EMERGENCY AND REMEDIAL RESPONSE PLAN
40 CFR 146.94(a)

Project Name: Pineywoods CCS Hub

Facility Information

Facility Name: Pineywoods CCS Hub

Facility Contact: Pineywoods CCS, LLC
14302 FNB Parkway
Omaha, NE 68154

RRC Organization Report Number: in process

Entrance Location: 30° 3'45.96"N, 94°33'14.78"W

Well Locations: Liberty and Hardin Counties, Texas

Well Name	Latitude (dms)	Longitude (dms)
PW-1	30° 2'1.24"N	94°31'16.30"W
PW-2	30° 3'45.96"N	94°33'14.78"W
PW-3	30° 6'7.27"N	94°31'27.22"W
PW-4	30° 7'58.94"N	94°31'28.79"W

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AOR	Area of Review
BOP	Blowout Preventer
CCS	carbon capture and storage
CO_2	carbon dioxide
DAS	Distributed Acoustic Sensing
DTS	Distributed Temperature Sensing
EPA	Environmental Protection Agency
ERRP	Emergency and Remedial Response Plan
ft	feet
MIT	Mechanical Integrity Test
MMcf/d	million cubic feet/day
mg/l	milligrams per liter
t	metric tons
MMt	millions of metric tons
t/d	metric tons per day
t/y	metric tons per year
MMT/y	millions of metric tons per year
PISC	Post-Injection Site Care
P&A	plugged and abandoned
PNC	Pulsed Neutron Capture Log
psi	pounds per square inch
psi/ft	pounds per square inch per foot
SS	Sub-Sea
TVD	True Vertical Depth
UIC	Underground Injection Control
USDW	Underground Source of Drinking Water

A. Introduction

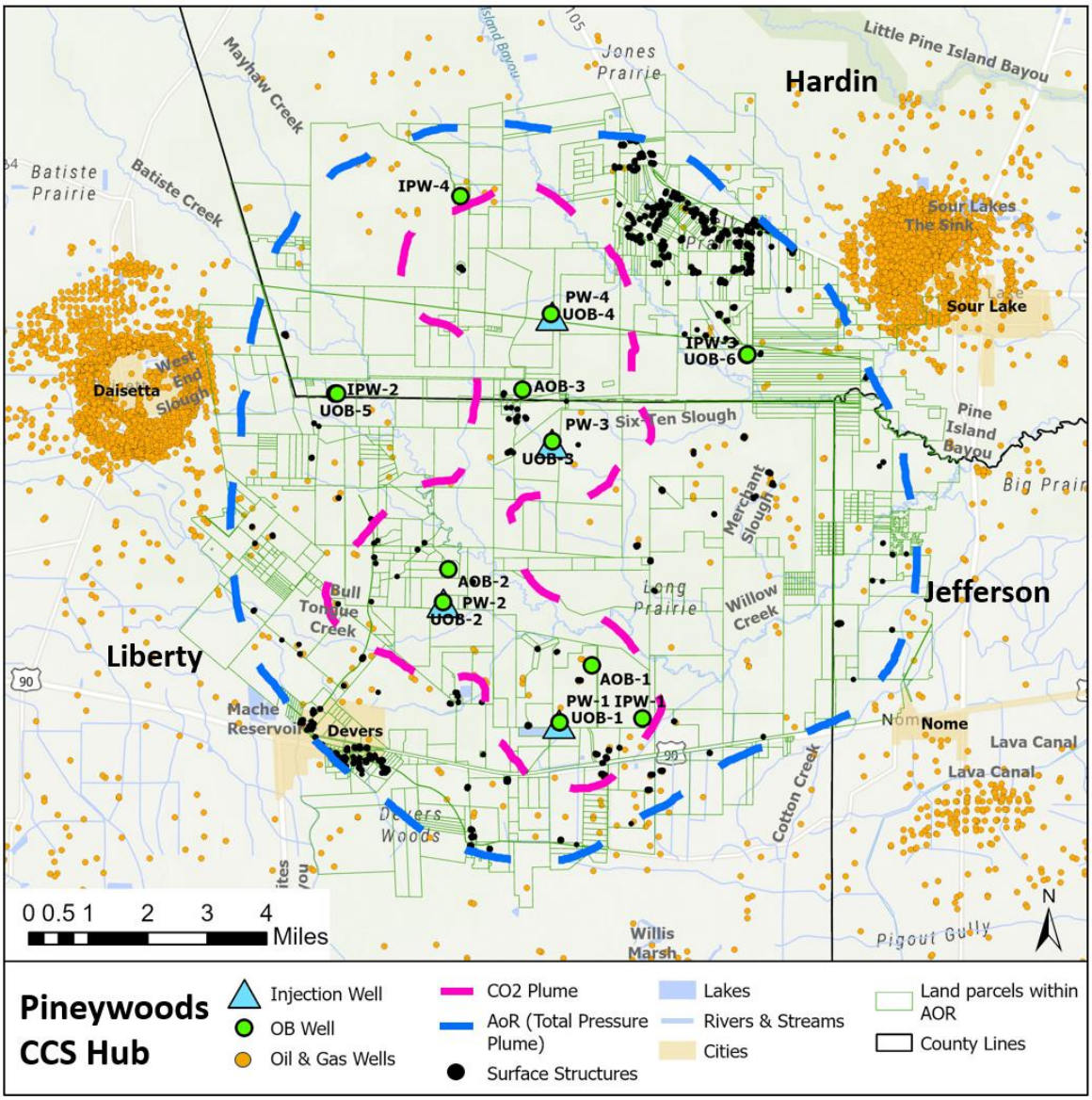
The purpose of this **Emergency and Remedial Response Plan (ERRP)** is to meet the federal requirements of 40 CFR 146.94 under the UIC Class VI Permit Guidelines and Texas requirements at 16 TAC 5.203(l). This plan covers the 4 proposed injection wells at the Pineywoods CCS Hub in Liberty and Hardin Counties, Texas: PW-1, PW-2, PW-3, and PW-4. The **ERRP** outlines the actions that Pineywoods CCS, LLC will take to address the unexpected movement of injection fluid or formation fluid if it endangers an underground source of drinking water (USDW) during the construction, operation, or post-injection site care (PISC) periods.

B. Local Resources and Infrastructure

The Pineywoods CCS Hub Area of Review (AOR) as described in the **Area of Review and Corrective Action Plan** covers an approximately 110 square mile area in Liberty, Hardin, and Jefferson Counties, as illustrated in **Figure 1** below. Overall, the land surface is sparsely populated and rural. Resources in the vicinity of the Pineywoods CCS Hub that may be affected due to an emergency event in the project area include:

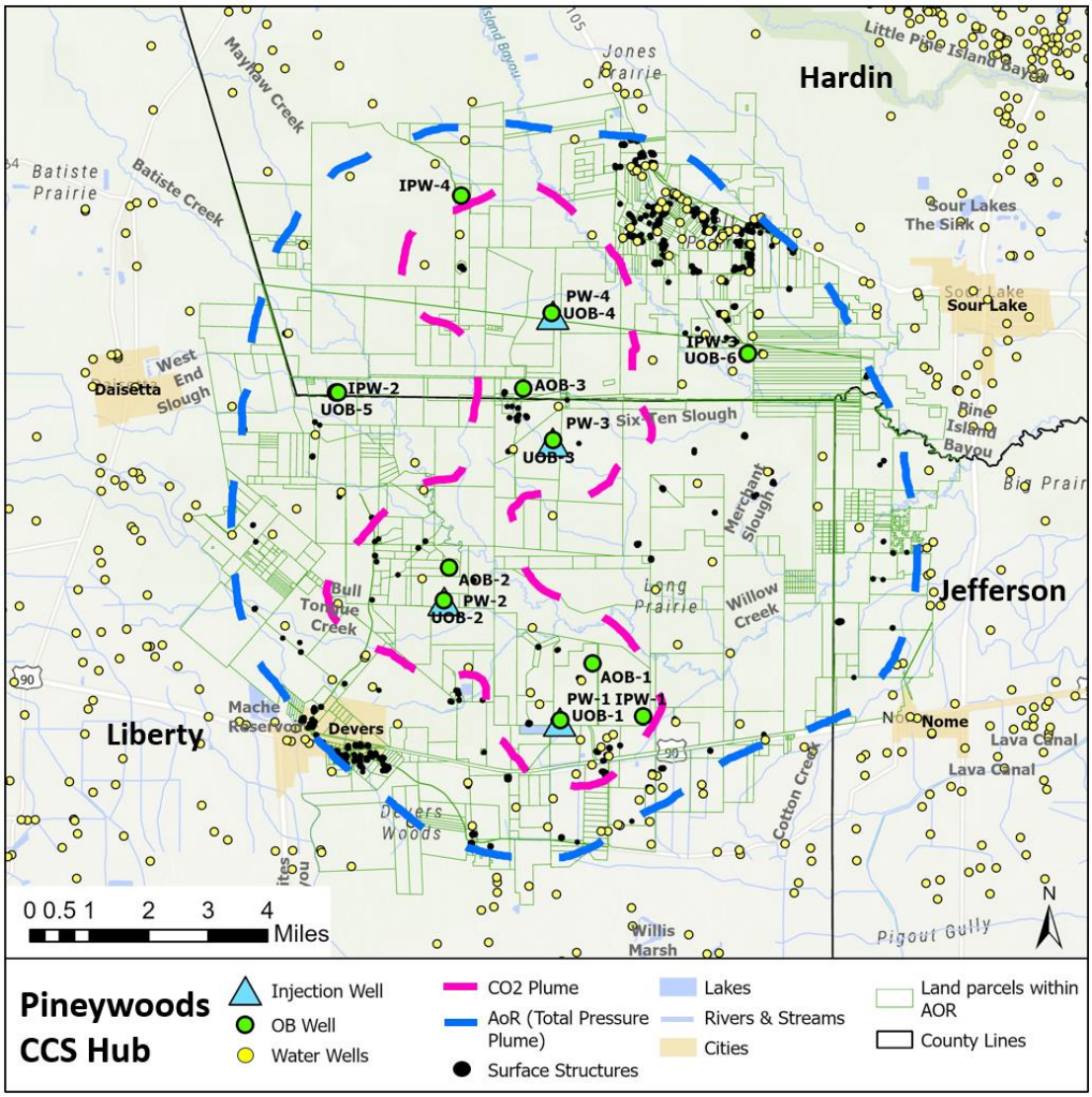
- **Alluvium (Holocene)** – Shallowest USDW source
- **Evangeline and Chicot Members of the Gulf Coast Aquifer System** – Primary water source in Liberty and Hardin Counties
- **Fleming Formation (Miocene Age)** – The lowermost potential USDW
- **Surface bodies of water** – Willow Creek, Uncle Charlie Slough, Merchant Slough, Long Marsh, Felicia Creek, Lower Natches Valley Authority Canal, Bull Tongue Creek, Whites Bayou, Batiste Creek, Mayhaw Creek, West End Slough, Jackson Creek, Six-Ten Slough, Pine Island Bayou, and multiple ponds (unnamed).

There is limited existing infrastructure within the Pineywoods CCS Hub project area. Land parcels within the Pineywoods CCS Hub are generally used for timber or hunting, with some residential and storage structures. Other infrastructure within the AOR includes residences, a cemetery, a church, roads, transmission lines, water supply wells, and oil and gas wells. The location of the Pineywoods CCS Hub along with structures, land parcels, oil and gas wells, and water supply wells, is illustrated in **Figure 1** and **Figure 2**, with the Pineywoods CCS Hub AOR shown for reference.



Oil and gas wells denoted by orange circles. The AOR (pressure plume) is the dashed blue line. PW wells are injectors. IPW wells are In-zone Observation Wells. AOB wells are Above Zone Observation Wells. UOB wells are USDW Observation Wells.

Figure 1: Map of the Site Resources, Land Parcels, and Infrastructure with oil and gas wells.



Water wells denoted by yellow circles. The AOR (pressure plume) is the dashed blue line. PW wells are injectors. IPW wells are In-zone Observation Wells. AOB wells are Above Zone Observation Wells. UOB wells are USDW Observation Wells.

Figure 2: Map of the Site Resources, Land Parcels, and Infrastructure with water supply wells.

C. Potential Risk Scenarios

Several scenarios could trigger an emergency response. Events that would trigger emergency responses include incidents that could cause personal injury, lead to contamination of the USDW, or result in property damage. These events may occur during the construction, injection, or PISC periods. Possible events requiring an emergency response for each stage of project development at the Pineywoods CCS Hub are outlined in **Table 1**. The degrees of risk for emergency events are defined in **Table 2** and match EPA guidance.

Table 1: Risk Scenario Matrix for Pineywoods CCS Hub

Risk Scenario	Construction Period	Injection Period	PISC Period	Degree of Risk	Appendix A Item Number
Fluid communication between formations while drilling	x			Serious to Major	1-3
Fluid leakage into or near USDW or ground surface through wellbore (injection, monitoring, P&A, or other), surface equipment failure, faults, fractures, or confining zone failure		x	x	Minor to Major	4-17
External impact to project wellheads or pipelines		x	x	Serious to Major	20-22
Loss of mechanical integrity (injection or monitoring well)	x	x	x	Minor to Major	4-7
Migration of CO2 outside of defined AOR		x	x	Minor to Major	18-19
Injection or monitoring equipment failure/malfunction		x	x	Minor to Serious	23-26
Induced seismicity		x	x	Minor to Major	27-28
Natural disaster (hurricane, earthquake, tornado, lightning, flood, wildfire)		x	x	Minor to Major	29-30
Accident or unplanned event (e.g., electrical outage causing injection to stop, unauthorized activity)		x		Minor	3, 8, 31, and 34

Table 2: Degrees of Risk for Emergency Events

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

D. Emergency Identification and Response Actions

Steps to identify and characterize the event will be dependent upon the specific issue identified and the severity of the event. The following actions will be taken by Pineywoods CCS, LLC if, through monitoring activities, there is evidence that a major or serious emergency has occurred that may pose a risk to a USDW or community infrastructure:

1. Initiate the emergency shutdown plan for the injection well.
2. Take all steps reasonably necessary to identify and characterize the suspected cause of the event.
3. Notify the facility's 24-Hour Emergency Contact of the emergency within 24 hours followed by a contact with the UIC Program Director.
4. 24-Hour Emergency Contact will contact the response personnel listed in the column headed "Response Personnel" in Appendix A. Emergency Remedial and Response Risk Scenarios, as needed.
5. Implement the applicable portions of the approved **ERRP**.

Where the phrase "initiate the emergency shutdown plan" is used, the following protocol will be employed: Pineywoods CCS, LLC will endeavor to immediately cease injection; however, in some circumstances, Pineywoods CCS, LLC will, in consultation with the UIC Program Director, determine whether gradual cessation of injection (using the parameters set forth in Appendix A. Emergency Remedial and Response Risk Scenariosof this plan) is appropriate.

Additionally, if necessary, Pineywoods CCS, LLC will pursue actions to address CO_2 escape from the permitted injection interval that may cause endangerment to USDWs. Moreover, per additional Texas requirements for Class VI UIC well application. Pineywoods CCS, LLC will:

- Provide security against unauthorized activity,
- Implement CO_2 release detection and prevention measure,
- Prepare instructions and procedures for alerting the public and public safety personnel of the existence of an emergency, procedures for requesting assistance and for follow-up action to remove public from an area of exposure,
- Develop provisions for advance briefing of the public within the AOR on subjects such as the hazards and characteristics of CO_2,

- Describe how the public will be notified of an emergency and steps to be taken in case of an emergency, and
- If necessary, develop proposed actions designed to minimize and respond to risks associated with potential seismic events, including seismic monitoring.

The risk scenarios outlined in **Table 1** and response actions for these risk scenarios are summarized in Appendix A. Emergency Remedial and Response Risk Scenarios. The appropriate response will depend on the nature of the emergency and the severity of the event. A formal risk assessment will be conducted to determine risk severity prior to requesting permission to operate, with a formal risk assessment report provided to the UIC Program Director.

The specific potential risk scenarios identified in **Potential Risk** Scenarios and detailed in Appendix A. Emergency Remedial and Response Risk Scenarios are conceptual; and, specific response plans may be amended in coordination with the UIC Program Director based on health, safety, and environmental circumstances specific to each event. In the event of an emergency requiring outside assistance, the lead project contact will notify the 24-Hour Emergency Contact identified in Appendix B. Emergency Contact List of this **ERRP** as soon as possible after requesting outside assistance from local emergency responders. Other notifications will be determined based on the type of emergency and notification requirements identified in Appendix A. Emergency Remedial and Response Risk Scenarios.

E. Response Personnel and Equipment

Site personnel, project personnel, and local authorities will be critical to successful implementation of this **ERRP**. The cities of Daisetta, Sour Lake, Nome, Devers, and unincorporated towns of Hull are the closest population centers to the Pineywoods CCS Hub (**Figure 1** and **Figure 2**). Therefore, both city and Liberty, Hardin, and Jefferson County emergency responders (as well as state agencies) may need to be notified in the event of an emergency. Please refer to Appendix B. Emergency Contact Listfor an emergency contact list—this list will be updated annually at a minimum.

Equipment needed in the event of an emergency and remedial response will vary depending on the triggering emergency event as specified for each potential risk scenario in Appendix A. Emergency Remedial and Response Risk Scenarios. Response actions (cessation of injection, well shut-in, and evacuation) will generally not require specialized equipment to implement. Pineywoods CCS, LLC will be responsible for procurement of any necessary additional specialized equipment (e.g., drilling rigs or logging equipment).

F. Emergency Communications Plan

In the event of an emergency requiring outside assistance, the lead project contact will notify the 24-Hour Emergency Contact identified in Appendix B. Emergency Contact List of this **ERRP** as soon as possible after requesting outside assistance from local emergency responders.

Pineywoods CCS, LLC will communicate to the public about any event that requires an emergency response to ensure the public understands what happened and whether there are any environmental, health, or safety implications. The amount of information, timing, and communication method(s)

will be tailored to the event; its severity; impacts on drinking water, other environmental resources, or the surrounding community; and the public's awareness of the event. In adherence with the **Environmental Justice Plan,** communication with the public in Liberty County will be in both English and Spanish.

Pineywoods CCS, LLC will work closely with the local broadcasting and news agencies in Liberty County, Hardin County, and Jefferson County to communicate necessary details about the emergency to the public. Pineywoods CCS, LLC will provide periodic updates to the broadcasting and news agencies to be communicated to the public.

In the case of an emergency that requires an evacuation, Pineywoods CCS, LLC will communicate and work with the Texas Division of Emergency Management and local offices of Emergency Management in Liberty County, Hardin County and Jefferson County to evacuate the public from the affected areas. Pineywoods CCS, LLC will provide shelters and homes for the public affected by the emergency. Pineywoods CCS, LLC will encourage the public to register for the State of Texas Emergency Assistance Registry (STEAR) through direct communication in tandem with evacuation assistance in an emergency. In addition, Pineywoods CCS, LLC will work closely with the mayors and judges in the affected areas to issue a mandatory evacuation order for the public, if necessary.

Pineywoods CCS, LLC will describe what happened, any actual or potential 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), Pineywoods CCS, LLC will provide periodic updates on the progress of the response action(s).

Pineywoods CCS, LLC will work with the Regional Response Teams and local environmental agencies to map the impacted zone and identify the areas with highest risk potential. Also, Pineywoods CCS, LLC will map the nearby environmentally sensitive areas, well locations, facility location, and entrances and exits to be communicated to the response team.

Pineywoods CCS, LLC will communicate with entities who may need to be informed about or act in response to the event, including local water system(s), management organization(s), CO_2 source(s), management organization(s), pipeline operator(s), landowners, Regional Response Teams (as part of the National Response Team), local authorities, the Texas Railroad Commission, and the Texas Commission on Environmental Quality.

G. Plan Review

This **ERRP** shall be periodically reviewed as follows:

- At least once every five (5) years following its approval by the permitting agency,
- After an AOR reevaluation,
- Following any significant changes to the injection process or the injection facility, or an emergency event, and
- At least annually for the Emergency Contact List in Appendix B. Emergency Contact List of this **ERRP**.

An amended **ERRP** should be submitted to the UIC Program Director within 1 year of an AOR reevaluation, following any significant changes to the facility, or when required by the UIC Program Director. Amendments must be approved by the UIC Program Director and incorporated into the permit and are subject to permit modification requirements. If the review indicates that no amendments to the **ERRP** are necessary, Pineywoods CCS, LLC will provide the UIC Program Director with the documentation supporting the "no amendment necessary" determination. Updating the Emergency Contact List and clarifications or corrections are not considered an amendment to the **ERRP** and do not require permit modification (40 CFR 144.41).

H. Staff Training and Exercise Procedures

Pineywoods CCS, LLC will integrate the **ERRP** into its existing operating procedures and training protocols. Pineywoods CCS, LLC will determine the required training programs for each employee commensurate with their job function, safety requirements, and regulatory requirements. All hub employees will be trained—this training will be documented prior to commencing injection. Pineywoods CCS, LLC will hold safety meetings with each contractor prior to commencement of any new contract work on the project with emergency measures specific to the contractor's work explained. Pineywoods CCS, LLC will provide information about employee training status, schedules, and coursework to RRC upon request and prior to commencing injection.

All Pineywoods field personnel will be trained and equipped with the necessary skills to ensure a safe working environment and to respond correctly in case of an emergency. Pineywoods CCS, LLC will reference the following standards established by the American Petroleum Institute (API) in their training program:

- API Recommended Practice 54 – Recommended Practice for Occupational Safety for Oil and Gas Well Drilling and Servicing Operations
- API Recommended Practice 74 – Recommended Practice for Occupational Safety for Onshore Oil and Gas Production Operations
- API Bulletin 75L – Guidance Document for the Development of a Safety and Environmental Management System for Onshore Oil and Natural Gas Production Operations and Associated Activities.
- API Recommended Practice 76 – Contractor Safety Management for Oil and Gas Drilling and Production Operations
- API Standard 2220 – Contractor Safety Performance Process

These recommended practices will be reviewed by Pineywoods CCS, LLC to design and implement training programs that are adequate for the field personnel generally and specific for unique job functions. The field personnel will go through a field probation period of no less than a month and no more than a year. This probation period will ensure that personnel can respond adequately and quickly in case of an emergency.

Pineywoods CCS, LLC intends to provide training courses for field personnel that may include, but are not limited to:

- Emergency action planning

- Hazard communication (HAZCOM)
- Basic fire extinguishers
- Major emergency response
- OSHA 10-hour and 30-hour general industry
- Risk management for oil and gas field operations

Periodic training will be provided, not less than annually, to construction personnel, well operators, project safety personnel, environmental personnel, the operations manager, and corporate communications. The training plan will record that the necessary personnel have been trained and possess the required skills to perform their relevant emergency response activities described in the **ERRP**.

I. Communications with Landowners in the AOR and Emergency Response Personnel

Prior to the start of CO_2 injection operations, Pineywoods CCS, LLC will attempt to promptly communicate with landowners living within the AOR as identified on **Figure 1** and **Figure 2** to provide information of the nature of the operations, potential risks, and appropriate response approaches under various emergency scenarios. This will include briefings on the potential hazards and characteristics of CO_2.

Pineywoods CCS, LLC's point of contact for any landowner or stakeholder concerns is listed in **Table 3**. Attached to the applications materials a .kmz file of landowner Parcel IDs was submitted.

Table 3: REDACTED Contact information for landowners in AOR.

Parcel ID	Owner	Address
10040	[redacted]	[redacted]
10041	[redacted]	[redacted]
100483	[redacted]	[redacted]
10051	[redacted]	[redacted]
10052	[redacted]	[redacted]
100783	[redacted]	[redacted]
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10960	[redacted]	[redacted]
10965	[redacted]	[redacted]
110128	[redacted]	[redacted]

Parcel ID	Owner	Address
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11269	[redacted]	[redacted]
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153766	[redacted]	[redacted]
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167048	[redacted]	[redacted]
167114	[redacted]	[redacted]
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219103	[redacted]	[redacted]
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22053	[redacted]	[redacted]
22055	[redacted]	[redacted]
22177	[redacted]	[redacted]
22178	[redacted]	[redacted]
22181	[redacted]	[redacted]
22185	[redacted]	[redacted]
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22463	[redacted]	[redacted]
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224961	[redacted]	[redacted]
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22524	[redacted]	[redacted]
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22572	[redacted]	[redacted]
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22582	[redacted]	[redacted]
226750	[redacted]	[redacted]
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22741	[redacted]	[redacted]
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22745	[redacted]	[redacted]
22746	[redacted]	[redacted]
227898	[redacted]	[redacted]
227899	[redacted]	[redacted]
22818	[redacted]	[redacted]
22819	[redacted]	[redacted]
22822	[redacted]	[redacted]

Parcel ID	Owner	Address
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22829	[redacted]	[redacted]
22830	[redacted]	[redacted]
22832	[redacted]	[redacted]
22834	[redacted]	[redacted]
22835	[redacted]	[redacted]
228357	[redacted]	[redacted]
22836	[redacted]	[redacted]
22839	[redacted]	[redacted]
22842	[redacted]	[redacted]
22843	[redacted]	[redacted]
22844	[redacted]	[redacted]
22845	[redacted]	[redacted]
22846	[redacted]	[redacted]
22847	[redacted]	[redacted]
22850	[redacted]	[redacted]
22851	[redacted]	[redacted]
22852	[redacted]	[redacted]
22854	[redacted]	[redacted]
22855	[redacted]	[redacted]
22858	[redacted]	[redacted]
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22862	[redacted]	[redacted]
22864	[redacted]	[redacted]
22865	[redacted]	[redacted]
22867	[redacted]	[redacted]
22872	[redacted]	[redacted]
22873	[redacted]	[redacted]
23005	[redacted]	[redacted]
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23120	[redacted]	[redacted]
23123	[redacted]	[redacted]
23124	[redacted]	[redacted]
231458	[redacted]	[redacted]
23254	[redacted]	[redacted]
23301	[redacted]	[redacted]
23302	[redacted]	[redacted]
23303	[redacted]	[redacted]
23312	[redacted]	[redacted]
23314	[redacted]	[redacted]
23315	[redacted]	[redacted]

Parcel ID	Owner	Address
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23336	[redacted]	[redacted]
23342	[redacted]	[redacted]
23365	[redacted]	[redacted]
23373	[redacted]	[redacted]
23377	[redacted]	[redacted]
23378	[redacted]	[redacted]
23379	[redacted]	[redacted]
23380	[redacted]	[redacted]
23382	[redacted]	[redacted]
23383	[redacted]	[redacted]
23384	[redacted]	[redacted]
233876	[redacted]	[redacted]
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23391	[redacted]	[redacted]
23395	[redacted]	[redacted]
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23397	[redacted]	[redacted]
233976	[redacted]	[redacted]
233977	[redacted]	[redacted]
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23403	[redacted]	[redacted]
23409	[redacted]	[redacted]
23410	[redacted]	[redacted]
23411	[redacted]	[redacted]
23471	[redacted]	[redacted]
23472	[redacted]	[redacted]
23473	[redacted]	[redacted]
23479	[redacted]	[redacted]
23555	[redacted]	[redacted]
23630	[redacted]	[redacted]
23631	[redacted]	[redacted]
23673	[redacted]	[redacted]
23674	[redacted]	[redacted]
23675	[redacted]	[redacted]
23676	[redacted]	[redacted]
23679	[redacted]	[redacted]
23680	[redacted]	[redacted]
23683	[redacted]	[redacted]
23691	[redacted]	[redacted]
23692	[redacted]	[redacted]
23736	[redacted]	[redacted]

Parcel ID	Owner	Address
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239451	[redacted]	[redacted]
242833	[redacted]	[redacted]
24293	[redacted]	[redacted]
24294	[redacted]	[redacted]
24367	[redacted]	[redacted]
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244248	[redacted]	[redacted]
244249	[redacted]	[redacted]
245145	[redacted]	[redacted]
245213	[redacted]	[redacted]
245332	[redacted]	[redacted]
24549	[redacted]	[redacted]
24550	[redacted]	[redacted]
246213	[redacted]	[redacted]
24654	[redacted]	[redacted]
24656	[redacted]	[redacted]
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247013	[redacted]	[redacted]
247014	[redacted]	[redacted]
247137	[redacted]	[redacted]
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248952	[redacted]	[redacted]
252057	[redacted]	[redacted]
252650	[redacted]	[redacted]
252652	[redacted]	[redacted]
252653	[redacted]	[redacted]
252654	[redacted]	[redacted]
252655	[redacted]	[redacted]
25321	[redacted]	[redacted]
25404	[redacted]	[redacted]
25457	[redacted]	[redacted]
25468	[redacted]	[redacted]
25469	[redacted]	[redacted]
25470	[redacted]	[redacted]
25473	[redacted]	[redacted]
256433	[redacted]	[redacted]
256434	[redacted]	[redacted]
256435	[redacted]	[redacted]
256436	[redacted]	[redacted]
256437	[redacted]	[redacted]
256438	[redacted]	[redacted]
256439	[redacted]	[redacted]
256440	[redacted]	[redacted]

Parcel ID	Owner	Address
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256442	[redacted]	[redacted]
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256444	[redacted]	[redacted]
256445	[redacted]	[redacted]
256446	[redacted]	[redacted]
256447	[redacted]	[redacted]
256448	[redacted]	[redacted]
256449	[redacted]	[redacted]
256450	[redacted]	[redacted]
256451	[redacted]	[redacted]
256453	[redacted]	[redacted]
256454	[redacted]	[redacted]
256456	[redacted]	[redacted]
256457	[redacted]	[redacted]
256458	[redacted]	[redacted]
25843	[redacted]	[redacted]
25844	[redacted]	[redacted]
25845	[redacted]	[redacted]
25846	[redacted]	[redacted]
25847	[redacted]	[redacted]
25848	[redacted]	[redacted]
25850	[redacted]	[redacted]
25851	[redacted]	[redacted]
25852	[redacted]	[redacted]
25858	[redacted]	[redacted]
25859	[redacted]	[redacted]
26015	[redacted]	[redacted]
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26022	[redacted]	[redacted]
26023	[redacted]	[redacted]
26029	[redacted]	[redacted]
26034	[redacted]	[redacted]
262469	[redacted]	[redacted]
262772	[redacted]	[redacted]
262831	[redacted]	[redacted]
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262834	[redacted]	[redacted]
262835	[redacted]	[redacted]
262836	[redacted]	[redacted]
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Parcel ID	Owner	Address
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262844	[redacted]	[redacted]
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262847	[redacted]	[redacted]
263041	[redacted]	[redacted]
263042	[redacted]	[redacted]
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26325	[redacted]	[redacted]
26326	[redacted]	[redacted]
26327	[redacted]	[redacted]
26521	[redacted]	[redacted]
26522	[redacted]	[redacted]
26528	[redacted]	[redacted]
26532	[redacted]	[redacted]
26534	[redacted]	[redacted]
26549	[redacted]	[redacted]
266752	[redacted]	[redacted]
26761	[redacted]	[redacted]
26762	[redacted]	[redacted]
26764	[redacted]	[redacted]
267881	[redacted]	[redacted]
268747	[redacted]	[redacted]
268748	[redacted]	[redacted]
268749	[redacted]	[redacted]
268858	[redacted]	[redacted]
26965	[redacted]	[redacted]
26966	[redacted]	[redacted]
26967	[redacted]	[redacted]
26978	[redacted]	[redacted]
28434	[redacted]	[redacted]
28435	[redacted]	[redacted]
28698	[redacted]	[redacted]
28700	[redacted]	[redacted]
28701	[redacted]	[redacted]
28702	[redacted]	[redacted]
28703	[redacted]	[redacted]
28704	[redacted]	[redacted]
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28707	[redacted]	[redacted]
28709	[redacted]	[redacted]
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Parcel ID	Owner	Address
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28714	[redacted]	[redacted]
28727	[redacted]	[redacted]
28750	[redacted]	[redacted]
28752	[redacted]	[redacted]
28754	[redacted]	[redacted]
28756	[redacted]	[redacted]
28762	[redacted]	[redacted]
28767	[redacted]	[redacted]
28769	[redacted]	[redacted]
28771	[redacted]	[redacted]
28773	[redacted]	[redacted]
28774	[redacted]	[redacted]
28777	[redacted]	[redacted]
28780	[redacted]	[redacted]
28781	[redacted]	[redacted]
28782	[redacted]	[redacted]
28783	[redacted]	[redacted]
28784	[redacted]	[redacted]
28793	[redacted]	[redacted]
28795	[redacted]	[redacted]
28796	[redacted]	[redacted]
28798	[redacted]	[redacted]
28799	[redacted]	[redacted]
28800	[redacted]	[redacted]
28801	[redacted]	[redacted]
28803	[redacted]	[redacted]
28805	[redacted]	[redacted]
28806	[redacted]	[redacted]
28808	[redacted]	[redacted]
28809	[redacted]	[redacted]
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29052	[redacted]	[redacted]
29054	[redacted]	[redacted]
29055	[redacted]	[redacted]
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29057	[redacted]	[redacted]
29059	[redacted]	[redacted]
29060	[redacted]	[redacted]
29061	[redacted]	[redacted]
29065	[redacted]	[redacted]

Parcel ID	Owner	Address
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29403	[redacted]	[redacted]
29404	[redacted]	[redacted]
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30118	[redacted]	[redacted]
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3019	[redacted]	[redacted]
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30427	[redacted]	[redacted]
30428	[redacted]	[redacted]
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30506	[redacted]	[redacted]
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30511	[redacted]	[redacted]
30512	[redacted]	[redacted]
30542	[redacted]	[redacted]
30589	[redacted]	[redacted]
30590	[redacted]	[redacted]
30705	[redacted]	[redacted]
30706	[redacted]	[redacted]
30707	[redacted]	[redacted]
30708	[redacted]	[redacted]
30776	[redacted]	[redacted]
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31222	[redacted]	[redacted]
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31614	[redacted]	[redacted]
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31716	[redacted]	[redacted]
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Parcel ID	Owner	Address
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31817	[redacted]	[redacted]
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31981	[redacted]	[redacted]
31982	[redacted]	[redacted]
31983	[redacted]	[redacted]
31984	[redacted]	[redacted]
31990	[redacted]	[redacted]
31992	[redacted]	[redacted]
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32026	[redacted]	[redacted]
32034	[redacted]	[redacted]
32047	[redacted]	[redacted]
32066	[redacted]	[redacted]
32067	[redacted]	[redacted]
32068	[redacted]	[redacted]
32070	[redacted]	[redacted]
32071	[redacted]	[redacted]
32072	[redacted]	[redacted]
32074	[redacted]	[redacted]
32075	[redacted]	[redacted]
32077	[redacted]	[redacted]
32079	[redacted]	[redacted]
32081	[redacted]	[redacted]
32082	[redacted]	[redacted]
32083	[redacted]	[redacted]
32084	[redacted]	[redacted]
32085	[redacted]	[redacted]
32090	[redacted]	[redacted]
32102	[redacted]	[redacted]
32160	[redacted]	[redacted]
32180	[redacted]	[redacted]
32181	[redacted]	[redacted]
32192	[redacted]	[redacted]
32278	[redacted]	[redacted]
32279	[redacted]	[redacted]
32281	[redacted]	[redacted]
32301	[redacted]	[redacted]
32334	[redacted]	[redacted]

Parcel ID	Owner	Address
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344565	[redacted]	[redacted]
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361044	[redacted]	[redacted]
361245	[redacted]	[redacted]
361391	[redacted]	[redacted]
361392	[redacted]	[redacted]
385632	[redacted]	[redacted]
386752	[redacted]	[redacted]
41548	[redacted]	[redacted]
41549	[redacted]	[redacted]
41572	[redacted]	[redacted]
41574	[redacted]	[redacted]
41575	[redacted]	[redacted]
41576	[redacted]	[redacted]
41577	[redacted]	[redacted]
41579	[redacted]	[redacted]
41581	[redacted]	[redacted]
41582	[redacted]	[redacted]
41584	[redacted]	[redacted]
41585	[redacted]	[redacted]
41586	[redacted]	[redacted]
41587	[redacted]	[redacted]
41588	[redacted]	[redacted]
41589	[redacted]	[redacted]
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41591	[redacted]	[redacted]
41592	[redacted]	[redacted]
41594	[redacted]	[redacted]
41595	[redacted]	[redacted]
41596	[redacted]	[redacted]
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41598	[redacted]	[redacted]
41599	[redacted]	[redacted]
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41604	[redacted]	[redacted]
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41613	[redacted]	[redacted]
41615	[redacted]	[redacted]
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41618	[redacted]	[redacted]
41625	[redacted]	[redacted]
41628	[redacted]	[redacted]

Parcel ID	Owner	Address
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41632	[redacted]	[redacted]
41635	[redacted]	[redacted]
41637	[redacted]	[redacted]
41643	[redacted]	[redacted]
41647	[redacted]	[redacted]
41651	[redacted]	[redacted]
41654	[redacted]	[redacted]
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41656	[redacted]	[redacted]
41657	[redacted]	[redacted]
41658	[redacted]	[redacted]
41663	[redacted]	[redacted]
41664	[redacted]	[redacted]
41666	[redacted]	[redacted]
41669	[redacted]	[redacted]
41671	[redacted]	[redacted]
41674	[redacted]	[redacted]
41683	[redacted]	[redacted]
41684	[redacted]	[redacted]
41685	[redacted]	[redacted]
41686	[redacted]	[redacted]
41687	[redacted]	[redacted]
41688	[redacted]	[redacted]
41690	[redacted]	[redacted]
41691	[redacted]	[redacted]
41692	[redacted]	[redacted]
41696	[redacted]	[redacted]
41698	[redacted]	[redacted]
41709	[redacted]	[redacted]
41710	[redacted]	[redacted]
41711	[redacted]	[redacted]
41712	[redacted]	[redacted]
41713	[redacted]	[redacted]
41715	[redacted]	[redacted]
41716	[redacted]	[redacted]
41718	[redacted]	[redacted]
41721	[redacted]	[redacted]
47140	[redacted]	[redacted]
47142	[redacted]	[redacted]
48045	[redacted]	[redacted]
48055	[redacted]	[redacted]
48056	[redacted]	[redacted]

Parcel ID	Owner	Address
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48067	[redacted]	[redacted]
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48069	[redacted]	[redacted]
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48071	[redacted]	[redacted]
48072	[redacted]	[redacted]
48073	[redacted]	[redacted]
48074	[redacted]	[redacted]
48075	[redacted]	[redacted]
48076	[redacted]	[redacted]
48077	[redacted]	[redacted]
48078	[redacted]	[redacted]
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48080	[redacted]	[redacted]
48081	[redacted]	[redacted]
48478	[redacted]	[redacted]
48600	[redacted]	[redacted]
48601	[redacted]	[redacted]
48602	[redacted]	[redacted]
49467	[redacted]	[redacted]
49964	[redacted]	[redacted]
49966	[redacted]	[redacted]
50684	[redacted]	[redacted]
51534	[redacted]	[redacted]
57128	[redacted]	[redacted]
57385	[redacted]	[redacted]
57386	[redacted]	[redacted]
58303	[redacted]	[redacted]
58319	[redacted]	[redacted]
59445	[redacted]	[redacted]
59983	[redacted]	[redacted]
59985	[redacted]	[redacted]
59986	[redacted]	[redacted]
60434	[redacted]	[redacted]
60555	[redacted]	[redacted]
60879	[redacted]	[redacted]
60881	[redacted]	[redacted]
60882	[redacted]	[redacted]
60883	[redacted]	[redacted]

Parcel ID	Owner	Address
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61125	[redacted]	[redacted]
61126	[redacted]	[redacted]
61154	[redacted]	[redacted]
61287	[redacted]	[redacted]
61292	[redacted]	[redacted]
61658	[redacted]	[redacted]
61680	[redacted]	[redacted]
61681	[redacted]	[redacted]
61965	[redacted]	[redacted]
61966	[redacted]	[redacted]
61968	[redacted]	[redacted]
61969	[redacted]	[redacted]
62001	[redacted]	[redacted]
62857	[redacted]	[redacted]
63048	[redacted]	[redacted]
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63054	[redacted]	[redacted]
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63058	[redacted]	[redacted]
63059	[redacted]	[redacted]
63060	[redacted]	[redacted]
63061	[redacted]	[redacted]
63062	[redacted]	[redacted]
63063	[redacted]	[redacted]
63064	[redacted]	[redacted]
63065	[redacted]	[redacted]
63066	[redacted]	[redacted]
63067	[redacted]	[redacted]
63068	[redacted]	[redacted]
68455	[redacted]	[redacted]
68681	[redacted]	[redacted]
69549	[redacted]	[redacted]
69907	[redacted]	[redacted]
69913	[redacted]	[redacted]
70363	[redacted]	[redacted]
71385	[redacted]	[redacted]
71509	[redacted]	[redacted]
71510	[redacted]	[redacted]
71562	[redacted]	[redacted]
71628	[redacted]	[redacted]

Parcel ID	Owner	Address
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76175	[redacted]	[redacted]

Parcel ID	Owner	Address
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Parcel ID	Owner	Address
10041	[redacted]	[redacted]

Appendix A. Emergency Remedial and Response Risk Scenarios

Pineywoods CCS Hub
Liberty County, Texas

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
1	Construction Period	***Fluid Leakage - Drilling operations:*** Hydrostatic column controlling the well decreases below the formation pressure, resulting in a sudden influx of fluid, causing a well control event with loss of containment.	• Flow sensor • Pressure sensor • Tank level indicator • Tripping displacement practices • Mud weight control	• Blowout prevention (BOP) equipment • Kill fluid • Well control training • BOP drills • BOP testing protocol • Kick drill • Lubricators for wireline operations	<u>Drilling:</u> * Stop operation * Close BOP * Clear floor and secure area * Execute well control procedure * Evaluate drilling parameters to identify root cause * Notify 24-Hour Emergency Contact and UIC Program Director and propose an action plan based on the finding * Continue operations <u>Completion:</u> * Stop operations * Close BOP * Clear floor and secure area * Execute well control procedure * Notify 24-Hour Emergency Contact and UIC Program Director and propose remediation plans. * Continue operations	* Project manager * Rig crew * Rig manager * Field superintendent

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
2	Construction Period	***Fluid Leakage - Drilling operations:*** Failure of surface casing completion to protect USDW while drilling resulting in cross flow of brine between formations resulting in fluid losses into the underground source of drinking water (USDW).	* Pressure sensors * Cement bond log (CBL)	* Pressure sensors * USDW will be covered with the surface casing * Casing test after cementing surface casing to check integrity * CBL to check cement bonding	* In case of influx, control the well, without compromising the shoe integrity * In the case of the shoe leaking, squeeze to regain integrity * In the case of the surface casing leaking, squeeze or install a casing patch. * Notify 24-Hour Emergency Contact and UIC Program Director and propose remediation plans.	* Project manager * Rig crew * Rig manager * Field superintendent
3	Construction period	***Unauthorized access/activity:*** Unauthorized activity on filed site	* Field personnel logs	* Fencing around well sites * Security in place	* Report any incidents to local Sheriff's office	*Field superintendent *Company man
4	Construction Period	***Fluid Leakage - Drilling through USDW:*** Improper well control during the drilling of one or more monitoring or injection wells, the drilling fluid weight exceeds the aquifer	* Flow sensor * Pressure sensor *Mud weight control	* Well control training * Overbalance mud program	<u>Drilling:</u> * Stop operation * Close BOP * Clear floor and secure area * Execute well control procedure * Evaluate drilling parameters to identify root cause	* Project manager * Rig crew * Rig manager * Field superintendent

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		reservoir pressure, and the drilling fluid migrates into the pores and contaminates a USDW.			* Notify 24-Hour Emergency Contact and UIC Program Director and propose remediation plans. *Implement corrective actions * Continue operations	
5	Injection Period	***Fluid Leakage – UIC Wellbores*** A loss of mechanical integrity in the injection well causing a tubing/packer to leak due to corrosion damage, damage to the tubulars during installation, fatigue, higher load profiles, and other issues, that could cause communication of formation fluids with the annular casing tubing as well as sustained casing pressure. There is no loss of containment (LOC) in this scenario.	* Pressure and temperature gauges on surface and downhole real time * Pulsed-neutron logs * Annular pressure test * CO_2 leak sensors on the wellhead	* Tubing at 13CR or coated * Inhibited packer fluid in annulus * Corrosion monitoring plan * Dry CO_2 injected * 13CR packers * CR tubing tailpipes below packers * New tubing or inspection of tubing before reinstalling	* Trigger Emergency Shutdown system * SCADA alarms notification to operations staff * Follow protocol to stop operation, vent, or deviate CO_2 * Notify 24-Hour Emergency Contact * Troubleshoot the well * If tubing leak is detected, notify UIC Program Director and propose an action plan based on the finding * Schedule well service to repair tubing	* Operations manager * Field superintendent * Project manager

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
6	Injection/ Post Injection Site Care Period	***Fluid Leakage – MW Wellbores*** A loss of mechanical integrity in the monitoring well causing a tubing/packer to leak due to corrosion damage, damage to the tubulars during installation, fatigue, higher load profiles, and others and could cause a communication of the formation fluids with the annular casing tubing as well as sustained casing pressure. There is no LOC in this scenario.	* Pressure and temperature gauges on surface and downhole real time * Pulsed-neutron logs * Annular pressure test. * CO_2 leak sensors on the wellhead	* Tubing at 13CR or coated * Inhibited packer fluid in annulus * Corrosion monitoring plan * 13CR packers * CR tubing below/between packers * CR or Inconel carrier for the sensors * New tubing or inspection of tubing before reinstalling * Cased hole logging program * Observation wells are designed to be outside of the projected plume for most of the project which reduces the risk of contact with CO_2	* Trigger Emergency Shutdown system * SCADA alarms notification to operations staff * Notify 24-Hour Emergency Contact * Troubleshoot the well * Notify UIC Program Director and propose an action plan for well service * Schedule well service to repair tubing, isolate CO_2 zone, or abandon the well	* Operations manager * Field superintendent * Project manager * Rig crew and DH contractors
7	Injection Period	***Fluid Leakage – UIC Wellbores:*** A loss of mechanical integrity in the injection wells causing a casing leak due to corrosion,	* Pressure and temperature gauges on surface and downhole real time * CO_2 leak sensors on the wellhead	* CO_2-resistant cement and metallurgic across injection zone * Injection through tubing and packer	* Trigger Emergency Shutdown system * SCADA alarms notification to operations staff	* Operations manager * Field superintendent * Project manager * Rig crew and DH contractors

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		damage in the tubulars during installation, fatigue, higher load profiles, or others. This event could cause migration of CO_2 and brines through the casing, the cement sheet, and into different formations of the injection target or into USDW.	* DTS fiber real time alongside the casing * Flow rate monitoring * Pulsed-neutron logs * CBL/Ultra-sonic logging * USDW water monitoring	* Inhibited packer fluid in the annular * Cement to surface * Corrosion monitoring plan * Cased hole logging program * New casing and tubing installed	* Follow protocol to stop operation, vent, or deviate CO_2 * Notify 24-Hour Emergency Contact * Troubleshoot the well. * Evaluate if there is a movement of CO_2 or brines to USDW. In the remote event that USDW gets affected, discuss remediation options with the UIC Program Director * Notify UIC Program Director and propose an action plan based on the finding and location of the leak * Schedule well service to repair the casing	* Remediation contractors
8	Injection period	***Unauthorized access/activity:*** Unauthorized activity on filed site	* Field personnel logs	* Fencing around well sites * Security in place	* Report any incidents to local Sheriff's office	*Field superintendent *Company man

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
9	Injection Period/ Post Injection Site Care Period	***Fluid Leakage – MW Wellbores:*** A loss of mechanical integrity in the monitoring well causing a casing leak due to corrosion, damage in the tubulars during installation, fatigue, higher load profiles, and others. This event could cause a migration of CO_2 and brines through the casing, the cement sheet, and into different formations of the injection target or into USDW.	* Pressure and temperature gauges on surface and downhole real time * CO_2 leak sensors on the wellhead * Pulsed-neutron logs * CBL/Ultra-sonic logging * USDW water monitoring	* CO_2-resistant cement across injection zone * 13CR packers * Inhibited packer fluid in the annular * Cement to surface * Corrosion monitoring plan * Cased hole logging program * New casing * New or inspected tubing before reinstallation * Observation wells are designed to be outside of the projected plume for most of the project's life cycle which minimizes the risk of contact with CO_2	* Trigger Emergency Shutdown system * SCADA alarms notification to operations staff * Notify 24-Hour Emergency Contact * Troubleshoot the well * Evaluate if there is a movement of CO_2 or brines to USDW. In the remote event that USDW gets affected, discuss remediation options with the UIC Program Director * Notify UIC Program Director and propose an action plan based on the findings and the location of the leak. * Schedule well service to repair the casing	* Operations manager * Field superintendent * Project manager * Rig crew and DH contractors * Remediation contractors

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
10	Injection Period / Post Injection Site Care Period	***Fluid Leakage – Legacy Wellbores:*** Brines and CO_2 could migrate through poor cement bonding, cement degradation, or cracking in the cement of plugged and abandoned (P&A) wells.	* Time-lapse vertical seismic profile survey * USDW water sampling	* Legacy wells are properly abandoned for brine movement because of pressurization of injection zone * Injectors will be abandoned as soon as CO_2 injection ends, except if they are left as observation wells	* Notify 24-Hour Emergency Contact * Evaluate if it's a positive CO_2 release because of a leak in the legacy/P&A well * Notify regulator and propose plan to repair the well, delineate the area, and identify potential resources affected * Discuss specific remediation actions and monitoring plans * Execute program, monitor, and evaluate efficacy	* Operations manager * Field superintendent * Project manager * Rig crew and DH contractors * Remediation contractors
11	Injection	***Fluid Leakage – Faults and Fractures:*** During injection, the pressurization of the injection zone exceeds the sealing capacity of the confining zone above or if there are features such as fault or fractures that are	* USDW water sampling * Time-lapse vertical seismic profile survey * Pulsed-neutron log in injector and observation wells	* Injection is limited to 90% of frac gradient * Extensive characterization of the rocks shows good sealing capacity * If the confining zone above the Paluxy fails, the Selma Group will	* Notify 24-Hour Emergency Contact * Assess root cause by reviewing monitoring data * Notify UIC Program Director * If necessary, follow protocol to stop injection.	* Operations manager * Field superintendent * Geologist * Reservoir engineer * Project manager * Remediation contractors

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		reactivated. Creating a leakage pathway for CO_2 and brine to migrate to a shallower formation, including a USDW.		act as a buffer formation before CO_2 or brines are able to reach the USDW	* If necessary, conduct geophysical survey to delineate potential leak path * Evaluate if there is a movement of CO_2 or brines to USDW. If USDW gets affected, discuss with UIC Program Director remediation options, action plan, and monitoring program. * Actions to restore injection will depend on the nature of the leak path and the extent. Operator needs to reevaluate model and discuss action plan with UIC Program Director	
12	Injection Period	***Fluid Leakage - Geomechanical Seal Failure*** Elevated well bottomhole pressure (BHP) either exceeds the	* Pressure gauges on surface and downhole real time * USDW water sampling	* Injection is limited to less than 90% of the fracture gradient * Core and geomechanical testing and	* Trigger Emergency Shutdown system * SCADA alarms notification to operations staff	* Operations manager * Field superintendent * Monitoring staff * Geologist * Reservoir engineer

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		permitted maximum injection pressure or the estimated maximum injection pressure is inaccurate (i.e., the true fracture pressure is lower than the estimated maximum pressure) in the injection zone, resulting in the failure of the confining system and leading to vertical migration of CO_2 or brine to a USDW, the surface or atmosphere (CO_2 only).	* Time-lapse seismic profile survey * Pulsed-neutron log in injector and observation wells	geochemical modeling of the upper confining zone show good sealing capacity and fluid compatibility, respectively * If the confining zone above the Paluxy fails, the Selma Group will act as a buffer formation before CO_2 or brines are able to reach the USDW * Microfracture test prior to receiving authorization to operate, confirm formation breakdown pressure.	* Follow protocol to stop injection * Designate an exclusion zone, and provide appropriate PPE for protection of onsite personnel * Notify 24-Hour Emergency Contact * Assess root cause by reviewing monitoring data * If required, conduct geophysical survey to delineate potential leakage pathway * Evaluate if there is a movement of CO_2 or brines to USDW. * Notify UIC Program Director and propose remediation options, action plan, and monitoring program * Actions to restore injection will	* Project manager * Remediation contractors

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					depend on the nature of the leak path and the extent. Operator needs to reevaluate model and discuss action plan with UIC Program Director	
13	Injection Period	***Fluid Leakage - Surface Infrastructure:*** Vehicle strikes other surface equipment (e.g., tank battery pumps/compressors, etc.), causing the release of CO_2 at the surface.	* Use of protective equipment, such as bollards, fences, locking gates * Use of appropriate fencing and signage	* Temperature-controlled building and/or containment, as required by regulation or law, will be proposed to protect the surface equipment and other instrumentation (i.e., interrogator, gauges, meters, etc.).	* Trigger Emergency Shutdown system * SCADA alarms notification to operations staff * Designate an exclusion zone, and provide appropriate PPE for protection of onsite personnel * Follow protocol to shut down CO_2 delivery * If there is injured personnel, call emergency team, and execute evacuation protocol * Notify 24-Hour Emergency Contact * Clear location and secure the	* Operations manager *Field superintendent *Project manager *Plant manager *Remediation contractors

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					perimeter. If possible, install containment devices around the location. * Evaluate environmental impact (soil, water, fauna, vegetation), * Assess mechanical integrity of the system * Notify UIC Program Director and propose repair actions * Repair or replace equipment	
14	Injection Period	***Fluid Leakage - Surface Infrastructure:*** Failure of a valve results in leakage of CO_2 with potential impacts to health, safety, and the environment, particularly if the leak is not detected and corrected.	* Routine field inspections * Routine inspection of emergency alert systems, monitoring systems and controls.	* Equipment upstream or downstream of the failed valve can be used to isolate the problem as necessary * Preventative maintenance * Periodic inspections	* Trigger Emergency Shutdown system * SCADA alarms notification to operations staff * If there are injured personnel, call emergency team, and execute evacuation protocol * Notify 24-Hour Emergency Contact	* Operations manager *Field superintendent *Plant manager *Remediation contractors *Emergency teams

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					* Clear location and secure the perimeter. I * Evaluate environmental impact * Assess mechanical integrity of the system * Notify UIC Program Director and propose repair actions * Repair or replace equipment	
15	Injection Period	***Fluid Leakage – Surface Infrastructure:*** The CO_2 stream is blocked between valves on the surface, heated (e.g., by the sun), and expands to rupture the line or flowline on the site is plugged and the pressure sensor fails to detect the change, resulting in a CO_2 leak.	* Pressure, temperature, and flowmeter sensors in real time * Field inspections	* Relief valves (e.g., Pressure Safety Valves) in areas where this is a risk as part of the design process * Equipment upstream or downstream of the failed valve can be used to isolate the problem as necessary * Cleaning protocols: - Wiping the lines - Testing with water	* Trigger Emergency isolation valves * SCADA alarms notification to operations staff * Follow protocol to shut down CO_2 delivery * If there are injured personnel, call emergency team, and execute evacuation protocol * Notify 24-Hour Emergency Contact to activate emergency plan,	* Operations manager *Field superintendent *Plant manager *Remediation contractors

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
				- Performing cleaning runs to remove any debris. * Witches hat (cone strainer) filters can be used to filter out large pieces of debris on startup	reverse 9-1-1 protocol for residents or occupants in proximity to occurrence. * Clear location and secure the perimeter. If possible, install containment devices around the location * Evaluate environmental impact (soil, water, fauna, vegetation), * Assess mechanical integrity of the system * Notify UIC Program Director and propose repair actions * Repair or replace equipment	
16	Injection Period	***Fluid Leakage*** – ***Natural Disaster:*** A natural disaster event - e.g., hurricane, lightning, tornadoes, floods, landslides – impacts the pipelines or	* Pressure and flowmeter sensors in real time * Field inspections	* HAZOP review * ESD valve installed near the wellhead so it will cease injection whenever any leak occurs downstream	* Trigger Emergency isolation valves * SCADA alarms notification to operations staff * Follow protocol to shut down CO_2	* Operations manager * Field superintendent * Project manager *Remediation contractors *Emergency teams

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		flowlines at the storage location, forcing the release of CO_2 at the surface.		or upstream of the ESD * Weather monitoring	delivery if the automatic shutoff device is not functional * If there are injured personnel, call emergency team, and execute evacuation protocol * Notify 24-Hour Emergency Contact * Clear the location and secure the perimeter. If possible, install containment devices around the location. *Assess mechanical integrity of the pipelines or flowlines * Notify UIC Program Director and propose action plan * Evaluate environmental impact (soil, water, fauna, vegetation), and present remediation plan to	

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					the UIC Program Director for approval * Execute remediation, and install additional monitoring system as needed	
17	Injection Period	***Fluid Leakage – Surface Infrastructure:*** Failure of CO_2 transport flowlines from the CO_2 capture system to Pineywoods CCS Hub CO_2 Injection wellhead.	* Surface P/T gauges and flowmeters at inlet and delivery point.	* Preventive maintenance * Periodic inspections * Monitoring devices at both ends of the transmission pipeline and flowline	* Trigger emergency isolation valves * SCADA alarms notification to operations staff * Follow protocol to shut down CO_2 delivery * Detect CO_2 stream release and its location * Initiate evacuation plan * Notify 24-Hour Emergency Contact * Transmission line and/or flowline failure will be inspected to determine the root cause of the failure * Notify UIC Program Director and propose action plan	* Operations manager * Field superintendent * Remediation contractors * Emergency teams * Plant manager/ contact

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					* Repair/replace the damaged transmission line or flowline, and if warranted, put in place the measures necessary to eliminate such events in the future	
18	Injection Period	***Loss of Containment - Vertical Migration via injection well:*** During the life of the injector wells, there are induced stresses and chemical reactions on the tubulars and cement exposed to the CO_2 pressure and plume. Changes in temperature and injection pressure create stresses in the tubulars trying to expand or contract, and it can lead to microannulus effects, resulting in fugitive movement of brines/CO_2.	* CO_2 leak sensors on the wellhead * DTS fiber real time alongside the casing * USDW water monitoring * Pulsed-neutron logs (PNL) to be run for external integrity * CBL/Ultra-sonic logging * Pressure gauges at surface * Flow rate monitoring	* CO_2-resistant cement and metallurgic across injection zone * Injection through tubing and packer, 13CR or better tubing and 13CR packers. * Cement to surface * Cased hole logging program * USDW covered as second barrier with surface casing and surface cement sheet * New casing installed, 13CR or better.	* Trigger Emergency Shutdown system * SCADA alarms notification to operations staff * Follow protocol to stop operation, vent, or deviate CO_2 * Notify 24-Hour Emergency Contact * Troubleshoot the well * Evaluate if there is a movement of CO_2 or brines to USDW. * Notify UIC Program Director and discuss action plan to repair the well or P&A based	* Operations manager * Field superintendent * Project manager * Rig crew and DH contractors * Remediation contractors

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					on the findings of the assessment	
19	Injection Period/ Post Injection Site Care Period	***Loss of Containment - Vertical Migration via monitoring well:*** During the life of the injector wells, there are induced stresses and chemical reactions on the tubulars and cement exposed to the CO_2 pressure and plume. Changes in temperature and injection pressure create stresses in the tubulars trying to expand or contract, and it can lead to microannulus effects, resulting in fugitive movement of brines/CO_2.	* CO_2 leak sensors on the wellhead * USDW water monitoring * Pulsed-neutron logs to be run for external integrity * CBL/Ultra-sonic logging * Pressure gauges at surface	* CO_2-resistant cement across injection zone * Cement to surface * Case hole logging program * USDW covered as second barrier with surface casing and surface cement sheet * New casing installed, 13CR or better. * Observation wells are designed to be outside of the plume for most of the injection period	* Trigger Emergency Shutdown system * SCADA alarms notification to operations staff * Notify 24-Hour Emergency Contact * Troubleshoot the well. * Evaluate if there is a movement of CO_2 or brines to USDW. * Notify UIC Program Director and discuss action plan to repair the well or P&A based on the findings of the assessment	* Operations manager * Field superintendent * Project manager * Rig crew and DH contractors * Remediation contractors
20	Injection Period/ Post Injection Site Care Period	***Loss of Containment- Lateral Migration of CO_2 Outside Defined AOR:*** The CO_2 plume moves faster or in an unexpected pattern	* Time-lapse vertical seismic profile surveys * Pulsed-neutron logs in observation wells * Pressure and temperature gauges	* Detailed geologic model with stratigraphic wells as calibration * Seismic survey integrated in the model	<u>Injection period:</u> * Trigger Emergency Shutdown system * SCADA alarms notification to operations staff	* Operations manager * Field superintendent * Geologist * Reservoir engineers * Project manager

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		and expands beyond the secured pore space for the project and the AOR.	real time in observation wells	* Extensive characterization of the rocks and formation * Periodic review of CO_2 and pressure plume within AOR every 5 years * Monitor the plume over PISC	* Notify 24-Hour Emergency Contact * Review monitoring data and trends and compare with the simulation. * Notify UIC Program Director, propose action plan and request to keep injection process while AOR is reviewed, if the data show that CO_2 will stay in the secured pore space. * Perform logging in observation wells. * Conduct geophysical survey as required to evaluate AOR. * Recalibrate model and simulate new AOR * Assess if additional corrective actions are needed and if it's required to secure additional pore space	

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					* Assess if any remediation is needed, and discuss action plan with UIC Program Director * Present AOR review to UIC Program Director for approval and adjust monitoring plan <u>Post Injection Site Care Period:</u> * SCADA alarms notification to monitoring personnel * Notify 24-Hour Emergency Contact * Review monitoring data and trends, compare with the simulation * Notify UIC Program Director and propose action plan * Conduct geophysical survey	

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					as required to evaluate AOR * Recalibrate model, and simulate new AOR * Assess if additional corrective actions are needed and if it's required to secure additional pore space * Assess if any remediation is needed, and discuss action plan with UIC Program Director	
21	Injection Period/ Post Injection Site Care Period	***Containment - Pressure Propagation:*** A "pressure front" that exceeds the minimum pressure necessary to cause fluid flow from the injection zone into a USDW through a hypothetical conduit (i.e., an artificial penetration that is perforated in both intervals).	* Pulsed-neutron logs *Pressure gauges on surface and downhole real time * USDW water monitoring * Flow rate monitoring * Time-lapse vertical seismic profile survey (AOR review periods) * Incremental leakage modeling	* Detailed geologic model with stratigraphic wells as calibration * Seismic survey integrated in the model * Extensive characterization of the rocks and formation * Periodic review of CO_2 and pressure plume within AOR every 5 years	<u>Injection period:</u> * Identification by monitoring staff * Notify 24-Hour Emergency Contact * Review monitoring data and trends and compare with the simulation * If endangerment to USDW is suspected follow shut down procedure.	* Operations manager * Field superintendent * Monitoring staff * Geologist * Reservoir engineers * Project manager * Remediation contractors

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
			to validate a lack of potential for fluid movement into the USDW.	* Monitor the plume until stabilization (min 10 years) * USDW covered as second barrier with surface casing and surface cement sheet * Cased hole logging program	* Notify UIC Program Director and propose action plan and request to keep injection process while AOR is reviewed, if the data shows that the CO_2 will stay in the secured pore space * Perform logging in observation wells * Conduct geophysical survey as required to evaluate AOR * Recalibrate model and simulate new AOR * Assess if additional corrective actions are needed and if it's required to secure additional pore space * Assess if any remediation is needed, and discuss action plan with UIC Program Director	

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					* Present AOR review to UIC Program Director for approval and adjust monitoring plan <u>Post Injection Site Care Period:</u> * Identification by monitoring staff * Notify 24-Hour Emergency Contact * Review monitoring data and trends and compare with simulations * Notify UIC Program Director and propose action plan * Conduct geophysical survey as required to evaluate AOR * Recalibrate model, and simulate new AOR * Assess if additional corrective actions are needed and if	

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					it's required to secure additional pore space * Evaluate if there is a movement of CO_2 or brines to USDW. In the remote event that USDW gets affected, discuss remediation options with the UIC Program Director	
22	Injection Period	***External impact – UIC Well:*** During injection, the wellhead is hit by a massive object that causes major damage to the equipment. The well gets disconnected from the pipeline and from the shutoff system and leads to a loss of	* Pressure, temperature, and flow sensors in real time * Field inspections	* Fence location and block direct access to the wellhead * Bollards and/or concrete barriers installed to protect installation * No populated area	* Trigger emergency isolation valves * SCADA notification to monitoring or operations staff * Follow protocol to shut down CO_2 delivery if the automatic shutoff device is not functional * Designate an exclusion zone,	* Operations manager * Field superintendent * Project manager * Rig crew and DH contractors * Remediation contractors * Well control specialist

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		containment of CO_2 and brine.			and provide appropriate PPE for protection of onsite personnel * If there are injured personnel, call emergency team, and execute evacuation protocol * Notify 24-Hour Emergency Contact * Clear the location and secure the perimeter. If possible, install containment devices around the location. * Contact well control special team to execute blowout emergency plan that may include but is not limited to capping the well, secure location, drill relief well to kill injector, properly repair or abandon injection well. This	

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					plan would be discussed with UIC Program Director * Evaluate environmental impact (soil, water, fauna, vegetation) * Notify UIC Program Director and propose action plan * Execute remediation, and install monitoring system as needed	
23	Injection Period/ Post Injection Site Care Period	***External impact – MW:*** The wellhead of the deep monitoring well is hit by a massive object that causes major damage leading to a LOC. Since the well is open to the formation pressure at the injection zone, formation fluids have the potential to flow and spill on the location.	* Pressure, temperature, and flow sensors in real time * Field inspections * Incremental leakage modeling to validate a lack of potential for fluid movement into the USDW.	* Fence location and block direct access to the wellhead * Bollards and/or concrete barriers installed to protect installation * No populated area * Lined pads * Reduced pressure in the monitoring well compared with the injector well on bottom	* SCADA alarms notification to operations staff * Designate an exclusion zone, and provide appropriate PPE for protection of onsite personnel * If there are injured personnel, call emergency team, and execute evacuation protocol * Notify 24-Hour Emergency Contact	* Operations manager * Field superintendent * Project manager * Rig crew and DH contractors * Remediation contractors * Well control specialist

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					* Clear the location and secure the perimeter. If possible, install containment devices around the location. * Contact well control special team to execute blowout emergency plan that may include, but is not limited to, capping the well, securing the location, drilling relief well to kill the injector, properly repairing, or abandoning the injection well. * Evaluate environmental impact (soil, water, fauna, vegetation) * Notify UIC Program Director and propose action plan * Execute remediation, and install monitoring system as needed	

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
24	Injection Period	***External impact – Pipeline:*** During injection, the CO_2 pipeline is hit causing major damage and LOC of the CO_2.	* Pressure, temperature, and flowmeter sensors in real time * Field inspections * Bollards and/or concrete barriers installed to protect aboveground piping at valve stations * Appropriate warning signage/painting * Appropriate fencing	* Buried pipe * Bollards and/or concrete barriers installed to protect aboveground piping at valve stations * Painting for visibility in varied weather conditions * Signage along right of way as needed * Pipeline is part of One Call system	* Trigger emergency isolation valves * SCADA alarms notification to operations staff * If there are injured personnel, call emergency team, and execute evacuation protocol * Designate an exclusion zone, and provide appropriate PPE for protection of onsite personnel * Verify CO_2 flow was shut off by the system or start protocol to stop flow * Notify 24-Hour Emergency Contact * Clear the location and secure the perimeter. If possible, install containment devices around the location. * Evaluate environmental	* Operations manager * Field superintendent * Remediation contractors * Emergency teams * Plant manager/ contact

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					impact (soil, water, fauna, vegetation) * Notify UIC Program Director and propose action plan * Execute remediation, and install monitoring system as needed	
25	Injection Period	***Monitoring Equipment Failure or Malfunction:*** Failure of the monitoring system/ alarm devices that lead to over pressurization of the system or reservoir beyond the design limits, causing fracturing of the reservoir, leaks or failure on equipment and tubulars, and damage of the facilities.	* Real-time pressure monitoring system and redundancy * Field inspections	* Preventive maintenance * Periodic inspections	* SCADA alarms notification to operations staff * If there are injured personnel, call emergency team, and execute evacuation protocol * Designate an exclusion zone, and provide appropriate PPE for protection of onsite personnel * Notify 24-Hour Emergency Contact * Assess mechanical integrity of the system, and propose repair actions if needed	* Operations manager * Field superintendent * Project manager * Remediation contractors * Emergency teams * Geologist * Reservoir engineers * Monitoring staff

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					* Assess any potential environmental impact * Notify UIC Program Director and propose action plan * Repair or replace instrumentation. Calibrate equipment. * Review monitoring records, and if needed, perform an injectivity test or falloff test to evaluate reservoir	
26	Injection Period/ Post Injection Site Care Period	***Injection or Monitoring Equipment Failure:*** Failure of surface injection or monitoring equipment including injection pumps, valves, gauges, meters, sensors, electrical, or other equipment results in potentially unsafe operating conditions and requires an	* Real-time monitoring system and redundancy * Field inspections * Routine inspection/testing of emergency alert systems, monitoring systems and controls systems.	* Preventive maintenance * Periodic inspections	* SCADA alarms notification to operations staff * If there are injured personnel, call emergency team, and execute evacuation protocol * Designate an exclusion zone, and provide appropriate PPE for protection of onsite personnel	* Operations manager * Field superintendent * Project manager * Remediation contractors * Emergency teams * Geologist * Reservoir engineers * Monitoring staff

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		emergency response at the site.			* Notify 24-Hour Emergency Contact * Assess mechanical integrity of the system, and propose repair actions if needed * Assess any potential environmental impact * Notify UIC Program Director and propose action plan * Perform Lockout/Tagout (LOTO) for defective equipment until it is properly replaced * Repair or replace instrumentation. Calibrate equipment. * If the assessment allows resuming injection safely, discuss plan with the UIC Program Director and get approval	

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
27	Injection Period/ Post Injection Site Care Period	***Injection or Monitoring Equipment Failure:*** Malfunction of subsurface injection/monitoring well subsurface equipment including gauges, fiber, cables, or capillary string, requiring an emergency response at the site.	* Real-time monitoring system and redundancy * Field inspections * Routine inspection/testing of emergency alert systems, monitoring systems and controls systems.	* Preventive maintenance * Periodic inspections	* SCADA alarms notification to operations staff * If there are injured personnel, call emergency team, and execute evacuation protocol * Notify 24-Hour Emergency Contact * Assess mechanical integrity of the system, and propose repair actions if needed * Assess any potential environmental impact * Notify UIC Program Director and propose action plan * If the assessment allows resuming injection safely, discuss plan with the UIC Program Director and get approval * Repair or replace instrumentation.	* Operations manager * Field superintendent * Project manager * Remediation contractors * Emergency teams * Geologist * Reservoir engineers * Monitoring staff

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					Calibrate equipment. * Review monitoring records, and if needed, perform an injectivity test or falloff test to evaluate reservoir	
28	Injection Period	***Injection or Monitoring Equipment Failure:*** A large pressure drop in the CO_2 stream results in low temperatures that could cause harm to personnel or damage/brittleness in materials (e.g., carbon steel and elastomers).	* Real time monitoring system of the CO_2 injection stream	* Use of materials that are rated for low temperatures * Controlled CO_2 stream composition	* SCADA alarms notification to operations staff * If there are injured personnel, call emergency team, and execute evacuation protocol * Designate an exclusion zone, and provide appropriate PPE for protection of onsite personnel * Notify 24-Hour Emergency Contact * Assess mechanical integrity of the system, and propose repair actions if needed * Assess any potential	* Operations manager *Field superintendent *Plant manager *Emergency teams

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					environmental impact, and propose remedial action with the UIC Program Director, if needed * If the assessment allows resuming injection safely, discuss plan with the UIC Program Director and obtain approval * Repair or replace any damaged equipment and recalibrate * Review monitoring records and, if needed, adjust CO_2 accordingly	
29	Injection Period	***Induced Seismicity:*** Pressurization of the reservoir, during injection of CO_2, activates preexisting fault planes and creates a displacement that causes a seismic event. If it's a major event (>2.7 Richter), it could compromise	* Geophones array to monitor induced seismicity * DAS fiber * Pulsed-neutron logs * CBL/Ultra-sonic logging	* A detailed geomechanical model was created to evaluate the storage complex * The region is seismically stable * Cased hole logging program	* SCADA alarms notification to operations staff * If there is injured personnel or property damages, call emergency team, and execute evacuation protocol and secure location	* Operations manager * Field superintendent * Project manager * Remediation contractors * Emergency teams * Geologist * Reservoir engineers * Monitoring staff

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		the integrity of the wells, facilities, or pipeline.			* Notify 24-Hour Emergency Contact * Assess any potential environmental impact * Notify UIC Program Director and propose action plan, if needed * Define new injection parameters and get approval from the UIC Program Director * If the assessment allows resuming injection safely, increase surveillance to validate effectiveness of the actions	
30	Injection Period/ Post Injection Site Care Period	***Induced Seismicity:*** Other subsurface injection (e.g., saltwater disposal) causes pressure changes and induced seismicity at the Project Site or induced seismicity	* Geophones array to monitor induced seismicity * DAS fiber * Pressure gauges at surface * Pulsed-neutron logs	* Detailed geomechanical model was created to evaluate the storage complex * Cased hole logging program	* SCADA alarms notification to operations staff * If there is injured personnel or property damage, call emergency team, and execute evacuation	* Operations manager * Field superintendent * Project manager * Geologist * Monitoring staff * Remediation contractors

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
		occurs at a nearby site that impacts the Project site.	* CBL/Ultra-sonic logging		protocol and secure location * Follow protocol to stop injection (injection period) * Notify 24-Hour Emergency Contact * Assess any potential environmental impact * Notify UIC Program Director and propose action plan, if needed * Review regional information as well as monitoring records to determine the origin of the event (natural or induced) * If the assessment allows resuming injection safely, increase surveillance to validate effectiveness of the actions (injection period)	

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
31	Injection Period/ Post Injection Site Care Period	***Major seismic event*** Natural seismicity causes LOC by opening transmissive features in the confining zone, resulting in release of CO_2 to a USDW, surface, or atmosphere.	* Geophones array to monitor induced seismicity * DAS fiber * Pulsed-neutron logs * CBL/Ultra-sonic logging	* The region is seismically stable * Cased hole logging program	* SCADA alarms notification to operations staff * If there is injured personnel or property damage, call emergency team, and execute evacuation protocol and secure location * Designate an exclusion zone, and provide appropriate PPE for protection of onsite personnel * Notify 24-Hour Emergency Contact * Assess any potential environmental impact * Notify UIC Program Director and propose action plan, if needed * If the assessment allows resuming injection safely, increase surveillance to validate	* Operations manager * Field superintendent * Project manager * Remediation contractors * Emergency teams * Geologist * Reservoir engineers * Monitoring staff

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					effectiveness of the actions (injection period)	
32	Injection Period/ Post Injection Site Care Period	***Other Major Natural Disaster*** Natural disaster that limits or endangers the normal operation of the Hub.	* Weather monitoring	* Project safety program * Condition/atmospheric monitoring. * Emergency shutdown valves	* SCADA alarms notification to operations staff * If there is injured personnel or property damage, call emergency team, and execute evacuation protocol and secure location * Follow protocol to stop injection * Notify 24-Hour Emergency Contact * Assess mechanical integrity of the system * Assess any potential environmental impact * Notify UIC Program Director and propose repair actions based on findings * If the assessment allows resuming injection safely,	* Operations manager * Field superintendent * Project manager * Remediation contractors * Emergency teams * Geologist * Reservoir engineers * Monitoring staff

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					increase surveillance to validate effectiveness of the actions	
33	Injection Period	***Accidents or Unplanned Event:*** Loss of electricity causing injection to cease.	*Field inspections	* PLC with Uninterrupted Power Supply (UPS) * "Fail-Closed" shutdown valves *Consider backfeed to redundant generation sources or generation sources *Install industry standard weather mitigation on distribution lines *Solar Back-up if required	* SCADA alarms notification to operations staff * PLC/UPS programmed to initiate a closure of shutdown valves in fail safe position (Fail-Closed) * PLC/UPS will continue to monitor the shutdown and report back to the SCADA system for personnel * Designate an exclusion zone, and provide appropriate PPE for protection of onsite personnel * Verify CO_2 flow was shut off by the system or start manual protocol to stop flow, visual inspection, and	* Operations manager * Field superintendent * Project manager

	Project Phase	Risk Scenario	Monitoring Equipment	Control In Place	Response Action	Response Personnel
					manually close valves. * Notify 24-Hour Emergency Contact * Notify UIC Program Director within 24-hours of shut-in * Notify UIC Program Director of start-up procedure.	
34	Post-injection period	***Unauthorized access/activity:*** Unauthorized activity on filed site	* Field personnel logs	* Fencing around well sites * Security in place	* Report any incidents to local Sheriff's office	*Field superintendent *Company man

Appendix B. Emergency Contact List

Pineywoods CCS Hub, Liberty and Hardin Counties, Texas
Updated 8/09/2023
REDACTED

Facility Contacts	Phone Number
24-Hour Emergency Contact During Construction: Project Manager – Ryan Choquette	[redacted]
24-Hour Emergency Contact During Operation and Post-Injection: Operations Manager – TBD	TBD
Local Agencies	
Liberty County Office of Emergency Management	936-334-3219
Liberty County Sheriff's Office	(936) 336-4500
Hardin County Office of Emergency Management - Coordinator	(409) 246-5198
Hardin County Sheriff's Office	(409) 246-5100
Jefferson County Emergency Management Agency	(409) 835-8757
Jefferson County Sheriff's Office	(409) 835-8411
City of Sour Lake – Emergency Management Coordinator / Chief of Police	409-287-2059
City of Daisetta - Fire Department	936-536-1334
City of Nome – Fire Station	409-861-4353
City of Devers – Fire Department	936-776-2687
State Agencies	
State Emergency Response Commission – Texas Spill Reporting Hotline (24-hour)	1-800-832-8224
Texas Commission on Environmental Quality – Region 10 (Hardin and Jefferson Counties)	409-898-3838
Texas Commission on Environmental Quality – Region 12 (Liberty County)	713-767-3500
Geological Survey of Texas – Jay Kipper (Deputy Director)	(512)-475-9505
Texas Railroad Commission – Carbon Sequestration Group (Bryce McKee)	512-463-2259
Texas Railroad Commission – Gas Pipeline Safety	512-463-7058
Federal Agencies	
U.S. EPA Region 6 UIC Program Director (Ken Johnson)	241-665-8473
National Response Center (NRC)	800-424-8802