Meeting of the Central Valley Flood Protection Board
May 23, 2014

Staff Report

Natomas Central Mutual Water Company
Pritchard Lake Pumping Plant Replacement
Sacramento County

1.0 – ITEM

Consider approval of Draft Permit No. 18915
(Attachment B).

2.0 – APPLICANT

Natomas Central Mutual Water Company (NCMWC)

3.0 – LOCATION

The project is located along the Garden Highway north of Sacramento approximately 1.1-miles north of West Elverta Road, near River Mile 75 and Levee Mile 5.82. (Sacramento River, Sacramento County, see Attachment A).

4.0 – PROJECT DESCRIPTION

The applicant proposes to remove and replace the Pritchard Lake Pumping Plant (PLPP) and tie-into the existing 72-inch diameter discharge piping through the levee on the left (east) bank of the Sacramento River. Replacement of the existing piping through the levee will be covered under a separate permit in Phase II of the project. The existing pumping station was permitted on December 4, 1952 (Permit No.1723) and was issued to Elkhorn Mutual Water Company.

5.0 - AUTHORITY OF THE BOARD

California Water Code § 8534, 8590 – 8610.5, and 8700 - 8710

California Code of Regulations, Title 23 (Title 23)

- § 6, Need for a Permit
- § 13, Evidentiary Hearings
- § 112, Streams Regulated and Nonpermissible Work Periods
- § 121, Erosion Control
- § 123, Pipelines, Conduits, and Utility Lines
- § 126, Fences and Gates

6.0 – PROJECT ANALYSIS

Permit No. 18915 covers the first phase of the Pritchard Lake Pumping Plant Replacement Project. Phase one of the project involves the demolition and replacement of the PLPP and tying into the existing 72-inch diameter discharge piping that runs under the Garden Highway (Project Levee) and through the new Sacramento Area Flood Control Agency (SAFCA) setback levee. New piping from the first phase of the project will tie into the existing 72-inch diameter pipe 15-feet to the waterside of the existing 96-inch diameter CMP vertical standpipe that is located on the waterside of the Garden Highway. The second phase of the project, replacement of the piping through the levees will take place once SAFCA secures the necessary funds for the project. Phase 2 of the PLPP Replacement Project and will require a separate encroachment permit from the CVFPB.

The proposed PLPP is a feature of the Natomas Mutual Water Company's Central System. The PLPP pumps water from the Sacramento River into the Central Main Canal to provide agricultural irrigation service to the area. As part of the SAFCA's Natomas Levee Improvement Program (NLIP), an important component of the project is to provide protective fish screens that will prevent juvenile fish entrainment. In addition, new levee design criteria requires that the discharge pipes cross the SAFCA setback levee be above the new "200-year" design flood elevation; thus, modifications to the PLPP are needed to allow similar pumping performance of the new PLPP when discharge pipe is raised. Furthermore, the superstructure at the existing 60-year old PLPP is substantially deteriorated. The new PLPP will be constructed in the same location of the existing facility. The nearby Sankey Pumping Plant will temporarily supply water to NCMWC until the new PLPP is operational.

The existing PLPP would be decommissioned and removed during construction of the new PLPP. The existing pumps, pipes, platform, walkway deck, and timber support bracing would be removed using shore-based cranes and support equipment. An existing concrete vault that provides flow metering, and a landing for the existing access platform, would be demolished and removed. An existing emergency drain pipe for the concrete vault would also be removed during construction. All debris would be recycled or disposed of in an appropriate commercial landfill.

The new PLPP would include a new steel frame pump platform with a concrete deck for maintenance access. The pump platform would be approximately 16 feet wide by 64 feet long and supported by eight, 24-inch diameter steel pipe piles. The platform provides the surface to which all the pump motors, pump controls, and screen controls would be mounted above the 200-year flood elevation. The first bay of the access platform would be a constructed to accommodate crane access for construction and maintenance. The three remaining bays of the access platform would be constructed to accommodate service vehicles that will be used to maintain the pumps and screens. The steel pilings and access platform will also support the three new water discharge pipes (two 36-inch-diameter and one 30-inch-diameter). Riprap will be placed on the river side of the concrete abutment to prevent erosion of the slope. To alert boaters and protect the new PLPP from large floating debris, a floating log boom and a timber deflector would be constructed.

6.1 – Hydraulic Analysis

The purpose of the hydraulic analysis (March 2012) was to determine the potential hydraulic impacts from the replacement of the Pritchard Lake Pumping Plant (PLPP) and the Reclamation District No. 1000 (RD-1000) Pump Plant 2 Outfall which are approximately 150-feet apart. The Sacramento River Flood Control Project (SRFCP) design flow of 107,000 cubic feet per second (cfs) and the Urban Levee Design Criteria flow (ULDC) [DWR 2011] of 112,000 cfs were used in the analysis.

The hydraulic model cross-section at RM 75.50 was duplicated and used in the pre- and post-project conditions at RM 75.56 (PLPP) and RM 75.59 (RD-1000 Outfall). For the pre-project condition the model conservatively assumed the existing PLPP did not exist. In addition, the model cross-section at the RD-1000 Outfall was modified to represent the existing grade.

For the post-project condition, the model cross-sections at RM 75.56 and RM 75.59 were modified to represent the proposed projects. The computed water surface elevation changes at the RD-1000 Outfall and the PLPP for the design flow are - 0.01

and - 0.12 feet respectively. The computed water surface elevation changes at the RD-1000 Outfall and the PLPP for the 200-year flow are - 0.01 and - 0.15 feet respectively. Computed maximum water velocity changes for the project design flow at the RD-1000 Outfall and the PLPP are + 0.13 and + 0.74 feet per second (fps) respectively. Computed maximum water velocity changes for the 200-year flow at the RD-1000 Outfall and the PLPP are + 0.14 and + 0.82 feet per second (fps) respectively. It should be noted that the water velocity values presented herein are average cross-sectional velocities. The velocities near the river banks will be lower than those shown in the table. The results of the hydraulic analysis show that the proposed PLPP project will have no adverse impact on the SRFCP design flood or the ULDC 200-year water surface elevations and small increases in the stream velocities.

6.2 – Geotechnical Analysis

A geotechnical analysis was not required as all work will occur outside of the levee prism.

7.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with this project, from all pertinent agencies are shown below:

- Reclamation District No. 1000 endorsed the project with conditions. The conditions will be incorporated into the permit as Exhibit A.

- The USACE comment letter has been received for this application. The USACE District Engineer has no objection to the project, subject to conditions. The letter is incorporated into the permit as Exhibit B.

8.0 – CEQA ANALYSIS

Board staff has prepared the following CEQA findings:

An Environmental Impact Report (EIR) was prepared by SAFCA, acting as lead agency, and certified by the SAFCA Board of Directors on May 21, 2009 with Resolution No. 09-059. On April 23, 2010, California Environmental Quality Act (CEQA) responsible agency findings were considered and adopted through CVFPB Board Resolution 2010-

10 (Attachment E) as part of the construction of Reaches 5A through 9B of the Natomas Levee Improvement Program Phase 3 Landside Improvements Project.

The Board finds that its prior CEQA findings made on April 23, 2010 regarding the SAFCA project are still valid and that this activity was covered in the original project description. The Board finds that the proposed Pritchard Lake Pumping Plant replacement is within the scope of the previously certified EIR. No new environmental effects could occur and no new mitigation measures are required as a result of this pumping plant replacement. Therefore, no new environmental documents are required pursuant to CEQA Guidelines section 15162.

The documents and other materials which constitute the record of the Central Valley Flood Protection Board proceedings in this matter are in the custody of Jay Punia, Executive Officer, Central Valley Flood Protection Board, 3310 El Camino Ave., Room 151, Sacramento, California 95821.

9.0 – WATER CODE SECTION 8610.5 CONSIDERATIONS

1. Evidence that the Board admits into its record from any party, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:

   The Board has considered all the evidence presented in this matter, including the original and updated applications and supporting documents, this Staff Report and attachments, all other evidence presented by any individual or group, and all letters and other correspondence received by the Board and in the Board's files related to this matter.

2. The best available science that related to the scientific issues presented by the executive officer, legal counsel, the Department or other parties that raise credible scientific issues.

   The accepted industry standards for the earth work proposed and water delivery channels under this permit as regulated by Title 23 have been applied to the review of this permit.

3. Effects of the decision on facilities of the State Plan of Flood Control, and consistency of the proposed project with the Central Valley Flood Protection Plan as adopted by Board Resolution 2012-25 on June 29, 2012:

The proposed project replaces an existing authorized pumping facility; therefore there will be no adverse effect on facilities of the State Plan of Flood Control. The proposed project is consistent with the 2012 Central Valley Flood Protection Plan as the project was designed to accommodate the 200-year flood event.

4. Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

   There will be no effects of reasonable projected future events as the project has been designed to accommodate a 200-year flood event. Replacement of the project by the Natomas Central Mutual Water Company is needed to meet current fish screening regulations for pumping stations and to meet the ULDC standards (200-year flood protection) for SAFCA's NLIP setback levee.

10.0 – STAFF RECOMMENDATION

Staff recommends that the Board adopt (in substantially the form provided):

- Board CEQA findings,
- Approve Board Encroachment Permit No. 18915;

And direct the Executive Officer to take the necessary actions to prepare and execute the permit and any related documents and to file a Notice of Determination with the State Clearinghouse.

11.0 – LIST OF ATTACHMENTS

A. Location Maps and Photos
B. Draft Permit No. 18915
C. Hydraulic Report
D. Project Drawings
E. Adopted Resolution 2010-10

Design Review:	Gary W. Lemon P.E.
Environmental Review:	Andrea Buckley
Document Review:	Mitra Emami P.E., Len Marino P.E.
Legal Review:	Leslie Gallagher, Chief Counsel

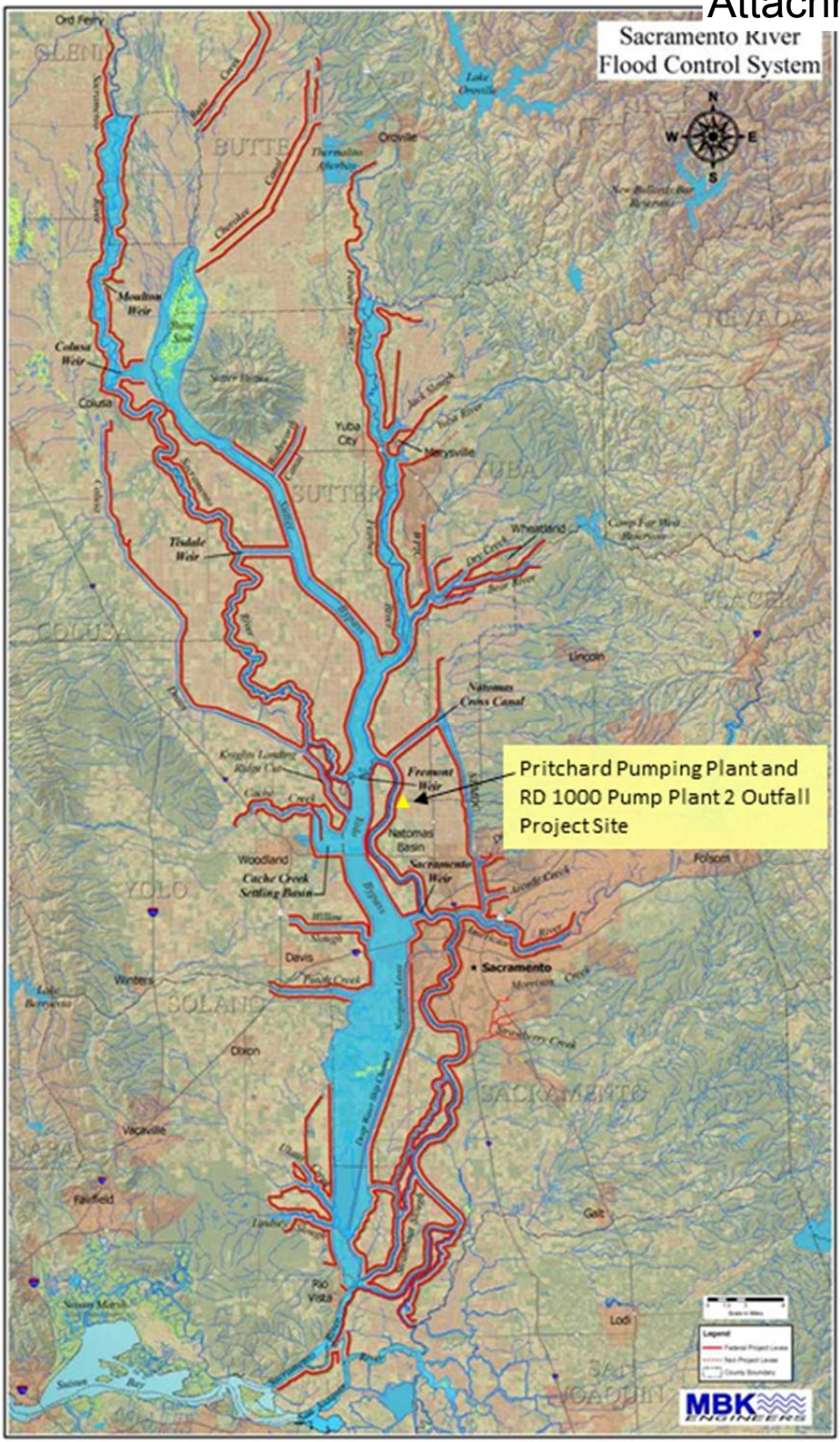
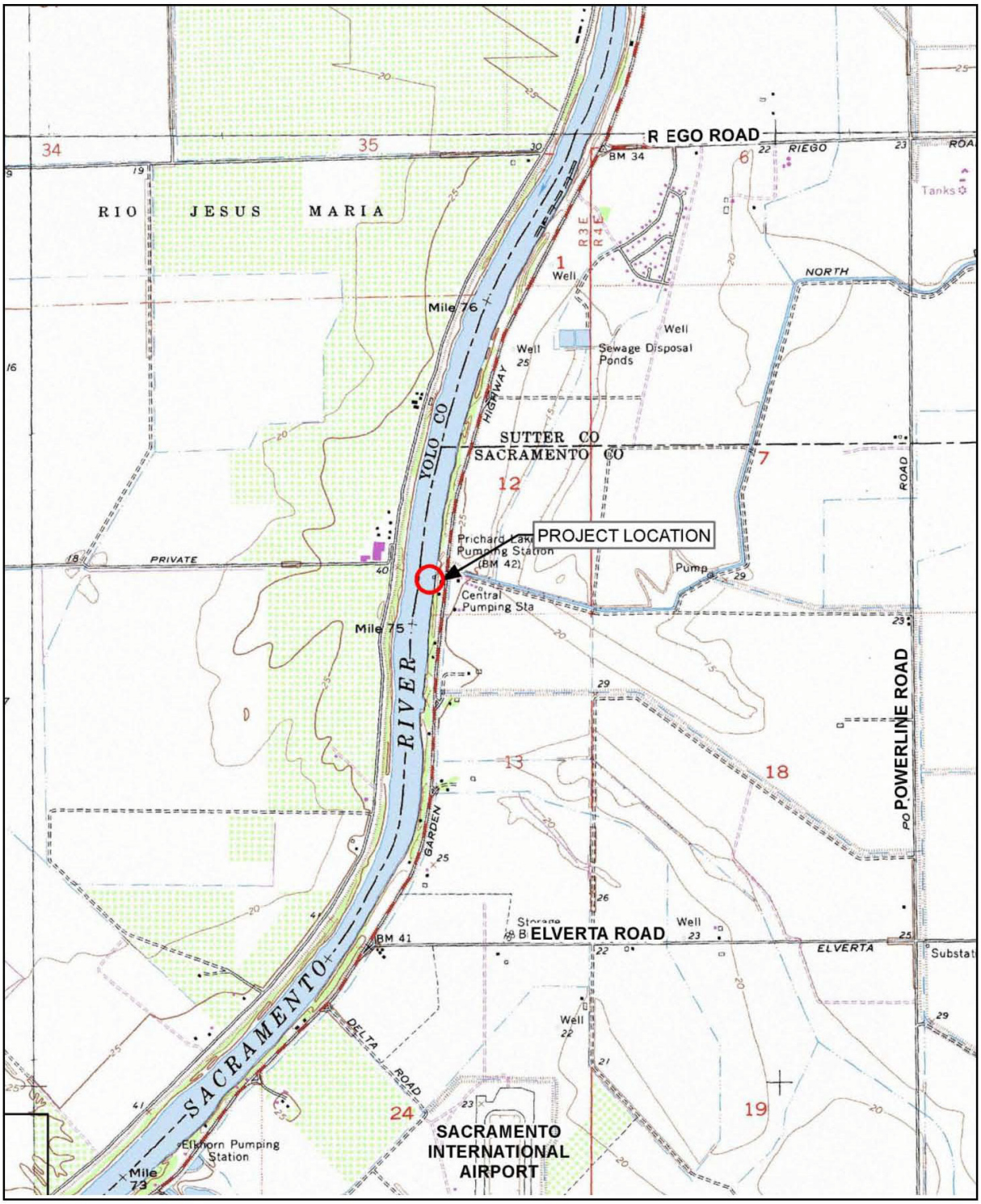


Figure 1 - Location Map

FIGURE 1
Project Vicinity Map



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Feet

Project Vicinity Map
Pritchard Pumping Plant
SACRAMENTO AREA FLOOD CONTROL AGENCY
Natomas Levee Improvement Program

Source: Mead and Hunt, 2012

Photograph 1: Pritchard Pumping Plant site from Garden Highway (River Mile 75.1).

Photograph 2: Standing at new Pritchard Pumping Plant site looking north towards existing plant.

Photograph 3: Looking north from top of adjacent levee at the Pritchard Pumping Plant site.

Photograph 4: Looking east from top of adjacent levee to beginning of Elkhorn Canal. The temporary transition structure to be removed is in the foreground and fenced with orange fence.

DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18915 BD

This Permit is issued to:

Natomas Central Mutual Water Company
2601 West Elkhorn Blvd
Sacramento, California 95673

To remove and replace the Pritchard Lake Pumping Plant and tie-into the existing 72-inch diameter discharge piping through the levee on the left (east) bank of the Sacramento River. Replacement of the existing piping through the levee will be covered under a separate permit in Phase ll of the project. The existing pumping station was permitted on December 4, 1952 (Permit No.1723) and was issued to Elkhorn Mutual Water Company. The project is located along the Garden Highway north of Sacramento approximately 1.1-miles north of West Elverta Road near River Mile 75 and Levee Mile 5.82 (Section 12, T10N, R3E, MDB&M, Reclamation District 1000, Sacramento River, Sacramento County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

Dated: _____

_____
Executive Officer

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18915 BD

THIRTEEN: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

FOURTEEN: All work approved by this permit shall be in accordance with the submitted drawings and specifications except as modified by special permit conditions herein. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Central Valley Flood Protection Board.

FIFTEEN: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SIXTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its

defense, in its sole discretion.

SEVENTEEN: The Central Valley Flood Protection Board, Department of Water Resources, and Reclamation District No.1000 shall not be held liable for any damages to the permitted encroachment(s) resulting from flood fight, operation, maintenance, inspection, or emergency repair.

EIGHTEEN: No construction work of any kind shall be done during the flood season from November 1st to April 15th without prior approval of the Central Valley Flood Protection Board.

NINETEEN: Upon receipt of a signed copy of the issued permit the permittee shall contact the Board by telephone at (916) 574-0609, and the Board's Construction Supervisor at (916) 651-1299 to schedule a preconstruction conference. Failure to do so at least 20 working days prior to start of work may result in delay of the project.

TWENTY: During demolition of the exsisting Pritchard Lake Pumping Plant, any and all anticipated or unanticipated conditions encountered which may impact levee integrity or flood control shall be brought to the attention of the DWR Flood Project Inspector immediately and prior to continuation.

TWENTY-ONE: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1st to April 15th.

TWENTY-TWO: All piles being removed shall be removed to at least 1 foot below the natural ground line and at least 3 feet below the bottom of the low-water channel.

TWENTY-THREE: Excavations below the design flood plane and within the levee section or within 10 feet of the projected waterward and landward levee slopes shall have side slopes no steeper than 1 horizontal to 1 vertical. Flatter slopes may be required to ensure stability of the excavation.

TWENTY-FOUR: Backfill material for excavations within the levee section shall be free of stones or lumps that exceed 3 inches in greatest dimension, organic matter, or other unsatisfactory material and shall be compacted to at least 90 percent relative compaction as measured by ASTM Method D1557-91.

TWENTY-FIVE: Positive drainage away from the levee shall be provided in all fill areas.

TWENTY-SIX: Backfill material for excavations within the levee section and within 10 feet of the levee toes shall be placed in 4- to 6-inch layers, moisture conditioned above optimum moisture content, and compacted to a minimum of 90 percent relative compaction as measured by ASTM Method D1557-91.

TWENTY-SEVEN: Compaction tests by a certified soils laboratory will be required to verify compaction of backfill within the levee section or within 10 feet of the levee toe.

TWENTY-EIGHT: Revetment shall be quarry stone and shall, at a minimum, meet the following grading specifications:

Quarry Stone

Stone Size	Percent Passing
15 inches;	100
8 inches;	80-95
6 inches;	45-80
4 inches;	15-45
2 inches;	0-15

TWENTY-NINE: Revetment shall be uniformly placed and properly transitioned into the bank, levee slope, or adjacent revetment and in a manner which avoids segregation.

THIRTY: The revetment shall not contain any reinforcing steel, floatable, or objectionable material. Asphalt or other petroleum-based products may not be used as fill or erosion protection on the levee section or within the floodway.

THIRTY-ONE: All temporary fencing, gates and signs shall be removed upon completion of the project.

THIRTY-TWO: The permittee shall replant or reseed the levee slopes to restore sod, grass, or other non-woody ground covers if damaged during project work.

THIRTY-THREE: All debris generated by this project shall be disposed of outside the Project Works.

THIRTY-FOUR: The existing 72-inch diamter pipeline through the levee shall be tested and confirmed free of leaks by X-ray, pressure tests, or other approved methods during construction or anytime after construction upon request by the Central Valley Flood Protection Board.

THIRTY-FIVE: The permittee shall maintain the permitted encroachment(s) and the project works within the utilized area in the manner required and as requested by the authorized representative of the Department of Water Resources or any other agency responsible for maintenance.

THIRTY-SIX: Debris that may accumulate on the permitted encroachment(s) and related facilities shall be cleared off and disposed of outside the floodway after each period of high water.

THIRTY-SEVEN: The permitted encroachment(s) shall not interfere with operation and maintenance of the flood control project. If the permitted encroachment(s) are determined by any agency responsible for operation or maintenance of the flood control project to interfere, the permittee shall be required, at permittee's cost and expense, to modify or remove the permitted encroachment(s) under direction of the Central Valley Flood Protection Board or Department of Water Resources. If the permittee does not comply, the Central Valley Flood Protection Board may modify or remove the encroachment(s) at the permittee's expense.

THIRTY-EIGHT: If the new Pritchard Lake Pumping Plant result(s) in an adverse hydraulic impact, the permittee shall provide appropriate mitigation measures, to be approved by the Central Valley Flood Protection Board, prior to implementation of mitigation measures.

THIRTY-NINE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, the Central Valley Flood Protection Board may remove the encroachment(s) at the permittee's expense.

FORTY: If the project, or any portion thereof, is to be abandoned in the future, the permittee or successor shall abandon the project under direction of the Central Valley Flood Protection Board and Department of Water Resources, at the permittee's or successor's cost and expense.

FORTY-ONE: The permittee shall comply with all conditions set forth by Reclamation District No.1000. The conditions are attached to this permit as Exhibit A and are incorporated by reference.

FORTY-TWO: The permittee shall comply with all conditions set forth in the letter from the Department of the Army (U.S. Army Corps of Engineers, Sacramento District) dated May 2, 2014, which is attached to this permit as Exhibit B and is incorporated by reference.

FORTY-THREE: Upon completion of the project, the permittee shall submit as-constructed drawings to: Department of Water Resources, Flood Project Inspection Section, 3310 El Camino Avenue, Suite 256, Sacramento, California 95821.

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Exhibit A

RD1000

RECLAMATION
DISTRICT 1000

Permit Conditions

Permit Application No. Unnumbered
Location: Sacramento River East Levee—RM 75.0 (approx)
Applicant: Natomas Central Mutual Water Company
Description: Construct Pritchard Diversion Water Intake Structure

CONDITIONS:

1. Maintenance of all encroaching structures, facilities, vegetation or any other items or matters approved under this permit shall remain the responsibility of the Permittee.

2. Permittee may be required, at the Permittee's sole cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted work if such removal, alteration, relocation or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if the encroaching facilities interferes with the District's ability to operate and maintain its flood control facilities or if the encroaching facilities are damaged by any cause.

3. Permittee(s) hereby agree(s) to indemnify and hold and save the District and its employees harmless from any damage, costs or liability, including all costs of defense, which may arise as result of the exercise of this Permit.

4. During construction, Permitte shall provide access for District personnel, vehicles and equipment at all times to allow for the District to conduct its operation and maintenance responsibilities

5. Permittee shall obtain all necessary permits and regulatory approvals for the proposed work

6. Permittee shall notify the District one week in advance of the start of construction.

7. Permittee shall coordinate this project with the Natomas Levee Improvement Project (NLIP) by the Sacramento Area Flood Control Agency (SAFCA). Such coordination with SAFCA may require subsequent modifications by Permittee which shall be at Permittee's sole cost.

1633 GARDEN HIGHWAY
SACRAMENTO, CA 95833
916-922-1449

8. Construction of the proposed encroachment shall be scheduled and done in a manner so as not to interfere with or delay construction of the proposed NLIP levee improvements at this location.

9. All work within the channel and/or on the levee must be done between April 15 and November 1 unless otherwise approved by the District and the CVFPB.

10. Permittee may not use the levee crown, access road or adjacent easement area for access, staging construction or storing materials without specific approval by the District. If approved by the District, the disturbed areas shall be fully restored to its pre-project condition to the satisfaction of the District. The District will require the Permitte's contractor to execute a Temporary Use Permit and Hold Harmless Agreement with the District and include a cash deposit as determined by the District which shall be used to restore the site to the satisfaction of the District should the contractor fail to do so. In addition, if adverse weather conditions are forecast or other emergency condition arises, the Permittee shall immediately remove any equipment or materials stored on the levee and restore the levee surface for all-weather access to the satisfaction of the District.

11. Permittee shall remain responsible for any damages to the flood control system caused by the permitted encroachment including, but not limited to, erosion on the landside or waterside levee slope, or bank erosion. Any such damage shall be repaired prior to the next flood season to the satisfaction of the District.

12. Permittee is responsible to remove all debris caught by the encroachment in the river and disposed of outside the floodway and levee to the satisfaction of the District and the Central Valley Flood Protection Board (CVFPB). The proposed logboom debris deflector shall be designed so as not to impact the operations of the District's adjacent Pumping Plant No. 2 to the satisfaction of the District.

13. The District reserves the right to request reasonable modifications to the project during construction as field conditions warrant

14. Permittee shall restore the levee and adjacent area within the disturbed area to the satisfaction of the District upon completion of the project

Exhibit B

DEPARTMENT OF THE ARMY
U.S. Army Engineer District, Sacramento
Corps of Engineers
1325 J Street
Sacramento, California 95814-2922

REPLY TO
ATTENTION OF

Flood Protection and Navigation Section (18915)

MAY 0 2 2014

Mr. Jay Punia, Executive Officer
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, California 95821

Dear Mr. Punia:

We have reviewed an application for a permit by Natomas Central Mutual Water Company (application number 18915). These plans include removing and replacing Pritchard Lake Pumping Plant and tying in to existing discharge piping through the levee on the left (east) bank of the Sacramento River. Replacement of the existing piping through the levee will be covered under a separate permit at a future date in Phase 2 of the project. The project is located at river mile 75, at 38.730875°N 121.602894°W NAD83, Sacramento County, California.

The District Engineer has no objection to approval of this application by your Board from a flood control standpoint, subject to the following conditions:

a. That the work shall not be performed or remain during the flood season of November 1 to April 15, unless otherwise approved in writing by your Board.

b. That in the event trees and brush are cleared, they shall be properly disposed of either by complete burning or complete removal outside the limits of the project right-of-way. All cleared vegetation shall be properly grubbed. All roots greater than ½-inch in diameter shall be completely removed and the levee embankment returned to the existing lines and grade.

c. That the existing Pritchard Lake Pumping Plant shall be completely removed from the project right of way.

d. That any debris that accumulates around the proposed intake shall be completely removed prior to the flood season and immediately after major accumulations.

e. That the proposed bank protection work shall be placed uniformly and properly transitioned into the natural bank at both ends.

f. That in the event bank erosion injurious to the flood risk reduction project occurs at or adjacent to the site of the the proposed pumping facility, the eroded areas shall be repaired in a timely manner and adequate bank protection shall be placed to prevent further erosion.

g. That the proposed work shall not interfere with the integrity or hydraulic capacity of the flood risk reduction project; easement access; or maintenance, inspection, and flood fighting procedures.

h. That the condition of the pipes through the levee shall be verified using video or sonar equipment at least once every 5 years or annual pressure readings showing no significant loss in pressure. The results shall be submitted through the Central Valley Flood Protection Board to the Department of Water Resources, Flood Project Integrity and Inspection Branch and this office.

A file (SPK-2008-01039) has been opened because a Section 10 and/or Section 404 permit may be required. Please advise the applicant to contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Division, 1325 J Street, Room 1350, Sacramento, California 95814, telephone (916) 557-5250.

A copy of this letter is being furnished to Mr. Don Rasmussen, Chief, Flood Project Integrity and Inspection Branch, 3310 El Camino Avenue, Suite 200, Sacramento, CA, 95821.

Sincerely,

for Rick L. Poeppelman, P.E.
Chief, Engineering Division

MBK ENGINEERS

Water Resources • Flood Control • Water Rights

M E M O R A N D U M

TO: Natomas Mutual Water Company, c/o Dee Swearingen
Reclamation District No. 1000, c/o Paul Devereux

DATE: March 27, 2012

FROM: George Preston, P.E.

SUBJECT: Hydraulic Impact Analysis of Proposed Pritchard Pumping Plant Replacement and RD 1000 Pump Plant 2 Outfall Replacement on the Sacramento River

Purpose

The purpose of the analysis documented in this Technical Memorandum was to determine the potential hydraulic impacts on the Sacramento River Flood Control Project (SRFCP) from the replacement of the Natomas Mutual Water Company Pritchard Pumping Plant and the RD 1000 Pump Plant 2 Outfall (RD 1000 Outfall). The Pritchard Pumping Plant is located on the east levee (left bank) of Sacramento River, 4.6 miles upstream of Interstate 5 and 3.6 miles downstream of the Natomas Cross Canal. The RD 1000 Outfall is located 150 feet upstream of the Pritchard Pumping Plant on the same levee. These structures are shown in Figure 1. Preliminary design drawings of the proposed replacement pumping plant and outfall structure are provided in Figure 2 and Figure 3.

Hydraulic Model

The MBK version of the Sacramento and San Joaquin River Basins Comprehensive Study (Comp Study) Sacramento River UNET model, which was originally developed by the United States Army Corps of Engineers (USACE) [USACE 2002], was used for this analysis. This model was used to determine the design water surface elevations for the Natomas Levee Improvement Project [MBK 2008a] and the West Sacramento Levee Improvement Project [MBK 2008b]. The extents of the hydraulic model are shown in Figure 4.

The Pritchard Pumping Plant is located at Comp Study River Mile (RM) 75.56, and the RD 1000 Outfall is located at RM 75.59. The nearest hydraulic model cross-section for both structures is at RM 75.50, as shown in Figure 5.

Procedure

The purpose of the analysis was to determine the potential impacts from the proposed project using the SRFCP design flood and the Urban Levee Design Criteria (ULDC) [DWR 2011] flood (200-year with no upstream levee failures). The SRFCP design flood discharge in the project reach is 107,000 cubic feet per second (cfs) [USACE 1957]. Rather than perform an iterative

analysis to adjust upstream model inputs to achieve a flow of 107,000 cfs at the project site for the SRFCP design flood analysis, an existing model simulation with a peak flow at the project site of 112,000 cfs was used.

The hydraulic model cross-section at RM 75.50 was duplicated and used in the pre- and post-project conditions at RM 75.56 (Pritchard Pumping Plant) and RM 75.59 (RD 1000 Outfall). For the pre-project condition the model conservatively assumed the existing Pritchard Pumping Plant did not exist. In addition, the model cross-section at the RD 1000 Outfall was modified to represent the existing grade. For the post-project condition, the model cross-sections at RM 75.56 and RM 75.59 were modified to represent the proposed projects as shown in Figure 6 and Figure 7.

Results

The computed pre-project and post-project maximum water surface elevations at and near the project site are shown in Tables 1 and 2 for the SRFCP design flood and ULDC flood, respectively, while computed maximum velocities are shown in Tables 3 and 4. It should be noted that the velocity values presented herein are average cross-sectional velocities. The velocities near the river banks will be lower than those shown in the table. The results of the analysis show that the proposed projects would have no adverse impact on the SRFCP design flood or the ULDC flood water surface elevations and small increases in the stream velocities.

Table 1. Project Impact on SRFCP Design Flood Event Maximum Water Surface Elevation

Location (Comp Study River Mile)	Computed Maximum Water Surface Elevation (ft. NAVD 88)		Project Impact (ft.)
	Pre-project	Post-project	
76.00	41.88	41.88	0
75.75	41.79	41.79	0
75.59 (RD 1000 Outfall)	41.75	41.74	-0.01
75.56 (Pritchard Pumping Plant)	41.67	41.55	-0.12
75.50	41.65	41.65	0
75.25	41.51	41.51	0
75.00	41.44	41.43	-0.01
74.75	41.31	41.31	0

Table 2. Project Impact on ULDC Flood Event Maximum Water Surface Elevation			
Location (Comp Study River Mile)	Computed Maximum Water Surface Elevation (ft. NAVD 88)		Project Impact (ft.)
	Pre-project	Post-project	
76.00	43.02	43.02	0
75.75	42.91	42.92	0.01
75.59 (RD 1000 Outfall)	42.87	42.86	-0.01
75.56 (Pritchard Pumping Plant)	42.78	42.63	-0.15
75.50	42.76	42.75	-0.01
75.25	42.60	42.59	-0.01
75.00	42.54	42.54	0

Table 3. Project Impact on SRFCP Design Flood Event Maximum Velocity[1]			
Location (Comp Study River Mile)	Computed Maximum Velocity (fps)		Project Impact (fps)
	Pre-project	Post-project	
76.00	4.93	4.93	0
75.75	4.68	4.68	0
75.59 (RD 1000 Outfall)	4.35	4.48	0.13
75.56 (Pritchard Pumping Plant)	4.86	5.60	0.74
75.50	4.83	4.83	0
75.25	4.94	4.94	0
75.00	4.63	4.63	0
[1] Average cross-sectional velocity.			

Table 4. Project Impact on ULDC Flood Event Maximum Velocity[1]			
Location (Comp Study River Mile)	Computed Maximum Velocity (fps)		Project Impact (fps)
	Pre-project	Post-project	
76.00	5.37	5.37	0
75.75	5.08	5.08	0
75.59 (RD 1000 Outfall)	4.73	4.87	0.14
75.56 (Pritchard Pumping Plant)	5.29	6.11	0.82
75.50	5.25	5.25	0
75.25	5.37	5.36	-0.01
75.00	4.91	4.91	0
[1] Average cross-sectional velocity.			

References

California Department of Water Resources. Urban Levee Design Criteria, draft. November 15, 2011. [DWR 2011]

MBK Engineers. Supplemental Report for the Design Water Surface Profile for the Natomas Levee Improvement Program. June 17, 2008. [MBK 2008a]

MBK Engineers. Supplemental Report for the City of West Sacramento Levee Alternatives Hydraulic Analysis. December 4, 2008. [MBK 2008b]

United States Army Corps of Engineers. Sacramento River Flood Control Project Levee and Channel Profiles, Sheet No. 1. March 15, 1957, revised August 1969. [USACE 1957]

United States Army Corps of Engineers. Sacramento and San Joaquin River Basins Comprehensive Study. December 2002. [USACE 2002]

Prepared by: Reviewed by:

GP/ps
3522/MBK MEMO PRITCHARD HIA 2012-03-27.DOCX

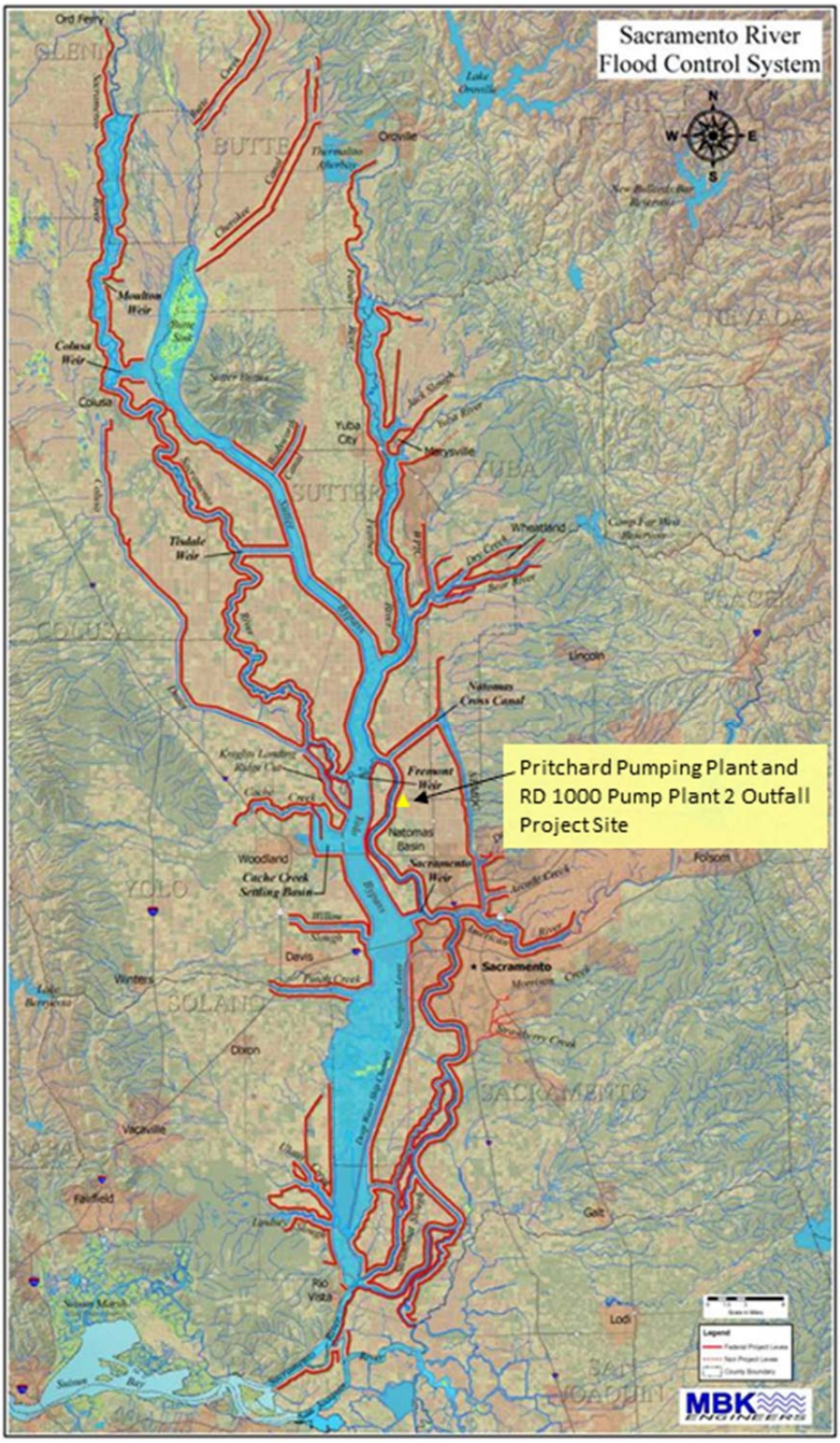


Figure 1. Location Map

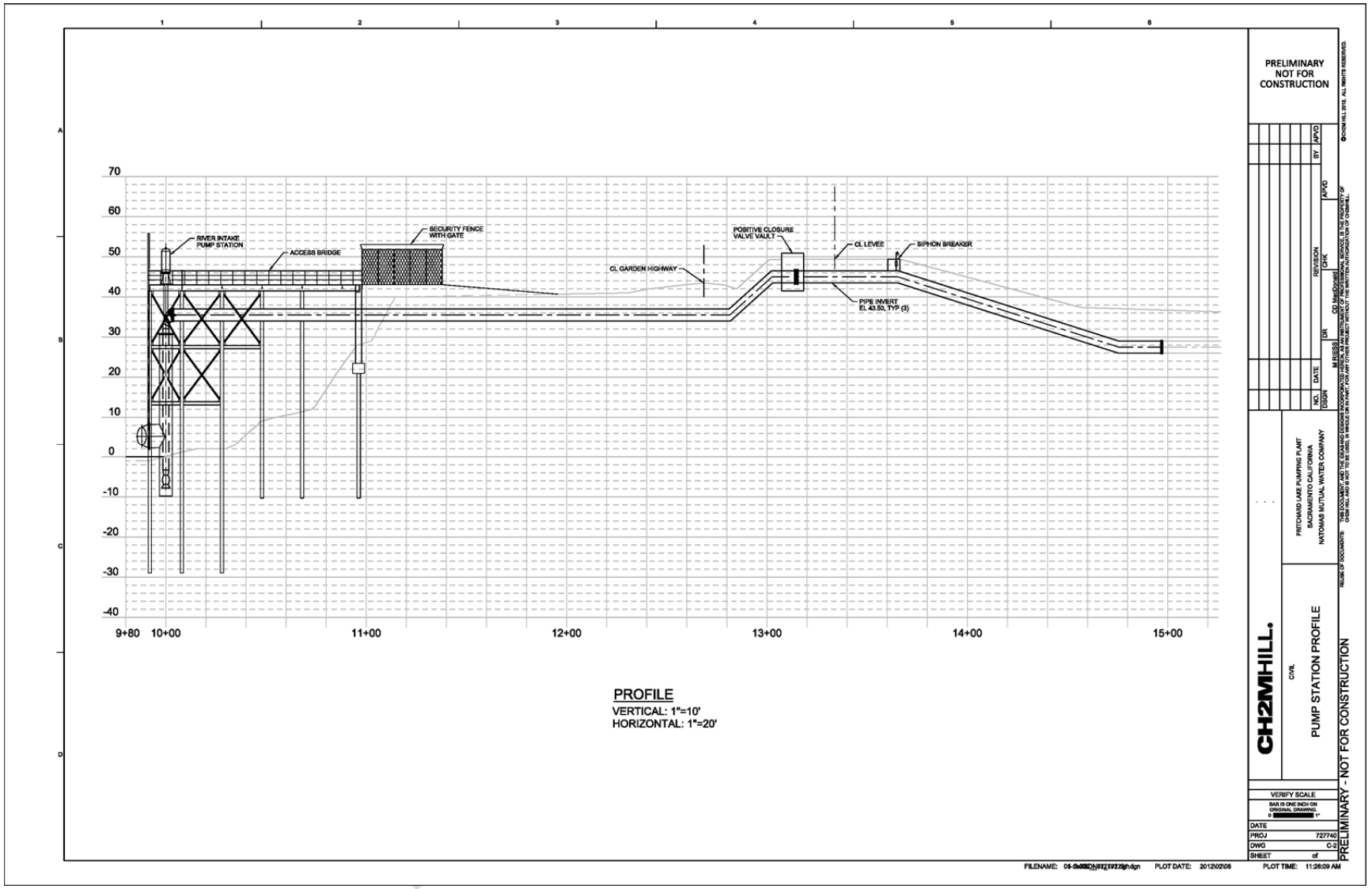


Figure 2. Pritchard Pumping Plant Design Profile (CH2MHILL)

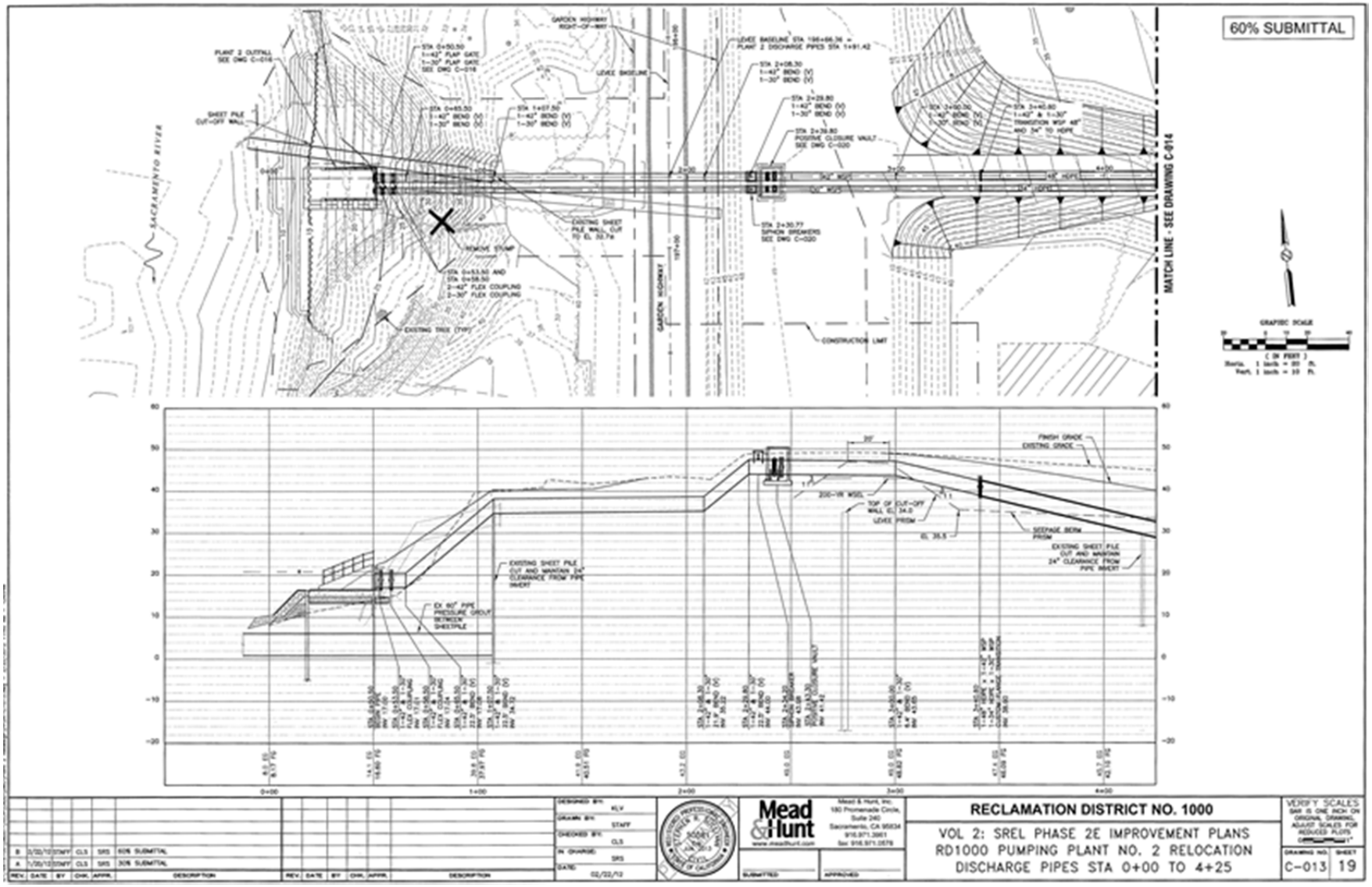


Figure 3. RD 1000 Pump Plant 2 Design (Mead & Hunt)

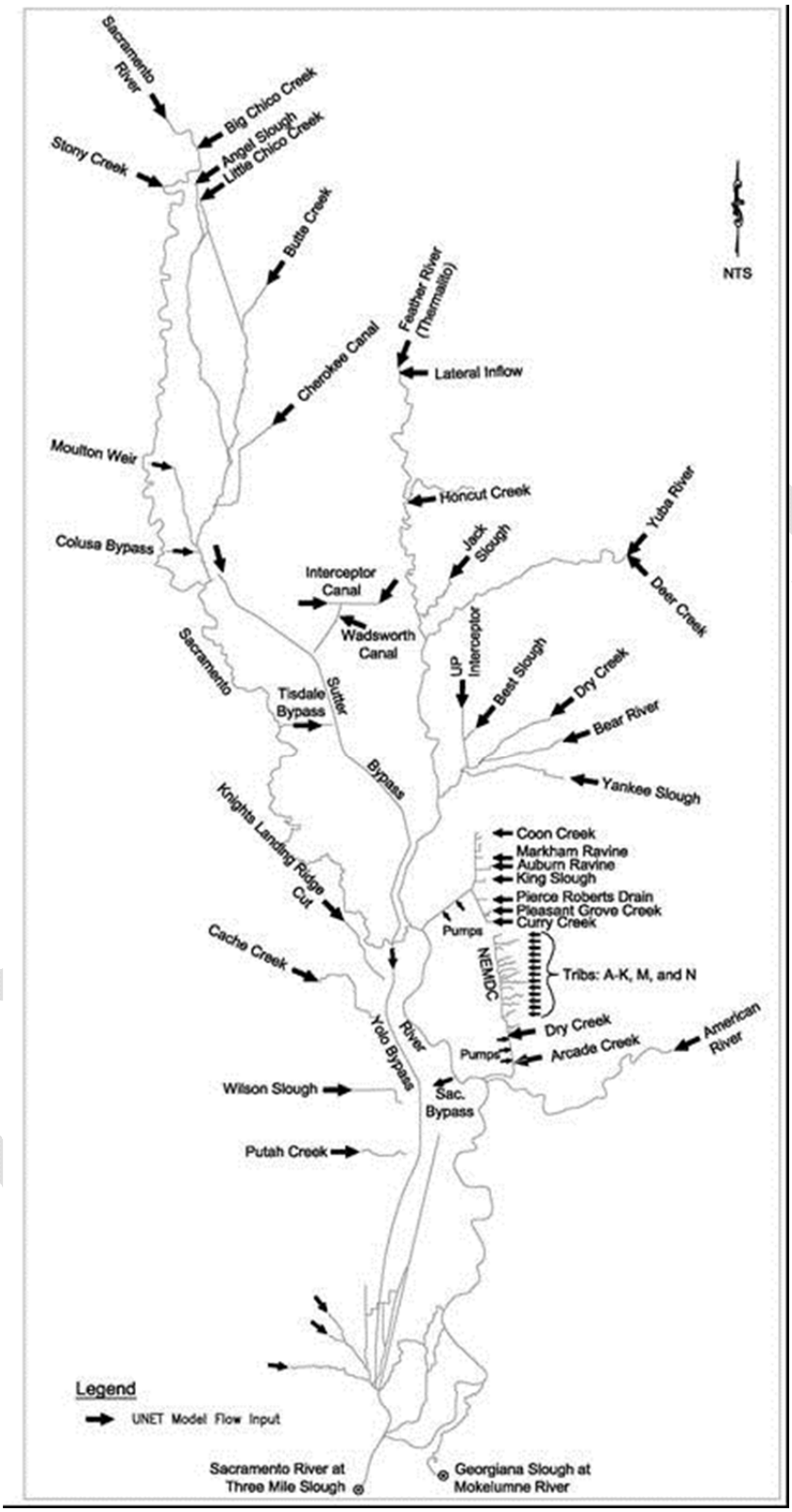


Figure 4. Hydraulic Model Extents

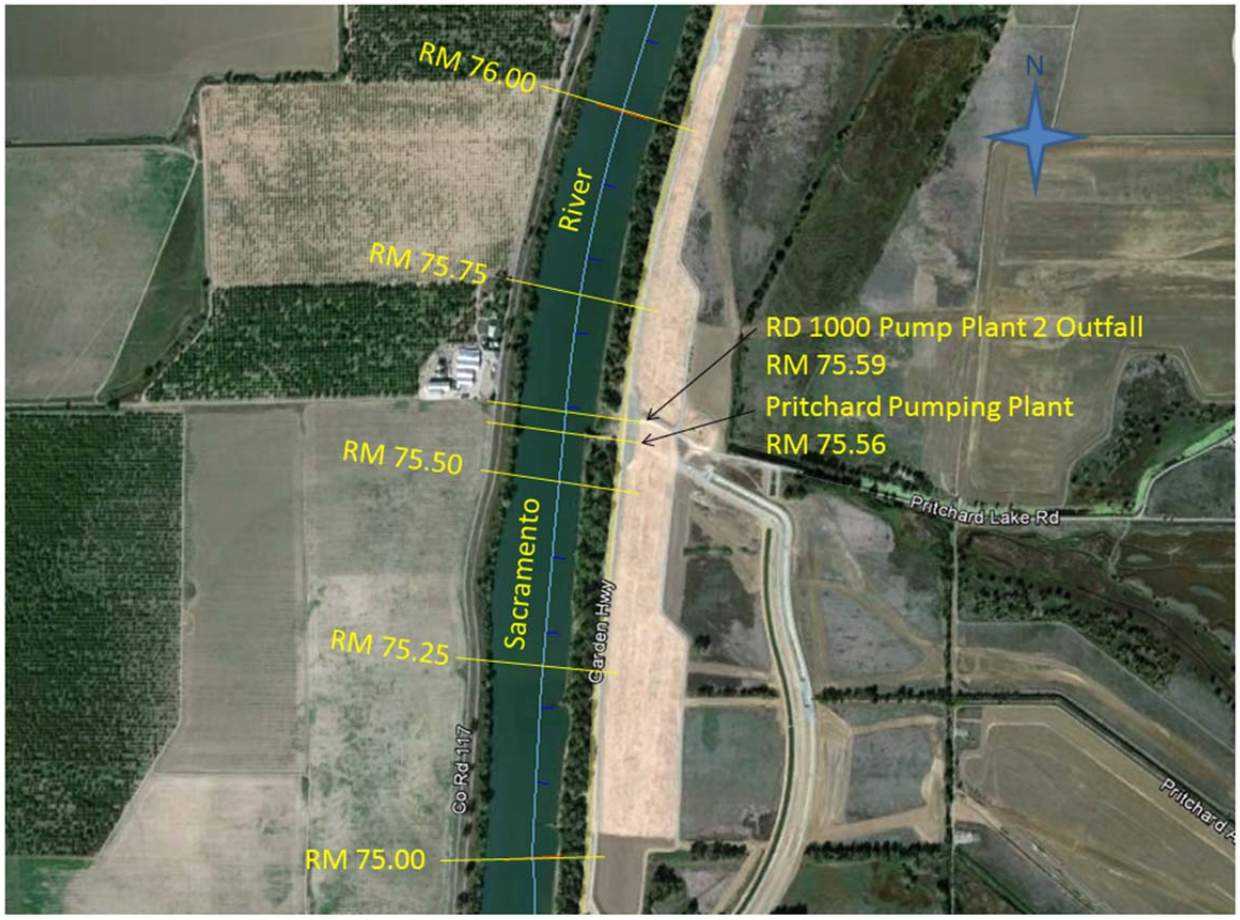


Figure 5. Hydraulic Model Cross-section Locations in Vicinity of Project

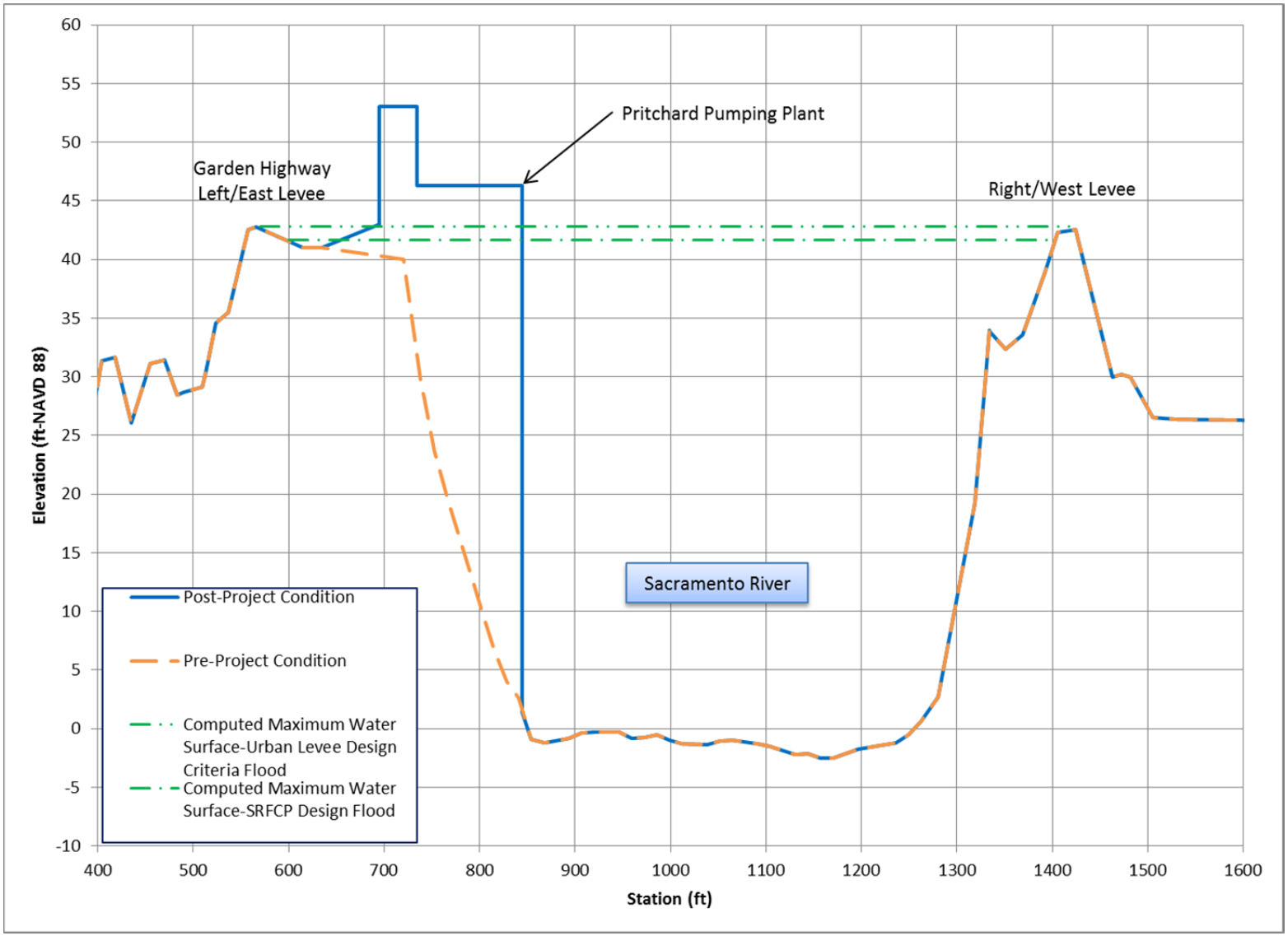


Figure 6. Pre-Project and Post-Project Cross-Section at Pritchard Pumping Plant (looking downstream)

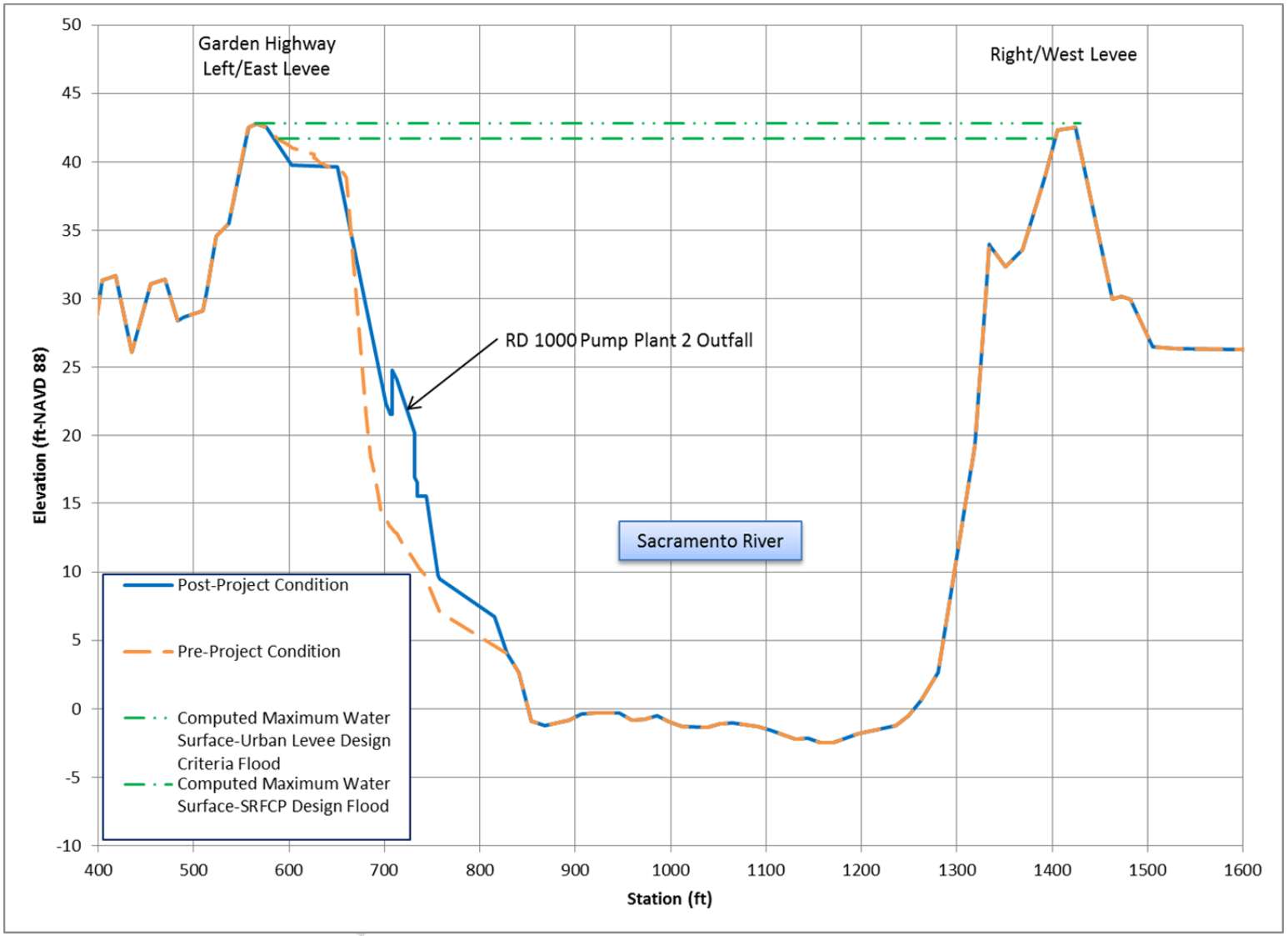


Figure 7. Pre-Project and Post-Project Cross-Section at RD 1000 Pump Plant 2 Outfall (looking downstream)

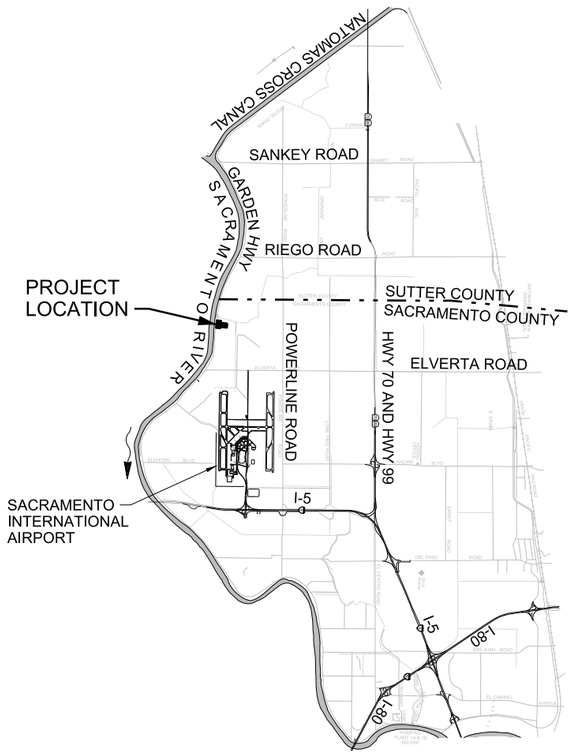
NATOMAS MUTUAL WATER COMPANY

American Basin Fish Screen and Habitat Improvement Project
Pritchard Lake Pumping Plant Replacement

Volume 2 - Drawings

Rio Linda, California

MARCH 2014
CONFORMED
DRAWINGS



LOCATION MAP
NTS

REGISTERED PROFESSIONAL ENGINEER
DAVID C. HASANOFF
M34505
MECHANICAL
STATE OF CALIFORNIA

12-13-2013

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SHEET NO.	DWG. NO.	DISCIPLINE	TITLE
GENERAL			
1	G-1	GENERAL	COVER
2	G-2	GENERAL	INDEX TO DRAWINGS
3	G-3	GENERAL	ABBREVIATIONS
4	G-4	GENERAL	GENERAL SITE NOTES AND CIVIL LEGEND
5	G-5	GENERAL	STRUCTURAL NOTES 1
6	G-6	GENERAL	STRUCTURAL NOTES 2
7	G-7	GENERAL	SPECIAL INSPECTIONS 1
8	G-8	GENERAL	SPECIAL INSPECTIONS 2
9	G-9	GENERAL	SPECIAL INSPECTIONS 3
10	G-10	GENERAL	MECHANICAL LEGEND
11	G-11	GENERAL	INSTRUMENTATION AND CONTROL LEGEND 1
12	G-12	GENERAL	INSTRUMENTATION AND CONTROL LEGEND 2
13	G-13	GENERAL	ELECTRICAL LEGEND
PRITCHARD LAKE PUMPING PLANT			
14	PLP-C-1	CIVIL	OVERALL SITE PLAN
15	PLP-C-2	CIVIL	PUMPING PLANT SITE PLAN
16	PLP-C-3	CIVIL	PUMPING PLANT SITE SECTIONS
17	PLP-D-1	DEMOLITION	DEMOLITION PLAN
18	PLP-YP-1	YARD PIPING	DISCHARGE PIPING PLAN AND PROFILE
19	PLP-YP-2	YARD PIPING	SECTION
20	PLP-YP-3	YARD PIPING	MANHOLE PLANS AND SECTIONS
21	PLP-S-1	STRUCTURAL	FOUNDATION PLAN
22	PLP-S-2	STRUCTURAL	BOTTOM FRAMING PLAN
23	PLP-S-3	STRUCTURAL	INTERMEDIATE FRAMING PLAN
24	PLP-S-4	STRUCTURAL	UPPER FRAMING PLAN
25	PLP-S-5	STRUCTURAL	TOP PLAN
26	PLP-S-6	STRUCTURAL	FRAME ELEVATION
27	PLP-S-7	STRUCTURAL	FRAME ELEVATIONS
28	PLP-S-8	STRUCTURAL	FRAME ELEVATIONS
29	PLP-S-9	STRUCTURAL	SECTIONS
30	PLP-S-10	STRUCTURAL	DETAILS
31	PLP-S-11	STRUCTURAL	DETAILS
32	PLP-S-12	STRUCTURAL	DETAILS
33	PLP-S-13	STRUCTURAL	DETAILS
34	PLP-S-14	STRUCTURAL	DETAILS
35	PLP-S-15	STRUCTURAL	LOG BOOM PLAN
36	PLP-S-16	STRUCTURAL	LOG BOOM SECTIONS AND DETAILS
37	PLF-S-17	STRUCTURAL	LOG BOOM SECTIONS AND DETAIL
38	PLF-S-18	STRUCTURAL	CONTROL ENCLOSURE FOUNDATION PLAN AND SECTION
39	PLP-M-1	MECHANICAL	PUMP DECK PLAN AND SECTION
40	PLP-M-2	MECHANICAL	DISCHARGE PIPING PIPE SUPPORT PLAN
41	PLP-M-3	MECHANICAL	PUMP DECK SECTION AND DETAILS
42	PLP-M-4	MECHANICAL	PUMP DECK DETAILS
43	PLP-IC-1	INSTRUMENTATION & CONTROL	P&ID FISH SCREEN AND PUMPING PLANT
44	PLP-E-1	ELECTRICAL	ONE-LINE DIAGRAM
45	PLP-E-2	ELECTRICAL	SITE PLAN
46	PLP-E-3	ELECTRICAL	PUMPING PLANT PLANS AND DETAIL
47	PLP-E-4	ELECTRICAL	WORK PLATFORM
48	PLP-E-5	ELECTRICAL	CONTROL ENCLOSURE PLAN
49	PLP-E-6	ELECTRICAL	CONTROL DIAGRAMS
50	PLP-E-7	ELECTRICAL	LUMINAIRE AND PANEL SCHEDULES
51	PLP-E-8	ELECTRICAL	CIRCUIT SCHEDULE
52	PLP-E-9	ELECTRICAL	RACEWAY SCHEDULE

SHEET NO.	DWG. NO.	DISCIPLINE	TITLE
STANDARD DETAILS			
53	SD-C-1	STANDARD DETAILS	CIVIL
54	SD-C-2	STANDARD DETAILS	CIVIL
55	SD-S-1	STANDARD DETAILS	STRUCTURAL
56	SD-S-2	STANDARD DETAILS	STRUCTURAL
57	SD-S-3	STANDARD DETAILS	STRUCTURAL
1 58	SD-S-4	NOT INCLUDED IN SET	
59	SD-S-5	STANDARD DETAILS	STRUCTURAL
60	SD-S-6	STANDARD DETAILS	STRUCTURAL
61	SD-M-1	STANDARD DETAILS	MECHANICAL
62	SD-M-2	STANDARD DETAILS	MECHANICAL
63	SD-IC-1	STANDARD DETAILS	INSTRUMENTATION AND CONTROL
64	SD-E-1	STANDARD DETAILS	ELECTRICAL
65	SD-E-2	STANDARD DETAILS	ELECTRICAL

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M34505
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NATOMAS MUTUAL WATER COMPANY
AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

GENERAL
INDEX TO DRAWINGS

SHEET	2 of 65
DWG	G-2
DATE	DECEMBER 2013
PROJ	172791

FILENAME: 001-G-0002_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:00:48 PM

GENERAL SITE NOTES:

1. SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS ARE BASE MAPS PROVIDED BY PSOMAS. ADDITIONAL MAPPING HAS BEEN ADDED FROM AS-BUILT DATA AND SUPPLEMENT SURVEY FROM NATOMAS LEVEE IMPROVEMENT PROGRAM EAST LEVEE (SREL) PHASE 2E IMPROVEMENT PROJECT PLANS BY MEAD AND HUNT, DATED MARCH 23, 2012. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83), CALIFORNIA COORDINATE SYSTEM OF 1983 (CCS83) ZONE 2, US SURVEY FOOT.
4. VERTICAL DATUM: NATIONAL GEODEDIC VERTICAL DATUM OF 1929 (NGVD29).
5. ORIGINAL SURVEY VERTICAL DATUM: ORIGINAL SURVEY WAS PERFORMED USING NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BUT WAS CONVERTED TO NGVD29. CONVERSION FACTOR FOR ADJUSTMENT FROM NAVD88 ELEVATION TO NGVD29 ELEVATIONS IS SUBTRACT (-) 2.28 FEET FROM NAVD88 ELEVATIONS TO GET NGVD29 ELEVATIONS.
6. VERTICAL BENCHMARK: NGS "G-858" (PID JS0925), ELEVATION 67.56 (NAVD88)
   BRASS DISK SET IN A CONCRETE BRIDGE IN THE TOP OF THE SOUTH END OF THE EAST HEAD WALL, 9 FEET EAST OF THE CENTER LINE OF S. BREWER ROAD APPROXIMATELY 70 YARDS NORTH OF NICOLAUS ROAD.
7. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
8. FOR LOCATION OF CONTROL POINT ON STRUCTURES, SEE CIVIL DRAWINGS.
9. COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.
10. STAGING AREA SHALL BE FOR CONTRACTOR'S EMPLOYEE PARKING, CONTRACTOR'S TRAILERS AND ON-SITE STORAGE OF MATERIALS.
11. PROVIDE TEMPORARY FENCING AS NECESSARY TO MAINTAIN SECURITY AT ALL TIMES.
12. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN.
13. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
14. UNLESS SHOWN ON THE LANDSCAPING PLANS, ALL DISTURBED AREAS NOT RECEIVING A HARD SURFACE SHALL BE COVERED WITH GRASS.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. SEE SD-C-1 EROSION CONTROL DEVICES (3125-140) AND (3125-165) ARE THE MINIMUM REQUIRED.
16. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE. CONTRACTOR TO SUBMIT EROSION CONTROL PLAN.

HABITAT PROTECTION NOTES :

1. SEE SPECIAL PROVISIONS AND GENERAL SPECIFICATIONS, SECTION 10-13. PROTECTION OF EXISTING TREES, FOR MEASURES TO BE APPLIED WHEN WORKING AROUND TREES TO BE AVOIDED.
2. PROVIDE TEMPORARY PROTECTIVE FENCING AND SIGNAGE AS SPECIFIED IN THE SPECIAL PROVISIONS AND GENERAL SPECIFICATIONS, SECTION 10-19, CONSTRUCTION PROTOCOLS FOR ELDERBERRY SHRUBS. APPROXIMATE BUFFER LOCATIONS ARE INDICATED ON THE DRAWINGS. ANY TRANSPLANTATION OR REMOVAL OF ELDERBERRY SHRUBS WITHIN THE PROJECT LIMITS WILL BE PERFORMED BY THE AGENCY.
3. SEE SPECIAL PROVISIONS AND GENERAL SPECIFICATIONS, SECTION 10-15, CONSTRUCTION CONTRACTOR PROTOCOLS FOR AVOIDING AND MINIMIZING IMPACTS TO THE GIANT GARTER SNAKE, FOR MEASURES TO BE APPLIED WHEN WORKING WITHIN 200 FEET OF THE GIANT GARTER SNAKE (AQUATIC) HABITAT.
4. LIMITS OF TEMPORARY FENCING FOR PROTECTION OF HABITAT WILL BE FLAGGED IN THE FIELD BY AGENCY.

SITE ACCESS NOTES:

1. SITE ACCESS SHALL BE FROM HIGHWAY 99 TO ELVERTA ROAD, WEST TO GARDEN HIGHWAY, AND GARDEN HIGHWAY NORTH TO SITE.
2. CONSTRUCTION EMPLOYEE VEHICLES MAY USE GARDEN HIGHWAY FROM RIEGO ROAD TO ACCESS THE CONSTRUCTION SITE.
3. RIEGO ROAD HAS A 20 TON GROSS VEHICLE WEIGHT LIMIT BETWEEN STATE HIGHWAY 99 AND POWERLINE ROAD.

CIVIL LEGEND

EXISTING	THIS CONTRACT	
× 157.7	⊗ 158.5	SPOT ELEVATION
155	155	CONTOUR LINE
	3:1	EMBANKMENT AND SLOPE
		DRAINAGEWAY OR DITCH
	CB OR (CB)	CATCH BASIN OR INLET
		TRENCH DRAIN
	OR	SIGN
	Ⓓ OR Ⓢ	MANHOLE
E	E	ELECTRICAL MANHOLE
H	H	ELECTRIC HANDHOLE
		POST OR GUARD POST
		GUY ANCHOR
		FIRE HYDRANT
		UTILITY POLE
		LIGHT POLE
	BM	BENCH MARK
		SURVEY CONTROL POINT OR POINT OF INTERSECTION
		BRUSH/TREE LINE
		TREE
		PROPERTY LINE
		CENTER LINE, BUILDING, ROAD, ETC.
		STAGING OR WORK AREA LIMITS
	N 1000.00 E 1000.00	STRUCTURE, BUILDING OR FACILITY LOCATION POINT - COORDINATES
	B-1	BORING LOCATION AND NUMBER
	TP-2	TEST PIT LOCATION AND NUMBER
	P-3	PIEZOMETER LOCATION AND NUMBER
OR OR	OR	DEMOLITION
OR	OR	STRUCTURE, BUILDING OR FACILITY
		ASPHALT CONCRETE PAVEMENT
		GRAVEL SURFACING
		CONCRETE PAVEMENT
		CURB
		CURB AND GUTTER
		SINGLE SWING GATE
		DOUBLE SWING GATE
		SLIDING GATE
		GUARD RAIL
		CHAIN LINK FENCE
		ARCHITECTURAL FENCE
		WIRE FENCE
		CULVERT

YARD PIPING LEGEND

EXISTING	THIS CONTRACT	
		NOMINAL PIPE DIAMETER
	8" PE	PIPE USE IDENTIFICATION
8" PE	8" PE	PIPING < 30" DIAMETER
		PIPING ≧ 30" DIAMETER
		EXISTING PIPE TO BE ABANDONED
		EXISTING PIPE TO BE REMOVED
		NON-FREEZE HOSE VALVE (V-X) X = NO. IN SPECIFICATIONS
		NON-FREEZE HOSE VALVE WITH HOSE RACK (V-X) X = NO. IN SPECIFICATIONS
		INDICATOR POST VALVE
		GATE VALVE AND VALVE BOX
		BUTTERFLY VALVE AND VALVE BOX
		PLUG VALVE AND VALVE BOX
		FLEXIBLE COUPLING
		90° ELBOW UP
		90° ELBOW DOWN
		BEND < 90° UP
		BEND < 90° DOWN
		CONCENTRIC REDUCER
		CAP OR PLUG
		CLEANOUT
		FIRE HYDRANT

GENERAL YARD PIPING AND UTILITIES NOTES:

1. EXISTING UNDERGROUND UTILITIES OBTAINED FROM AS-BUILTS AND FROM FIELD SURVEY. CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION.
2. FOR PIPING FLOW STREAM IDENTIFICATION, SEE DRAWING PLP-YP-1.
3. EXISTING PIPING AND EQUIPMENT ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW PIPING AND EQUIPMENT ARE SHOWN HEAVY-LINED.
4. UNLESS OTHERWISE SHOWN ALL PIPING SHALL HAVE A MINIMUM OF 4'-0" OF COVER.
5. ALL PIPES SHALL HAVE A CONSTANT SLOPE BETWEEN INVERT ELEVATIONS UNLESS A FITTING IS SHOWN.
6. FOR TRENCHING AND BACKFILL, SEE PLP-YP-2.
7. FOR SURFACE RESTORATION SEE SD-C-1 (3123-115), FOR GRAVEL SURFACING, SEE SD-C-2 (3213-220).

REGISTERED PROFESSIONAL ENGINEER — WILLIAM J. OHLIN — 72267 — CIVIL — STATE OF CALIFORNIA

12-13-2013

		NO.	DATE	REVISION	BY	APVD
DSGN	W OHLIN					
DR	M DUNN					
CHK	B GATTON					
APVD	J ROZGA					

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AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

GENERAL

GENERAL SITE NOTES AND CIVIL LEGEND

SHEET	4 of 65
DWG	G-4
DATE	DECEMBER 2013
PROJ	172791

FILENAME: 001-G-0004_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:00:53 PM

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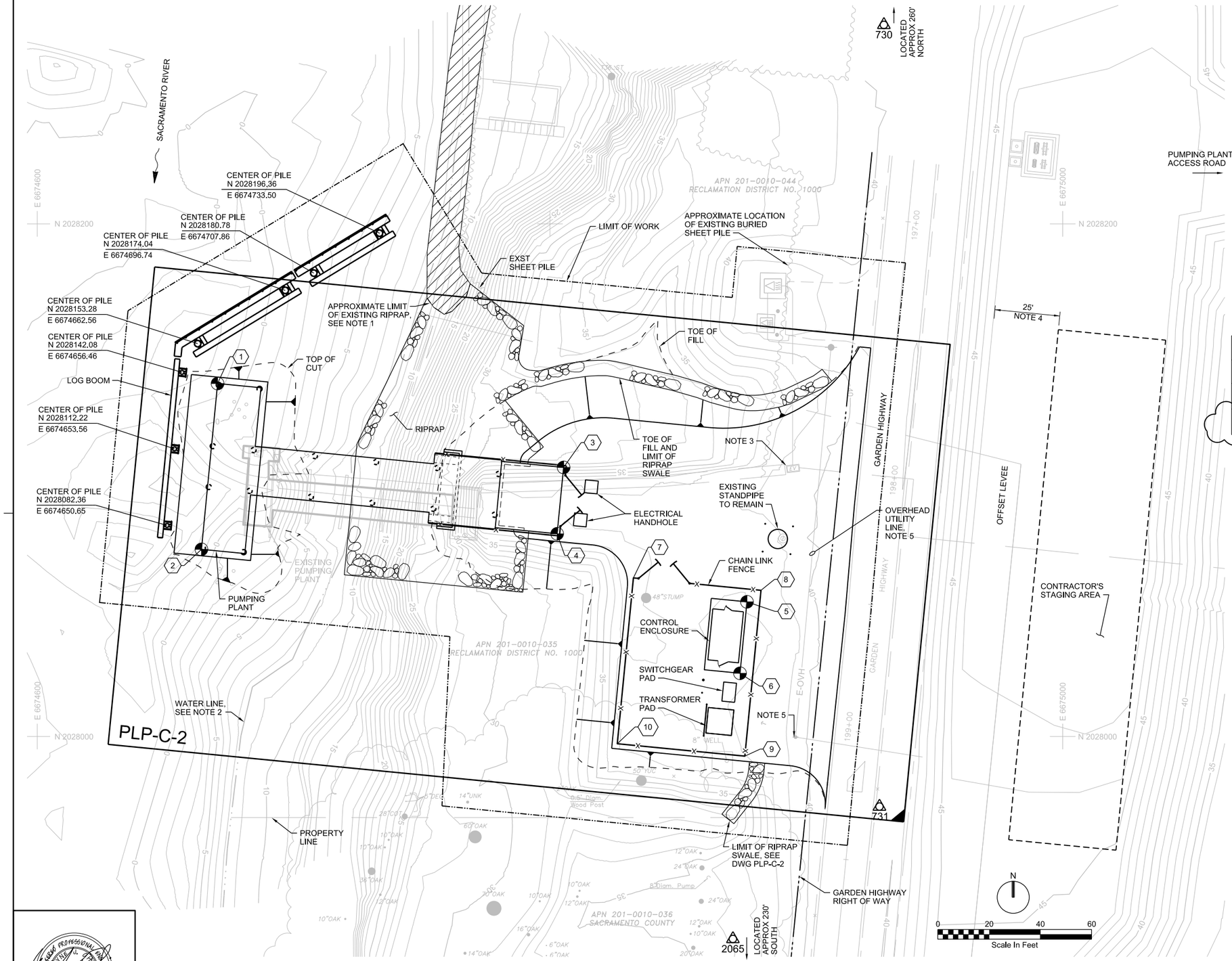


STRUCTURE CONTROL POINTS

NO	NORTHING	EASTING	DESCRIPTION
1	2028137.72	6674670.34	PUMPING PLANT (NE)
2	2028073.02	6674664.04	PUMPING PLANT (SE)
3	2028104.98	6674805.30	APPROACH SLAB
4	2028079.11	6674802.78	APPROACH SLAB
5	2028052.54	6674876.85	CONTROL ENCLOSURE PAD (NW)
6	2028024.68	6674874.13	CONTROL ENCLOSURE PAD (SW)
7	2028061.88	6674832.54	CHAINLINK FENCE
8	2028057.04	6674882.31	CHAINLINK FENCE
9	2027992.34	6674876.01	CHAINLINK FENCE
10	2027997.19	6674826.24	CHAINLINK FENCE

SURVEY CONTROL POINTS

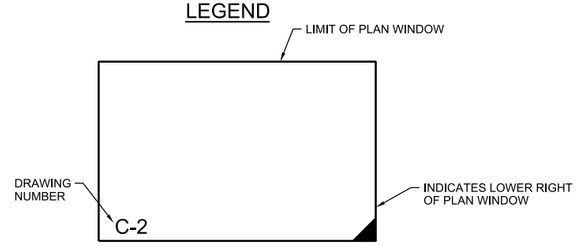
POINT #	NORTHING	EASTING	ELEV (NGVD29)*	DESCRIPTION
730	2028562.59	6674966.75	40.68	PSOMAS 1" IP W/PSO CAP
731	2027972.67	6674928.54	40.70	PSOMAS 1" IP W/PSO CAP
2065	2027744.29	6674881.18	40.42	PSOMAS 1" IP W/PSO CAP

1 *SURVEY CONTROL POINT ELEVATIONS HAVE BEEN CONVERTED FROM NAVD88 DATUM TO NGVD29 DATUM BY USING THE FOLLOWING CONVERSION: SUBTRACT (-) 2.28' FROM NAVD88 ELEVATIONS TO GET NGVD29 ELEVATIONS.

NOTES:

1. RIPRAP AND SHEET PILE LOCATIONS FROM NATOMAS LEVEE IMPROVEMENT PROGRAM, SACRAMENTO RIVER EAST LEVEE (SREL) PHASE 2E IMPROVEMENT PROJECT PLANS BY MEAD AND HUNT, DATED 23 MARCH 2012.
2. APROXIMATE WATER LINE ELEVATION SHOWN AS OF DECEMBER 28, 2011. TOPOGRAPHY SHOWN BELOW THE WATER LINE IS BASED ON SPOT ELEVATIONS AND MAY NOT REPRESENT THE ACTUAL SURFACE OF THE RIVER BED.
3. RAISE EXISTING ELECTRICAL HANDHOLE TO GRADE.
4. MAINTAIN 25' CLEAR FOR LEVEE PATROL ROAD.
5. EXISTING OVERHEAD UTILITY LINE, POLE & GUIDE WIRE WILL BE DECOMMISSIONED WHEN NEW TRANSFORMER INSTALLED BY SMUD.

LEGEND



REGISTERED PROFESSIONAL ENGINEER — WILLIAM J. OHLIN — 72257 — CIVIL — STATE OF CALIFORNIA

12-13-2013

DSGN	W OHLIN				
DR	B CHELONIS				
CHK	B GATTON				
APVD	J ROZGA				

NO.	DATE	REVISION	BY	APVD
1	03/2014	EDITED SURVEY CONTROL POINT	BC	JR

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL®
AREA OFFICE: 2485 NATOMAS PARK DR. SUITE 600 SACRAMENTO, CA 95833 (916) 920-0300
DESIGN OFFICE: 2525 AIRPARK DR. REDDING, CA 96001 (530) 243-5831

NATOMAS MUTUAL WATER COMPANY
AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

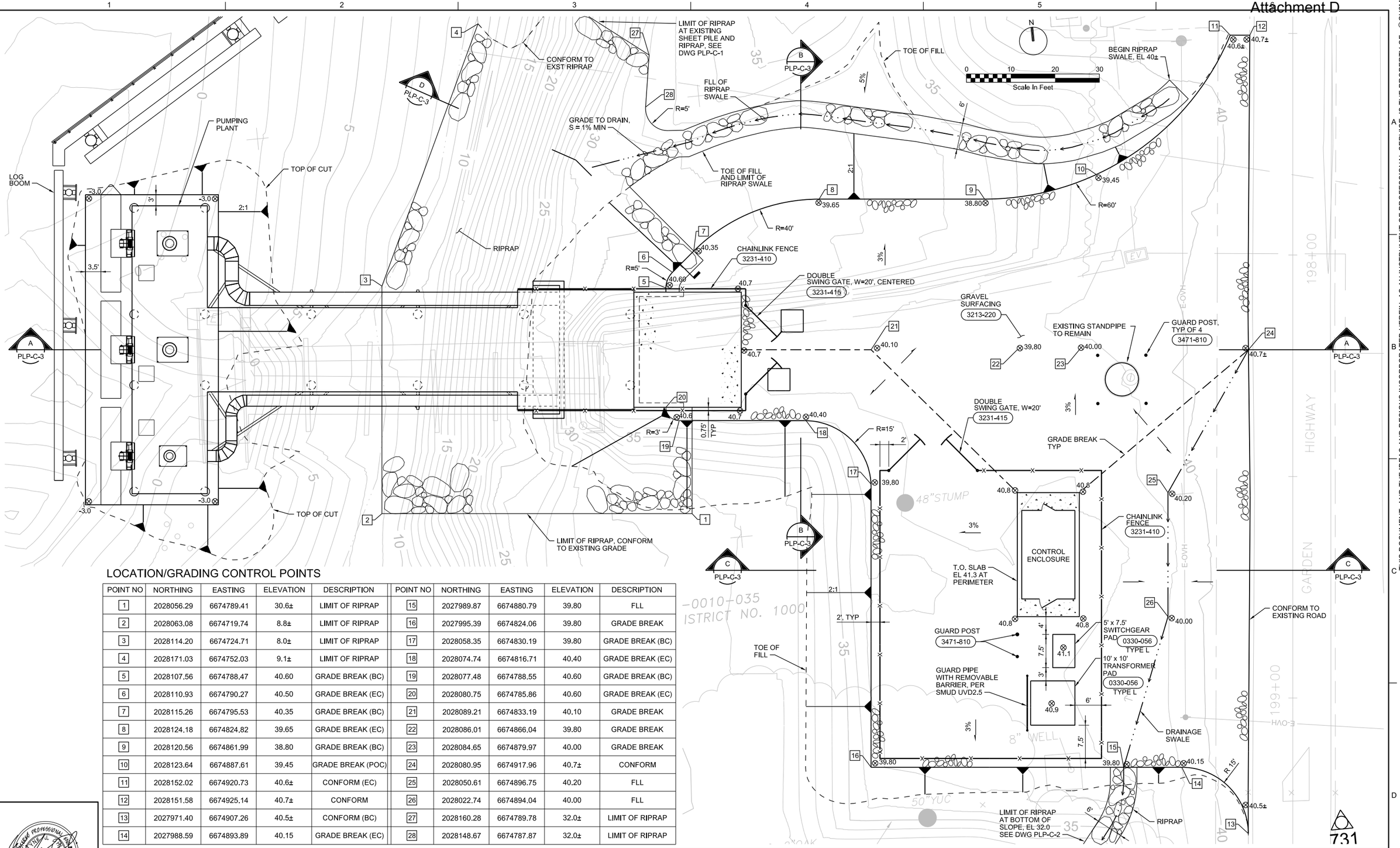
CIVIL

OVERALL SITE PLAN

SHEET	14 of 65
DWG	PLP-C-1
DATE	DECEMBER 2013
PROJ	172791

FILENAME: ADM1-005-c-01_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:05:24 PM

Attachment D



LOCATION/GRADING CONTROL POINTS

POINT NO	NORTHING	EASTING	ELEVATION	DESCRIPTION	POINT NO	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	2028056.29	6674789.41	30.6±	LIMIT OF RIPRAP	15	2027989.87	6674880.79	39.80	FLL
2	2028063.08	6674719.74	8.8±	LIMIT OF RIPRAP	16	2027995.39	6674824.06	39.80	GRADE BREAK
3	2028114.20	6674724.71	8.0±	LIMIT OF RIPRAP	17	2028058.35	6674830.19	39.80	GRADE BREAK (BC)
4	2028171.03	6674752.03	9.1±	LIMIT OF RIPRAP	18	2028074.74	6674816.71	40.40	GRADE BREAK (EC)
5	2028107.56	6674788.47	40.60	GRADE BREAK (BC)	19	2028077.48	6674788.55	40.60	GRADE BREAK (BC)
6	2028110.93	6674790.27	40.50	GRADE BREAK (EC)	20	2028080.75	6674785.86	40.60	GRADE BREAK (EC)
7	2028115.26	6674795.53	40.35	GRADE BREAK (BC)	21	2028089.21	6674833.19	40.10	GRADE BREAK
8	2028124.18	6674824.82	39.65	GRADE BREAK (EC)	22	2028086.01	6674866.04	39.80	GRADE BREAK
9	2028120.56	6674861.99	38.80	GRADE BREAK (BC)	23	2028084.65	6674879.97	40.00	GRADE BREAK
10	2028123.64	6674887.61	39.45	GRADE BREAK (POC)	24	2028080.95	6674917.96	40.7±	CONFORM
11	2028152.02	6674920.73	40.6±	CONFORM (EC)	25	2028050.61	6674896.75	40.20	FLL
12	2028151.58	6674925.14	40.7±	CONFORM	26	2028022.74	6674894.04	40.00	FLL
13	2027971.40	6674907.26	40.5±	CONFORM (BC)	27	2028160.28	6674789.78	32.0±	LIMIT OF RIPRAP
14	2027988.59	6674893.89	40.15	GRADE BREAK (EC)	28	2028148.67	6674787.87	32.0±	LIMIT OF RIPRAP

REGISTERED PROFESSIONAL ENGINEER C 72267 CIVIL STATE OF CALIFORNIA
12-13-2013

DSGN	W OHLIN						
DR	B CHELONIS						
CHK	B GATTON						
APVD	J ROZGA	NO.	DATE	REVISION	BY	APVD	

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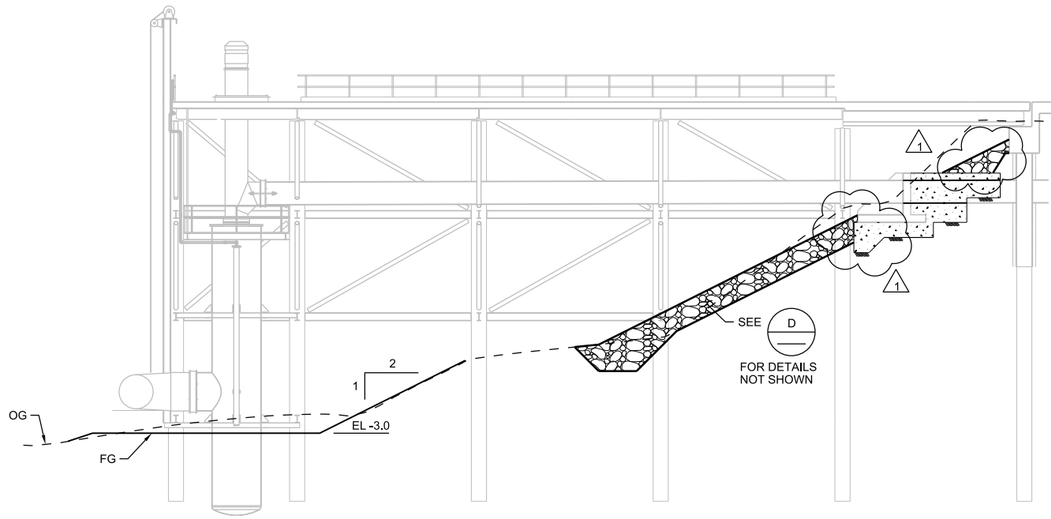
NATOMAS MUTUAL WATER COMPANY
AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

CIVIL
PUMPING PLANT SITE PLAN

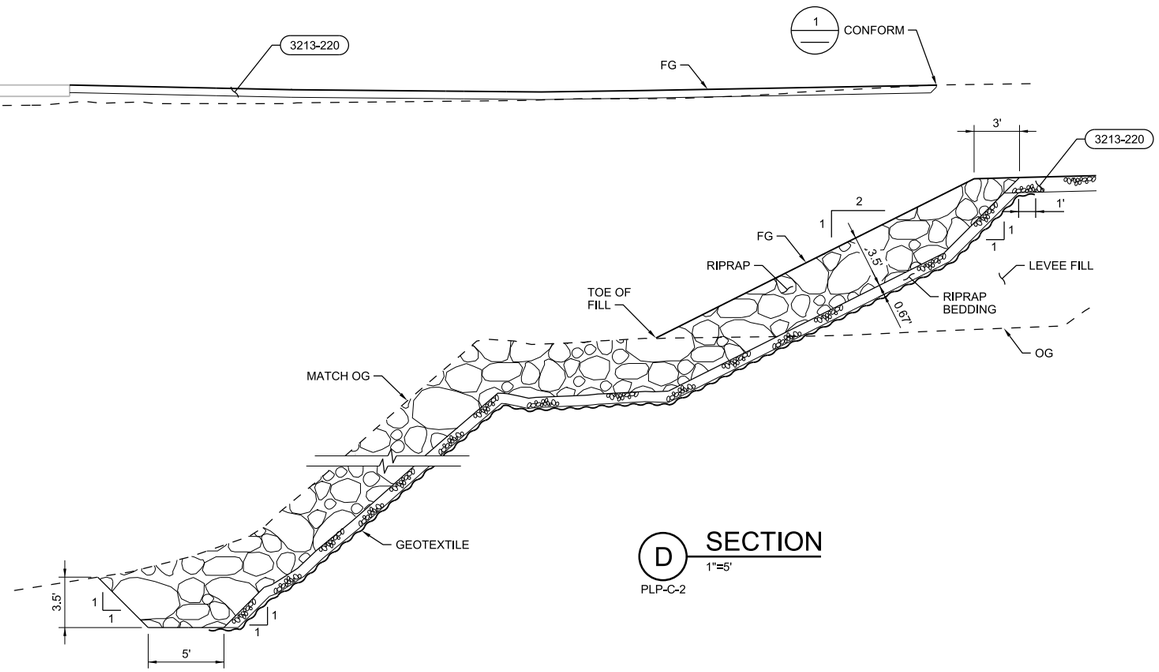
SHEET	15 of 65
DWG	PLP-C-2
DATE	DECEMBER 2013
PROJ	172791

731

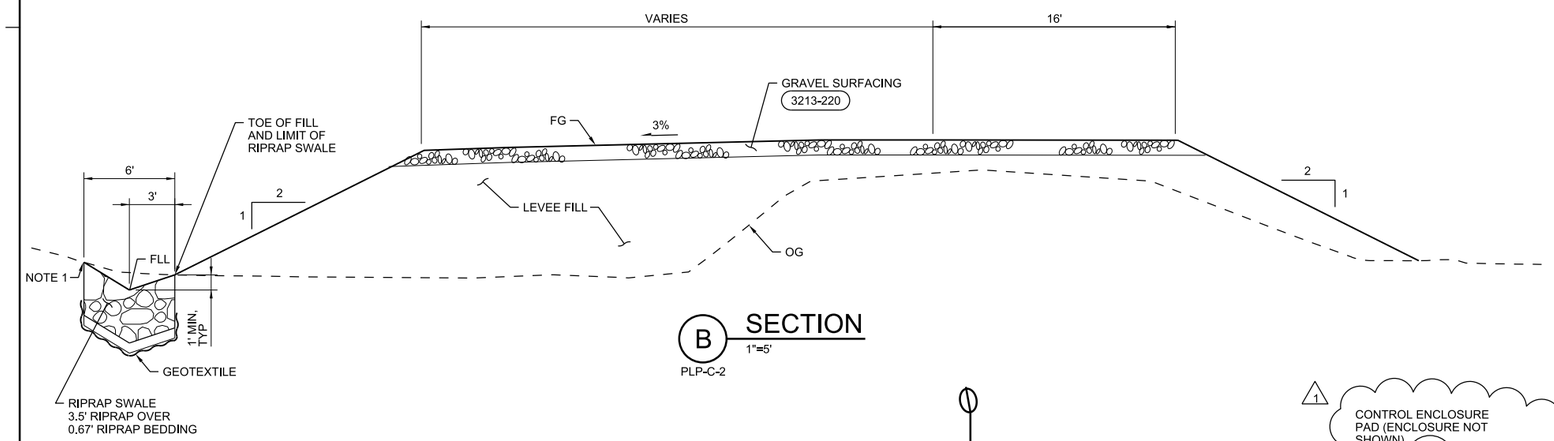
FILENAME: 005-c-02_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:05:24 PM



A SECTION
1"=10'
PLP-C-2



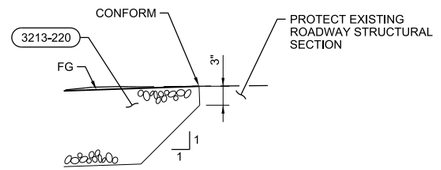
D SECTION
1"=5'
PLP-C-2



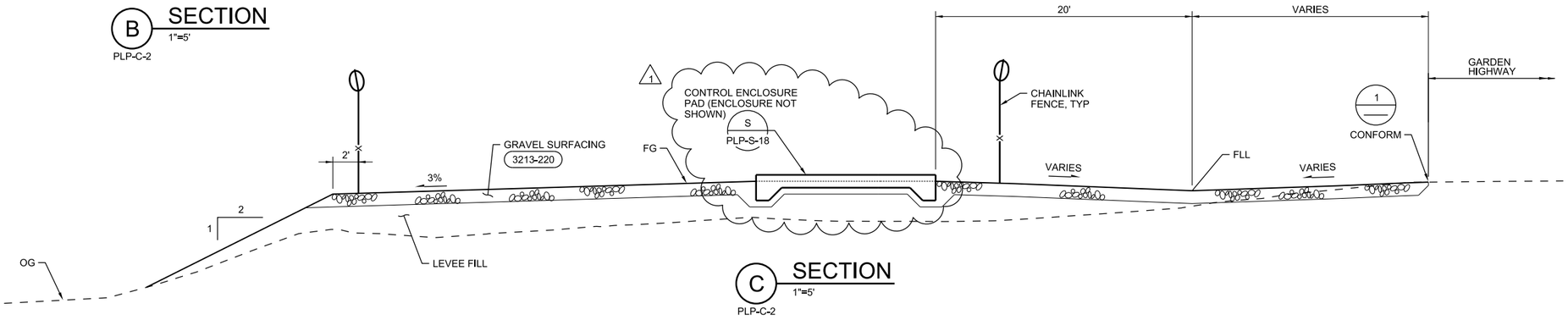
B SECTION
1"=5'
PLP-C-2

NOTE:

1. MATCH ORIGINAL GROUND OR 1' MINIMUM ABOVE FLOWLINE.



1 DETAIL
1"=1'-0"



C SECTION
1"=5'
PLP-C-2

STATE OF CALIFORNIA — REGISTERED PROFESSIONAL ENGINEER — WILLIAM J. OHLIN — C 72267 — CIVIL
12-13-2013

DSGN	W OHLIN
DR	B CHELONIS
CHK	B GATTON
APVD	J ROZGA

NO.	DATE	REVISION	BY	APVD
1	01/2014	REVISED RIPRAP AND CONTROL ENCLOSURE PAD	WO	JR

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL®
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DESIGN OFFICE: 2525 AIRPARK DR. REDDING, CA 96001 (530) 243-5831

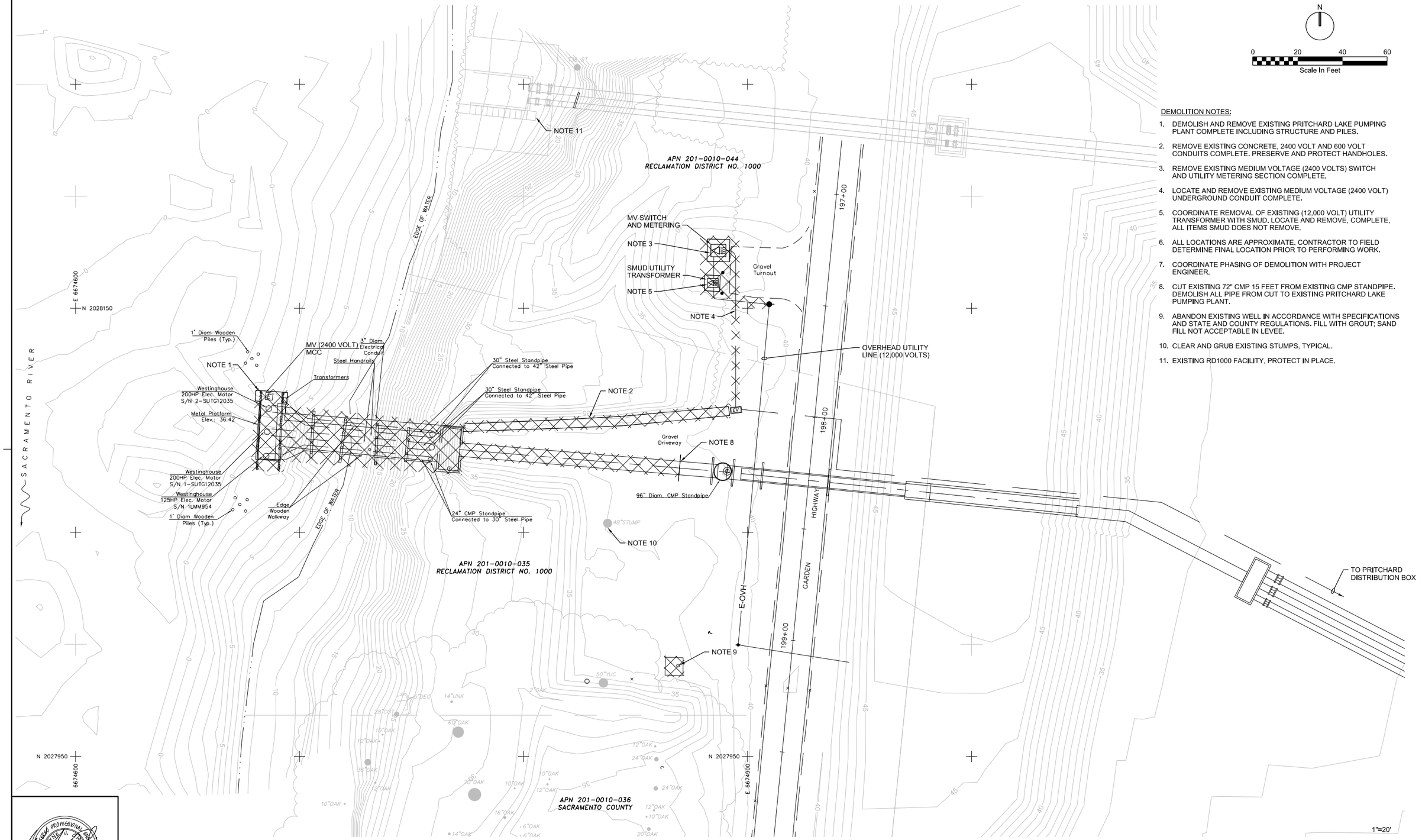
NATOMAS MUTUAL WATER COMPANY
AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

CIVIL
PUMPING PLANT SITE SECTIONS

SHEET	16 of 65
DWG	PLP-C-3
DATE	DECEMBER 2013
PROJ	172791

FILENAME: ADM1-005-c-03_172791.dgn PLOT DATE: 3/4/2014 PLOT TIME: 6:10:20 PM

Attachment D



DEMOLITION NOTES:

1. DEMOLISH AND REMOVE EXISTING PRITCHARD LAKE PUMPING PLANT COMPLETE INCLUDING STRUCTURE AND PILES.
2. REMOVE EXISTING CONCRETE, 2400 VOLT AND 600 VOLT CONDUITS COMPLETE. PRESERVE AND PROTECT HANDHOLES.
3. REMOVE EXISTING MEDIUM VOLTAGE (2400 VOLTS) SWITCH AND UTILITY METERING SECTION COMPLETE.
4. LOCATE AND REMOVE EXISTING MEDIUM VOLTAGE (2400 VOLT) UNDERGROUND CONDUIT COMPLETE.
5. COORDINATE REMOVAL OF EXISTING (12,000 VOLT) UTILITY TRANSFORMER WITH SMUD. LOCATE AND REMOVE, COMPLETE, ALL ITEMS SMUD DOES NOT REMOVE.
6. ALL LOCATIONS ARE APPROXIMATE. CONTRACTOR TO FIELD DETERMINE FINAL LOCATION PRIOR TO PERFORMING WORK.
7. COORDINATE PHASING OF DEMOLITION WITH PROJECT ENGINEER.
8. CUT EXISTING 72" CMP 15 FEET FROM EXISTING CMP STANDPIPE. DEMOLISH ALL PIPE FROM CUT TO EXISTING PRITCHARD LAKE PUMPING PLANT.
9. ABANDON EXISTING WELL IN ACCORDANCE WITH SPECIFICATIONS AND STATE AND COUNTY REGULATIONS. FILL WITH GROUT; SAND FILL NOT ACCEPTABLE IN LEVEE.
10. CLEAR AND GRUB EXISTING STUMPS, TYPICAL.
11. EXISTING RD1000 FACILITY, PROTECT IN PLACE.

REGISTERED PROFESSIONAL ENGINEER — JAMES J. PFEIFER — No. C072257 — CIVIL — STATE OF CALIFORNIA

12-13-2013

DSGN	W OHLIN
DR	J PFEIFER
CHK	B GATTON
APVD	J ROZGA

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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0 1"
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NATOMAS MUTUAL WATER COMPANY
AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

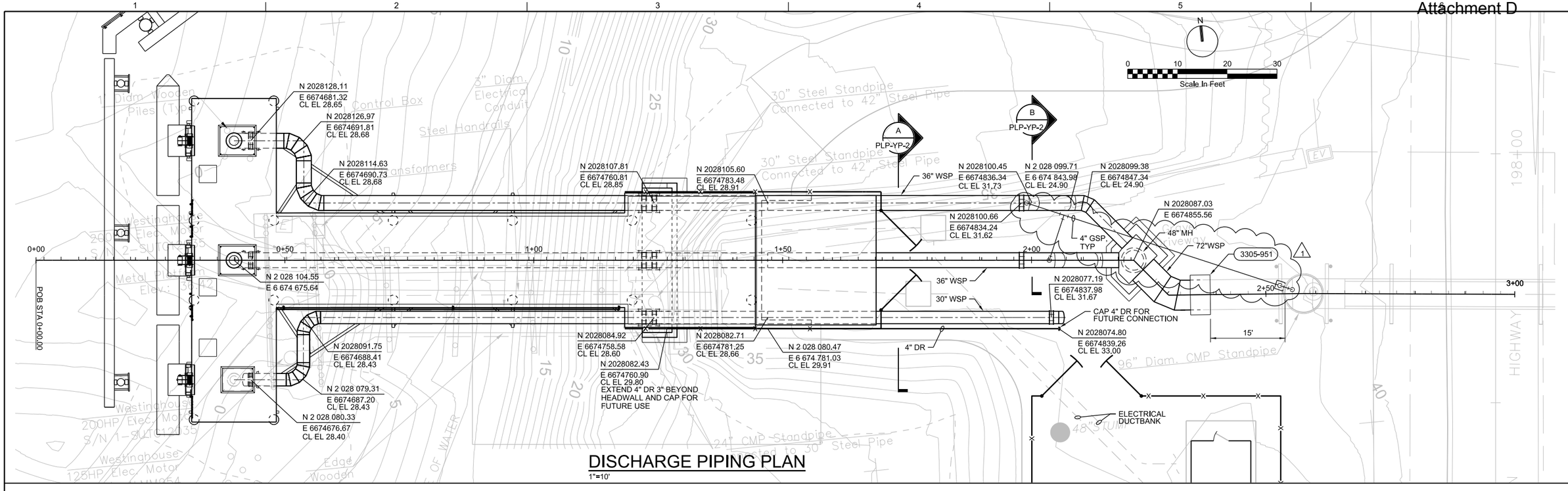
CIVIL

DEMOLITION PLAN

SHEET	17 of 65
DWG	PLP-D-1
DATE	DECEMBER 2013
PROJ	172791

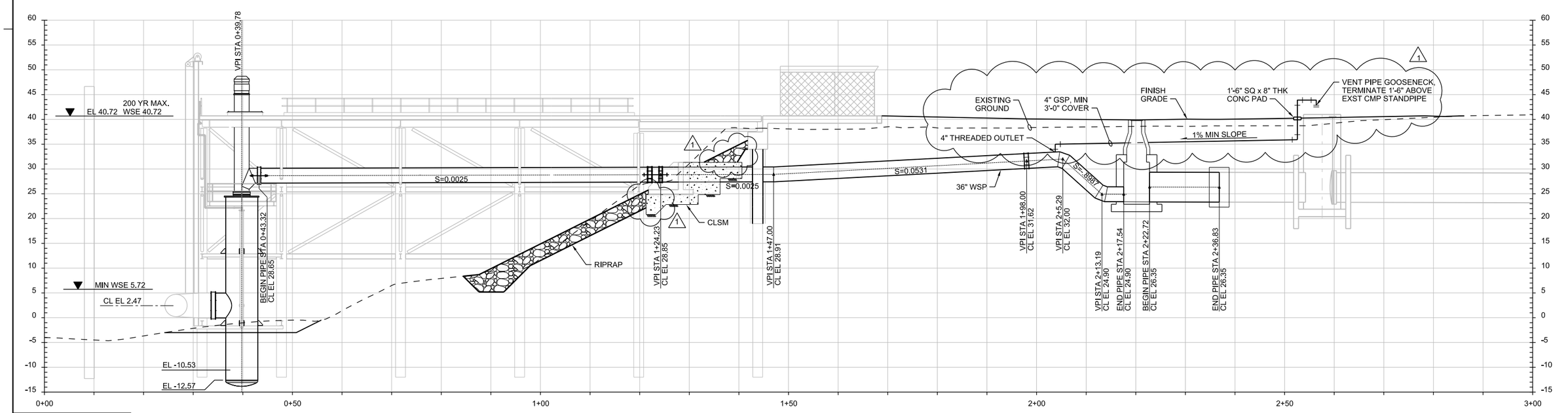
FILENAME: 005-d-01_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:05:29 PM

Attachment D



DISCHARGE PIPING PLAN

1"=10'



DISCHARGE PIPING PROFILE

HORIZ: 1"=10'
VERT: 1"=10'

NOTE: VERTICAL DATUM NGVD29.

REGISTERED PROFESSIONAL ENGINEER
WAYNE U. OHLIN
172267
CIVIL
STATE OF CALIFORNIA
12-13-2013

DSGN	W OHLIN
DR	CD MacDonald
CHK	B GATTON
APVD	J ROZGA

NO.	DATE	REVISION	BY	APVD
1	01/2014	REVISED RIPRAP, DELETED INCORRECT DATA IN PLAN, ADDED 4" GSP VENT	MR	JR

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
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SUITE 600
SACRAMENTO, CA 95833
(916) 920-0300
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REDDING, CA 96001
(530) 243-5831

NATOMAS MUTUAL WATER COMPANY

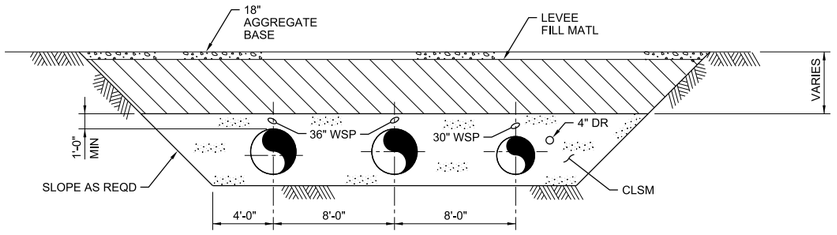
AMERICAN BASIN FISH SCREEN AND
HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

CIVIL

DISCHARGE PIPING PLAN AND PROFILE

SHEET	18 of 65
DWG	PLP-YP-1
DATE	DECEMBER 2013
PROJ	172791

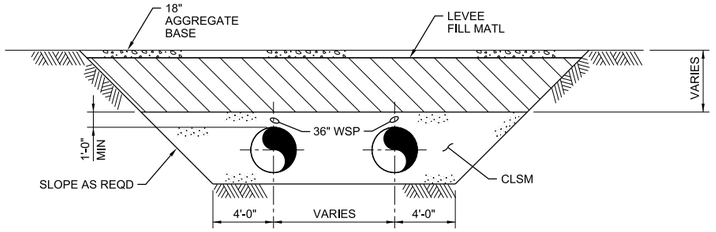
FILENAME: ADM1-005-YP-01_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:05:47 PM



A DISCHARGE PIPE SECTION

1"=5'

PLP-YP-1



B DISCHARGE PIPE SECTION

1"=5'

PLP-YP-1

REGISTERED PROFESSIONAL ENGINEER — WILLIAM L. OHLIN — C72267 — CIVIL — STATE OF CALIFORNIA

12-13-2013

DSGN	W OHLIN
DR	CD MacDonald
CHK	B GATTON
APVD	J ROZGA

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL®

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2485 NATOMAS PARK DR.
SUITE 600
SACRAMENTO, CA 95833
(916) 920-0300

DESIGN OFFICE:
2525 AIRPARK DR.
REDDING, CA 96001
(530) 243-5831

NATOMAS MUTUAL WATER COMPANY

AMERICAN BASIN FISH SCREEN AND
HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

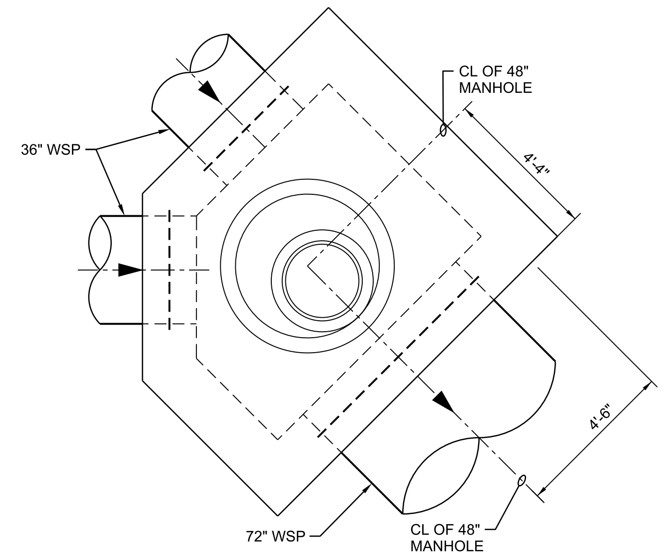
CIVIL

SECTIONS

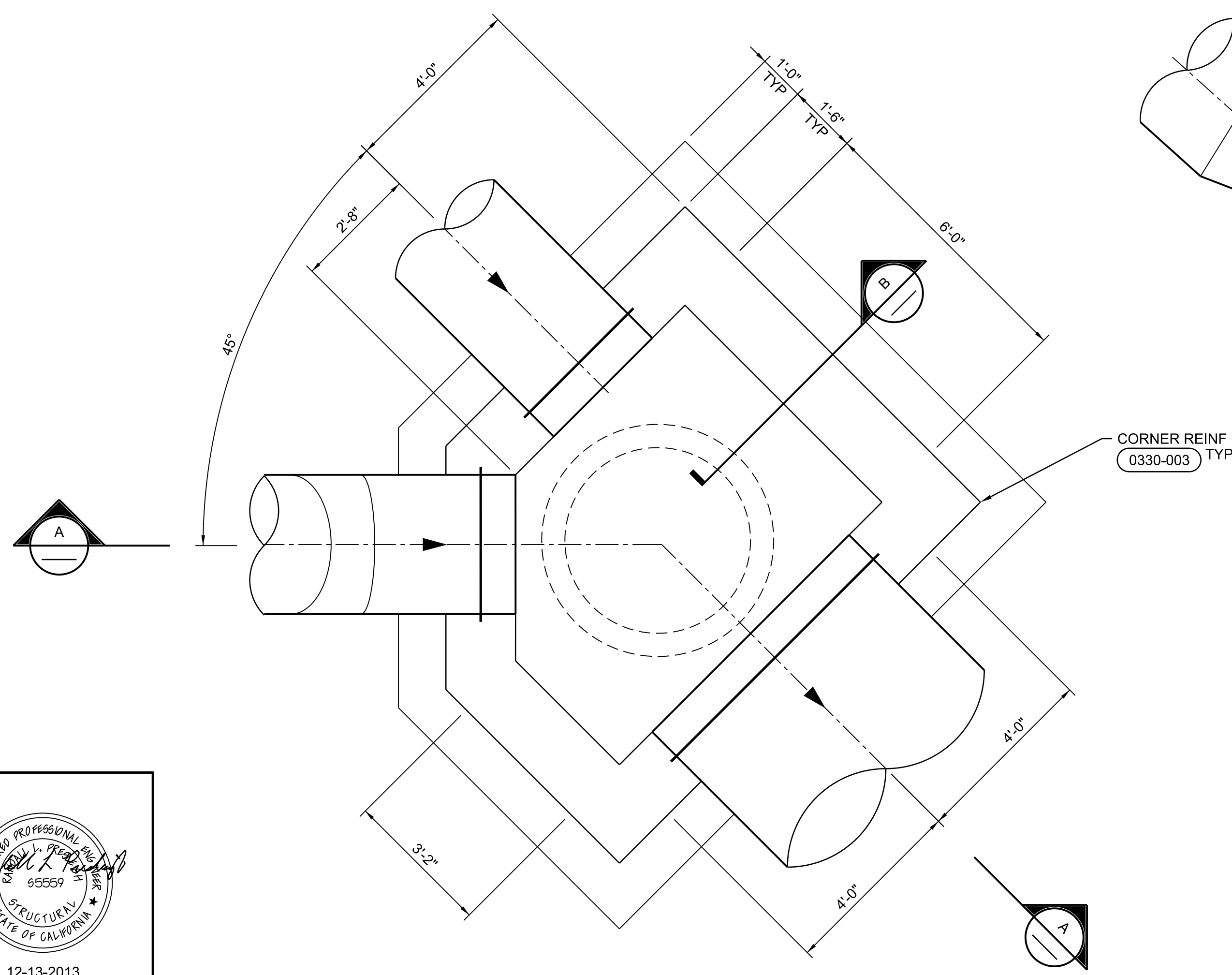
SHEET	19 of 65
DWG	PLP-YP-2
DATE	DECEMBER 2013
PROJ	172791

FILENAME: 005-YP-02_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:05:27 PM

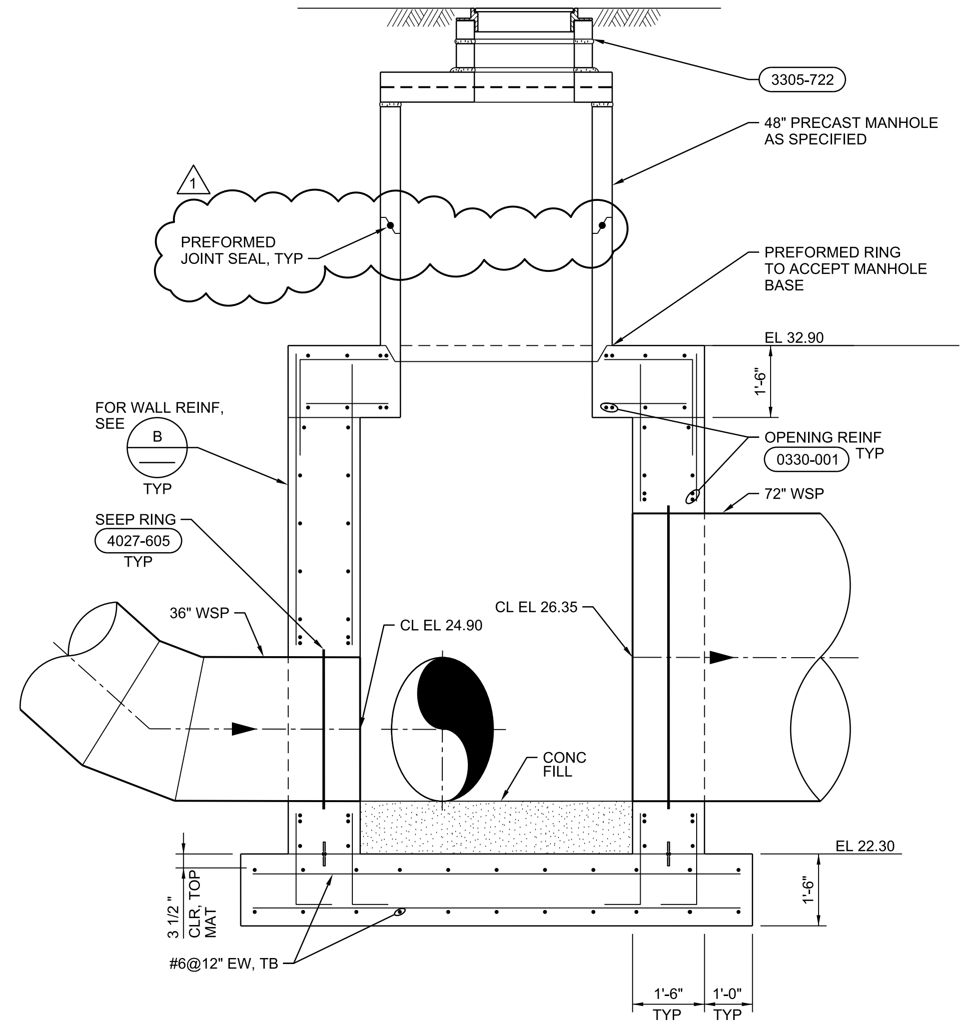
Attachment D



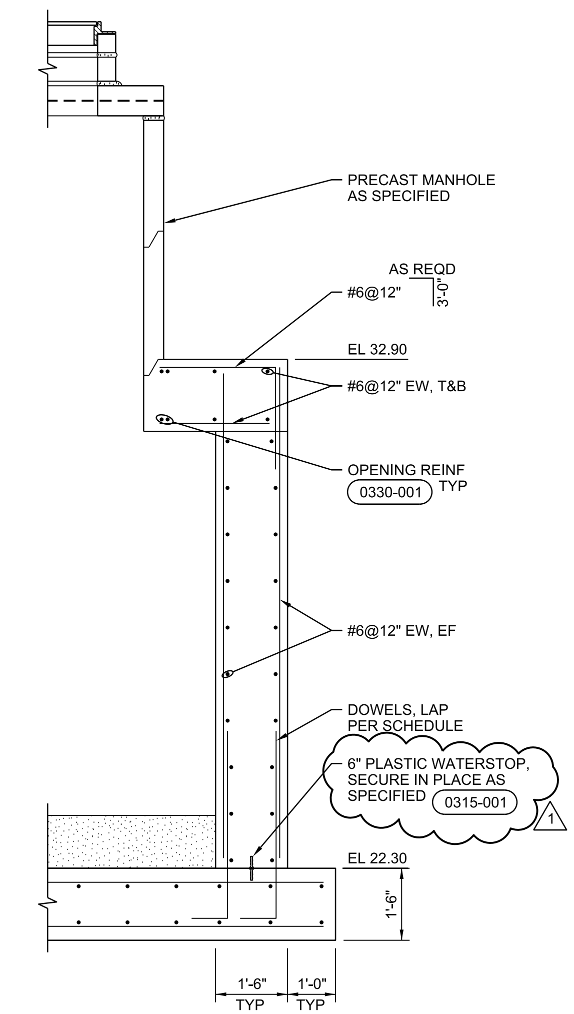
TOP PLAN
3/8"=1'-0"



LOWER PLAN
1/2"=1'-0"



A SECTION
1/2"=1'-0"



B SECTION
1/2"=1'-0"

NOTES:

1. REFERENCE CONCRETE MANHOLE SPECIFICATON 33 05 13 FOR ADDITIONAL INFORMATION.

12-13-2013

12-13-2013

DSGN	W OHLIN R PRESLEIGH					
DR	CD MacDonald					
CHK	M RANDALL	1	01/2014	MISCELLANEOUS REVISIONS	RP	JR
APVD	J ROZGA	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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CH2MHILL®
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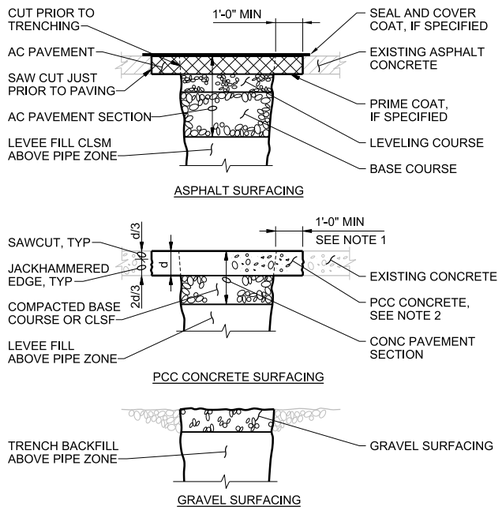
NATOMAS MUTUAL WATER COMPANY
AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

CIVIL

MANHOLE PLANS AND SECTIONS

SHEET	20 of 65
DWG	PLP-YP-3
DATE	DECEMBER 2013
PROJ	172791

FILENAME: ADM1-005-YP-03_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:05:54 PM



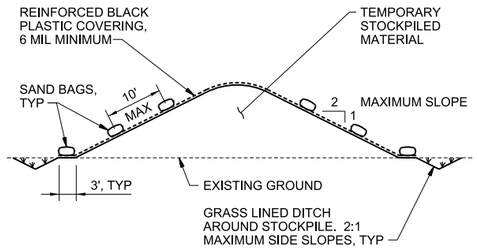
NOTES:

1. IF LOCATION OF TRENCH SAW CUT IS WITHIN 2 FEET OF AN EXISTING JOINT OR EDGE OF CONCRETE, REPLACE ENTIRE CONCRETE TO THE JOINT OR EDGE.
2. CONSTRUCT JOINTS ACROSS NEW CONCRETE TO MATCH EXISTING JOINT TYPES AND LOCATIONS.

SURFACE RESTORATION

NTS

3123-115



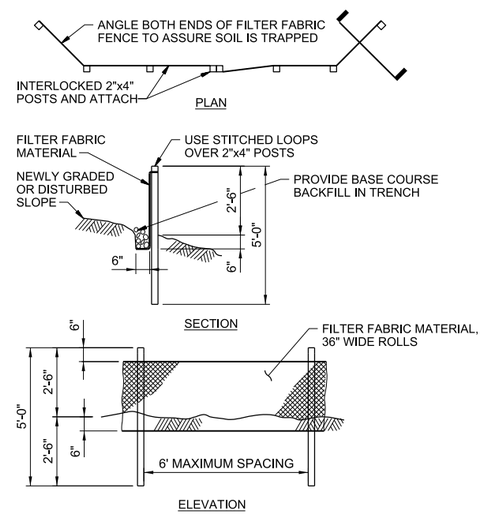
NOTES:

1. ALL SEAMS SHALL BE TAPED OR WEIGHTED DOWN FULL LENGTH. ALL SEAMS SHALL HAVE A MINIMUM 12" OVERLAP.
2. SEAMS PARALLEL TO THE SLOPE CONTOUR SHALL HAVE THE UPHILL SHEET OVERLAP THE DOWN HILL SHEET.
3. NO SURFACE RUN-OFF SHALL BE ALLOWED TO RUN UNDER THE PLASTIC COVERING.
4. DRAINAGE FROM AREAS COVERED BY REINFORCED PLASTIC SHEETING SHALL BE CONTROLLED SUCH THAT NO DISCHARGE OCCURS DIRECTLY ONTO UNCONTROLLED DISTURBED AREAS OF THE CONSTRUCTION SITE.
5. ALL SAND BAGS SHALL BE MAINTAINED IN PLACE WITH ROPE.

TEMPORARY STOCKPILE COVERING

NTS

3125-140



NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x4" DOUGLAS FIR OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

SEDIMENT FENCE

NTS

3125-165

REGISTERED PROFESSIONAL ENGINEER
WILLIAM J. OHLIN
C72267
CIVIL
STATE OF CALIFORNIA
12-13-2013

DSGN	W OHLIN
DR	CJ BROWN
CHK	B GATTON
APVD	J ROZGA

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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0 1"
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CH2MHILL®
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SUITE 600
SACRAMENTO, CA 95833
(916) 920-0300
DESIGN OFFICE:
2525 AIRPARK DR.
REDDING, CA 96001
(530) 243-5831

NATOMAS MUTUAL WATER COMPANY

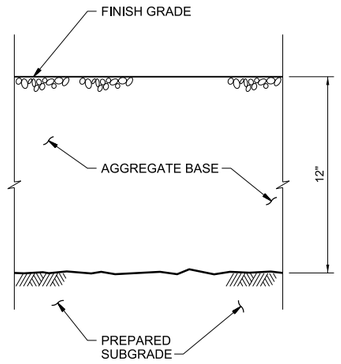
AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

CIVIL

STANDARD DETAILS

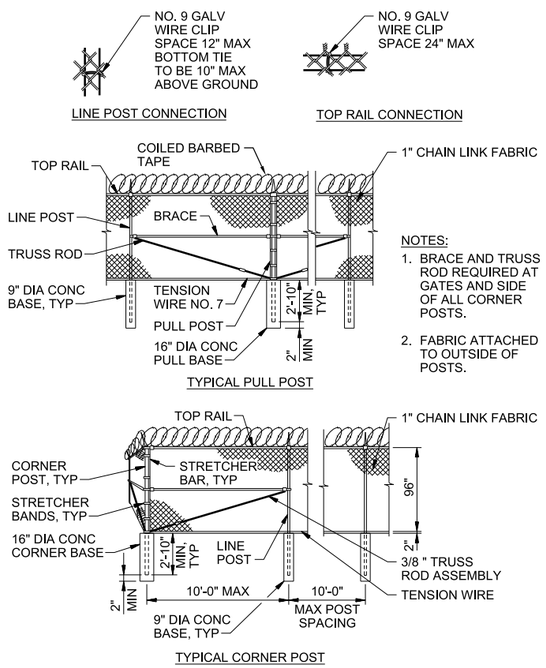
SHEET	53 of 65
DWG	SD-C-1
DATE	DECEMBER 2013
PROJ	172791

FILENAME: 900-C-001_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:18:21 PM



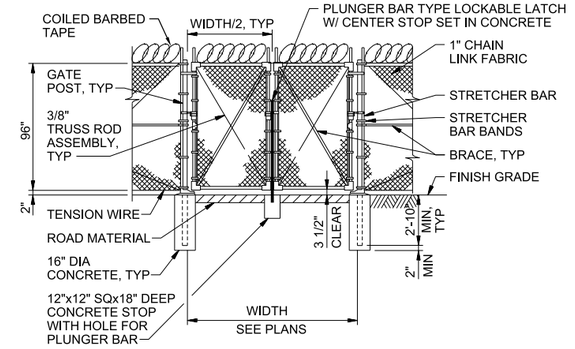
TYPICAL GRAVEL SURFACING
NTS

3213-220



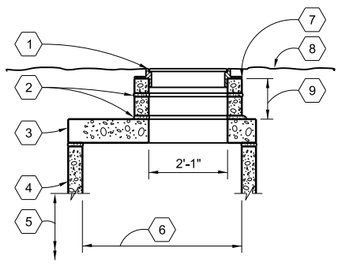
CHAIN LINK FENCE
NTS

3231-410



DOUBLE SWING GATE
NTS

3231-415

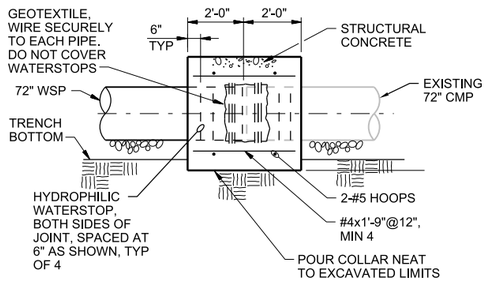


1. MANHOLE FRAME AND LOCKING COVER
2. GROUT
3. REINFORCED STANDARD TOP SLAB DESIGNED FOR H20 LOADING
4. PRECAST MANHOLE SECTION
5. MANHOLE BASE
6. AS SPECIFIED OR SHOWN
7. PRECAST 2", 4" OR 6" GRADE RINGS
8. FINISH GRADE
9. VARIES AS REQUIRED 2" MINIMUM 12" MAXIMUM

NOTE:
FOR ADDITOINAL INFORMATION, REFERENCE CONCRETE MANHOLE SPECIFICATION SECTION 33 05 15

FLAT TOP MANHOLE
NTS

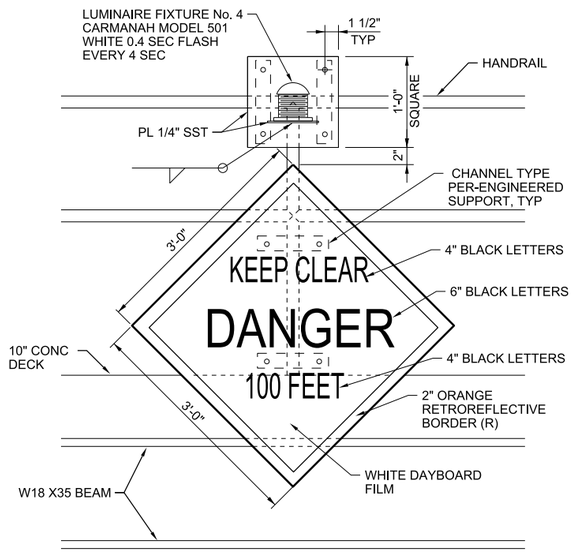
3305-722



SECTION

CONCRETE CLOSURE COLLAR
NTS

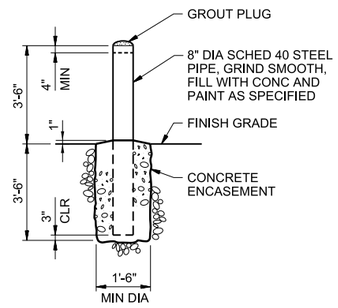
3305-951



ELEVATION

USCG DAY MARKERS
NTS

3305-970



GUARD POST - EXTERIOR
NTS

3471-810

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER J. ROZGA — No. C72257 — CIVIL — STATE OF CALIFORNIA

12-13-2013

DSGN	W OHLIN
DR	CJ BROWN
CHK	B GATTON
APVD	J ROZGA

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL®
AREA OFFICE:
2485 NATOMAS PARK DR.
SUITE 600
SACRAMENTO, CA 95833
(916) 920-0300
DESIGN OFFICE:
2525 AIRPARK DR.
REDDING, CA 96001
(530) 243-5831

SHEET

NATOMAS MUTUAL WATER COMPANY
AMERICAN BASIN FISH SCREEN AND HABITAT IMPROVEMENT PROJECT
PRITCHARD LAKE PUMPING PLANT REPLACEMENT

CIVIL

STANDARD DETAILS

SHEET	54 of 65
DWG	SD-C-2
DATE	DECEMBER 2013
PROJ	172791

FILENAME: 900-C-002_172791.dgn PLOT DATE: 3/3/2014 PLOT TIME: 3:18:24 PM

STATE OF CALIFORNIA
THE RESOURCES AGENCY
CENTRAL VALLEY FLOOD PROTECTION BOARD

RESOLUTION NO. 2010-10

FINDINGS AND DECISION AUTHORIZING ISSUANCE OF
ENCROACHMENT PERMIT NO. 18159-4
SACRAMENTO AREA FLOOD CONTROL AGENCY
NATOMAS LEVEE IMPROVEMENT PROGRAM
SACRAMENTO RIVER EAST LEVEE ("SREL") PHASE 2B, SACRAMENTO COUNTY

WHEREAS, the Sacramento Area Flood Control Agency ("SAFCA") has begun a multi-year Natomas Levee Improvement Program; and

WHEREAS, SAFCA as lead agency under the California Environmental Quality Act, Public Resources Code sections 21000 *et seq*. ("CEQA") prepared an Environmental Impact Report on the Natomas Levee Improvement Program Landside Improvements Project ("EIR") (incorporated herein by reference and available at the Central Valley Flood Protection Board offices or SAFCA offices); and

WHEREAS, SAFCA, as lead agency, certified the EIR, adopted mitigation measures and a Mitigation Monitoring Reporting Plan ("MMRP") (incorporated herein by reference and available at the Central Valley Flood Protection Board or at SAFCA), approved findings and a statement of overriding considerations pursuant to CEQA and the CEQA Guidelines (incorporated herein by reference); and approved the Project as identified for the REACH 5A-9B Project; and

WHEREAS, SAFCA submitted Application No. 18159-4 to the Central Valley Flood Protection Board on September 15, 2009 to construct approximately 4.5 linear-miles of adjacent levee on the landside slope of the existing Garden Highway Levee (Reaches 5A-9B, STA 224+00 to 468+00); installing seepage cutoff wall from STA 229+50 to 464+00, ranging in depth from 40 to 115-feet deep; constructing 300-foot seepage berm from STA 228+00 to 232+50 and from 457+00 to 464+50; constructing a 100-foot seepage berm from STA 336+80 to 353+33; constructing approximately 640 linear-feet of a reinforced concrete floodwall from STA 442+00 to 447+00; installing drainage structures and outfalls through the existing Garden Highway Levee; completing grading construction for the Reclamation District (RD) 1000 Pumping Plant No. 2 and Natomas Mutual Water Company (NMWC) Pritchard Lake Pumping Plant; removing, relocating, and replacing structures, outfalls, and appurtenances to complete interim construction, including grading, of the NMWC Elkhorn Pumping Plant; and complete private drainage improvements; and

WHEREAS, the geographic description of the project area is located in Sacramento approximately 5 miles downstream from the Natomas Cross Canal along the Garden Highway; and

- Geotechnical Basis of Design Report (BODR) – Kleinfelder (2010)
- Geotechnical Data Report – Kleinfelder (2010)
- Hydrology / Hydraulic Analysis – MBK Engineers

This technical review concluded that the designs for SREL Phase 2B are in accordance with Board, USACE standards, and DWR ILDC; and

WHEREAS, this technical review concluded that the designs of the new cutoff wall, adjacent levee, seepage berm, and surface water drainage facilities are in accordance with current Central Valley Flood Protection Board (Board) and U.S. Army Corps of Engineers (Corps) standards; and

WHEREAS; upon receipt of final 100% plans and specifications Board staff will review and address any final issues with SAFCA prior to issuance of the permit. If major technical issues remain Board staff will determine if the issues can be resolved without further Board consideration, or if they will require the application be brought back to the Board at a future meeting; and

WHEREAS, the Board has conducted a public hearing on Permit Application No. 18159-4 and has reviewed the Reports of its staff, the documents and correspondence in its file, and the environmental documents prepared by SAFCA.

NOW, THEREFORE, BE IT RESOLVED THAT,

Findings of Fact.

1. The Central Valley Flood Protection Board hereby adopts as findings the facts set forth in the Staff Report.

2. The Board has reviewed all Attachments, Exhibits, Figures, and References listed in the Staff Report.

CEQA Findings.

3. The Central Valley Flood Protection Board, as a responsible agency, has independently reviewed the analyses in the Draft Environmental Impact Statement /Draft Environmental Impact Report (DEIS/DEIR) (SCH No. 2008072060, February 2009) and the FEIS/EIR (August 2009) on the Natomas Levee Improvement Program Phase 3 Landside Improvements Project submitted by SAFCA and has reached its own conclusions regarding them.

E. Potential Damage to or Destruction of Previously Undiscovered Cultural Resources from Ground-Disturbance or Other Construction - Ground-disturbing work associated with the levee improvements could affect several prehistoric sites by disturbing interred human skeletal remains and associated grave goods. Because of the complex and stratified geomorphology of the area as well as the magnitude of the construction, implementation of all mitigation may not fully reduce impacts to a less-than-significant level. For example, buried components may not be susceptible to adequate documentation prior to intrusive work. Therefore, this impact would remain significant and unavoidable;

F. Potential Discovery of Human Remains during Construction - The construction methods and procedures involved in the levee improvements preclude complete advance investigation for human remains, so previously unknown buried human remains may be unearthed, damaged, or destroyed during project construction and excavation of borrow. Ground-disturbing work could disinter and damage human remains. Therefore, this impact would remain significant and unavoidable;

G. Temporary Increase in Traffic on Local Roadways - Before the start of construction in each construction season, SAFCA and its primary contractors for engineering and construction shall develop a coordinated construction traffic safety and control plan to minimize the simultaneous use of roadways by different construction contractors for material hauling and equipment delivery to the extent feasible and to avoid and minimize potential traffic hazards on local roadways during construction;

H. Temporary Emissions - The project would result in temporary construction related emissions of reactive organic gases, nitrogen oxides, and particulate matter that could expose nearby sensitive receptors to substantial pollutant concentrations and/or substantially contribute a violation of an air quality standard;

I. Generation of Temporary, Short-Term Construction Noise - Project levee and canal improvements could result in temporary, short-term noise levels that exceed the applicable daytime and nighttime standards for non-transportation sources, resulting in increased annoyance and/or sleep disruption to occupants of residential buildings and other sensitive receptors;

J. Exposure of Sensitive Receptors to or Generation of Excessive Ground borne Vibration - At one residence located near the Pumping Plant No. 2 site, pile driving activities could temporarily cause vibration levels that exceed the Federal Transit Administration's (FTA's) human disturbance-based standard. Mitigation may not reduce the impact to the affected residential structure to levels below applicable standards. Therefore, this impact would remain significant and unavoidable;

K. Short-term Exposure of Residents to Increased Traffic Noise Levels from Hauling Activity - Project construction would generate high volumes of haul truck trips on area roads, temporarily causing noise levels to exceed exterior noise standards at residential land uses and potentially resulting in temporary sleep disturbance at

7. **Statement of Overriding Considerations.** Pursuant to CEQA Guidelines sections 15096(h) and 15093, the Board has balanced the economic, social, technological and other benefits of the Project described in application No. 18159-4, against its significant and unavoidable impacts, listed in paragraph 5(a) above, and finds that the benefits of the Project outweigh these impacts and they may, therefore, be considered "acceptable".

   The Central Valley Flood Protection Board finds that there is an immediate need to protect the people and property at risk in the project area. The Natomas Basin floodplain is occupied by over 83,000 residents and $10 billion in damageable property. The area is presently vulnerable to flooding in a less than 100-year flood event along the Sacramento River or American River. The Natomas Basin is a deep floodplain and depending on the circumstances, flood depths in the Natomas Basin could reach life-threatening levels. The disruption in transportation that would result from a major flood would affect the Sacramento International Airport, interstate and state highways, and rail service.

   The health and safety benefits of the project, which would significantly reduce the risk of an uncontrolled flood in the Natomas Basin that would result in a catastrophic loss of property and threat to residents of the area, outweigh the remaining unavoidable environmental impacts.

8. **Custodian of Record**. The custodian of the CEQA record for the Board is its Executive Officer, Jay Punia, at the Central Valley Flood Protection Board Offices at 3310 El Camino Avenue, Room 151, Sacramento, California 95821.

Considerations pursuant to Water Code section 8610.5

9. **Evidence Admitted into the Record**. The Board has considered all the evidence presented in this matter, including the original application for Permit Nos. 18159-4 and technical documentation provided by SAFCA on SREL Phase 2B proposed improvements, past and present Staff Reports and attachments, the original Environmental Impact Report on the Natomas Levee Improvement Program Landside Improvements Project (Draft and Final Versions), SAFCA Resolution 09-059 including findings and Statement of Overriding Considerations, the Mitigation Monitoring and Reporting Program

   The custodian of the file is Executive Officer Jay Punia at the Central Valley Flood Protection Board, 3310 El Camino Avenue, Room 151, Sacramento, California 95821.

10. **Best Available Science**. In making its findings, the Board has used the best available science relating to the issues presented by all parties. On the important issue of hydraulic impacts and the computed water surface profiles, SAFCA used the UNET one-dimensional unsteady flow model developed by the USACE for the Sacramento-San Joaquin Comprehensive Study. The model is considered by many experts as one of the best available scientific tools for the purpose of modeling river hydraulics, including flood control system simulations and water surface profile computations.

Other Findings/Conclusions regarding Issuance of the Permit.

13. Based on the foregoing and particularly on the evidence that the condition of the existing Natomas levees poses an unacceptable risk to life and property, the Board finds and concludes that the issuance of Encroachment Permit No. 18159-4 for the Sacramento River East Levee Improvement Project, Reach 5A-9B is in the public interest.

14. This resolution shall constitute the written decision of the Central Valley Flood Protection Board in the matter of Permit No. 18159-4.

Approval of Encroachment Permit No. 18159-4

15. Based on the foregoing, the Central Valley Flood Protection Board hereby approves the modifications to the NLIP relevant to the Sacramento River East Levee Phase 2B and conditionally approves issuance of Encroachment Permit No. 18159-4 in substantially the form provided as Staff Report Attachment B, subject to receipt, review and approval of final 100% plans, drawings and specifications.

16. The Board directs the Executive Officer to take the necessary actions to prepare and execute the Encroachment Permit No. 18159-4 and all related documents and to prepare and file a Notice of Determination under the California Environmental Quality Act for the Natomas Levee Improvement Program, Landside Improvements Project, Sacramento River East Levee Phase 2B Improvement Project.

PASSED AND ADOPTED by vote of the Board on 23 APRIL 2010, ~~2009~~

Benjamin F. Carter
President

Maureen Lady Bug Doherty
Maureen (Lady Bug) Doherty
Secretary