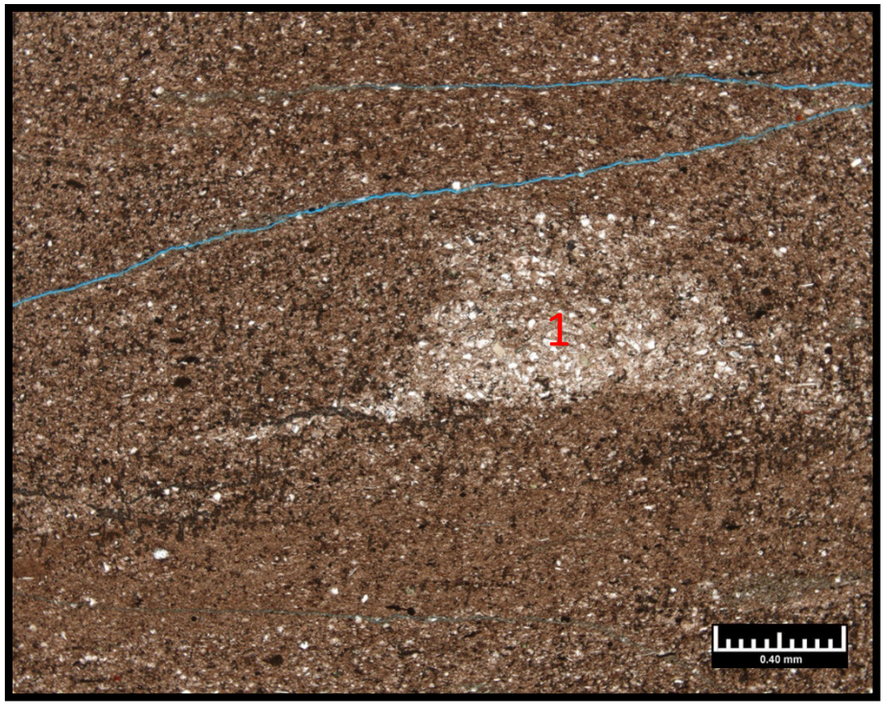
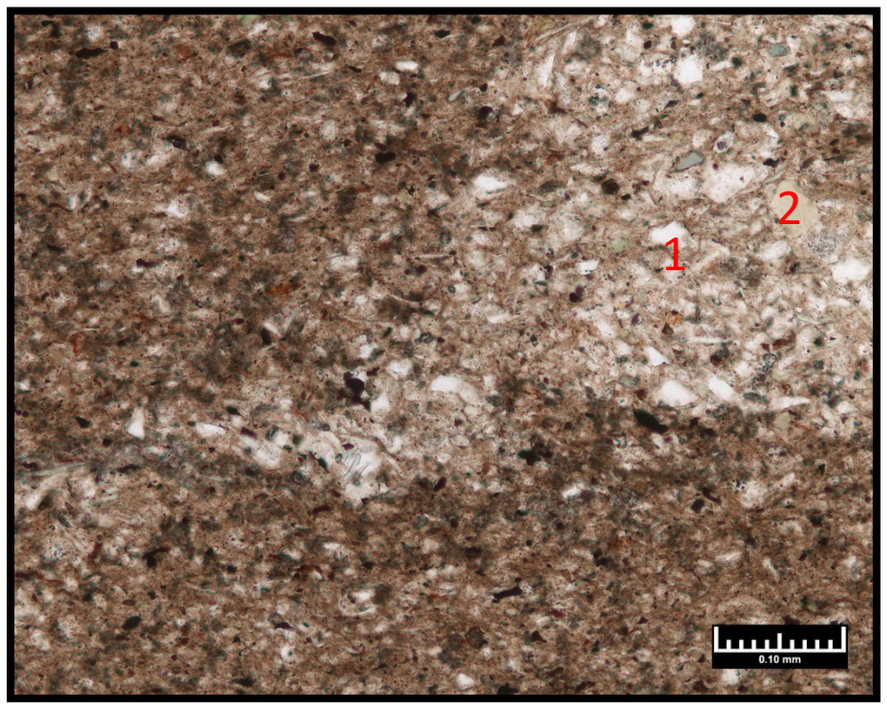
Strategic Biofuels LLC
Louisiana Green Fuels Well 001
Caldwell, Onshore Louisiana

3609.20-3609.45 feet
Sample 1-10 P (TS #1)
Silty Mudstone

Project # HH-108056
Conventional Core





DETRITAL GRAINS/ALLOCHEMS:

Est. Avg. Grain Size = 0.02 mm; **Range**: <0.004-0.09 mm
Sorting: moderately well (includes sand/silt portion only)
Compaction: moderate, based on preferred orientation of ductile grains and uniform extinction of detrital clays

MAJOR COMPONENTS:

Monocrystalline quartz silt, muscovite mica

MINOR/ACCESSORY:

Potassium feldspar silt, plagioclase silt, peloids, carbonaceous debris, phosphatic fragments, undifferentiated bioclasts, monocrystalline quartz sand, chlorite, rutile, biotite, glauconite

MATRIX:

Abundant detrital illite/smectite and illite. Minor residual dead oil/bitumen and rare to minor light oil

DIAGENESIS:

MAJOR:

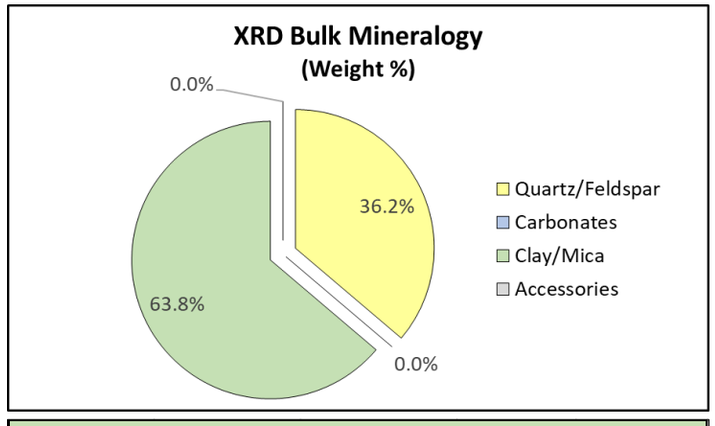
N/A

MINOR:

Minor pyrite replacement of matrix and organic material. Rare to minor quartz replacement of the matrix. Trace to rare carbonate replacement of the matrix.

PORE TYPES:

No naturally occurring porosity or microporosity observed within the sample based on white-light optical analysis. Refer to SEM analysis for micropore estimation. Epifluorescence optical analysis and FEE-SEM are recommended for further micropore characterization. Open fractures are likely a result from sample preparation process.



Clay Mineralogy (weight %)				
Chlorite	Kaolinite	Illite/Mica	Mx I/S*	Mx I/S**
7.8	5.4	18.0	0.0	32.6

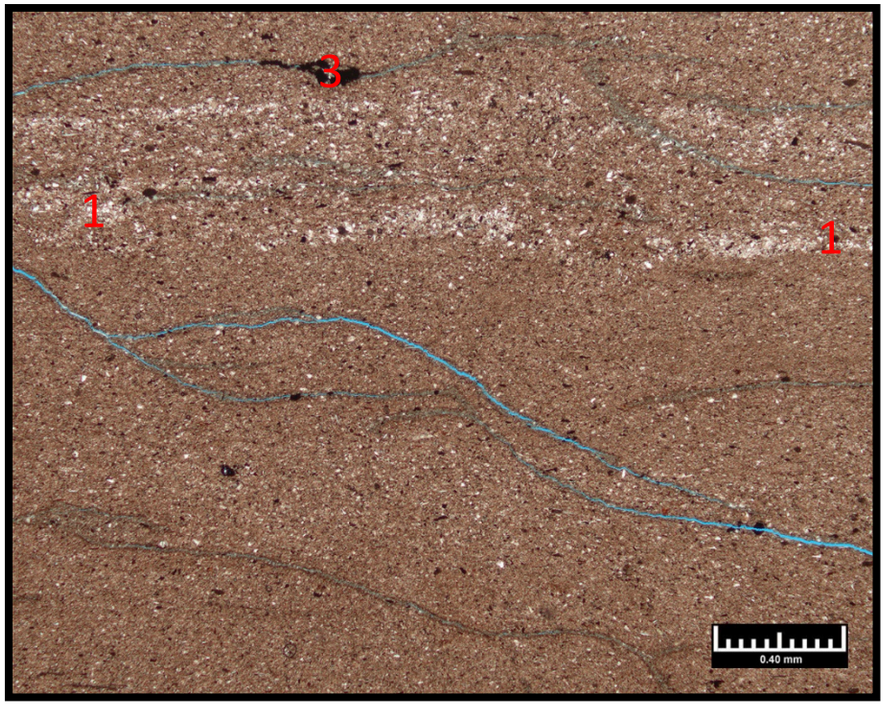
PETROGRAPHIC SUMMARY

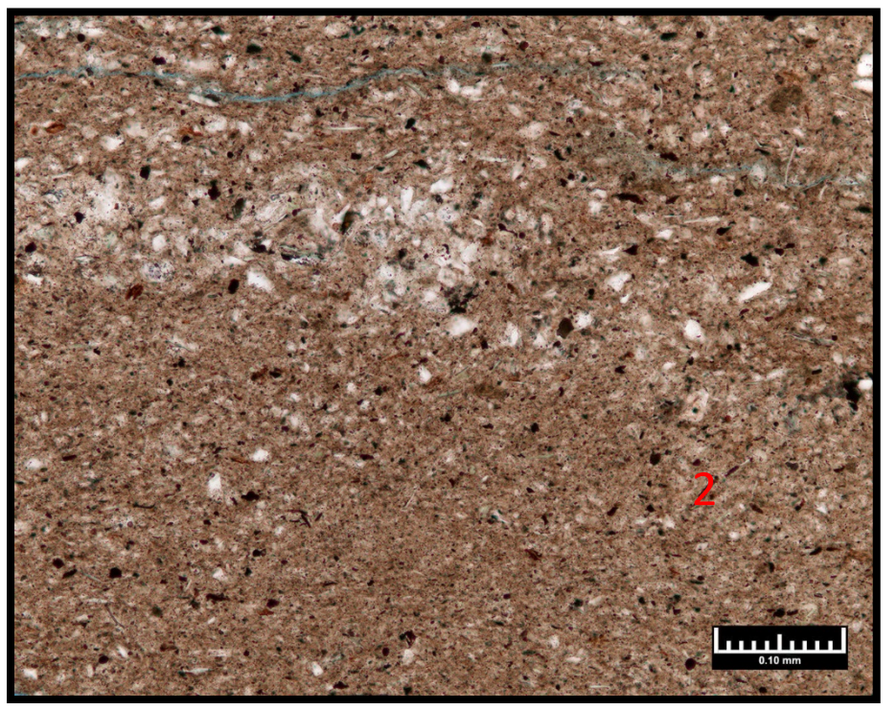
Photomicrographs depict a silty mudstone with a faintly laminated fabric. Minor discontinuous, lenticular laminations are filled mainly with silt-sized detrital grains. Burrow traces are minor to common and include silt- and clay-filled elliptical and compacted undifferentiated traces (1), and escape traces. Detrital grains include abundant monocrystalline quartz silt, common muscovite mica, and minor amounts of potassium feldspar silt, plagioclase silt, peloids, carbonaceous debris, phosphatic fragments, undifferentiated bioclasts, monocrystalline quartz sand, chlorite (2), rutile, biotite, and glauconite. The matrix contains a mixture of detrital mixed-layer illite/smectite along with illite and minor to common chlorite and kaolinite. Minor residual bitumen and rare light oil are also mixed with the detrital clays. Framboidal pyrite partially replaces organic material, susceptible grains, and bioclasts (opaque). Carbonate replacement of the matrix is rare (distinction between the type of carbonate content in the sample is difficult without dual carbonate staining, and this sample was not suitable for staining due to the presence of water-sensitive/expandable clays). Open fractures and micropores around the fractured areas (blue epoxy) are not natural and likely a result from sample preparation process.

Strategic Biofuels LLC
Louisiana Green Fuels Well 001
Caldwell, Onshore Louisiana

3619.00-3619.25 feet
Sample 1-20 P (TS #2)
Silty Mudstone

Project # HH-108056
Conventional Core





DETRITAL GRAINS/ALLOCHEMS:

Est. Avg. Grain Size = 0.01 mm; **Range**: <0.004-0.05 mm
Sorting: well (includes sand/silt portion only)
Compaction: moderate, based on preferred orientation of ductile grains and uniform extinction of detrital clays

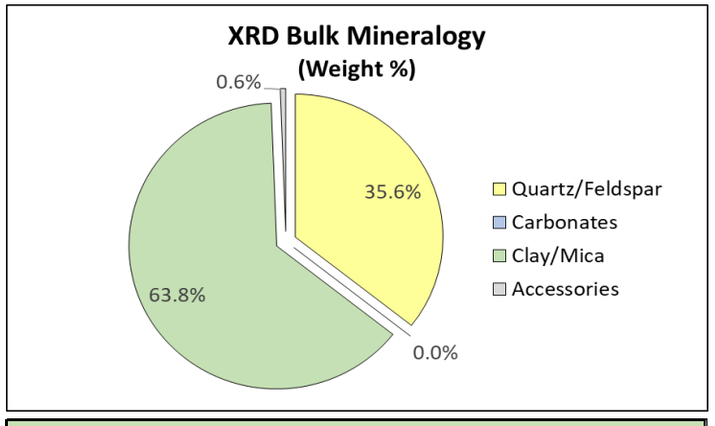
MAJOR COMPONENTS:
Monocrystalline quartz silt, muscovite mica
MINOR/ACCESSORY:
Plagioclase silt, potassium feldspar silt, carbonaceous debris, phosphatic fragments, calcareous foraminifera tests, carbonate fragments, mudstone rock fragments, peloids
MATRIX:
Abundant detrital illite/smectite and illite. Minor residual dead oil/bitumen and rare to minor light oil

DIAGENESIS:

MAJOR:
N/A
MINOR:
Minor pyrite replacement or matrix and organic material. Rare to minor quartz replacement of the matrix. Trace to rare carbonate replacement of the matrix.

PORE TYPES:

No naturally occurring porosity or microporosity observed within the sample based on white-light optical analysis. Refer to SEM analysis for micropore estimation. Epifluorescence optical analysis and FEE-SEM are recommended for further micropore characterization. Open fractures are likely a result from sample preparation process.



Clay Mineralogy (weight %)				
Chlorite	Kaolinite	Illite/Mica	Mx I/S*	Mx I/S**
8.8	5.5	17.3	0.0	32.2

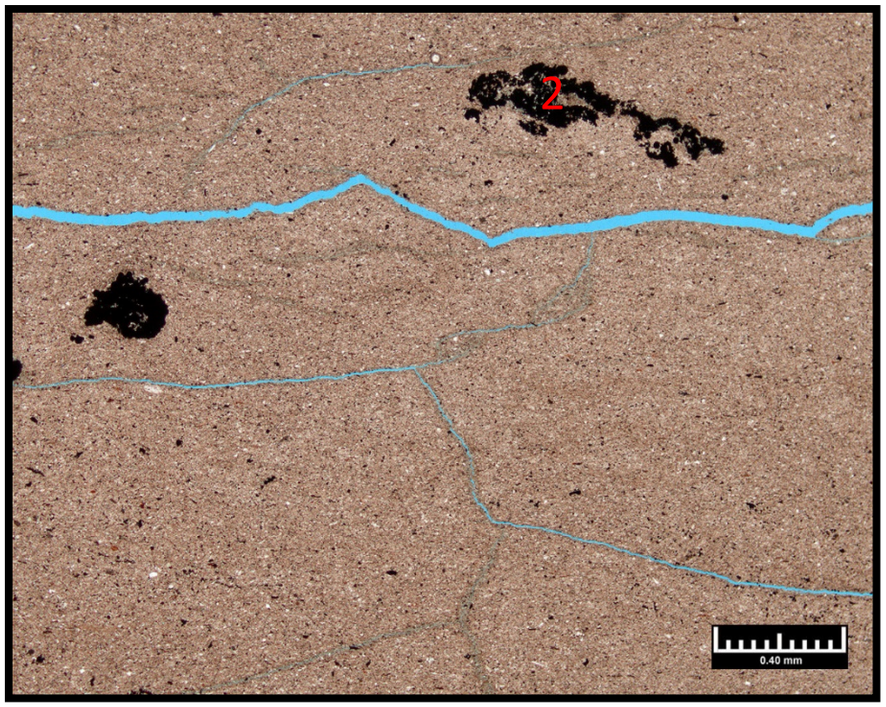
PETROGRAPHIC SUMMARY

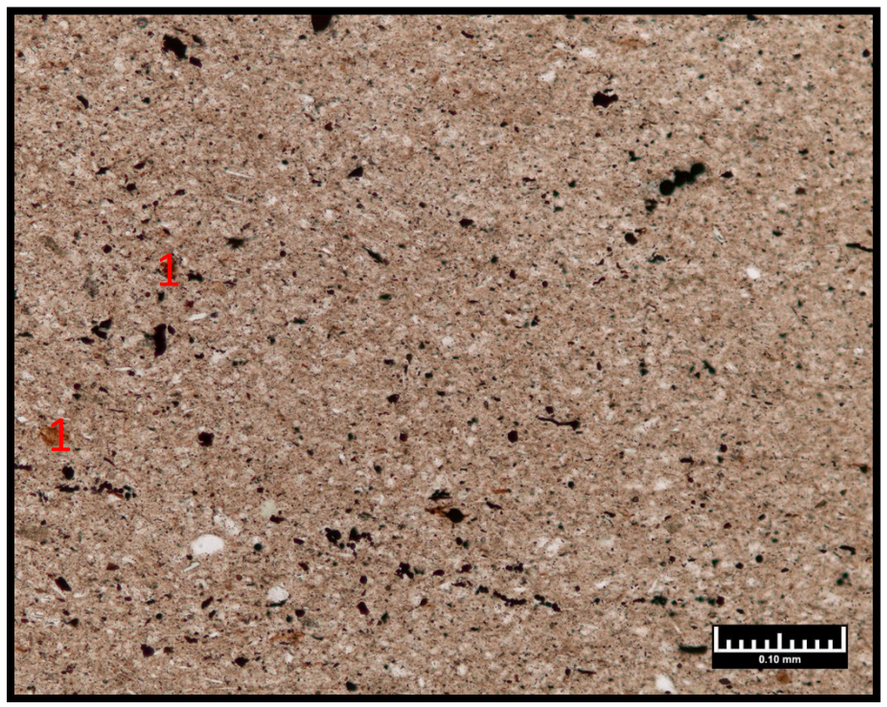
Photomicrographs depict a silty mudstone with a faintly laminated fabric. Minor discontinuous, lenticular laminations are filled mainly with silt-sized detrital grains (1). Elliptical and compacted burrows are scarce and filled mainly with silt-sized detrital grains. Detrital grains include monocrystalline quartz silt, muscovite mica, plagioclase silt, carbonaceous debris, phosphatic fragments, calcareous foraminifera tests, carbonate fragments, and mudstone rock fragments. The matrix contains a mixture of detrital mixed-layer illite/smectite along with illite and minor to common chlorite and kaolinite. Minor residual bitumen and rare light oil (2) are also mixed with the detrital clays. Framboidal pyrite partially replaces organic material and susceptible grains (3). Carbonate replacement of the matrix is rare (distinction between the type of carbonate content in the sample is difficult without dual carbonate staining, and this sample was not suitable for staining due to the presence of water-sensitive/expandable clays). Open fractures and micropores around the fractured areas (blue epoxy) are not natural and likely a result from sample preparation process.

Strategic Biofuels LLC
Louisiana Green Fuels Well 001
Caldwell, Onshore Louisiana

3627.50-3627.75 feet
Sample 1-28 P (TS #3)
Silty Mudstone

Project # HH-108056
Conventional Core





DETRITAL GRAINS/ALLOCHEMS:

Est. Avg. Grain Size = 0.01 mm; **Range**: <0.004-0.05 mm
Sorting: well (includes sand/silt portion only)
Compaction: moderate, based on preferred orientation of ductile grains and uniform extinction of detrital clays

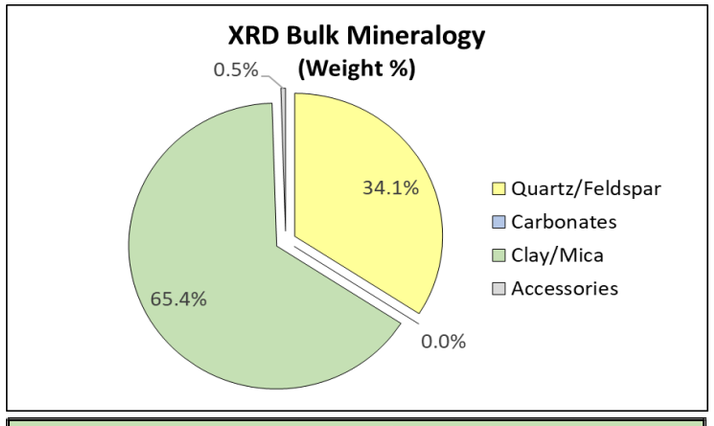
MAJOR COMPONENTS:
Monocrystalline quartz silt, muscovite mica
MINOR/ACCESSORY:
Plagioclase silt, potassium feldspar silt, carbonaceous debris, phosphatic fragments, calcareous foraminifera tests, undifferentiated bioclasts, carbonate fragments, mudstone rock fragments, peloids
MATRIX:
Abundant detrital illite/smectite and illite. Minor residual dead oil/bitumen and rare to minor light oil

DIAGENESIS:

MAJOR:
N/A
MINOR:
Minor pyrite replacement of matrix and organic material. Rare to minor quartz replacement of the matrix. Trace to rare carbonate replacement of the matrix.

PORE TYPES:

No naturally occurring porosity or microporosity observed within the sample based on white-light optical analysis. Refer to SEM analysis for micropore estimation. Epifluorescence optical analysis and FEE-SEM are recommended for further micropore characterization. Open fractures are likely a result from sample preparation process.



Clay Mineralogy (weight %)				
Chlorite	Kaolinite	Illite/Mica	Mx I/S*	Mx I/S**
7.6	5.4	22.4	0.0	30.0

PETROGRAPHIC SUMMARY

Photomicrographs depict a silty mudstone with a faintly laminated fabric. Detrital grains include abundant monocrystalline quartz silt, common muscovite mica, and minor amounts of plagioclase silt, potassium feldspar silt, carbonaceous debris, phosphatic fragments, calcareous foraminifera tests, undifferentiated bioclasts, carbonate fragments, mudstone rock fragments, and peloids. The matrix contains a mixture of detrital mixed-layer illite/smectite along with illite and minor to common chlorite and kaolinite. Minor residual bitumen and rare light oil (1) are also mixed with the detrital clays. Volcanic ash might also be present within the matrix. Framboidal pyrite partially replaces matrix (2), organic material, susceptible grains, and bioclasts. Carbonate replacement of the matrix is rare (distinction between the type of carbonate content in the sample is difficult without dual carbonate staining, and this sample was not suitable for staining due to the presence of water-sensitive/expandable clays). Open fractures and micropores around the fractured areas (blue epoxy) are not natural and likely a result from sample preparation process.