FEASIBILITY STUDY | JUNE 2025

STONY CREEK DIVERSIONS FOR RECHARGE CORNING SUBBASIN

PREPARED FOR

TEHAMA COUNTY FCWCD

AND CORNING SUBBASIN GSA

PREPARED BY

Luhdorff & Scalmanini

Consulting Engineers

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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AEM	Airborne Electromagnetic
CFS	Cubic Feet per Second
DWR	Department of Water Resources
FCWCD	Flood Control and Water Conservation District
GSA	Groundwater Sustainability Agency
I-5	Interstate 5
LSCE	Luhdorff & Scalmanini Consulting Engineers
SAGBI	Soil Agricultural Banking Index
SWRCB	State Water Resources Control Board

1. INTRODUCTION

This feasibility study was conducted as part of the Tehama County GSP Implementation Prop 68 Grant under the Stony Creek diversions task. This study covers the investigation of opportunities for recharge in the Corning Subbasin from Stony Creek.

1.1. Location

The Corning Subbasin is located in the Northern Sacramento Valley. The subbasin covers the valley portion of southern Tehama County and northern portions of Glenn County. Stony Creek forms the southern boundary of the subbasin. Sites identified in this feasibility study are generally along the southern boundary of the Subbasin due to proximity to Stony Creek.

1.2. Project Goals

This project aims to utilize flows from Stony Creek to recharge groundwater supplies within the Corning Subbasin.

2. SITE IDENTIFICATION

2.1. Site Criteria

Sites were selected based various criteria which indicated their potential for groundwater recharge.

2.1.1. Proximity

Proximity to Stony Creek was the first criteria assessed when searching for potential sites. Any recharge outside the small areas served by these facilities must currently be carried out via pumps and pipelines. Proximity to Stony Creek ensures that pumping and pipe costs are minimized. Additionally, sites were evaluated to ensure that temporary pumps could physically be installed and operated during times of high flow on Stony Creek. As the time periods when diversions will be allowed will be short in duration, the ability to access pumps to start and stop pumps quickly is necessary.

Additionally, in some cases, sites were also in close proximity to distribution infrastructure from other water sources. These additional water sources have the potential to be utilized during periods of flow in Stony Creek that do not meet diversion criteria.

2.1.2. Topography and Land Use

Sites were further evaluated based on their ability to receive and infiltrate applied surface water. Various public datasets and information collected during site visits were utilized to evaluate sites. Analysis of sites prioritized those which were generally level, to encourage the spreading of applied water and encourage infiltration into the subsurface. Additionally, sites with land uses compatible with applications of large volumes of surface water during periods of high flow in Stony Creek were sought out. These included present uses such as fallow, grazing/rangeland, and some orchard/vineyard crops.

2.1.3. Geology

Sites were evaluated based on their ability to infiltrate applied surface water. Two publicly available datasets, the Soil Agricultural Banking Index (SAGBI) developed by the University of California Soil Resource Lab and the Airborne Electromagnetic (AEM) Survey data collected by the California Department of Water Resources (DWR) were both utilized when evaluating sites.

SAGBI values are calculated based on five factors which influence the success of groundwater recharge including: deep percolation, root zone residence time, topography, chemical limitations, and soil surface condition. These factors are combined to create a rating from 0 to 100. Ratings from 49-69 are considered moderately good, 69-85 are considered good, while ratings from 85-100 are considered excellent. Sites with moderately good to excellent ratings were preferred.

AEM Survey data was used to further evaluate sites. The AEM survey conducted by DWR utilized an induced electrical current to determine the resistivity of subsurface materials at various depths. Contracted helicopter pilots flew "lines" across the state to collect resistivity data. Areas with low resistivity (3 – 10 Ohm-m) are associated with fine grained materials and/or saline water and areas with high resistivity (70 – 300 Ohm-m) are associated with coarse grained materials with fresh water. Sites with high resistivity values from AEM survey lines were preferred.

2.1.4. Landowner Cooperation

Successful groundwater recharge requires extensive cooperation from landowners. Landowners must be willing to allow diverted surface water to be applied to their land and be willing to operate temporary pumps to divert water during periods of high flow. In some cases, landowners must also be willing to allow modifications to their property to enhance recharge such as creating berms or shallow basins.

2.2. Sites Identified

Throughout 2024, various sites were identified by map reconnaissance and consultations with landowners in the Subbasin. Seven potential sites were identified for further investigation. Of these seven sites, three were not selected due to various limitations. The remaining four sites were, however, selected for further investigation and pilot testing.

3. SITE EVALUATION AND SELECTION

3.1. Gay Creek – Not Selected

3.1.1. Location and Land Use

This project initially intended to divert water from Stony Creek into the Gay Creek channel via the Lemon Home Colony Canal diversion structure. This portion of Gay Creek is located just north of Stony Creek where it crosses the Tehama-Glenn County line (see **Figure 3-1**). The diverted water would flow down Gay Creek and infiltrate through the creek bed to recharge the shallow aquifer. These diversions were to be conducted during high flow events on Stony Creek when flood storage limits did not allow the storage of water in Black Butte Reservoir. After an initial site visit and investigation, it was determined that this

course of action was generally infeasible. Generally, during periods of high flow in Stony Creek, Gay Creek also experiences high flows. Excess flows from Stony Creek could not be diverted into the already full Gay Creek channel. For this reason, Gay Creek was not selected as a diversion site.

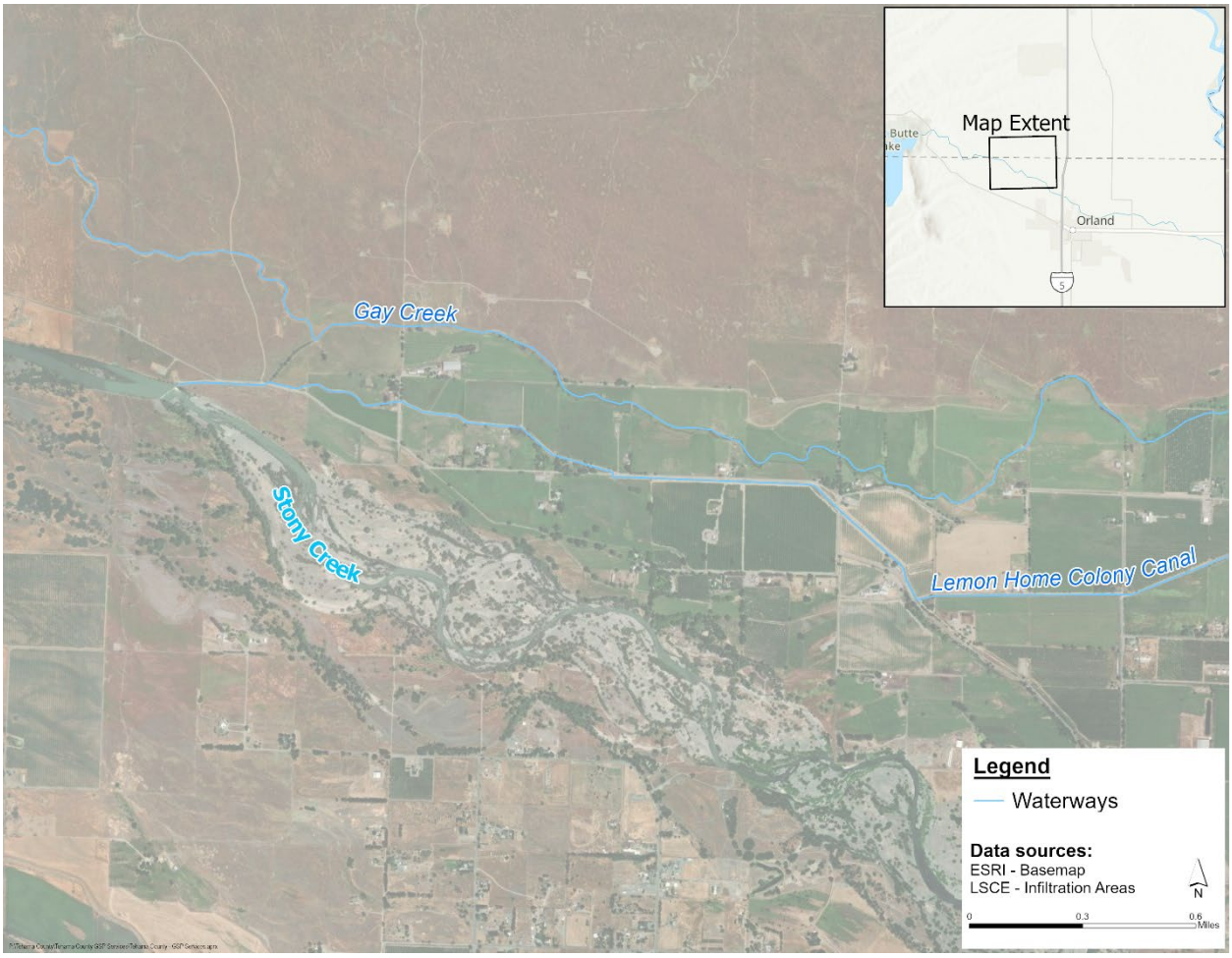


Figure 3-1. Gay Creek Site

3.2. City of Orland Site – Not Selected

3.2.1. Location and Land Use

The City of Orland Site is located on the south side of Stony Creek near County Road 7 and County Road E. The site consists of approximately 33 acres of unused land owned by the City of Orland (see **Figure 3-2**). During a site visit with an employee from the city, it was determined that the area was previously used as a landfill for the city. Given the history of the site as a landfill, surface water diverted for the purpose of groundwater recharge holds a significant risk of adverse impacts to groundwater quality. For this reason this site was not selected as a diversion site.

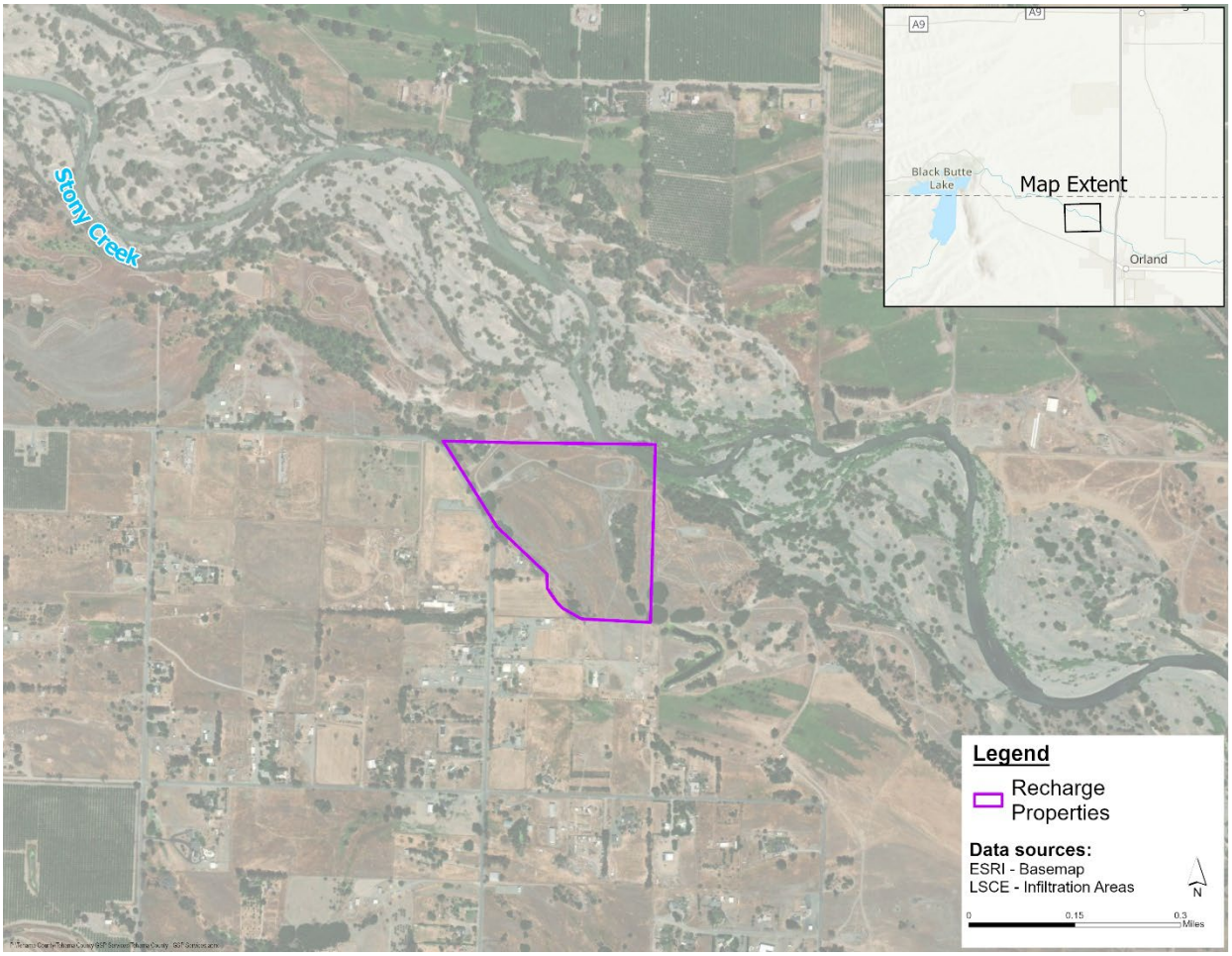


Figure 3-2. City of Orland Site

3.3. County of Glenn Site – Not Selected

3.3.1. Location and Land Use

The County of Glenn site is located on the north side of Stony Creek near County Road 11 and County Road PP. The site consists of approximately 28 acres of land directly adjacent to Stony Creek owned by Glenn County (see **Figure 3-3**). The land is currently unused and consists mainly of old stream channels formed by the slow migration of Stony Creek within its floodplain. A visit to the site determined that due to the site's topography and surface geology, it would be a poor candidate for diversions of surface water for recharge. The site is cut by numerous old stream channels, which would make diversions difficult during high flows. Additionally, the site would cause difficulties for any attempt to contain diverted water to allow infiltration into the subsurface. For these reasons, this site was not selected for diversions.

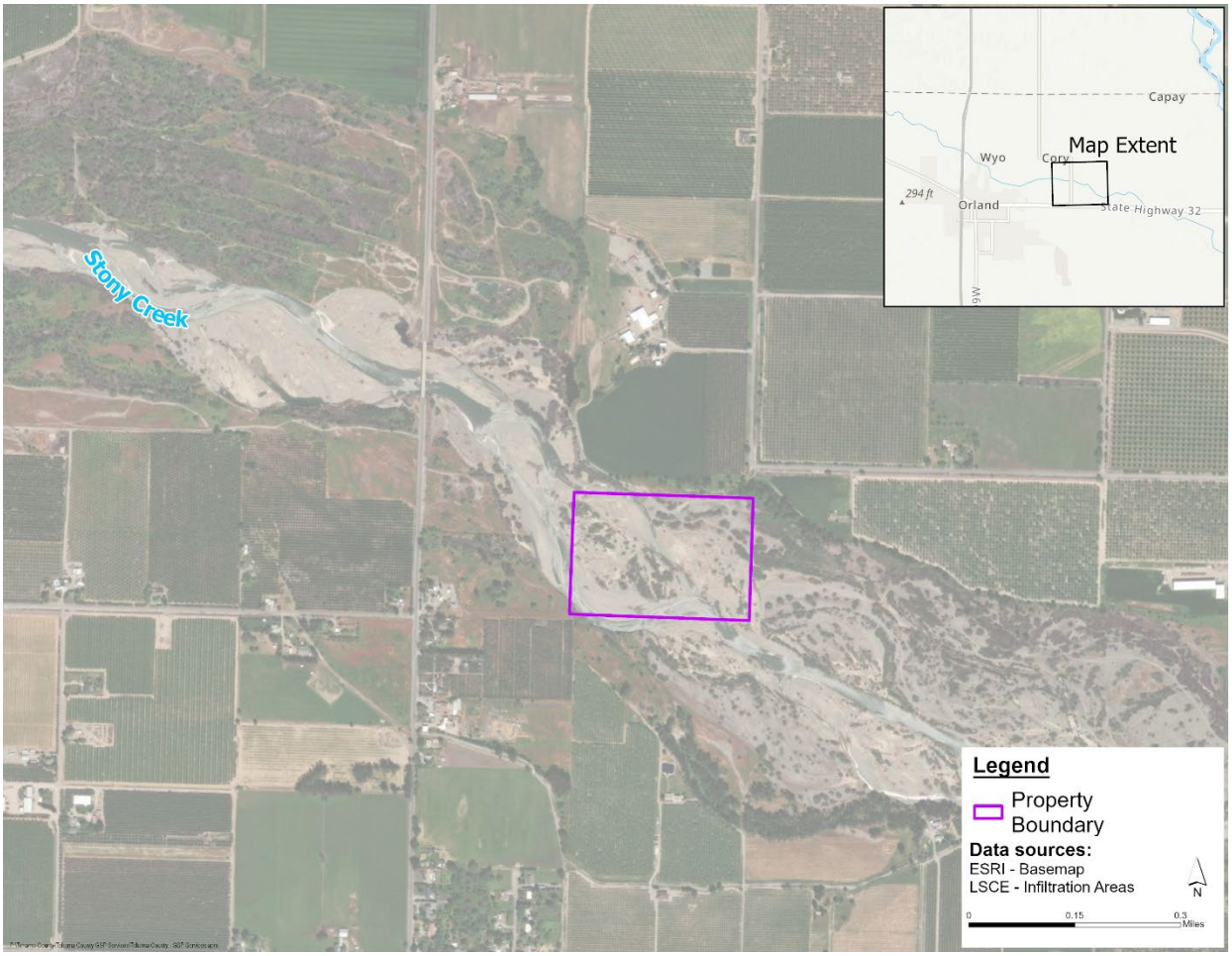


Figure 3-3. County of Glenn Site

3.4. Capay South Site

3.4.1. Location and Land Use

The Capay South site is located on the north side of Stony Creek near State Highway 32 and County Road VV. The site consists of approximately 40.5 acres of cleared land which previously was planted in orchard crops (see **Figure 3-4**). The area is generally flat and is separated from Stony Creek by a levee. Photos of the site can be found in **Appendix A: Capay South Photos**.

As this site is directly adjacent to Stony Creek, pump and piping requirements to divert water during high flow events will be minimal. The site is currently unplanted, so recharge operations will have no impact on current land use. Additionally, the generally flat nature of the site combined with the levee separating it from the Stony Creek channel are ideal for spreading of diverted water, requiring little if any site modification in terms of leveling and berm construction.

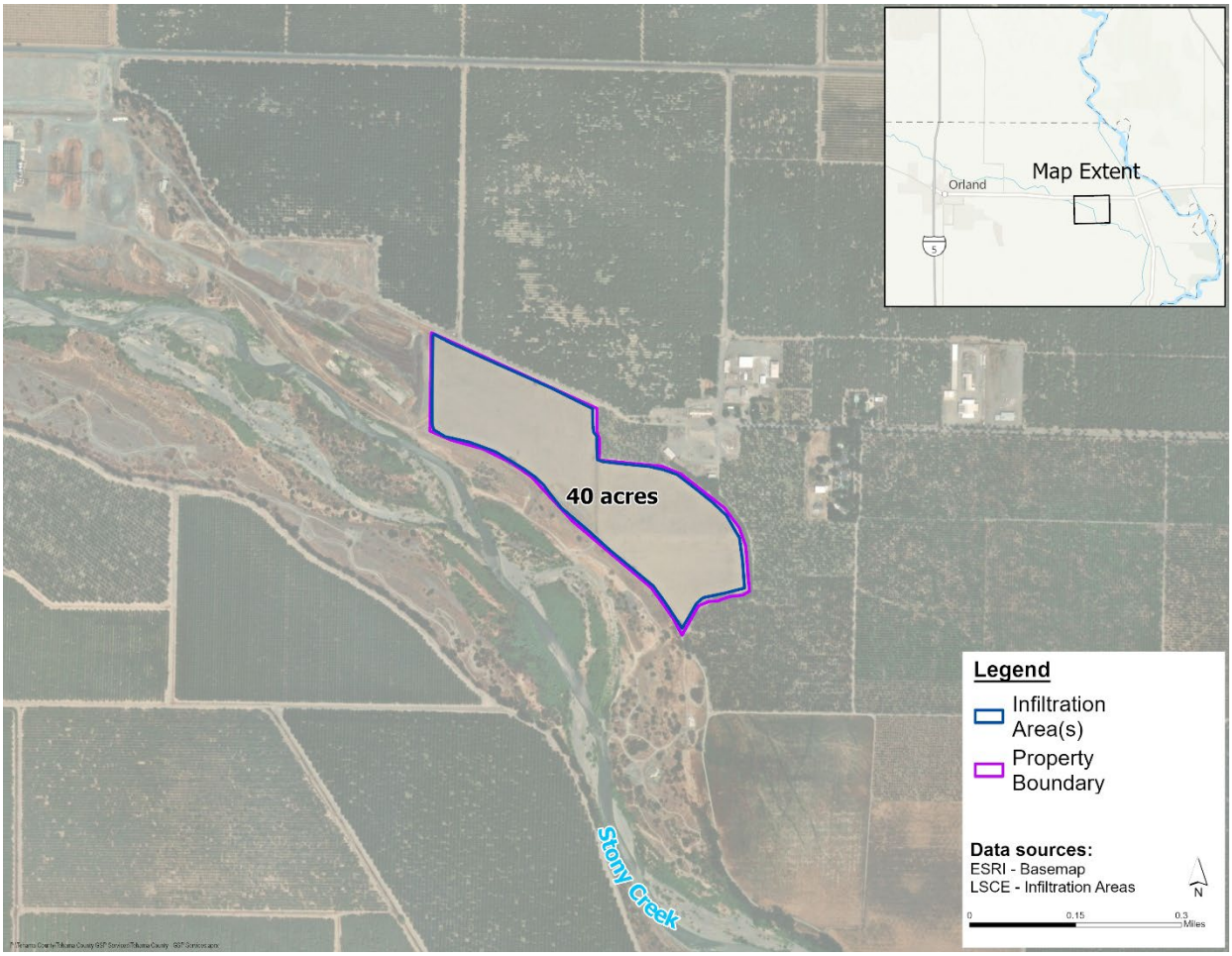


Figure 3-4. Capay South Site

3.4.2. Geology

SAGBI values on the proposed infiltration area are rated as poor. However, areas directly adjacent to the site are rated as good (see **Figure 3-5**). The AEM resistivity values collected adjacent to the site are moderately down to about 100 ft (see **Figure 3-6**). While the SAGBI rating for the site is less promising, the AEM data indicates that there is potential for high infiltration rates on the site. Further evaluation via pilot testing will give more conclusive data to determine the utility of the site for recharge.

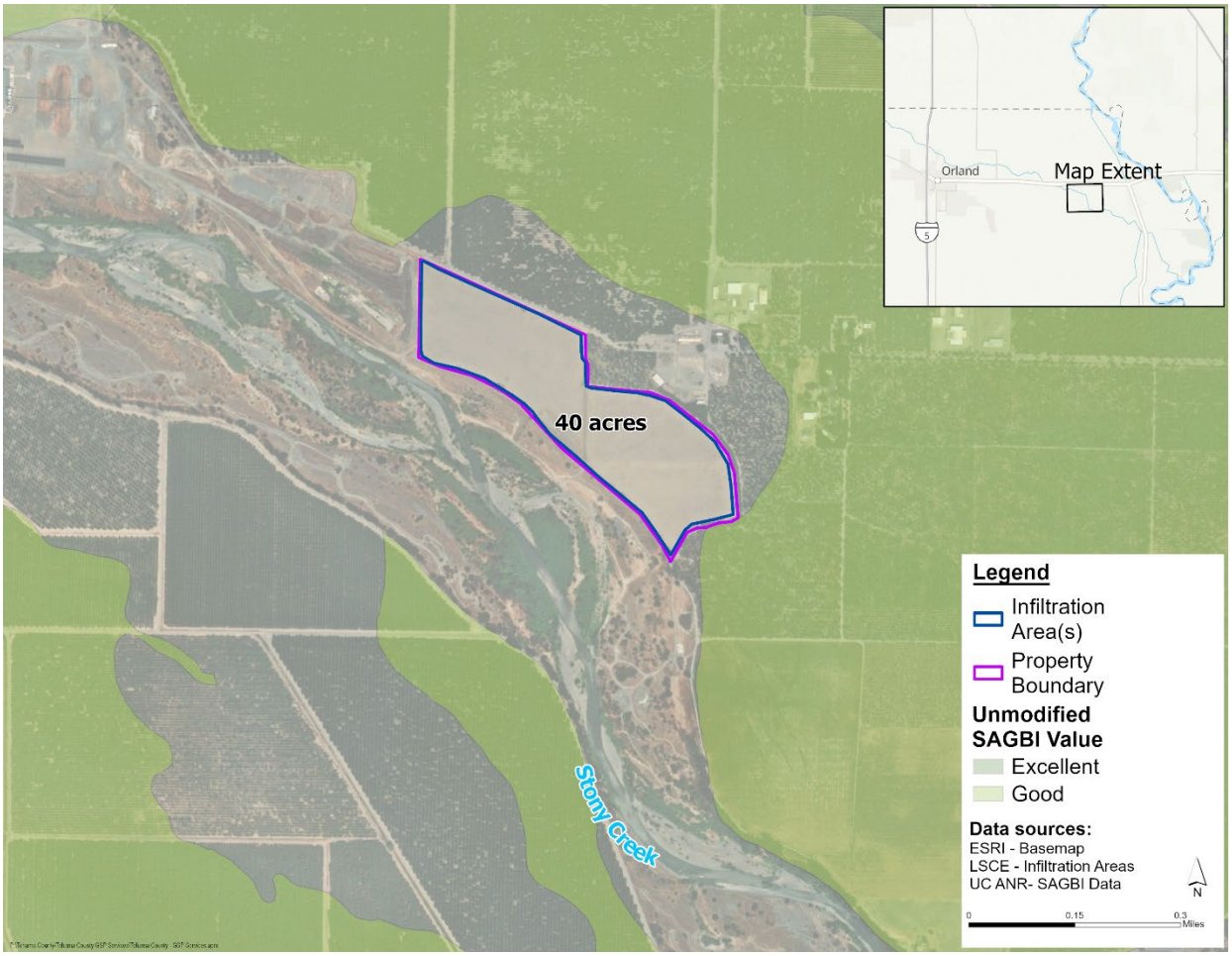


Figure 3-5. Capay South SAGBI

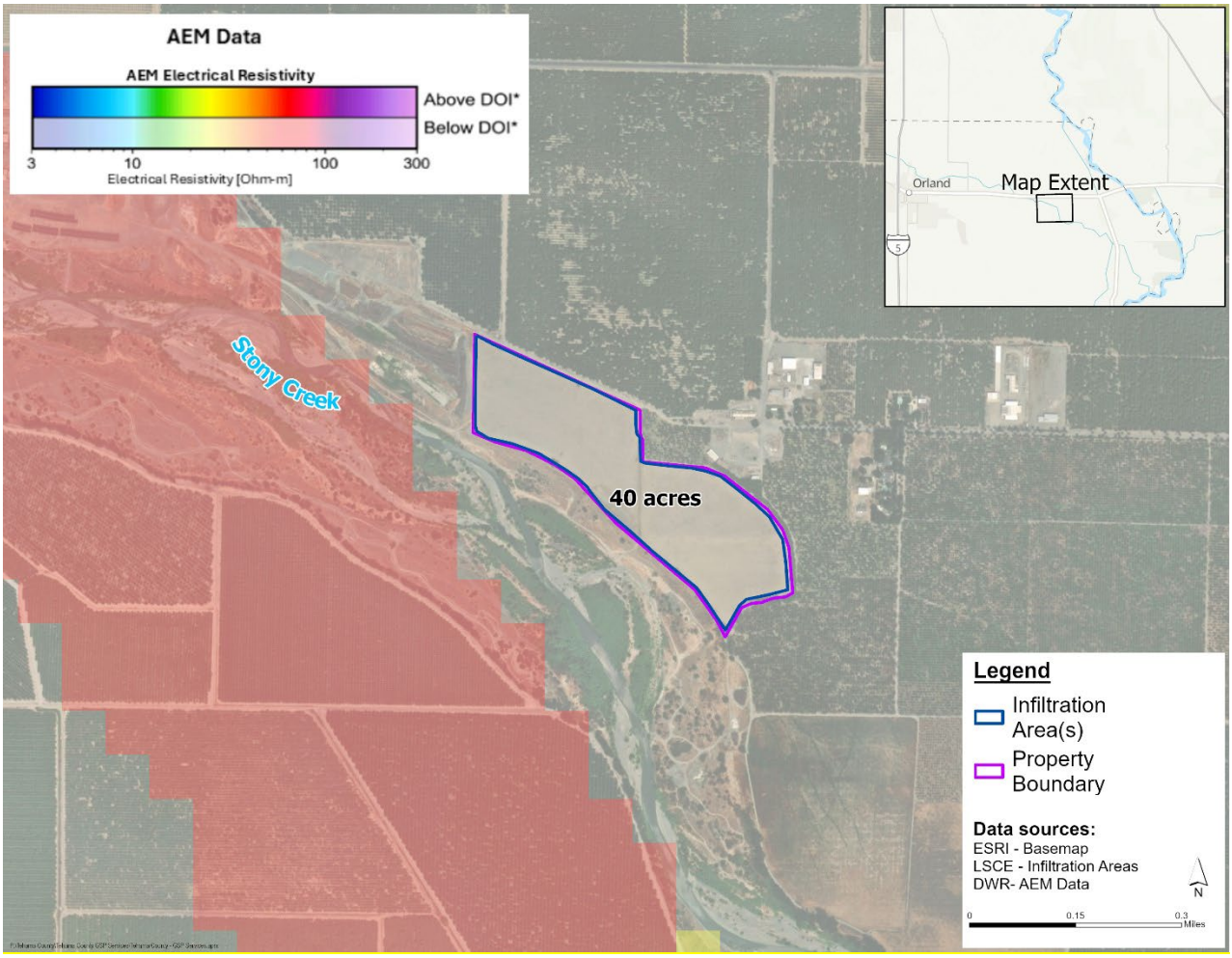


Figure 3-6. Capay South AEM 50-100 ft Depth

3.4.3. Landowner Cooperation

Throughout the process of site investigation and permitting, the landowners of the site have been cooperative and motivated to implement recharge on the site.

3.5. Prune Orchard and Sump Site

3.5.1. Location and Land Use

The Prune Orchard and Sump site is located on the north side of Stony Creek, southeast of the intersection of County Road 23 and State Highway 45. The site consists of approximately 44.5 acres planted in Prunes. The site is relatively flat, with a slight slope towards the east, away from Stony Creek. In addition to the orchard, a drainage ditch leading to a sump located to the east was also identified as a site for potential recharge. The total area of the ditch and sump are approximately 6 acres. A map the site and surrounding

area are shown in **Figure 3-7**. Photos of the site can be found in **Appendix B: Prune Orchard and Sump Photos.**

As this site is directly adjacent to Stony Creek, pump and piping requirements to divert water during high flow events will be minimal. Recharge operations are anticipated to take place in the orchard while the trees are dormant, so impacts to operations should be minimal. Additionally, the generally flat nature of the site will require little if any site modification in terms of leveling and berm construction. The drainage ditch and sump are also anticipated to require little if any modification for recharge. Water diverted from Stony Creek diverted via pump can gravity flow through the ditch to the sump without modification.

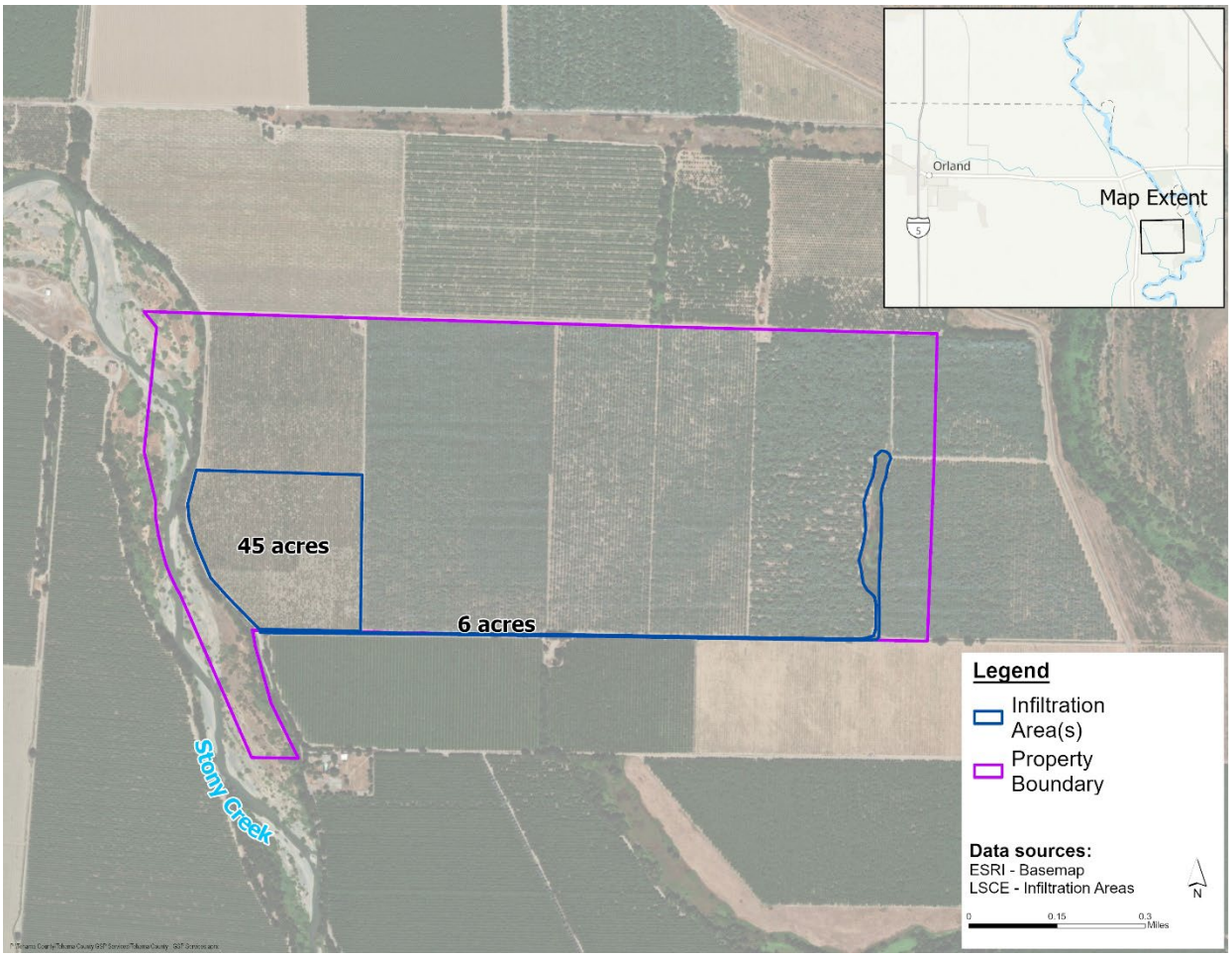


Figure 3-7. Prune Orchard and Sump Site

3.5.2. Geology

The SAGBI value for the orchard area of the site is Good. A portion of the ditch is also rated as good, while the remainder of the ditch and the sump are rated lower than Moderately Good (see **Figure 3-8**). AEM data was not collected directly on the site. However, the resistivity values collected adjacent to the site are moderate down to the 100-200 ft interval (see **Figure 3-9**). Both datasets indicate good potential for infiltration of applied surface water, likely with some variation across the area.

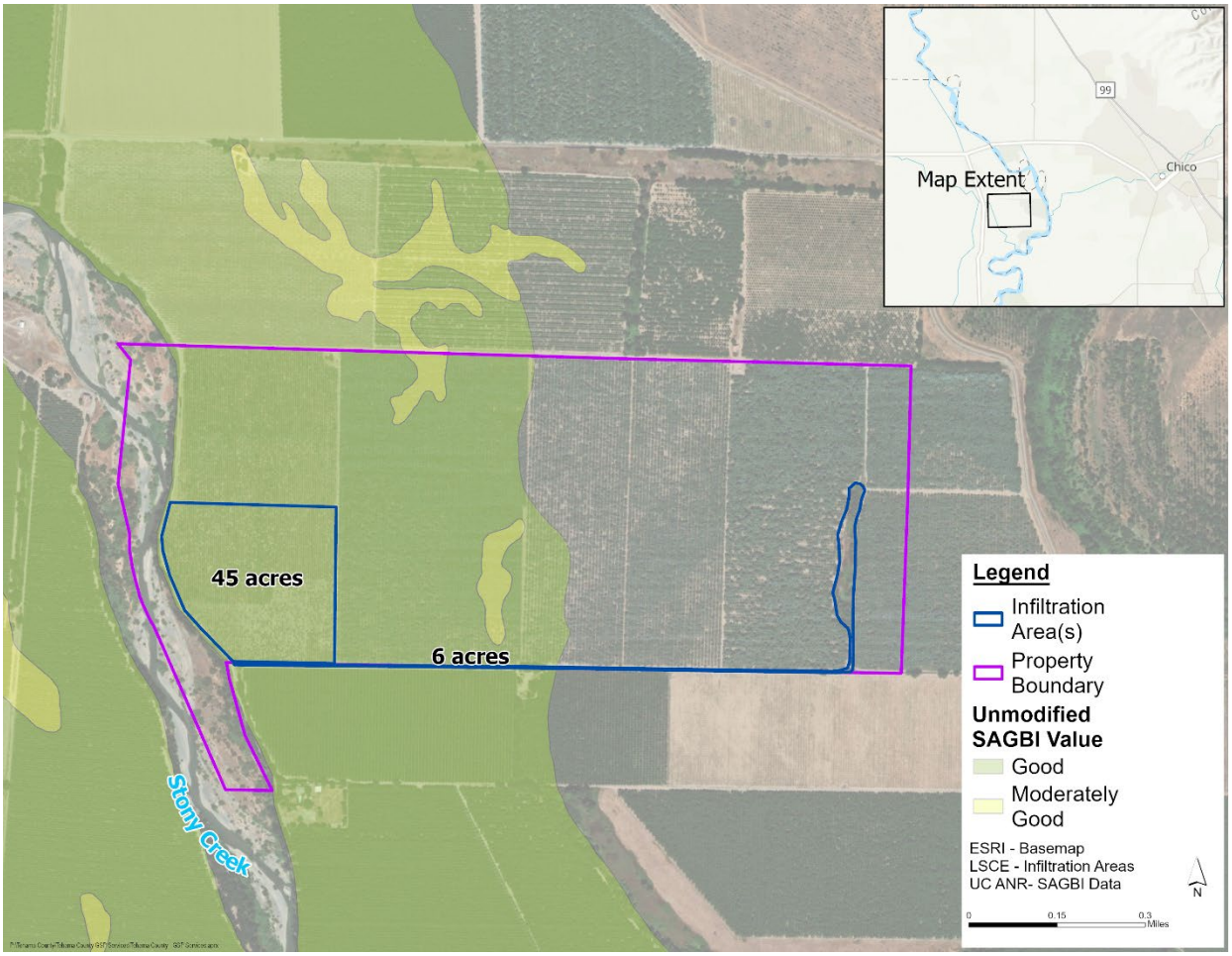


Figure 3-8. Prune Orchard and Sump SAGBI

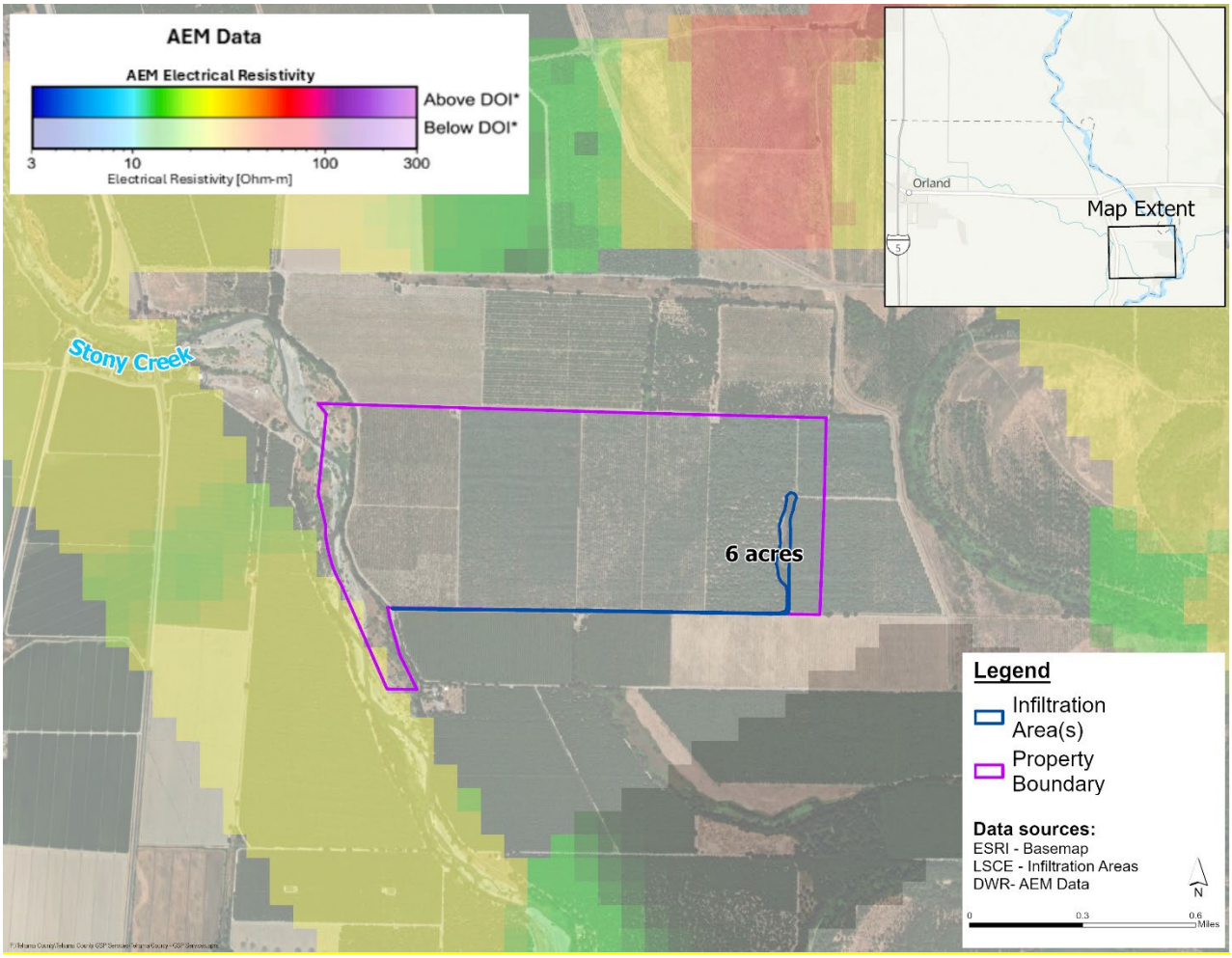


Figure 3-9. Prune Orchard and Sump AEM 100-200 ft Depth

3.5.3. Landowner Cooperation

Throughout the process of site investigation and permitting, the landowner of the site has been cooperative and motivated to implement recharge on the site.

3.6. Monroeville Site

3.6.1. Location and Land Use

The Monroeville site is located on the south side of Stony Creek, east of the intersection of County Road 26 and State Highway 45. The site consists of approximately 44 acres planted in walnuts, and another 3 acres of fallow land nearest Stony Creek. The orchard portion of the site is generally flat, and the small fallow area near the creek has minor undulations. A map the site and surrounding area are shown in **Figure 3-10**. Photos of the site can be found in **Appendix C: Monroeville Photos.**

As this site is directly adjacent to Stony Creek, pump and piping requirements to divert water during high flow events will be minimal. Recharge operations are anticipated to take place in the orchard while the trees are dormant, so impacts to operations should be minimal. Diverted water delivered to the orchard portion of the site should not require extensive construction to encourage spreading and infiltration of water. The fallow area nearest the creek may require some minor site modifications to ensure diverted water does not flow back towards the creek.

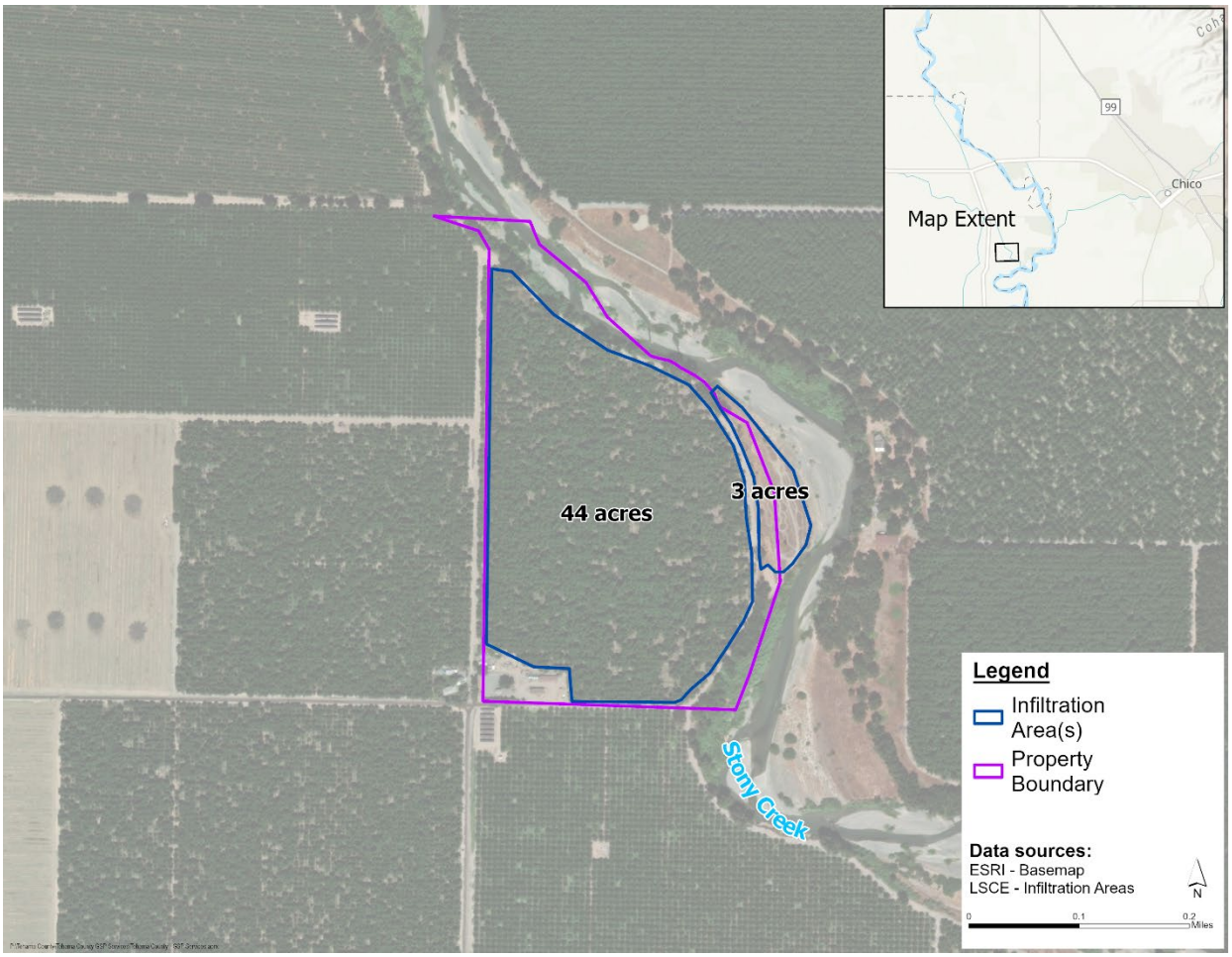


Figure 3-10. Monroeville Site

3.6.2. Geology

The orchard portion of the site has a SAGBI rating of Good, while the fallow area near the creek is classified as less than Moderately Good (see **Figure 3-11**). AEM data was collected directly over the site. The resistivity values across the site are moderately low nearest the surface and improve to moderate in the 50-100 ft depth range (see **Figure 3-12**). Both datasets indicate potential for rapid infiltration of applied surface water in the orchard portion of the site.

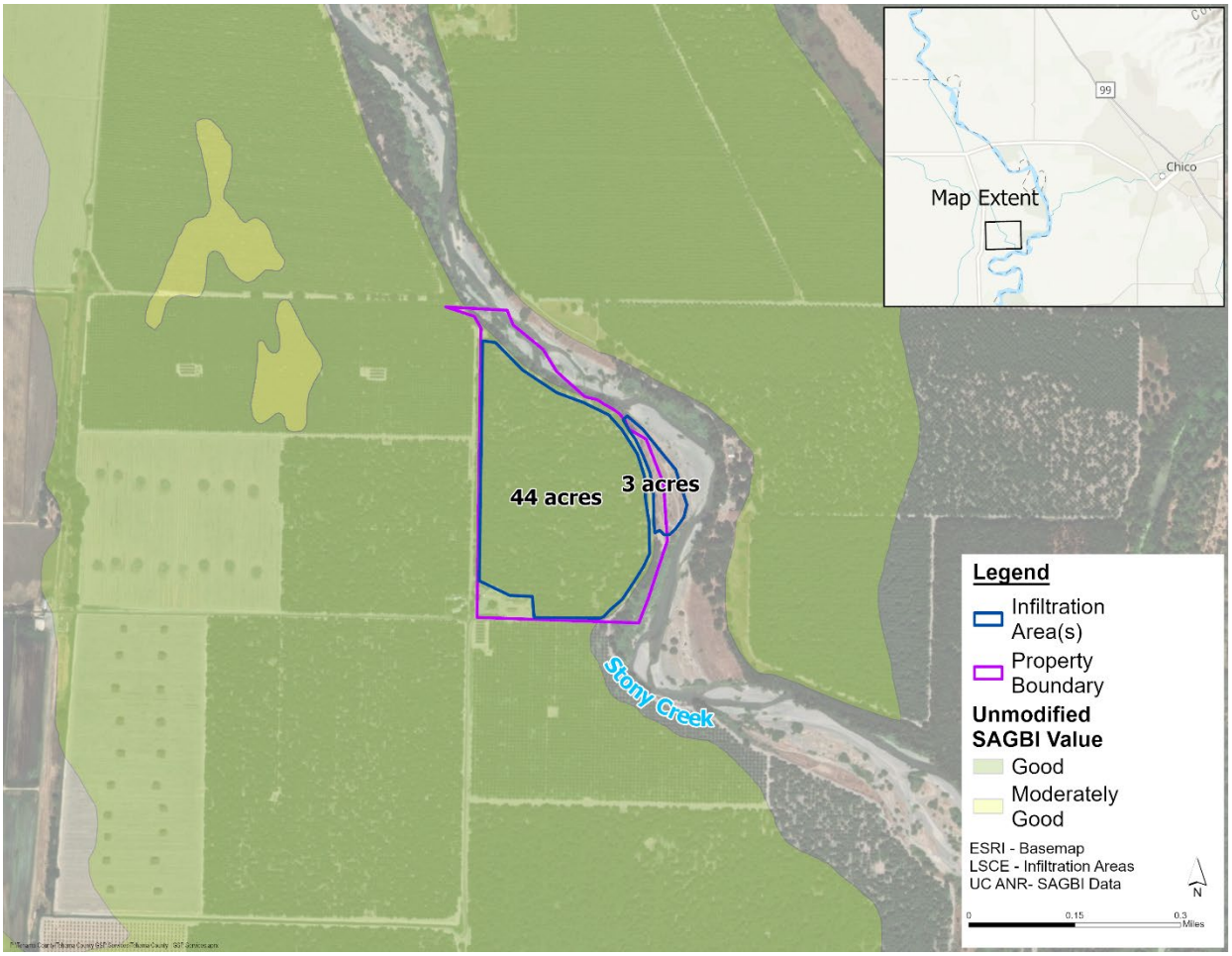


Figure 3-11. Monroeville SAGBI

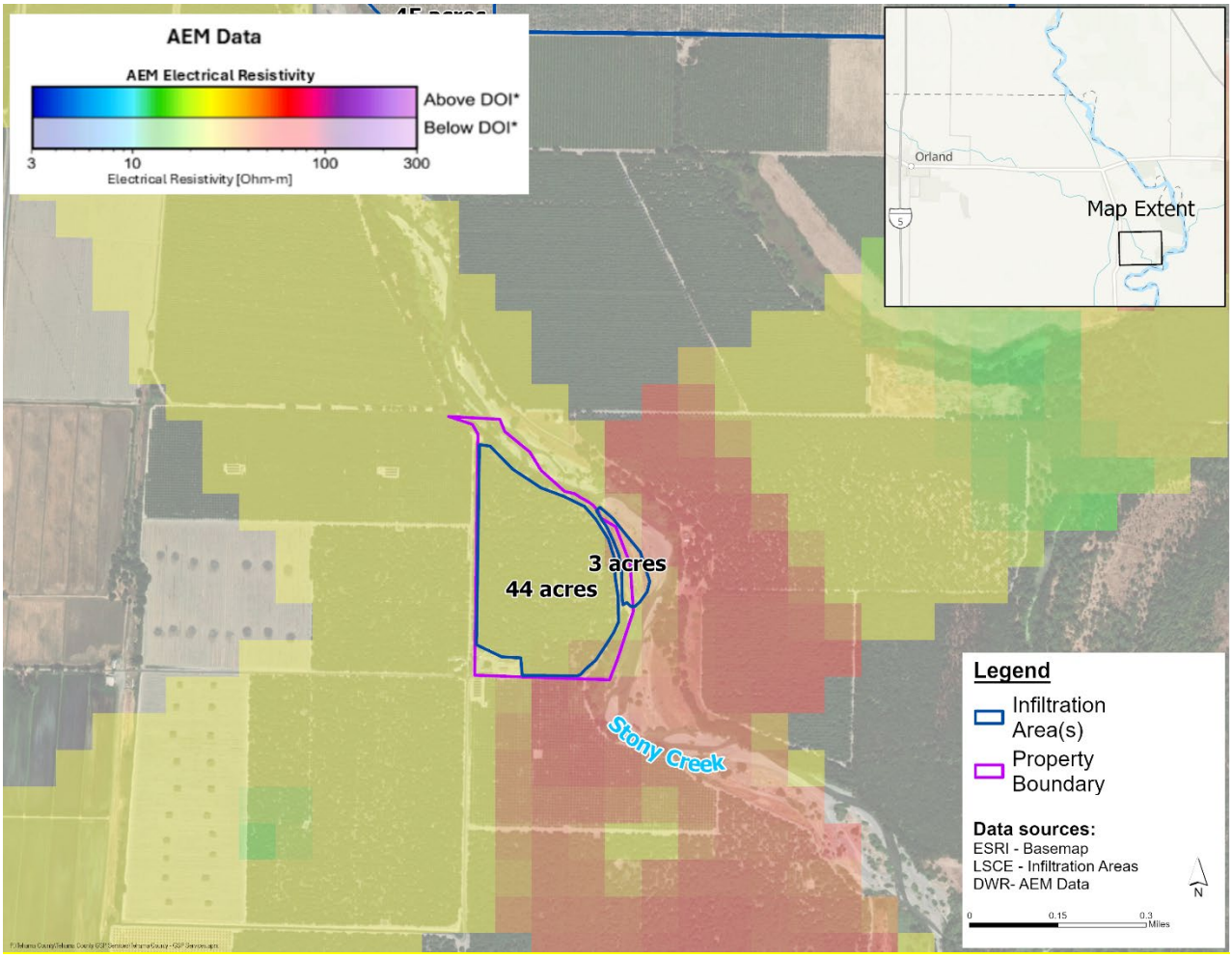


Figure 3-12. Monroeville 50-100 ft Depth

3.6.3. Landowner Cooperation

Throughout the process of site investigation and permitting, the landowner of the site has been cooperative and motivated to implement recharge on the site.

3.7. Orland Sand and Gravel Site

3.7.1. Location and Land Use

The Orland Sand and Gravel site is located on the south side of Stony Creek, northeast of the intersection of County Road 12 and County Road P. The site consists of an unused gravel pit approximately 1.3 acres in area that can potentially be used as a recharge basin. A map the site and surrounding area are shown in **Figure 3-13**. Photos of the site can be found in **Appendix D: Orland Sand and Gravel Photos.**

As this site is directly adjacent to Stony Creek, pump and piping requirements to divert water during high flow events will be minimal. The pit is an enclosed basin and would not require any modifications to be filled with diverted water.

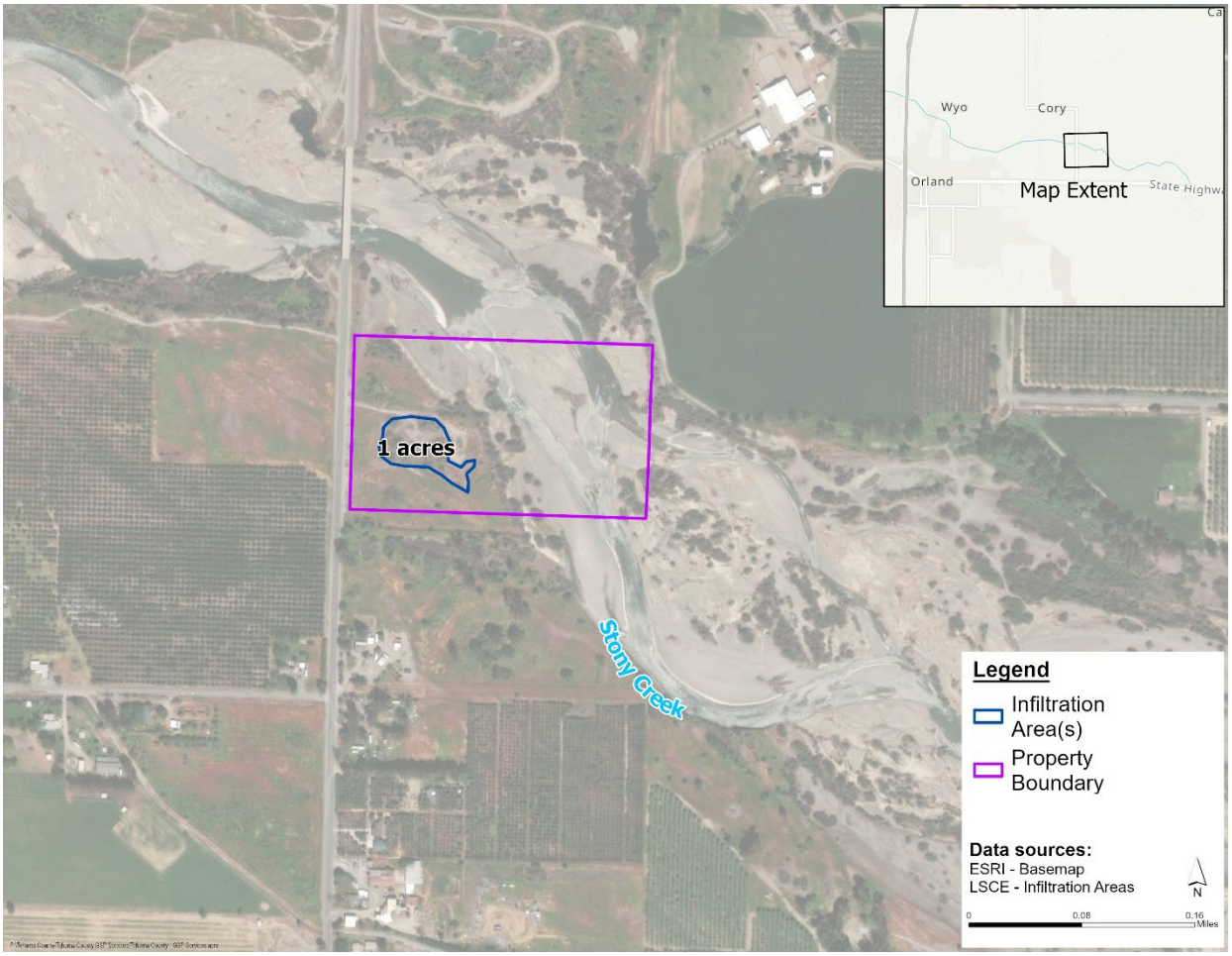


Figure 3-13. Orland Sand and Gravel Site

3.7.2. Geology

The pit and the area around it are classified as less than Moderately Good (see **Figure 3-13**). However, the AEM data collected near the site show high resistivity values to a depth of 50 ft and moderately high resistivity in the 50-100 ft depth range (see **Figure 3-14**). While the SAGBI rating for the site is less promising, the AEM data indicates that there is potential for high infiltration rates on the site. Further evaluation via pilot testing will give more conclusive data to determine the utility of the site for recharge.

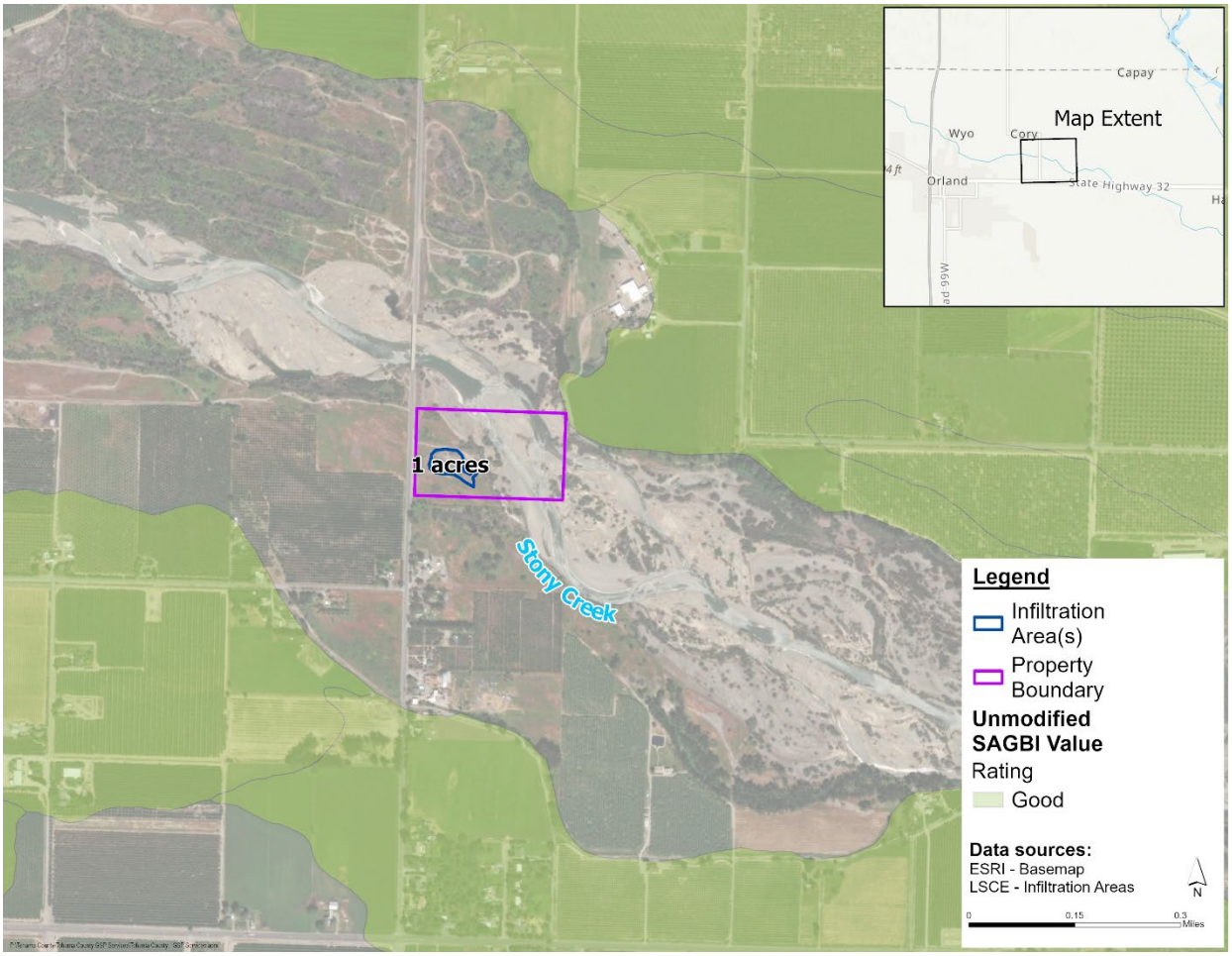


Figure 3-14. Orland Sand and Gravel SAGBI

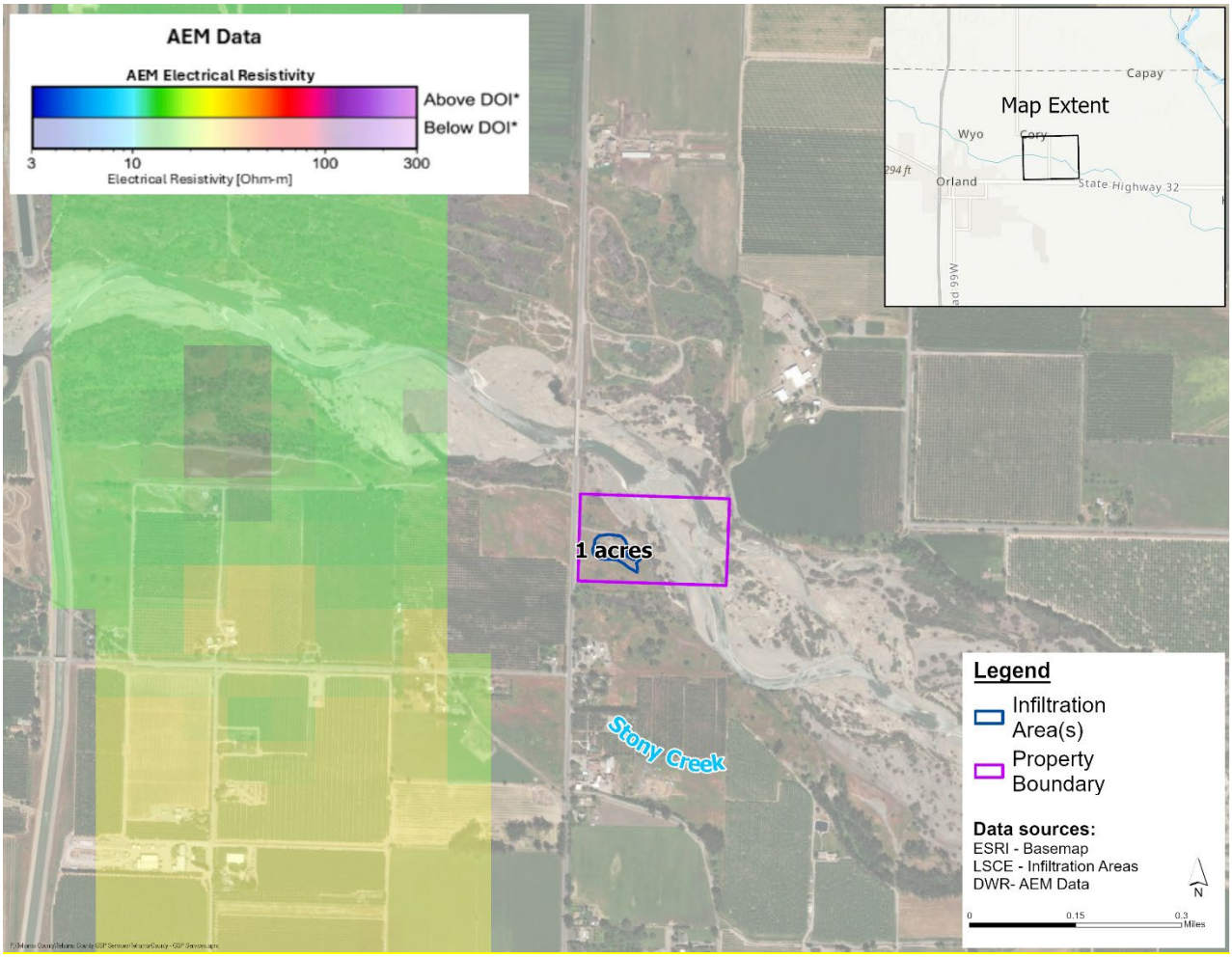


Figure 3-15. Orland Sand and Gravel AEM 50-100 ft Depth

3.7.3. Landowner Cooperation

Throughout the process of site investigation and permitting, the landowner of the site has been cooperative and motivated to implement recharge on the site.

4. PERMITTING PROCESS

4.1. 180-Day Temporary Permit

Currently none of the sites identified along Stony Creek have existing appropriative water rights. Appropriative rights allow water to be diverted for underground storage, and so are a necessary step in implementing recharge on these sites. The California State Water Resources Control Board (SWRCB) issues temporary (180-day or 5-year) permits, as well as permanent water rights. Temporary permits, as the name suggests, are temporary in nature, but are significantly lower in cost and can be approved in a shorter time frame than permanent rights.

Temporary rights are generally granted under the streamlined recharge permitting criteria. These criteria generally follow the "90th Percentile, 20 Percent Method" wherein diversions are allowed when the waterway is at or above its 90th percentile of flow and the flow diverted is less than or equal to 20 percent of the total flow. These streamlined criteria allow for an expedited evaluation of the permit application. A water availability analysis (WAA) was conducted on Stony Creek based on flows observed at both the Black Butte Dam and Lake and South Diversion Canal stream gauges. The 90th Percentile Flow for each day during the diversion season (December through March) was calculated based on 25 years of data collected at the stations. These values are shown in **Table 4-1**. Additionally, total potential monthly diversion volumes were calculated based on water year type and are shown in **Table 4-2**.

The Corning Sub-basin Groundwater Sustainability Agency (CSGSA) and the Glen Groundwater Authority (GGA) applied for a 180-day temporary permit for the winter of 2024-2025. On January 31, 2025, a 180-day temporary permit was granted by the SWRCB to allow diversions for underground storage. This permit allowed for diversions from Stony Creek through March 31, 2025. According to the terms of the permit, diversions were only allowed when flows were at or above the 90th percentile flow of Stony Creek. During the time period specified in the permit, diversions would have been allowed from February 4th through 13th. However, the necessary pumps and pipelines had not yet been installed during this period, so no diversions were carried out. Additional details of the issued permit and planned diversions can be found in **Appendix E: Report of Temporary Permit No. 21470**.

Table 4-1. Stony Creek 90th Percentile Flow (CFS)

Day	December	January	February	March
1	85	6454	4744	3027
2	88	6316	5058	2649
3	163	6196	4771	2360
4	200	5169	4358	2075
5	202	6644	4442	3187
6	810	3993	4441	3682
7	1188	3616	5247	3603
8	1061	4614	4857	3287
9	604	6022	3985	3482
10	481	6488	4417	3361
11	1233	5891	4208	3916
12	1598	5503	4142	4605
13	1933	6114	4548	4729
14	1961	5943	5724	4030
15	1822	5541	6506	3692
16	1497	5205	5342	3136
17	1554	4552	4613	3128

18	1622	4900	5754	3961
19	1975	4917	5777	4166
20	2488	4879	7216	5077
21	2391	4916	7228	4445
22	2173	4875	6573	5723
23	2515	4821	6042	6016
24	3398	4817	6148	5248
25	4103	4036	5048	4632
26	4001	3271	4701	4365
27	3324	4654	4288	3965
28	3934	5325	3518	3429
29	3990	5297	4394	2345
30	4935	5521		1424
31	5750	5251		1059

Table 4-2. Stony Creek Potential Diversion Volumes (acre-feet)

Water Year Type	December	January	February	March	Total
Wet	346	627	535	977	2,486
Above Normal	305	68	130	102	603
Below Normal	179	116	220	203	717
Dry	349	102	0	68	518
Critically Dry	162	41	0	0	203
All Years	265	194	175	273	907

4.2. 5-Year Temporary Permit

The Groundwater Sustainability Agencies (GSA) are in the process of applying for 5-year temporary water rights permits to implement further pilot recharge projects on the identified sites. The GSAs have determined that 5-year temporary rights are advantageous to carry out multiple years of pilot diversions at each site. During the 5-year permit period, the GSA expects to conduct diversions on Stony Creek and apply the diverted water to the sites. The viability of each of the sites will then be fully evaluated based on the performance of the sites. The ability of the sites to receive and infiltrate surface water, and the subsequent positive impacts on water levels in the Subbasin will be evaluated during these pilot projects.

4.3. Permanent Water Rights

Pending the success of the planned pilot projects on each site, the GSAs may opt to convert the temporary water rights permits to permanent rights. The process of applying for and receiving a permanent water

right is significantly longer, more complex and costly. A permanent water right requires an in-depth analysis of water availability, and potential impacts to other water rights holders and wildlife at various diversion times and volumes. The advantages of a permanent water right, though, are significant. As the name implies, rights are permanent and do not require periodic re-application. Additionally, in-depth analysis of required in-stream flows may indicate that diversions can be made at lower than 90th percentile flows. This would allow diversions to happen more often, and potentially outside the normal diversion time period of December through March. It is expected that permanent water rights will only be pursued in cases where pilot projects indicate that diversions will have a significant positive impact on the subbasin.

5. NEXT STEPS

5.1. Permitting

A 5-year temporary permit for diversions from Stony Creek is currently in progress. The GSAs will be the permittee, as the diversions for recharge are to benefit the subbasin as a whole. The provisions of the permit will include the Capay South Site, Prune Orchard and Sump Site, Monroeville Site, and Orland Sand and Gravel Site as points of diversion. The GSAs anticipate that a permit will be issued in time for potential diversions as early as December 2025. This permit will be in place for 5 years, allowing ample opportunity for diversions for pilot testing.

5.2. Pilot Testing

Following the issuance of the permit, diversions can be made as soon as diversion criteria are met. These diversions will be made via temporary pumps. Pilot testing will consist of various data collection efforts. Measurements of total diversions will be made throughout the diversion season via flow meters on the temporary pumps. Additionally, water depth transducers may be utilized to determine infiltration rates at various points across the sites, depending on specific site conditions. Finally, water levels in nearby wells will be recorded, either by manual measurements or via continuous monitoring equipment. These water levels will be compared with values from more distant wells to determine if recharge operations are having a measurable positive impact on water levels in the subbasin.

5.3. Construction

5.3.1. Capay South Site

A temporary pump and piping will be used on the Capay South Site to direct water to the recharge area. Based information gathered during site visits, it is not anticipated that any earthmoving will be required to direct and contain surface water on the site. During the pilot testing phase, the site will be observed to determine if any modifications to the site are necessary to encourage spreading and infiltration of applied water. If pilot testing is successful on the site, more permanent structures for diverting and directing flow from Stony Creek will be investigated.

5.3.2. Prune Orchard and Sump Site

A temporary pump and piping will be used on the site to direct water to both the prune orchard and the ditch leading to the drainage sump. Based information gathered during site visits, it is not anticipated that any earthmoving will be required to direct and contain surface water on the site. During the pilot testing phase, the site will be observed to determine if any modifications to the site are necessary to encourage spreading and infiltration of applied water. If pilot testing is successful on the site, more permanent structures for diverting and directing flow from Stony Creek will be investigated.

5.3.3. Monroeville Site

A temporary pump and piping will be used on the site to direct water to both the orchard and the fallow area adjacent to Stony Creek. Based information gathered during site visits, it is not anticipated that any earthmoving will be required to direct and contain surface water in the orchard. Though if the fallow area is also utilized for recharge, some minor berm construction will be required to contain applied surface water. During the pilot testing phase, the site will be observed to determine if any modifications to the site are necessary to encourage spreading and infiltration of applied water. If pilot testing is successful on the site, more permanent structures for diverting and directing flow from Stony Creek will be investigated.

5.3.4. Orland Sand and Gravel Site

A temporary pump and piping will be used on the site to direct water to the existing gravel pit. Based information gathered during site visits, it is not anticipated that any earthmoving will be required to direct and contain surface water on the site. During the pilot testing phase, the site will be observed to determine if any modifications to the site are necessary to encourage spreading and infiltration of applied water. If pilot testing is successful on the site, more permanent structures for diverting and directing flow from Stony Creek will be investigated.

Appendix A

TECHNICAL MEMORANDUM

To: Luhdorff & Scalmanini Consulting Engineers

From: Davids Engineering, Inc.

Date: June 06, 2025

Subject: **Brannin Creek Instream Recharge Feasibility Study**

1 Summary

The Corning Subbasin needs to achieve groundwater sustainability per the Sustainable Groundwater Management Act (SGMA) and as described in its Groundwater Sustainability Plan (GSP). Increasing groundwater recharge is one of the multiple projects and management actions (PMAs) described in the GSP to achieve groundwater sustainability. Davids Engineering (DE) was tasked with evaluating the feasibility of Corning Water District (CWD) conducting instream recharge within Brannin Creek, which is a small seasonal tributary that runs west to east through the southern portion of CWD and then flows into Burch Creek and to the Sacramento River, see **Figure 1**. Utilizing existing infrastructure and natural waterways to facilitate increased groundwater recharge is typically simpler and more cost-effective than design and construction of new recharge facilities. DE evaluated the feasibility of instream recharge within Brannin Creek through a 10-day field test, as described below.

Water flows to evaluate groundwater recharge potential were routed from CWD Lateral C (a buried pipeline) through a temporary above-ground pipeline retrofitted to an existing Lateral C air vent located near the Brannin Creek streambed. Flows were directed into Brannin Creek over a span of 10 days (from October 29th, 2024 to November 8th, 2024). A water budget was completed to calculate the volume that infiltrated and percolated through the streambed (presumably downwards back into the groundwater aquifer), and the streambed geology was evaluated. The water budget directly measured, estimated, or calculated all inflows, outflows, and change in storage (**Figure 2**). The inflows consisted of water redirected from CWD Lateral C into Brannin Creek, which was measured using a flowmeter, and precipitation, which was based on a nearby precipitation gauge. The outflows consisted of evaporation, which was calculated based on wetted area and evaporative demand, and percolation, which was calculated as the closure term based on the conservation of mass. No other surface outflows were observed during data collection over the course of the 10-day field test. The change in storage was estimated through measurements of ponding extent and depth and the saturation depth of the streambed. The overall objective of this effort was to evaluate the recharge potential of Brannin Creek and the feasibility of increasing groundwater recharge in the Corning Subbasin by wetting the creek during times it is dry to allow for water to infiltrate and percolate into the groundwater aquifer.

The feasibility study showed that Brannin Creek was favorable for groundwater recharge due to the close proximity of existing surface water conveyance infrastructure (CWD Lateral C), but unfavorable due to the presence of a confining layer that resulted in the ponded area continually expanding downstream over the course of the 10-day field test. Although there is large uncertainty about whether this value is representative of long term percolation rates in Brannin Creek, the calculated percolation rate from the study is equal to 0.34 feet (or 4.1 inches) per day. Additional investigation and testing would be required to more comprehensively evaluate the long term recharge potential of Brannin Creek and ultimate fate of surface water conveyed to Brannin Creek for recharge.

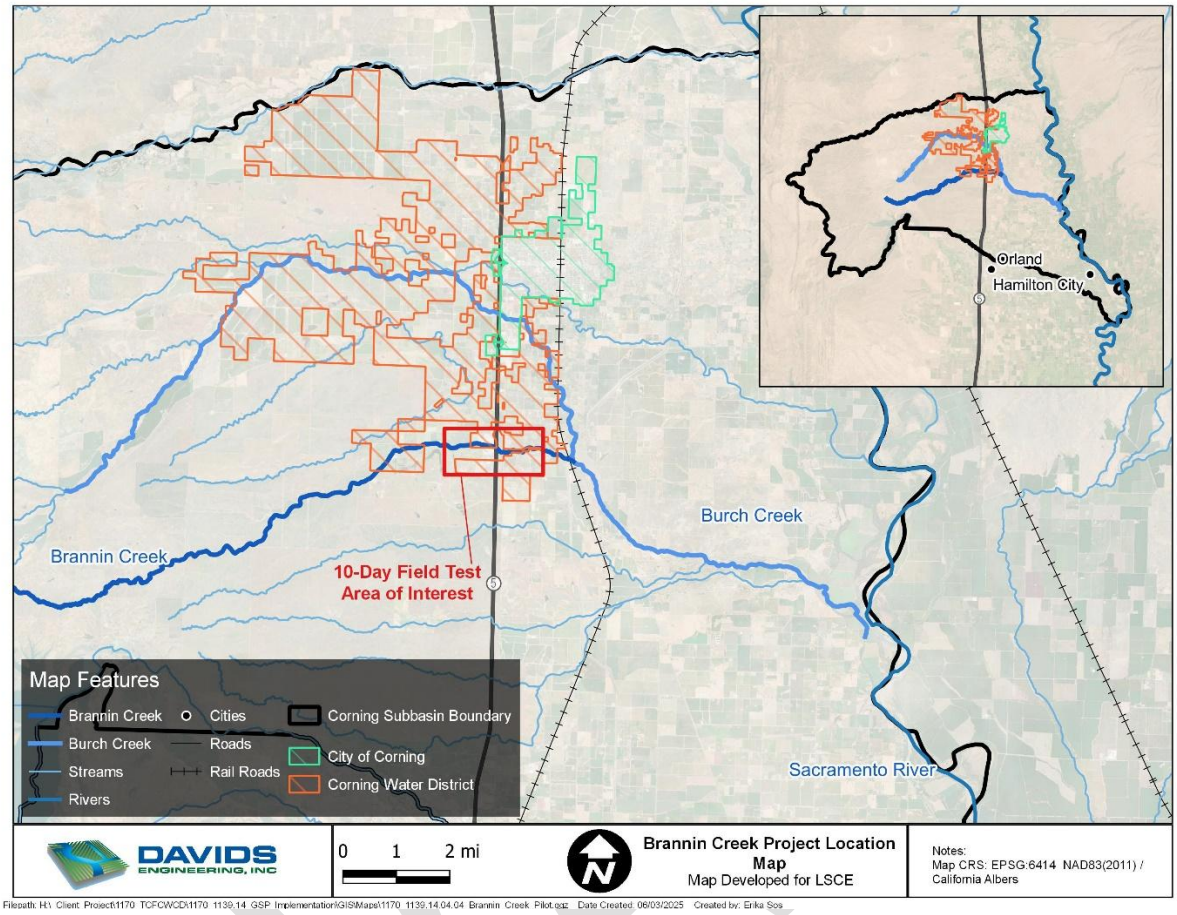


Figure 1. Study location map of Brannin Creek and 10-Day Field Test within the Corning Subbasin.

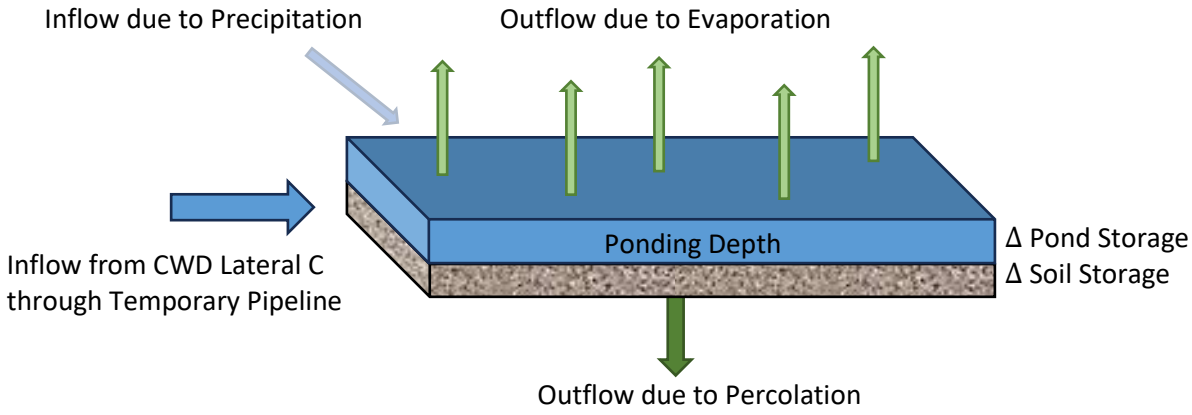


Figure 2. Schematic of instream-recharge water budget. Outflow due to percolation was calculated as the closure term of the water budget; all other inflows, outflows, and change in storage terms were independently measured or estimated.

2 Methods

The following methods and procedures were undertaken to complete the 10-day field test and associated feasibility study.

2.1 Temporary Pipeline Construction

A preliminary site visit was conducted to estimate pipe length and layout, and other associated materials, required to construct a temporary pipeline to convey water from CWD Lateral C to the Brannin Creek streambed. Materials were then procured as outlined in **Appendix B** – List of Materials for Temporary Pipeline Construction. The existing 2" ball air vent at the end of Lateral C was removed, and the temporary pipeline was connected and constructed from the vent location across and into the Brannin Creek streambed, as shown in **Figure 3** through **Figure 5**. A Seametrics 6" AG3000 flanged electromagnetic flowmeter was installed in accordance with the procedures detailed in **Appendix C**, including a raised discharge location to ensure full-pipe conditions at the flowmeter, to measure flows from CWD Lateral C to Brannin Creek. After construction of the temporary pipeline, flow was initiated, and the 10-day field test began. Upon completion of the 10-day field test, the water was shut off and flow stopped, the temporary pipeline was deconstructed, and the site was restored to its original condition.

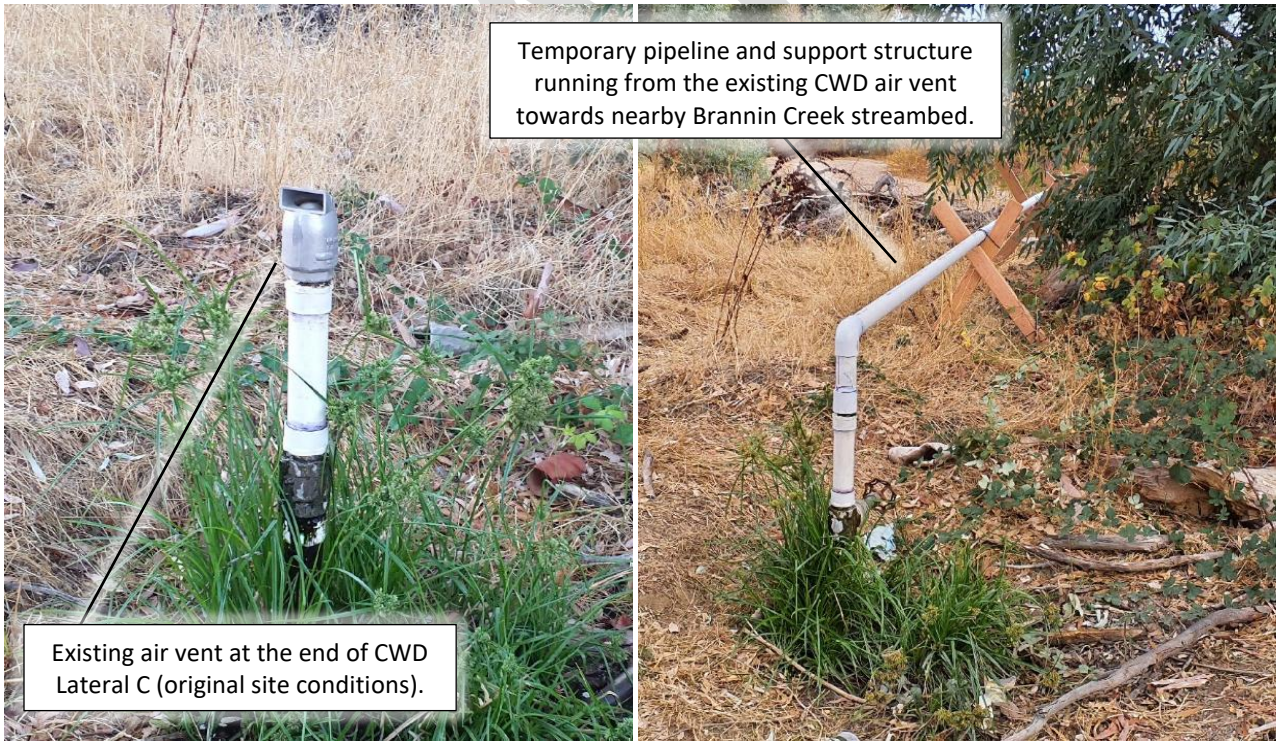


***Figure** 3. Source of water for Brannin Creek Instream Recharge Feasibility Study, consisting of a temporary pipeline retrofitted to connect to existing infrastructure (an air vent located at the end of CWD Lateral C).*

Figure 4. Temporary pipeline and support structure spanning the distance between the CWD Lateral C air vent and Brannin Creek streambed (approximately 60 feet (FT) of 2" PVC pipe).

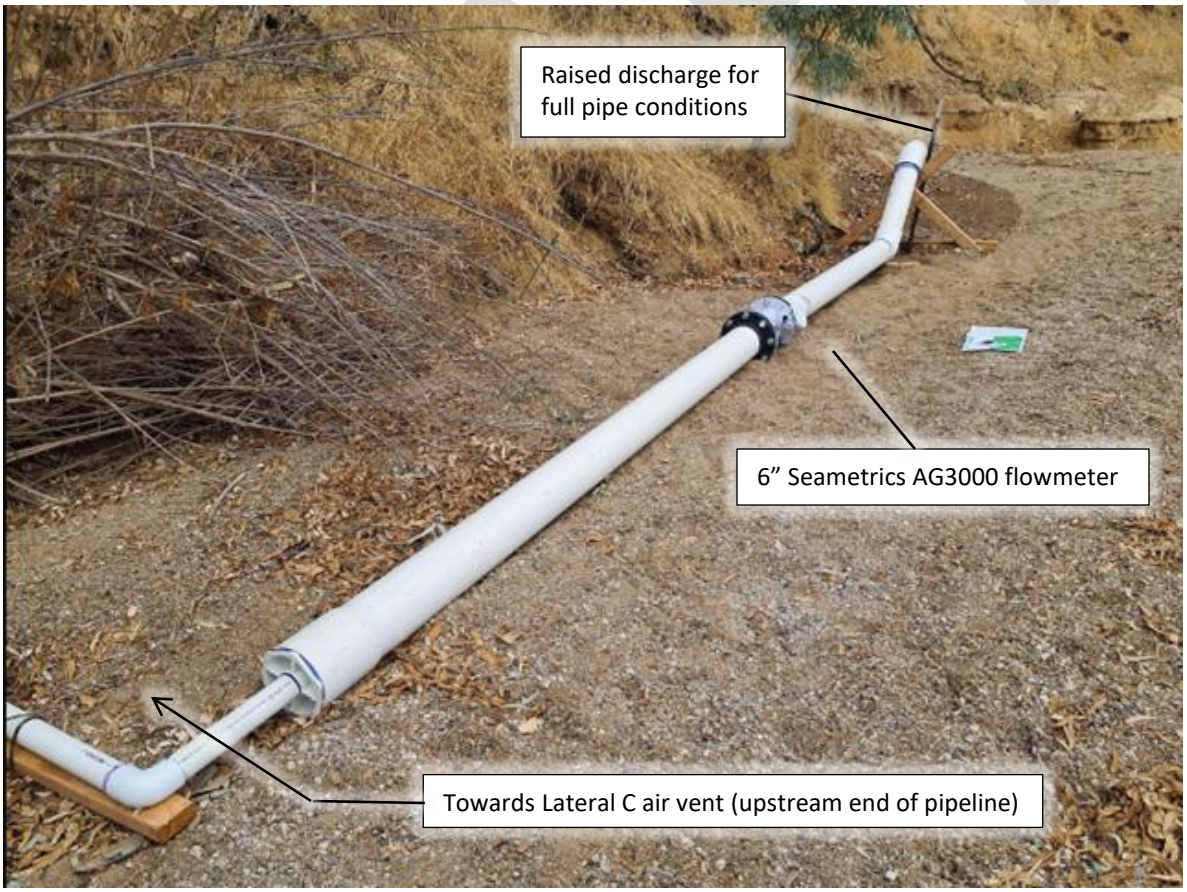


Figure 5. Temporary pipeline in Brannin Creek streambed. Pipeline transitions from 2" PVC to 6" PVC to allow for measurement through 6" Seametrics AG3000 flanged flowmeter. The discharge end of the pipeline is raised in elevation to ensure the pipe remains full for accurate flowmeter measurement.

2.2 10-Day Field Test

At the onset of the 10-day field test, flow was allowed through the temporary pipeline, as shown in **Figure 6,** and an initial survey of the wetted area was conducted on day one. After that, periodic surveys of the wetted area were conducted, along with observations noted on ponding depths, streambed saturation, evidence of percolation, and any potential surface outflows. Wetted perimeter surveys were conducted using a RTK network and rover to collect points along the pooled water edges, and later post-processed in a GIS application. After completing the final survey on day ten, the water inflow from CWD Lateral C was shut off. Data collection also included readings of the flow and volume measured by the Seametrics flowmeter on the days of periodic surveys. Following completion of the 10-day field test, the survey data were then processed and compiled into daily results (including maps of wetted extent, see **Appendix A** – Surveys) for use in the water budget analysis.

Figure 6. Surface water flow redirected from CWD Lateral C into the Brannin Creek streambed for Instream Recharge Feasibility Study.

2.3 Soils Analysis

During the daily surveys described previously, three test holes were excavated in different locations along the streambed to measure the depth of streambed saturation and investigate the presence of any potential confining layers within the subsurface. One of these holes is depicted in **Figure 7**. During the excavations, general observations regarding soil composition were made, along with measuring the depth of streambed saturation or depth to a confining layer. Additionally, a hand auger was also used to collect a soil sample to evaluate soil composition. A desktop soils analysis was also conducted utilizing Natural Resources Conservation Service's (NCRS) Soil Survey Geographic Database (SSURGO) data for the Brannin Creek streambed and surrounding area for comparison to in-field observations.

Figure 7. One of three holes excavated to investigate the existence and depth of a potential confining layer beneath the Brannin Creek streambed. Standing water at a depth of 1.5 FT below the surface was observed at this and the other two test holes.

2.4 Water Budget Analysis

All data collected in the field were processed for water budget analysis calculations. Periodic readings from the Seametrics flowmeter were reviewed and utilized to calculate daily surface water inflow volumes. Survey data for wetted areas were imported into a GIS application to determine the surface area of ponded water. Additional data collection and review related to streambed width, streambed saturation depth, and the soils analysis were completed to estimate soil properties and the subsurface wetted area and extent to calculate a subsurface storage volume; this process included an assessment of the presence of a confining layer.

Precipitation and evaporative demand data were obtained from the nearest California Irrigation Management Information System (CIMIS) station, which was Station #222 in South Gerber (roughly 12

miles to the north of the Study site)[1], for use in water budget analysis. The values obtained from CIMIS in inches per day (in/day) were multiplied by the relevant area to calculate a total volume.

A water budget was then calculated for the 10-day testing period on a daily timestep, as shown below in **Equation 1**. Based on the principle of the conservation of mass, all inflows and outflows must be equal to one another, while accounting for change in storage within the area of interest (both ponded and subsurface storage). As observed in the field during the 10-day field test, no surface outflows occurred apart from evaporation. Each inflow and outflow was quantified as described previously, with percolation being calculated as the closure term of the water budget. The closure term inherently includes any uncertainty and error in measurement or estimation of the other flow paths, and it should also be noted that for purposes of this water budget analysis, the percolation is assumed to represent vertical flow downwards towards the aquifer, but it may also include lateral movement of water within the subsurface (either continuing to flow downstream through the Brannin Creek streambed, or flowing to the north and south away from Brannin Creek).

$$\boldsymbol{Percolation} = (\boldsymbol{Inflows}) - \boldsymbol{Outflows} - \Delta\ \boldsymbol{Storage}\ \textit{(eqn. 1)}$$

Inflows = Applied water + Precipitation
Outflows = Evaporation
Δ Storage = Change in pond storage + Change in soil water storage

3 Results and Discussion

The SSURGO soils analysis revealed the presence of a confining layer at an average depth of 17.0 IN (or 1.4 FT). During the excavation of the three test holes, beneath a gravel and sandy layer, a hard layer was encountered that could not be easily penetrated with a shovel. The depth to this confining layer from the surface of the sandy soil was recorded, with an average depth of 1.5 FT (a 0.1 FT difference from depth identified in the SSURGO data). A soil sample was also collected using a hand auger, with soils taken from above and from within the confining layer; the soils can be seen in **Figure 8**. The SSURGO soils analysis also provided additional soils information for the Brannin Creek area of interest such as available water holding capacity (AWHC), clay, sand, silt, and rock fragment percentages. **Table 1** depicts these results, in addition to the depth to confining layer. The SSURGO results aligned well with observations in the field, especially regarding the existence of and depth to a confining layer.

Table 1. NCRS SSURGO Soils Analysis Results.

Parameter	Value
AWHC (in)	6.5
Clay (%)	18.0
Rock Fragments (%)	10.7
Sand (%)	41.6
Silt (%)	40.4
Depth to confining layer (in)	17.0

[1] More information above CIMIS (including data access) is available at: https://cimis.water.ca.gov/

Figure 8. Soil samples retrieved from Brannin Creek Streambed, showing the soil above the confining layer comprised of sands and gravels (left), and soil within the confining layer (right) comprised of smaller particles that bind together into a hardened material.

To calculate the volume of percolation past the streambed[2] and potentially back into the groundwater aquifer, a water budget was conducted using the known inflows, outflows, and change in storage (see **Equation 1** previously, and **Table 2** below). Inflows consisted of surface water through CWD Lateral C (and measured by the Seametrics flowmeter), as well as minor precipitation. Outflows consisted of surface evaporation and percolation. Change in storage included ponded water above the streambed in Brannin Creek and subsurface storage in the soils within the Brannin Creek streambed. Over the course of the 10-day field test, the surface water applied from CWD Lateral C created a pond that continually expanded to further downstream reaches on Brannin Creek. The pond surface area and extent was monitored over the 10-day period and is shown in **Table 3, Figure 9, and Appendix A – Surveys.**

[2] As noted above, this analysis was unable to determine whether this subsurface movement of water was vertical towards the groundwater aquifer or lateral away from or down Brannin Creek.

The depth of ponding varied, but based on in-field observations and measurements of ponded depth, a depth of 1.5 FT was determined to be an overall representative depth for the ponded area (although some ponded depths were shallower and other deeper than this). This depth was multiplied by the ponded area to determine the ponded volume (i.e., surface storage). To calculate soil storage (i.e., subsurface storage), the saturated wetted area was estimated as the length of ponded area along Brannin Creek streambed, multiplied by the streambed width of Brannin Creek (measured over distinct reaches). The extent of subsurface wetted area was reviewed in the field through excavation of test holes, which all were wetted in the subsurface. The resulting wetted area was multiplied by the AWHC from the SSURGO data to estimate subsurface storage.

Table 2. Flow paths and change in storage terms for inflows, outflows, and storage included in the water budget.

Inflows	Storage	Outflows
CWD Surface Water	Pond (i.e., Surface)	Evaporation
Precipitation	Soil (i.e., Subsurface)	Percolation

Table 3. Summary of surveyed surface area data by date for ponding and subsurface soil storage results, including calculation of volumes using the procedure and values described previously. By the end of the 10-day field test there was a pond volume of 2.06 AF on the surface of the streambed and a soil storage volume of 3.13 AF beneath the surface of the streambed (i.e., subsurface).

Storage	Survey Date	Surface Area (sqft)	Surface Area (Acres)	Volume (AF)
Pond	10/29/2024	800	0.02	0.03
Pond	10/30/2024	16,500	0.38	0.58
Pond	11/01/2024	20,700	0.47	0.73
Pond	11/04/2024	22,700	0.52	0.80
Pond	11/08/2024	58,200	1.34	**2.06**
Soil	11/08/2024	236,800	5.44	**3.13**

Based on all data assembled, water budget volumes were calculated and summed for the entirety of the 10-day field test. These are described below and shown in **Figure 10**.

1. The surface inflow volume through CWD Lateral C was 9.76 AF (an average flow rate of 221 gallons per minute (gpm) over the 10-day field test[3]) and precipitation inflow volume was 0.15 AF. The combined inflow volume of these two flow paths was 9.91 AF.
2. The outflow volume due to evaporation was 0.25 AF.
3. Change in storage volume includes pond and soil storage. The ponding depth volume was 2.01 AF, determined using the measured surface area of the ponded extend after 10-days and an average ponding depth of 1.5 FT. The subsurface storage volume was 3.13 AF, based on AHWC (determined in the SSURGO soils analysis), measured streambed area, and the assumed saturated condition.
4. Using equation 1, the values presented above calculate the water budget outflow due to percolation (closure term) equal to 4.53 AF.

[3] Six observations of the instantaneous flow rate through the Seametrics flowmeter were also recorded during fields visits. These ranged from 212 to 220 gpm with an average of 217 gpm, slightly lower than the average flow rate calculated based on total volume measured by the flowmeter over the course of the 10-day field test.

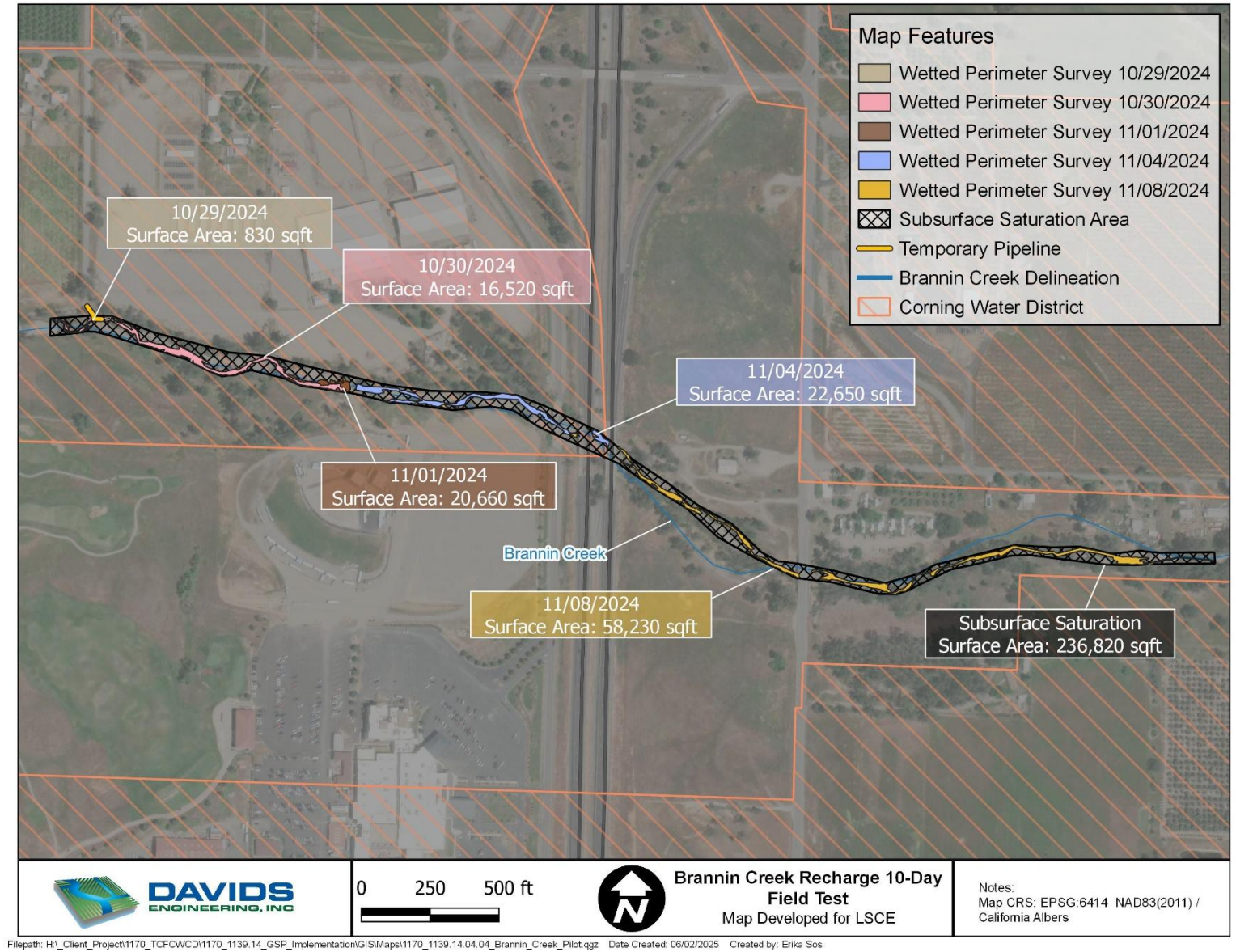


Figure 9. Map of surveyed ponded areas and estimated subsurface saturation.

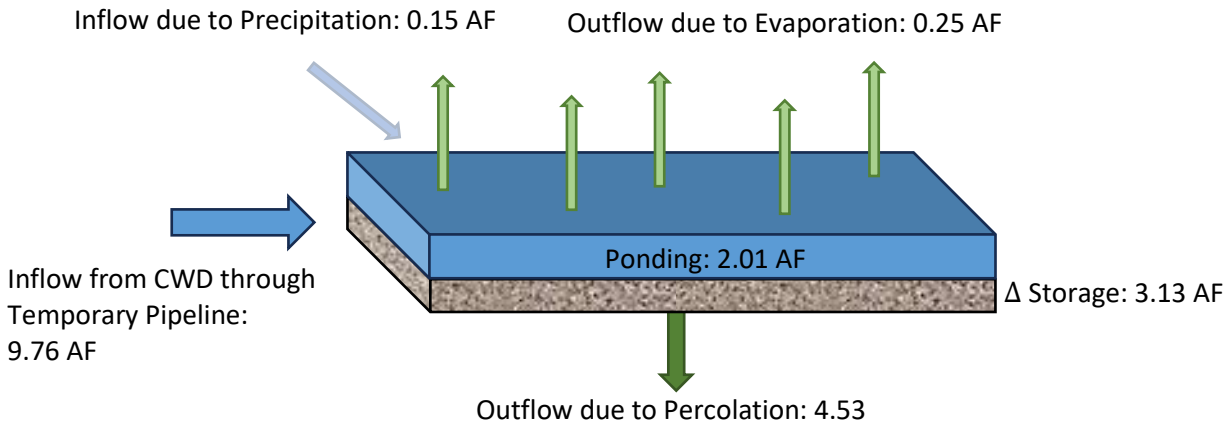


Figure 10. Water budget schematic including total cumulative volumes (AF) from the 10-day field test.

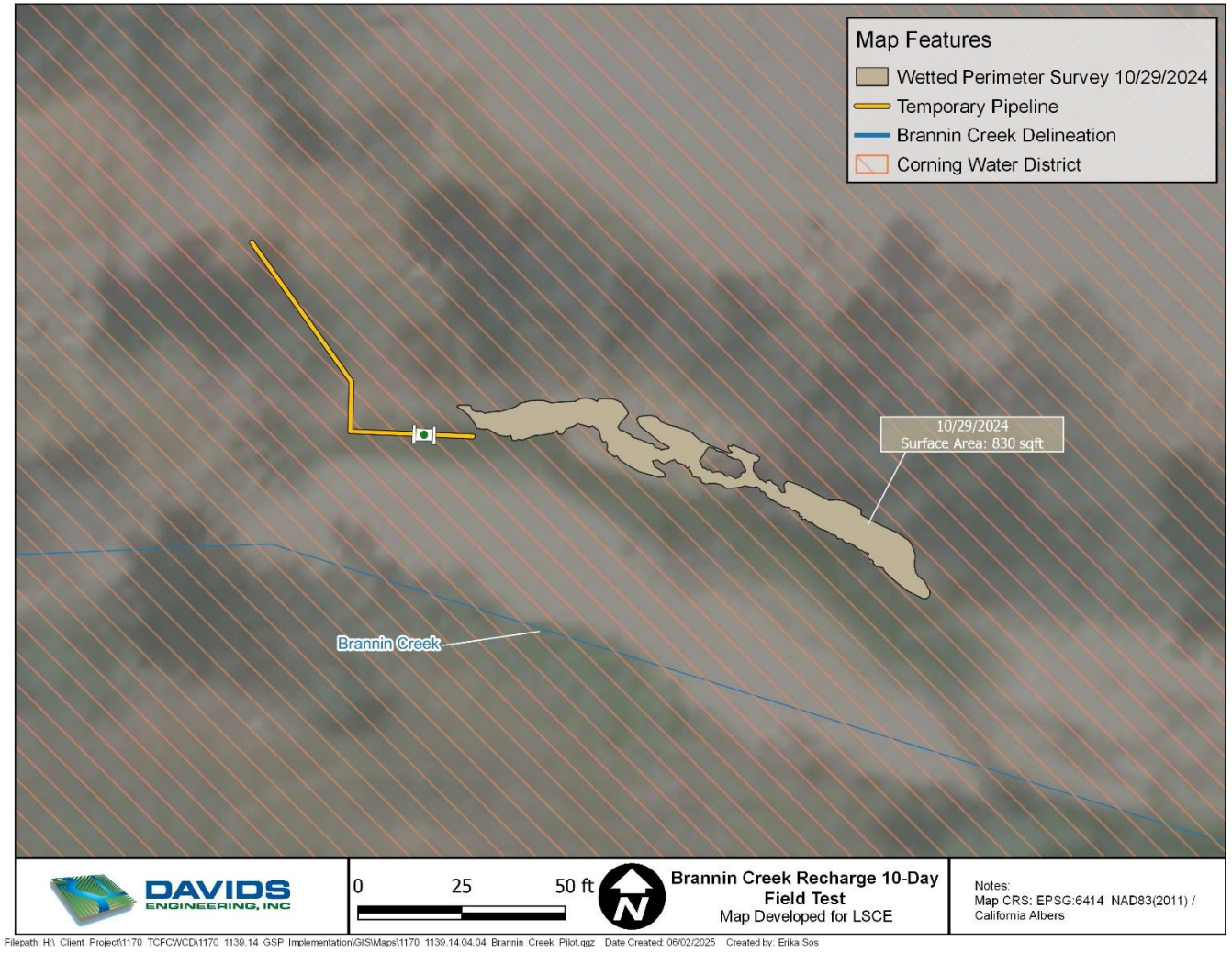
4 Conclusion

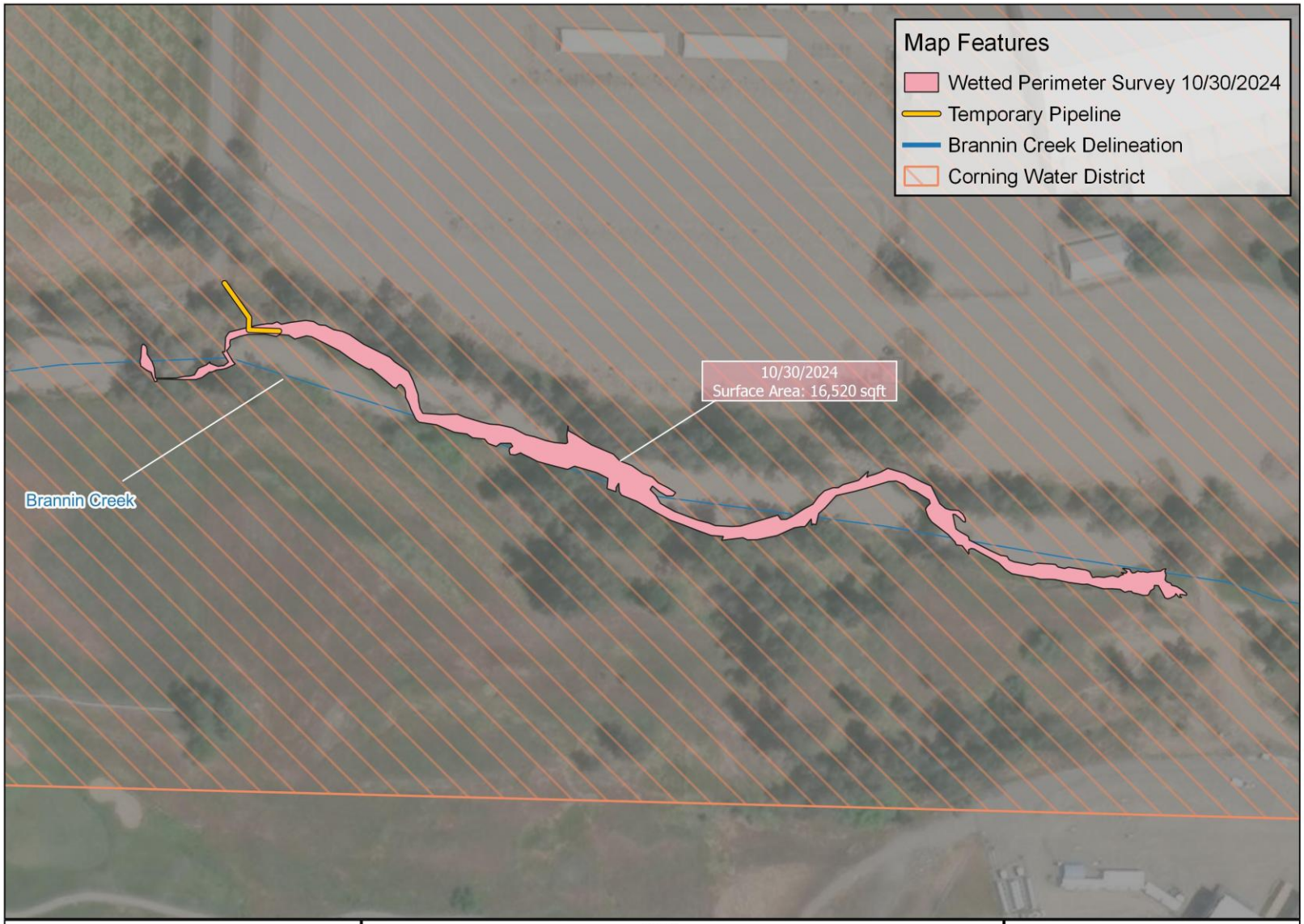
The purpose of this study was to determine the feasibility of CWD using Brannin Creek as an instream recharge location to support increasing groundwater recharge and PMA implementation under the GSP. Brannin Creek's streambed location is favorable due to its close proximity to existing water conveyance infrastructure (CWD lateral C) and would only require relatively simple modifications to deliver surface water to the streambed for potential recharge. However, the presence of a confining layer within the streambed (identified from SSURGO data and confirmed in the field) is unfavorable for recharge; this limits the rate at which water leaves surface and soil storage and resulted in ponded water extent continually expanding downstream over the course of the 10-day field test. Assuming evaporative demands remain low, the majority of the water in surface and soil storage is ultimately expected to result in percolation, although the time required for this percolation to occur is currently unknown, and the final destination of percolation is unknown (i.e., vertical or lateral movement of water in the subsurface). The results of the 10-day field test provide initial information regarding the feasibility of Brannin Creek for groundwater recharge, which can be evaluated relative to other alternatives for increasing groundwater recharge by CWD and others in the Corning Subbasin. Additional investigation and testing would be required to more comprehensively evaluate the long term recharge potential of Brannin Creek and ultimate fate of surface water conveyed to Brannin Creek for recharge.

Although a long term steady state percolation (or recharge) rate cannot be calculated from the data available from this study, a percolation rate can be calculated based on available information. The total percolation of 4.53 AF at the end of the 10-day field test (a volume) divided by the total ponded area of 58,230 square feet (or 1.34 acres) at the end of the 10-day field test (an area) produces a representative percolation depth over this area and time. The resulting value is 3.39 FT (or 40.7 inches) over 10 days, or 0.34 FT (or 4.1 inches) per day. There is uncertainty as to whether this calculated percolation rate is representative of long term steady state conditions for percolation in Brannin Creek (the actual percolation rate may be substantially lower or higher), but this is the percolation rate over the 10-day field test calculated from study results.

Appendix A – Surveys

The following maps depict results of the RTK surveys conducted periodically throughout the 10-day field test and show the wetted perimeter of the ponded water in the streambed above the surface. It can be seen over the course of the surveys the ponded water expanded downstream substantially.




Map Features
Wetted Perimeter Survey 10/30/2024
Temporary Pipeline
Brannin Creek Delineation
Corning Water District
10/30/2024
Surface Area: 16,520 sqft
Brannin Creek
DAVIDS ENGINEERING, INC
0
100
200 ft
Brannin Creek Recharge 10-Day Field Test
Map Developed for LSCE
Notes:
Map CRS: EPSG:6414 NAD83(2011) / California Albers
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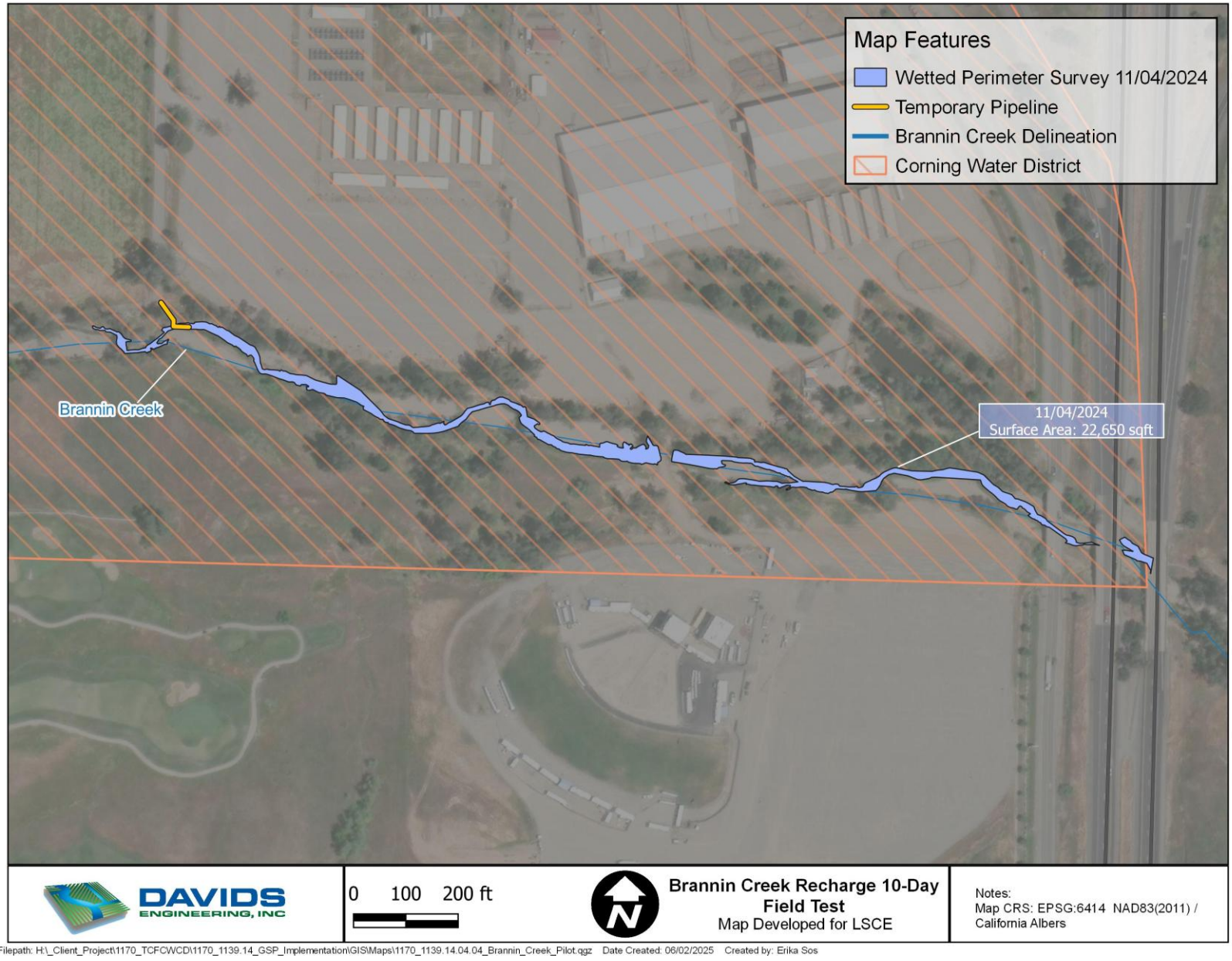
Map Features
Wetted Perimeter Survey 11/04/2024
Temporary Pipeline
Brannin Creek Delineation
Corning Water District
Brannin Creek
11/04/2024
Surface Area: 22,650 sqft
DAVIDS ENGINEERING, INC
0 100 200 ft
Brannin Creek Recharge 10-Day Field Test
Map Developed for LSCE
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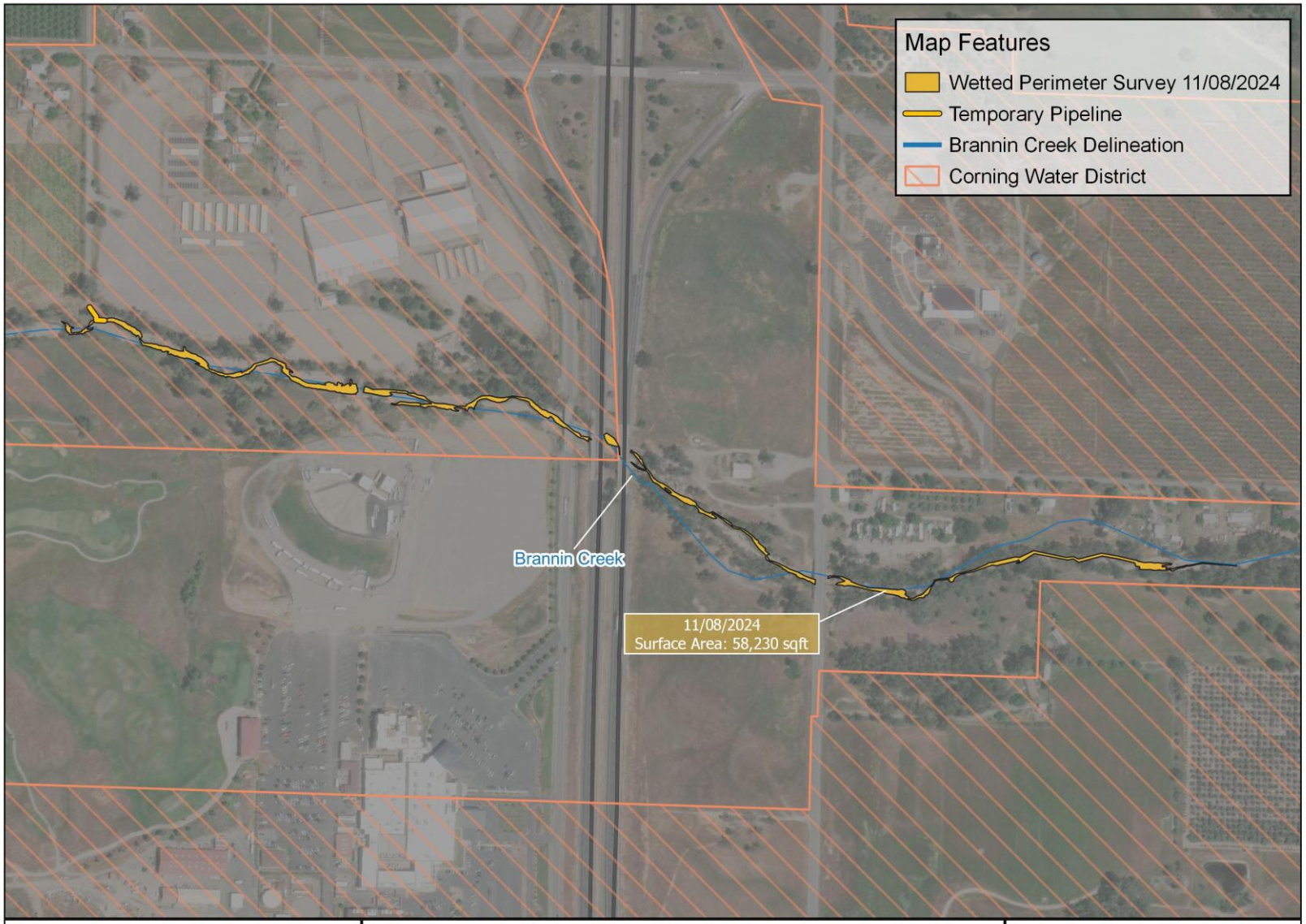

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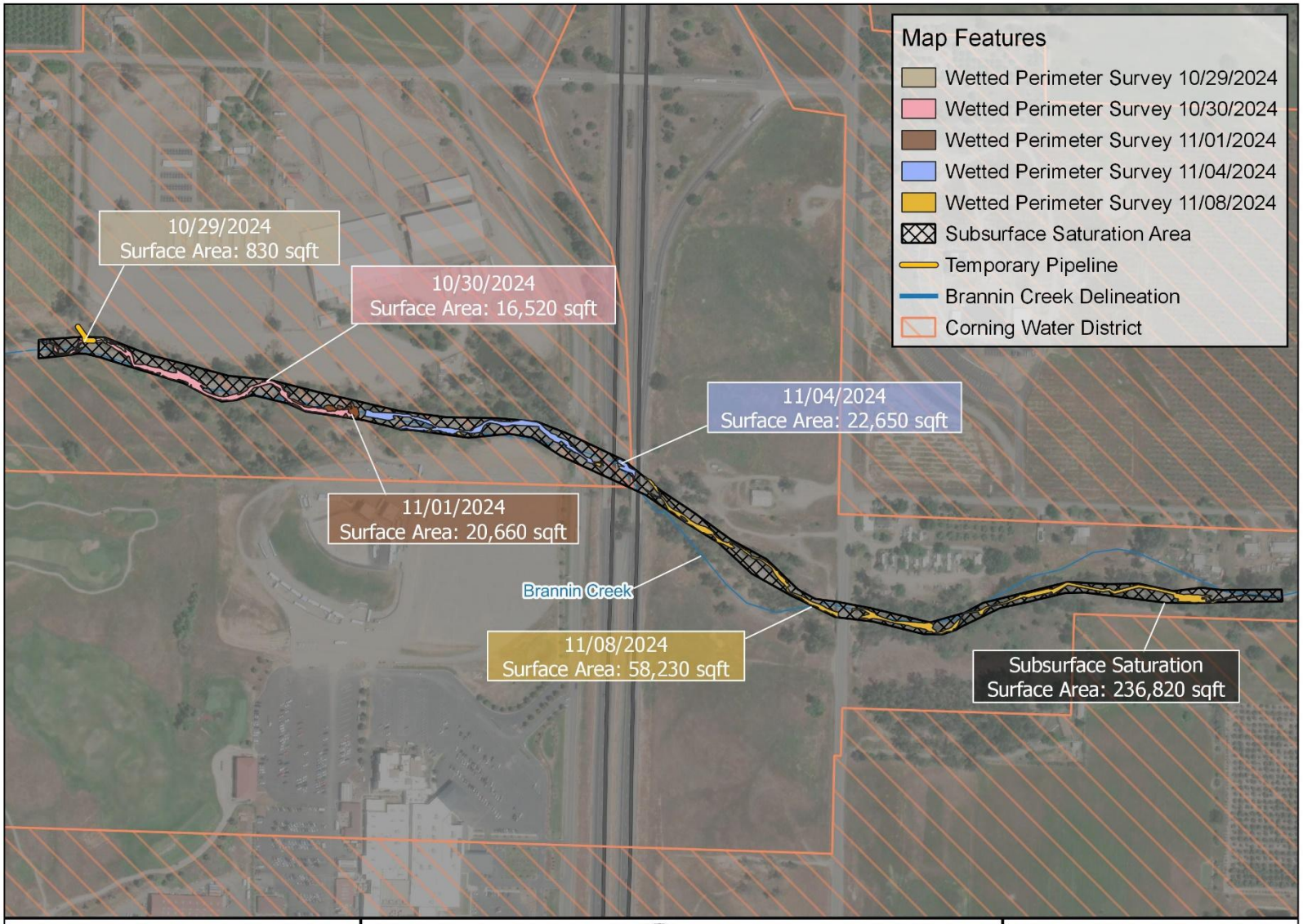
Map Features
Wetted Perimeter Survey 10/29/2024
Wetted Perimeter Survey 10/30/2024
Wetted Perimeter Survey 11/01/2024
Wetted Perimeter Survey 11/04/2024
Wetted Perimeter Survey 11/08/2024
Subsurface Saturation Area
Temporary Pipeline
Brannin Creek Delineation
Corning Water District
10/29/2024
Surface Area: 830 sqft
10/30/2024
Surface Area: 16,520 sqft
11/04/2024
Surface Area: 22,650 sqft
11/01/2024
Surface Area: 20,660 sqft
Brannin Creek
11/08/2024
Surface Area: 58,230 sqft
Subsurface Saturation
Surface Area: 236,820 sqft
DAVIDS ENGINEERING, INC
0 250 500 ft
Brannin Creek Recharge 10-Day Field Test
Map Developed for LSCE
Notes:
Map CRS: EPSG:6414 NAD83(2011) / California Albers
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Appendix B – List of Materials for Temporary Pipeline Construction

Item	Amount
6” Seametrics AG3000 Bolt-on magnetic flowmeter	1
6” Diameter SCH 40 PVC Pipe	20 FT
2” Diameter SCH 40 PVC Pipe	60 FT
6” to 2” pipe reducer fitting	1
2” Fittings and elbows	Various
6” Fittings and elbows	Various
Pipe Primer and Cement	2
2x4x8 Boards for Supporting Structure	8
Miscellaneous required hardware and fasteners	Misc

Appendix C – Seametrics AG3000 Documentation

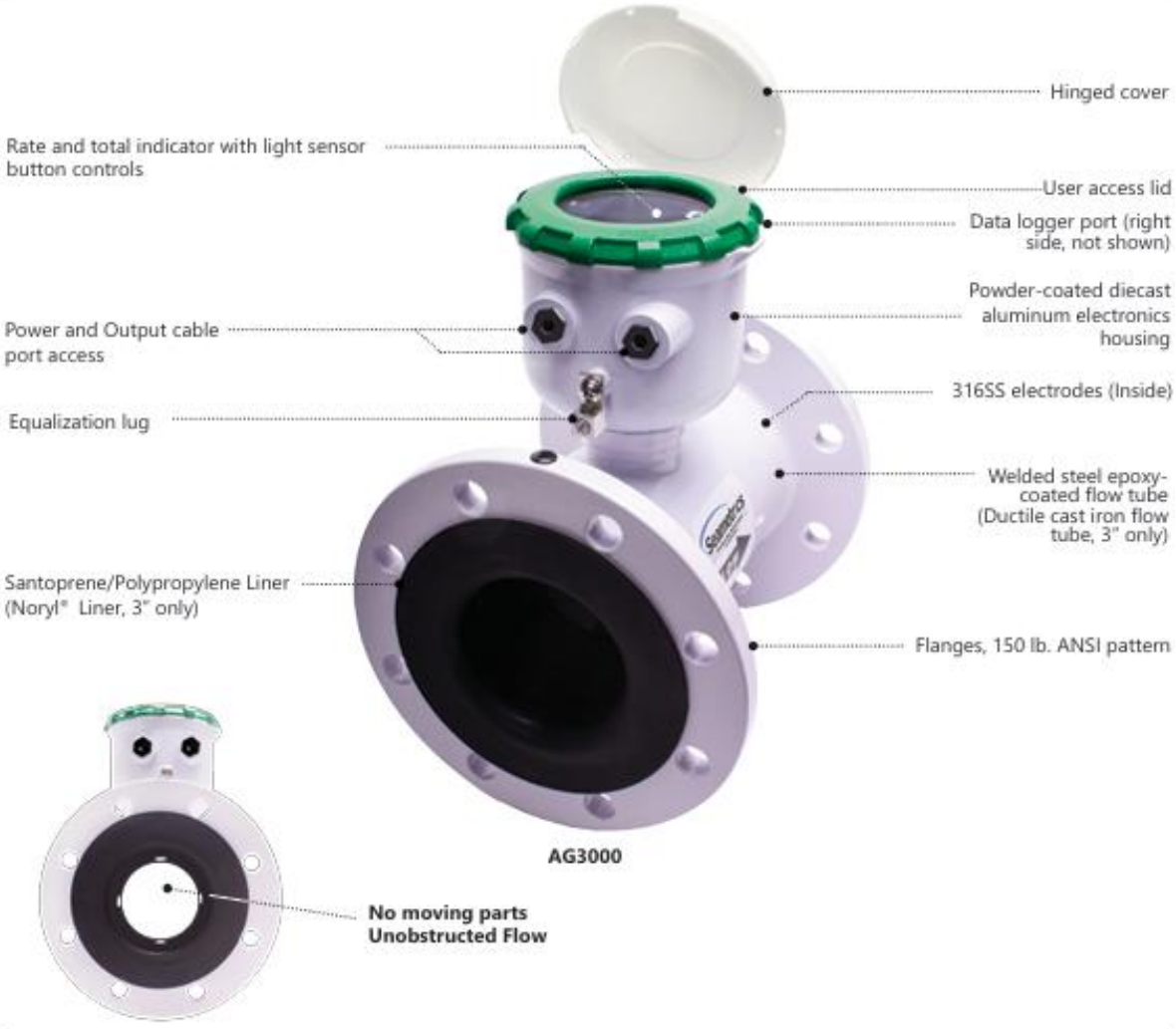
The **AG3000 Series** is a spool-type electromagnetic flowmeter for use in irrigation applications in 3" to 12" pipe. With no moving parts, these meters provide unobstructed flow and are resistant to wear from debris found in ground or surface water. Little maintenance is required because there are no bearings to wear out or propellers to stop turning. Minimal straight pipe requirements allow AG3000 meters to be used in piping configurations where there is little space between the meter and an elbow.

The standard AG3000 is battery powered with an available pulse output. Both rate and total indication show on the meter mounted display. Bidirectional flow reading is standard with totals available in forward, reverse, net flow, batch forward flow, and batch reverse flow. Batch totals can be reset. Built-in data logging is available as an option for secure flow logging.

The AG3000 is also available with external DC power. With an externally powered AG3000 an additional output can be added, such as 4-20mA, HART, Modbus®, or high speed digital.

The AG3000 Series is CE certified and IP68 for burial, or applications where the meter may be under water for prolonged periods of time. All meters are provided with a security seal to protect against unauthorized access. The seal can be broken by an authorized agent to replace the battery pack or field install a power/output cable. The cable is field installed where external power is available and/or an output is needed.

Features



Specifications*

Pipe Sizes		3", 4", 6", 8", 10", 12"					
Flanges		150 lb. ANSI Pattern					
Pressure		150 psi (10.3 bar) line pressure					
Temperature	**Operating**	10° to 140° F (-12° to 60° C)					
	Storage	-40° to 158° F (-40° to 70° C)					
Accuracy		±0.75% of reading on AG3000p and AG3000r (±1.0% AG3000), ±0.025% of full-scale flow from low flow cutoff to maximum flow rate of 10 m/sec					
Low Flow Cutoff		0.5% of maximum flow rate					
Material	**Body** *(3" only)*	Ductile cast iron, powder coated					
	Body *(4"-12")*	Welded steel, epoxy-coated					
	Liner *(3" only)*	Noryl®					
	Liner *(4"-12")*	Santoprene flange/Polypropylene liner body					
	Electronics Housing	Powder-coated diecast aluminum					
	Electrodes	316 stainless steel					
	O-ring (3" only)	EPDM					
Display	**Type**	128x64 dot-matrix LCD					
	Digits	5 Digit Rate			8 Digit Total		
	Units	Rate Volume Units		Rate Time Units	Total Volume Units		
	Please Note: All AG3000 meters are factory set for gallons per minute (GPM) rate and acre feet total. If other units are required, they can be set in the field.	Gallons Liters Barrels(42 gal) Cubic Feet Cubic Meters	Million Gallons[2] Mega Liters[2] Imperial Gallons Million Imperial Gallons[2]	Second Minute Hour Day	Gallons Gallons x 10 Gallons x 100 Gallons x 1000 Million Gallons Liters Kilo Liters Mega Liters	Barrels (42 gal) Cubic Meters Cubic Meters x 1000 Cubic Feet Cubic Feet x 1000 Second Foot Day Million Cubic Feet	Acre Feet Acre Inches Imperial Gallons Imperial Gallons x 1000 Million Imperial Gallons Fluid Ounces
	Bidirectional[1]	Forward Total, Reverse Total, Net Total, Batch Forward Total, Batch Reverse Total (Batch totals can be reset)					
Power	**DC Power**	9-36 Vdc @ 250 mA max, 30 mA average					
	Battery Backup (Not for use as primary power)	DC powered units: Two lithium 3.6V 'D' batteries, replaceable. AC powered units: One 9V alkaline battery, replaceable.					
	AC Power *(AG3000r and AG3000p only)*	85-264Vac, 50/60Hz, 0.12A					
	Battery *(AG3000 only)*	One lithium 7.2V 'D' size battery pack, replaceable.					
Scaled Pulse Output	**Signal**	Current sinking pulse, isolated, 36 Vdc at 10 mA max					
	Pulse Rates	User-scalable from 0.1 to 99,999.9 volume units/pulse. Pulse width is one-half of pulse period with minimum pulse width of 2.5 ms, 200 pulses/sec max. For battery option meters, pulse width varies with frequency, 150 pulses/sec max.					
Options	**4-20mA Current Loop**	Isolated, passive, 24Vdc, 650 Ω maximum current loop					
	HART/4-20mA	HART protocol over 4-20mA line					
	High Speed Digital Output *(AG3000 & AG3000p only)*	Isolated, open collector, 24 Vdc					
	Serial Communications	Isolated, asynchronous serial RS485 (Reconfigurable for RS232 or 3.3V CMOS), Modbus® RTU protocol (factory selectable)					
Cable	**Power/Output Cable**	20ft (6m) standard length polyurethane jacketed cable—for power and outputs (lengths up to 200' available).					
	Remote Display Cable *(AG3000r)*	20ft (6m) standard length polyurethane jacketed cable—for connection between meter and remote display (lengths up to 200' available).					
Conductivity		>20 microSiemens/cm					
Empty Pipe Detection		Hardware/software, conductivity-based					
Regulatory		CE (EN 61326)					
Environmental		NEMA 6P, IP68 (10ft (3m) depth, continuously)					

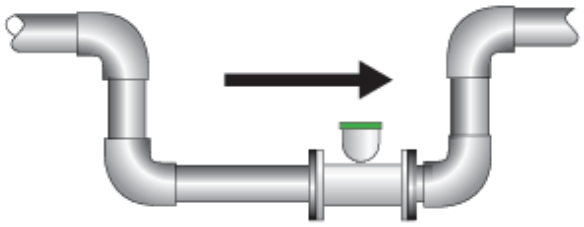
Modbus is a registered trademark of Schneider Electric.

* *Specifications subject to change. Please consult our website for the most current data (www.seametrics.com).*

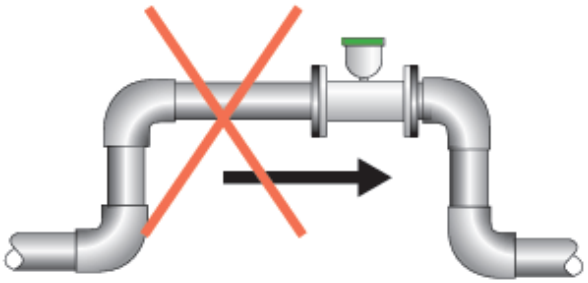
[1] *If forward and reverse flow data needs to be sent to another device, either the Digital or Modbus output is required.*

[2] *Rate Time Unit is available in Day only.*

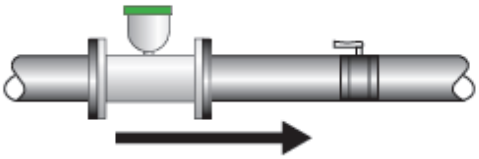
Full Pipe Recommendations



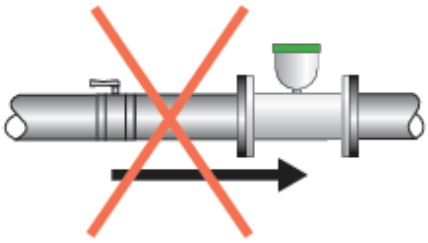
Recommended:
Keep pipe full at meter for accuracy



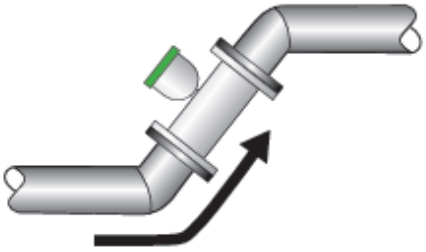
Not Ideal:
Allows air pockets to form at meter



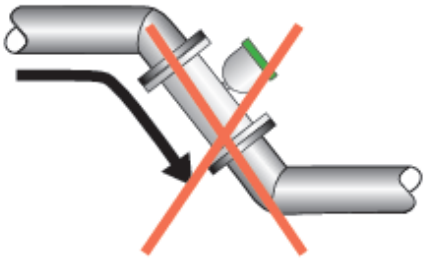
Recommended:
Keeps pipe full at meter for accuracy



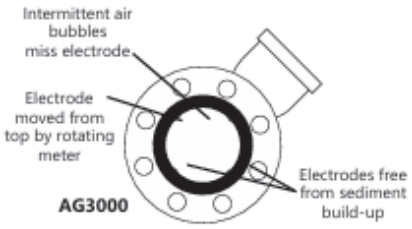
Not Ideal:
Post-valve cavitation can create air pocket



Recommended:
Allows air to bleed off



Not Ideal:
Air can be trapped



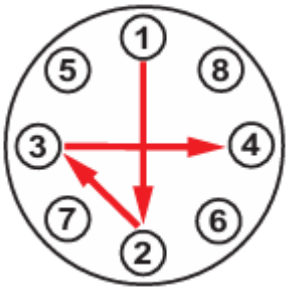
Best:
Improved accuracy results from unimpeded electrodes

Not Ideal:
If pipe contains air bubbles or sediment (may affect accuracy)

Tightening Flange Bolts

NOTE: Mating pipe flanges must be ANSI 150# full face (FF) and/or raised face (RT).

1. Tighten flange bolts in an alternating pattern.
   - Tighten left flange bolt-1 to 20% recommended torque.
   - Tighten right flange bolt-1 to 20% of recommended torque.
   - Repeat steps a and b for each bolt in an alternating order, such as shown at right, tightening to 40%, then 60%, then 80%, and then 100%.
2. Test for leaks.
3. If needed, tighten further in 10% increments until leaking stops. **DO NOT over-tighten. Over-tightening can cause serious damage to the flow meter.**
4. Recheck after 24 hours, adjusting if needed.



Suggested Tightening Sequence

Caution: Improper tightening sequence can cause serious damage to the flow meter.
- Do not tighten one side at a time.
- Do not tighten each bolt completely at one time.

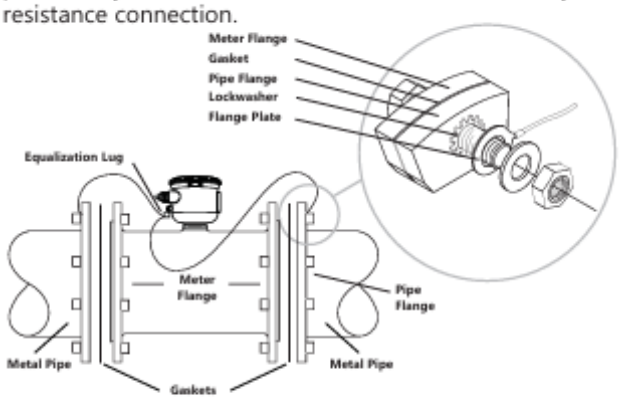
SUGGESTED FLANGE BOLT TORQUE

Pipe Size	Liner	
	ft-lb	Nm
3"	25	34
4"	20	27
6"	42	57
8"	65	88
10"	73	99
12"	97	132

Equalization and Grounding

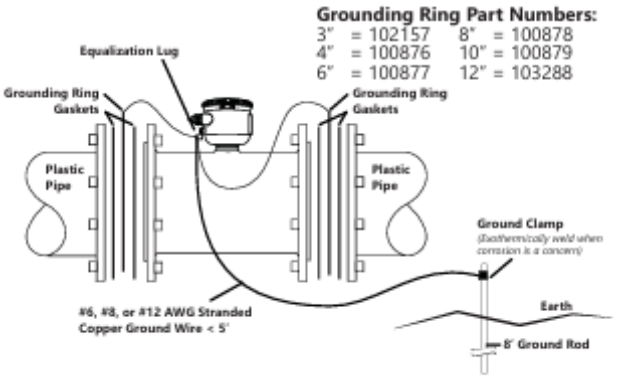
WARNING: ELECTRICAL SHOCK HAZARD
When the AG3000 is installed in a plastic piping system, or when externally powered, the piping system must be grounded to meet national and local electrical safety codes. Failure to do so can result in electrocution.

Metal Pipe Installations. To equalize the electrical potential of the fluid, the AG3000 meter, and the surrounding pipe, secure the flange plates (factory-installed on the equalization wire) to both pipe flanges at one of the bolt holes, as shown below. Be sure the lock washer fits between the pipe flange and the flange plate. For the best electrical bonding, remove rust and paint to expose clean, bare metal where the equalization flange plate lock washer contacts the pipe flange. Connection must be inspected periodically for corrosion to maintain the necessary low resistance connection.



Plastic Pipe and Electronically Noisy Installations. When the AG3000 is installed in plastic pipe or in an electrically noisy system (near a VFD etc.), grounding rings are recommended. As shown in the diagram below, the equalization wires should be solidly connected to the grounding ring tabs instead of the flange bolts as in metal piping installations. Where lightning is a threat, or in severe electrical environments, an optional connection to a nearby equipment ground or ground rod may be advisable.

Grounding Ring Part Numbers:
3" = 102157 8" = 100878
4" = 100876 10" = 100879
6" = 100877 12" = 103288



Appendix B

FEASIBILITY REPORT
AND PRELIMINARY DESIGN

BRANNIN CREEK RECHARGE PROJECT

Prepared For:
Tehama County Flood Control
and Water Conservation District

Prepared by:

Haling & Associates
Civil-Environmental Engineers

2540 Zanella Way, Suite 40
Chico, CA 95928
(530) 342-6958

30 JULY 2024

BRANNIN CREEK RECHARGE PROJECT
FEASIBILITY REPORT
AND PRELIMINARY DESIGN

Brannin Creek
Rolling Hills Casino
Corning, CA

TABLE OF CONTENTS

APPENDIXES

1.0 INTRODUCTION

Luhdorff & Scalmanini, Consulting Engineers (LSCE) has been hired by the Tehama County Flood Control and Water Conservation District (Tehama County FCWCD) for the purpose of providing Professional Services for Groundwater Sustainability Plan (GSP) Annual Reports, DWR GSP Review Response to Comments, and Implementation Activities for the Bowman, Red Bluff, Antelope, Los Molinos, and Corning Subbasins. Haling & Associates (H&A) has been hired as a subconsultant to LSCE to assist in the implementation of groundwater recharge activities in the Red Bluff, Los Molinos, and Corning Subbasins. This Feasibility Report is for a proposed project to take place under Task 4.4, regarding recharge through unlined canals and drainages in the Corning Sub-basin.

In consultation with the Paskenta Band of Nomlaki Indians (Paskenta), it is proposed to utilize a section of Brannin Creek to recharge the groundwater aquifer. Due to known impermeable soil layers in the area, dry wells will be utilized to assist in groundwater recharge. Water delivered through the Corning Canal will be utilized for groundwater recharge.

1.1 Location

The proposed project site is an approximately 1700-foot stretch of Brannin Creek, located directly west of Interstate-5. The creek is located directly north of the Rolling Hills Casino, and south of the Liberal Avenue exit. The creek flows east under Interstate-5. The project site stretches between Orchard Avenue and Everett Freeman Way. A map of the project site is included in the preliminary design drawings (Appendix C).

The Corning Canal flows south and ends at Brannin Creek, approximately 7,000 feet west of the proposed project site. A bulk head is located where the canal crosses Liberal Avenue. The 1,600-foot section of canal between Liberal Ave. and Brannin Creek is currently dry.

1.2 Hydrogeologic Setting

An exploration well was drilled near the project site in 2022 (See Appendix A for well log). The area beneath the project site consists of several aquifers at varying depths, separated by layers of high clay soils (70% to 100% clay). The first aquifer/gravel layer occurs at approximately 40 to 50 feet below ground surface. Water has not been observed at this depth. The second aquifer is located between 90 and 105 feet below ground surface. This second aquifer is made up of relatively small gravel with less than 10% clay content and water has been observed at this elevation. Additional gravel layers are present beyond 150 feet, but the second aquifer is the shallowest depth to intercept an effective recharge zone.

2.0 BASIS OF DESIGN

Soil within the project site is known to be very high in clay and relatively impermeable. This includes the soils beneath the creek bed of Brannin Creek. Because of this, dry wells are proposed to allow infiltration of surface water to deeper aquifers.

2.1 Water Supply

Surplus irrigation water from the Corning Water District is proposed to be utilized for this project. The Corning Water District has rights to 15,000 acre-ft per year. Currently, much of this water goes unused and flows back into the Sacramento River. It is proposed to request 3,000 to 5,000 acre-ft per year of water for groundwater recharge.

The Water District does not deliver water between December and March. This leaves 8 months to perform groundwater recharge with the irrigation water supplied from the district. This averages out to about 500 acre-ft per month of recharge flow for design of the dry wells.

Paskenta has proposed utilizing water from their surface water reservoir located west of the Rolling Hills Casino to maintain water elevation within the creek and provide hydraulic head.

This recharge project is not contingent upon, nor utilizes, existing surface water flows from the creek. Regular (seasonal) flows from Brannin Creek would be allowed to flow over the weir and not be captured for recharge.

2.2 Dry Wells

Soil within the project site is known to be very high in clay and relatively impermeable. This includes the soils beneath the creek bed of Brannin Creek. Because of this, dry wells are proposed to be utilized to allow infiltration of surface water to deeper aquifers.

An exploration well was drilled near the project site in 2022 (See Appendix A for well log). This exploratory drilling discovered a gravel layer located between 90 and 105 feet below ground surface. The soil in this layer was described as gravel, clay/silt; small rounded pebbles; gravel (small) with <10% clay. For this soil type, saturated hydraulic conductivity can be estimated to be between 1.64E-03 and 1.64E-01 ft/s.

An estimated 117 acre-ft per month could be accepted by each 30-inch diameter dry well, assuming 1.64E-02 ft/s hydraulic conductivity and depending on actual soil condition at the dry well location.

Four (4) dry wells of this size could accept up to 467 acre-ft per month of water for groundwater recharge purposes. Calculations are presented in Appendix B.

2.3 Water Conveyance

Several structures will be required in order to convey water from the Corning Canal to the project site for groundwater recharge purposes. This will include the following:

- Bulk head at the intersection of Corning Canal and Liberal Ave may require modification
- Discharge structure from Corning Canal to Brannin Creek
- Gravity turnout structure/gate for each dry well
- Weir structure at east end of project site to maintain water level and hydraulic head for dry wells

2.3.1 Bulk Head

A bulk head is present at the intersection of Liberal Ave. and the Corning Canal. The canal south of Liberal Ave is kept dry. Modification of this bulk head may be necessary to allow flow to reach the end of the canal at Brannin Creek. Additional investigation is necessary.

2.3.2 Discharge Structure

Additional investigation at the south end of the Corning Canal is required to determine the condition of the canal; what infrastructure already exists there, if any; and what additional structures will be necessary.

At a minimum, discharge from the Corning Canal will require:

- A method to measure and control the amount of water released, e.g. an adjustable weir
- A method of transporting water to Brannin Creek, e.g. a culvert or channel

The discharge structure will be designed for a flow of 500 acre-ft per month.

2.3.3 Gravity Turnouts

Four (4) gravity turnouts (one per dry well) will be necessary to convey water from the creek to each dry well. The dry wells will be constructed along the bank of the project site at even intervals. The turnout will consist of a concrete box with a sloped trash rack, constructed into the bank of the project site. A gate valve will allow the dry well to be closed off as necessary. A 10-inch pipe will convey water from the turnout to the dry well. A stilling well will be installed between the turnout and dry well in order to calculate flow into each dry well.

Preliminary design drawings for the gravity turnouts are provided in Appendix C.

2.3.4 Weir Structure

A broad-crested weir will need to be constructed across Brannin Creek in order to maintain a constant water elevation across the project site. Several options exist for this structure and will need to be considered. A topographic survey of the creek bed and banks will be necessary to determine weir height, weir length, and an adequate location. An adjustable weir may be necessary to allow for lowering of the weir during winter storms.

3.0 CONCLUSION

This report has been prepared on behalf of the Tehama County FCWCD and The Paskenta Band of the Nomlaki Indians. Following review of this report, additional information, permitting, and design will be required for construction of this recharge project. This report and the design drawings herein are for preliminary and conceptual purposes, not for construction.

APPENDIX A

EXPLORATION WELL LOG

Log of Paskenta Exploration Well 2022

NRCE

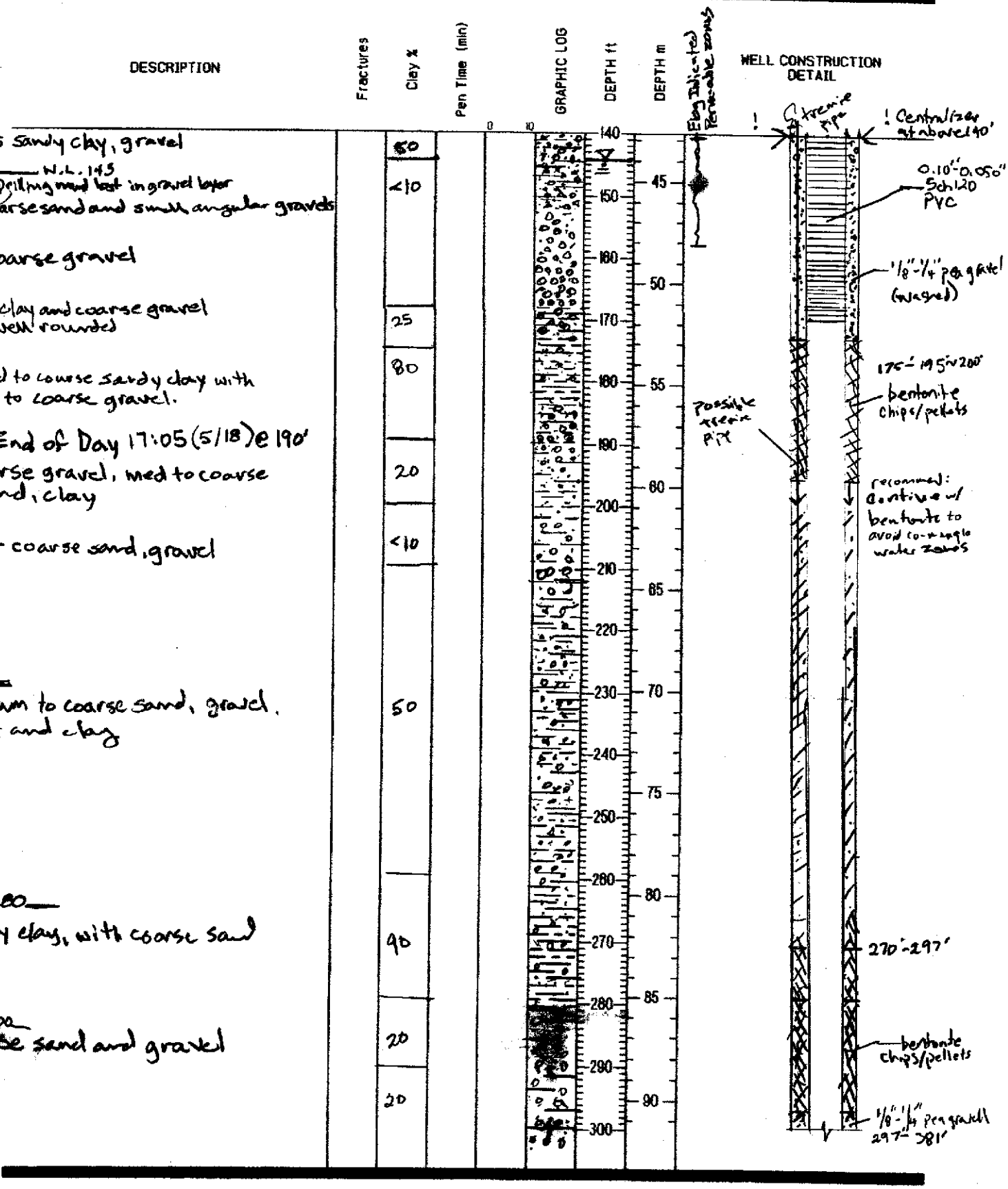
PROJECT: Paskenta 2022
DRILLING CO: Maggiora Bros.
WATER DEPTH: 90 - 140
NORTHING:

DATE CMPLTD:
RIG TYPE: Direct Rotary
HOLE DIA: 8 3/4"
EASTING:

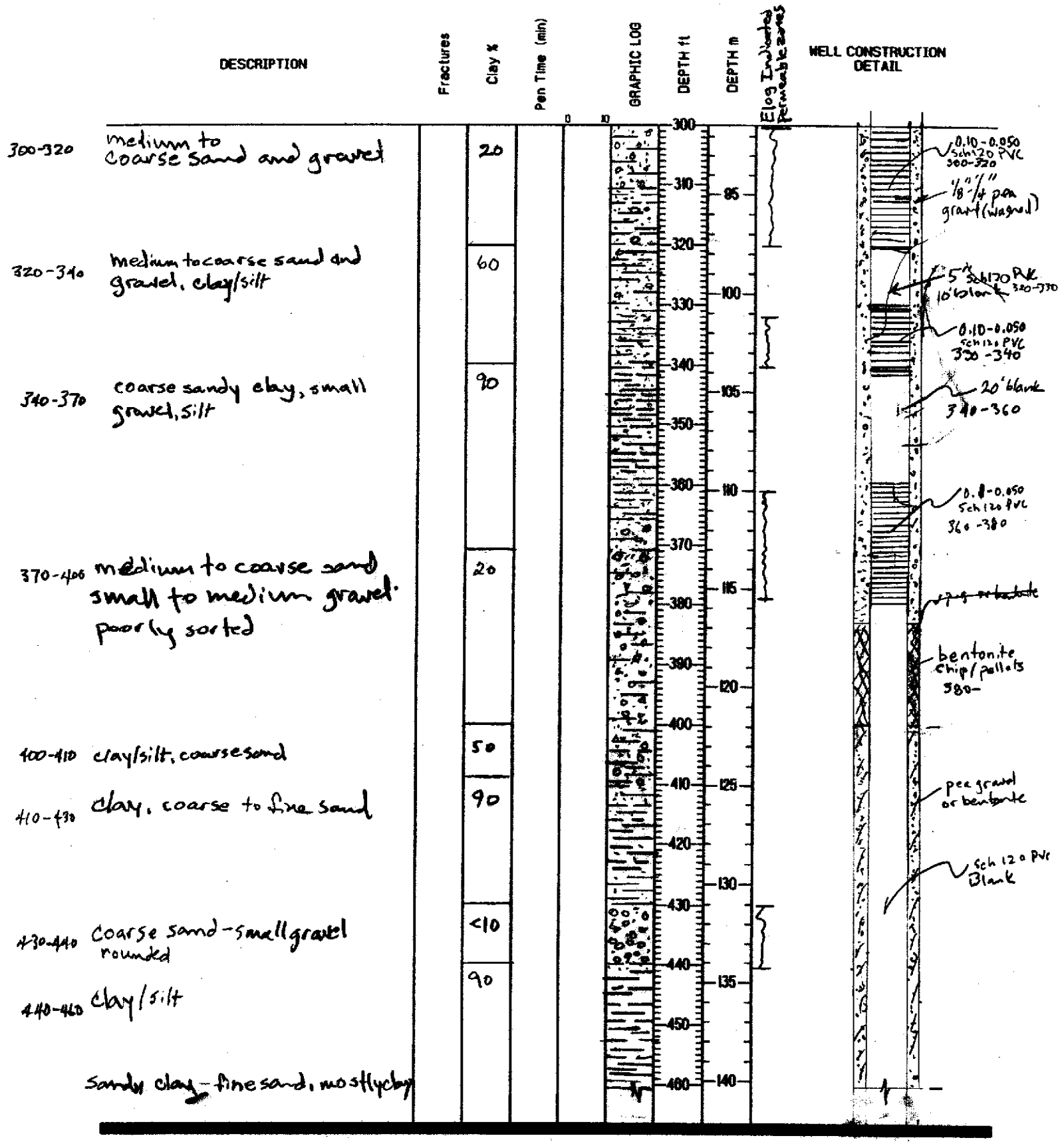
LOGGED BY: T. HEWITT, PG
TOTAL DEPTH: 710'
COMPLETED DEPTH: 710'
ELEV: ~290 ft AMSL

	DESCRIPTION	Fractures	Clay %	Pen Time (min)	Flow (L/L) 0 10	GRAPHIC LOG	DEPTH ft	DEPTH m	Elog Indicated permeable zones	WELL CONSTRUCTION DETAIL
0-23	surface material, soil clay, silt, sand, sm gravel	N/A	50	N/A	N/A		0			Lockable cover
23-30	clay/silt						10	5		3/8" bentonite chipseal
30-40	clay + sm pebbles - well rounded grades to coarse sand and gravel		< 10				20			
40-50							30	10		1/8" 1/1 Lonestar #2 gravel pack
50-60	Coarse sand, gravel rounded pebbles, clay		50				40			10" reamed borehole
End day 1 (5/17)	600 Sandy, clay/silt		70				50	15		5" 120 sch PVC
(5/18) 70-80	Clay and some sand		95				60			
80-90	clay/silt		100				70	20		
	Elog WL 90' (5/26)		90				80	25		
90-105	gravel, clay/silt small rounded pebbles gravel (small)		<10				90			▽ 90' Static Elog
105-110	sandy clay/silt		90				100	30		10" centralizer
110-125	clay/silt		100				110			
125-140	lt green clay sticky						120	35		
							130			
	sandy clay and sm gravel		50				140	40		▽ 10" centralizer above screen.

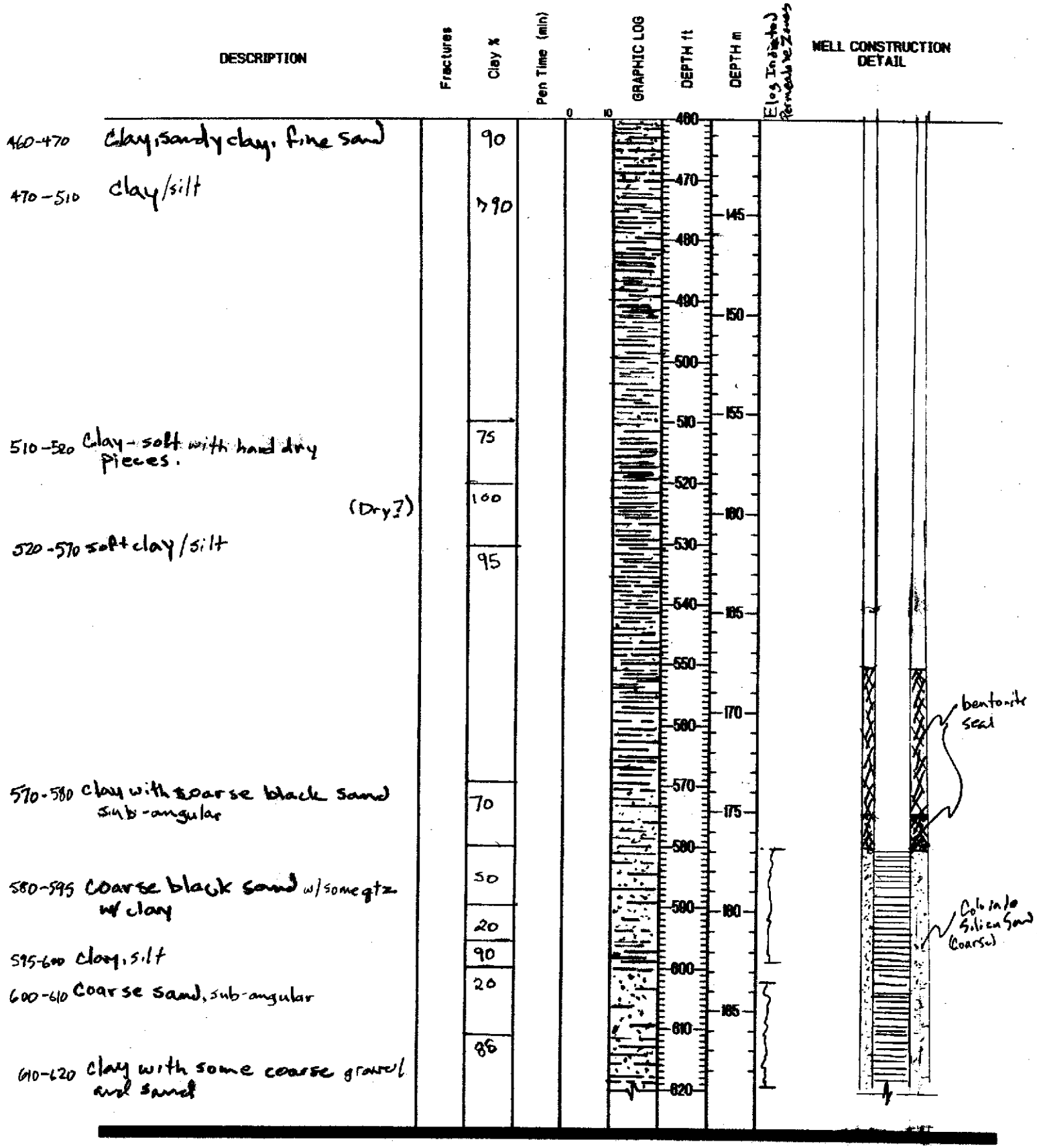
Log of Paskenta Exploration Well 2022



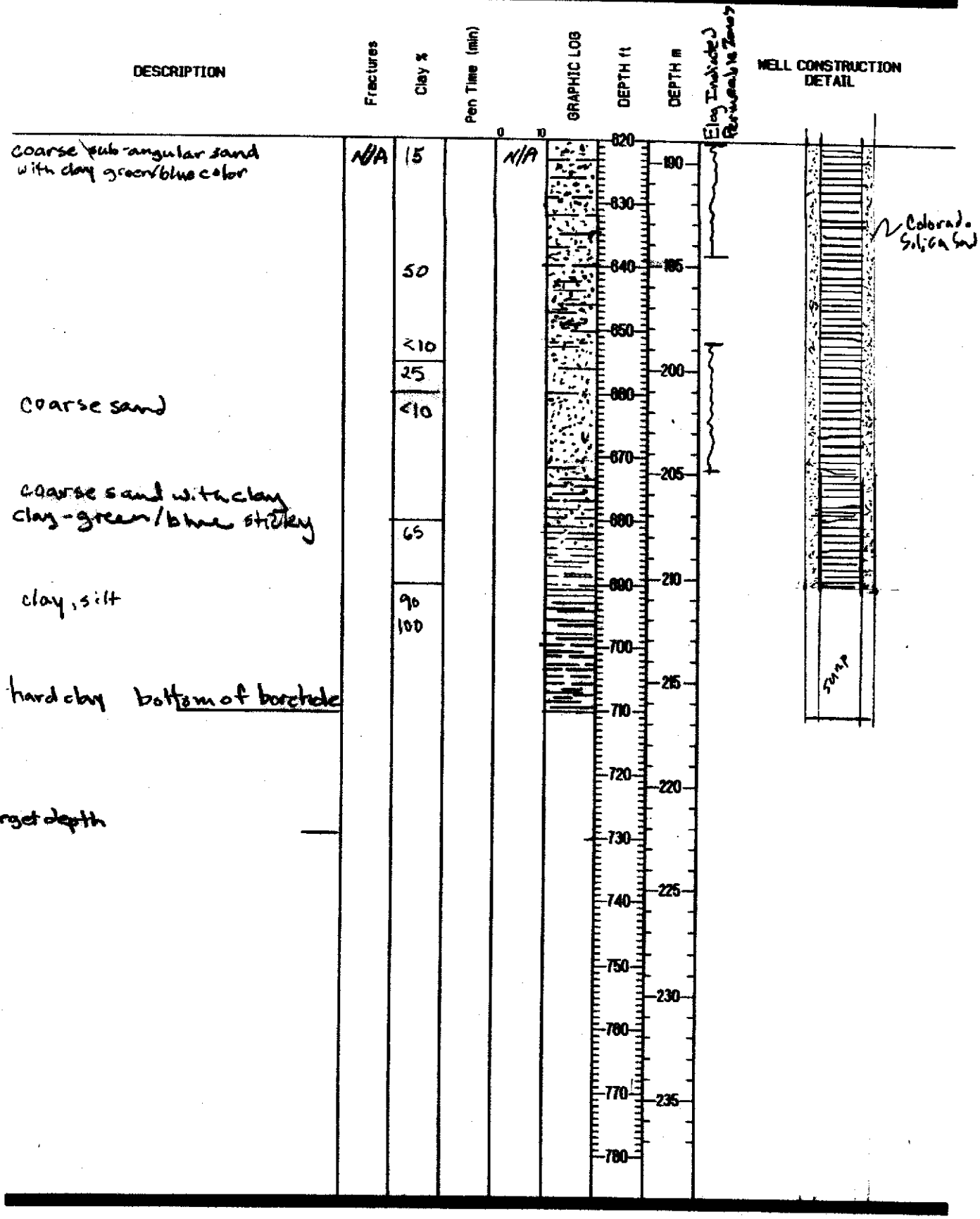
Log of Paskenta Exploration Well 2022



Log of Paskenta Exploration Well 2022



Log of Paskenta Exploration Well 2022



APPENDIX B

PRELIMINARY DESIGN CALCULATIONS

Dry Well Diameter		2.5	ft
Dry Well Circumfrence		7.9	ft
Gravel Layer Thickness	×	15	ft
Application Area		118	sq-ft
Application Area		118	sq-ft
Estimated Hydraulic Conductivity	×	0.0164	ft/s
Flow Rate per Dry Well		1.93	cfs
Flow Rate per Dry Well		1,248,703	gpd
Flow Rate per Dry Well		117	acre-ft/month
Flow Rate per Dry Well		117	acre-ft/month
4 Dry Wells	×	4	
Total Flow for 4 Wells		467	acre-ft/month

APPENDIX C

PRELIMINARY DESIGN DRAWINGS

Sheet 01	Site Vicinity Map
Sheet 02	Site Map
Sheet 03	Turnout Details
Sheet 04	Dry Well Details

H&A
Haling & Associates
2540 Zanella Ste. 40
Chico, CA 95928
Phone: (530) 342-6958

SHEET TITLE

SITE VICINITY MAP

PROJECT

BRANNIN CREEK RECHARGE
PRELIMINARY DRAWINGS

JOB NO:
1284

SHEET
01
OF 04

DATE:
MAY 2024

H&A
Haling & Associates
2540 Zanella Ste. 40
Chico, CA 95928
Phone: (530) 342-6958

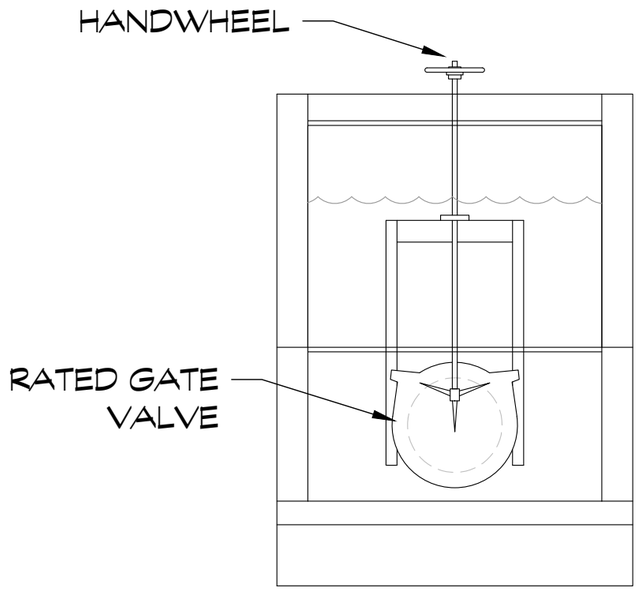
SHEET TITLE
SITE MAP

PROJECT
BRANNIN CREEK RECHARGE
PRELIMINARY DRAWINGS

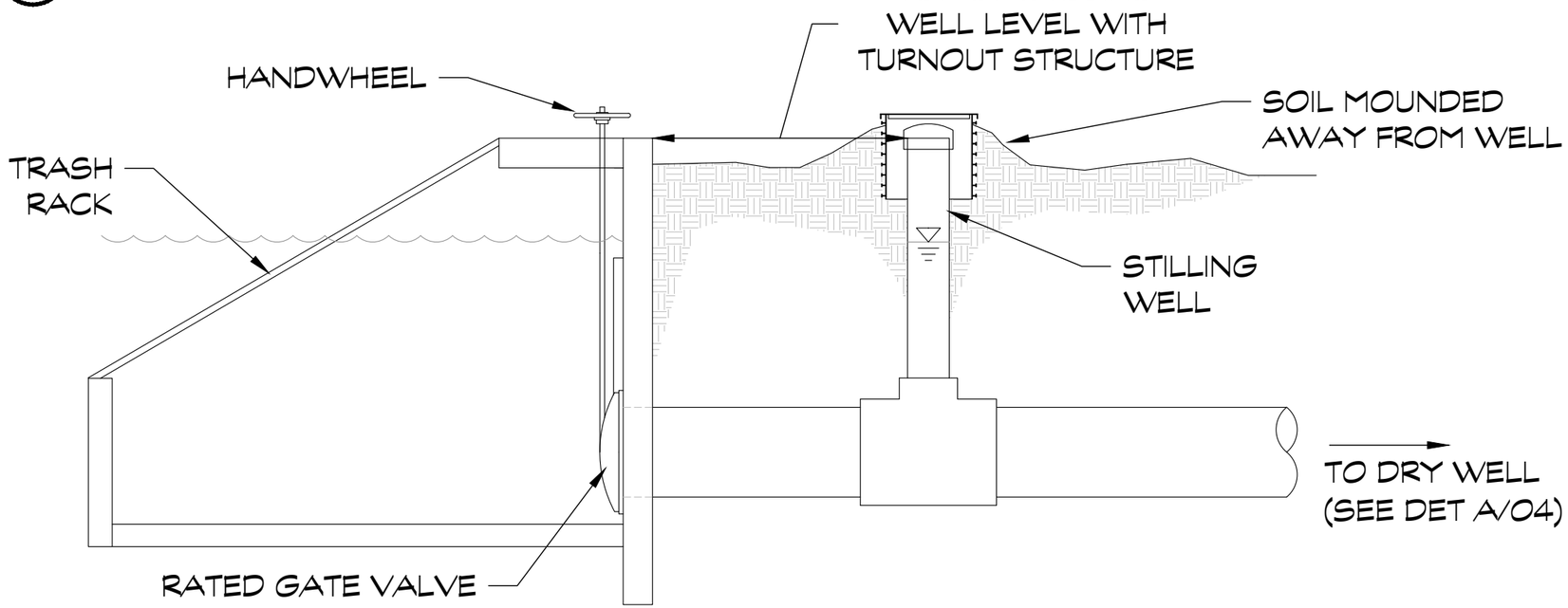
JOB NO: 1284

SHEET 02 OF 04

DATE: MAY 2024



A 03 ADJUSTABLE GATE VALVE TURNOUT
FRONT VIEW - NTS



B 03 ADJUSTABLE GATE VALVE TURNOUT
SIDE VIEW - NTS

Haling & Associates
2540 Zanella Ste. 40
Chico, CA 95928
Phone: (530) 342-6958

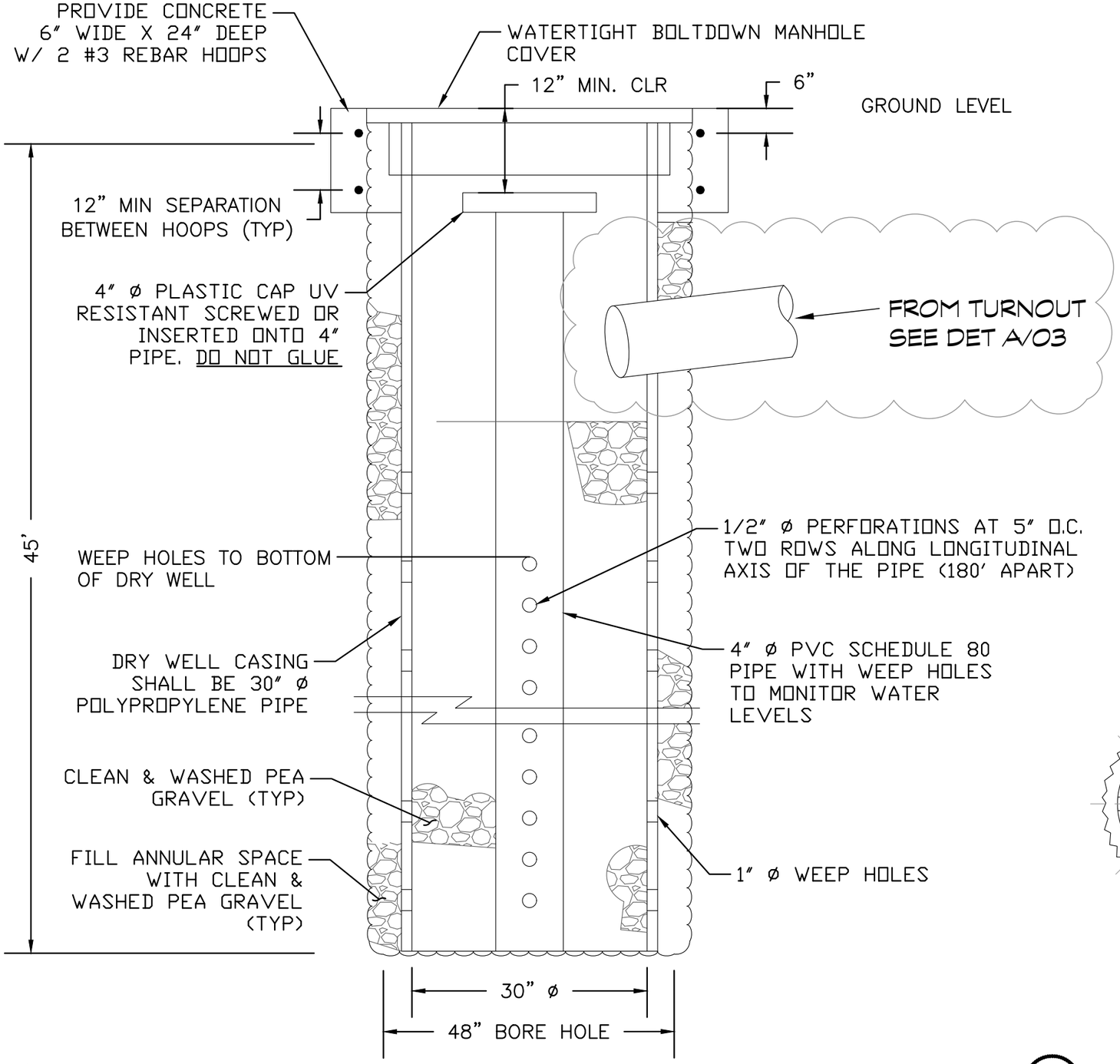
SHEET TITLE
TURNOUT DETAILS

PROJECT
BRANNIN CREEK RECHARGE
PRELIMINARY DRAWINGS

JOB NO: 1284

SHEET 03 OF 04

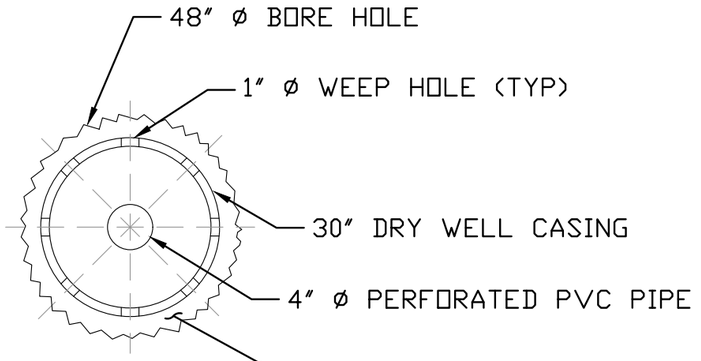
DATE: MAY 2024



A/04 DRY WELL PROFILE VIEW - NTS

ORIGINAL DRY WELL DETAIL DRAWINGS PREPARED BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS (LSCE).

MODIFICATIONS HAVE BEEN MADE TO THIS DRAWING BY HALING & ASSOCIATES (H&A) AND HAVE BEEN NOTED WITH REVISION CLOUDS.



B/04 DRY WELL PLAN VIEW - NTS

Haling & Associates
2540 Zanella Ste. 40
Chico, CA 95928
Phone: (530) 342-6958

SHEET TITLE: DRY WELL DETAILS

PROJECT: BRANNIN CREEK RECHARGE PRELIMINARY DRAWINGS

JOB NO: 1284

SHEET 04 OF 04

DATE: MAY 2024

Appendix C

Luhdorff & Scalmanini
Consulting Engineers

DISCHARGE MONITORING

Well Name: _____ Client: Tehama County
Project Name: Brannin Creek Recharge Personnel: Leah Schultz, Leah Jackson
Project No.: 231099-A.1 Location: Rolling Hills Cabins / Brannin Creek

Discharge Description: _____

Date	Time	Totalizer	Q (gpm)	Temp. (°C)	pH	EC (µS/cm)	Turbidity (NTU)	
10/29/24	8:50			19.1°	7.31	123.1	88.5 ppm	canal 10 min
10/29/24	9:18			13.0°	6.86	0.0	0.0 ppm	Questionable - redo? Lake 1
10/29/24	9:35			14.3°	6.48	268 µS	194 ppm	Lake 2
10/29	9:42			15.3°	7.14	276 µS	196 ppm	Lake 3
10/29	9:59			17.4°	7.48	112.5	80.1	Canal 1 hr
10/29	10:08			13.0	6.86	275.0	195 ppm	Redo Sample Lake 1
10/29	10:43			18.5	7.04	108.6	76 ppm	Canal 2 hr

LS

Luhdorff & Scalmanini
Consulting Engineers

INSPECTOR'S DAILY REPORT

Client: Tehama County
Project Name: Brannin Creek Recharge
Project No.: 231099-4A.1
Contractor: Davids Engineering
Item(s) of Work:

Date: 10/29/24 Tues
Location: Canal Rolling Hills Casing / Brannin Creek
Day: Monday
Weather: Sunny, chilly, breezy
Time: Arrived: 8:30am Left: 11:00 AM

Time	Description
8:50	Canal sampling @ 10 min interval
	~~Conductivity~~ & field measurements on other page
9:15	Sample 1 @ lake. Coordinates: 39.87705 N, 122.21987 W
9:30	Lake 2 sample coordinates: 39.87656 N, 122.21953 W
9:38	Lake 3 sample coords: same as Sample 1
9:55	Canal 1 hr sample collected
10:43	Sampling @ 2hr interval

Signature:

ENVIRONMENTAL FGL AGRICULTURAL
Analytical Chemists

Special

CHAIN OF CUSTODY
www.fglinc.com

Customer Copy (2 of 2)

75857:10/07/2024

Client: **Luhdorff & Scalmanini Consulting**
Address: Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Phone: (530)661-0109 Fax:
Contact Person: Eddy Teasdale
Project Name: **Surface & Canal Water**
Purchase Order Number:
Quote Number: **CH 20241016-01**

Sampler(s) Leeah Schultz; Leah Jackson

Sampling Fee: _____ Pickup Fee: _____
Compositor Setup Date: ___/___/___ Time: ___/___

Lab Number: **CH** **7-10503**

TEST DESCRIPTION - See Reverse side for Container, Preservative and Sampling information

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite(C) Grab(G)	Type of Sample **SEE REVERSE SIDE**	Potable(P) Non-Potable(NP) Ag Water(AgW)	Bacti Type: Other(O) System(SYS) Source(SR) Waste(W)	Bacti Reason: Routine(ROUT) Repeat(RPT) Replace(RPL) Other(O) Special(SPL)	General Mineral 16oz(P)	Wet Chemistry-Turbidity,Odor,Color **Analyzed in Chico** 500 ml(AGT)	Field Test-Field pH !!pH = 15 MINUTE HOLD TIME!!	Field - pH Date	Field - pH Time	Metals, Total-Sb,As,Be,Cd,Cr,Cu,Pb,Hg,Ni,Se,Ag,Tl,V,Zn,3010Prep 250ml(P)-HNO3
1	Canal 10 Min Sample	10/29/24	0950am	G	SW				1	1				1
2	Canal 1 Hour Sample		0955	G	SW				1	1				1
3	Canal 2 Hour Sample		1012am	G	SW				1	1				1
4	Lake Sample 1		918am	G	SW				1	1				1
5	Lake Sample 2		930am	G	SW				1	1				1
6	Lake Sample 3		938am	G	SW				1	1				1

Remarks: ROI 2.1°C

Relinquished Date: 10/29 Time: 1410
Received By: KSH Date: 10/29 Time: 1401

Relinquished Date: Time:
Received By: Date: Time:

Relinquished Date: Time:
Received By: Date: Time:

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853 Corporation Street
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ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

Invoice # 490089A

Remit To:
FGL Environmental
853 Corporation St
Santa Paula, CA 93060

INVOICE

Luhdorff & Scalmanini Consulting
500 First Street
Woodland, CA 95695

Account # 7010503	
Date Billed 11/25/2024	Amount Due $2201.00
Date Due 12/25/2024	Amount Paid

To ensure that your account is properly credited, please return top portion with payment

Keep bottom portion for your records.

ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

INVOICE

Customer Luhdorff & Scalmanini Consulting	Account # 7010503	Date Sampled 10/29/2024	Lab Number CH 2490089
Project Surface & Canal Water	Invoice # 490089A	Date Billed 11/25/2024	Amount Due $2201.00
PO# / Check Number	Date Paid	Date Due 12/25/2024	Amount Paid

Description of Work	Quantity	Rate	Extended
Inorganic Analysis			
General Mineral	6	162.00	972.00
Wet Chemistry-Turbidity,Odor,Color	6	41.00	246.00
Metals, Total-Sb,As,Be,Cd,Cr,Cu,Pb,Hg,Ni,Se,Ag,Tl,V,Zn,3010Prep	6	163.00	978.00
Misc. Analysis			
Materials/Disposal For More Information http://fglinc.com/md.php	1	5.00	5.00
		Total	**$2201.00**

(SMH-L4) **For Questions about this Invoice** - contact Stephanie Herron at 805-392-2021

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November 25, 2024

Lab No. : CH 2490089
Customer No. : 7010503

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Laboratory Report

Introduction: This report package contains a total of 28 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(18 pages)	: Results for each sample submitted.
Quality Control	(8 pages)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab No.	Matrix
Canal 10 Min Sample	10/29/2024	10/29/2024	CH 2490089-001	SW
Canal 1 Hour Sample	10/29/2024	10/29/2024	CH 2490089-002	SW
Canal 2 Hour Sample	10/29/2024	10/29/2024	CH 2490089-003	SW
Lake Sample 1	10/29/2024	10/29/2024	CH 2490089-004	SW
Lake Sample 2	10/29/2024	10/29/2024	CH 2490089-005	SW
Lake Sample 3	10/29/2024	10/29/2024	CH 2490089-006	SW

Sampling and Receipt Information:

All samples were received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. All samples were received, prepared and analyzed within the method specified holding times except those as listed in the table below. All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the associated Chain of Custody and Condition Upon Receipt Form.

Samples Over Hold Time

Lab No	Analyte Method	Maximum Hold Time	Actual Hold Time
CH 2490089-002	Nitrate + Nitrite as N	48 hours	556.6 hours
CH 2490089-002	Nitrate as NO3	48 hours	556.6 hours
CH 2490089-002	Nitrate Nitrogen	48 hours	556.6 hours
CH 2490089-002	Nitrite as N	48 hours	556.6 hours
CH 2490089-003	Nitrate + Nitrite as N	48 hours	56.5 hours
CH 2490089-003	Nitrate as NO3	48 hours	56.5 hours
CH 2490089-003	Nitrate Nitrogen	48 hours	56.5 hours
CH 2490089-003	Nitrite as N	48 hours	56.5 hours
CH 2490089-004	Nitrate + Nitrite as N	48 hours	557.6 hours
CH 2490089-004	Nitrate as NO3	48 hours	557.6 hours
CH 2490089-004	Nitrate Nitrogen	48 hours	557.6 hours
CH 2490089-004	Nitrite as N	48 hours	557.6 hours
CH 2490089-004	pH	15 minutes	0.0 minutes

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CH 2490089-006	Nitrate + Nitrite as N	48 hours	60.2 hours
CH 2490089-006	Nitrate as NO3	48 hours	60.2 hours
CH 2490089-006	Nitrate Nitrogen	48 hours	60.2 hours
CH 2490089-006	Nitrite as N	48 hours	60.2 hours

Quality Control: All samples were prepared and analyzed according to established quality control criteria. Any exceptions are noted in the Quality Control Section of this report.

Test Summary	
EPA 200.7	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
EPA 200.8	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
EPA 245.1	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
EPA 300.0	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 2120 B	Preparation and analysis performed by FGL-Chico (FGL-CH ELAP# 2670)
SM 2130 B	Preparation and analysis performed by FGL-Chico (FGL-CH ELAP# 2670)
SM 2150 B	Preparation and analysis performed by FGL-Chico (FGL-CH ELAP# 2670)
SM 2540 C	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 4500-H+B	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 5540 C	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)

Certification: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above and in the QC Section. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature. This report shall not be reproduced except in full, without the written approval of the laboratory.

KD: SVH

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2024-11-25

Page 2 of 28

November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Canal 10 Min Sample
Project : Surface & Canal Water

Lab No. : CH 2490089-001
Customer No. : 7010503

Sampled On : October 29, 2024 at 08:50
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
General Mineral							Date	Time	Who	Method	Date	Time	Who
Total Hardness as CaCO3	53.0	2.5	mg/L		1		10/31/2024	10:00	ac	2340B	10/31/2024	12:55	ac
Calcium	13	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	12:55	ac
Magnesium	5	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	12:55	ac
Potassium	1	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	12:55	ac
Sodium	6	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	12:55	ac
Total Cations	1.3	---	meq/L				10/31/2024	10:00	ac	Calc.	10/31/2024	12:55	ac
Boron	ND	0.1	mg/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	12:55	ac
Copper	30	10	ug/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	12:55	ac
Iron	60	30	ug/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	12:55	ac
Manganese	ND	10	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	12:55	ac
Zinc	ND	20	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	12:55	ac
SAR	0.4	0.1	--		1		10/31/2024	10:00	ac	Calc.	10/31/2024	12:55	ac
Total Alkalinity (as CaCO3)	60	10	mg/L		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	20:51	amm
Hydroxide as OH	ND	10	mg/L		1	U	10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	20:51	amm
Carbonate as CO3	ND	10	mg/L		1	U	10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	20:51	amm
Bicarbonate as HCO3	70	10	mg/L		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	20:51	amm
Sulfate	3.4	0.5	mg/L		1		10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:26	ldm
Chloride	2	1	mg/L		1		10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:26	ldm
Nitrate as NO3	ND	0.4	mg/L		1	U	10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:26	ldm
Nitrite as N	ND	0.1	mg/L		1	U	10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:26	ldm
Nitrate + Nitrite as N	ND	0.1	mg/L		1	J	10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:26	ldm
Fluoride	ND	0.1	mg/L		1	U	10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:26	ldm
Total Anions	1.3	---	meq/L		1		10/30/2024	18:32	amm	Calc.	10/30/2024	20:51	amm
pH	7.3	---	units		1		10/29/2024	08:50	lsl	SM 4500-H+B	10/29/2024	08:50	lsl
Specific Conductance	131	1	umhos/cm		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	20:51	amm
Total Dissolved Solids	100	20	mg/L		1		10/30/2024	16:00	ctl	SM 2540 C	10/31/2024	10:50	ctl
MBAS, Calc. as LAS, MW 320	ND	0.1	mg/L		1	U	10/30/2024	17:06	krh	SM 5540 C	10/30/2024	21:35	krh
Aggressiveness Index	10.6	1	--		1		10/29/2024	08:50	lsl	Calc.	10/29/2024	08:50	lsl
Langelier Index (20°C)	-1.2	1	--		1		10/29/2024	08:50	lsl	Calc.	10/29/2024	08:50	lsl
Nitrate Nitrogen	ND	0.1	mg/L		1	U	10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:26	ldm
Metals, Total													
Antimony	0.0010	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Arsenic	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Beryllium	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Cadmium	ND	0.0002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Chromium	0.0015	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Copper	0.0275	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Lead	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Mercury	ND	0.00002	mg/L		1	U	11/11/2024	08:00	ejc	EPA 245.1	11/13/2024	13:17	ejc
Nickel	0.001	0.001	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Selenium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac

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Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Silver	ND	0.00025	mg/L		1	Ul	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Thallium	ND	0.001	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Vanadium	0.004	0.002	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Zinc	0.02	0.01	mg/L		1	l	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:26	ac
Wet Chemistry													
Color, Apparent	13	13*	units		3		10/29/2024	14:55	kx1	SM 2120 B	10/29/2024	14:13	kx1
Odor	ND	1	TON		1		10/29/2024	14:51	kx1	SM 2150 B	10/29/2024	15:52	kx1
Turbidity	1.5	0.1	NTU		1	I	10/30/2024	09:08	kx1	SM 2130 B	10/30/2024	09:26	kx1

DQF Flags Definition:

U Constituent results were non-detect.

J Reported value is estimated; detected at a concentration below the RL and above the laboratory MDL.

l The MS/MSD did not meet QC criteria.

I The RPD for the laboratory duplicate exceeded laboratory criteria.

ND=Non-Detected, RL=Reporting Level * RL adjusted for dilution, Dil.=Dilution

Page 4 of 28

November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Canal 10 Min Sample
Project : Surface & Canal Water

Lab No. : CH 2490089-001
Customer No. : 7010503

Sampled On : October 29, 2024 at 08:50
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Field Test

Constituent	Result	RL	Units	Note	Sample Preparation	Sample Analysis	
Field Test					Date	Method	Date
pH (Field)	7.31		units		10/29/2024 08:50	4500HB	10/29/2024 08:50

ND=Non-Detected, RL=Reporting Level. * RL adjusted for dilution

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November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Canal 1 Hour Sample
Project : Surface & Canal Water

Lab No. : CH 2490089-002
Customer No. : 7010503

Sampled On : October 29, 2024 at 09:55
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
General Mineral							Date	Time	Who	Method	Date	Time	Who
Total Hardness as CaCO3	54.6	2.5	mg/L		1		10/31/2024	10:00	ac	2340B	10/31/2024	13:20	ac
Calcium	12	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:20	ac
Magnesium	6	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:20	ac
Potassium	1	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:20	ac
Sodium	6	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:20	ac
Total Cations	1.4	---	meq/L				10/31/2024	10:00	ac	Calc.	10/31/2024	13:20	ac
Boron	ND	0.1	mg/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:20	ac
Copper	20	10	ug/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:20	ac
Iron	50	30	ug/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:20	ac
Manganese	ND	10	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:20	ac
Zinc	ND	20	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:20	ac
SAR	0.4	0.1	--		1		10/31/2024	10:00	ac	Calc.	10/31/2024	13:20	ac
Total Alkalinity (as CaCO3)	60	10	mg/L		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:19	amm
Hydroxide as OH	ND	10	mg/L		1	U	10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:19	amm
Carbonate as CO3	ND	10	mg/L		1	U	10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:19	amm
Bicarbonate as HCO3	70	10	mg/L		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:19	amm
Sulfate	3.4	0.5	mg/L		1		11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:33	ldm
Chloride	2	1	mg/L		1	b	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:33	ldm
Nitrate as NO3	0.4	0.4	mg/L		1	Tl	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:33	ldm
Nitrite as N	ND	0.1	mg/L		1	UT	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:33	ldm
Nitrate + Nitrite as N	0.1	0.1	mg/L		1	Tl	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:33	ldm
Fluoride	ND	0.1	mg/L		1	U	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:33	ldm
Total Anions	1.3	---	meq/L		1	bl	10/30/2024	18:32	amm	Calc.	10/30/2024	21:19	amm
pH	7.5	---	units		1		10/29/2024	09:55	lsl	SM 4500-H+B	10/29/2024	09:59	lsl
Specific Conductance	129	1	umhos/cm		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:19	amm
Total Dissolved Solids	90	20	mg/L		1		10/30/2024	16:00	ctl	SM 2540 C	10/31/2024	10:50	ctl
MBAS, Calc. as LAS, MW 320	ND	0.1	mg/L		1	U	10/30/2024	17:06	krh	SM 5540 C	10/30/2024	21:35	krh
Aggressiveness Index	10.8	1	--		1		10/29/2024	09:55	lsl	Calc.	10/29/2024	09:59	lsl
Langelier Index (20°C)	-1.0	1	--		1		10/29/2024	09:55	lsl	Calc.	10/29/2024	09:59	lsl
Nitrate Nitrogen	ND	0.1	mg/L		1	JTl	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:33	ldm
Metals, Total													
Antimony	0.0005	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Arsenic	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Beryllium	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Cadmium	ND	0.0002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Chromium	0.0010	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Copper	0.0250	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Lead	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Mercury	ND	0.00002	mg/L		1	U	11/11/2024	08:00	ejc	EPA 245.1	11/13/2024	13:38	ejc
Nickel	0.001	0.001	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Selenium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac

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Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Silver	ND	0.00025	mg/L		1	Ul	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Thallium	ND	0.001	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Vanadium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Zinc	0.03	0.01	mg/L		1	l	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:12	ac
Wet Chemistry													
Color, Apparent	14	5	units		1		10/29/2024	14:55	kx1	SM 2120 B	10/29/2024	14:13	kx1
Odor	ND	1	TON		1		10/29/2024	14:51	kx1	SM 2150 B	10/29/2024	15:52	kx1
Turbidity	0.90	0.1	NTU		1	I	10/30/2024	09:08	kx1	SM 2130 B	10/30/2024	09:26	kx1

DQF Flags Definition:

- U Constituent results were non-detect.
- b The Blank was positive for constituent but less than the PQL
- T Exceeded method/regulatory-specific holding time.
- l The MS/MSD did not meet QC criteria.
- J Reported value is estimated; detected at a concentration below the RL and above the laboratory MDL.
- I The RPD for the laboratory duplicate exceeded laboratory criteria.

ND=Non-Detected, RL=Reporting Level * RL adjusted for dilution, Dil.=Dilution

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November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Canal 1 Hour Sample
Project : Surface & Canal Water

Lab No. : CH 2490089-002
Customer No. : 7010503

Sampled On : October 29, 2024 at 09:55
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Field Test

Constituent	Result	RL	Units	Note	Sample Preparation	Sample Analysis	
Field Test					Date	Method	Date
pH (Field)	7.48		units		10/29/2024 09:55	4500HB	10/29/2024 09:55

ND=Non-Detected, RL=Reporting Level. * RL adjusted for dilution

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November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Canal 2 Hour Sample
Project : Surface & Canal Water

Lab No. : CH 2490089-003
Customer No. : 7010503

Sampled On : October 29, 2024 at 10:43
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
General Mineral							Date	Time	Who	Method	Date	Time	Who
Total Hardness as CaCO3	54.6	2.5	mg/L		1		10/31/2024	10:00	ac	2340B	10/31/2024	13:26	ac
Calcium	12	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:26	ac
Magnesium	6	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:26	ac
Potassium	1	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:26	ac
Sodium	6	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:26	ac
Total Cations	1.4	---	meq/L				10/31/2024	10:00	ac	Calc.	10/31/2024	13:26	ac
Boron	ND	0.1	mg/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:26	ac
Copper	20	10	ug/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:26	ac
Iron	50	30	ug/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:26	ac
Manganese	ND	10	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:26	ac
Zinc	ND	20	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:26	ac
SAR	0.4	0.1	--		1		10/31/2024	10:00	ac	Calc.	10/31/2024	13:26	ac
Total Alkalinity (as CaCO3)	60	10	mg/L		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:28	amm
Hydroxide as OH	ND	10	mg/L		1	U	10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:28	amm
Carbonate as CO3	ND	10	mg/L		1	U	10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:28	amm
Bicarbonate as HCO3	70	10	mg/L		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:28	amm
Sulfate	3.2	0.5	mg/L		1		10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	19:12	ldm
Chloride	2	1	mg/L		1		10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	19:12	ldm
Nitrate as NO3	ND	0.4	mg/L		1	UT	10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	19:12	ldm
Nitrite as N	ND	0.1	mg/L		1	UT	10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	19:12	ldm
Nitrate + Nitrite as N	ND	0.1	mg/L		1	JT	10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	19:12	ldm
Fluoride	ND	0.1	mg/L		1	U	10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	19:12	ldm
Total Anions	1.3	---	meq/L		1		10/30/2024	18:32	amm	Calc.	10/30/2024	21:28	amm
pH	7.0	---	units		1		10/29/2024	10:43	lsl	SM 4500-H+B	10/29/2024	10:43	lsl
Specific Conductance	128	1	umhos/cm		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:28	amm
Total Dissolved Solids	100	20	mg/L		1		10/30/2024	16:00	ctl	SM 2540 C	10/31/2024	10:50	ctl
MBAS, Calc. as LAS, MW 320	ND	0.1	mg/L		1	U	10/30/2024	17:06	krh	SM 5540 C	10/30/2024	21:35	krh
Aggressiveness Index	10.3	1	--		1		10/29/2024	10:43	lsl	Calc.	10/29/2024	10:43	lsl
Langelier Index (20°C)	-1.5	1	--		1		10/29/2024	10:43	lsl	Calc.	10/29/2024	10:43	lsl
Nitrate Nitrogen	ND	0.1	mg/L		1	UT	10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	19:12	ldm
Metals, Total													
Antimony	0.0010	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Arsenic	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Beryllium	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Cadmium	ND	0.0002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Chromium	0.0015	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Copper	0.0240	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Lead	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Mercury	ND	0.00002	mg/L		1	U	11/11/2024	08:00	ejc	EPA 245.1	11/13/2024	14:00	ejc
Nickel	0.002	0.001	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Selenium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac

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Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Silver	ND	0.00025	mg/L		1	Ul	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Thallium	ND	0.001	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Vanadium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Zinc	0.03	0.01	mg/L		1	l	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:06	ac
Wet Chemistry													
Color, Apparent	15	5	units		1		10/29/2024	14:55	kx1	SM 2120 B	10/29/2024	14:13	kx1
Odor	ND	1	TON		1		10/29/2024	14:51	kx1	SM 2150 B	10/29/2024	15:52	kx1
Turbidity	0.65	0.1	NTU		1	I	10/30/2024	09:08	kx1	SM 2130 B	10/30/2024	09:26	kx1

DQF Flags Definition:

U Constituent results were non-detect.
T Exceeded method/regulatory-specific holding time.
J Reported value is estimated; detected at a concentration below the RL and above the laboratory MDL.
l The MS/MSD did not meet QC criteria.
I The RPD for the laboratory duplicate exceeded laboratory criteria.

ND=Non-Detected, RL=Reporting Level * RL adjusted for dilution, Dil.=Dilution

November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Canal 2 Hour Sample
Project : Surface & Canal Water

Lab No. : CH 2490089-003
Customer No. : 7010503

Sampled On : October 29, 2024 at 10:43
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Field Test

Constituent	Result	RL	Units	Note	Sample Preparation	Sample Analysis	
Field Test					Date	Method	Date
pH (Field)	7.04		units		10/29/2024 10:43	4500HB	10/29/2024 10:43

ND=Non-Detected, RL=Reporting Level. * RL adjusted for dilution

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November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Lake Sample 1
Project : Surface & Canal Water

Lab No. : CH 2490089-004
Customer No. : 7010503

Sampled On : October 29, 2024 at 09:18
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
General Mineral							Date	Time	Who	Method	Date	Time	Who
Total Hardness as CaCO3	111	2.5	mg/L		1		10/31/2024	10:00	ac	2340B	10/31/2024	13:33	ac
Calcium	18	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:33	ac
Magnesium	16	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:33	ac
Potassium	2	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:33	ac
Sodium	27	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:33	ac
Total Cations	3.4	---	meq/L				10/31/2024	10:00	ac	Calc.	10/31/2024	13:33	ac
Boron	ND	0.1	mg/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:33	ac
Copper	ND	10	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:33	ac
Iron	90	30	ug/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:33	ac
Manganese	ND	10	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:33	ac
Zinc	ND	20	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:33	ac
SAR	1.1	0.1	--		1		10/31/2024	10:00	ac	Calc.	10/31/2024	13:33	ac
Total Alkalinity (as CaCO3)	160	10	mg/L		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:09	amm
Hydroxide as OH	ND	10	mg/L		1	U	10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:09	amm
Carbonate as CO3	ND	10	mg/L		1	U	10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:09	amm
Bicarbonate as HCO3	200	10	mg/L		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:09	amm
Sulfate	2.9	0.5	mg/L		1		11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:54	ldm
Chloride	5	1	mg/L		1	b	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:54	ldm
Nitrate as NO3	ND	0.4	mg/L		1	UTl	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:54	ldm
Nitrite as N	ND	0.1	mg/L		1	UT	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:54	ldm
Nitrate + Nitrite as N	ND	0.1	mg/L		1	UTl	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:54	ldm
Fluoride	0.2	0.1	mg/L		1		11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:54	ldm
Total Anions	3.5	---	meq/L		1	bl	10/30/2024	18:32	amm	Calc.	10/30/2024	21:09	amm
pH	6.9	---	units		1	T	10/29/2024	09:18	lsl	SM 4500-H+B	10/29/2024	10:08	lsl
Specific Conductance	321	1	umhos/cm		1		10/30/2024	18:32	amm	SM 4500-H+B	10/30/2024	21:09	amm
Total Dissolved Solids	200	20	mg/L		1		10/30/2024	16:00	ctl	SM 2540 C	10/31/2024	10:50	ctl
MBAS, Calc. as LAS, MW 320	0.106	0.1	mg/L		1		10/30/2024	17:06	krh	SM 5540 C	10/30/2024	21:35	krh
Aggressiveness Index	10.8	1	--		1		10/29/2024	09:18	lsl	Calc.	10/29/2024	10:08	lsl
Langelier Index (20°C)	-1.1	1	--		1		10/29/2024	09:18	lsl	Calc.	10/29/2024	10:08	lsl
Nitrate Nitrogen	ND	0.1	mg/L		1	UTl	11/21/2024	09:58	ldm	EPA 300.0	11/21/2024	14:54	ldm
Metals, Total													
Antimony	0.0020	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Arsenic	0.004	0.002	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Beryllium	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Cadmium	ND	0.0002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Chromium	0.0015	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Copper	0.0010	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Lead	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Mercury	ND	0.00002	mg/L		1	U	11/11/2024	08:00	ejc	EPA 245.1	11/13/2024	14:04	ejc
Nickel	ND	0.001	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Selenium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac

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Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Silver	ND	0.00025	mg/L		1	Ul	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Thallium	ND	0.001	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Vanadium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Zinc	0.02	0.01	mg/L		1	l	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	13:33	ac
Wet Chemistry													
Color, Apparent	33	13*	units		3		10/29/2024	14:55	kx1	SM 2120 B	10/29/2024	14:13	kx1
Odor	ND	1	TON		1		10/29/2024	15:59	kx1	SM 2150 B	10/29/2024	16:46	kx1
Turbidity	0.90	0.1	NTU		1	I	10/30/2024	09:08	kx1	SM 2130 B	10/30/2024	09:26	kx1

DQF Flags Definition:

U Constituent results were non-detect.
b The Blank was positive for constituent but less than the PQL
T Exceeded method/regulatory-specific holding time.
l The MS/MSD did not meet QC criteria.
I The RPD for the laboratory duplicate exceeded laboratory criteria.

ND=Non-Detected, RL=Reporting Level * RL adjusted for dilution, Dil.=Dilution

November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Lake Sample 1
Project : Surface & Canal Water

Lab No. : CH 2490089-004
Customer No. : 7010503

Sampled On : October 29, 2024 at 09:18
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Field Test

Constituent	Result	RL	Units	Note	Sample Preparation	Sample Analysis	
Field Test					Date	Method	Date
pH (Field)	6.86		units		10/29/2024 09:18	4500HB	10/29/2024 09:18

ND=Non-Detected, RL=Reporting Level. * RL adjusted for dilution

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November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Lake Sample 2
Project : Surface & Canal Water

Lab No. : CH 2490089-005
Customer No. : 7010503

Sampled On : October 29, 2024 at 09:30
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
General Mineral							Date	Time	Who	Method	Date	Time	Who
Total Hardness as CaCO3	111	2.5	mg/L		1		10/31/2024	10:00	ac	2340B	10/31/2024	13:52	ac
Calcium	18	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:52	ac
Magnesium	16	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:52	ac
Potassium	1	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:52	ac
Sodium	28	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:52	ac
Total Cations	3.5	---	meq/L				10/31/2024	10:00	ac	Calc.	10/31/2024	13:52	ac
Boron	ND	0.1	mg/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:52	ac
Copper	ND	10	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:52	ac
Iron	90	30	ug/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:52	ac
Manganese	ND	10	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:52	ac
Zinc	ND	20	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:52	ac
SAR	1.2	0.1	--		1		10/31/2024	10:00	ac	Calc.	10/31/2024	13:52	ac
Total Alkalinity (as CaCO3)	170	10	mg/L		1		10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	22:43	amm
Hydroxide as OH	ND	10	mg/L		1	U	10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	22:43	amm
Carbonate as CO3	ND	10	mg/L		1	U	10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	22:43	amm
Bicarbonate as HCO3	200	10	mg/L		1		10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	22:43	amm
Sulfate	2.7	0.5	mg/L		1		10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:46	ldm
Chloride	4	1	mg/L		1		10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:46	ldm
Nitrate as NO3	ND	0.4	mg/L		1	U	10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:46	ldm
Nitrite as N	ND	0.1	mg/L		1	U	10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:46	ldm
Nitrate + Nitrite as N	ND	0.1	mg/L		1	J	10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:46	ldm
Fluoride	0.2	0.1	mg/L		1		10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:46	ldm
Total Anions	3.5	---	meq/L		1		10/31/2024	18:37	amm	Calc.	10/31/2024	22:43	amm
pH	6.5	---	units		1		10/29/2024	09:30	lsl	SM 4500-H+B	10/29/2024	09:35	lsl
Specific Conductance	319	1	umhos/cm		1		10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	22:43	amm
Total Dissolved Solids	210	20	mg/L		1		10/30/2024	16:00	ctl	SM 2540 C	10/31/2024	10:50	ctl
MBAS, Calc. as LAS, MW 320	ND	0.1	mg/L		1	U	10/30/2024	17:06	krh	SM 5540 C	10/30/2024	21:35	krh
Aggressiveness Index	10.4	1	--		1		10/29/2024	09:30	lsl	Calc.	10/29/2024	09:35	lsl
Langelier Index (20°C)	-1.4	1	--		1		10/29/2024	09:30	lsl	Calc.	10/29/2024	09:35	lsl
Nitrate Nitrogen	ND	0.1	mg/L		1	U	10/30/2024	16:50	ldm	EPA 300.0	10/30/2024	21:46	ldm
Metals, Total													
Antimony	0.0010	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Arsenic	0.004	0.002	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Beryllium	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Cadmium	ND	0.0002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Chromium	0.0015	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Copper	0.0015	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Lead	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Mercury	ND	0.00002	mg/L		1	U	11/11/2024	08:00	ejc	EPA 245.1	11/13/2024	14:09	ejc
Nickel	0.002	0.001	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Selenium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac

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Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Silver	ND	0.00025	mg/L		1	Ul	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Thallium	ND	0.001	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Vanadium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Zinc	0.04	0.01	mg/L		1	l	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:46	ac
Wet Chemistry													
Color, Apparent	40	17*	units		3		10/29/2024	14:55	kx1	SM 2120 B	10/29/2024	14:13	kx1
Odor	ND	1	TON		1		10/29/2024	15:59	kx1	SM 2150 B	10/29/2024	16:46	kx1
Turbidity	1.5	0.1	NTU		1	I	10/30/2024	09:08	kx1	SM 2130 B	10/30/2024	09:26	kx1

DQF Flags Definition:

U Constituent results were non-detect.

J Reported value is estimated; detected at a concentration below the RL and above the laboratory MDL.

l The MS/MSD did not meet QC criteria.

I The RPD for the laboratory duplicate exceeded laboratory criteria.

ND=Non-Detected, RL=Reporting Level * RL adjusted for dilution, Dil.=Dilution

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November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Lake Sample 2
Project : Surface & Canal Water

Lab No. : CH 2490089-005
Customer No. : 7010503

Sampled On : October 29, 2024 at 09:30
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Field Test

Constituent	Result	RL	Units	Note	Sample Preparation	Sample Analysis	
Field Test					Date	Method	Date
pH (Field)	6.48		units		10/29/2024 09:30	4500HB	10/29/2024 09:30

ND=Non-Detected, RL=Reporting Level. * RL adjusted for dilution

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November 25, 2024

Luhdorff & Scalmanini Consulting
Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Description : Lake Sample 3
Project : Surface & Canal Water

Lab No. : CH 2490089-006
Customer No. : 7010503

Sampled On : October 29, 2024 at 09:38
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
General Mineral							Date	Time	Who	Method	Date	Time	Who
Total Hardness as CaCO3	115	2.5	mg/L		1		10/31/2024	10:00	ac	2340B	10/31/2024	13:59	ac
Calcium	18	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:59	ac
Magnesium	17	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:59	ac
Potassium	2	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:59	ac
Sodium	28	1	mg/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:59	ac
Total Cations	3.6	---	meq/L				10/31/2024	10:00	ac	Calc.	10/31/2024	13:59	ac
Boron	ND	0.1	mg/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:59	ac
Copper	ND	10	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:59	ac
Iron	90	30	ug/L		1		10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:59	ac
Manganese	ND	10	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:59	ac
Zinc	ND	20	ug/L		1	U	10/31/2024	10:00	ac	EPA 200.7	10/31/2024	13:59	ac
SAR	1.1	0.1	--		1		10/31/2024	10:00	ac	Calc.	10/31/2024	13:59	ac
Total Alkalinity (as CaCO3)	170	10	mg/L		1		10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	20:23	amm
Hydroxide as OH	ND	10	mg/L		1	U	10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	20:23	amm
Carbonate as CO3	ND	10	mg/L		1	U	10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	20:23	amm
Bicarbonate as HCO3	200	10	mg/L		1		10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	20:23	amm
Sulfate	2.7	0.5	mg/L		1		10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	21:51	ldm
Chloride	4	1	mg/L		1		10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	21:51	ldm
Nitrate as NO3	ND	0.4	mg/L		1	UT	10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	21:51	ldm
Nitrite as N	ND	0.1	mg/L		1	UT	10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	21:51	ldm
Nitrate + Nitrite as N	ND	0.1	mg/L		1	UT	10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	21:51	ldm
Fluoride	0.2	0.1	mg/L		1		10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	21:51	ldm
Total Anions	3.5	---	meq/L		1		10/31/2024	18:37	amm	Calc.	10/31/2024	20:23	amm
pH	7.1	---	units		1		10/29/2024	09:38	lsl	SM 4500-H+B	10/29/2024	09:42	lsl
Specific Conductance	317	1	umhos/cm		1		10/31/2024	18:37	amm	SM 4500-H+B	10/31/2024	20:23	amm
Total Dissolved Solids	200	20	mg/L		1		10/30/2024	16:00	ctl	SM 2540 C	10/31/2024	10:50	ctl
MBAS, Calc. as LAS, MW 320	0.146	0.1	mg/L		1		10/30/2024	17:06	krh	SM 5540 C	10/30/2024	21:35	krh
Aggressiveness Index	11.0	1	--		1		10/29/2024	09:38	lsl	Calc.	10/29/2024	09:42	lsl
Langelier Index (20°C)	-0.8	1	--		1		10/29/2024	09:38	lsl	Calc.	10/29/2024	09:42	lsl
Nitrate Nitrogen	ND	0.1	mg/L		1	UT	10/31/2024	17:14	ldm	EPA 300.0	10/31/2024	21:51	ldm
Metals, Total													
Antimony	0.0010	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Arsenic	0.004	0.002	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Beryllium	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Cadmium	ND	0.0002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Chromium	0.0015	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Copper	0.0040	0.0005	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Lead	ND	0.0005	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Mercury	ND	0.00002	mg/L		1	U	11/11/2024	08:00	ejc	EPA 245.1	11/13/2024	14:13	ejc
Nickel	0.003	0.001	mg/L		1		11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Selenium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac

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Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Silver	ND	0.00025	mg/L		1	Ul	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Thallium	ND	0.001	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Vanadium	ND	0.002	mg/L		1	U	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Zinc	0.04	0.01	mg/L		1	l	11/05/2024	08:00	ejc	EPA 200.8	11/08/2024	12:39	ac
Wet Chemistry													
Color, Apparent	35	13*	units		3		10/29/2024	14:55	kx1	SM 2120 B	10/29/2024	14:13	kx1
Odor	ND	1	TON		1		10/29/2024	15:59	kx1	SM 2150 B	10/29/2024	16:46	kx1
Turbidity	1.0	0.1	NTU		1	I	10/30/2024	09:08	kx1	SM 2130 B	10/30/2024	09:26	kx1

DQF Flags Definition:

U Constituent results were non-detect.

T Exceeded method/regulatory-specific holding time.

l The MS/MSD did not meet QC criteria.

I The RPD for the laboratory duplicate exceeded laboratory criteria.

ND=Non-Detected, RL=Reporting Level * RL adjusted for dilution, Dil.=Dilution

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November 25, 2024

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Description : Lake Sample 3
Project : Surface & Canal Water

Lab No. : CH 2490089-006
Customer No. : 7010503

Sampled On : October 29, 2024 at 09:38
Sampled By : Leeah Schultz; Leah
Received On : October 29, 2024 at 14:01
Matrix : Surface Water

Sample Results - Field Test

Constituent	Result	RL	Units	Note	Sample Preparation	Sample Analysis	
Field Test					Date	Method	Date
pH (Field)	7.14		units		10/29/2024 09:38	4500HB	10/29/2024 09:38

ND=Non-Detected, RL=Reporting Level. * RL adjusted for dilution

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November 25, 2024

Luhdorff & Scalmanini Consulting

Lab No. : CH 2490089
Customer No. : 7010503

Quality Control - Metals

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Boron	200.7	10/31/2024:212318AC	MS	mg/L	4.000	93.9%	75-125	
		(SP 2417897-001)	MSD	mg/L	4.000	93.0%	75-125	
			MSRPD	mg/L		0.9%	≤20.0	
			MS	mg/L	4.000	89.9%	75-125	
		(CH 2490089-005)	MSD	mg/L	4.000	91.1%	75-125	
			MSRPD	mg/L		1.3%	≤20.0	
Calcium	200.7	10/31/2024:212318AC	MS	mg/L	12.00	55.1%	<¼	406
		(SP 2417897-001)	MSD	mg/L	12.00	61.0%	<1/4	
			MSRPD	mg/L		0.5%	≤20.0	
			MS	mg/L	12.00	81.2%	75-125	
		(CH 2490089-005)	MSD	mg/L	12.00	81.5%	75-125	
			MSRPD	mg/L		0.1%	≤20.0	
Copper	200.7	10/31/2024:212318AC	MS	ug/L	800.0	92.5%	75-125	
		(SP 2417897-001)	MSD	ug/L	800.0	95.8%	75-125	
			MSRPD	ug/L		3.5%	≤20.0	
			MS	ug/L	800.0	89.9%	75-125	
		(CH 2490089-005)	MSD	ug/L	800.0	89.3%	75-125	
			MSRPD	ug/L		0.7%	≤20.0	
Iron	200.7	10/31/2024:212318AC	MS	ug/L	4000	93.0%	75-125	
		(SP 2417897-001)	MSD	ug/L	4000	92.0%	75-125	
			MSRPD	ug/L		1.1%	≤20.0	
			MS	ug/L	4000	90.7%	75-125	
		(CH 2490089-005)	MSD	ug/L	4000	95.0%	75-125	
			MSRPD	ug/L		4.5%	≤20.0	
Magnesium	200.7	10/31/2024:212318AC	MS	mg/L	12.00	68.6%	<¼	406
		(SP 2417897-001)	MSD	mg/L	12.00	71.5%	<1/4	
			MSRPD	mg/L		0.4%	≤20.0	
			MS	mg/L	12.00	82.7%	75-125	
		(CH 2490089-005)	MSD	mg/L	12.00	84.5%	75-125	
			MSRPD	mg/L		0.8%	≤20.0	
Manganese	200.7	10/31/2024:212318AC	MS	ug/L	800.0	91.3%	75-125	
		(SP 2417897-001)	MSD	ug/L	800.0	92.8%	75-125	
			MSRPD	ug/L		1.5%	≤20.0	
			MS	ug/L	800.0	90.6%	75-125	
		(CH 2490089-005)	MSD	ug/L	800.0	90.6%	75-125	
			MSRPD	ug/L		0.0%	≤20.0	
Potassium	200.7	10/31/2024:212318AC	MS	mg/L	12.00	95.0%	75-125	
		(SP 2417897-001)	MSD	mg/L	12.00	93.1%	75-125	
			MSRPD	mg/L		1.7%	≤20.0	
			MS	mg/L	12.00	84.5%	75-125	
		(CH 2490089-005)	MSD	mg/L	12.00	87.0%	75-125	
			MSRPD	mg/L		2.6%	≤20.0	
Sodium	200.7	10/31/2024:212318AC	MS	mg/L	12.00	18.1%	<¼	406
		(SP 2417897-001)	MSD	mg/L	12.00	101%	75-125	
			MSRPD	mg/L		4.6%	≤20.0	
			MS	mg/L	12.00	81.7%	75-125	

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Quality Control - Metals

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
		(CH 2490089-005)	MSD	mg/L	12.00	77.6%	75-125	
			MSRPD	mg/L		1.3%	≤20.0	
Zinc	200.7	10/31/2024:212318AC	MS	ug/L	800.0	79.7%	75-125	
		(SP 2417897-001)	MSD	ug/L	800.0	81.9%	75-125	
			MSRPD	ug/L		2.7%	≤20.0	
			MS	ug/L	800.0	81.8%	75-125	
		(CH 2490089-005)	MSD	ug/L	800.0	80.0%	75-125	
			MSRPD	ug/L		2.2%	≤20.0	
Antimony	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<0.5	
			LCS	ug/L	50.00	95.3%	85-115	
			MS	ug/L	50.00	96.8%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	101%	75-125	
			MSRPD	ug/L		4.2%	≤20.0	
			MS	ug/L	50.00	97.2%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	97.4%	75-125	
			MSRPD	ug/L		0.1%	≤20.0	
Arsenic	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<2	
			LCS	ug/L	50.00	98.3%	85-115	
			MS	ug/L	50.00	97.3%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	103%	75-125	
			MSRPD	ug/L		5.7%	≤20	
			MS	ug/L	50.00	103%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	106%	75-125	
			MSRPD	ug/L		3.3%	≤20	
Beryllium	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<0.5	
			LCS	ug/L	50.00	89.3%	85-115	
			MS	ug/L	50.00	91.5%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	93.3%	75-125	
			MSRPD	ug/L		1.9%	≤20	
			MS	ug/L	50.00	91.0%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	99.0%	75-125	
			MSRPD	ug/L		8.4%	≤20	
Cadmium	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<0.2	
			LCS	ug/L	50.00	95.0%	85-115	
			MS	ug/L	50.00	96.1%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	101%	75-125	
			MSRPD	ug/L		4.6%	≤20.0	
			MS	ug/L	50.00	101%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	103%	75-125	
			MSRPD	ug/L		2.3%	≤20.0	
Chromium	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<0.5	
			LCS	ug/L	50.00	97.6%	85-115	
			MS	ug/L	50.00	96.6%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	102%	75-125	
			MSRPD	ug/L		4.7%	≤20.0	
			MS	ug/L	50.00	101%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	103%	75-125	
			MSRPD	ug/L		1.8%	≤20.0	
Copper	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<0.5	
			LCS	ug/L	50.00	96.1%	85-115	
			MS	ug/L	50.00	95.5%	75-125	

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Luhdorff & Scalmanini Consulting

Lab No. : CH 2490089
Customer No. : 7010503

Quality Control - Metals

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
		(SP 2417968-001)	MSD	ug/L	50.00	105%	75-125	
			MSRPD	ug/L		8.5%	≤20.0	
			MS	ug/L	50.00	102%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	104%	75-125	
			MSRPD	ug/L		1.6%	≤20.0	
Lead	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<0.5	
			LCS	ug/L	50.00	94.3%	85-115	
			MS	ug/L	50.00	95.8%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	100%	75-125	
			MSRPD	ug/L		4.5%	≤20.0	
			MS	ug/L	50.00	98.9%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	102%	75-125	
			MSRPD	ug/L		3.3%	≤20.0	
Nickel	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<1	
			LCS	ug/L	50.00	95.5%	85-115	
			MS	ug/L	50.00	95.2%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	101%	75-125	
			MSRPD	ug/L		6.1%	≤20	
			MS	ug/L	50.00	99.3%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	104%	75-125	
			MSRPD	ug/L		4.6%	≤20	
Selenium	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<2	
			LCS	ug/L	50.00	102%	85-115	
			MS	ug/L	50.00	103%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	108%	75-125	
			MSRPD	ug/L		4.8%	≤20.0	
			MS	ug/L	50.00	111%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	111%	75-125	
			MSRPD	ug/L		0.2%	≤20.0	
Silver	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<0.25	
			LCS	ug/L	50.00	95.2%	85-115	
			MS	ug/L	50.00	13.7%	75-125	435
		(SP 2417968-001)	MSD	ug/L	50.00	14.2%	75-125	435
			MSRPD	ug/L		3.6%	≤20.0	
			MS	ug/L	50.00	13.9%	75-125	435
		(SP 2417895-002)	MSD	ug/L	50.00	15.4%	75-125	435
			MSRPD	ug/L		9.9%	≤20.0	
Thallium	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<1	
			LCS	ug/L	50.00	93.5%	85-115	
			MS	ug/L	50.00	95.4%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	98.6%	75-125	
			MSRPD	ug/L		3.3%	≤20	
			MS	ug/L	50.00	96.9%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	101%	75-125	
			MSRPD	ug/L		3.9%	≤20	
Vanadium	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<2	
			LCS	ug/L	50.00	95.9%	85-115	
			MS	ug/L	50.00	96.3%	75-125	
		(SP 2417968-001)	MSD	ug/L	50.00	101%	75-125	
			MSRPD	ug/L		5.0%	≤20	
			MS	ug/L	50.00	101%	75-125	

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Luhdorff & Scalmanini Consulting

Lab No. : CH 2490089
Customer No. : 7010503

Quality Control - Metals

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
		(SP 2417895-002)	MSD	ug/L	50.00	102%	75-125	
			MSRPD	ug/L		0.9%	≤20	
Zinc	200.8	11/05/2024:212504EJC	Blank	ug/L		ND	<10	
			LCS	ug/L	50.00	109%	85-115	
			MS	ug/L	50.00	38.2%	75-125	435
		(SP 2417968-001)	MSD	ug/L	50.00	42.0%	75-125	435
			MSRPD	ug/L		2.4%	≤20	
			MS	ug/L	50.00	79.0%	75-125	
		(SP 2417895-002)	MSD	ug/L	50.00	88.6%	75-125	
			MSRPD	ug/L		5.8%	≤20	
Mercury	245.1	11/11/2024:212688EJC	Blank	ug/L		ND	<0.02	
			LCS	ug/L	0.2000	85.0%	85-115	
			MS	ug/L	0.2000	87.9%	75-125	
		(CH 2490089-001)	MSD	ug/L	0.2000	86.9%	75-125	
			MSRPD	ug/L		1.1%	≤20	

Definition

Blank : Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.

DQO : Data Quality Objective - This is the criteria against which the quality control data is compared.

LCS : Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.

MS : Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSD : Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSRPD : MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.

ND : Non-detect - Result was below the DQO listed for the analyte.

Explanation

406 : Matrix Spike (MS) not within the Acceptance Range (AR) because of high analyte concentration in the sample. Data was accepted based on the LCS or CCV recovery.

435 : Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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November 25, 2024
Luhdorff & Scalmanini Consulting

Lab No. : CH 2490089
Customer No. : 7010503

Quality Control - Wet Chem

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Color	2120B	(CH 2490087-001)	Dup	units		0%	20	
Turbidity	2130B	(CH 2490087-001)	Dup	NTU		22.2%	20	440
Odor	2150B	(CH 2490087-001)	Dup	TON		0%	20	
Alkalinity (as CaCO3)	2320B	(CC 2484199-003)	Dup	mg/L		1.30%	10	
	2320B	(SP 2417945-003)	Dup	mg/L		1.57%	10	
Bicarbonate	2320B	(CC 2484199-003)	Dup	mg/L		1.24%	10	
	2320B	(SP 2417945-003)	Dup	mg/L		1.56%	10	
Carbonate	2320B	(CC 2484199-003)	Dup	mg/L		0%	10	
	2320B	(SP 2417945-003)	Dup	mg/L		0%	10	
E. C.	2320B	(CC 2484199-003)	Dup	umhos/cm		0.4%	5	
	2320B	(SP 2417945-003)	Dup	umhos/cm		0.4%	5	
Hydroxide	2320B	(CC 2484199-003)	Dup	mg/L		0%	10	
	2320B	(SP 2417945-003)	Dup	mg/L		0%	10	
Solids, Total Dissolved	2540CE	10/30/2024:212271CTL	Blank	mg/L		ND	<20	
			LCS	mg/L	991.1	100%	90-110	
		(VI 2448735-001)	Dup	mg/L		0.3%	5	
		(VI 2448735-001)	Dup	mg/L		0.06%	5	
Chloride	300.0	10/30/2024:212519LDM	Blank	mg/L		ND	<1	
			LCS	mg/L	25.00	98.3%	90-110	
			MS	mg/L	50.00	87.0%	67-117	
		(SP 2417840-001)	MSD	mg/L	50.00	87.5%	67-117	
			MSRPD	mg/L		0.3%	≤7	
	300.0	10/31/2024:212343LDM	Blank	mg/L		ND	<1	
			LCS	mg/L	25.00	97.2%	90-110	
			MS	mg/L	50.00	95.8%	67-117	
		(CH 2490089-003)	MSD	mg/L	50.00	96.0%	67-117	
			MSRPD	mg/L		0.2%	≤7	
			MS	mg/L	50.00	94.8%	67-117	
		(STK2455940-003)	MSD	mg/L	50.00	95.0%	67-117	
			MSRPD	mg/L		0.2%	≤7	
	300.0	11/21/2024:213208LDM	Blank	mg/L		ND	<1	
			LCS	mg/L	25.00	101%	90-110	
			MS	mg/L	50.00	97.3%	67-117	
		(STK2456087-001)	MSD	mg/L	50.00	96.8%	67-117	
			MSRPD	mg/L		0.4%	≤7	
			MS	mg/L	50.00	101%	67-117	
		(STK2456087-002)	MSD	mg/L	50.00	101%	67-117	
			MSRPD	mg/L		0.4%	≤7	
Fluoride	300.0	10/30/2024:212519LDM	Blank	mg/L		ND	<0.1	
			LCS	mg/L	2.500	97.8%	90-110	
			MS	mg/L	5.000	96.7%	89-111	
		(SP 2417840-001)	MSD	mg/L	5.000	95.1%	89-111	
			MSRPD	mg/L		1.5%	≤9	
	300.0	10/31/2024:212343LDM	Blank	mg/L		ND	<0.1	
			LCS	mg/L	2.500	97.5%	90-110	
			MS	mg/L	5.000	93.7%	89-111	
		(CH 2490089-003)	MSD	mg/L	5.000	94.3%	89-111	
			MSRPD	mg/L		0.5%	≤9	
			MS	mg/L	5.000	93.7%	89-111	
		(STK2455940-003)	MSD	mg/L	5.000	94.5%	89-111	

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Luhdorff & Scalmanini Consulting

Lab No. : CH 2490089
Customer No. : 7010503

Quality Control - Wet Chem

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
			MSRPD	mg/L		0.9%	≤9	
	300.0	11/21/2024:213208LDM	Blank	mg/L		ND	<0.1	
			LCS	mg/L	2.500	101%	90-110	
			MS	mg/L	5.000	102%	89-111	
		(STK2456087-001)	MSD	mg/L	5.000	101%	89-111	
			MSRPD	mg/L		0.7%	≤9	
			MS	mg/L	5.000	105%	89-111	
		(STK2456087-002)	MSD	mg/L	5.000	105%	89-111	
			MSRPD	mg/L		0.5%	≤9	
Nitrate	300.0	10/30/2024:212519LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	97.7%	90-110	
			MS	mg/L	40.00	97.5%	86-112	
		(SP 2417840-001)	MSD	mg/L	40.00	97.3%	86-112	
			MSRPD	mg/L		0.2%	≤7	
	300.0	10/31/2024:212343LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	97.4%	90-110	
			MS	mg/L	40.00	97.5%	86-112	
		(CH 2490089-003)	MSD	mg/L	40.00	97.4%	86-112	
			MSRPD	mg/L		0.1%	≤7	
			MS	mg/L	40.00	93.9%	86-112	
		(STK2455940-003)	MSD	mg/L	40.00	93.8%	86-112	
			MSRPD	mg/L		0.1%	≤7	
	300.0	11/21/2024:213208LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	100%	90-110	
			MS	mg/L	40.00	77.5%	86-112	435
		(STK2456087-001)	MSD	mg/L	40.00	77.1%	86-112	435
			MSRPD	mg/L		0.3%	≤7	
			MS	mg/L	40.00	79.6%	86-112	435
		(STK2456087-002)	MSD	mg/L	40.00	79.9%	86-112	435
			MSRPD	mg/L		0.3%	≤7	
Nitrate + Nitrite as N	300.0	10/30/2024:212519LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	97.7%	90-110	
			MS	mg/L	40.00	97.5%	86-112	
		(SP 2417840-001)	MSD	mg/L	40.00	97.3%	86-112	
			MSRPD	mg/L		0.2%	≤7	
	300.0	10/31/2024:212343LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	97.4%	90-110	
			MS	mg/L	40.00	97.5%	86-112	
		(CH 2490089-003)	MSD	mg/L	40.00	97.4%	86-112	
			MSRPD	mg/L		0.1%	≤7	
			MS	mg/L	40.00	93.9%	86-112	
		(STK2455940-003)	MSD	mg/L	40.00	93.8%	86-112	
			MSRPD	mg/L		0.1%	≤7	
	300.0	11/21/2024:213208LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	100%	90-110	
			MS	mg/L	40.00	77.5%	86-112	435
		(STK2456087-001)	MSD	mg/L	40.00	77.1%	86-112	435
			MSRPD	mg/L		0.3%	≤7	
			MS	mg/L	40.00	79.6%	86-112	435
		(STK2456087-002)	MSD	mg/L	40.00	79.9%	86-112	435
			MSRPD	mg/L		0.3%	≤7	

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Luhdorff & Scalmanini Consulting

Lab No. : CH 2490089
Customer No. : 7010503

Quality Control - Wet Chem

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Nitrate Nitrogen	300.0	10/30/2024:212519LDM	Blank	mg/L		ND	<0.1	
			LCS	mg/L	4.518	97.6%	90-110	
			MS	mg/L	9.036	97.5%	86-112	
		(SP 2417840-001)	MSD	mg/L	9.036	97.2%	86-112	
			MSRPD	mg/L		0.2%	≤7	
	300.0	10/31/2024:212343LDM	Blank	mg/L		ND	<0.1	
			LCS	mg/L	4.518	97.3%	90-110	
			MS	mg/L	9.036	97.5%	86-112	
		(CH 2490089-003)	MSD	mg/L	9.036	97.4%	86-112	
			MSRPD	mg/L		0.1%	≤7	
			MS	mg/L	9.036	93.8%	86-112	
		(STK2455940-003)	MSD	mg/L	9.036	93.7%	86-112	
			MSRPD	mg/L		0.1%	≤7	
	300.0	11/21/2024:213208LDM	Blank	mg/L		ND	<0.1	
			LCS	mg/L	4.518	100%	90-110	
			MS	mg/L	9.036	77.4%	86-112	435
		(STK2456087-001)	MSD	mg/L	9.036	77.0%	86-112	435
			MSRPD	mg/L		0.3%	≤7	
			MS	mg/L	9.036	79.5%	86-112	435
		(STK2456087-002)	MSD	mg/L	9.036	79.8%	86-112	435
			MSRPD	mg/L		0.3%	≤7	
Nitrite as Nitrogen	300.0	10/30/2024:212519LDM	Blank	mg/L		ND	<0.1	
			LCS	mg/L	4.567	98.4%	90-110	
			MS	mg/L	9.134	95.3%	88-111	
		(SP 2417840-001)	MSD	mg/L	9.134	96.2%	88-111	
			MSRPD	mg/L		0.9%	≤8	
	300.0	10/31/2024:212343LDM	Blank	mg/L		ND	<0.1	
			LCS	mg/L	4.567	94.3%	90-110	
			MS	mg/L	9.134	95.1%	88-111	
		(CH 2490089-003)	MSD	mg/L	9.134	95.3%	88-111	
			MSRPD	mg/L		0.2%	≤8	
			MS	mg/L	9.134	96.0%	88-111	
		(STK2455940-003)	MSD	mg/L	9.134	96.2%	88-111	
			MSRPD	mg/L		0.3%	≤8	
	300.0	11/21/2024:213208LDM	Blank	mg/L		ND	<0.1	
			LCS	mg/L	4.567	99.7%	90-110	
			MS	mg/L	9.134	100%	88-111	
		(STK2456087-001)	MSD	mg/L	9.134	100%	88-111	
			MSRPD	mg/L		0.3%	≤8	
			MS	mg/L	9.134	104%	88-111	
		(STK2456087-002)	MSD	mg/L	9.134	104%	88-111	
			MSRPD	mg/L		0.7%	≤8	
Sulfate	300.0	10/30/2024:212519LDM	Blank	mg/L		ND	<0.5	
			LCS	mg/L	50.00	98.7%	90-110	
			MS	mg/L	100.0	86.2%	18-165	
		(SP 2417840-001)	MSD	mg/L	100.0	86.8%	18-165	
			MSRPD	mg/L		0.4%	≤7	
	300.0	10/31/2024:212343LDM	Blank	mg/L		ND	<0.5	
			LCS	mg/L	50.00	97.2%	90-110	
			MS	mg/L	100.0	95.9%	18-165	
		(CH 2490089-003)	MSD	mg/L	100.0	96.1%	18-165	

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November 25, 2024

Luhdorff & Scalmanini Consulting

Lab No. : CH 2490089
Customer No. : 7010503

Quality Control - Wet Chem

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
			MSRPD	mg/L		0.3%	≤7	
			MS	mg/L	100.0	95.9%	18-165	
		(STK2455940-003)	MSD	mg/L	100.0	96.1%	18-165	
			MSRPD	mg/L		0.2%	≤7	
	300.0	11/21/2024:213208LDM	Blank	mg/L		ND	<0.5	
			LCS	mg/L	50.00	101%	90-110	
			MS	mg/L	100.0	98.6%	18-165	
		(STK2456087-001)	MSD	mg/L	100.0	98.2%	18-165	
			MSRPD	mg/L		0.3%	≤7	
			MS	mg/L	100.0	102%	18-165	
		(STK2456087-002)	MSD	mg/L	100.0	102%	18-165	
			MSRPD	mg/L		0.4%	≤7	
MBAS	5540C	10/30/2024:212297KRH	Blank	mg/L		ND	<0.1	
			LCS	mg/L	0.5000	97.7%	86-114	
			BS	mg/L	0.5000	97.8%	86-114	
			BSD	mg/L	0.5000	99.2%	86-114	
			BSRPD	mg/L		1.4%	≤5	

Definition

Blank : Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.

BS : Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.

BSD : Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.

BSRPD : BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis.

Dup : Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.

LCS : Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.

MS : Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSD : Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSRPD : MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.

Explanation

435 : Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

440 : Sample nonhomogeneity may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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ENVIRONMENTAL FGL AGRICULTURAL
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Laboratory Copy (1 of 2)

75857:10/07/2024

Client: **Luhdorff & Scalmanini Consulting**
Address: Attn: Eddy Teasdale
550 Salem Street, Suite 3
Chico, CA 95928

Phone: (530)661-0109 Fax:
Contact Person: Eddy Teasdale
Project Name: **Surface & Canal Water**
Purchase Order Number:
Quote Number: **CH 20241016-01**

Sampler(s) Leeah Schultz; Leah Jackson

Sampling Fee: _____ Pickup Fee: _____
Compositor Setup Date: ___/___/___ Time: ___/___

Lab Number: **CH** 24190089 **7-10503**

TEST DESCRIPTION - See Reverse side for Container, Preservative and Sampling information

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite(C) Grab(G)	Type of Sample **SEE REVERSE SIDE**	Potable(P) Non-Potable(NP) Ag Water(AgW)	Bacti Type: Other(O) System(SYS) Source(SR) Waste(W)	Bacti Reason: Routine(ROUT) Repeat(RPT) Replace(RPL) Other(O) Special(SPL)	General Mineral 16oz(P)	Wet Chemistry-Turbidity,Odor,Color **Analyzed in Chico** 500 ml(AGT)	Field Test-Field pH !!pH = 15 MINUTE HOLD TIME!!	Field - pH Date	Field - pH Time	Metals, Total-Sb,As,Be,Cd,Cr,Cu,Pb,Hg,Ni,Se,Ag,Tl,V,Zn,3010Prep 250ml(P)-HNO3
1	Canal 10 Min Sample	10/29/24	850am	G	SW	NP			1	1	7.31	10/29	0850	1
2	Canal 1 Hour Sample		955am	G	SW	NP			1	1	7.48	10/29	0959	1
3	Canal 2 Hour Sample		1043am	G	SW	NP			1	1	7.04	10/29	1043	1
4	Lake Sample 1		918am	G	SW	NP			1	1	6.86	10/29	1008	1
5	Lake Sample 2		930am	G	SW	NP			1	1	6.48	10/29	9:35	1
6	Lake Sample 3		938am	G	SW	NP			1	1	7.14	10/29	0942	1

Remarks:

ROI 2.1°

Relinquished	Date:	Time:	Relinquished	Date:	Time:	Relinquished	Date:	Time:
[signature]	10/29	1401	KSH	10/29	1700	GS	10/30/24	1200
Received By:	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**
KSH	10/29	1401	GCS	10/29	1700	[signature]	10/30/24	1200

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2490089

Inter-Laboratory Condition Upon Receipt (Attach to COC)Sample Receipt at:
CC (CH) STK VI

1. Number of ice chests/packages received: 3 IC Shipping tracking #(s):_____
2. Temp IR Gun ID #: 1
3. Were samples received on ice? (Yes) No Temps: 2.1° / ____ / ____ / ____ / ____
   Surface water SWTR bact samples: A sample that has a temperature upon receipt of >10° C, whether iced or not, should be flagged unless the time since sample collection has been less than two hours.

4. Do the number of bottles received agree with the COC?	(Yes)	No	N/A
5. Were samples received intact? (i.e. no broken bottles, leaks etc.)	(Yes)	No	
6. VOAs checked for Headspace?	Yes	No	(N/A)
7. Were all analyses within holding times at time of receipt?	(Yes)	No	
8. Verify sample date, time and sampler name	(Yes)	No	

Sign and date the COC, place in a ziplock and put in the same ice chest as the samples.
Sample Receipt Review completed by (initials): KSH

Sample Receipt at SP:
1. Number of ice chests/packages received: 1 Shipping tracking #(s): 576814140
2. Temp IR Gun ID #: 101
3. Were samples received on ice? (Yes) No Temps: 3 / ____ / ____ / ____ / ____
   Acceptable is above freezing to 6°C. If many packages are received at one time check for tests/H.T.'s/rushes/

4. Do the number of bottles received agree with the COC?	(Yes)	No	N/A
5. Were samples received intact? (i.e. no broken bottles, leaks etc.)	(Yes)	No	

Sign and date the COC, obtain LIMS sample numbers, select methods/tests and print labels.

Sample Verification, Labeling and Distribution:

1. Were all requested analyses understood and acceptable?	(Yes)	No		
2. Did bottle labels correspond with the client's ID's?	(Yes)	No		
3. Were all bottles requiring sample preservation properly preserved? [Exception: Oil & Grease, VOA and CrVI verified in lab]	(Yes)	No	N/A	FGL
4. VOAs checked for Headspace?	Yes	No	(N/A)	
5. Have rush or project due dates been checked and accepted?	Yes	No	(N/A)	
6. Were all analyses within holding times at time of receipt?	(Yes)	No		

Attach labels to the containers and include a copy of the COC for lab delivery.
Sample Receipt, Login and Verification completed by (initials): _____

Discrepancy Documentation:
Any items above which are "No" or do not meet specifications (i.e. temps) must be resolved.

1. Person Contacted:_____ Phone Number:_____
   Initiated By:_____ Date:_____
   Problem:
   Resolution:

2. Person Contacted:_____
   Initiated By:_____
   Problem:
   Resolution:

(Please use the back of this sheet for additional comment