County of Yolo

DEPARTMENT OF COMMUNITY SERVICES

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M_E_M_O_R_A_N_D_U_M

TO: Honorable Leroy Bertolero, Chair
Yolo County Planning Commission

FROM: Jeff Anderson, Associate Planner
Elisa Sabatini, Senior Natural Resources Analyst

DATE: May 12, 2016

RE: Correspondence Item- Teichert Esparto Correction Plan

Administrative Policy Overview

In June 2014, the Planning Commission directed staff to examine ways to address compliance issues (for non SMARA issues and issues where there is no imminent and substantial endangerment to the public health, safety, or the environment) before they reach a level of a violation. Staff subsequently developed an Administrative Policy that was agreed upon by all mining operators and reviewed by County Counsel. The Administrative Policy outlines a procedure to document potential violations or issues of non-compliance and provides operators a specific timeframe to remedy the issue(s). The main purpose of the Administrative Policy is to open lines of communication between the County and the operator and provide a reasonable amount of time to fix potential problems within the context and authority of the Off-Channel Surface Mining Ordinance (OCSMO) and the Surface Mining Reclamation Ordinance (SMRO).

In July 2015, staff presented the Administrative Policy to the Planning Commission and amended the Administrative Policy to include an additional step to notify the Planning Commission through an information item once a Correction Plan has been finalized. Since the Planning Commission acts as the appellate body for considering Notice of Violations under the OCSMO (Title 10, Chapter 4, Article 11) and SMRO (Title 10, Chapter 5, Article 12), the Commission is precluded from acting on the Correction Plan. Thus, the Teichert Esparto Correction Plan is forwarded to the Commission as an informational item only, upon which no action can be taken at this time. The Administrative Policy is included as Attachment E.

Teichert Esparto Operations Overview

As explained in more detail in the Correction Plan (Attachment A), Teichert began pumping water from the Reiff pit to the processing plant in 2004. Prior to 2004, water was supplied to the plant via a well. Also in 2004, Teichert began discharging recycled wash water back into the Reiff pit instead of discharging into settling ponds adjacent to the plant site. The Central Valley Water Quality Control Board required this change because they no longer allowed discharge within the flood zone (the settling ponds are located in the flood zone). In summary, beginning in 2004, Teichert began pumping water from the Reiff pit to the plant, and then from the plant back to the Reiff pit.

Teichert began mining in the Mast pit in 2004 until 2009, when operations were put on hold due to the economic downturn. According to Teichert, when they resumed mining again in 2012/2013, they realized they needed to add water to the Reiff pond in order to continue use of the existing infrastructure (i.e., pump intake and conveyance pipeline). Thus, in late 2013 Teichert began pumping surface water from the Mast pit to the Reiff pit to provide “make-up” water.

Correction Plan Process

In April 2015, County staff received a complaint that Teichert was employing dewatering practices in the Mast pit. The OCSMO prohibits dewatering activities. Section 10-4.412 of the OCSMO states: "Under no circumstances, shall any off-channel excavation use dewatering as a part of their surface mining operations." Though dewatering is prohibited in the OCSMO, the term is not defined. Typically in the mining industry, dewatering involves the lowering of groundwater or surface water by pumping to allow mining in relatively dry conditions to improve the efficiency of mining methods. This did not appear to be the case with Teichert's use of pumping surface water.

Staff requested information and analysis, and held numerous meetings with Teichert over the course of several months, to figure out the scope and scale of the pumping activities. In August 2015, staff notified Teichert that the pumping activities were inconsistent with the OCSMO and resulted in a "condition of concern" pursuant to the Administrative Policy. Teichert began preparation of the Correction Plan and retained a Professional Geologist/Certified Hydrogeologist (Luhdorff and Scalmanini Consulting Engineers (LSCE)) to prepare detailed analysis to determine if the operational change may constitute an increased risk to groundwater resources or imminent impacts to health, safety, or the environment. The County retained the services of a Professional Geologist/Certified Hydrogeologist (Baseline Environmental Consulting (Baseline)) to review all documents submitted by Teichert and to aid in our determination.

LSCE found that there is no indication that mining activities have had an impact on groundwater levels over the period of record reviewed, and specifically current mining activities since 2011, even in the wells that are located immediately adjacent to the mining pits. LSCE concluded that there is no apparent physical mechanism introduced by the operational change that could constitute an increased risk to groundwater resources or imminent impacts to health, safety, or the environment (Attachment D). Similarly, after reviewing all of the available information, the County's consultant (Baseline) found that there is substantial evidence to support a determination that there is no imminent and substantial endangerment to the public health, safety, or environment related to the ongoing extraction of water from the on-site wet pits for use in the aggregate processing plant, as long as the water use does not substantially exceed the amount used during the monitoring period (i.e., 160 acre-feet per year) and the washwater is returned to the Reiff or Mast ponds (so that the aquifer can be recharged) (Attachment C).

Based on the determinations by LSCE and Baseline, and continued meetings with county staff, Teichert submitted a revised Correction Plan on March 15, 2016, which proposes a timeline for coming into compliance with the OCSMO. Teichert proposes to amend the OCSMO to allow dewatering on a site-specific basis if surface mining operators can demonstrate that the proposed dewatering would not adversely affect the surrounding environment. Should the ordinance amendment be successful, Teichert would then apply to amend their mining permit to provide for conditions under which dewatering can occur at the Teichert Esparto site (Reiff pit, Mast pit, and plant). As part of the mining permit amendment application, Teichert will submit a technical analysis from a Registered Civil Engineer or Certified Hydrogeologist that demonstrates that the proposed dewatering will comply with the proposed OCSMO ordinance requirements.

The County Administrator accepted the Correction Plan on April 5, 2016 (Attachment B). Teichert will be responsible for following the schedule outlined in the Correction Plan to achieve compliance. No action is required of the Planning Commission at this time.

Attachments:

A: Teichert Esparto Correction Plan
B: County Acceptance Memo
C: Baseline Final Determination Memo
D: LSCE Analysis (sans Attachment 5 due to size)
E: Administrative Policy
F: Exhibit/Graphic

ATTACHMENT A

Teichert Esparto Correction Plan

TEICHERT ESPARTO CORRECTION PLAN
Revised March 15, 2016

Introduction

Teichert submits this Correction Plan in response to a Condition of Concern identified by Yolo County at Teichert's Esparto Plant, as set forth in the County's letter of August 17, 2015 (Exhibit A). The County's letter describes the Condition of Concern as follows:

> Staff has reviewed your July 15th letter and supplemental documents, and has concluded that the water pumping activities described are inconsistent with the Off-Channel Mining Program ("OCMP"). As described in the information that you submitted, Teichert is pumping surface water from the Mast pit to the Reiff pit, and from the Reiff pit to the Plant site. This pumping is prohibited by Section 10-4.412 of the Off-Channel Surface Mining Ordinance, which states, "Under no circumstances, shall any off-channel excavation use dewatering as a part of their surface mining operations." Any removal of naturally occurring water from an open pit is prohibited.

Thus, the Condition of Concern relates to Section 10-4.412 of the Yolo County Off-Channel Surface Mining Ordinance (OCSMO).

Background Information

Existing Entitlements

The Esparto Plant and associated Reiff and Mast mining sites are regulated by Mining Permit and Reclamation Plan No. ZF# 95-094 and Development Agreement #96-290, which were approved by the County in 1996. These entitlements expire in January 2028.

Environmental Analysis

An environmental impact report (EIR) for the Teichert Esparto mining and reclamation project was prepared and certified by Yolo County in 1996 for the purposes of compliance with the California Environmental Quality Act (CEQA). The EIR analyzed the impacts of mining and reclaiming the Mast and Reiff mining sites, aggregate processing at the Esparto Plant site, and off-site impacts associated with aggregate truck trips. The EIR assumed that aggregate wash water from the Esparto Plant would be discharged to sedimentation basins near the plant site. The EIR also noted that the water supply for the Esparto Plant processing and onsite dust suppression would be provided by an onsite well located in the northwest portion of the site (presumably on the Reiff site) and that two other wells are located on the plant site. The EIR assumed that total water use for the Esparto mining and reclamation operation would average 470 acre-feet per year.

Operational History

Prior to 2004, aggregate wash water was discharged into a series of five settling ponds located within the 100-year floodplain of Cache Creek on the Esparto Plant site. Water in the settling ponds was recycled and pumped back to the Esparto Plant once sediments settled out. In addition, an onsite well located at the plant site provided make-up water to account for water lost to evaporation and retained in the processed aggregate.

In 2004, the Central Valley Regional Water Quality Control Board (RWQCB) approved revised Waste Discharge Requirements (WDRs) for the Esparto Plant. The revised WDRs moved the designated wash water discharge location for the Esparto Plant to the active mining area, including Reiff and Mast mining sites, and prohibited further discharges to the settling ponds or elsewhere within the 100-year floodplain. The RWQCB determined that the impacts of this change in discharge location was adequately addressed by the existing 1996 Esparto EIR and, thus, no further environmental documentation was required to comply with CEQA.

Pursuant to the revised WDRs, Teichert began discharging aggregate wash water from the Esparto Plant to the Reiff mining pit in 2004. As part of this process, water was recycled in the Reiff pit and pumped back to the Esparto Plant once sediments were allowed to settle out[1]. Teichert was unaware that the pumping of water from the Reiff pit constituted "dewatering" under the OCSMO, because no offsite discharge or lowering of offsite groundwater levels was occurring in this case.

Beginning in 2013 or 2014, pumping water from the Reiff pit to the Esparto Plant became a challenge as a result of the drought and its effects on groundwater elevations. In order to supply make-up water for the Esparto Plant, Teichert began to pump water from the Mast pond to the Reiff pond. Aggregate wash water from the Esparto Plant continued to be discharged to the Reiff pond and recycled for re-use at the plant.

Current Operations

Current operations at the Esparto Plant include active mining on the Mast property. Aggregate wash water is discharged to and recycled in the Reiff pond. Water from the Mast pond is pumped into the Reiff pond to provide make-up water for the Esparto Plant. As discussed previously, the County has determined that Teichert's current practices of pumping water from the Mast pond into the Reiff pond and from the Reiff pond to the Esparto Plant are prohibited under Section 10-4.412 of the OCSMO.

[1] In its letter of July 15, 2015, Teichert stated that the Reiff well had been used from approximately 2004 to 2013 or 2014 to supply make-up water to the Reiff pond. We subsequently discovered that this description was inaccurate. The Reiff pit was the sole source of water for the Esparto Plant from approximately 2004 to 2013 or 2014 with no make-up water from the Reiff well.

Dewatering Prohibition

Section 10-4.412 of the OCSMO provides:

> Under no circumstances, shall any off-channel excavation use dewatering as a part of their surface mining operations.

The OCSMO's prohibition against dewatering originated as part of the public review process for the County's Off-Channel Mining Plan (OCMP), which was approved by the Yolo County Board of Supervisors in 1996 in conjunction with the OCSMO. In response to a preliminary public comment concerning dewatering, County staff, in coordination with the four aggregate mining operators who elected to participate in the OCMP, decided to prohibit dewatering rather than analyzing the effects of allowing it. Thus, the EIR that was prepared for the OCMP and OCSMO did not analyze the environmental effects of the use of dewatering in surface mining operations.

Proposed Correction Plan

Teichert's proposed Correction Plan consists of the following actions:

1) Within 90 days of approval of the Correction Plan, Teichert proposes to file an application consisting of an amendment to the OCSMO to allow dewatering activities on a site-specific basis for surface mining operators that can demonstrate that the proposed dewatering would not adversely affect the surrounding environment; and

2) Within 90 days of approval of the proposed OCSMO amendment, Teichert proposes to file an amendment to Mining Permit ZF# 95-094 to provide for specific conditions under which dewatering can occur at the Esparto Plant and associated Mast and Reiff mining sites.

Each of these two amendments and the environmental analysis of the impacts of such revisions are discussed in further detail below.

Proposed OCSMO Amendment

Within 90 days of approval of the Correction Plan, Teichert proposes to file an amendment to the OCSMO to allow dewatering on a site-specific basis if surface mining operators can demonstrate that the proposed dewatering would not adversely affect the surrounding environment. To achieve this purpose, Teichert proposes the following text amendment to Section 10-4.412 of the OCSMO:

> "Dewatering" shall mean lowering the water level in a wet pit by pumping water from the pit regardless of the purpose of the pumping. Water generated from dewatering activities must be beneficially used or discharged on-site. This ordinance does not permit water generated from dewatering activities to be discharged off-site. ~~Under no circumstances, shall any~~ No off-channel excavation

shall use dewatering as a part of ~~their~~ surface mining operations, unless site-specific technical analysis performed by a qualified Professional Engineer or Professional Geologist with experience in hydrolgeology demonstrates that the proposed dewatering will not adversely affect off-site wells with respect to groundwater level and quality. The Professional Engineer or Professional Geologist shall demonstrate, using appropriate hydrogeologic analysis (i.e., using data-supported empirical, analytical, and/or numerical investigative tools), that the proposed dewatering activity will not adversely impact active off-site wells or other water resources (e.g., creeks and wetlands) within 1,000 feet of the proposed dewatering pit boundary. Average, historic low groundwater levels in the subject well, shall be used for the analysis. Site-specific aquifer testing shall be conducted, if needed, to determine aquifer properties for the analysis. Consistent with the OCMP EIR, an effect shall be considered adverse if the reduction in simulated groundwater levels exceeds two feet at any well located within 1,000 feet of the pit boundary or results in well failure.

If an adverse impact were identified by the analysis (either impacts to existing wells or other water resources, including creeks and wetlands), dewatering activities will be modified to reduce impacts, and/or the applicant shall otherwise mitigate impacts to the satisfaction of the County and neighbors within 1,000 feet of the pit boundary. Mitigation measures include, but are not limited to, well modification, well relocation, compensation of well owners for increased pumping cost, or providing an alternative water supply (at no expense to the County). The hydrogeologic analysis shall be submitted to the County for review and approval prior to implementation of any dewatering activities.

Prior to and for the duration of dewatering activities, the applicant shall: 1) monitor water levels in the wet pit(s), and nearby monitoring wells on a quarterly basis; and 2) quantify the amount of water pumped from and returned to the wet pit(s). This monitoring data shall be reviewed by the applicant's Professional Engineer or Professional Geologist to determine whether any adverse impacts are occurring. If adverse impacts are found to be occurring, dewatering activities will be modified to reduce impacts, and/or the applicant shall otherwise mitigate impacts to the satisfaction of the County and neighbors within 1,000 feet of the pit boundary. (at no expense to the County). Documentation of the monitoring and data evaluation shall be submitted the County annually.

Pumping of water from the wet pit in lieu of pumping of groundwater from a well shall not require predictive impact analysis in addition to analysis provided in the approved, site-specific CEQA document, unless the total annual water demand, as set forth in the CEQA document, is exceeded. This does not remove the requirement for monitoring and reporting activities described above.

Proposed Revisions to Esparto Plant Entitlements

Within 90 days of approval of the proposed OCSMO amendment discussed above, Teichert proposes to apply for an amendment to Mining Permit ZF# 95-094 to provide for specific conditions under which dewatering can occur at the Esparto Plant and associated Mast and Reiff mining sites. These conditions may include the following, subject to environmental analysis and County approval:

- Annual water use shall not exceed the 470 acre-feet per year analyzed in the 1996 EIR.
- No offsite discharge of pumped groundwater shall occur.
- Onsite aggregate wash water discharge shall comply with WDRs.
- Groundwater pumping rate from either Mast or Reiff pits shall not exceed 3500 gpm.

Technical Analysis of Dewatering Impacts

As part of the Mining Permit amendment application, Teichert will be submitting a technical analysis from a Registered Civil Engineer or Certified Hydrogeologist that demonstrates that the proposed dewatering will comply with the proposed OCSMO ordinance requirements.

ATTACHMENT B

County Acceptance Memo

COUNTY OF YOLO

Office of the County Administrator

Patrick S. Blacklock
County Administrator

NATURAL RESOURCES DIVISION
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April 5, 2016

Jason Smith
Project Manager
Teichert Materials
P.O. Box 15002
Sacramento, CA 95851

Mr. Smith:

The County Administrator has reviewed the proposed Correction Plan dated March 15, 2016, prepared by Teichert Materials, and the relevant technical analysis prepared by Luhdorff and Scalmanini Consulting Engineers describing the effects of water pumping activities at the Teichert Esparto mining facility. In consultation with Baseline Environmental Consulting, the County Administrator has determined that the continued water pumping activities do not constitute an imminent and substantial endangerment to the public health, safety, or environment. In accordance with the procedures set forth in the *Administrative Policy for Off-Channel Surface Mining and Reclamation Violation Process*, the water pumping activities remain a "condition of concern" until such time as the Correction Plan has been fully completed.

The County Administrator hereby accepts the Correction Plan as proposed. The Correction Plan will be forwarded to the Planning Commission as an informational/correspondence item with the agenda packet for the April 14, 2016, hearing. Teichert shall adhere to the timeline described in the Correction Plan for correcting the condition of concern.

Should you have any questions with regards to the Correction Plan procedure, please contact Elisa Sabatini, Senior Natural Resources Analyst (elisa.sabatini@yolocounty.org; 530-406-5773) or Jeff Anderson, Associate Planner (jeff.anderson@yolocounty.org; 530-666-8036).

Sincerely,

Patrick S. Blacklock
Yolo County Administrator

ATTACHMENT C

Baseline Environmental Consulting
Final Determination Memo

BASELINE
ENVIRONMENTAL CONSULTING

MEMORANDUM

Date: 25 January 2016 **Job No.:** 14208-02.02397

To: Jeff Anderson, Yolo County

From: Bruce Abelli-Amen, PG, CHg, BASELINE

Subject: Comments on Luhdorff and Scalmanini Consulting Engineers ("LSCE") Letter entitled "Addendum - Recent Mining Activities, Water Use, and Groundwater Conditions at the Teichert Esparto Plant, Yolo County, CA" dated 20 January 2016

At your request, BASELINE has reviewed the subject LSCE letter (hereafter referred to as the "Addendum") related to extraction (i.e., active pumping) of water from the Reiff and Mast wet pits at the Teichert aggregate mining and processing facility in Esparto. It is our understanding that the County considers this activity, which is on-going, "dewatering" and therefore in violation of Section 10-4.412 of the Yolo County Off-Channel Surface Mining Ordinance ("Ordinance"). The Addendum responds to a BASELINE comment memorandum on the original LSCE letter (dated 5 November 2015).

We have reviewed both the original LSCE letter (dated 5 November 2015) and the Addendum and find that combined they contain the information necessary to allow for the evaluation of potential hydrology, water quality, and water supply consequences related to the pumping of water from on-site wet pits rather from the on-site supply well. We concur with LSCE that there is substantial evidence to support a determination that there is no imminent and substantial endangerment to the public health, safety, or environment related to the ongoing extraction of water from the Mast pond for use in the aggregate processing plant, as long as the water use does not substantially exceed the amount used during the monitoring period (i.e., 160 acre-feet per year)[1] and the washwater is returned to the Reiff or Mast ponds (so that the aquifer can be recharged).

BAA

[1] Data that support lack of impact are available only for water use up to 160 acre-feet per year. It is possible that more water could be extracted without impact (up to 470 acre-feet per year – the amount evaluated in the 1996 environmental impact report), but Teichert would need to demonstrate that no new impacts would occur if more than 160 acre-feet per year were to be extracted.

ATTACHMENT D

Luhdorff & Scalmanini Consulting Engineers Analysis

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

GROUNDWATER RESOURCES
HYDROLOGY · DEVELOPMENT · MANAGEMENT

January 20, 2016
LSCE File 15-7-109

Electronic Submittal

Jason Smith, Project Manager
Teichert Materials
3500 American River Drive
Sacramento, CA 95864

SUBJECT: ADDENDUM – RECENT MINING ACTIVITIES, WATER USE, AND GROUNDWATER CONDITIONS AT THE TEICHERT ESPARTO PLANT, YOLO COUNTY, CA

Dear Mr. Smith:
This letter provides additional information and clarification in response to BASELINE's December 3, 2015 letter to Jeff Anderson, Yolo County. That letter is attached for reference together with Luhdorff and Scalmanini Consulting Engineers' (LSCE) November 5, 2015 letter (**Attachment 1**). The additional information provided herein was largely compiled from reports that were submitted to Yolo County in previous years as part of Teichert's obligations under the mining permit.

1. Pumping from the Reiff pond began in approximately 2004 and pumping from the Mast pond began in late 2013.
2. The capacity refers to the pumping rate of the pump withdrawing water from Reiff pond. During the three-year period when no mining occurred (2009-2011), water levels in Reiff pond declined. In 2012, a minor amount of mining occurred and it quickly became clear that water needed to be added to Reiff pond in order to continue use of the existing infrastructure (i.e., pump intake and conveyance pipe line). Tabulated well construction information and water level hydrographs for the Reiff Ag well (no data since 2009), monitoring wells R1A (perched and often dry), and R1B (deeper screen; showing recent water level declines) are provided in **Attachment 2**. There are no pumping records available for the Reiff Ag well; the well is not metered. Pumping estimates are given in Item 5, below.
3. **Attachment 3** provides three cross sections, a cross section location map, and an aerial photograph (Title MAST PIT) that identifies two points with approximate pond floor elevations in October 2015. Figure 1 is a modification by Teichert of cross section A-A' roughly parallel to Cache Creek that was prepared earlier by LSCE (Figure I-3b). Figure I-3a is a cross section location map, and Figure I-3c shows cross section B-B' roughly perpendicular to the Creek. Figure 1 does not show the extent of Mast pond. However, the

approximate pit elevations from MAST PIT indicate an excavation depth approximately equal to the total depth of well M1 (near point A'). Teichert does not have bathometric data documenting the deposition of fines that are being recycled to Reiff pond.

4. Table 1 (November 5, 2015 letter, page 2) shows only plant water use. A revised table is shown below for clarification. The revised table also shows the source of water.
5. Water for landscaping and dust control is supplied by the Reiff Ag well and applied via tanker truck (4,000 gallons per load). Teichert estimated an average of 8 loads (ranging from < 2 to 15 per day, depending on the season) on 200 operating days per year. This yields an estimated 20 acre-feet per year.
6. **Attachment 4** provides two composite figures showing water level hydrographs together with annual water use and annual precipitation (obtained from CIMIS station #196 in Esparto, CA).
7. **Attachment 5** provides tabulated water quality information. Annual groundwater monitoring reports that have been submitted to Yolo County for the duration of the wet-pit mining operations discuss groundwater quality and have not identified any mining impacts on groundwater quality.

Table 1: Product Sold and Water Use, 2003–2014

Calendar Year	Product Sold¶ (1000 x tons)	Water Use† (ac-ft)	Pond Water Source
2003	925	160	Reiff
2004	873	146	Reiff
2005	886	97	Reiff
2006	1,082	113	Reiff
2007	723	87	Reiff
2008	363	42	Reiff
2009	0	0	-
2010	14	0	-
2011	105	0	-
2012	0	5	Reiff
2013	410	117	Mast via Reiff
2014	577	115	Mast via Reiff

¶ Figures are per calendar year. Sales are tracked and reported for regulatory compliance on an April-March fiscal year basis.
† This is the non-recycled portion of process water (i.e., water lost to evaporation during washing and stockpiling, water percolating back into the ground from stockpiles, and water exported with sold product), estimated to be 10 percent of supplied water. Estimated via plant operating hours and mean pumping rate of 3,500 gpm.

Sincerely,

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

Till Angermann, P.G., C.Hg.
Principal Hydrogeologist

PROFESSIONAL GEOLOGIST
TILL ERICH ANGERMANN
No. 853
CERTIFIED
HYDROGEOLOGIST
STATE OF CALIFORNIA

Attachment 1 – Letter correspondence
Attachment 2 – Well specifications and hydrographs
Attachment 3 – Cross Sections and maps
Attachment 4 – Modified figures
Attachment 5 – Water quality record

PROFESSIONAL GEOLOGIST
TILL ERICH ANGERMANN
No. 7789
01-20-2016
STATE OF CALIFORNIA

Attachment 1

Letter correspondence

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

GROUNDWATER RESOURCES
HYDROLOGY · DEVELOPMENT · MANAGEMENT

November 5, 2015
LSCE File 15-7-109

Electronic Submittal

Jason Smith, Project Manager
Teichert Materials
3500 American River Drive
Sacramento, CA 95864

SUBJECT: RECENT MINING ACTIVITIES, WATER USE, AND GROUNDWATER CONDITIONS AT THE TEICHERT ESPARTO PLANT, YOLO COUNTY, CA

Dear Mr. Smith:
Per your request, Luhdorff and Scalmanini Consulting Engineers (LSCE) evaluated a recent operational change and associated potential impacts to groundwater at the Teichert Esparto Plant (**Figure 1**). Specifically, the purpose of this letter is to respond to your questions whether the operational change may constitute an increased risk to groundwater resources, if those impacts may be irreversible, and if imminent impacts to health, safety or the environment are to be expected.

Background and Operational Change
There are two mining parcels at the plant, Reiff and Mast. Wet pit mining of the Reiff parcel commenced in early 2001 and was concluded in fall 2008. Stripping of overburden of the Mast parcel commenced in 2005 and wet pit mining started in spring 2008, but only for a few months because the plant was closed in late 2008 due to declining demand. Mast mining activities started again in 2012.

From approximately 2004 until late 2013/early 2014, aggregate wash water was exclusively from the Reiff pond where it was also recycled into. Water demand for dust control and landscaping has, and continues to be met by the Reiff Ag well. After Mast mining operations started up again in 2012, capacity dropped off in the wake of the current drought and Teichert started withdrawing water from the Mast pond (via Reiff pond) in late 2013/early 2014. Wash water continues to be returned to the Reiff pond in the same manner as has been done since 2004.

Observations
The excavation pits on the Reiff and Mast parcels extend below the groundwater table. Therefore, current withdrawl of water from the Mast pond essentially constitutes extraction of

groundwater, i.e., the same source of water as tapped by the Reiff Ag well. However, withdrawl from the pond is expected to have less of an effect on nearby groundwater levels than the withdrawl of an equal amount of groundwater from the Reiff Ag well due to the localized nature of well extraction and the fact that the Reiff Ag well extracts from a deeper zone. Since pond water withdrawls are from near the water table and process water is returned to near the water table (i.e., Reiff pond), the current process is expected to induce less (if any) vertical mixing within the aquifer than when the Reiff Ag well was used.

Based on the above, there is no apparent physical mechanism introduced by the operational change that could constitute an increased risk to groundwater resources or imminent impacts to health, safety or the environment.

Production levels and water use for the last twelve years are summarized in **Table 1**. There were no mining activities from 2009-2011 as indicated by zero water use, and all of the product sold during this time was from existing stockpiles. Mining operations slowly started back up in 2012 and increased in 2013. Water use at the plant does not correlate very well with the product sold on a calendar year basis. However, it provides a means to compare demands on the aquifer system over the period of record. The maximum water use was 160 ac-ft in 2003, which is only one third of the estimated 470 ac-ft (Teichert Esparto Project EIR, County of Yolo, June 5, 1996, page 3-17).

Table 1: Product Sold and Water Use, 2003–2014

Calendar Year	Product Sold¶ (1000 x tons)	Water Use† (ac-ft)
2003	925	160
2004	873	146
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2011	105	0
2012	0	5
2013	410	117
2014	577	115

¶ Figures are per calendar year. Sales are tracked and reported for regulatory compliance on an April-March fiscal year basis.
† This is the non-recycled portion of process water (i.e., water lost to evaporation during washing and stockpiling, water percolating back into the ground from stockpiles, and water exported with sold product), estimated to be 10 percent of supplied water. Estimated via plant operating hours and mean pumping rate of 3,500 gpm.

Figure 2 shows the water level record of four key on-site monitoring wells, all of which are completed in the same water bearing zone. R3B is upgradient of the mining pits and represents ambient groundwater conditions (i.e., unaffected by mining operations). M1 is downgradient of the mining pits and, as such, provides a means to monitor for potential impacts to groundwater. R2 is located in between the two mining pits, and any impacts to groundwater resources would be expected to be most prevalent in this well. The historical record of these three wells starts in 1990, i.e., it predates off-channel mining operations by approximately 10 years. Therefore, during that period, R3B, M1, and R2 represent ambient groundwater conditions.

The groundwater level record, in its entirety, shows no correlation to Teichert's water use. Instead, the record exhibits a strong correlation to the agricultural water supply conditions, both under pre-mining conditions and since 2001, when wet-pit mining commenced on the Reiff parcel. The Reiff and Mast parcels were in agricultural production prior to mining, and the plant is still surrounded by agricultural land uses. Irrigation water is supplied via a network of irrigation canals operated by the Yolo County Flood Control and Water Conservation District. Farmers respond to surface water shortages in years of low precipitation with increased groundwater well use. The water level record captures the tail end of the 1987-92 drought. During the three critically dry years (California Department of Water Resources' Water Year Hydrologic Classification Index for the Sacramento Valley) from 1990-1992, water levels in all three wells were almost as deep as in 2014. Water levels during that time, and again in 1994 (another critically dry year), exhibit much larger seasonal fluctuations (over 30 feet) than during the following wet years (i.e., 1995-1999).

Groundwater levels remained high and stable during the entirety of mining the Reiff parcel, including below normal, dry, above normal, and one wet year until the beginning of the 2007-2010 drought. Mining operations ended in late 2008 but groundwater levels continued to drop. After a brief recovery in 2011 (a single wet year), the drought continued to what now is described as the most severe drought California has experienced since records were kept in 1901.

R7 was constructed in 2007. It also is located between the two mining pits but toward their northern shore line. Its record continues in 2010-2014, when no water levels were measured in R2. Notably, during the entirety of the historical record, water levels in R2 and R7 are bracketed by those of the upgradient and downgradient wells. In the case of R2, this includes ambient, pre-mining times. This trend has been observed in wet hydrologic years and under drought conditions. Furthermore, the relationship between upgradient and downgradient water levels has been consistent.

In summary, there is no indication that mining activities over the period of record reviewed herein, and specifically current mining activities since 2011, have had an impact on groundwater

levels, even in the wells that are located immediately adjacent to the mining pits. Furthermore, there is no apparent physical mechanism introduced by the operational change that could constitute an increased risk to groundwater resources or imminent impacts to health, safety or the environment.

Sincerely,

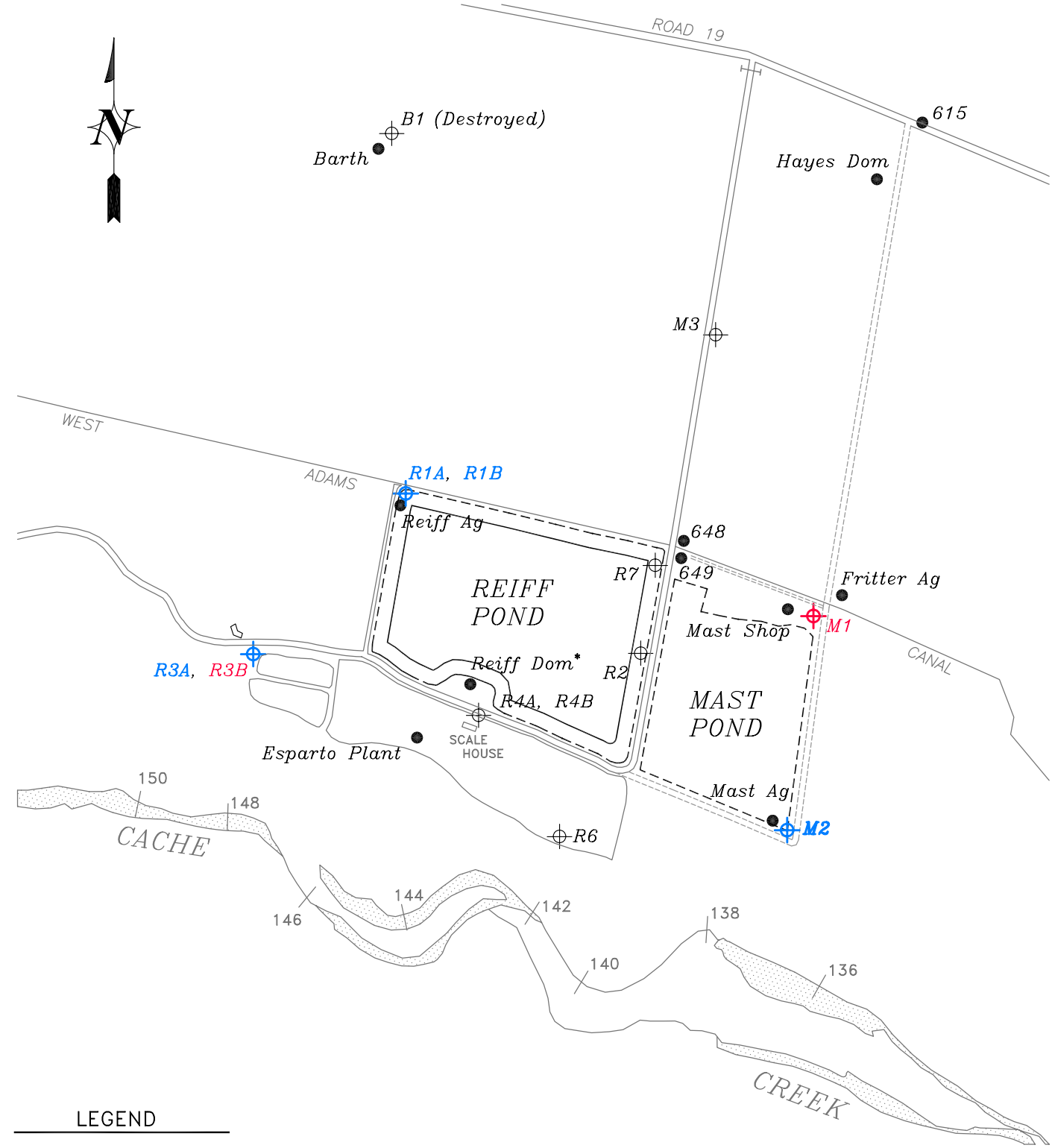
LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

Till Angermann, P.G., C.Hg.
Principal Hydrogeologist

PROFESSIONAL GEOLOGIST
TILL ERIC ANGERMANN
No. 853
CERTIFIED
HYDROGEOLOGIST
STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST
TILL ERIC ANGERMANN
No. 7789
11-5-2015
STATE OF CALIFORNIA

Enclosure:
Figures 1 and 2



LEGEND

- MONITORING WELL
- MONITORING WELL FOR WATER LEVELS UNDER MINING PERMIT AND RECLAMATION PLAN NO. ZF95-094 (R3B,M1: WATER LEVELS AND WATER QUALITY)
- WATER SUPPLY WELL
- 150 THALWEG ELEVATIONS (FEET MSL)
- * WELL DESTROYED IN 2000

Scale in Feet

0' 600' 1200' 2400'

CAD FILE: G:/Projects/Teichert Aggregates/07-1-005/2007/Figure 1.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 10-06-08 8:24am

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Figure 1
Groundwater Monitoring Network and Property Locations
Esparto Properties

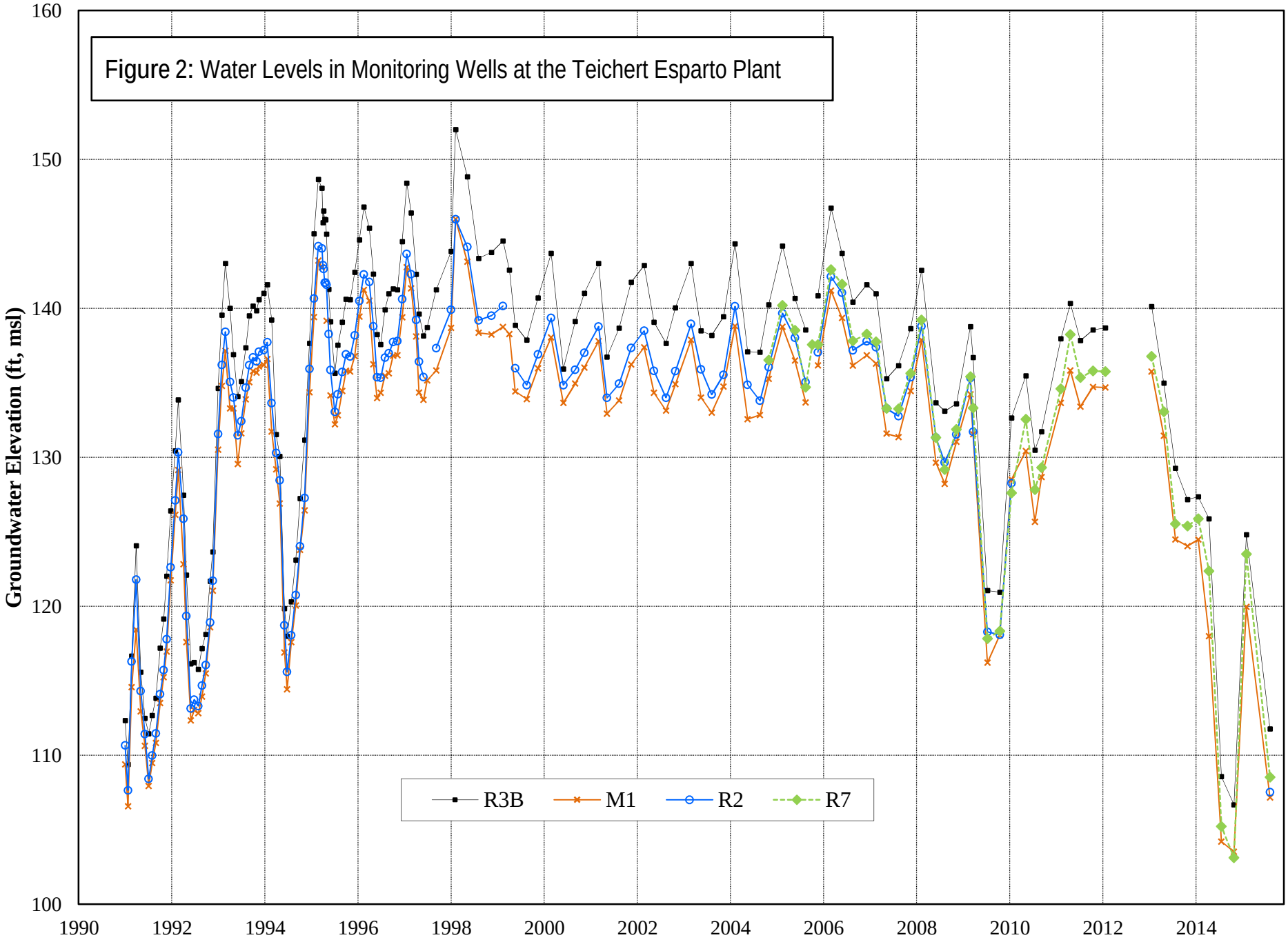


Figure 2: Water Levels in Monitoring Wells at the Teichert Esparto Plant
Groundwater Elevation (ft, msl)
160
150
140
130
120
110
100
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
R3B
M1
R2
R7

BASELINE
ENVIRONMENTAL CONSULTING

MEMORANDUM

Date: 3 December 2015 **Job No.:** 14208-02

To: Jeff Anderson, Yolo County

From: Bruce Abelli-Amen, PG, CHg, BASELINE

Subject: Comments on Luhdorff and Scalmanini Consulting Engineers ("LSCE") Letter entitled "Recent Mining Activities, Water Use, and Groundwater Conditions at the Teichert Esparto Plant, Yolo County, CA" dated 5 November 2015

At your request, BASELINE has reviewed the subject LSCE letter related to extraction (i.e., active pumping) of water from the Reiff and Mast wet pits at the Teichert aggregate mining and processing facility in Esparto. It is our understanding that the County considers this activity, which is on-going, "dewatering" and therefore in violation of Section 10-4.412 of the Yolo County Off-Channel Surface Mining Ordinance ("Ordinance"). The purpose of our peer review was to determine whether the letter contains the information necessary to allow for the evaluation of potential hydrology, water quality, and water supply consequences related to the pumping of water from on-site wet pits rather from the on-site supply well, and to confirm that the LSCE letter provides substantial evidence to support a determination that there is no imminent and substantial endangerment to the public health, safety, or environment.

Our comments on the LSCE letter are as follows:

Page 1, second paragraph under *Background and Operational Change*:

This paragraph appears to indicate that water has been pumped from the Reiff pond since 2004 (for aggregate wash water). However, in a 15 July 2015 letter from Teichert entitled "Response to Teichert Esparto Plant Water Pumping and Usage Questions" it is expressly stated that the "Esparto Plant was soley [*sic*] supplied by the Reiff well until 2013 or 2014." Please clarify when pumping from the wet pits began.

It is further stated in this paragraph that "after Mast mining operations started up again in 2012, capacity dropped off in the wake of the current drought…" It is unclear what capacity is being referred to. Is it the capacity of the Reiff well? If so, additional information about why capacity of the well dropped off would be useful. Please provide the following:

- Depth, screened interval, and historic pumping records for the Reiff well;
- Water level hydrographs for the Reiff well and/or monitoring well R1A;
- Any records of pumping tests and associated drawdown or specific capacity tests for the Reiff well.

Page 2, first complete sentence:

This sentence states that "However, withdrawl [*sic*] from the pond is expected to have less of an effect on nearby groundwater levels than the withdrawl [*sic*] of an equal amount of groundwater from the Reiff Ag well due to the localized nature of well extraction and the fact that the Reiff Ag well extracts from a deeper zone." Please provide a cross-section that shows the depths of the Reiff and Mast ponds (including depth of redeposited processing fines), the Reiff well, all nearby monitoring wells, and known geologic stratigraphy.

Page 2, Table 1:

Please provide a breakdown of the source of the water used (i.e., Reiff pond, Mast pond, or Reiff well) and the end use of the water (i.e., aggregate processing or landscaping/dust control) by year.

Page 3, second paragraph, first sentence:

This sentence states that "the groundwater level record, in its entirety, shows no correlation to Teichert's water use." Please modify Figure 2 to show water use (add another y-axis on the right with appropriate units). Also add a new figure that shows groundwater levels in monitoring wells on the left y-axis and annual precipitation on the right y-axis.

General:

The letter does not provide any quantitative analysis or summary of water quality conditions over time. Only the following statement that implies a lack of vertical mixing (which could affect water quality) is provided:

"Since pond water withdrawls [*sic*] are from near the water table and process water is returned to near the water table (i.e., Reiff pond), the current process is expected to induce less (if any) vertical mixing within the aquifer than when the Reiff Ag well was used."

Please provide a summary table that shows all available water quality data for the monitoring wells and ponds and provide a description of any trends (or lack of trends) that may be related to operations and pumping.

BAA

Attachment 2

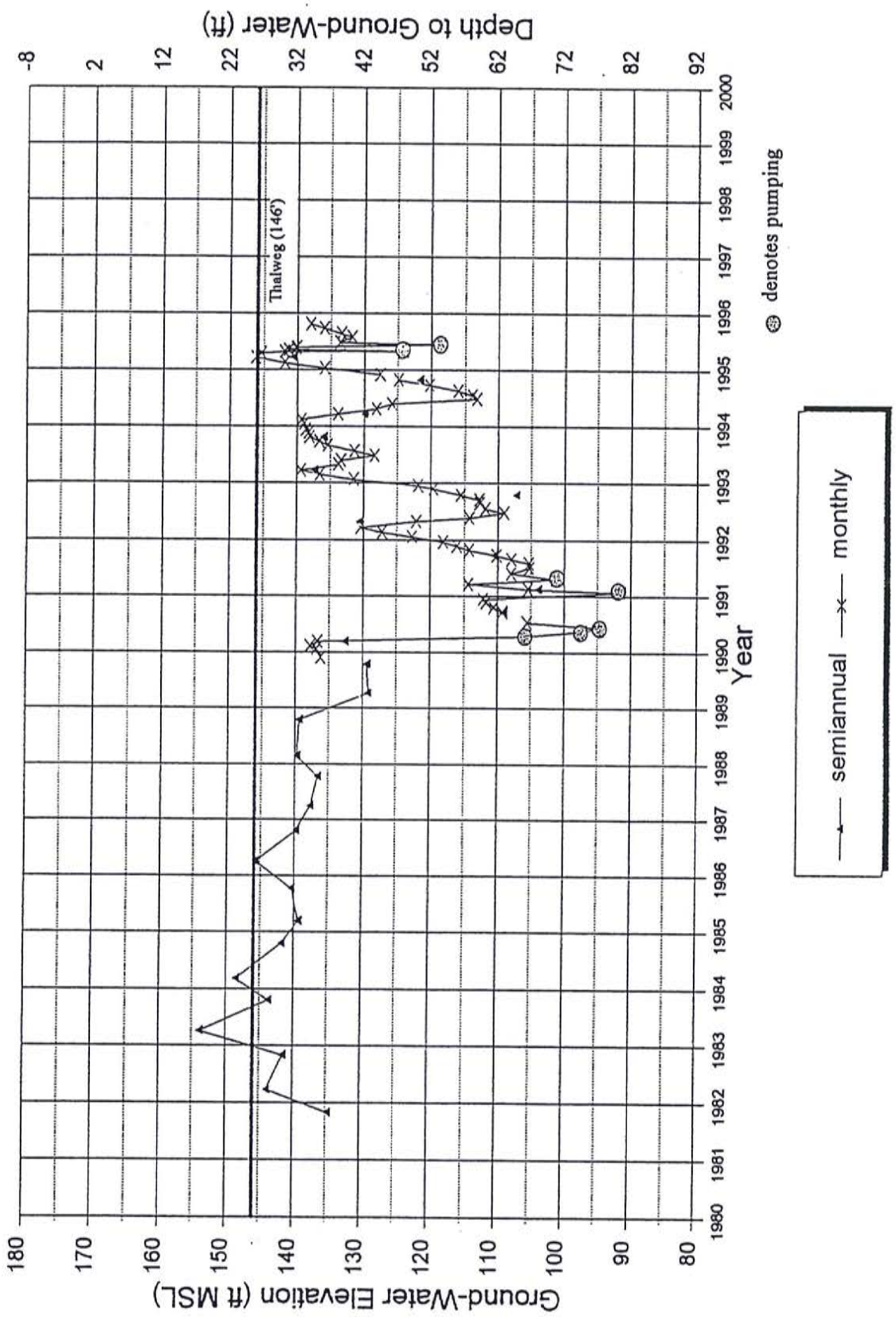
Well specifications and hydrographs

Table 1
Well Information - Teichert-Esparto Plant Properties

Well Name	Usage	RPE[1] (Ft MSL)	Total Depth (Ft)	Completed Depth (Ft)	Screen Interval (Depth in Ft)	Casing Diameter (Inches)	Construction Completion Date	Portion of the first aquifer in which the well is completed
R1A	MW	173.07	36	35	25 - 35	2	12/15/1989	Perched
R1B	MW	173.31	65	62	42 - 62	2	12/15/1989	Shallow (Upper)
R2	MW	169.55	80	60	45 - 60	2	11/29/1989	Shallow (Upper)
R3A	MW	173.31	36	35	25 - 35	2	12/15/1989	Perched
R3B	MW	172.86	85	85	75 - 85	2	12/15/1989	Shallow (Upper)
R4A	MW	169.35	36	33	23 - 33	2	11/21/1989	Perched
R4B	MW	169.35	56	54	44 - 54	2	11/20/1989	Shallow (Upper)
R6	MW	169.87	60	60	40 - 60	2	12/15/1989	Shallow (Upper)
R7	MW	172.31	69	69	51-66	2	11/22/2004	Shallow (Upper)
M1	MW	168.63	90	65	45 - 65	2	12/14/1989	Shallow (Upper)
M2	MW	163.05	65	64	44 - 64	2	12/15/1989	Shallow (Upper)
M3	MW	169.00	75	65	45 - 65	2	12/15/1989	Shallow (Upper)
Reiff Ag	WS	172.09	160	160	100-115 & 130-160	16	4/13/1972	Intermediate (Lower)
Reiff Dom[2]	WS	168.15	139	130	110 - 130	5	3/30/1988[3]	Intermediate (Lower)
Esparto Plant	WS	167.70	180	170	130 - 170	12.75	7/5/1987	Intermediate (Lower)
Mast 648	WS	170.41	155	152	72 - 152	15	5/11/1978	Intermediate (Lower)
Mast 649	WS	169.46	167	162	72 - 162	16	11/22/1971	Intermediate (Lower)
Mast Shop	WS	168.98	195	160	120 - 160	8	11/17/1971	Intermediate (Lower)

Notes: MW = monitoring well; WS = water supply well

1. Reference point elevation is the top of casing (monitoring wells).
2. Well removed in late 2000.
3. Date of the well driller's report filed with the California State Resources Agency (Department of Water Resources).

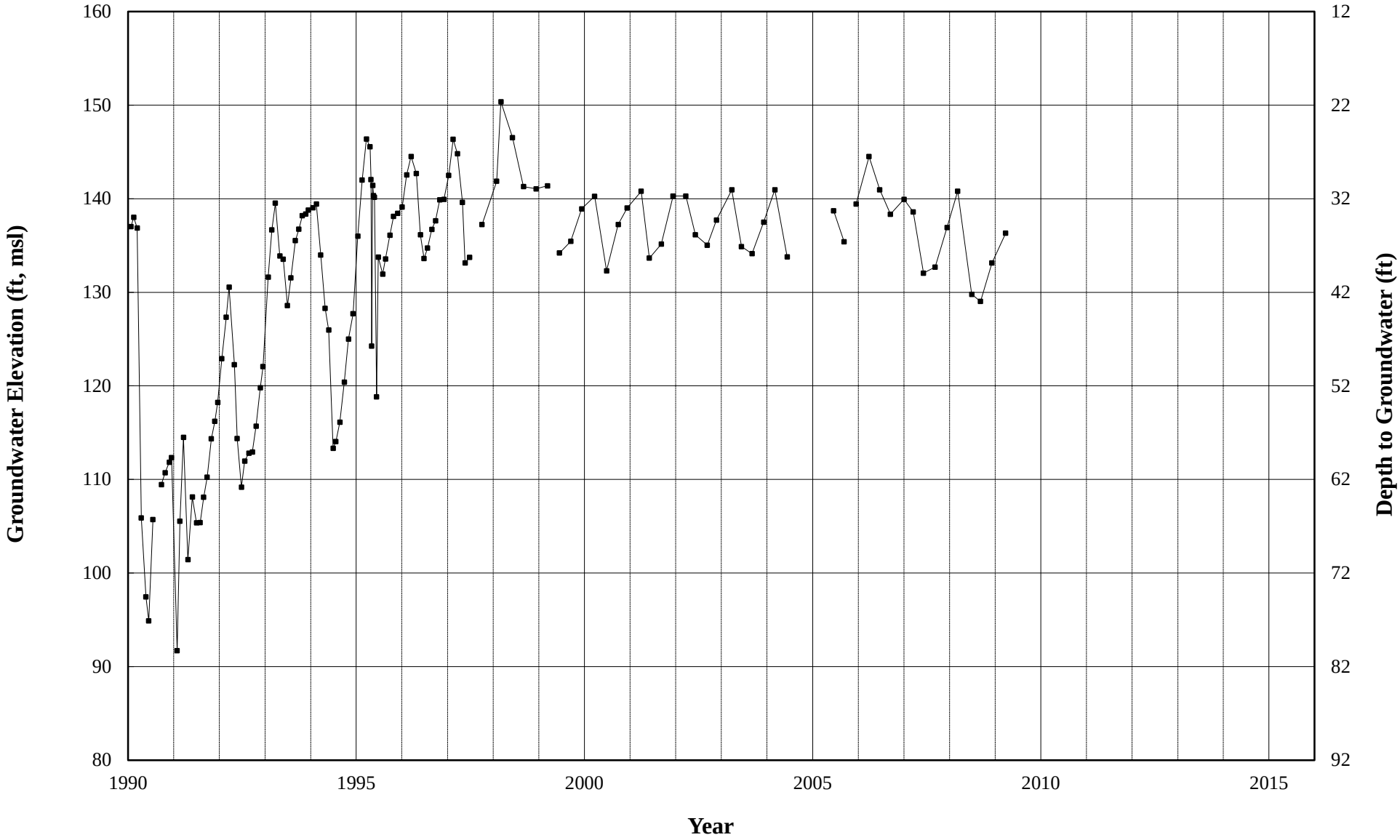


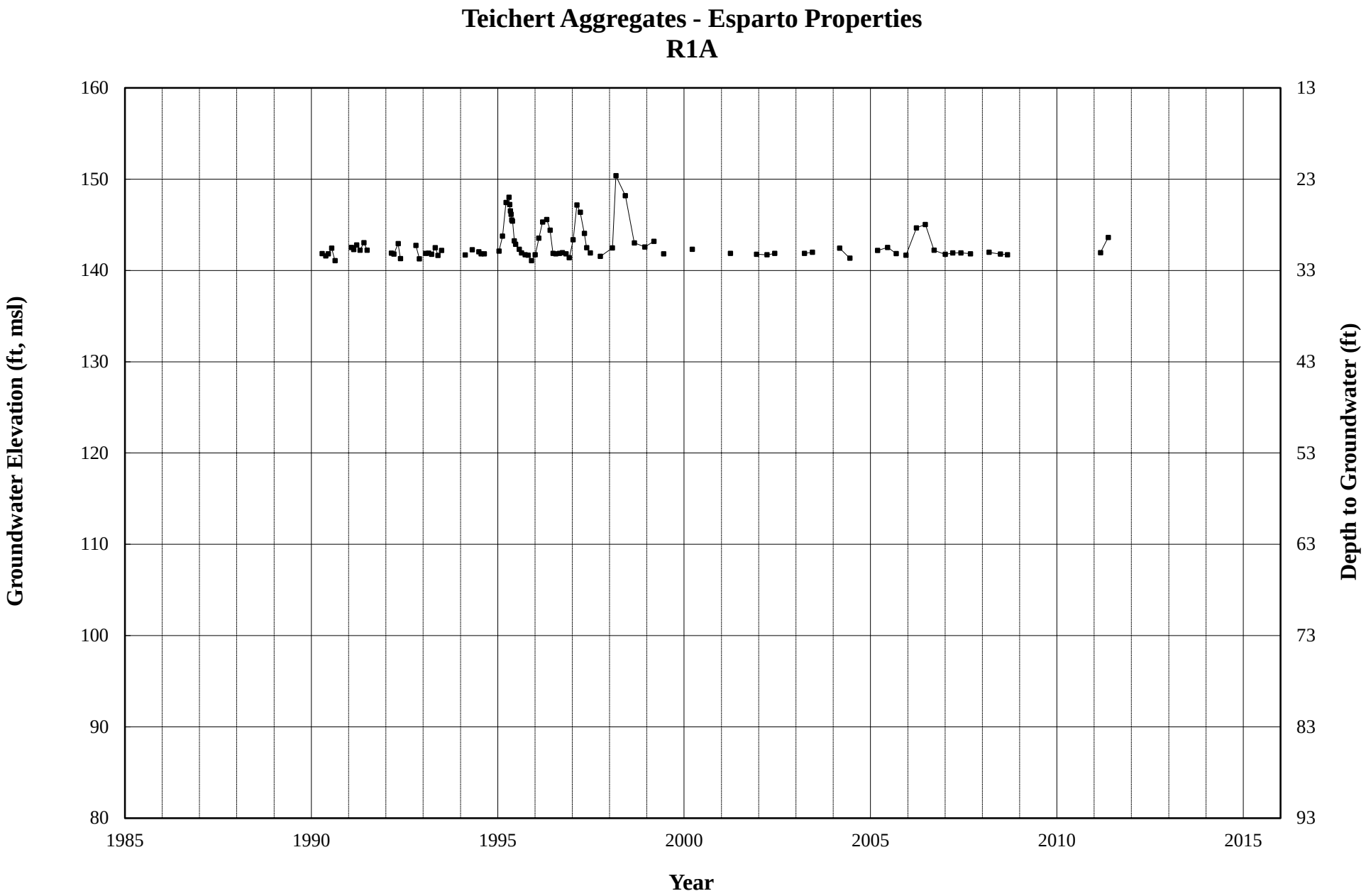
tcbrdrs

Historic Ground-Water Elevation Hydrograph, Reiff Agricultural Well
Esparto Properties

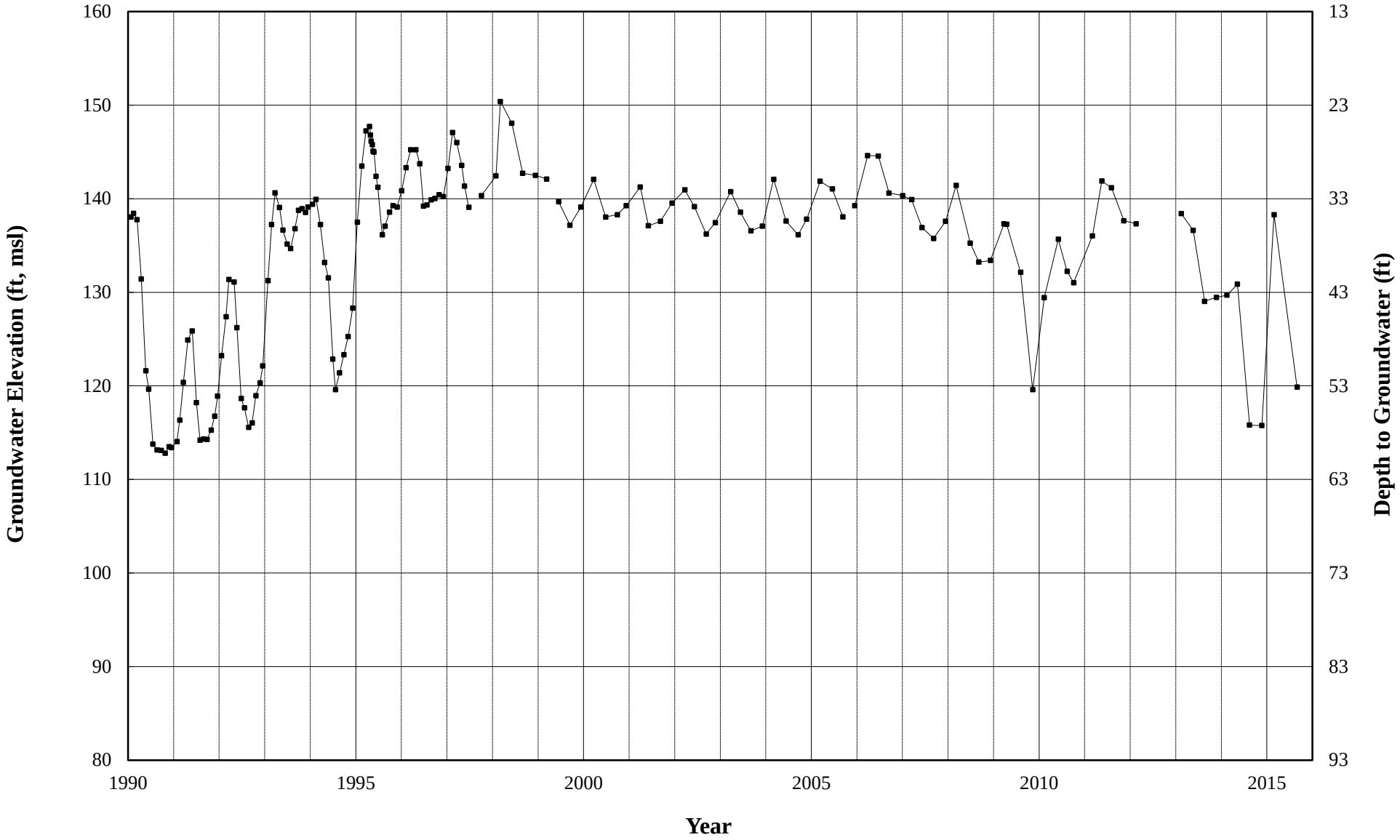
FIGURE
9

Teichert Aggregates - Esparto Properties
Reiff Ag Well



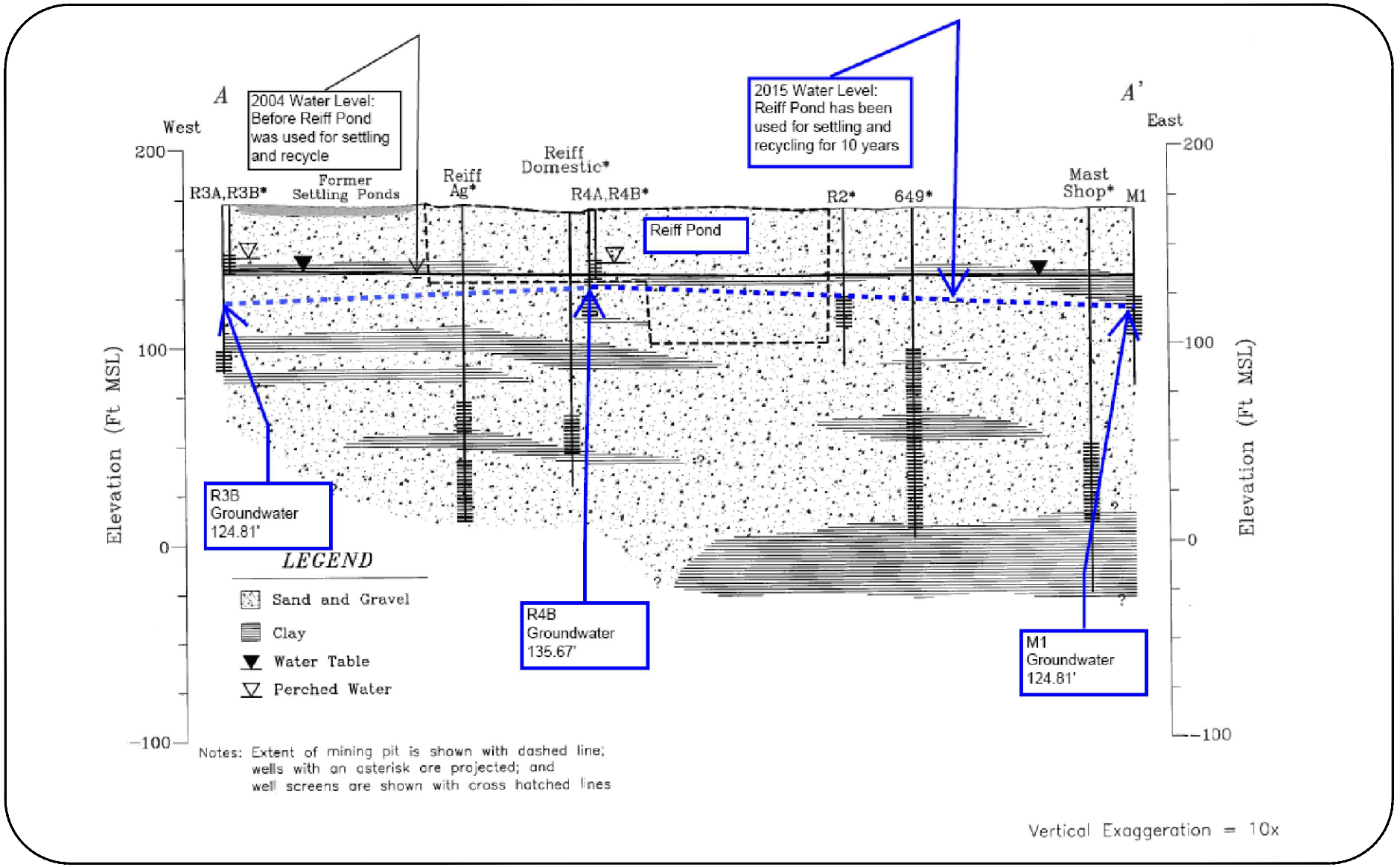

Teichert Aggregates - Esparto Properties
R1A
Groundwater Elevation (ft, msl)
Depth to Groundwater (ft)
Year
160
150
140
130
120
110
100
90
80
13
23
33
43
53
63
73
83
93
1985
1990
1995
2000
2005
2010
2015

Teichert Aggregates - Esparto Properties
R1B

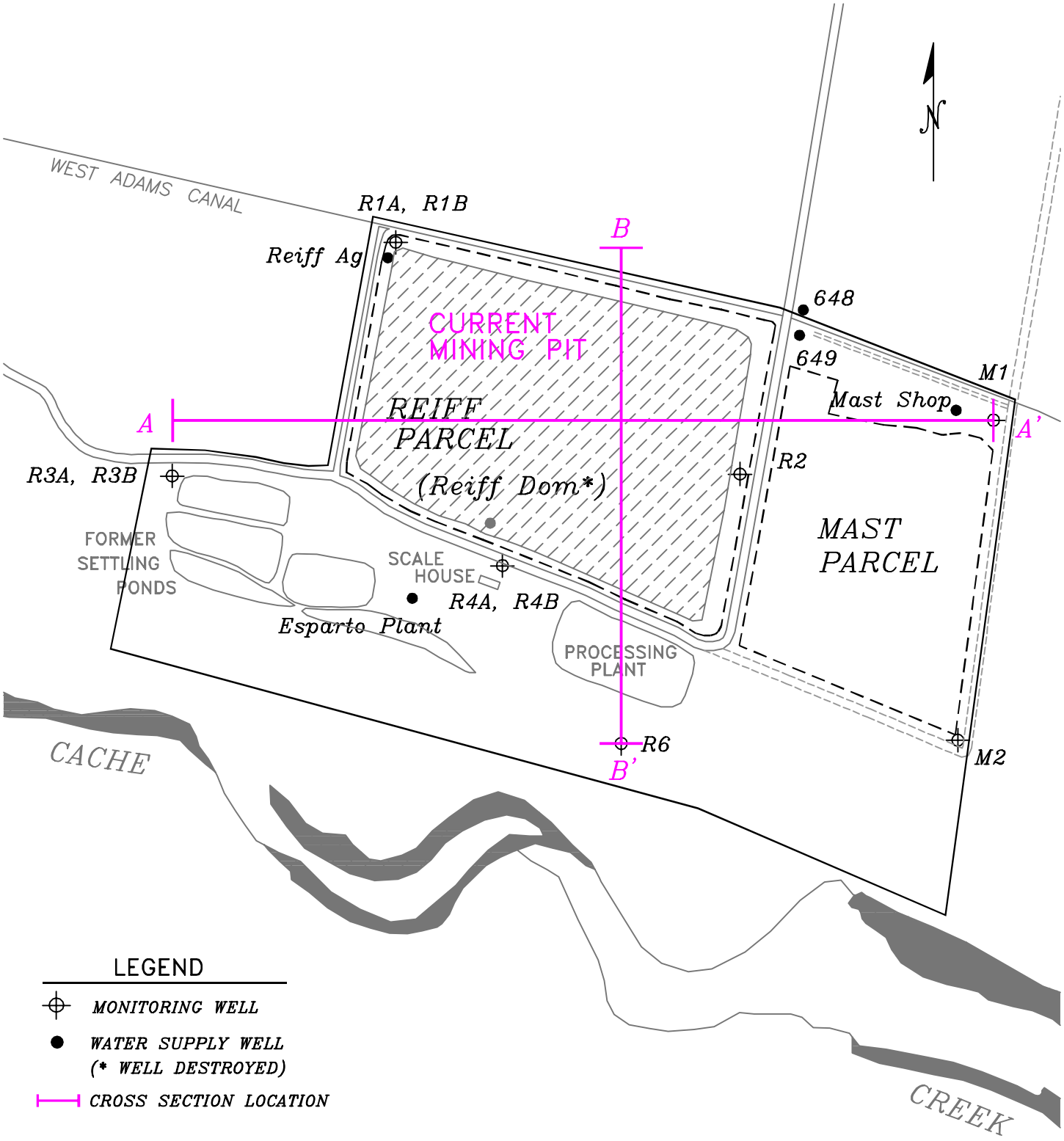


Attachment 3

Cross sections and maps



TEICHERT MATERIALS	**LEGEND:** Blue lines represent current data (First Quarter 2015) overlain on top of historic data	**SOURCE:** Ludorph and Scalmanini, Workplan for Ground-Water Monitoirng Well Installation and Smapling Teichert Aggregates Esparto Plant, Yolo County, August 2004		**FIGURE 1 - Esparto Plant** **Groundwater Level Comparison** **Reiff Pond Cross Section** **YOLO COUNTY, CALIFORNIA**



Note: property boundary is solid line; parcel boundary is dashed

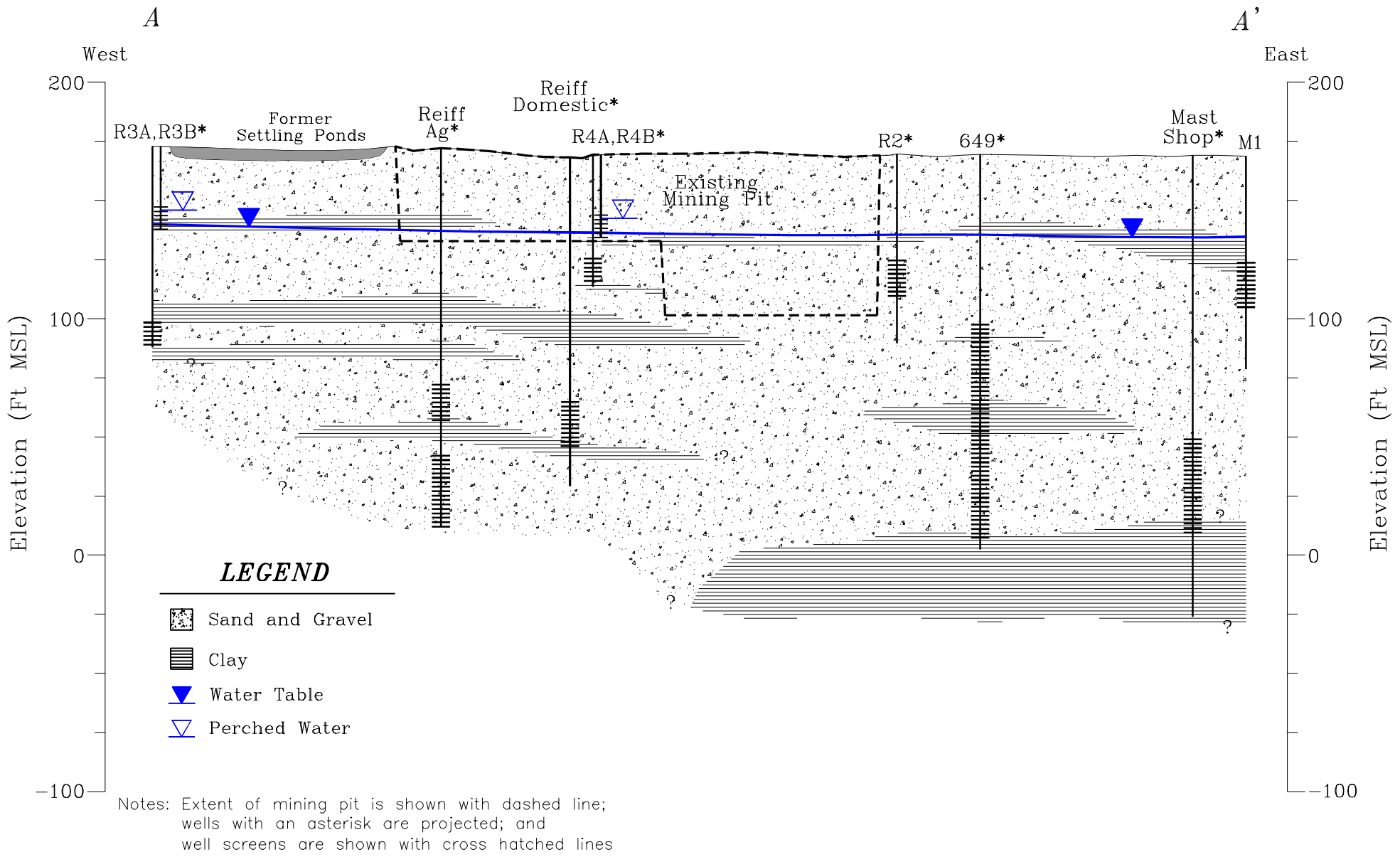
SCALE IN FEET

1000 0 1000 2000

Teichert/97-1-061/Esparto_2004_XSec_Map.dwg

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

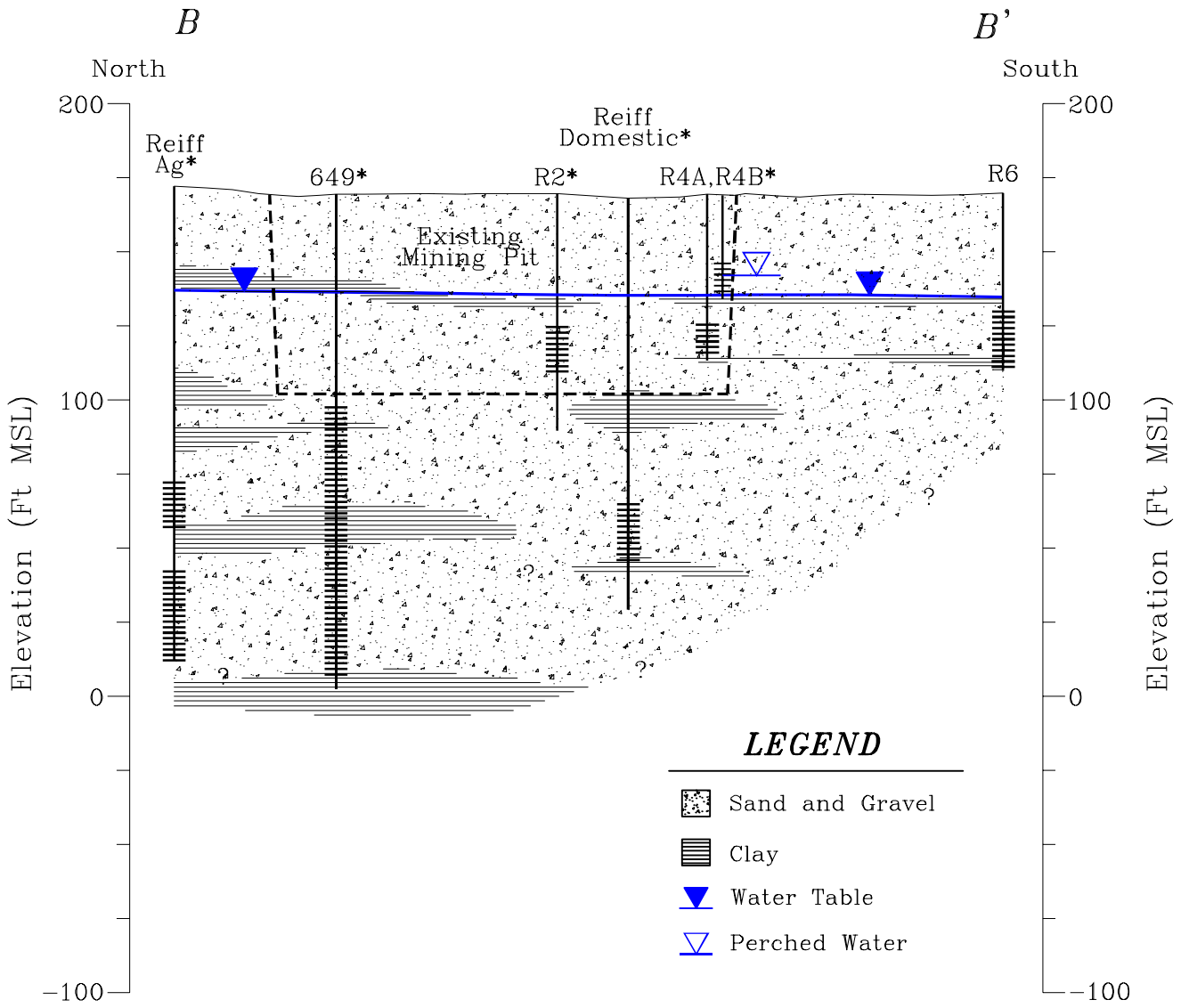
Figure I-3a
Geologic Cross Section Locations
Teichert-Esparto Plant Property



G:/Projects/Teichert Aggregates/97−1−061/Esparto/Cross Section AA'dwg

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

Figure I-3b
Geologic Cross Section A-A'
Teichert-Esparto Plant Property



Notes: Extent of mining pit is shown with dashed line; wells with an asterisk are projected; and well screens are shown with cross hatched lines

Vertical Exaggeration = 10x

G:/Projects/Teichert Aggregates/97−1−061/Esparto/Cross Section BB'dwg

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Figure I-3c
Geologic Cross Section B-B'
Teichert-Esparto Plant Property

DISCLAIMER:
The data was mapped for assessment purposed only. No liability is assumed for the accuracy of the data shown.

TEICHERT MATERIALS

LEGEND:

Property Boundary

Elevation Point

SOURCE:
Orthophoto Provided by Point Co. (May 29, 2015)
Orthomosaic Provided by Kespry (Oct. 26, 2015)

N W E S

0 200 400 Feet

MAST PIT
MINING DEPTH 10/26/2015
ESPARTO PROPERTY
TEICHERT MATERIALS
YOLO COUNTY, CALIFORNIA

M. Fletcher 01/14/2016 ESP_MiningDepth10262015_20160114.dwg

Attachment 4

Modified figures

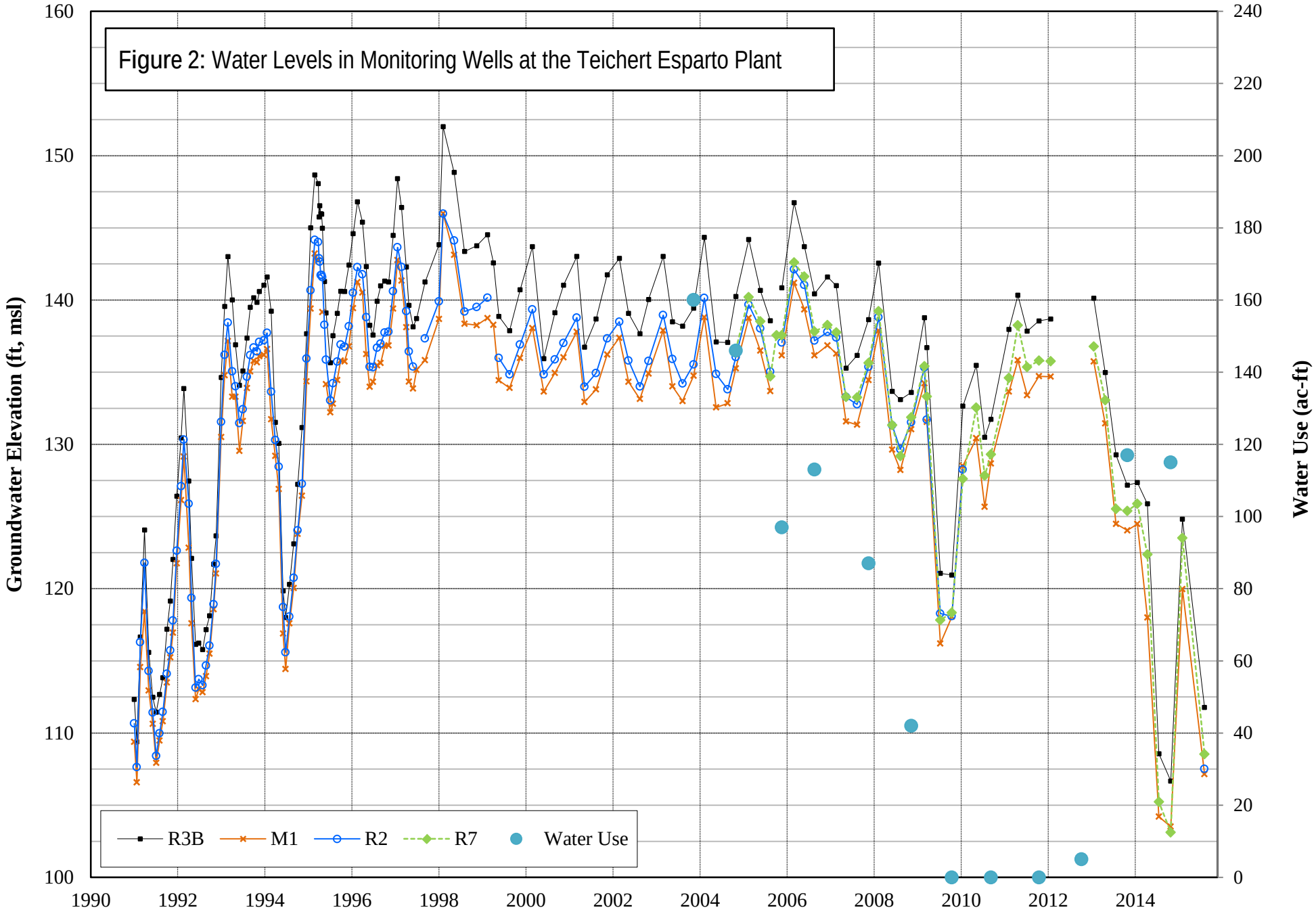


Figure 2: Water Levels in Monitoring Wells at the Teichert Esparto Plant
Groundwater Elevation (ft, msl)
Water Use (ac-ft)
160
150
140
130
120
110
100
240
220
200
180
160
140
120
100
80
60
40
20
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
R3B
M1
R2
R7
Water Use

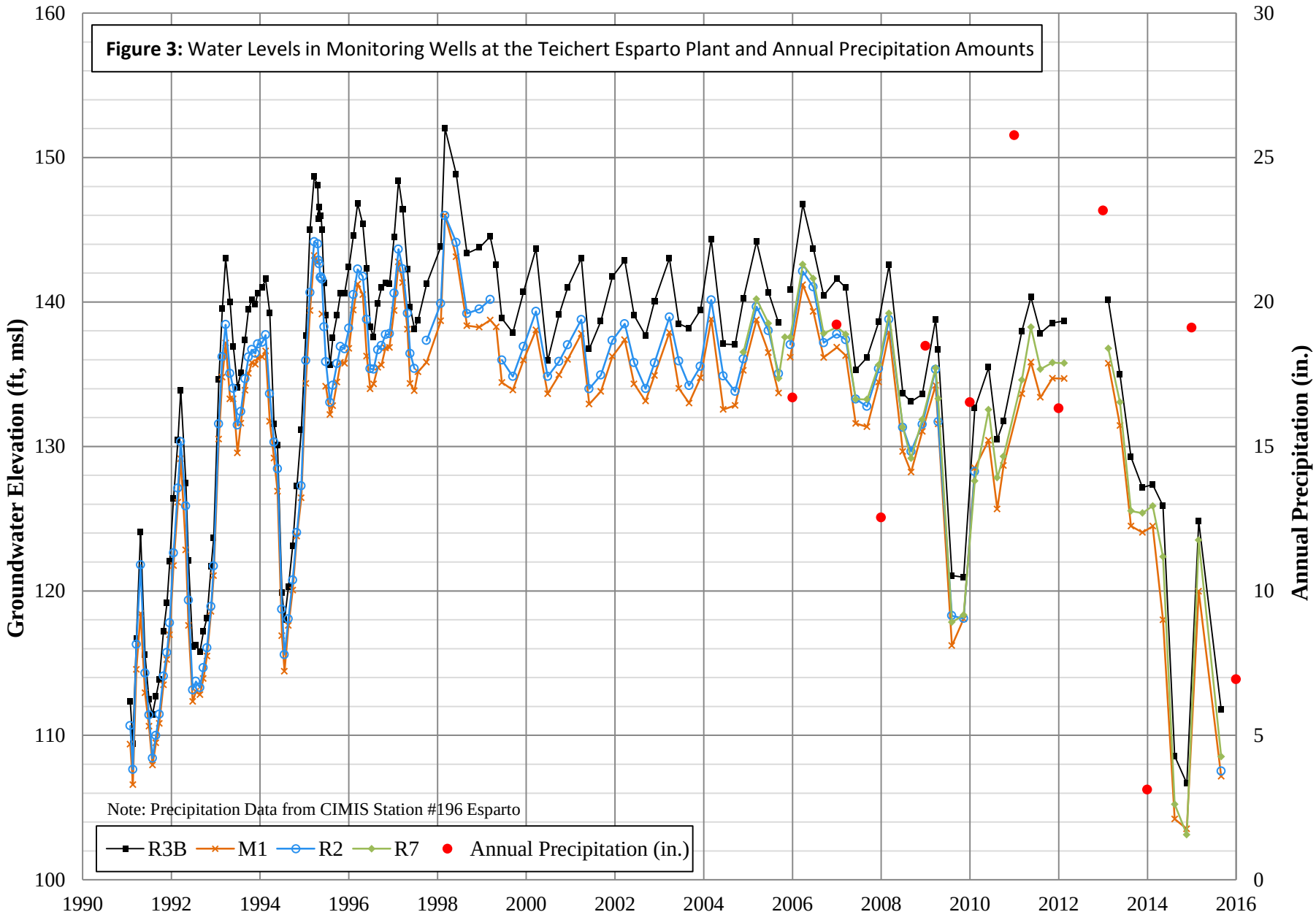


Figure 3: Water Levels in Monitoring Wells at the Teichert Esparto Plant and Annual Precipitation Amounts
Groundwater Elevation (ft, msl)
Annual Precipitation (in.)
160
150
140
130
120
110
100
30
25
20
15
10
5
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Note: Precipitation Data from CIMIS Station #196 Esparto
R3B
M1
R2
R7
Annual Precipitation (in.)

NOT INCLUDED DUE TO SIZE OF DOCUMENT
AVAILABLE UPON REQUEST

Attachment 5

Water quality record

ATTACHMENT E

Administrative Policy for Off-Channel Surface Mining and Reclamation Violation Process

COUNTY OF YOLO

Office of the County Administrator

Patrick S. Blacklock
County Administrator

NATURAL RESOURCES DIVISION
625 Court Street, Room 202
Woodland, CA 95695
530-666-8150 • FAX 530-668-4029
www.yolocounty.org

ADMINISTRATIVE POLICY

OFF-CHANNEL SURFACE MINING & RECLAMATION VIOLATION PROCESS

Background

This administrative policy sets forth specific steps to address issues of compliance or non-compliance before a Notice of Violation is issued. On June 12, 2014, the Yolo County Planning Commission directed staff to examine ways to address compliance issues (for non-SMARA issues and issues where there is no imminent and substantial endangerment to the public health, safety, or the environment) before they reach a level of a violation. Staff met with gravel operators on July 24, 2014, to request feedback on the proposed process. The following process has been agreed upon by all mining operators who are operating under the Off-Channel Mining Program, and has been reviewed by County Counsel.

Administrative Policy

If after an inspection of mining and/or reclamation activities at a surface mining operation, or any review of permit documents, County staff has reasonable cause to believe that a surface mining operation or reclamation activities are in violation of SMARA, Off-Channel Surface Mining Ordinance, Surface Mining Reclamation Ordinance, or any terms or conditions of a surface mining permit, reclamation plan, or development agreement, the following procedure shall be followed:

1. If a potential violation of SMARA is evident, staff shall notify the operator at the time of inspection or as soon thereafter as the potential violation is made known. The operator shall be provided 30 days to correct. If correction is not or cannot be achieved within 30 days, staff shall issue a Notice of Violation pursuant to the procedure set forth in Yolo County Code Section 10-4.1105 or Section 10-5.1206.

2. If staff determines that a potential violation of the Off-Channel Surface Mining Ordinance, Surface Mining Reclamation Ordinance, or any terms or conditions of a surface mining permit, reclamation plan, or development agreement exists, and said potential violation amounts to an imminent and substantial endangerment to the public health, safety, or to the environment in the sole discretion of staff, staff shall follow the procedure set forth in (1), above.

3. If staff determines that a potential violation of the Off-Channel Surface Mining Ordinance, Surface Mining Reclamation Ordinance, or any terms or conditions of a surface mining permit or reclamation plan exists, but there is not an imminent and substantial endangerment to the public health, safety, or environment, the following procedure shall be followed:

a. Staff shall provide written notice to the operator documenting the potential violation ("condition of concern"). Staff may request additional information from the operator to assess the site conditions and determine if a violation exists. The operator shall be provided 30 days to respond to this initial notice. If the requested information is not received within 30 days, County staff shall proceed with the outlined violation process set forth in Section 10-4.1105 or Section 10-5.1206. An extension of time may be requested by the applicant in cases where compilation of the information may take longer, but such extension shall not exceed 60 days.

b. If the operator resolves the condition of concern within the timeframe set in 3(a), staff shall verify by conducting a site inspection or review of information provided by the operator, whichever is appropriate. Staff shall notify the operator in writing that the condition of concern has been satisfactorily resolved.

c. If staff determines the condition of concern is still active after the timeframe described in 3(a), staff shall submit a letter to the operator requiring submittal of a Correction Plan. The Correction Plan (to be provided by the operator) shall at a minimum describe in detail the sequence, methods, and timeline necessary for each step to correct the conditions of concern identified by staff. The Correction Plan must be received within 30 days from the date of notification. The County Administrator (or his/her designee) shall review and accept or request changes to the Correction Plan within 30 days of receipt by County staff. If changes or clarification is requested, the operator shall then be provided another 30 days to finalize and submit the final Correction Plan and commence implementation. Implementation must begin immediately (unless mutually agreed upon and documented in the Correction Plan) and must be fully completed no later than one year from the date of submission of the final Correction Plan.

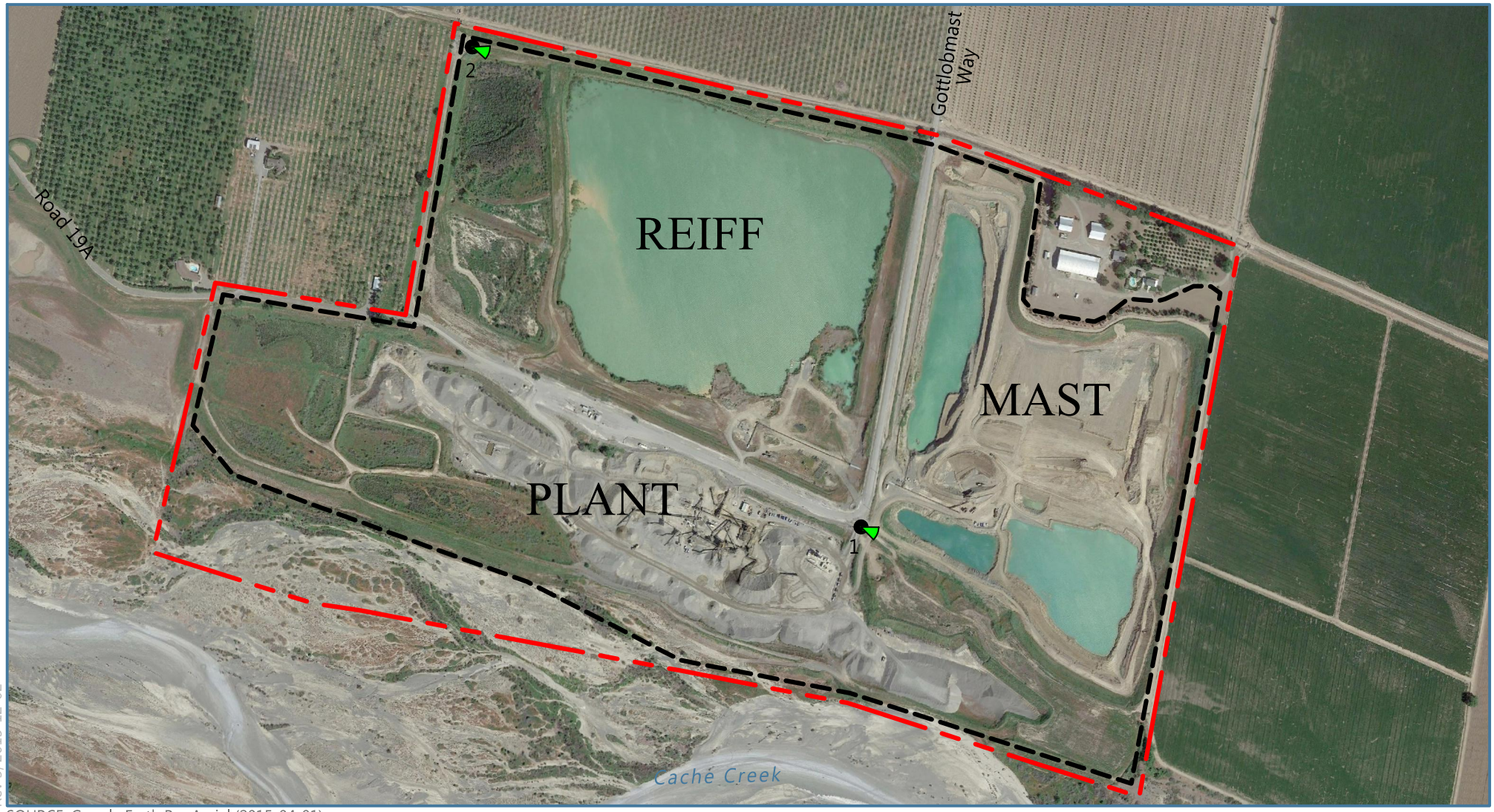
   Once the Correction Plan is finalized, staff shall forward the Correction Plan to the Planning Commission as an informational/correspondence item with next Planning Commission agenda packet. No formal action shall be taken by the Planning Commission on the Correction Plan.

d. In the event that the procedure set forth above does not result in correction of a violation, the violation process outlined in Article 11 of the Off-Channel Surface Mining Ordinance and/or Article 12 of the Surface Mining Reclamation Ordinance would commence.

This administrative policy does not increase, reduce or otherwise modify the authority of staff with respect to the investigation or enforcement of violations of the Off-Channel Surface Mining Ordinance and Surface Mining Reclamation Ordinances. The County Administrator, in her/her capacity as the Director of the Program, has delegated authority to staff in the Natural Resources Division to take the actions described herein.

ATTACHMENT F

Property Exhibit



Rev 3, 2015-12-02

SOURCE: Google Earth Pro Aerial (2015-04-01)

LEGEND

1	Photo Viewpoint and Detail # (see Figure 2)	Site Boundary	±290 acres
		Surface Disturbance	±231 acres

N

0 350 700 1,400 Feet

BENCHMARK RESOURCES

Site Conditions

ESPARTO - 91-57-0011
2015 SMARA INSPECTION - 2015-12-1
Figure 1