November 11, 2022
File No. 272222154.00

EPA Region 6

Subject: Site Characterization Certification

Facility name: Capio [redacted] Sequestration, LLC
Well name: Capio [redacted] CCS Well No. 1

Facility contact: Peter Hollis, Capio Sequestration – President
Michael Neese, Capio Sequestration – Senior Vice President
Capio Sherburne Sequestration, LLC, 109 N. Post Oak Ln, Suite 140, Houston, Texas 77024
832-551-3300 | pete@fidelisinfra.com

Well location: [redacted] Pointe Coupee Parish, Louisiana
[redacted]

To Whom It May Concern:

I, Michael A. Simms, Ph.D., P.G. (Louisiana License Number 1142) conducted the site characterization for this Class VI permit application. This task included evaluation of regional geology, geophysical logs of the [redacted] test well and nearby wells, test well drilling and core data, 2D and 3D seismic data, and records of wells in the area.

Sincerely,

Michael A. Simms, Ph.D., P.G.
Project Director
SCS Engineers

Seal:

November 11, 2022

Plan revision number: V2.0
Plan revision date: 11/11/2022

CLASS VI PERMIT APPLICATION NARRATIVE
40 CFR 146.82(a)

Facility Information

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Well location: [redacted]
Pointe Coupee Parish, Louisiana
[redacted]

Project Background and Contact Information

Fidelis New Energy, LLC ("Fidelis") is a Carbon Reduction and Climate Impact Company whose mission is to reduce carbon intensity of society and industry through the development, delivery, and operation of climate impact infrastructure. Fidelis collaborates with customers, partners, and local communities through the development, investment, and delivery of infrastructure that helps them achieve their carbon reduction and climate impact objectives.

[redacted]

[redacted]

[redacted]

[redacted]

The facility name and contact information is provided above. An injection depth waiver or aquifer exemption expansion is not being requested.

Site Characterization

Regional Geology, Hydrogeology, and Local Structural Geology [40 CFR 146.82(a)(3)(vi)]

The proposed sequestration area is a lease obtained by Capio from the State of Louisiana, located in [redacted] Pointe Coupee Parish in the lower Louisiana coastal plain of the Gulf of Mexico sedimentary basin. The Class VI well is to be located in [redacted] The well site is located approximately [redacted] The planned Class VI well site is located approximately [redacted] **Figure 2-1** shows the location of the project site on a US Geological Survey topographic map.

The lease area also includes a Class V test well [redacted] The Class V test well was drilled by Capio [redacted] to provide data on the site stratigraphy and to collect data on the proposed injection and confining zones. The project Area of Review (AOR) as defined by EPA guidance is the portion of the sequestration area in which the CO_2 plume is forecasted to occur in the injection zone and in which the pressure in the injection zone is expected to exceed the critical pressure. The AOR Evaluation and Corrective Action Plan portion of the permit application provides information on the characteristics of the AOR based on numerical modeling of the CO_2 injection. The lease area is larger than the modeled area of the AOR and is used in this permit application as a basis for evaluating the geologic conditions in the AOR.

The proposed injection zone consists of thick fluvial sand deposits of [redacted] that occur between approximately [redacted] feet below mean sea level (msl). The proposed injection zone is confined above and below by extensive, laterally-continuous clay zones. The geologic and physical characteristics of the proposed injection zone and the confining zone are described in detail in their respective section of this narrative.

Summary of Area Stratigraphy

This subsection describes the stratigraphic framework of the lease area based on published regional cross sections (Bebout and Gutierrez, 1982) and geologic reports, reports on nearby petroleum fields (McCampbell and Sheller, 1964; Harrison and others, 1970), geophysical well logs from the proposed sequestration area from the LDNR Strategic Online Natural Resources Information System (SONRIS), and regional summaries (Bebout and others, 1992; Brown and Loucks, 2009; Snedden and Galloway, 2019). In addition, well log and core data from the [redacted] also has been used to support the evaluation of the site stratigraphy.

Figure 2-2 summarizes the stratigraphic column from the land surface to the base of the [redacted], which occurs at a depth of over [redacted] feet. This depth interval includes the formations containing the Underground Source of Drinking Water (USDW), the proposed sequestration/injection zone and its upper and lower confining zones, and other deeper zones that could potentially be used for sequestration in future permitting efforts. The underlying Mesozoic formations are discussed briefly in the subsection on Tectonic History. The stratigraphic column includes ages, stratigraphic group names, and locally-used lithostratigraphic nomenclature.

The surficial geology of area is Holocene and Pleistocene alluvium of the [redacted]. The alluvium extends from the land surface at elevations of [redacted] feet msl downward to elevations of approximately [redacted] feet msl (Saucier, 1969). The lower [redacted] feet of the alluvium consists of sand known as the [redacted] (Winner and others, 1968). The [redacted] alluvium is part of the larger body of Pleistocene alluvium that has filled the [redacted]. [redacted] in Pointe Coupee Parish, for example, the alluvium is referred to as the [redacted] alluvium and the aquifer is known as the [redacted]. The Hydrologic and Hydrogeologic Information narrative provides a detailed description of the occurrence of fresh groundwater in the [redacted].

Pleistocene clay and sand zones underlie the [redacted] alluvium and extend to elevations of -[redacted] feet msl (Nyman, 1984). Pleistocene sand intervals make up the [redacted], which is of fluvial origin.

Pliocene series clay and sand zones underlie the [redacted] aquifer to elevations of [redacted] feet msl. The Pliocene deposits are referred to locally as the [redacted] aquifer. The sand zones of the [redacted] aquifer have been named in the Pointe Coupee Parish area in reference to the aquifer sand depths in the [redacted] (Winner and others, 1968). The [redacted] aquifer sands include the [redacted]. On the [redacted] in St. Landry Parish, the Pliocene deposits are not differentiated and are referred to as the [redacted]. The Evangeline aquifer sands are fluvial and deltaic in origin. The Hydrologic and Hydrogeologic Information narrative provides a detailed description of the occurrence of fresh groundwater in the Evangeline aquifer.

The top of the [redacted] series clay and sand zones occurs at approximately [redacted] feet msl (Winner and others, 1968). The entire [redacted] series is referred to as the [redacted] in the Louisiana and Texas Gulf Coast (Galloway and others, 1986) and includes the lower, sand-rich [redacted] and the overlying mud-rich [redacted]. The base of the [redacted] deposits is at [redacted] feet msl in the sequestration area. The thickness of the [redacted] is approximately [redacted] feet. The [redacted] series is the proposed sequestration zone for this project. A thick clay predominated interval at the base of the [redacted] series is proposed to make up the upper confining zone for sequestration. In addition, the proposed injection interval is directly overlain by a primary confining zone clay. The narrative on Characteristics of the Injection and Confining Zones provides a detailed description of the [redacted] sand zones proposed for sequestration of CO_2 and the [redacted] confining zone(s).

The shallowest [redacted] sands in the sequestration area include the [redacted]. The base of the Underground Source of Drinking Water (USDW) occurs within the shallowest [redacted] sands at elevations between [redacted] feet below sea level. The Hydrologic and Hydrogeologic Information narrative provides a detailed description of the occurrence of fresh groundwater in the [redacted] sands and the depth of the base of the USDW.

The [redacted] of [redacted] age underlies the [redacted] deposits. The top of the [redacted] occurs at approximately [redacted] feet msl. The [redacted] consists of clay interbedded with proximal deltaic sand deposits. The [redacted] is proposed to be the lower confining zone for sequestration in the [redacted]. The base of the [redacted] is at -[redacted] feet msl at the project area. The thickness of the [redacted] is [redacted] feet in the area. Brown and Loucks (2009) classified the [redacted] as a transgressive member of the underlying [redacted], which includes the [redacted]. However, in this document the term [redacted] will be retained, in accordance with stratigraphic terms used in Louisiana. The narrative on Characteristics of the Injection and Confining Zones provides a detailed description of the [redacted] section that is to be the lower confining zone.

The [redacted] age occurs at approximately [redacted] feet msl. The [redacted] is included in the [redacted]. The [redacted] consists of clay interbedded with distal deltaic sand deposits. The deltaic sand zones of the [redacted] extend downward to elevations of [redacted] feet msl. The thickness of the [redacted] is approximately [redacted] feet thick in the sequestration area. The base of the [redacted] is identified as the base of the deepest deltaic sand zone that occurs at any given location.

Figure 2-3 shows a west to east cross section through the location of the [redacted]. The cross section extends from the land surface to an elevation of approximately [redacted] feet msl to show the general relationships of the sequence of formations from the alluvial aquifer to the top of the [redacted]. The [redacted] section has been subdivided into [redacted], which are separated by clay confining units. The proposed injection zone is to be in [redacted]

[redacted]. Important confining units for the proposed injection zone sands consist of the overlying clay interval (primary confining unit) above [redacted] and the underlying [redacted] (lower confining unit) below [redacted]. In addition, a thick clay interval above the [redacted] makes up the upper secondary confining unit for the entire [redacted] sand complex. The base of the USDW occurs above the upper confining unit. The narrative section Characteristics of the Injection and Confining Zones provides detailed description of the injection zone sand units and confining zones.

The [redacted] underlies the [redacted]. The [redacted] consists of marine clay, and overlies the [redacted] age. The [redacted] also consists of marine clay. The thickness of the [redacted] and the underlying [redacted] is approximately [redacted] feet in the sequestration area.

The [redacted] is underlain by older Cenozoic deposits including the [redacted] of [redacted], the [redacted], and the [redacted]. The underlying Mesozoic formations extend to the Paleozoic basement at depths of approximately [redacted] (Snedden and Galloway, 2019).

Structure

Located away from major structural features of the Louisiana Gulf Coast the project area is located in an area of simple geologic structure with generally uniform dip to the south and south-southwest. This area of uniform geologic structure is approximately [redacted] The sequestration area is in the [redacted]

The dip of the formations in the sequestration area increases with depth and to the south because of the southward increases of subsidence and growth faulting in older formations. The dip of the Pleistocene near-surface formations is estimated to be approximately 20 feet per mile based on south-north cross section A-A' of Winner and others (1968). The dip of the [redacted] aquifer sands is approximately 40 feet per mile. The [redacted] sand zones have dips ranging from 40 to 60 feet per mile in the sequestration area and the base of the [redacted] dips at approximately 75 feet per mile. The base of the [redacted] dips south-southwestward at approximately 115 feet per mile. The upper portion of the [redacted] dips south-southwestward at approximately 150 feet per mile and the base of the [redacted] dips south-southwestward at approximately 250 feet per mile.

Figure 2-4 shows regional geologic structural features including faults and salt domes located in the vicinity of the sequestration area. **Figure 2-4** also shows the locations of gas and oil fields located in the area. These include the [redacted] located to the north of the proposed location of the Class VI well, the [redacted] and [redacted] located to the west, and the [redacted] located to the east, as well as other fields located at greater distances. The gas and oil fields shown in Figure 3 primarily are located adjacent to faults and generally include structural traps related to the occurrence of the mapped faults. The gas and oil fields in the area are depleted and have little or no production at the present time (2022). The producing intervals in all of the gas and oil fields located in the area have been from the deeper sediment that comprise the [redacted].

Figure 2-4 shows three normal faults north of the sequestration area. This trend of faulting in the area north of the sequestration area has been referred to as the [redacted] fault zone (Galloway, 2008). The normal faults dip toward the south and developed during periods of rapid sedimentation in response to [redacted] sedimentary loading. These "growth" faults have an expanded sedimentary section at the depths of the [redacted] in the downthrown blocks to the south. The displacement on the faults generally decreases upward as the faults became less active during the [redacted].

The site seismic data shows the growth fault that is located in the area [redacted] The site seismic data is described later in this section under the description of Project Data Sources. This fault has been mapped from the north side of [redacted] (Duchin, 1964) eastward to the [redacted] (Wright, 1965 and Pierson, 1970). This fault shows significant expansion of the [redacted] series sediments at depths greater than [redacted] feet and was a growth fault during that time. The displacement on this fault decreases upwards and is approximately 100 feet in the upper part of the [redacted]. The displacement in the [redacted] section is less than 50 feet and the displacement across the fault appears to terminate at the top of the [redacted] ([redacted]). There is no evidence of thickening of [redacted] sedimentary layers across the fault. The dip of the fault in the [redacted] section is 45 degrees. The modeled AOR for the Class VI well location does not extend outward to the location of this fault. The Faults and Fractures narrative provides more information on this fault.

Faults in the [redacted] fault zone have displacements that terminate in the upper part of the [redacted]. The fault located north of the [redacted] (northernmost fault shown in **Figure 2-4**), however, shows displacement from within the [redacted] upwards into the [redacted] section.

The South Louisiana [redacted] growth faulting province occurs to the south of the sequestration area. The growth fault on the [redacted] is located approximately [redacted] of the sequestration area. This fault shows significant displacement in the [redacted] and marks the northern boundary of the [redacted] growth faulting province. The [redacted] growth faults were activated during rapid sedimentation during the [redacted] depocenters. **Figure 2-4** also shows the western portion of the [redacted] Fault, a [redacted] growth fault which extends westward from the [redacted] area to the area of the [redacted]. The western end of the [redacted] Fault is approximately [redacted] miles [redacted] of the sequestration area. The locations of other [redacted] growth faults further to the south are not shown in **Figure 2-4**. The modeled AOR does not extend to the locations of the [redacted] growth faults.

There are no known salt structures at the sequestration area (Beckman and Williamson, 1990). The nearest mapped salt domes are the [redacted] Salt Dome, the [redacted] Salt Dome, and the [redacted] Salt Dome. The [redacted] Salt Dome is located approximately [redacted] miles [redacted] of the sequestration area. The top of salt at the [redacted] Dome is approximately [redacted] feet deep. The [redacted] Salt Dome is located approximately [redacted] miles to the [redacted] of the sequestration area. The top of salt at the [redacted] Dome is approximately [redacted] feet deep. The [redacted] Salt Dome is located approximately [redacted] miles to the [redacted] of the sequestration area. The top of salt at the [redacted] Dome is approximately [redacted] feet deep. These salt domes do not show any influence on the structural configuration of the geologic formations in the sequestration area.

The formation pore water is normally pressured from the land surface to the [redacted] series. Overpressured (geopressured) conditions occur at depths of [redacted] feet in the [redacted] or at the top of the [redacted] in the vicinity of the sequestration area (Bebout and Gutierrez, 1982). Therefore, there is no impact of overpressured conditions on the CO2 injection zones.

Subsurface temperatures have been measured in petroleum wells in the vicinity of the sequestration area. The temperatures range from [redacted] feet to [redacted] feet and show a temperature gradient of approximately [redacted] feet. The temperature gradient increases to [redacted] feet in the depth range of [redacted] feet. The heat flow in the sequestration area is in the range of [redacted] milliWatts per square meter (mW/m^2) according to the Geothermal Map of North America (Blackwell and Richards, 2004). The subsurface temperatures in the proposed sequestration zones are suitable for injection and storage of CO_2.

Tectonic History

The study of the tectonic history of the Gulf of Mexico sedimentary basin has developed a large body of literature. The summary contained herein is derived from Snedden and Galloway (2019), which provides a detailed description of the current state of understanding of the basin's tectonic history. This summary of the tectonic history addresses major depositional and tectonic events in the region of the sequestration area.

The Gulf of Mexico sedimentary basin initiated with the deposition of the Louann Salt of Jurassic age. During this time, the sequestration area was located in the [redacted] part of the [redacted], which was an important area of Louann Salt accumulation. Opening of the Gulf of Mexico began as an intrusive phase of oceanic crust generation below the accumulating mass of evaporite sediments. As the sedimentary basin grew through rifting and extension, clastic sediment input developed from sources in the newly-emerged Laramide highlands to the west and northwest and from the rejuvenated Appalachian Mountains to the northeast.

The Jurassic and Cretaceous Periods included extensive carbonate sedimentation with the Smackover, Sligo, Glen Rose, Stuart City, and Austin Chalk shelves and platforms. During this time interval, the sequestration area was located in a basinal setting to the south of the shelf margin. Sedimentation in the basin area included carbonate and siliciclastic input to the Haynesville Shale, Bossier Shale, Paluxy, Woodbine, Tuscaloosa, and Navarro-Taylor sequences.

The Paleogene Period opened with continuing conditions of high sea level and transgressive and aggradational deposition of the Midway Group deep-water basin and shelf mud. The Western Interior of the North American plate underwent Laramide orogeny and this resulted in a long-term surge of siliciclastic sediment into the Gulf of Mexico sedimentary basin from the west and northwest. The large sediment influx resulted in the deposition of the [redacted]. The Laramide compression enhanced the gulf-ward tilt of the basin and reactivated basement structures. The [redacted] deltas and coastal plain pro-graded over the Cretaceous shelf edge located to the [redacted] of the sequestration area. The [redacted] deposition extended southward in the basin to the [redacted] of the sequestration area. The extensive sedimentation into the basin activated growth faulting in the former deep-water basin and along the basin margin. The [redacted] associated with the [redacted] was the main [redacted] sedimentation feature in the sequestration area. Eocene deposition continued with the Queen City mud shelf, the Sparta deltaic and coastal deposits, and the Cockfield and Jackson deltaic and fluvial deposits.

The Oligocene Epoch tectonism and sediment influx caused the most rapid sedimentation in the history of the Gulf of Mexico. At the sequestration area, the [redacted] is a shelf mudstone resulting from the shallow submergence of the shelf that began during deposition of the [redacted]. During the following period of [redacted] deposition, the [redacted] delivered sediment in the [redacted] across the sequestration area to a major depo-center to the [redacted]. In the sequestration area, [redacted] sediments with present-day thickness of approximately [redacted] feet were deposited in less than 10 million years. The [redacted] developed to the [redacted] of the sequestration area after evacuation of salt due to the sediment loading. Growth faulting was activated during the Oligocene and continued through the [redacted] transgression, which culminated in regional maximum flooding and deposition of marine muds across the sequestration area.

During the [redacted], high sediment influx continued in the [redacted] which extended across the sequestration area. Two depositional episodes named [redacted] occurred at this time and were separated by the [redacted]. The [redacted] deposits prograded rapidly across the [redacted] shelf and developed a major shore zone and progradational slope depo-center near the present-day [redacted] to the [redacted] of the sequestration area. Both fluvial and deltaic sedimentation occurred at the sequestration area during this time interval. [redacted] extensional faulting and salt-canopy loading occurred to the [redacted] of the sequestration area in the areas of maximum sediment accumulation. The sequestration area shows no evidence of [redacted] extensional faulting or other deformation. The [redacted] depositional events were followed by a regional transgression in the Northern Gulf basin margin that deposited the [redacted].

Rapid sedimentation continued in the [redacted]. The Mississippi River and Tennessee River drainage systems converged into the northern Gulf of Mexico in the Middle Miocene and rapidly prograded the deltaic and shelf deposits southward. Fluvial sedimentation occurred at the sequestration area during the Middle and Late Miocene. The Late Miocene ended with transgression at approximately 6 million years before present.

The Pliocene and Pleistocene series included fluvial deposition in the Mississippi River drainage system. The major depocenters were in the continental slope to the south of the present-day Gulf shoreline. The Holocene rise of sea level resulted in the aggradation of the [redacted] alluvium across the sequestration area and its vicinity.

Project Data Sources

The principal project data sources for subsurface geologic information included geophysical logs of legacy petroleum wells in and adjacent to the sequestration area, existing 2D and 3D seismic data in the sequestration area, and the Class V stratigraphic test well with geophysical logs, core samples, and mud logging. In addition, publications of the Louisiana Geological Survey, U.S. Geological Survey, the Lafayette Geological Society, the Gulf Coast Geological Society Library and the New Orleans Geological Society have provided detailed information on the stratigraphy and structure of the area including type sections and structure maps of the nearby depleted gas and oil fields.

Geophysical Logs of Legacy Wells

Legacy wells in the sequestration area and its surroundings were identified from the LDNR Strategic Online Natural Resources Information System (SONRIS) and utilized to assess the local stratigraphy. If available the geophysical logs were obtained from SONRIS. The geophysical logs from a number of wells in the area were not available in SONRIS and were obtained from TGS, a commercial petroleum industry data company.

The identification of legacy wells in the sequestration area was supplemented by searching for wells with the following services: TGS, and the Gulf Coast Geological Library In addition, regional structure maps from Geomap Corporation were reviewed to assess if any additional wells occur in the sequestration area.

Table 2-1 lists the legacy petroleum wells in the project area that had geophysical logs used in the evaluation of the subsurface stratigraphy of the area. These wells are identified by their State Serial Number and API Number. Other information listed in this table includes well name, location information, section-township-range, parish, and well status. The State Serial Numbers of the wells are used in this permit application to identify the legacy wells because it is briefer than the API Number. This table provides a cross reference for identifying legacy wells by API number if necessary.

Existing Seismic Data

Two 2D seismic lines and a licensed area of a 3D seismic survey have been used to assess the stratigraphy and structure of the sequestration area.

Two 2D seismic lines in the planned project area were used to provide a portion of the preliminary geologic characterization. These dip-oriented 2D seismic lines are located in the area adjacent to the [redacted] well site are licensed by Seismic Exchange, Inc (SEI). The two 2D seismic lines include line [redacted] The locations of the two seismic lines are shown in **Figure 2-5.** The licensed data is proprietary to SEI and subject to confidentiality terms of the license to Capio.

Table 2-1. Interpreted Wells for Geologic Modeling

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]			

(white)	Denotes wells outside 3D seismic boundary
(grey)	Denotes wells inside 3D seismic boundary

Line [redacted] is 3.693 miles long and extends from Shot Point (SP) 110 on the south to SP 148 on the north. The line is located in Pointe Coupee Parish [redacted] of the Class V test well [redacted] is adjacent to the location of [redacted] that provides stratigraphic data from its Spontaneous Potential (SP) log. The shot point spacing of line [redacted] is 500 feet, with a 6-fold gather. Processed products delivered were SEG-Y data and wiggle-trace displays of an un-migrated stack and a migrated line.

Line [redacted] is 4.25 miles long, running north to south from SP1-SP68, with shot point spacing of 330 feet and 12-fold gather. Products delivered were SEG-Y data and a wiggle trace display of an un-migrated stack.

The upper 2.5 seconds of two-way reflection time (TWT) of the two seismic sections was interpreted to assess shallow subsurface conditions. This TWT interval corresponds to a depth range of approximately the upper [redacted] feet of the subsurface. Line [redacted] was reviewed in detail because of it having a migrated section and its location adjacent to the Class V test well. Line [redacted] also included results of the velocity analysis listing the interval velocities at five locations along it. In addition, the log of the [redacted] well [redacted] which is located close to SP 136 and SP 137, has been compared to the sequence of reflections in line [redacted].

The two 2D seismic lines show a sequence of reflections dipping at low angle from north to south. In the upper portions of the sections to depths of [redacted] seconds TWT, the reflections are continuous over length scales of [redacted] feet from north to south and some reflections show continuity up to [redacted] feet. The terminations of reflections are convergent or show down lapping to the next deeper reflection. Based on the velocity analysis of line [redacted], the interval from [redacted] seconds TWT was interpreted to represent the fine-grained section from depths of [redacted]. This interval has discontinuous reflections with low and variable amplitude. Prominent, continuous reflections occur at approximately [redacted] seconds TWT, at [redacted] seconds TWT, and at [redacted] seconds TWT and are separated by intervals of discontinuous reflections. Based on time-depth conversion estimates, this section was interpreted to represent the [redacted] age interval, consisting of [redacted] separated by clay-rich abandonment surfaces. The observed patterns are consistent with that type of depositional environment. **Figure 2-6** shows the [redacted] interval in a portion of line [redacted].

Three high-amplitude reflections at approximately [redacted] seconds TWT are continuous throughout the lengths of both lines. Based on the velocity analysis of line [redacted], time-depth conversion suggests that these high-amplitude reflections are at a depth of [redacted] feet and represent the top of the [redacted] age. One or two high-amplitude reflections occur at [redacted] seconds TWT, corresponding to depths of [redacted] feet. These reflections could represent the base of the [redacted]. The [redacted] interval has discontinuous and variable-amplitude reflections within it, which could be related to the presence of thin or discontinuous depositional units. The [redacted] is a regional transgressive fine-grained deposit with thin sand zones deposited in distal deltaic and shelf environments. The [redacted] interval in line [redacted] is indicated in **Figure 2-6**.

In the northern portions of both seismic lines, a growth fault is shown by an expanded section deeper than approximately [redacted] seconds TWT. The expanded section is on the south side of the normal fault. The migrated section of line [redacted] shows down to the south displacements of reflections deeper than approximately [redacted] seconds TWT (approximately [redacted] feet depth). The normal fault trends from west-northwest to east-southeast based on its intersections with the seismic lines.

The evaluation of the 2D seismic lines by SCS showed that the major stratigraphic zones ([redacted]) can be identified from seismic data. The characterization of the stratigraphy is consistent with offset well logs in the area. However, the resolution of the 2D seismic data is not high enough to identify the thicknesses and extents of individual [redacted]) or the extent and displacement magnitudes of the normal fault. The resolution of the 2D seismic lines is limited by the low fold of the data gathers, large shot point spacing, and age of the data acquisition and processing.

To refine the area's interpretation, Capio licensed [redacted] square miles of the [redacted] seismic survey. The [redacted] seismic survey was shot and processed by CGGVeritas Land (US), Inc. in 2010. The licensed [redacted]-square mile area was selected to include the location of the [redacted] and the proposed location for the first Class VI sequestration well to be permitted. The [redacted] survey covers [redacted] square miles in [redacted] Pointe Coupee Parish, northern St. Martin Parish, northwestern Iberville Parish, and western West Baton Rouge Parish.

Figure 2-7 shows the licensed area of the [redacted] survey. The licensed area of the [redacted] seismic data is in yellow. The adjacent areas of the remainder of the [redacted] survey are shown in blue. In this figure, the lease boundary line is shown in green. The licensed area is located in [redacted]

The north-south extent of the licensed area is approximately [redacted] miles in [redacted] The east-west extent is approximately [redacted] miles and widens to approximately [redacted] miles and the southern part. A segment of licensed area in [redacted] is approximately [redacted] mile from north to south and up to [redacted] mile from west to east. This segment is separated from the reminder of the licensed area by a no-permit area

The licensed data is proprietary to Seismic Exchange, Inc. and subject to confidentiality terms of the license to Capio.

The north boundary of the licensed 3D data is approximately [redacted] miles north of the [redacted] boundary of the Capio lease and is approximately [redacted] miles [redacted]. The [redacted] boundary of the [redacted] survey is approximately [redacted] of the [redacted] side of the licensed area.

Capio drilled the [redacted] (marked with a red star in Figure 7) and proposes to install the Class VI injection well at a location approximately [redacted]

Class V Stratigraphic Test Well

The Class V Well History and Work Resume Report for the stratigraphic test hole [redacted] described the drilling of the Class V test well. The following information as included with the report:

LDNR Form UIC-42, *Class V Well History and Work Resume Report*

Wellbore Schematic of the completed [redacted] Well

Electronic Log identifying the lowermost extents of the USDW

This information is included in **Appendix 1-A** of this permit section.

The Louisiana Office of Conservation Injection & Mining Division permitted the [redacted] The well was spud on [redacted] and completed on [redacted]. Casing within the Class V well is comprised of

- 16-in OD conductor driven to [redacted] ft
- 9⅝-in OD 40# J55 surface casing cemented with Class A lead cement to [redacted] ft, and
- 5½-in OD 20# L80 production casing cemented with Class H CO2 resistant cement with latex additive to total depth ([redacted] ft).

Geophysical logs were performed by Schlumberger from surface to total depth and include

- Surface casing hole from depth of approximately [redacted] feet
  - Open hole. Spontaneous Potential (SP), Resistivity (array induction), Gamma, Neutron porosity, Density, caliper
  - Cased hole. Cement bond log
- Production hole from [redacted] feet
  - Open hole. SP, Gamma, Spectral Gamma, Resistivity (array induction), Neutron porosity, Density porosity, Sonic Scanner, Formation Image (FMI)
  - Cased hole. Cement bond log, Casing Locator Log

Mud logging was conducted during drilling from the base of the surface casing to the total depth of [redacted] feet. The mud logging included classification of samples collected at 30-foot depth intervals and monitoring of gases. The frequency of sample collected was increased to 10-foot depth intervals in the 100 feet shallower than each coring point.

No reservoir tests were performed within the Class V well on the basis of concern for communication and upward migration in the [redacted]. The well was pressure tested, filled with drilling mud, and completed with pressure monitoring gauge on a surface tree. The site has been secured by removing and storing the valve handles and providing a locking grate over the cellar.

The drilling of the Class V test well included obtaining five cores. The core were from the upper confining zone, [redacted], and the underlying [redacted] (lower confining zone). The core samples have been tested by Core Laboratories, Inc. for routine core analysis and for special core analysis tests. The following table summarizes the drilled depths, recovered depth ranges, and stratigraphic intervals of the cores:

Table 2-2. Drilled Depths, Recovered Depth Ranges & Stratigraphic Intervals

Core Number	Drilled Depth (feet KB)	Actual Recovered Depth Range (feet KB)	Stratigraphic Interval
1	[redacted]	[redacted]	[redacted]
2	[redacted]	[redacted]	[redacted]
3	[redacted]	[redacted]	[redacted]
4	[redacted]	[redacted]	[redacted]
5	[redacted]	[redacted]	[redacted]

Maps and Cross Sections of the AOR [40 CFR 146.82(a)(2), 146.82(a)(3)(i)]

The size of the AOR has been evaluated with numerical modeling of CO_2 injection in the proposed storage zone. The numerical modeling of the AOR is presented in the AOR Evaluation and Corrective Action Plan of this permit application. The extent of the AOR is shown in **Figure 2-8**. The AOR includes the model-predicted CO_2 plume in which separate-phase CO_2 occurs in the pore space and an area of pressure buildup in the formation water. The AOR is defined by the extent of the CO_2 plume, not pressure build up, as the transmissive nature of the injection zone mitigated pressure effects in the reservoir. The maximum predicted dimensions of the CO_2 plume are 7,000 feet from west to east and up to 10,000 feet from south to north. There is no significant pressure buildup in the formation water in the AoR.

Figure 2-9 shows a north-south vertical seismic line passing through the [redacted] location. This seismic section displays the seismic data with respect to two-way time (TWT). The location of this seismic section is shown in **Figure 2-7**.

The sonic and density logs from the Sherburne #1 test well were used to convert the seismic data from time to depth. **Figure 2-10** shows the depth-converted seismic section. This section covers a depth interval from shallower than [redacted] feet to approximately [redacted] feet below sea level. Positive depths below sea level are referred to as subsea true vertical depth (SSTVD). The geologic ages shown include the Pliocene Series to approximately [redacted] feet SSTVD, the [redacted], and the top of the Oligocene Series below that. The top of the [redacted]. The depth-converted cross section image includes the lithologic log of the Class V well from approximately [redacted]. In addition, the sonic and density logs from well [redacted] located in the [redacted] part of the licensed seismic data volume, were also used for time-depth conversion.

Figure 2-11 shows three depth-converted seismic lines from the 3D seismic data extending from west to east at the locations shown in the inset map. Section A is located [redacted] of the planned Class VI well location. Section B extends through the location of the [redacted]. Section C is located in the [redacted] part of the seismic data volume.

The 3D seismic data was used to evaluate the configurations and thicknesses of the injection zone sands and confining zones. As described in the permit section on Injection and Confining Zone Details, Capio is proposing to conduct CO_2 sequestration within the [redacted]

Evaluation of the 3D seismic data in relation to well logs including the [redacted] and other petroleum logs in the area showed that the sand units of the [redacted] and the associated confining zones have consistent seismic reflections at the tops and bottoms of the units. Therefore, the tops and bottoms of the units are mappable and this provides a comprehensive correlation of the sand units within the 3D seismic volume. The internal reflections within the sand units are discontinuous and can downlap to the base or to internal reflections suggesting that each sand unit was deposited as a series of prograding and downlapping sedimentary bodies.

The proposed injection [redacted] SSTVD in the sequestration area. The proposed injection sand units are deeper than the base of the USDW throughout the area. The base of the USDW ranges from [redacted] feet SSTVD in the sequestration area.

Figure 2-12 shows the depth contours (feet SSTVD) of the top of [redacted] as derived from the 3D seismic data. This structure map shows that the top of [redacted] generally dips southward. **Figure 2-13** shows the isopach map of [redacted]. The thickness of [redacted] varies from [redacted] feet in the sequestration area and increases to over [redacted] feet to the north.

Figure 2-14 shows the depth contours (feet SSTVD) of the top of [redacted] as derived from the 3D seismic data. This structure map shows that the top of [redacted] dips southward. **Figure 2-15** shows the isopach map of [redacted]. The thickness of [redacted] feet in the sequestration area.

The confining zones for the proposed injection zone sand units include the primary confining unit directly overlying [redacted]. The primary confining unit includes a sequence of clay that occurs between the base of [redacted] and the top of [redacted]. The primary confining unit includes a minor sand unit denoted as [redacted]. The primary confining unit is deeper than the base of the USDW.

Figure 2-16 shows the depth contours (feet SSTVD) derived from the 3D seismic data of the top of the primary confining unit (base of [redacted]) that overlies [redacted]. This structure map shows that the top of the primary confining unit dips southward. **Figure 2-17** shows the isopach map of the primary confining unit. The thickness of the primary confining unit varies from [redacted] feet in the sequestration area.

In addition, a regional transgressive clay interval makes up the upper confining unit overlying the [redacted]. The upper confining unit is correlated with the [redacted]) that occurs widely in the Northern Gulf Coast basin. The top of the upper confining unit is deeper than the base of the USDW. The upper confining unit is [redacted] feet thick throughout the sequestration area and vicinity.

Figure 2-18 shows the depth contours (feet SSTVD) for the top of the upper confining unit as derived from the 3D seismic data. This structure map shows that the upper confining unit dips to the south. **Figure 2-19** shows the depth contours of the base of the upper confining unit (top of [redacted] of the [redacted] sand units). This structure map also shows that the base of the upper confining unit dips southward. **Figure 2-20** shows the isopach map of the upper confining unit. The thickness of the upper confining unit ranges from [redacted] feet in the sequestration area. The upper confining unit forms a regional barrier to any potential movement of fluids from the [redacted] injection zone sand units.

[redacted] at the base of the [redacted] is underlain by the [redacted]. The [redacted] is made up primarily of clay and constitutes a lower confining unit for the proposed injection zone sands. The thickness of the [redacted] ranges from [redacted] feet in the sequestration area. The [redacted] forms a regional barrier to any potential downward movement of fluids from the [redacted] injection zone sand units.

Based on the 3D seismic data and correlations with well logs in the vicinity of the sequestration area, there are no observed regional pinch outs of the injection zone sand units or of the confining zones.

The injection zone sand units [redacted] have variable top elevations with local relief of 20 to 40 feet. The variability of the top elevations can provide for local structural trapping of CO2. In addition, the CO2 trapping has been evaluated to include residual trapping and dissolution trapping.

The injection zone sand units and confining zones are continuous throughout the vicinity of the sequestration area.

Structure maps and isopach maps also have been prepared for the area encompassed by the dynamic numerical model developed for modeling of the injection and movement of CO_2 in the injection zone sand units. The model area extends 5.3 miles from west to east and 6.2 miles from north to south. The model area is larger than the area of the licensed 3D seismic data. The top and bottom surfaces of the primary confining unit, [redacted], and [redacted] were geostatistically modeled from the licensed 3D seismic data and from depths of those surfaces in the well logs from the wells in the model area.

Figures 2-21, 2-22, and 2-23 show the structure maps of the top and base and the isopach map of [redacted].

Figure **2-24** shows the isopach map of the confining unit clay interval between the base of [redacted] and the top of [redacted]. This clay interval is [redacted] feet thick in the sequestration area.

Figures 2-25, 2-26, and 2-27 show the structure maps of the top and base and the isopach map of [redacted].

Figures 2-28 and 2-29 show the structure map of the top and the isopach map of the primary confining unit.

Figures 2-30, 2-31, and 2-32 show the structure maps of the top and base and the isopach map of the upper confining unit.

Figures 2-33 and 2-34 show the structure of the base and thickness of the [redacted]. The [redacted] is made up primarily of clay and constitutes a lower confining unit for the proposed injection zone sands. The structure map shows that the [redacted] dips southward. The thickness of the [redacted] ranges from [redacted] feet in the sequestration area. The [redacted] forms a regional barrier to any potential downward movement of fluids from the [redacted]

Figure 2-35 shows the location of geologic cross section A-A' oriented from southwest to northeast across the model area. **Figure 2-36** shows cross section A-A' to display the occurrence of [redacted] throughout the model area. **Figure 2-37** shows the location of geologic cross section B-B' oriented from west to east across the model area. **Figure 2-38** shows cross section B-B' through the [redacted] location to display the occurrence of [redacted] in the model area.

Faults and Fractures [40 CFR 146.82(a)(3)(ii)]

The seismic line of **Figure 2-10** shows a normal fault located approximately 6,200 feet north of the Class V well at the level of the base of the [redacted]. This fault dips southward at 45° in the depth interval shown by the seismic section. The location of this fault at the base of the [redacted] is shown in **Figure 2-7**. The [redacted] do not fail by fracturing, so it is not likely that any fractures occur in the injection zone or confining zones.

This fault is not located within the AOR and is approximately 3,000 feet north of the northernmost extent of the AOR.

The displacements on this fault generally range from 30 to 50 feet within the [redacted] section and decrease upward. Displacements up to approximately 100 feet occur at some horizons. The displacements of [redacted] and of [redacted] generally are not sufficient to offset these sands in the down-dropped hanging wall (south side) from the sands in the foot wall (north side). The structure map of the top of [redacted] (**Figure 2-12**) shows approximately 100 feet of downward change in elevation along the trace of the fault. The thickness of [redacted] in the area of the fault ranges from [redacted] feet.

At the elevation of the upper confining unit, there appears to be no measurable displacement. Therefore, there is no threat to containment by the confining zones. There is no apparent displacement at the top of the [redacted]. Based on the distribution of displacements on the fault, the fault has been inactive since the Late Miocene over 5 million years ago.

The maximum displacement in the underlying [redacted] is approximately 100 feet. The thickness of the [redacted] ranges from [redacted] feet.

In the deeper portion of the seismic data volume, this fault shows larger displacements and stratigraphic expansion in the [redacted], and underlying formations.

The dynamic model of CO_2 injection was used to predict the fluid pressure buildup in the AOR. The fault is located approximately 11,000 feet north of the proposed location of the Class VI well. There is no pressure buildup at this distance from the Class VI well. Therefore, there is no predicted pressure change that would result in changes of stress to reactivate movement of the fault.

Injection and Confining Zone Details [40 CFR 146.82(a)(3)(iii)

There are [redacted] in the [redacted] between the base of the upper confining zone at approximately [redacted] feet subsea total vertical depth (SSTVD) and the top of the [redacted] at [redacted] feet SSTVD. The identified sand zones range from [redacted] feet thick to [redacted] feet thick with a total net sand thickness of [redacted] feet. The net to gross ratio of the sands over this depth range is approximately [redacted]. These sands were identified based on the logs of the [redacted] located next to the Class V well, and logs of other wells near the Sherburne CCS Well #1 (proposed Class VI well) location including [redacted]

The identified [redacted] sand zones are continuous throughout the licensed seismic volume and appear to be bounded by continuous, identifiable reflections. The 3D seismic data throughout the licensed area shows that the reflections are continuous and have low dip (40 to 60 feet per mile). Reflections within the thicker sand zones generally are low amplitude and can be discontinuous or down lapping to the base of the sand zone or to other internal reflections.

The clay intervals between the sand zones in the [redacted] also are continuous throughout the seismic data volume. In particular, the predominantly-clay interval from the top of [redacted] to the base of [redacted] is continuous and ranges from [redacted] feet in thickness. This clay confining interval is the primary confining unit.

The upper confining zone from approximately [redacted] feet to [redacted] feet depth is continuous and includes a small number of discontinuous, high-amplitude reflections that appear to show discontinuous sand intervals.

This permit application is for CO_2 injection and sequestration in the lowest two identified [redacted]. The other [redacted] in the [redacted] section are anticipated to be used for sequestration in the future as part of subsequent permitting efforts.

The following table lists the depths and characteristics of the [redacted] based on data (Spontaneous Potential and Gamma logs) from the [redacted] The depths are listed to the nearest 5-foot increments and include the SSTVD, the depth relative to the kelly bushing (KB) measuring point, and depth in feet below ground surface (BGS). The ground surface at the well site is approximately [redacted] above msl. The KB reference point was approximately 15 feet above the drill pad for both [redacted] and for the [redacted]

The depths of the sands at the Class VI injection well location are expected to be approximately 50 to 100 feet deeper based on the rate of dip in the area.

Table 2-3. Sand Zone Depth & Thickness

Sand Zone Number	Depth SSTVD/KB/BGS	Sand Thickness (feet)
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Note: Green - Zones targeted for initial permitting and injection | Blue - Zones available for future injection [redacted] were selected for the initial permitting based on their potential capacity and their position at the base of the [redacted] section. [redacted] has a uniform SP log signature with minor occurrences of clay on the gamma log. [redacted] contains clay interbeds that could have additional stratigraphic trapping, which could lead to locally higher storage efficiency values and larger capacity.

The top of [redacted] ranges from depths of [redacted] feet SSTVD in the sequestration area. The thickness of [redacted] ranges from [redacted] feet. The top of [redacted] ranges from depths of [redacted] feet SSTVD in the sequestration area. The thickness of [redacted] ranges from [redacted] are laterally extensive and show no significant changes in thickness in the sequestration area and vicinity.

The containment of the CO_2 in the storage zone would be provided by the combination of the low permeability upper confining zone consisting of [redacted] clay intervals, residual trapping, and structural trapping in anticlinal structures and at sealing faults.

Volumetric analysis (U.S. DOE, 2012; SPE, 2022) was used to estimate the CO_2 storage capacity of the storage zone. The CO_2 storage capacity is the mass of CO_2 that can be stored in a reservoir zone based on the reservoir-zone volume and physical properties such as porosity and pore-water saturation. The theoretical storage capacity is the amount of CO_2 that can displace the pore water leaving pore water only at the irreducible water saturation Swirr. The theoretical storage capacity is given by

$$G = V\ \emptyset\rho(1 - Swirr)$$

where G is the mass of CO_2, V is the volume of the reservoir, ø is the porosity, and ρ is the density of the CO_2 phase. The theoretical storage capacity is the maximum storage capacity and can be achieved in a structural or stratigraphic trap configuration in which the CO_2 is constrained to occupy the volume of the trap and fill all available pore space except the pore space occupied by irreducible formation water saturation. In this formulation, the volume V is the volume of the storage zone within the trapping region and is calculated by multiplying the storage zone area by the net thickness of the sand zones.

CO_2 storage in flat-lying and dipping reservoir zones is affected by fluid dynamic effects including residual CO_2-phase saturation and buoyant transport so that the CO_2 fills only a fraction of the available pore space as the CO_2 plume expands and moves. The effective storage capacity accounts for these effects with a storage efficiency factor ε as follows:

$$G = V\ \emptyset\rho\varepsilon(1 - Swirr)$$

The storage efficiency factor can vary depending on the degree of structural trapping.

For this calculation the following parameter values were used:

Parameter	Value
Storage Zone Thickness	[redacted]
Porosity	[redacted]
Density of Supercritical CO2	43.6 pounds/cubic foot at specific gravity of 0.7
Irreducible Water Saturation	0.2 (20%)
Storage Efficiency Factor	[redacted]

The volumetric analysis of the storage capacity for the one-half (0.5)-mile radius of the Class VI well was based on residual trapping with a storage efficiency factor of [redacted] of the plume area and structural/stratigraphic trapping with a storage efficiency factor of [redacted] of the plume area. This is expected to be a median-range value (approximate P50) of storage capacity. Median-case capacities have large uncertainty because the actual range of storage efficiency is not known at this time. The modeling results together with future monitoring of the plume will be the basis for assessing the most probable trapping scenarios and their associated storage capacity. If structural or stratigraphic traps are more widely present, the storage capacity could be significantly higher.

Sand Zone Number	Depth SSTVD/KB	Sand Thickness (feet)	Median Capacity *	Porosity	Notes
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Note: Green - Zones targeted for initial permitting and injection | Blue - Zones available for future injection
**(Residual Trapping and Minor Structural Trapping) | ([redacted])*

The dynamic numerical model of CO_2 injection and movement provides a more comprehensive evaluation of the transport and fate of supercritical CO_2 in the injection zones. This is presented in Permit Section 3 in the AOR Evaluation and Corrective Action Plan.

Upper Confining Zone

The upper confining zone has been identified from available geophysical information contained within logs of wells included in the project area. Information from the [redacted] well includes gamma logs, image logs, mudlogging of well cuttings, core gamma scans, and core photographs. Two wells located approximately 1,000 feet east of the Class V test well also have gamma logs in the LDNR SONRIS files. The gamma logs from these and other wells in the project area have been used to support the identification of the upper confining zone.

The upper confining zone consists of intervals with shale baseline SP values interbedded with thin intervals with low deflections of the SP log from the shale baseline. The fine-grained intervals have SP values coincident with the shale base line in the logs at shallower and deeper depths. The interbedded less clay-rich zones have low deflections of the SP, suggesting that these intervals are mud-rich. Based on the gamma logs from the Class V test well and other wells, the gamma response of the upper confining zone is intermediate between that of sand zones and clay zones. Based on the gamma readings throughout the upper confining zone, the volume of shale (Vsh) in the upper confining zone is estimated to be approximately [redacted] and the shale index ranges from [redacted] The upper confining zone appears to coincide with a transgressive sequence of interbedded clay and sand located at the top of the [redacted] that is characterized by the [redacted].

The upper confining zone was present at all of the well locations in the project area. The thickness of the upper confining zone ranges from [redacted] feet to [redacted] feet. The median thickness of the upper confining zone is approximately [redacted] feet based on the thickness values in the project area. Half of the measured thickness values occur within the interquartile range of the data set from [redacted] feet to [redacted] feet.

The elevations of the top of the upper confining zone range from [redacted] feet to [redacted] feet in the project area. The bottom elevations of the upper confining zone range from [redacted] to [redacted] feet in the project area. The upper confining zone occurs deeper than the critical depth for CO2 to exist in the supercritical phase. The bottom elevation of the upper confining zone is the elevation of the top of the storage zones occurring within the [redacted].

The containment provided by the upper confining zone is supplemented by continuous clay intervals that occur between each of the [redacted]. The thicknesses of each of the clay intervals are uniform throughout the project area. The thicknesses of the individual clay intervals range from [redacted] feet to [redacted] feet and the median thickness of these intervals is [redacted] feet. The primary confining unit between the base of [redacted] and the top of [redacted] ranges from [redacted] to [redacted] feet in thickness.

Anahuac Group

The [redacted] consists of clay with interbedded sands. The [redacted] is a basal confining zone for the [redacted] storage zone and an upper confining zone for the underlying [redacted] storage sands. The [redacted] was deposited during a major transgressive phase of sedimentation in South Louisiana.

The thickness of the [redacted] ranges from approximately [redacted] feet to over [redacted] feet in the project area, but principally ranges from [redacted] feet to [redacted] feet and the median thickness is [redacted] feet. The sand zone percentage in the [redacted] in the project area is approximately [redacted] but the sand intervals are separated by continuous clay intervals.

The confining zones in the project area are continuous and have significant thicknesses. The confining zones will provide vertical containment for the CO_2 injected into the storage zones.

The [redacted] storage zone [redacted] is overlain by the upper confining zone. The [redacted] upper confining zone consists of a clay-rich sequence of mud interbedded with thin sand and/or silt layers. The upper containment provided by the upper confining zone will be supplemented by the continuous clay zones that occur between each of the [redacted] storage zone sands.

Geomechanical and Petrophysical Information [40 CFR 146.82(a)(3)(iv)]

The geophysical logs of the [redacted] well are the principal source of petrophysical data for the sequestration. The geophysical logs provide physical properties information for identifying and characterizing the injection zone sand intervals and the confining units.

The stratigraphy was characterized with the SP, gamma, spectral gamma, and formation image logs.

Physical property information was derived from the neutron porosity, density porosity, and sonic scanner logs. The sonic scanner log provided geomechanical information including Poisson's ratio, Young's modulus, and estimates of the minimum horizontal stress.

Information on pore water salinity was derived from the SP and resistivity logs.

In addition, the geophysical logs from other wells in the area were evaluated and compared with the [redacted] well logs. The logs from other wells included SP and resistivity logs primarily, but other logs including gamma and sonic logs have been available.

Appendix 1-B includes copies of the geophysical logs from the [redacted] well.

Five core samples were collected including two cores from the upper confining unit, two cores from [redacted] sand units, and one core from the [redacted] lower confining unit. The testing of the cores includes core photography, grain size analysis, measurements of porosity and permeability, core gamma scans, mercury injection capillary pressure, relative permeability, geomechanical testing, and measurement of residual saturation of CO_2. In addition, dual energy CT scanning of the cores was conducted to guide the selection of core plug points and to provide additional information on density, classification of sediment types, porosity, compressional and shear velocities, dynamic Poisson's ratio, dynamic Young's modulus, and unconfined compressive strength.

Seismic History [40 CFR 146.82(a)(3)(v)]

SCS reviewed the USGS Quaternary Faults map of the United States. According to the map, no evidence of mapped Quaternary faults exist within Louisiana. Multiple studies, however, have documented displacement along the [redacted] of Pointe Coupee Parish and the Capio [redacted] CCS Well site. Up-dip limits of faults within the Louisiana growth-fault province lie south of the project location, and consist of normal growth faults of [redacted] age. The Baton Rouge and Tepetate normal fault systems lie east and west of the [redacted], respectively, and a tentatively identified normal fault denoted as the [redacted] lies north and west of the project location (Heinrich and McCulloh, 2013). These faults appear to be aseismic, likely due to a low friction coefficient, high pore pressure, and relatively low tectonic stresses. Displacement along faults within the area ranges from 0.01 to 0.025 inches per decade (USGS, 2018). A more complete discussion of faults within the region is presented in the Faults and Fractures section of this narrative.

Recorded seismicity for Louisiana is sparse. The 1983 Seismicity Map of Louisiana (Stover et. al., 1987) reports 17 events for the state between the years 1843 and 1983. The USGS National Earthquake Information Center (NEIC) reports two “felt” earthquakes (both M 3.0) in the southern half of Louisiana in the past 25 years, both of which were east of Baton Rouge.

The 2018 Long-term National Seismic Hazard Map (USGS, 2018) shows the majority of Louisiana, including Pointe Coupee Parish and the surrounding areas, as the second lowest risk category for earthquake hazards in the United States. The Short-Term Induced Seismicity Model (USGS, 2018) shows induced seismicity generation for the region to be <1% chance of potentially minor-damage ground shaking.

Using the USGS Seismic Unified Hazard Tool, the peak ground acceleration and frequency was calculated for the proposed CCS well. Using a risk level of 2% for 50 years, the estimated peak ground motion is 0.0419 g, and the estimated annual frequency is 0.00049.

Based upon the results of the seismic history review of the [redacted], and including Pointe Coupee Parish and southern Louisiana, the risk of seismicity for the region is low and presents no threat to carbon dioxide containment.

Hydrologic and Hydrogeologic Information [40 CFR 146.82(a)(3)(vi), 146.82(a)(5)]

The USDW consists of an aquifer or its portion which supplies any public water system, or an aquifer or its portion which contains a sufficient quantity of water to supply a public water system, and which currently supplies drinking water for human consumption, or contains less than 10,000 mg/L of total dissolved solids (TDS) and which is not an exempted aquifer. The USDW in the vicinity of the sequestration area consists of groundwater aquifers including the alluvial aquifer [redacted], the [redacted] aquifer, the [redacted] aquifer or [redacted] aquifers, and the [redacted] aquifers as shown in **Figure 2-3**. The [redacted] aquifers include the [redacted] All of these aquifers supply water for human consumption in the region surrounding the sequestration area.

The TDS content or salinity of the groundwater increases with depth and generally becomes greater than 10,000 mg/L in the [redacted] aquifers. The [redacted] aquifers include the [redacted]. The deeper portions of the [redacted] aquifers contain groundwater with TDS content greater than 10,000 mg/L. The base of the USDW in the region of the sequestration area is identified as the depth at which salinity of the groundwater in deeper sand zones consistently becomes greater than 10,000 mg/L.

The base of the USDW at the sequestration area is approximately [redacted] feet below ground level based on the deep induction resistivity logs of the Class V test well, plugged and abandoned gas well [redacted], and other plugged and abandoned petroleum wells in the area.

The following criteria were used to assess the occurrence and base of the USDW in accordance with requirements of the LDNR:

- Ground surface to 1,000 feet depth: 3 ohm m or greater is the USDW;
- 1,000 feet to 2,000 feet depth: 2.5 ohm m or greater is considered to be the USDW; and
- 2,000 feet depth and deeper: 2 ohm m or greater is the USDW.

The base of the USDW is assigned at the base of the sand unit that contains the lowermost USDW.

Geophysical logs of petroleum wells in the vicinity of the sequestration area were reviewed to assess the regional distribution of the base of the USDW. The base of the USDW occurs at depths ranging from [redacted] feet along a west-east transect from 10 miles west of the sequestration area to 10 miles east of the sequestration area. The depth of the base of the USDW also is relatively uniform with depths of [redacted] feet in the area up to 11 miles north of the sequestration area and approximately 6 miles south of the sequestration area. The base of the USDW becomes shallower southward and is approximately [redacted] feet deep in the area near [redacted] approximately 11 miles south of the sequestration area.

Groundwater in the [redacted] aquifer, [redacted] aquifers, and [redacted] aquifers is part of a regional groundwater-flow system known as the [redacted] regional aquifer system (Griffith, 2003). Regional groundwater flow in the aquifer system is driven by topographic differences between higher-elevation source areas in southern Mississippi and the northern part of eastern Louisiana and the lower elevations of the Mississippi River valley and coastal areas of Louisiana. The sequestration area lies in the [redacted] portion of the regional aquifer system in the area of the approximate downdip limit of fresh groundwater.

Figure 2-39 shows the potentiometric surface of the [redacted] aquifers in 1980. The potentiometric surface slopes southwestward from the source area in southern Mississippi toward the downgradient limits of the aquifer system. Groundwater-supply pumping in the Baton Rouge area generates a large cone of depression in the potentiometric surface. The western portion of the aquifer system in the area surrounding the sequestration area has relatively uniform groundwater levels of less than 20 feet relative to mean sea level. The potentiometric map shows a broad shallow cone of depression in southwestern Pointe Coupee Parish and eastern St. Landry Parish that could result from groundwater-supply pumpage from towns located along [redacted]. Periodic monitoring of groundwater levels in this area by the U.S. Geological Survey shows that groundwater levels have shown increases to near sea level in this area since 1980.

Figure 2-40 shows the potentiometric surface of the [redacted] aquifers in 1984. These deeper aquifers show the same pattern of regional groundwater flow to the south and southwest from the source area in Mississippi. The southwestern limit of fresh groundwater occurs near and upgradient of the sequestration area. The hydraulic heads in the [redacted] aquifers show less drawdown in the downgradient limit of the aquifer system and have elevations of 20 feet above sea level and higher. A shallow cone of depression to the east of the sequestration area could result from groundwater-supply pumpage in the area of [redacted], and other towns. Periodic monitoring of groundwater levels in this area by the U.S. Geological Survey shows that groundwater levels have shown increases to near sea level in this area since 1984. The potentiometric map shows that the Baton Rouge Fault forms a barrier to groundwater flow into the cone of depression of the Baton Rouge area from the south side of the fault. The potentiometric map shows that the presence of the Baton Rouge Fault as far west as Rosedale affects groundwater flow at the depth of the [redacted] aquifer so that higher heads occur south of the fault.

Groundwater use is relatively minor in the sequestration area (Sargent, 2011). Groundwater from the alluvial aquifer ([redacted]) is used for domestic and irrigation supply. The alluvial aquifer groundwater also has been used in the area for drilling rig water supply during drilling of petroleum wells. Groundwater from the [redacted] or [redacted] aquifer is used for domestic, industrial, agricultural, and public supply in the region. **Figure 2-41** shows the locations of water wells in the sequestration area and vicinity. Within a one-mile radius of the proposed Class VI well, there are four water wells including three domestic wells and one irrigation well. Two of the domestic wells and the irrigation well are installed in the alluvial aquifer. There is one domestic well in the [redacted].

Geochemistry

The pore fluid resistivities and salinities of the injection zone sands were estimated from the SP log of the [redacted] well, the subsurface temperatures, and the measured resistivities of the drilling mud and mud filtrate. The formation water resistivities R_w ranged from 0.088 to 0.119 ohm-m. The NaCl-equivalent salinities were estimated to be from 37,000 ppm to 45,000 ppm in the [redacted] sand zones. The pore-water salinities were estimated to be 45,000 ppm in [redacted] and 38,000 ppm in [redacted]. The salinity values suggest that the pore water consists predominantly of sea water or a diagenetically-altered sea-water solution. The [redacted] sands in the sequestration area do not have higher-salinity brines because of the distance to and greater depth of the salt domes that are located to the [redacted] and to the [redacted] of the sequestration area.

Core samples were collected during drilling of the [redacted] well. The selected analyses include X-ray diffraction (XRD) scans of samples from three samples from each core to identify the mineralogy and mineral abundances of the confining zone clay and injection zone sand. The XRD analysis includes separate analysis of the clay-size fraction to identify swelling clay. X-ray fluorescence (XRF) testing also is included for up to three samples per core. Grain mounts of sand also are included for petrographic analysis including sorting, framework grain size, description of the fabric, and photomicrographs of the samples. The following table summarizes the drilled depths, recovered depth ranges, and stratigraphic intervals of the cores:

Core Number	Drilled Depth (feet KB)	Actual Recovered Depth Range (feet KB)	Stratigraphic Interval
1	[redacted]	[redacted]	[redacted]
2	[redacted]	[redacted]	[redacted]
3	[redacted]	[redacted]	[redacted]
4	[redacted]	[redacted]	[redacted]
5	[redacted]	[redacted]	[redacted]

The XRD, XRF, and petrography testing are in progress and this information will be provided upon receipt and interpretation.

During the drilling of the [redacted] pore-fluid samples were not collected from the injection zone sand units. Pore-fluid samples will be collected from the injection zone sand units during drilling of the Class VI well. The pore-fluid samples will be analyzed for major cations and anions including sodium, calcium, magnesium, potassium, alkalinity (bicarbonate and carbonate), chloride, and sulfate to assess the composition of the pore fluid. The pore-fluid composition also will be used for modeling of the interaction of the pore fluid with CO2 to assess the potential for CO2 dissolution trapping and for modeling the geochemical interactions of the CO2-fluid mixture with the injection zone and confining zone minerals.

Site Suitability

40-CFR 156.83 requires Owners and Operators of Class VI injection well to demonstrate to the Director that the wells are within a geologic area appropriate for the intended use. The first specific requirement is to show the sufficient extent, thickness, porosity, and permeability to sequester the CO_2 permanently and that the site has an adequate storage capacity for the design volumes. The second criterion within the regulation is the integrity of the confining zone, faults within the project area, and the potential for pressure build-up compromising the confining zone.

The preceding narrative in this section addresses the questions presented above. The sequestration area is a simple monoclinal structure with a relatively uniform dip to the south. Detailed geologic mapping and geophysical (seismic) surveys have established the geospatial distribution of multiple sand zones of sufficient thickness to store large amounts of CO_2. Geophysical logs and analysis of drilling cores from a stratigraphic test well both support the porosity and permeability calculations. Additionally, the potential injection sands are well below the USDW.

These sands have the pore pressure to maintain the CO_2 in a supercritical state. Candidate injection zones are bounded by continuous, laterally-extensive low-permeability confining zone clay units overlying and underlying the storage zone. Significant faulting or other tectonic features are not present in the area.

The following section of this document, the AOR review, presents a robust simulation of the migration and pressure front derived from CO2 injection operations. This model illustrates that the pressure build-up near the injection well is generally less than [redacted], insufficient to compromise a confining zone. The following sections address engineering concerns, the AOR review, and many other topics needed to operate a safe and environmentally protective Class VI injection operation.

40 CFR 156.83 sets the minimum requirements for siting a Class VI injection well. The Site Characterization demonstrates that this project meets and exceeds the minimum need for a Class VI injection operation.

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Figures

Legend

☆ CO_2 Sequestration Well

[redacted]

FIGURE 2-1
TOPOGRAPHIC MAP
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 4,000 Feet
N

[redacted]

FIGURE 2-2
GENERALIZED LITHOSTATIGRAPHIC SUBDIVISION,
SEQUESTRATION AREA
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS

Wichita, KS	November 2022

[redacted]

FIGURE 2-3
CROSS-SECTION EAST TO WEST
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS

Wichita, KS	November 2022

[redacted]

Legend

- Wells
- Salt Dome
- Fault
- [redacted]

FIGURE 2-4
REGIONAL GEOLOGIC STRUCTURAL FEATURES
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 300,000 Feet
N

[redacted]

PROJECT NO.	27222038.00	DRAWN BY:	AA	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT	CAPIO SEQUESTRATION, LLC.	SITE	[redacted] POINTE COUPEE PARISH, LOUISIANA	LOCATIONS & 2D SEISMIC LINES	FIGURE 2-5
DRAWN:	02/11/2022	CHECKED BY:	JO								
REVISED:	11/07/2022	APPROVED BY:									

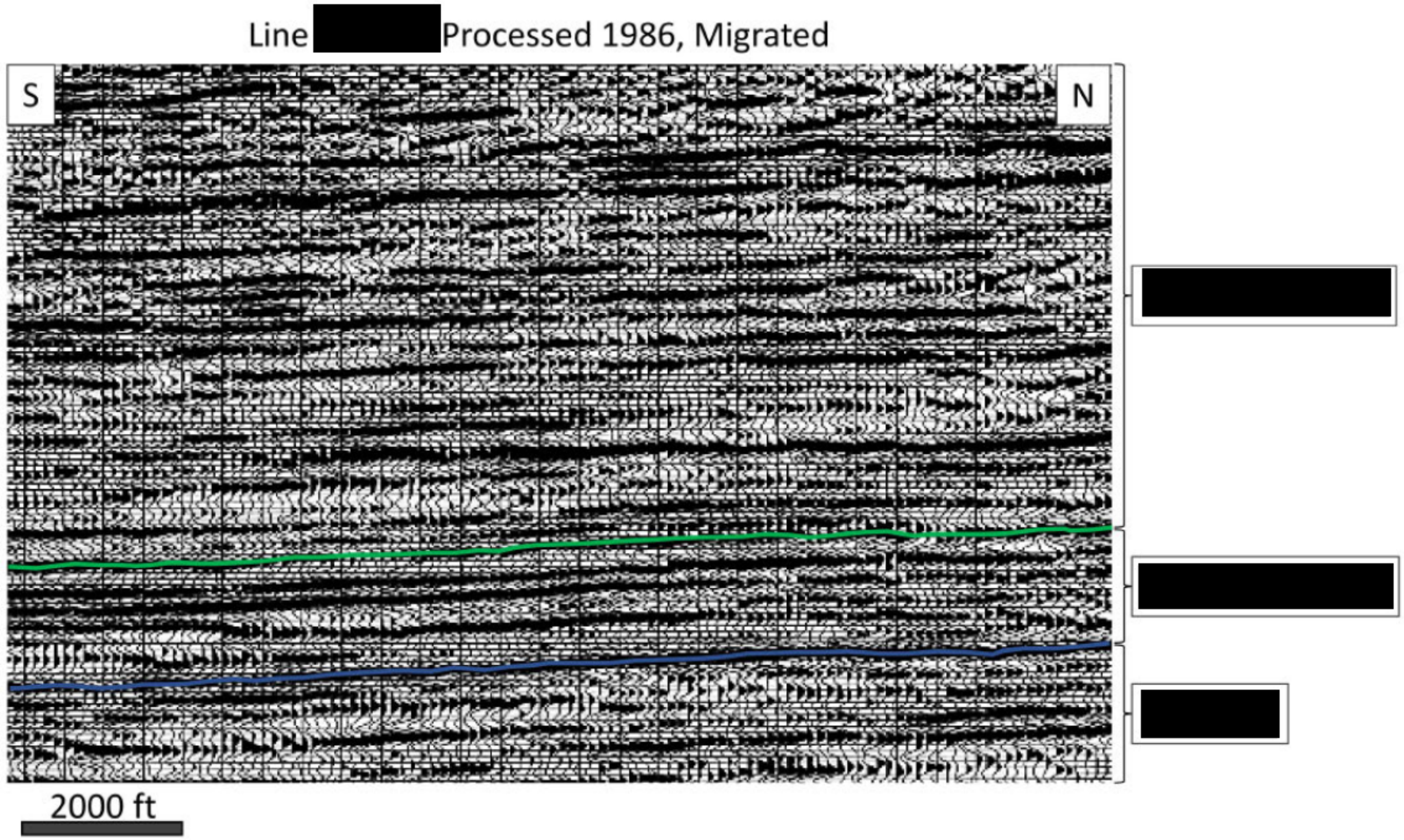
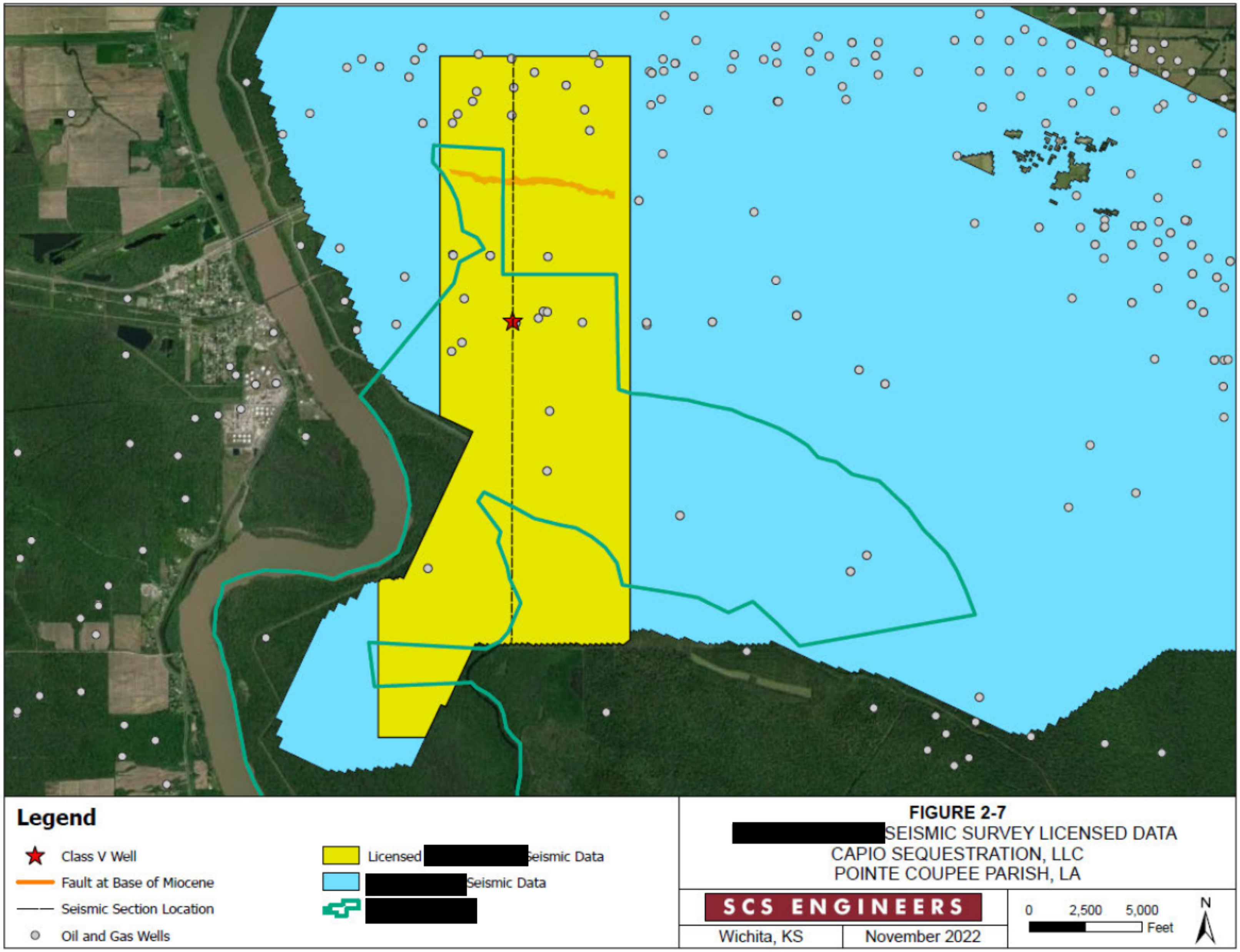
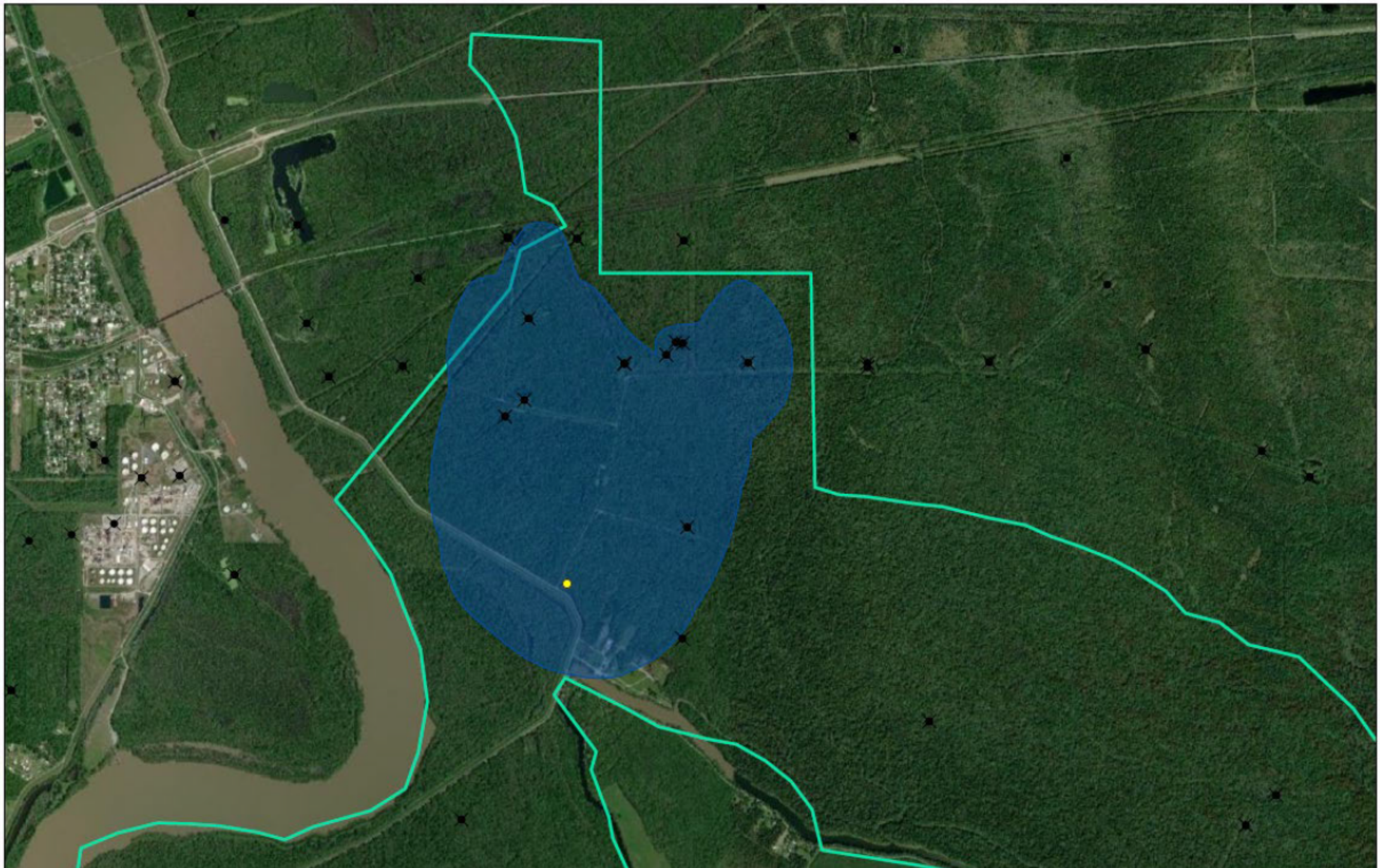


FIGURE 2-6
PORTION OF SEISMIC LINE B603-E
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022


Legend
Class V Well
Fault at Base of Miocene
Seismic Section Location
Oil and Gas Wells
Licensed [redacted]eismic Data
[redacted]Seismic Data
[redacted]
FIGURE 2-7
[redacted] SEISMIC SURVEY LICENSED DATA
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA
SCS ENGINEERS
Wichita, KS
November 2022
0
2,500
5,000
Feet
N



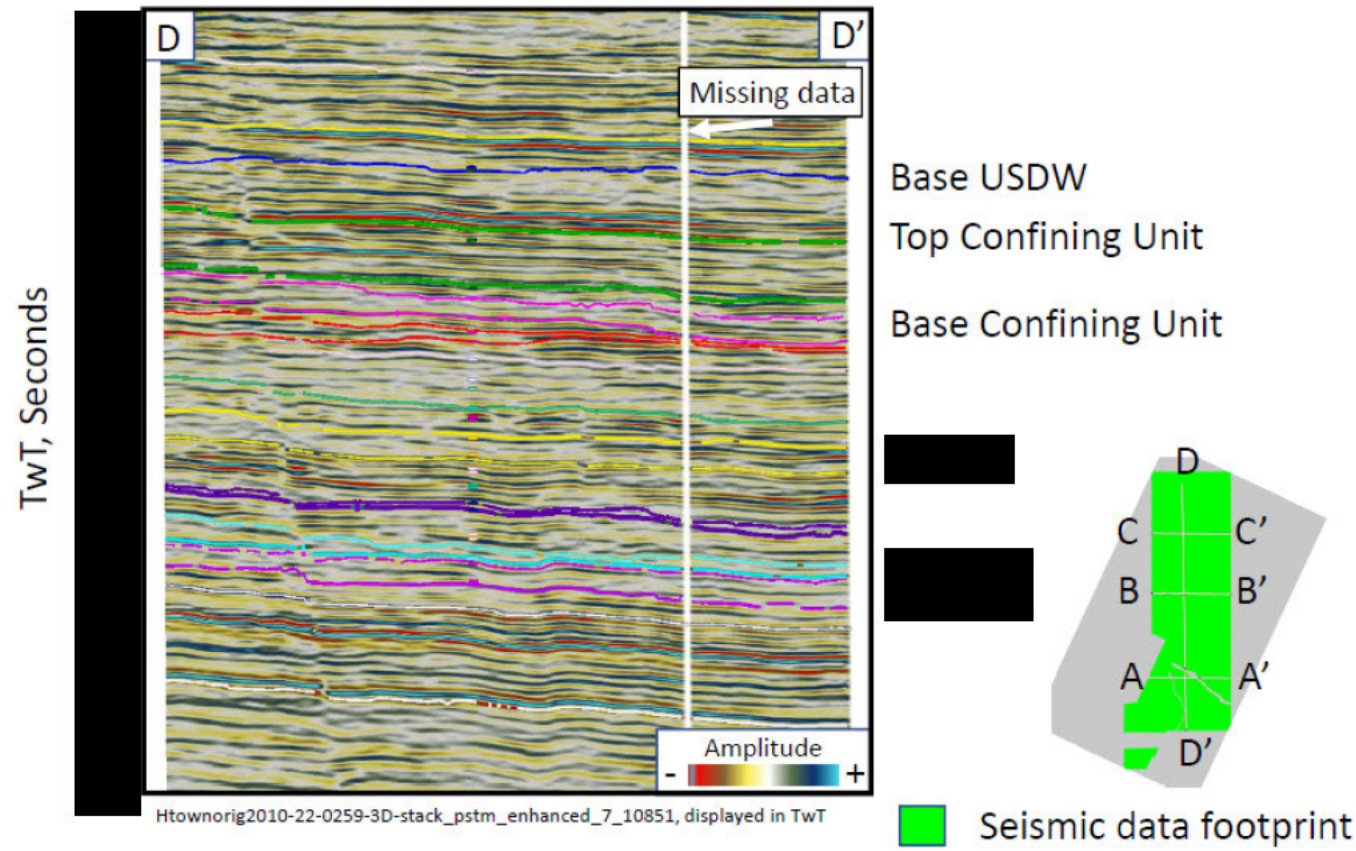
Legend

- CO_2 Sequestration Well
- Oil and Gas Well
- CO_2 Plume
- [redacted]

FIGURE 2-8
MAXIMUM AREA OF REVIEW
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 3,000 Feet
N



CLIENT	Capio Sequestration, LLC	SITE	[redacted] Pointe Coupee Parish, Louisiana	N-S Seismic Cross Section in Time

PROJECT NO.	27222154.00	DRAWN BY:	JAO	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
DRAWN:	11/8/2022	CHECKED BY:				2-9
REVISED:	11/8/2022	APPROVED BY:				

[redacted]

Note:
Depths in feet below ground surface (approximate).

FIGURE 2-10
SEISMIC SECTION AT CLASS V TEST WELL (N-S) CONVERTED TO DEPTH
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 2,500 5,000 Feet

N

[redacted]

CLIENT: Capio Sequestration, LLC.	SITE: [redacted] Pointe Coupee Parish, Louisiana	West-East Seismic Cross Sections	
PROJECT NO. 27222154.00	DRAWN BY: JAO	ENGINEER: SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE 2-11
DRAWN: 11/6/2022	CHECKED BY:		
REVISED: 11/6/2022	APPROVED BY:		

[redacted]

CLIENT: CAPIO SEQUESTRATION, LLC — CAPIO SEQUESTRATION, LLC.

SITE: [redacted] POINTE COUPEE PARISH, LOUISIANA

[redacted]

PROJECT NO.	27222154.00	DRAWN BY:	AA
DRAWN:	10/12/2022	CHECKED BY:	JAO
REVISED:	11/02/2022	APPROVED BY:	

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE, MADISON, WI 53718-6751
PHONE: (608) 224-2830

FIGURE
2-12

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[redacted]

CLIENT	CAPIO SEQUESTRATION, LLC	CAPIO SEQUESTRATION, LLC.	SITE	[redacted] POINTE COUPEE PARISH, LOUISIANA	[redacted]
PROJECT NO.	27222154.00	DRAWN BY: AA	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE, MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
DRAWN:	10/13/2022	CHECKED BY: JAO			2-13
REVISED:	11/02/2022	APPROVED BY:			

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[redacted]

CLIENT: CAPIO SEQUESTRATION, LLC.	SITE: [redacted] POINTE COUPEE PARISH, LOUISIANA	[redacted]	
PROJECT NO. 27222154.00	DRAWN BY: AA	ENGINEER: SCS ENGINEERS 2830 DAIRY DRIVE, MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
DRAWN: 10/12/2022	CHECKED BY: JAO		2-14
REVISED: 11/02/2022	APPROVED BY:		

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[redacted]

CLIENT	CAPIO SEQUESTRATION, LLC. CAPIO SEQUESTRATION, LLC.	SITE	[redacted] POINTE COUPEE PARISH, LOUISIANA		[redacted]
PROJECT NO.	27222154.00	DRAWN BY:	AA	ENGINEER: SCS ENGINEERS 2830 DAIRY DRIVE, MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
DRAWN:	10/13/2022	CHECKED BY:	JAO		2-15
REVISED:	11/02/2022	APPROVED BY:			

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[redacted]

CLIENT	CAPIO SEQUESTRATION, LLC — CAPIO SEQUESTRATION, LLC.	SITE	[redacted] POINTE COUPEE PARISH, LOUISIANA	[redacted]
PROJECT NO. 27222154.00	DRAWN BY: AA	ENGINEER	SCS ENGINEERS	FIGURE
DRAWN: 10/12/2022	CHECKED BY: JAO		2830 DAIRY DRIVE, MADISON, WI 53718-6751	2-16
REVISED: 11/02/2022	APPROVED BY:		PHONE: (608) 224-2830	

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[redacted]

CLIENT	CAPIO SEQUESTRATION, LLC	CAPIO SEQUESTRATION, LLC.	SITE	[redacted] POINTE COUPEE PARISH, LOUISIANA	[redacted]
PROJECT NO.	27222154.00	DRAWN BY: AA	ENGINEER	SCS ENGINEERS	FIGURE
DRAWN:	10/13/2022	CHECKED BY: JAO		2830 DAIRY DRIVE, MADISON, WI 53718-6751 PHONE: (608) 224-2830	2-17
REVISED:	11/02/2022	APPROVED BY:			

DOCUMENT PATH: I:\27222154.00\DRAWINGS\GIS\SHURBURNE LEASE\SHURBURNE LEASE.APRX

[redacted]

CLIENT	CAPIO SEQUESTRATION, LLC	CAPIO SEQUESTRATION, LLC.	SITE	[redacted] POINTE COUPEE PARISH, LOUISIANA	[redacted]
PROJECT NO.	27222154.00	DRAWN BY:	AA	ENGINEER: SCS ENGINEERS	FIGURE
DRAWN:	10/12/2022	CHECKED BY:	JAO	2830 DAIRY DRIVE, MADISON, WI 53718-6751 PHONE: (608) 224-2830	2-18
REVISED:	11/02/2022	APPROVED BY:			

DOCUMENT PATH: I:\27222154.00\DRAWINGS\GIS\SHURBURNE LEASE\SHURBURNE LEASE.APRX

[redacted]

CLIENT	CAPIO SEQUESTRATION, LLC.	SITE	[redacted] POINTE COUPEE PARISH, LOUISIANA	[redacted]	
PROJECT NO.	27222154.00	DRAWN BY:	AA	ENGINEER: SCS ENGINEERS, 2830 DAIRY DRIVE, MADISON, WI 53718-6751, PHONE: (608) 224-2830	FIGURE
DRAWN:	10/14/2022	CHECKED BY:	JAO		2-19
REVISED:	11/02/2022	APPROVED BY:			

DOCUMENT PATH: I:\27222154.00\DRAWINGS\GIS\SHURBURNE LEASE\SHURBURNE LEASE.APRX

[redacted]

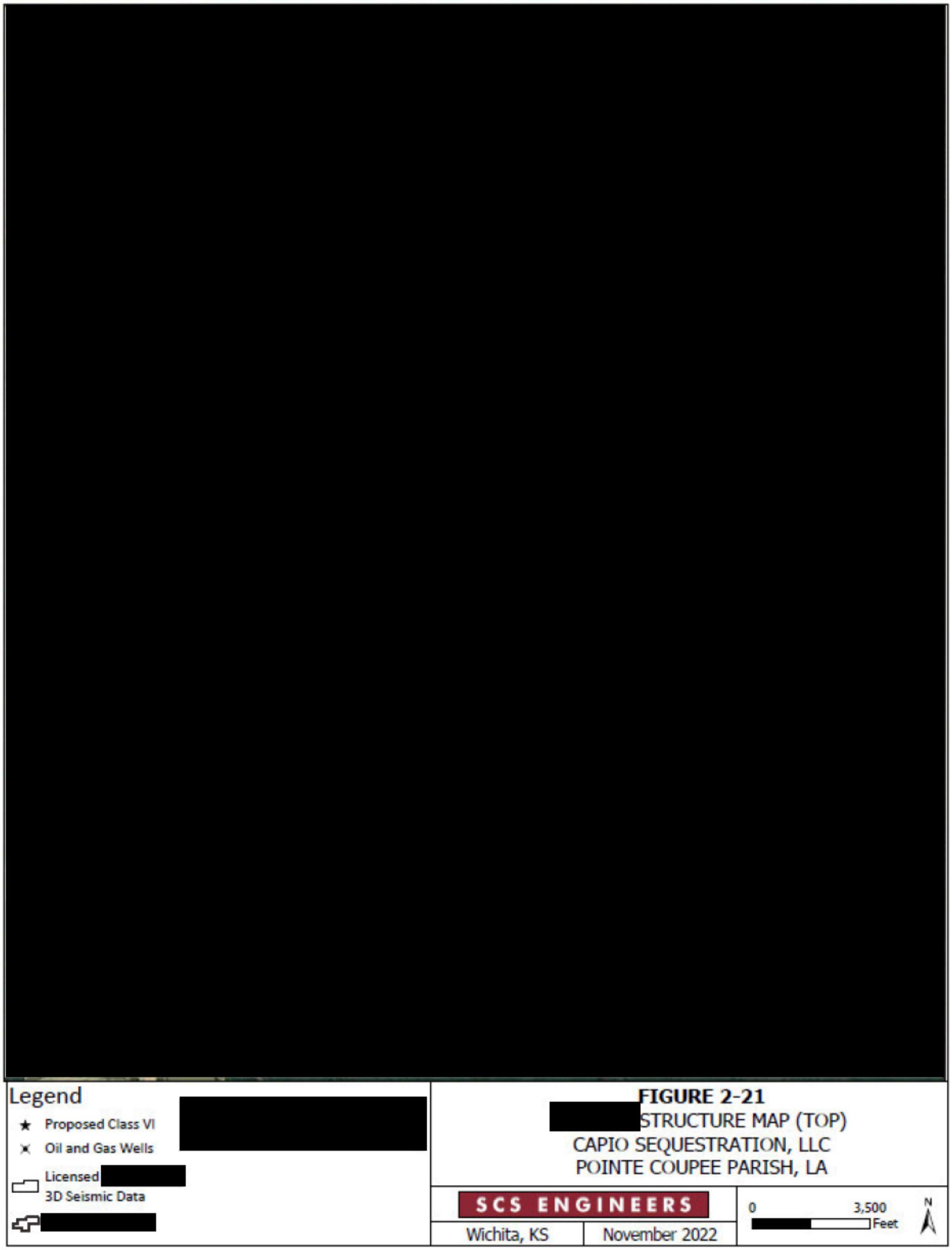
CLIENT: CAPIO SEQUESTRATION, LLC. | SITE: [redacted] POINTE COUPEE PARISH, LOUISIANA | [redacted]

PROJECT NO.	27222154.00	DRAWN BY:	AA
DRAWN:	10/12/2022	CHECKED BY:	JAO
REVISED:	11/02/2022	APPROVED BY:	

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE, MADISON, WI 53718-6751
PHONE: (608) 224-2830

FIGURE 2-20

DOCUMENT PATH: I:\27222154.00\DRAWINGS\GIS\SHURBURNE LEASE\SHURBURNE LEASE.APRX


[redacted]
Legend
Proposed Class VI
Oil and Gas Wells
Licensed [redacted]
3D Seismic Data
[redacted]
FIGURE 2-21
[redacted] STRUCTURE MAP (TOP)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA
SCS ENGINEERS
Wichita, KS
November 2022
0
3,500
Feet
N

[redacted]

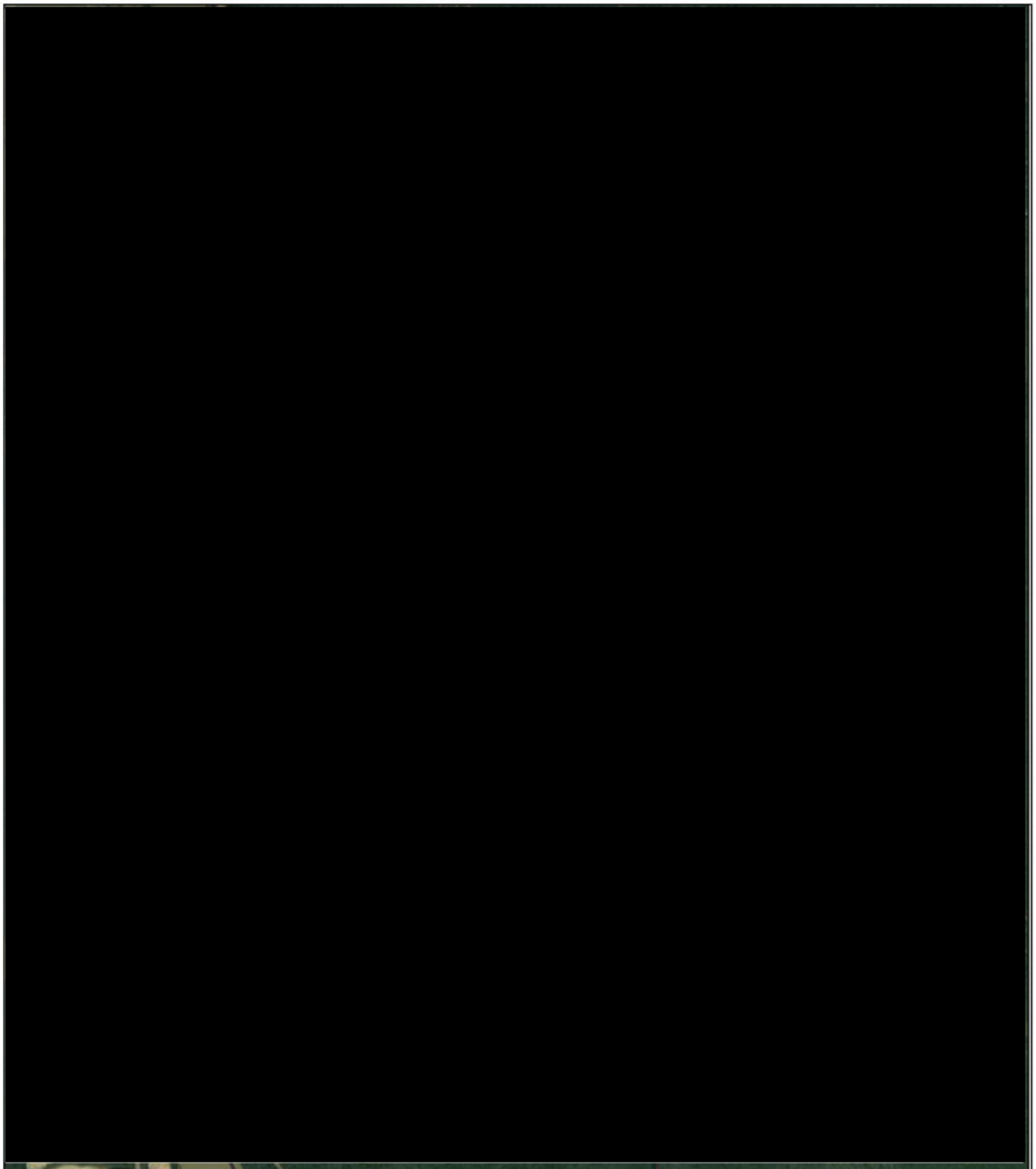
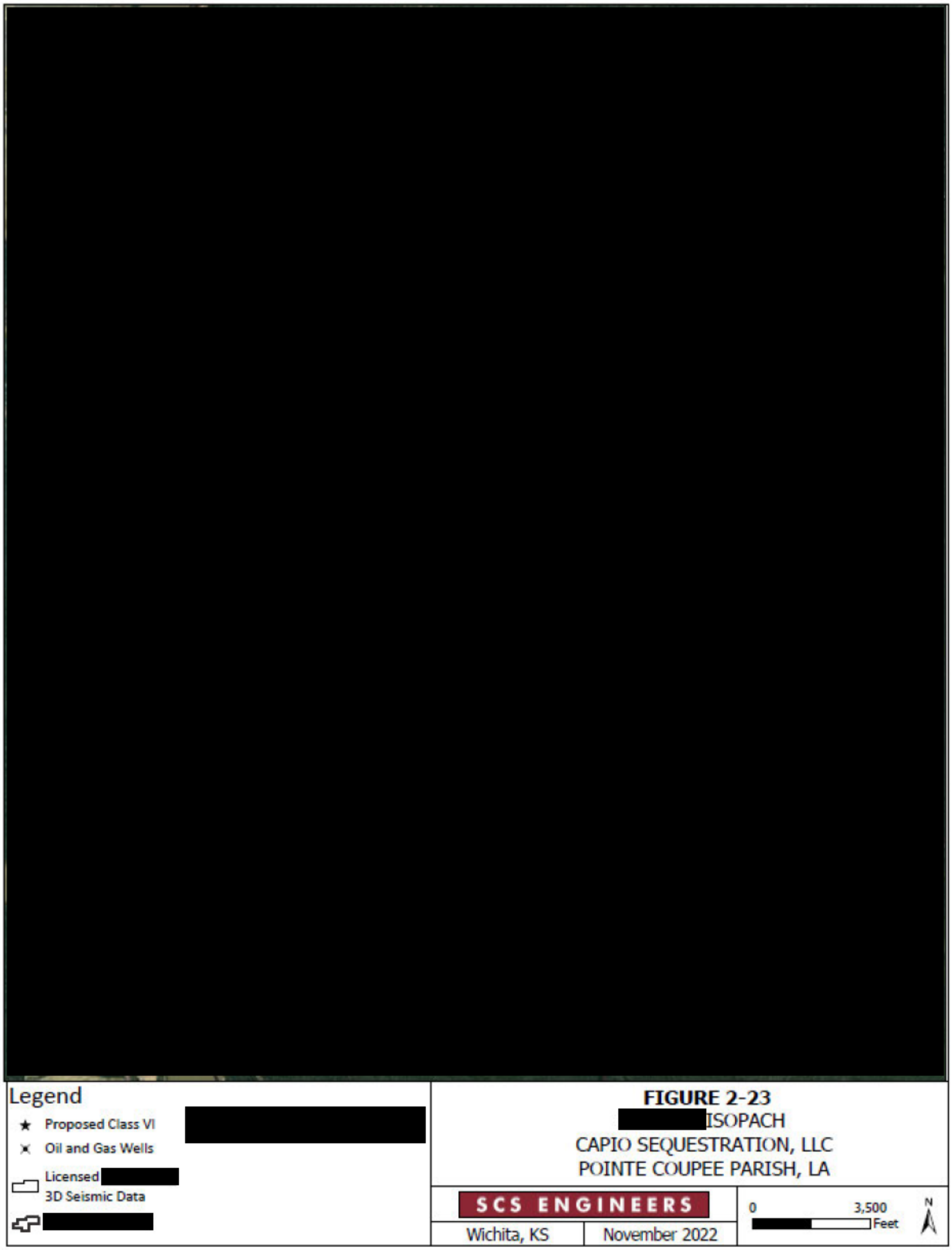


FIGURE 2-22
[redacted] STRUCTURE MAP (BASE)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA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Legend
Proposed Class VI
Oil and Gas Wells
[redacted]
Licensed [redacted]
3D Seismic Data
[redacted]
FIGURE 2-23
[redacted] ISOPACH
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA
SCS ENGINEERS
Wichita, KS
November 2022
0
3,500
Feet
N

[redacted]

Legend

- ★ Proposed Class VI [redacted]
- Oil and Gas Wells
- Licensed [redacted] 3D Seismic Data
- [redacted]

FIGURE 2-24

CONFINING UNIT [redacted] ISOPACH

CAPIO SEQUESTRATION, LLC

POINTE COUPEE PARISH, LA

SCS ENGINEERS

Wichita, KS | November 2022

0 3,500 Feet

N

[redacted]

Legend
- ★ Proposed Class VI
- Oil and Gas Wells
- [redacted]
- Licensed [redacted] 3D Seismic Data
- [redacted]

FIGURE 2-25
[redacted] STRUCTURE MAP (TOP)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 3,500 Feet
N

[redacted]

Legend
- ★ Proposed Class VI
- Oil and Gas Wells
- Licensed [redacted] 3D Seismic Data
- [redacted]

[redacted]

FIGURE 2-26
[redacted] STRUCTURE MAP (BASE)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 3,500 Feet
N

[redacted]

Legend

- ★ Proposed Class VI [redacted]
- ✖ Oil and Gas Wells
- Licensed [redacted] 3D Seismic Data
- [redacted]

FIGURE 2-27
[redacted] ISOPACH
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 3,500 Feet
N

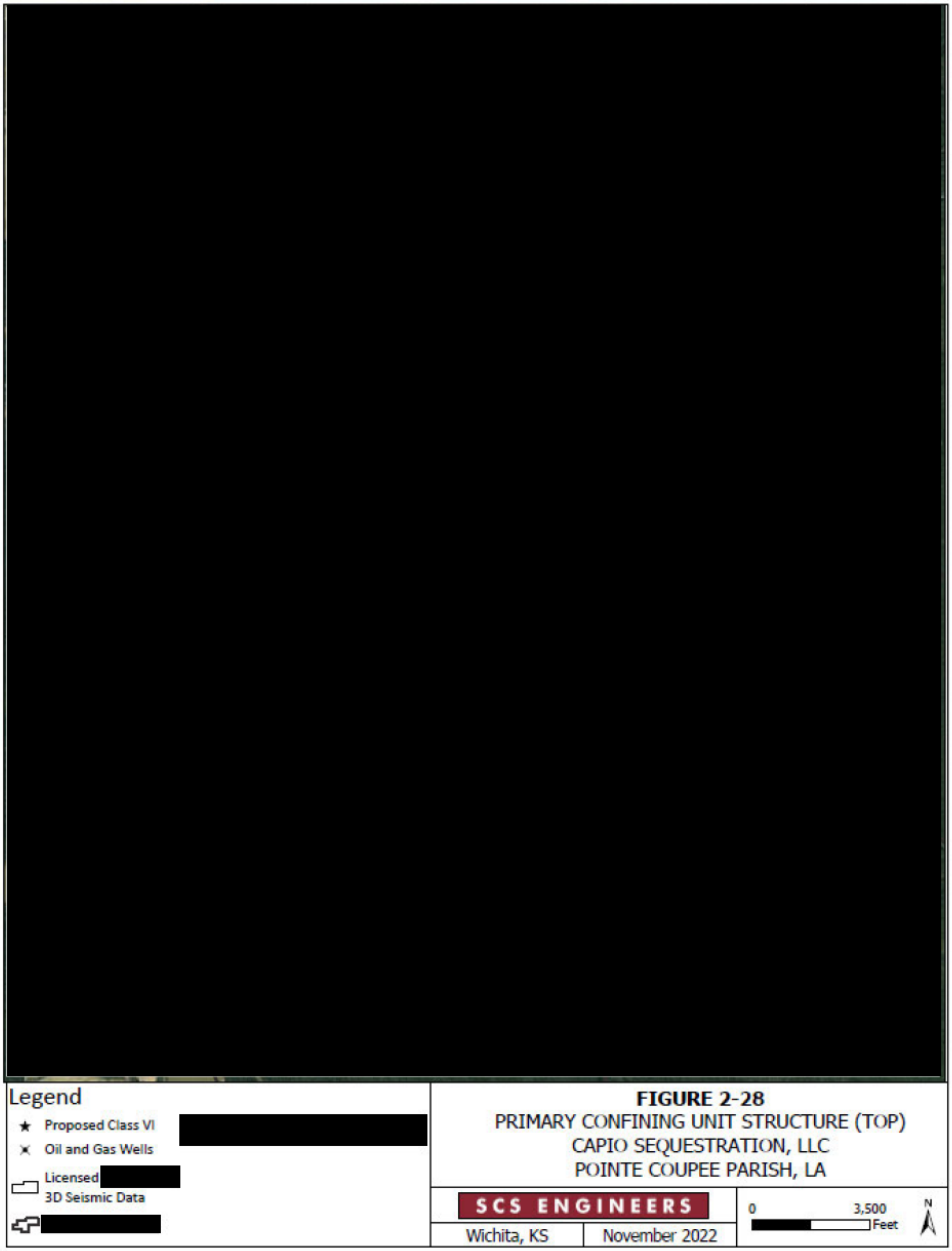

FIGURE 2-28
PRIMARY CONFINING UNIT STRUCTURE (TOP)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

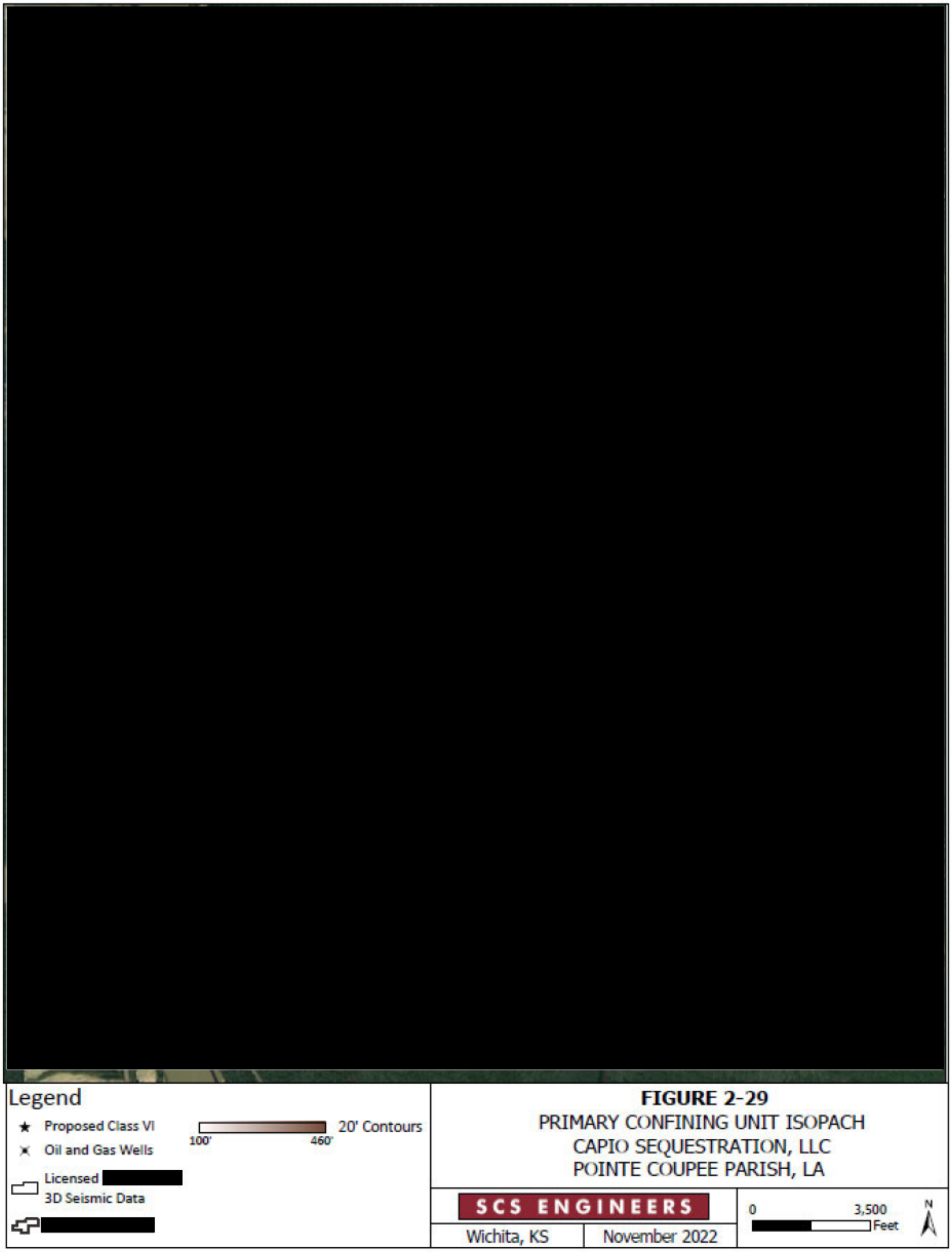

FIGURE 2-29
PRIMARY CONFINING UNIT ISOPACH
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

[redacted]

Legend
- ★ Proposed Class VI
- Oil and Gas Wells

[redacted]

- Licensed [redacted] 3D Seismic Data
- [redacted]

FIGURE 2-30
UPPER CONFINING UNIT STRUCTURE (TOP)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 3,500 Feet
N

[redacted]

Legend
- ★ Proposed Class VI [redacted]
- Oil and Gas Wells
- Licensed [redacted] 3D Seismic Data
- [redacted]

FIGURE 2-31
UPPER CONFINING UNIT STRUCTURE (BASE)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 3,500 Feet
N

[redacted]

Legend

- Proposed Class VI [redacted]
- Oil and Gas Wells
- Licensed [redacted] 3D Seismic Data
- [redacted]

FIGURE 2-32
UPPER CONFINING UNIT ISOPACH
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 3,500 Feet

N

[redacted]

Legend

- ★ Proposed Class VI [redacted]
- ⁎ Oil and Gas Wells
- Licensed [redacted] 3D Seismic Data
- [redacted]

FIGURE 2-33
[redacted] STRUCTURE (BASE)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 3,500 Feet
N

[redacted]

Legend

- ★ Proposed Class VI [redacted]
- Oil and Gas Wells
- Licensed [redacted] 3D Seismic Data
- [redacted]

FIGURE 2-34
[redacted] ISOPACH
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

0 3,500 Feet
N

[redacted]

FIGURE 2-35
CROSS-SECTION TRACE A-A' (SW-NE)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | November 2022

N

[redacted]

FIGURE 2-36
Cross-Section A-A' (SW-NE)
Capio Sequestration, LLC
Pointe Coupee Parish, LA

SCS ENGINEERS
Wichita, KS | November 2022

N

[redacted]

FIGURE 2-37
CROSS-SECTION TRACE B-B' (W-E)
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS

Wichita, KS | November 2022

N

[redacted]

FIGURE 2-38
Cross-Section B-B' (W-E)
Capio Sequestration, LLC
Pointe Coupee Parish, LA

SCS ENGINEERS

Wichita, KS	November 2022

[redacted]

FIGURE 2-39

[redacted]

CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS

Wichita, KS | November 2022

N

[redacted]

[redacted]

FIGURE 2-40

[redacted]

CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS

Wichita, KS

November 2022

N

[redacted]

[redacted]

FIGURE 2-41
AREA WATER WELLS
CAPIO SEQUESTRATION, LLC
POINTE COUPEE PARISH, LA

SCS ENGINEERS
Wichita, KS | October 2022

0 9,000 Feet
N

Appendices