ATTACHMENT G

POST-INJECTION SITE CARE AND SITE CLOSURE PLAN 40 CFR 146.93(a)

1. FACILITY INFORMATION

Facility Name: CarbonFrontier

Facility Contact: Faisal Latif, Storage Development Manager
(661) 763-6274, Faisal.latif@crc.com

Well Information:

Well Number	County, State	Latitude	Longitude
CI1-64Z-27N	Kern County, CA	35°33'9.4877"N	119°48'26.3702"W
CI2-64Z-35N	Kern County, CA	35°32'32.6713"N	119°47'37.0682"W
CI3-64Z-35N	Kern County, CA	35°32'11.6457"N	119°47'7.5912"W
CI4-64Z-35N	Kern County, CA	35°31'55.4154"N	119°46'51.7864"W
27R-27N	Kern County, CA	35°33'2.4280"N	119°48'28.6103"W
55-26N	Kern County, CA	35°32'43.2520"N	119°47'32.7755"W
64-35N	Kern County, CA	35°31'44.3600"N	119°46'44.9788"W
9-1N	Kern County, CA	35°31'31.6480"N	119°46'37.0154"W
64-27N	Kern County, CA	35°32'38.0979"N	119°47'54.6576"W

Version History

File Name	Version	Date	Description of Change
Attachment G – Aera CCS PISC SC.pdf	1	January 19, 2023	Original document
Attachment G – CarbonFrontier PISC SC V2 04182024.pdf	2	April 18, 2024	Revisions made based on updated Alternative PISC Timeframe and an additional monitoring well
Attachment G – CarbonFrontier PISC SC V3 10152024.pdf	3	October 15, 2024	Revisions made based on EPA Technical Review comments from September 12, 2024

This Post-Injection Site Care (PISC) and Site Closure plan describes the activities that Aera Energy LLC (Aera) will perform to meet the requirements of Title 40 of the Code of Federal Regulations (40 CFR) 146.93. Aera will monitor groundwater quality and track the position of the carbon dioxide (CO_2) plume and pressure front for 15 years following the cessation of injection. Aera may not cease post-injection monitoring until a demonstration of non-endangerment of underground sources of drinking water (USDWs) has been approved by the Underground Injection Control

(UIC) Program Director pursuant to 40 CFR 146.93(b)(3). Following approval for site closure, Aera will plug the monitoring wells, restore the well sites to their pre-project condition, and submit a site closure report and associated documentation.

2. PRE- AND POST-INJECTION PRESSURE DIFFERENTIAL [40 CFR 146.93(A)(2)(I)]

The pressure differential between pre-injection and post-injection as derived from the reservoir simulation is shown in **Figure 1**. Based on the modeling of the pressure front as part of the Area of Review (AoR) delineation (**Attachment B**), pressures at the injection wells are expected to stabilize within the first two years after stopping injection, as displayed in **Figure 2**. Additional discussion of the predicted post-injection pressure declines and differentials is presented in the AoR and Corrective Action Plan (**Attachment B**).

3. PREDICTED POSITION OF THE CO_2 PLUME AND ASSOCIATED PRESSURE FRONT AT SITE CLOSURE [40 CFR 146.93(A)(2)(II)]

Figure 3 shows the predicted extent of the plume and pressure front at the end of the PISC timeframe, 15 years, and at 100 years post-injection. The AoR boundary shown in **Figure 3** represents the maximum extent of the plume and pressure front. This map is based on the AoR delineation modeling results submitted pursuant to 40 CFR 146.84.

4. POST-INJECTION MONITORING PLAN [40 CFR 146.93(B)(1)]

Performing groundwater monitoring in the Agua Sandstone and Lower Carneros Sandstone along with plume and pressure front tracking in the injection zone, as described in the following sections during the post-injection phase, will meet the requirements of 40 CFR 146.93(b)(1). The results of the post-injection phase testing and monitoring will be submitted annually, within 60 days of the anniversary date on which injection ceases, as described under "Schedule for Submitting Post-Injection Monitoring Results," below.

A Quality Assurance and Surveillance Plan (QASP) for testing and monitoring activities during the injection and post injection phases is provided in the appendix to the Testing and Monitoring Plan (**Attachment E**). Five existing wells, owned by Aera, will be repurposed for monitoring purposes as described in **Table 1** and depicted on **Figure 4.**

Table 1: Monitoring Well Locations and Zones

Well Number	County, State	Latitude	Longitude	Monitoring Zone
39-26N	Kern County, CA	35°32'54.8149"N	119°47'35.1082"W	64 Zone
1-28N	Kern County, CA	35°33'22.7757"N	119°48'51.4527"W	Agua & 64 Zone
25-26N	Kern County, CA	35°33'1.2506"N	119°47'43.8785"W	Agua
27-1N	Kern County, CA	35°31'18.6498"N	119°46'21.0202"W	64 Zone
35X-27N	Kern County, CA	35°32'59.1538"N	119°48'06.3812"W	Lower Carneros

Access to monitoring wells will continue to be provided through Aera's ownership and existing access agreements.

4.1 Monitoring Above the Confining Zone

Table 2 presents the monitoring methods, locations, and frequencies for monitoring above the confining zone. **Table 3** identifies the parameters to be monitored and the analytical methods Aera will employ. Continuous monitoring parameters are described in **Table 4.** Fluid sampling will be performed as described in **Section 2.2.1** of the **QASP;** sample handling and custody will be performed as described in **Section 2.3** of the **QASP**; and quality control methods are described in **Section 2.5** of the **QASP**. Establishment of an increasing trend of pressure and CO_2 stream components beyond the baseline would be considered a deviation and reason for further investigations.

Table 2: Monitoring of Groundwater Quality and Geochemical Changes Above the Confining Zone

Target Formation	Monitoring Activity	Monitoring Well Locations	Frequency
Agua Sandstone (approximately 7,500-7,800 ft MD)	Fluid sampling	1-28N and 25-26N	Every 2 years starting from the year of cessation of injection until 15 years after injection ceases, which is the end of the PISC period
	Temperature (DTS)	1-28N and 25-26N	Continuous
	Pressure monitoring	1-28N and 25-26N	Quarterly
	Temperature (DTS) monitoring	39-26N and 27-1N	Continuous
	Pulsed neutron logging	1-28N, 25-26N, and 27-1N	Every 2 years starting from the year of cessation of injection until 15 years after injection ceases, which is the end of the PISC period
Lower Carneros (approximately 6,550-7,150 ft MD)	Fluid sampling	35X-27N	Every 2 years starting from the year of cessation of injection until 15 years after injection ceases, which is the end of the PISC period
	Pressure monitoring	35X-27N	Quarterly

ft: foot or feet
MD: measured depth

Table 3: Summary of Analytical and Field Parameters for Groundwater Fluid Sampling

Parameters		Analytical Methods
Cations/Metals (aluminum, barium, calcium, manganese, sodium, potassium, iron, arsenic, magnesium, silica, cadmium, chromium, copper, lead, selenium, titanium, zinc)		EPA Method 200.7/200.8 or similar
Anions (chloride, sulfate, sulfide, bromide, fluoride, nitrate)		EPA Method 300.0/300.1 or similar; SM 4500 for sulfide
Dissolved gases • carbon dioxide • methane • oxygen • hydrogen sulfide (field)		 RSK-175M RSK-175M SM 4500 OG or RSK-175M Field
Total dissolved solids		EPA Method 160.1/SM 2540 C
Alkalinity		SM 2320 B/EPA Method 310.1
Field measurements	pH	EPA Method 150.1/SM4500-H+B
	Specific conductance	EPA Method 120.1
	Temperature	Thermocouple
Hardness		SM 2340C
Turbidity		SM 2130B
Specific gravity		SM2710F
Water density		
Dissolved inorganic carbon isotopes ($\delta^{13}C$)		Mass spectrometry

Table 4: Sampling and Recording Frequencies for Continuous Monitoring

Parameter	Device(s)	Location Depth	Minimum Sampling Frequency[a]	Minimum Recording Frequency[b]
Pressure	Pressure gauge - 1% accuracy	Surface and downhole	Continuous	Continuous[c]
Temperature	DTS[d]/Temperature gauge	Along wellbore to packer	Continuous	Continuous

a. Sampling frequency refers to how often the monitoring device obtains data from the well for a particular parameter. For example, a recording device might sample a pressure transducer monitoring injection pressure once every 2 seconds and save this value in memory.
b. Recording frequency refers to how often the sampled information gets recorded to digital format (such as a computer hard drive). For example, the data from the injection pressure transducer might be recorded to a hard drive once every minute.
c. This can be the average of the sampled readings over the period, or maximum or minimum, as appropriate.
d. DTS: distributed temperature sensing

4.2 Carbon Dioxide Plume and Pressure Front Tracking [40 CFR 146.93(a)(2)(iii)]

Aera will employ direct and indirect methods to track the extent of the CO_2 plume and the presence or absence of elevated pressure. **Table 5** presents the direct and indirect methods that Aera will use to monitor the CO_2 plume, including the activities, locations, and frequencies Aera will employ. The parameters to be analyzed as part of fluid sampling in the 64 Zone Sandstones (and associated analytical methods) are presented in **Table 6**. **Table 7** presents the direct and indirect

methods that Aera will use to monitor the pressure front, including the activities, locations, and frequencies Aera will employ.

Fluid sampling will be performed as described in **Section 2.2.1** of the **QASP;** sample handling and custody will be performed as described in **Section 2.3** of the **QASP**; and quality control methods are described in **Section 2.5** of the **QASP**.

Data suggesting potential deviations from AoR model predictions may be cause to revisit the AoR delineation to support the non-endangerment demonstration.

Table 5: Post-Injection Phase Plume Monitoring

Target Formation	Monitoring Activity	Monitoring Location(s)	Spatial Coverage	Frequency
Direct Plume Monitoring				
64 Zone	Fluid sampling	1-28N	1 Point location: ~8,029 - 8,358 ft MD	Every 2 years starting from the year of cessation of injection until 15 years after injection ceases, which is the end of the PISC period
64 Zone	Fluid sampling	39-26N	1 Point location: ~7,975 - 8,243 ft MD	Every 2 years starting from the year of cessation of injection until 15 years after injection ceases, which is the end of the PISC period
64 Zone	Fluid sampling	27-1N	1 Point location: ~8,001 - 8,302 ft MD	Every 2 years starting from the year of cessation of injection until 15 years after injection ceases, which is the end of the PISC period
Indirect Plume Monitoring				
64 Zone	Pulsed neutron logging	1-28N	Survey log: ~7,505 - 8,450 ft MD	Every 2 years starting from the year of cessation of injection until 15 years after injection ceases, which is the end of the PISC period
64 Zone	Pulsed neutron logging	39-26N	Survey log: ~7,667 - 8,300 ft MD	Every 2 years starting from the year of cessation of injection until 15 years after injection ceases, which is the end of the PISC period
64 Zone	Pulsed neutron logging	27-1N	Survey log: ~7,594 - 8,278 ft MD	Every 2 years starting from the year of cessation of injection until 15 years after injection ceases, which is the end of the PISC period
64 Zone	DTS	1-28N	Entire Wellbore	Continuous

Target Formation	Monitoring Activity	Monitoring Location(s)	Spatial Coverage	Frequency
64 Zone	DTS	39-26N	Entire Wellbore	Continuous
64 Zone	DTS	27-1N	Entire Wellbore	Continuous

Table 6: Summary of Analytical and Field Parameters for Injection Zone Fluid Sampling

Parameters	Analytical Methods[1]	Detection Limit/Range[2]	Typical Precisions (Laboratory Control Limit) [2]	Typical Quality Control (QC) Requirements
Cations/metals (aluminum, barium, manganese, arsenic, cadmium, chromium, copper, lead, selenium, titanium, zinc)	EPA Method 200.7/200.8 or similar by inductively coupled plasma optical emission spectroscopy (ICP-OES) or mass spectroscopy (ICP-MS)	0.01 to 2 mg/L (analyte, dilution, and matrix dependent; scanning or selective ion monitoring mode dependent)	85-115%	Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Cations/metals (calcium, sodium, potassium, iron, magnesium, silica)				Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Anions (chloride, sulfate, sulfide, bromide, fluoride, nitrate)	EPA Method 300.0/300.1 or similar by ion chromatography; SM 4500 for sulfide by colorimetry	0.1 to 1 mg/L for 300.0/300.1; 0.05 mg/L for SM 4500 (sulfide) (analyte, dilution, and matrix dependent)	90-110%; 70-130% for sulfide	Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Dissolved CO_2	Coulometric titration or RSK-175M by gas chromatography/flame ionization detector (GC/FID)	5 µg/L	80-120%	Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Dissolved CH_4	RSK-175M by GC/FID	1 µg/L	80-120%	Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Dissolved O_2	SM 4500 OG by Membrane Electrode Method or RSK-175M by GC/FID	0.01 mg/L	80-120%	Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Dissolved H_2S (field)	Field Test Kit	Dependent on selected field test kit	Dependent on selected field test kit	Dependent on selected field test kit
Total dissolved solids	EPA Method 160.1/SM 2540 C by gravimetry	1 mg/L	84-108 %	Balance calibration, duplicate analysis, QC check std
Alkalinity	SM 2320 B/EPA Method 310.1 by titration	5 mg/L	80-120%	Daily calibration of pH, blanks, duplicates, QC check std

Parameters	Analytical Methods[1]	Detection Limit/Range[2]	Typical Precisions (Laboratory Control Limit) [2]	Typical Quality Control (QC) Requirements
pH (field)	EPA Method 150.1/SM4500-H+B by electrode	Dependent on field meter selected	Dependent on field meter selected	User calibration per manufacturer recommendation, QC check std
Specific conductance (field)	EPA Method 120.1 by conductivity meter	Dependent on field meter selected	Dependent on field meter selected	User calibration per manufacturer recommendation, QC check std
Temperature (field)	Thermocouple	Dependent on field meter selected	Dependent on field meter selected	Factory calibration
Hardness	SM 2340C by titration	7.05 mg/L	Dependent on selected laboratory	Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Turbidity	SM 2130B by nephelometry	0.05 NTU	90-110%	Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Specific gravity	SM 2710F by calculation	0.05	Dependent on selected laboratory	Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Water density	SM 2710F by calculation	0.05g/cc	Dependent on selected laboratory	Daily calibration; blanks, duplicates, QC check std, and matrix spikes at 10% or greater frequency
Dissolved inorganic carbon isotopes ($\delta^{13}C$)	Mass spectrometry (Singleton 2019)	Dependent on selected laboratory	Dependent on selected laboratory	Dependent on selected laboratory

Note 1: An equivalent method may be employed with the prior approval of the UIC Program Director.
Note 2: Detection limits and precision (laboratory control limits) are typical for these analytical methods and were provided by Eurofins Environment Testing.
µg/L: microgram per liter
g/cc: gram per cubic centimeter
mg/L: milligram per liter
NTU: Nephelometric turbidity unit

Table 7: Post-Injection Phase Pressure-Front Monitoring

Target Formation	Monitoring Activity	Monitoring Location(s)	Spatial Coverage	Frequency
Direct Pressure-Front Monitoring				
64 Zone	DTS/Pressure Gauge	1-28N	Distributed measurement to ~8,450 ft MD	Quarterly
64 Zone	DTS/Pressure Gauge	39-26N	Distributed measurement to ~8,243 ft MD	Quarterly
64 Zone	DTS/Pressure Gauge	27-1N	Distributed measurement to ~8,278 ft MD	Quarterly
Indirect Pressure-Front Monitoring				
Multiple	Seismic activity	California Integrated Seismic Network	AoR	Continuous

4.3 Schedule for Submitting Post-Injection Monitoring Results [40 CFR 146.93(a)(2)(iv)]

The post-injection site care monitoring data and monitoring results collected using the methods described above will be submitted to the U.S. Environmental Protection Agency (EPA) in annual reports within 90 days following the anniversary date of the date on which injection ceased. The reports will contain information and data generated during the reporting period (i.e., well-based monitoring data, sample analysis, and the results from updated site models.)

5. ALTERNATIVE POST-INJECTION SITE CARE TIMEFRAME [40 CFR 146.93(C)]

Aera will conduct post-injection monitoring for 15 years following the cessation of injection operations. A justification for this alternative PISC timeframe is provided in **Attachment H**. Regardless of the alternative PISC timeframe, monitoring and reporting, as described in the sections above, will continue until Aera demonstrates, based on monitoring and other site-specific data, that no additional monitoring is needed and the project does not pose an endangerment to USDWs, per the requirements at 40 CFR 146.93(b)(2) or (3).

6. NON-ENDANGERMENT DEMONSTRATION CRITERIA

Prior to approval of the end of the post-injection phase, Aera will submit a report that details demonstration of non-endangerment of USDWs to the UIC Program Director, per 40 CFR 146.93(b)(2) and (3), based on the evaluation of the site monitoring data used in conjunction with the project's computational model. The report will detail how the non-endangerment demonstration evaluation uses site-specific conditions and will include relevant monitoring data and interpretations upon which the non-endangerment demonstration is based, model documentation, supporting data, and other pertinent information for the UIC Program Director to review the analysis. The report subsections are described below.

6.1 Introduction and Overview

A summary of relevant background information will be provided, including the operational history of the injection project, the date of the non-endangerment demonstration relative to the post-injection period outlined in this PISC and Site Closure Plan, and a general overview of how monitoring and modeling results will be used together to support a demonstration of USDWs non-endangerment.

The collection of the types of monitoring data for reservoir pressure and plume extent - during injection and post-injection, will be tabulated and compared to the computational model and used to update the computational model over the life of the project. This iteration and validation of the computational model will provide strong evidence of the non-endangerment to USDWs.

6.2 Summary of Existing Monitoring Data

A summary of the previous monitoring data collected at the site, pursuant to the Testing and Monitoring Plan (**Attachment E**) and this PISC and Site Closure Plan, including data collected during the injection and post-injection phases of the project, will be submitted to help demonstrate non-endangerment. Data submittals will be in a format acceptable to the UIC Program Director [40 CFR 146.91(e)] and will include a narrative explanation of monitoring activities, including the dates of monitoring events, changes to the monitoring program over time, and an explanation of the monitoring infrastructure that has existed at the site. Data will be compared with baseline data collected during site characterization [40 CFR 146.82(a)(6) and 146.87(d)(3)]. In the event that monitoring data indicate that the actual plume or pressure front may extend beyond the modeled plume and pressure front, Aera will follow the steps outlined in Attachment B section 4.1 to reevaluate the AoR using the computational model.

6.3 Summary of Computational Modeling History

The computational model used to describe the plume and pressure fronts for this project is fully detailed in **Attachment B**. From the computational model, the plume and pressure fronts are modeled from the beginning of injection through the post-injection period. The monitoring data (e.g., fluid sampling, pulsed neutron logging, and seismic monitoring) collected over the project lifecycle will be compared to the modeled response, and the computational model will be updated throughout the life of the project as necessary, as described in Section 4.1 of Attachment B. These comparisons will be described in the report including model accuracy, reconciliation of model deviations, and provide a demonstration of non-endangerment.

6.4 Evaluation of Reservoir Pressure

The increase in pressure from CO_2 injection is the primary concern for endangerment of USDWs. During the post-injection timeframe, the pressure within the injection zone should decrease from the reservoir pressure at the start of the post-injection period. The downhole pressure will be monitored using the methods and locations listed in **Table 7**, and the measured pressure profile will be compared to the computational model. Alignment of measured and predicted pressure will be used to validate the model and further demonstrate non-endangerment of USDWs.

6.5 Evaluation of CO_2 Plume

Time-lapse pulsed neutron logs paired with direct sampling (**Table 5**) will be used to track the extent of the CO_2 plume. The pulsed neutron logs will be acquired over time and will be used to measure the vertical extent of the plume along the wellbores where they are acquired. These measured vertical extents will be compared to the modeled extents at the time of logging. The agreement of these measured data and the model response will demonstrate that the model accurately represents the CO_2 plume in the subsurface.

6.6 Evaluation of Emergencies or Other Events

Potential risks to USDWs in this project may include mobilized formation fluids, including saline brines and hydrocarbons, CO_2 and other elements associated with the injectate.

Artificial penetrations, potential conduits, and their locations relative to the plume and pressure front are listed in **Attachment B**, as well as the plans for plugging and abandonment (P&A) of those penetrations. P&A procedures conform to EPA guidelines to prevent the mobilization of formation fluids.

Geochemical analysis from the groundwater monitoring program (**Tables 2** and **3**) will be used to establish that mobilized formation fluids from the injection zone detrimental to USDWs do not exist above the sealing formation during the injection and post-injection timeframe.

To establish non-endangerment, the groundwater samples collected above the confining zones during and after injection will be compared to the geochemical composition established in the baseline sampling before injection. The comparison will demonstrate that the geochemical makeup of the samples above the confining zone has not been affected by mobilized formation fluids from the injection zone.

Seismic monitoring will also be used to demonstrate the integrity of the confining zone. The seismic events will be accurately positioned in the subsurface by the monitoring network, and the locations of the events will be examined for proximity to the seal and mapped faults. This examination will be used to show that no fracturing of the confining zone or re-activation of faults occurred during injection or the post-injection period.

The time-lapse pulsed neutron logs will be used to show that the salinity of the formation fluids above the confining zone remained consistent during injection and post-injection and were not affected by mobilized formation fluids from the injection zone.

When combined, the analysis of groundwater sampling, seismic monitoring, and pulsed neutron logging will demonstrate that mobilized formation fluids did not pose a danger to USDWs.

In case of an emergency event during the injection or post-injection phase, the following details as per **Section 4** of the Emergency and Remedial Response Plan, **Attachment I,** will be summarized within the report for the demonstration of non-endangerment of USDW. The details would include identification and detection of the emergency event through monitoring methods outlined in **Attachment E**, characterizing the severity of the event as minor, serious or major emergency and

the appropriate response actions taken including immediate actions, notifications, assessments and remediation performed.

7. SITE CLOSURE PLAN

Aera will conduct site closure activities, as described below, that meet the requirements of 40 CFR 146.93(e). Aera will submit a final Site Closure Plan and notify the UIC Program Director at least 120 days prior of its intent to close the site (40 CFR 146.93(d)). Once EPA has approved closure of the site, Aera will plug the monitoring wells and submit a Site Closure Report to the UIC Program Director within 90 days of site closure (40 CFR 146.93(g)). The activities, as described below, represent the planned activities, at the time of this application submittal, based on information provided to EPA. The actual site closure activities and final Site Closure Plan may employ different methods and procedures than those described below. A final Site Closure Plan will be submitted to the UIC Program Director for approval with the notification of the intent to close the site.

7.1 Plugging Monitoring Wells

Aera will conduct monitoring well P&A according to the procedures described in the Injection Well Plugging Plan (**Attachment F)** and in accordance with state and local agency requirements. **Figure 5** describes the plugging details. **Figure 2** of the Injection Well Plugging Plan (**Attachment F)** also refers to the plugging schematic of monitoring wells.

Following approval for P&A, Aera will plug the monitoring wells, restore the well sites to their pre-project condition in accordance with state and local agency requirements, and submit a Site Closure Report and associated documentation.

7.2 Site Closure Report

A Site Closure Report will be prepared and submitted within 90 days following site closure, documenting the following:

- Plugging of the verification and monitoring wells (and the injection well if it has not previously been plugged);
- Location of sealed injection wells on a plat of survey that has been submitted to the local zoning authority;
- Notifications to state and local authorities as required by 40 CFR 146.93(f)(2);
- Records regarding the nature, composition, and volume of the injected CO_2; and
- Post-injection monitoring records.

Aera will record a notation to the property's deed on which the injection well was located that will indicate the following:

- That the property was used for CO_2 sequestration;

- The name of the local agency to which a plat of survey with injection well location was submitted;
- The volume of fluid injected;
- The formation into which the fluid was injected; and
- The period over which the injection occurred.

The Site Closure Report will be submitted to the permitting agency and maintained by Aera for a period of 10 years following site closure. Additionally, Aera will maintain the records collected during the post-injection period for a period of 10 years after which these records will be delivered to the UIC Program Director.

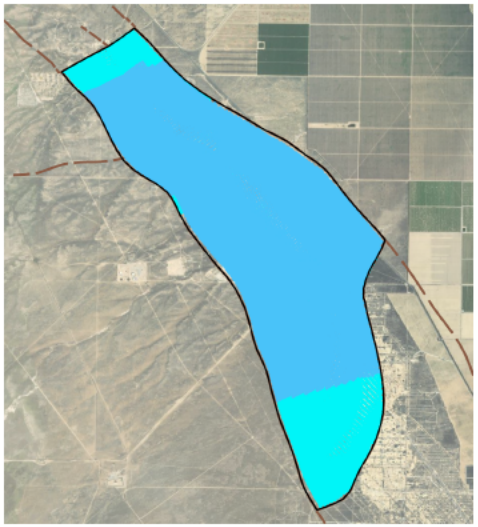
8. QUALITY ASSURANCE AND SURVEILLANCE PLAN (QASP)

The QASP is presented in the appendix of the Testing and Monitoring Plan (**Attachment E**).

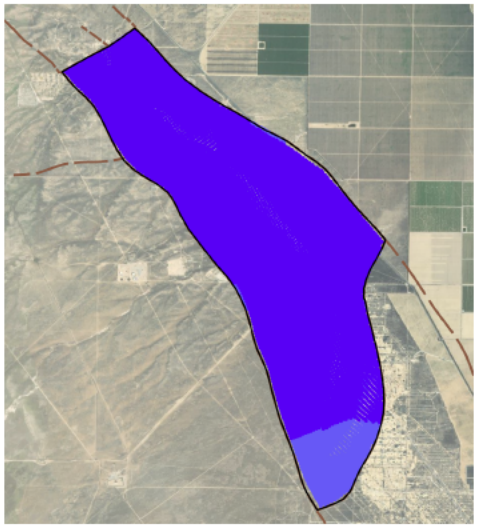
Figures

Figures Index

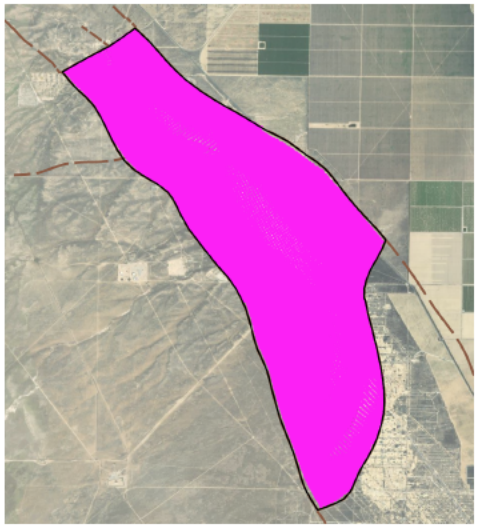
1 year during injection (2027)



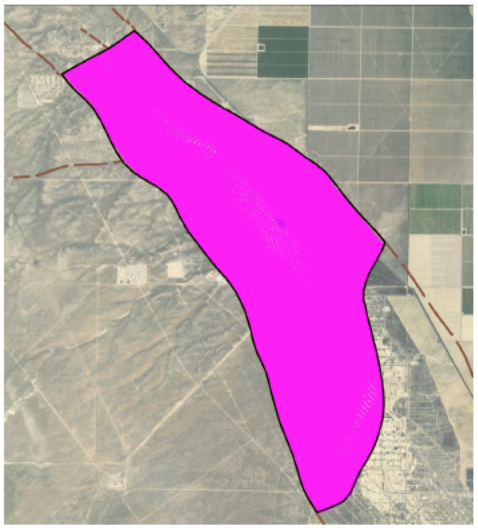
5 years during injection (2031)



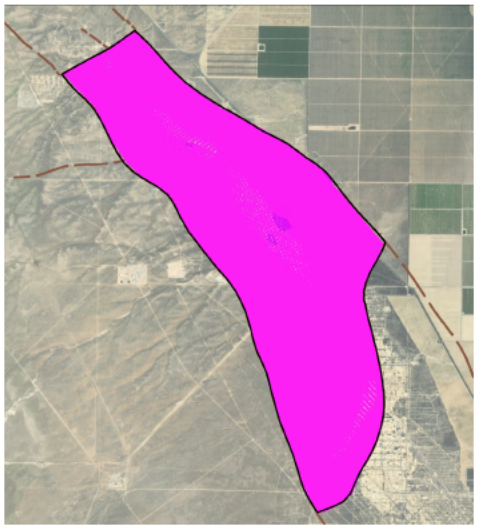
End of injection (9.5 years, 2035)



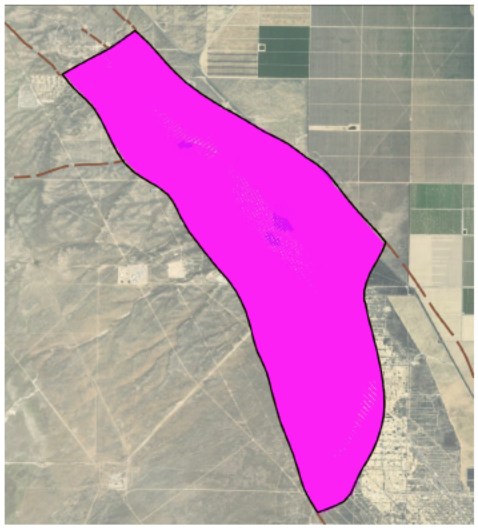
15 years post-injection (2050)



70 years post-injection (2105)



100 years post-injection (2135)



Legend:

Area of Review Boundary

Faults projected from Top U-Sandstone

25 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,350

Pressure Differential (psi)

Notes:

Showing maximum pressure Increment at each X/Y cell for all depths.

0 10,000 Feet

N

Evolution of Pressure Differential
Map View

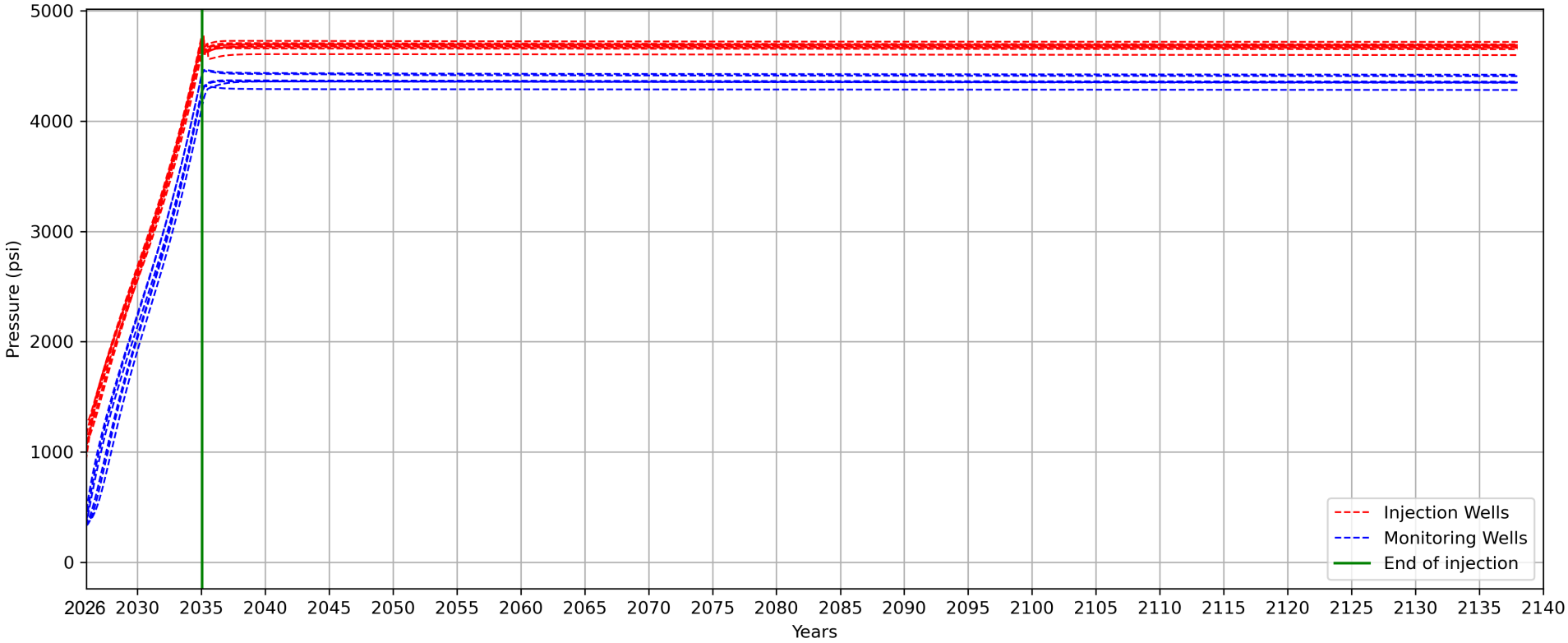
North Belridge Oil Field
Western Kern County
California

Geosyntec consultants

CarbonFrontier | April 2024

Figure 1

Geosyntec\Aera Belridge CCUS Project - General\EPA VI\A. Technical\01_Figures_EPAProactive2024\i_Illustrator\Attachment G\G_ Fig-1 Evolution of Pressure Differential (Map View).ai



Explanation:
psi = pounds per squared inch

Notes:
Pressures at top of perforated interval for injection and monitoring wells is shown in the figure.

Well Pressure Over Time

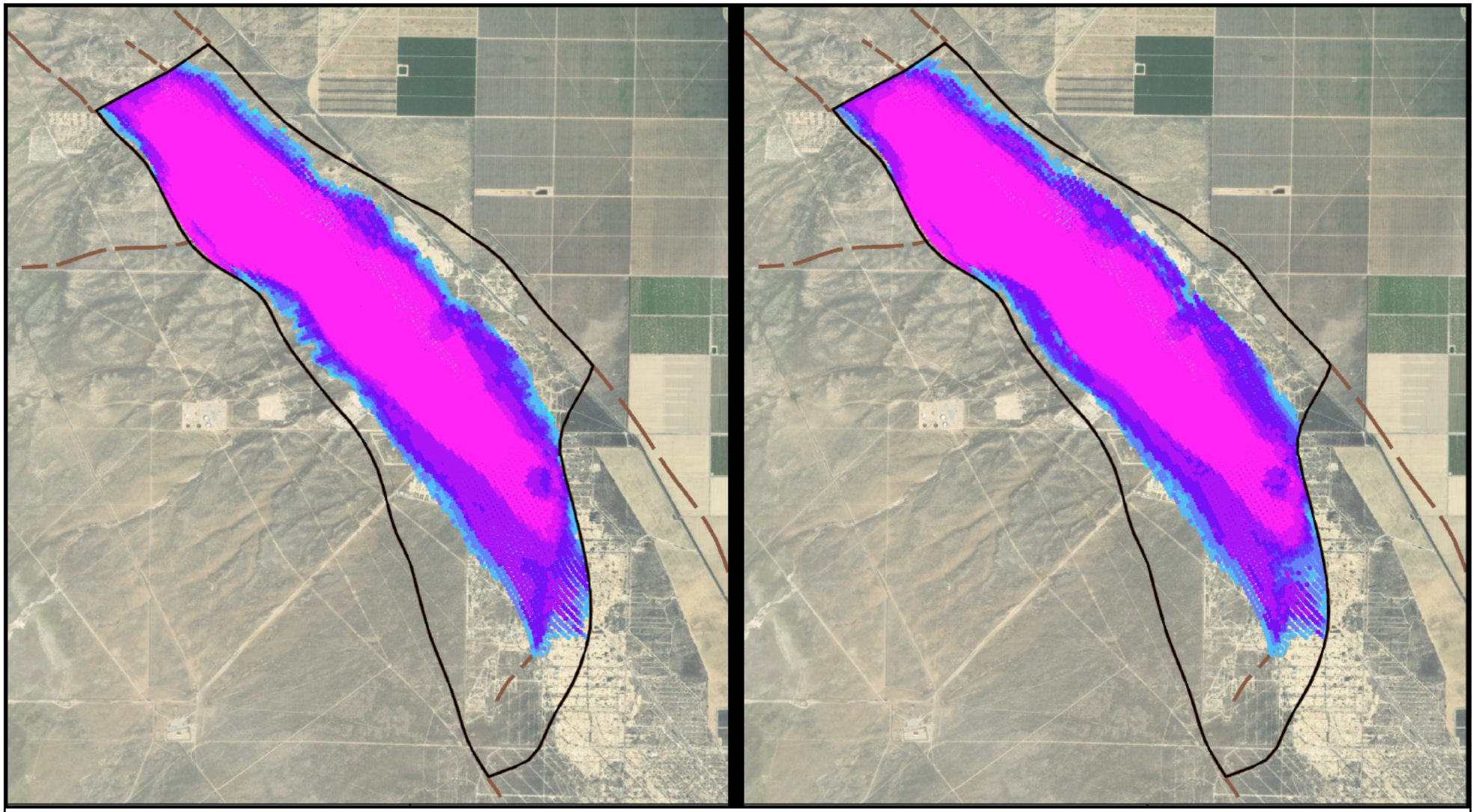
North Belridge Oil Field
Western Kern County
California

Geosyntec consultants

CarbonFrontier	April 2024

Figure 2

Geosyntec\Aera Belridge CCUS Project - General\EPA VI\A. Technical\01_Figures_EPAProactive2024\i_Illustrator\Attachment G\G_ Fig-2 Well Pressure Over Time.ai



15 years post-injection (2050)

100 years post-injection (2135)

Legend:

Area of Review Boundary

Faults are projected from Top U-Sandstone

N

0 10,000 Feet

Explanation:

CO_2 - Carbon Dioxide

1 10 20 30 40 50 60 68

CO_2 Saturation (%)

Notes:

The CO_2 plume is shown as a percent value of CO_2 saturation in the pore space, which is the sum of all phases (free-phase, dissolved phase in water, dissolved phase in oil, and residual) for all cells in the model at the respective time. The saturations are shown in map view by presenting the maximum value for all depths of the Area of Review. The Area of Review Boundary is defined as the maximum extent of the CO_2 plume and the pressure front.

CO2 Plume and Pressure Front Post-Injection

North Belridge Oil Field
Western Kern County
California

Geosyntec consultants

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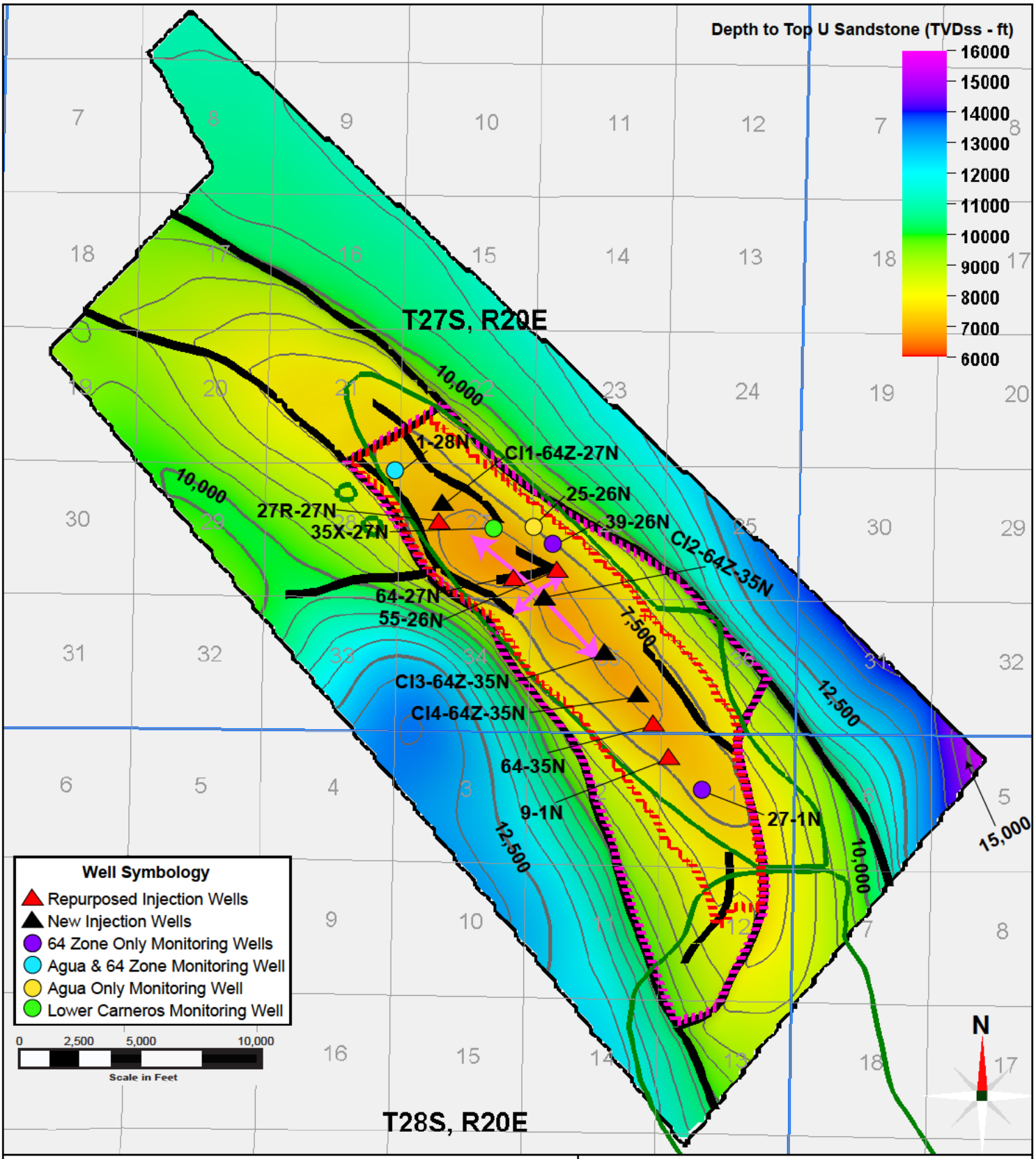
Figure 3

Geosyntec\Aera Belridge CCUS Project - General\EPA VI\A. Technical\01_Figures_EPAProactive2024\i_Illustrator\Attachment G\G_ Fig-3 CO2 Plume and Pressure Front Post-Injection.ai



Legend:

- Area of Interest
- Township/Range Boundaries
- Section Boundaries
- 1973/74 Oil Field Boundaries
- Fault Traces
- Elevation Contours (500 ft CI)
- Area of Review
- Modeled CO_2 Plume Extent
- Anticline Axis

Explanation:

ft - feet
TVDss - true vertical depth sub sea (ft)
CI - contour interval
CO_2 - carbon dioxide

Notes:

Surface artifacts due to interpolation across faults and structural model grid.

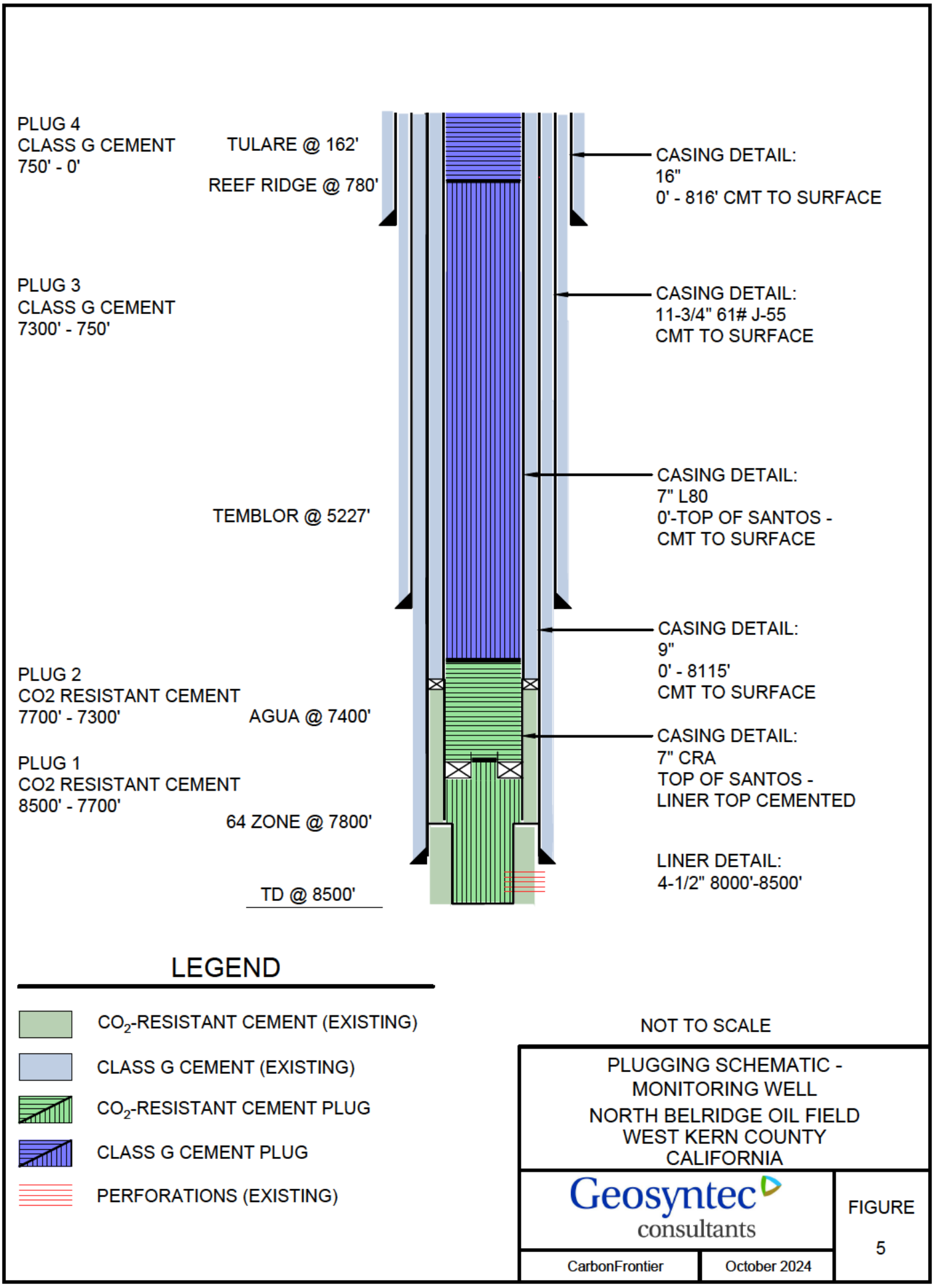
Location Map of Repurposed and New Wells

North Belridge Oil Field
Western Kern County
California

Geosyntec consultants

CarbonFrontier	April 2024	Figure 4

Geosyntec\Aera Belridge CCUS Project - General\EPA VI\A. Technical\01_Figures_EPAProactive2024\i_Illustrator\Attachment G\G_ Fig-4 Location Map of Repurposed & New Wells.ai


PLUG 4
CLASS G CEMENT
750' - 0'
TULARE @ 162'
REEF RIDGE @ 780'
CASING DETAIL:
16"
0' - 816' CMT TO SURFACE
PLUG 3
CLASS G CEMENT
7300' - 750'
CASING DETAIL:
11-3/4" 61# J-55
CMT TO SURFACE
CASING DETAIL:
7" L80
0'-TOP OF SANTOS -
CMT TO SURFACE
TEMBLOR @ 5227'
CASING DETAIL:
9"
0' - 8115'
CMT TO SURFACE
PLUG 2
CO2 RESISTANT CEMENT
7700' - 7300'
AGUA @ 7400'
CASING DETAIL:
7" CRA
TOP OF SANTOS -
LINER TOP CEMENTED
PLUG 1
CO2 RESISTANT CEMENT
8500' - 7700'
64 ZONE @ 7800'
LINER DETAIL:
4-1/2" 8000'-8500'
TD @ 8500'
LEGEND
CO_2-RESISTANT CEMENT (EXISTING)
CLASS G CEMENT (EXISTING)
CO_2-RESISTANT CEMENT PLUG
CLASS G CEMENT PLUG
PERFORATIONS (EXISTING)
NOT TO SCALE
PLUGGING SCHEMATIC -
MONITORING WELL
NORTH BELRIDGE OIL FIELD
WEST KERN COUNTY
CALIFORNIA
Geosyntec consultants
FIGURE
5
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October 2024