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## Central Valley Regional Water Quality Control Board

18 September 2020

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### **REVISED NOTICE OF APPLICABILITY**

GENERAL WASTE DISCHARGE REQUIREMENTS  
FOR THE DISCHARGE OF BIOSOLIDS TO LAND  
FOR USE AS A SOIL AMENDMENT IN AGRICULTURAL, SILVICULTURAL,  
HORTICULTURAL, AND LAND RECLAMATION ACTIVITIES  
SYNAGRO WEST LLC; EMIGH LAND LP; EMIGH LAND TP (SO-4)  
2004-0012-DWQ-0022  
SOLANO COUNTY

On 4 October 2018, Synagro West LLC and Emigh Land LP (hereafter, jointly referred to as “Discharger”) submitted a Notice of Intent (NOI) to add new biosolids application areas at the Emigh Land TP (SO-4) property. Additional information was submitted on 14 December 2018, 21 June 2019, 23 and 30 July 2020, 27 August 2020, and 10 September 2020. The Central Valley Water Quality Control Board regulates the application of biosolids to designated fields at the Emigh Land TP property under State Water Resources Control Board Water Quality Order No. 2004-0012-DWQ, *General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities* (General Order).

Based on the information provided in the NOI and subsequent documents, this project and the requested additional application areas meet the conditions of the General Order. This discharge has been assigned enrollee number 2004-0012-DWQ-0022. Please include this number on all correspondence related to this discharge.

You should familiarize yourself with the entire General Order and its attachments, which describe mandatory discharge and monitoring requirements. The discharge must be

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KARL E. LONGLEY SCD, P.E., CHAIR | PATRICK PULUPA, ESQ., EXECUTIVE OFFICER

managed in accordance with the requirements contained in the General Order, the information submitted in the NOI, and the requirements contained in this Notice of Applicability (NOA). A copy of the General Order is enclosed for the Discharger; it may also be viewed on the [Water Board Website](https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0012.pdf).

([https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2004/wqo/wqo2004-0012.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0012.pdf))

## **PROJECT LOCATION**

The Emigh Land TP property is located in the southeastern portion of Solano County, near California State Routes 12 and 113, and about 6.5 miles northwest of Rio Vista's city boundary as shown in Attachment A. The geographic location of the property overlaps onto two Regional Water Quality Control Boards. The biosolids application areas described in this NOA with the exception of Field SO 4-37 are within the jurisdiction of the Central Valley Water Quality Control Board and the operative Water Quality Control Plan is the Sacramento and San Joaquin River Basin. Field SO 4-37 is located in an area under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board and the operative Water Quality Control Plan is the San Francisco Bay Basin. The operative Water Quality Control Plans referenced herein for the Sacramento and San Joaquin River Basin and San Francisco Bay Basin (hereafter Basin Plans), designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies for protecting waters of the basins and incorporates by reference State Water Board plans and policies. This NOA and its requirements applies to all biosolids land application areas described herein.

## **PROJECT DESCRIPTION**

On 22 June 2005, the Discharger was issued an NOA which regulates the discharge of biosolids to Fields SO 4-24, 4-33, 4-34A, 4-34B, 4-41B, 4-42, 4-43, and 4-45. The Discharger proposes the following changes:

1. Add new fields SO 4-25A, SO 4-25B, and SO 4-41A for biosolids application.
2. Add Field SO 4-37. Historically, the San Francisco Water Board has granted conditional approval for biosolids application to Field SO 4-37, provided that the Discharger adheres to the requirements of the Biosolids General Order. Field SO 4-37 has received biosolids since 2001. Since then, approximately 14,361 dry tons of biosolids have been applied as of the last biosolids application in 2019.
3. Remove existing Field SO 4-45 for biosolids application, however the field will continue to be used for pasture and animal grazing.

The land application areas are summarized in Table 1. Net acreage excludes buffer zones between the land application area and property lines, public roadways, surface waters, water supply wells, residences, surface water supply intakes, and city limits. Field SO 4-33 has been split into two separate fields. Due to configuration of Field

SO 4-24 and new fence lines, Field SO 4-41B increased in net acreage from 125 to 149.39 acres.

**Table 1: Biosolids Land Application Area Summary**

Field ID	Field Status	Section-Township-Range	Previous Applied Net Acreage	New Applied Net Acreage
SO 4-24	Existing	34-5N-1E	161	152.58
SO 4-33A	Existing	2-4N-1E	469	141.68
SO 4-33B	Existing	2-4N-1E		266.12
SO 4-34A	Existing	1-4N-1E	484	305.67
SO 4-34B	Existing	1-4N-1E		127.30
SO 4-41B	Existing	34-5N-1E	125	149.39
SO 4-42	Existing	35-5N-1E	121	54.93
SO 4-43	Existing	3-4N-1E	102	125.89
SO 4-45	Existing	4-4N-1E	108	0
SO 4-25A	New	35-5N-1E	0	125.38
SO 4-25B	New	35-5N-1E	0	125.84
SO 4-37	New	4-4N-1E	0	273.38
SO 04-41A	New	34-4N-1E	0	103.01
Total Area:			1,570	1,951.19

The Discharger receives biosolids from various municipal wastewater treatment facilities within California. These can vary from year to year but typically include the following: Calera Creek Water Recycling Plant, Central Marin Sanitation Agency, City of Burlingame, City of Calistoga Public Water Works, City of Eureka, City of Fort Bragg Wastewater Treatment Plant, City of Millbrae, City of Petaluma WRF, City of Roseville, City of San Mateo Wastewater Treatment Plant, City of Windsor, Daly City, Delta Diablo Sanitation District, East Bay Municipal Utility District, Elk River Wastewater Treatment Plant, Ironhouse Sanitary District, San Francisco Public Commission – Oceanside Plant, San Francisco Public Utilities Commission – Southeast Plant, Silicon Valley Clean Water, Sunnyvale Water Pollution Control Plant, and Union Sanitation District.

Biosolids application areas typically grow pasture grasses and are used for cattle and sheep grazing. Other crops or vegetation including but not limited to alfalfa, corn, cotton, sudan grass, and wheat may be grown in the application areas. Crop nitrogen usage is from 200 to 400 pounds per acre per year, depending on the crop (UC Davis Cooperative Extension 2015). Biosolids will be applied between 15 April and 15 October each year and incorporated into the soil on the same day biosolids arrive on site. The site is not irrigated and receives approximately 15 inches of precipitation per year as the

sole source water. Biosolids are not applied during precipitation events (as required by the Solano County Ordinance). Setbacks and buffer zones for land application and staging that comply with the General Order and Solano County Ordinance will be marked prior to each application.

The Discharger will maintain minimum setbacks and buffer zones from biosolids application areas consistent with the General Order and the Solano County Ordinance. Buffer zones for land application and staging in accordance with the County Ordinance is shown in the table below:

<b>FEATURE</b>	<b>DO NOT APPLY OR STAGE WITHIN:</b>
Property Lines	100 feet
Public Roadways	100 feet
Surface Water	200 feet
Any type of water supply wells	500 feet
Residents located off site that are registered for biosolids application (may be reduced to $\geq 100$ feet, if approved by owner occupied residences)	$\frac{1}{2}$ mile (1,320 feet)
Residents located on site that are registered for biosolids (except in case where owner occupied residence is waived by owner)	$\frac{1}{4}$ mile (1,320 feet)
Surface water supply intake	2,500 feet
City limits or Travis Air Force Base employment centers	2 miles

The terrain is gently sloping north with surface elevations ranging between 30 and 100 feet above mean sea level. The site is surrounded by gently rolling hills, grasslands, and agricultural lands. Outside the southeast corner of the site is Aqua Clear Farms, a permitted Class II disposal facility with surface impoundments. The disposal facility is owned, operated, and regulated separately from the Emigh Land property.

Surface water drainage within the Emigh Land property is to intermittent streams that traverse the site generally from south to north. Site soils are typically mixtures of clay, loam, sand, clayey sand, and silty sand. The site is primarily outside the 0.2 percent annual chance floodplain. Areas where surface waters or ephemeral streams bisect the property are subject to inundation by the 1 percent annual chance flood.

## **GROUNDWATER CONDITIONS**

The General Order requires groundwater monitoring for biosolids application operations where minimum depth to first encountered groundwater is less than 25 feet below ground surface (bgs).

An initial groundwater assessment was performed in May 2007 when the biosolids application site consisted of Fields SO 4-24, 4-33, 4-34A, 4-34B, 4-41B, 4-42, 4-43, and 4-45. The assessment was described in the *Depth to Groundwater Study* dated 29 August 2007. Five direct push borings were completed to depths of between 46 and 50 feet bgs and represented differing elevations with special focus on low areas near streams within the application fields. Direct push borings were not completed in Fields SO 41-B and SO 4-42 based on elevations and no presence of water bodies or streams. Temporary wells to collect grab groundwater samples were constructed at Fields SO 4-24, SO 4-34A, and SO 4-42 and in the north and south sections of SO 4-33B; and were later backfilled after the completion of the assessment. Temporary well locations are shown in Attachment B.

The 2007 study concluded that first encountered groundwater at Fields SO 4-34A and SO 4-42 and the south section of SO 4-33 was at depths greater than 30 feet bgs. Groundwater was encountered at a depth of 46 feet bgs in the northern temporary well at Field SO 4-33B. Because groundwater was encountered approximately 12 feet bgs at SO 4-24, the General Order prescribes groundwater monitoring in areas where groundwater is encountered at depths less than 25 feet bgs. Therefore, the Discharger shall conduct groundwater monitoring or demonstrate that biosolids application activities have not impacted first encountered groundwater at Field SO 4-24.

Maps included in the NOI show water bodies within new Field SO 4-41A and ephemeral streams that bisect new Fields SO 4-25 and SO 4-41A. A recent groundwater assessment was performed at Fields SO 4-25 and SO 4-33. The analysis was submitted on 3 January 2020. Two borings were drilled to 20 feet bgs; one at the northeast corner of SO 4-25B and another at the northern section of SO 4-33B. Depth to first encountered groundwater was approximately 9.5 to 10 feet bgs.

Based on the 2007 and 2020 groundwater assessments, below is a table summarizing approximate depth to first encountered groundwater with respect to existing and planned biosolids application areas. NA denotes not available and no assessment was performed.

**Table 2: Depth of Groundwater**

<b>Field ID</b>	<b>Field Status</b>	<b>Approximate Depth to Groundwater (feet bgs)</b>
SO 4-24	Existing	12
SO 4-33A	Existing	32 - 46
SO 4-33B	Existing	32 - 46
SO 4-34A	Existing	37
SO 4-34B	Existing	37
SO 4-41B	Existing	> 25

Field ID	Field Status	Approximate Depth to Groundwater (feet bgs)
SO 4-42	Existing	38.5
SO 4-43	Existing	> 25
SO 4-25A	New	10
SO 4-25B	New	10
SO 4-37	New	86
SO 04-41A	New	NA

As a result of the 2020 groundwater assessment, three groundwater monitoring wells were installed on 20 April 2020 to monitor first encountered groundwater at Field SO 4-25. Monitoring well locations are shown in Attachment B. Well construction details are summarized in Table 3. TOC denotes top of casing. MSL denotes mean sea level.

**Table 3: Groundwater Monitoring Well Summary**

Well ID	Top of Casing (feet MSL)	Depth to Bottom (feet TOC)	Depth to Water (feet TOC)	Groundwater Elevation (feet MSL)
MW-1	105.46	52.56	23.29	82.17
MW-2	37.36	29.04	14.67	22.69
MW-3	35.86	29.28	15.51	20.35

Wells MW-1, MW-2, and MW-3 will be used to monitor first encountered groundwater at Field SO 4-25, which was encountered at a depth of less than 25 feet bgs. Baseline ground samples were obtained on 20 April 2020 and analyzed for the parameters shown in Table 4. A duplicate sample was obtained from MW-2 and identified as MW-2A. Water quality data was provided in the *Monitoring Well Installation and Sampling Report* dated 26 May 2020. NA denotes not available. ND denotes not detected above the practical quantitation limit (PQL) / reporting limit (RL). J denotes estimated value detected between the maximum detection limit (MDL) and PQL / RL.

**Table 4: Baseline Groundwater Quality**

Constituents	Units	MW-1	MW-2	MW-2A	MW-3
pH	std. units	7.76	7.27	NA	7.34
Specific Conductance	µmhos/cm	1,651	1,751	NA	2,174
TDS	mg/L	938	1,080	971	1,170
Chloride	mg/L	220	360	350	490

Constituents	Units	MW-1	MW-2	MW-2A	MW-3
Sodium	mg/L	300	180	180	240
Sulfate	mg/L	52	51	50	99
Nitrate as N	mg/L	74	19	19	18
Nitrate as NO <sub>3</sub> N	mg/L	17	4.3	4.2	4.0
TKN	mg/L	0.33	< 0.3, ND	< 0.3, ND	< 0.3, ND
Arsenic	µg/L	3.7	4.9	4.0	3.7
Cadmium	µg/L	< 0.5, ND	< 0.5, ND	< 0.5, ND	< 0.5, ND
Copper	µg/L	0.9	1.3	0.44, J	1.2
Iron	µg/L	380	750	110	390
Lead	µg/L	< 0.5, ND	< 0.5, ND	< 0.5, ND	< 0.5, ND
Magnesium	µg/L	28,000	58,000	59,000	72,000
Manganese	µg/L	7.7, J	21, J	10, J	14, J
Mercury	µg/L	< 0.2, ND	< 0.2, ND	< 0.2, ND	< 0.2, ND
Molybdenum	µg/L	61	6	5.9	11
Nickel	µg/L	<1, ND	6.3	2.2	4.4
Selenium	µg/L	1.4	2.7	2.8	5.4
Zinc	µg/L	< 20, ND	< 20, ND	< 20, ND	< 20, ND

Due to limited land availability for biosolids application, an assessment of the depth to first encountered groundwater at Field SO 4-41A has not yet been performed. The General Order prescribes an assessment of groundwater only if encountered at depths less than 25 feet bgs, therefore the Discharger shall perform a groundwater assessment at Field SO 4-41A prior to first biosolids application.

As reported in the NOI, groundwater underlying Field SO 4-37 is at a depth of approximately 86 feet bgs, based on a nearby irrigation well (state well number 05N01E32B001M). The General Order prescribes an assessment of groundwater only if encountered at depths less than 25 feet bgs, therefore a groundwater assessment or groundwater monitoring at Field SO 4-37 is not needed.

## MONITORING AND REPORTING

The Discharger must comply with Monitoring and Reporting Program (MRP) R5-2005-0825 REV1, which is attached hereto and made part of this NOA by reference. This site-specific MRP replaces the requirements of the MRP contained in the General Order, requires the submittal of monthly monitoring reports, and has been revised to include groundwater monitoring. Monitoring reports need to be submitted even if there is no biosolids land application during the reporting period. The site-specific MRP applies

to all biosolids application fields as described in this NOA. Monitoring reports shall be submitted to the Central Valley Water Board as described in the Document Submittal section of this NOA. Please reference Order 2004-0012-DWQ-0022 and revised MRP R5-2005-0825 REV1, when submitting your monitoring reports.

## CONDITIONS OF DISCHARGE

1. The General Order requires submittal of a Pre-application Report at least 30 days prior to the application of biosolids for each field. The NOI for proposed Field SO 4-41A included information as required in the Pre-application Report with the exception of Item 10.A, a Land Productivity Evaluation. **At least 30 days** prior to the first planned application of biosolids to Field SO 4-41A, the Discharger shall submit a Land Productivity Evaluation to satisfy the Pre-application Report requirement set forth in Provision D.1 of the Biosolids General Order.
2. **By 30 December 2020**, the Discharger shall submit a *Groundwater Evaluation Report* to determine if groundwater monitoring is required at Field SO 4-24. The report shall confirm depth to first encountered groundwater at Field SO 4-24 and groundwater quality, if encountered. If groundwater is found to be at a depth less than 25 ft bgs, the report shall demonstrate based on, but not limited to site specific investigations and best management practices that previous biosolids applications at Field SO 4-24 has not impacted groundwater quality. If it can be demonstrated that impacts to groundwater from continued application of biosolids to this field will not likely degrade groundwater quality, the Discharger shall document those findings in the report. Upon approval of the report by the Central Valley Water Board Executive Officer, groundwater monitoring will not be required. However, if at any time it can be shown that discharges are impacting groundwater, groundwater monitoring may be required.

If groundwater monitoring is warranted, the following documents shall be submitted:

- a. *Groundwater Well Installation Workplan* that proposes an adequate number of groundwater monitoring wells to ensure sufficient monitoring of groundwater quality beneath Field SO 4-24, including but not limited to groundwater characterization upgradient and downgradient of Field SO 4-24. Groundwater monitoring wells shall be designed to yield samples representative of the uppermost portion of the first encountered groundwater underlying Field SO 4-24. The workplan shall be prepared in accordance with, and including the items listed in, the first section of Attachment C: "Monitoring Well Installation Workplans and Monitoring Well Installation Reports", which is attached hereto.
- b. *Groundwater Monitoring Well Installation Report* that describes the installation and development of all new monitoring wells and explains any deviations from



the approved installation workplan. The report shall be prepared in accordance with, and include the items listed in, the second section of Attachment C: "Monitoring Well Workplan and Monitoring Well Installation Report," which is attached hereto.

3. **At least 120 days** prior to first planned biosolids application to Field SO 4-41A, the Discharger shall perform a groundwater assessment to determine if first encountered groundwater underlying Field SO 4-41A is less than 25 feet bgs. The Groundwater Assessment Report shall be prepared by a licensed professional engineer or geologist that describes the results of a preliminary groundwater assessment. The assessment shall be based on information from a site-specific field investigation designed to characterize soils underlying the biosolids application field, the depth to groundwater (with special focus on low areas near streams), and groundwater quality beneath the biosolids application fields. At a minimum, two borings shall be completed into the first encountered water table or a maximum depth of 25 feet bgs. If groundwater is encountered, samples shall be obtained and analyzed by a state-certified laboratory for nitrate nitrogen, total dissolved solids, general minerals, and metals regulated under the General Order.

If first encountered groundwater is found to be less than 25 feet bgs and if it can be demonstrated that impacts to groundwater from application of biosolids will not likely degrade groundwater quality, the Discharger shall document those findings in the report to be submitted to the Central Valley Water Board. Upon approval of the report by the Central Valley Water Board Executive Officer, groundwater monitoring will not be required. However, if at any time it can be shown that discharges are impacting groundwater, groundwater water may be required.

If groundwater monitoring is warranted, the following documents shall be submitted:

- a. *Groundwater Well Installation Workplan* that proposes an adequate number of groundwater monitoring wells to ensure sufficient monitoring of groundwater quality beneath Field SO 4-41A, including but not limited to groundwater characterization upgradient and downgradient of Field SO 4-41A. Groundwater monitoring wells shall be designed to yield samples representative of the uppermost portion of the first encountered groundwater underlying Field SO 4-41A. The workplan shall be prepared in accordance with, and including the items listed in, the first section of Attachment C: "Monitoring Well Installation Workplans and Monitoring Well Installation Reports", which is attached hereto.
- b. *Groundwater Monitoring Well Installation Report* that describes the installation and development of all new monitoring wells and explains any deviations from

the approved installation workplan. The report shall be prepared in accordance with, and include the items listed in, the second section of Attachment C: "Monitoring Well Workplan and Monitoring Well Installation Report," which is attached hereto.

4. **Every 5 years beginning in 2025**, the Discharger shall submit an updated Groundwater Assessment Report. The report shall be due by **1 February** the following year. The report shall be prepared by a licensed professional engineer or geologist. The assessment shall evaluate the depth to first encountered groundwater at all biosolids application fields in comparison to the previous assessment conducted in 2007 and determine that the application of biosolids has not impacted water quality where first encountered groundwater is less than 25 feet bgs.

#### **SITE SPECIFIC AND OTHER REQUIREMENTS**

1. Application of biosolids at a location or in a manner different from that is described in the NOI, this NOA, and in Attachments A and B is prohibited.
2. The application shall not cause or threaten to cause pollution as defined by California Water Code section 13050.
3. There shall be no discharge of biosolids from the storage or application areas to adjacent land areas not regulated by this NOA, to surface water, or to surface water drainage courses.
4. The staging and application of biosolids shall comply with all applicable setbacks contained in the General Order and the Solano County Ordinance.
5. Application of biosolids at rates in excess of the nitrogen requirements of the vegetation or at rates that would degrade ground water quality is prohibited.
6. The application of biosolids to water-saturated or frozen ground or during periods of precipitation that includes runoff from the permitted site is prohibited.
7. The application of Class B biosolids containing a moisture content of less than 50 percent is prohibited.
8. The application of biosolids to slopes exceeding 25 percent is prohibited.
9. The Discharger is required to implement its Biosolids Spill Response Plan and Monitoring and Reporting Plan.
10. This Discharger shall submit the required annual fee in the annual billing statement issued by the State Water Resources Control Board until this NOA is officially terminated. To terminate coverage under this NOA, the Discharger must

notify this office in writing using the Notice of Termination form that accompanies the General Order.

11. Failure to abide by the conditions of General Order 2004-0012-DWQ, including its monitoring and reporting requirements and this NOA could result in enforcement actions, as authorized by provisions of the California Water Code.

This NOA serves as formal notice that Water Quality Order No. 2004-0012-DWQ is applicable, as described above. If the discharge violates the terms or conditions of the General Order, the Central Valley Water Board may take enforcement action, including assessment of administrative civil liability. Prior to implementing any discharge changes, a new NOI must be submitted for continued coverage under the General Order. Alternatively, a Report of Waste Discharge may be submitted for coverage under individual Waste Discharge Requirements.

### **DOCUMENT SUBMITTALS**

All monitoring reports and other correspondence should be converted to searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50 MB should be emailed to: [centralvalleysacramento@waterboards.ca.gov](mailto:centralvalleysacramento@waterboards.ca.gov).

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 any documentation submitted to the mailing address for this office:

Program:	Non-15 Compliance
Facility Name:	Emigh Land LP (SO-4)
County:	Solano
Order:	2004-0012-DWQ-0022
CIWQS Place ID:	CW-222717

Documents that are 50 MB or larger should be transferred to a CD, DVD, or flash drive and mailed to:

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

Now that the NOA has been issued, the Board's Compliance and Enforcement section will take over management of your case. Kenny Croyle is your point of contact for any questions about compliance with the General Order. If you find it necessary to make a change to your permitted operations, Kenny will direct you to the appropriate Permitting staff. You may contact Kenny at (916) 464-4676 or [kenny.croyle@waterboards.ca.gov](mailto:kenny.croyle@waterboards.ca.gov).



for Patrick Pulupa  
Executive Officer

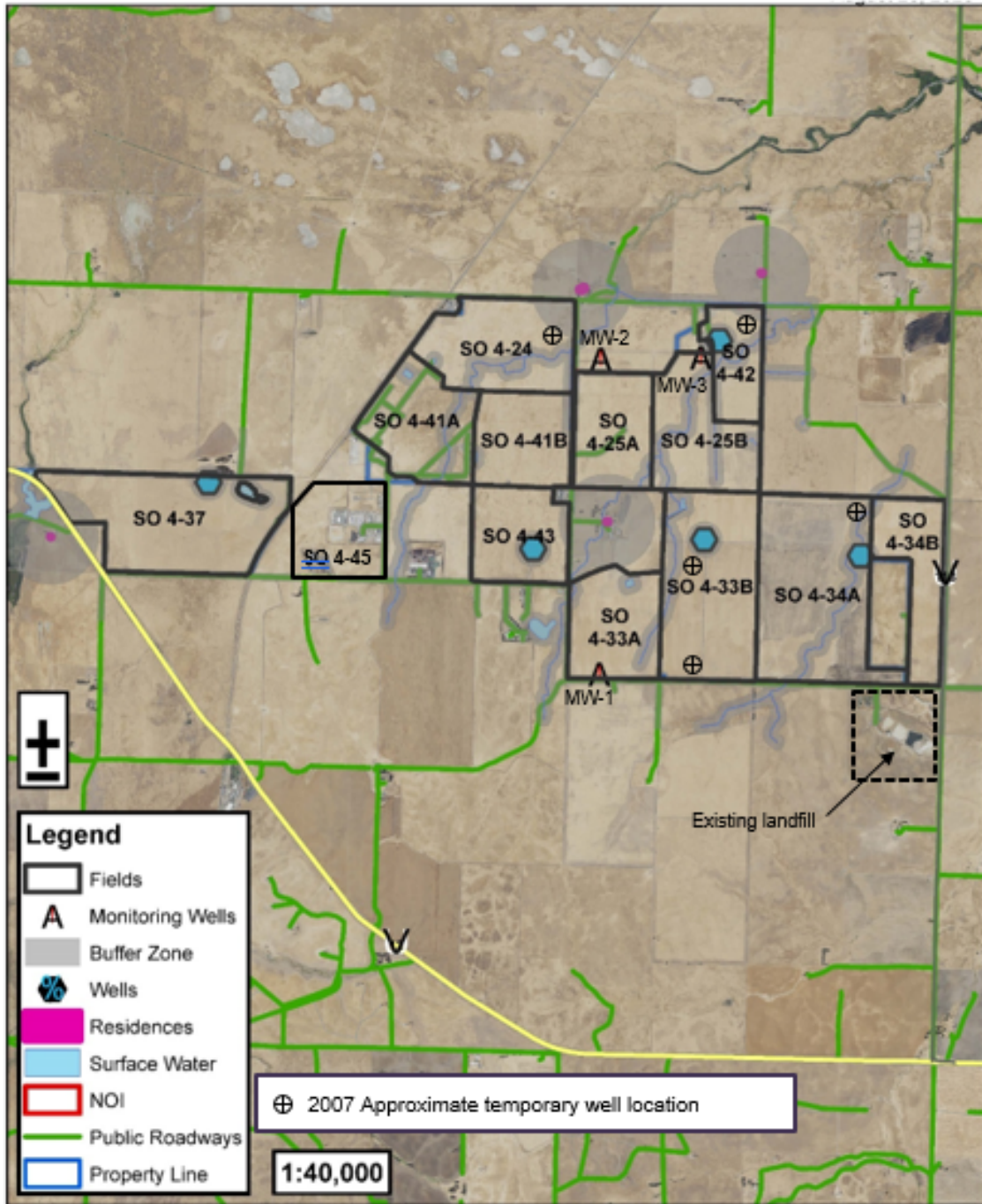
Attachments: Attachment A, Project Location and Vicinity Map  
Attachment B, Biosolids Application Area Maps  
Attachment C, Requirements for Monitoring Well Installation Workplans  
and Monitoring Well Installation Reports.

Enclosure: Monitoring and Reporting Program No. R5-2009-0825 REV1  
State Water Board Water Quality Order No. 2004-0012-DWQ

cc w/ out enc: Jeffrey Bell, Solano County Environmental Health Department, Fairfield  
Howard Hold, CVRWQCB, Rancho Cordova (via email)  
Melissa Gunter, SFRWQCB, Oakland (via email)  
Margaret Monahan, SFRWQCB, Oakland (via email)  
Jose Valencia, Synagro, Rancho Cordova (via email)



### SO - 4 Emigh Ranch

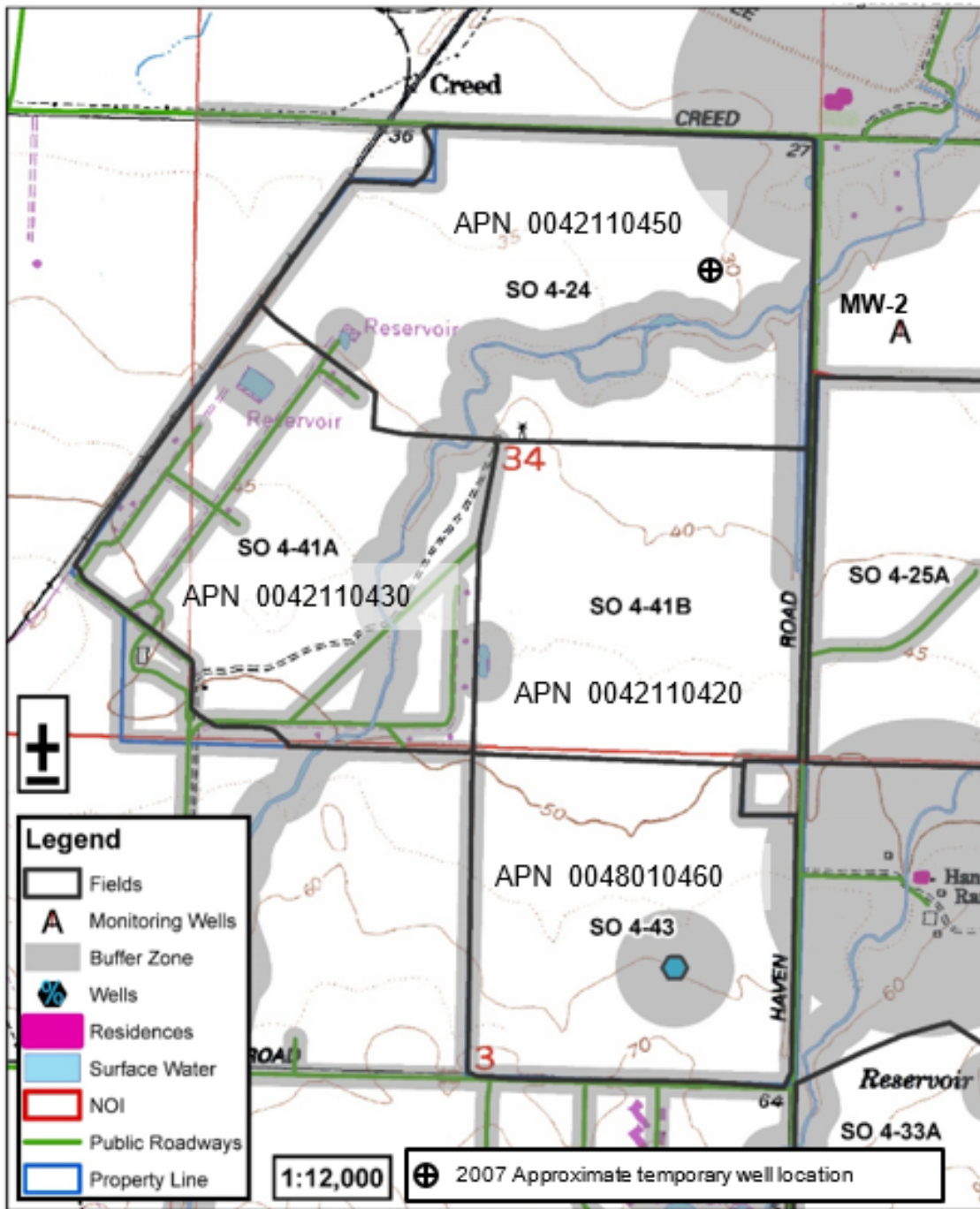


Source:  
Land IQ Maps  
August 26, 2020

**BIO SOLIDS APPLICATION AREA MAP**  
Synagro West LLC and Emigh Land LP  
Emigh Land TP (SO-4)  
Solano County

Approximate  
Scale:  
As noted

### SO - 4 Emigh Ranch Field Map: A (FIELDS 24, 41A, 41B, AND 43)

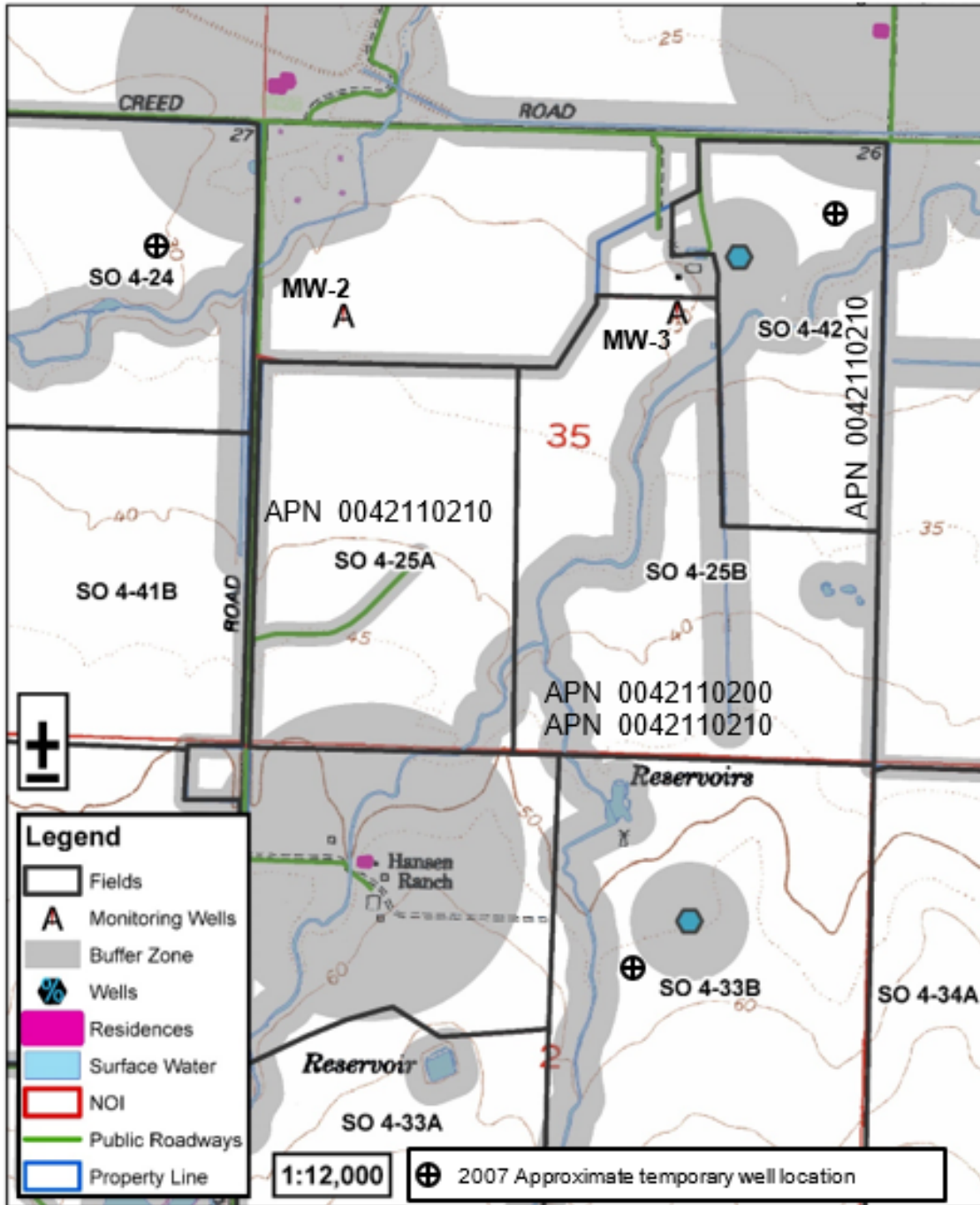


Source:  
Land IQ Maps  
August 26, 2020

**FIELDS 24, 41A, 41B, AND 43**  
**BIOSOLIDS APPLICATION AND BUFFERS**  
 Emigh Land TP (SO-4)  
 Solano County

Approximate  
Scale:  
As noted

### SO - 4 Emigh Ranch Field Map: B (FIELDS 25A, 25B, AND 42)



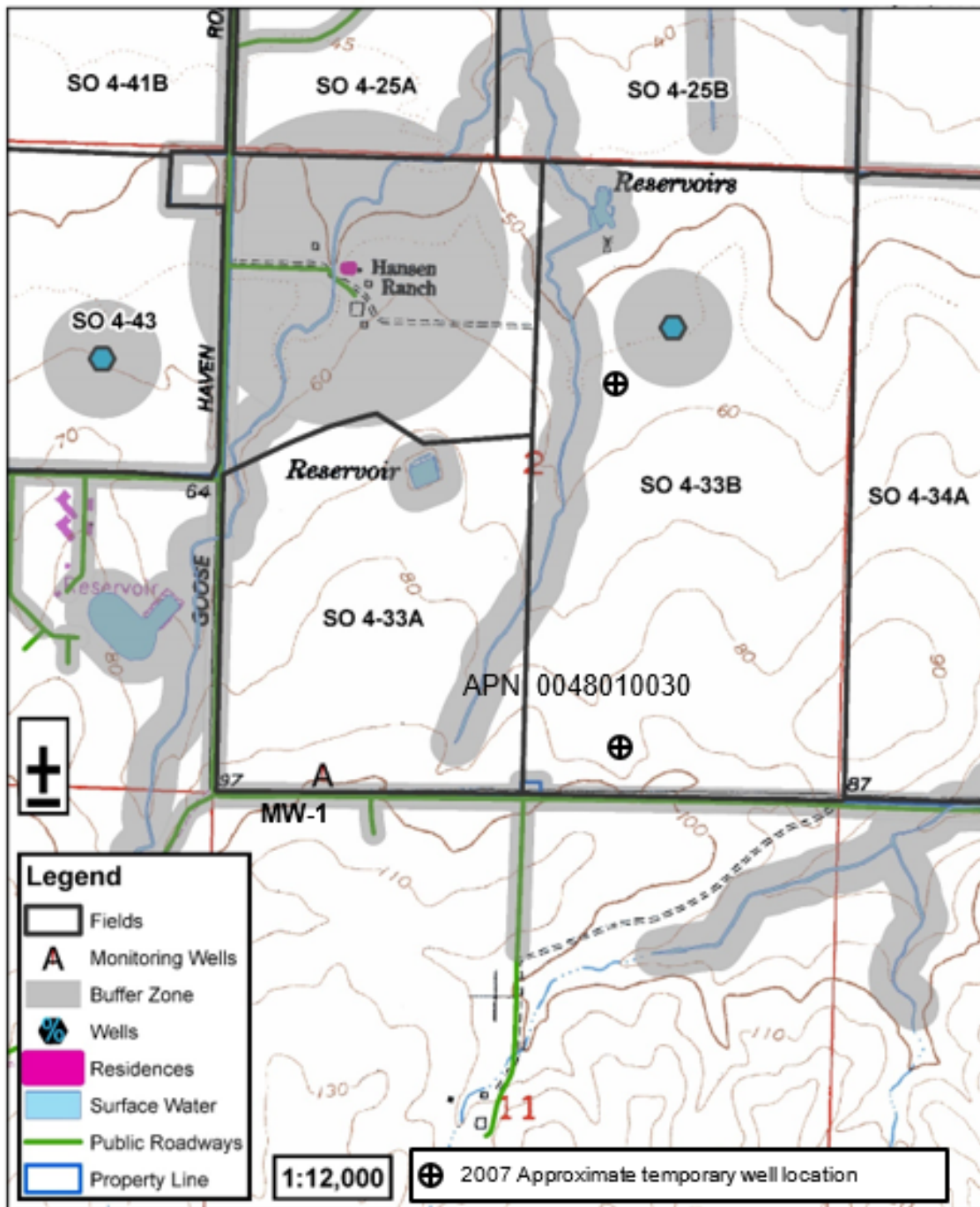
Source:  
Land IQ Maps  
August 26, 2020

**FIELDS 25A, 25B, AND 42**  
**BIOSOLIDS APPLICATION AND BUFFERS**  
Emigh Land TP (SO-4)  
Solano County

Approximate  
Scale:  
As noted



### SO - 4 Emigh Ranch Field Map: C (FIELDS 33A AND 33B)

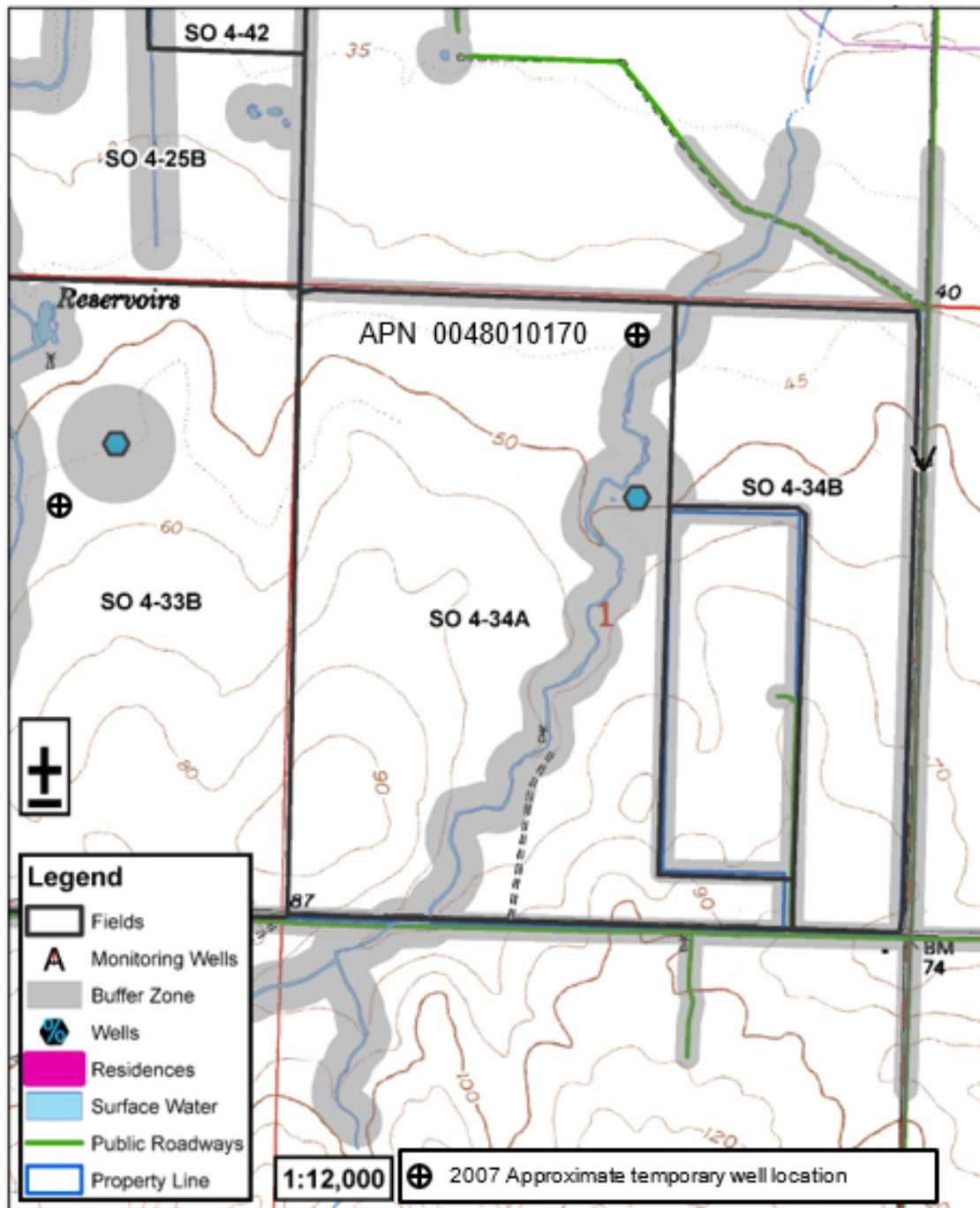


Source:  
Land IQ Maps  
July 28, 2020

**FIELDS 33A AND 33B**  
**BIOSOLIDS APPLICATION AND BUFFERS**  
Emigh Land TP (SO-4)  
Solano County

Approximate  
Scale:  
As noted

### SO - 4 Emigh Ranch Field Map: D : (FIELDS 34A AND 34B)

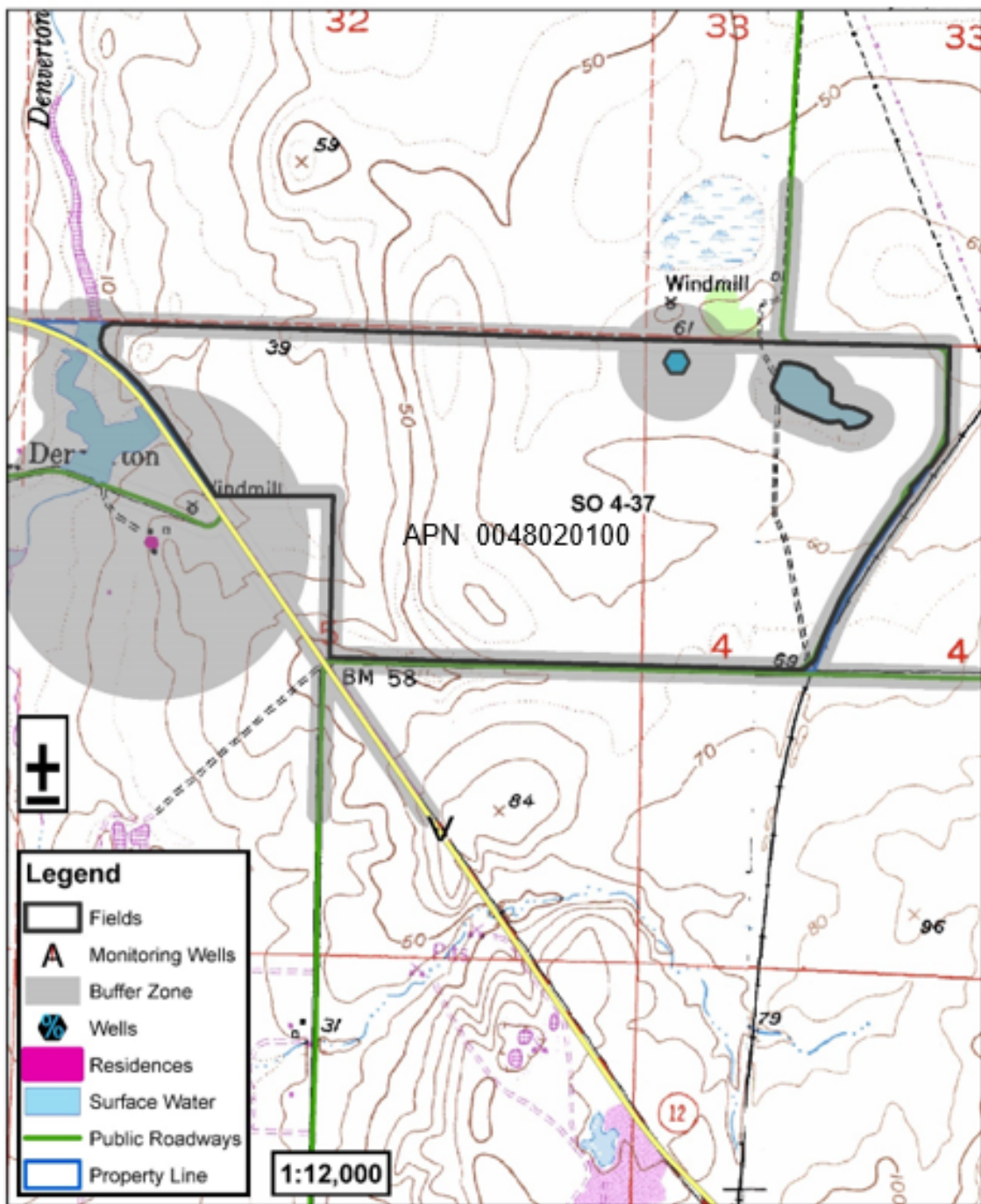


Source:  
Land IQ Maps  
July 28, 2020

**FIELDS 34A AND 34B**  
**BIOSOLIDS APPLICATION AND BUFFERS**  
Emigh Land TP (SO-4)  
Solano County

Approximate  
Scale:  
As noted

### SO - 4 Emigh Ranch Field Map: E : (FIELD 37)



Source:  
Land IQ Maps  
July 28, 2020

**FIELD 37**  
**BIOSOLIDS APPLICATION AND BUFFERS**  
Emigh Land TP (SO-4)  
Solano County

Approximate  
Scale:  
As noted

**ATTACHMENT C**

**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.