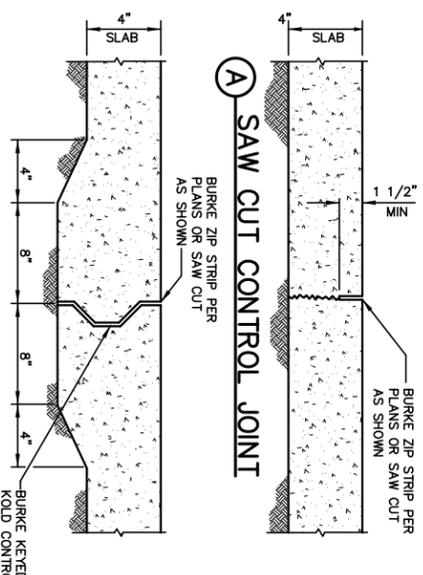
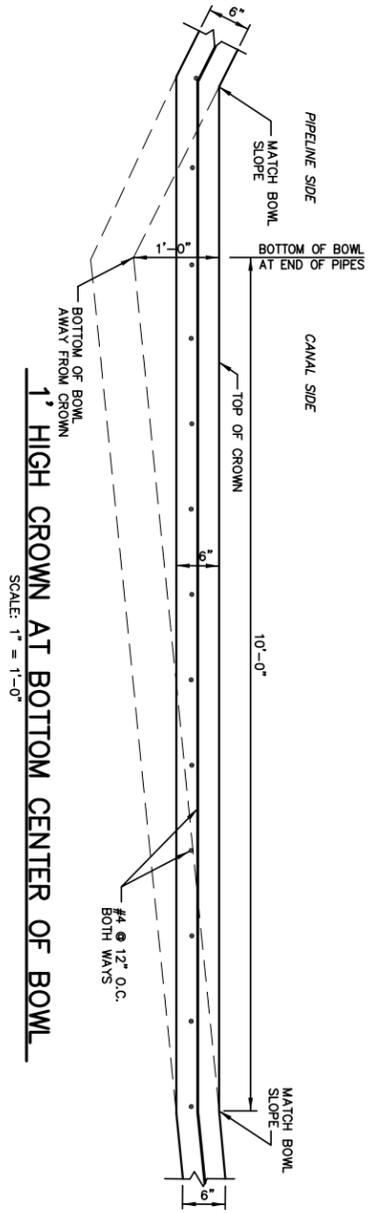
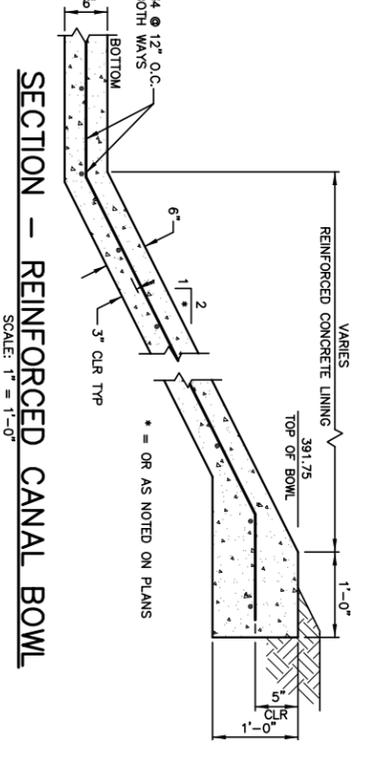
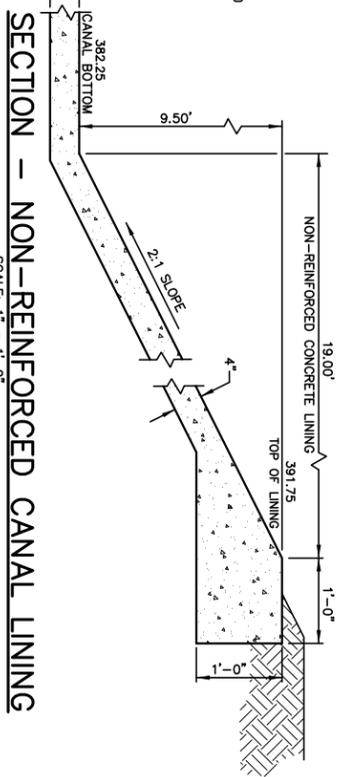
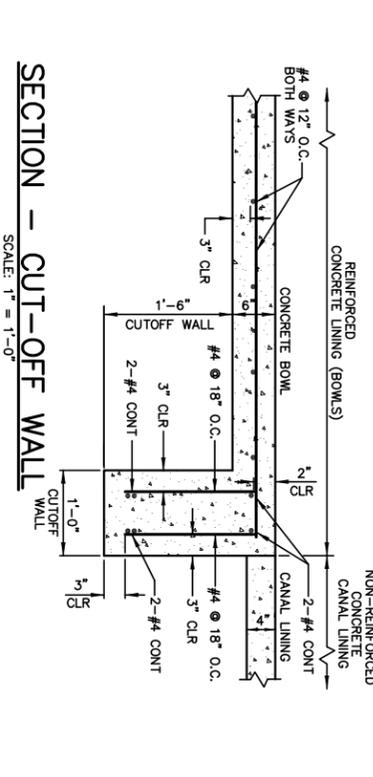
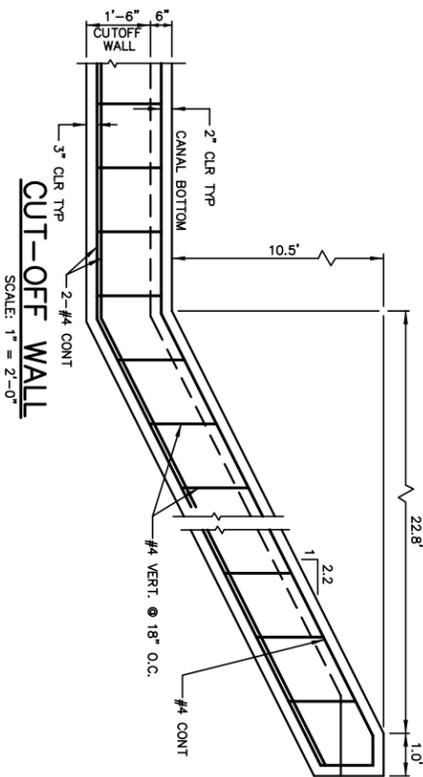
CONCRETE

- ALL CONCRETE AND CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE ACI BUILDING CODE (ACI 318), AND THE ACI MANUAL OF CONCRETE PRACTICE, AND STATE STRENGTH DESIGN USED FOR ALL CONCRETE GRADES.
- CONCRETE STRENGTH SHALL BE AS FOLLOWS
 - REINFORCED CANAL LINING 3,000 PSI
 - NON-REINFORCED CANAL LINING 3,000 PSI
- LOCATION: 28-DAY STRENGTH (MIN)
- ALL CEMENT SHALL CONFORM TO ASTM C-150, TYPE I OR II. (FLY ASH COMPLYING WITH ASTM C618, CLASS F, MAY BE USED TO REPLACE CEMENT UP TO 15% BY WEIGHT.)
- WATER TO BE POTABLE, CLEAN, AND PURE, FREE OF SUBSTANCES DELETERIOUS TO CONCRETE AND REINFORCING. THIS REQUIREMENT APPLIES TO WATER USED IN MIX, AS WELL AS TO WATER FOR AGGREGATE WASHING AND FOR CURING.
- FINE AND COARSE AGGREGATE SHALL CONFORM TO ASTM C-33 FOR STANDARD WEIGHT CONCRETE AND ASTM C-330 FOR LIGHT WEIGHT CONCRETE.
- ALL AGGREGATE SHALL BE FROM A STATE APPROVED STOCKPILE SOURCE. THE SHRINKAGE SHALL BE AS PER ASTM C-157 WITH THE AVERAGE DRYING SHRINKAGE (28 DAYS OF DRYING) NOT EXCEEDING 0.045
- MAXIMUM SIZE OF AGGREGATE SHOULD BE 1" 1/4" AGGREGATE MAY BE USED IN CONTINUOUS FOOTINGS OR ISOLATED PAV.
- MIX DESIGNS SHALL BE PREPARED BY AN APPROVED TESTING LABORATORY AND SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. MINIMUM CEMENT CONTENT SHALL BE 51/2 SACKS PER CUBIC YARD.
- MAXIMUM WATER-CEMENT RATIO TO BE 6 GALS. PER SACK.
- READY-MIXED CONCRETE TO MEET REQUIREMENTS OF ASTM C-94.
- ADMITTANCE AND CURING COMPOUNDS TO BE AS FOLLOWS: CONTRACTOR SHALL SUBMIT REQUESTS FOR USE OF ADMIXTURES FOR HIS REVIEW AND APPROVAL.
 - WATER REDUCING ADMIXTURE, POZZOLITH 900R AT THE RATE OF 5 OZ PER SACK OF CEMENT AT THE RATE OF 68 OZ PER SACK, GRADE WPA-79 AT THE RATE OF 8 OZ PER SACK, OR GRADE WPA-64 AT THE RATE OF 5 OZ PER SACK, WITH THE ACCEPTANCE OF THE ENGINEER, POZZOLITH 900R OR 322N AT THE RATE OF 5 OZ PER SACK, OR ZECON H AT THE RATE OF 6 OZ PER SACK MAY BE USED.
 - AT SLABS AND OTHER HORIZONTAL CONCRETE SURFACES, WHITE PIGMENTED LIQUID MEMBRANE, ALL RESIN, WATER BASED CURING COMPOUND, CONFORMING TO ASTM C-309, TYPE 2, CLASS B, BURKE AQUA RESIN CURE, V.R. MEADOWS SEALIGHT 1200, OR ACCEPTABLE EQUIVALENT.
 - AT VERTICAL SURFACES, INCLUDING FORMED SURFACES WHERE FORMS ARE REMOVED PRIOR TO THE END OF THE CURING PERIOD, CLEAR LIQUID MEMBRANE, ALL RESIN, WATER BASED CURING COMPOUND, CONFORMING TO ASTM C-309, TYPE 1, CLASS B, V.R. MEADOWS SEALIGHT 1100, OR ACCEPTABLE EQUIVALENT.
- ANCHOR BOLTS, DOVELS, INSERTS, ETC., SHALL BE SECURELY TIED IN PLACE PRIOR TO POURING CONCRETE.
- CONCRETE SHALL BE CURED BY KEEPING IT CONTINUOUSLY WET FOR 10 DAYS, OR BY AN APPROVED CURING METHOD.
- TESTING OF CONCRETE WITH F.C. (28 DAYS) GREATER THAN 2800 PSI AND REINFORCING STEEL, SHALL BE DONE BY A LICENSED TESTING LABORATORY.
- VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE AND NOTIFY ENGINEER OF ANY DISCREPANCY.
- POUR FOOTINGS AGAINST UNDISTURBED NATURAL GRADE TO LINES AND DIMENSIONS SHOWN ON DRAWINGS. THE BOTTOM OF ALL FOOTINGS SHALL BE CLEANED OF ANY LOOSE MATERIAL, AND ALL REINFORCEMENT SHALL BE FIRMLY TIED IN POSITION BEFORE CONCRETE IS POURED.
- MAXIMUM CONCRETE SLUMP SHALL BE 4 INCHES (4 INCH FOR ALL WORK.
- CONSTRUCTION JOINTS MAY BE V. J. BURKE COMPANY KEVED KOLD JOINT FORM, OR EQUAL.
- NON-SHRINK GROUT SHALL BE PAB-PAK, OR APPROVED EQUAL, WITH COMPRESSIVE STRENGTH OF 5000 PSI OR BETTER.
- VIBRATE ALL CONCRETE (INCLUDING SLABS ON GRADE) AS IT IS PLACED, WITH A MECHANICAL VIBRATOR OPERATED BY EXPERIENCED PERSONNEL. THE VIBRATOR SHALL BE USED TO CONSOLIDATE THE CONCRETE, NOT TRANSPARENT IT. REINFORCING AND FORMS SHALL NOT BE VIBRATED.
- REMOVE FORMS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:
 - SIZE FORMS OF FOOTINGS: MINIMUM 2 DAYS.
 - FORMS FOR WALLS: MINIMUM 3 DAYS.
 - IS PERFORMED AS SPECIFIED FOR UNFORMED SURFACES.
- UNLESS OTHERWISE NOTED, ANCHOR BOLTS ARE TO BE FULL DIAMETER CUT THREAD BOLTS, MADE FROM GRADE A-36 STEEL, BY AN AMERICAN MANUFACTURER.
- FORM WORK DESIGN AND RENDVAL SHALL CONFORM TO CALIFORNIA BUILDING CODE, SECTION 1906 AND STATE OF CALIFORNIA D.O.T. STANDARD SPECIFICATIONS SECTION 5106.
- CONCRETE SHALL NOT FALL MORE THAN SIX FEET. USE TREKME, PUMP, OR OTHER APPROVED METHODS.
- ONLY ONE GRADE OF CONCRETE SHALL BE ALLOWED ON PROJECT SITE AT ANY TIME.
- TESTING
 - LABORATORY: THE OWNER SHALL RETAIN AND PAY FOR THE SERVICES OF A TESTING LABORATORY (ACCEPTABLE TO THE ENGINEER WHERE SAMPLES WILL BE TESTED) IN ACCORDANCE WITH THESE STRUCTURAL NOTES AND THE APPLICABLE STANDARDS OF THE ASTM. WORK UNDER THIS DIVISION CTD BE PERFORMED BY THE CONTRACTOR WHO INCLUDES THE TAKING AND STORAGE OF SAMPLES AND THEIR DELIVERY TO THE TESTING LABORATORY. THE TESTING LABORATORY SHALL BE GIVEN A MINIMUM OF 48 HRS. NOTICE PRIOR TO CONCRETE PLACING OPERATIONS.
 - FREQUENCY OF TESTING: SAMPLES FOR STRENGTH TESTS OF EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN AND CURED AS FOLLOWS: A DAY, NINE SAMPLES PER CLASS OF CONCRETE FOR EACH 5000 SQ. FT. OF SURFACE AREA FOR SLABS OR WALLS.
 - SAMPLES: MAKE 4 TEST CYLINDERS FOR EACH DAY'S POUR.
 - TESTING OF SAMPLES: TEST EACH BATCH OF 3 CYLINDERS AS FOLLOWS: 1 AT 7 DAYS, 1 AT 14 DAYS AND 2 AT 28 DAYS.
 - TEST REPORTS: A COPY OF ALL TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER.

REINFORCING STEEL

- ALL REINFORCING STEEL SHALL BE NEW STOCK, DEFORMED BARS, CONFORMING TO ASTM A-706/A-706M GRADE 60 UNLESS SHOWN OTHERWISE.
- ALL BARS SHALL BE FREE OF LOOSE AND FLAKY RUST AND SCALE, GREASE, OR OTHER MATERIALS WHICH MIGHT AFFECT OR IMPAIR BOND.
- PLACING OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH SECTION 1907 OF THE CALIFORNIA BUILDING CODE, LATEST EDITION, AND STATE OF CALIFORNIA D.O.T. STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL SHALL BE SECURELY TIED AND BRACED IN PLACE PRIOR TO POURING CONCRETE OR PLACING MASSWORK.
 - POURED AGAINST EARTH 3" CLEAR
 - EXPOSED TO EARTH BUT POURED AGAINST FORMS 2" CLEAR
 - MAIN BARS ON COLUMNS AND BEAMS 1" CLEAR
 - STRUCTURAL SLAB 1" CLEAR
 - EXTERIOR FACE OF WALLS & COLUMNS 1" CLEAR
 - INTERIOR FACE OF WALLS & COLUMNS 1" CLEAR
 - SLABS ON GRADE AT CENTER
- REINFORCING BARS MARKED CONT. SHALL BE SPLICED WITH A MINIMUM LAP OF 45 BAR DIAMETERS FOR #8 AND SMALLER OR 60 BAR DIAMETERS FOR #9, #10, #11 IN CONCRETE, OR 24", WHICHEVER IS GREATER.
- WHEN ADJACENT SPLICES IN CONCRETE ARE SEPARATED BY THREE (3) INCHES OR LESS, THE LAP LENGTH SHALL BE INCREASED BY 1.3 TIMES, OR THE SPLICE MAY BE STAGGERED AT LEAST 24 BAR DIAMETERS WITH NO INCREASE IN LAP LENGTH.
- IF DRIVELS ARE REQUIRED, PROVIDE REINFORCING THE SAME SIZE AND SPACING AS THE MOST STRINGENT REINFORCING, AND LAP 45 BAR DIAMETERS FOR #8 AND SMALLER OR 60 BAR DIAMETERS FOR #9, #10, #11, WITH 24" LAP MINIMUM.
- ALL BENDS TO BE MADE COLD.
- DO NOT WELD REINFORCING STEEL UNLESS SPECIAL APPROVAL IS OBTAINED FROM STRUCTURAL ENGINEER.
- WELDABLE REPAIR SHALL CONFORM TO ASTM A-706 STANDARDS AND CALIFORNIA BUILDING CODE STANDARD 19-2.
- ELECTRIC WELDED WIRE MESH SHALL CONFORM TO ASTM A-185 (EXCEPT AT SLABS ON GRADE WHICH MAY BE GRADE 40).
- USE EPOXY AT ALL REBAR TO EXISTING CONCRETE PER ASTM C 881, TYPE 3, GRADE 3.
- CLOSED TIES OR STIRRUPS SHALL BE FORMED IN ONE PIECE BY OVERLAPPING STANDARD STIRRUP OR TIE END HOOKS AROUND A LONGITUDINAL BAR, OR FORMED IN ONE OR TWO PIECES AND SPLICED EITHER BY VEE GROOVE WELDED SPLICE, WELDED LAP SPLICING OR MECHANICAL LAP SPLICING PER CAL TRANS STANDARD SPECIFICATIONS 52-1.08.
- STAGGER SPLICES IN REINFORCING STEEL, UNLESS SPECIFICALLY NOTED OTHERWISE, MINIMUM DISTANCE BETWEEN STAGGERED SPLICES OF MECHANICAL LAP SPLICES SHALL BE SAME LENGTH REQUIRED FOR A LAPPED SPLICE OF LARGER BAR.
- FABRICATION, ERECTION, AND PLACEMENT OF REINFORCING STEEL SHALL CONFORM TO CONCRETE REINFORCING STEEL INSTITUTE OF STANDARD PRACTICE.
- REINFORCING BARS LARGER THAN #8 ARE NOT PERMITTED UNLESS SPECIFICALLY DETAILED OR NOTED OTHERWISE.
- MINIMUM LAP FOR ALL REINFORCING BARS AT SPLICES (SPLICES TO BE STAGGERED)

CONCRETE	#3, #4, #5, #6, #24	#7, #8, #9, #10, #11, #12, #13, #14, #15, #16, #17, #18, #19, #20, #21, #22, #23, #25, #26, #27, #28, #29, #30, #31, #32
19. ALL ANCHOR BOLTS USED IN CONCRETE CONSTRUCTION SHALL HAVE A MINIMUM TOTAL EMBEDMENT AS FOLLOWS, UNL:	#3..... 1 1/8"	#6..... 2 1/4"
5/8" DIA OR SMALLER..... 7"	#4..... 1 1/2"	#7..... 2 5/8"
3/4" DIA..... 8"	#5..... 1 7/8"	#8..... 3"
7/8" DIA..... 9"	#6..... 10"	
1" DIA..... 10"		
- LOCATION OF ALL CONSTRUCTION JOINTS, OTHER THAN SPECIFIED, SHALL BE APPROVED BY THE ENGINEER. ALL CONSTRUCTION JOINTS SHALL BE PROPERLY PREPARED. AGGREGATES AIR SURFACES TO RECEIVE CONCRETE SHALL BE MAINTAINED CONTINUOUSLY WET AT LEAST THREE HOURS IN ADVANCE OF POURING.
- ALL REINFORCING STEEL, ANCHOR BOLTS, DOVELS, INSERTS, AND ANY OTHER HARDWARE TO BE SET IN PLACE AND SECURED IN POSITION PRIOR TO POURING OF CONCRETE.
- ENGINEER AND INSPECTOR SHALL BE NOTIFIED FOR REINFORCING.
- EPOXY-COATED REINFORCING BARS TO CONFORM TO THE ASTM A 775 SPECIFICATIONS.
- REINFORCING SHALL BE PROPERLY SUPPORTED SO NO BAR SPAS MORE THAN ± 3/32", REINFORCING SHALL BE PROPERLY POSITIONED TO MATCH BOTH VERTICAL AND HORIZONTAL LINES AS SHOWN ON THESE PLANS.



PRELIMINARY

DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

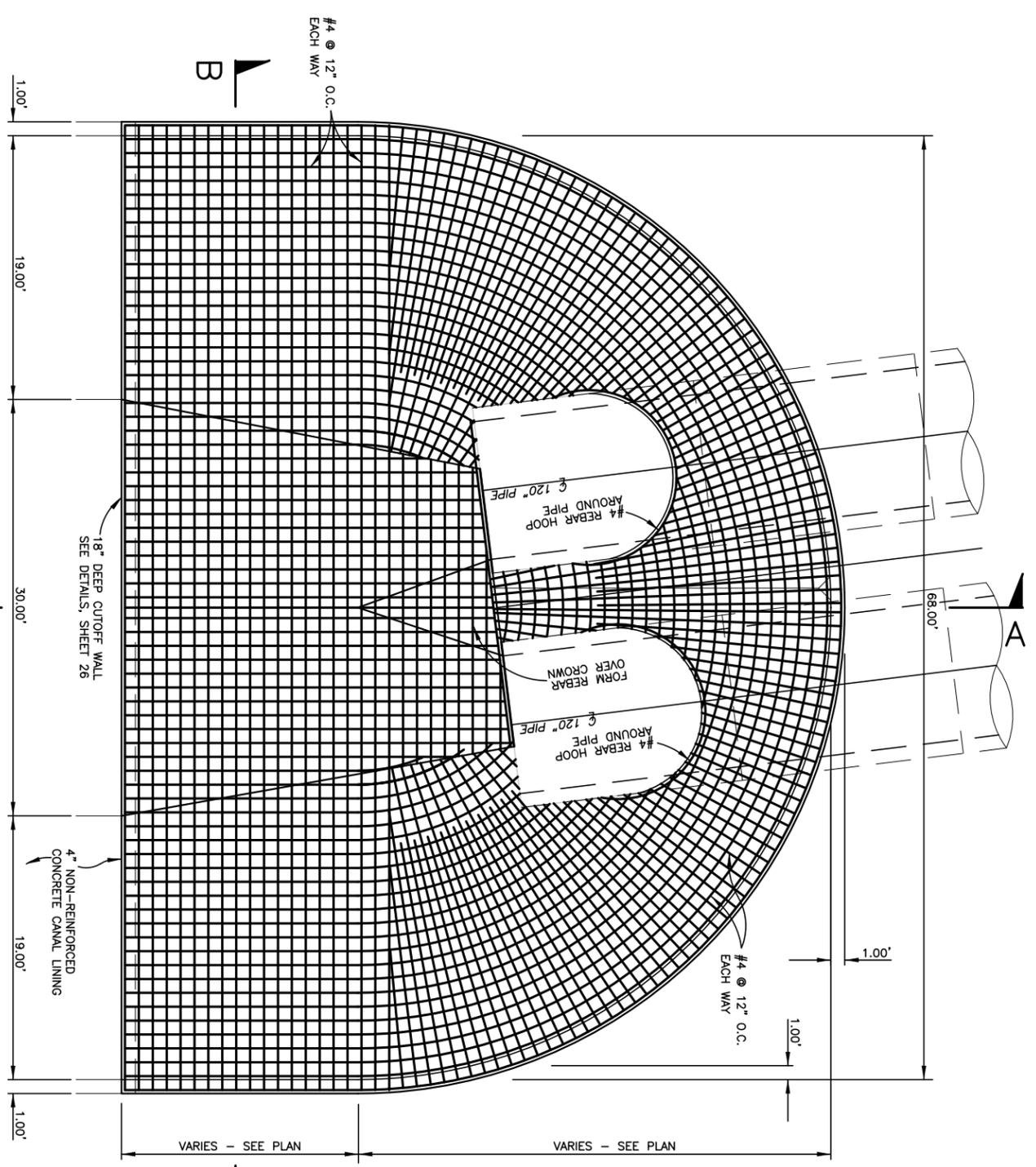
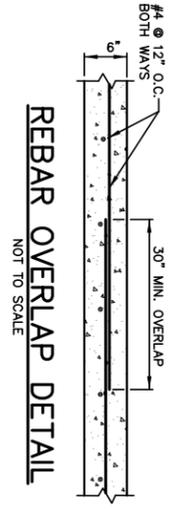
INTERTIE CANAL BOWL DETAILS

NOTES AND REINFORCEMENT DETAILS

NORTH KERN WATER STORAGE DISTRICT
33380 CAWEL0 AVENUE
BAKERSFIELD, CALIFORNIA, 93380

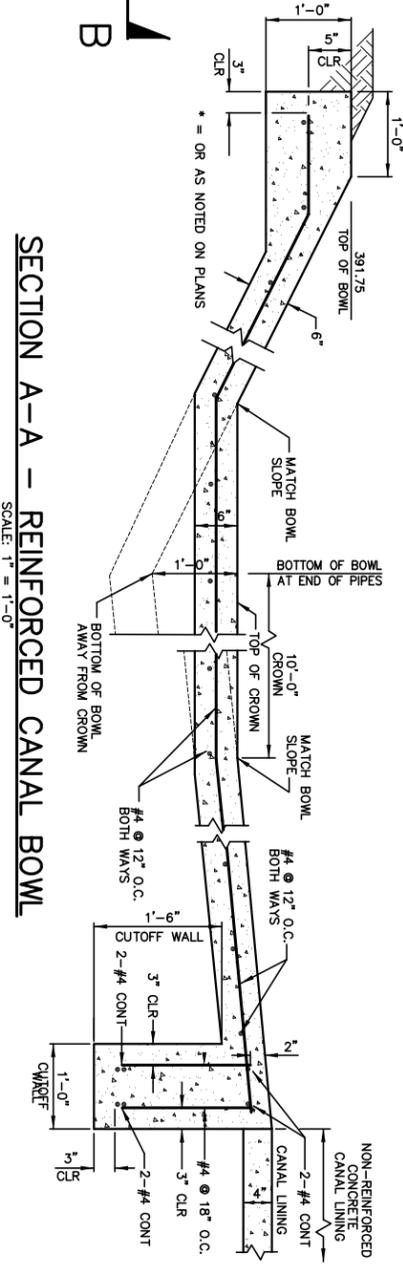
ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

NOTE:
SEE SHEET 26 FOR CONCRETE AND STEEL NOTES
AND REINFORCEMENT DETAILS



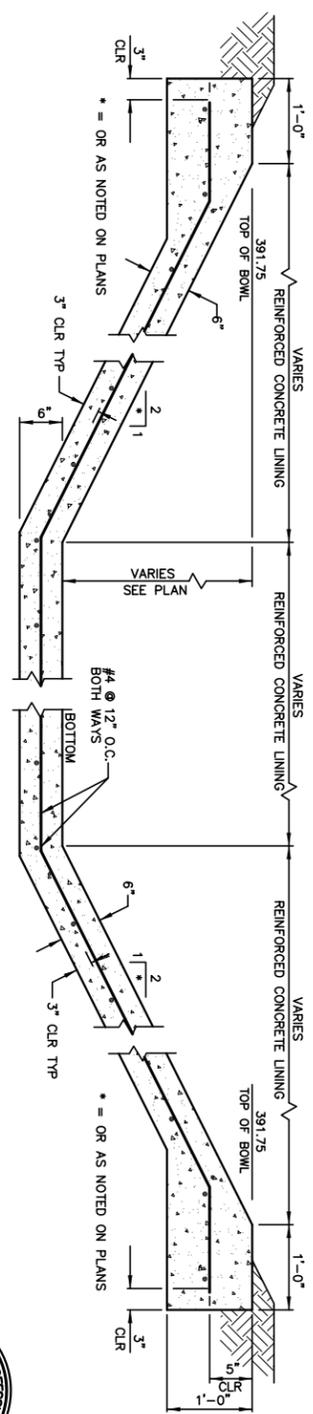
TYPICAL BOWL REINFORCEMENT DETAIL
SCALE: 1"=5'

REBAR OVERLAP DETAIL
NOT TO SCALE



SECTION A-A - REINFORCED CANAL BOWL
SCALE: 1"=1'-0"

SEE SHEET 26 FOR ADDITIONAL
STEEL REINFORCEMENT DETAILS



SECTION B-B - REINFORCED CANAL BOWL
SCALE: 1"=1'-0"



PRELIMINARY

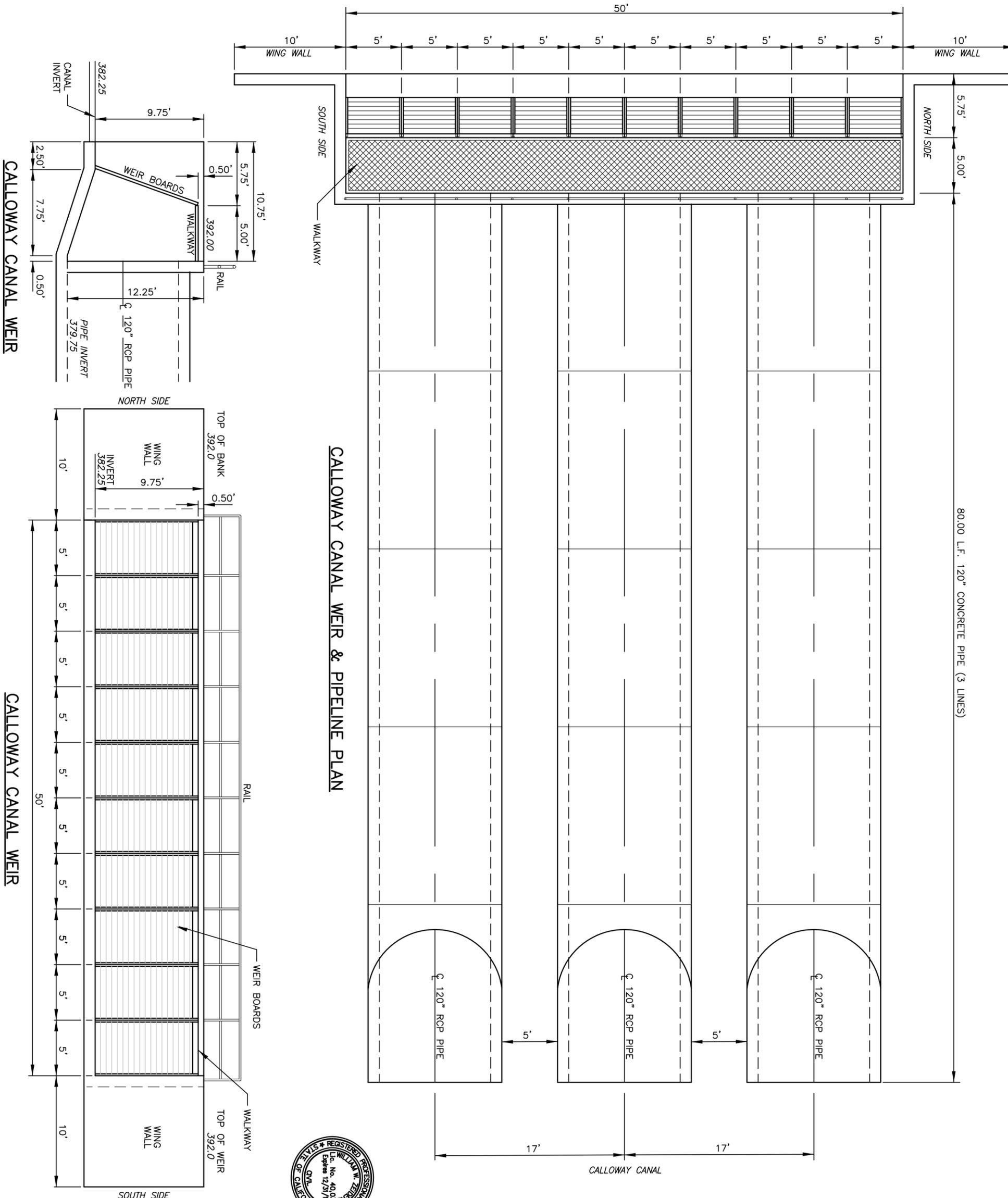
DATE: MAY 11, 2010
SCALE: AS NOTED
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

INTERTIE CANAL
BOWL DETAILS
B.N.S.F. RAILROAD CROSSING - STA. 35+13.53

NORTH KERN WATER STORAGE DISTRICT
33380 CAWEL0 AVENUE
BAKERSFIELD, CALIFORNIA, 93380

ZEIDERS CONSULTING
1655 GREELEY ROAD
BAKERSFIELD, CA. 93314
(661) 589-8366

DRAWING NO.
27
of 31



80.00 L.F. 120" CONCRETE PIPE (3 LINES)

CALLOWAY CANAL WEIR

CALLOWAY CANAL WEIR

CALLOWAY CANAL WEIR & PIPELINE PLAN

PRELIMINARY

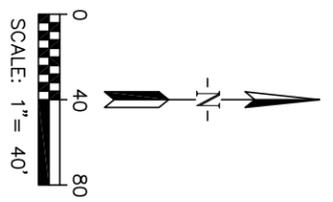
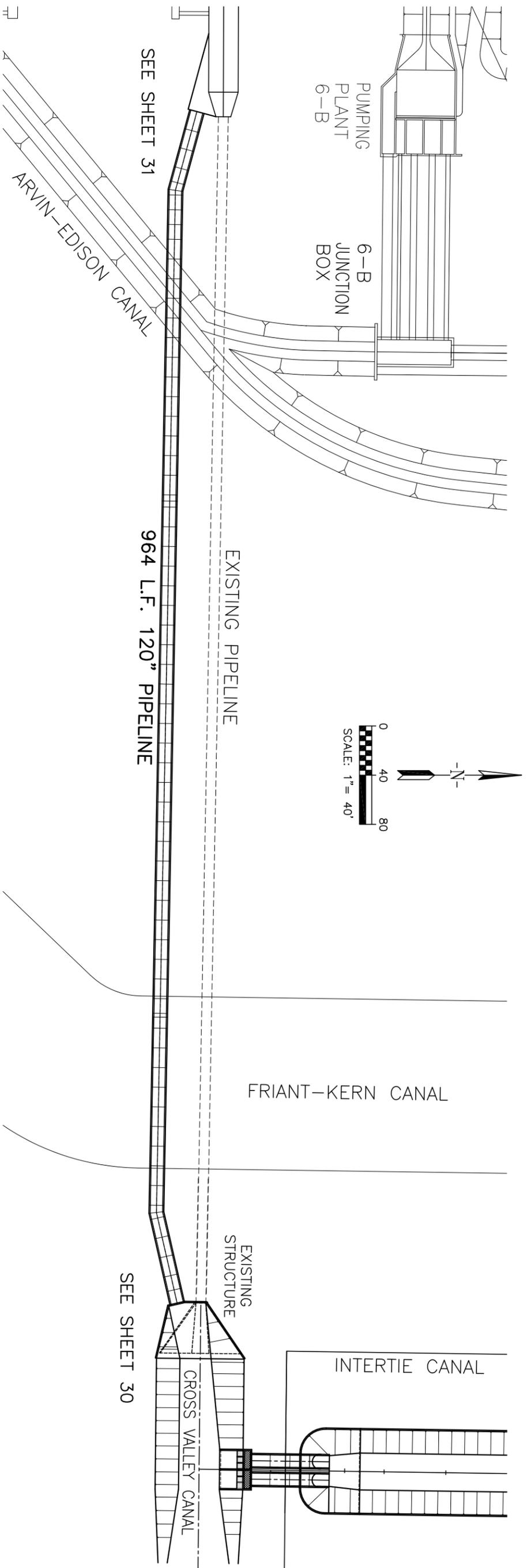
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DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

INTERTIE CANAL
 PUMPING PLANT 6A PIPELINE
 INLET DETAILS

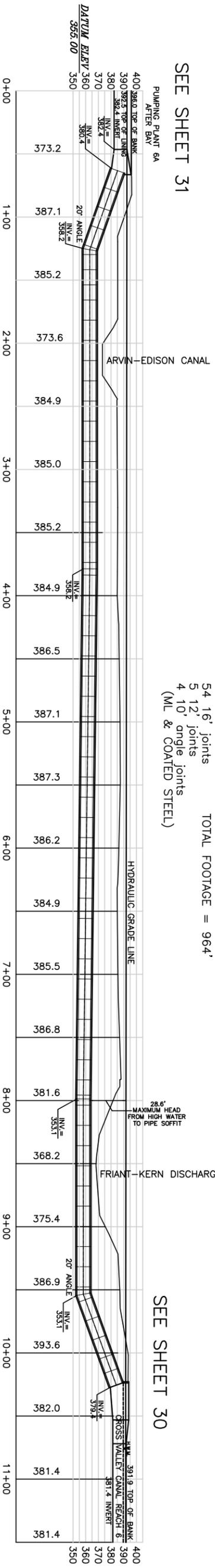
CAWELO WATER DISTRICT
 17207 INDUSTRIAL FARM ROAD
 BAKERSFIELD, CALIFORNIA, 93308

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 1655 GREELEY ROAD
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DRAWING NO. **28**
 of 31



PUMPING PLANT 6A PIPELINE - PLAN



PUMPING PLANT 6A PIPELINE - PROFILE



PRELIMINARY

DATE: MAY 11, 2010
 SCALE: 1" = 5'
 DRAWN BY: J. STORMONT
 CHECKED BY: W. ZEIDERS
 FILE NAME: CLWY-CVC-INTERTIE-DETAILS

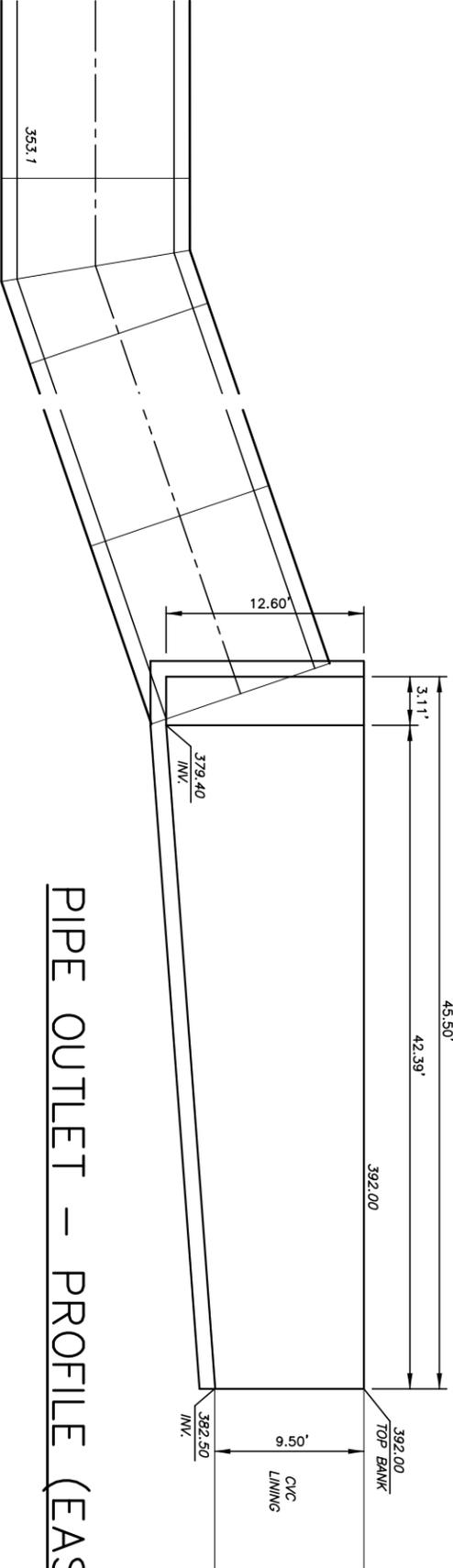
INTERTIE CANAL
 PUMPING PLANT 6A PIPELINE
 OUTLET CONNECTION DETAILS

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 BAKERSFIELD, CALIFORNIA, 93308

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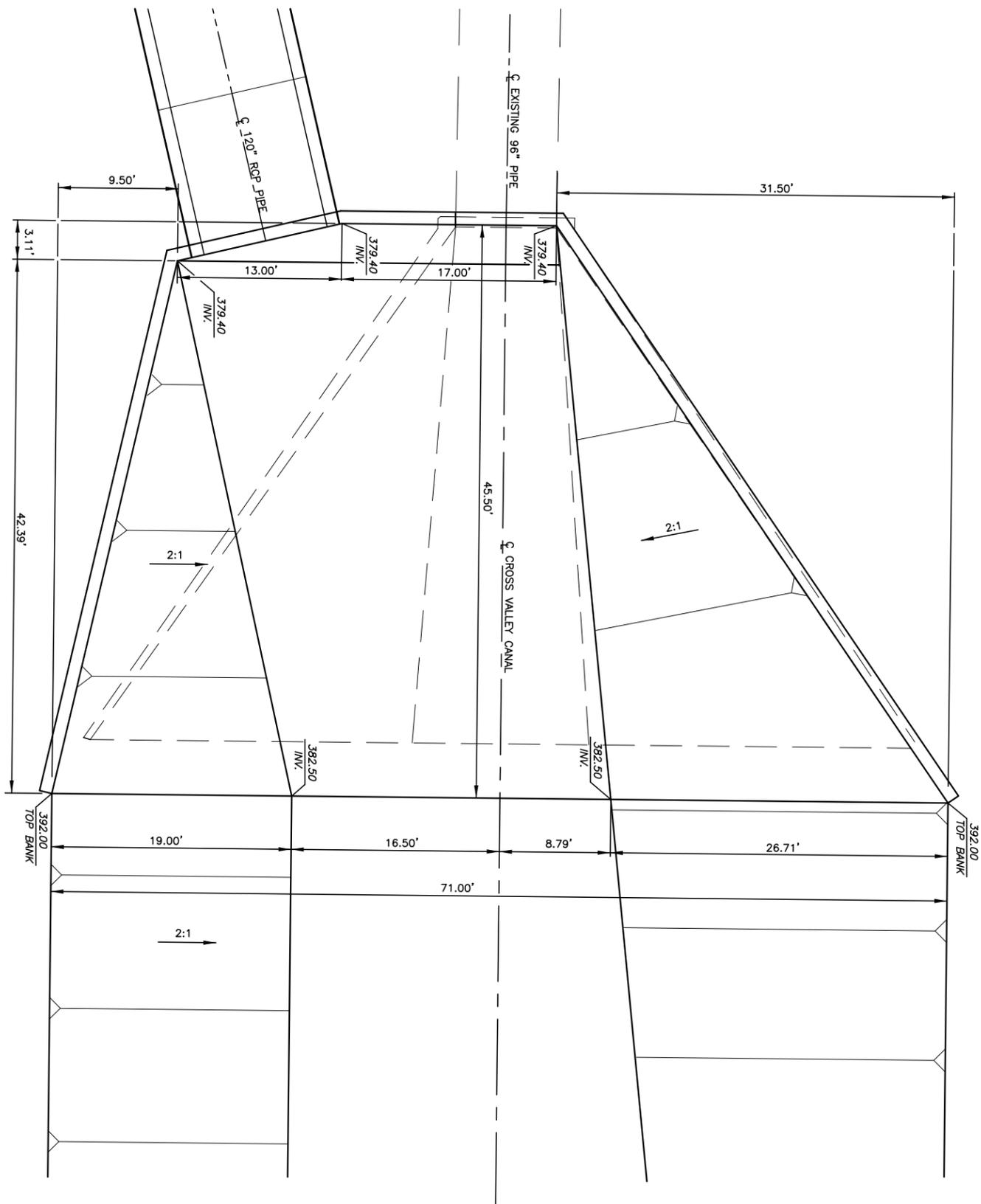
DRAWING NO.
29
 of 31

SEE SHEET 29

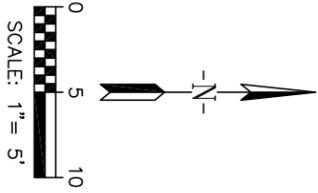


PIPE OUTLET - PROFILE (EAST)

SEE SHEET 29



PIPE OUTLET - PLAN



PRELIMINARY

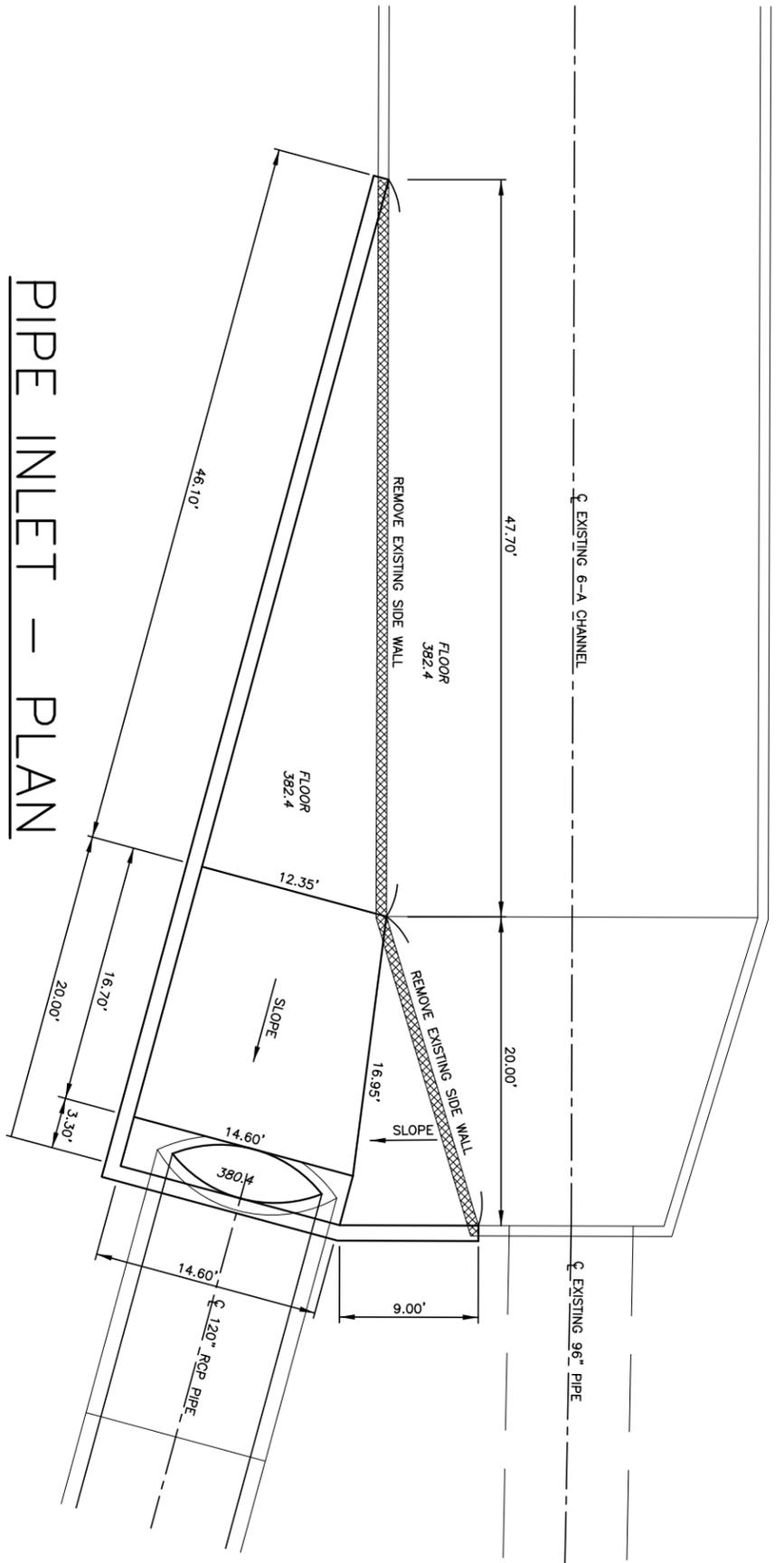
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 DRAWN BY: J. STORMONT
 CHECKED BY: W. ZEIDERS
 FILE NAME: CLWY-CVC-INTERTIE-DETAILS

INTERTIE CANAL
 PUMPING PLANT 6A PIPELINE
 OUTLET CONNECTION DETAILS

CAWELO WATER DISTRICT
 17207 INDUSTRIAL FARM ROAD
 BAKERSFIELD, CALIFORNIA, 93308

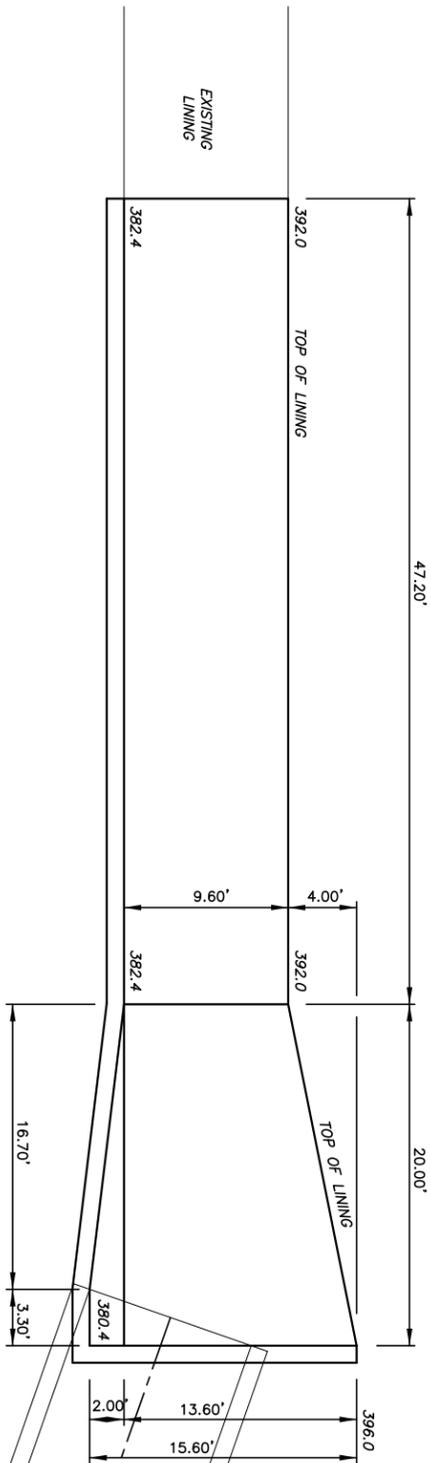
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 (661) 589-8366

DRAWING NO.
30
 of 31



PIPE INLET - PLAN

SEE SHEET 29



PIPE INLET - PROFILE (WEST)

SEE SHEET 29



PRELIMINARY

DATE: MAY 11, 2010
SCALE: 1" = 5'
DRAWN BY: J. STORMONT
CHECKED BY: W. ZEIDERS
FILE NAME: CLWY-CVC-INTERTIE-DETAILS

INTERTIE CANAL
PUMPING PLANT 6A PIPELINE
 INLET CONNECTION DETAILS

CAWELO WATER DISTRICT
 17207 INDUSTRIAL FARM ROAD
 BAKERSFIELD, CALIFORNIA, 93308

ZEIDERS CONSULTING
 1655 GREELEY ROAD
 BAKERSFIELD, CA. 93314
 (661) 589-8366

DRAWING NO.
31
 of 31

3.2 Project 2 – Madera Avenue Intertie

Introduction

The Madera Avenue Intertie is a proposed pipeline connection to accommodate gravity deliveries from Shafer-Wasco ID to Semitropic WSD (east to west) and pumped deliveries from Semitropic WSD to Shafer-Wasco ID (west to east). The specific activities required to construct the Madera Avenue Intertie (Project 2) are presented in this section. Project 2 budget and schedule are presented in the Attachment 4 and 5. Concept level plans are included as Appendix 3.2-1 to this section of Attachment 3.

3.2.1 Goals and Objectives

While Project 2 accomplishes multiple goals and objectives of the Poso IRWM Plan, the specific purpose of this project is to add up to 7,500 acre-feet of return capacity (in the form of west to east conveyance) that will facilitate a reliable, dry-year supply and drought protection for districts that bank water in Semitropic WSD and can complete exchanges that involve Shafer-Wasco ID. The specific Poso IRWM Plan goal of the Intertie is to enable CVP Contractors to return their previously stored water in the existing Semitropic WSD water bank while at the same time Semitropic WSD helps meet the drought protection needs of its Statewide banking partners through return of stored water to the CA Aqueduct in times of dry-year requests.

Exhibit 3.2-1 below presents a selection of the Poso IRWM Plan Objectives, and how the Project Goals and Objectives coincide with them:

EXHIBIT 3.2-1

IRWM Plan Objectives	Project 2 Goals and Objectives
<p><u>Primary:</u> Enhance Water Supply Reliability of Surface Supplies</p>	<p>A conveyance system modification that adds capacity to deliver water into the in-lieu service areas of an existing water bank.</p> <p>Increase Drought Protection in the Poso Creek Region by adding west to east return conveyance from existing groundwater banking facilities</p> <p>Increase operational flexibility</p>
<p>Maintain Groundwater levels at economically viable pumping lifts</p>	<p>The Project facilitates the return of supplies that can be stored in Semitropic's banking facilities. As more supplies are made available for banking, it provides the opportunity for less water to be pumped from the shared groundwater basin and leaves water in storage, which results in a slowing, or reversal, of groundwater level decline.</p>
<p>Maintain water supply costs at a level commensurate with the continued viability of the agricultural economy which has developed in the area</p>	<p>Increases the ability for CVP contractors to manage the timing of deliveries and add capacity to return banked supplies. Avoids the cost of replacing existing contract supplies with more expensive options.</p>

3.2.2 Purpose and Need

Semitropic Water Storage District and Shafter-Wasco Irrigation District are proposing to construct a bi-directional water conveyance intertie, identified as the Madera Avenue Intertie, and is requesting a grant to assist with funding. The Project is intended to serve several purposes, which include the following:

- Increase operational flexibility and drought protection for the Poso Creek Region by adding capacity to convey water west to east, which facilitates return of water stored in existing banking facilities, and supports the banking programs that bring more surface water into the Poso Creek Region;
- Provide drought protection for the established economy within the Poso Creek Region;
- Provide additional capacity, up to 16 cfs, 30 acre-feet per day of exchange capacity, and 7,500 acre-feet of dry-year yield, for conveying , Delta CVP or SWP water into a CVP Contractor's District, specifically, into Shafter-Wasco ID from Semitropic; and
- Provide a means for delivering previously banked Delano-Earlimart ID and Kern-Tulare WD CVP water stored in Semitropic, into Shafter-Wasco ID for exchange of Shafter-Wasco ID's contract supply that can be delivered to Delano-Earlimart ID and Kern-Tulare WD upstream of Shafter-Wasco ID' intake from the Friant-Kern Canal.
- Increases return capabilities to Semitropic banking partners through exchanges with Kern-Tulare.

Beneficiaries include SWP and CVP Contractors, including all Poso Creek Regional Water Management Group members; Semitropic WSD, Shafter-Wasco ID, Kern-Tulare Water District, Delano-Earlimart ID, and including the Disadvantaged Communities of Shafter and Wasco. These entities are neighboring districts that share a common groundwater basin with environmental and urban uses.

3.2.3 Project Abstract

The Madera Avenue Intertie will provide up to approximately 16 cfs of west to east conveyance capacity, add 30 acre-feet per day of return from banking capacity, and 7,500 acre-feet of dry-year yield for neighboring districts. It will add flexibility in managing surface supplies utilizing Semitropic's existing banking facilities and provides a means to complete exchanges with neighboring districts who are CVP contractors. The Intertie, which is expected to start construction in 2012, specifically adds return capacity for CVP contractors, provides synergy with the recently completed non-structural water management measures implemented since adoption of the Poso Creek IRWM Plan (agreements for banking and exchanges among the Poso Creek IRWMP districts), and several structural improvements between SWP, CVP, and Kern River contractor districts.

The Madera Avenue Intertie current status is at 30-percent completion of design, which is being used for cost estimate for Project 2 of this Proposal. Semitropic WSD, Shafter-Wasco

ID, Delano-Earlimart ID and Kern-Tulare WD will collaborate on the Final Design that will include a value engineering component to optimize the Project to meet the needs of both the immediate two districts and neighboring CVP contractor districts. Semitropic WSD and Shafter-Wasco ID will partner on the construction of this Project.

The Madera Avenue Intertie, at the 30-percent design, consists of three main components, (1) a pipeline connecting the two districts' conveyance facilities, (2) a pumping plant, and (3) a lateral to allow surface water delivery to lands presently served by groundwater and Shafter-Wasco ID's gravity system. Physically, the proposed connecting pipeline component would be about two miles in length; however, the value engineering will consider modifying the design to a longer, smaller sized pipeline that connects further into Shafter-Wasco ID's system. The design is to operate in both directions; gravity to the west and pumped to the east. Since the present design is limited to gravity delivery into Semitropic from the east to the west and pumped delivery going west to east for return of stored water from Semitropic, the value engineering will assess the needs of all interested districts and evaluate the most economical length and size of the Intertie.

An important purpose of this Intertie is to provide CVP Contractor return capacity for water stored in and returned from Semitropic's existing groundwater banking facilities. Banking agreements among the Poso Creek IRWM RWMG districts include provisions that water is stored prior to retrieving from the bank. Completion of an Intertie between Semitropic and Shafter-Wasco provides the flexibility necessary for CVP Contractors to recover banked water during dry-years from Semitropic at the same time Semitropic is obligated to meet the needs of their high-priority banking partners.

Another benefit from this Project is to increase delivery capability to Semitropic's high priority banking partners through exchanges with Kern-Tulare WD. This is accomplished by delivering Kern-Tulare's CVP Delta supplies to Semitropic's banking partners in exchange for groundwater stored in Semitropic. This exchange reduces pumping from Semitropic back to the California Aqueduct and helps manage Kern-Tulare's use of its CVP water supplies by providing flexibility in the timing of deliveries.

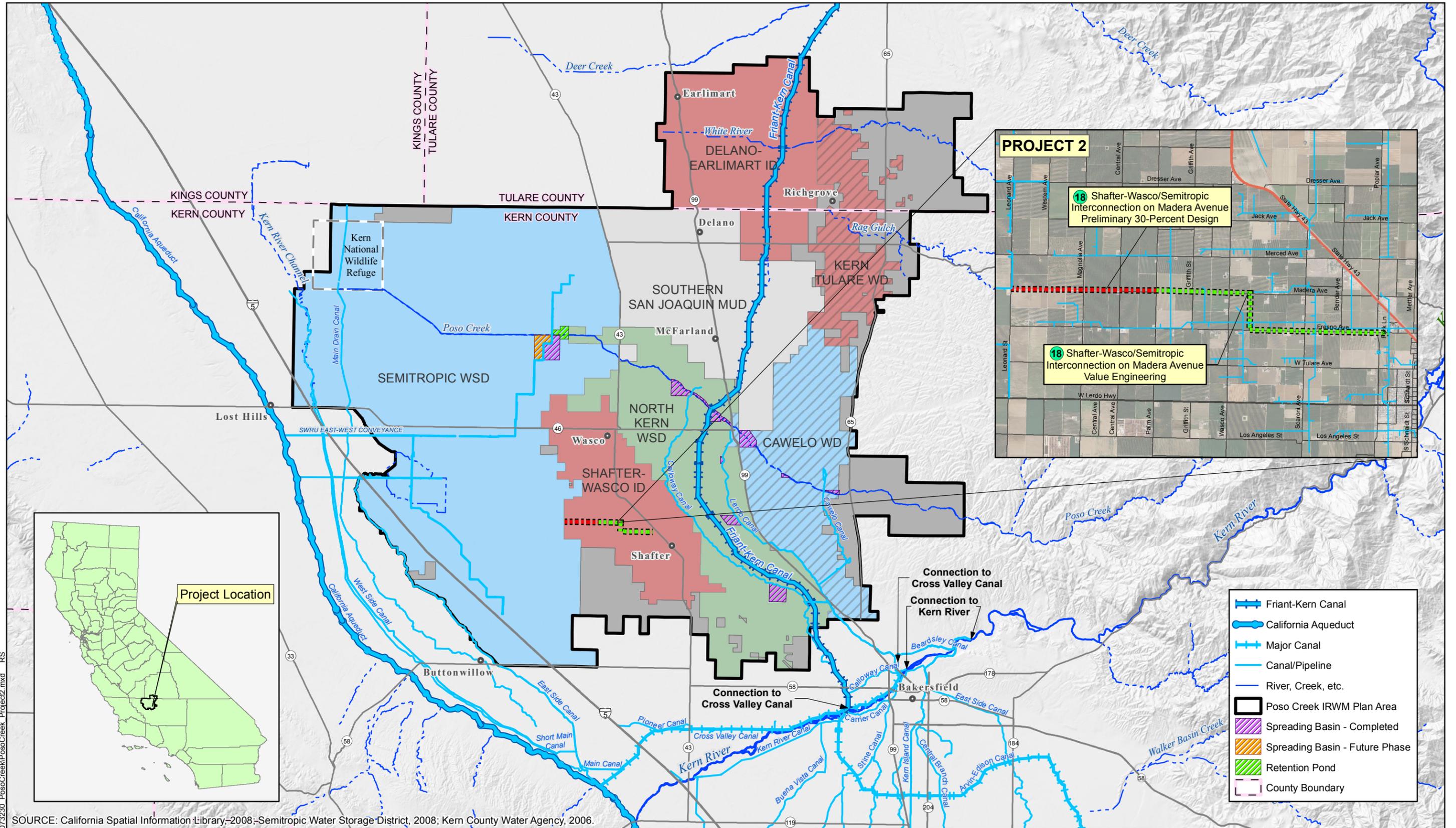
3.2.4 Integrated Elements of Project

The *Madera Avenue Intertie* is one of a number of high-priority Projects in the Poso Creek IRWM Plan that will allow SWP and CVP Contractors more flexibility in managing supplies that have been reduced by the San Joaquin River Settlement and loss of reliability from the Sacramento-San Joaquin Delta issues. The Poso Creek Plan Brochure and Plan Synopsis, included in the Introduction to this Attachment 3 – Work Plan, identified the need to support water management for issues outside of the IRWM Region. Project 2 specifically helps to implement the identified Poso Creek Plan Project No. 27 - Environmental Water Management in Support of Wildlife Settlements Outside of the IRWM Region.

In general, the Poso Creek Plan identified non-structural and structural projects that focus on providing benefit towards meeting the Region's highest priority; increasing water supply reliability to the Region. Several high-priority projects identified in the Poso Creek IRWM Plan, which are not part of this grant application, have been constructed since the Poso Creek Plan adoption in July of 2007. Two key conveyance facilities that link North Kern's Calloway Canal to the North and South mainline systems in Shafter-Wasco ID will be completed in early 2011; the South Interconnection between North Kern WSD and Shafter-Wasco ID (Poso Plan Project No. 19) received funding from Reclamation's WaterSMART program in August of 2010 and started construction in December, 2010. The proposed Madera Avenue Intertie adds an important banking and exchange component, and return capacity for the banking participants within Poso Creek IRWM Plan Region. This structural component adds a key component to allow implementation of banking and exchange agreements that are now possible since the Poso Creek IRWM Plan's districts have completed the necessary CEQA and are completing NEPA documents to allow agreements for banking and exchanging water among the Poso Creek IRWM districts.

3.2.5 Project Map

The Madera Avenue Intertie is a regional conveyance connection, shown on Figure 3.2-1. The Intertie connects Semitropic's Lateral B-230 to Shafter-Wasco ID's mainline of their South System, named Lateral 137.2. The intertie will allow for direct delivery and return of SWP, CVP-Delta, or CVP-Friant water supplies between Semitropic and Shafter-Wasco ID to integrate the two water supplies. The Intertie also connects banking facilities within Semitropic. Water banked in Semitropic can later be returned to lands served by the Intertie, allowing contractors to complete banking and exchanges within the Region.



SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2006.

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Poso Creek IRWMP Implementation Grant Proposal

Poso Creek IRWMP Region



MADERA AVENUE INTERTIE PROJECT 2 LOCATION

JANUARY 2011

FIGURE 3.2-1

3.2.6 Completed Work

Since the Poso Creek Plan adoption, the Madera Avenue Intertie has been discussed by the Poso Creek Plan Regional Water Management Group (RWMG) as a key component to add for increasing the return capacity from Semitropic's banking facilities to the neighboring districts within the Region. In October 2010, a preliminary design and cost estimate was prepared at the 30-percent design level. This proposal includes an assessment of costs and benefits for the Intertie based on the 30-percent design.

Work that is expected to be completed prior to the grant award date (June 1, 2011) will include an evaluation of potential connection points in Shafter-Wasco's South Main system and the determination of those that are most economical.

Once grant funding is secured, several issues that require time to complete will be addressed. These issues include proceeding with the 60-percent Design, acquisition of the necessary rights-of-way, and securing necessary construction easements and permits.

Other lead time items include:

- Finalizing design of the Madera Avenue Intertie, and
- Finalizing an agreement with the participating Districts for use of the Intertie for banking and exchanges, construction cost sharing, and operation of the Intertie (Poso Creek IRWM MOU has provisions for cost sharing projects).

Semitropic WSD and Shafter-Wasco ID are engaged and working on these items which will be addressed at the regularly scheduled Poso Creek IRWM Plan meetings to insure that steps are taken towards Final Design and the planned construction schedules can be met.

Several tasks, listed below in Section 3.2.9 Tasks, are defined to accomplish the Project Work and are organized to track with Attachment 4 - Budget and Attachment 5 - Schedule (presented in subsequent attachments). Engineering plans resulting from the design work that has been completed to date are included as Appendix 3.2-1 to this section of Attachment 3. Once funding assistance is known, the value engineering can take place in June through August, 2011, with construction anticipated to start in mid-year, 2012, and completion of the Project by March, 2013. Some construction items need coordination to be installed during the district's irrigation shutdown periods, which typically occurs in November-December-January period each year.

3.2.7 Existing Data and Studies

The following technical reports included this project in their analysis and support the sequencing of constructing this project in relation to the high-priority project in the Poso Plan Region.

- System Optimization Review for Shafter-Wasco ID, 2009, a specific component of the SOR for the Poso Creek IRWM Plan Area.
- System Optimization Review for the Poso Creek IRWM Plan Area, conducted from October 2008 through September 2010 (funded by a Reclamation WaterSMART grant).

3.2.8 Project Timing and Phasing

This project is not part of a multi-phased project; it is a standalone project and is fully functional without implementation of subsequent projects. The Project will be constructed over a 2 to 2.5-year period.

Implementing Agency and Management of Project

The proposed Project will be the responsibility of Semitropic WSD in cooperation with Shafter-Wasco ID. Semitropic WSD has an engineering services contract in place with GEI Consultants Inc. (GEI), who will provide design, construction management, administrative, and reporting assistance as requested. Role and responsibility of the District and their service providers is included in the task descriptions below. The sequencing of work is addressed in Attachment 5, which presents and discusses the Project Schedule.

3.2.9 Tasks

Task 1 –Project Administration

Semitropic will be responsible for development of the funding agreements and service contracts as well as coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration (preparation of invoices and maintenance of financial records).

Deliverables: (1) review of DWR Grant Contract; (2) project kick-off meeting with DWR personnel; (3) coordination of field visits with DWR personnel; (4) preparation of invoices and maintenance of financial records (5) preparation of Grant reimbursement requests; and (6) other deliverables as required.

Task 2 – Labor Compliance Program

Semitropic will be responsible for development of a Labor Compliance Program (LCP) which will follow the rules of the California Department of Industrial Relations. Specifically, the LCP will enforce the prevailing wage requirements as stipulated in the Labor Code Section 1771.5. The goal of the LCP will be to accomplish the following: (1) Inform contractors about their prevailing wage obligations; (2) Monitor compliance by obtaining and reviewing certified payroll records throughout the construction of the project; (3) Investigate

complaints and other suspected violations; and (4) Take appropriate actions when violations are found.

Deliverables: (1) prepare a Labor Compliance Program (LCP) Plan; and (2) enforce the LCP during the construction of the project.

Task 3 – Reporting

Report on the financial status and project performance on a quarterly basis. Significant development reports and a final project report will be prepared. In addition, the Project will comply with any other reporting requirements specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4 - Land Purchase/Easement

Semitropic and Shafter-Wasco will purchase necessary property for the pipeline and obtain temporary and permanent easements for the pipeline. The districts will secure all the necessary project rights-of-way by following a standard practiced R/W acquisition process as follows: (1) Conduct field work to determine best site layout and location for facilities; (2) Initiate contact with the landowners and act as the primary contact during the negotiations; (3) Order litigation guarantees from the title company to confirm ownership of the rights-of-way parcels; (4) Prepare the legal descriptions and plats which include a written description and a drawing (plat) showing the proposed layout of the project easements; (5) Order and coordinate property appraisals; (6) Assist with the preparation of the offer letters for just compensation for the purchase of the project easements, assist in drafting the easement deed and in compiling the final package to be transmitted to the landowners which includes the offer letter, easement deed, appraisal and legal plat and description; (7) Assist with securing signatures for the easement deed; and (8) Assist in filing the document with the County recorder's office.

Deliverables: Obtain rights-of-way and easements necessary for project construction.

Task 5 – Assessment and Evaluation

Assessment and evaluation of the project will include a Value Engineering component to determine the optimum distance into Shafter-Wasco ID's South Mainline Distribution system the Intertie pipeline needs to connect. The concept design has established a goal of 7,500 acre-feet of return capacity; several criteria will be evaluated in detail to determine the appropriate distance for the Intertie.

Deliverables: Assessments and evaluations will be completed, culminating in a technical memorandum identifying the preferred pipeline size and length.

Task 6 – Design

Starting in 2006, the Districts began investigated the feasibility of interties between Semitropic WSD and Shafter-Wasco ID. In 2007, a preliminary design and cost estimate was provided for the Poso Creek IRWM Plan for four separate locations. Based on the preliminary evaluation and work completed in the System Optimization Review of Shafter-Wasco ID's distribution system, the Madera Avenue Intertie was recommended to improve Shafter-Wasco IDs South System prior to Kimberlina Intertie on the North Distribution System. A 30-percent Design was completed in October, 2010 for the Madera Avenue Intertie. The Project is to include a Value Engineering component prior to the 60-percent Design step. Once the 90-percent design is reached, the districts will proceed with acquisition of the necessary rights-of-way, identification of underground utilities, and pursue agreements with various interested parties (easements, common use, etc.). Accordingly, work under this task will include the Final Design of the project prior to advertisement of the project for award to construct.

Deliverables: Completion of 60-percent, 90-percent, and Final Design project plans and specifications prior to advertising for project award to construct.

Task 7 – Environmental Documentation

Pursuant to California Environmental Quality Act (CEQA) guidelines, the District will prepare a CEQA Initial Study which will evaluate the project's potential for significant effects on the environment. It is anticipated that the Initial Study will indicate the Project environmental compliance can be met through the preparation and filing of a Negative Declaration. Once the environmental compliance is met and prior to any construction, field surveys will be conducted by a qualified biologist to ensure the construction area is unoccupied by sensitive species.

Deliverables: (1) prepare and conduct an Initial Study; (2) prepare and adopt an appropriate environmental document; and (3) provide results of the pre-activity biological survey at the time of construction.

Task 8 – Permitting

Once the 60-percent Design level is reached, the District will contact Kern County Roads to initiate a permit application for encroachment permit to cross county roads.

Once the Final Design level is completed, bids for construction will be solicited through the competitive bidding process on the basis of final plans and specifications. The standard specifications include language relating to the contractor obtaining permits and approvals prior to construction. In particular, the standard language in the specifications states “ The Contractor is an independent contractor and shall, at his sole cost and expense, comply with

all laws, rules, ordinances and regulations of all governing bodies having jurisdiction over the work, obtain all necessary permits and licenses therefor...”.

A National Pollutant Discharge Elimination System (NPDES) permit will not be required inasmuch as any potential storm water runoff from the construction activity can be captured and controlled on the construction site. If before construction commences it is determined that potential storm water runoff cannot be captured on site by means of allowing the storm water runoff to evaporate, soak into the ground on site or used for irrigation, the District will apply for a Notice of Intent, NPDES permit.

No other permits as required by the United States Environmental Protection Agency or the California Department of Fish and Game are required inasmuch as the construction activities are not subject to these types of permits.

Finally, it is noted that the agricultural districts are not subject to the County’s jurisdiction with regard to building and grading permits.

Deliverables: Required permits will be obtained by District and confirmation from District’s Counsel that no other permits are required.

Task 9 – Construction Contracting

Once the plans and specifications for the final level design are complete, the activities related to construction contracting will commence and they include the following: (1) Advertisement and solicitation of bids; (2) Responding to prospective bidders’ request for information; (3) Preparation of addendas making changes or clarifications to the Contract documents; (4) Conducting a pre-bid tour and conference; (5) Conducting the bid opening; (6) Preparation of the abstract of bids; (7) Evaluation of proposals; (8) Checking references for the apparent low bidder; (9) Awarding the contract; and (10) Issuance of the Notice to Proceed.

Deliverables: (1) advertisement and solicitation of bids; (2) conduct a pre-bid tour and conference; (3) conduct bid opening; (4) evaluate bids; (5) award the contract; and (6) issue the Notice to Proceed.

Task 10 – Construction

This involves the furnishing and installation of all Project works as listed in the budget and schedule. A contract for this task will be awarded to the successful bidder.

Deliverables: Project works constructed as designed and specified.

Task 11 – Environmental Compliance

Once the contract has been awarded to a contractor, the District will engage a certified biologist to conduct pre-construction biological surveys prior to construction commencing.

Accordingly, under this task the District will coordinate pre-construction biological surveys and provide additional monitoring during construction in compliance with Specifications.

Deliverables: (1) conduct pre-construction biological field surveys; and (2) report on biological monitoring during construction.

Task 12 – Construction Administration and Management

Once a construction contract is awarded, GEI can work under an existing contract arrangement with Semitropic WSD to provide the Project Construction Administration and Management. This task involves everything from the issuance of the Notice to Proceed to the filing of the Notice of Completion for the Project works and preparation of “As-Built” plans. The activities can generally be categorized as field inspection and contract administration, where the latter includes the following activities: (1) Attend weekly construction meetings; (2) Process technical submittals; (3) Process Requests for Information (RFI’s); (4) Review contractor schedule and cash flows; (5) Process contract change order requests; (6) evaluate and process claims; (7) Prepare the monthly progress estimate; (8) Maintain as-built drawings and photographic records; and (9) Contract close-out. Activities related to field inspection include inspection of materials and quality of work for conformance with the plans and Specifications including the following: (1) Verification of depth and invert elevations of facilities to be constructed; (2) Record quantities of materials received or used during specified periods; (3) Maintenance of daily logs of construction and inspection activities, including photographs; and (4) Coordination of concrete and earthwork testing in support of construction.

Deliverables: (1) review of construction progress submittals; (2) processing RFI’s, contract change orders and claims; (3) start-up and testing; (4) filing of the Notice of Completion; and (5) preparation of the “As-Built” plans.

Task 13 – Monitoring, Assessment, and Performance Measures

This task involves some time for utilizing the project specific monitoring tables as input for development of a proposal monitoring plan.

Deliverables: (1) project implementing agency to use project specific monitoring tables to develop proposal monitoring plan with Poso RWMG; and (2) implementing agency to monitor performance measures; and (3) implementing agency to report monitoring results of project performance measures to the Poso RWMG on an acceptable schedule, such as an annual basis.

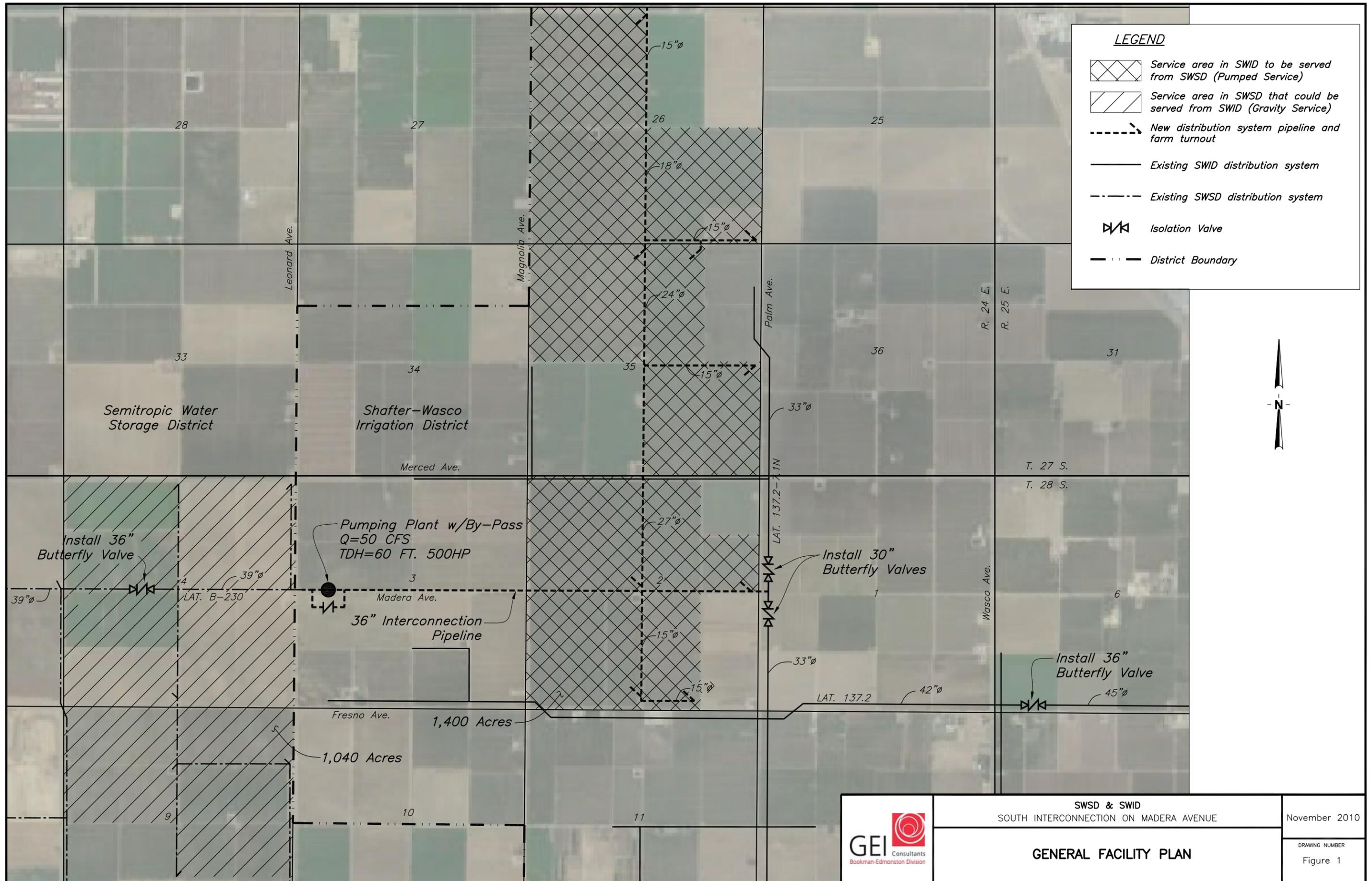
3.2.10 Appendices

Appendices for this Project 2 Work Plan include:

Appendix 3.2-1 30-Percent Concept Level Design Plans

3.2.11 Tables

There are no tables for this section.

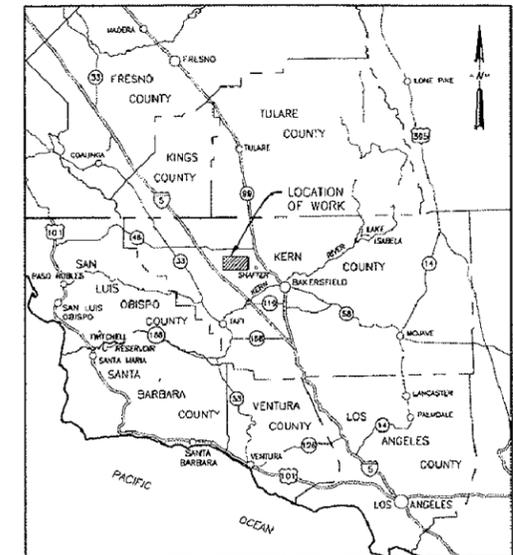
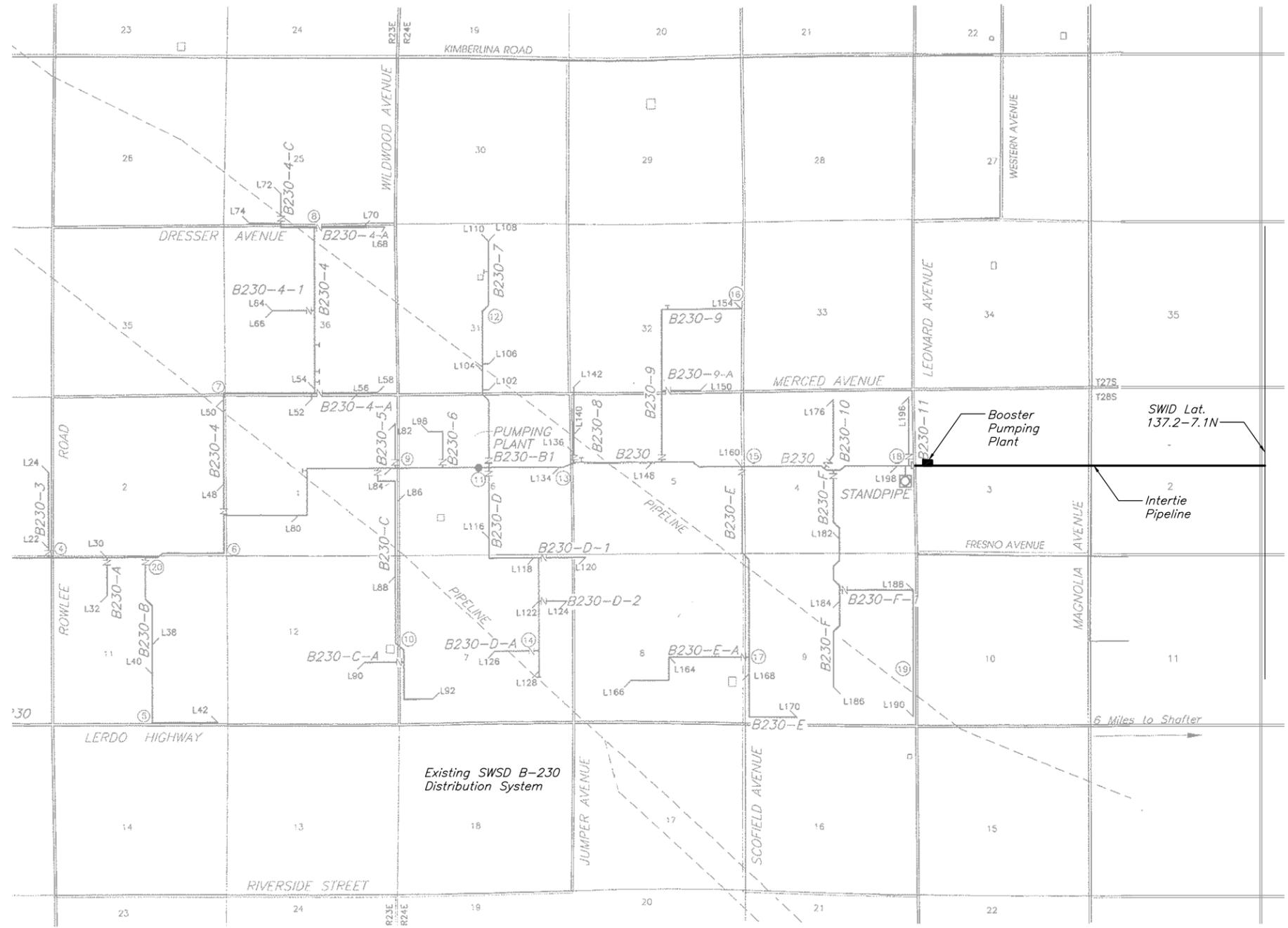


LEGEND

-  Service area in SWID to be served from SWSD (Pumped Service)
-  Service area in SWID that could be served from SWID (Gravity Service)
-  New distribution system pipeline and farm turnout
-  Existing SWID distribution system
-  Existing SWSD distribution system
-  Isolation Valve
-  District Boundary



	SWSD & SWID SOUTH INTERCONNECTION ON MADERA AVENUE	November 2010
	GENERAL FACILITY PLAN	



VICINITY MAP

SHEET NO	DWG NO	DRAWING TITLE
1	MAI-001	LOCATION OF WORK AND LIST OF DRAWINGS
2	MAI-002	PLAN AND PROFILE STA 1+00 TO STA 55+00
3	MAI-003	PLAN AND PROFILE STA 55+00 TO STA 107+43.50
4	MAI-004	BOOSTER PUMPING PLANT - GENERAL PLAN
5	MAI-005	BOOSTER PUMPING PLANT - TYPICAL CAN PUMP INSTALLATION DETAILS
6	MAI-006	TYPICAL PIPE TRENCH SECTIONS
7	MAI-007	STEEL PIPE SPECIALS AND FITTINGS
8	MAI-008	AIR VALVES AND MANHOLES
9	MAI-009	THRUST BLOCKS FOR REDUCERS AND BENDS
10	MAI-010	METER VAULT - SHEET 1 OF 2
11	MAI-011	METER VAULT - SHEET 2 OF 2
12	MAI-012	GENERAL STRUCTURAL NOTES
13	MAI-013	TYPICAL STRUCTURAL DETAILS - SHEET 1 OF 4
14	MAI-014	TYPICAL STRUCTURAL DETAILS - SHEET 2 OF 4
15	MAI-015	TYPICAL STRUCTURAL DETAILS - SHEET 3 OF 4
16	MAI-016	TYPICAL STRUCTURAL DETAILS - SHEET 4 OF 4
17	MAI-017	MISCELLANEOUS MANIFOLD DETAILS
18	MAI-018	CONCRETE FOUNDATION
19	MAI-019	ADJUSTABLE FLANGE SUPPORT AND PIPE SUPPORT DETAILS
20	MAI-020	CHAIN LINK FENCE DETAILS

REDUCED NOTE DRAWING

FOR REVIEW PURPOSES ONLY

DESIGNED	HUANG	CHECKED	HUANG		
DRAWN	CHUNG	SUBMITTED	ROZMAN		
REV	DATE	DESCRIPTION	SUB	APP'D	APPROVED

SEMITROPIC WATER STORAGE DISTRICT
KERN COUNTY, CALIFORNIA

BOOKMAN-EDMONSTON ENGINEERING
BAKERSFIELD, CALIFORNIA

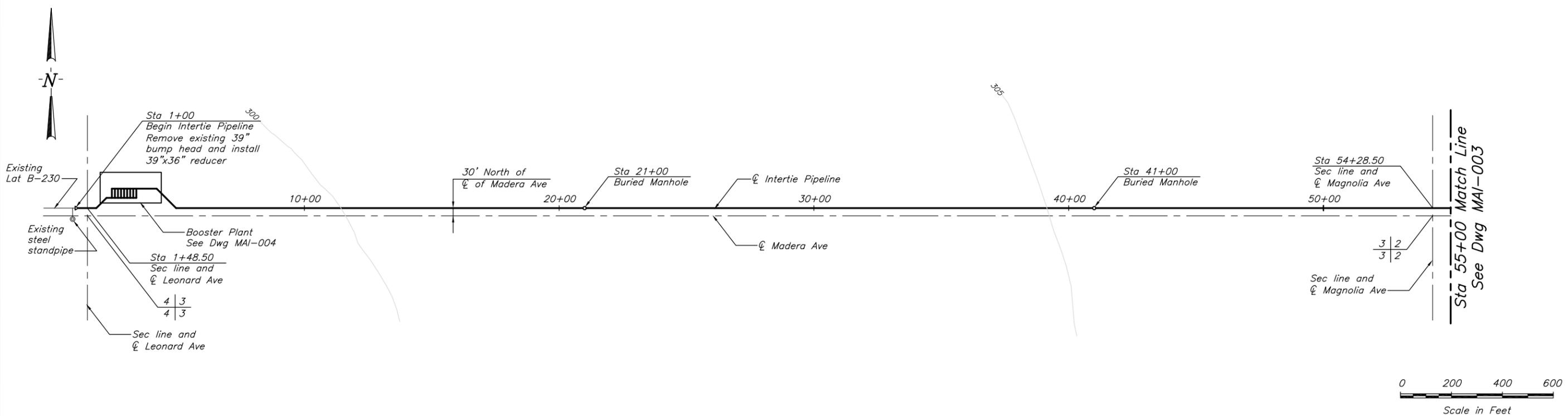
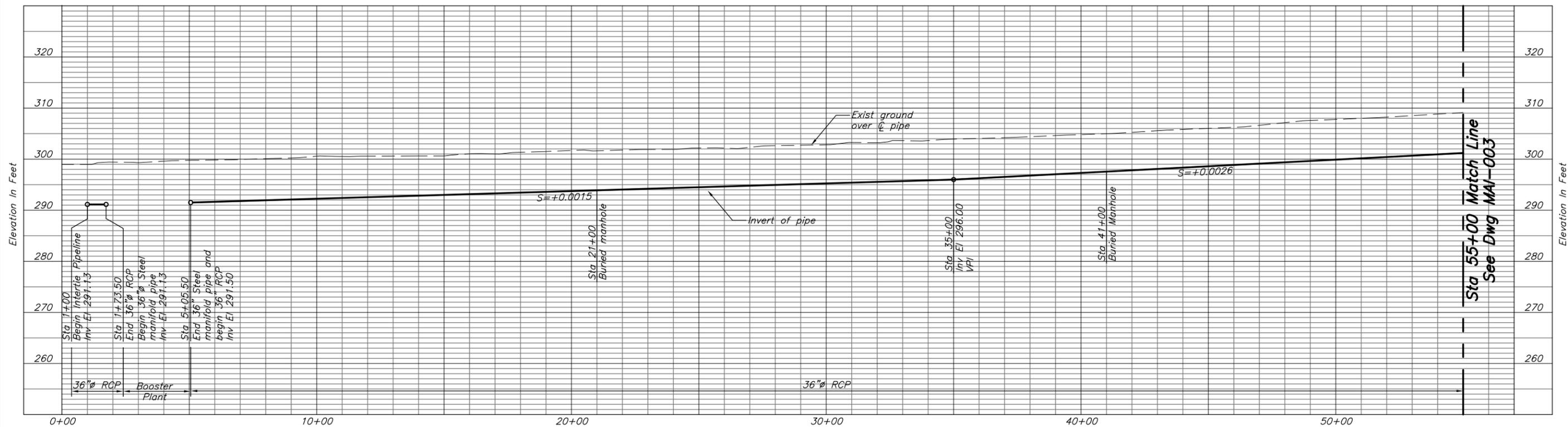


SEMITROPIC IMPROVEMENT DISTRICT
SWSD-SWID MADERA AVENUE INTERTIE

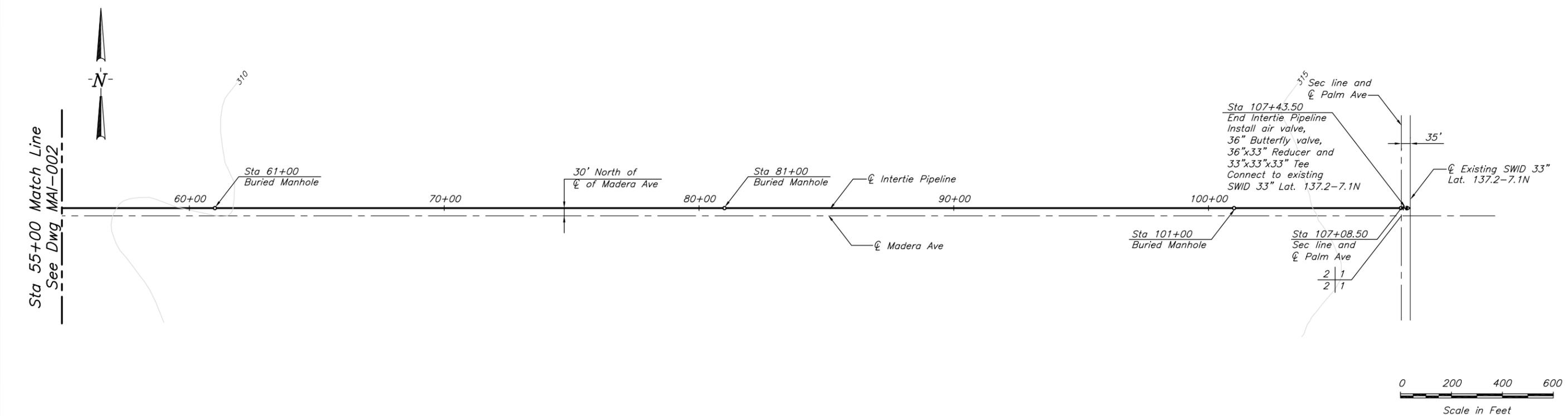
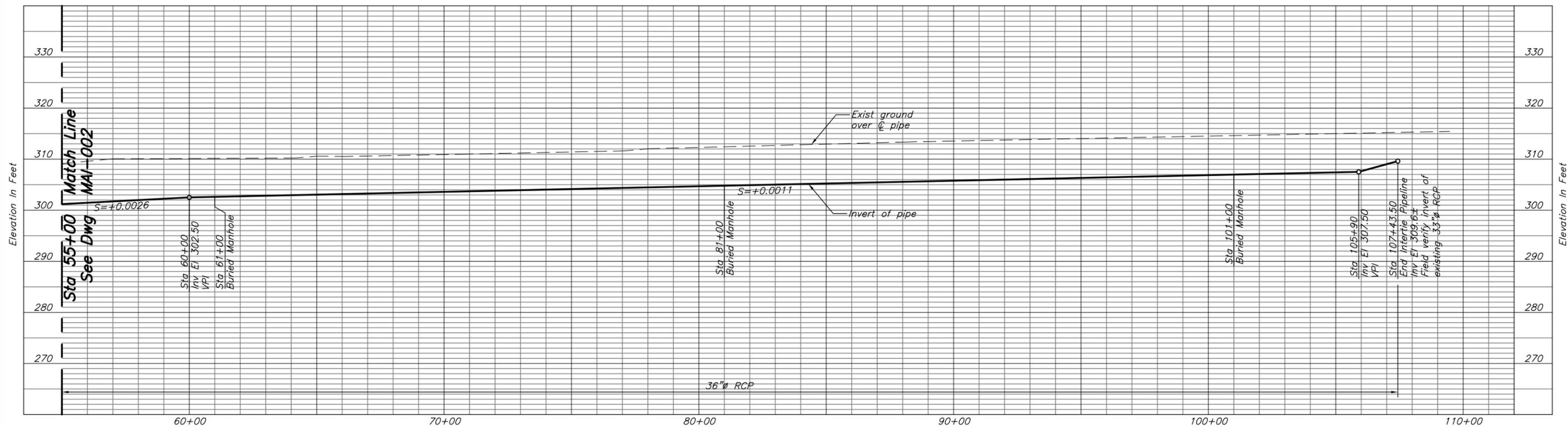
LOCATION OF WORK AND LIST OF DRAWINGS

DATE
October 2010

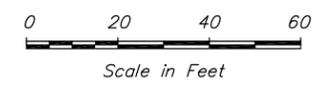
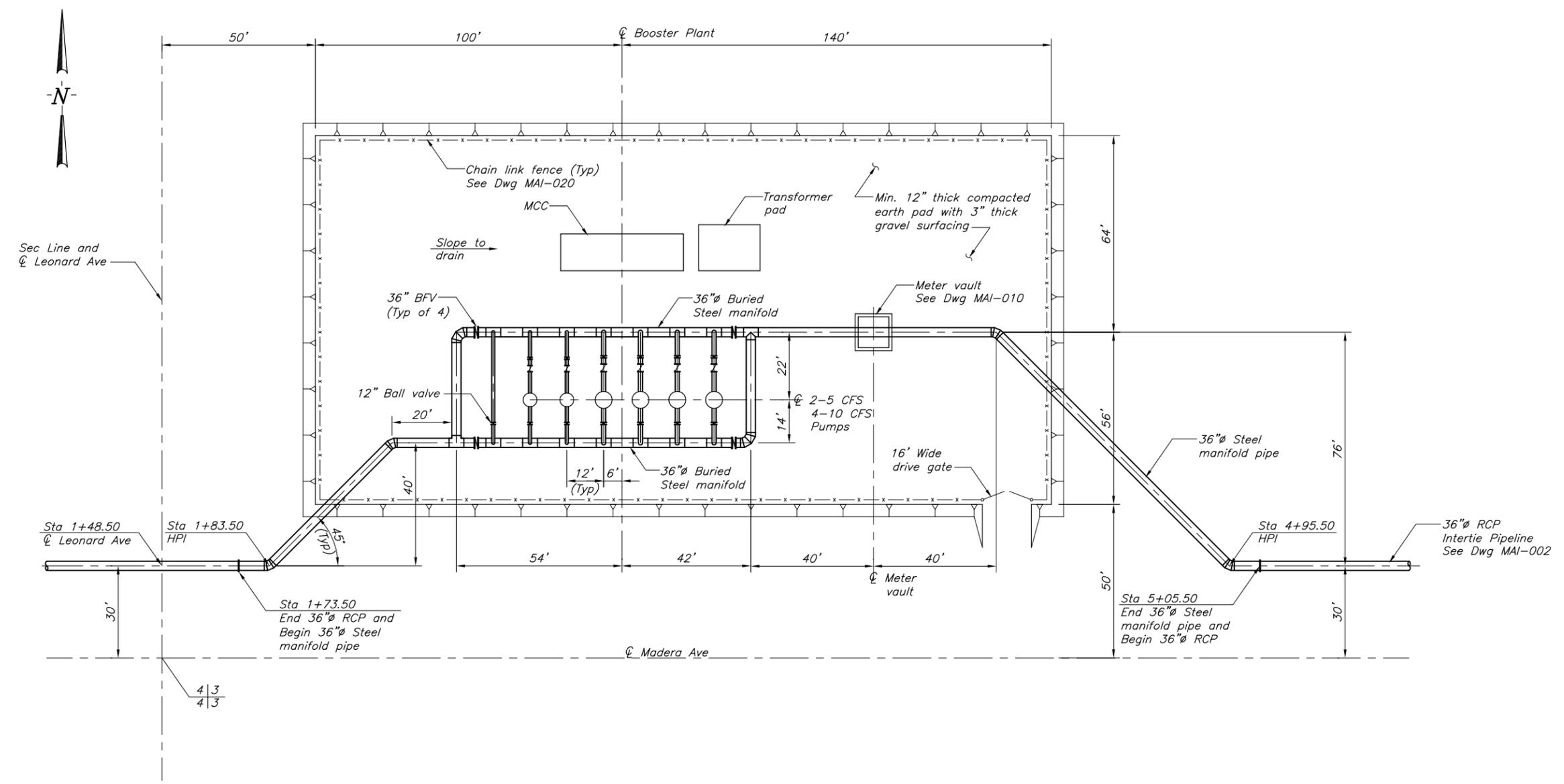
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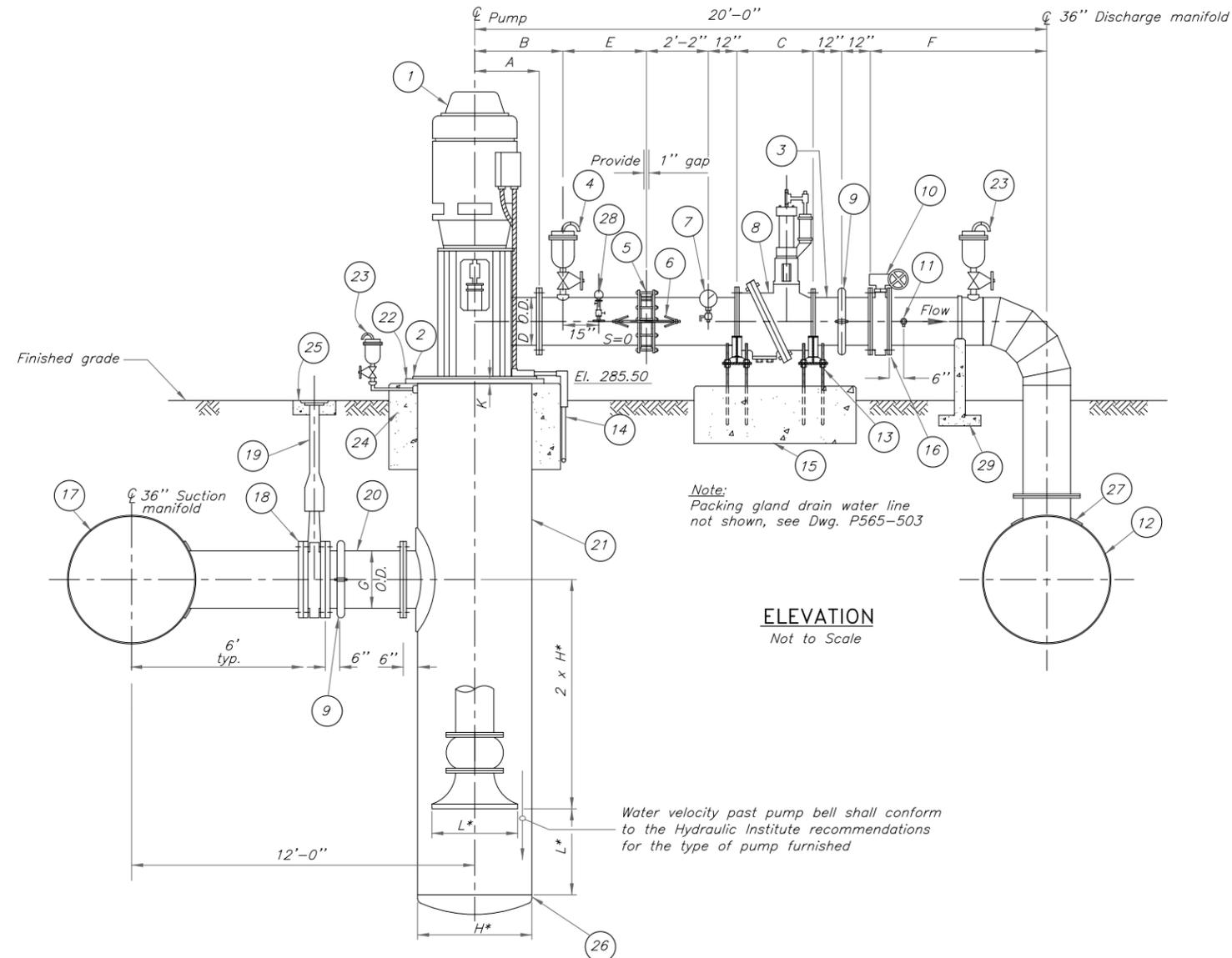
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	REV DATE DESCRIPTION SUB APP'D APPROVED	BOOKMAN-EDMONSTON ENGINEERING BAKERSFIELD, CALIFORNIA		<p>PLAN AND PROFILE STA 1+00 TO STA 55+00</p>		DRAWING NUMBER MAI-002



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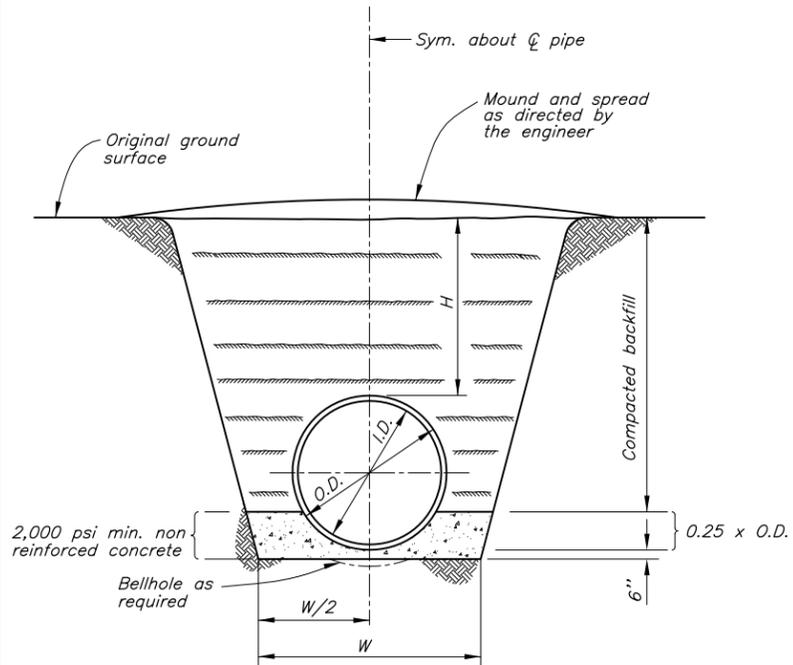


ITEM NUMBER	DESCRIPTION
1	Pump, motor, and fabricated, flanged discharge head with bolts, nuts & gaskets
2	Pump base plate with attaching bolts
3	Pump discharge pipe, 0.250" wall steel pipe
4	3" Air and vacuum valve assembly, Dwg. MAI-017
5	Sleeve-type coupling - 7" middle ring, 2 tie bolts required per coupling
6	Coupling harness, Dwg. MAI-017
7	Pressure gauge, mounted on side of pipe, Dwg. MAI-017
8	Tilting disc check valve with oil controlled dashpot, class 125
9	Victaulic coupling
10	Flanged butterfly valve- AWWA class 150B - manual handwheel operator
11	3/4" Hose faucet outlet, Dwg. MAI-017 (on unit #1 only)
12	36" Steel discharge manifold
13	Adjustable flange supports, Dwg. MAI-019
14	Conduits to MCC
15	Reinforced concrete foundation, Dwg. MAI-019
16	Insulated flange connection
17	36" Steel suction manifold
18	Flanged butterfly valve - AWWA class 150 B with Buried operator, Dwg. MAI-007
19	Valve box
20	Steel manifold piping - 0.250" wall min.
21	Steel suction barrel - 0.250" wall min. To be supplied by pump manufacturer
22	Suction barrel base plate
23	2" Air release valve assembly, Dwg. MAI-017
24	Reinforced concrete foundation, Dwg. MAI-018
25	18" sq. x 6" Concrete support pad
26	Dished and flanged head, ASME code, 100% C.R. - 0.250 wall thickness
27	Provide outlet reinforcement per AWWA M-11, design pres. = 100psi
28	Pressure switch, mounted on side of pipe
29	Reinforced concrete foundation, Dwg. MAI-018

Q	A	B	C	D	E	F	G	H	J	K	L
5 CFS	*	2'-6"	2'-0"	12 3/4"	3'-6"	8'-10"	14"	*	33"x33"	1 1/4"	*
10 CFS	*	2'-9"	2'-6"	16"	3'-3"	8'-4"	20"	*	60"x60"	2"	*

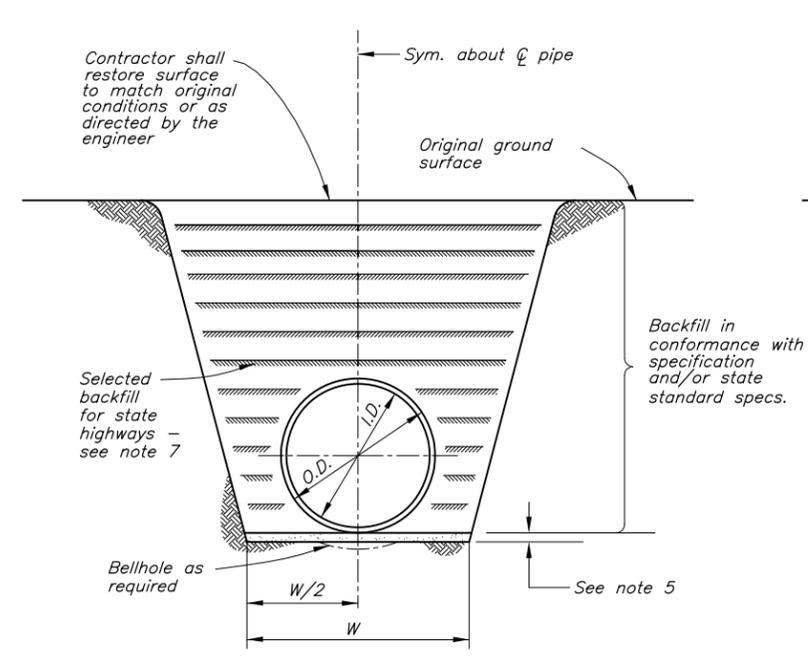
* Dimensions per pump manufacturer

 FOR REVIEW PURPOSES ONLY	DESIGNED <u>HUANG</u> CHECKED <u>HUANG</u> DRAWN <u>CHUNG</u> SUBMITTED <u>ROZMAN</u>		SEMITROPIC WATER STORAGE DISTRICT KERN COUNTY, CALIFORNIA	 Bookman-Edmonston Division	SEMITROPIC IMPROVEMENT DISTRICT SWSD-SWID MADERA AVENUE INTERTIE	DATE October 2010
	REV DATE DESCRIPTION SUB APP'D APPROVED		BOOKMAN-EDMONSTON ENGINEERING BAKERSFIELD, CALIFORNIA		BOOSTER PUMPING PLANT TYPICAL CAN PUMP INSTALLATION DETAILS	DRAWING NUMBER MAI-005

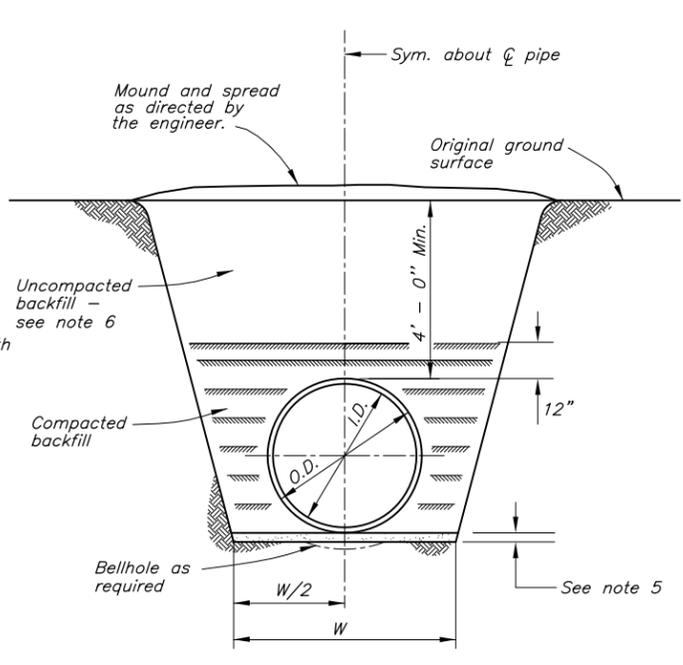


**SPECIAL TRENCH SECTION
REINFORCED CONCRETE PIPE – ALL SIZES
WHEN H IS GREATER THAN 10 FEET**

See plan and profile drawings for location and station limits

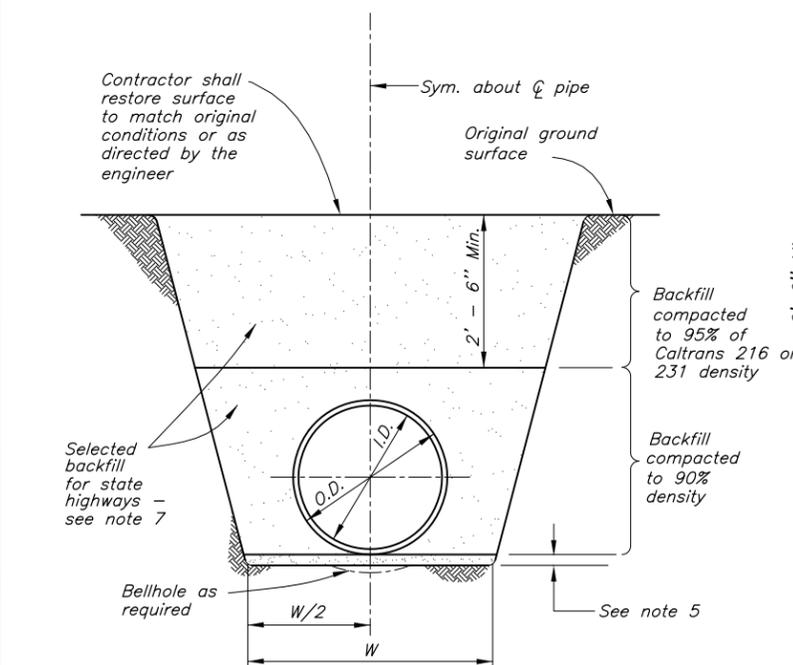


**ALL STEEL PIPES, ALL SIZES RCP
WATERWAY CROSSINGS, ALL STATE R/W,
AND ALL PVC TURNOUT PIPING**

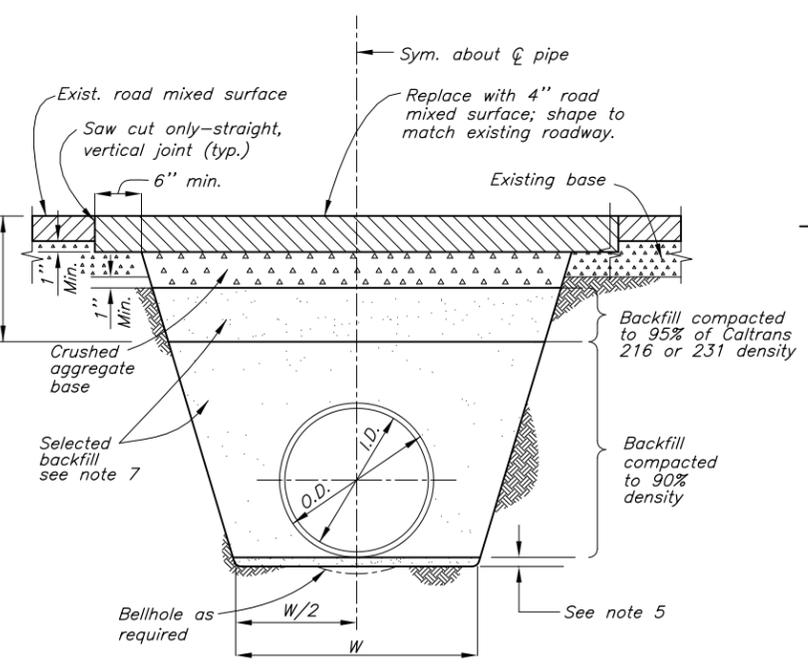


PVC DISTRIBUTION LATERAL PIPING

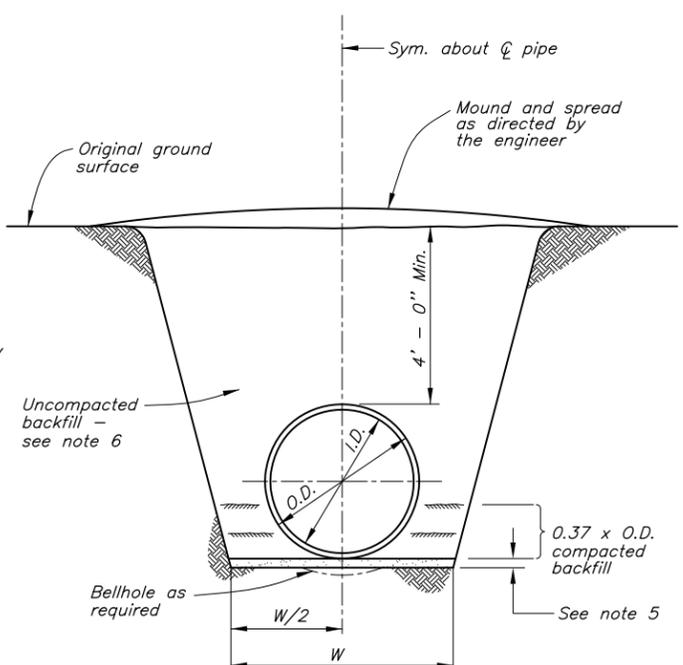
- General Notes:
1. Where pipe trench crosses county road, special backfill conditions are required. See specifications and details on this drawing.
 2. Trench bottom or bedding for all pipe shall be graded to provide uniform support for the entire length of the pipe except at bellholes.
 3. Bellholes for pipe shall have a clearance of 3" between the bottom of the bellhole and the exterior of the pipe barrel, but in no case shall bellholes be smaller than required to facilitate placing of the pipe or proper joining of the pipe.
 4. Compacted backfill shall be compacted to a degree at least equivalent to the existing degree of compacting of adjacent in-place earth materials against which such compacted backfill is to be placed, or to a minimum of 95% of the laboratory standard maximum ASTM D698 density, whichever is greater. For definition of compacted backfill and of maximum density, see specifications.
 5. Minimum 3-inch deep layer of scarified material when in hard material. In unsuitable material, overexcavate as directed by the engineer (6" min.) and replace with compacted backfill.
 6. When pipeline is in and parallel to farm roads, all uncompacted backfill shall be wheel rolled using a grader or similar equipment. Existing surfacing on farm roads that is disturbed or destroyed during performance of the contract work shall be replaced in kind.
 7. All selected backfill is to be in conformance with state standard specifications.
 8. $W = \text{pipe O.D.} + 24" \text{ min.}$
 9. All trench sections shall comply with CAL-OSHA requirements.



**ALL TYPES AND SIZES OF PIPE
IN UNPAVED COUNTY ROAD R/W**

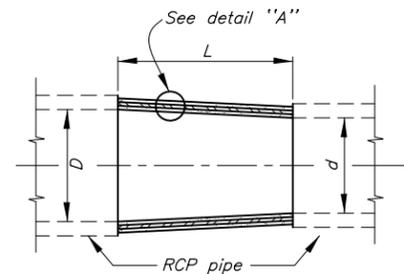


**ALL TYPES AND SIZES OF PIPE
IN PAVED ROADWAYS**



REINFORCED CONCRETE PIPE – 27" AND LARGER

<p>FOR REVIEW PURPOSES ONLY</p>	DESIGNED: HUANG DRAWN: CHUNG	CHECKED: HUANG SUBMITTED: ROZMAN	SEMITROPIC WATER STORAGE DISTRICT KERN COUNTY, CALIFORNIA		<p>Bookman-Edmonston Division</p>	SEMITROPIC IMPROVEMENT DISTRICT SWSD-SWID MADERA AVENUE INTERTIE	DATE October 2010
	REV: DATE: DESCRIPTION: SUB: APP'D: APPROVED:	BOOKMAN-EDMONSTON ENGINEERING BAKERSFIELD, CALIFORNIA		TYPICAL PIPE TRENCH SECTIONS		DRAWING NUMBER MAI-006	

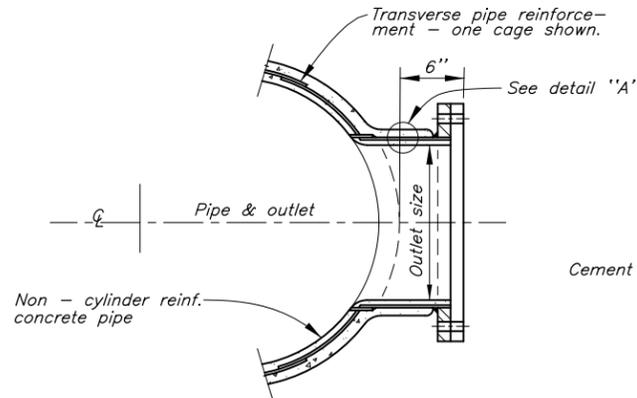


Note:
Thrust block not shown.

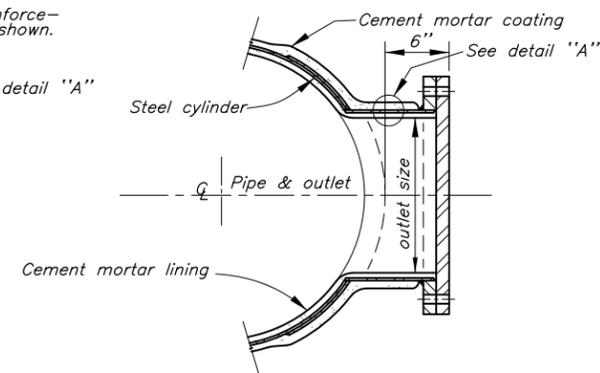
MINIMUM LENGTH OF REDUCERS AND INCREASERS

D - d inches	L inches	D - d inches	L inches
2	12	7	21
3	12	8	24
4	12	9	27
5	15	10	30
6	18	54	72

TYPICAL CONCENTRIC REDUCER



TYPICAL FLANGED TEE IN NON-CYLINDER R.C.P.



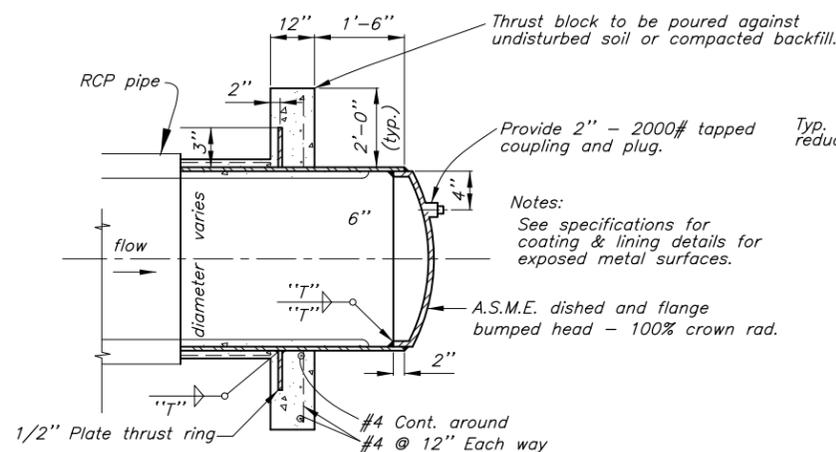
TYPICAL FLANGED TEE IN STEEL PLATE FITTING

FLANGED TEE NOTES:

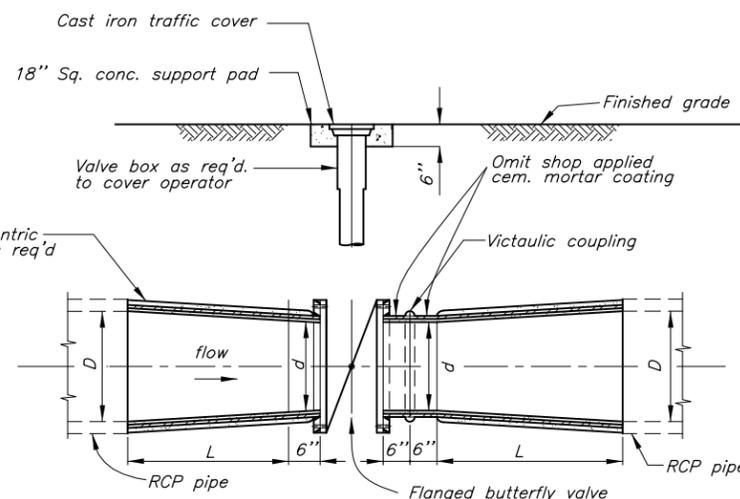
1. Alternate details may be submitted to the engineer for approval.
2. All flanges are to be A.W.W.A. class "D".
3. See specifications for coating details for exposed metal surfaces.

GENERAL NOTES:

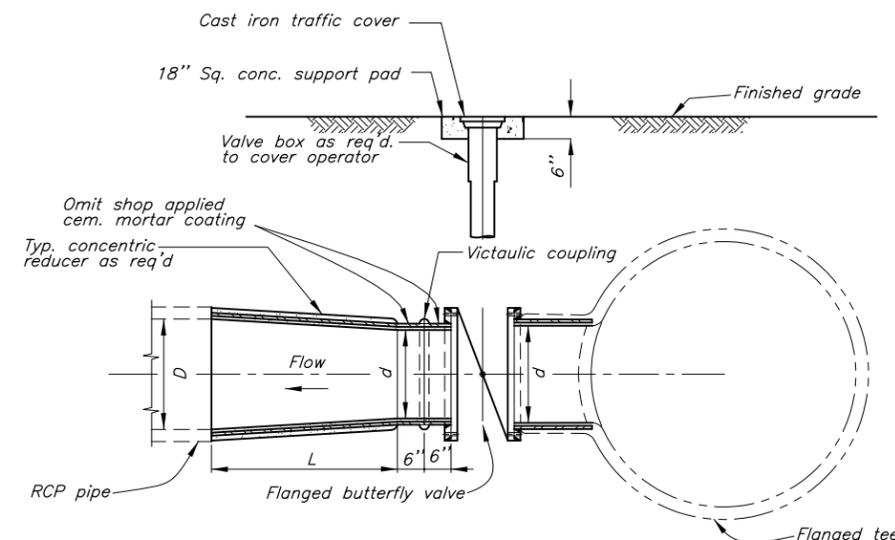
1. The finished I.D. of all steel plate fittings is to be the same as that of adjacent lateral pipe.
2. Details shown hereon are "not to scale".



END OF LINE BUMPED HEAD



TYPICAL BURIED LINE VALVE INSTALLATION

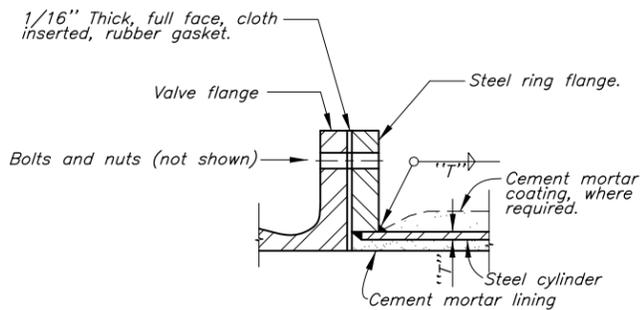


TYPICAL BURIED VALVE INSTALLATION AT TEE

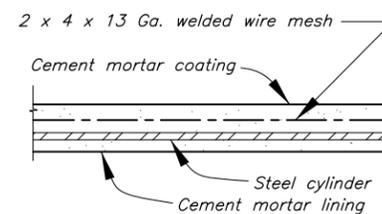
TABLE 1

Minimum thickness "t" of steel plate cylinder for tee outlets, spools, elbows and reducers. (Use larger diameter of reducer.)

Diameters	Min. "t"
6" Thru 15"	10 Gage
18" Thru 24"	3/16"
27" Thru 42"	1/4"
45" Thru 51"	5/16"

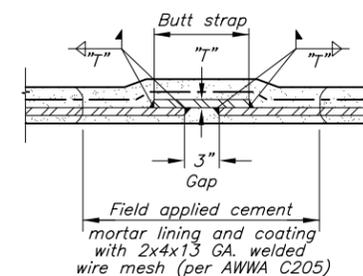


TYPICAL FLANGED VALVE CONNECTION



DETAIL "A"

- Notes:
1. See specifications for thickness of coating and lining.
 2. See Table 1 for steel plate thickness "t".



TYPICAL BUTT STRAP CONNECTION

BURIED VALVE NOTES:

1. See specification for coating details for exposed metal surfaces.
2. Provide concrete valve support pad for each buried valve.
3. Thrust blocks not shown. See Dwg. P565-303.

REDUCED NOTE DRAWING

FOR REVIEW PURPOSES ONLY

DESIGNED HUANG CHECKED HUANG
DRAWN CHUNG SUBMITTED ROZMAN

REV	DATE	DESCRIPTION	SUB	APP'D	APPROVED

SEMITROPIC WATER STORAGE DISTRICT
KERN COUNTY, CALIFORNIA

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BAKERSFIELD, CALIFORNIA

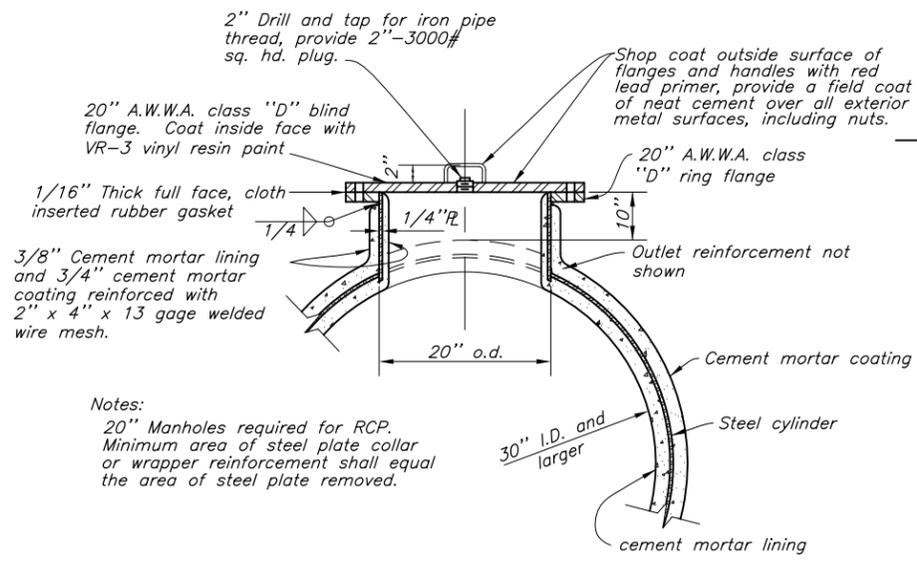


SEMITROPIC IMPROVEMENT DISTRICT
SWSD-SWID MADERA AVENUE INTERTIE

STEEL PIPE SPECIALS AND FITTINGS

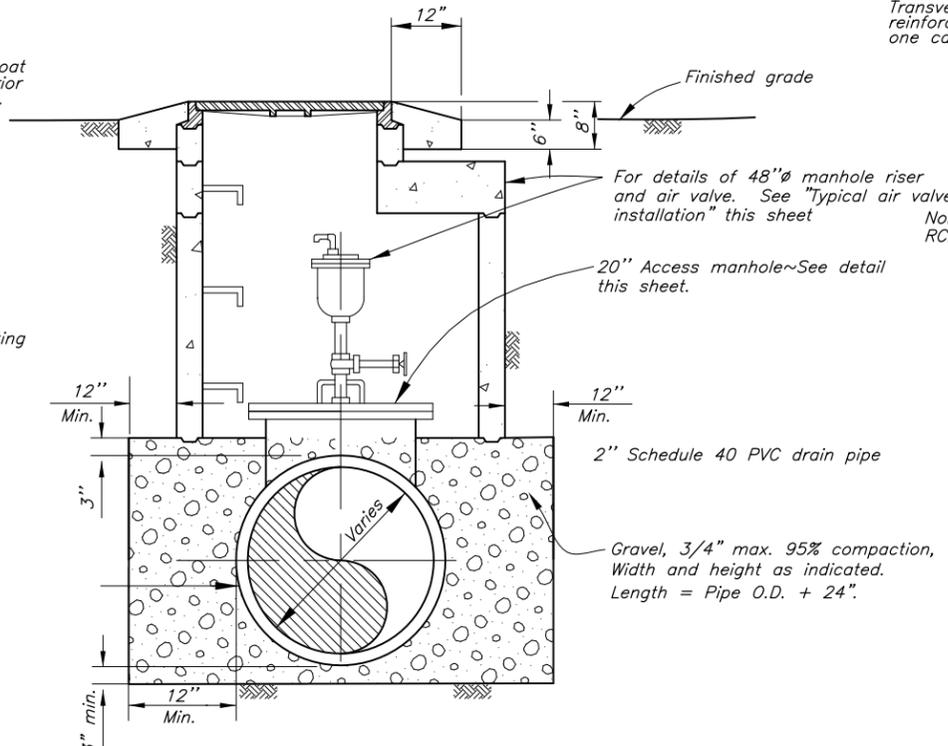
DATE
October 2010

DRAWING NUMBER
MAI-007

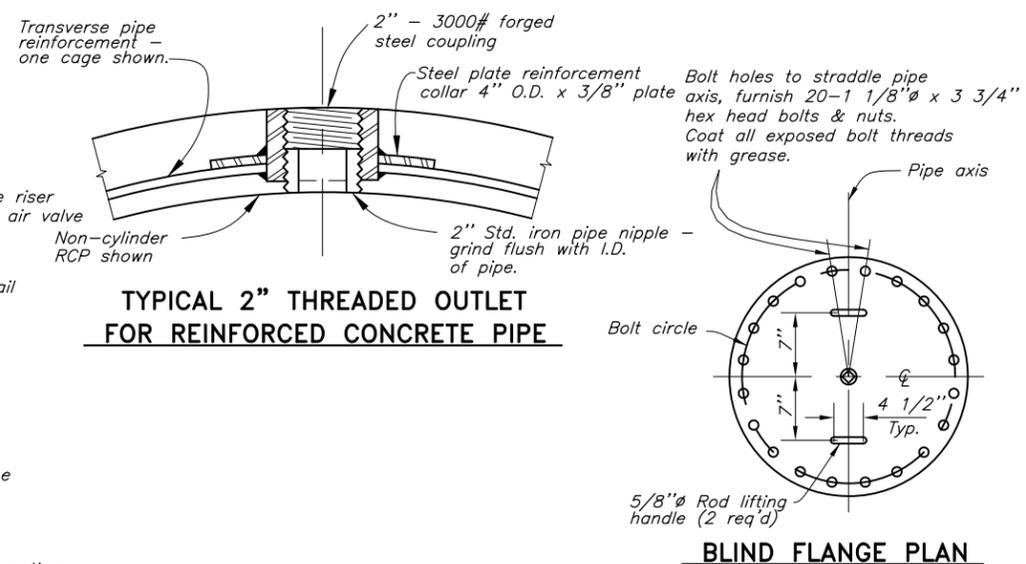


TYPICAL 20" ACCESS MANHOLE

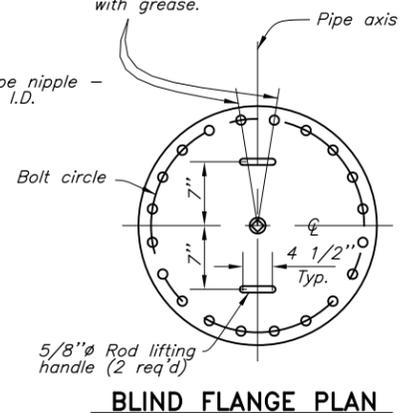
Notes:
20" Manholes required for RCP.
Minimum area of steel plate collar or wrapper reinforcement shall equal the area of steel plate removed.



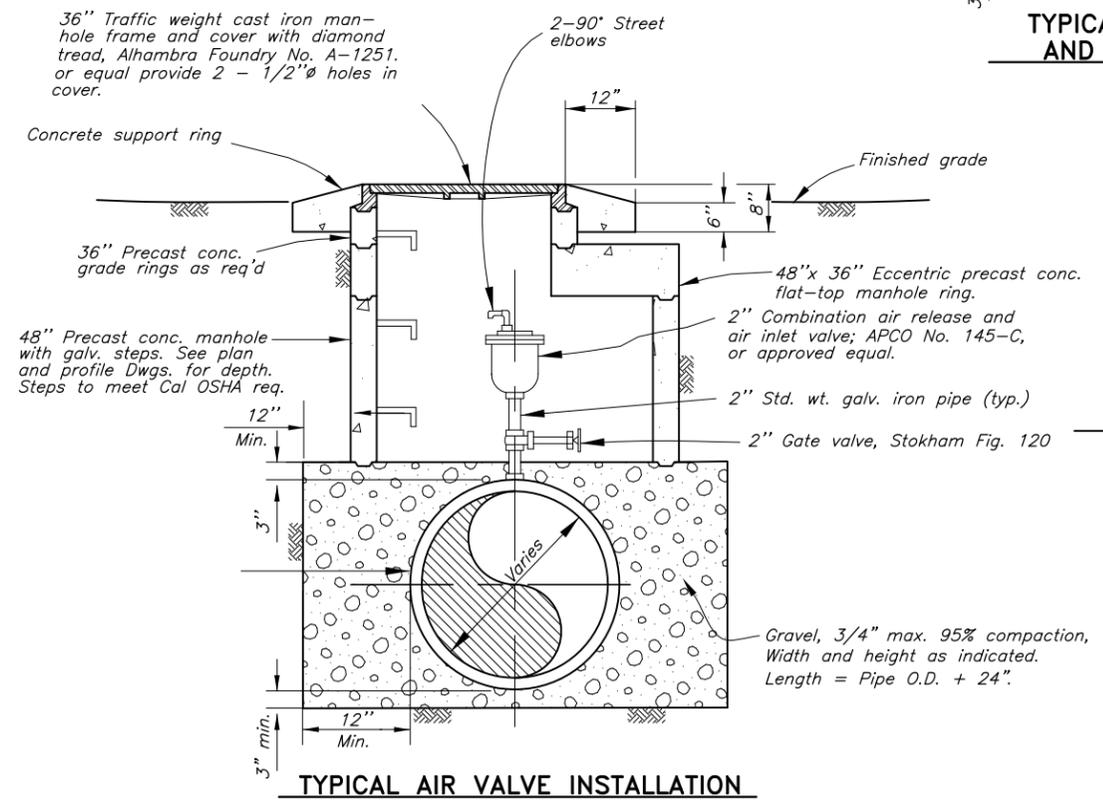
TYPICAL COMBINATION MANHOLE AND AIR VALVE INSTALLATION



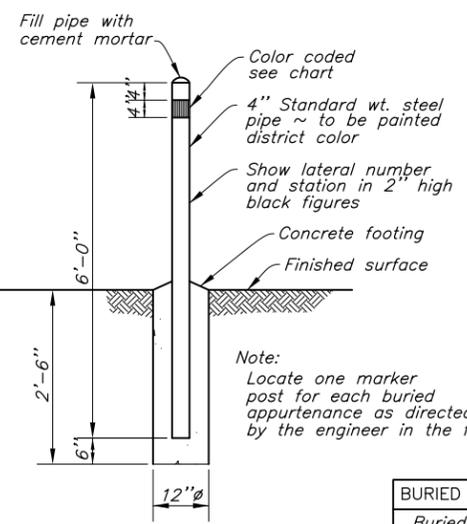
TYPICAL 2" THREADED OUTLET FOR REINFORCED CONCRETE PIPE



BLIND FLANGE PLAN

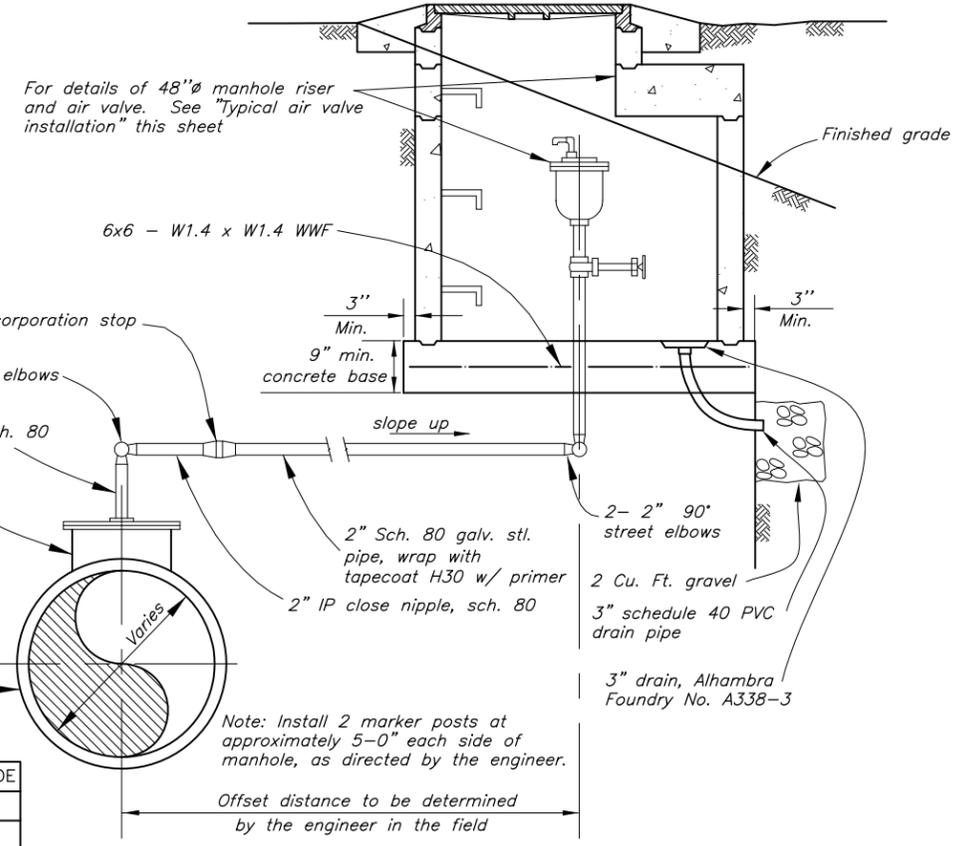


TYPICAL AIR VALVE INSTALLATION



TYPICAL MARKER POST

BURIED APPURTENANCE	COLOR CODE
Buried valve	Red
Air valve	Blue
Buried manhole	Green
Blind flanged outlet	Brown
Bumped head	Pink



AIR VALVE INSTALLATION OFFSET FROM PIPELINE

REDUCED NOTE DRAWING
FOR REVIEW PURPOSES ONLY

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DRAWN	CHUNG	SUBMITTED	ROZMAN
REV	DATE	DESCRIPTION	SUB APP'D

APPROVED

SEMITROPIC WATER STORAGE DISTRICT
KERN COUNTY, CALIFORNIA

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BAKERSFIELD, CALIFORNIA



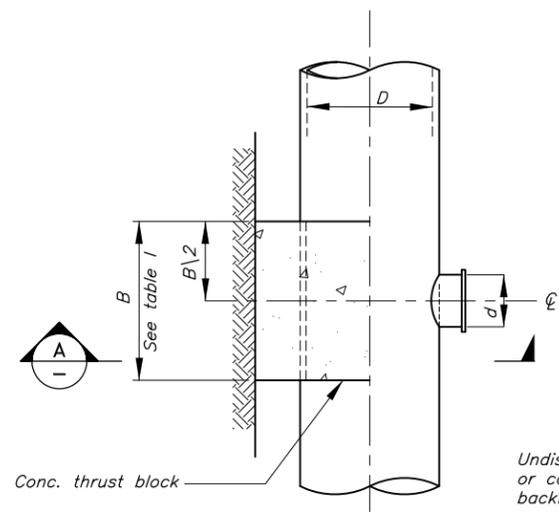
SEMITROPIC IMPROVEMENT DISTRICT
SWSD-SWID MADERA AVENUE INTERTIE

AIR VALVES AND MANHOLES

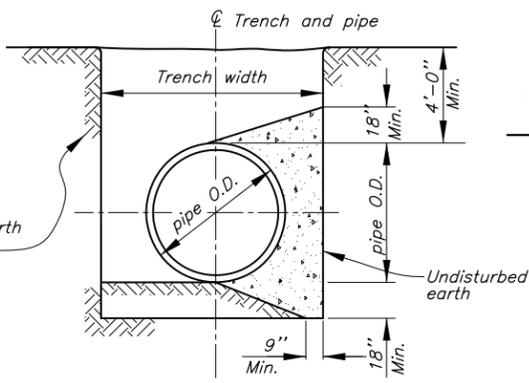
DATE
October 2010

DRAWING NUMBER
MAI-008

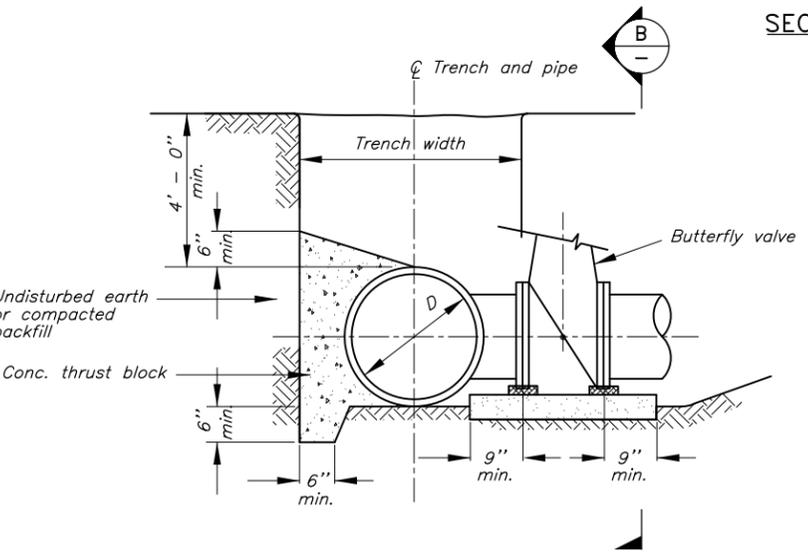
- Notes:
1. Refer to General Notes, and minimum trench width requirements.
 2. For line valves, thrust block shown for reducers shall be provided both upstream and downstream.
 3. Thrust blocks are required for blind flanged outlets.
 4. Thrust blocks are to be used for all pipe head classes.



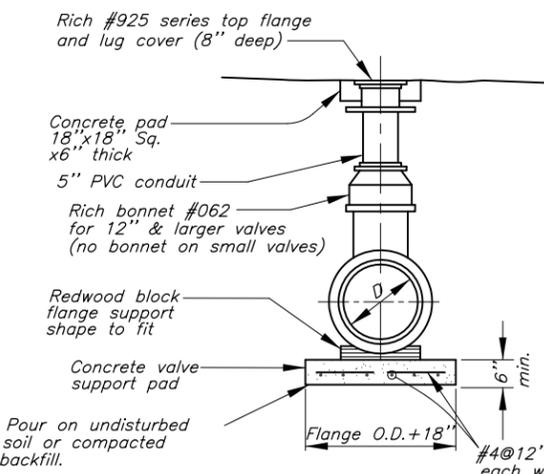
PLAN - BLOCKING FOR FLANGED OUTLETS



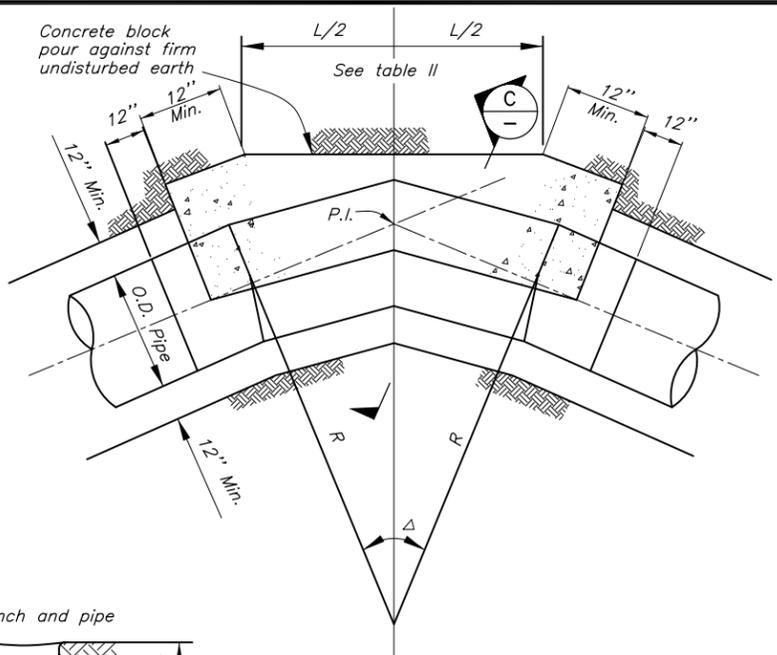
SECTION C



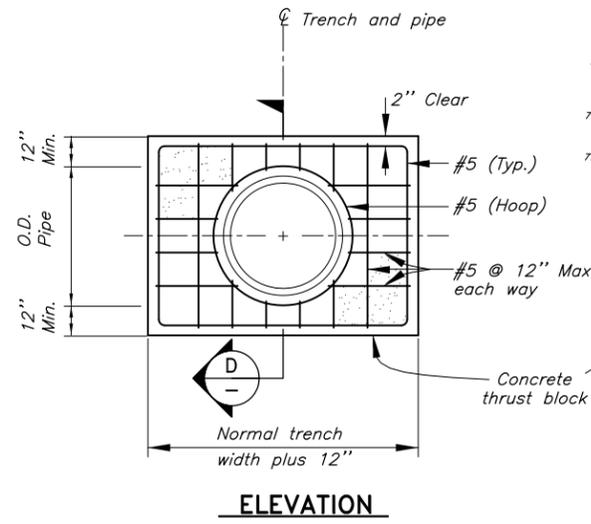
SECTION A



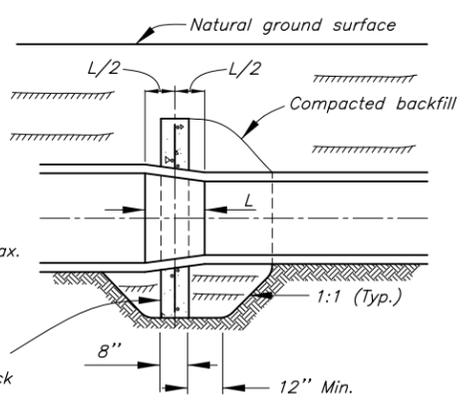
SECTION B



PLAN - HORIZONTAL THRUST BLOCKS



ELEVATION



SECTION D

BLOCKING FOR REDUCERS

Note:
For dim. L, See
Dwg. P565-301

TABLE I
LENGTH OF THRUST BLOCK FOR FLANGED OUTLETS

d	15"	18"	20"	21"	24"	27"	30"	33"	39"	42"	45"	48"	51"	60"	66"	69"	72"	78"
6 & 8"	1'-6"	1'-6"	1'-6"	1'-3"	1'-3"	N/R												
10 & 12"	3'-3"	3'-3"	3'-3"	2'-9"	2'-6"	2'-3"	2'-0"	2'-0"	1'-9"	1'-9"	1'-6"	1'-6"	N/R	N/R	N/R	N/R	N/R	N/R
14 & 15"	5'-6"	4'-9"	4'-3"	4'-0"	3'-9"	3'-6"	3'-3"	3'-0"	2'-6"	2'-6"	2'-6"	2'-3"	2'-3"	2'-0"	2'-0"	1'-6"	1'-6"	1'-6"
16 & 18"		6'-6"	6'-3"	5'-9"	5'-3"	4'-9"	4'-6"	4'-3"	3'-6"	3'-6"	3'-3"	3'-3"	3'-0"	3'-0"	2'-9"	2'-9"	2'-6"	2'-6"
20"			7'-3"	7'-0"			6'-3"	6'-0"	5'-6"	5'-3"	4'-6"	4'-3"	4'-0"	4'-0"	3'-9"	3'-9"	3'-6"	3'-6"
24"						9'-0"	8'-3"	7'-9"	7'-3"	6'-9"	6'-3"	5'-9"	5'-6"	5'-6"	5'-3"	5'-3"	5'-0"	5'-0"
30"								9'-0"	9'-0"	8'-9"	8'-9"	8'-9"	8'-6"	8'-6"	8'-3"	8'-3"	8'-0"	8'-0"

NOTE: N/R indicates not required

TABLE II
LENGTH OF HORIZONTAL THRUST BLOCKS

D	15"	18"	20"	21"	24"	27"	30"	33"	39"	42"	45"	48"	51"	60"	66"	69"	72"	78"
22 1/2"	1'-0"	1'-0"	1'-3"	1'-6"	1'-9"	2'-0"	2'-3"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	4'-9"	5'-9"	6'-6"	7'-0"	7'-3"	7'-6"
45"	1'-6"	2'-0"	2'-6"	3'-0"	3'-3"	3'-9"	4'-6"	5'-0"	6'-0"	7'-0"	7'-9"	8'-6"	9'-3"	11'-6"	12'-9"	13'-6"	14'-3"	15'-0"
90"	2'-9"	3'-6"	4'-6"	5'-6"	6'-0"	7'-0"	8'-3"	9'-9"	11'-0"	13'-0"	14'-6"	15'-9"	17'-0"	21'-0"	23'-9"	25'-0"	26'-6"	28'-0"

REDUCED NOTE DRAWING
FOR REVIEW PURPOSES ONLY

DESIGNED	HUANG	CHECKED	HUANG		
DRAWN	CHUNG	SUBMITTED	ROZMAN		
REV	DATE	DESCRIPTION	SUB	APP'D	APPROVED

SEMITROPIC WATER STORAGE DISTRICT
KERN COUNTY, CALIFORNIA

BOOKMAN-EDMONSTON ENGINEERING
BAKERSFIELD, CALIFORNIA

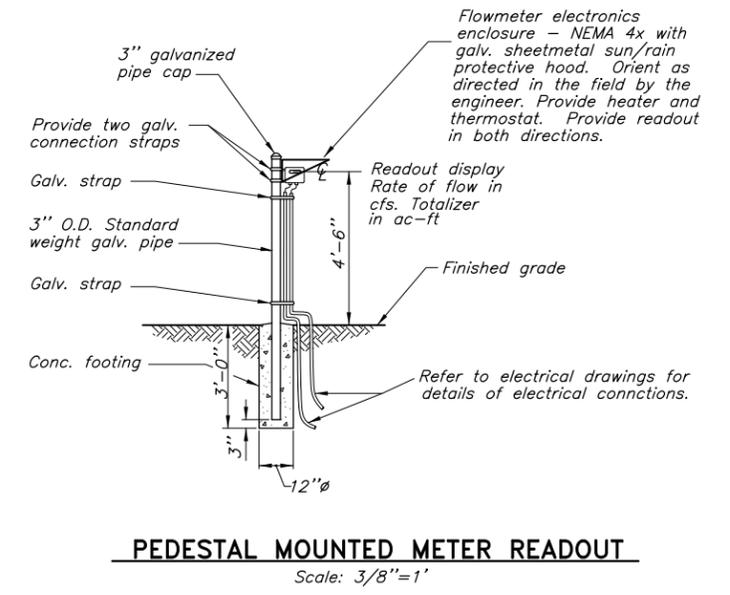
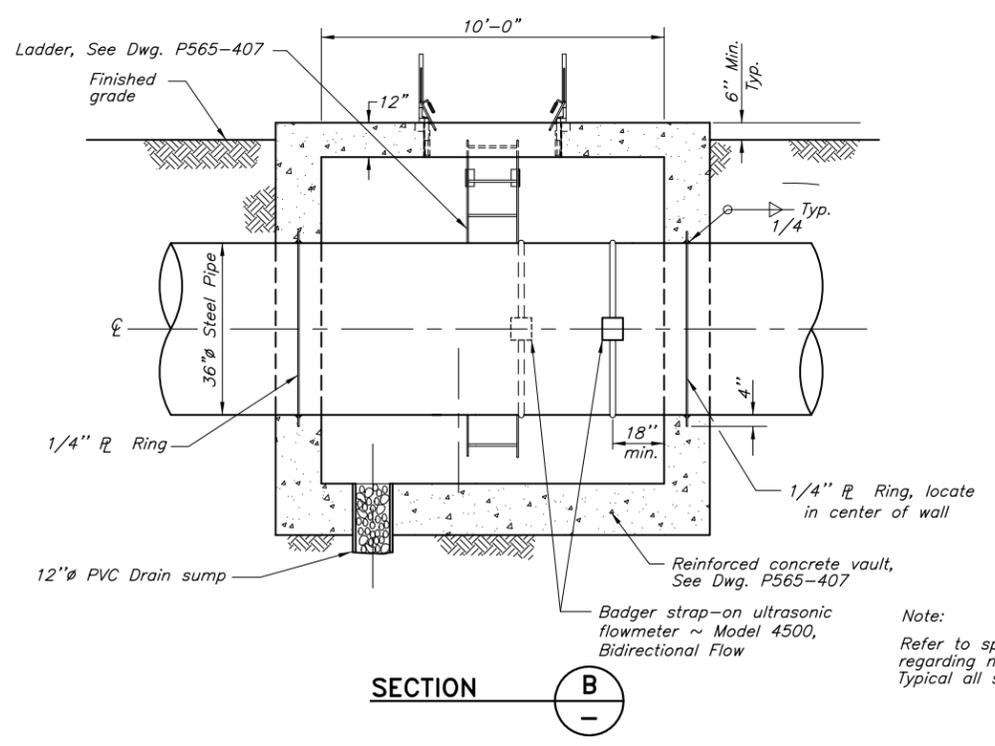
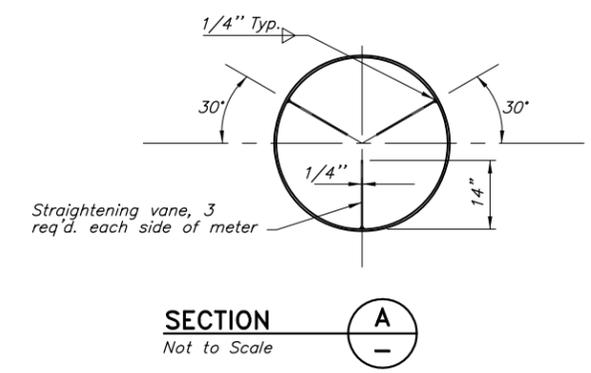
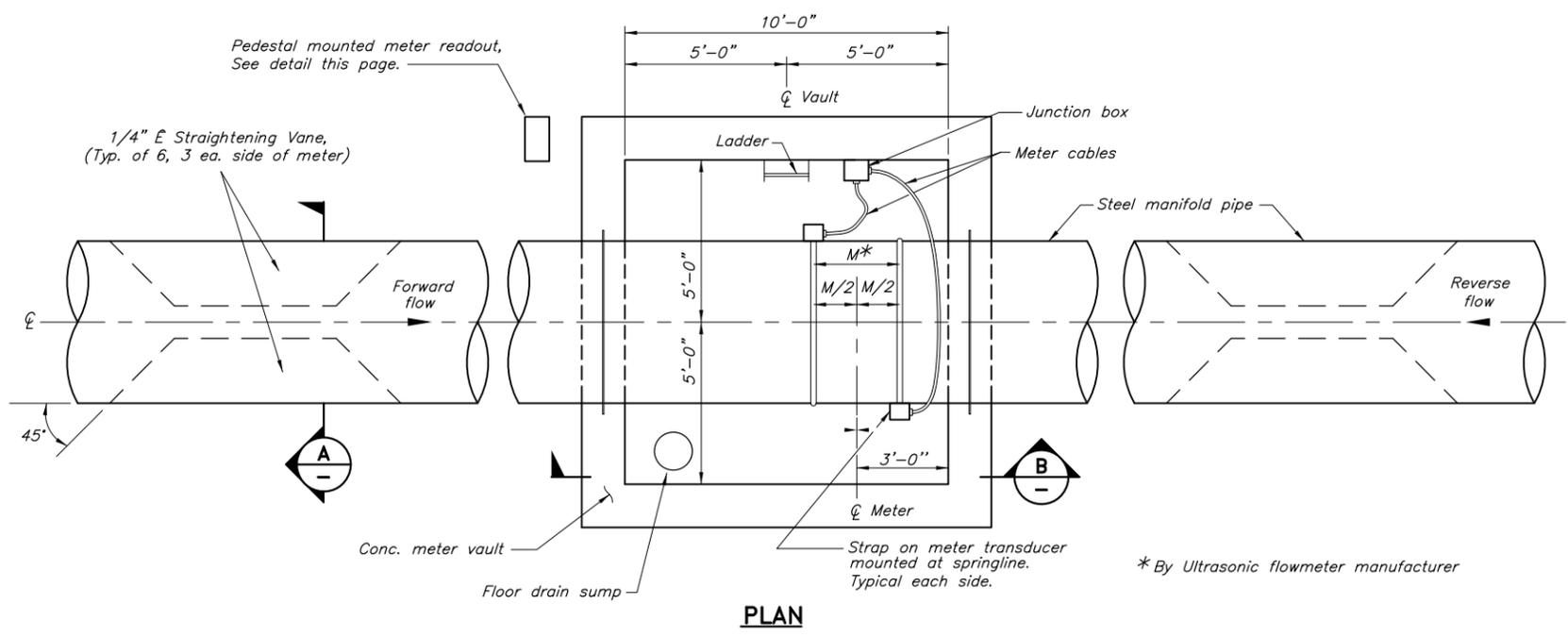


SEMITROPIC IMPROVEMENT DISTRICT
SWSD-SWID MADERA AVENUE INTERTIE

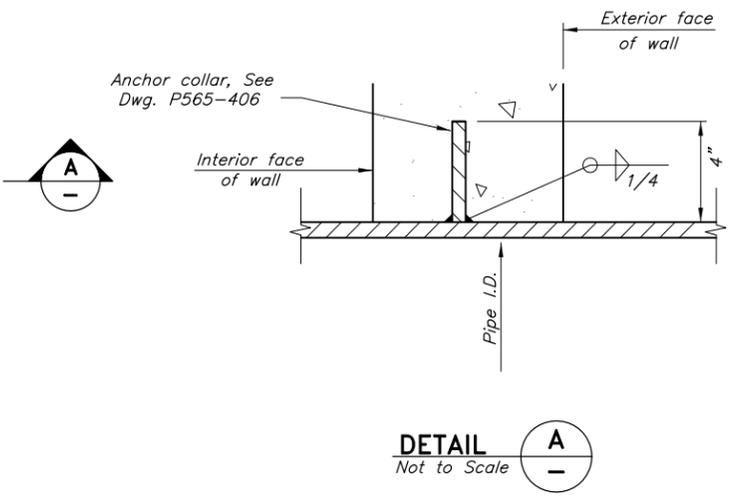
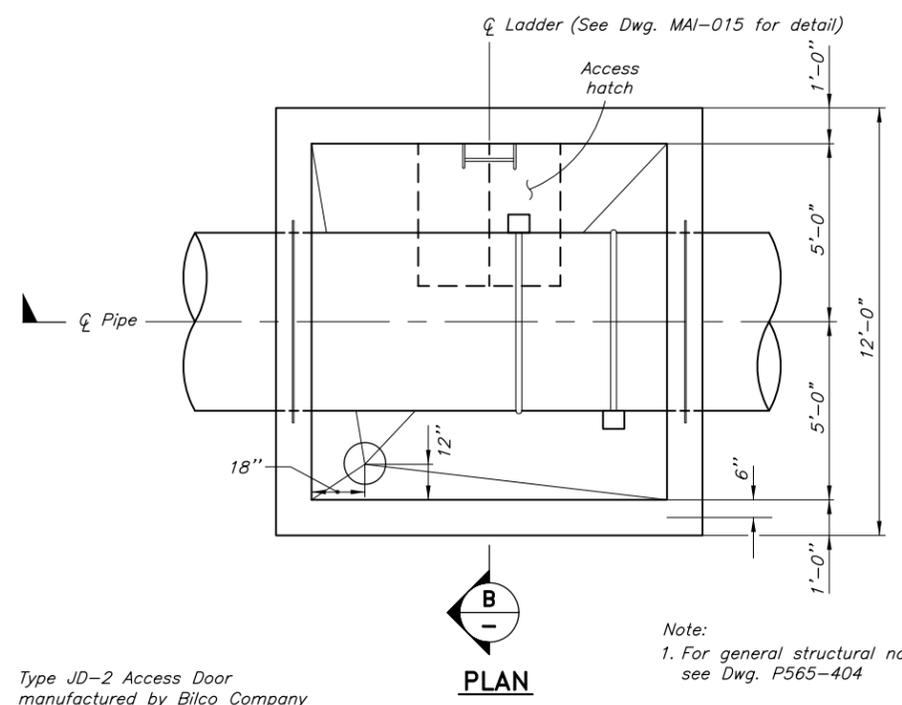
THRUST BLOCKS FOR REDUCERS AND BENDS

DATE
October 2010

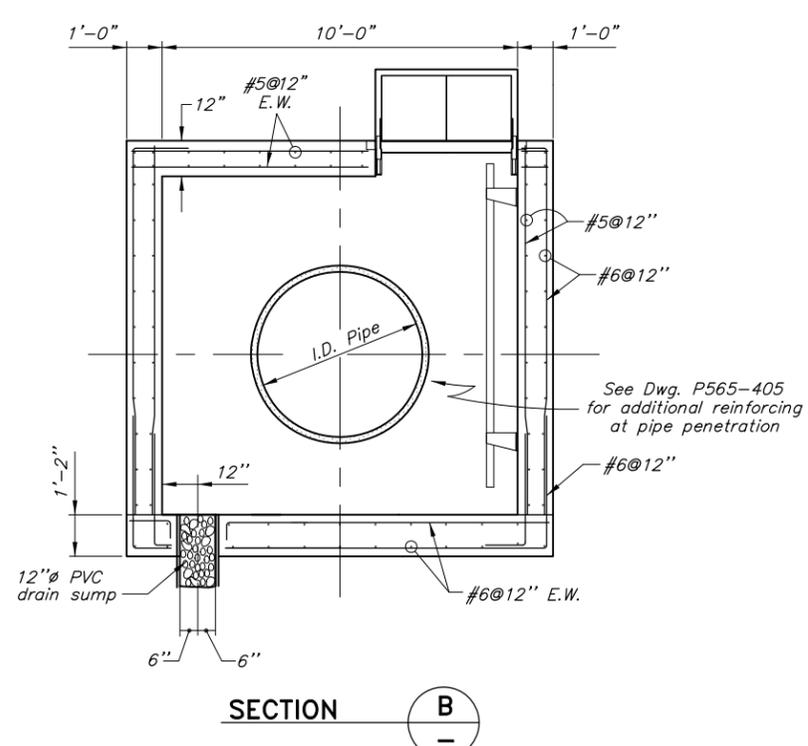
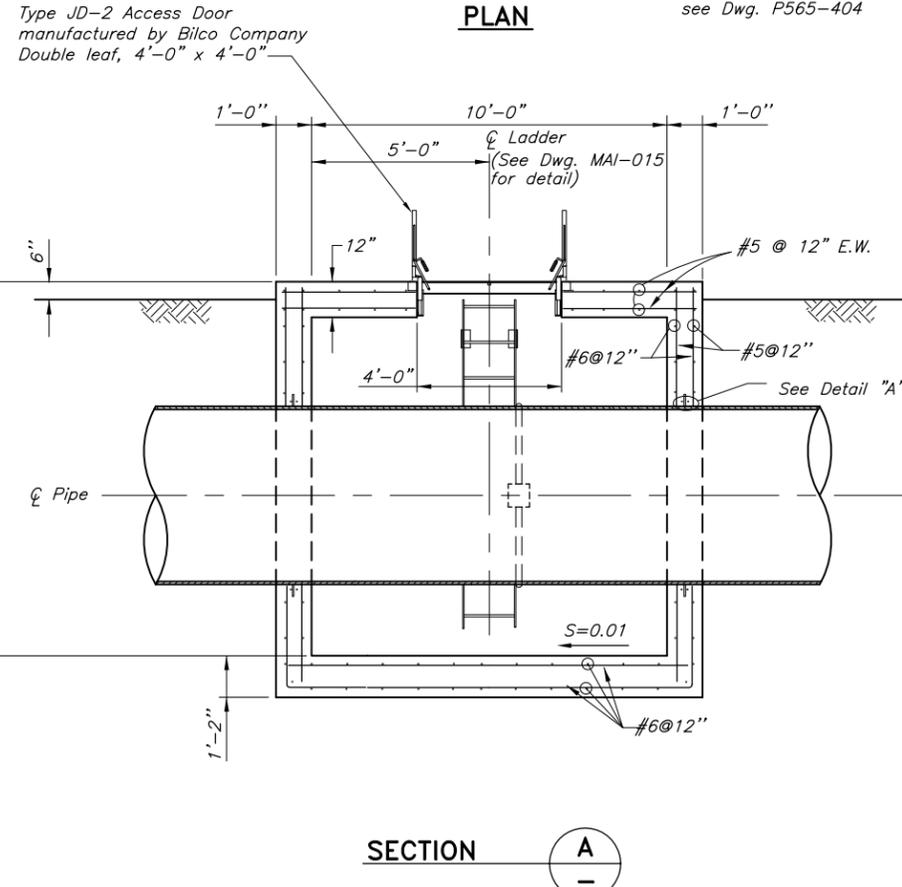
DRAWING NUMBER
MAI-009



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	REV DATE DESCRIPTION SUB APP'D APPROVED			BOOKMAN-EDMONSTON ENGINEERING BAKERSFIELD, CALIFORNIA		METER VAULT SHEET 1 OF 2	DRAWING NUMBER MAI-010



Note:
1. For general structural notes see Dwg. P565-404



REDUCED NOTE DRAWING

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REV	DATE	DESCRIPTION	SUB	APP'D	APPROVED

SEMITROPIC WATER STORAGE DISTRICT
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BAKERSFIELD, CALIFORNIA



SEMITROPIC IMPROVEMENT DISTRICT
SWSD-SWID MADERA AVENUE INTERTIE

METER VAULT
SHEET 2 OF 2

DATE
October 2010

DRAWING NUMBER
MAI-011

GENERAL NOTES:

1. These notes are general and apply to the entire project except where specifically indicated otherwise.
2. Structural dimensions controlled by or related to mechanical equipment, including anchorage and recesses for such equipment not shown on the structural drawings, shall be coordinated by the contractor prior to construction. Anchor bolt sizes and placement, recesses, and embeds required by mechanical and electrical equipment shall be verified with the equipment manufacturer.
3. Structural drawings shall be used in conjunction with civil, mechanical, electrical drawings and with shop drawings provided by the equipment manufacturers.
4. Structures have been designed for operational loads on the completed structures. During construction the structures shall be protected by bracing and balancing wherever excessive construction loads may occur. Overstressing of any structural element is prohibited.
5. Unless otherwise indicated, finished grade is shown thus  on all structural drawings indicating ground surface, top of concrete slab, or top of AC pavement. For details of finished surfaces see civil drawings.
6. Design is in accordance with the 2006 international Building Code and the 2007 California Building Code except where other applicable codes or the following notes are more restrictive.
7. Loadings:
 Elevated Slab/walkway Live Load – 100 psf + Equipment Load
 Additional Dead and Live Loads per 2006 IBC
 Wind – Per 2006 IBC
 Seismic per 2006 IBC – applied to above ground structures only
 Lateral Soil Pressures per geotechnical report
8. Construction joints for structures shall be located as indicated on the drawings or approved by the engineer. All construction joints in members in contact with water shall have a 6-inch flatstrip waterstop unless otherwise indicated. In addition, joints in slabs covered with water shall have a 6-inch flatstrip waterstop and a sealant groove. Maximum spacing between construction joints shall be 40 ft.

STRUCTURAL STEEL NOTES:

1. All structural steel conform to the requirements of the AISC "Manual of Steel Construction, Allowable Stress Design, 9th Edition".
2. All welding shall be by the shielded arc method and shall conform to the AWS Code for Arc and Gas Welding in Building Construction. Qualifications of welders shall be in accordance with the Specifications for Standard Qualification Procedures of the AWS
3. All structural steel shall be hot-dip galvanized after fabrication unless otherwise noted.

CONCRETE NOTES:

1. All structural concrete shall develop a minimum compressive strength of 4000 P.S.I. at 28 days, unless otherwise noted.
2. All reinforcing steel shall be deformed bars conforming to the requirements of ASTM A-615, Grade 60, unless otherwise noted.
3. All detailing, fabrication, and placing of reinforcing steel shall be in accordance with ACI-315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures", latest edition.
4. The first and last bars in slabs and walls, stirrups in beams, and ties in columns shall start and end a maximum of one half of the adjacent bar spacing or 3-inches, whichever is less, from the start or end of the member.
5. All construction joints shall be rough and thoroughly cleaned for bond prior to placing concrete.
6. Tolerances for placing reinforcing steel shall be: ± 3/8 inch for members ≤ 8 inches thick. ± 1/2 inch for members > 8 inches thick.
7. Dowels, piping, waterstops, and other embeds shall be held securely in place while the concrete is being poured.
8. All grout shall be non-shrink, unless otherwise noted.
9. Bar supports, spacers, and other accessories are not shown on the design drawings.
10. Metal clips or supports shall not be placed in contact with the forms or subgrade. Concrete blocks or dobies shall be in sufficient numbers to support the bars on the subgrade without settlement. In no case shall such support be continuous.
11. Unless otherwise indicated, the following shall be used in addition to the normal accessories used to hold reinforcing bars firmly in position:
 - A. In slabs #5 riser bars @ 36" O.C. Max. to support reinforcing bars.
 - B. In walls with 2 curtains #3 U or Z shape spacers @ 6'-0" O.C. Max each way.
12. Dowels shall be set and wired or otherwise held in place prior to placing the concrete. Dowels shall not be inserted into freshly placed concrete.
13. A minimum clear distance of 2 inches shall be maintained between the reinforcing steel and all pipes, pipe flanges, or other metal parts embedded in the concrete.
14. All items embedded in the concrete shall be spaced at no less than 4 times the outside dimension of the largest item. The outside dimension shall not exceed one third the concrete member thickness.
15. Unless otherwise shown on the drawings, concrete cover for reinforcing bars shall be as follows:
 Concrete placed against earth.....3"
 For surfaces in contact with water or weather and formed surfaces in contact with earth.....2"
 For concrete not exposed to weather or contact with water or earth.....2"
16. Unless otherwise noted, where a single layer of reinforcing steel is shown in a wall or slab the reinforcing shall be centered.
17. Slab thickness called out on the drawings are minimums. Where slabs have a sloping surface the slab bottom may be flat or it may be sloped to maintain a constant thickness. reinforcing steel in slabs with sloping surfaces shall be placed at the required distances from the slab surfaces.

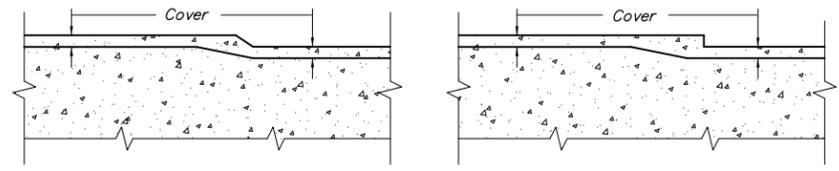
TYPICAL DETAIL NOTES:

1. Details on drawings MAI-013 through MAI-016 are typical details. These details are to be used when referred to or when no other more restrictive or different details are shown on the drawings.

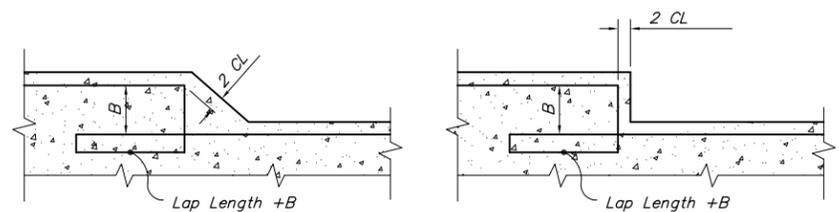
SPECIAL INSPECTION NOTES:

1. Unless otherwise noted the following items require special inspections:
 Concrete reinforcement placement.
 Shop welding if not done in a UBC approved shop.
 Field welding.
 High strength bolted connections.
 Installation of adhesive anchors.
 Installation of cast-in-place anchor bolts.
2. Special inspection shall be provided per the 2006 IBC.

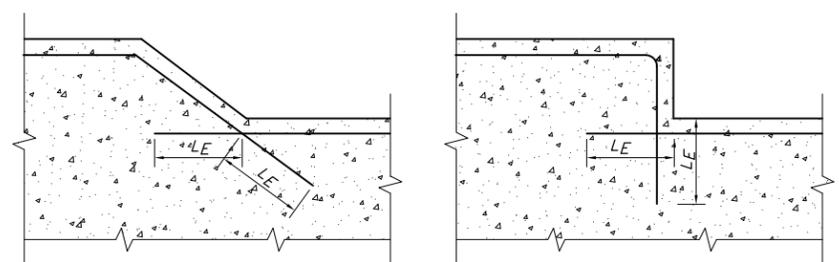
FOR REVIEW PURPOSES ONLY	DESIGNED <u> HUANG </u>	CHECKED <u> HUANG </u>	SEMITROPIC WATER STORAGE DISTRICT KERN COUNTY, CALIFORNIA				SEMITROPIC IMPROVEMENT DISTRICT SWSD-SWID MADERA AVENUE INTERTIE	DATE October 2010
	DRAWN <u> CHUNG </u>	SUBMITTED <u> ROZMAN </u>					BOOKMAN-EDMONSTON ENGINEERING BAKERSFIELD, CALIFORNIA	GENERAL STRUCTURAL NOTES
	REV	DATE	DESCRIPTION	SUB	APP'D	APPROVED		



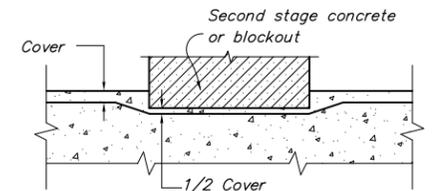
OFFSET LESS THAN 3"



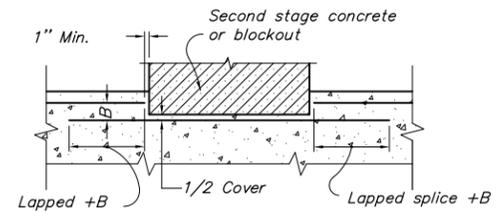
OFFSET 3" TO 8"



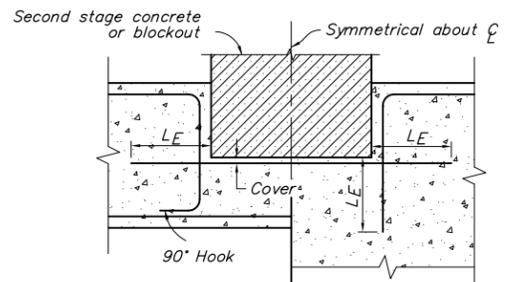
OFFSET GREATER THAN 8"



RECESS LESS THAN 3" DEEP

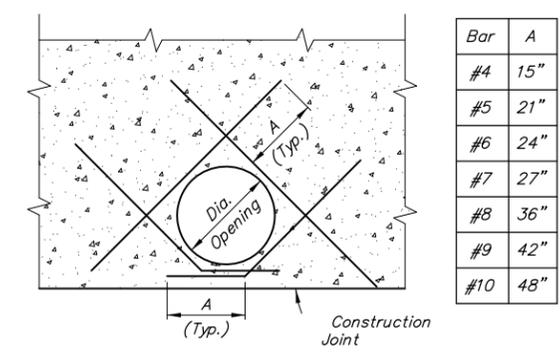


RECESS 3" TO 8" DEEP

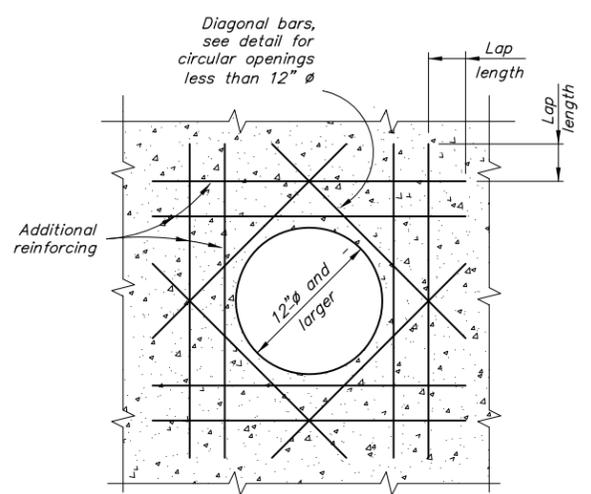


RECESS GREATER THAN 8"

TYPICAL BLOCKOUT RECESS DETAILS



ADDITIONAL REINFORCING AT CIRCULAR OPENINGS LESS THAN 12"



ADDITIONAL REINFORCING AT CIRCULAR OPENINGS GREATER THAN 12"

NOTES:

Lengths apply to grade 60 reinforcing only.

Place diagonal bars at centerline of wall where only one layer of reinforcing is provided and at each face where two layers of reinforcing are provided.

Diagonal bars shall match the size of the largest of the normal wall (slab) bars.

Bend diagonal bars as required at construction joints or other obstructions.

NOTES:

Cut normal reinforcing at opening.

Place additional vertical bars with an area of steel (A_s) equal to 1/2 the A_s of the vertical bars cut on each side of the opening. A_s of additional vertical bars equals A_s of vertical bars cut.

Place additional horizontal bars with an area of steel (A_s) equal to 1/2 the A_s of the horizontal bars cut on each side of the opening. A_s of additional horizontal bars equals A_s of horizontal bars cut.

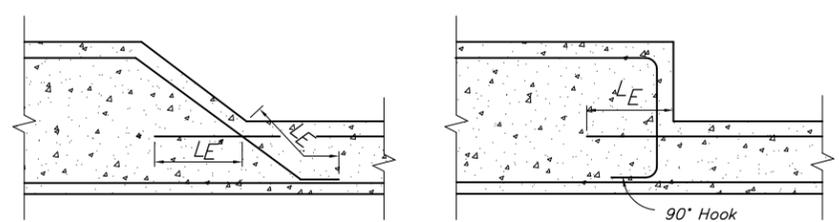
Increase bar size as required to fit additional bars within a distance of 2 x wall (slab) thickness from the opening. Maintain a minimum of 2" clear between bars.

If a wall or slab intersects the wall with the opening within one wall thickness of the opening the additional bars may be omitted on that side.

NOTES:

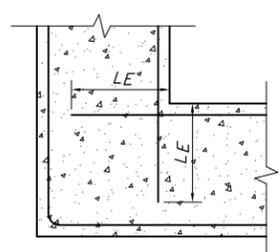
For general notes see Dwg. No. CT2010-16.

For lap length and embedment lengths (L_e) see drawing CT2010-18.

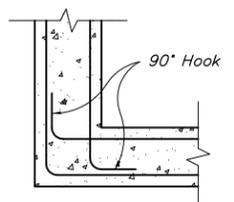


OFFSET GREATER THAN 8" RESTRICTED MEMBER THICKNESS

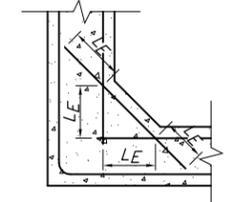
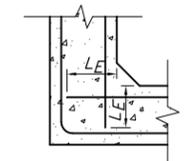
TYPICAL OFFSET DETAILS



RESTRICTED MEMBER THICKNESS



FILLET LESS THAN 1'-0"



FILLET 1'-0" OR GREATER

TYPICAL CORNER DETAILS

REDUCED NOTE DRAWING

FOR REVIEW PURPOSES ONLY

DESIGNED HUANG CHECKED HUANG
DRAWN CHUNG SUBMITTED ROZMAN

REV	DATE	DESCRIPTION	SUB	APP'D

APPROVED

SEMITROPIC WATER STORAGE DISTRICT
KERN COUNTY, CALIFORNIA

BOOKMAN-EDMONSTON ENGINEERING
BAKERSFIELD, CALIFORNIA

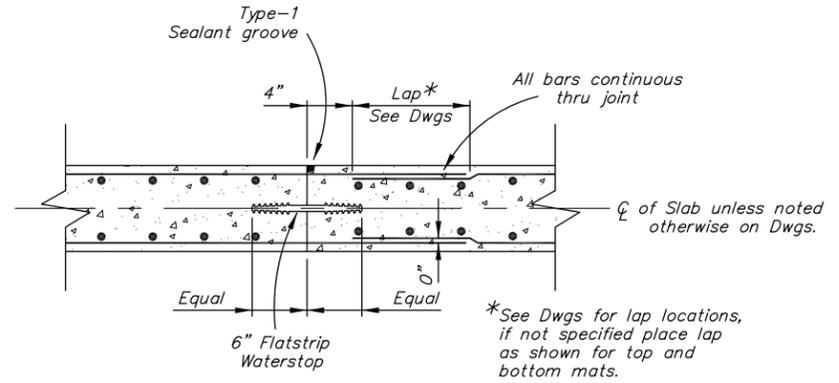


SEMITROPIC IMPROVEMENT DISTRICT
SWSD-SWID MADERA AVENUE INTERTIE

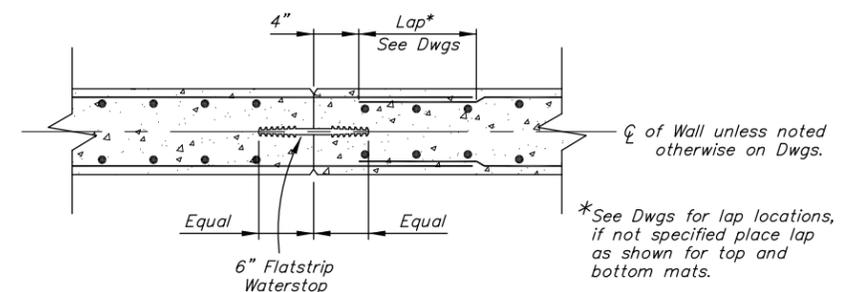
TYPICAL STRUCTURAL DETAILS
SHEET 1 OF 4

DATE
October 2010

DRAWING NUMBER
MAI-013

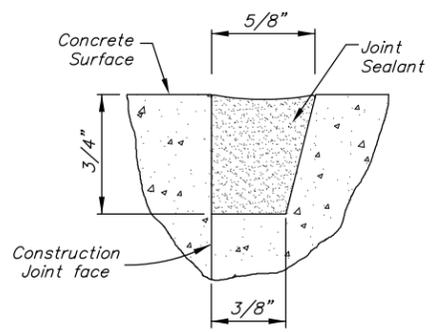


SLAB ON GRADE CONSTRUCTION JOINT



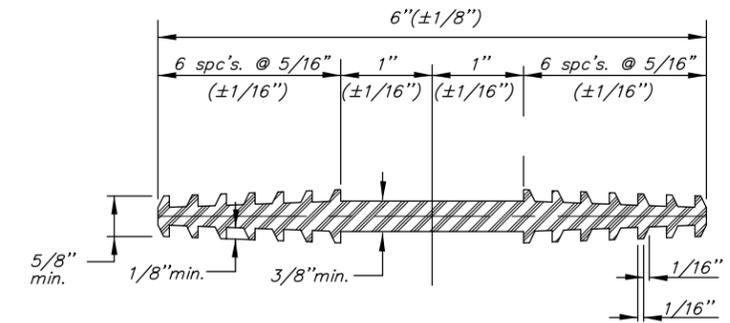
- Notes:**
1. In all wall construction joints with waterstops apply 2 coats of bond breaker to face of joint. Avoid coating waterstop.
 2. Unless otherwise noted 3/4" chamfers shall be omitted in surfaces to receive architectural treatment.
 3. Unless specifically noted otherwise #5 and larger bars shall be continuous thru joint. #4 and smaller bars shall stop alternate bars at joint.
 4. Stagger splices unless noted otherwise.

VERTICAL WALL CONSTRUCTION JOINT

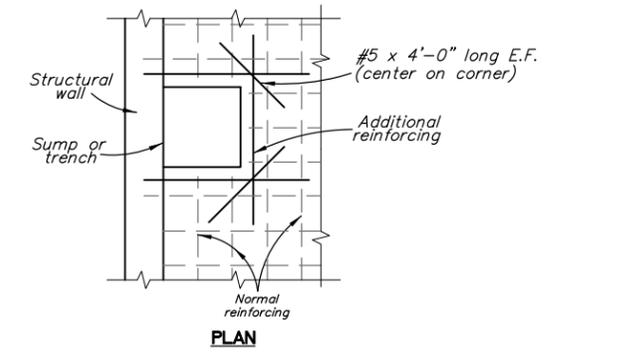


TYPE -1 SEALANT GROOVE

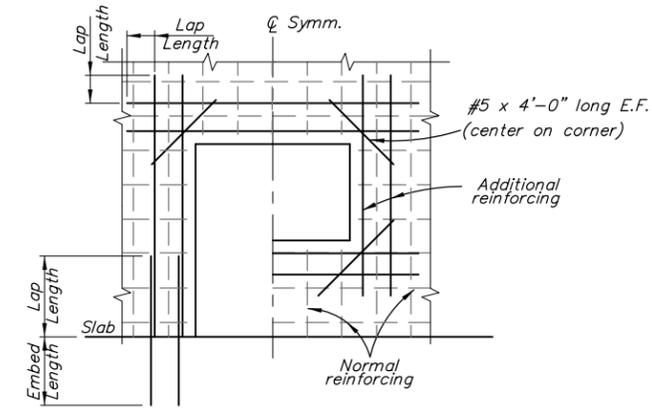
- Notes:**
1. All floor joints of hydraulic structures (members covered with water) shall have a sealant groove.
 2. Where face of joint is to be coated with bond breaker avoid coating sealant groove.
 3. Sandblasting required prior to application of primer.



6" FLATSTRIP WATERSTOP



PLAN



ELEVATION
(Plan similar)

- Notes:**
1. Cut normal reinforcing at opening.
 2. Place additional vertical bars with an area of steel (As) equal to 1/2 the As of the vertical bars cut on each side of the opening. As of additional vertical bars equals As of vertical bars cut.
 3. Place additional horizontal bars with an area of steel (As) equal to 1/2 the As of the horizontal bars cut on each side of the opening. As of additional horizontal bars equals As of horizontal bars cut.
 4. Increase bar size as required to fit additional bars within a distance of 2 x wall (slab) thickness from the opening. Maintain a minimum of 2" clear between bars. If a wall or slab intersects the wall with the opening within one w/thickness of the opening the additional bars may be omitted on that side.

ADDITIONAL REINFORCING AT RECTANGULAR OPENINGS

*LENGTH			
Bar Size	Hook	Lap (L _L)	Embedment (L _E)
#4	8"	18" (24")	14" (19")
#5	10"	23" (30")	18" (24")
#6	12"	28" (37")	22" (29")
#7	14"	33" (43")	25" (33")
#8	16"	See Table Below	See Table Below
#9	19"		
#10	22"		
#11	24"		

*LENGTH						
Bar Size	For 1" to < 2" Concrete Cover		For 2" to < 3" Concrete Cover		For 3" and Larger Concrete Cover	
	Rebar Spacing (center to center) < 8"	Rebar Spacing (center to center) ≥ 8"	Rebar Spacing (center to center) < 8"	Rebar Spacing (center to center) ≥ 8"	Rebar Spacing (center to center) < 8"	Rebar Spacing (center to center) ≥ 8"
LAP (L _L)						
#8	62" (81")	62" (81")	37" (49")	37" (49")	37" (49")	37" (49")
#9	99" (129")	79" (103")	69" (90")	55" (72")	49" (64")	42" (55")
#10	125" (163")	100" (130")	88" (115")	70" (91")	63" (82")	50" (65")
#11	154" (201")	123" (160")	108" (141")	86" (112")	77" (101")	62" (81")
EMBEDMENT (L _E)						
#8	48" (63")	48" (63")	29" (38")	29" (38")	29" (38")	29" (38")
#9	77" (101")	61" (80")	54" (71")	43" (56")	38" (50")	33" (53")
#10	97" (127")	77" (101")	68" (89")	54" (71")	49" (64")	39" (51")
#11	119" (155")	95" (124")	84" (110")	67" (88")	60" (78")	48" (63")

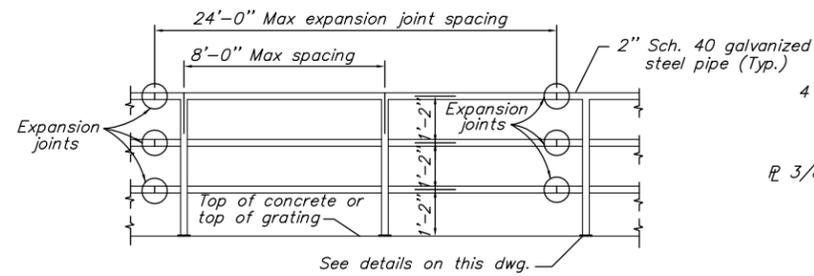
* Use length in parenthesis for wall horizontal rebars and slab bars with 12" or more of fresh concrete underneath.

Notes:

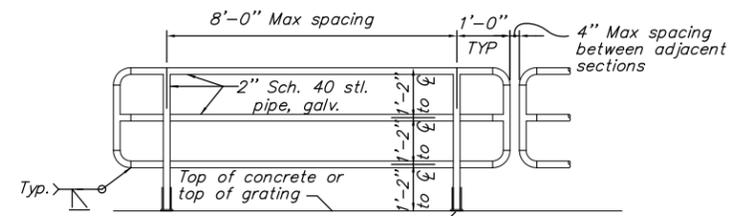
1. Use lengths in these tables unless otherwise indicated on design drawings.
2. Tables are for concrete with a compressive strength f'c of 4,000 P.S.I. and grade 60 reinforcing steel (fy = 60,000 P.S.I.) only.
3. If reinforcing steel is epoxy coated multiply the lap and embedment lengths in the tables by 1.5.
4. To splice bars of different sizes use a lap length equal to the larger of the embedment length of the larger bar and the lap length of the smaller bar.
5. Splice bars larger than #11 with rebar couplers.
6. Extend dowel bars an embedment length into the second member or across the construction joint unless it is shown to splice with other bars or extend to the far face of the member and end with a standard hook.

STANDARD 90° HOOKS, EMBEDMENT LENGTHS AND LAP LENGTHS

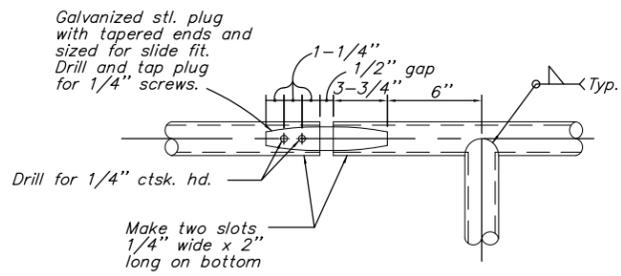
 FOR REVIEW PURPOSES ONLY	DESIGNED: HUANG DRAWN: CHUNG	CHECKED: HUANG SUBMITTED: ROZMAN	SEMITROPIC WATER STORAGE DISTRICT KERN COUNTY, CALIFORNIA	 GEI Consultants Bookman-Edmonston Division	SEMITROPIC IMPROVEMENT DISTRICT SWSD-SWID MADERA AVENUE INTERTIE	DATE October 2010
	REV: DATE: DESCRIPTION: SUB: APP'D: APPROVED:			BOOKMAN-EDMONSTON ENGINEERING BAKERSFIELD, CALIFORNIA	TYPICAL STRUCTURAL DETAILS SHEET 2 OF 4	



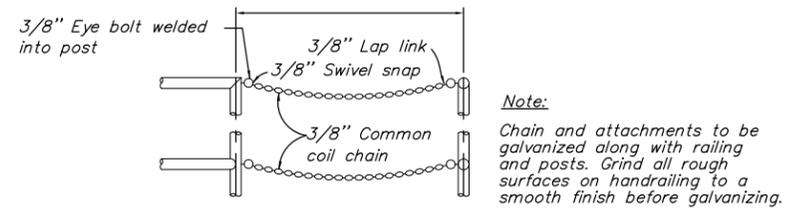
FIXED HANDRAIL



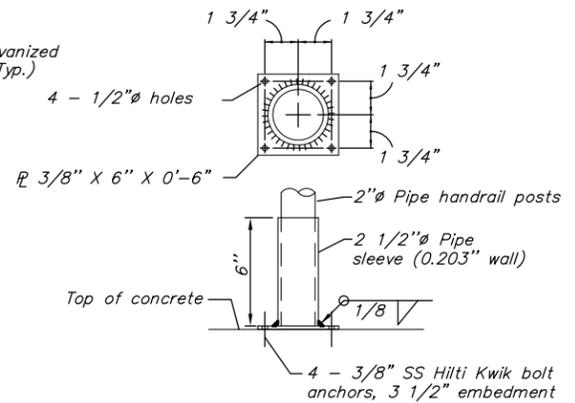
REMOVABLE HANDRAIL



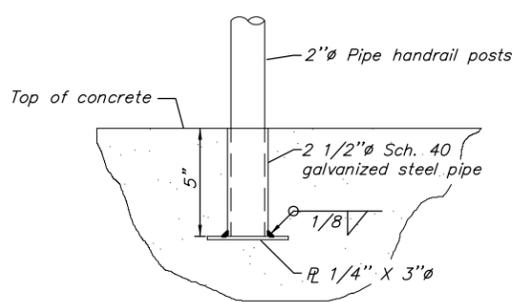
N JOINT DETAIL



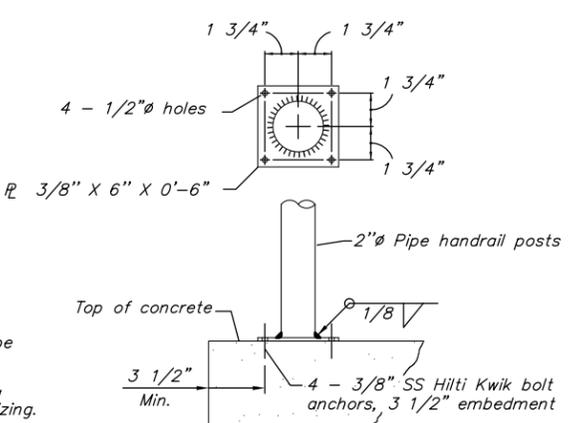
S



TOP MOUNTED PIPE SLEEVE DETAIL

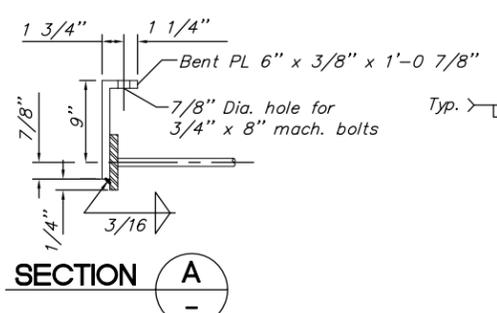
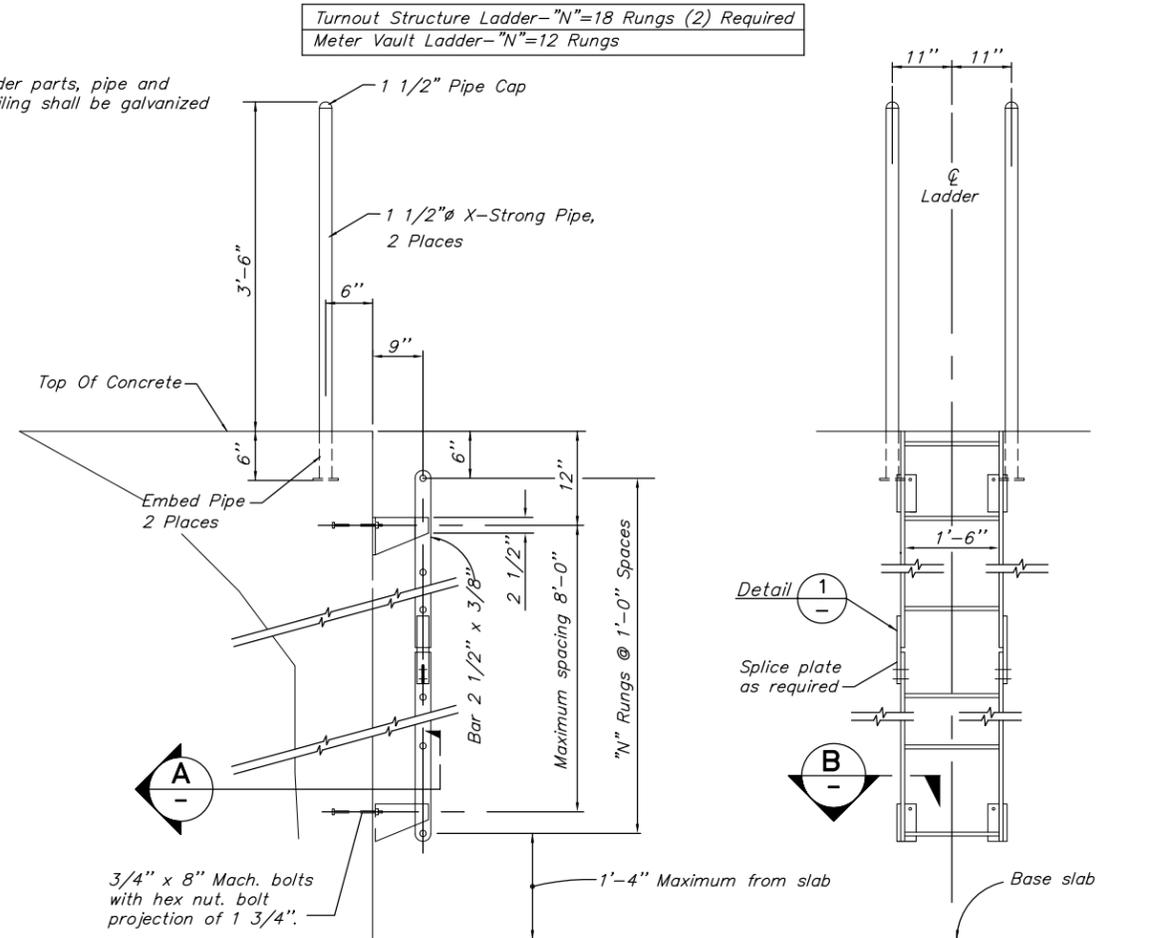


EMBEDDED PIPE SLEEVE DETAIL

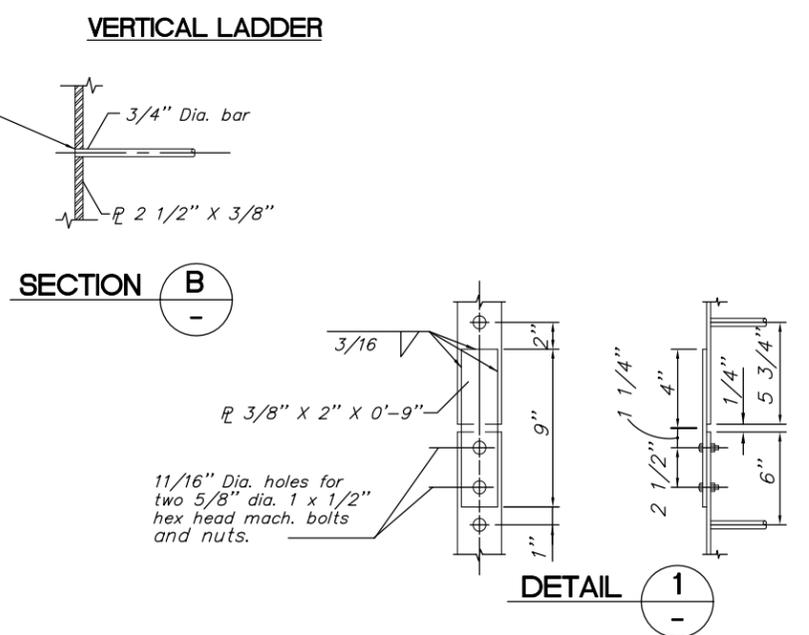


BASE PLATE DETAIL

Note:
All ladder parts, pipe and handrailing shall be galvanized



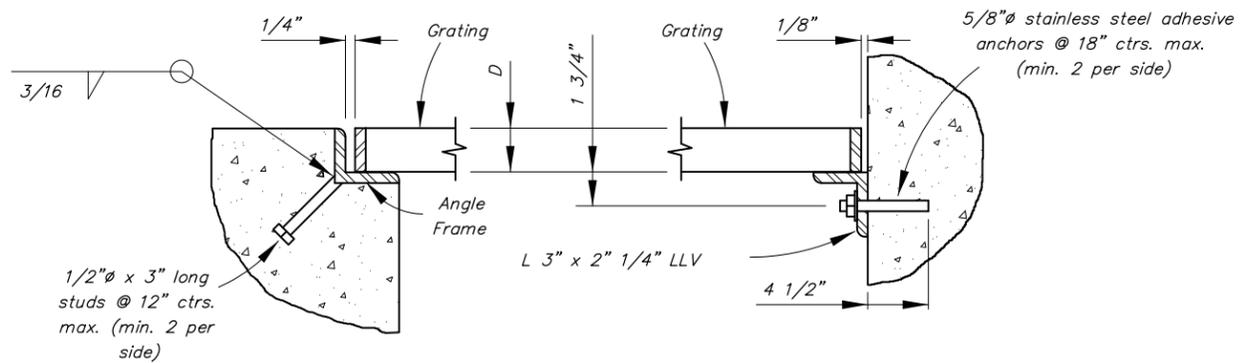
SECTION A



SECTION B

DETAIL 1

	DESIGNED HUANG	CHECKED HUANG	SEMITROPIC WATER STORAGE DISTRICT KERN COUNTY, CALIFORNIA			SEMITROPIC IMPROVEMENT DISTRICT SWSD-SWID MADERA AVENUE INTERTIE		DATE October 2010
	DRAWN CHUNG	SUBMITTED ROZMAN				BOOKMAN-EDMONSTON ENGINEERING BAKERSFIELD, CALIFORNIA		TYPICAL STRUCTURAL DETAILS SHEET 3 OF 4
REV	DATE	DESCRIPTION	SUB	APP'D	APPROVED			



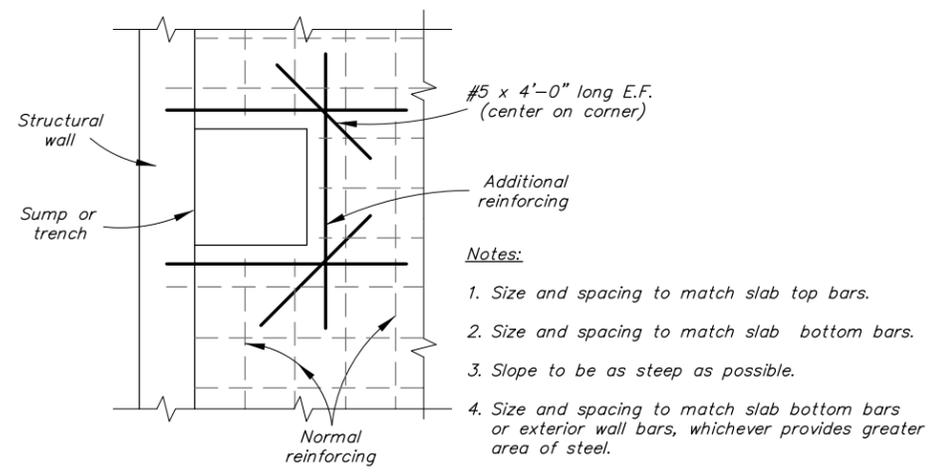
Grating Depth "D"	Angle Frame Size
1"	L 1 3/4" x 1 1/4" x 1/4" LLH
1 1/4"	L 2" x 1 1/2" x 1/4" LLH
1 1/2"	L 1 3/4" x 1 3/4" x 1/4"
1 3/4"	L 2" x 2" x 1/4"
2"	* L 2 1/2" x 2 1/2" x 1/2"

* May substitute L 2 1/2" x 2 1/2" x 1/4" with bar 1 3/4" x 1/4" welded to the top of the horizontal leg with 3/16" continuous fillet weld all around.

Notes:

- All grating and angles shall be galvanized steel unless otherwise noted.
- Grating shall be welded bar grating with bearing bars "D" x 3/16" @ 1 3/16" ctrs. and cross bars @ 4" ctrs. "D" shall be as indicated on the design drawings or as determined by the grating manufacturer and approved by the engineer.
- Both ends of each grating panel and all openings shall be banded. Banding bar depth and thickness shall match bearing bars. Weld end bars and every 4th interior bar to banding with double 1/8" fillet weld full height.
- Fasten grating to supports with a minimum of 4 saddle clips 4" from corners of panel, maximum spacing 3'-0".

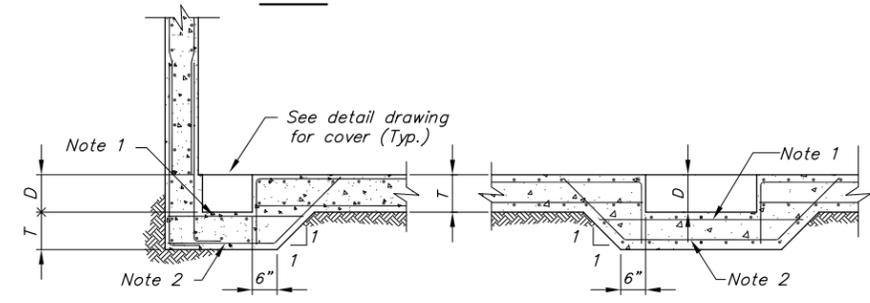
GRATING SUPPORT DETAIL



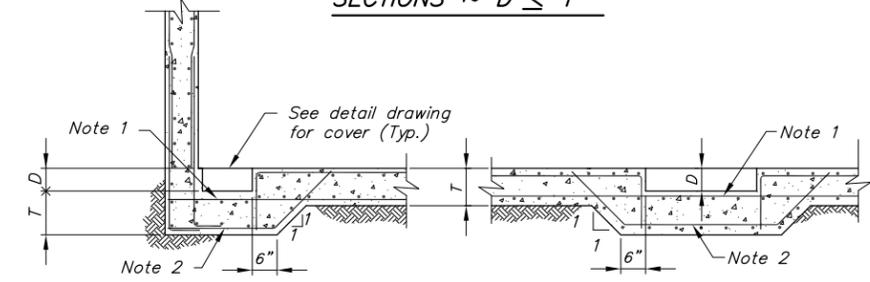
Notes:

- Size and spacing to match slab top bars.
- Size and spacing to match slab bottom bars.
- Slope to be as steep as possible.
- Size and spacing to match slab bottom bars or exterior wall bars, whichever provides greater area of steel.

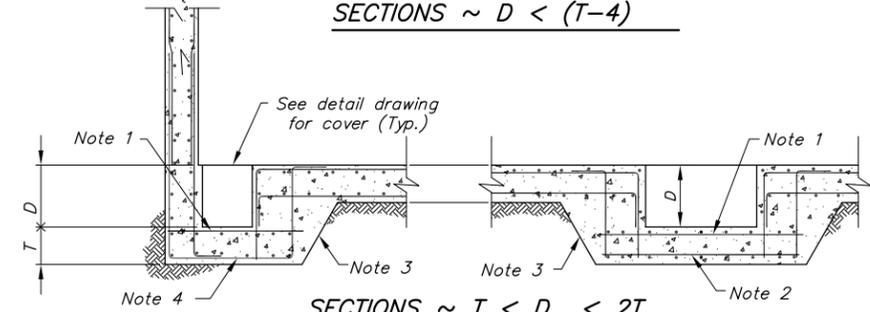
PLAN



SECTIONS ~ D ≤ T



SECTIONS ~ D < (T-4)



SECTIONS ~ T < D ≤ 2T

SUMP OR TRENCH



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DESIGNED	HUANG	CHECKED	HUANG
DRAWN	CHUNG	SUBMITTED	ROZMAN
REV	DATE	DESCRIPTION	SUB APP'D

APPROVED

SEMITROPIC WATER STORAGE DISTRICT
KERN COUNTY, CALIFORNIA

BOOKMAN-EDMONSTON ENGINEERING
BAKERSFIELD, CALIFORNIA

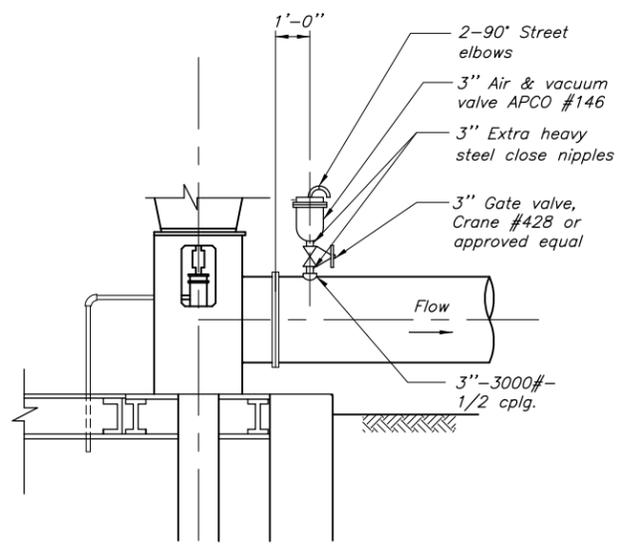


SEMITROPIC IMPROVEMENT DISTRICT
SWSD-SWID MADERA AVENUE INTERTIE

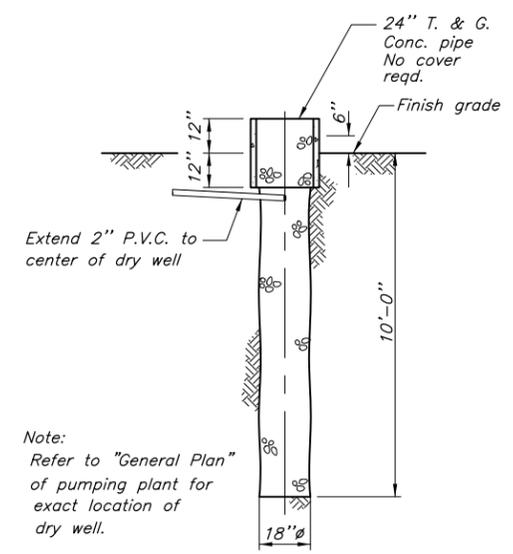
TYPICAL STRUCTURAL DETAILS
SHEET 4 OF 4

DATE
October 2010

DRAWING NUMBER
MAI-016

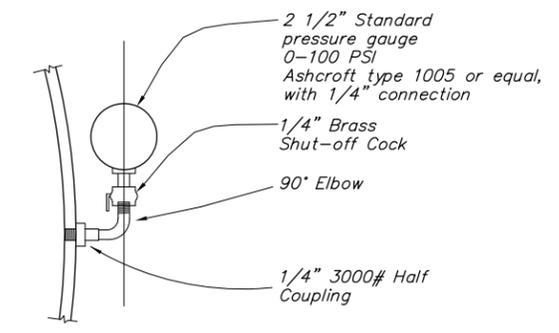


**AIR VALVE ASSEMBLY
OPEN SUMP PUMP INSTALLATION**
Scale: 3/8"=1'-0"

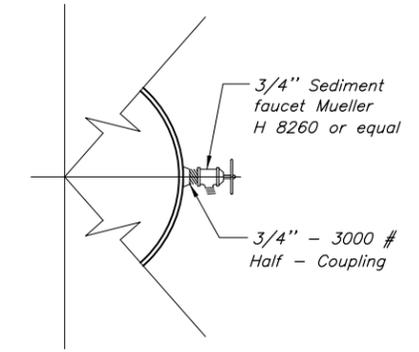


Note:
Refer to "General Plan"
of pumping plant for
exact location of
dry well.

TYPICAL DRY WELL
Scale: 3/8"=1'-0"

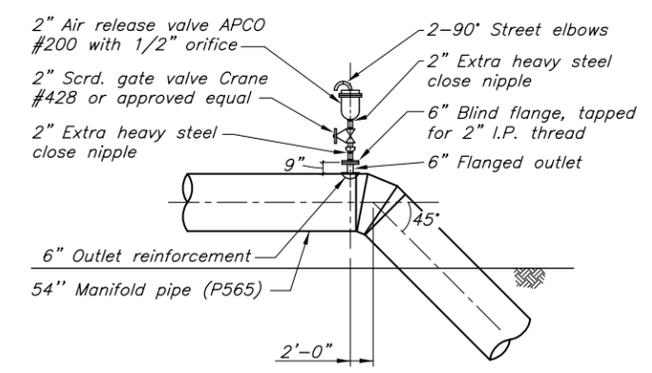


PRESSURE GAUGE DETAIL

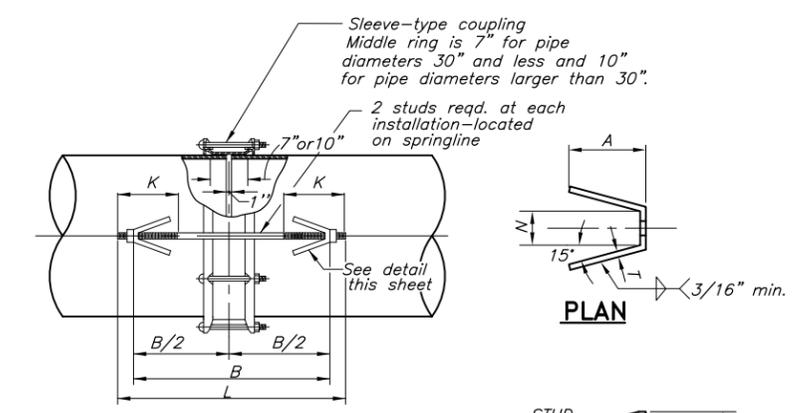


Note:
See Manifold Dwgs. for location

HOSE FAUCET OUTLET
Scale: 1"=1'-0"



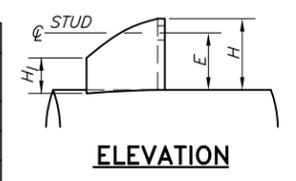
AIR VALVE ASSEMBLY DETAILS



JOINT HARNES DIMENSIONS (IN INCHES)

PIPE SIZE	STUD Ø	A	B	T	H	E	H ₁	L	N	K
12	5/8	3	26	3/8	3 7/8	3	2	28 1/4	2	3 1/2
16	3/4	3 3/4	27 1/2	3/8	4 1/8	3 1/8	2	30	2	3 5/8
20	7/8	4 1/2	29	3/8	4 1/4	3 1/8	2	31 3/4	2	3 3/4
30	1	5 1/8	30 1/4	3/8	4 1/2	3 1/4	2	33 3/4	4	3 7/8
36	1 1/4	6 3/4	33 1/2	1/2	5	3 3/4	2 1/2	37	4	4 1/4
48	1 1/2	8 3/4	47 1/2	1/2	5 3/4	3 7/8	2 1/2	51 1/2	4	4 1/2
60	1 3/4	11 1/4	50 1/2	1/2	6 3/8	4 1/8	2 1/2	55	4	4 3/4

HARNES DETAIL
Not to Scale



ELEVATION

REDUCED
NOTE
DRAWING

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DESIGNED HUANG CHECKED HUANG
DRAWN CHUNG SUBMITTED ROZMAN

REV	DATE	DESCRIPTION	SUB	APP'D

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SEMITROPIC WATER STORAGE DISTRICT
KERN COUNTY, CALIFORNIA

BOOKMAN-EDMONSTON ENGINEERING
BAKERSFIELD, CALIFORNIA

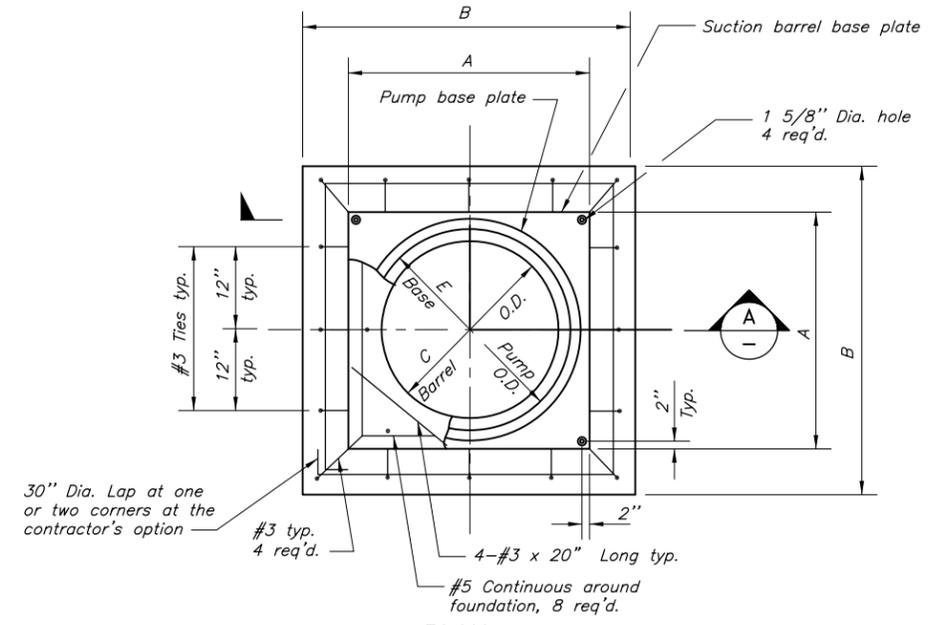


SEMITROPIC IMPROVEMENT DISTRICT
SWSD-SWID MADERA AVENUE INTERTIE

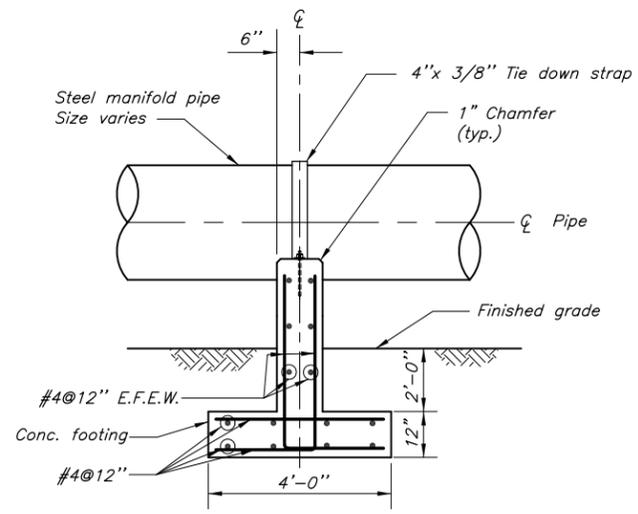
MISCELLANEOUS MANIFOLD DETAILS

DATE
October 2010

DRAWING NUMBER
MAI-017

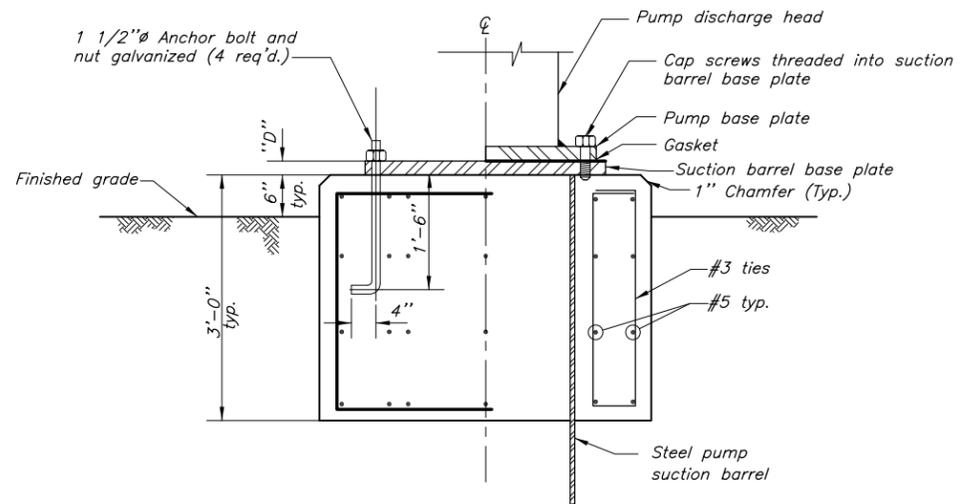


PLAN

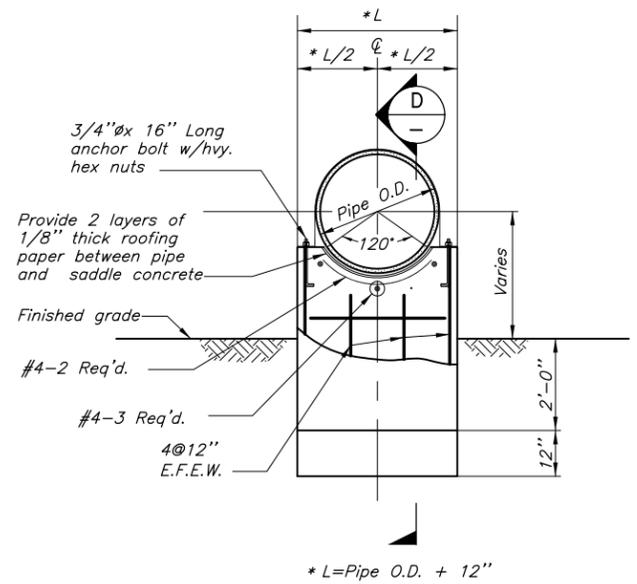


SECTION D

Notes:
1. For general structural notes, see Dwg. MAI-012.



SECTION A



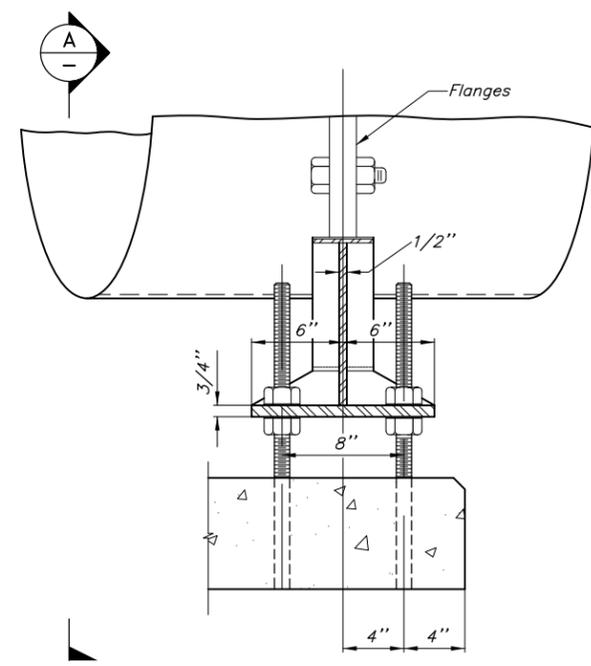
SADDLE TYPE PIPE SUPPORT

Pump capacity	A	B	C	D	E
5 cfs	33"	5'-0"	*	1 1/4"	*
10 cfs	60"	7'-0"	*	2"	*
20 cfs	70"	7'-10"	*	2 1/2"	*

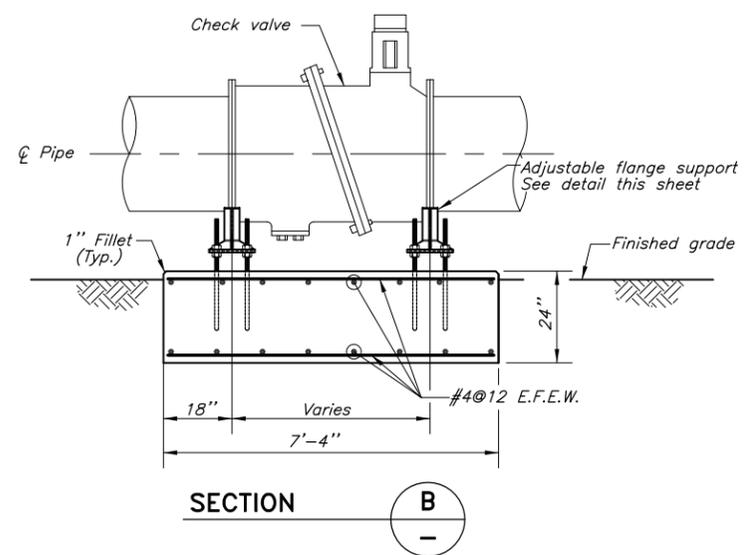
* Per pump manufacturer dimensions

CLOSED SUCTION PUMP FOUNDATION SLAB

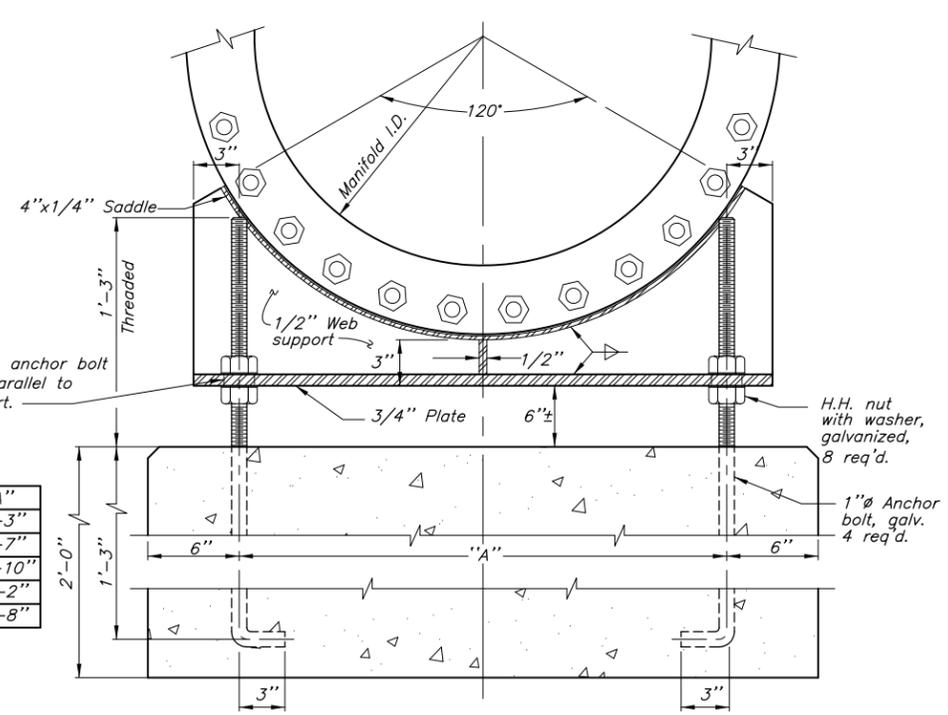
 FOR REVIEW PURPOSES ONLY	DESIGNED: HUANG DRAWN: CHUNG	CHECKED: HUANG SUBMITTED: ROZMAN	SEMITROPIC WATER STORAGE DISTRICT KERN COUNTY, CALIFORNIA	 GEI Consultants Bookman-Edmonston Division	SEMITROPIC IMPROVEMENT DISTRICT SWSD-SWID MADERA AVENUE INTERTIE	DATE October 2010
	REV: DATE: DESCRIPTION: SUB: APP'D:	APPROVED	BOOKMAN-EDMONSTON ENGINEERING BAKERSFIELD, CALIFORNIA	CONCRETE FOUNDATION	DRAWING NUMBER MAI-018	



DETAIL OF ADJUSTABLE FLANGE SUPPORT
Not to Scale

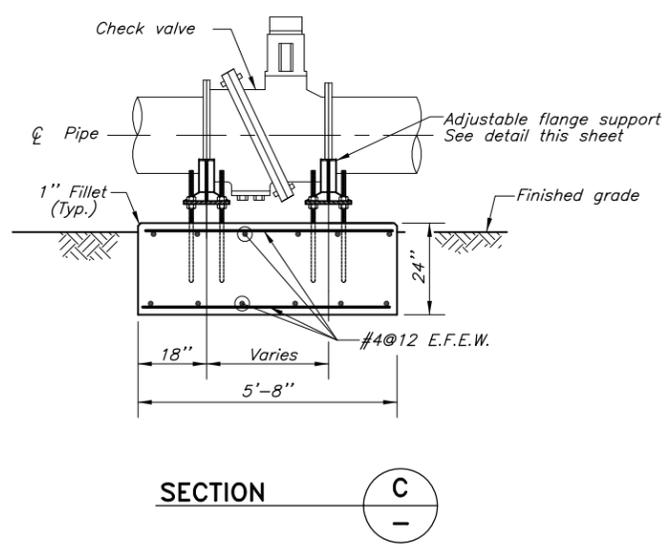


SECTION B



SECTION A
Not to Scale

Pipe Size	"A"
12"	1'-3"
16"	1'-7"
20"	1'-10"
24"	2'-2"
30"	2'-8"



SECTION C

REDUCED NOTE DRAWING

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DESIGNED HUANG CHECKED HUANG
DRAWN CHUNG SUBMITTED ROZMAN

REV	DATE	DESCRIPTION	SUB	APP'D	APPROVED

SEMITROPIC WATER STORAGE DISTRICT
KERN COUNTY, CALIFORNIA

BOOKMAN-EDMONSTON ENGINEERING
BAKERSFIELD, CALIFORNIA

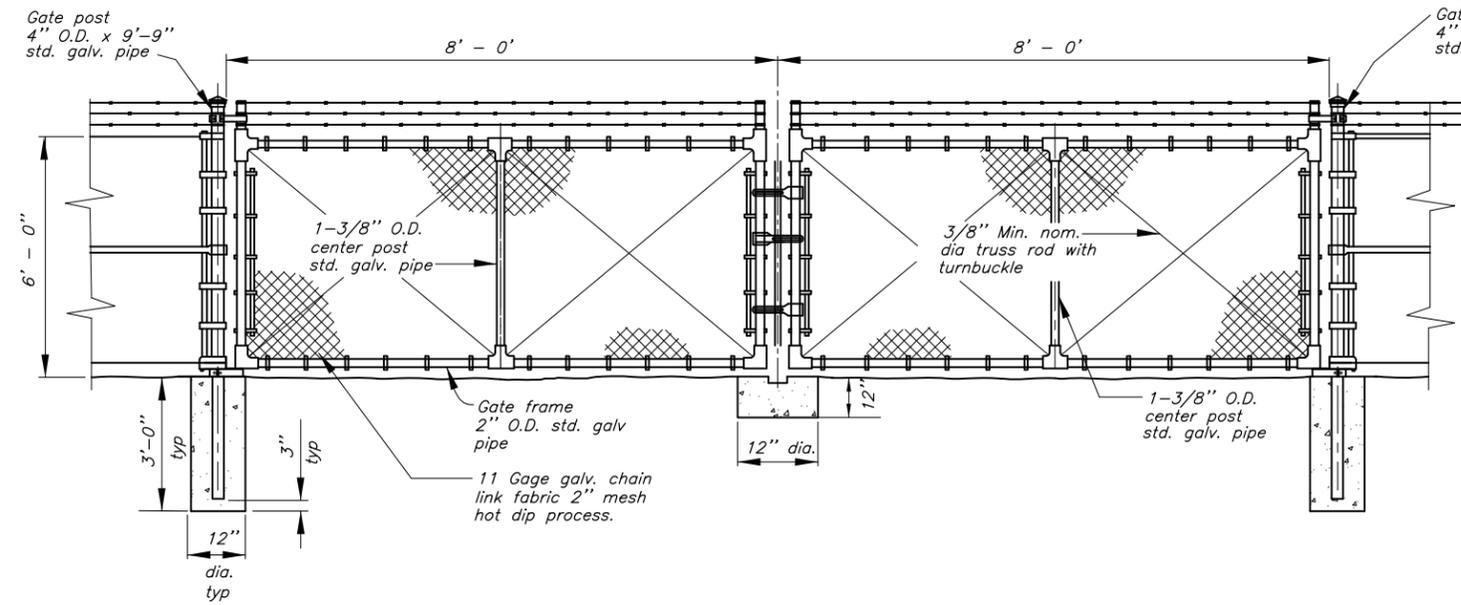


SEMITROPIC IMPROVEMENT DISTRICT
SWSD-SWID MADERA AVENUE INTERTIE

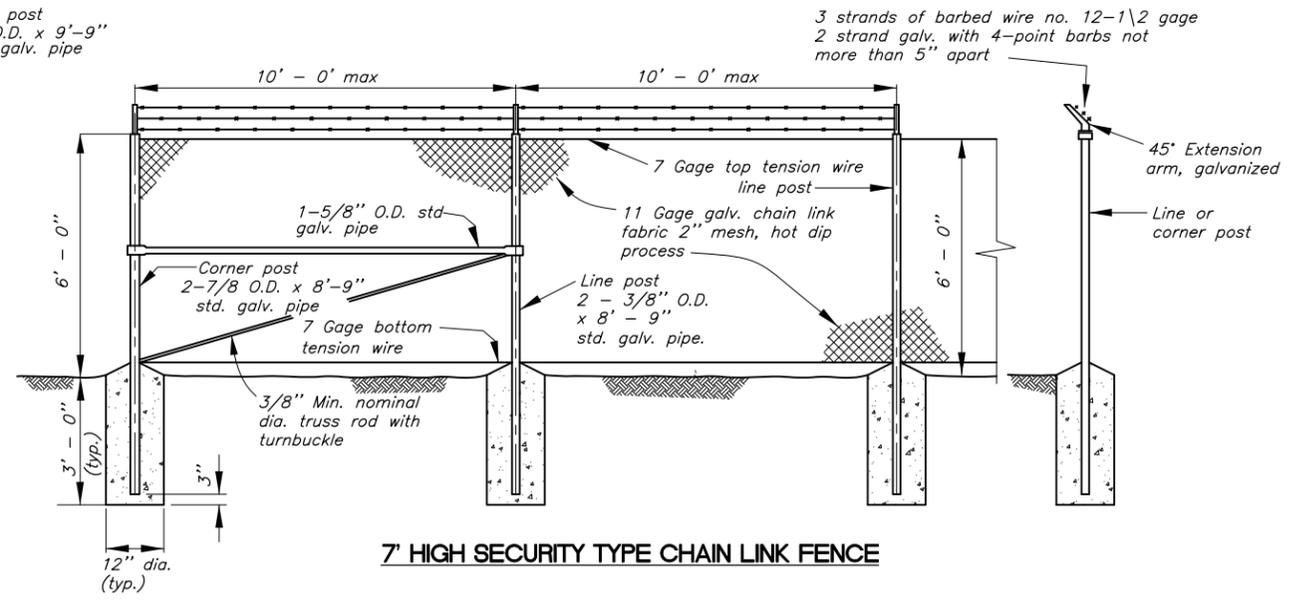
ADJUSTABLE FLANGE SUPPORT AND PIPE SUPPORT DETAILS

DATE
October 2010

DRAWING NUMBER
MAI-019



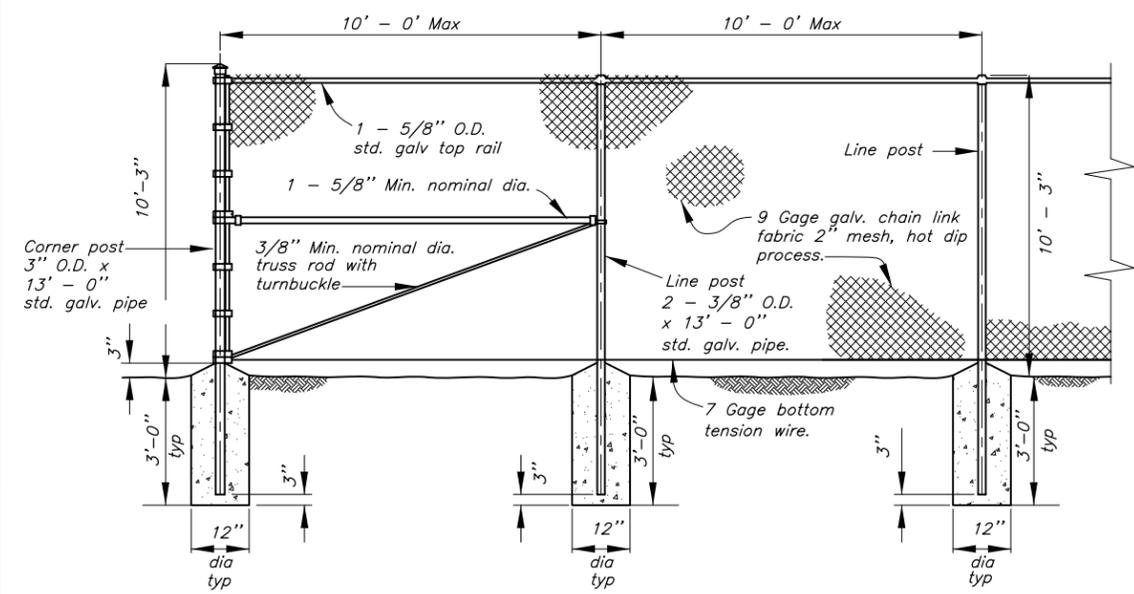
METAL FRAME DRIVE GATE



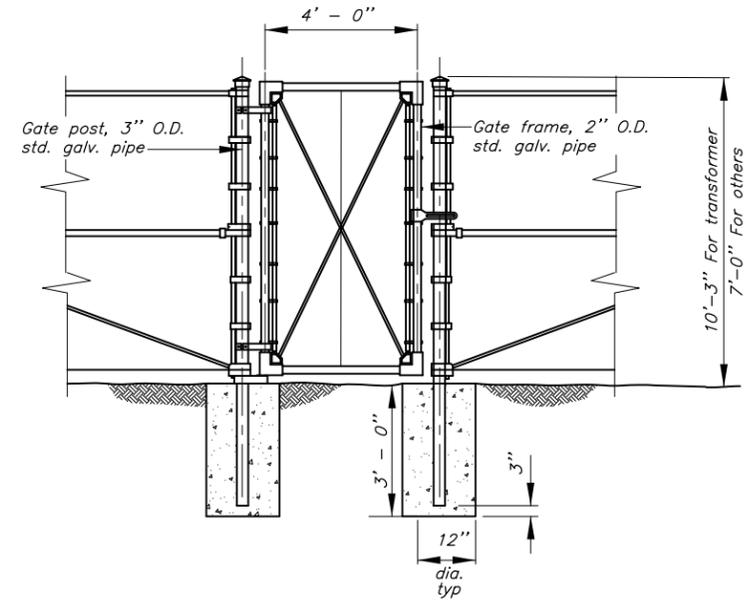
7' HIGH SECURITY TYPE CHAIN LINK FENCE

NOTES:

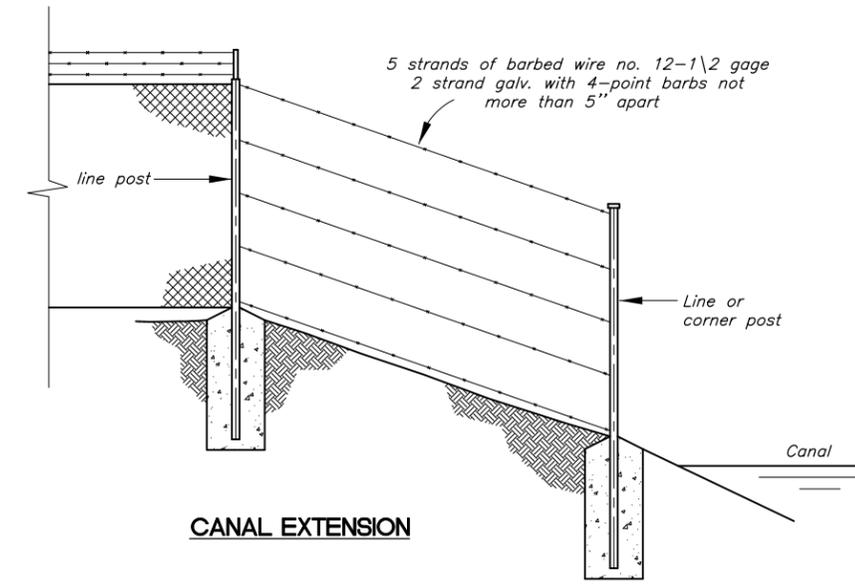
1. All pipe diameters shown are steel pipe sizes—standard weight.
2. Chain link fabric shall be attached to fence framework in accordance with the manufacturers' standard instructions.
3. Embankment at fence post location shall be thoroughly compacted prior to post installation.
4. All gates shall be equipped with gate fasteners suitable for locking with padlock.
5. Corner and end posts shall be braced in the direction of pull.
6. Alternate details may be submitted for approval.
7. All fencing shall be grounded in accordance with P. G. & E. standards.



10' HIGH CHAIN LINK FENCE FOR TRANSFORMER



METAL FRAME WALK GATE



CANAL EXTENSION

	DESIGNED <u>HUANG</u> CHECKED <u>HUANG</u> DRAWN <u>CHUNG</u> SUBMITTED <u>ROZMAN</u>	SEMITROPIC WATER STORAGE DISTRICT KERN COUNTY, CALIFORNIA BOOKMAN-EDMONSTON ENGINEERING BAKERSFIELD, CALIFORNIA		SEMITROPIC IMPROVEMENT DISTRICT SWSD-SWID MADERA AVENUE INTERTIE	DATE October 2010
	REV DATE DESCRIPTION SUB APP'D APPROVED			CHAIN LINK FENCE DETAILS	DRAWING NUMBER MAI-020

3.3 Project 3 – Habitat Improvements on Pond-Poso and Turnipseed Spreading Basins

Introduction

Project 3 will add habitat to two spreading ground facilities that are in construction in the Poso Creek IRWM Region. This section presents the Work Plan for Project 3, which describes the tasks to accomplish habitat improvements on completed components of the Pond-Poso and Turnipseed Spreading Basins. The Project 3 budget and schedule are presented in the following Attachments 4 and 5. Site plans are shown on a figure in this section of Attachment 3.

3.3.1 Goals and Objectives

One of the goals of the Poso Creek IRWM Plan is to achieve synergy of environmental enhancement and water supply reliability efforts in this IRWM Region. The objective of Project 3 is to incorporate habitat into two spreading basins as sections of the two basins are completed. Exhibit 3.3-1 below presents the Project’s Goals and Objectives and how they coincide with the Poso Creek IRWM Plan Objective:

Exhibit 3.3-1

IRWM Plan Objective	Project 3 Goals and Objectives
Maintain and/or enhance environmental resources within and outside of the Poso Creek RWMP Region	Project 3 will create 443 acres of wetland habitat and 31.3 acres of related riparian habitat on Semitropic’s Pond-Poso Spreading Basins and 70 acres of wetland habitat and 2.7 acres of related riparian habitat on DEID’s Turnipseed Spreading Basins that will resemble native riparian and wetland ecological systems.

3.3.2 Purpose and Need

Semitropic WSD and Delano-Earlimart Irrigation District (DEID), in collaboration with Tulare Basin Wildlife Partners (TBWP), are proposing to add wildlife habitat along the margins of Pond-Poso and Turnipseed Spreading Basins in two locations within the Poso Creek IRWM Region. Specifically the following habitat would be created:

- 443 Acres of wetland habitat along the margin or within the shallow-pond areas within the Pond-Poso Spreading Basins
- 31.3 Acres of emergent and riparian habitat along the margin of the created wetland habitat in the Pond-Poso Spreading Basins
- 70 Acres of wetland habitat along the margin or within the shallow-pond areas within DEID’s Turnipseed Spreading Basin

- 2.7 Acres of emergent and riparian habitat along the margin of the created wetland habitat in DEID's Turnipseed Spreading Basin

The Poso Creek IRWM Region is a part of the Tulare Basin which is one of the most productive agricultural areas in the United States. However, this region has lost 90-95% of its native habitat. As a result, more than 120 special status species found the Region are in need of protection. Because the Tulare Basin has the smallest proportion of protected natural land and one of the smallest percentages of public recreational land per capita of any region in California, the Poso Creek IRWM Regional Water Management Group (RWMG) in collaboration TBWP propose to create habitat along the margins of Pond-Poso and Turnipseed Spreading Basins. This project is an outgrowth of several years of planning and collaboration between the RWMG and TBWP.

Between 2005 and 2010, TBWP under took a systematic, regional conservation planning process resulting in the five-volume Tulare Basin Regional Conservation Plan. The first three volumes each examine a different area within the Tulare Basin: the Goose Lake Conservation Plan (April 2006), the Sand Ridge – Tulare Lake Conservation Plan (July 2006), and the Buena Vista Lake – Kern Lake Conservation Plan (December 2006). A fourth volume, the Tulare Basin Riparian and Wildlife Corridor Conservation Plan (February 2009), identifies 16 key corridors connecting conservation areas in the Tulare Basin to the Sierra Nevada, Transverse, and Coast Range mountains. Together, these plans chart a course to protect and restore one million acres of wetland, upland, and riparian habitats. A fifth and final volume, Tulare Basin Regional Conservation Plan Water Supply Strategies Report (March 2010) complements the other four plans, quantifies the water needs, and identifies potential water supplies. In addition, the organization completed an Integrated Outreach and Fundraising Plan (December 2007, updated March 2010) to support the goals of the Tulare Basin Regional Conservation Plan.

The proposed habitat Project was identified in the Integrated Regional Water Management Plan (Adopted July 2007) for the Poso Creek Region as Project No. 26 Wildlife Improvement Projects in IRWMP Region (Poso Creek Plan Brochure is included in Attachment 3 – Introduction) and the TBWP Annual Report (provided in Appendix 3.3-1). In particular, this habitat Project supports the Poso Creek Plan's secondary goal to improve environmental resources on completed facilities. The two spreading basin sites, as identified in the Poso Creek Plan as Project No. 6 Pond-Poso Spreading and Recovery Facility and Project No. 8 Turnipseed G-W Banking Project Enhancement along White River in DEID, were determined to be a high priority with regard to achieving the overarching goal to improve water supply reliability for the Poso Creek Region.

3.3.3 Project Abstract

Project 3 would add wildlife habitat along the margins of Pond-Poso and Turnipseed Spreading Basins in two locations within the Poso Creek IRWM Region. Specifically the following habitats, shown schematically in Figure 3.3-1, would be created:

- 443 Acres of wetland habitat along the margin or within the shallow-pond areas within the Pond-Poso Spreading Basins
- 31.3 Acres of emergent and riparian habitat along the margin of the created wetland habitat in the Pond-Poso Spreading Basins.
- 70 Acres of wetland habitat along the margin or within the shallow-pond areas within DEID's Turnipseed Spreading Basin
- 2.7 Acres of emergent and riparian habitat along the margin of the created wetland habitat in DEID's Turnipseed Spreading Basin

For Semitropic's Pond-Poso site, the wetland habitat would be created on benches that are to be planted with low-growing vegetation, shrubs and trees to create habitat that resembles riparian habitat along local streams (Exhibit 3.3-2). A portion of each bench area will be elevated to support the emergent and riparian habitat. Native vegetation from locally derived seed stock will be used to the extent available. The habitat will be created in two seasons. In year one all benches will be graded and seeded. Approximately half the shrubs and trees would be planted in year one. In year two the remaining shrubs and trees will be planted and weeding begun. During year two and annually thereafter, weeding, reseeding and erosion control will be performed until the habitat is established and surfaces stable.

At the Semitropic Pond-Poso site, approximately 443 acres of wetland habitat and 31.3 acres of riparian area will be created as shown in Exhibit 3.3-3. Since the Pond-Poso recharge ponds became operational in the fall of 2010 and are in use, Semitropic staff recently obtained acreage for each potential habitat improvement site by using a mobile GPS unit.

Cost estimates are being developed for obtaining the plant material needed for each site. For the DEID Turnipseed site, the planting would take place in year two based on a similar planting scheme and site preparation methods as the Pond-Poso site. A portion of the total 80-acre site will be prepared and seeded once the site is constructed and operational. Since construction of the Turnipseed Spreading Basins will begin in early 2011 and the Pond-Poso Spreading Ground became operational in the fall of 2010, year one work for the habitat at the Pond-Poso site will begin prior to planting on both sites in year two.

EXHIBIT 3.3-2 SCHEMATIC OF HABITAT AREA ON POND-POSO SPREADING PONDS

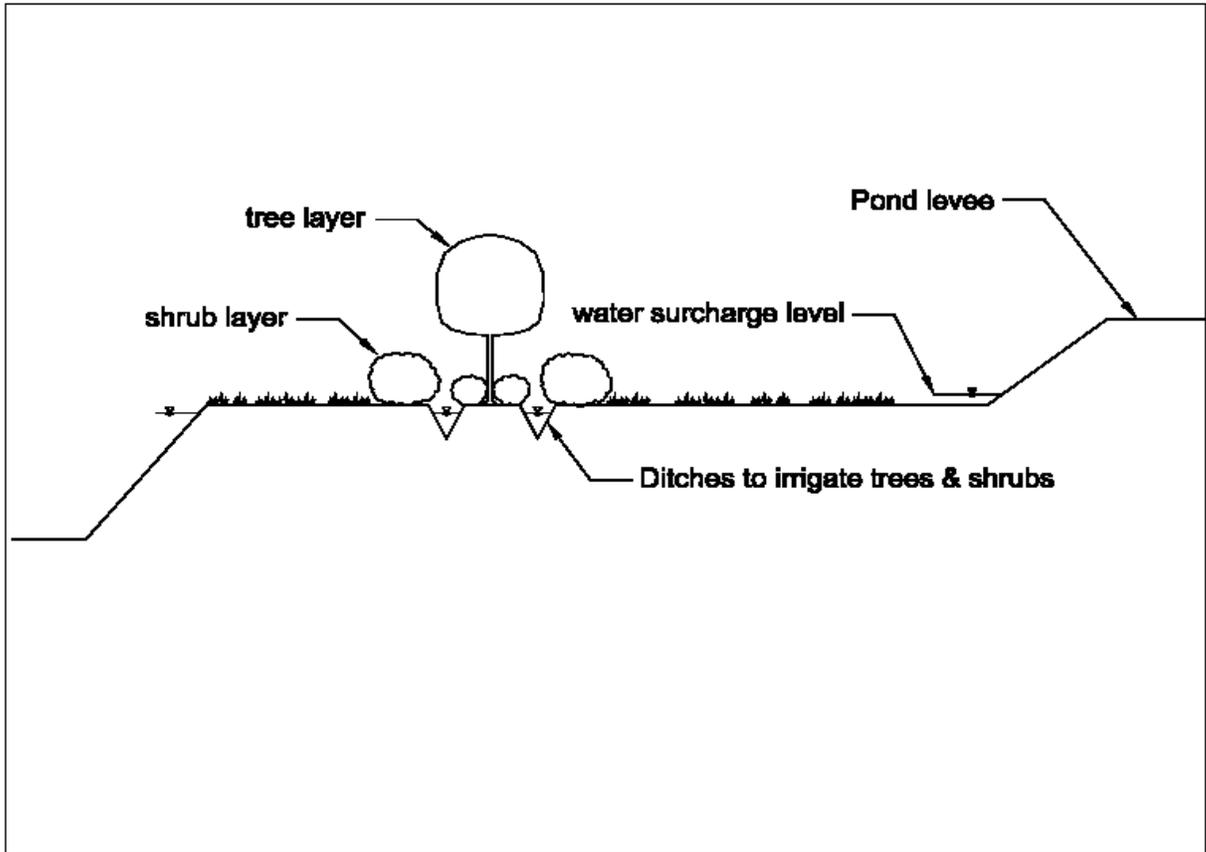


EXHIBIT 3.3-3 SEMITROPIC POND-POSO AND TURNIPSEED SPREADING PONDS AREAS

New Pond Number	Total Pond Area (Acres)	Bench Length (ft)	Bench Area (Acres)	Shallow Flooded Area (Acres)
1	5.21	0	0.00	0.86
2	21.42	661	0.91	16.75
3	19.64	0	0.00	15.11
4	14.61	0	0.00	11.27
5	27.60	1440	1.98	22.36
6	27.00	1170	1.61	22.13
7	15.84	1480	2.04	10.90
8	27.12	900	1.24	23.25
9	25.53	640	0.88	21.28
10	23.36	1360	1.87	19.22
11	17.51	940	1.29	12.44
20	36.48	1075	1.48	32.40
21A	31.66	740	1.02	25.64

New Pond Number	Total Pond Area (Acres)	Bench Length (ft)	Bench Area (Acres)	Shallow Flooded Area (Acres)
21B	16.68	0	0.00	16.68
22	27.44	2100	2.89	19.91
23	29.05	1625	2.24	23.48
24	30.33	740	1.02	27.30
25	22.62	680	0.94	17.11
26	26.71	1100	1.52	21.30
27	25.65	950	1.31	22.28
28	27.40	2165	2.98	19.42
29	20.94	1430	1.97	16.13
30	14.17	1535	2.11	9.92
33	19.68	0	0.00	16.04
Total	553.65	22731	31.31	443.17
Turnipseed	80	2000	2.75	70

3.3.4 Integrated Elements of Project

Project 3 is integrated with ongoing groundwater recharge projects and will be an element of a broader ecological restoration plan, Tulare Basin Regional Conservation Plan, developed by TBWP and incorporated into projects contained in the Poso Creek IRWM Plan. The Project relates to the Poso Creek Plan Project No. 26, to improve wildlife habitat in the IRWM Region. The Poso Creek IRWM Plan identified non-structural and structural projects that support achievement of the Region’s highest priority; regaining water supply reliability lost to the Region and secondary benefits of habitat enhancement on completed water supply projects.

3.3.5 Project Maps

The locations of the ponds to be planted are shown on Figure 3.3-1 and Exhibit 3.3-4.

EXHIBIT 3.3-4 LOCATIONS OF POND-POSO SPREADING PONDS FOR PLANTING



3.3.6 Completed Work

Construction of the Pond-Poso Spreading Ponds began in 2007 and became operational in the fall of 2010, as Semitropic completed the improvements in phases to help absorb the cost of the capital improvement. The DEID Turnipseed spreading basins are to begin construction in early 2011. No project specific design work for the habitat component of these two sites was completed prior to September 30th, 2008. Development of the Tulare Basin Regional Conservation Plan was completed in September 2010 and design of the habitat restoration for the Pond-Poso site was completed in December 2010. While these efforts are included in the task discussion to show they are complete, they are not included in the cost estimates as a basis for cost match calculation or for reimbursement.

Work that is expected to be completed prior to the grant award date (June 1, 2011) will include: Final planting plans and materials lists for ordering plant materials. Purchase of plant materials and grading will begin upon award of the grant. Several tasks, listed below, are defined to accomplish Project work and are organized to correspond with Budget and Schedule Attachments (presented in subsequent attachments).

3.3.7 Existing Data and Studies

The following technical reports identified this Project in their analysis and support the sequencing of constructing this project next in relation to the recently completed projects within the Poso Plan Region.

- Poso Creek IRWM Plan, adopted July, 2007
- Tulare Basin Regional Conservation Plan completed in September 2010

3.3.8 Project Timing and Phasing

This project is part of a two multi-phased, multi-million dollar projects to convert irrigated land purchased by the districts into spreading ground facilities; however, the habitat component is a standalone project and is fully functional since it is to add habitat to spreading basins once the spreading basins are constructed and operational. The Project will be constructed over a 2-year period that will allow bench leveling and planting on the operational Pond-Poso Spreading Grounds and construction of the second spreading basin area, Turnipseed, to be complete and ready for habitat establishment in year two.

The proposed Project will be performed under the general direction of the Semitropic WSD and DEID. The sequencing of work is addressed in Attachment 5, which presents and discusses the Project Schedule.

3.3.9 Tasks

Task 1 –Project Administration

Semitropic WSD and DEID will be responsible for development and coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration (preparation of invoices and maintenance of financial records).

Deliverables: (1) review of DWR Grant Contract; (2) project kick-off meeting with DWR personnel; (3) coordination of field visits with DWR personnel; (4) preparation of invoices and maintenance of financial records (5) preparation of Grant reimbursement requests; and (6) other deliverables as required.

Task 2 – Labor Compliance Program

Semitropic WSD and DEID will be responsible for evaluating the need for development of a Labor Compliance Program (LCP) plan for this project. If needed, the LCP will follow the rules of the California Department of Industrial Relations. Specifically, the LCP will enforce the prevailing wage requirements as stipulated in the Labor Code Section 1771.5. The LCP will accomplish the following: (1) Inform contractors about their prevailing wage obligations; (2) Monitor compliance by obtaining and reviewing certified payroll records throughout the construction of the project; (3) Investigate complaints and other suspected violations; and (4) Take appropriate actions when violations are found.

Deliverables: (1) prepare a Labor Compliance Program (LCP) Plan; and (2) enforce the LCP during the construction of the project.

Task 3 – Reporting

Semitropic WSD, in coordination with DEID, will be responsible for reporting on the financial status and project performance on a quarterly basis. Annual progress reports and a final project report will be prepared. In addition, the Project will comply with any other reporting requirements specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4 - Land Purchase/Easement

The two districts have already purchased the land for these two spreading basins to be used in this Project, therefore, no land purchase or additional easement agreements will be necessary.

Deliverables: N/A

Task 5 – Assessment and Evaluation

Assessment and evaluation of the project is complete inasmuch as the project is not expected to require a high level of engineering design. Planting recommendations are based on professional judgment and experience of agencies providing in-kind support.

Deliverables: Assessments and evaluations were completed by BLM Staff and additional technical review will be provided by the local Kern County Natural Resources Conservation Service (NRCS), no further funded actions are required.

Task 6 – Design

Preliminary grading plans and planting plans have been developed by Semitropic WSD in coordination with TBWP and the local Kern County or Tulare County NRCS. Accordingly, work under this task will include the districts finalizing the planting plan for purchase of Plant material and irrigation pipe.

Deliverables: Completion of project plans and specifications at the final level for purchase of project related materials.

Task 7 – Environmental Documentation

Pursuant to California Environmental Quality Act (CEQA) guidelines, the project is exempt.

Deliverables: Provide confirmation of environmental documentation.

Task 8 – Permitting

Deliverables: No permits are required.

Task 9 – Construction Contracting

For these two work sites, the work does not require formal plans and specifications. Work tasks to be completed for each site can be completed under simple work order requests initiated by district Staff. Thus, the activities related to construction contracting will be completed by district Staff and they include the following: (1) Evaluation of local cost proposals to conduct the work and (2) Issuance of the Notice to Proceed.

Deliverables: (1) evaluate cost proposal; and (2) issue the Notice to Proceed.

Task 10 – Construction

This involves the furnishing and installation of all Project works as listed in the budget and schedule. A contract for this task will be a simple award to a local grower or contractor with equipment (tractor and disc) to level the benches. Seeding of plant stock may be

accomplished with in-kind labor supplied by volunteer groups. (See task and subtask list in (Table 7) Project 3 Budget of Attachment 4 and Project 3 Schedule of Attachment 5).

Deliverables: Project works constructed as directed by District Staff.

Task 11 – Environmental Compliance

Environmental compliance will include normal monitoring of the site during activity that is in line with normal site maintenance. Task 13 comprises monitoring of establishment of the new riparian habitat to assure the Project goals are accomplished.

Deliverables: Comply with normal monitoring of site during activities.

Task 12 – Construction Administration and Management

This task involves district Staff communicating with a local grower or contractor to initiate and complete simple contractual work requests. Activities will include field visits and inspection of work for conformance with the work order request specifications.

Deliverables: (1) initiate work order requests; (2) review cost proposals and award work orders (3) field visits and documentation of completed tasks; ; (4) process invoices submitted for completed work; and (5) final payment for completion of work orders.

Task 13 – Monitoring, Assessment, and Performance Measures

This task involves some time for utilizing the Project specific monitoring tables as input for development of a proposal monitoring plan.

Deliverables: (1) Project implementing agency to use project specific monitoring tables to develop proposal monitoring plan with Poso RWMG; and (2) implementing agency to monitor performance measures; and (3) implementing agency to report monitoring results of project performance measures to the Poso RWMG on an acceptable schedule, such as an annual basis.

3.3.10 Appendices

Appendices for this Project 3 Work Plan include:

Appendix 3.3-1 Tulare Basin Wildlife Partners 2007 to 2009 Annual Reports

3.3.11 Tables

There are no tables for this section.



TULARE BASIN WILDLIFE PARTNERS
Creating Opportunities for Nature and People

Annual Report 2007-2009



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			5-Year Goals	P6		



TULARE BASIN WILDLIFE PARTNERS
Creating Opportunities for Nature and People

Annual Report 2007 - 2009

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C. Jeff Thomson

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Steve Laymon
Bill Loudermilk

Planning & Implementation Team

Sarah Campe
Bobby Kamansky
Johanna Kamansky
Stephen A. Laymon

Tulare Basin Wildlife Partners is a 501 (c)(3) non-profit dedicated to protecting, enhancing, and restoring wildlife and their habitats in the Tulare Basin. A copy of the latest financial statement and registration filed with the Registry of Charitable Trusts may be obtained by contacting the organization. Contributions are deductible to the extent allowed by law.

Dear TBWP partners, supporters, and friends,

I was reflecting recently on the amazing spring we experienced in the Tulare Basin, a region with less than 10 inches of rain each year. Our rains came often and at just the right time to turn Kings County's normally dry, golden Kettleman Hills into a floral carpet of brilliant color that surpassed any tapestry or manicured landscape. Our "Valley of tules", the richest agricultural area in the world, still encompasses remnant natural treasure – wetlands, prairie, and forests – that flourish side-by-side with productive grazing land, orchards, vineyards, and row crops. After collaborating with our agency and private partners for the past two years on comprehensive, forward-thinking landscape-level planning and research, we are excited about the opportunity to implement priority conservation projects that will help to maintain the phenomenal natural heritage we still enjoy today.

All of TBWP's Board members and advisors can look with pride at the collaborative projects already accomplished. We firmly believe that our community has the creativity and the will to turn back the hands of the "habitat loss clock" just a little. Together, we can devise creative approaches for sharing limited water resources with agricultural producers in ways that help restore some of the natural scenery. We can also once again make the Tulare Basin a popular destination for increasing numbers of sportsmen, nature-lovers, and tourists.



Rob Hansen, TBWP President. ©2010.

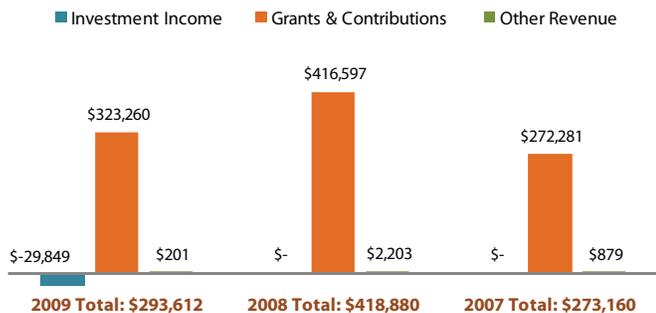
We have shown that wildlife and their habitats will continue to benefit from the partnering that is the Tulare Basin Wildlife Partners' trademark. Partnering provides multiple benefits to farming, water supply, water quality, flood control, air quality, and the local economy. This approach provides a blueprint for a more wildlife-friendly future for the Tulare Basin and a better quality of life for the current and future generations living in or visiting this area.

We do this work because we sincerely hope that children who grow up here can grow up in a healthy environment with an abundance of open space and wildlife; enjoying our surroundings enough that they may choose to settle here themselves. We thank you for your support of the Tulare Basin Wildlife Partners during its founding years and look forward to your help to make this vision a reality.

Sincerely,

Financial Statement 2007-2009

Support & Revenue



Expenses



	2009	2008	2007
Assets			
Savings & Temporary Cash Investments	\$104,319	\$142,578	\$88,110
Accounts Receivable	\$27,593	\$9,929	\$16,903
Other Assets	\$0	\$30,038	\$0
Total Assets	\$131,912	\$182,545	\$105,013
Liabilities			
Accounts Payable & Accrued Expenses	\$24,293	\$25,115	\$71,336
Notes Payable	\$0	\$0	\$2,500
Total Liabilities	\$24,293	\$25,115	\$73,836
Net Assets	\$107,619	\$157,430	\$31,177

TBWP partners with a wide range of public agencies and private organizations to secure funding and low-cost services for conservation, restoration and education projects in the Tulare Basin. 2007 - 2009 contributors included:

Grant Support

Bureau of Land Management
 California Partnership for the San Joaquin Valley,
Seed Grant Program
 County of Fresno
 County of Tulare
 Jiji Foundation
 Natural Resources Conservation Service
 Resources Legacy Fund Foundation
 U.S. Bureau of Reclamation, *Central Valley Project
 Conservation Program*
 U.S. Fish and Wildlife Service, Central Valley Joint
 Venture
 U.S. Fish and Wildlife Service, *Central Valley Project
 Improvement Act Habitat Restoration Program*
 U.S. Fish and Wildlife Service, Migratory Bird
 Program (Region 8)

Donors & Contributors

Anonymous
 Shauna & John Austin

Donors & Contributors (continued)

Combined Federal Campaign (Kern, Inyo & Mono
 Counties; Kings-Tulare Counties; Fresno-Madera
 Counties)
 Carole Combs
 Rob Hansen
 Carol Sellers Herbert & James K. Herbert
 Steve Laymon & Pam Williams
 Melissa McKibben
 Charlene & Dick Moss
 Bea & Kevin Olsen
 Nancy Robb
 RollGiving Matching Gifts (Paramount Farms)
 Tulare Basin Wetlands Association

Services

Artis & Company
 Conservation Strategy Group
 Pine, Pedroncelli & Aguilar
 Will Murray Company

Accomplishments

Between 2007 and 2009, TBWP completed important planning and research projects to direct future conservation efforts in the Tulare Basin. Then, with the groundwork in place, TBWP set to work implementing new opportunities through partner-driven, high-priority conservation projects that will benefit people and wildlife for years to come.

Planning & Research Projects

Collaborated with California Department of Fish and Game, U.S. Bureau of Reclamation, USDA Natural Resources Conservation Service and Tulare Lake Basin Working Group participants to develop the Tulare Basin Regional Conservation Plan, a comprehensive guide to protecting and restoring important seasonal and permanent wetlands, riparian areas, and upland habitat, benefitting wildlife and people in the Tulare Basin.

Completed a comprehensive watershed study of water flow, use, and management in the Tulare Basin. Developed strategies to assess, define, and obtain the water supply for high-priority, multi-purpose, conjunctive use conservation projects.

Prepared riparian and wildlife corridor studies and reports for the Tulare County Association of Governments and Council of Fresno County Governments.

Completed mitigation bank site recommendations for the Tulare County Association of Governments to enable the county to complete much-needed road and other transportation improvement projects while meeting state and federal environmental regulations.

Implementation Projects

Completed Phase 1 of a four-phase demonstration project in partnership with the Deer Creek and Tule River Authority to re-design an 105-acre recharge basin to allow for increased flexibility in water management for fall and winter migrating waterfowl habitat, brood water habitat for nesting ducks, groundwater recharge, and flood control.

Partnered with the Bureau of Land Management to restore 400 acres of marshes, sloughs, and ponds for important wetland-dependent plants and animals, such as herons, egrets, ducks, rails, and southwestern pond turtle, at the BLM's Atwell Island Project, near Alpaugh, California. Project includes a nature trail and viewing area that offer new education opportunities.

Assisted the U.S. Fish & Wildlife Service in undertaking a new program of voluntary conservation agreements on private wetlands near Kern National Wildlife Refuge.

Honors & Awards

Recognized by the Central Valley Joint Venture for conservation leadership in partnership building on behalf of the San Joaquin Valley's wildlife resources, particularly those involving wetlands and associated migratory bird habitats within the Tulare Basin. Acting executive director Carole Combs received this honor.

Carole Combs, acting executive director, was appointed to the State Watershed Advisory Committee to work with the Natural Resources Agency and the Department of Conservation to guide development and implementation of a statewide watershed program.

Restored wetland near Alpaugh, California. Johanna Kamansky ©2010.



Planning for Success

What does success look like? Often, success is measured in quantifiable results. The number of acres conserved or restored; or the number of school kids learning about a natural area, for example. But, before you can measure success, you must plan for it. So, that's exactly what the Tulare Basin Wildlife Partners (TBWP) did.

In 2005, the Tulare Lake Basin Working Group, an alliance of over 70 non-profit, agency and industry partners, directed TBWP to develop a comprehensive conservation plan for the Tulare Basin, built on, updating, and expanding existing conservation plans. Five years later, TBWP completed the Tulare Basin Regional Conservation Plan, a science-based, results-oriented, five-volume set that charts goals and strategies to protect and restore open space, natural habitat, and wildlife in the Tulare Basin.

The Tulare Basin Regional Conservation Plan studies one million acres on lands surrounding three of the historical lakes in the Tulare Basin, as well as the corridors that connect those areas to surrounding landscapes and the water supply needed for such conservation work. In-depth, science-based planning such as this is crucial to conservation project success. It determines the current status of wildlife, habitats, and water supply and prioritizes leading opportunities to protect, restore, and enhance habitat at the watershed and landscape scale.

Based on the information in the Tulare Basin Regional Conservation Plan and with input from the Tulare Lake Basin Working Group, TBWP developed a list of 67 priority projects for potential implementation over the next 10 years. From this list, 11 projects emerged as high-priority opportunities to protect or restore seasonal and permanent wetlands, riparian areas, and upland habitat, benefitting wildlife and people in the Tulare Basin. Criteria used to select the proposed projects included: wildlife value, water management, connectivity to other protected lands, availability of funding, and the availability of willing landowners. All projects provide opportunities for climate change adaptation and enhancement of degraded habitat.



Members of the conservation planning and implementation team. TBWP ©2008.

Take, for example, the four-phase Deer Creek/Friant Kern Canal Basin Modification and Environmental Groundwater Banking Project. This demonstration project, in partnership with the Deer Creek and Tule River Authority, implements structural and engineered improvements to an existing groundwater recharge basin to increase the acreage of managed wetland habitat for endangered species, breeding and migratory waterfowl and shorebirds, and Neotropical migrant birds. In addition, this project provides a model to demonstrate how water districts and NGOs, such as TBWP, can collaborate to improve flood storage and groundwater recharge; enhance wildlife habitat; generate baseline and ongoing monitoring data; and provide public recreation and education opportunities.

So, what does success look like? It's doing science-based research, creating a foundation of baseline information, making a plan, and implementing on-the-ground conservation with proven results. By taking a holistic view of the Tulare Basin, TBWP sets the stage for integrated, partner-driven success that will help mitigate the effects of climate change and provide new opportunities for people and wildlife for many years to come.

Five-Year Goals

Tulare Basin Wildlife Partners is a science-driven, collaborative organization that uses the most current and complete data to identify priorities and engage significant partners in pursuing its goals. Current five-year high-priority projects, grouped by watershed, include:

Implementation Phase

Deer Creek Riparian Corridor

Atwell Island Sustainable Wetland Project: Upgrade Ton Tache Wetland facilities, including: installing a lift pump to move water from the Homeland Canal to the wetland; installing a solar power generating station to ensure an affordable water supply; and reconditioning four wells and pumps.

Deer Creek/Friant Kern Canal Basin Modification & Environmental Groundwater Banking Project, Phase 2-4: Enhance and expand existing habitat and restore a more natural hydrologic regime to the area; develop public outreach and recreational opportunities; and create a watershed-wide resource management plan to coordinate resources and efforts between local, state, and federal entities, as well as other interested parties.

Kern River Riparian Corridor

Goose Lake Ephemeral Lake Conservation: Protect 4,100 acres in Goose Lake, including creating a new California Department of Fish & Game Wildlife Area, to conserve pristine grassland, shrubland, marshes & streams in the Tulare Basin's last ephemeral lake.

Planning Phase

Deer Creek Riparian Corridor

University of California Natural Reserve Research Station in the Tulare Basin: Establish a research station on the 8,000-acre Atwell Island Project to inform conservation and resource management about the effects of climate change on flora and fauna; upland, wetland, and riparian ecosystems; and salinization of agricultural lands.

White River – Allensworth Ecological Reserve Rehabilitation & Flood Control: Design a 4,000-acre flood control system that will protect important upland habitat for endangered wildlife, the town of Allensworth, and Colonel Allensworth State Historic Park.

Kern River Riparian Corridor

Goose Lake Wetlands Reserve Program Residual Value Purchase: Conserve 4,100 acres in Goose Lake by providing a secure water supply for wetlands and public recreational benefits via duck clubs on private land.

Kings River Riparian Corridor

Kings River Valley Oak Restoration: Restore 6,000 acres with valley oak riparian woodland, broadening the existing floodplain vegetation; provide flood control, groundwater recharge, and recreational opportunities.

Fresno Slough, Deer Creek, and Kern River Riparian Corridors

Finding Conservation Buyers for NRCS Wetland Easements: Identify and partner with conservation buyers to manage 15,000 acres of wetlands on lands protected through NRCS Wetland Reserve Program easements.

Poso Creek Riparian Corridor

West-East Pintail Slough: Construct a water facility and 7-mile conveyance system to enhance historical seasonal wetlands that benefit migratory water birds and shorebirds.

Semitropic Water Storage District Poso Creek Detention Ponds & Upland Enhancement: Restore 320 acres of native habitat; manage sediment deposition in detention ponds.

Semitropic Water Storage District, Pond-Poso Spreading Grounds Habitat "Bench" Management: Restore terraced "benches" surrounding 780 acres of recharge basins to native upland habitat; provide sites for spreading pond expansion on 640 acres.



Greater yellowlegs. Steve Laymon ©2007.

Tulare Lake Basin Working Group

Tulare Basin Wildlife Partners operates as the “action arm” of the Tulare Lake Basin Working Group, an alliance of 70+ agency, non-profit, and industry partners, with whom TBWP determines, funds, and implements conservation projects.

Agency Partners: Federal Government

- Naval Air Station Lemoore
- Central Valley Joint Venture (USFWS)
- Central Valley Shorebird and Waterbird Monitoring and Evaluation Group
- US Bureau of Land Management - Bakersfield Field Office
- US Bureau of Reclamation
- US Congressman Devin Nunes
- US Congressman Jim Costa
- US Congressman Kevin McCarthy
- US Department of Agriculture, Natural Resources Conservation Service
- US Environmental Protection Agency
- US Fish and Wildlife Service (USFWS)
- Kern National Wildlife Refuge
- USFWS Migratory Bird Program
- Pixley National Wildlife Refuge
- US Senator Barbara Boxer
- US Senator Dianne Feinstein

Agency Partners: State Government

- California Department of Fish and Game
- California Department of Parks and Recreation
- California Department of Conservation
- California Department of Water Resources
- Endangered Species Recovery Program, administered by CSU, Stanislaus Foundation
- Riparian Habitat Joint Venture (state-agency affiliated)
- University of California Berkeley, Department of City and Regional Planning
- University of California Merced, Sierra Nevada Research Institute
- Wildlife Conservation Board

Agency Partners: Local Government

- Deer Creek and Tule River Authority
- Fresno County Council of Governments
- Kern County Council of Governments
- Kern County Planning Department
- Kings County Association of Governments/
San Joaquin Valley Blueprint
- Kings County Planning Agency
- Semitropic Water Storage District
- Supervisor Allen Ishida, District 1,
Tulare County Board of Supervisors
- Supervisor Mike Ennis, District 5,
Tulare County Board of Supervisors
- Supervisor Ray Watson, 4th District,
Kern County Board of Supervisors
- Tulare County Association of Governments
- County Resource Management Agency
- Tulare County Water Commission

Industry Partners

- Conservation Strategy Group, LLC
- Greenbridges LLC
- Michael Nordstrom, Attorney at Law
- Paramount Farms
- URS Corporation
- Westervelt Ecological Services
- Wildlands, Inc.

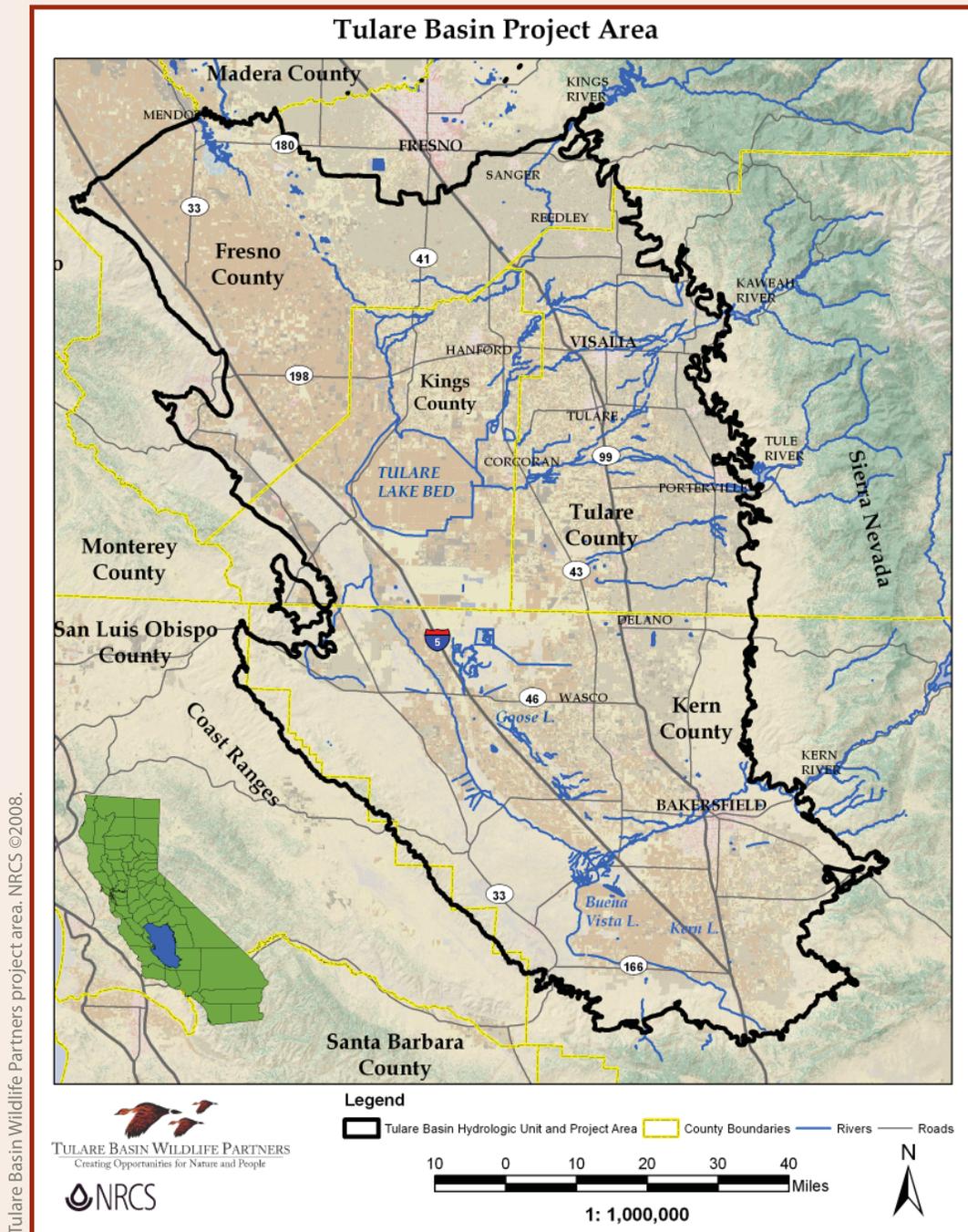
Non-Profit Partners

- American Farmland Trust
- American Land Conservancy
- Audubon California
- California Institute for Biodiversity
- California Outdoor Heritage Alliance
- California Partnership for the San Joaquin Valley
- California Watchable Wildlife
- California Water Institute
- California Waterfowl Association
- Center for Natural Lands Management
- Ducks Unlimited
- Great Valley Center
- Land Trust Alliance
- National Audubon Society
- Point Reyes Bird Observatory
- River Partners
- Sequoia Riverlands Trust
- Sustainable Conservation
- The Nature Conservancy
- Trust for Public Land
- Tulare Basin Wetlands Association
- Tulare County Audubon Society
- Tulare County Farm Bureau
- US Green Building Council Central California
- Water Education Foundation
- Western Rivers Conservancy

Water Work Group Partners

- Kaweah Basin Integrated Regional Water Management Planning Group
- Kern County Water Agency Integrated Water Management Planning Group
- Poso Creek Integrated Regional Water Management Group
- Southern Sierra Integrated Regional Water Management Planning Group
- Tulare Basin Integrated Regional Water Joint Powers Agreement
- Tule River Integrated Regional Water Management Planning Group
- Upper Kings Basin Integrated Regional Water Management Authority

About Tulare Basin Wildlife Partners



TBWP is a leadership and advocacy organization with a local focus that works to form partnerships, implement projects, educate the public and secure funding for wildlife and their habitats in the Tulare Basin.

We cooperate, coordinate, and collaborate with individual business, non-profit and agency partners to maximize the benefits of our shared wetland and upland resources. We strive to develop a regional identity where freshwater and saline wetlands and upland natural communities in the Basin can be protected, enhanced and restored as a microcosm

of the historic natural richness in a way that complements agricultural productivity and recognizes and expands the economy of the southern San Joaquin Valley.

Tulare Basin Wildlife Partners, a 501 (c) 3 non-profit organization, was established in May 2005 as a resource for the Tulare Lake Basin Working Group, an alliance of more than 70 public agencies and private entities who joined together in May 2003 to coordinate existing and future conservation projects in the Tulare Basin.

3.4 Project 4 – On-Farm Mobile Lab, Water Use Efficiency Services

Introduction

Project 4 - On-Farm Mobile Lab, Water Use Efficiency Services Project will allow the continued implementation of the Irrigation Mobile Lab Program and provide technical assistance and information for 12,000 acres of land within the Poso Creek IRWM Region. The specific activities that will be performed to construct the *On-Farm Mobile Lab, Water Use Efficiency Services* (Project 4) are presented in this Attachment. Project 4 budget and schedule are presented in the following Attachments 4 and 5.

3.4.1 Goals and Objectives

Project 1 accomplishes numerous goals and objectives of the Poso Creek Integrated Regional Water Management Plan (IRWMP). Exhibit 3.4-1 below presents a selection of the Poso Creek IRWM Plan Objectives, and how the Project Goals and Objectives coincide with them.

EXHIBIT 3.4-1

IRWM Plan Objectives	Project 4 Goals and Objectives
Enhance Water Supply Reliability of Surface Supplies	Project 4 will enhance Water Supply Reliability by developing irrigation efficiency improvements on 12,000 acres within the Region. Project 4 accomplishes the improvements through evaluation and instruction to growers in more efficient irrigation.
Maintain Groundwater levels at economically viable pumping lifts	More efficient irrigation will result in reduced pumping rates and less total withdrawal. Both reduced pumping rates and reduced withdrawal will lower pumping lifts and related energy costs.
Protect the quality of groundwater and enhance where practical	Declining water levels leads to certain water quality degradation such as higher TDS and Arsenic. The project would help avoid the need for costly water treatment.
Maintain water supply costs at a level commensurate with the continued viability of the agricultural economy which has developed in the area	Both reduced pumping rates and reduced withdrawal will lower pumping lifts and related energy costs.

3.4.2 Purpose and Need

This project will allow Mobile Lab services to an estimated 12,000 acres of irrigated farmland within the North West Kern Resource Conservation District (NWKRCDD) and all of Kern County. Information generated from irrigation system evaluations will provide information to the land owners that will enable them to better manage the water they have available to them by improving their irrigation scheduling, management and delivery methods. Thus, they will be able to improve their overall water use efficiency, and thereby conserve water, enabling them to also conserve energy through reduced pumping.

The Mobile Lab provides specific onsite information about irrigation system performance that will enable the water user to be more proficient maintaining application efficiency and at scheduling application.

In farming, irrigation water management is a critical component of a successful operation, yet it tends to be neglected in many instances. There is much a farmer can do to better utilize the water that is available to him, from land leveling, to the installation of a tail water return system, to the proper maintenance of a micro irrigation system. These are areas where the Mobile Lab will initially focus. Benefits include:

- Reduced energy costs for ground-water pumping;
- Avoid energy costs for (conveyance) pumping; and
- Reduce water treatment costs.

The proposed Project was an identified water management measure in the Integrated Regional Water Management Plan (Adopted July 2007) for the Poso Creek Region. This Region includes several water districts that share a common groundwater resource and collaborate in management of surface water supplies. In particular, the Project was determined to be a high priority with regard to achieving the goals set forth in the Plan, where the overarching goals area's improve water supply reliability and cost management for both the Poso Creek and Kern County Regions.

Beneficiaries within the Poso Creek Region include, but are not limited to, North Kern Water Storage District, Cawelo Water District, Kern-Tulare Water District, Semitropic Water Storage District and Shafter-Wasco Irrigation District.

Also benefiting would be districts outside the Region, both within and outside the service area of the North West Kern Resource Conservation District including: Improvement District No. 4 of the Kern County Water Agency (ID4), Lost Hills Water District, Arvin-Edison Water Storage District, Buena Vista Water Storage District, Kern Delta Water District, Tehachapi-Cummings County Water District, Southern San Joaquin MUD, Belridge Water Storage District, Henry Miller Water District, Wheeler Ridge-Maricopa Water Storage District, and Rosedale Rio-Bravo Water Storage District.

3.4.3 Project Abstract

Project 4 - On-Farm Mobile Lab, Water Use Efficiency Services, will provide irrigation efficiency assessments to approximately 12,000 acres in the Region. The Mobile Lab will provide assistance to agricultural landowners in the Region that would consist of on-farm irrigation system evaluations and would be available to farms of all sizes. Contact will be made directly with growers that might benefit from an on-farm analysis within water districts of the Region.

The evaluation or assessment process involved in observing a working irrigation system includes monitoring various components of the system. Those components will vary depending on the system type, of which there are basically only two. These two are surface (or gravity flow) systems, and pressurized systems.

1. Surface systems are made up primarily of two different types, including furrow and flood (Border Strip), which work on the same principle of advance and recession, taking into account flow rate and soil types.
2. Pressurized systems include the various types of sprinkler based systems (solid set, hand move, linear, undertree, micro, etc.), and are driven by pressure and flow rate. Observations in these systems are more extensive due to the nature of the system (i.e. a lot more hardware involved in the delivery of the water). There is even a break down between an impact type sprinkler system and a micro system, with even more to observe in the latter.

3.4.4 Integrated Elements of Project

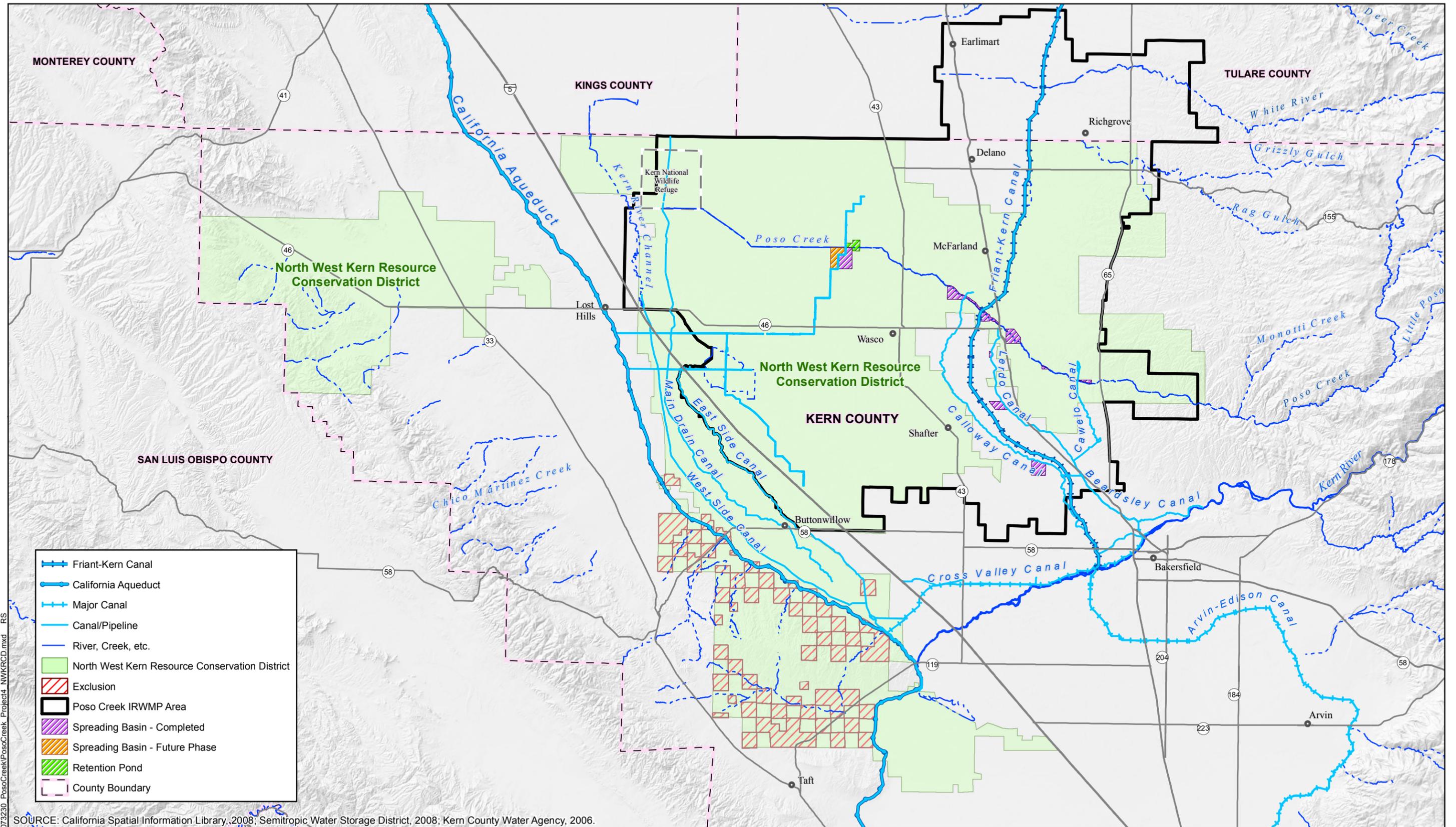
Funding for the On-Farm Mobile Lab, Water Use Efficiency Services Project has been identified and vetted during the regular implementation meetings of the Poso Creek IRWM Plan. This Project was recommended as a regional Project that supports water use efficiency throughout the Region. The NWKCD is a member of the Poso Creek IRWM Regional Water Management Group that has been meeting regularly since adoption of the Plan. During the past year, the Poso RWMG has identified the need to secure supplemental matching funds to ensure the On-Farm Mobile Lab services will continue in the Region.

The Poso Creek Plan identified non-structural and structural projects that focused on providing benefit towards meeting the Region's highest priority; regaining water supply reliability lost to the Region. This non-structural Project has a direct benefit of identifying on-farm methods to improve efficient use of water supply and reduce on-farm applied water.

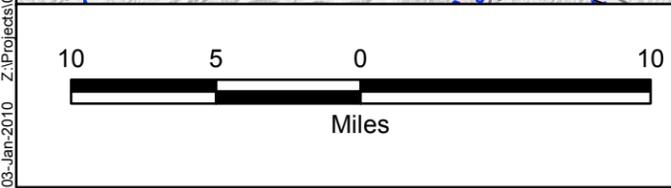
This project integrates with all other proposed projects because improved irrigation efficiency would make all system operations more efficient through enhanced flexibility, make proposed improvements more effective and thereby reduce both the dependence on surface water importation and reduces energy costs.

3.4.5 Project Map

The On-Farm Mobile Lab, Water Use Efficiency Services is a regional project, serving areas the within and surrounding the Poso Creek Plan Region shown on Figure 3.4-1 except urban areas with identified communities.



SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2006.



Poso Creek IRWMP Implementation
Grant Proposal

Poso Creek IRWMP Region



ON-FARM MOBILE LAB, WATER USE EFFICIENCY SERVICES
PROJECT 4 LOCATION

JANUARY 2011

FIGURE 3.4-1

03-Jan-2010 Z:\Projects\073230 PosoCreek\PosoCreek Project4 NWKRCDC.mxd RS

3.4.6 Completed Work

The Mobile Lab is operated by the NWKRCDD and has successfully served the Region for several years; the additional funding would allow expanded operation. Because there are no project development costs, and no prior services will be considered as part of the project for the purposes of the grant application, there is no “complete work” per se for this project and no prior tasks are included as project costs for reimbursement or counted as eligible for cost match.

3.4.7 Existing Data and Studies

The following technical reports identified the value of Mobile Lab analysis and support the implementing this project within the Poso Plan Region.

- Poso Creek IRWM Plan, adopted July, 2007
- Annual Mobile Lab Reports for the NWKRCDD’s Long Range Work Plan

3.4.8 Project Timing and Phasing

This project is not part of a multi-phased project; it is a standalone project and is fully functional without implementation of subsequent projects. The Project will be completed over a 2-year period.

Implementing Agency and Management of Project

The proposed Project will be performed under the direction of North West Kern Resource Conservation District, in coordination with water suppliers and landowners in the Poso Creek Region and Kern Region. The Mobile Lab is operated by the North West Kern Resource Conservation District (NWKRCDD) and has successfully served the Region for several years. NWKRCDD will manage the day to day operations of the Mobile Lab and be responsible for preparation of all reports to the Poso Creek RWMG and adhering to grant conditions pertaining to their work.

3.4.9 Tasks

Task 1 –Project Administration

Activities include coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration (preparation of invoices and maintenance of financial records). These activities will be performed by the Poso Creek RWMG and NWKRCDD.

Deliverables: (1) review of DWR Grant Contract; (2) project kick-off meeting with DWR personnel; (3) coordination of field visits with DWR personnel; (4) preparation of invoices

and maintenance of financial records (5)preparation of Grant reimbursement requests; and (6) other deliverables as required.

Task 2 – Labor Compliance Program

Since the NWKRCDC is a Federal entity and any work would be conducted through the NWKRCDC, they will evaluate the need for a plan for this Project to follow the Labor Compliance Program (LCP) rules of the California Department of Industrial Relations.

Deliverables: Determination regarding Project need to prepare a Labor Compliance Program (LCP) Plan.

Task 3 – Reporting

Report on the financial status of the project will be provided on a quarterly basis. However, the Mobile Lab program prepares its reports annually so that project performance will be provided on an annual basis. A final project report will be prepared. In addition, the Project will comply with any other reporting requirements specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement by the Poso Creek RWMG.

Task 4 - Land Purchase/Easement

No land acquisition or easements are necessary for this project.

Task 5 – Assessment and Evaluation

The number of field visits and acres evaluated will be included in the Mobile Lab annual report for the region. Assessment and evaluation of water conserved through the project will be performed by Mobile Lab personnel in follow-up assessments and summarized in their annual reports.

Deliverables: Assessments and evaluations contained in the Mobile Lab annual report to the NWKRCDC and Region.

Task 6 – Design

The Mobile Lab program is well established and relies on proven, documented and defined USDA and UC Cooperative Extension Program methodology. Therefore no final design is necessary.

Deliverables: No project plans and specifications will be developed.

Task 7 – Environmental Documentation

This project is exempt for CEQA and NEPA.

Deliverables: Basis for categorical exemption will be filed at initiation of project.

Task 8 – Permitting

No permitting is required for any elements of Mobile lab assessment work. In the unlikely event that landowners need permits for recommended modifications to their irrigation systems, those actions would be considered separate and independent projects.

Deliverables: No permits are required.

Task 9 – Construction Contracting

Mobile Lab assessment work requires no construction. In the unlikely event that landowners need permits for recommended modifications to their irrigation systems, those actions would be considered separate and independent projects.

Deliverables: No construction will occur as part of Mobile Lab assessments so no construction deliverables will be developed.

Task 10 – Construction

Mobile Lab assessment work requires no construction. In the unlikely event that landowners need permits for recommended modifications to their irrigation systems, those actions would be considered separate and independent projects.

Deliverables: No construction will occur as part of Mobile Lab assessments so no construction deliverables will be developed.

Task 11 – Environmental Compliance

Mobile Lab assessments involve no activities that require monitoring or environmental compliance.

Deliverables: No environmental compliance report is necessary.

Task 12 – Construction Administration and Management

Mobile Lab assessment work requires no construction. In the unlikely event that landowners need permits for recommended modifications to their irrigation systems, those actions would be considered separate and independent projects.

Deliverables: No construction will occur as part of Mobile Lab assessments so no construction deliverables will be developed.

Task 13 – Monitoring, Assessment, and Performance Measures

This task involves some time for utilizing the project specific monitoring tables as input for development of a proposal monitoring plan.

Deliverables: (1) project implementing agency to use project specific monitoring tables to develop proposal monitoring plan with Poso RWMG; and (2) implementing agency to monitor performance measures; and (3) implementing agency to report monitoring results of project performance measures to the Poso RWMG on an acceptable schedule, such as an annual basis.

3.4.10 Appendices

Appendices for this Project 4 Work Plan include:

Appendix 3.4-1 NWKRCD 2009 Annual Report

3.4.11 Tables

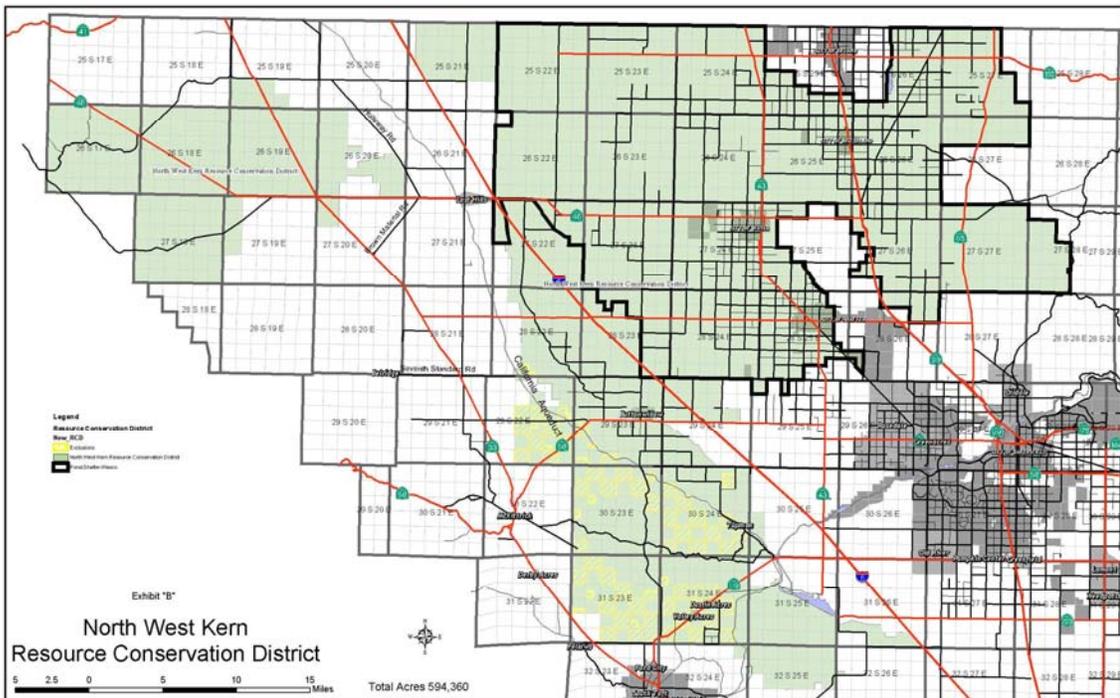
There are no tables for this section.

2009

Annual Report

of the

North West Kern Resource Conservation District



2009 ANNUAL REPORT

of the

NORTH WEST KERN

RESOURCE CONSERVATION DISTRICT

5000 California Avenue, Suite #100

Bakersfield, CA 93309

DISTRICT DIRECTORS

President	- <i>Craig Fulwyler</i>
Vice-President	- <i>Jim Grundt</i>
Secty-Treasurer	- <i>Stephen Fanucchi</i>
Director	- <i>Bryan Bone</i>
Director	- <i>Dave Cosyns</i>
Director	- <i>James Forrest</i>
Director	- <i>Robert Heely</i>
Director	- <i>Don Palla</i>
Director	- <i>Matthew Haddon</i>

DISTRICT EMPLOYEES

District Manager	- <i>Brian Hockett</i>
District Secretary	- <i>Christine Aguirre</i>
Irrigation Technician	- <i>Laura Hockett</i>

NATURAL RESOURCES CONSERVATION SERVICE PERSONNEL

District Conservationist	- <i>Carolyn LoFreso</i>
Soil Conservationist	- <i>Raul Ramirez</i>
Soil Conservationist	- <i>Whitney Haraguchi</i>
Soil Conservation Tech.	- <i>James Booth</i>
Engineer	- <i>Jose Lule</i>
Farm Bill Assistant	- <i>Kathy Fuller</i>
Farm Bill Assistant	- <i>Ray Tolentino</i>

GENERAL INFORMATION

The North West Kern Resource Conservation District has pursued the goals of the District's Long Range Work Plan to the best of its ability. The district consists of 594,360 acres, reaching as far west as the north western portion of Kern County, then along the county line east of Delano, and then almost as far south as Taft, with areas in between that are not included in the boundaries.

ACKNOWLEDGMENT

The Natural Resources Conservation Service (NRCS) provided assistance to the RCD through in-kind services, of which involved the usage of office space, information, materials within the office and office personnel.

ASSISTANCE

The RCD has provided secretarial assistance to the NRCS to process 118 incoming and outgoing Environmental Quality Incentive Program (EQIP) applications for payment, login 66 2010 EQIP referrals for the upcoming year, as well as administrative assistance in handling various tasks that occur on a daily basis.

CONFERENCES

1. Attended the California Irrigation Institute's 47th Annual Conference on Feb. 3 - 4 at the Embassy Suites in Sacramento. Participated in a tour of the Yolo County Flood Control District on 2/2 before the start of the conference.
2. Attended the Annual Conference of the California Association of Resource Conservation Districts on November 19-21 at Squaw Creek in Olympic Valley at Lake Tahoe.

MEETINGS

1. Regular meetings of the RCD were held on the third Wednesday of the month at noon at Don Pericos in Shafter.
2. Participated in quarterly Steering Committee meetings held in Fresno for the San Joaquin Valley Resource Conservation & Development (RC&D) Area. This area includes Kern, Tulare, Fresno, Madera, Merced, and Stanislaus Counties. The mission of the RC&D is to make available the total resources of the USDA and other public-private partnerships to build relationships, create financial leverage, and increase the capability of communities to address rural and economic development.

There are currently 375 RC&D's nationwide, with ten in California. The San Joaquin

Valley RC&D still has not been authorized by Congress, but has applied for and received its 501(c)(3) status with the federal and state government. Upon authorization, the SJVRC&D will be able to hire a coordinator to manage the organization. The District Manager of the North West Kern RCD serves as Treasurer for this organization.

3. Participated in steering committee meetings for the Poso Creek Integrated Regional Water Management Plan at the Semitropic Water Storage District on the 1st Tuesday of each month.

4. Conducted monthly safety meetings throughout the year for district employees, as well as for USDA/NRCS employees.

5. Attended and participated in an 'Almond Field Day' in the Belridge area on July 13, sponsored by the University of California Cooperative Extension (UCCE). Farm Advisor Blake Sanden shared results of trials conducted that looked at different amounts of water applied as it relates to yield.

6. Met with members of the agriculture industry on Sept. 22nd at the request of the Almond Board of California to provide expertise for a Sustainability Program that will be made available to almonds growers throughout the State. This program will look at various aspects of the farming operation in order to promote more efficient practices.

7. Participated in the Environmental Quality Incentives Program (EQIP) Local Work Group Developmental meeting on November 6 in the NRCS conference room to determine which practices would be cost-shared and to set the cost share level for each. This group is made up of local RCD directors, USDA employees and University of California Cooperative Extension personnel.

WORKSHOPS

1. Participated in an Irrigation Workshop on March 31st the Kern Ag Pavilion. The event was sponsored by the UCCE (Farm Advisor, Blake Sanden), and the North West Kern RCD (District Manager, Brian Hockett). Lunch was provided by various irrigation companies including Ag Quest, Britz Fertilizer, Dellavalle Labs, Harmon Int., Hydratec, Irrometer, MK Hanson, Netafim, Pure Sense, U.S. Irrigation and Western Farm Service.

Topics covered included:

- Irrigation System Uniformity (Brian Hockett – Mobile Irrigation Lab)
- NRCS Cost Share for micro systems (Carolyn LoFreso – NRCS)
- Pump Improvement Rebate Program (Pete Canessa – CIT, Fresno State)
- Ground Water Supply Trends (Kern County Water Agency)
- Crop Salt Tolerance for Trees/vines (Blake Sanden – UCCE)
- CIMIS Weather Data, Crop Coefficients (Blake Sanden)
- Deficit Irrigation in Pistachios and Citrus (Craig Kallsen – UCCE)
- Deficit Irrigation in Almonds using a pressure bomb (Ken Shakel – UC Davis)
- Panel discussion with local irrigation managers and consultants

2. Participated in an Irrigation Workshop at the Center for Irrigation Technology (CIT) at Fresno State on April 22nd. The event was titled “Managing Irrigation in a Water Short Year” and was sponsored by Pure Sense, an irrigation water management company.

Topics covered included:

- Vineyard tour to demonstrate soil moisture monitoring equipment (Matt Angell – Pure Sense)
- Irrigation System Uniformity (Brian Hockett – Mobile Irrigation Lab)
- Irrigation Pump Efficiency (Bill Green – CIT)
- Knowing Your Soils (Dr. Florence Cassle – CIT)
- Creating a Field Water Balance for Optimum Irrigation Scheduling (Blake Sanden)
- Tools and Information for Irrigation Planning and Scheduling (Matt Angell)
- Growers perspective – Panel discussion

AGREEMENTS

1. United States Bureau of Reclamation (USBR) Agreement R09AP20007, Water Conservation Field Services Program, Irrigation System Evaluations for Friant Water Users.
2. Natural Resources Conservation Service Cooperative Agreement No. 65-9104-9-715, to accelerate implementation of USDA Farm Bill Programs.

EVENTS

1. Participated in the California Envirothon at Felton, CA, near Santa Cruz on April 30th as a preliminary orals judge. This event brings high school age youth together in a setting that tests them in the areas of soils, aquatics, forestry and wildlife. A current issue is also included in the overall program that helps tie all of the topics together. This year’s current issue was on the “Protection of Ground Water through Urban, Agricultural and Environmental Planning.”

POSO CREEK

1. Maintenance work was completed by the North Kern Water Storage District in the stretch of Poso Creek east of Leonard Avenue to remove dead tree limbs, as well as islands in the middle that could potentially impede the flow of water during a flood event.
2. An Easement Deed was completed with the Semitropic Water Storage District to allow access to Poso Creek for the purpose of placing a pipeline across the creek for water conveyance from one side to the other in three separate locations.

FUNDING

The Mobile Lab is funded mostly by local agencies, such as the Kern County Water Agency, Water Districts, and Resource Conservation Districts. In addition, the North West Kern RCD received funds from the United States Bureau of Reclamation for Mobile Lab evaluations in and outside of Kern County. The Natural Resources Conservation Service provided funding for evaluations conducted as follow up for the EQIP program.

Contributions to the Mobile Lab for the 2009-2010 fiscal year were as follows:

1. Kern County Water Agency	\$	25,000.00
2. North Kern WSD	\$	6,000.00
3. Lost Hills WD	\$	3,000.00
4. Arvin-Edison WSD	\$	6,000.00
5. Buena Vista WSD	\$	5,000.00
6. Kern Delta WD	\$	4,000.00
7. Cawelo WD	\$	5,000.00
8. Semitropic WSD	\$	6,000.00
9. Shafter-Wasco ID	\$	6,000.00
10. Tehachapi-Cummings CoWD	\$	1,000.00
11. Southern San Joaquin MUD	\$	3,000.00
12. Belridge WSD	\$	2,500.00
13. Henry Miller WD	\$	2,500.00
14. Kern Tulare WD	\$	750.00
15. Wheeler Ridge-MWSD	\$	3,500.00
16. Rosedale Rio-Bravo WSD	\$	750.00
18. Other	\$	8,500.00
19. Evaluations	\$	10,000.00
20. USDA-NRCS EQIP Grant	\$	20,000.00
21. USBR - Mobile Lab Evaluations	\$	50,000.00
Total contributions -	\$	168,500.00

MOBILE LAB PROGRAM ANNUAL PROGRESS REPORT

For services performed from January 1, 2009 to December 31, 2009.

IRRIGATION SYSTEM EVALUATIONS

A total of 118 evaluations were conducted on 12,748 acres during the 2009 irrigation season.

Table 1. Summary of evaluations conducted.

System Type	Number of Evaluations	Acres Evaluated	Average DU (%)
Micro Drip	61	8250	87
Micro Sprinkler	54	4181	86
Buried Drip	1	80	72
Permanent Undertree Spr	2	237	85
Totals	118	12748	

Table 2. Evaluation summary by system type.

System Type	Crop	DU (%)	Acres
Micro/drip	Almonds	99	75
	almonds	98	78
	almonds	95	126
	almonds	79	165
	almonds	83	307
	almonds	87	78
	almonds	91	154
	almonds	86	119
	almonds	74	176
	almonds	99	58
	almonds	98	75
	almonds	98	150
	almonds	97	76
	almonds	79	163
	almonds	95	163
		Citrus	91
	citrus	98	150
	citrus	91	20
	Figs	91	74
	Grapes	95	28
	grapes	91	62
	grapes	97	71
	grapes	94	74
	grapes	78	320
	grapes	73	53
	grapes	89	38
	grapes	19	151
	grapes	32	153
	grapes	75	154
	grapes	60	320

Table 2 (con't). Evaluation summary by system type.

System Type	Crop	DU	Acres
<i>Micro/drip (con't)</i>	almonds	84	75
	almonds	75	76
	almonds	93	40
	almonds	66	115
	almonds	97	148
	Grapes	91	310
	grapes	89	310
	grapes	88	20
	grapes	91	40
	grapes	95	40
	grapes	92	40
	grapes	79	96
	grapes	96	37
	grapes	83	50
	grapes	63	54
	grapes	NA (*)	124
	grapes	83	70
	grapes	80	116
	grapes	95	42
		Nectarines	83
	Pistachios	97	152
	pistachios	97	28
	pistachios	89	72
	pistachios	83	75
	pistachios	89	385
	pistachios	97	386
	pistachios	94	135
	pistachios	98	170
	pistachios	97	152
	pistachios	97	228
	pistachios	93	312
	pistachios	98	420
	pistachios	97	343
	pistachios	96	135

(*) NA – This was a pressure test only, no flow catches were made.

Table 2 (con't). Evaluation summary by system type.

<u>System Type</u>	<u>Crop</u>	<u>DU</u>	<u>Acres</u>
--------------------	-------------	-----------	--------------

<i>Micro/sprinkler</i>	Almonds	86	160
	almonds	82	165
	almonds	93	158
	almonds	92	78
	almonds	94	75
	almonds	85	182
	almonds	90	20
	almonds	89	240
	almonds	94	70
	almonds	92	144
	almonds	90	140
	almonds	91	160
	almonds	92	90
	almonds	81	77
	almonds	91	140
	almonds	88	141
	almonds	93	40
	almonds	87	80
	almonds	89	75
		Citrus	76
	citrus	94	20
	citrus	89	75
	citrus	77	46
	citrus	93	25
	citrus	87	40
	citrus	96	20
	citrus	93	22
	citrus	90	60
	citrus	78	80
	citrus	82	80
	citrus	84	60
	citrus	91	110
	citrus	83	114
	citrus	77	40
	citrus	81	60
	citrus	89	40
	citrus	91	45
	citrus	50	30
	citrus	79	40
	citrus	83	34
	citrus	87	77
	citrus	68	43

Table 2 (con't). Evaluation summary by system type.

<u>System Type</u>	<u>Crop</u>	<u>DU</u>	<u>Acres</u>	
<i>Micro/sprinkler (con't)</i>	citrus	76	40	
	citrus	91	75	
	citrus	75	25	
	citrus	NA (*)	50	
	citrus	87	25	
	citrus	89	22	
	citrus	91	85	
	citrus	92	69	
	citrus	86	70	
	citrus	84	80	
		Figs	85	20
		Pistachios	85	104
	<i>Undertree Sprinkler</i>	Almonds	86	152
Figs		84	86	

(*) NA – This was a pressure test only, no flow catches were made.

OBSERVATIONS AND RECOMMENDATIONS

Micro-Irrigation Systems

The main cause of non-uniformity during the irrigation season was due to a variation in system pressures. These variations were typically due to improperly set control valves. Another cause of the variations was attributed to plugged hose screens. In some cases, growers had removed the hose screens completely in order to remedy the problem, but this can potentially lead to other complications, such as plugged emitters.

Other observations and recommendations made during the season included:

1. Flow Meter – This is an indispensable management tool that can help to monitor the amount of water applied throughout the season. Also, checking the flow meter frequently can help to detect system problems. For example, a steady decline in flow rate may indicate pump wear or a drop in the water level of a well. A slight decline in flow rate can indicate emitter plugging as well.
2. Flush-outs – Manifold flush-outs should be opened periodically to flush out silt and debris that was not removed by the filters. The frequency that is necessary will depend on the size of the manifold and the effectiveness of the filters.
3. Hose Flushing – With micro-irrigation systems, it is very important to periodically undo the ends of each individual line and flush the dirt and debris from it. If this is not done on a regular basis, the water in the hoses can become very dirty and even plug the emitters. This should be done as often as necessary depending on the quality of the irrigation water.
4. Emitter Plugging – With micro-irrigation systems, bacteria and algae can build up inside the hoses and emitters and may eventually cause plugging. This can be avoided by regularly injecting chlorine or acid into the system, or some type of material that will promote the breakdown of these clogging agents.

5. Flow Control Nozzles – In a number of evaluations conducted throughout the summer, these nozzles were a cause of pressure differences that lead toward system non-uniformity. It was not that the nozzles were not working properly, but that some of them were missing, thus not providing the proper flow rate to a given hose line to allow for a uniform application of the irrigation water within an orchard.
6. Hose Screens – Valuable for removing large particles that may have escaped from the filter system. However, they can become plugged with algae or debris, thus reducing pressure to a given hose line, and thereby decreasing uniformity to the overall irrigation system. This was found to be the case in many situations throughout the irrigation season. Chlorine injection can prevent this from occurring, however, hose screens should be checked periodically for clogging. If they are clogged, they can be rinsed clean or replaced.
7. Leaks – It is important that irrigation workers are aware of leaks due to damaged hoses, missing emitters, etc. Even a small leak can reduce the pressure in a line and cause a non-uniform application of water.
8. Different Emitter Types – Mixing emitters can adversely affect the distribution uniformity by applying more or less water to those plants with different emitters. Emitters are often mixed accidentally by irrigation workers when they come across a broken or plugged emitter in the field. When repairing these emitters, they may sometimes substitute a different emitter type because it is the only one available at the time. It is essential in this situation to match the replacement emitter with the existing ones in the field in order to maintain the proper flow and uniformity of the irrigation system.

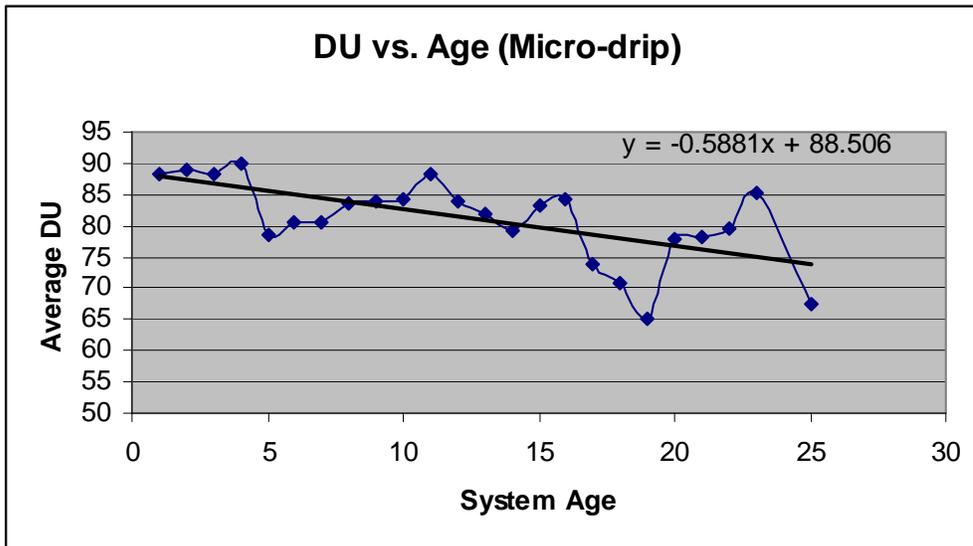
Summary of Average DU vs. System Age for Micro-drip and Micro-sprinkler Irrigation Systems

Over the life of an irrigation system, there will always be things that go wrong or break down as the system ages. This is a given, but there are things that the irrigator in the field can do to maintain or prolong the life of a system under his or her care as is mentioned above. To highlight the degradation of an irrigation system as it grows older, a comparison was made of the average DU as it relates to the age of a system with the DU being affected mostly by pressure differences and emitter plugging.

Looking at the charts below, the progression of decline is apparent as the system ages, but not in a steady manner, as one might think it would. This is due in part to the number of evaluations completed for a given age bracket. This becomes apparent when looking at the progression for the drip system at 23 years of age and where the uniformity is still quite high. There were only 3 evaluations conducted for that age bracket, which might indicate that more were needed for a better sample. However, this doesn't always hold true, even at ages where there were a lot of tests conducted, the uniformity can still be way above or below the line. This is probably due to the amount of maintenance, or lack thereof, that was conducted on those systems, where some were obviously taken care of better than others.

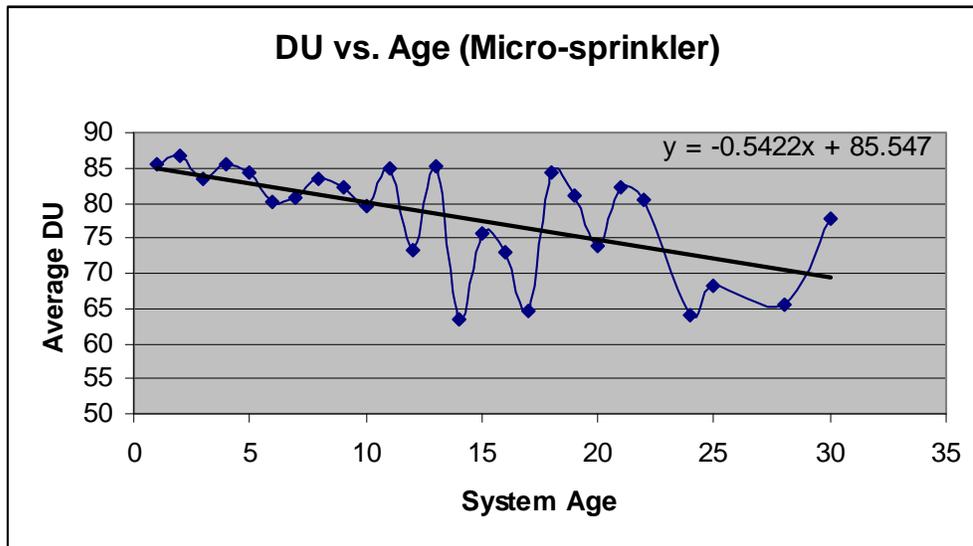
Possible sources of error:

- Some values for age may be uncertain
- Omitting evaluations from which the age value was missing



System Age	# of Evaluations Conducted
1	83
2	30
3	23
4	16
5	15
6	20
7	16
8	35
9	13
10	29
11	10
12	22
13	7
14	12
15	16
16	5
17	3
18	7
19	6
20	22
21	3
22	11
23	3
25	12

Regardless of how old an irrigation system is the key to having a high performing one is consistent maintenance and following the recommendations mentioned above.



System Age	# of Evaluations Conducted	99
2	44	
3	37	
4	42	
5	38	
6	27	
7	30	
8	28	
9	15	
10	38	
11	9	
12	10	
13	5	
14	2	
15	22	
16	1	
17	3	
18	8	
19	1	
20	17	
21	4	
22	2	
23	2	
24	8	
25	2	
30	4	

Success Stories

In one situation, emitter uniformity was very low (less than 25%) due to calcification. In areas throughout the orchard, some hose lines had as many as six emitters plugged in a row. A recommendation was made to inject acid into the system in order to dissolve the

deposits and put them back into solution. This was done and a follow-up evaluation was conducted some weeks later. The subsequent test revealed that system uniformity had increased to 95%.

In many situations throughout the season, it was found that pressure variation was a big contributor to system non-uniformity. The cause of this problem was due to several factors, including improperly set regulating valves, plugged hose screens, and missing flow control nozzles. By resetting the valves, cleaning the hose screens, and/or replacing the flow control nozzles, most of the problems that occurred in these systems were rectified. With the elimination of these problems, overall system uniformity improved dramatically, as shown through later tests.

Preparing for the 2010 irrigation season

As growers are getting ready for the upcoming season, the Mobile Lab will be available to assist them with their irrigation needs. Being an efficient irrigation water manager is essential in today's environment, as we are faced with many water related issues that will impact the way we do business in the future.

3.5 Project 5 – DAC Fund for Feasibility-Level Studies and Well Destruction Program

Introduction

Project 5 is primarily designed to provide funding to address two critical water supply needs for several disadvantaged communities (DACs) in the region and secondary to enhance the working relationships among communities of various sizes by:

1. Performing feasibility and engineering studies necessary to construct facilities to solve defined water supply problems in several DACs including:
 - Allensworth Community Services District
 - Ducor Community Services District
 - City of Wasco
 - City of Delano
 - Lost Hills Utility District

The project will address critical water supply needs in these DACs by providing funding for project development not available from other sources.

2. Identifying and properly destroying of up to 30 unused wells that contribute to DAC water quality problems. Contribution to well destruction costs will motivate landowners to accelerate proper permanent abandonment of unused wells that due to poor design or deterioration may allow contaminants to enter production zones used for DAC supply.

The program would be administered under the direction of Semitropic WSD in collaboration with the affected DACs and community interest groups as well as the Counties of Kern and Tulare. Project 5 budget and schedule are presented in Attachments 4 and 5. Additional information is included in Appendix 3.5-1 to this Section 3.5.

3.5.1 Goals and Objectives

Project 5 accomplishes multiple goals and objectives of the Poso Creek Integrated Regional Water Management Plan (IRWMP). Exhibit 3.5-1 below presents a selection of the Poso Creek IRWM Plan Objectives, and how the Project Goals and Objectives coincide with them.

EXHIBIT 3.5-1

IRWM Plan Objectives	Project 6 Goals and Objectives
Enhance Water Supply Reliability of Surface Supplies	Project 5 will provide funding in at least 5 DAC areas to address critical water supply and/or water quality issues.
Protect quality of groundwater and enhance where practical	Each DAC will be able to pursue funding for projects that are fully engineered and designed.
	Destruction of problem wells will reduce potential contamination in DAC supplies.
Maintain water supply costs at a level affordable to DAC communities and the continued viability of the agricultural economy which has developed in the area	Project 5 will provide the subject DACs with the means to implement a more reliable water supply system and within each community's financial resources.

3.5.2 Purpose and Need

Project 5 will address critical water supply needs in DACs by providing funding for project development and proper well destruction not available from other sources. Project funding will be used to:

1. Perform feasibility studies, environmental and engineering work necessary to construct facilities to solve defined water supply and/or quality problems, and
2. Buy down the cost of destroying unused wells that pose a threat to DAC and regional water supplies.

Some of the DAC communities do not have the resources to fund feasibility studies environmental and engineering work needed to secure funding to construct facilities that would solve their problems. As a result of the project, several DACs will be provided the necessary funding resources to develop the materials to proceed with application for project construction funding and subsequently request construction bids.

Agricultural owners often regard unused wells as potential backup in the event that additional supplies are needed. However, many of these unused well are often older wells constructed without regard to isolating poor quality zones and have deteriorated with time, in either case potentially allowing poor quality water to enter higher quality production zones. This can contribute significantly to water quality problems in near-by urban supply wells. Two common contaminants in DAC water supply wells are Arsenic and Nitrate (discussed below).

Of the contaminants found in the Poso IRWM Plan area's groundwater, there are two primary contaminants generally found in the groundwater used by DACs as their drinking water. These are nitrate and arsenic. Each of the DACs supported in this project rely exclusively on pumped groundwater for its municipal needs. When the EPA reduced the MCL for arsenic in drinking water from 50 ppb to 10 ppb with a compliance date of January,

2006, several DAC wells failed to meet the new MCL. The lower standard was adopted because living with arsenic-contaminated wells poses a serious health threat to DAC residents in particular. In the Poso Creek Region arsenic is a highly prevalent naturally occurring element in the groundwater due to the natural geology, predominantly found in the deeper parts of the aquifer.

Another serious contaminate in the Poso IRWM Plan area groundwater is Nitrate. While nitrate is naturally occurring in soil, Nitrate in drinking water can come from natural, industrial, or agricultural sources (including septic systems, storm water run-off, and fertilizers). Levels of nitrate in drinking water can vary throughout the year. Due to its high mobility, nitrate can easily leach into groundwater. Possible health effects from short-term exposure to nitrates in drinking water can result in methemoglobinemia or Blue Baby Syndrome. Infants below the age of six months who drink water containing nitrate in excess of the MCL may quickly become seriously ill and, if untreated, may die because high nitrate levels can interfere with the capacity of the infant's blood to carry oxygen. Symptoms include shortness of breath and blueness of the skin. .

Regionally water levels in area wells have dropped substantially in dry years such as 2007 and 2008. This is because during dry years there is less surface water supplies diverted into the Region to support the local irrigated agriculture, urban, and environmental water uses. To the extent that surface water supplies are reduced, groundwater pumping for irrigation is increased. Inasmuch as the DACs and the surrounding agriculture rely on a common groundwater basin, agricultural pumping affects municipal pumping and vice versa.

The proposed Project was added to the Integrated Regional Water Management Plan for the Poso Creek Region after its adoption in collaboration between the RWMG and representatives from DAC communities. This Region includes the Applicants and several other water districts that share a common groundwater resource. In particular, the Projects were determined to be a high priority with regard to achieving the goals set forth in the Plan, where the overarching goal is improve water supply reliability and quality of supplies delivered to DAC areas within the Poso Creek Region.

3.5.3 Project Abstract

Project 5 is designed to provide funding to address two critical water supply needs for several disadvantaged communities (DACs) in the region and to enhance the working relationships among communities of various sizes and the agricultural water districts these communities depend on for replenishing the common groundwater basin by:

1. Performing feasibility studies, environmental documents and engineering necessary to construct facilities to solve defined water supply and/or quality problems in several DACs and

2. Identify and fund proper destruction of up to 30 unused wells that contribute to DAC water quality problems. Contribution to well destruction costs will motivate landowners to accelerate proper permanent abandonment of unused wells that may allow contaminants to enter production zones used for DAC and agricultural supply.

Funding Feasibility and Engineering Studies

Feasibility, environmental and engineering work is necessary to construct facilities to solve defined water supply and/or quality problems in several DACs including:

- Ducor Community Services District
- City of Wasco
- Allensworth Community Services District
- City of Delano
- Lost Hills Utility District

These DACs, with the assistance of local support groups such as Self Help Enterprises, have identified key water supply issues in their community. The communities and their water supply issues are shown in Exhibit 3.5-2.

EXHIBIT 3.5-2

DAC Community	Water Supply	Defined Problem	Potential Solution
Allensworth	Pumped Groundwater	System capacity can't meet demands so moratorium on new connections in effect; Problems with system controls have historically created water outages; and arsenic levels now over MCL of 10ppb.	Drill new well, rehabilitate existing well(s), provide additional storage for blending, and upgrade system controls
Ducor	Pumped Groundwater	Lower production, decline in water quality: Nitrate level fails the MCL in one well limiting supply.	Planning and design of a new well, pump and connection to the water system Ducor CSD will be adding 152 meters during construction to serve their community. This will help with water conservation and allow residents to pay for the water they use.
City of Wasco	Pumped Groundwater	Wells will become unusable due to nitrate contamination.	Fund feasibility-level study to conduct well profiling to identify aquifer water quality characteristics. Use information gained to optimize groundwater filtering and treating. Evaluate short term and long term solutions to the regional problem. The Long term solution may a regional treatment facility that receives surface water.

DAC Community	Water Supply	Defined Problem	Potential Solution
City of Delano	Pumped Groundwater	Lower production, decline in water quality, Arsenic violation.	Fund feasibility-level study for development of facilities to provide alternative supply and water treatment facilities to meet the current arsenic of 10 ppb.
Lost Hills Utility District	Pumped Groundwater	Disposal of Arsenic laden treatment waste.	Fund feasibility-level study for development of larger solar sludge drying beds.

The project will address critical water supply needs in DACs by providing funding for project development not available from other sources. Project funding will be used to perform feasibility studies, environmental and engineering work necessary to construct facilities to solve defined water quality and supply problems. These DAC communities do not have the resources to fund feasibility studies and engineering design needed to secure funding to construct facilities that would solve their problems. As a result of the project, several DACs will be provided the necessary funding resources to develop the materials to proceed with application for project construction funding and subsequently request construction bids.

In general, the development of each DACs drinking water supply related study will be conducted by a team representing the local community, Self-Help Enterprises, and local consultants. The team will consider factors that affect their supply and possible solutions including:

1. Potential DAC Drinking Water Quality Problem Solutions
 - a. Water Source Control
 - i. Provide Potable Water Connection
 - ii. Construct Replacement Well
 - iii. Modification of Problem Well
 - 1) Change Screen Interval
 - 2) Change Well Depth
 - 3) Decrease Well Discharge Volume
 - 4) Install Well Liner
 - 5) Change Pump, Motor or Column Pipe
 - b. Water Source Modification
 - i. Provide Well-Head Treatment
 - ii. Recharge Local Groundwater Source Area with Good Water Quality Water
 - iii. Well Water Level Management /Control Contaminant Migration
 - iv. Provide Water for Blending

- c. Pollutant Control or Elimination
 - i. Provide a Wastewater Connection
 - ii. Nitrogen source evaluation
 - iii. Groundwater for Non-Potable Use
 - iv. Groundwater for Potable Use
 - v. Provide Well Head Protection
 - vi. Adjacent Abandon Well Destruction to Prevent Cross-Contamination

Destruction of Unused Wells

Agricultural owners often regard unused wells as potential backup in the event that additional supplies are needed. However, older wells may have been constructed without regard to isolating poor quality aquifers and they deteriorate with time, in either case allowing poor quality water to enter higher quality aquifer. This can contribute significantly to water quality problems in near-by urban supply wells as well as the regional aquifer.

The well destruction component of the project would be guided by a working group to identify problem wells near DACs. The working group would include representatives of DACs, the IRWM RWMG and County of Kern. Existing water quality studies, available well records and DAC supply information will be used to identify potential wells for destruction. Once the working group developed recommendations of selected wells for destruction, the Project Manager (Semitropic) would contact each well's owner to explain the program and its benefits and offer to buy down the cost of destruction of the owner's unused well.

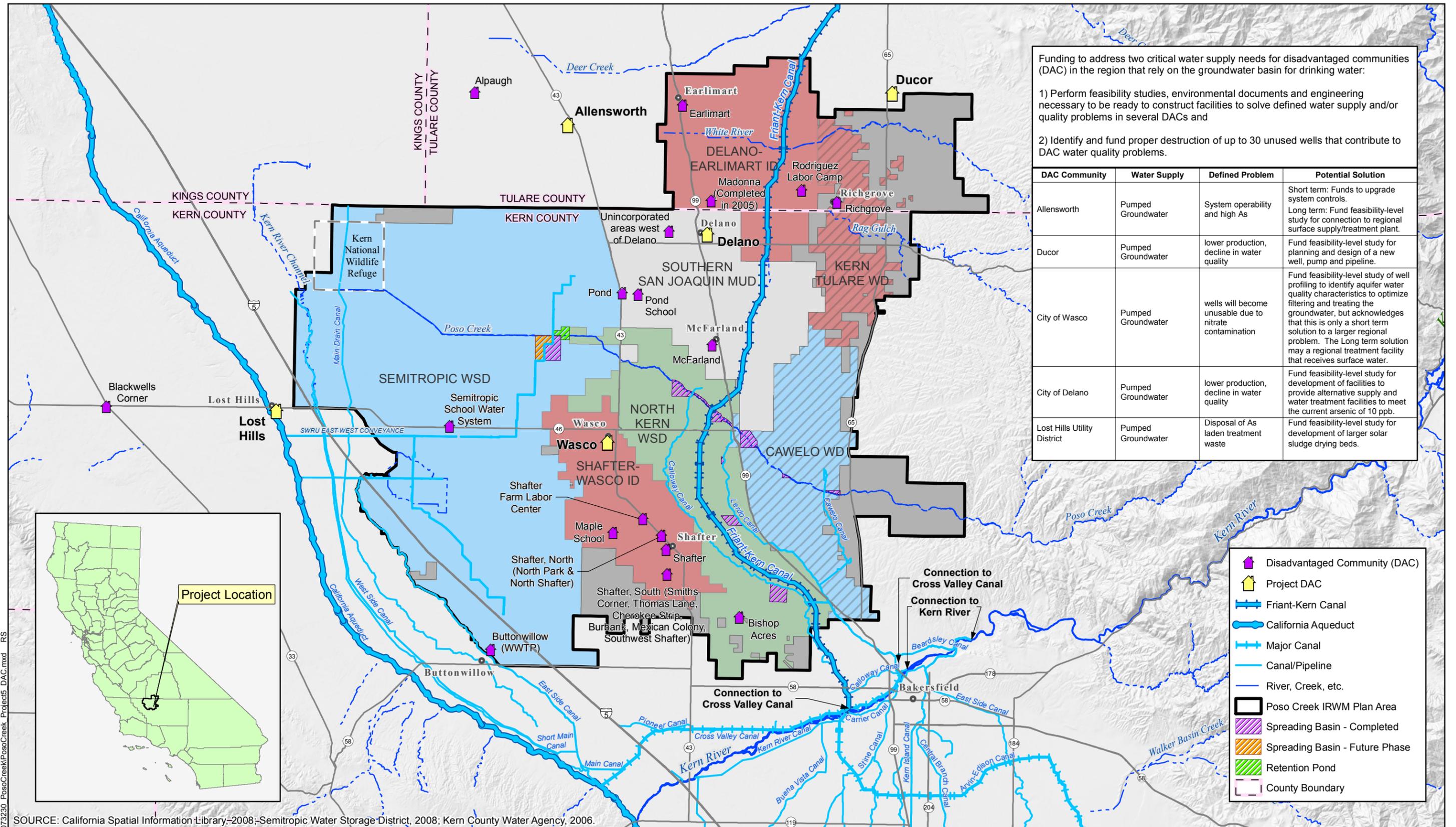
Financial assistance would be based on the wells diameter and depth and is estimated to be roughly 3/4th of the total cost of destruction. This project will be implemented over the course of two years, with well destruction recommendations being acted on as they are developed.

3.5.4 Integrated Elements of Project

Project 5 is a component of Poso Creek IRWM Plan Project 29, to Assist Disadvantaged Communities to Enhance Water Supply, Drinking Water Treatment, and Waste Water Treatment Facilities. The project will allow several small water supply systems in the Poso Creek Region to be better integrated in ground water development and still meet water quality objectives necessary to protect the health of their customers. This Project provides benefit towards meeting one of the Region's highest priorities; providing an affordable water supply to users within the Region. This Region includes the Applicants and several other water districts that share a common groundwater resource.

3.5.5 Project Map

The communities of Allensworth, Ducor and Lost Hills, and the Cities of Wasco and Delano are shown on Figure 3.5-1. Delineation of Census boundaries used as the basis for DAC status is shown in Attachment 12.



Funding to address two critical water supply needs for disadvantaged communities (DAC) in the region that rely on the groundwater basin for drinking water:

- 1) Perform feasibility studies, environmental documents and engineering necessary to be ready to construct facilities to solve defined water supply and/or quality problems in several DACs and
- 2) Identify and fund proper destruction of up to 30 unused wells that contribute to DAC water quality problems.

DAC Community	Water Supply	Defined Problem	Potential Solution
Allensworth	Pumped Groundwater	System operability and high As	Short term: Funds to upgrade system controls. Long term: Fund feasibility-level study for connection to regional surface supply/treatment plant.
Ducor	Pumped Groundwater	lower production, decline in water quality	Fund feasibility-level study for planning and design of a new well, pump and pipeline.
City of Wasco	Pumped Groundwater	wells will become unusable due to nitrate contamination	Fund feasibility-level study of well profiling to identify aquifer water quality characteristics to optimize filtering and treating the groundwater, but acknowledges that this is only a short term solution to a larger regional problem. The Long term solution may a regional treatment facility that receives surface water.
City of Delano	Pumped Groundwater	lower production, decline in water quality	Fund feasibility-level study for development of facilities to provide alternative supply and water treatment facilities to meet the current arsenic of 10 ppb.
Lost Hills Utility District	Pumped Groundwater	Disposal of As laden treatment waste	Fund feasibility-level study for development of larger solar sludge drying beds.

- Disadvantaged Community (DAC)
- Project DAC
- Friant-Kern Canal
- California Aqueduct
- Major Canal
- Canal/Pipeline
- River, Creek, etc.
- Poso Creek IRWM Plan Area
- Spreading Basin - Completed
- Spreading Basin - Future Phase
- Retention Pond
- County Boundary



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SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2006.



Poso Creek IRWMP Implementation Grant Proposal

Poso Creek IRWMP Region

GEI Consultants
Bookman-Edmonston Division

DAC FUND FOR FEASIBILITY-LEVEL STUDIES AND WELL DESTRUCTION PROGRAM PROJECT 5

JANUARY 2011

FIGURE 3.5-1

3.5.6 Completed Work

DACs in the Poso Creek IRWM Plan area have identified water supply and/or water quality problems in their communities. Several of these DACs, have separately obtained grants for project development and will complete engineering and design of solutions to their problems. Several of the communities are also making progress on design and permitting projects however, this Project would allow acceleration of several community projects that have not been able to be funded locally for the needed design and permitting steps.

Five DACs, with the assistance of local support groups, such as Self-Help Enterprises, Inc., have identified key water supply issues in their community. The communities and their water supply issues are shown in Exhibit 3.5-3.

EXHIBIT 3.5-3

DAC Community	Defined Problem	Potential Solution	Tasks
Allensworth	System capacity can't meet demands so moratorium on new connections in effect; Problems with system controls have historically created water outages; and arsenic levels now over MCL of 10ppb.	Drill new well (preceded by test well). Rehabilitate existing well(s) to lower arsenic levels. Provide additional storage for blending. Upgrade system controls with radio telemetry system.	Feasibility Study Stage: 1) Preliminary Engineering Report that would evaluate current system and its problems, analyze alternative solutions, recommend best alternative and provide cost estimates. 2) Prepare CEQA (and if necessary) NEPA documents. 3) Drill Test Well, sample and analyze results, prepare recommendations for production well design 4) Prepare bid documents for new well, transmission line, system controls and storage facilities.
Ducor	Lower production, decline in water quality, Nitrate contamination violates the MCL.	New well, pump and pipeline.	Complete the planning, environmental & design phase for new well, pump and pipeline.
City of Wasco	Wells will become unusable due to nitrate contamination.	Filter and treat the water as short term solution to a larger regional problem. The Long term solution may a regional treatment facility that receives surface water.	Support for alternatives study, preliminary design, permitting and environmental review and final design for water treatment facilities. Develop feasibility analysis for a regional treatment facility that receives surface water.

DAC Community	Defined Problem	Potential Solution	Tasks
City of Delano	Lower production, decline in water quality, Arsenic contaminated wells.	Develop facilities to provide alternative supply and water treatment facilities to meet the current arsenic of 10 ppb.	Provide support for alternatives study, preliminary design, permitting and environmental review and final design.
Lost Hills Utility District	Disposal of Arsenic laden treatment waste	Development of larger solar sludge drying beds.	Prepare alternatives study, preliminary design, permitting and environmental review and final design for larger sludge drying beds.

3.5.7 Existing Data and Studies

The following technical reports define the ground-water quality problems in the Region and support the recommendations to pursue this project as discussed within the Poso Creek Region.

Aqua Resources, Inc. *West Bakersfield Ground Water Toxics Management Study*. Draft. 1986.

Community Self Help. *Summary of DAC Water Supply Issues*.

County of Kern. *Inventory of Unused Wells*.

Kenneth C. Schmidt and Associates. *Biennial Groundwater Monitoring Report for the Semitropic Water Storage District Water Banking Project (2001-2002)*. 2005.

Kern County Health Department. *Kern County Ground Water Pollutant Study*. 1980.

Organic Chemical Contamination of Small Public Water Systems in Kern County Health Department :1987.

Organic Chemical Contamination of Small Public Water Systems in Kern County Health Department: 1988.

SWRCB Sacramento. *West Bakersfield Area Ground Water Quality Management Study Final Report*. 1990.

3.5.8 Project Timing and Phasing

This project has two related elements. The well destruction element is a standalone project and is fully functional without implementation of subsequent projects. Well destruction portion of the Project will occur over 2 years.

The water supplies portion of Project 5 would achieve their objectives by serving as the basis for subsequent funding. The water supply studies portion of Project 5 would depend on subsequent funding and construction of the individual projects to realize their full benefits. The water supply studies will be completed over a 2-year period.

The proposed Project will be performed under the general direction of the Poso Creek RWMG, which Semitropic WSD is the lead agency, in consultation with Self-Help Enterprises, the Community Water Center, and individual DAC communities. The sequencing of work is addressed in Attachment 5, which presents and discusses the Project Schedule.

The proposed general scope of work for Project 5 is described as a series of tasks in 3.5.9. The process for funding of each community's feasibility-level study is described in Task 5 Assessment and Evaluation. (Subsequent Tasks relate to construction and thus would not be relevant to project feasibility-level studies beyond design). Destruction of problem wells would include well identification and physical modification and so would encompass Tasks 1 through 13. The Project 5 tasks are the basis for the project budget which is presented in Attachment 4 and schedule which is shown in Attachment 5.

3.5.9 Tasks

Task 1 –Project Administration

Activities include coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration (preparation of invoices and maintenance of financial records).

Deliverables: (1) review of DWR Grant Contract; (2) project kick-off meeting with DWR personnel; (3) coordination of field visits with DWR personnel; (4) preparation of invoices and maintenance of financial records (5) preparation of Grant reimbursement requests; and (6) other deliverables as required.

Task 2 – Labor Compliance Program

Semitropic WSD will work with each Project 5 community sponsor to develop a plan for a Labor Compliance Program (LCP), if needed for the feasibility-level studies, to follow the rules of the California Department of Industrial Relations. Specifically, the LCP will enforce the prevailing wage requirements as stipulated in the Labor Code Section 1771.5. The goal of

the LCP will be to accomplish the following: (1) Inform contractors about their prevailing wage obligations; (2) Monitor compliance by obtaining and reviewing certified payroll records throughout the construction of the project; (3) Investigate complaints and other suspected violations; and (4) Take appropriate actions when violations are found.

Deliverables: (1) prepare a Labor Compliance Program (LCP) Plan; and (2) enforce the LCP during the construction of the project.

Task 3 – Reporting

Semitropic and each community sponsoring a component of this Project will provide a report on the financial status and project performance on a quarterly basis. Significant development reports and a final project report will be prepared. In addition, the Project will comply with any other reporting requirements specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4 - Land Purchase/Easement

No land purchase will be required for this project. Permission for a right-of-entry will be obtained from the owner of property to be the site of the proposed test well for Allensworth.

Deliverables: Obtain Right-of-entry from the owner of property to be the site of the proposed test well for Allensworth.

Task 5 – Assessment and Evaluation

Development of each DAC feasibility-level study will involve members of the Poso Creek IRWM RWMG, the DACs, and community groups. Each community will present a work order level cost estimate to the Poso Creek IRWM RWMG to conduct a feasibility-level study of their defined problem and proposed solution, as identified in Exhibit 3.5-2. Procedures for award of task orders will be developed and approved by the Poso Creek IRWM RWMG.

The Well Destruction element will be guided by a working group including the Semitropic WSD, Poso Creek IRWM RWMG, representatives from the DACs, and the County of Kern. Funding would allow for reimbursement of up to 3/4th of the cost to properly destroy the unused well. Reimbursement procedures will be established by the Poso Creek IRWM RWMG.

Deliverables: Procedures for funding feasibility-level studies and well destruction programs to be established by the Poso Creek IRWM RWMG.

Task 6 – Design

The DAC feasibility-level studies may fund development of up to 100 percent (Final) Design packages that can be used for advertisement for project award and for construction and implementation of each DAC project. Since these communities are in need of funding to provide design, the projects are presently at 10 percent, conceptual design level.

Design of each well destruction location will be pursuant to State guidelines and well industry practices. Detailed engineering design will not be required for well destruction.

Deliverables: Completion of Design Packages for Appraisal Level Report and Final Appraisal Level Report

Task 7 – Environmental Documentation

Pursuant to California Environmental Quality Act (CEQA) guidelines, both the studies and the well destruction activities are exempt for review.

Deliverables: (1) provide confirmation of filing of notices of exemption.

Task 8 – Permitting

No permits are required for the development studies.

The Counties of Kern and Tulare issue permits for destruction of wells. As each well is scheduled for destruction, the landowner or well contractor will be responsible for obtaining the necessary permit. Well destruction will be recorded pursuant to State Regulations.

Deliverables: Well destruction permits

Task 9 – Construction Contracting

The Landowner will be responsible for contracting well destruction services with a state licensed well construction contractor.

Deliverables: The landowner will be responsible for the contract and any Notice to Proceed.

Task 10 – Construction

Well destruction will follow State and County regulations and industry practices regarding techniques and materials. See attached Well abandonment guidelines for County of Kern.

Deliverables: Well Destruction pursuant to State and County guidelines and regulations.

Task 11 – Environmental Compliance

Due to the nature of well destruction techniques, environmental compliance measures will not be required.

Deliverables: N/A

Task 12 – Construction Administration and Management

Upon satisfactory documentation of completion of destruction of each well, the Project Manager will calculate the amount of support appropriate and arrange for payment to the landowner. The Project Manager will develop documentation of each well destroyed for incorporation in project reports.

Deliverables:

Completed State and/or County approved well destruction reports.

Task 13 – Monitoring, Assessment, and Performance Measures

The Poso Creek IRWM RWMG will monitor the progress of the feasibility-level studies and the well destruction program tasks, funding, and work orders. The accomplishments of this Project will be reported on through the DAC Working Group to the Poso Creek IRWM RWMG.

Deliverables: Semitropic WSD will report monitoring results of subsequent water quality monitoring to the Poso RWMG on an annual basis.

3.5.10 Appendices

Appendices for this Project 5 Work Plan include:

Appendix 3.5-1 Well Destruction Procedure Information

3.5.11 Tables

There are no tables for this section.

Memorandum

To: Files (073230) Appendix 3.5-1
From: Sam Schaefer
Re: Water Well Destruction Information

Appendix 3.5-1 contains the following list of additional information for the administration of the Project 5 Well Destruction Program.

- 1) Kern County Environmental Health Services, Water Program – Water Well Permits Policy Manual
- 2) Kern County Public Health Services Department, Example form for Application for Water Well Permit
- 3) Public Health Services – Well Application Fees schedule
- 4) Kern County Water Supply Systems Ordinance – Well Destruction Approved Sealing Material
- 5) Water Well Destruction Procedures

KERN COUNTY ENVIRONMENTAL HEALTH SERVICES

Water Program

WATER WELL PERMITS POLICY MANUAL (PROPOSED CHANGE) (New wells, deepening, reconstruction)

SCOPE

The Kern County Ordinance Code, Chapter 14, provides for the design, construction, repair, and reconstruction of agricultural wells, domestic wells, cathodic protection wells, industrial wells, monitoring wells, observation wells, geothermal heat exchange wells, and test wells in such a manner that the groundwater of the county will not be contaminated or polluted, and that water obtained for beneficial uses will not jeopardize the health and safety or welfare of the people of this county. Any of the wells listed above must obtain a permit from the Environmental Health Services (EHS) Department prior to initiation of construction.

- I. WATER WELL PERMIT APPLICATION INQUIRIES (all forms are available on line at www.co.kern.ca.us/eh/WaterProgram.asp)

For inquiries on how to obtain a water well permit:

1. Supply a copy of "Application for a Permit to Construct, Reconstruct, Deepen or Destroy a Well."
2. Supply the list of approved well drillers, if requested. A C-57 license is required to drill a well, and the driller must be on the current list entitled, "Well Drillers Registered with the Kern County Environmental Health Services Department."
 - A. Be sure to check current memo of well drillers whose applications should not be accepted.

- II. WATER WELL PERMIT APPLICATION SUBMITTALS

For water well permit application submittals:

1. Collect a completed application form, including:
 - A. signature of contractor or owner (verification from drilling contractor required if only owner signature)
 - B. township, range and section - if lacking, assist applicant
 - C. Assessor's parcel number
 - D. map of well location with distances from roads, property lines, section lines, and distances from septic tanks, seepage pits, leach lines, and water wells on adjoining properties and well site property

- E. proposed depth, size, and type of casing
 - F. intended use and type of work done
2. Locate property information using the GIS mapping system on-line or in the Assessor's parcel books, zone map binder, and floodplain binder.
 - A. If GIS information is not the same as applicant, verify legal owner using KIPS.
 3. For all new domestic, industrial, and agricultural wells, review for approval of:
 - A. zoning
 - B. floodplain

Using the on-line GIS mapping information
 If unsure, ask a planner from the Planning Department.

Cathodic protection wells, monitoring wells, test holes, and well reconstructions do not require above review. If a cathodic well is in the road right-of-way, contact Roads to see if they will issue an encroachment permit for the cathodic well permit.

4. If EHS Building Plans Technician or the Planning Department cannot approve A. or B. above, do not accept fees or the application.
5. Determine if an existing well is being replaced or if any abandoned wells are located on the property site.
 - A. request an application to destroy a well is submitted if any abandoned wells or old well will not be used.
4. If the application is complete and meets all requirements (including distance from the section and mid-section lines for Ag. Wells), accept the application and appropriate fee. Complete the fee information portion of the EHS Department section.

Collect fee based on current ordinance.

7. Check on-line GIS mapping information and KIPS for correct owner information and maps. All information pages from GIS & KIPS should be attached to the application.
8. If GIS mapping information does not agree with the permit application, check KIPS. If it still does not agree, ask for a copy of the grant deed. Do not accept the application or fee.
9. If approval is necessary from the Floodplain Section, then accept both the fees and the application. Also collect an additional flood evaluation fee or a flood evaluation update fee. Note that "flood approval is required" on the

service request. Attach a copy of the receipt to the well permit application and give to Floodplain Management for review. Forward the application to the Water Program as usual.

FOR WATER WELL DESTRUCTION PERMIT APPLICATION SUBMITTALS:

1. Collect a completed application form, including:
 - A. signature of contractor or owner (verification from drilling contractor required if only owner signature)
 - B. township, range and section - if lacking, assist applicant
 - C. Assessor's parcel number
 - D. map of well location with distances from roads, property lines, section lines, and distances from septic tanks, seepage pits, leach lines, and water wells on adjoining properties and well site property
 - E. depth, size, and type of casing
2. Locate property information using the GIS mapping system on-line.
 - A. If GIS information is not the same as applicant, verify legal owner using KIPS.
3. If the application is complete and meets all requirements, accept the application and forward to Water Program.
4. A copy of the application is sent to the KCWA and the water district within which the well site is located. The Water Agency and the affected water district shall be allowed 48 hours to review the application and make contact with the property owner if either entity desire to obtain access to the well.
5. No up front fee is required. An hourly service fee is charged when destruction is completed.

III. WATER - WELL PERMIT APPLICATION REVIEW PROCESS

1. Receive completed application from counter Building Plans Technician.
2. Environmental Health Specialist reviews proposed location of the well and determines if an annular seal will be required.
 - A. Factors used to determine if an annular seal will be required.

Review maps and other information as noted on attached Exhibit A.

Review available water quality analysis data for the specific Township/Range/Section that the well will be located in and adjacent sections if necessary.

An annular seal is required if the water quality analysis data for the following constituents indicate differences in quality between the unconfined and confined aquifers (better quality required in the confined aquifer):

TDS	500 mg/L
NITRATE	20 mg/L
EDB	Any difference, unless MCL is exceeded in the confined aquifer.
DBCP	Any difference, unless MCL is exceeded in the confined aquifer.
URANIUM	Any difference, unless MCL is exceeded in the confined aquifer.

Other constituents may be used by the Environmental Health Specialist in conjunction with the above constituents to determine if an annular seal will be required.

3. If, after reviewing the available water quality analysis data, the Environmental Health Specialist cannot make a determination that an annular seal will or will not be required, the application is submitted to the Kern County Water Agency for a recommendation and the applicant is also advised that a recommendation from a private consultant may be submitted for review. No further action is taken on the application until a recommendation from the Water Agency and a private consultant, if retained, is received.
4. If an ESS flood review is required, the application will not be approved until a recommendation from ESS flood review is received.
5. A site inspection will be conducted by an Environmental Health Specialist or Technician.
6. The application is approved/disapproved by an Environmental Health Specialist (based upon requirements found in County Ordinance) a permit number is issued and letter written to the property owner and copy of the letter is mailed to the well driller and the Kern County Water Agency advising of the approval and any conditions that may be required.

Annular seal.
E-log.
Deeper top seal.

7. If the applicant chooses to have independent review of the decision for the location of the seal, a California certified hydrogeologist must be retained for that purpose at the applicant's cost.

8. An inspection of the installation of the annular seal is conducted.
9. Final inspection of the surface features (except destruction and cathodic protection wells) must be requested by the applicant, pump company, etc., and is performed by the Environmental Health Specialist or Technician.
10. All new agricultural wells shall be equipped with an approved air gap separation or an approved chemigation check valve assembly (a list of assemblies approved by the Department is posted on the Department web page and is available for review at the Department). Prior to final approval of the agricultural water well, the air gap separation must be constructed or the approved chemigation check valve assembly must be installed.

The Department may approve, on a case-by-case basis, an alternate backflow prevention device when the applicant or his representative demonstrates that the alternate device will be effective for preventing degradation of groundwater due to backflow.

11. The water quality (except destruction, monitoring and cathodic protection wells) is tested by the applicant and results submitted to the Kern County Environmental Health Services Department. For agricultural wells, the minimum testing shall be conducted for the following:
 - A. Irrigation Water Analysis
 - B. Arsenic
 - C. Fluoride
 - D. Organics
 1. EDB
 2. DBCP
 - E. Gross Alpha
12. Upon receipt of satisfactory water quality (except destruction, monitoring and cathodic protection wells), well driller's log (except destruction), and final inspection (except destruction and cathodic protection wells), the well is issued a water supply certificate.

EXHIBIT A

KERN COUNTY WATER SUPPLY SYSTEMS ORDINANCE

Guidelines for Kern County Water Agency Review of Kern County Water Well Ordinance Permits

Water well permit applications submitted to the Kern County Environmental Health Services Department (KCEHSD) should be sent to the Kern County Water Agency (Agency) for review when the permits meet any of the following conditions:

- Proposed well site falls within the northern extent of the Corcoran Clay as described by Metz, et al, 1991 (Figure 1).
- Proposed well site falls within the extent of the shallow groundwater conditions (Figure 1).
- Proposed well site is within 1 mile radius of a public drinking water supply well.
- Proposed well site is within 1 mile radius of the sphere of influence of any Kern County municipality (Figure 2).
- Proposed well site is within 1 mile radius of an established or proposed groundwater recharge/recovery facility (figure 3).
- Proposed well site is within 1 mile radius of an active or proposed dairy or feedlot operation (Figure 4).
- Proposed well site is within 1 mile radius of a biosolids composting, disposal, or land application area (Figure 4).
- Proposed well site is within 1 mile radius of a known or suspected hazardous waste site, active or inactive sanitary landfill, burn dump, hazardous materials facility.
- Proposed well site is within 1 mile radius of a known area of poor water quality (refer to Groundwater Quality Report San Joaquin Valley Kern County, California; March 1982).
- Proposed well site is within 1 mile radius of an active or proposed fruit or vegetable processing facility.
- All water well destruction permit applications should be reviewed by the Agency and water district having jurisdiction for the site.

EXHIBIT B

KERN COUNTY WATER SUPPLY SYSTEMS ORDINANCE

Well Construction Approved Sealing Material

Sealing material shall consist of neat cement, sand cement, concrete, or bentonite. Cuttings from drilling, or drilling mud, shall not be used for any part of the sealing material.

1. Cement-based Sealing Material:

- a. **Neat Cement.** For Types I or II Portland cement, neat cement shall be mixed at a ratio of one 94-pound sack of Portland cement 5 to 6 gallons of clean water.
- b. **Sand Cement.** Sand-cement shall be mixed at a ratio of not more than 188 pounds of sand to one 94-pound sack of Portland cement (2 parts sand to 1 part cement, by weight) and about 7 gallons of clean water, where Type I or Type II Portland cement is used. This is equivalent to a '10.3 sack mix.' Less water shall be used if less sand than 2 parts sand per one part cement by weight is used.
- c. **Concrete.** Concrete shall consist of Portland cement and aggregate mixed at a ratio of at least six-94 pound sacks of Portland cement per cubic yard of aggregate. A popular concrete mix consists of eight-94 pound sacks of Type I or Type II Portland cement per cubic yard of uniform 3/8-inch aggregate.

2. Bentonite Sealing Material

Bentonite used for annular seals shall be commercially prepared, powdered, granulated, pelletized, or chipped/crushed sodium montmorillonite clay. The largest dimension of pellets or chips shall be less than 1/5 the radial thickness of the annular space into which they are placed.

Bentonite clay mixtures shall be thoroughly mixed with clean water prior to placement. A sufficient amount of water shall be added to bentonite to allow proper hydration. Depending on the bentonite sealing mixture used, 1 gallon of water should be added to about every 2 pounds of bentonite. Water added to bentonite for hydration shall be of suitable quality and free of pollutants and contaminants.

Bentonite preparations normally require ½ to 1 hour to adequately hydrate. Actual hydration time is a function of site conditions and the form

of bentonite used. Finely divided forms of bentonite generally require less time for hydration, if properly mixed.

Dry bentonite pellets or chips may be placed directly into the annular space below water, where a short section of annular space, up to 10 feet in length, is to be sealed. Care shall be taken to prevent bridging during the placement of bentonite seal material.

Unamended bentonite clay seals should not be used where structural strength of the seal is required, or where it will dry. Bentonite seals may have a tendency to dry, shrink and crack in arid and semi-arid areas of California where subsurface moisture levels can be low. Bentonite clay seals can be adversely affected by subsurface chemical conditions, as can cement-based materials.

Bentonite clay shall not be used as a sealing material if roots from trees and other deep rooted plants might invade and disrupt the seal, and/or damage the well casing. Roots may grow in an interval containing a bentonite seal depending on surrounding soil conditions and vegetation.

Bentonite-based sealing material shall not be used for sealing intervals of fractured rock or sealing intervals of highly unstable, unconsolidated material that could collapse and displace the sealing material, unless otherwise approved by the enforcing agency. Bentonite clay shall not be used as a sealing material where flowing water might erode it.

3. Other Approved Sealing Material

Well proportioned mixes of silts, sands, and clays (or cement), and native soils that have a coefficient of permeability of less than 10 feet per year.

EXHIBIT C

KERN COUNTY WATER SUPPLY SYSTEMS ORDINANCE

Well Destruction Approved Sealing Material

Sealing material shall consist of neat cement, sand cement, concrete, or bentonite. Cuttings from drilling, or drilling mud, shall not be used for any part of the sealing material.

1. Cement-based Sealing Material:

- a. **Neat Cement.** For Types I or II Portland cement, neat cement shall be mixed at a ratio of one 94-pound sack of Portland cement 5 to 6 gallons of clean water.
- b. **Sand Cement.** Sand-cement shall be mixed at a ratio of not more than 188 pounds of sand to one 94-pound sack of Portland cement (2 parts sand to 1 part cement, by weight) and about 7 gallons of clean water, where Type I or Type II Portland cement is used. This is equivalent to a '10.3 sack mix.' Less water shall be used if less sand than 2 parts sand per one part cement by weight is used.
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Bentonite clay shall not be used as a sealing material if roots from trees and other deep rooted plants might invade and disrupt the seal, and/or damage the well casing. Roots may grow in an interval containing a bentonite seal depending on surrounding soil conditions and vegetation.

Bentonite-based sealing material shall not be used for sealing intervals of fractured rock or sealing intervals of highly unstable, unconsolidated material that could collapse and displace the sealing material, unless otherwise approved by the enforcing agency. Bentonite clay shall not be used as a sealing material where flowing water might erode it.

3. Other Approved Sealing Material

Well proportioned mixes of silts, sands, and clays (or cement), and native soils that have a coefficient of permeability of less than 10 feet per year.



**Kern County Public Health Services Department,
Environmental Health Division**

2700 "M" Street, Suite 300, Bakersfield, CA 93301
Phone (661) 862-8700 FAX (661) 862-8701
www.co.kern.ca.us/eh/

Permit/Well # _____

Starting Date _____

APPLICATION FOR WATER WELL PERMIT

APPLICATION MUST BE SUBMITTED AT LEAST TEN (10) WORKING DAYS PRIOR TO THE PROPOSED STARTING DATE

Mark Type of Permit:	<input type="checkbox"/> Construct New	<input type="checkbox"/> Reconstruct/Modify	<input type="checkbox"/> Deepen	<input type="checkbox"/> Destroy
----------------------	--	---	---------------------------------	----------------------------------

Type of Well

- | | | |
|--|---------------------------------------|--|
| <input type="checkbox"/> Domestic/Private (1) | <input type="checkbox"/> Agricultural | <input type="checkbox"/> Cathodic Protection |
| <input type="checkbox"/> Domestic (2-4 connections) | <input type="checkbox"/> Test Hole | <input type="checkbox"/> Vadose |
| <input type="checkbox"/> Domestic (5 or more connections) | <input type="checkbox"/> Monitoring | <input type="checkbox"/> Other _____ |

MARK ONE OF THE BOXES BELOW FOR THE PARTY RESPONSIBLE FOR PAYMENT OF FEES

OWNER'S INFORMATION				PROPERTY/FACILITY INFORMATION											
<input type="checkbox"/> Name:				<input type="checkbox"/> Name:											
Address:				Address:											
City:		State:		Zip:		City:		State:		Zip:					
Phone:			e-mail:			APN:			T: R: Sec:						
CONTRACTOR'S INFORMATION															
<input type="checkbox"/> Environmental Contractor:						<input type="checkbox"/> Drilling Contractor:									
Address:						Address:									
City:				State:		Zip:		City:				State:		Zip:	
Contact :				Phone:				Contact:				Phone:			
e-mail:						e-mail:									

LOCATION OF WELL:

TOTAL ACRES _____

Attach a plot plan with the exact location of water well with respect to the following items: property lines, adjoining properties, water bodies or courses, drainage pattern, roads, existing wells, structures, sewers or private disposal systems. **Include dimensions. Draw a 200' radius circle from well site location.** For **monitoring wells** provide a description of the facility to be monitored, including: location of tanks, proposed monitoring and placement, nearest street or intersection, location of any water wells or surface water within 500' radius of facility.

Provide detailed directions to site:

WELL CONSTRUCTION INFORMATION

METHOD: Reverse Rotary Rotary Air Rotary Hollow Stem Auger Other: _____

WELL NAME / NUMBER				
MAXIMUM WELL DEPTH				
SEALING MATERIAL				
SEAL DEPTH (HARD ROCK/UNCONSOLIDATED)				
CASING MATERIAL & GAUGE				
CASING - INSIDE DIAMETER				
SCREEN/PERFORATION DEPTH				
CONDUCTOR DEPTH				
CONDUCTOR DIAMETER				
DEPTH TO GROUNDWATER				
LOCKING WELL CAP				
BOREHOLE DIAMETER				
SCREEN MATERIAL & GAUGE				
TYPE OF BENTONITE PLUG & DEPTH				
FILTER PACK MATERIAL & SIZE				
SCREEN SLOT SIZE & LENGTH				
SEALANT PLACEMENT METHOD				

WELL DESTRUCTION INFORMATION

WELL NUMBER					
WELL DEPTH					
CASING MATERIAL					
SEALANT MATERIAL					
SEALANT PLACEMENT METHOD					
DESCRIBE DESTRUCTION PROCEDURE:					

GENERAL CONDITIONS FOR DESTRUCTION:

1. A well destruction application must be filed with this Department if a well is being destroyed that is not in conjunction with a test hole permit.
2. Destruction procedures must be followed as per UT-50.
3. Placement of the seal must be witnessed by a representative of this Department. Forty-eight hour advanced notice is required for an appointment.

SPECIAL CONDITIONS:

GENERAL CONDITIONS FOR ALL PERMITS:

Permit applications may be submitted to the Planning Department by county staff for zoning, access, and flood plain clearances prior to approval of the Environmental Health Services Department (EHS). If you are drilling within city's limits, you will have to receive approval from their Planning Department.

1. Permit applications must be submitted to EHS at least ten (10) working days prior to the proposed starting date.
2. Well site approval is required before beginning any work related to water well construction. It is unlawful to continue work past the stage at which an inspection is required unless inspection is waived or completed.
3. Other required inspections include: setting conductor casing, E-Logs, all seals, and final construction features.
4. In areas where a water well penetrates more than one aquifer, and one or more of the aquifers may contain water which is of a quality which may degrade the other aquifer(s) penetrated if allowed to commingle, an E-Log shall be required to determine the location of the confining clay layer(s) and assist in the placement of any required annular seal(s).
5. A phone call to the **Department Hotline at (661) 862-8788** is required 48 hours before the placement of any seals or plugs.
6. Approval of water quality and final construction features is required before the water well is put into use.
7. Construction under this permit is subject to any instructions by EHS representatives.
8. Any misrepresentation or noncompliance with required permit conditions, or regulations, will result in issuance of a "Stop Work Order."
9. A copy of the Department of Water Resources Driller's Report and water quality analyses must be submitted to EHS within sixty (60) days after completion of the work.
10. "Dry" holes must be properly destroyed within two (2) weeks of drilling. A water well destruction application must be filed with EHS.
11. The permit is void one (1) year after date of issuance if work has not been started and reasonable progress toward completion made. Fees are not refundable or transferable.
12. Lead appurtenances shall not be used in construction of any private or public water supply system. The use of solders containing more than 2/10 of 1% lead is prohibited in making joints and fittings in any private or public potable water system.
13. Drilling of a water well shall be performed by a C-57 contractor licensed in accordance with the provisions of the Contractors License Law (Chapter 9, Division 3, of the Business and Professions Code) unless exempted by that act, and registered to drill within the County of Kern.
14. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the County of Kern and/or Kern County Water Agency, its officers, agents, and employees, free and harmless from any and all expense, cost or liability in connection with or resulting from the exercise of this permit, including, but not limited to, property damage, personal injury, and wrongful death.

I UNDERSTAND THAT FUTURE DEVELOPMENT PERMITS MAY NOT BE ISSUED (KCOC 17.04.120) UNLESS RECORDED LEGAL ACCESS TO THE PROPERTY CAN BE DEMONSTRATED.

I certify that I am the owner of the above-described property, or the authorized representative of such owner, and that all the information I have furnished is current and accurate to the best of my knowledge, and I intend to construct the water well as represented above. I understand that all work is to be done in accordance with Kern County Ordinance Code Chapter 14.08, Bulletin 74-81 and all subsequent bulletins and the conditions of the Permit Application, including any conditions which may be added or changed by EHS upon review of this Application and issuance of the Permit. I further understand that any permit issued pursuant to this application is subject to such further conditions as may be deemed necessary to ensure compliance with the permit regulations.

Owner's Signature _____ Date _____ Authorized Agent or Agency _____ Date _____

THIS APPLICATION BECOMES A PERMIT WHEN APPROVED

<i>For internal use only</i>	
Permit Approved: _____ Date: _____ Expiration Date: _____	Total Fee: _____ Date Paid: _____ Receipt #: _____ <input type="checkbox"/> Cash <input type="checkbox"/> Check (# _____) Fee received by: _____
Zone: _____ Flood Plain Approval Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	E-Log Required: <input type="checkbox"/> Yes <input type="checkbox"/> No Faxed to KCWA on _____ by _____

REASONS FOR DENIAL OR CONDITIONS OF PERMIT:

MATTHEW CONSTANTINE
DIRECTOR
PUBLIC HEALTH SERVICES



ENVIRONMENTAL HEALTH DIVISION

PUBLIC HEALTH SERVICES D E P A R T M E N T

June 1, 2010

WELL APPLICATION FEES

Application Processing Fee for all Wells:	\$ 75.00
Well Application: Domestic/Industrial	\$675.00
Well Application: Cathodic Protection	\$675.00
Well Application: Monitoring Well	\$675.00
Well Application: Test Hole (D.D)*	\$455.00
Well Application: Test Hole (D.C)**	\$675.00
Well Application: Agricultural Well	\$675.00
Well Application: Vadose Zone Well	\$675.00
Well Application: Destruction of Well	\$100.00/hr

* note: D.D = Drill and Destroy

**note: D.C = Drill and Completed

Flood review fees may be charged in addition to above fees if the property is in a flood zone.

For additional information regarding submittal of applications and fees, please call Nina Brennan at (661) 862-8753.

“ONE VOICE”

KERN COUNTY WATER SUPPLY SYSTEMS ORDINANCE

Well Destruction Approved Sealing Material

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1. Cement-based Sealing Material:

- a. **Neat Cement.** For Types I or II Portland cement, neat cement shall be mixed at a ratio of one 94-pound sack of Portland cement 5 to 6 gallons of clean water.
- b. **Sand Cement.** Sand-cement shall be mixed at a ratio of not more than 188 pounds of sand to one 94-pound sack of Portland cement (2 parts sand to 1 part cement, by weight) and about 7 gallons of clean water, where Type I or Type II Portland cement is used. This is equivalent to a '10.3 sack mix.' Less water shall be used if less sand than 2 parts sand per one part cement by weight is used.
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Bentonite clay mixtures shall be thoroughly mixed with clean water prior to placement. A sufficient amount of water shall be added to bentonite to allow proper hydration. Depending on the bentonite sealing mixture used, 1 gallon of water should be added to about every 2 pounds of bentonite. Water added to bentonite for hydration shall be of suitable quality and free of pollutants and contaminants.

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Bentonite-based sealing material shall not be used for sealing intervals of fractured rock or sealing intervals of highly unstable, unconsolidated material that could collapse and displace the sealing material, unless otherwise approved by the enforcing agency. Bentonite clay shall not be used as a sealing material where flowing water might erode it.

3. Other Approved Sealing Material

Well proportioned mixes of silts, sands, and clays (or cement), and native soils that have a coefficient of permeability of less than 10 feet per year.

WATER WELL DESTRUCTIONS

Water wells that are no longer in use (abandoned) or are no longer producing adequate supplies of water are required by state law and county ordinance to be destroyed according to established procedures.

Abandoned water wells can act as conduits for surface and subsurface pollution to enter groundwater supplies. Once polluted, groundwater is no longer drinkable.

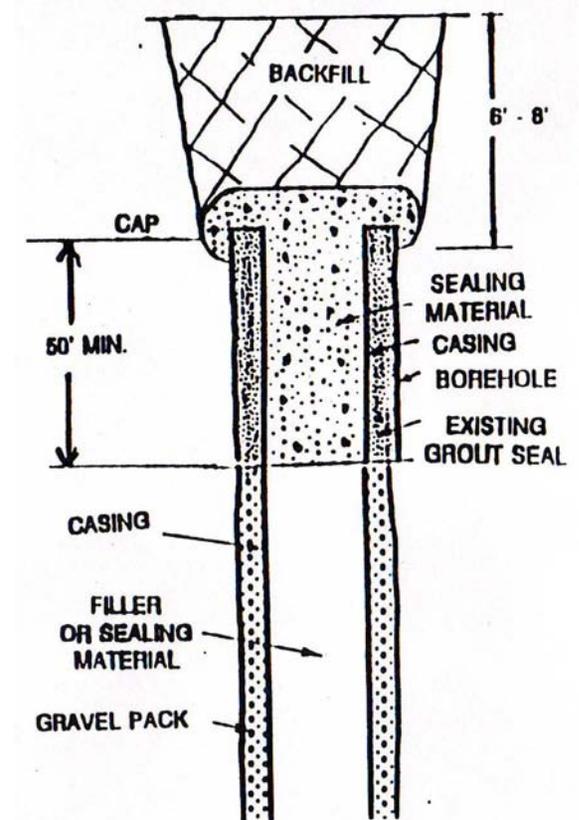
Abandoned wells can also be illegally used for the disposal of liquid and solid wastes, causing further degradation of the groundwater quality.

The following guidelines will enable you to destroy your well in compliance with those regulations:

1. An application for a permit to destroy the well must be submitted to the Kern County Public Health Services Department, Environmental Health Division, for review prior to the well destruction.

2. The contractor submitting an application must have a C-57 license and be registered with the Department.
3. A fee at the rate of \$100 per hour will be charged for the travel and inspection time.
4. Cut off casing six to eight feet (6'-8') below grade if in an urban area.
5. Sealing material shall consist of neat cement, sand cement, concrete, bentonite or other approved material. Cuttings from drilling, or drilling mud, shall not be used for any part of the sealing material.
6. With an aid of a tremie pipe, cement, concrete, or sand-cement grout in top 50 feet, spilling over to form a mushroom cap.
7. Placement of the 50-foot cement seal must be witnessed by a representative of this Division.

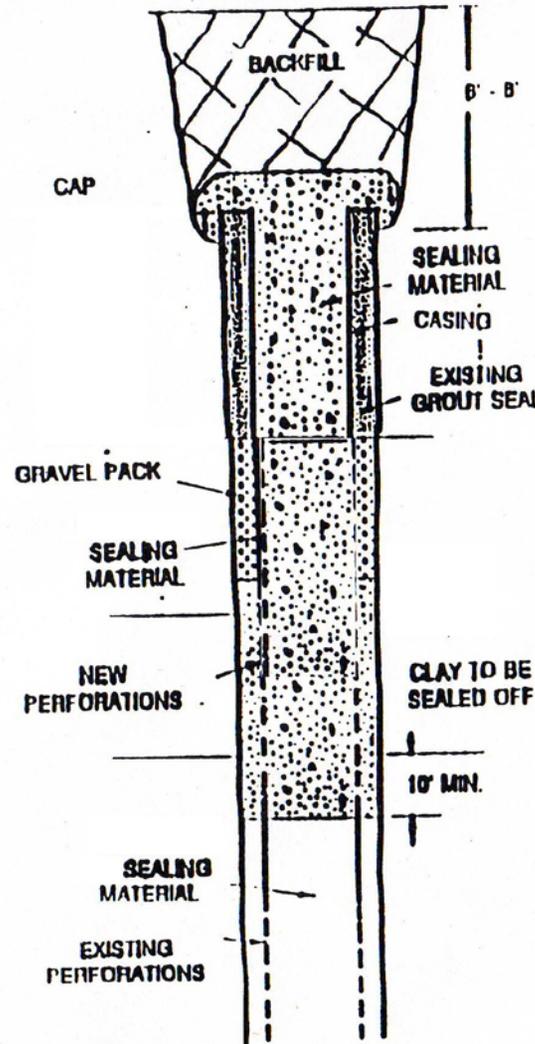
WELL DESTRUCTION



DESTRUCTION OF WELL WITH REGIONAL CONFINING CLAY

For wells that penetrate a regional confining clay, additional requirements are as follows:

1. Depth of the annular seal will be determined at the time the application is submitted or after the application is submitted to the Kern County Water Agency for review.
2. Casing may be required to be perforated across the regional confining clay with a mills knife or wire line casing shot.
3. The casing is to be immediately pumped full of approved sealing material with the aid of a tremie pipe from 10' below the regional confining clay to the top of the well casing.
4. The destruction procedures for the upper seal are the same as for the shallow well destruction.



WELL DESTRUCTION PROCEDURES

DEPARTMENT OF PUBLIC
HEALTH SERVICES,
ENVIRONMENTAL HEALTH DIVISION
2700 M STREET, SUITE 300
BAKERSFIELD, CA 93301

(661) 862-8700

October 2006

3.6 Project 6 – Consolidation of Bishop Acres into City of Shafter Water Supply System

Introduction

Project 6 will integrate the water well and distribution system serving the neighborhood of Bishop Acres with the water supply system of the City of Shafter so as to increase the level of service and reliability of Bishop Acres’ water supply. Currently, Bishop Acres is an unincorporated, mostly residential community that consists of 26 service connections that is served by one standalone groundwater well that is owned and operated by the Bishop Acres Mutual Water Company. The area is within the City of Shafter Master Planning Area. Project 6 budget and schedule are presented in the following Attachments 4 and 5. Site plans are included within attachment 3.

3.6.1 Goals and Objectives

Project 6 accomplishes multiple goals and objectives of the Poso Creek Integrated Regional Water Management Plan (IRWMP). Exhibit 3.6-1 presents a selection of the Poso Creek IRWM Plan Objectives, and how the Project Goals and Objectives coincide with them:

EXHIBIT 3.6-1

IRWM Plan Objectives	Project 6 Goals and Objectives
Primary: Enhance Water Supply Reliability of Surface Supplies	<p>Project 6 will integrate the water well and distribution system serving the neighborhood of Bishop Acres with the more reliable water supply system of the City of Shafter.</p> <p>The City of Shafter will incorporate the current water supply well of Bishop Acres into its system better balancing its sources geographically.</p>
Maintain water supply costs at a level commensurate with the continued viability of the economy which has developed in the area	<p>Project 6 will provide the neighborhood of Bishop Acres with a more reliable water supply system without the need to upgrade its well for specific water quality issues.</p> <p>The City of Shafter will acquire an additional water supply well to better match use with source water quality and allows for balancing its sources geographically without having to bear the expense of a new well.</p>

3.6.2 Purpose and Need

The consolidation of the Bishop Acres water system into the City of Shafter public water supply would improve the operability and reliability of delivery to the Bishop Acres by a physical connection between the two systems that includes the following:

- Approximately 800 linear feet of water distribution main (under 16-inch in diameter) to Bishop Acres
- Approximately 275 foot feet of boring casing and carrier pipe across BNSF rail mainline and County of Kern roadway

- New valves and control equipment at the interconnection
- Rehabilitation and automation of the existing Bishop Acres well

The newly modified system would provide greater reliability to the neighborhood of Bishop Acres and would afford the City greater operational flexibility due to acquisition of an additional supply well. The project will allow a small water supply system in the Poso Creek Region to consolidate with a larger neighboring system, thus allowing the smaller system to meet water quality standards necessary to protect the health of their customers.

3.6.3 Project Abstract

The consolidation of the Bishop Acres water system into the City of Shafter public water supply would improve the operability and reliability of delivery to the Bishop Acres by a physical connection between the two systems. The Bishop Acres well will be incorporated into the City water supply system after the City modifies its system by the following:

- Approximately 800 linear feet of water distribution main (under 16-inch in diameter) to Bishop Acres
- Approximately 275 foot feet of boring casing and carrier pipe across BNSF rail mainline and County of Kern roadway
- New valves and control equipment at the interconnection
- Rehabilitation and automation of the existing Bishop Acres well

The City would begin construction upon acquisition of the grant in accordance with the schedule show in Attachment 5. All engineering design work will be completed by the City of Shafter engineering staff. Necessary permits and permissions have been identified by the City of Shafter for installing the new pipeline; no difficult or time constraining permits or permissions are known. Construction of the new railroad undercrossing will require an encroachment permit, which the City of Shafter will obtain.

3.6.4 Integrated Elements of Project

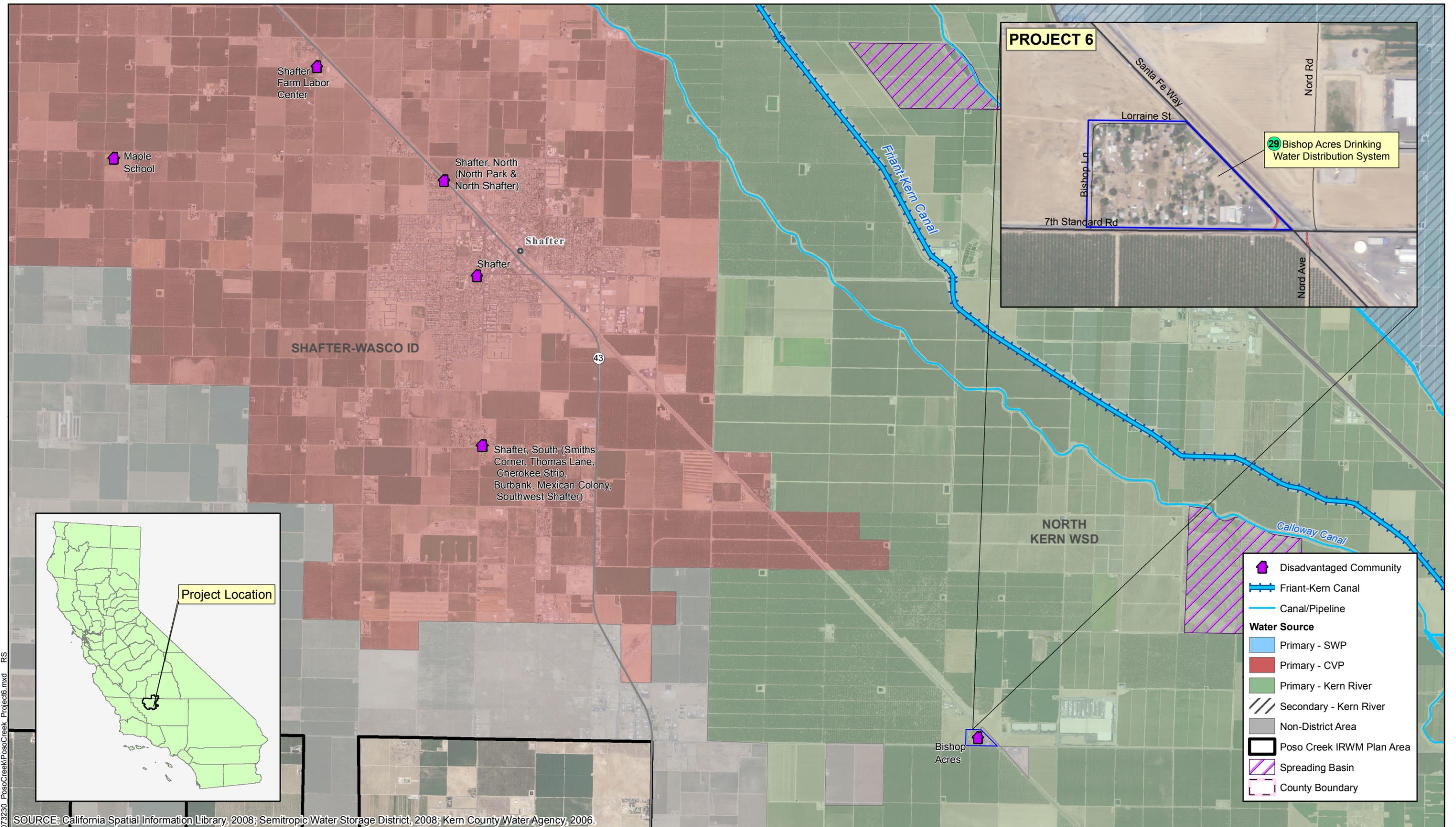
Project 6 is one of the Projects identified in the Poso Creek IRWM Plan as a component of Poso Creek Plan Project 29, to Assist Disadvantaged Communities to Enhance Water Supply, Drinking Water Treatment, and Waste Water Treatment Facilities. The project will integrate an isolated water supply serving a small community neighborhood with the City of Shafter water supply system.

The City of Shafter is proposing two other projects to better manage, monitor and protect the groundwater supply and use within its city limits and master planning boundary; Project 7 would provide sewer hookups to abandon failing septic systems that threaten ground water quality and public health and Project 8 would provide updated and radio-equipped water meters to approximately 600 severely disadvantaged customers allowing the City to better manage its water system and gage water usage Together, the three projects proposed by the

City of Shafter will allow the City to better promote water efficiency, reduce financial hardships on severely disadvantaged communities plus better ensure a safe and reliable water supply.

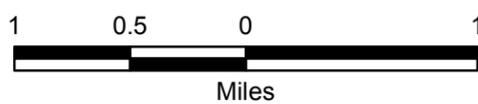
3.6.5 Project Map

The location of the Bishop Acres community water system to be consolidated with the City of Shafter system is shown on Figure 3.6-1. Although the Bishop Acres neighborhood is not within the boundary of the City of Shafter, it is within the City's Master Planning Boundary.



SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2006.

05-Jan-2011 Z:\Projects\PosoCreek\PosoCreek\Project6.mxd RS



Poso Creek IRWMP Implementation Grant Proposal

Poso Creek IRWMP Region



CONSOLIDATION OF BISHOP ACRES INTO CITY OF SHAFTER WATER SUPPLY SYSTEM PROJECT 6 LOCATION

JANUARY 2011

FIGURE 3.6-1

3.6.6 Completed Work

Work that is expected to be completed prior to the grant award date (June 1, 2011) will include preparation of the contracting documents to allow the tasks identified in Construction to proceed. Several tasks, listed below, are defined to accomplish Project 6 work and are organized to track with Budget and Schedule Attachments (presented in subsequent attachments).

3.6.7 Existing Data and Studies

The Project does not involve in depth data collection or studies to determine the need to consolidate the small community into the larger City of Shafter drinking water distribution system.

3.6.8 Project Timing and Phasing

This project is not part of a multi-phased project; it is a standalone project and is fully functional without implementation of subsequent projects. The Project will be constructed over a six month period.

The proposed Project will be performed under the general direction of City of Shafter. The sequencing of work is addressed in Attachment 5, which presents and discusses the Project Schedule.

3.6.9 Tasks

Task 1 –Project Administration

The City of Shafter will be responsible for development of funding agreements and service contracts, as well as coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration (preparation of invoices and maintenance of financial records).

Deliverables: (1) review of DWR Grant Contract; (2) project kick-off meeting with DWR personnel; (3) coordination of field visits with DWR personnel; (4) preparation of invoices and maintenance of financial records (5) preparation of Grant reimbursement requests; and (6) other deliverables as required.

Task 2 – Labor Compliance Program

The City of Shafter will hire a sub-consultant to be responsible for development of a Labor Compliance Program (LCP) which will follow the rules of the California Department of Industrial Relations. Specifically, the LCP will enforce the prevailing wage requirements as stipulated in the Labor Code Section 1771.5. The goal of the LCP will be to accomplish the following: (1) Inform contractors about their prevailing wage obligations; (2) Monitor

compliance by obtaining and reviewing certified payroll records throughout the construction of the project; (3) Investigate complaints and other suspected violations; and (4) Take appropriate actions when violations are found.

Deliverables: (1) prepare a Labor Compliance Program (LCP) Plan; and (2) enforce the LCP during the construction of the project.

Task 3 – Reporting

The City of Shafter will report on the financial status and project performance on a quarterly basis. Significant development reports and a final project report will be prepared. In addition, the Project will comply with any other reporting requirements specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4 - Land Purchase/Easement

The City of Shafter will secure all the necessary project rights-of-way and license agreements required for the construction and ongoing operation and maintenance of the Project. If further action by the City is necessary, they will implement the following standard R/W acquisition process: (1) Determine site layout and location for facilities; (2) Contact and negotiate with the landowners; (3) Order litigation guarantees from the title company to confirm ownership of the rights-of-way parcels; (4) Prepare the legal descriptions and plats; (5) Order and coordinate property appraisals; (6) Assist with the preparation of the offer letters for just compensation for the purchase of the project easements, assist in drafting the easement deed and in compiling the final package to be transmitted to the landowners; (7) Assist with securing signatures for the easement deed; and (8) Assist in filing the document with the County recorder's office.

Deliverables: Obtain rights-of-way and easements necessary for project construction.

Task 5 – Assessment and Evaluation

Assessment and evaluation of the project is complete inasmuch as the project is now in the final stages of design.

Deliverables: Assessments and evaluations were completed and no further action is required.

Task 6 – Design

Starting in 2006, the City investigated the feasibility of connection with the Bishop Acres area. In 2007, preliminary design, identification of the necessary rights-of-way, and identification of underground utility conflict was undertaken. Since then, engineering and design work has been completed at the 80 % design stage by City staff. Accordingly, work under this task will include finalizing the design of the project to the final level for advertisement of the project.

Deliverables: Completion of project plans and specifications at the final level for advertising for project award.

Task 7 – Environmental Documentation

Pursuant to California Environmental Quality Act (CEQA) guidelines, a Negative Declaration will be filed.

Deliverables: (1) provide confirmation of completed and approved environmental documentation; and (2) provide results of the pre-activity biological survey at the time of construction.

Task 8 – Permitting

This task includes permits and fees associated with railroad pipeline license agreement and county road encroachment permits and an NPDES permit (if required), and verification of permit compliance.

Deliverables: Required permits will be obtained by the City and confirmation from City's Counsel that no other permits are required.

Task 9 – Construction Contracting

Once the plans and specifications for the final level design are complete, the activities related to construction contracting will commence and they include the following: (1) Advertisement and solicitation of bids; (2) Responding to prospective bidders' request for information; (3) Preparation of addendas making changes or clarifications to the Contract documents; (4) Conducting a pre-bid tour and conference; (5) Conducting the bid opening; (6) Preparation of the abstract of bids; (7) Evaluation of proposals; (8) Checking references for the apparent low bidder; (9) Awarding the contract; and (10) Issuance of the Notice to Proceed.

Deliverables: (1) advertisement and solicitation of bids; (2) conduct a pre-bid tour and conference; (3) conduct bid opening; (4) evaluate bids; (5) award the contract; and (6) issue the Notice to Proceed.

Task 10 – Construction

This involves the furnishing and installation of all Project works as listed in the budget and schedule. A contract for this task will be awarded to the successful bidder.

Deliverables: Project works constructed as designed and specified.

Task 11 – Environmental Compliance

Given the location and nature of water line extension and well rehabilitation, no environmental mitigation is anticipated but standard field monitoring will occur during the Project implementation.

Deliverables: N/A

Task 12 – Construction Administration and Management

This task involves everything from the issuance of the Notice to Proceed to the filing of the Notice of Completion for the Project works and preparation of “As-Built” plans. The activities can generally be categorized as field inspection and contract administration, where the latter includes the following activities: (1) Attend weekly construction meetings; (2) Process technical submittals; (3) Process Requests for Information (RFI’s); (4) Review contractor schedule and cash flows; (5) Process contract change order requests; (6) evaluate and process claims; (7) Prepare the monthly progress estimate; (8) Maintain as-built drawings and photographic records; and (9) Contract close-out. Activities related to field inspection include inspection of materials and quality of work for conformance with the plans and Specifications including the following: (1) Verification of depth and invert elevations of facilities to be constructed; (2) Record quantities of materials received or used during specified periods; (3) Maintenance of daily logs of construction and inspection activities, including photographs; and (4) Coordination of concrete and earthwork testing in support of construction.

Deliverables: (1) review of construction progress submittals; (2) processing RFI’s, contract change orders and claims; (3) start-up and testing; (4) filing of the Notice of Completion; and (5) preparation of the “As-Built” plans.

Task 13 – Monitoring, Assessment, and Performance Measures

This task involves some time for utilizing the project specific monitoring tables as input for development of a proposal monitoring plan.

Deliverables: (1) City of Shafter will use project specific monitoring tables to develop proposal monitoring plan with Poso RWMG; and (2) City of Shafter will monitor

performance measures; and (3) City of Shafter will report monitoring results of project performance measures to the Poso RWMG pursuant to the Project Monitoring Plan.

3.6.10 Appendices

There are no appendices for this section.

3.6.11 Tables

There are no tables for this section.

3.7 Project 7 – North Shafter Sewer Hook-up Reimbursement Fund

Introduction

Project 7, the North Shafter Sewer Hook-Up Reimbursement Fund would provide funding for the City of Shafter to administer a reimbursement program for the 240 affected households of the North Shafter Sewer Project. The reimbursement fund is to provide the mechanism and economic incentive for DAC households to complete their connections to the newly-constructed sewer mains that are currently being extended to their area. The specific activities that will be performed to implement the North Shafter Sewer Hook-up Reimbursement Fund are presented in this section. Project 7 budget and schedule are presented in the following Sections 4 and 5. Site plans showing the individual households within the North Shafter Sewer Improvement Project are included as an Appendix 3.7-1 to this section.

3.7.1 Goals and Objectives

The goal of the Project 7 is to buy down individual connection costs so as to facilitate sewer hookups in a DAC to eliminate failing septic systems that are a source of ground water pollution and significant public health threat. The project would accomplish several goals and objectives of the Poso Creek Integrated Regional Water Management Plan (IRWMP). Exhibit 3.7-1 presents a selection of the Poso Creek IRWM Plan Objectives, and how the Project Goals and Objectives coincide with them:

EXHIBIT 3.7-1

IRWM Plan Objectives	Project 7 Goals and Objectives
<p>Primary: Enhance Water Supply Reliability of Surface Supplies</p>	<p>Project 7 will enhance water supply reliability by improving ground-water quality. Poor ground-water quality threatens the water supply of the City of Shafter which relies entirely on wells.</p>
<p>Protect the quality of groundwater and enhance where practical</p>	<p>The project would eliminate a source of contamination and help avoid the need for costly water treatment.</p> <p>The project will protect public health in a DAC community by improving, maintaining and protecting the local and regional water supply of clean water.</p>
<p>Maintain water supply costs at a level commensurate with the continued viability of the economy which has developed in the area</p>	<p>The project would help avoid the need for costly water treatment and/or new supplies in a DAC community.</p>

3.7.2 Purpose and Need

The City of Shafter is currently implementing a State-funded project to extend City sewer mains to the communities of North Park and North Shafter. The current project does not have funding for the service connections to the new main lines. Without additional funding, residents in these areas will have to rely on outdated and failing septic tanks and leach fields. In 2005, 71% of the area's 240 properties reported failing septic systems and/or use of greywater disposal into their lawns to avoid overloading of septic systems and reduce septic tank pumping. North Shafter residents report that many are forced to have their septic tanks pumped three or more times per year. The City of Shafter and Regional Water Quality Control Board have declared a potential pollution problem for the area based on local well contamination from failing septic systems.

3.7.3 Project Abstract

Project 7 would complement construction of a collection system and trunkline that will connect North Shafter to the City of Shafter/North of the River regional wastewater system and the abandonment of existing septic systems. Specifically, the funding would be used to pay for sewer hookups to a new collection system under construction by the City of Shafter. The total project cost is \$2,467,700 (See Attachment 4 North Shafter Budget). The City of Shafter has applied for \$2,467,700 in State Grant and Loan funds for design and construction of a wastewater collection system. Without Proposition 84 Grant funding (this application), to connect to the collection system, the intent and benefits of having a wastewater collection system cannot be fully realized. IRWMP funds will be used to offset the non-funded Project costs which could reach as high as \$1,200,000 (\$5,000 per connection and septic abandonment for 240 connections if done individually). The City will manage the project and can provide a contracting mechanism to administer and obtain a reasonable cost by advertising for a contractor who can provide the service to all the households. The City intends to save additional cost through integrate the service area into its current wastewater collection and treatment enterprise.

Integrated Elements of Project

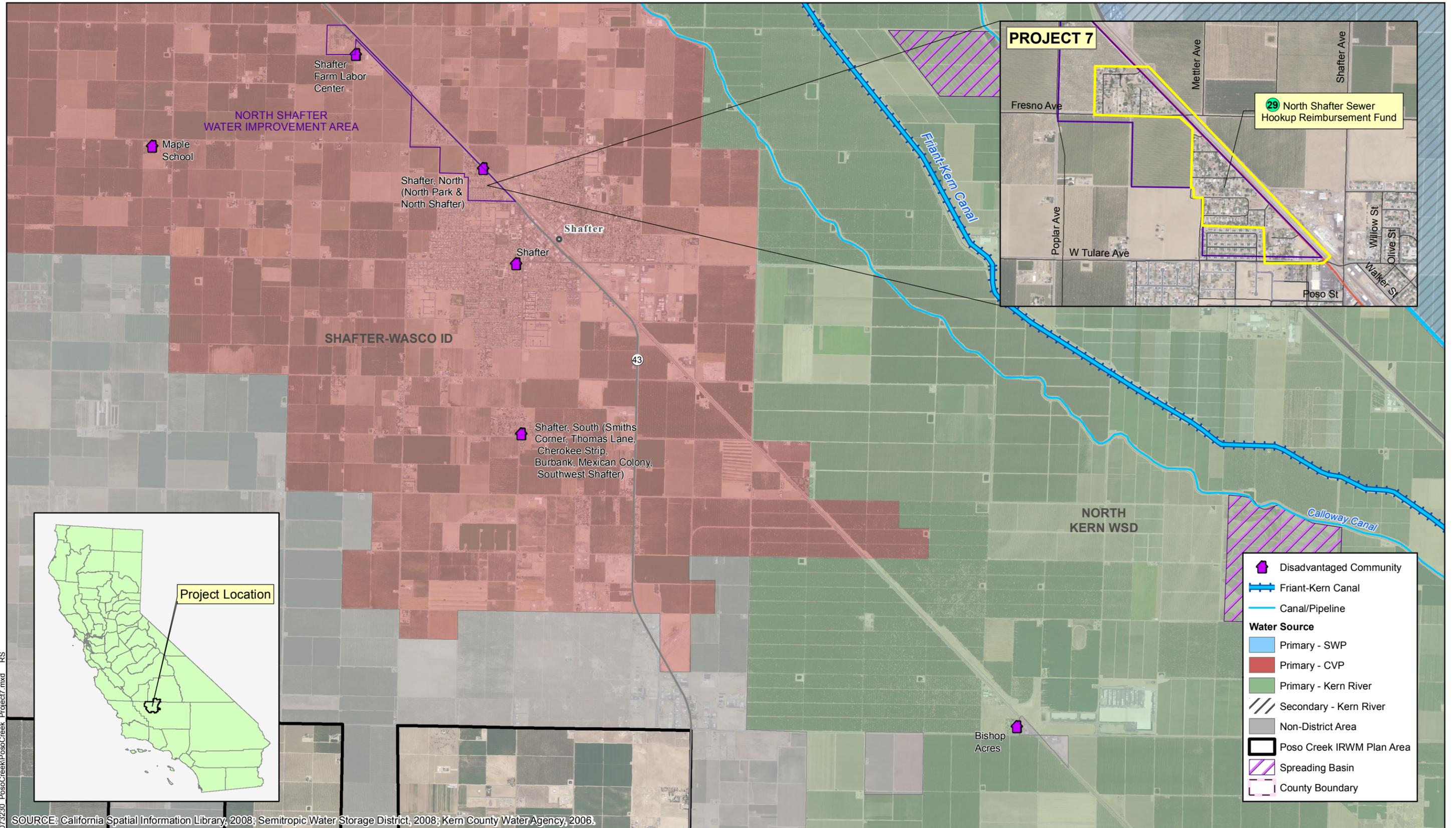
Project 7 is one of a number of projects identified in the Poso Creek IRWM Plan. Specifically, this Project is a component of Poso Plan Project 29, to Assist Disadvantaged Communities to Enhance Water Supply, Drinking Water Treatment, and Waste Water Treatment Facilities. The Poso Creek Plan identified non-structural and structural projects that focused on providing benefit towards meeting the Region's highest priority; regaining water supply reliability lost to the Region. Project 7 is a structural project that will help disadvantaged communities remove nonpoint source contaminants such as Nitrates and other pollutants from being discharged to the groundwater in the Poso Creek IRWM Region and City of Shafter. Removal of these pollution sources will eliminate the septic systems as a groundwater pollution problem and help protect groundwater that is used as a source for

drinking and irrigation water for the area. The wastewater will be sent to the City of Shafter/North of the River regional wastewater treatment plant where it will be treated and recycled for use on agricultural crops near the treatment plant site.

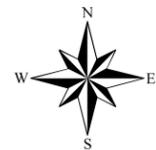
The City of Shafter is proposing two other project to better integrate and protect their water supply system; Project 6 would consolidate the Bishop Acres community into the City-wide water supply system and Project 8 would provide updated and radio-equipped water meters to approximately 600 severely disadvantaged customers allowing the City to better manage its water system and gage water usage Together, the three projects proposed by the City of Shafter will allow the City to better promote water efficiency, reduce financial hardships on severely disadvantaged communities plus better ensure a safe and reliable water supply.

3.7.4 Project Map

The location of the North Shafter Sewer Improvement Project area in relation to the City of Shafter is shown on Figure 3.7-1.



SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2006.



Poso Creek IRWMP Implementation
Grant Proposal

Poso Creek IRWMP Region



NORTH SHAFTER SEWER HOOK-UP REIMBURSEMENT FUND
PROJECT 7 LOCATION

JANUARY 2011

FIGURE 3.7-1

3.7.5 Completed Work

Work that is expected to be completed prior to the grant award date (June 1, 2011) will include setting up a procedure for the City of Shafter to administer a reimbursement fund for private homeowners in North Park – North Shafter who connect their houses to the new sewer line. Several tasks, listed below, are defined to accomplish Project 6 Work and are organized to track with Budget and Schedule Attachments (presented in subsequent attachments).

3.7.6 Existing Data and Studies

The Project does not involve in depth data collection or studies to determine the need to hook-up private homes on septic systems to the new sewer collection line.

3.7.7 Project Timing and Phasing

This project is not part of a multi-phased project; it is a standalone project and is fully functional without implementation of subsequent projects. The Project will be constructed over a two-year period.

The proposed Project will be performed under the general direction of City of Shafter. The sequencing of work is addressed in Attachment 5, which presents and discusses the Project Schedule.

3.7.8 Tasks

Task 1 –Project Administration

Activities include coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration (preparation of invoices and maintenance of financial records).

Deliverables: (1) review of DWR Grant Contract; (2) project kick-off meeting with DWR personnel; (3) coordination of field visits with DWR personnel; (4) preparation of invoices and maintenance of financial records (5) preparation of Grant reimbursement requests; and (6) other deliverables as required.

Task 2 – Labor Compliance Program

The City of Shafter will hire a sub-consultant to be responsible for development of a Labor Compliance Program (LCP) which will follow the rules of the California Department of Industrial Relations. Specifically, the LCP will enforce the prevailing wage requirements as stipulated in the Labor Code Section 1771.5. The goal of the LCP will be to accomplish the following: (1) Inform contractors about their prevailing wage obligations; (2) Monitor

compliance by obtaining and reviewing certified payroll records throughout the construction of the project; (3) Investigate complaints and other suspected violations; and (4) Take appropriate actions when violations are found.

Deliverables: (1) prepare a Labor Compliance Program (LCP) Plan; and (2) enforce the LCP during the construction of the project.

Task 3 – Reporting

The City of Shafter will report on the financial status and project performance on a quarterly basis. Significant development reports and a final project report will be prepared. In addition, the Project will comply with any other reporting requirements specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4 - Land Purchase/Easement

The Project includes construction on private property and will not require land purchasing or easements.

Task 5 – Assessment and Evaluation

Assessment and evaluation of the need for sewer hook-ups was completed as part of the evaluation for the sewer upgrade.

Deliverables: Assessments and evaluations were completed and no further action is required.

Task 6 – Design

Preliminary engineering will be provided by the City of Shafter Public Works Department.

Deliverables: Completion of project specifications for advertisement of work.

Task 7 – Environmental Documentation

Pursuant to California Environmental Quality Act (CEQA) guidelines.

Deliverables: (1) provide confirmation of completed and approved environmental documentation; and (2) provide results of the pre-activity biological survey at the time of construction.

Task 8 – Permitting

No permit requirements are expected for this Project.

Deliverables: Confirmation by City’s Counsel that no other permits are required to support the hook-ups through reimbursement fund.

Task 9 – Construction Contracting

Preliminary drawings and contract documents for bidding may be prepared by the City of Shafter Public Works Department once the reimbursement fund procedures are established.

Deliverables: (1) advertisement and solicitation of bids; (2) conduct a pre-bid tour and conference; (3) conduct bid opening; (4) evaluate bids; (5) award the contract; and (6) issue the Notice to Proceed.

Task 10 – Construction

A successful bidder will be awarded a contract to furnish and install all Project works as listed in the budget and schedule. A contract for the specified work may be awarded by the City of Shafter following establishment of the procedure to administer the reimbursement fund.

Deliverables: Project works constructed as designed and specified.

Task 11 – Environmental Compliance

Given the location and nature of water line extension and well rehabilitation, no environmental mitigation is anticipated but standard field monitoring will occur during the Project implementation.

Deliverables: N/A

Task 12 – Construction Administration and Management

The City of Shafter will establish procedures to notify and assist homeowners with financial assistance for connection costs. The City procedures will include monitoring and reporting of construction and costs associated with each connection assisted financially.

Deliverables: (1) Establishing a procedure to notify and assist homeowners of sewer hook-up fee reimbursement program (2) Accounting of connection costs certification of completion of each connection assisted financially.

Task 13 – Monitoring, Assessment, and Performance Measures

This task involves some time for utilizing the project specific monitoring tables as input for development of a proposal monitoring plan.

Deliverables: (1) City of Shafter will use project specific monitoring tables to develop proposal monitoring plan with Poso RWMG; and (2) City of Shafter will monitor and report performance measures.

3.7.9 Appendices

Appendices for this Project 7 Work Plan include:

Appendix 3.7-1 Site Plan Views of North Shafter Sewer Improvement Projects

3.7.10 Tables

There are no tables for this section.

Memorandum

To: Files (073230) Appendix 3.7-1
From: Rick Iger
Re: North Shafter Sewer Hook-Up Reimbursement Fund Information

Appendix 3.7-1 contains the following additional information for Project 7 North Shafter Sewer Hook-Up Reimbursement Fund:

1. Site Plan Views of North Shafter Sewer Improvement Project; Sheet 1, Sheet 2, and Sheet 3 of 24.

PLANS FOR THE CONSTRUCTION OF 2010 NORTH PARK - NORTH SHAFTER SEWER IMPROVEMENT PROJECT

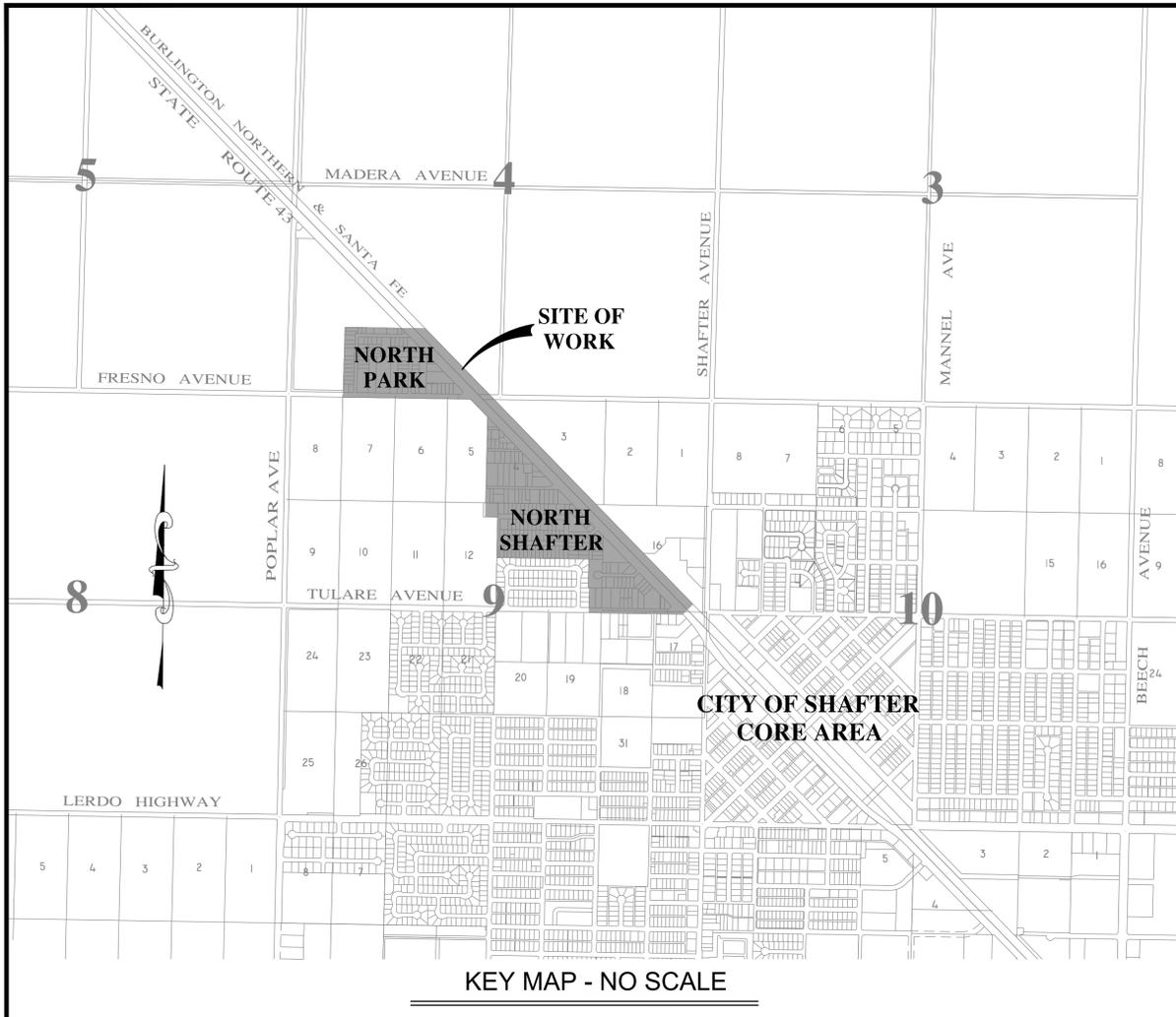


CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

ENGINEERING PROVIDED BY: CITY OF SHAFTER
ENGINEERING & PUBLIC WORKS DIVISION
336 PACIFIC AVENUE
SHAFTER, CA 93263

PH: (661) 746-5002
FX: (661) 746-9125

FUNDING FOR THIS PROJECT HAS BEEN PROVIDED IN FULL OR IN PART THROUGH AN AGREEMENT WITH THE STATE WATER RESOURCES CONTROL BOARD (STATE WATER BOARD). THE CONTENTS OF THIS DOCUMENT DO NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF THE STATE WATER BOARD, NOR DOES MENTION OF TRADE NAMES OR COMMERCIAL PRODUCTS CONSTITUTE ENDORSEMENT OR RECOMMENDATION FOR USE (GOV. CODE 7550)



GENERAL NOTES:

1. THESE PLANS ARE TO BE USED IN CONJUNCTION WITH THE CORRESPONDING CITY OF SHAFTER SPECIFICATIONS AT THE DATE OF BID.
2. IT IS THE INTENTION THAT THE PLANS, SPECIFICATIONS, AND BIDDING DOCUMENTS COINCIDE AND AGREE IN ALL PARTICULARS. IF ANY MATTER OR THING BE SHOWN IN ONE AND NOT IN THE OTHER IT SHALL BE OF THE SAME FORCE AND AFFECT AS IF INCORPORATED IN BOTH; AND ALL THINGS MUST BE DONE BY THE CONTRACTOR WHICH MAY BE SHOWN IN EITHER.
3. ALL EXISTING PUBLIC & PRIVATE IMPROVEMENTS AND UTILITIES, (STREET, PAVING, CURB, GUTTER, SIDEWALK, CROSS GUTTER, FENCING, IRRIGATION STRUCTURES, CANALS, PRIVATE ROADS, PIPELINES, SWALES, ETC.) THAT ARE REMOVED, DAMAGED OR UNDERCUT SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE CITY ENGINEER. ALL EXISTING PAVING AND SURFACING REMOVED, DAMAGED OR UNDERCUT SHALL BE REPLACED IN ACCORDANCE PER THE CITY ENGINEER. IRRIGATION STRUCTURES SHALL BE RETURNED TO A FULLY OPERATIONAL CONDITION BY THE END OF THE DAY FOR EACH DAY OF WORK.
4. PRIOR TO THE START OF ANY PHASE OF CONSTRUCTION THE CITY OF SHAFTER SHALL BE GIVEN 24 HOURS NOTICE (PHONE: (661) 746-5002). 24 HOUR NOTICE REQUIRED FOR TESTING AND INSPECTION.
5. THE UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND FOR INFORMATION PURPOSES ONLY. UNDERGROUND SERVICE ALERT (USA) SHALL BE NOTIFIED AT LEAST 2 WORKING DAYS BEFORE CONSTRUCTION IN ANY GIVEN AREA. TELEPHONE (800) 642-2444.
6. UNDERGROUND FACILITIES KNOWN TO EXIST ARE SHOWN ON THE PLANS BASED ON AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION, LOCATION, PROTECTION, AND REPAIR (IF DAMAGED DURING CONSTRUCTION) OF SAID FACILITIES. SHOULD UNDERGROUND FACILITIES BE ENCOUNTERED WHICH ARE NOT SHOWN ON THE PLANS OR

DEVIATE FROM THE LOCATION SHOWN, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER OF THAT FACILITY (IF APPROPRIATE) AND THE ENGINEER FOR POSSIBLE DESIGN CHANGES.

7. CITY SUBDIVISION ENGINEERING AND DESIGN STANDARDS ARE AVAILABLE ONLINE AT WWW.SHAFTER.COM OR FROM THE CITY ENGINEERING OFFICE.

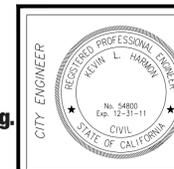
BENCHMARK: CHISELED "X" AT TOP OF MEDIAN ISLAND CURB LOCATED AT THE INTERSECTION OF SHAFTER AVENUE AND TULARE AVENUE. ELEV = 348.97'

COORDINATE SYSTEM: COORDINATE SYSTEM IS NAD83, CALIFORNIA ZONE V. COORDINATES SHOWN ARE FOR SURVEYING AND ARCHIVING PURPOSES ONLY.

WATER & GAS SERVICE LOCATIONS: EACH RESIDENT WITHIN THE PROJECT AREA RECEIVES SERVICE FROM BOTH THE CITY OF SHAFTER WATER DEPARTMENT AND THE GAS COMPANY. CONTRACTOR CAN EXPECT TO CROSS OR FIND AT LEAST ONE OF EACH SERVICE TYPE FOR EACH PROPERTY. WATER METERS AND SERVICES SHOWN IN THE PLAN VIEW ARE BASED UPON FIELD SURVEY. THE APPROXIMATE LOCATIONS OF GAS METERS VISIBLE FROM THE PUBLIC RIGHT OF WAY ALSO SHOWN IN THE PLAN VIEW. FOR SIMPLICITY, NEITHER ARE SHOWN IN THE PROFILES.

CALTRANS ENCROACHMENT PERMIT: CITY OF SHAFTER HAS OBTAINED A PERMIT FROM THE CALIFORNIA DEPARTMENT OF TRANSPORTATION FOR WORK WITHIN THEIR RIGHT OF WAY. CONTRACTOR SHALL ADD THEIR NAMES TO THE EXISTING PERMIT. CONTRACTOR SHALL COORDINATE WITH STATE ANY INSPECTIONS OF WORK WITHIN STATE RIGHT OF WAY. ALL WORK PERFORMED WITHIN STATE RIGHT OF WAY MUST CONFORM TO CALTRANS STANDARD SPECIFICATIONS AND STANDARD PLANS DATED MAY 2006.

KERN COUNTY ENCROACHMENT PERMIT: CITY OF SHAFTER HAS OBTAINED A PERMIT FROM KERN COUNTY ROADS DEPARTMENT FOR WORK WITHIN AND/OR ADJACENT TO THEIR RIGHT OF WAY. ANY EXCAVATION BACKFILL, AND ROAD REPAIR WITHIN KERN COUNTY RIGHT OF WAY MUST CONFORM TO THE KERN COUNTY ENGINEERING & SUBDIVISION STANDARDS, LATEST EDITION.



SUBMITTED BY:

KEVIN L. HARMON, R.C.E. 54800 EXP. 12/31/2011 DATE
CITY ENGINEER

DATE	REVISIONS
10/17/10	ISSUES RESOLVED TO ALIGNMENT & CITY. RELEASED FOR CONSTRUCTION

ENGINEER	CHECKED BY	APPROVED BY	DATE	JOB NO.	ACAD FILE	NIPUS SEWER PROJ.
KLH	MU	KLH	MAY 2010			

ENGINEERING SERVICES DEPARTMENT
336 Pacific Avenue Shafter, CA 93263
Phone (661) 746-5002 Fax (661) 746-9125



2010 NORTH PARK NORTH SHAFTER
SEWER IMPROVEMENT PROJECT
COVER SHEET

SHEET
1
OF 24



EXISTING STREET RIGHT OF WAY DATA

- 1. KLASSEN DRIVE (CO. ROAD 1871) RIGHT OF WAY DEDICATIONS PER BOOK 3007, PGS 518-543, K.C.O.R.
- 2. PRINCE, GIBSON, MCCRUMB, VENABLE, AND METTLER (CO. ROAD 1647) PER BOOK 2227, PGS 460-461, K.C.O.R.
- 3. ENGLISH LANE & SUNNY STREET PER GRANT DEED IN BOOK 6770, PGS 1441-1444, K.C.O.R.
- 4. VOTH LANE (CO. ROAD 1851) RIGHT OF WAY DEDICATIONS PER BOOK 3232, PGS 768-776, PGS 978-979, & PG 995
- 5. HICKS ROAD (CO. ROAD 1664) RIGHT OF WAY DEDICATION PER BOOK 2309, PGS 76-85
- 6. PARK LANE & MAYER LANE (CO. ROAD 2187) RIGHT OF WAY DEDICATION PER BOOK 3321, PGS 356-402, BOOK 3329, PGS 562-568, BOOK 3332, PGS 994-996, AND BOOK 3336, PG 556, K.C.O.R.
- 7. ALAMO ROAD (CO. ROAD 1987) RIGHT OF WAY DEDICATION PER BOOK 3052, PGS 350-363, K.C.O.R.
- 8. FRESNO AVENUE AND TULARE AVENUE RIGHT OF WAY DEDICATION PER KCLC SALES MAP FOR SECTION 9, T28S, R25E, MDB&M, FILED FEBRUARY 11, 1913.

NORTH

POPLAR AVE.

CITY OF SHAFTER
COUNTY OF KERN

THIS PORTION OF FRESNO IS UNDER THE JURISDICTION OF THE COUNTY OF KERN. ENCROACHMENT PERMIT REQUIRED. ALL WORK ON THE SOUTH HALF OF FRESNO WITHIN THIS AREA IS SUBJECT TO COUNTY STANDARDS.

COUNTY OF KERN
CITY OF SHAFTER

SHT 19
PARK LANE

SHT 20
MAYER LANE

SHT 22
CAGLE LANE (PVT)

PARK

SHT 21
ALAMO ROAD

SHT 22

SHT 17
FRESNO AVENUE

SHT 18

SHT 14

BURLINGTON
NORTHERN AND THE SANTA FE R.R.
CENTRAL VALLEY
HIGHWAY (SR43)

REVISIONS	DATE

ENGINEER:	KLH	MU	KLH	DATE:	MAY 2010
CHECKED BY:				JOB NO.:	
APPROVED BY:				ACAD FILE:	NIPUS SEWER PROJ.

ENGINEERING SERVICES DEPARTMENT
 336 Pacific Avenue Shafter, CA 93263
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2010 NORTH PARK NORTH SHAFTER
SEWER IMPROVEMENT PROJECT
 SHEET INDEX, NORTH PARK



EXISTING STREET RIGHT OF WAY DATA

- 1. KLASSEN DRIVE (CO. ROAD 1871) RIGHT OF WAY DEDICATIONS PER BOOK 3007, PGS 518-543, K.C.O.R.
- 2. PRINCE, GIBSON, MCCRUMB, VENABLE, AND METTLER (CO. ROAD 1647) PER BOOK 2227, PGS 460-461, K.C.O.R.
- 3. ENGLISH LANE & SUNNY STREET PER GRANT DEED IN BOOK 6770, PGS 1441-1444, K.C.O.R.
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CITY OF SHAFTER
COUNTY OF KERN

COUNTY OF KERN
CITY OF SHAFTER

NORTH

SHAFTER

TRACT 5837

PROJECT SIGN LOCATION

BENCHMARK:
CHISELED "X" AT TOP OF MEDIAN CURB
LOCATED AT THE INTERSECTION OF
SHAFTER AVENUE AND TULARE
AVENUE. ELEV = 348.97'

REVISIONS	DATE

ENGINEER:	CHECKED BY:	APPROVED BY:	DATE:

ENGINEERING SERVICES DEPARTMENT

336 Pacific Avenue Shafter, CA 93263
Phone (661) 746-5002 Fax (661) 746-9125



2010 NORTH PARK NORTH SHAFTER
SEWER IMPROVEMENT PROJECT

SHEET INDEX, NORTH SHAFTER

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SHT 12

SHT 12

SHT 6

SHT 6

SHT 4

SHT 5

ENGLISH LN

SUNNY ST

KLASSEN DRIVE

BASIN

PRINCE LANE

AVE

GIBSON LANE

CRUZ WAY

ARROYO SECO AVE

MESA VERDE AVE

TULARE AVE

MCCRUMB STREET

VENABLE LN

HICKS LN

BASIN

VOTH LANE

BURLINGTON NORTHERN AND THE SANTA FE R.R.
CENTRAL VALLEY HIGHWAY (SR43)

BURLINGTON NORTHERN AND THE SANTA FE R.R.
CENTRAL VALLEY HIGHWAY (SR43)

NORTH SHAFTER AVE

REDWOOD DRIVE

EAST TULARE AVE

3.8 Project 8 – Provide Water Meters to Severely Disadvantaged Community Service Areas

Introduction

The City of Shafter has approximately 600 meters to retrofit and update in the areas surrounding the City that have, in the past, abandoned their community water wells and systems and connected with the City's water distribution system. These connected areas include North Shafter, South Shafter and Southwest Shafter water improvement areas. Specific communities that would benefit include the Mexican Colony, Cherokee Strip, Smith's Corner, North Shafter, North Park, North Shafter Farm Labor Camp, Thomas Lane, former Burbank Water System, etc. Most of these are unincorporated water customers that switched over to the City system because of operational costs or water quality issues that they did not have the financial resources to address. Having these outside the City connections equipped with meters and Automatic Meter Reading radios to electronically transmit consumption will help the City avoid costs for retrofitting and labor for manual reads which would in turn force the City to pass along the costs to severely disadvantaged communities.

Upon execution of a funding agreement the City of Shafter expects to be able to get the construction clearances and a contract awarded by January, 2011. The City anticipates 90 days for construction. The labor compliance program will likely be administered by a third party consultant which is a practice the City has used on other grant projects, most recently the Maple School Waterline Project in 2009.

The specific activities that will be performed to Provide Water Meters in Severely Disadvantaged Community Service Areas in and near the City of Shafter (Project 8) are presented in this section. Project 8 budget and schedule are presented in the following Attachments 4 and 5. Site plans are included as Appendix 3.8-1 to this Section 3.

3.8.1 Goals and Objectives

The goal of the Project 8 is to install approximately 600 water meters per the City's new Automatic Meter Reading standard in severely disadvantaged areas served by the City of Shafter, itself a DAC. Most of these are water customers that had operational costs or water quality issues that were resolved through connection with the City water supply system. The project would accomplish several goals and objectives of the Poso Creek Integrated Regional Water Management Plan (IRWMP).

Exhibit 3.8-1 presents a selection of the Poso Creek IRWM Plan Objectives, and how the Project 8 Goals and Objectives coincide with them.

EXHIBIT 3.8-1

IRWM Plan Objectives	Project 8 Goals and Objectives
<p><u>Primary:</u> Enhance Water Supply Reliability of Surface Supplies</p>	<p>Project 8 will help expedite City's current meter retrofit program plus enhance water supply reliability by improving the City's knowledge of the amount of water served to surrounding DAC areas. Knowing more information regarding the demand will help the City with scheduling, equitable billing, and detection of system leaks. Knowledge of consumption and billing with commodity rates will also encourage a customer to use water wisely and, in turn, save money on a service bill.</p>
<p>Maintain water supply costs at a level commensurate with the continued viability of the economy which has developed in the area</p>	<p>The project would pay the cost of metering water supplies in a DAC community.</p> <p>The project will protect public health in a DAC community by ensuring a protected local supply of clean water.</p>

3.8.2 Purpose and Need

The City of Shafter is proposing to retrofit and update 600 water meters to residential and commercial customers in the North Shafter, South Shafter and Southwest Shafter water improvement areas. This project would allow the City to better serve these severely disadvantaged areas while minimizing the need for rate increases. The information from the meters would allow the City to equitably distribute costs among users and would also allow identification of user systems needing repair of leaks. Utilizing the City's new Automatic Meter Reading standard will be more cost-effective, efficient and accurate than traditional manual meter reading.

3.8.3 Project Abstract

The City of Shafter is proposing to retrofit and update 600 water meters to a new Automatic Meter Reading standard for residential and commercial customers in the North Shafter, South Shafter and Southwest Shafter water improvement areas. Specific communities that would benefit include the Mexican Colony, Cherokee Strip, Smith's Corner, North Shafter, North Park, North Shafter Farm Labor Camp, Thomas Lane, and former Burbank Water System (Figure 3.8-1).

These connections outside the City incorporation areas will be equipped with meters and radios to transmit consumption electronically, which will help avoid costs for manual meter reading. This project would allow the City to avoid passing on purchase, installation and ongoing reading costs to customers in severely disadvantaged community areas. Without Proposition 84 Grant funding (this application), the City estimates the residential water costs would increase approximately \$5 per month mostly because of the labor cost involved with manual meter reads. The City will manage the project and continue to own and operate the water supply system to the areas outside its incorporation boundary.

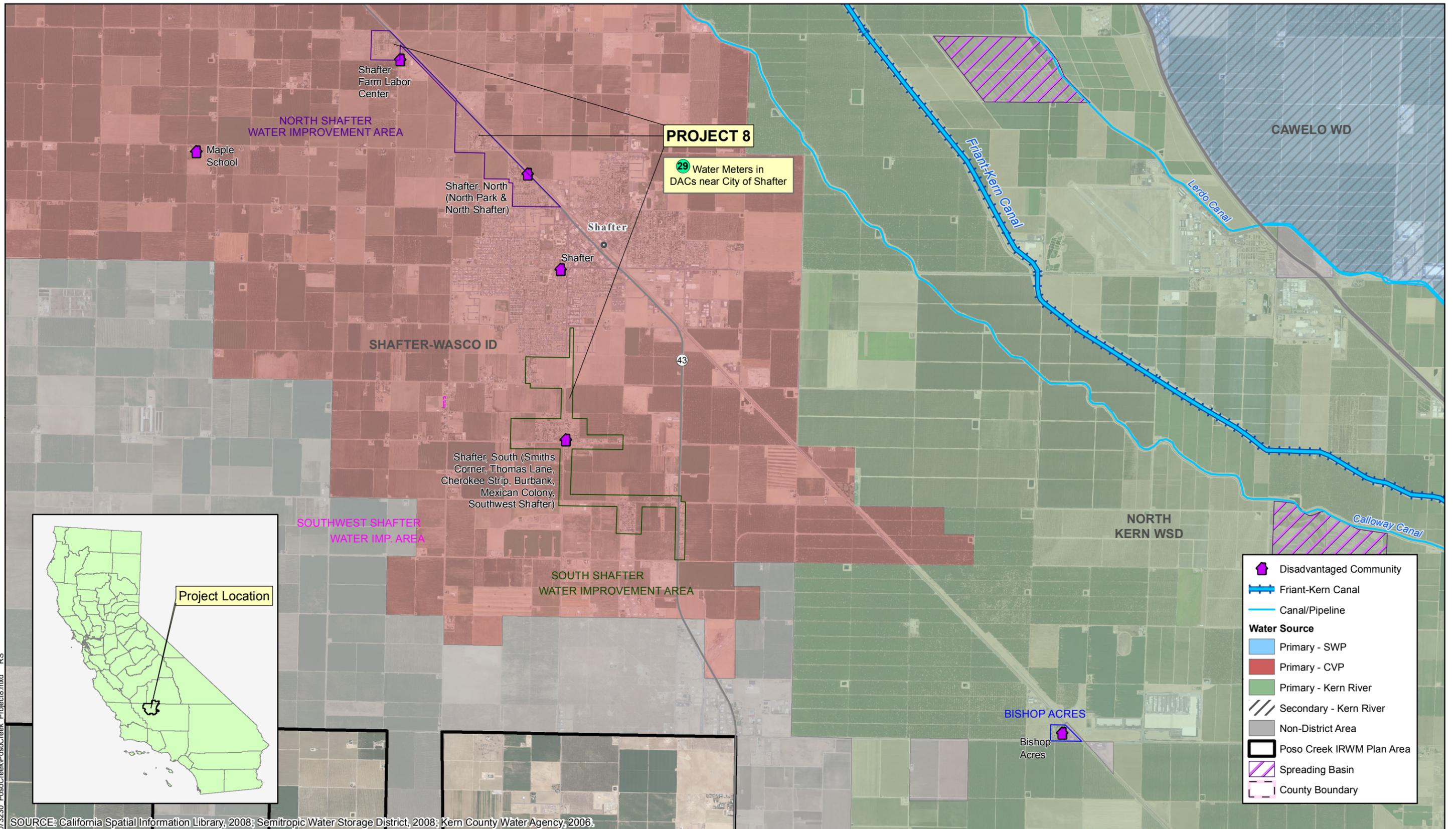
3.8.4 Integrated Elements of Project

Project 8 is one of a number of projects identified in the Poso Creek IRWM Plan. Specifically, this Project is a component of Poso Plan Project 29, to Assist Disadvantaged Communities to Enhance Water Supply, Drinking Water Treatment, and Waste Water Treatment Facilities. The Poso Creek Plan identified non-structural and structural projects that focused on providing benefit towards meeting the Region's highest priority; regaining water supply reliability lost to the Region. Project 8 is a structural project that will help a disadvantaged community (City of Shafter) better address the water supply needs of severely disadvantaged areas within its water service area.

The City of Shafter is proposing two other projects to better manage, monitor and protect the groundwater supply and use within its city limits and master planning boundary; Project 6 would consolidate the Bishop Acres neighborhood into the City-wide water supply system and Project 7 would provide sewer hookups to abandon failing septic systems that threaten ground water quality and public health.

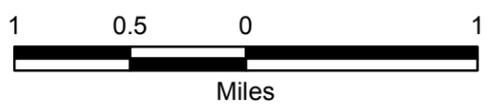
3.8.5 Project Map

The location of the areas to receive water meters in relation to the City of Shafter is shown on Figure 3.8-1.



SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2006.

03-Jan-2010 Z:\Projects\073230_PosoCreek\PosoCreek Project8.mxd RS



Poso Creek IRWMP Implementation Grant Proposal

Poso Creek IRWMP Region



METER INSTALLATION IN DAC SERVICE AREA PROJECT 8 LOCATION

JANUARY 2011

FIGURE 3.8-1

3.8.6 Completed Work

Work that is expected to begin prior to the grant award date (June 1, 2011) will include preparation of the contracting documents and permitting requirements to allow the tasks identified in Construction to proceed. Several tasks, listed below, are defined to accomplish Project 8 Work and are organized to track with Budget and Schedule Attachments (presented in subsequent attachments).

3.8.7 Existing Data and Studies

The Project does not involve in depth data collection or studies to determine the need to replace or install new meter in the identified areas.

3.8.8 Project Timing and Phasing

This project is not part of a multi-phased project; it is a standalone project and is fully functional without implementation of subsequent projects. The Project will be completed in approximately 18 months.

The proposed Project will be performed under the general direction of City of Shafter. The sequencing of work is addressed in Attachment 5, which presents and discusses the Project Schedule.

3.8.9 Tasks

Task 1 –Project Administration

Activities include coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration (preparation of invoices and maintenance of financial records).

Deliverables: (1) review of DWR Grant Contract; (2) project kick-off meeting with DWR personnel (as needed); (3) coordination of field visits with DWR personnel; (4) preparation of invoices and maintenance of financial records (5) preparation of Grant reimbursement requests; and (6) other deliverables as required.

Task 2 – Labor Compliance Program

The City of Shafter is proposing to procure and contract with sub-consultant to oversee and conduct a Labor Compliance Program (LCP) per the applicable per the direction and guidelines of the California Department of Industrial Relations. Specifically, the LCP will enforce the prevailing wage requirements as stipulated in the Labor Code Section 1771.5. The goal of the LCP will be to accomplish the following: (1) Inform contractors about their prevailing wage obligations; (2) Monitor compliance by obtaining and reviewing certified

payroll records throughout the construction of the project; (3) Investigate complaints and other suspected violations; and (4) Take appropriate actions when violations are found.

Deliverables: (1) prepare a Labor Compliance Program (LCP) Plan; and (2) enforce the LCP during the construction of the project.

Task 3 – Reporting

The City of Shafter will report on the financial status and project performance on a quarterly basis. Significant development reports and a final project report will be prepared. In addition, the Project will comply with any other reporting requirements specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4 - Land Purchase/Easement

The City of Shafter has all the necessary operational authority and easements to accomplish the project. No further action by the City is necessary.

Task 5 – Assessment and Evaluation

Installing replacement or new meters in water service connections is a routine procedure. The City has obtained cost estimates as a basis of their budget process and for this application. No further evaluations are necessary to proceed with the project.

Deliverables: Assessments and evaluations were completed and no further action is required.

Task 6 – Design

Installing updated or new meters in water service connections is a routine operational procedure. No detailed design is necessary. The City will issue a Request for Proposal for the Project per its Municipal Code and/or applicable DWR guidelines.

Deliverables: Completion of project description for advertising for project award.

Task 7 – Environmental Documentation

The City will file a Categorical Exemption for the Project per California Environmental Quality Act (CEQA) guidelines because this type of operational practice is exempt.

Deliverables: Confirmation of filed environmental documentation.

Task 8 – Permitting

No special permit requirements are expected for this Project.

Deliverables: No special permits are required that require substantial effort to obtain.

Task 9 – Construction Contracting

Upon execution of a funding agreement, the City will follow standard City and/or State procedures for developing a construction contract: (1) Advertisement and solicitation of bids; (2) Conducting the bid opening; (3) Evaluation of proposals; (4) Checking references for the apparent low bidder; (5) Awarding the contract; and (6) Issuance of the Notice to Proceed.

Deliverables: (1) advertisement and solicitation of bids; (2) award the contract; and (3) issue the Notice to Proceed.

Task 10 – Construction

This involves the furnishing and installation of all Project works as listed in the budget and schedule. A contract for this task will be awarded to the lowest responsive bidder.

Deliverables: Install meters as specified.

Task 11 – Environmental Compliance

Given the location and nature of water meter installation, no environmental mitigation is anticipated but standard field monitoring will occur during the Project implementation.

Deliverables: N/A

Task 12 – Construction Administration and Management

This task involves field inspection and contract administration including the following activities: (1) construction meetings; (2) Review contractor schedule and cash flows; (3) Process contract change order requests; (4) evaluate and process claims; (5) Maintain as-built drawings and photographic records; and (6) Contract close-out.

Deliverables: (1) review of construction progress submittals; (2) processing RFI's, contract change orders and claims; and (3) filing of the Notice of Completion.

Task 13 – Monitoring, Assessment, and Performance Measures

This task involves some time for utilizing the project specific monitoring tables as input for development of a proposal monitoring plan.

Deliverables: (1) City of Shafter will use project specific monitoring tables (2) City of Shafter will monitor performance measures; and (3) City of Shafter will report monitoring results of project performance measures to the Poso RWMG.

3.8.10 Appendices

There are no appendices for this section.

3.8.11 Tables

There are no tables for this section.