



# **ATTACHMENT G**

## **Emergency Remedial Response Plan**

### **Gulf Coast Sequestration, LLC (G1037)**

Project Minerva, Cameron Parish  
Minerva South CCS Well Nos. 001 & 002

EPA Project Id: R06-LA-0002

LDENR Appl Nos: 45301 & 45302

Date: November 2024

## CERTIFICATION

Per LAC 43:VII §3603.H.1, the geoscientific aspects of the Emergency Remedial Response Plan have been prepared by or under the supervision of a licensed Professional Geologist authorized to practice by and in good standing with the Louisiana Board of Professional Geoscientists. A separate certification page will be submitted with the Attachments to the Narrative that require certification.

**Kaycee M. Garrett**

LA License No. 1325

*I, Kaycee M. Garrett, certify that I have personally examined and am familiar with the information submitted in this document and the attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.*



### EMERGENCY REMEDIAL RESPONSE PLAN

(Including applicable Tables, Figures, and Appendices)

Section 3.1.3 Brine or CO2 Leakage to USDW or Surface

Per LAC 43:VII §3603.H.2, the engineering aspects of the Narrative have been prepared by or under the supervision of a licensed Professional Engineer (PE) authorized to practice by and in good standing with the Louisiana Board Professional Engineering and Land Surveying. Since the engineering aspects of the applications have been designed by a consulting PE, the required documents will be certified once the technical review is completed by LDENR. A separate certification page will be submitted with the attachments to the Narrative that require certification.

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## FACILITY INFORMATION

Facility Name: Minerva Facility

Injector Wells: Minerva South CCS Well No. 001 (MS CCS 1)  
Minerva South CCS Well No. 002 (MS CCS 2)

Facility Contact: David Cook, CEO  
5599 San Felipe St., Ste. 1450, Houston, Texas 77056  
(713) 419-6808; [dcook@gcscarbon.com](mailto:dcook@gcscarbon.com)

Well Locations: Sec 3, T12S, R13W, Cameron Parish, Louisiana

MS CCS 1 (NAD 1927)  
Surface: 30° 02' 34.10"W, -93° 40' 20.63"N  
Bottom-Hole: 30° 02' 34.10"W, -93° 40' 20.63"N

MS CCS 2 (NAD 1927)  
Surface: 30° 02' 33.84"W, -93° 40' 20.48"N  
Bottom-Hole: 30° 02' 13.74"W, -93° 40' 42.07"N

## 1 INTRODUCTION

This Emergency and Remedial Response Plan ("ERRP") describes actions that Gulf Coast Sequestration ("GCS") shall take to address movement of the injection fluid/gas or formation fluid in a manner that may endanger the underground source of drinking water ("USDW") during the pre-injection, injection, or post-injection site care periods.

If GCS obtains evidence that the injected CO<sub>2</sub> stream and/or associated pressure front may cause endangerment to a USDW, GCS must perform the following actions:

1. Immediately cease injection for the injection well(s)
2. Take all steps reasonably necessary to identify and characterize any release
3. Notify the Louisiana Department of Energy and Natural Resources Commissioner (LDNR Commissioner) and the Environmental Protection Agency (EPA) of the emergency event within 24 hours (as required by LAC43: XVII §3623.A.2.c)
  - a. LDNR notification by phone (225) 342-5515
  - b. Within the 24 hour period submit the additional information outlined in LAC43: XVII §3609.L.6.a.b
4. Implement applicable portions of the approved ERRP
5. Prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of the USEPA (EPA) GSDT (Geologic Sequestration Data Tool).
6. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances and shall contain a description of the noncompliance and its cause and other information required by LAC43: XVII §3609.L.6

Where the phrase “initiate shutdown plan” is used, the following protocol will be employed: GCS will immediately cease injection. However, in some circumstances, GCS will, in consultation with the UIC Program Director, determine whether gradual cessation of injection (using the parameters set forth in the Summary of Requirements of the Class VI permit) is appropriate.

## 2 LOCAL RESOURCES AND INFRASTRUCTURE

Project Minerva is located within Cameron Parish, with a delineated plume acreage equaling 2,965 acres. Resources that could be impacted in the event of an emergency at the project site includes:

- Local USDW
- One (1) active groundwater wells
- Wetland areas
- Local roads and access roads
- Navigable waterways

Infrastructure that could be impacted in the event of an emergency at the project site includes:

- Project Minerva CO<sub>2</sub> injection wells wellheads
  - Minerva South CCS Well No. 001
  - Minerva South CCS Well No. 002
- Project Minerva monitoring wells
  - One (1) in-zone well and wellhead
    - Minerva South InZone Well No. 001
  - Two (2) Above-zone wells and wellheads
    - Minerva South USDW Well No. 001
    - Minerva South USDW Well No. 002

Resources and infrastructure addressed in this plan are shown in Figure G.2-1.

Table G.2-1 includes data for the water wells within and adjacent to delineated AOR.

Table G.2-2 provides the types, status, depths and well construction details for SN 224951 and SN 185606, which are the nearest oil and gas wells adjacent to the delineated AOR.

## 3 POTENTIAL RISK SCENARIOS

An emergency event occurs when an event endangers a USDW or threatens human health, safety, and/or the environment during the construction, pre-injection, injection, post-injection phases —due to the movement of the injectate, formation, or other fluids. Other events include the risk of accidental release of CO<sub>2</sub> into the atmosphere.

The following events related to Project Minerva that could potentially result in an emergency response:

- Injection or monitoring well integrity failure
- Injection well monitoring equipment failure (e.g., shut-off valve or pressure gauge, etc.)
- Fluid (e.g., brine) leakage to a USDW
- CO<sub>2</sub> leakage to USDW or land surface
- A natural disaster (e.g., earthquake, tornado, hurricane, flooding, lightning strike)
- Significant induced seismic event, of level Orange or Magenta in Table G.3-1

Response actions will depend on the severity of the event(s) triggering an emergency response. “Emergency events” are categorized as shown in Table G.3-2.

### 3.1 EMERGENCY IDENTIFICATION AND RESPONSE ACTIONS

Steps to identify and characterize the event will be dependent on the specific issue detected, and the severity of the event. The potential risk scenarios identified in Section 3.0 are detailed below.

#### 3.1.1 Injection or Monitoring Well Integrity Failure

Integrity loss of an injection or monitoring well may endanger USDWs. Integrity loss may have occurred if:

- Automatic Shutdown Devices are activated:
  - Wellhead pressure exceeds the specified shutdown pressure specified in the permit
  - There is a loss of external or internal well containment according to annular pressure monitoring
  - Pursuant to LAC43: XVII §3629.A.1c.iii GCS must notify the LDNR Commissioner within 24 hours of any triggering of a shut-off system
- Mechanical integrity test results identify a loss of mechanical integrity

##### 3.1.1.1 Severity

Minor to major, depending on the results of investigation into the incident and identified remedial activities.

##### 3.1.1.2 Timing of event

Pre-injection, injection, post-injection phases

##### 3.1.1.3 Avoidance measures

- Proper well design, construction, inspection, and maintenance
- Routine mechanical integrity testing
- Routine inspection of monitoring equipment

#### 3.1.1.4 Detection methods

- Well pressure monitoring
- Annulus pressure and fluid level monitoring
- Mechanical integrity testing

#### 3.1.1.5 Potential response actions

- Notify the LDNR Commissioner and EPA within 24 hours of the emergency event
- Take all steps reasonably necessary to identify and characterize any release
- Begin investigation into the source and extent of the problem and determine an appropriate course of action to repair and/or remediate the issue
- Prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of GSDT
- If the event is associated with any non-compliance to this permit, submit a written notification to the commissioner (see LAC43: XVII §3609.L.6 for 24 hour and 5 day notification requirements)

For a major or serious emergency:

- Immediately cease injection
- If contamination is detected, identify and implement appropriate remedial actions (in consultation with the LDNR Commissioner)

For a minor emergency:

- Conduct assessment to determine whether there has been a loss of mechanical integrity
- If there has been a loss of mechanical integrity, immediately cease injection

#### 3.1.1.6 Response personnel

Workover, or injection crew, supervisory personnel.

#### 3.1.1.7 Equipment

Depending on the severity of the event, equipment required may include a workover rig, drilling rig, casing, and cementing equipment, drilling fluids/muds/kill fluids, logging equipment, and surface monitoring equipment.

### 3.1.2 Injection Well or Monitoring Equipment Failure

The failure of monitoring equipment for wellhead pressure, temperature, and/or annulus pressure may indicate a problem that could endanger USDWs.

#### 3.1.2.1 Severity

Minor to major, depending on the results of the investigation into the incident and identified remedial activities.

#### 3.1.2.2 Timing of event

## Injection, post-injection phases

### 3.1.2.3 Avoidance measures

Preventative and routine maintenance of monitoring equipment

### 3.1.2.4 Detection methods

Continuous monitoring and recording of well parameters. Please see the Testing and Monitoring Plan (Attachment D) for full details on detection methods.

### 3.1.2.5 Potential response actions

- Notify the LDNR Commissioner and EPA within 24 hours of the emergency event
- Determine the severity of the event based on the information available
  - Review baseline data for anomalies
  - Determine the cause of failure / disruption to data
- Begin investigation into the source and extent of the problem and determine an appropriate course of action to repair and/or remediate the issue
- Prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of GSDT
- If the event is associated with any non-compliance to this permit, submit a written notification to the commissioner (see LAC43: XVII §3609.L.6 for 24 hour and 5 day notification requirements)

For a major or serious emergency:

- Immediately cease injection
- If contamination is detected, identify and implement appropriate remedial actions (in consultation with the LDNR Commissioner)

For a moderate emergency:

- Conduct assessment to determine whether there has been a loss of mechanical integrity
- If there has been a loss of mechanical integrity, immediately cease injection.

For a minor emergency:

- Review baseline data for anomalies, determine cause of failure / disruption to data
- Replace or repair monitoring equipment as needed
- If a loss of mechanical integrity is suspected proceed with response actions in Section 3.1.1.5
- If there has been a loss of mechanical integrity, immediately cease injection as outlined in Section 3.1.1.5

### 3.1.2.6 Response Personnel

Supervisory personnel, maintenance technicians, and contract personnel



### 3.1.2.7 Equipment

Applicable equipment for repair and/or replacement of monitoring systems

### 3.1.3 Brine or CO<sub>2</sub> Leakage to USDW or the Surface

GCS is committed to the protection of USDWs and the prevention of any release of CO<sub>2</sub> and/or brine to surface or into USDWs. Should a breach of confinement occur GCS is committed to the timely detection of a breach through monitoring and testing outlined in the Testing and Monitoring Plan (Attachment D) and the Post Injection Site Closure Plan (Attachment F), and to the actions of emergency response and remediation outlined in this section.

USDW endangerment may be indicated by the following:

- Elevated concentrations of indicator parameter(s) in groundwater sample(s) as identified in the Testing and Monitoring Plan (Attachment D)
- Elevated concentrations of indicator parameter(s) in the soil gas sample(s)
- Anomalies in monitoring data from the project well(s)
- Other verified evidence of CO<sub>2</sub> and/or fluid (brine) leakage into a USDW or a CO<sub>2</sub> release at surface

#### 3.1.3.1 Severity

Major, due to potential contamination of USDWs

#### 3.1.3.2 Timing of event

Injection, post-injection phases

#### 3.1.3.3 Avoidance measures

Following methods and sampling schedules as specified in the Testing and Monitoring Plan (Attachment D)

#### 3.1.3.4 Detection methods

Anomalies in the results of any monitoring outlined in the Testing and Monitoring Plan (Attachment D) or during the Post-Injection Site Care (Attachment F) period may be cause for additional samples to be taken at surface, in the surrounding soils and, in the USDW to investigate potential leakage.

#### 3.1.3.5 Response actions

- Notify the LDNR Commissioner and EPA within 24 hours of the emergency event
- Determine the severity of the event, based on the information available
- Prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of GSDT

- If the event is associated with any non-compliance to this permit, submit a written notification to the commissioner (see LAC43: XVII §3609.L.6 for 24 hour and 5 day notification requirements)

For all emergencies:

- Immediately cease injection
- Sample monitoring and groundwater and surface water wells. Test samples for elevated concentrations of indicator parameters
- If the presence of indicator parameters is confirmed, develop (in consultation with the LDNR Commissioner) a case-specific work plan
  - Test water in water wells within the project area for suitability for consumption using drinking water standards
  - If any water well being utilized as potable water supply and has been caused to exceed drinking water standards, arrange for an alternate potable water supply
  - Proceed with efforts to remediate USDW to mitigate any unsafe conditions
- Continue groundwater remediation and monitoring on a frequent basis (frequency to be determined by GCS and the LDNR Commissioner) until unacceptable adverse USDW impact has been fully addressed

#### Response personnel

Supervisory personnel, environmental professionals and subcontractors

#### Equipment

Depending on the severity of the event, response equipment may include water testing and treatment/sampling equipment, sampling equipment for surface water, soil gas, ambient air, and surface water remediation and water supply equipment.

### **3.1.4 Natural Disaster**

A natural disaster (e.g., hurricane, tornado, lightning strike, flooding, or earthquake) affecting the normal operation of the injection well could impact site operations by loss of well integrity, fluid leakage, and/or equipment malfunction. An earthquake may disturb surface equipment and/or subsurface facilities, and weather-related events may affect surface facilities.

Due to the proximity of the location to the Gulf of Mexico, hurricanes and severe storms involving tornadoes are the most likely natural disasters/severe weather events to occur at the project location.

#### **3.1.4.1 Severity**

Minor to major, depending on the type and severity of the natural disaster. Any immediate, near-term, or prolonged risk to human health, resources, or infrastructure will be assessed immediately to determine emergency actions that will be taken.

#### 3.1.4.2 Timing of event

All phases of the project

#### 3.1.4.3 Avoidance measures

Preparation measures may be taken by monitoring current and predicted conditions.

#### 3.1.4.4 Detection methods

Weather forecast monitoring and monitoring of activity reported by the USGS earthquake hazard program.

#### 3.1.4.5 Response actions

- Notify the LDNR Commissioner and EPA within 24 hours of the emergency event
- Determine the severity of the event, based on the information available
- Prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of GSDT
- If the event is associated with any non-compliance to this permit, submit a written notification to the commissioner (see LAC43: XVII §3609.L.6 for 24 hour and 5 day notification requirements)

For a major emergency:

- Immediately cease injection
- If contamination or endangerment is detected, identify and implement appropriate remedial actions (in consultation with the LDNR Commissioner)

For a major or minor emergency:

- Conduct assessment to determine whether there has been a loss of mechanical integrity
- If there has been a loss of mechanical integrity, immediately cease injection

#### 3.1.4.6 Response personnel

Supervisory personnel, and applicable personnel to diagnose, repair, and remediate as needed

#### 3.1.4.7 Equipment

Applicable equipment to diagnose, repair, and remediate as needed

### 3.1.5 Induced or Natural Seismic Event

Based on the project operating conditions, it is highly unlikely that injection operations would ever induce a seismic event outside the Area of Review (“AoR”). Therefore, this

portion of the response plan is developed for any seismic event within the AoR (see Figure G.2-1).

To monitor the area for seismicity, Distributed Acoustic Sensing (“DAS”) will be installed in the monitoring wells. DAS is a technology that enables continuous, real-time measurements along the entire length of a fiber optic cable. Unlike traditional sensors that rely on discrete sensors measuring at pre-determined points, distributed sensing utilizes the optical fiber. The optical fiber is the sensing element. These systems allow acoustic signals to be detected over large distances and in harsh environments.

#### 3.1.5.1 Severity

Depending on the magnitude of the induced or natural seismic event, the impact could cause a minor, serious, or major emergency. Any immediate, near term, or prolonged risk to human health, resources, or infrastructure will be assessed immediately to determine emergency actions that will be taken.

#### 3.1.5.2 Timing of event

All phases of the project

#### 3.1.5.3 Avoidance measures

Operation of injection project within operational parameters outlined in this permit, the inclusion of safety valves on injection wells, and compliance with all monitoring requirements.

While naturally occurring seismic events cannot be avoided, measures for avoidance of a subsequent emergency response include:

- Proper well design, construction, inspection, and maintenance
- Routine mechanical integrity testing
- Routine inspection of monitoring equipment

#### 3.1.5.4 Detection methods

DAS installed in injection wells and the public monitoring array to detect any minor changes in induced or natural seismicity

#### 3.1.5.5 Response actions

The site will be assigned an operating state based on the periodic analysis of monitoring data, observed level of seismic activity, and local reporting of felt events. The operating state is determined using threshold criteria which correspond to the site’s potential risk and level of seismic activity. The operating state provides information to facility personnel regarding the potential risk of further seismic activity and guides them through a series of response actions, further described in Table G.3-1.

GCS will perform the following in the event of a seismic event:

- Identify the epicenter, timing, frequency, and magnitude of the event(s)

- Determine whether there is a correlation between the event and injection activities
- Determine if the event has impacted the mechanical integrity (well integrity testing details are included in the Testing and Monitoring Plan, Attachment D) of the well and/or confining layers of the injection zone
- If warranted, stop CO<sub>2</sub> injection and implement appropriate remedial actions in consultation with the LDNR Commissioner
- If warranted, prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of GSDT
- If warranted, submit a written notification to the commissioner (see LAC43: XVII §3609.L.6 for 24 hour and 5 day notification requirements)

The seismic monitoring system summary is presented in Table G.3-1. The table provides each level of operating state with the threshold conditions and operation response actions.

#### 3.1.5.6 Response personnel

Supervisory personnel, and applicable personnel to diagnose, repair, and remediate as needed

#### 3.1.5.7 Equipment

Depending on the severity of the event, equipment needed may include groundwater remediation equipment, drilling rig, workover rig, drilling fluids/muds/kill fluids, logging equipment, and cement or casing equipment as approved and discussed with the LDNR Commissioner.

## 4 RESPONSE PERSONNEL AND EQUIPMENT

Site personnel, project personnel, and local authorities will be relied upon to implement this ERRP.

Site personnel to be notified includes (not listed in order of notification):

1. Head of Operations
2. Field Supervisor(s) or equivalent
3. Additional relevant site personnel to be confirmed prior to commencing injection

A site-specific emergency contact list will be developed and maintained during the life of the project. Project Minerva will provide the current site-specific emergency contact list to the LDNR Commissioner.

Equipment needed in the event of an emergency and remedial response will vary, depending on the triggering emergency event. Response actions (cessation of injection, well shut-in, and evacuation) will generally not require specialized equipment to implement. Where specialized equipment (such as a drilling rig or logging equipment) is required, GCS shall be responsible for its procurement.

## 5 EMERGENCY COMMUNICATIONS PLAN

GCS will communicate to the public about any event that requires an emergency response to ensure that the public understands the event and whether there are any short- or long-term environmental or safety implications. The amount of information, timing, and communications method(s) will be appropriate to the event, its severity, whether any impacts to drinking water or other environmental resources occurred, any impacts to the surrounding community, and their awareness of the event.

As appropriate, GCS will describe what happened, any impacts to the environment or other local resources, how the event was investigated, what responses were taken, and the status of the response. For responses that occur over the long-term (e.g., ongoing cleanups), GCS will provide timely and continual updates on the progress of the response action(s).

GCS will also communicate with entities who may need to be informed about or act in response to the event, including local water systems, CO<sub>2</sub> source(s) and pipeline operators, landowners, and Regional Response Teams (as part of the National Response Team). Table G.5.1-1 lists key contacts for notification.

## 6 PLAN REVIEW

This ERRP shall be reviewed:

- At least once every five years following its approval by the Commissioner
- Within one year of an AoR reevaluation
- Following after any significant changes to the injection facility
- As required by the Commissioner

If the review indicates that no amendments to the ERRP are necessary, GCS will provide the permitting agency with the documentation supporting the “no amendment necessary” determination.

If the review indicates that amendments to the ERRP are necessary, amendments shall be made and submitted to the permitting agency, following an event that initiates the ERRP review procedure.

## 7 STAFF TRAINING AND EXERCISE PROCEDURES

GCS will ensure all personnel have the knowledge they need to conduct their job safely.

NIMS (300 Level) ICS training is required on a biennial basis for personnel who are named in the Spill Management Team in a Facility or Emergency and Remedial Response Plan or are reasonably expected to fulfill a supervisory role in the management of an incident/emergency. All personnel expected to participate in an emergency response will be trained annually on the hazardous substances they may encounter during an emergency response and will be provided training on mitigating those hazards.

Hazardous Waste Operations and Emergency Response (HAZWOPER) Operations level training is required for personnel who are required to participate in the active response to an



incident/emergency. The Training Program Administrator will certify personnel as HAZWOPER trained through the completion of comprehensive hands-on training, response drill participation, and applicable on-the-job experiences per Occupational Safety and Health Administration (OSHA) regulations. Applicable personnel will possess biennial CPR/First Aid/AED Awareness Certifications and participate in hands-on response training in their area of operations through equipment deployment drills aligning with GCS's Preparedness Response Exercise Program (PREP).

GSC will maintain documentation on the completion of all training elements and HAZWOPER certification for each trained employee.


**Table G.2-1 Water Wells Within and Adjacent to the Delineated AoR**

Well Number	County Name	Water Well Use	Well Status	Date Completed	Owner Name	S/T/R	Well Depth	NAD27 Long & Lat
<b>WATER WELL WITHIN THE AOR</b>								
5891Z	CAMERON	Domestic	Active	1999-08-01	PIN TAIL ENT	12S/13W	400	-93.67731148, 30.04449854
<b>NEAREST WATER WELLS ADJACENT TO THE AOR</b>								
5893Z	CAMERON	Domestic	Active	1999-08-01	ROBINSON, ROB	12S/13W	235	-93.65758982, 30.0447763
13643Z	CALCASIEU	Rig Supply	Active	2005-05-01	ZINKE & TRUMBO	26/11S/13W	100	-93.66397848, 30.07061041



Table G.2-2 Nearest Oil and Gas Wells Adjacent to Delineated AoR

WELL DETAILS	Well API No.	17019219190000	17023218990000
	Serial Number (SN)	224951	185606
	Operator	MAYNE & MERTZ, INC.	AMOCO PRODUCTION COMPANY
	Well Name, Well No.	STREAM 34 # 1	CAMERON PARISH SCHOOL BOARD E # 1
LOCATION	Well Status	DRY & PLUGGED NO PRODUCT SPECIFIED	DRY & PLUGGED NO PRODUCT SPECIFIED
	S/T/R, Parish	Sec 35/T11S/R13W, Calcasieu Parish	Sec 16/T12S/R13W, Cameron Parish
	State Plane (NAD 27, LA-S Zone)	1261626, 514133	1253860, 499000
	Latitude, Longitude (NAD 27)	30.059820, -93.667550	30.01761, -93.69028
DATES	Permit Date	10/5/2000	4/18/1983
	Date Drilled	11/11/2000	4/18/1983
	Date Plugged	2/28/2001	10/1/1983
DEPTHS	Groud Elevation (ft)	4	2
	Groud Elevation Source	Reported	Estimated
	Kelly Bushing Elevation (ft)	33	24.56
	Total Depth, MD (ft)	14255	14000
CASING	Hole Size (in)	13.5 9.875	9.875
	Casing Type	Surface Intermediate OH	Conductor Surface Production OH
	Casing Size (in) / Cement Vols (sacks)	10.75/1285 7.625/765 N/A	16 10.75 7.625 6.25
	Depth (ft)	2995 11565 14255	N/A 4026 10446 14000
	Calculated TOC (ft)	Surface 8500 N/A	Driven N/A N/A N/A
	Casing Pulled (ft)	Yes	N/A
	Casing Remained (ft)	Cut 2991' 7.625" 8574 ft. Remain	all
	Plug Depth (ft) / Cement Vol (sacks/sx)	8-108 2329-2549 2841-3041 11400-11715	5-255/50 2276-2491/50 9815-11124/225
	Mud Data (Log)	N/A	N/A
	Mud Wt. (P&A)	9	17
FORMATIONS	Top of Inj Zone (ft)	9291.79	8332.52
	Top of Inj Zone Source	Picked	Picked
	Top of Confining Zone (ft)	8360.06	7207.99
	Top of Confining Zone Source	Picked	Picked
	Base of USDW (ft)	1085.01	1019.58
	Base of USDW Source	Model	Model
AOR	5 Yr AoR	No	No
	Plume/Pressure	Neither	Neither

Table G.3-1 Seismic Monitoring System for Seismic Events Greater than M1.0 with an Epicenter within the AOR

Operating State	Threshold Condition <sup>[1], [2]</sup>	Response Action <sup>[3]</sup>
Green	Seismic events less than or equal to M1.5	1. Continue normal operation within permitted levels.
Yellow	Five (5) or more seismic events within a 30 day period having a magnitude greater than M1.5 but less than or equal to M2.0	1. Continue normal operation within permitted levels. 2. Within 24 hours of the incident, notify the Commissioner of the operating status of the well.
Orange	Seismic event greater than M1.5 and local observation or felt report	1. Continue normal operation within permitted levels. 2. Within 24 hours of the incident, notify the Commissioner of the operating status of the well. 3. Review seismic and operational data.
	Seismic event greater than M2.0 and no felt report	4. Report findings to the Commissioner and issue corrective actions if required.
Magenta	Seismic event greater than M2.0 and local observation or felt report	1. Initiate rate reduction plan. 2. Within 24 hours of the incident, notify the Commissioner of the operating status of the well. 3. Limit access to wellhead to authorized personnel only 4. Communicate with facility personnel and local authorities to initiate evacuation plans, as necessary. 5. Monitor well pressure, temperature, and annulus pressure to verify well status and determine the cause and extent of any failure; identify and implement appropriate remedial actions (in consultation with the Commissioner). 6. Determine if leaks to ground water or surface water occurred. 7. If USDW contamination is detected: a. Notify the Commissioner within 24 hours of the determination. b. Identify and implement appropriate remedial actions (in consultation with the Commissioner). 8. Review seismic and operational data. 9. Report findings to the Commissioner and issue corrective actions.
Red	Seismic event greater than M2.0, and local observation or felt report, and local felt report and confirmation of damage <sup>[4]</sup>	1. Initiate rate reduction plan. 2. Within 24 hours of the incident, notify the Commissioner of the operating status of the well. 3. Limit access to wellhead to authorized personnel only 4. Communicate with facility personnel and local authorities to initiate evacuation plans, as necessary. 5. Monitor well pressure, temperature, and annulus pressure to verify well status and determine the cause and extent of any failure; identify and implement appropriate remedial actions (in consultation with the Commissioner). 6. Determine if leaks to ground water or surface water occurred. 7. If USDW contamination is detected: a. Notify the Commissioner within 24 hours of the determination. b. Identify and implement appropriate remedial actions (in consultation with the Commissioner). 8. Review seismic and operational data. 9. Report findings to the Commissioner and issue corrective actions.

Notes

<sup>[1]</sup> Specified magnitudes refer to magnitudes determined by local Project Minerva or USGS seismic monitoring stations or reported by the USGS National Earthquake Information Center using the national seismic network.

<sup>[2]</sup> “Felt report” and “local observation and report” refer to events confirmed by local reports of felt ground motion or reported on the USGS “Did You Feel It?” reporting system.

<sup>[3]</sup> Reporting findings to the UIC Program Director and issuing corrective action will occur within 25 business days (five weeks) of change in operating state.

<sup>[4]</sup> Onset of damage is defined as cosmetic damage to structures, such as bricks dislodged from chimneys and parapet walls, broken windows, and fallen objects from walls, shelves, and cabinets.

**Table G.3-2 Degrees of Risk for Emergency Events**

Emergency Condition	Definition
Major Emergency	Event poses immediate substantial risk to human health, resources, infrastructure, or USDW. Emergency actions involving local authorities (evacuation or isolation of areas) should be initiated.
Serious Emergency	Event poses potential serious (or significant) near term risk to human health, resources, infrastructure, or USDW if conditions worsen or no response actions taken.
Minor Emergency	Event poses no immediate risk to human health, resources, infrastructure, or USDW.

**Table G.5.1-1 Contact Information for Key Local, State, and Other Authorities**

Entity	Contact	Phone Number	Email	Address
Stream Property Management, Inc	David Richard Stream Land Manager - Facility Access	(337)-433-1055 (ext. 119) (337)-515-0855 (mobile)	david.richard@streamcompany.com	2417 Shell Beach Drive Lake Charles, LA 70602 P. O. Box 40
LDENR - Commissioner of Conservation	Benjamin C. Bienvenu	(225)-342-5540 (M-F 8AM-430PM) (225)-342-5505 (After Hours)	benjamin.bienvenu@la.gov	P.O. Box 94275 Baton Rouge, Louisiana 70804
LDENR - Injection Well Incidents (24 Hours)		(225)-342-5515		
EPA - National UIC Program Director	Ken Johnson	(214)-665-8473	johnson.ken-e@epa.gov	
EPA - National Response Center (24 Hours)		(800)-424-8802		
Environmental Services Contractor	Benjamin Richard Tetra Tech - Project Manager	(225)-383-1780 (office) (225)-229-0935 (mobile)	benjamin.richard@tetrattech.com	
Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP)	Jacques Thibodeaux Director	(225)-925-7500	jacques.thibodeaux@la.gov	7667 Independence Boulevard, Baton Rouge, LA 70806
Louisiana Office of Emergency Preparedness (OEP)	Danny Lavergne - Cameron Parish Jared Maze- Calcasieu Parish	(337)-775-7048 (337)-721-3800	oep@cameronpj.org ohsep@calcasieuparish.gov	
Louisiana State Emergency Management Agency	Cameron Parish Calcasieu Parish	(337)-775-7048 (337)-721-3800		
State Geological Survey	Clare Falcon	(225)-578-5320	gs@lsu.edu	
Local Sheriff- Cameron Parish (24 Hours)	Chris Savoie	(337)-775-5111		
Local Louisiana State Police	Troop D, Lake Charles	(337)-491-2511	troopD@la.gov	805 Main Street Lake Chales, LA 70615





Gulf Coast Sequestration, LLC (G1037)  
5599 San Felipe, Suite 1450, Houston, TX 77056  
(713) 997-3145 | www.gcscarbon.com

FIGURE G.2-1  
Resources and Infrastructure  
Within Delineated Area of Review

MAP LEGEND

- ▲ Injector Bottom Hole

■ Injector Well Pad

— Injector Schematic Well Trajectory

⋮ Max Extent of Stable CO2 Plume

▭ Max Extent of Pressure Front

▭ Delineated Area of Review

▬ Top Upper Frio Faults

▭ PLSS Townships & Ranges

▭ PLSS Sections

▭ SONRIS Parishes

Electric Transmission Line Volt Class

100-161

220-287

NOT AVAILABLE

UNDER 100

Pipeline Type

Crude

Miscellaneous

Natural Gas

Other Liquids

Refined Product

Monitoring Wells

⊕ In-Zone Bottom Location

□ In-Zone Surface Location

★ USDW Monitoring Well (Vertical)

— In-Zone Well Trajectory

○ Status Not Available

● Active

● Destroyed

● Plugged and Abandoned

Well Status

○ Other

★ Active - Producing

○ Drilled

✦ Dry & Plugged

✦ Inactive

★ Orphan

✦ Permit Expired

✦ Plugged & Abandoned

✦ Reverted

★ Shut In

✦ Temporarily Abandoned

✦ Unable to Locate

□ Surface Location

--- Well Trajectory
- Well Labels
- Map ID

Serial Number

Total Depth (TVDSS)

Well Number

Monitoring Well Name
- 
- MAP DETAILS
- |             |                        |      |                    |
|-------------|------------------------|------|--------------------|
| PREPARED BY | R WENCEL               | DATE | 10/25/2024 1:57 PM |
| APPROVED BY | K GARRETT              | DATE | 10/XX/2024         |
| MAP SCALE   | 1:16,000               |      |                    |
| PAGE SIZE   | A0 (46.81 W X 33.11 H) |      |                    |
- SPATIAL REFERENCE
- |            |  |
|------------|--|
| PCS        | NAD 1927 State Plane Louisiana South (FIPS 1702) |
| GCS        | GCS North American 1927                          |
| DATUM      | North American 1927                              |
| PROJECTION | Lambert Conformal Conic                          |
- PROJECT MINERVA DETAILS
- |                |   |
|----------------|---|
| WELLS          | Minerva South CCS Well Nos. 001 and 002 |
| LOCATION       | Cameron Parish, Louisiana               |
| EPA PROJECT ID | R06-LA-0002                             |
| LDENR APPL NOS | 45031 & 45032                           |
- 
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- Note: See Tables G.2-1 and G.2-2 for Tabulated Well Information