

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2021-0809
FOR
TOM CHARTER AND PERRY CHARTER
T & P FARMS
DRY WELL AQUIFER STORAGE PILOT STUDY
COLUSA COUNTY

Issued by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) pursuant to Water Code section 13267, subdivision (b)(1), this Order establishes a Monitoring and Reporting Program (MRP) for Tom Charter and Perry Charter (collectively, Dischargers), in connection with a proposed pilot project involving the use of untreated irrigation water in dry wells to recharge the shallow aquifer (Pilot Study), as described in the Dischargers' Engineer's Report (Report) dated 13 March 2019¹. After a request for further information, the Dischargers submitted a Revised Report² to include a Well Installation Workplan, well construction details for the proposed dry wells and monitoring wells; a groundwater sampling and analysis plan; initial groundwater and source water quality data; historical groundwater levels; and a proposed monitoring and reporting program. The Pilot Study will evaluate the feasibility of recharging the first encountered groundwater basin within the Colusa Irrigation District (District) service area.

This Order establishes an MRP with monitoring requirements for monitoring the injection water and the underlying groundwater. This Order shall remain in effect for the duration of the Pilot Study (through submission of the Pilot Study Completion Report) and shall be subject to revision by the Executive Officer. This Order shall not be construed as Waste Discharge Requirements (WDRs), which may be prescribed based on the results of the Pilot Study.

A glossary of terms used in this MRP is included on the last page.

PILOT STUDY

Per the Revised Report, the Dischargers propose to inject untreated and undisinfected irrigation water from District's Tehama Colusa Canal (Canal), into several dry wells on T & P Farms property (Site), which is located at 1241 Putnam Way, Arbuckle in Colusa County; Assessor Property Number 018-260-124-000; Section 32, Township 14N,

¹ Report: *Dry Well Groundwater Storage Demonstration for Tom and Perry Charters, T&P Farms and the Colusa Irrigation District*, NexGen Utility Management (13 March 2019).

² Revised Report: *Above Vadose Zone Injection Well Workplan, Dry Well Groundwater Storage Demonstration for Tom and Perry Charters*, T&P Farms and the Colusa Irrigation District, NexGen Utility Management (12 February 2020).

Range 2W, Mount Diablo Base and Meridian. A site vicinity map is shown on **Attachment A**.

The Pilot Study is anticipated to take place over the course of three to five years, starting from the first day of injection. Injection activities will occur during intermittent injection intervals when water is made available for purchase by the Dischargers from District. To extend the duration of the Pilot Study beyond three (3) years from the first day of injection, the Discharger shall submit the results and evaluation of the Pilot Study and include a Report of Waste Discharge (RWD) for Waste Discharge Requirements.

The Dischargers propose to initially install two (2) dry wells (Dry Wells 1 and 2) as part of the Pilot Study with the goal to discharge approximately 2,400 gallons per minute (gpm), which will yield up to 10-acre feet per day into the groundwater basin. Additional dry wells may be installed as part of the Pilot Study to meet this goal. Up to a total of eight (8) potential dry well locations have been identified and are shown on **Attachment B**. Water levels in the dry wells will be kept to six (6) feet below the ground surface (bgs). The dry wells will be spaced at 500-foot intervals and will be located at least 200 feet from an existing agricultural well.

According to the Revised Report, test borings were drilled and logged at four (4) of the proposed dry well locations in September 2019. Electronic logs generated from each boring location to depths ranging from 200 to 220 feet bgs indicated that water-bearing intervals were present below 100 to 130 feet bgs.

All proposed dry wells to be installed and used for this Pilot Study will be registered as USEPA Class V injection wells. Dry wells will consist of a 30-inch diameter borehole drilled to at least 100-feet-deep bgs and completed with an 18-inch diameter stainless steel or PVC casing with approximately 70-foot slotted screen interval. After placement of a gravel filter pack above the screen interval, the dry wells will be sealed with a 25-foot concrete and bentonite well seal, and then grouted to the surface. Well drilling permits will be obtained from the Colusa County Environmental Health Division prior to installation.

The following existing wells will be used to monitor groundwater and the effects of recharging activities during the Pilot Study: Huller Well (domestic well), Well CR1 (agricultural well), Well CFTS2 (agricultural well), and AG Well #1. Prior to injection activities, the above-referenced wells will be analyzed for Electrical Conductivity (EC), Total Dissolved Solids (TDS), Nitrate as Nitrogen, General Minerals³ and Metals⁴ to

³ For purposes of this Order, "General Minerals" includes the following constituents: Alkalinity (as CaCO₃); Hardness; Bicarbonate (as CaCO₃); Boron; Carbonate (as CaCO₃); Calcium; Chloride; Iron; Magnesium; Manganese; Phosphate; Potassium; Sodium; and Sulfate.

⁴ For purposes of this Order, "Metals" includes the following constituents: Antimony; Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Mercury; Molybdenum; Nickel; Selenium; Silver; Thallium; Vanadium; and Zinc.

establish baseline groundwater quality. Additional wells were identified as potential monitoring wells. Well locations are shown on **Attachment C**.

The Discharger’s existing irrigation infrastructure consisting of conveyance pipe and a filter pump station will be used to convey Canal irrigation water to the dry wells. Irrigation water will be delivered from the Canal to a filter pump station alongside, as shown on **Attachment C**. Connection to the dry wells will be made at the filter pump station to reduce the risk of fouling the well screens. At the filter station, debris and organic matter will be removed from the water.

Flows to the dry wells will be metered and recorded at the beginning and end of the recharge activities.

Canal irrigation water was sampled on four occasions between 1 May 2017 and 18 September 2018. Samples were obtained from the north and south end of the Canal. Samples were analyzed in accordance with the Aquifer Storage and Recovery (ASR) General Order Water Quality Order 2012-0010 and the data results are summarized in **Table 1**. “ND” denotes non-detect and the reporting limit is shown. “NA” denotes not available.

Table 1 - Tehama Colusa Canal Irrigation Water Characterization, Minimum and Maximum Concentrations

Parameters	Units	North End of Canal		South End of Canal	
		Min	Max	Min	Max
pH	std. units	7.7	8.2	7.8	8.8
EC	µmhos/cm	110	140	100	150
TDS	mg/L	NA	NA	NA	NA
Nitrate (as Nitrogen)	mg/L	ND, 0.1	0.2	ND, 0.1	0.2
Arsenic	mg/L	NA	NA	NA	NA
Iron	mg/L	ND, 0.1	0.18	ND, 0.1	0.27
Manganese	mg/L	ND, 0.2	ND, 0.2	ND, 0.2	ND, 0.2

SITE CONDITIONS

Based on data obtained from the Department of Water Resources’ (DWR) online water database, groundwater in the area of the recharge site is approximately 130 feet bgs. The recharge area is located on the alluvial fan of Sand Creek. Sand Creek is a seasonal creek discharging onto a Quaternary alluvial fan, flood basin, and alluvial deposits. The recharge area is zoned as exclusively agricultural. The area north and south of the proposed dry wells is located in the FEMA 1 percent floodplain. However, the entire area is subject to shallow alluvial flooding.

The Dischargers provided groundwater quality data from the following existing wells: Huller Well, TPS1 District, TPS NW, and CFTS 2. Groundwater samples were obtained on 10 September 2018, and analyzed for the following metals: dissolved antimony, dissolved arsenic, dissolved lead, dissolved mercury, dissolved selenium, dissolved thallium, and hexavalent chromium. With the exception of hexavalent chromium, data results show that concentrations were detected below the respective practical quantitation limit. Hexavalent chromium concentrations of 0.2 micrograms per liter (µg/L) were detected in the groundwater samples. The samples were also analyzed for trihalomethanes and haloacetic acids. Data results show that concentrations were below the respective reporting limits. Well locations are shown on **Attachment C**.

Under this Order, after the completion of this three-year pilot study, the Dischargers will submit a Pilot Study Completion Report that summarizes the results of the Pilot Study and evaluates its impact on underlying groundwater.

If the Dischargers wish to pursue a long-term groundwater recharge project for the area using dry wells, a complete RWD, including the applicable application fee, to apply for waste discharge requirements shall be submitted. The RWD should utilize the information gathered during the three-year pilot study to demonstrate how the ongoing recharge of groundwater using dry wells will comply with the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) and the *Statement of Policy with Respect to Maintaining High Quality Waters in California, Resolution 68-16* (Anti-Degradation Policy).

LEGAL AUTHORITY

Water Code section 13267, subsection (b)(1) provides as follows:

[T]he regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

Water Code section 13268, subdivisions (a)(1) and (b)(1) provide as follows:

(a)(1) Any person failing or refusing to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267, failing or refusing to furnish a statement of compliance as required by subdivision (b) of Section 13399.2, or falsifying and information provided therein, is guilty of a misdemeanor and may be liable civilly in accordance with subdivision (b)...

- (b)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with section 13323) of Chapter 5 for a violation of subdivision (a) in an amount which shall not exceed one thousand dollars (\$1,000) for each day in which the violation occurs.

This Order is issued under the authority delegated to the Executive Officer by the Central Valley Water Board pursuant to Resolution R5-2018-0057.

REQUIREMENTS

Pursuant to Water Code section 13267, the Dischargers are hereby directed to comply with the following provisions.

A. PRELIMINARY/NOTIFICATION REPORTS

1. **Injection Well Installation and Injection Activity Notification:**

At least 30 days prior to well installation activities, the Dischargers shall notify the Central Valley Water Board in writing with the following:

- a. Schedule of planned well installation activities, including anticipated dates for well installation and completion.
- b. Schedule of injection activities, including approximate date of first injection.

2. **Injection Well Installation Completion Report:**

Within 90 days following completion of well installation activities, the Dischargers shall submit an *Injection Well Installation Completion Report* for the installation of dry wells as designated for use in this Pilot Study.

- a. The report shall describe the installation and development of all dry wells and explain any deviation from the well workplan per the Revised Report dated 12 February 2020.
- b. The Discharger shall include documentation that the dry well has been registered as a Class V Injection Well with the USEPA, or alternatively, provide evidence that USEPA will not require the well to be registered.

3. **Groundwater Monitoring Network and Pre-Injection Groundwater Quality Report:**

At least 90 days prior to pilot study injection activities, the Dischargers shall submit a *Groundwater Monitoring Network and Pre-Injection Groundwater Quality Report*. Any existing well, in addition to the Huller

Well, Well CR1, Well CFTS 2, and AG Well 1 that will be used to monitor groundwater and the effects of recharge activities within the surrounding area shall be identified. The report shall include a map that shows well locations and include well logs and construction details for each well. Prior to injection activities, pre-injection groundwater quality shall be established and included in the report. Each designated monitoring well shall be sampled and analyzed for the parameters listed in Table 2. The report shall present a summary of the monitoring data.

Table 2 - Baseline Groundwater Monitoring Parameters

Groundwater Monitoring Parameters
pH
EC
TDS
TKN
Nitrate as Nitrogen
Total Coliform Organisms
Organochlorine Pesticides ⁵ (per USEPA Method 8081A)
Organophosphorus Pesticides (per USEPA Method 8141A)
General Minerals: Alkalinity (as CaCO ₃), Hardness, Bicarbonate (as CaCO ₃), Boron, Carbonate (as CaCO ₃), Calcium, Chloride, Iron, Magnesium, Manganese, Phosphate, Sodium, and Sulfate.
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, and Thallium.

4. Water Quality Notification:

Within 10 days after receipt of laboratory data showing detections of pesticides or constituents of concern that exceed water quality objectives (WQOs), the Dischargers shall notify the Board. The WQO shall be the Primary or Secondary Maximum Contaminant Levels (MCLs), the drinking water standards adopted by the State Water Resources Control Board pursuant to the California Safe Drinking Water Act. Dischargers shall

⁵ For the purposes of this Order, organochlorine pesticides shall include, at a minimum: 4,4'-DDD; 4,4-DDE; 4,4-DDT, Dieldrin; Endosulfan I; Endosulfan II; Endosulfan sulfate; Endrin; Endrin aldehyde; Heptachlor; Heptachlor epoxide; Methoxychlor; Mirex; and Toxaphene.

provide details on the manner and methods for actions that will be taken if those occurrences should occur. If organochlorine or organophosphorus pesticides or other constituents of concern are detected at levels exceeding WQOs, the Dischargers shall cease injection activities.

5. Reporting for Additional Dry Wells

- a. If additional dry wells are needed at a later date during the Pilot Study, **at least 60 days prior** to planned dry well installation, the Dischargers shall submit a Well Installation Workplan. The workplan shall be prepared in accordance with, and including the items listed in, the first section of **Attachment D**: “Monitoring Well Installation Workplans and Monitoring Well Installation Reports,” which is attached hereto.
- b. **Within 90 days following** completion of dry well installation activities, the Dischargers shall submit an *Injection Well Installation Completion Report* per Section A.2 of this MRP. Subsequently installed dry wells will be monitored per Section B.2 and reported per Section C.1 and C.2 of this MRP.

6. Pilot Study Completion Report:

120 days after completion of the pilot study injection activities, the Discharger shall submit a *Pilot Study Completion Report*. The report shall summarize the results of the pilot scale injection activities, evaluate the impact the pilot study had on underlying groundwater, and include a description of any planned future injection activities. If the Discharger chooses to extend the Pilot Study beyond three (3) years from the first day of injection, the report shall include a Report of Waste Discharge (RWD) for application of Waste Discharge Requirements.

B. MONITORING REQUIREMENTS

- 1. **Injected Water Monitoring:** Whenever injection activity is occurring in the course of the Pilot Study, the Dischargers shall monitor the injection water in accordance with **Table 3**.

Table 3 - Injected Water Monitoring

Parameter	Units	Type of Sample	Monitoring Frequency
pH	pH units	Grab	Weekly during injection activities
EC	µmhos/cm	Grab	Weekly during injection activities

Parameter	Units	Type of Sample	Monitoring Frequency
Arsenic	mg/L	Grab	Weekly during injection activities
Iron	mg/L	Grab	Weekly during injection activities
Manganese	mg/L	Grab	Weekly during injection activities
Nitrate (as Nitrogen)	mg/L	Grab	Weekly during injection activities
TDS	mg/L	Grab	Weekly during injection activities
Organochlorine Pesticides ⁶ (per USEPA Method 8081A)	mg/L	Grab	Weekly during injection activities
Organophosphorus Pesticides (per USEPA Method 8141A)	mg/L	Grab	Weekly during injection activities
General Minerals	mg/L	Grab	Once per month during injection activities
Metals	mg/L	Grab	Once per month during injection activities

2. **Dry Well Monitoring:** Whenever injection activity is occurring in the course of the Pilot Study, the Dischargers shall monitor all dry wells in accordance with **Table 4.**⁷ Additionally, the Dischargers shall comply with the following:
- a. Well operational status shall be reported for each well associated with the Pilot Study.
 - b. During injection activities, dry wells shall be visually inspected at the intakes each daily for evidence of siltation or other physical issues that may impede or impact their operation.

⁶ See **Footnote 5** for list of organochlorine pesticides.

⁷ The monitored wells shall include all wells identified in Attachment B, as well as any subsequently installed wells. (See MRP, Section C.1.)

- c. Injection activity shall be recorded on a daily basis.

Table 4 - Dry Well Monitoring

Parameter	Units	Monitoring Type	Sampling Frequency
Well Operation Status	NA	Recorded	Daily
Water Levels	0.01 ft	Calculated	Monthly
Daily Average Injection Rate	gpd	Meter	Continuous
Injected Water, cumulative total for year to date	ac-ft/yr	Meter	Continuous

3. **Groundwater Monitoring:**

- a. Effective immediately, the Dischargers shall monitor Huller Well, Well CR1, Well CFTS2, and AG Well 1 in accordance with **Table 5**. Samples shall be collected using approved USEPA methods. Groundwater elevations shall be calculated to determine groundwater gradient and direction of flow.

Table 5 - Groundwater Aquifer Monitoring

Constituent	Units	Type of Sample	Sampling Frequency
Depth to Groundwater	0.01 feet	Measurement (before sampling)	Monthly
pH	pH units	Grab	Quarterly
EC	µmhos/cm	Grab	Quarterly
Arsenic	mg/L	Grab	Quarterly
Iron	mg/L	Grab	Quarterly
Manganese	mg/L	Grab	Quarterly
Nitrate (as Nitrogen)	mg/L	Grab	Quarterly
TDS	mg/L	Grab	Quarterly
General Minerals	mg/L	Grab	Quarterly
Metals	mg/L	Grab	Quarterly
Organochlorine Pesticides ⁸ (per USEPA Method 8081A)	mg/L	Grab	Upon detection in injection water, Quarterly

⁸ See Footnote 5 for list of organochlorine pesticides.

Constituent	Units	Type of Sample	Sampling Frequency
Organophosphorous Pesticides (per USEPA Method 8141A)	mg/L	Grab	Upon detection in injection water, Quarterly

- b. Prior to sampling, the groundwater elevations shall be measured. Unless periodically pumped, monitoring wells shall be purged of at least three well volumes, and until temperature, pH, and EC have stabilized within 80 percent. Wells identified for monitoring during the Pilot Study that are in active service shall be identified and sampled after temperature, pH, and EC readings have stabilized within 80 percent.
- c. Samples shall be filtered using a 0.45 micron filter.
- d. Monitoring information shall include the method detection limit (MDL) and the Reporting Limit (RL) or Practical Quantitation Limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

C. REPORTING REQUIREMENTS

- 1. **Quarterly Progress Reports** shall be submitted to the Board by the **1st day of the second month following** the end of the reporting periods. Quarterly Progress Reports shall include a discussion of the status (dates of injection and idle time) for all injection wells, any operational or water quality issues that occurred during the reporting quarter, and any monitoring data collected during the reported monitoring period. If no injection has occurred during the reporting quarter, a notification letter stating so will meet this requirement.
- 2. **Pilot Study Completion Report:** Required contents of the *Pilot Study Completion Report* shall include but not limited to the following:
 - a. In tabular format, results of the injected water, dry well, and groundwater monitoring.
 - b. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient data, and discussion of seasonal trends if any.
 - c. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal trends, with

reference to summary data tables, graphs, and appended analytical reports (as applicable).

- d. Discussion on the analysis of groundwater data, comparison to applicable water quality objectives, and evaluation of the impact, if any, the Pilot Study is having on underlying groundwater quality.
 - e. Discussion on future injection activities or long-term aquifer storage program.
 - f. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the injected water and groundwater monitoring.
 - g. A scaled map showing relevant structures and features of the facility, the locations of injection wells, monitoring wells, and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum.
 - h. Copies of laboratory analytical report(s).
 - i. A copy of calibration log page(s) verifying calibration of all hand-held monitoring instruments performed during the month.
3. General Reporting Requirements
- a. All preliminary, notification, and monitoring reports shall be submitted as follows.
 - i. Submittals less than 50 megabytes in size shall be emailed to centralvalleysacramento@waterboards.ca.gov.
 - ii. All other submittals (i.e., 50 megabytes or larger) shall be transferred to compact disc or flash drive, and mailed to:

Central Valley Regional Water Quality Control Board
ECM Mailroom
11020 Sun Center Drive, Suite 200
Rancho Cordova, California 95670

- b. To ensure that your submittal is routed to the appropriate staff person, the following information should be included in the body of the email or transmittal sheet:

Program: Non-15 Compliance Unit
Facility: T & P Farms Dry Well Aquifer Storage Pilot Study
Order: MRP R5-2021-0809
County: Colusa
CIWQS Place ID: 859391

- c. Each report shall be accompanied by a transmittal letter that includes:
 - i. The submitting of Discharger's name, the facility name and county, monitoring period and type of monitoring report (i.e., monthly or quarterly).
 - ii. A statement by the submitting party (or their authorized agent) certifying under penalty of perjury that the report is true, accurate and complete to the best of their knowledge.
- d. If any laboratory analyses are not performed by an outside laboratory, the report shall be signed and certified by the submitting party's chief of laboratory.
- e. All laboratory reports associated with analyses performed under this MRP must be retained for a minimum of three years.
- f. All monitoring instruments and devices used by the Dischargers to fulfill the prescribed monitoring program shall be properly maintained and calibrated at least yearly to ensure their continued accuracy.
- g. All monitoring reports that involve planning, investigation, evaluation or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to Business and Professions Code sections 6735, 7835 and 7835.1.

Any person aggrieved by this Central Valley Water Board action may petition the State Water Resources Control Board for administrative review in accordance with Water Code section 13320, and California Code of Regulations, title 23, section 2050 et seq. The State Water Resources Control Board must receive the petition by 5:00 p.m. on the 30th day after the date of this MRP, except that if the 30th day falls on a Saturday, Sunday or state holiday, the petition must be received by 5:00 p.m. on the next business day. Laws and regulations applicable to filing petitions are published on the

[Internet](http://www.waterboards.ca.gov/public_notices/petitions/water_quality) (at the address below), and will be provided upon request.
(http://www.waterboards.ca.gov/public_notices/petitions/water_quality)

This Order is issued under authority delegated to the Executive Officer by the Central Valley Water Board pursuant to Resolution R5-2018-0057 and is effective upon signature. This Order is effective as of the date below.

Ordered by:

Original Digitally Signed by John J. Baum
on Date: 2021.10.21 17:43:15 -07'00'

for PATRICK PULUPA, Executive Officer

Attachments

Attachment A - Site Vicinity Map

Attachment B – Dry Well Location Map

Attachment C – Monitoring Well Location Map

Attachment D – Requirements for Monitoring Well Installation Workplans and Monitoring
Well Installation Reports

GLOSSARY

Annually	Once per Calendar Year
bgs.....	Below Ground Surface
BOD ₅	Five-Day Biochemical Oxygen Demand
BMPs.....	Best Management Practices
CaCO ₃	Calcium Carbonate
CEQA.....	California Environmental Quality Act
Continuous	Measured by Meter on Continuous Basis
Daily	Every Day, Excluding Weekends (Saturday-Sunday) and Federal/State Holidays
EC	Electrical Conductivity at 25 C
ELAP	State Water Resources Control Board, Division of Drinking Water, Environmental Laboratory Accreditation Program
FDS	Fixed Dissolved Solids
General Minerals	Constituents: Alkalinity (as CaCO ₃); Hardness; Bicarbonate (as CaCO ₃); Boron; Carbonate (as CaCO ₃); Calcium; Chloride; Iron; Magnesium; Manganese; Phosphate; Potassium; Sodium; and Sulfate
Grab	Single Sample or Measurement Taken at a Specific Time
GPD	Gallons per Day
MGD.....	Millions of Gallons per Day
MCLs.....	Maximum Contaminant Levels
MDL.....	Method Detection Limit
Metals.....	Constituents: Antimony; Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Mercury; Molybdenum; Nickel; Selenium; Silver; Thallium; Vanadium; and Zinc
µg/L	Micrograms per Liter
µmhos/cm.....	Micromhos per Centimeter
mg/L	Milligrams per Liter
Monthly.....	Once per Calendar Month
MRP	Monitoring and Reporting Program
PQL.....	Practical Quantitation Limit
Quarterly	Once per Calendar Quarter
RL.....	Reporting Limit
Semiannually.....	Twice per Calendar Year in Nonconsecutive Quarters
Title 22	California Code of Regulations, title 22
Title 23	California Code of Regulations, title 23

Title 27 California Code of Regulations, title 27
TDS Total Dissolved Solids
TSS Total Suspended Solids
WDRs Waste Discharge Requirements
Weekly Once per Week

ATTACHMENT A



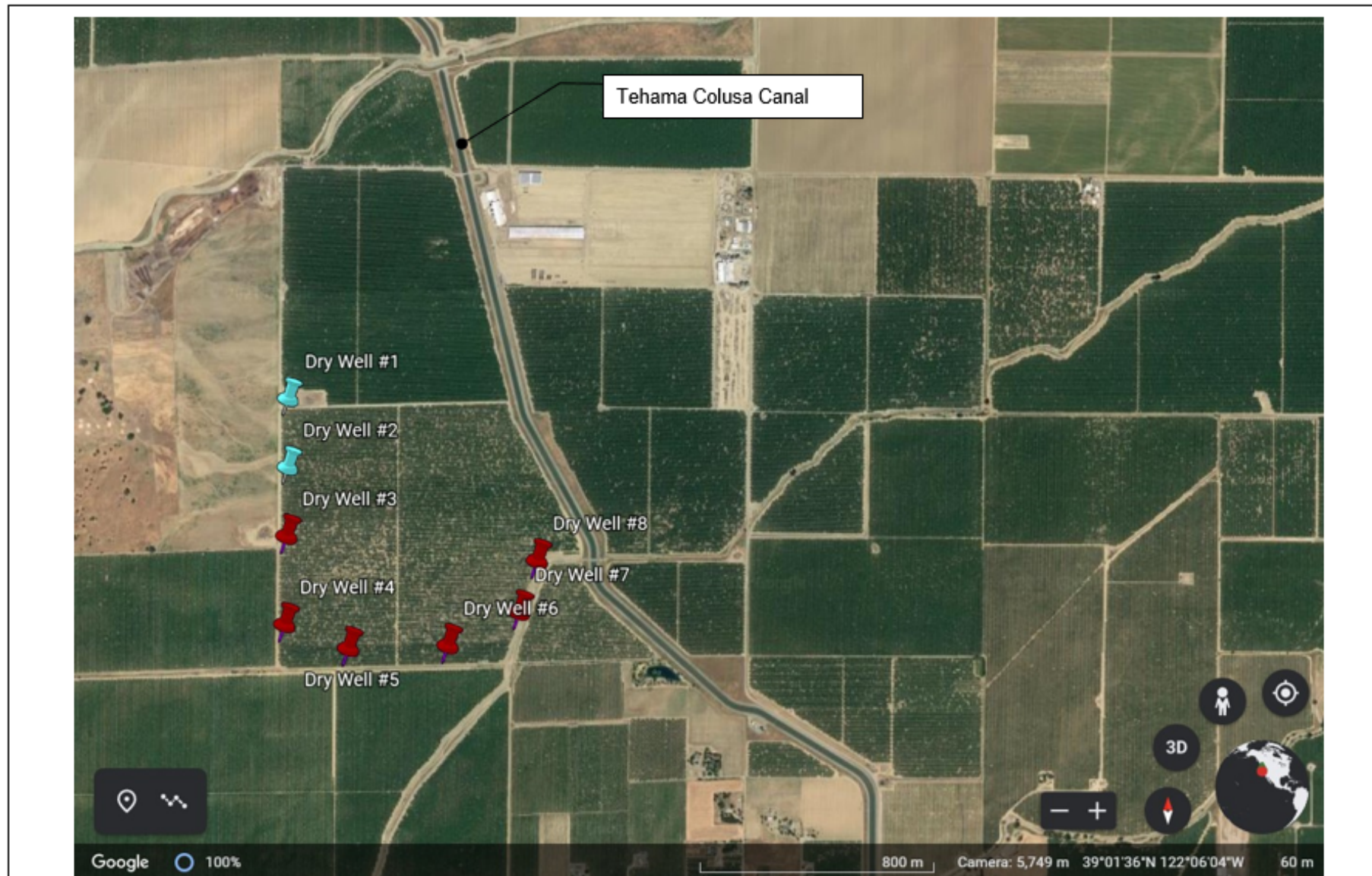
Approximate Scale:
Note to Scale



Drawing Reference:
Google Earth 2021

SITE VICINITY LOCATION MAP
Dry Well Aquifer Storage Pilot Study
T & P Farms
Colusa County

ATTACHMENT B



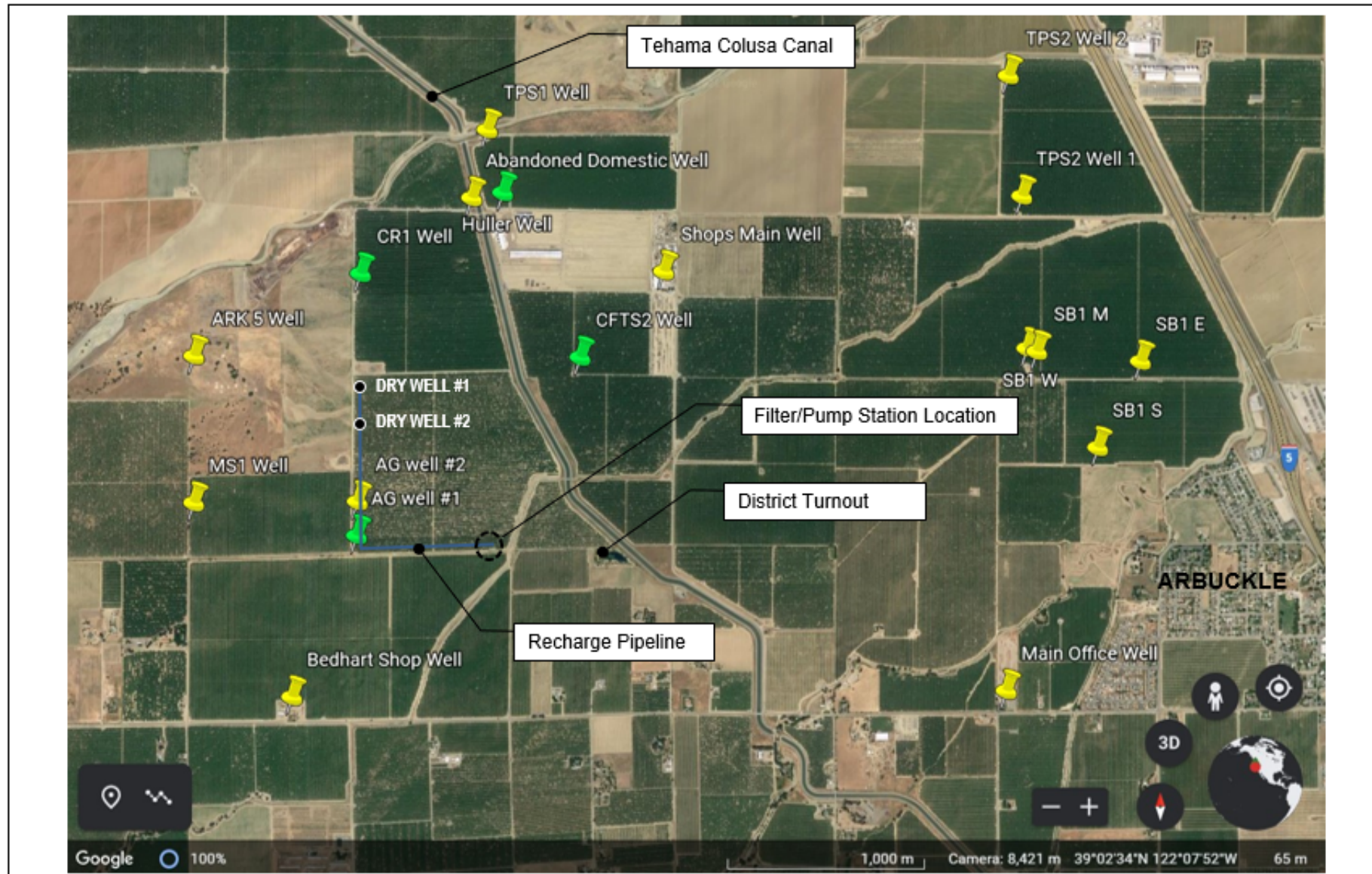
Approximate Scale:
As Noted Above




Drawing Reference:
Google Earth 2021

DRY WELL LOCATION MAP
Dry Well Aquifer Storage Pilot Study
T & P Farms
Colusa County

ATTACHMENT C



<p>Approximate Scale: As Noted Above</p> 	<p>Drawing Reference: Google Earth 2021</p>	<p>MONITORING WELL LOCATION MAP Dry Well Aquifer Storage Pilot Study T & P Farms Colusa County</p>
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ATTACHMENT D

**REQUIREMENTS FOR
MONITORING WELL INSTALLATION WORKPLANS AND
MONITORING WELL INSTALLATION REPORTS**

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1 below. Wells may be installed after staff approves the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report that includes the information contained in Section 2 below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 – Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:

- Purpose of the well installation project.
- Brief description of local geologic and hydrogeologic conditions.
- Proposed monitoring well locations and rationale for well locations.
- Topographic map showing facility location, roads, and surface water bodies.
- Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features.

B. Drilling Details:

- On-site supervision of drilling and well installation activities.
- Description of drilling equipment and techniques.
- Equipment decontamination procedures.
- Soil sampling intervals (if appropriate) and logging methods.

C. Monitoring Well Design (in narrative and/or graphic form):

- Diagram of proposed well construction details:
 - Borehole diameter.
 - Casing and screen material, diameter, and centralizer spacing (if needed).
 - Type of well caps (bottom cap either screw on or secured with stainless steel screws).
 - Anticipated depth of well, length of well casing, and length and position of perforated interval.
 - Thickness, position and composition of surface seal, sanitary seal, and sand pack.
 - Anticipated screen slot size and filter pack.

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):

- Method of development to be used (i.e., surge, bail, pump, etc.).
- Parameters to be monitored during development and record keeping technique.
- Method of determining when development is complete.
- Disposal of development water.

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):

- Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey.
- Datum for survey measurements.
- List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.).

F. Schedule for Completion of Work

G. Appendix: Groundwater Sampling and Analysis Plan (SAP)

- The Groundwater SAP shall be included as an appendix to the workplan and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.
- Provide a detailed written description of standard operating procedures for the following:
 - Equipment to be used during sampling.
 - Equipment decontamination procedures.
 - Water level measurement procedures.
 - Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged).
 - Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used).
 - Purge water disposal.
 - Analytical methods and required reporting limits.
 - Sample containers and preservatives.
 - Sampling:
 - General sampling techniques.
 - Record keeping during sampling (include copies of record keeping logs to be used).
 - QA/QC samples.
 - Chain of Custody
 - Sampling handling and transport.

SECTION 2 – Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.

A. General Information:

- Purpose of the well installation project.

- Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells.
- Number of monitoring wells installed and copies of County Well Construction Permits.
- Topographic map showing facility location, roads, surface water bodies.
- Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):

- On-site supervision of drilling and well installation activities.
- Drilling contractor and driller's name.
- Description of drilling equipment and techniques.
- Equipment decontamination procedures.
- Soil sampling intervals and logging methods.
- Well boring log:
 - Well boring number and date drilled.
 - Borehole diameter and total depth.
 - Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs).
 - Depth to first encountered groundwater and stabilized groundwater depth.
 - Detailed description of soils encountered, using the Unified Soil Classification System.

C. Well Construction Details (in narrative and/or graphic form):

- Well construction diagram, including:
 - Monitoring well number and date constructed.
 - Casing and screen material, diameter, and centralizer spacing (if needed).
 - Length of well casing, and length and position of perforated interval.
 - Thickness, position and composition of surface seal, sanitary seal, and sand pack.
 - Type of well caps (bottom cap either screw on or secured with stainless steel screws).

E. Well Development:

- Date(s) and method of development.
- How well development completion was determined.
- Volume of water purged from well and method of development water disposal.
- Field notes from well development should be included in report.

F. Well Survey (survey the top rim of the well casing with the cap removed):

- Identify the coordinate system and datum for survey measurements
- Describe the measuring points (i.e. ground surface, top of casing, etc.).
- Present the well survey report data in a table.
- Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix.