

Resource Report 6 Geological Resources



Resource Report No. 6

Geological Resources

Central Mainline Corridor Expansion Project

FERC Docket No. CP26-___-000

Volume I - Public

April 2026

RESOURCE REPORT NO. 6 – GEOLOGICAL RESOURCES

SUMMARY OF FILING INFORMATION

MINIMUM REQUIREMENT	LOCATION ADDRESSED
Identify the location (by milepost) of mineral resources and any planned or active surface mines crossed by the proposed facilities. (§ 380.12(h)(1) & (2)) <ul style="list-style-type: none"> Describe hazards to the facilities from mining activities, including subsidence, blasting, slumping or landsliding or other ground failure 	Sections 6.2 and 6.4
Identify any geologic hazards to the proposed facilities. (§ 380.12(h)(2)) <ul style="list-style-type: none"> For offshore this information is needed on a mile-by-mile basis and will require completion of geophysical and other surveys before filing 	Section 6.4
Discuss the need for and locations where blasting may be necessary in order to construct the proposed facilities. (§ 380.12(h)(3))	Section 6.3
For LNG projects in seismic areas, the materials required by "Data Requirements for the Seismic Review of LNG Facilities," NBSIR84- 2833. (§ 380.12(h)(5))	Not applicable
For underground storage facilities, how drilling activity by others within or adjacent to the facilities would be monitored, and how old wells would be located and monitored within the facility boundaries. (§ 380.12(h)(6))	Not applicable
ADDITIONAL INFORMATION	
Identify any sensitive paleontological resource areas crossed by the proposed facilities (Usually only if raised in scoping or if the project affects federal lands).	Section 6.5
Briefly summarize the physiography and bedrock geology of the project.	Section 6.1
If proposed pipeline crosses active drilling areas, describe plan for coordinating with drillers to ensure early identification of other companies' planned new wells, gathering lines, and aboveground facilities.	Not applicable
If the application is for underground storage facilities: <ul style="list-style-type: none"> Describe monitoring of potential effects of the operation of adjacent storage or production facilities on the proposed facility, and vice versa Describe measures taken to locate and determine the condition of old wells within the field and buffer zone and how the applicant would reduce risk from failure of known and undiscovered wells; and Identify and discuss safety and environmental safeguards required by state and federal drilling regulations 	Not applicable

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Abbreviations and Acronyms

asl	above sea level
ETWS	extra temporary workspace
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
HDD	horizontal directional drilling
IDNR	Iowa Department of Natural Resources
m	meter
MAOP	maximum allowable operating pressure
MP	milepost
Northern	Northern Natural Gas
NPPD	Nebraska Public Power District
PGA	peak ground acceleration
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Project	Central Mainline Corridor Expansion Project
ROW	right of way
SFHA	special flood hazard areas
USGS	U.S. Geological Survey

6.0 RESOURCE REPORT 6 – GEOLOGICAL RESOURCES

Resource Report 6 describes the physiography, geologic setting, mineral resources, geologic hazards, and paleontological resources associated with the proposed Project area, and the measures that Northern will implement to minimize impacts on geologic resources during construction and operation of the proposed pipelines and aboveground facilities.

Northern owns and operates a natural gas transmission pipeline system and associated aboveground facilities, including pipelines and facilities in Iowa and Nebraska. Northern is proposing to construct the Project, which will consist of (1) install 9.03 miles of 20-inch-diameter Omaha 3rd branch line loop, (2) install 14.64 miles of 30-inch-diameter NPPD Princeton Road power station branch line, (3) install 2.48 miles extension of the 20-inch-diameter Des Moines C-line, (4) uprate of the 20-inch-diameter Des Moines C-line south loop, (5) install new compressor station near Clarion, Iowa, (6) modify five compressor stations in Iowa and Nebraska allowing bidirectional flow, (7) install NPPD Princeton Road power station meter station, (8) install aboveground facilities including a launcher, receiver, tie-in valve settings, and uprate ancillary equipment. All Project components are located in various counties in Nebraska and Iowa.

Table 6.0-1 provides a list of the Project components along with their associated Iowa or Nebraska counties.

Table 6.0-1 Project Facilities and Location

Component	Project Facility	Facility Description	County, State
Omaha 3rd branch line loop	9.03-mile pipeline	20-inch-diameter loop	Cass and Sarpy, NE
	Palmyra compressor station	Temporary compression site	Otoe, NE
NPPD Princeton Road power station branch line	14.64-mile pipeline	30-inch-diameter branch line	Gage and Lancaster, NE
	Beatrice to Palmyra D-line and Beatrice to Palmyra E-line Block Valve 5 Setting	Temporary compression site	Lancaster, NE
Des Moines C-line branch line extension	2.48-mile pipeline	20-inch-diameter extension	Dallas, IA
	Ogden compressor station	Temporary compression site	Boone, IA
Des Moines C-line south loop uprate	Royal Estates reducing station	Disconnect existing MAOP control valve	Polk, IA
	Grimes Iowa Town Border Station	New MAOP regulator	Polk, IA
	Des Moines A-line launcher	New control valve	Polk, IA
Clarion compressor station	Proposed compressor station	ISO-rated 20,500-horsepower	Wright, IA
Beatrice compressor station	Facility modification	New scrubber install	Gage, NE
Guthrie Center compressor	Facility modification	New piping and valves	Guthrie, IA
Oakland compressor station	Facility modification	New piping and valves	Pottawattamie, IA

Component	Project Facility	Facility Description	County, State
Ogden compressor station	Facility modification	New piping and valves	Boone, IA
Palmyra compressor station	Facility modification	New piping, valves and regulation	Otoe, NE

6.1 Geologic Setting

6.1.1 Physiography and Topography

Fenneman (1928) developed a three-tiered classification system (Division, Province, Section) to characterize the physiography of the U.S. based on terrain, rock type, geologic structure, and geologic history. The Project occurs within the Central Lowland Physiographic Province of the Interior Plains Division. The Interior Plains Division encompasses a vast region generally bounded by the Precambrian core of North America to the northeast, the Appalachian Mountains to the east, the Gulf of Mexico to the south, and the Rocky Mountains to the west. The Central Lowland Province generally occupies the area of the U.S. around the Great Lakes that was affected by the most recent period of continental glaciation during the Pleistocene, including portions of Minnesota, Wisconsin, Michigan, Ohio, Illinois, and Pennsylvania, as well as parts of North Dakota, South Dakota, Nebraska, Iowa, and Missouri.

More specifically, the Project components lie within two different sections of the Central Lowland Province. Project components within the Dissected Till Plains Section, which is characterized by moderately dissected flat to rolling glacial till plains, include NPPD Princeton Road power station branch line, Omaha 3rd branch line loop, Beatrice compressor station, Palmyra compressor station, Oakland compressor station, and the Guthrie Center compressor station. The remaining Project components, including Des Moines C-line branch line extension, Des Moines C-line south loop uprate, Clarion compressor station, and Ogden compressor station, lie within the Western Lakes Section, which is characterized by nearly flat to gently rolling glaciated till plains with moraines and glacial lake plains in some areas. Based on USGS topographic maps (see Resource Report 1, Figure 1-2), the elevations of the Project components are shown in Table 6.1-1.

Table 6.1-1 Project Component Elevations

Project Component	Min Elevation (feet asl)	Max Elevation (feet asl)
Omaha 3rd branch line loop	1,020	1,324
NPPD Princeton Road power station branch line	1,324	1,482
Des Moines C-line branch line extension	1,000	1,052
Des Moines C-line south loop uprate	834	836
Clarion compressor station	1,138	1,150
Beatrice compressor station	1,340	1,386
Guthrie Center compressor	1,370	1,416
Oakland compressor station	1,222	1,306
Ogden compressor station	1,064	1,102
Palmyra compressor station	1,166	1,242

6.1.2 Surficial Geology

All Project facilities are located in the Central Lowland Province, which is a largely level region that rises to less than 1,000 feet asl in the east and less than 2,000 feet asl to the west. The province was subject to repeated Pleistocene glaciations and can be divided into regions based on glacial features, including the Great Lakes, Small Lakes, Driftless Area, Till Plains, Dissected Till Plains and Osage Plains. Underlying glacial deposits are mostly horizontal Paleozoic sandstones, shales, limestones, conglomerates, and coals (National Park Service 2018). The surficial geology of the Project facilities is identified as follows:

- Omaha 3rd branch line loop is Cedar Bluffs Till; loamy colluvium; clayey silt to silty clay loam colluvium; alluvial silt, clay, sand, and gravel; and loess. Cedar Bluffs Till is a poorly sorted clay-loam till containing pebble to boulder-sized clasts of limestone, chert, sandstone, shale, and glacial erratics (USGS 1994).
- NPPD Princeton Road power station branch line is Cedar Bluffs Till (USGS 1994).
- Des Moines C-line branch line is on the end moraine of the Dows Formation, a calcareous, unsorted to poorly sorted loamy till containing clasts primarily of shale, limestone and dolomite. The end moraine is characterized by broad ridges with local hummocky topography and a thickness of 2-30 m. The Des Moines C-line branch line is also identified as colluvium and sheetwash alluvium along the Des Moines River, consisting of sandy to silty clay containing clasts of sandstone, dolomite, limestone, and chert, with a thickness of 1-3 m (USGS 1991).
- Des Moines C-line south loop uprate is on the end moraine of the Dows Formation, as well as outwash sand that is fine to coarse-grained or silty and contains scattered pebbles, small cobbles, limestone, and dolomite clasts (USGS 1991).
- Clarion compressor station is a ground moraine of the Dows Formation, with a thickness of 4-25 m (USGS 1991).
- Beatrice compressor station is Illinoian alluvial gravelly sand derived from drainage of the Platte River in an alluvial fan deposit, underlain by Cedar Bluffs Till (USGS 1994).
- Guthrie Center compressor station is a poorly sorted clay loam till containing rounded pebbles and scattered cobbles and boulders, forming part of the Wolf Creek Formation across south-central Iowa (USGS 1991).
- Oakland compressor station is a poorly sorted clay loam till containing rounded pebbles and scattered cobbles and boulders, forming part of the Wolf Creek Formation across south-central Iowa (USGS 1991).
- Ogden compressor station is primarily a ground moraine and partly an end moraine of the Dows Formation, with a thickness of 4-25 m (USGS 1991).
- Palmyra compressor station is Cedar Bluffs Till (USGS 1994).

Northern completed geotechnical boreholes for one of the pipelines as follows. Northern is currently completing geotechnical boreholes on the Princeton Road power station branch line. No geotechnical boreholes are planned for the Des Moines C-line branch line extension nor the Des Moines C-line south loop uprate.

- 11 geotechnical borings along the Omaha 3rd branch line loop, which indicated the presence of clayey and silty loess and till, and sandy alluvium to depths of up to 72 feet below ground surface.

- Nine geotechnical borings along the Princeton Road power station branch line, which indicated the presence of clayey loess and till, and clayey and sandy alluvium to depths of up to 90 feet below ground surface.

Additional discussion on the results of the geotechnical investigation is included in Section 6.7 and copies of the geotechnical report or draft borehole logs are included in Appendix 6B.

6.1.3 Bedrock Geology

The bedrock underlying the Project components in Nebraska and Iowa consists of Pennsylvanian to Early Cretaceous sandstones, limestones and shales. The bedrock was deposited under tectonically stable geologic conditions in a shallow marine water that flooded Iowa and Nebraska approximately 500 million years ago. Bedrock geology is presented in Figure 6-2.

- The Omaha 3rd branch line loop overlies the Shawnee Group, the Douglas Group, the Lansing Group, and the Kansas City Group, all of which consist of Pennsylvanian fossiliferous limestone and shale. It also overlies the Dakota Sandstone, a Lower Cretaceous fine to coarse-grained, micaceous sandstone interbedded with sandy carbonaceous shale (Burchett et al. 1972).
- The NPPD Princeton Road power station branch line is in the Dakota Sandstone, as well as the Lower Permian Council Grove Group and Admire Group, which consist of fossiliferous shale and interbedded limestone (Burchett et al. 1972).
- The Des Moines C-line branch line and the Des Moines C-line south loop uprate are in the Cherokee Group, which consists of Pennsylvanian shale and sandstone with some coal and mudstone and minor fossiliferous limestone (Pope et al. 2002).
- The Beatrice compressor station is in the Lower Permian Chase Group, which consists of cherty, fossiliferous limestone and shale with a maximum thickness of 300 feet (Burchett et al. 1972).
- Clarion compressor station is in the Dakota and Windrow Formations, which consist of partly pebbly to conglomeratic sandstone as well as mudstone, with some chert residuum/gravel and siderite pellets and a maximum thickness of 150 feet (Witzke et al. 2001).
- The Guthrie Center compressor station is in the Dakota Formation, which consists of very fine to coarse-grained, partly pebbly to conglomerate sandstone, as well as mudstone (Pope et al. 2002).
- The Oakland compressor station overlies the Dakota Formation, the Douglas Group and the Shawnee Group; which consist primarily of sandstone, mudstone, shale, and fossiliferous limestone (Witzke et al. 2003).
- The Ogden compressor station is in the Pennsylvanian Cherokee Group, which consists of shale and sandstone with some coal and mudstone and minor fossiliferous limestone (Pope et al. 2002).
- The Palmyra compressor station overlies the Wabaunsee Group, which consists of Pennsylvanian shale, sandstone and interbedded fossiliferous limestone with a maximum thickness of 300 feet (Burchett et al. 1972).

Bedrock was encountered in three geotechnical borings on the Omaha 3rd branch line loop at depths between 72 and 88 feet below ground surface. The bedrock was identified as sandstone consistent with the Pennsylvanian fossiliferous limestone and shale. Additional

information on impacts to bedrock is included in Section 6.7. No bedrock was encountered in geotechnical borings on the NPPD Princeton Road power station branch line. No geotechnical borings are planned for the Des Moines C-line branch line extension nor the Des Moines C-line south loop uprate.

6.2 Mineral Resources

The mineral industry in Iowa consists of construction sand and gravel, crushed stone, industrial sand and gravel, lime, and Portland cement. Mineral production includes sand and gravel in Boone, Dallas, Guthrie, Polk, Pottawattamie, and Wright counties, clay in Dallas and Polk counties, and crushed stone in Polk and Pottawattamie counties (USGS 2019a). There are no active mineral resource operations or coal mines within 0.5 mile of the proposed pipeline or aboveground facilities in Iowa (IDNR 2026; Iowa Department of Agriculture and Land Stewardship 2026). The nearest abandoned underground coal mine is approximately 0.41 mile southeast of the south end of the Des Moines C-line branch line workspace (IDNR 2026; Iowa Department of Agriculture and Land Stewardship 2026). Iowa is not an oil-producing state and does not have any proven oil or natural gas reserves. Over 100 exploration wells have been drilled in the southeastern corner of the state, more than 80 miles from the closest Project area and their combined production was less than 500 barrels. There are no current oil and gas production facilities in Iowa (U.S. Energy Information Administration 2025a).

The mineral industry in Nebraska consists of construction sand and gravel, crushed stone, industrial sand and gravel, lime and Portland cement. Mineral production includes sand and gravel in Cass and Sarpy counties, crushed stone in Cass and Gage counties, cement in Cass County, and clay in Lancaster County (USGS 2019b). Two sand and gravel mines are located within 0.25 mile of the Omaha 3rd branch line loop and are listed in Table 6.2-1. No mines are located within 0.25 mile of any other Project component or facility in Nebraska. Nebraska does have crude oil or natural gas reserves or production; however, the producing wells are located in western and southwestern Nebraska, which is more than 100 miles from the nearest Project component. Nebraska does not have significant coal reserves and does not have any operating coal mines (U.S. Energy Information Administration 2025b).

On the Omaha 3rd branch line loop, two active or reclaimed pits are surface mines which are a source of sand and gravel. Northern also coordinated with the mine owners when selecting the proposed pipeline route to limit impacts to future operations. The active gravel pit (Barr Lane pit) located along the pipeline extension are separated by existing pipelines or public roads, which limit future expansion of any mining activities towards the Omaha 3rd branch line loop. The owner of the Barr Lane pit, Western Sand and Gravel, has also verified they do not plan to expand the pit beyond its current location.

Table 6.2-1 Mineral Resources within 0.25 mile of the Project

Project Component	Approximate MP	Mineral Resource¹	Distance/Direction from Construction Work Area (feet)	Primary Method of Extraction	Status	Quarry Designation or Name
Omaha 3rd Branch Line Loop	8.10	Sand and Gravel	0	N/A	Reclaimed	Unknown
	8.10	Sand and Gravel	100 W of OMA-TAR-009	N/A	Active	Barr Lane Pit

¹ Data source: NDWEE website and desktop analysis

Based on the above information, construction and operation of the Project is not expected to impact mineral resources in the area.

6.3 Blasting

Based on the soil mapping and site-specific geotechnical investigations, blasting is not expected to be necessary for construction of the Project. The site-specific geotechnical investigations indicate that bedrock does not occur within trench excavation depths.

6.4 Geologic Hazards

Geologic hazards are conditions that present a risk to life and/or property if triggered. Certain geologic hazards such as landslides can be triggered by construction activities, whereas other geologic hazards including earthquakes and the expression of karst features on the land surface occur naturally and are primarily of concern to operating natural gas transmission facilities.

6.4.1 Karst Terrain

Karst terrain results from the dissolution of soluble bedrock such as limestone, dolomite, or gypsum through the circulation of slightly acidic groundwater. Karst features such as sinkholes can form suddenly, posing a threat to buildings, roadways, pipelines, and other surface improvements.

An assessment of the potential for karst terrain was conducted using data available from the USGS. The majority of the Project components are underlain by a thick layer of glacial drift, which significantly reduces the likelihood of the surface expression of karst bedrock features. The type and thickness of the unconsolidated material over carbonate bedrock is related to the frequency and type of sinkhole that can form. The USGS states that surface expression of sinkholes and other karst features is unlikely in areas where karst bedrock is covered by more than 50 feet of unconsolidated material (Weary and Doctor 2014). Figure 6-2 depicts the Project where carbonate bedrock is covered by glacial drift. With the exception of approximately 2.75 miles at the north end of the Omaha 3rd branch line loop crossing the Platte River, the USGS has identified no areas with carbonate bedrock that is overlain by less than 50 feet of unconsolidated material. Geotechnical boring results from the Platte River crossing encountered limestone bedrock at depths between 89 and 92 feet below ground surface.

Based on the site-specific geotechnical boring results, bedrock is not expected to be encountered during the construction of the Omaha 3rd branch line loop, except for the Platte River HDD crossing. Bedrock is not expected to be encountered during construction of any of the other Project aboveground facilities.

Based on Northern’s experience operating and monitoring existing aboveground and pipeline facilities in Iowa and Nebraska, Northern does not expect karst terrain to present a danger to either of the proposed Project’s facilities. Northern will be alert for surface expressions of potential subsurface features, and engineering controls, if needed, will be employed as appropriate.

6.4.2 Landslides

Landslides occur in various forms and timeframes, from slow creep to collapse, and have the potential to significantly damage buildings, roads, pipelines, and other structures.

While most of the Project facilities are located on relatively level areas and not near any areas known for having the potential for landslides or slope instability, a few components are located in more susceptible areas. Areas of the Omaha 3rd branch line loop that cross the Platte River have a high potential for landslides, and the Des Moines C-line branch line is near areas of moderate to high landslide susceptibility along the Des Moines River and tributary streams (USGS 2026a). The crossing of the Platte River will be completed by HDD at a depth of at least 50 feet below ground level in the areas with high landslide hazard, which minimizes the potential for landslides to impact the pipeline. The Des Moines C-line branch line workspace has been designed to avoid the steep slopes associated with the tributary streams and landslides will have no impact on the pipeline.

Northern has reviewed site-specific civil survey elevation data to identify steep slopes present for the Project. Slopes between 5% and 15%, 15% and 30% and greater than 30% are identified by beginning and ending MP in Appendix 6A. All slopes greater than 30% are within areas where the pipeline will be installed by HDD. Two of five slopes between 15% and 30% on the Omaha 3rd branch line loop are within areas where the pipeline will be installed by HDD. The only slope between 15% and 30% on the NPPD Princeton Road power station branch line will be open cut.

In accordance with the FERC Plan, Northern will install temporary trench plugs and temporary slope breakers during construction on slopes greater than 5% for the Project. The temporary slope breakers will channel water off the ROW through a J-hook or other baffling device to limit water flow down long steep slopes. Temporary trench plugs will reduce the velocity of water flowing along the trench and volume of water that collects at the bottoms of slopes. In accordance with the FERC Plan, Northern will install permanent trench breakers and permanent slope breakers in areas of steep slopes on the Project. Trench breakers are designed to prevent preferential water flow along the pipeline trench by diverting subsurface water flow to the land surface. Groundwater discharging to the land surface is then redirected off the ROW by slope breakers. Used in combination, these structures prevent subsurface piping of soils that can lead to slope instability and failure.

6.4.3 Seismicity

Seismicity refers to the frequency, intensity and distribution of earthquakes in a given area. In general, the higher the magnitude of an earthquake the stronger the ground motion and the greater the resulting damage to structures and infrastructure. Earthquakes also can trigger related events including ground faults and soil liquefaction, a condition where granular, saturated soil temporarily loses its cohesive strength due to strong and prolonged shaking.

While Nebraska and Iowa are within one of the least seismically active areas of the U.S., there have been at least 11 earthquakes in Iowa and at least 128 earthquakes in Nebraska since 1900 (USGS 2026b; USGS 2026c). According to the USGS, the closest earthquake to the Project components in Iowa occurred on July 16, 2004, and had a magnitude of 3.5. The earthquake was located near Riverton, Iowa, approximately 48 miles south-southwest of the Oakland compressor station (USGS 2026c). The closest earthquake to the Project components in Nebraska occurred January 6, 2014, and had a magnitude of 2.9. The earthquake was located near Liberty, Nebraska, approximately 13 miles southeast of the Beatrice compressor station (USGS 2026b).

An assessment of the potential for seismic ground motions within the Project was conducted using data available from the USGS' 2023 Update to the U.S. National Seismic Hazard Model (USGS 2024). USGS National Seismic Hazard Probability Mapping shows that for the Project's area, within a 50-year period, there is a 2% probability of an earthquake with an effective PGA of 2 to 4% g, and a 10% probability of an earthquake with an effective PGA of less than 2% being exceeded (USGS 2024). For reference, PGA of 10% (0.1 g) is generally considered the minimum threshold for damage to older structures or structures not constructed to resist earthquakes. Thus, the risk that a damaging earthquake will occur during the operating life of the proposed pipelines is very low. As a result, the potential for soil liquefaction and surface faulting also is very low. The USGS does not map any surface faults in Iowa or Nebraska that have been active in the Quaternary period (the last 1.6 million years) (USGS 2006).

6.4.4 Flooding and Scour

FEMA Risk Maps have been prepared for the Project components. SFHA are defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood also is referred to as the base flood or 100-year flood elevation.

A review of the FEMA Risk Maps indicates all components except portions of the Omaha 3rd branch line loop and NPPD Princeton Road power station branch line are located outside of any identified SFHAs (Figure 6-3).

On the Omaha 3rd branch line loop, Northern identified locations where SFHAs will be crossed by the proposed pipeline:

- Between MP 7.66 and MP 8.10 will be crossed primarily with HDD; the HDD point on the south side of Platte River is located outside the SFHA. The HDD point and OMA-ETWS-047 are located within the SFHA on the north side of Platte River
- Between MP 8.24 and MP 8.75 will be crossed open-cut methods; OMA-TAR-010, OMA-ETWS-048, OMA-ETWS-049, and OMA-ETWS-050 are located within the SFHA. A portion of OMA-TAR-009 is also located within the SFHA
- 500-year flood zone between MP 8.25 and MP 8.76 will be crossed open-cut methods; a portion of OMA-ETWS-053 is also located within the 500-year flood zone
- Additional SFHA is located east of MP 7.68 outside the Project workspace

On the NPPD Princeton Road power station branch line, Northern identified locations where SFHAs will be crossed by the proposed pipeline:

- Is located immediately adjacent to PRB-ETWS-001, where the start of the pipeline will occur
- Between MP 2.81 and 3.02 will be primarily crossed by HDD; the HDD point on the west side of Shaw Creek is located outside the SFHA. A portion of PRB-SA-003 and PRB-ETWS-017 are located within the SFHA. The HDD point and PRB-ETWS-016 are located within the SFHA on the east side of Shaw Creek
- Between MP 3.25 and MP 3.33 will be crossed open-cut methods; a portion of PRB-ETWS-018, PRB-ETWS-019, PRB-ETWS-020, and PRB-ETWS-021 are located within the SFHA
- Between MP 3.81 and MP 3.89 will be crossed open-cut methods; a portion of PRB-ETWS-024 is located within the SFHA
- Between MP 7.21 and MP 7.37 will be crossed open-cut methods; PRB-ETWS-046 and PRB-ETWS-047 are located within the SFHA. A portion of PRB-ETWS-044 is located within the SFHA
- Between MP 7.40 and MP 7.57 will be primarily crossed by HDD; the HDD point on the west side of United States Highway 77 is located outside the SFHA. The HDD point, PRB-TAR-004, and portions of PRB-ETWS-048 and PRB-ETWS-049 are located within the SFHA on the east side of United States Highway 77
- Is located within PRB-ETWS-050, and PRB-ETWS-050 along United States Highway 77
- Between MP 11.26 and MP 11.29 will be primarily crossed by HDD; the HDD point on the north side of Middle Branch Big Nemaha River is located outside the SFHA. The HDD point and portions of PRB-ETWS-068 and PRB-ETWS-070 are located within the SFHA on the south side of Middle Branch Big Nemaha River
- Between MP 12.82 and MP 12.86 will be crossed open-cut methods; portions of PRB-ETWS-078, PRB-ETWS-79, and PRB-ETWS-080 are located within the SFHA
- Between MP 13.21 and MP 13.27 will be crossed open-cut methods
- Between MP 13.78 and MP 13.82 will be primarily crossed by HDD; with both HDD points located outside the SFHA

For mitigation within the SFHAs, Northern will stake down any construction mats, anchor or move any loose equipment outside of the SFHAs, and limit fuel storage and refueling operations inside the SFHAs.

Northern will complete seven waterbody crossings during construction of the Project; six of the waterbodies will be crossed via HDD, one will be crossed via open cut. The open cut crossing (PRB-S12 on NPPD Princeton Road power station branch line) will be buried with at least 4.0 feet of cover.

- Two waterbody crossings will be crossed by HDD on the Omaha 3rd branch line loop: OMA-S08 and OMA-S10 will be 75 and 110 feet below the bed of the waterbody, respectively
- Five waterbody crossings on the NPPD Princeton Road power station branch line, four by HDD and one by open-cut: PRB-S15, PRB-S16, PRB-S18, and PRB-S19 will be 27, 27, 34, and 27 feet below the bed of the waterbody, respectively

Due to the depths of the HDDs beneath the waterbodies, Northern does not anticipate scour will impact the crossing locations. No crossings of any waterbodies will occur on the other Project components; therefore, impacts from flooding and scouring will not impact these components. Additional information on the waterbodies is included in Resource Report 2, Table 2.2-1.

6.5 Paleontological Resources

Half of the Project components (Omaha 3rd branch line loop, NPPD Princeton Road power station branch line and Clarion, Guthrie Center, and Oakland compressor stations) are located in areas with Cretaceous sedimentary rocks, deposited in shallow marine and terrestrial environments. Reptiles and cartilaginous fish are some of the fossils that may be found in these areas (The Paleontology Portal 2025). The other Project components (Des Moines C-line branch line, Des Moines C-line south loop uprate and Beatrice, Ogden, and Palmyra compressor stations) are located in areas of the Paleozoic era where warm, shallow seas covered the area. These waters were home to many marine organisms, and their fossils can be found in the rocks formed from sediments deposited on the ancient sea floor. Fossils that can be found in these areas include cephalopods, cartilaginous fish, sponges, algae, forams, annelids, conodonts, crinoids, trilobites, bryozoans, gastropods, and brachiopods (The Paleontology Portal 2025).

The Oakland compressor station and Des Moines C-line south loop uprate are located in areas where Late Pleistocene vertebrates have been found (The Paleontology Portal 2025). The potential for construction to encounter important paleontological resources at either the Des Moines C-line south loop uprate sites or the Oakland compressor station is unlikely. These are all existing facilities that have underground previous ground disturbance. Additionally, deeper excavations are not planned as these facilities. The potential for encountering important paleontological resources while constructing the Project pipelines is expected to be limited as the proposed pipelines generally parallel existing lines where ground disturbance has occurred and the depth of the installation will be in unconsolidated recently deposited soils.

6.6 Impacts and Mitigation

The overall impacts of the Project on topography and geologic materials will be minor and limited to the temporary disturbance of slopes within the workspaces resulting from grading and trenching operations. The need to conduct blasting is not anticipated. Northern will further reduce impacts by implementing measures in FERC's Plan and Northern's Procedures to control water and minimize erosion during construction, returning contours, to preconstruction conditions to the extent practicable to avoid long-term impacts, and restoring vegetative cover over disturbed areas.

The risk of excavation and grading activities initiating a localized slope failure is low, as the proposed pipelines cross areas with little slope and slope failures are not common in the areas. The risk of initiating a slope failure will be further reduced by controlling water, minimizing erosion, restoring surface contours, and restoring vegetative cover in the disturbed areas as noted above. Northern does not expect karst terrain to impact the Project facilities and the areas do not experience significant earthquakes. Therefore, Project should not initiate or be affected by karst features or seismic activity. In addition, the pipelines have been designed and will be constructed, installed, and maintained in accordance with

applicable regulations that are designed to ensure the integrity of the facilities, further reducing the potential for damage from geological hazards.

Hydro-fracture assessments were conducted on all six of the HDDs for the Omaha 3rd branch line loop. The assessments were based on comparing the modelled maximum formation limiting pressure with the minimum required drilling fluid annular pressure anticipated to maintain circulation of cuttings to surface using the boring logs and what are considered to be conservative parameters for the soils properties. The results indicate the risk of an inadvertent release is low for all HDDs and will be continuously monitored and managed throughout the HDD installations. Northern will implement its Project-specific HDD Monitoring, Inadvertent Return Response, and Contingency Plans, see Resource Report 1, Appendix 1A, to minimize potential impacts associated with installation of the pipeline using the HDD method. The complete HDD feasibility study including mitigation recommendations and hydro-fracture analysis are included in the HDD Plan.

The Project will not impact mineral resources and pose only a low risk to paleontological resources. Northern's environmental inspector and other construction staff will be advised to watch for paleontological resources. In the unlikely event that fossils are encountered during construction, Northern will temporarily cease excavation in the area and will notify the state geological survey or natural history museum, as well as FERC, so that all finds may be properly documented.

6.7 Geotechnical Investigations

Northern conducted a geotechnical investigation along the Omaha 3rd branch line loop to obtain information used in the design of the six HDDs. The soil profile encountered at all 11 boreholes generally consisted of loess consisting of lean clay with sand and silty clay, till consisting of lean clay with sand and alluvium consisting of clayey sand and sand. Groundwater was encountered within 6 of 11 borings. Water levels observed in the soil layers were between 6 and 34 feet and were generally found within lean clay with sand units.

Northern will conduct a geotechnical investigation along the NPPD Princeton Road power station branch line to obtain information used in the design of seven HDDs. Soil information will be provided when the investigation is complete.

Northern will not complete a geotechnical investigation along the Des Moines C-line branch line extension as the pipeline will be installed without the use of HDDs.

A final geotechnical report for the Omaha 3rd branch line loop and draft geotechnical borehole logs for the NPPD Princeton Road power station branch line are included in Appendix 6B. A table of geotechnical testing results for the Project is included as Table 6.7-1. A geotechnical investigation will be completed at the Clarion compressor station and will be provided in a supplemental filing. Geotechnical investigation was not required at any of the other project components.

Table 6.7-1 Geotechnical Testing Results for the Project

Pipeline	Crossing Number/ Ref. Drawing	Begin MP	End MP	Arc Drill Length (feet)	Max HDD Depth (feet)	Related Geotechnical Borings	Approximate Depth to Bedrock (feet)
Omaha 3rd Branch line loop	OMA-P4-1	1.32	1.35	180	19	BH-01	>40
	OMA-P4-2	2.34	2.36	126	15	BH-02	>40
	OMA-P4-3	4.35	4.37	140	19	BH-03	>35
	OMA-P4-4	6.37	6.48	559	31	BH-04	>50
	OMA-P4-5	6.91	6.94	145	14	BH-05	>40
	OMA-P4-6	7.32	8.28	5,129	190	BH-06, BH-07, BH-08, BH-09	82, 86, 88, >90
NPPD Princeton Road power station branch line	PRB-P4-1	1.87	1.91	190	16	BH-01	>40
	PRB-P4-2	2.86	3.02	879	35	BH-01A	>40
	PRB-P4-3	6.13	6.17	210	16	BH-04	>40
	PRB-P4-4	7.42	7.42	1,865	85	BH-04A, BH-05, BH-06	>90
	PRB-P4-5	10.28	10.37	487	22	BH-07	>50
	PRB-P4-6	11.17	11.37	1,058	39	BH-08	>70
	PRB-P4-7	13.72	13.91	989	34	BH-10A, BH-10B	TBD
Des Moines C-Line branch line extension	No crossings						

Northern utilized the results of the geotechnical borings to finalize the HDD designs, specifically optimizing the angle of entry and adjusting the entry and exit pit locations. The current HDD design indicates that only one of the HDDs, OMA-P4-6, on the Omaha 3rd branch line loop will encounter bedrock. Northern adjusted its drilling profile on this drill to meet the design parameters for bedrock. The remaining HDDs for the Project will not encounter bedrock; therefore, Northern designed them to meet the parameters of the unconsolidated materials along the profiles. Northern has provided additional information on the feasibility of the HDDs along with safety factors and design considerations and recommendations in Resource Report 1, Appendix 1A.

6.8 References

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https://ngmdb.usgs.gov/ngm-bin/pdp/zui_viewer.pl?id=40584. Accessed March 3, 2026.

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Resource Report 6

Figures

Figure 6-1
Surficial Geology

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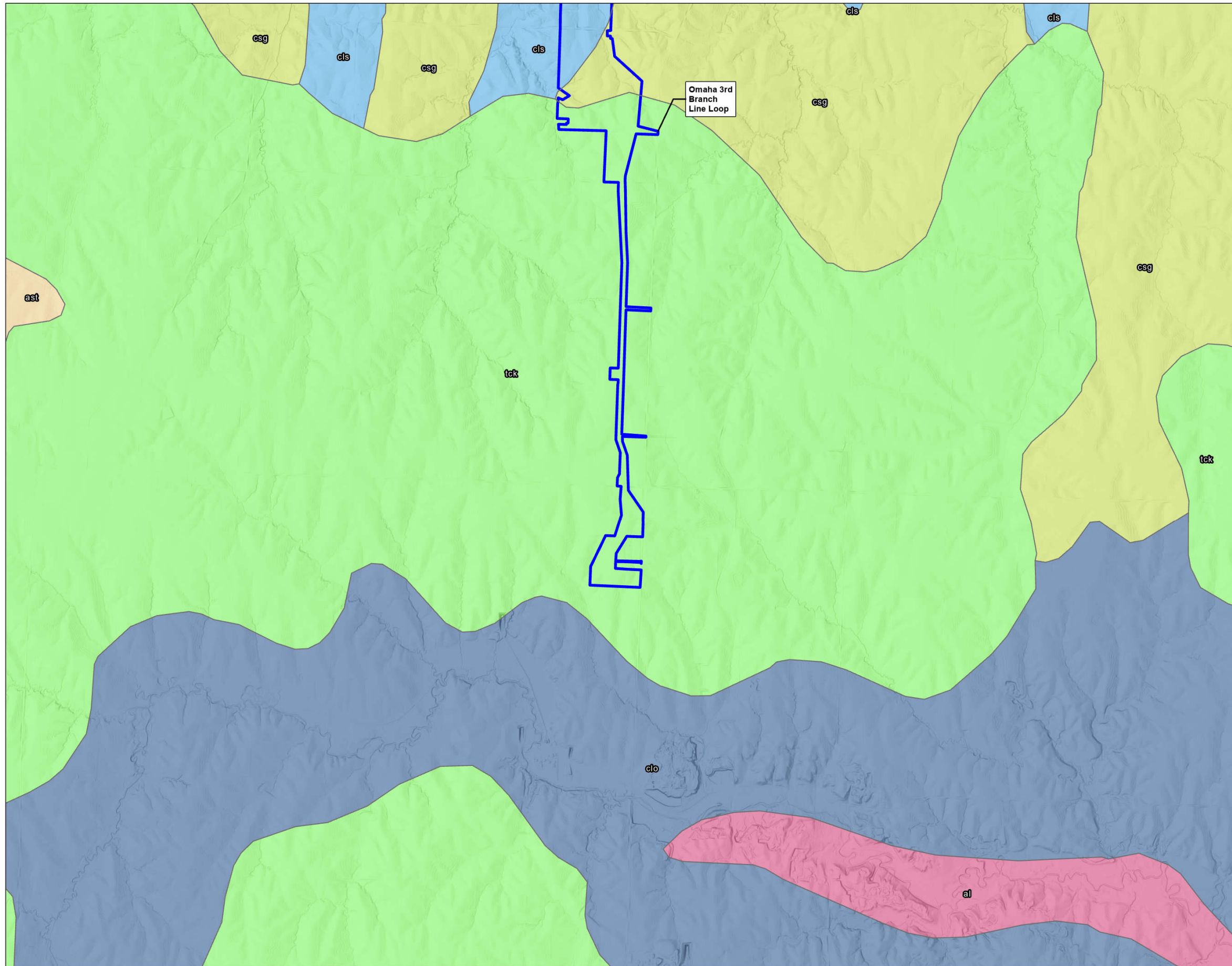
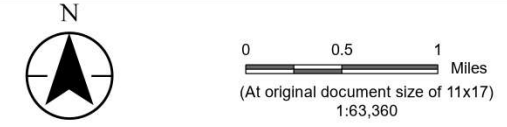
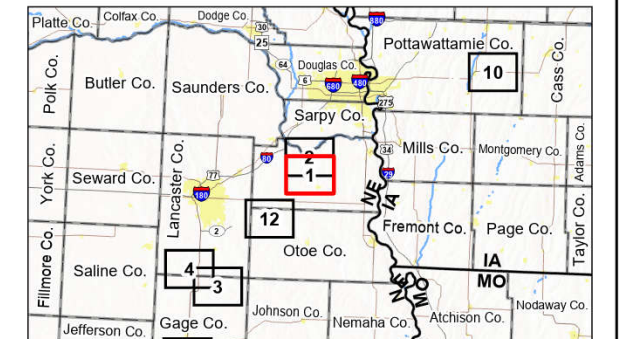


Figure No. **6-1**
 Title **Surficial Geology Omaha 3rd Branch Line Loop**
 Client/Project Northern Natural Gas 172609221
 Central Mainline Corridor Expansion Project

Project Location Cass County, Nebraska Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-23



- Legend
- Environmental Survey Boundary
 - Alluvial Gravelly Sand And Locally Underlying Lacustrine Sand (ast)
 - Alluvium (al)
 - Chert-Clast Clayey Silt To Silty Clay Loam Colluvium (cls)
 - Clay Loam Till (tck)
 - Sandstone- And Shale-Clast Loamy Colluvium (csg)
 - Shale-, Chalk-, And Chalky Limestone-Clast Loamy Colluvium (clo)



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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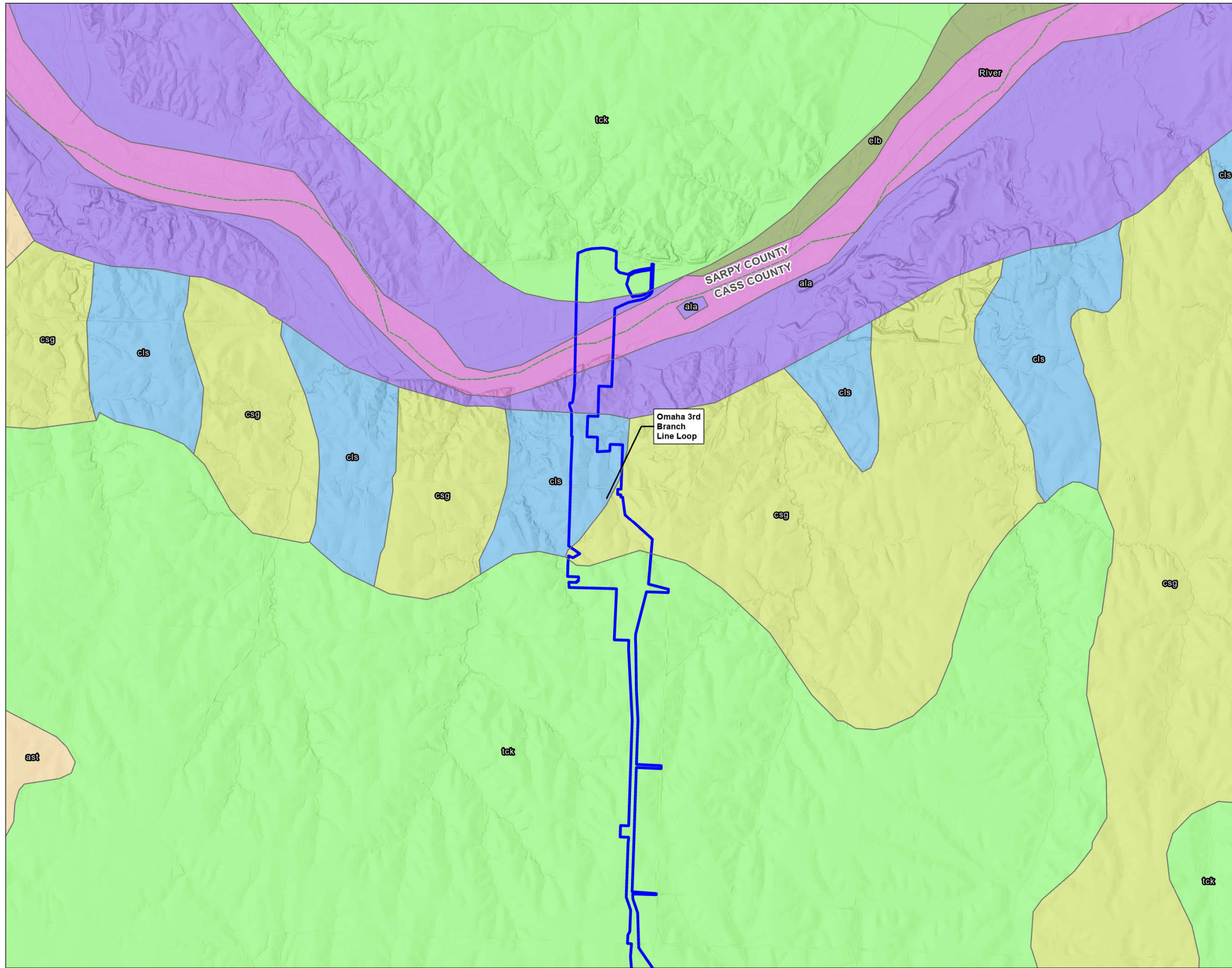
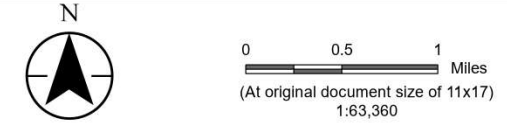
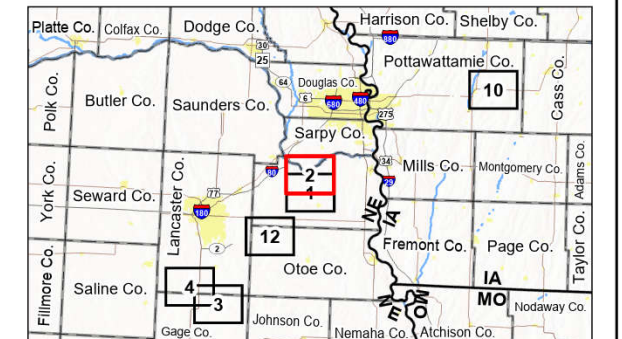


Figure No. **6-1**
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 Client/Project Northern Natural Gas 172609221
 Central Mainline Corridor Expansion Project

Project Location Sarpy & Cass Counties, Nebraska Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-23



- Legend
- Environmental Survey Boundary
 - Alluvial Gravelly Sand And Locally Underlying Lacustrine Sand (ast)
 - Alluvial Silt, Clay, Sand, And Gravel (ala)
 - Chert-Clast Clayey Silt To Silty Clay Loam Colluvium (cls)
 - Clay Loam Till (tck)
 - Loess (elb)
 - Platte River (River)
 - Sandstone- And Shale-Clast Loamy Colluvium (csg)



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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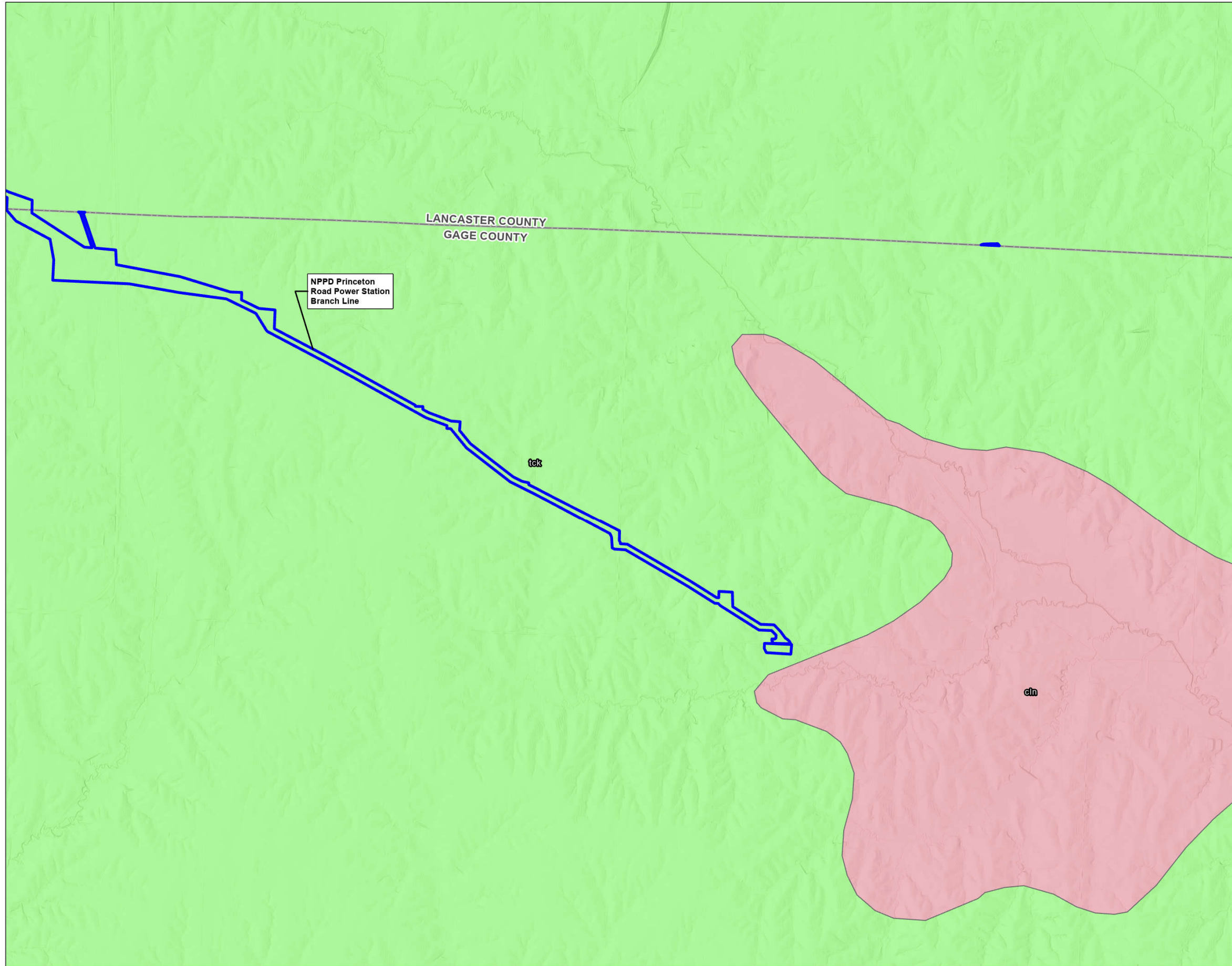


Figure No.
6-1

Title
Surficial Geology
NPPD Princeton Road Power Station
Branch Line

Client/Project
 Northern Natural Gas
 Central Mainline Corridor Expansion Project

172609221

Project Location
 Lancaster & Gage Counties, Nebraska

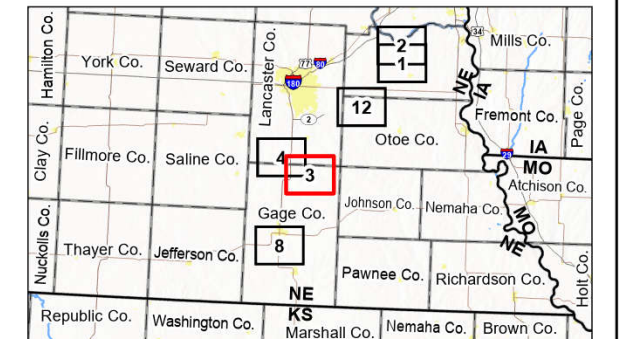
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 TR by SF on 2026-02-27
 IR by SK on 2026-03-23



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 (At original document size of 11x17)
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Legend

- Environmental Survey Boundary
- Clay Loam Till (tck)
- Shale-, Limestone-, And Chert-Clast Silty To Clayey Colluvium (cln)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade



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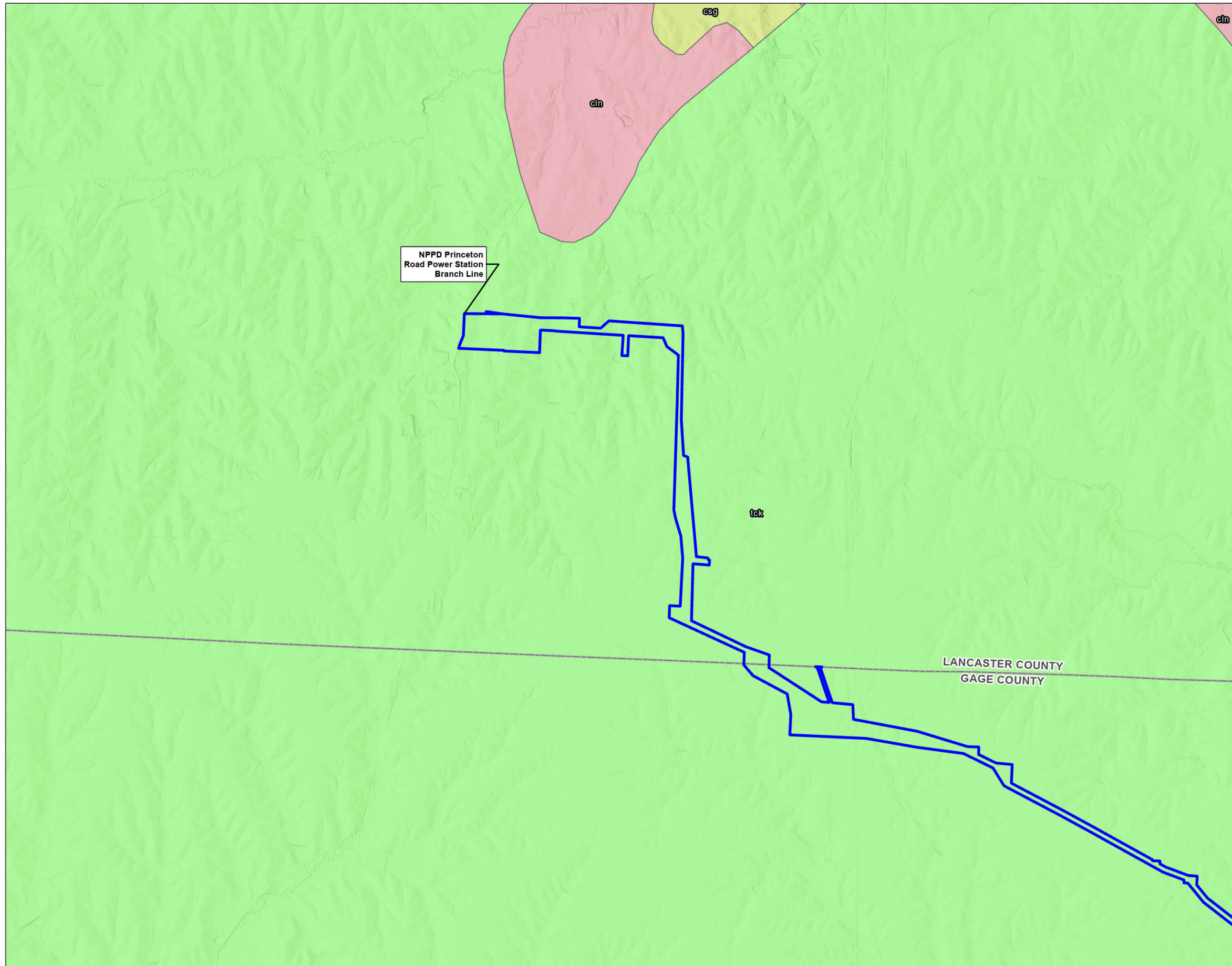
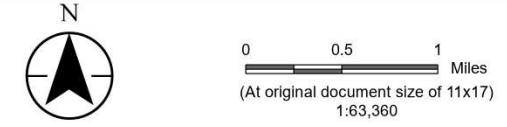


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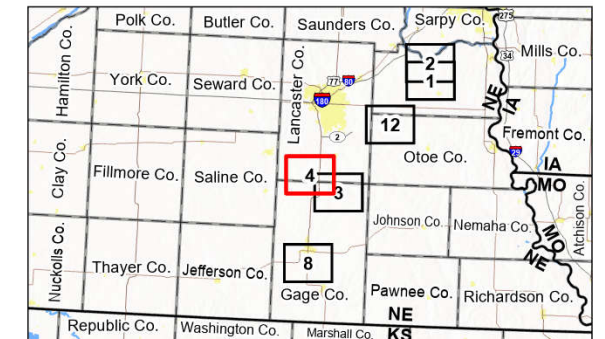
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Surficial Geology
NPPD Princeton Road Power Station
Branch Line

Client/Project 172609221
 Northern Natural Gas
 Central Mainline Corridor Expansion Project

Project Location Lancaster & Gage Counties, Nebraska
 Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-23



- Legend
- Environmental Survey Boundary
 - Clay Loam Till (tck)
 - Sandstone- And Shale-Clast Loamy Colluvium (csg)
 - Shale-, Limestone-, And Chert-Clast Silty To Clayey Colluvium (cin)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
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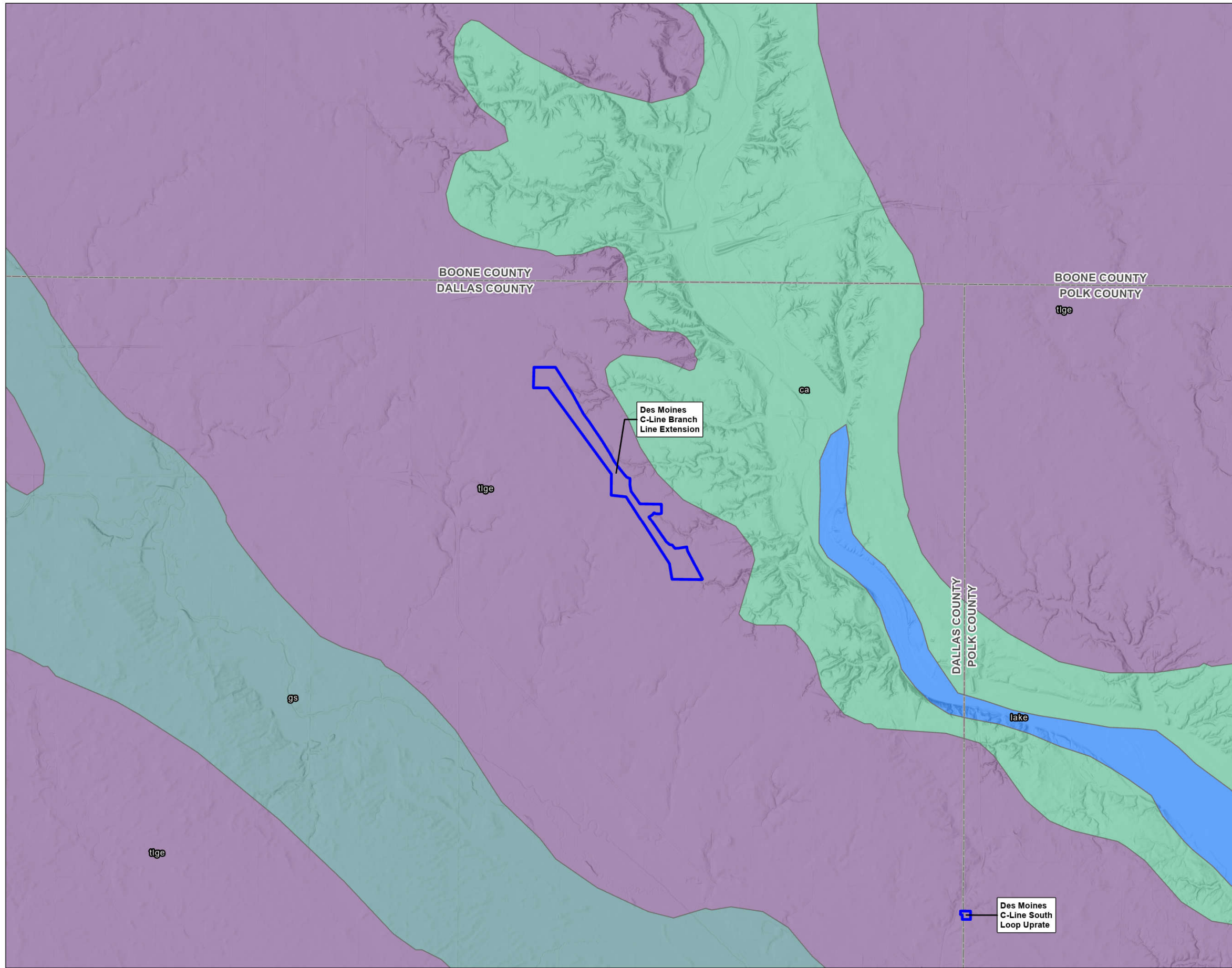


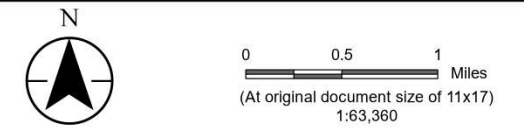
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Title
**Surficial Geology
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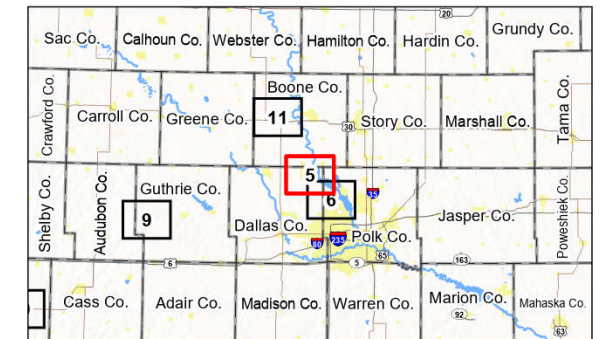
Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Dallas & Polk County, Iowa

Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-23



- Legend
- Environmental Survey Boundary
 - Colluvium And Sheetwash Alluvium (ca)
 - Lake
 - Loamy Till--End Moraine (tlge)
 - Outwash Sand (gs)



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS
3. Background: Esri World Hillshade

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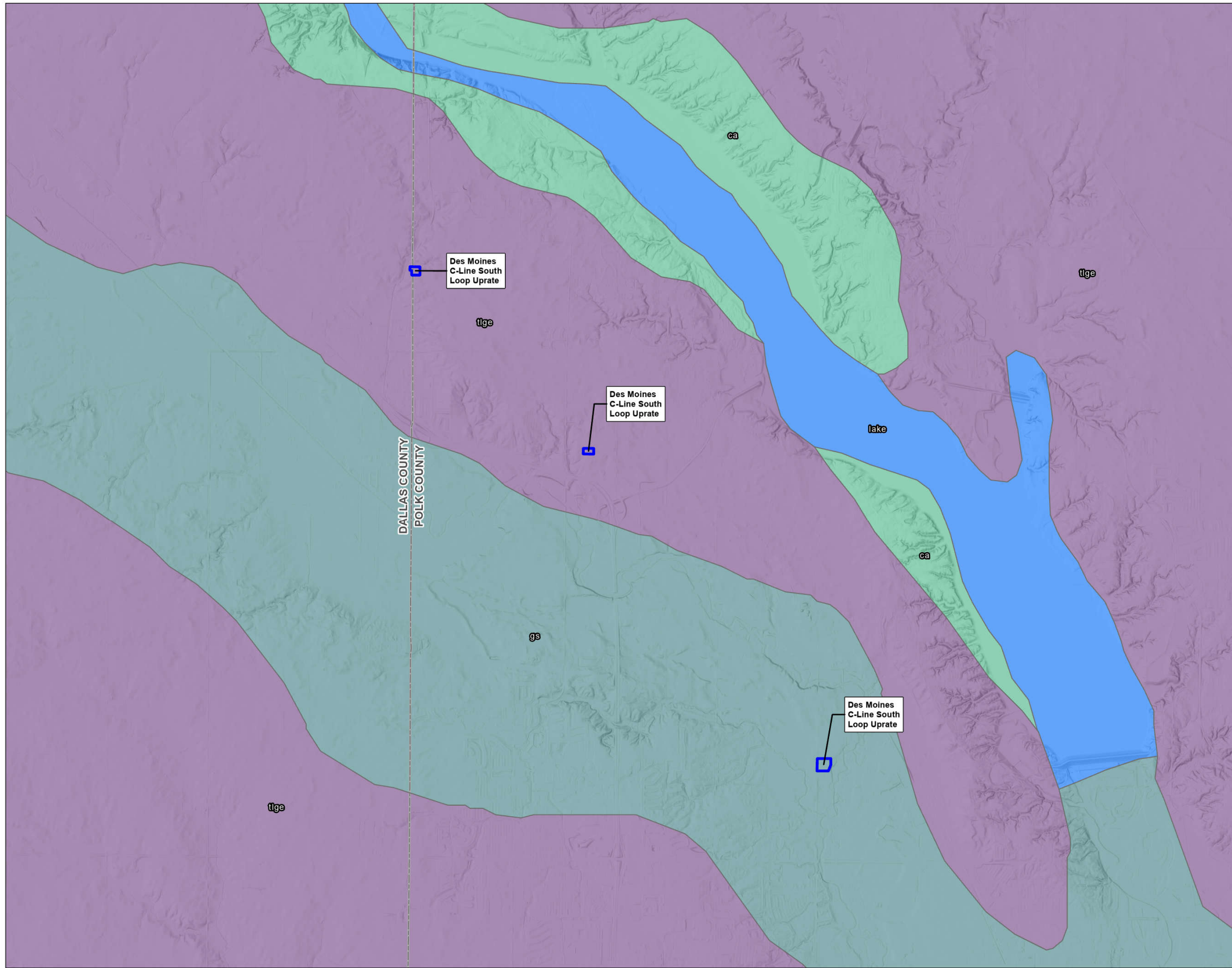


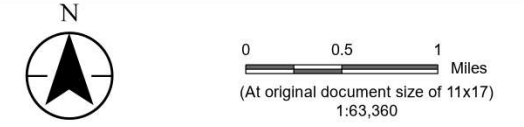
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**Surficial Geology
Des Moines C-Line South Loop Uprate**

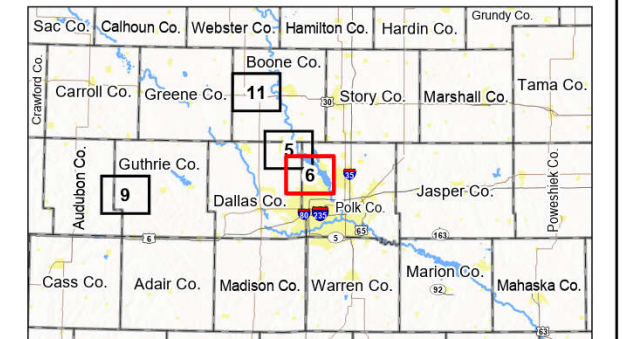
Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Dallas & Polk County, Iowa

Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-23



- Legend
- Environmental Survey Boundary
 - Colluvium And Sheetwash Alluvium (ca)
 - Lake
 - Loamy Till--End Moraine (tlge)
 - Outwash Sand (gs)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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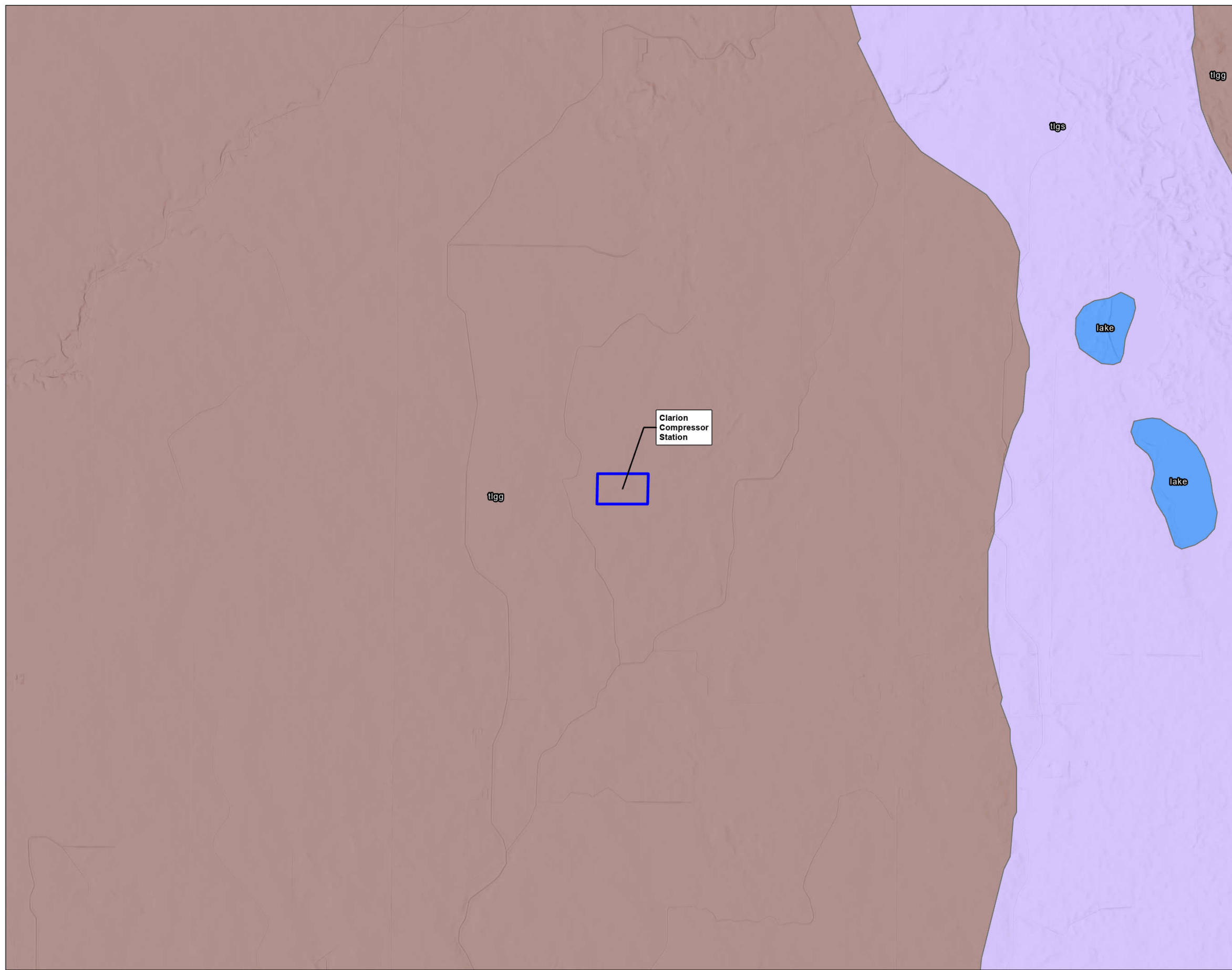


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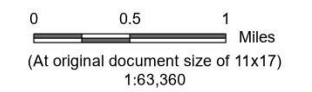
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**Surficial Geology
Clarion Compressor Station**

Client/Project 172609221

Northern Natural Gas
Central Mainline Corridor Expansion Project

Project Location Prepared by JM on 2026-02-09
Wright County, Iowa TR by SF on 2026-02-27
IR by SK on 2026-03-23



Legend

- Environmental Survey Boundary
- Lake
- Loamy Till--Ground Moraine (tlgg)
- Loamy Till--Stagnation Moraine (tigs)



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade



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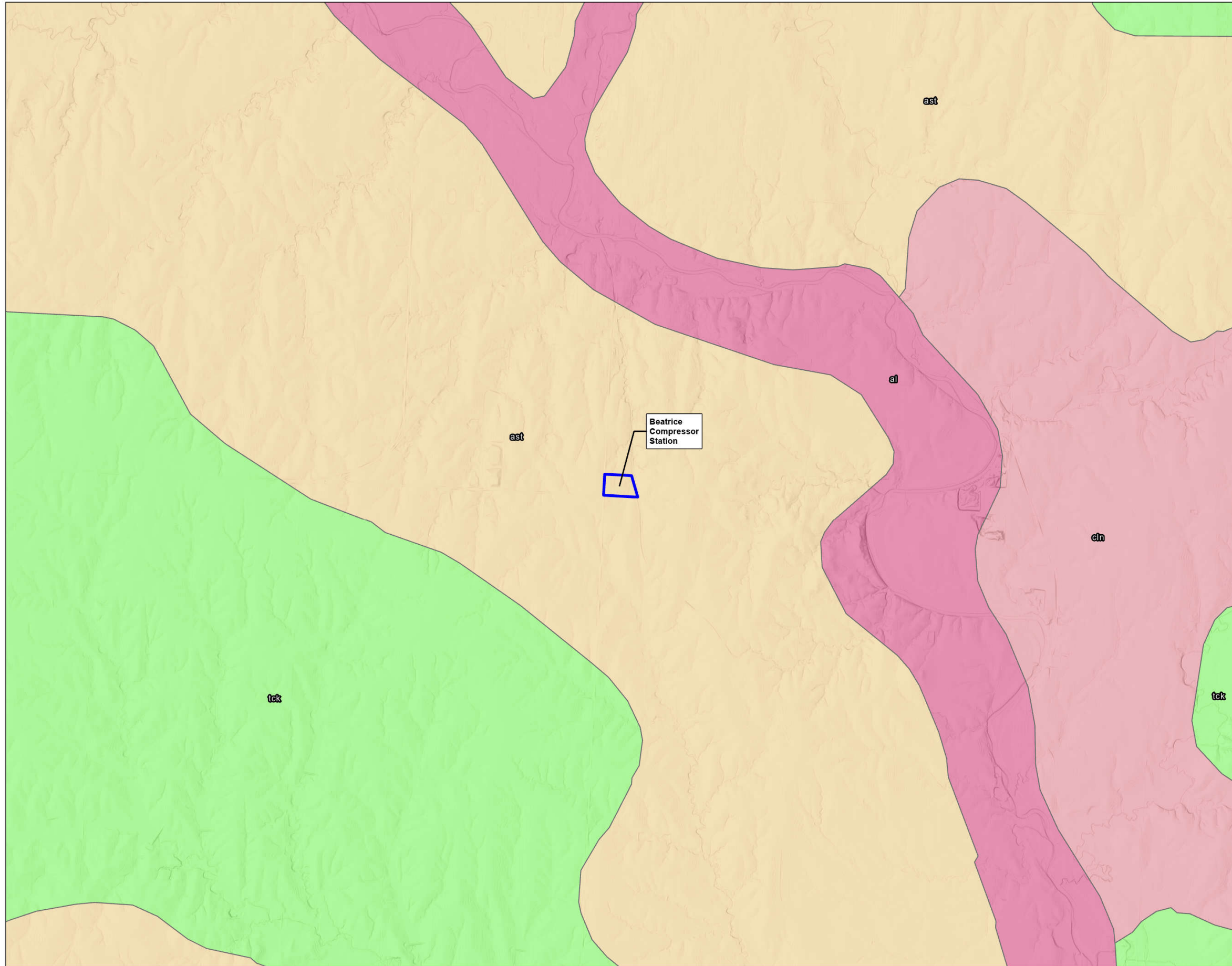


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Title
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Beatrice Compressor Station**

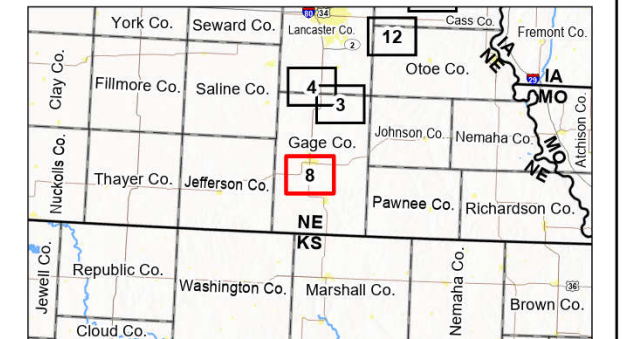
Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Gage County, Nebraska

Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-23



- Legend
- Environmental Survey Boundary
 - Alluvial Gravelly Sand And Locally Underlying Lacustrine Sand (ast)
 - Alluvium (al)
 - Clay Loam Till (tck)
 - Shale-, Limestone-, And Chert-Clast Silty To Clayey Colluvium (cln)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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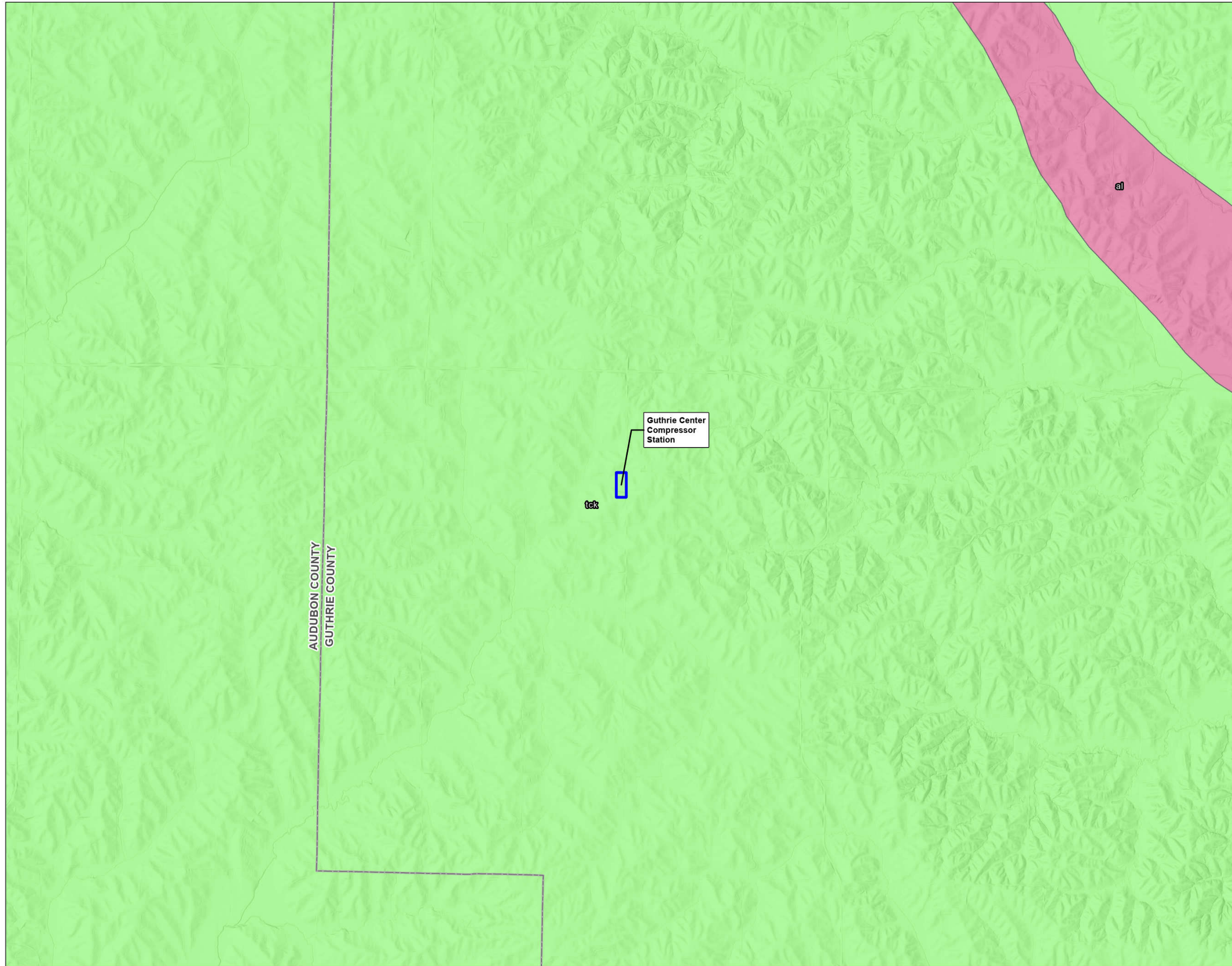
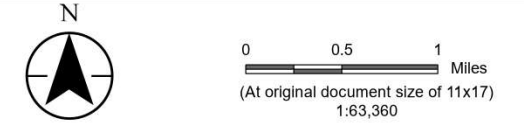


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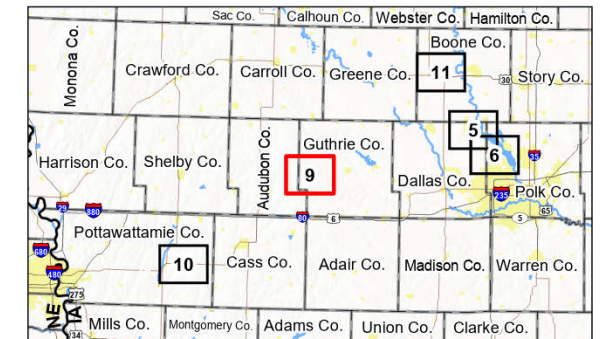
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Guthrie Center Compressor Station**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Guthrie County, Iowa
Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-23



- Legend
- Environmental Survey Boundary
 - Alluvium (al)
 - Clay Loam Till (tck)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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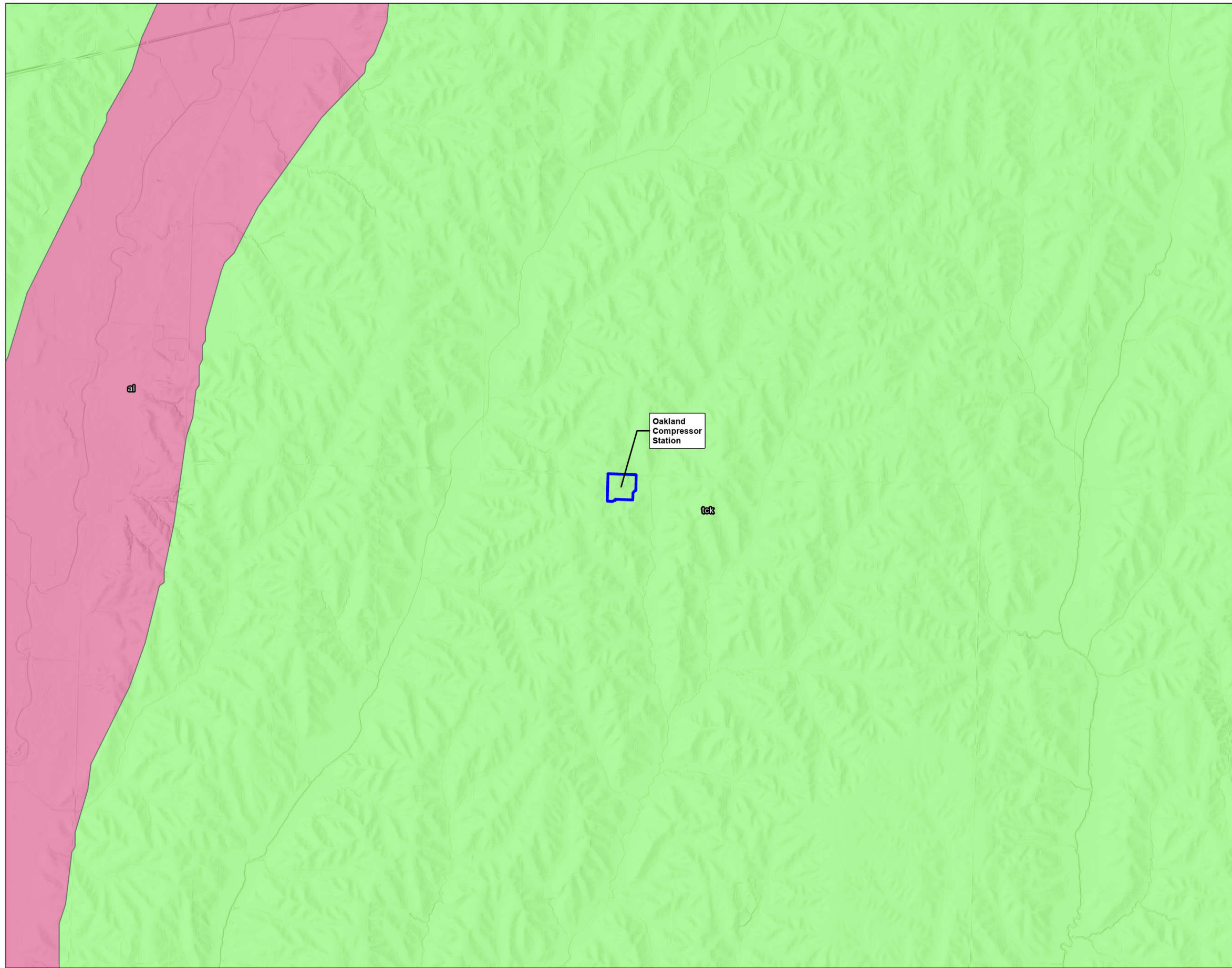


Figure No.

6-1

Title

**Surficial Geology
Oakland Compressor Station**

Client/Project 172609221




Northern Natural Gas
Central Mainline Corridor Expansion Project

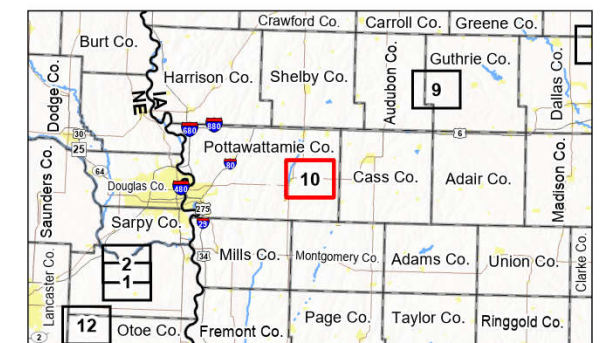
Project Location Pottawattamie County, Iowa Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-23



0 0.5 1 Miles
(At original document size of 11x17)
1:63,360

Legend

-  Environmental Survey Boundary
-  Alluvium (al)
-  Clay Loam Till (tck)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade



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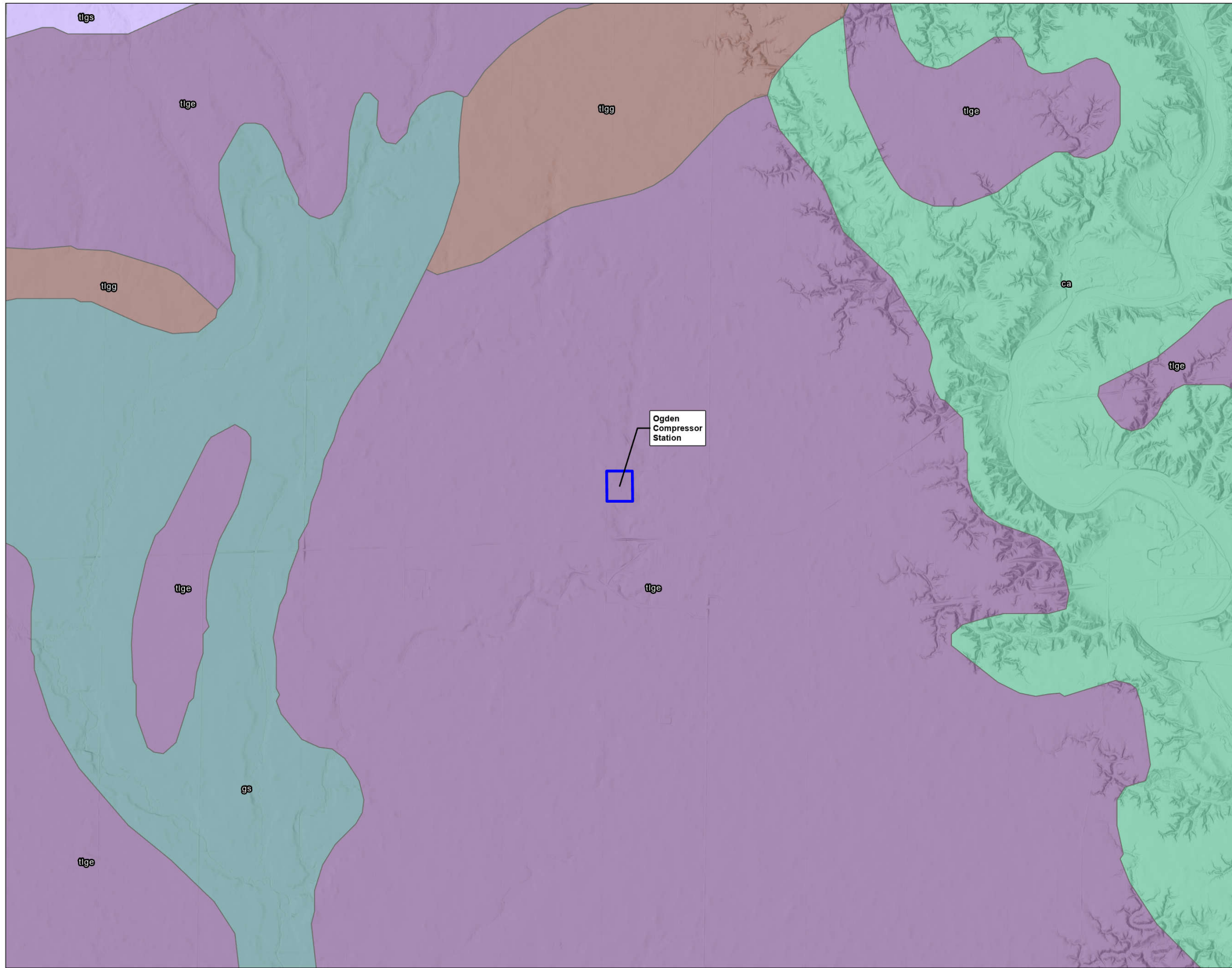


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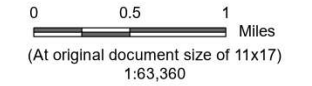
6-1

Title

**Surficial Geology
Ogden Compressor Station**

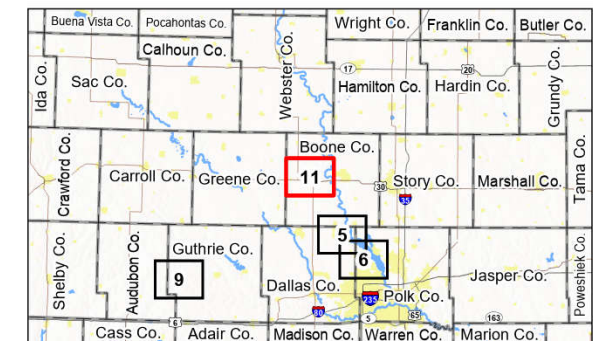
Client/Project 172609221
Northern Natural Gas
Central Mainline Corridor Expansion Project

Project Location Boone County, Iowa Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-23



Legend

- Environmental Survey Boundary
- Colluvium And Sheetwash Alluvium (ca)
- Loamy Till--End Moraine (tlge)
- Loamy Till--Ground Moraine (tlgg)
- Loamy Till--Stagnation Moraine (tigs)
- Outwash Sand (gs)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade



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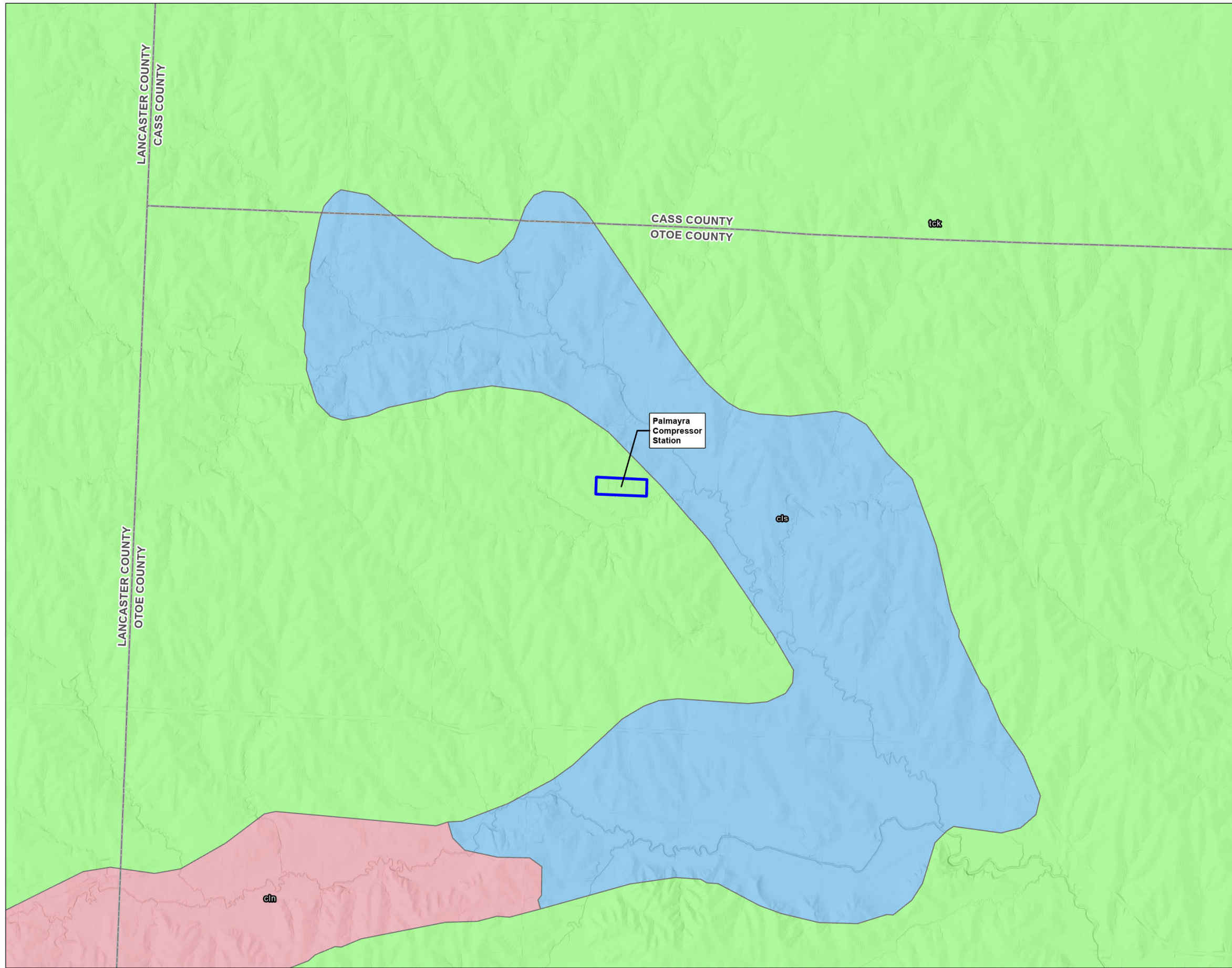


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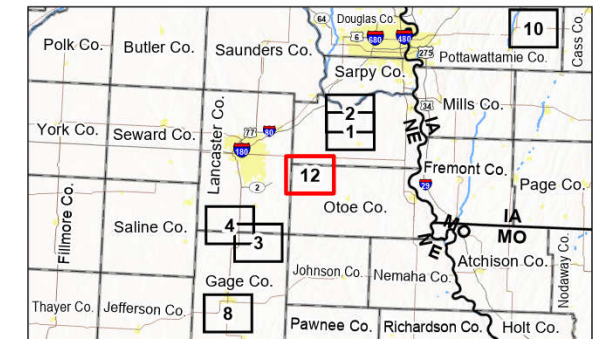
Title
**Surficial Geology
Palmyra Compressor Station**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Otoe County, Nebraska Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-23



- Legend
- Environmental Survey Boundary
 - Chert-Clast Clayey Silt To Silty Clay Loam Colluvium (cls)
 - Clay Loam Till (tck)
 - Shale-, Limestone-, And Chert-Clast Silty To Clayey Colluvium (cln)



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS
3. Background: Esri World Hillshade

Figure 6-2
Bedrock Geology

U:\1726\17260922103_data\gis_cad\gisArcPro\172609221_Central_Mainline_ResourceReports.aprx Central_Mainline_ResourceReports.aprx Revised: 2026-03-25 By: safoster

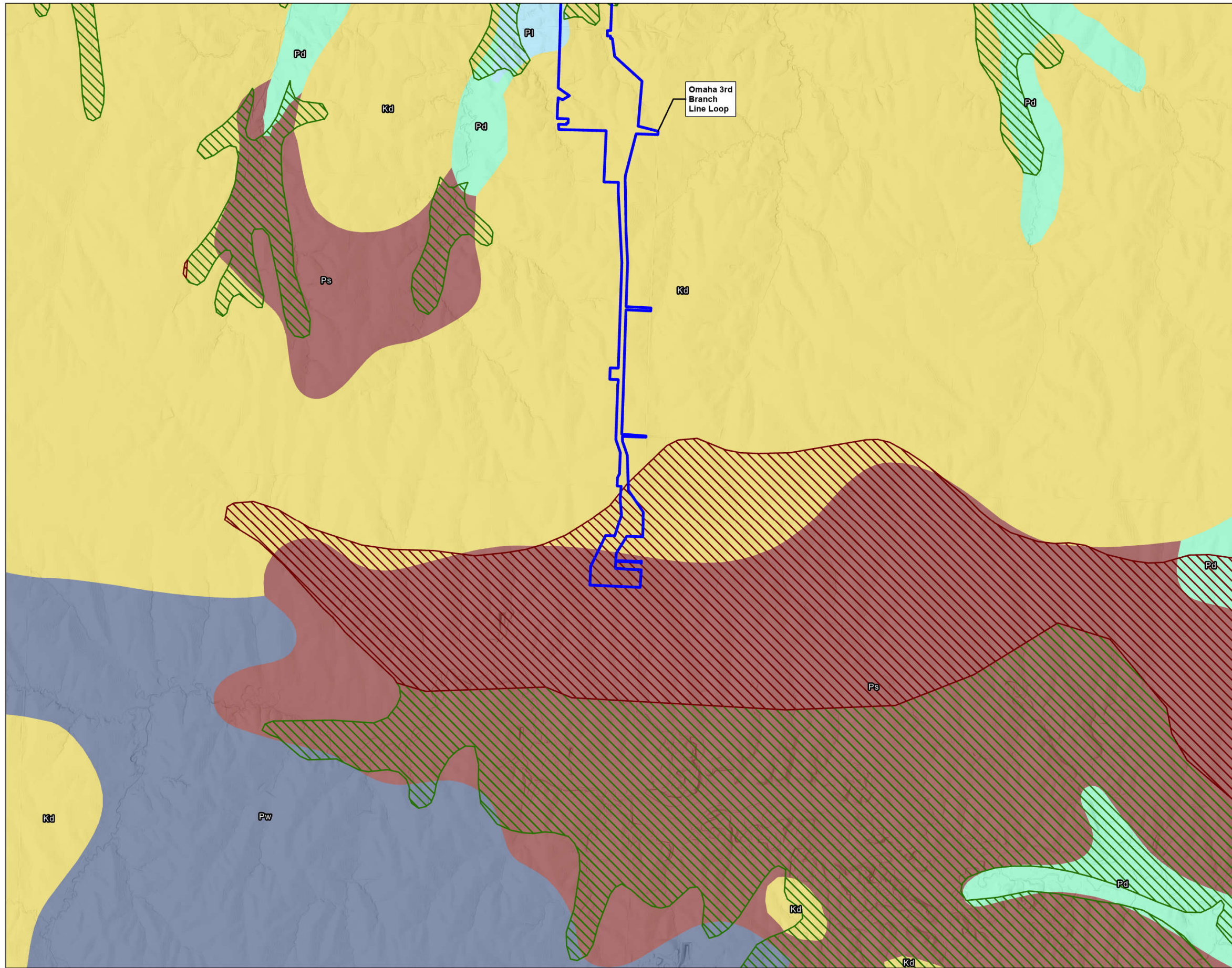
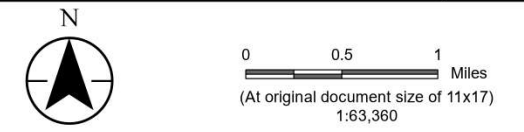
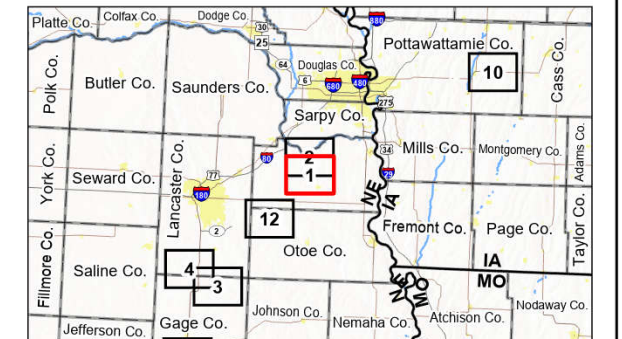


Figure No. **6-2**
 Title **Bedrock Geology
 Omaha 3rd Branch Line Loop**
 Client/Project Northern Natural Gas 172609221
 Central Mainline Corridor Expansion Project
 Project Location Cass County, Nebraska Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Carbonate rocks buried under < 50 ft of glacially derived insoluble sediments in a humid climate
 - Carbonate rocks buried under >50 ft of glacially derived insoluble sediments in a humid climate
 - Dakota, Windrow (Kd)
 - Douglas (Pd)
 - Lansing (Pl)
 - Shawnee (Ps)
 - Wabaunsee (Pw)



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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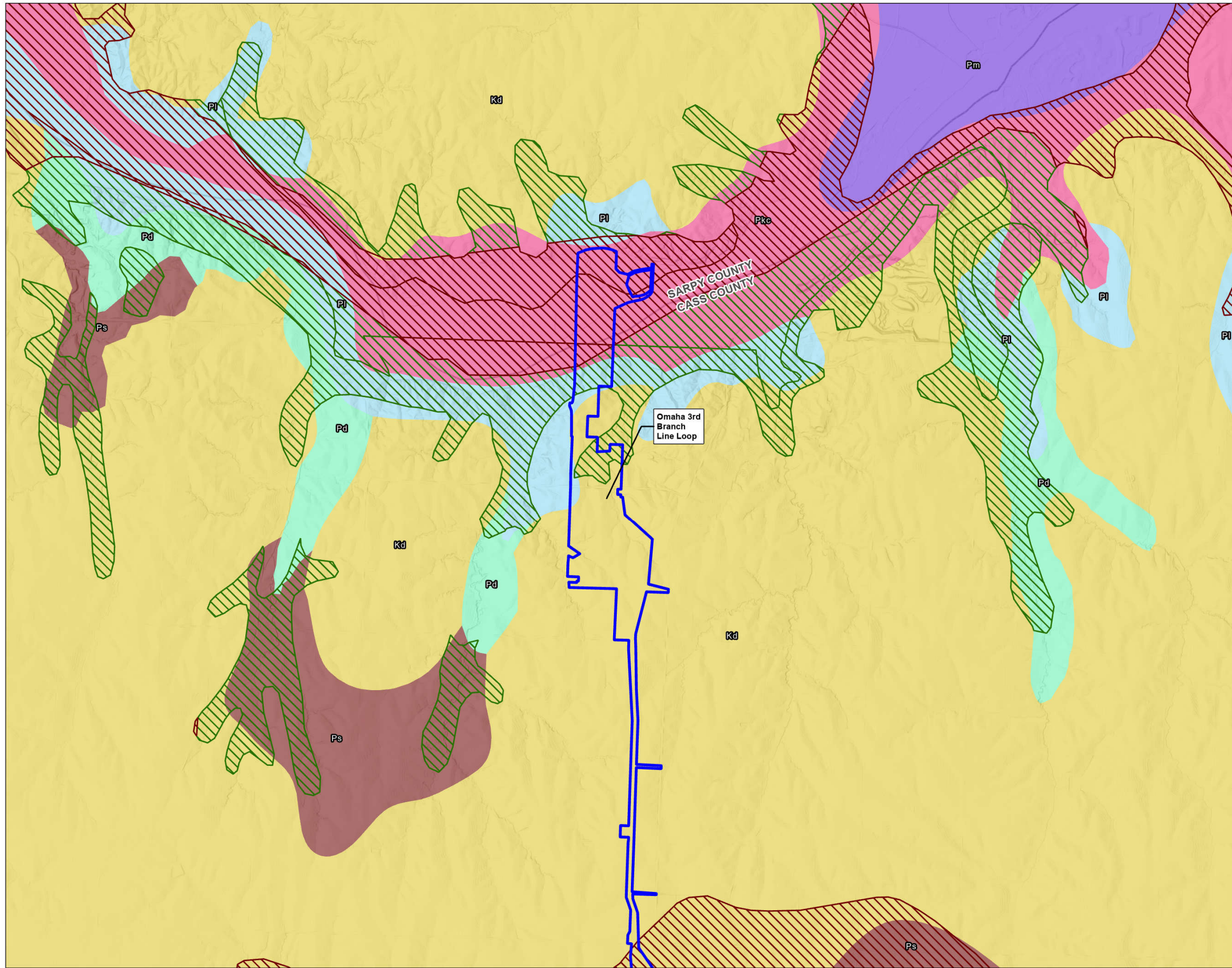
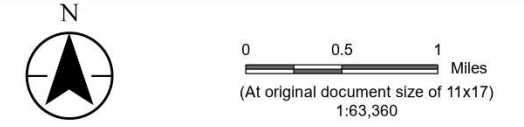


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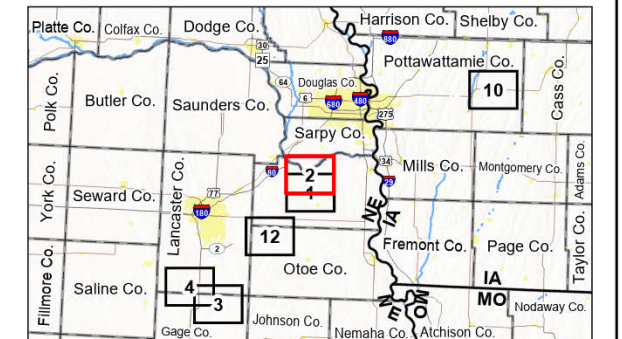
Title **Bedrock Geology
Omaha 3rd Branch Line Loop**

Client/Project **Northern Natural Gas
Central Mainline Corridor Expansion Project** 172609221

Project Location **Sarpy & Cass Counties, Nebraska** Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Carbonate rocks buried under < 50 ft of glacially derived insoluble sediments in a humid climate
 - Carbonate rocks buried under >50 ft of glacially derived insoluble sediments in a humid climate
 - Dakota, Windrow (Kd)
 - Douglas (Pd)
 - Kansas City (Pkc)
 - Lansing (Pl)
 - Marmaton (Pm)
 - Shawnee (Ps)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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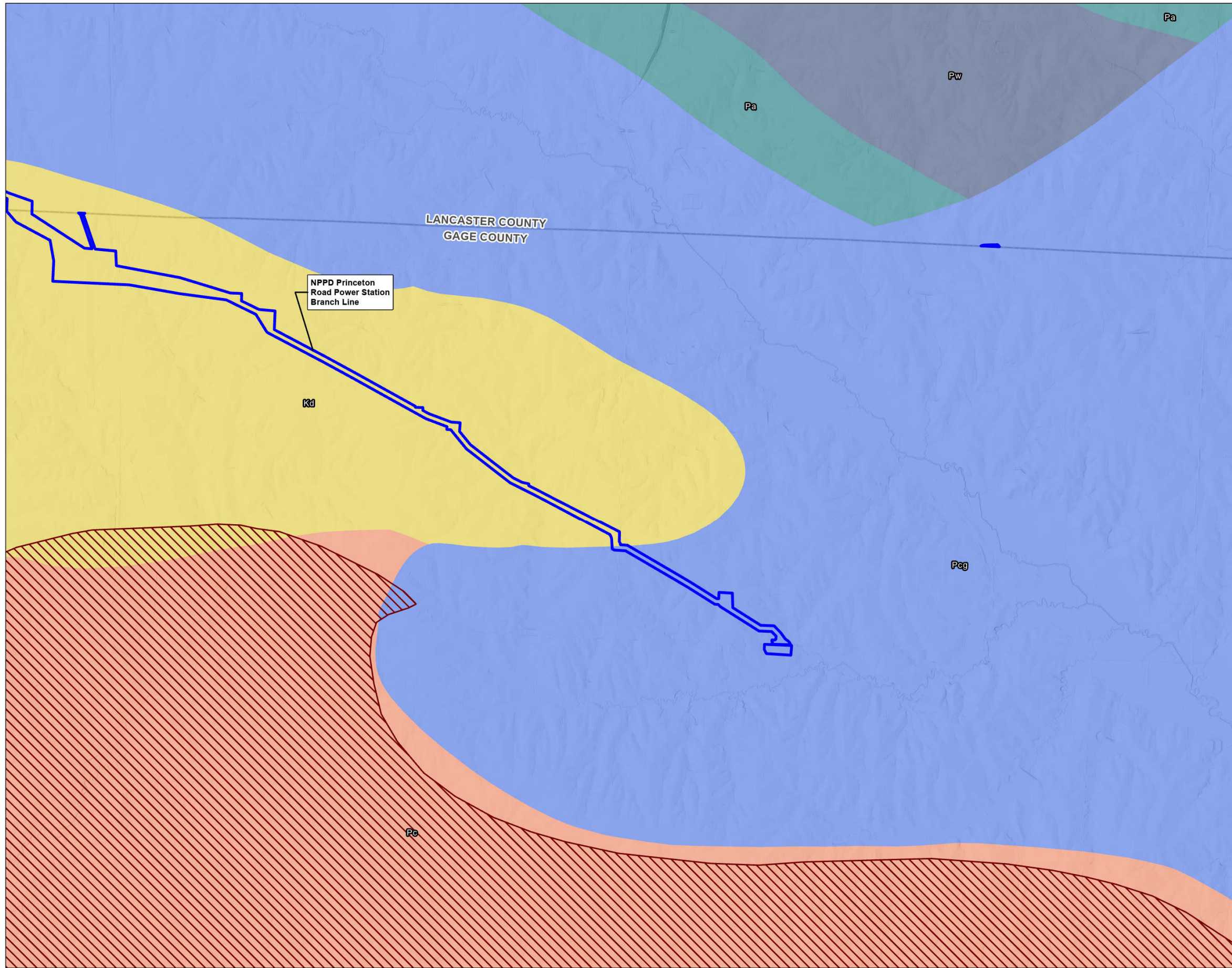


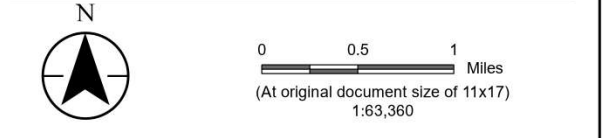
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6-2

Title
**Bedrock Geology
NPPD Princeton Road Power Station
Branch Line**

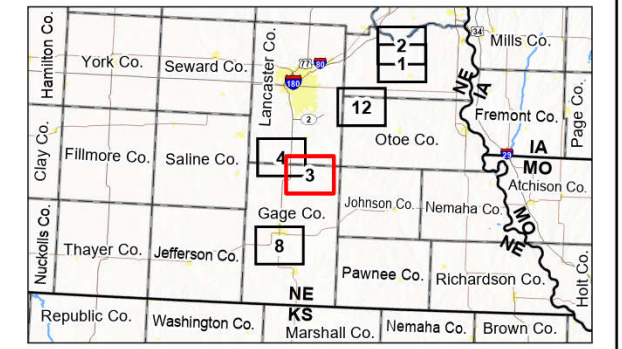
Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project

Project Location
Lancaster & Gage Counties, Nebraska

Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Carbonate rocks buried under >50 ft of glacially derived insoluble sediments in a humid climate
 - Admire (Pa)
 - Chase (Pc)
 - Council Grove (Pcg)
 - Dakota, Windrow (Kd)
 - Wabaunsee (Pw)



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS
3. Background: Esri World Hillshade

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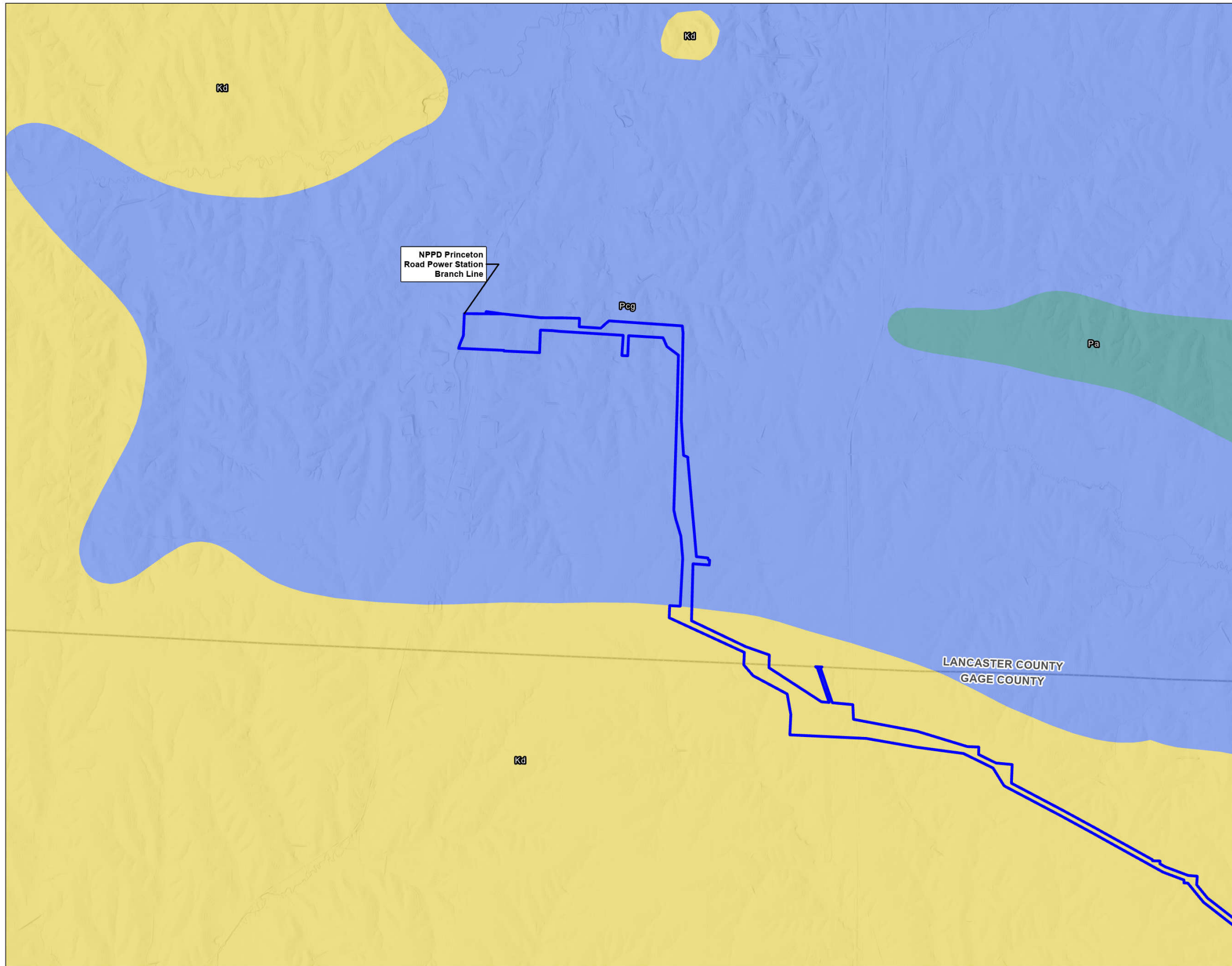
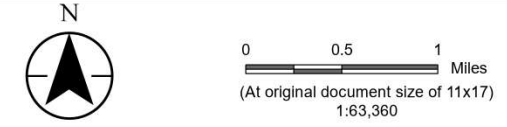
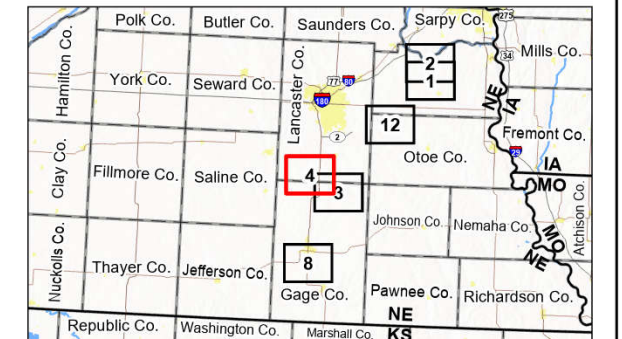


Figure No. **6-2**
 Title **Bedrock Geology
 NPPD Princeton Road Power Station
 Branch Line**
 Client/Project Northern Natural Gas
 Central Mainline Corridor Expansion Project 172609221

Project Location Lancaster & Gage Counties, Nebraska
 Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Admire (Pa)
 - Council Grove (Pcg)
 - Dakota, Windrow (Kd)



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade



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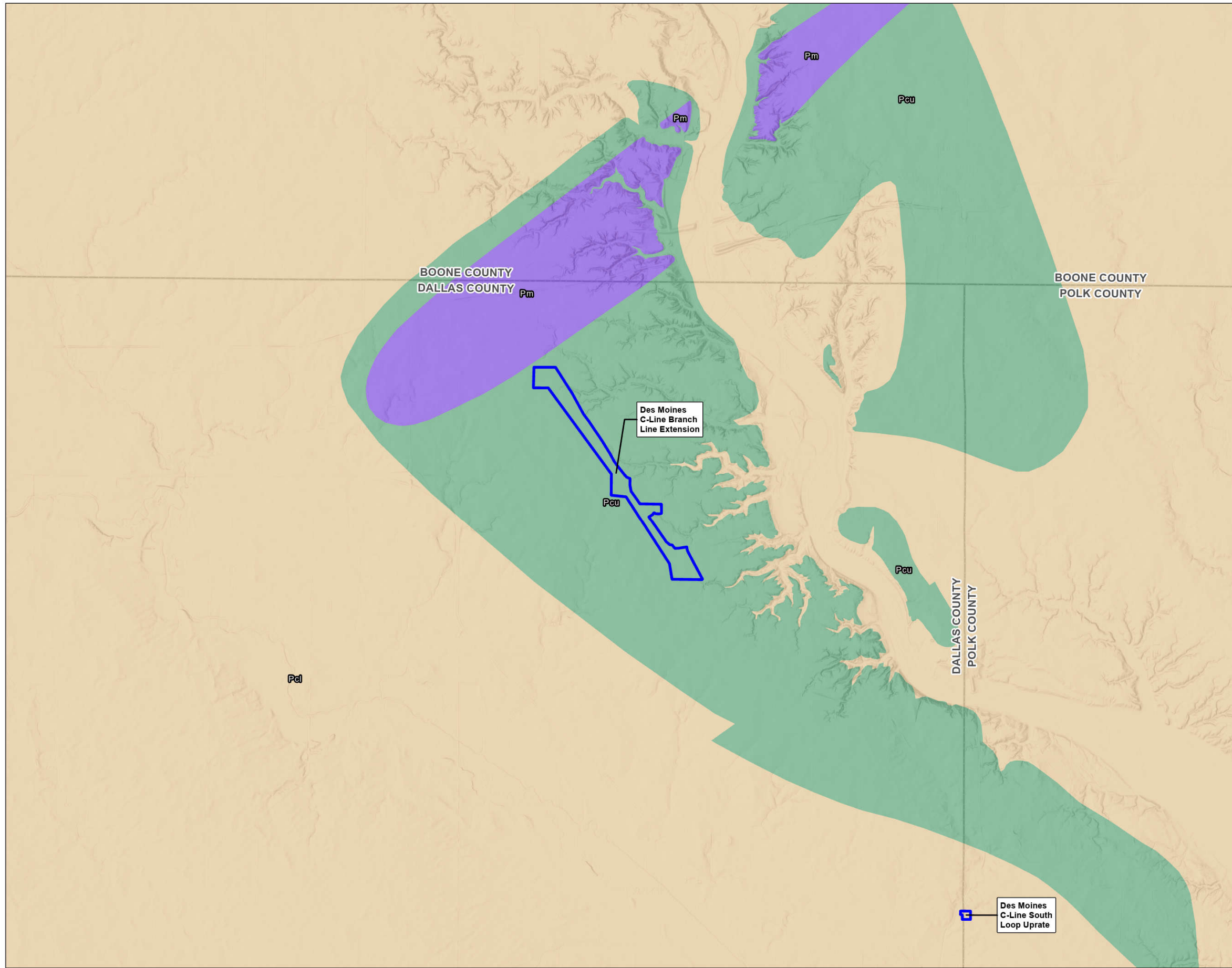


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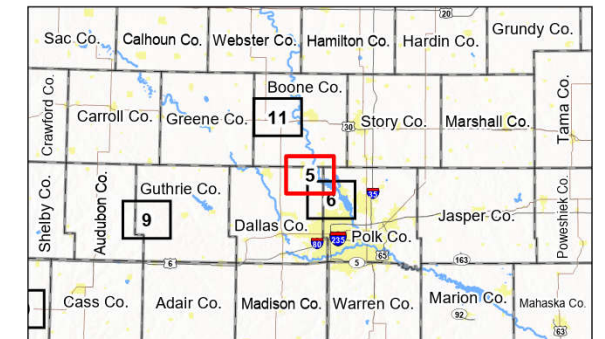
Title **Bedrock Geology
Des Moines C-Line Branch Line Extension**

Client/Project Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location Dallas & Polk County, Iowa Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Marmaton (Pm)
 - Lower Cherokee (Pcl)
 - Upper Cherokee (Pcu)



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS
3. Background: Esri World Hillshade

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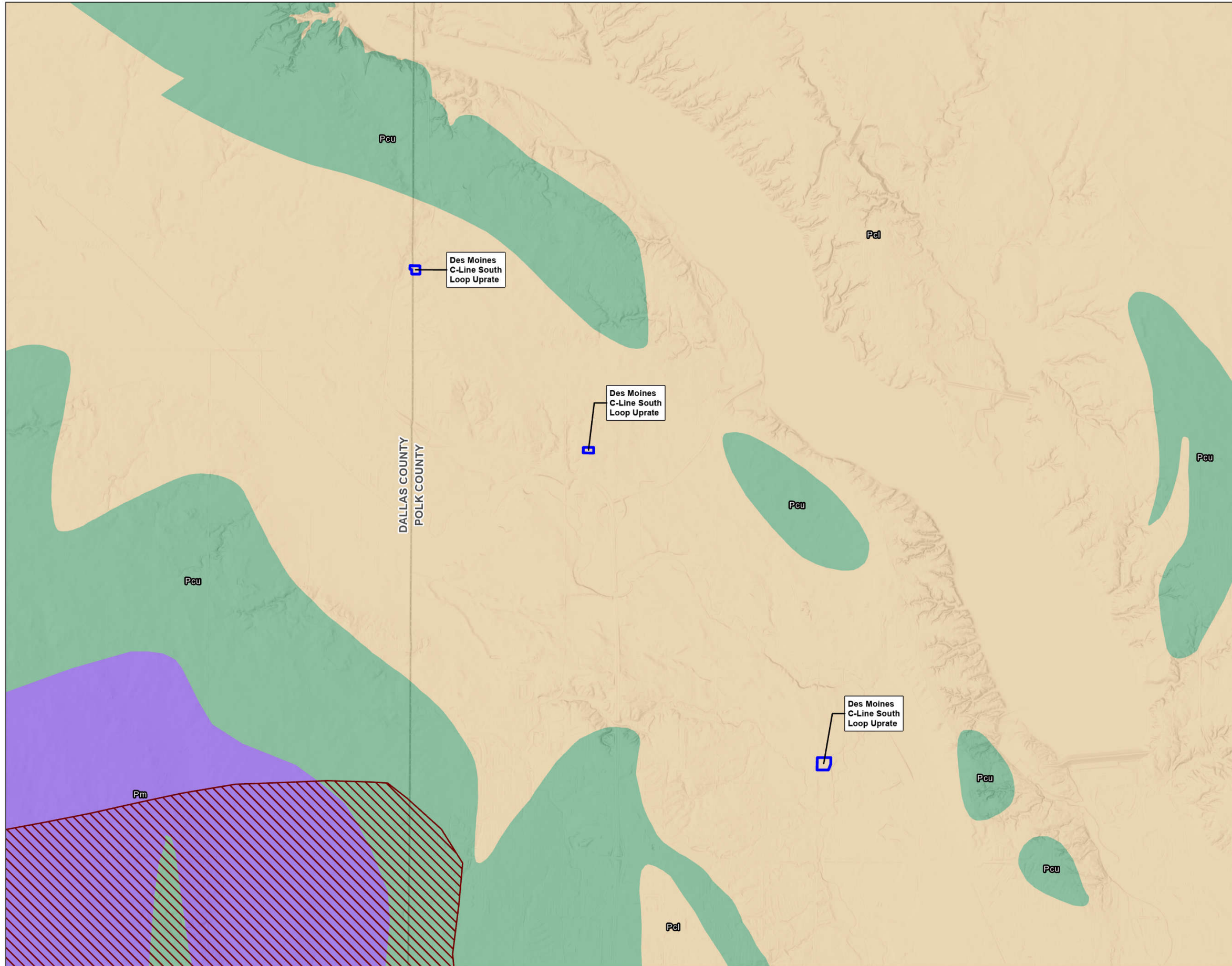


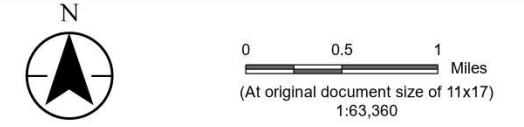
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Title
**Bedrock Geology
Des Moines C-Line South Loop Uprate**

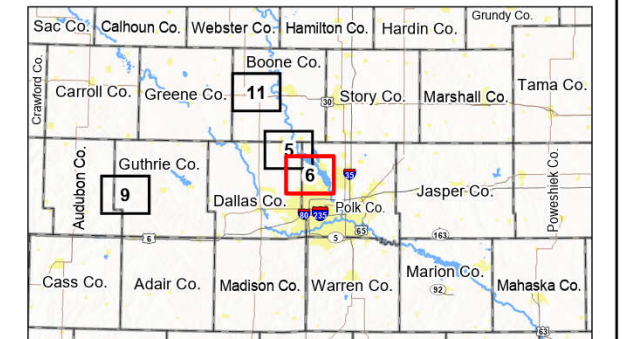
Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Dallas & Polk County, Iowa

Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Carbonate rocks buried under >50 ft of glacially derived insoluble sediments in a humid climate
 - Marmaton (Pm)
 - Lower Cherokee (Pcl)
 - Upper Cherokee (Pcu)



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS
3. Background: Esri World Hillshade

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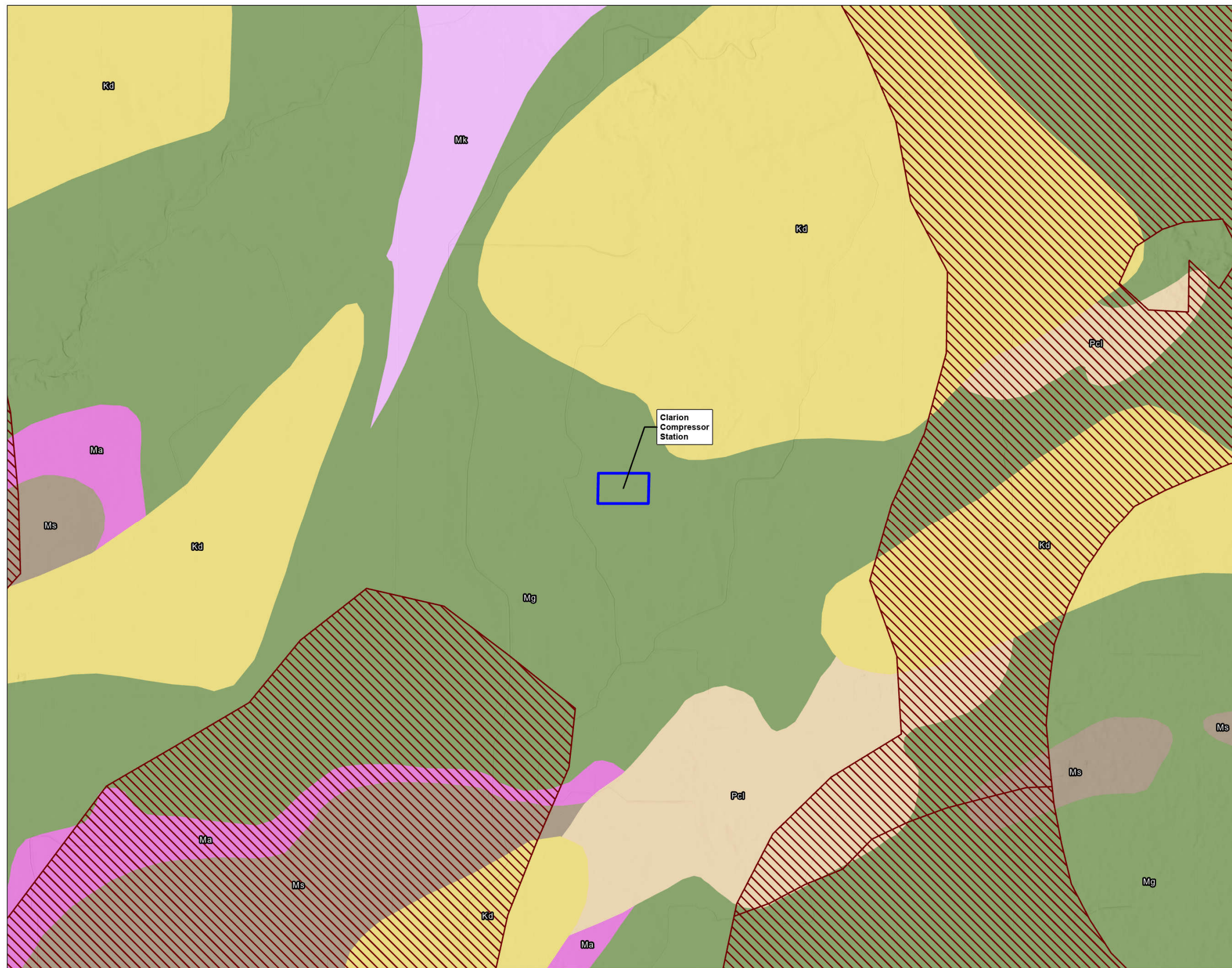
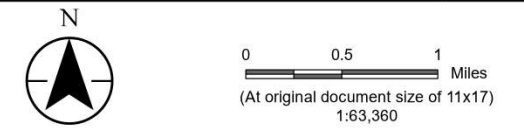


Figure No. **6-2**
 Title **Bedrock Geology
 Clarion Compressor Station**
 Client/Project Northern Natural Gas 172609221
 Central Mainline Corridor Expansion Project
 Project Location Wright County, Iowa Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Carbonate rocks buried under >50 ft of glacially derived insoluble sediments in a humid climate
 - Augusta (Ma)
 - Dakota, Windrow (Kd)
 - Gilmore City Formation (Mg)
 - Kinderhookian (Mk)
 - Pella & St. Louis Formations (Ms)
 - Lower Cherokee (Pcl)



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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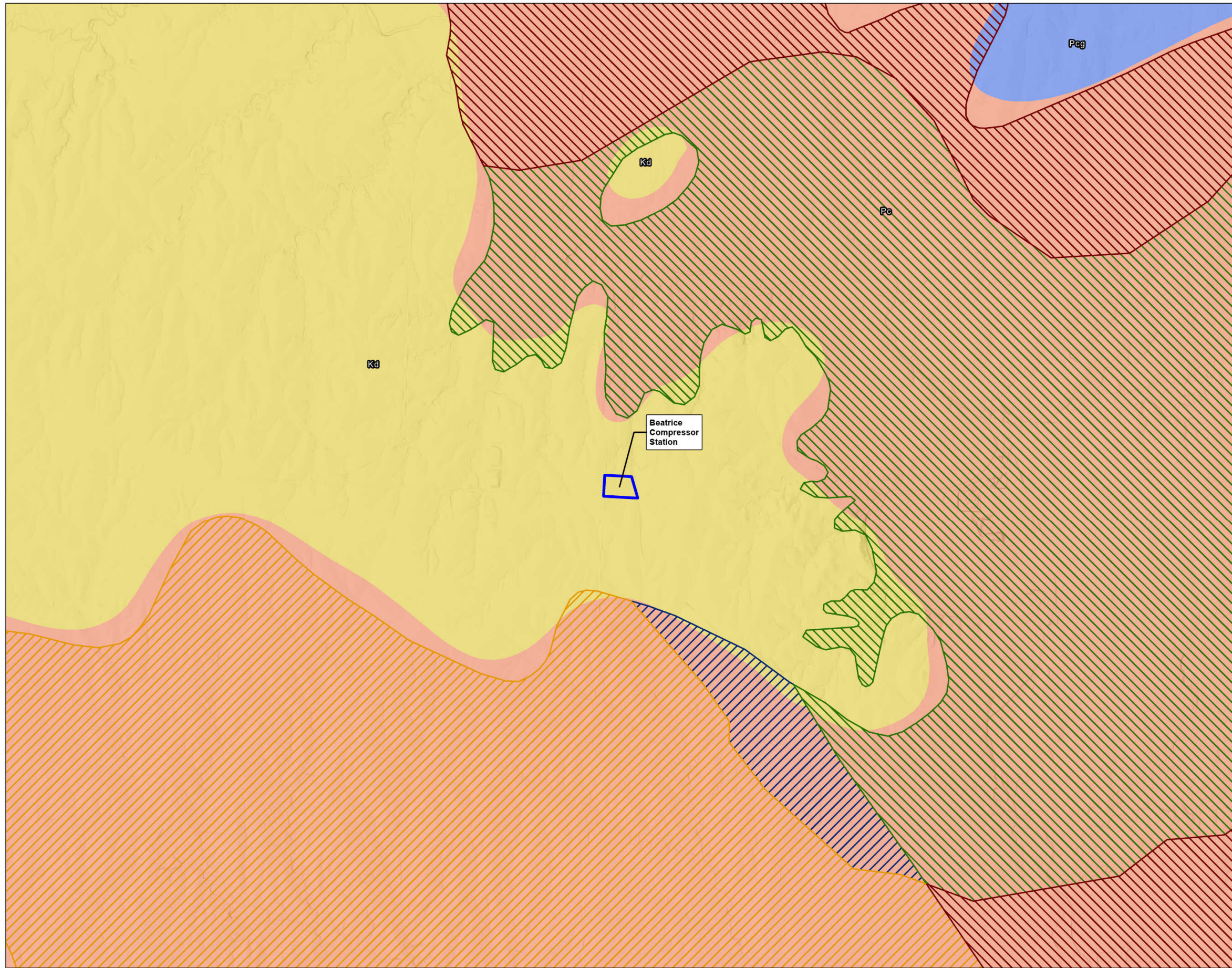
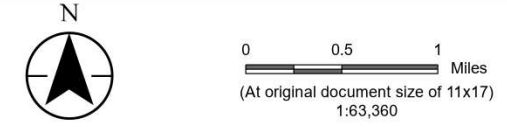
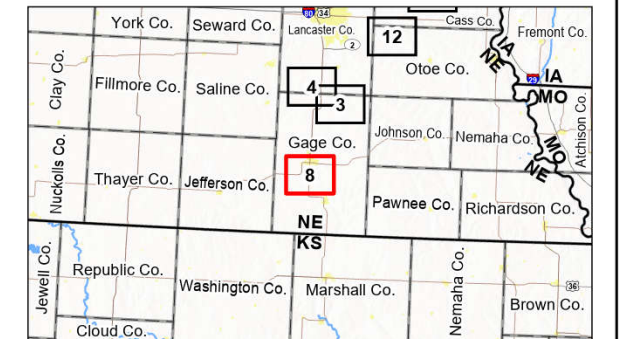


Figure No. **6-2**
 Title **Bedrock Geology
 Beatrice Compressor Station**
 Client/Project Northern Natural Gas 172609221
 Central Mainline Corridor Expansion Project
 Project Location Gage County, Nebraska Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Carbonate rocks buried under =50 ft of glacially derived insoluble sediments in a dry climate
 - Carbonate rocks buried under < 50 ft of glacially derived insoluble sediments in a humid climate
 - Carbonate rocks buried under >50 ft of glacially derived insoluble sediments in a dry climate
 - Carbonate rocks buried under >50 ft of glacially derived insoluble sediments in a humid climate
 - Chase (Pc)
 - Council Grove (Pcg)
 - Dakota, Windrow (Kd)



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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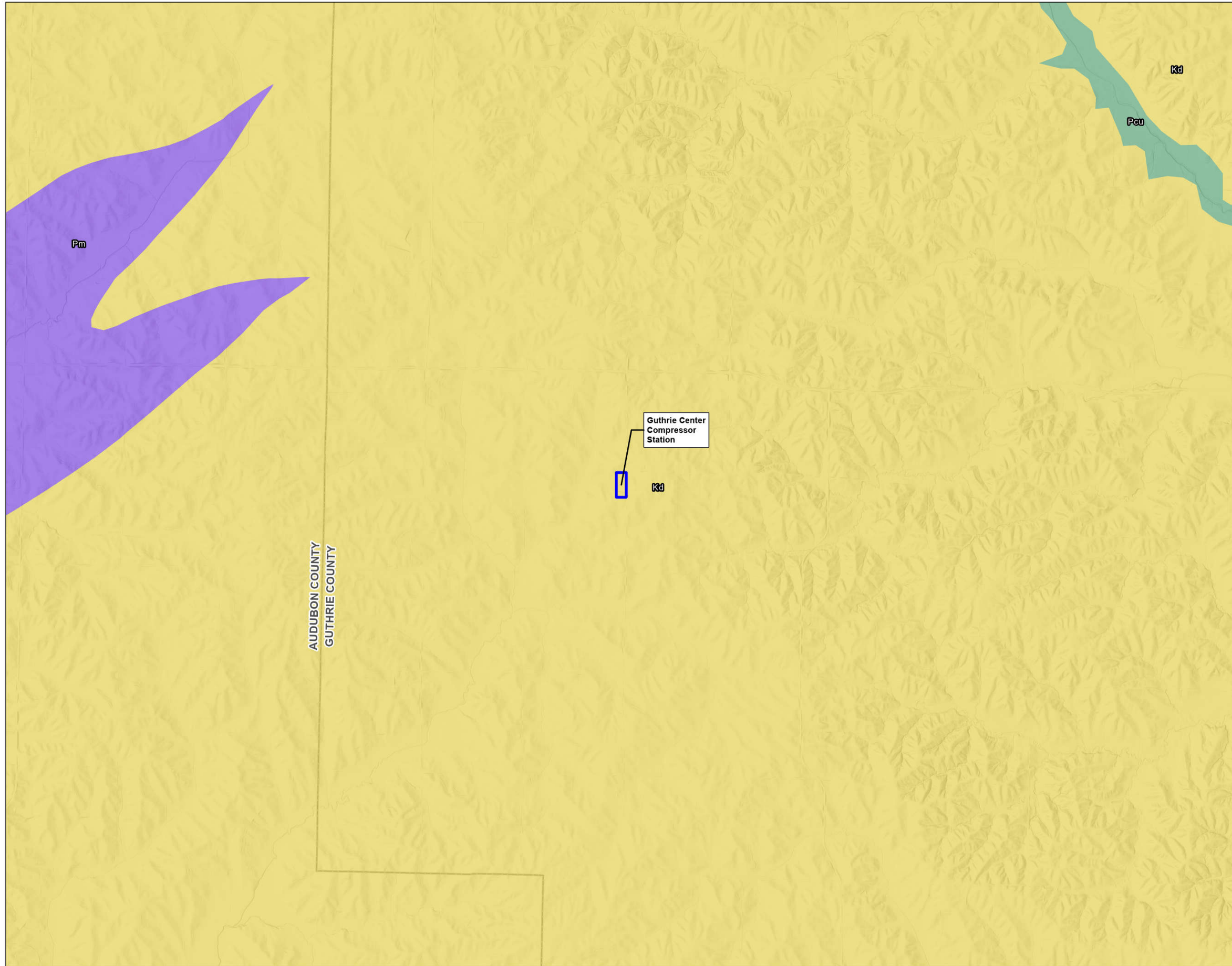
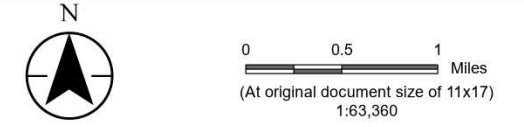


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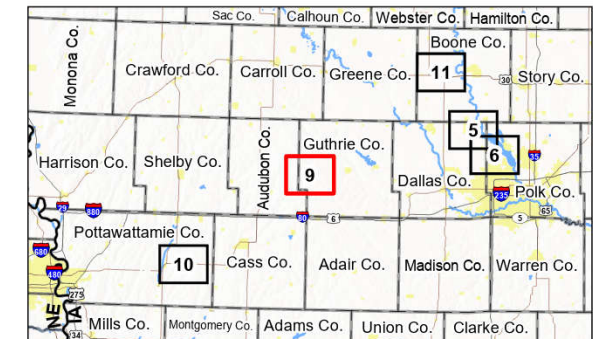
Title
**Bedrock Geology
Guthrie Center Compressor Station**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Guthrie County, Iowa
Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Dakota, Windrow (Kd)
 - Marmaton (Pm)
 - Upper Cherokee (Pcu)



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS
 3. Background: Esri World Hillshade

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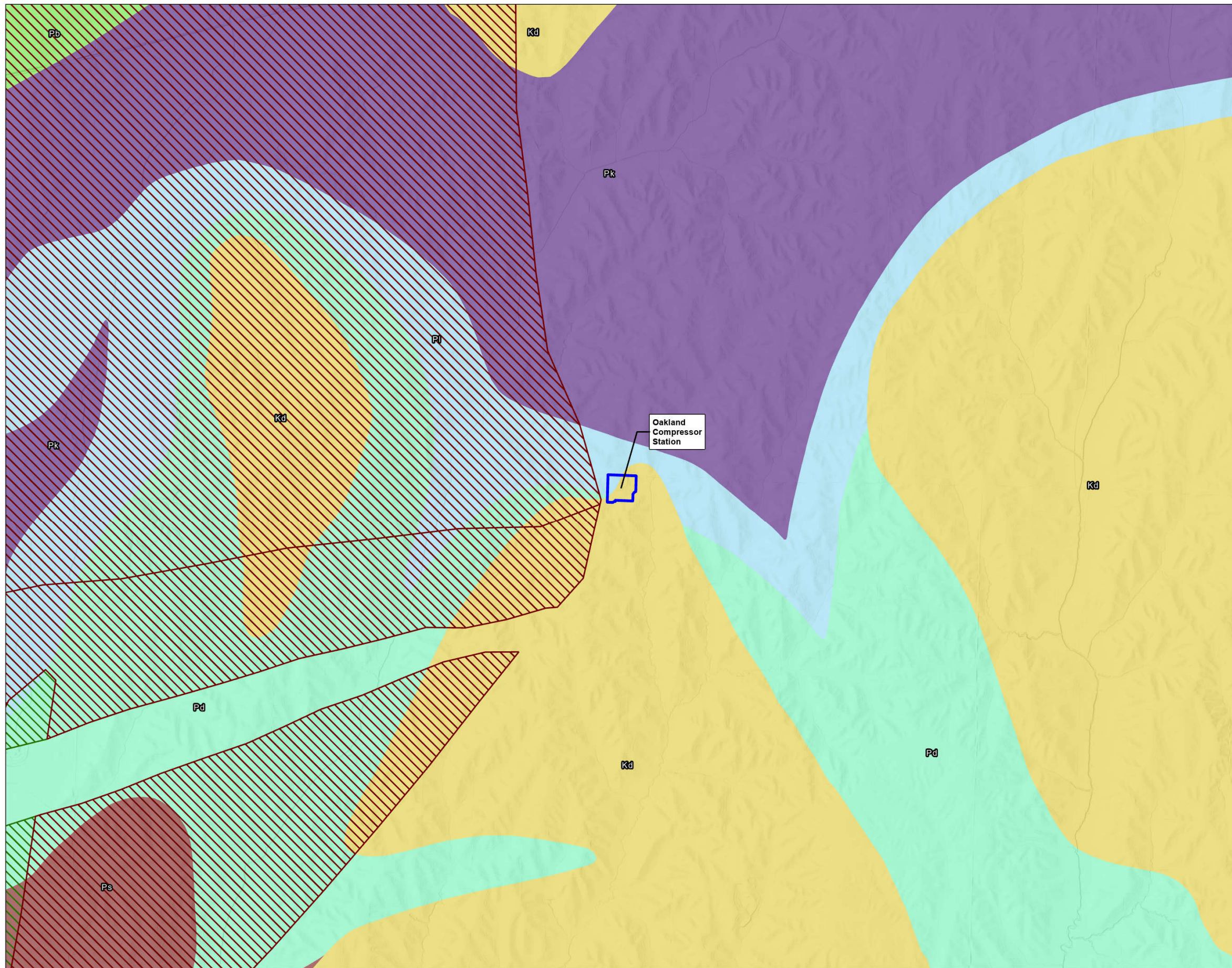


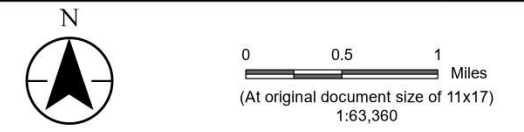
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6-2

Title
**Bedrock Geology
Oakland Compressor Station**

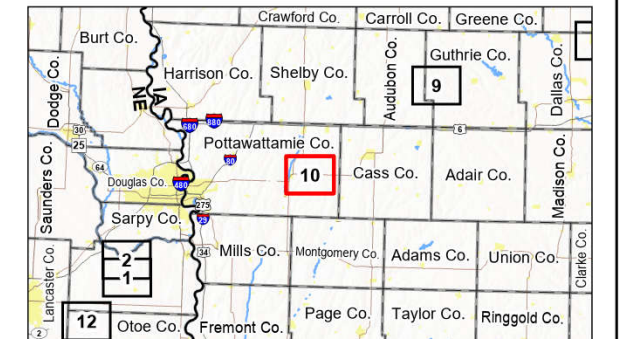
Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Pottawattamie County, Iowa

Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Carbonate rocks buried under < 50 ft of glacially derived insoluble sediments in a humid climate
 - Carbonate rocks buried under >50 ft of glacially derived insoluble sediments in a humid climate
 - Bronson (Pb)
 - Dakota, Windrow (Kd)
 - Douglas (Pd)
 - Kansas City (Pk)
 - Lansing (Pl)
 - Shawnee (Ps)



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS
3. Background: Esri World Hillshade

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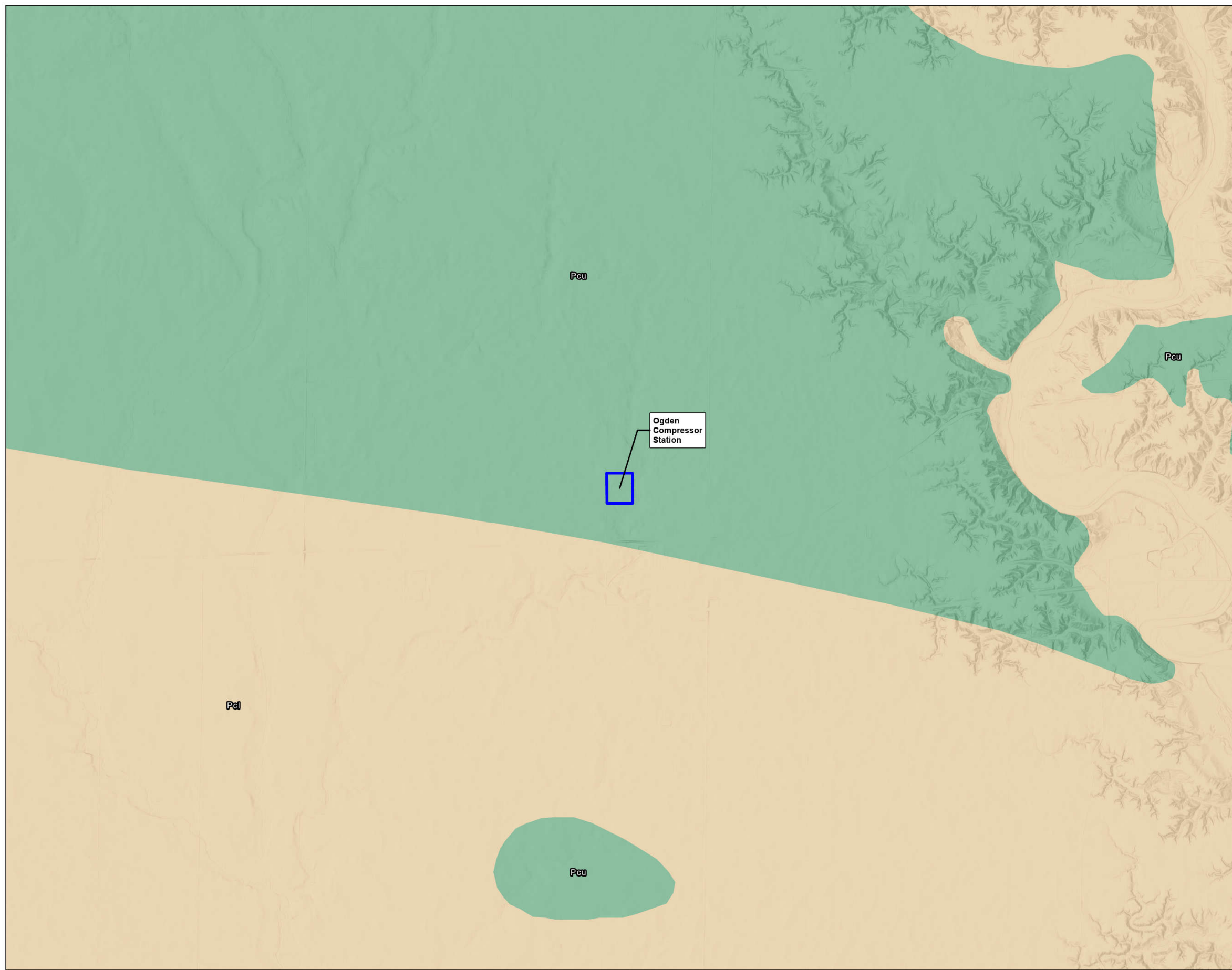
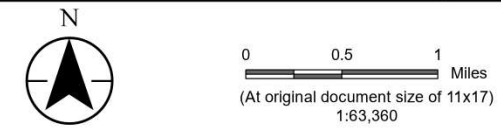


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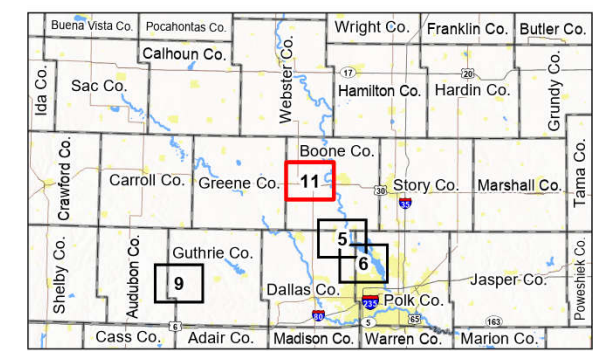
Title
**Bedrock Geology
Ogden Compressor Station**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Boone County, Iowa Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Lower Cherokee (Pcl)
 - Upper Cherokee (Pcu)



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS
3. Background: Esri World Hillshade

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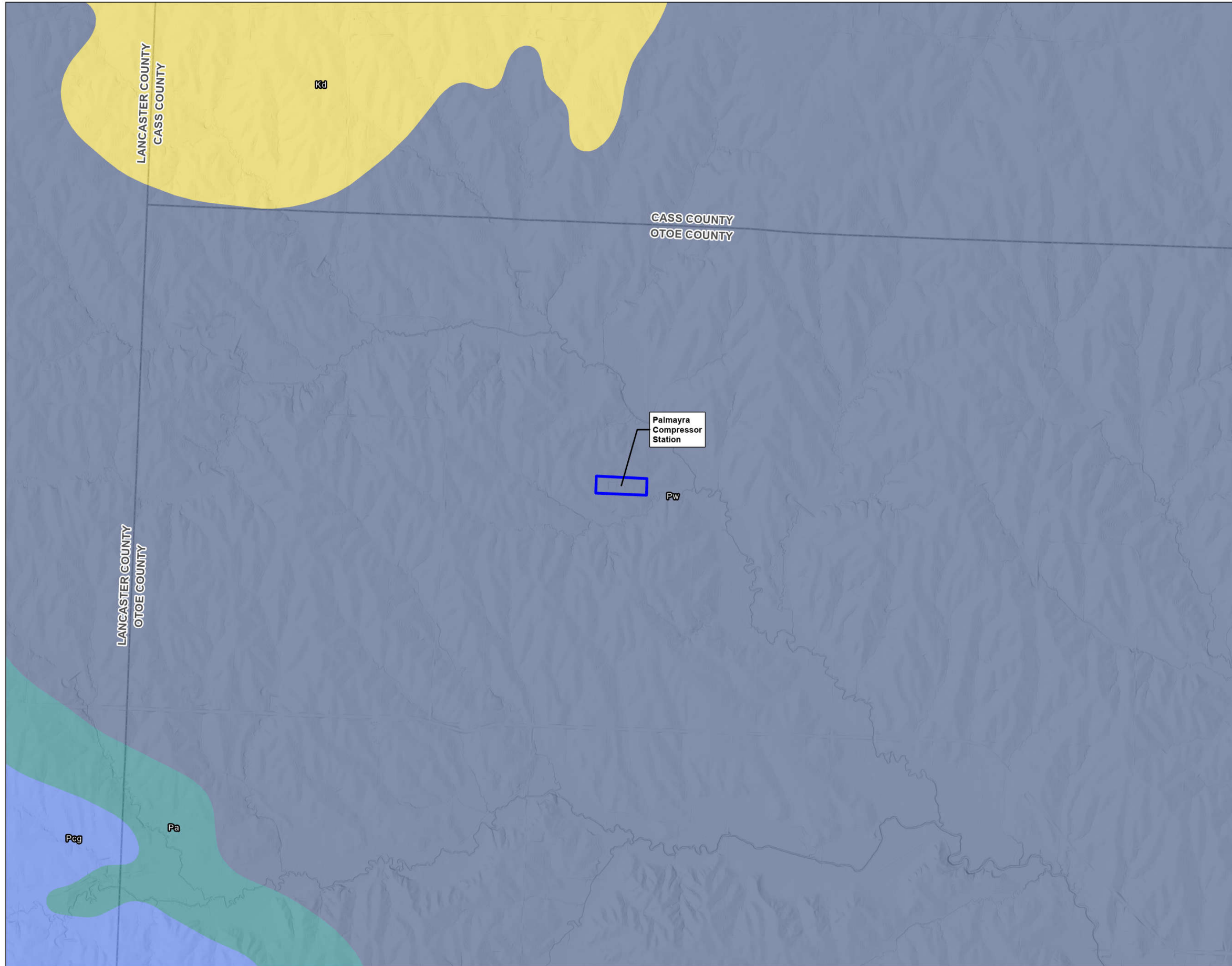
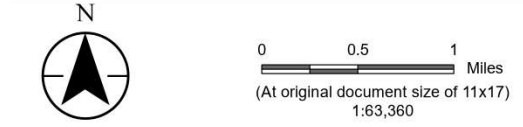


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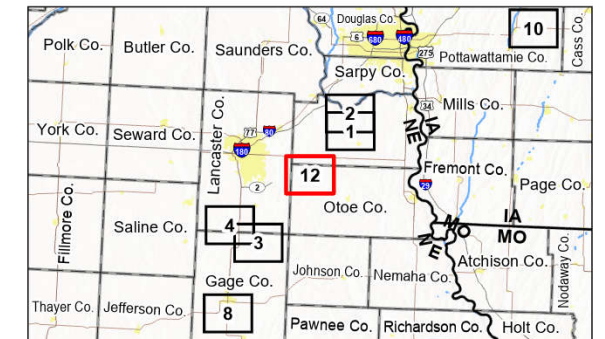
Title
**Bedrock Geology
Palmyra Compressor Station**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Otoe County, Nebraska Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-25



- Legend
- Environmental Survey Boundary
 - Admire (Pa)
 - Council Grove (Pcg)
 - Dakota, Windrow (Kd)
 - Wabaunsee (Pw)



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS
3. Background: Esri World Hillshade

Figure 6-3
FEMA Flood Hazard Areas for Project

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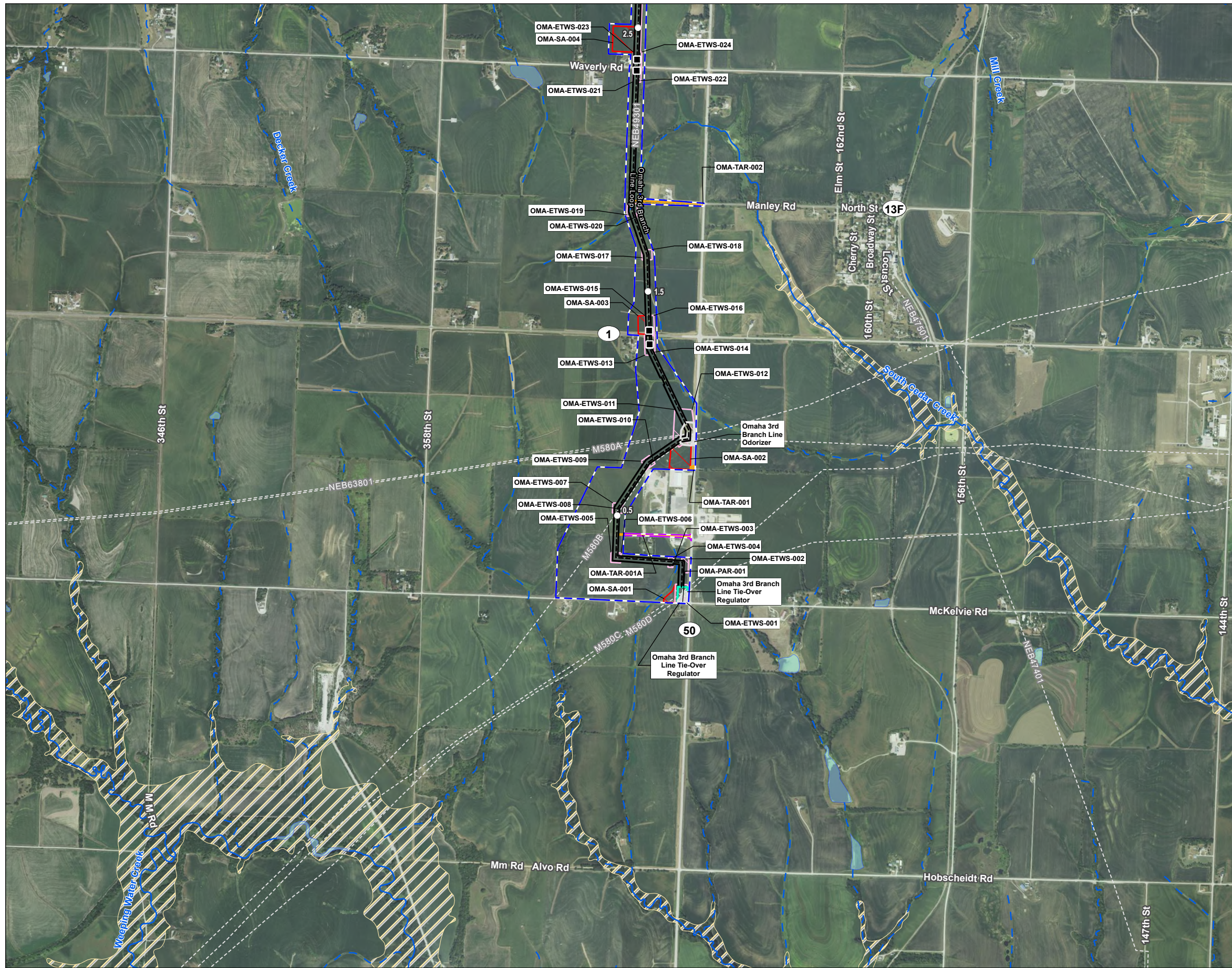
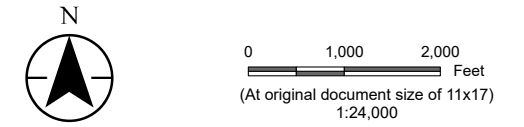


Figure No. **6-3**

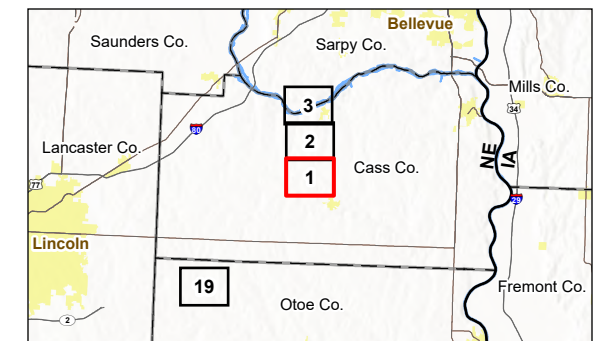
Title
**FEMA Flood Hazard Areas for Project
Omaha 3rd Branch Line Loop**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Precinct of Center
Cass County, Nebraska
Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-20



- Legend
- Mile Post
 - HDD
 - Proposed Pipeline
 - Existing Pipeline
 - Environmental Survey Boundary
 - Environmental Survey Boundary To Be Surveyed
 - Existing Facility
 - Proposed Facility
 - Permanent Access Road
 - Temporary Workspace
 - Extra Temporary Workspace
 - Temporary Access Road
 - Staging Area
 - Flood Hazard Zones
 - 100-year Floodplain
 - National Hydrography Dataset
 - Perennial Stream
 - Intermittent Stream
 - Canal/Ditch
 - Waterbody



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
3. Background: NAIP 2022

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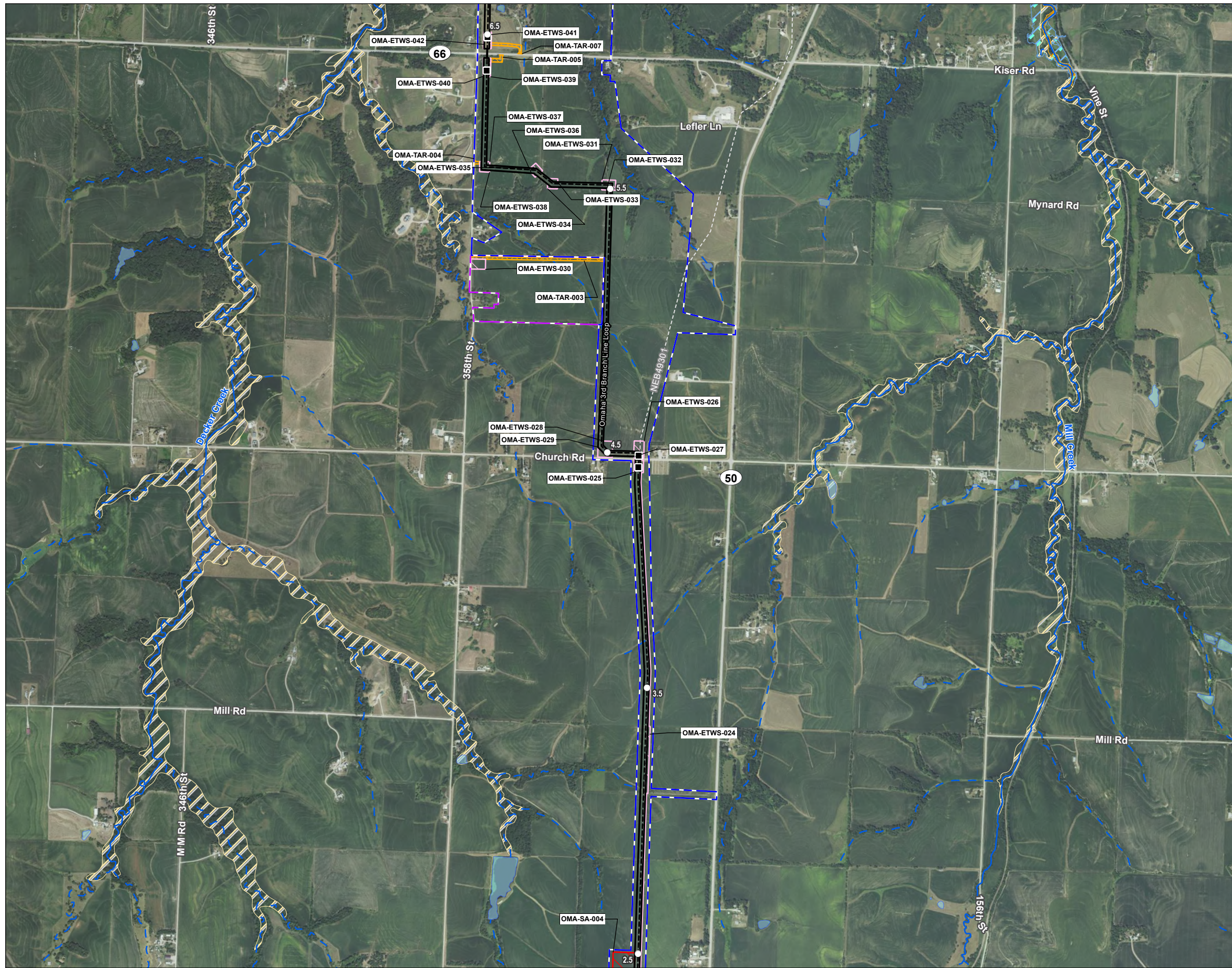
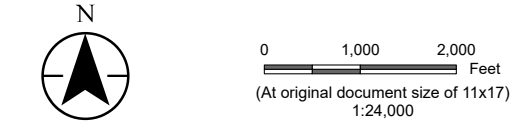
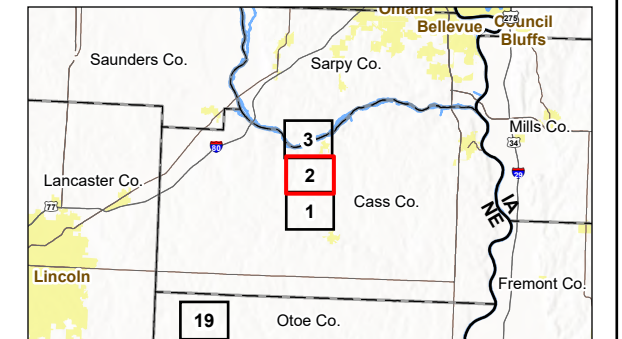


Figure No. **6-3**
Title
FEMA Flood Hazard Areas for Project Omaha 3rd Branch Line Loop
Client/Project
 Northern Natural Gas
 Central Mainline Corridor Expansion Project
 172609221
Project Location
 Precinct of Center & Louisville
 Cass County, Nebraska
 Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-20



- Legend**
- Mile Post
 - HDD
 - Proposed Pipeline
 - Existing Pipeline
 - Environmental Survey Boundary
 - Environmental Survey Boundary To Be Surveyed
 - Temporary Workspace
 - Extra Temporary Workspace
 - Temporary Access Road
 - Staging Area
 - Flood Hazard Zones**
 - Regulatory Floodway
 - 100-year Floodplain
 - 500-year Floodplain
 - National Hydrography Dataset**
 - Perennial Stream
 - Intermittent Stream
 - Canal/Ditch
 - Waterbody



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2022

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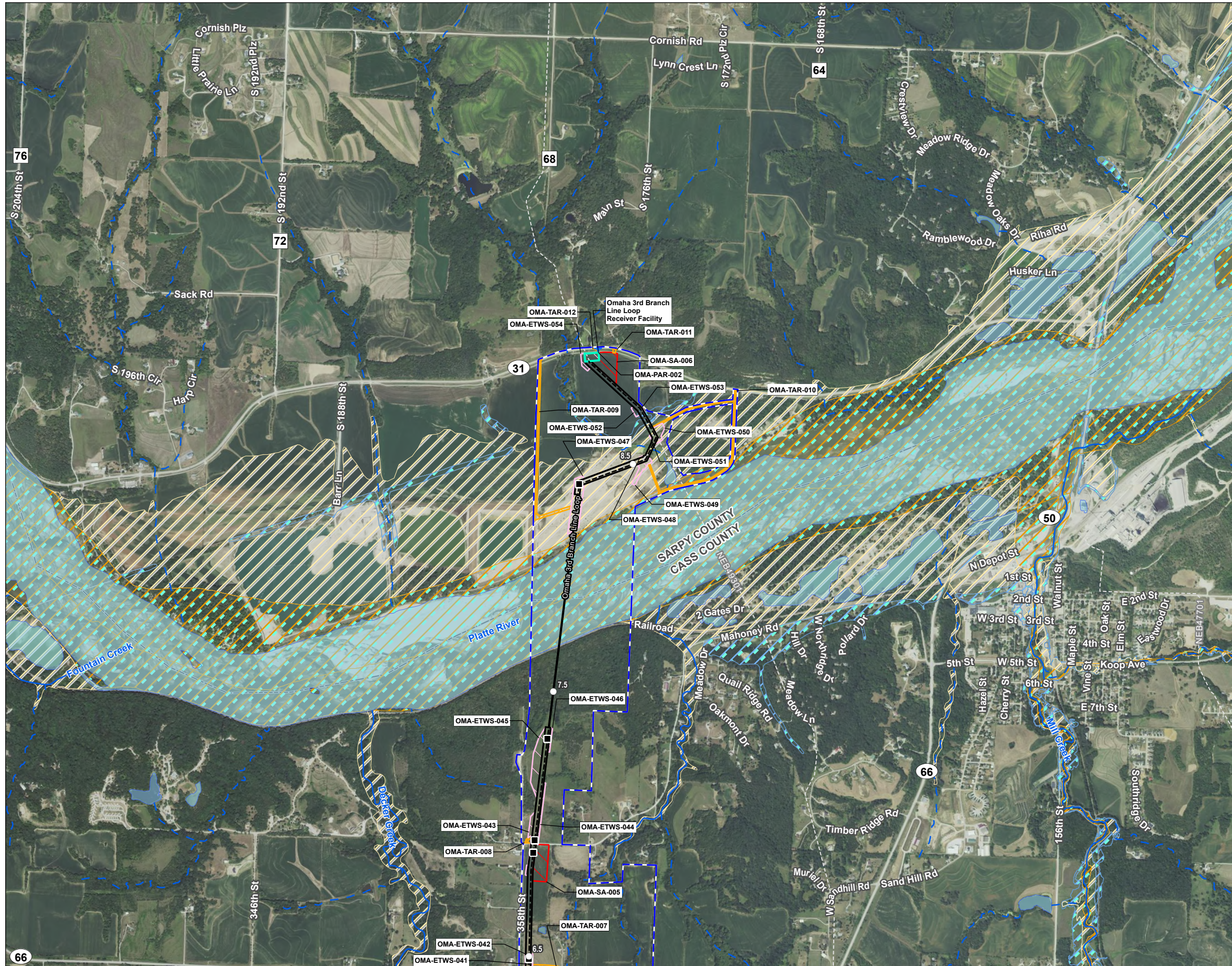
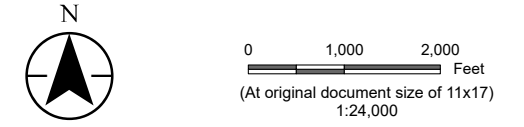
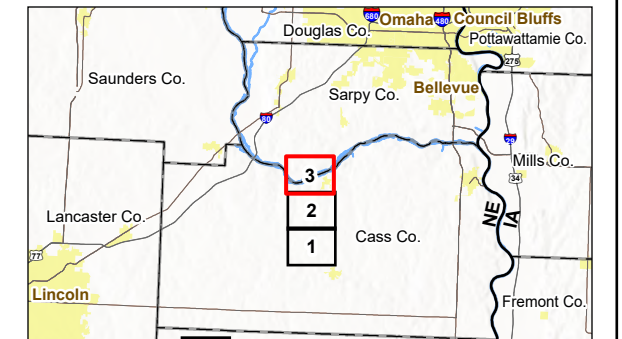


Figure No. **6-3**
 Title **FEMA Flood Hazard Areas for Project Omaha 3rd Branch Line Loop**
 Client/Project Northern Natural Gas Central Mainline Corridor Expansion Project 172609221
 Project Location Precinct of Louisville & Plattford-Springfield II Sarpy & Cass Counties, Nebraska Prepared by JM on 2026-02-09 TR by SF on 2026-02-27 IR by SK on 2026-03-20



- Legend**
- Mile Post
 - HDD
 - Proposed Pipeline
 - Existing Pipeline
 - ▭ Environmental Survey Boundary
 - ▭ Proposed Facility
 - ▭ Permanent Access Road
 - ▭ Temporary Workspace
 - ▭ Extra Temporary Workspace
 - ▭ Temporary Access Road
 - ▭ Staging Area
 - Flood Hazard Zones**
 - ▭ Regulatory Floodway
 - ▭ 100-year Floodplain
 - ▭ 500-year Floodplain
 - National Hydrography Dataset**
 - ▭ Perennial Stream
 - ▭ Intermittent Stream
 - ▭ Canal/Ditch
 - ▭ Waterbody



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2022

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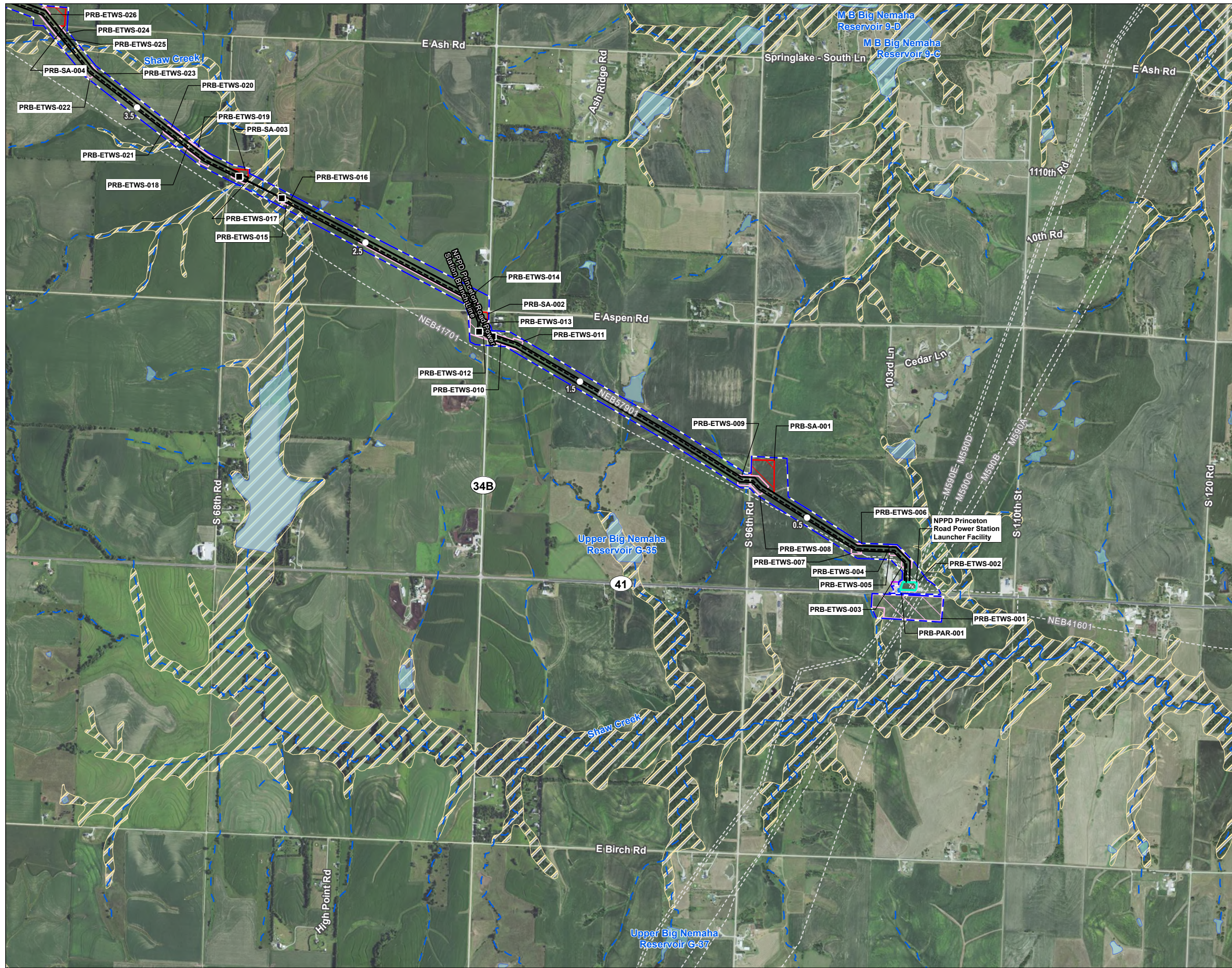
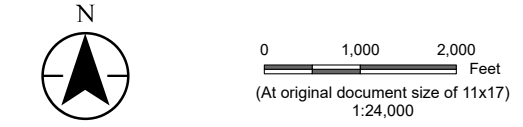
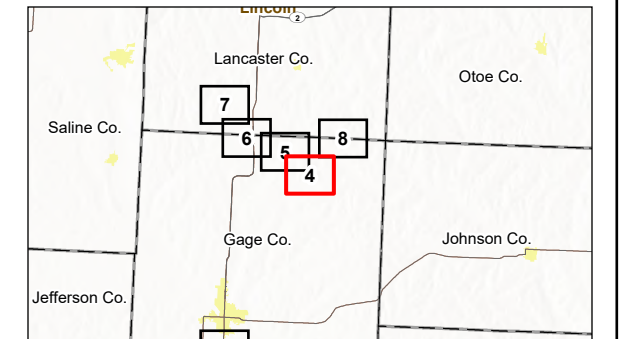


Figure No. **6-3**
 Title **FEMA Flood Hazard Areas for Project NPPD Princeton Road Power Station Branch Line**
 Client/Project Northern Natural Gas Central Mainline Corridor Expansion Project 172609221
 Project Location Township of Nemaha Gage County, Nebraska Prepared by JM on 2026-02-09 TR by SF on 2026-02-27 IR by SK on 2026-03-20



- Legend**
- Mile Post
 - HDD
 - Proposed Pipeline
 - Existing Pipeline
 - Environmental Survey Boundary
 - Environmental Survey Boundary To Be Surveyed
 - Proposed Facility
 - Permanent Access Road
 - Temporary Workspace
 - Extra Temporary Workspace
 - Staging Area
 - Flood Hazard Zones**
 - 100-year Floodplain
 - National Hydrography Dataset**
 - Perennial Stream
 - Intermittent Stream
 - Canal/Ditch
 - Waterbody



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2022

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Figure No.

6-3

Title
**FEMA Flood Hazard Areas for Project
NPPD Princeton Road Power Station
Branch Line**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project

172609221

Project Location
Township of Nemaha
Gage County, Nebraska

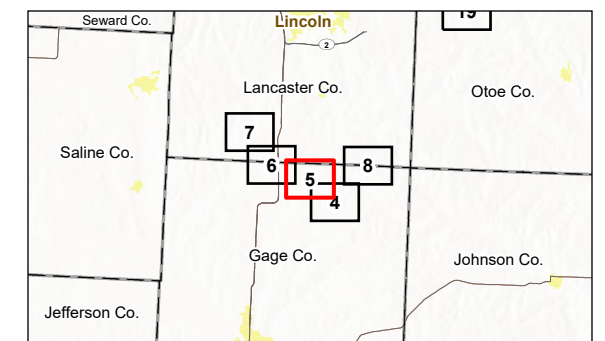
Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-20



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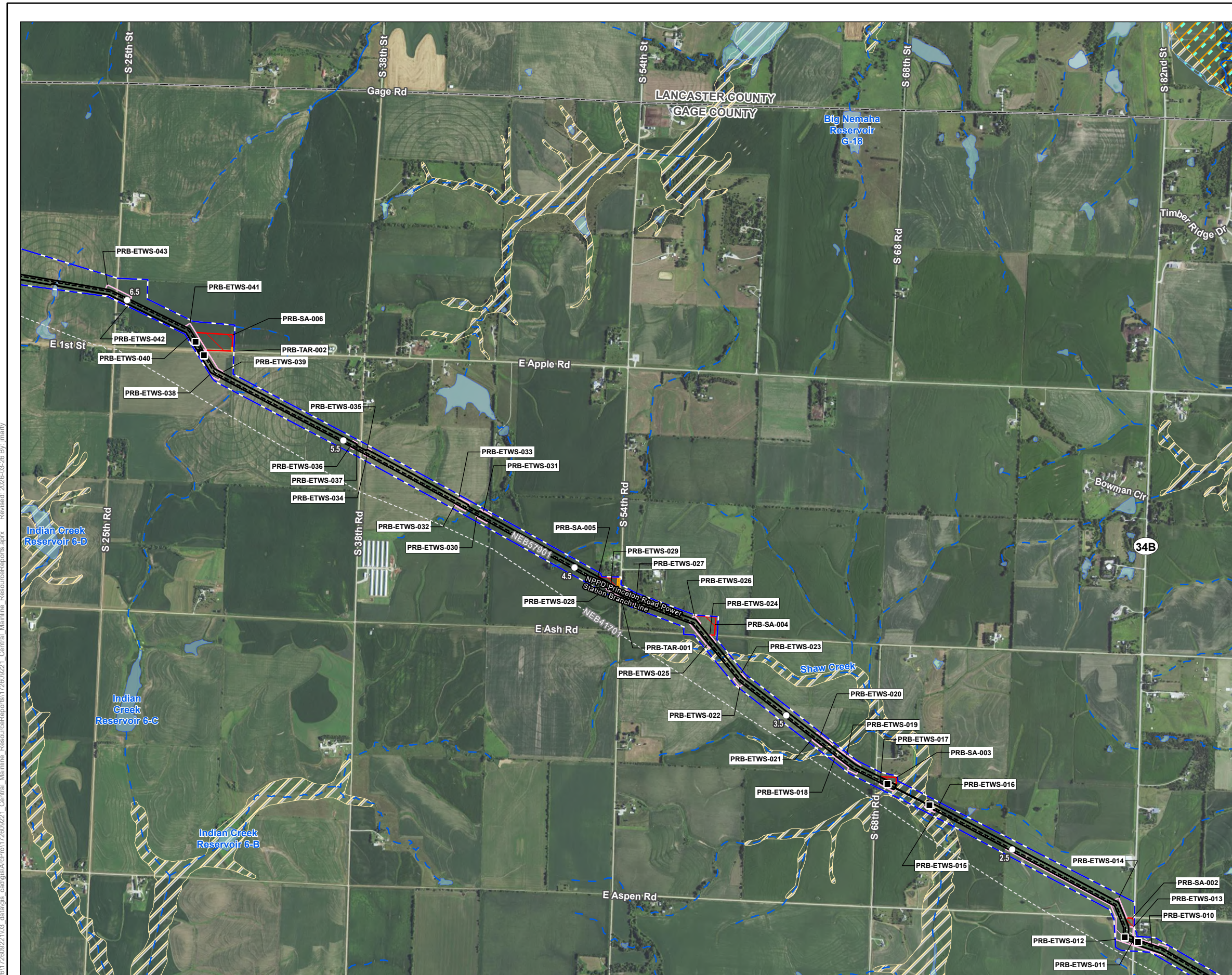
- Mile Post
- HDD
- Proposed Pipeline
- Existing Pipeline
- ▭ Environmental Survey Boundary
- ▭ Temporary Workspace
- ▭ Extra Temporary Workspace
- ▭ Temporary Access Road
- ▭ Staging Area
- Flood Hazard Zones**
- ▭ Regulatory Floodway
- ▭ 100-year Floodplain
- ▭ 500-year Floodplain
- National Hydrography Dataset**
- ~ Perennial Stream
- ~ Intermittent Stream
- ~ Canal/Ditch
- ~ Waterbody



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2022



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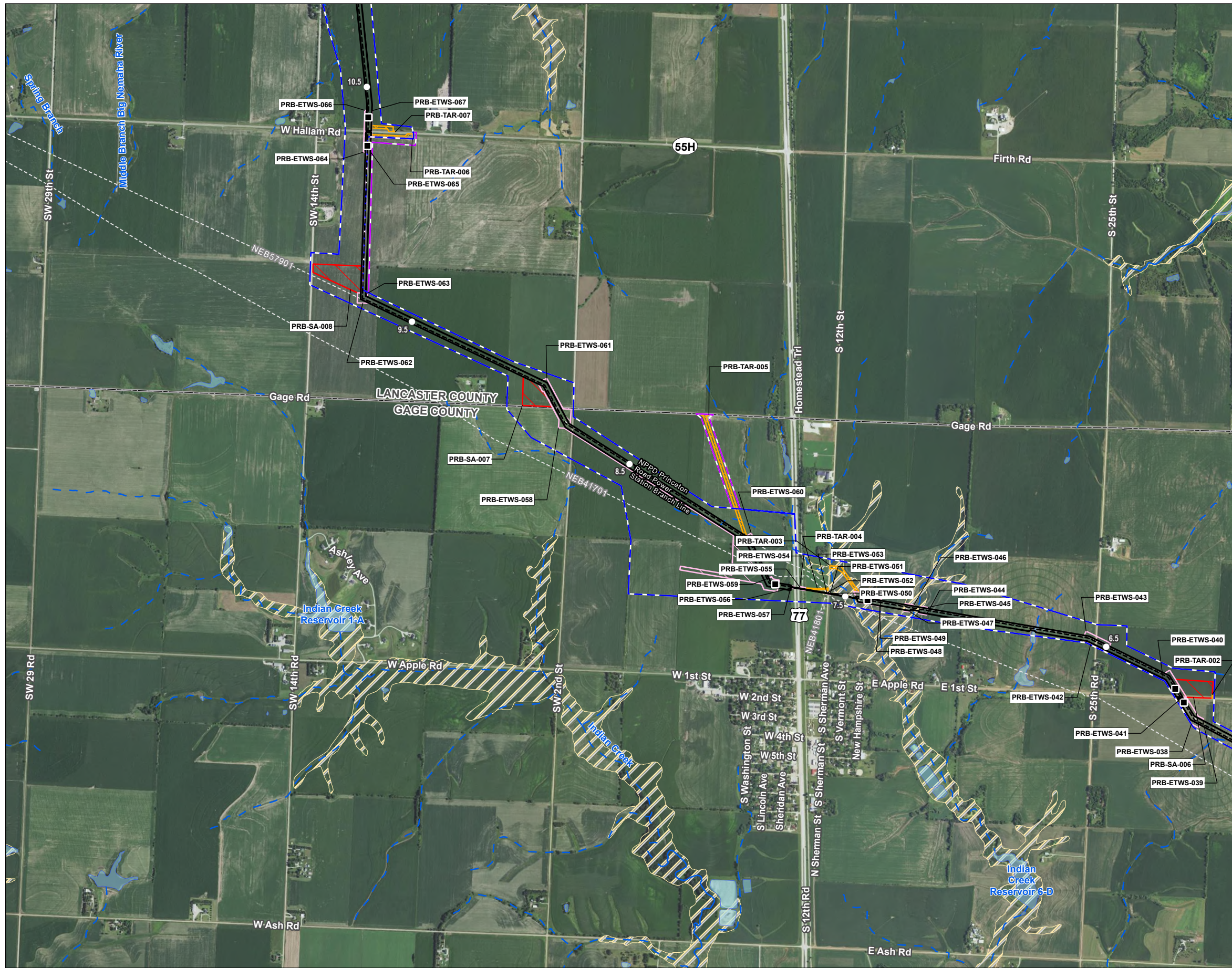
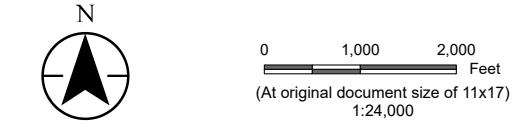
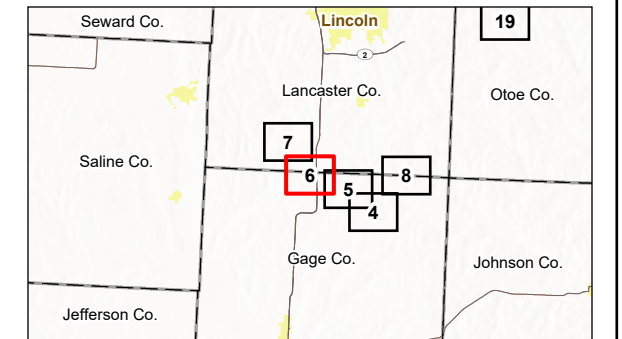


Figure No. **6-3**
Title
FEMA Flood Hazard Areas for Project NPPD Princeton Road Power Station Branch Line
 Client/Project
 Northern Natural Gas
 Central Mainline Corridor Expansion Project
 172609221
 Project Location
 Township of Highland & Precinct of Buda
 Lancaster & Gage Counties, Nebraska
 Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-20



- Legend**
- Mile Post
 - HDD
 - Proposed Pipeline
 - Existing Pipeline
 - Environmental Survey Boundary
 - Environmental Survey Boundary To Be Surveyed
 - Temporary Workspace
 - Extra Temporary Workspace
 - Temporary Access Road
 - Staging Area
 - Flood Hazard Zones**
 - 100-year Floodplain
 - National Hydrography Dataset**
 - Perennial Stream
 - Intermittent Stream
 - Canal/Ditch
 - Waterbody



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2022

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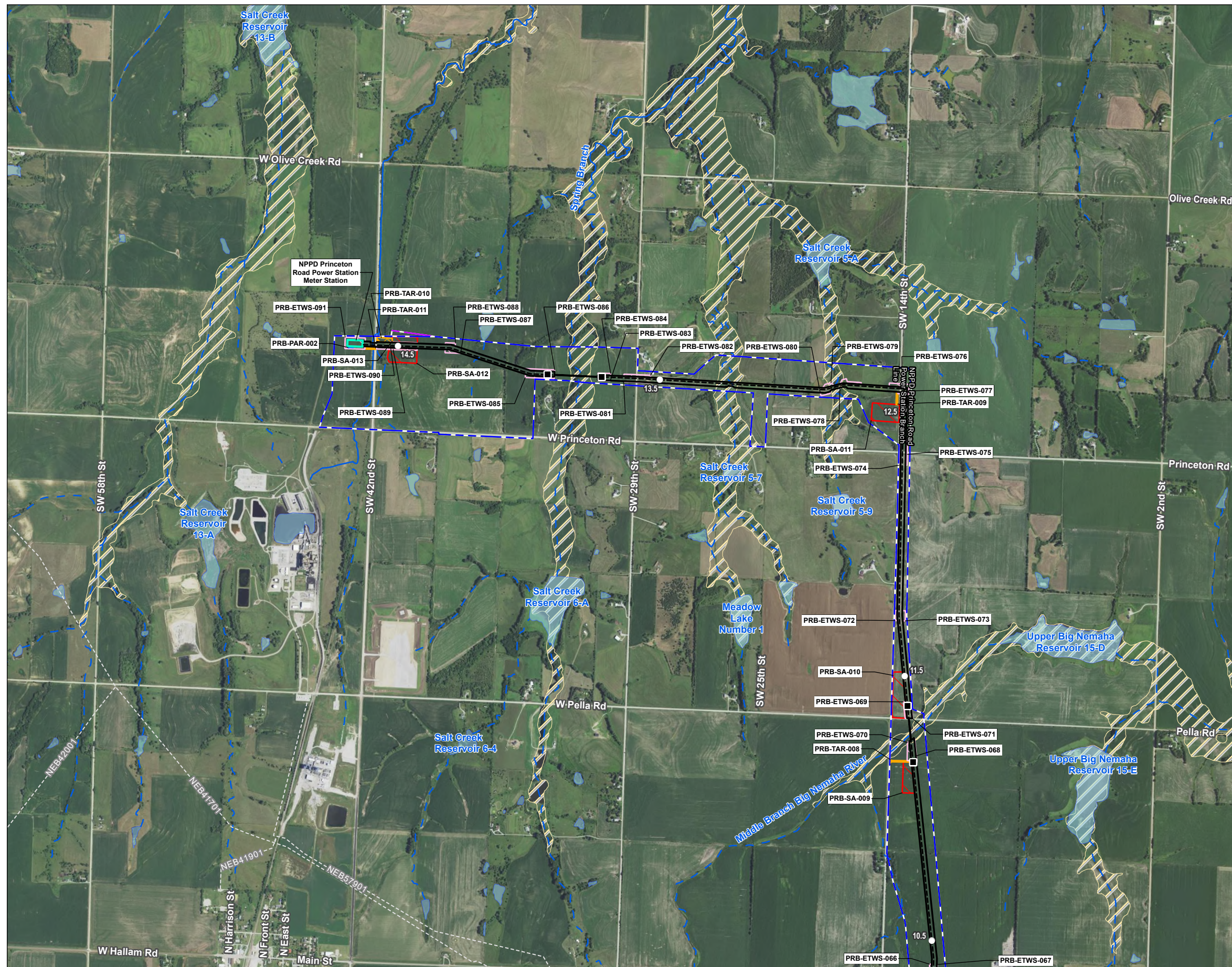
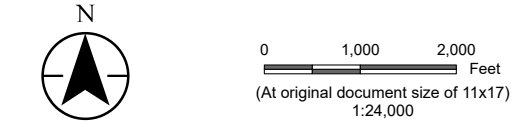
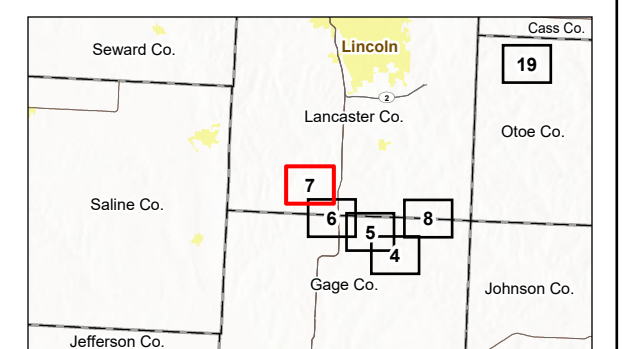


Figure No. **6-3**
 Title **FEMA Flood Hazard Areas for Project NPPD Princeton Road Power Station Branch Line**
 Client/Project Northern Natural Gas Central Mainline Corridor Expansion Project 172609221
 Project Location Precinct of Buda Lancaster County, Nebraska Prepared by JM on 2026-02-09 TR by SF on 2026-02-27 IR by SK on 2026-03-20



- Legend**
- Mile Post
 - HDD
 - Proposed Pipeline
 - ... Existing Pipeline
 - Environmental Survey Boundary
 - Environmental Survey Boundary To Be Surveyed
 - Proposed Facility
 - ▨ Permanent Access Road
 - ▨ Temporary Workspace
 - ▨ Extra Temporary Workspace
 - ▨ Temporary Access Road
 - ▨ Staging Area
 - ▨ Flood Hazard Zones
 - ▨ 100-year Floodplain
 - ▨ National Hydrography Dataset
 - ▨ Perennial Stream
 - ▨ Intermittent Stream
 - ▨ Canal/Ditch
 - ▨ Waterbody



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2022

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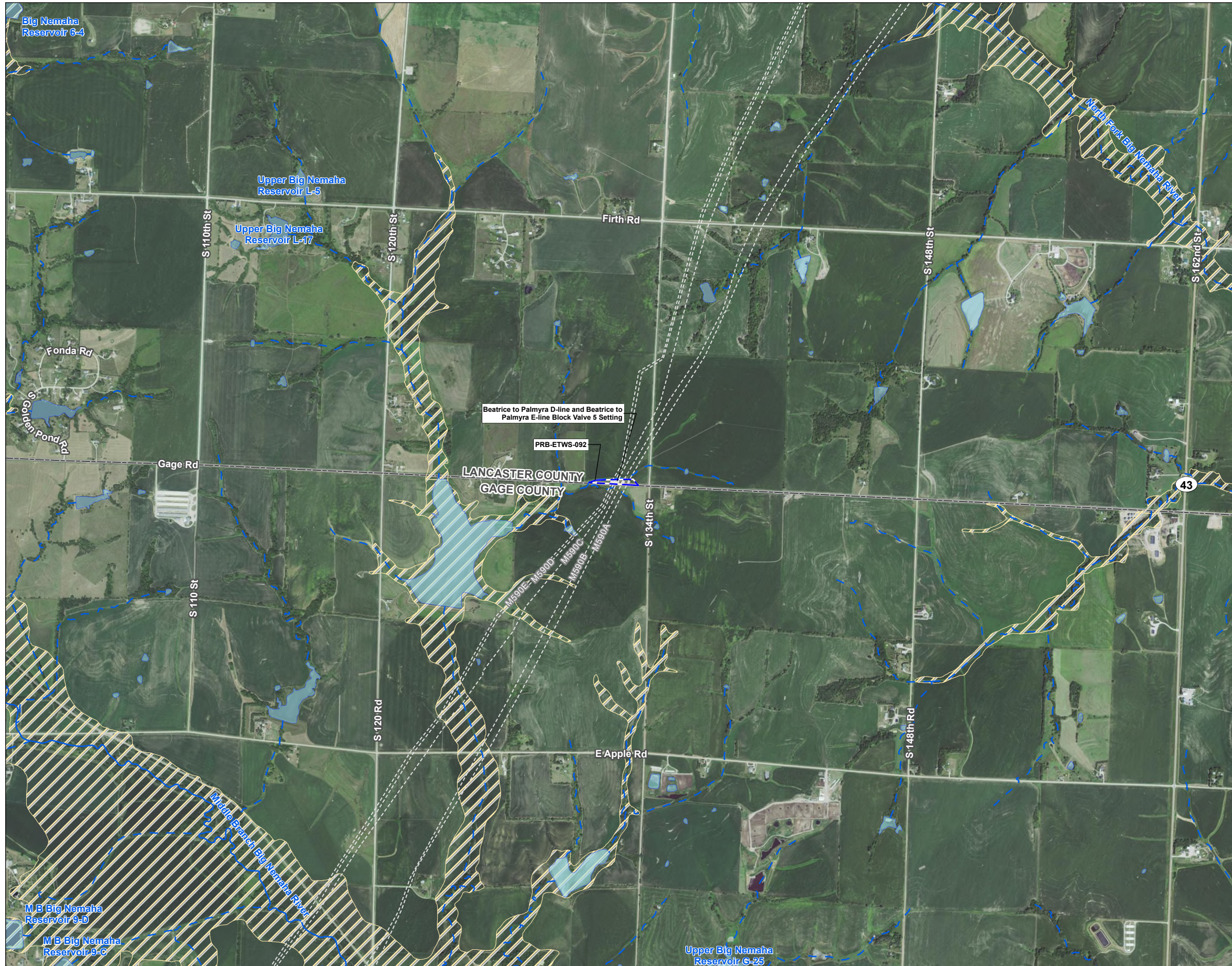


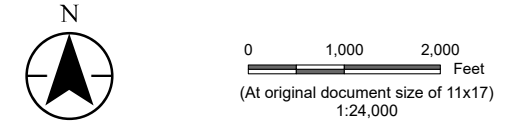
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6-3

Title
**FEMA Flood Hazard Areas for Project
 NPPD Princeton Road Power Station
 Branch Line**

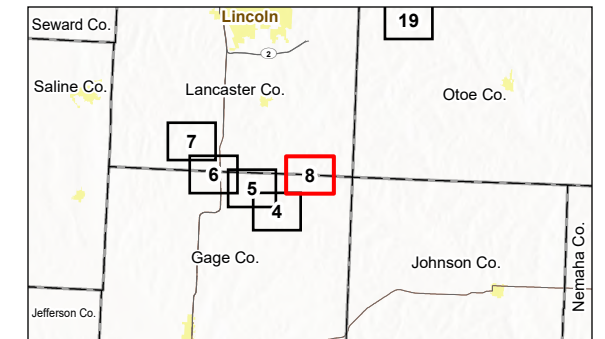
Client/Project Northern Natural Gas 172609221
 Central Mainline Corridor Expansion Project

Project Location Township of Nemaha, Gage County, Nebraska
 Prepared by JM on 2026-02-09, TR by SF on 2026-02-27, IR by SK on 2026-03-20



Legend

- Existing Pipeline
- Environmental Survey Boundary
- Existing Facility
- Extra Temporary Workspace
- Flood Hazard Zones**
- 100-year Floodplain
- National Hydrography Dataset**
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody

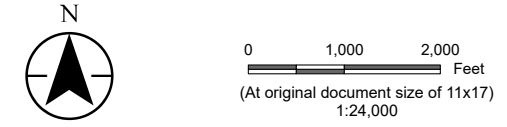


- Notes**
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 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2022

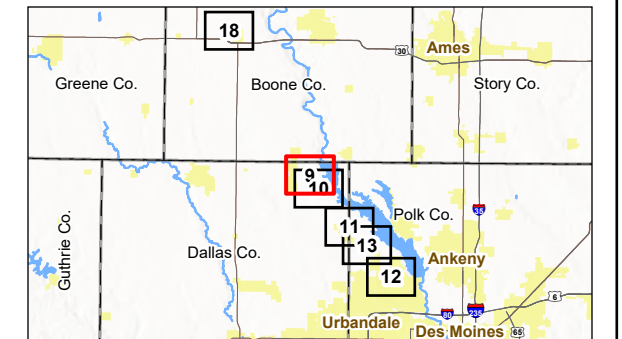
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Figure No. **6-3**
 Title **FEMA Flood Hazard Areas for Project Des Moines C-Line Branch Line Extension**
 Client/Project Northern Natural Gas Central Mainline Corridor Expansion Project 172609221
 Project Location Township of Des Moines Dallas County, Iowa Prepared by JM on 2026-02-09 TR by SF on 2026-02-27 IR by SK on 2026-03-20



- Legend**
- Mile Post
 - Proposed Pipeline
 - Existing Pipeline
 - ▭ Environmental Survey Boundary
 - ▭ Existing Facility
 - ▭ Proposed Facility
 - ▭ Permanent Access Road
 - ▭ Temporary Workspace
 - ▭ Extra Temporary Workspace
 - ▭ Temporary Access Road
 - ▭ Staging Area
 - Flood Hazard Zones**
 - ▭ 100-year Floodplain
 - ▭ 500-year Floodplain
 - National Hydrography Dataset**
 - ▭ Perennial Stream
 - ▭ Intermittent Stream
 - ▭ Canal/Ditch
 - ▭ Waterbody



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2023

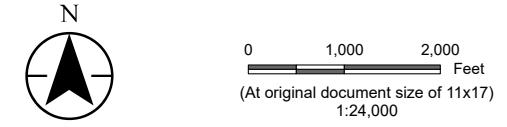
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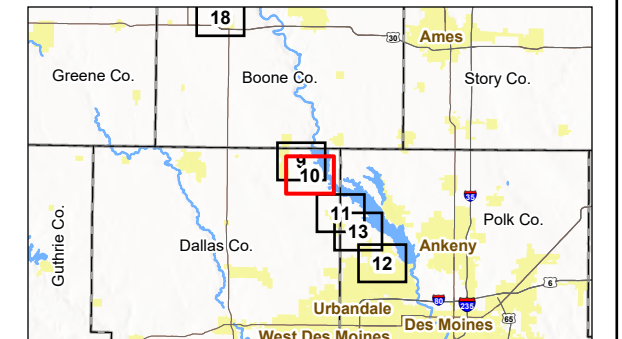
Figure No. **6-3**
 Title **FEMA Flood Hazard Areas for Project Des Moines C-Line Branch Line Extension**

Client/Project Northern Natural Gas 172609221
 Central Mainline Corridor Expansion Project

Project Location Township of Des Moines Dallas County, Iowa Prepared by JM on 2026-02-09 TR by SF on 2026-02-27 IR by SK on 2026-03-20



- Legend
- Mile Post
 - Proposed Pipeline
 - Existing Pipeline
 - Environmental Survey Boundary
 - Existing Facility
 - Proposed Facility
 - Permanent Access Road
 - Temporary Workspace
 - Extra Temporary Workspace
 - Temporary Access Road
 - Staging Area
 - Flood Hazard Zones
 - 100-year Floodplain
 - 500-year Floodplain
 - National Hydrography Dataset
 - Perennial Stream
 - Intermittent Stream
 - Canal/Ditch
 - Waterbody

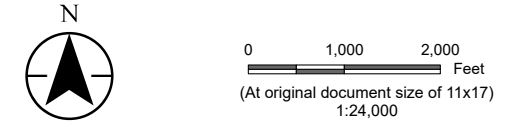


Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2023

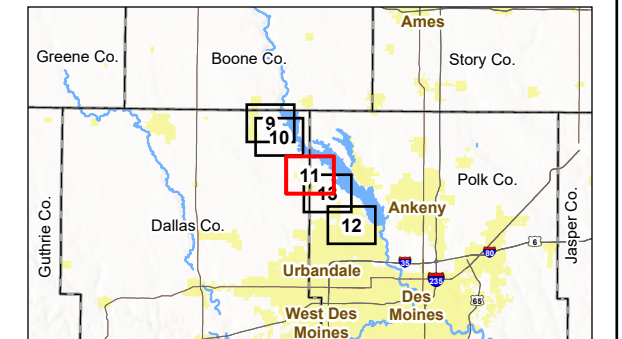
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Figure No. **6-3**
 Title **FEMA Flood Hazard Areas for Project Des Moines C-Line South Loop Uprate - Royal Estates Reducing Station**
 Client/Project Northern Natural Gas Central Mainline Corridor Expansion Project 172609221
 Project Location Townships of Grant & Jefferson Dallas & Polk Counties, Iowa Prepared by JM on 2026-02-09 TR by SF on 2026-02-27 IR by SK on 2026-03-20



- Legend
- Existing Pipeline
 - Environmental Survey Boundary
 - Existing Facility
 - Temporary Workspace
 - Extra Temporary Workspace
 - Flood Hazard Zones
 - 100-year Floodplain
 - 500-year Floodplain
 - National Hydrography Dataset
 - Perennial Stream
 - Intermittent Stream
 - Canal/Ditch
 - Waterbody

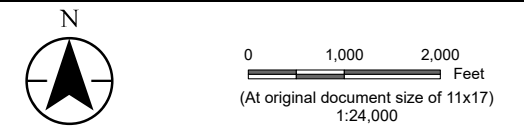


Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2023

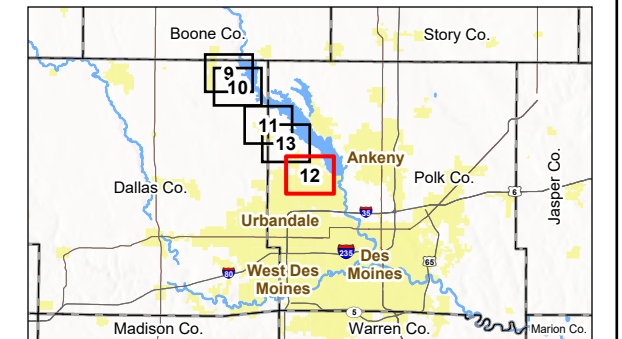


Figure No. **6-3**
Title
FEMA Flood Hazard Areas for Project Des Moines C-Line South Loop Upgrade - Des Moines A-line Launcher Facility
 Client/Project Northern Natural Gas 172609221
 Central Mainline Corridor Expansion Project

Project Location Township of Jefferson Polk County, Iowa
 Prepared by JM on 2026-02-09
 TR by SF on 2026-02-27
 IR by SK on 2026-03-20



- Legend**
- Existing Pipeline
 - Environmental Survey Boundary
 - Existing Facility
 - Temporary Workspace
 - Extra Temporary Workspace
 - Flood Hazard Zones**
 - Regulatory Floodway
 - 100-year Floodplain
 - 500-year Floodplain
 - National Hydrography Dataset**
 - Perennial Stream
 - Intermittent Stream
 - Canal/Ditch
 - Waterbody



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2023

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Figure No.

6-3

Title

FEMA Flood Hazard Areas for Project Des Moines C-Line South Loop Uprate - Grimes Iowa TBS

172609221

Client/Project

Northern Natural Gas
Central Mainline Corridor Expansion Project

Project Location

Township of Jefferson
Polk County, Iowa

Prepared by JM on 2026-02-09

TR by SF on 2026-02-27

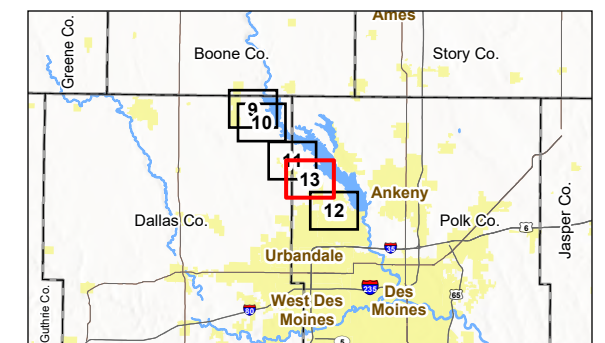
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Legend

- Existing Pipeline
- Environmental Survey Boundary
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Flood Hazard Zones**
- Regulatory Floodway
- 100-year Floodplain
- 500-year Floodplain
- National Hydrography Dataset**
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
3. Background: NAIP 2023



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Figure No.

6-3

Title

FEMA Flood Hazard Areas for Project Clarion Compressor Station

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

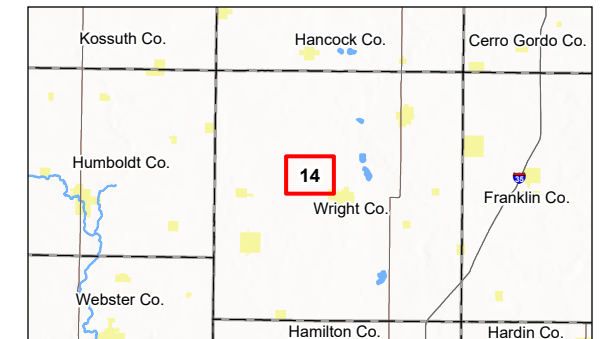
Project Location
Township of Lake
Wright County, Iowa
Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-20



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Legend

- Existing Pipeline
- Environmental Survey Boundary
- Existing Facility
- Proposed Facility
- Permanent Access Road
- Extra Temporary Workspace
- Flood Hazard Zones**
- 100-year Floodplain
- National Hydrography Dataset**
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2023



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Figure No.

6-3

Title

**FEMA Flood Hazard Areas for Project
Beatrice Compressor Station**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project

172609221

Project Location
Township of Riverside
Gage County, Nebraska

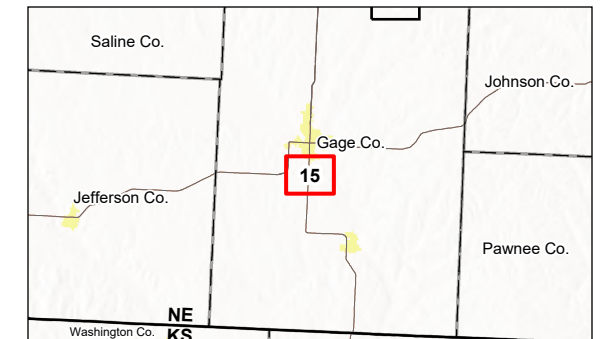
Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-20



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Legend

- Existing Pipeline
- Environmental Survey Boundary
- Temporary Workspace
- Flood Hazard Zones**
- 100-year Floodplain
- 500-year Floodplain
- National Hydrography Dataset**
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2022



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Figure No.
6-3

Title
**FEMA Flood Hazard Areas for Project
Guthrie Center Compressor Station**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project

172609221

Project Location
Township of Bear Grove
Guthrie County, Iowa

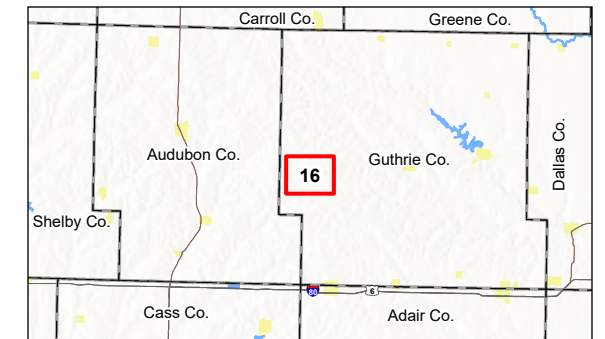
Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-20



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Legend

- Existing Pipeline
- Environmental Survey Boundary
- ▭ Temporary Workspace
- Flood Hazard Zones**
- ▨ 100-year Floodplain
- ▨ 500-year Floodplain
- National Hydrography Dataset**
- ~ Perennial Stream
- - - Intermittent Stream
- ~ Canal/Ditch
- Waterbody



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2023



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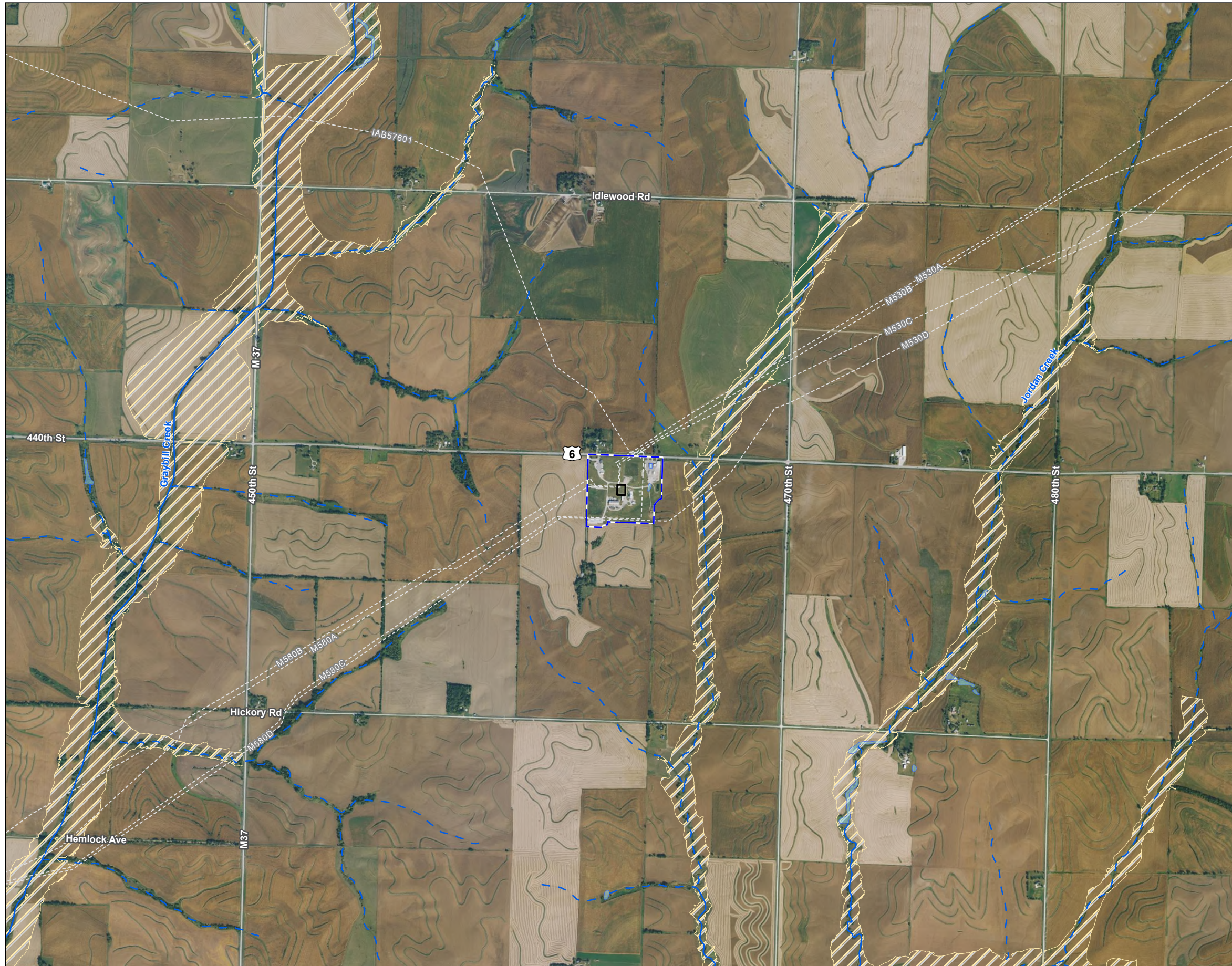


Figure No.

6-3

Title

**FEMA Flood Hazard Areas for Project
Oakland Compressor Station**

Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project

172609221

Project Location
Township of Center
Pottawattamie County, Iowa

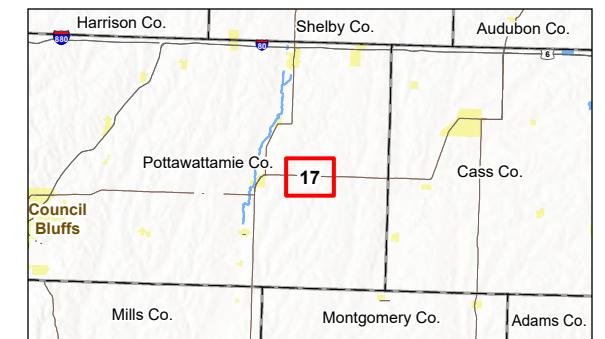
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TR by SF on 2026-02-27
IR by SK on 2026-03-20



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Legend

- Existing Pipeline
- Environmental Survey Boundary
- Temporary Workspace
- Flood Hazard Zones**
- 100-year Floodplain
- National Hydrography Dataset**
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



- Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2023



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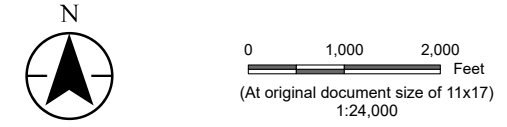
Figure No. **6-3**

Title
FEMA Flood Hazard Areas for Project Ogden Compressor Station

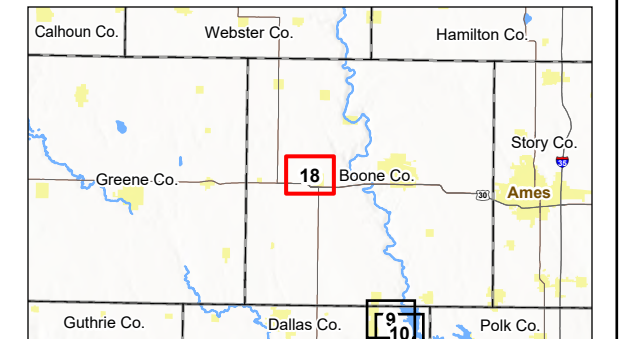
Client/Project
Northern Natural Gas
Central Mainline Corridor Expansion Project 172609221

Project Location
Township of Yell
Boone County, Iowa

Prepared by JM on 2026-02-09
TR by SF on 2026-02-27
IR by SK on 2026-03-20



- Legend
- Existing Pipeline
 - Environmental Survey Boundary
 - Temporary Workspace
 - Flood Hazard Zones
 - 100-year Floodplain
 - 500-year Floodplain
 - National Hydrography Dataset
 - Perennial Stream
 - Intermittent Stream
 - Canal/Ditch
 - Waterbody



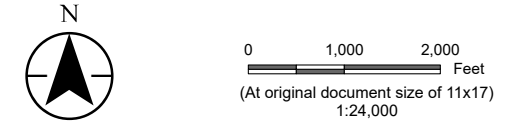
Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
3. Background: NAIP 2023

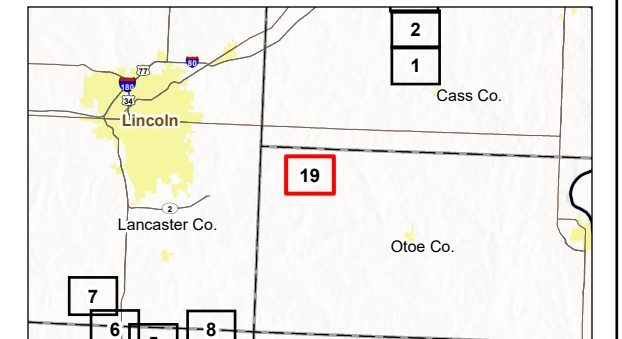
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Figure No. **6-3**
 Title **FEMA Flood Hazard Areas for Project Palmyra Compressor Station**
 Client/Project Northern Natural Gas Central Mainline Corridor Expansion Project 172609221
 Project Location Precinct of North Palmyra Otoe County, Nebraska Prepared by JM on 2026-02-09 TR by SF on 2026-02-27 IR by SK on 2026-03-20



- Legend
- Existing Pipeline
 - Environmental Survey Boundary
 - Temporary Workspace
 - Flood Hazard Zones
 - ▨ 100-year Floodplain
 - National Hydrography Dataset
 - Perennial Stream
 - - - Intermittent Stream
 - Canal/Ditch
 - Waterbody



Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec, NNG, Esri, USCB, USGS, FEMA
 3. Background: NAIP 2022

Appendix 6A Steep Slopes for the Project

MP Begin	MP End	Slope Category¹	Length (feet)
Omaha 3rd branch line loop			
0.11	0.16	5-15	255
0.17	0.19	5-15	123
0.77	0.80	5-15	176
0.80	0.83	5-15	132
0.88	0.89	5-15	54
0.94	0.98	5-15	248
1.19	1.22	5-15	154
2.08	2.10	5-15	99
2.10	2.12	5-15	129
2.73	2.74	5-15	51
3.04	3.06	5-15	107
3.10	3.11	5-15	73
3.15	3.16	5-15	75
3.59	3.66	5-15	375
3.73	3.74	5-15	75
4.13	4.14	5-15	45
4.20	4.22	5-15	119
4.38	4.42	5-15	228
4.45	4.47	5-15	76
4.61	4.69	5-15	411
4.84	4.91	5-15	397
5.09	5.13	5-15	227
5.14	5.15	5-15	52
5.55	5.56	5-15	86
5.57	5.60	5-15	140
5.61	5.64	5-15	172
5.65	5.66	5-15	70
5.74	5.75	5-15	53
5.75	5.76	5-15	57
5.78	5.80	5-15	92
5.84	5.86	5-15	123
5.87	5.88	5-15	62
5.89	5.90	5-15	37
5.90	5.92	5-15	62
5.92	5.93	5-15	45
5.94	5.95	5-15	82

MP Begin	MP End	Slope Category ¹	Length (feet)
5.95	5.96	15-30	57
5.97	5.99	5-15	135
6.03	6.06	5-15	127
6.07	6.08	5-15	78
6.09	6.10	5-15	74
6.10	6.12	5-15	70
6.12	6.14	5-15	86
6.41	6.42	>30	41 ²
6.44	6.45	15-30	53 ²
6.50	6.50	5-15	45
6.51	6.53	5-15	148
6.54	6.56	5-15	140
6.57	6.59	15-30	86
6.61	6.62	15-30	45
6.63	6.64	5-15	41
6.70	6.71	5-15	49
6.89	6.92	5-15	148 ²
6.94	7.01	5-15	332
7.10	7.17	5-15	373
7.20	7.22	5-15	102
7.31	7.33	5-15	145 ²
7.40	7.44	15-30	213 ²
7.46	7.51	5-15	255 ²
7.56	7.61	5-15	250 ²
NPPD Princeton Road power station branch line			
0.12	0.18	5-15	361
0.30	0.32	5-15	84
0.35	0.40	5-15	216
0.62	0.66	5-15	188
0.76	0.77	5-15	59
0.91	0.92	5-15	57
1.12	1.14	5-15	82
1.19	1.26	5-15	399
1.29	1.32	5-15	239
1.35	1.40	5-15	222
1.57	1.58	5-15	65
1.61	1.66	5-15	251
1.67	1.69	5-15	83

MP Begin	MP End	Slope Category¹	Length (feet)
1.77	1.82	5-15	233
2.47	2.49	5-15	106
2.61	2.64	5-15	169
2.69	2.73	5-15	176
2.73	2.74	5-15	44
3.23	3.23	5-15	43
3.24	3.25	5-15	79
3.28	3.29	5-15	67
3.33	3.36	5-15	145
3.57	3.59	5-15	99
3.65	3.68	5-15	159
3.72	3.78	5-15	316
4.04	4.06	5-15	120
4.06	4.09	5-15	130
4.95	4.99	5-15	185
5.46	5.48	5-15	100
6.79	6.81	5-15	78
7.19	7.23	5-15	178
7.26	7.27	5-15	81
7.42	7.45	5-15	158 ²
8.07	8.08	5-15	63
10.58	10.59	5-15	74
11.22	11.27	5-15	271 ²
11.38	11.39	5-15	84 ²
11.88	11.91	5-15	112
12.18	12.21	5-15	161
12.28	12.29	5-15	79
12.58	12.59	5-15	62
12.65	12.72	5-15	339
12.74	12.83	5-15	503
12.85	12.88	5-15	174
12.93	13.00	5-15	378
13.03	13.06	5-15	151
13.09	13.10	5-15	70
13.15	13.21	5-15	299
13.28	13.36	5-15	386
13.49	13.51	5-15	106
13.56	13.58	5-15	133

MP Begin	MP End	Slope Category¹	Length (feet)
13.59	13.62	5-15	171
13.65	13.67	5-15	84
13.86	13.88	5-15	148 ²
13.89	13.91	5-15	107 ²
13.91	13.93	5-15	105
13.94	13.98	5-15	231
14.06	14.08	5-15	127
14.13	14.19	5-15	309
14.21	14.25	5-15	223
14.27	14.30	5-15	163
14.44	14.54	5-15	531
14.54	14.55	15-30	51
14.60	14.63	5-15	177
Des Moines C-Line branch line extension			
16.31	16.31	5-15	36
17.17	17.18	5-15	46

¹ Slopes were obtained from civil survey data.

² Area is within an HDD or auger bore.

Appendix 6B
Reports of Geotechnical Investigation for the Project

Geotechnical Exploration Report

NNG CMC Corridor – Omaha Site

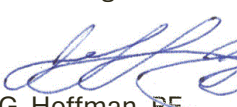
Omaha, Nebraska

Prepared for

Stantec Consulting Services, Inc.

Professional Certification:

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Nebraska.


Jeffrey G. Hoffman, PE
Principal Engineer
License Number: E-16010
April 10, 2026



Braun Intertec Corporation

Project B2508623

April 10, 2026

Project B2508623

Ginger Chan
Stantec Consulting Services, Inc.
200-325 25 Street SE
Calgary, AB T2A 7H8

Re: Geotechnical Exploration Report
NNG CMC Corridor – Omaha Site
Omaha, Nebraska

Dear Ms. Chan:

We are pleased to present this geotechnical exploration report for the above referenced project.

Thank you for making Braun Intertec Corporation (Braun Intertec) your geotechnical consultant for this project. If you have questions about this report, or if there are other services that we can provide in support of our work to date, please contact Richard Jett at 815-545-7059 (rjett@braunintertec.com).

Sincerely,

Braun Intertec Corporation



Richard S. Jett
Project Manager



Jeffrey G. Hoffman, PE
Associate Director, Principal Engineer



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1.0 Scope of Services

We performed our scope of services for the project in accordance with the task order from Stantec Consulting Services, Inc. dated June 11, 2025, Change Order #1 dated October 7, 2025, and subsequent change order email dated December 19, 2025. The following list describes the geotechnical tasks completed in accordance with our authorized scope of services for the Omaha site only. A separate report will be issued for the Princeton Road site.

- Reviewing the background information and reference documents previously cited.
- Coordinating the clearance of the exploration locations of public underground utilities.
- Performing eleven standard penetration test (SPT) borings, denoted as BH-1 through BH-11, to nominal depths ranging from 35 to 139 feet below grade across the site.
- Performing laboratory testing on samples selected by Braun Intertec Corporation with input from Stantec Consulting Services, Inc.
- Preparing this report containing a boring location sketch, logs of soil borings, a summary of the soils encountered, and results of laboratory tests performed on select soil samples.

We performed this geotechnical evaluation concurrently with environmental screening and laboratory testing, the results of which we will submit under separate cover. The project team should review the environmental report in conjunction with this geotechnical exploration report to understand both the geotechnical and environmental aspects of the site and how they may impact one another.

2.0 Results

2.1 Boring Results

Table 2-1 provides a summary of the soil boring results, in the general order we encountered the strata. Please refer to the Log of Boring sheets in the Appendix for additional details. The Descriptive Terminology sheets in the Appendix include definitions of abbreviations used in the table below.



Table 2-1. Subsurface Profile Summary

Strata	Soil Type -ASTM Classification	Range of Penetration Resistances (N Values)	Commentary and Details
Topsoil fill ¹	---	---	<ul style="list-style-type: none"> Observed in Borings BH-1 through BH-6 and BH-11. Extended to approximate depths ranging from 3 to 9 inches below existing grade.
Fill ²	CL	3 to 19	<ul style="list-style-type: none"> Observed in Borings BH-1 through BH-6 and BH-11 below the surficial soils. Extended to depths ranging from approximately 4 to 9 feet below existing grades. Moisture conditions were generally moist. Generally consisted of light brown to dark brown clay laden soils with zones of sand intermixed.
Loess Deposits	CL, CL-ML, ML	2 to 19	<ul style="list-style-type: none"> Observed in Borings BH-1 through BH-6 below the surficial soils and fill soils. Extended to depths ranging from 23 to 50+ feet below existing grade. Relative consistencies of the clay laden soils were generally soft to medium with occasional zones of stiff to very stiff soils. Relative densities of the silt soils were generally loose to medium dense. Generally brown to gray in color. Moisture conditions were generally moist to wet.
Alluvial Deposits	SP, SC, CL, ML	2 to 33	<ul style="list-style-type: none"> Observed in Borings BH-7 through BH-11 below the surficial soils and extended to depths ranging from 60 to 90+ feet below existing grade. Relative densities of the sand soils were generally loose to medium dense. Relative consistencies of the clay soils were generally medium. Moisture conditions were generally moist to wet.
Glacial Deposits	CL	11 to 40	<ul style="list-style-type: none"> Observed in Borings BH-1, BH-2, BH-5, and BH-6 below the loess soils. Extended to depths ranging from 40 to 59 feet. Generally consisted of stiff clay soils. Variable amounts of gravel; may contain cobbles and boulders. Moisture conditions were generally moist to wet.
Bedrock	Limestone, Shale, Sandstone	---	<ul style="list-style-type: none"> Observed in Borings BH-6 through BH-8 below the surficial soils and naturally deposited soils. Continued to the boring termination depths. Generally included alternating layers of shale and limestone. Sandstone also encountered at Boring BH-06. RQD varied from 27 to 83 Recovery varied from 21 to 100

¹We did not perform gradation analysis on the apparent topsoil encountered, in accordance with our scope of work. Therefore, we cannot conclusively determine if the encountered material satisfies a particular specification.

²For simplicity in this report, we define existing fill to mean existing, uncontrolled, or undocumented fill.



It should be noted that we encountered an unknown obstruction in Boring BH-7 at a depth of approximately 58 feet below existing grade. The drill crew attempted rock coring but there was no recovery before encountering sand again after approximately 2 feet. Based on our review of publicly available well logs, several nearby well logs also indicate a hard layer near a depth of 50 to 60 feet below existing grades. These borings were terminated at auger refusal, and generally noted refusal was caused by limestone bedrock. However, since the borings were terminated at refusal, we cannot evaluate if refusal was due to bedrock or other geologic features. Note that our Borings BH-07 and BH-08 encountered sand soils underlain by bedrock at approximate elevations 937 feet and 939 1/2 feet, respectively, and Borings BH-09 through BH-11 terminated in sand soils at approximate elevations 940 to 966 feet. The project team should anticipate the possibility that a hard layer/obstruction may be encountered within the sand soils near approximate elevations 975 to 960 feet across the HDD profile.

The exploration locations completed at this site were denoted as BH-1 through BH-11. The exploration locations were selected by Stantec and performed near the approximate locations as indicated in the attached Soil Boring Location Sketch. Stantec provided us with the surface elevations and GPS coordinates of the boring locations.

2.2 Groundwater

Groundwater was observed in six of the completed eleven soil borings at depths ranging from 6 to 34 feet below existing grade (approximate elevations ranging from 1016 to 1253 1/2 feet). We anticipate that groundwater on the north half of the project alignment, near Borings BH-7 through BH-11, will likely be correlated with the adjacent Platte River. Given the encountered soil types, apparent groundwater may take days or longer to reach equilibrium in the boreholes and we immediately backfilled the boreholes, in accordance with our scope of work. If the project team identifies a need for more accurate determination of groundwater depth, we can install piezometers and complete a groundwater monitoring program. Project planning should anticipate seasonal and annual fluctuations of groundwater.

Table 2-2 summarizes the depths where we observed groundwater; the attached Log of Boring sheets in the Appendix also include this information and additional details.

Table 2-2. Groundwater Summary

Locations	Surface Elevation	Measured Depth to Groundwater (feet)	Corresponding Groundwater Elevation (feet)
BH-1	1289.1	None Observed	None Observed
BH-2	1287.4	34	1253 1/2
BH-3	1237.5	None Observed	None Observed
BH-4	1185.8	None Observed	None Observed
BH-5	1167.3	None Observed	None Observed
BH-6	1150.0	None Observed	None Observed
BH-7	1023.1	7	1016



Locations	Surface Elevation	Measured Depth to Groundwater (feet)	Corresponding Groundwater Elevation (feet)
BH-8	1027.5	9	1018 1/2
BH-9	1030.1	13	1017
BH-10	1026.3	6	1020 1/2
BH-11	1026.2	7	1019 1/2

2.3 Laboratory Test Results

The boring logs show the results of geotechnical laboratory testing we performed next to the tested sample depth. The [Appendix](#) contains the results of these tests.

Moisture content tests performed on select soil samples indicated moisture contents ranging from 15 to 39 percent moisture by weight. Sieve analysis tests performed on select soil samples indicated from 93 to 99 percent particles passing the No. 200 sieve by weight for clay soils and 3 percent of particles passing the No. 200 sieve for sand soils. Atterberg limit tests performed on select clay laden soil samples indicated liquid limits ranging from 32 to 67 percent moisture and plastic limits ranging from 18 to 24 percent moisture.

Dry density tests performed on select apparent bedrock samples indicated dry densities ranging from 120 to 160 pounds per cubic foot.

3.0 Procedures

3.1 Penetration Test Borings

We drilled the penetration test borings with either an All-Terrain Vehicle (ATV)-mounted or a track mounted core and auger drill equipped with hollow-stem auger. We performed the borings in general accordance with ASTM D6151 taking penetration test samples at 2 1/2- or 5-foot intervals in general accordance with ASTM D1586. The boring logs show the actual sample intervals and corresponding depths.

We sealed penetration test boreholes using a bentonite grout slurry per our proposal.

3.2 Exploration Logs

3.2.1 Log of Boring Sheets

The [Appendix](#) includes Log of Boring sheets for our penetration test borings. The logs identify and describe the penetrated geologic materials and present the results of penetration resistance and other in-situ tests



performed. The logs also present the results of organic vapor screening, laboratory tests performed on penetration test samples, and groundwater measurements.

We inferred strata boundaries from changes in the penetration test samples and the auger cuttings. Because we did not perform continuous sampling, the strata boundary depths are only approximate. The boundary depths likely vary away from the boring locations, and the boundaries themselves may occur as gradual rather than abrupt transitions.

3.2.2 Environmental Screening

We conducted the geotechnical exploration concurrently with on site environmental screening and provided the results of the screening under separate cover. The project team should review the environmental report in conjunction with this geotechnical exploration report to understand both the geotechnical and environmental aspects of the site and how they may impact one another.

An environmental technician examined soil samples from the borings for staining, odors, and other apparent signs of contamination within the top 20 feet of each boring. In addition, the environmental technician screened the soil samples for the presence of organic vapors using a photoionization detector (PID). The boring logs in the [Appendix](#) include the PID results, which we discuss further in the companion environmental report.

3.2.3 Geologic Origins

We assigned geologic origins to the materials shown on the logs and referenced within this report, based on: (1) a review of the background information and reference documents cited above, (2) visual classification of the various geologic material samples retrieved during the course of our subsurface exploration, (3) penetration resistance and other in-situ testing performed for the project, (4) laboratory test results, and (5) available common knowledge of the geologic processes and environments that have impacted the site and surrounding area in the past .

3.3 Material Classification and Testing

3.3.1 Visual and Manual Classification

We visually and manually classified the geologic materials encountered based on ASTM D2488. When we performed laboratory classification tests, we used the results to classify the geologic materials in accordance with ASTM D2487. The [Appendix](#) includes a chart explaining the classification system we used.

3.3.2 Laboratory Testing

The exploration logs in the [Appendix](#) note most of the results of the laboratory tests performed on geologic material samples. The remaining laboratory test results follow the exploration logs. We performed the tests in general accordance with ASTM procedures.



3.4 Groundwater Measurements

The drillers checked for groundwater while advancing the penetration test borings, and again after auger withdrawal. We then filled the boreholes noted on the boring logs.

4.0 Qualifications

4.1 Variations in Subsurface Conditions

4.1.1 Material Strata

We developed our soil borings from a limited amount of site and subsurface information. It is not standard engineering practice to retrieve material samples from exploration locations continuously with depth. Therefore, we must infer strata boundaries and thicknesses to some extent. Strata boundaries may also be gradual transitions, and project planning should expect the strata to vary in depth, elevation, and thickness, away from the exploration locations.

Variations in subsurface conditions present between exploration locations may not be revealed until performing additional exploration work or starting construction. If future activity for this project reveals any such variations, you should notify us so that we may reevaluate our recommendations. Such variations could increase construction costs, and we recommend including a contingency to accommodate them.

4.1.2 Groundwater Levels

We made groundwater measurements under the conditions reported herein and shown on the exploration logs and interpreted in the text of this report. Note that the observation periods were relatively short, and project planning can expect groundwater levels to fluctuate in response to rainfall, flooding, irrigation, seasonal freezing and thawing, surface drainage modifications and other seasonal and annual factors.

4.2 Use of Report

This report is for the exclusive use of the addressed parties. Without written approval, we assume no responsibility to other parties regarding this report. Our evaluation, analyses and recommendations may not be appropriate for other parties or projects.

4.3 Standard of Care

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

Appendix

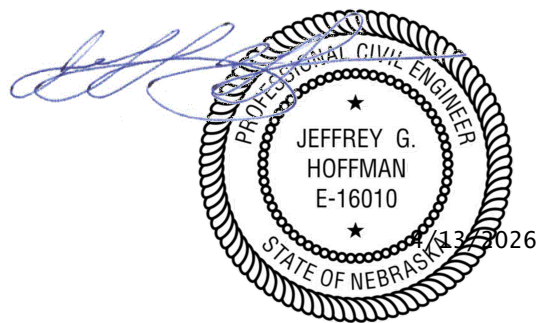
Soil Boring Location Sketch

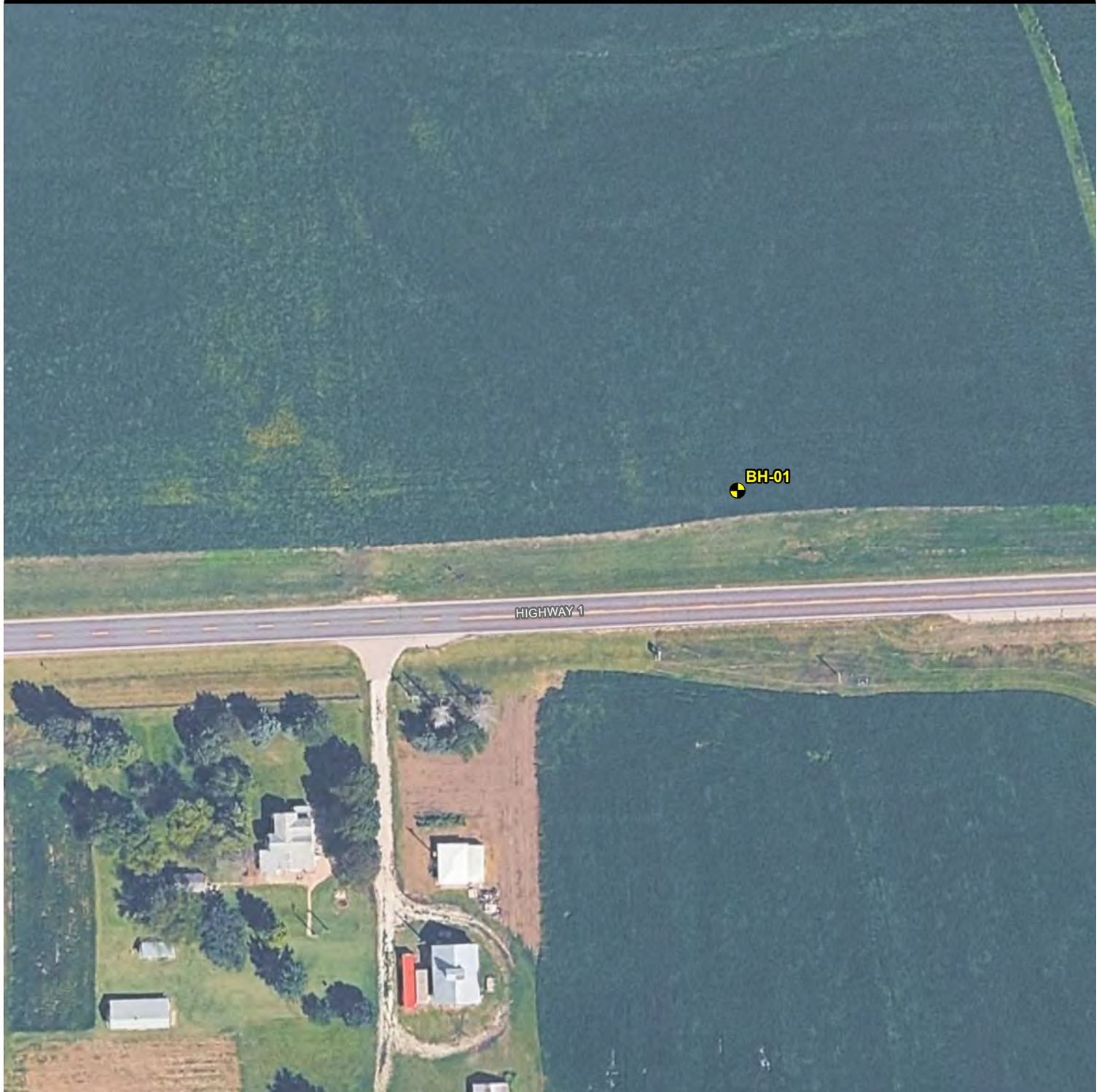
Log of Boring Sheets BH-1 through BH-11

Laboratory Testing Results

Descriptive Terminology of Soil

Descriptive Terminology of Rock





 Soil Boring



0 25 50 100'



SCALE: 1" = 100'

Source: Google Earth Imagery

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braunintertec.com

Project No:
B2508623

Drawing No:
Boring Location Sketch Omaha

Drawn By: ZS
Date Drawn: 10/1/2025
Checked By: RSJ
Last Modified: 1/22/2026

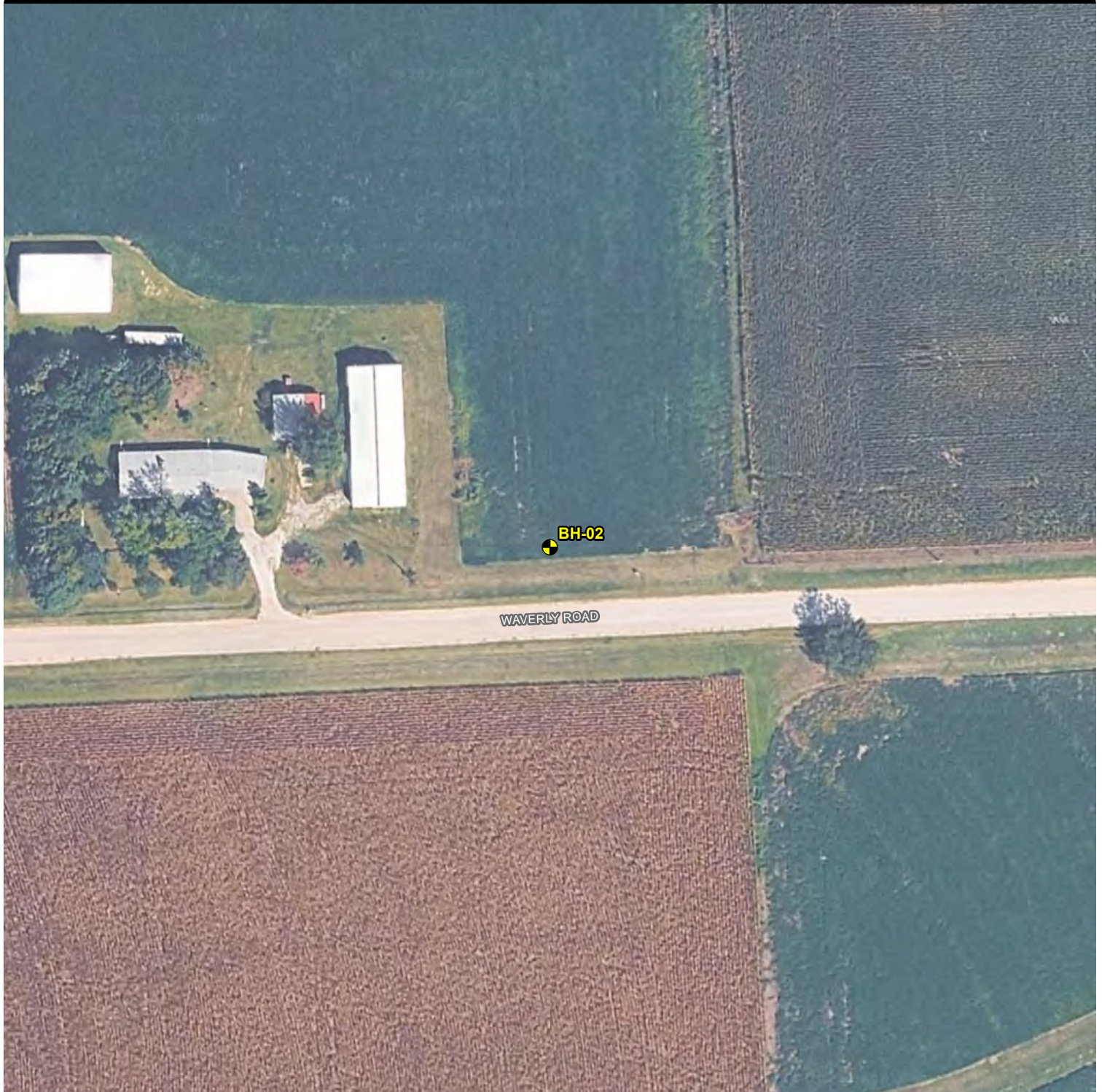
NNG CMC Corridor

NNG Omaha

South of Omaha, Nebraska

**Boring Location
Sketch**

Sheet:
1 of 7



 Soil Boring



0 25 50 100'



SCALE: 1" = 100'

Source: Google Earth Imagery

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Drawing No:
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Drawn By: ZS
Date Drawn: 10/1/2025
Checked By: RSJ
Last Modified: 1/22/2026

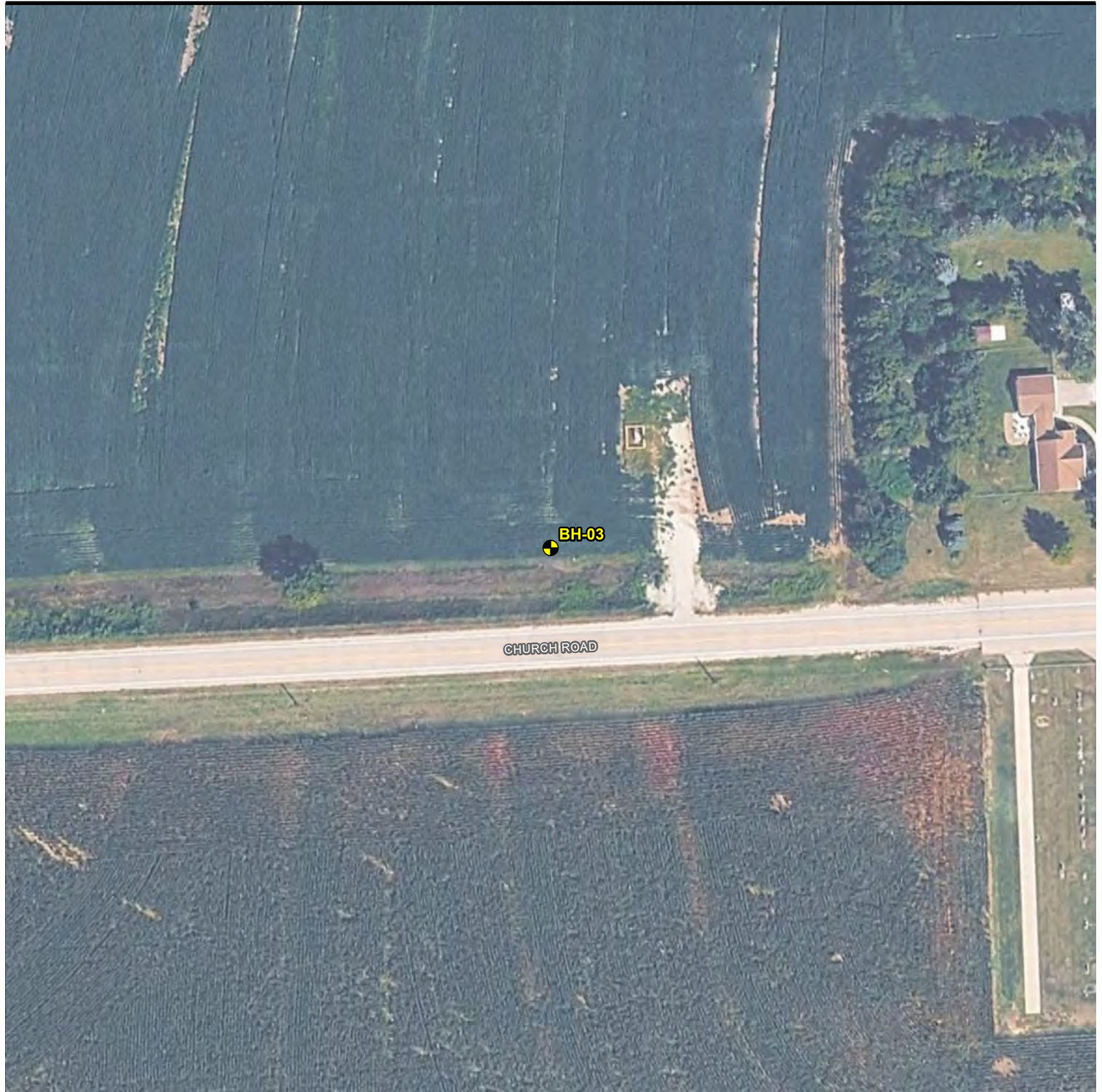
NNG CMC Corridor

NNG Omaha

South of Omaha, Nebraska

**Boring Location
Sketch**

Sheet:
2 of 7



 Soil Boring



0 25 50 100'



SCALE: 1" = 100'

Source: Google Earth Imagery

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Drawn By: ZS
Date Drawn: 10/1/2025
Checked By: RSJ
Last Modified: 1/22/2026

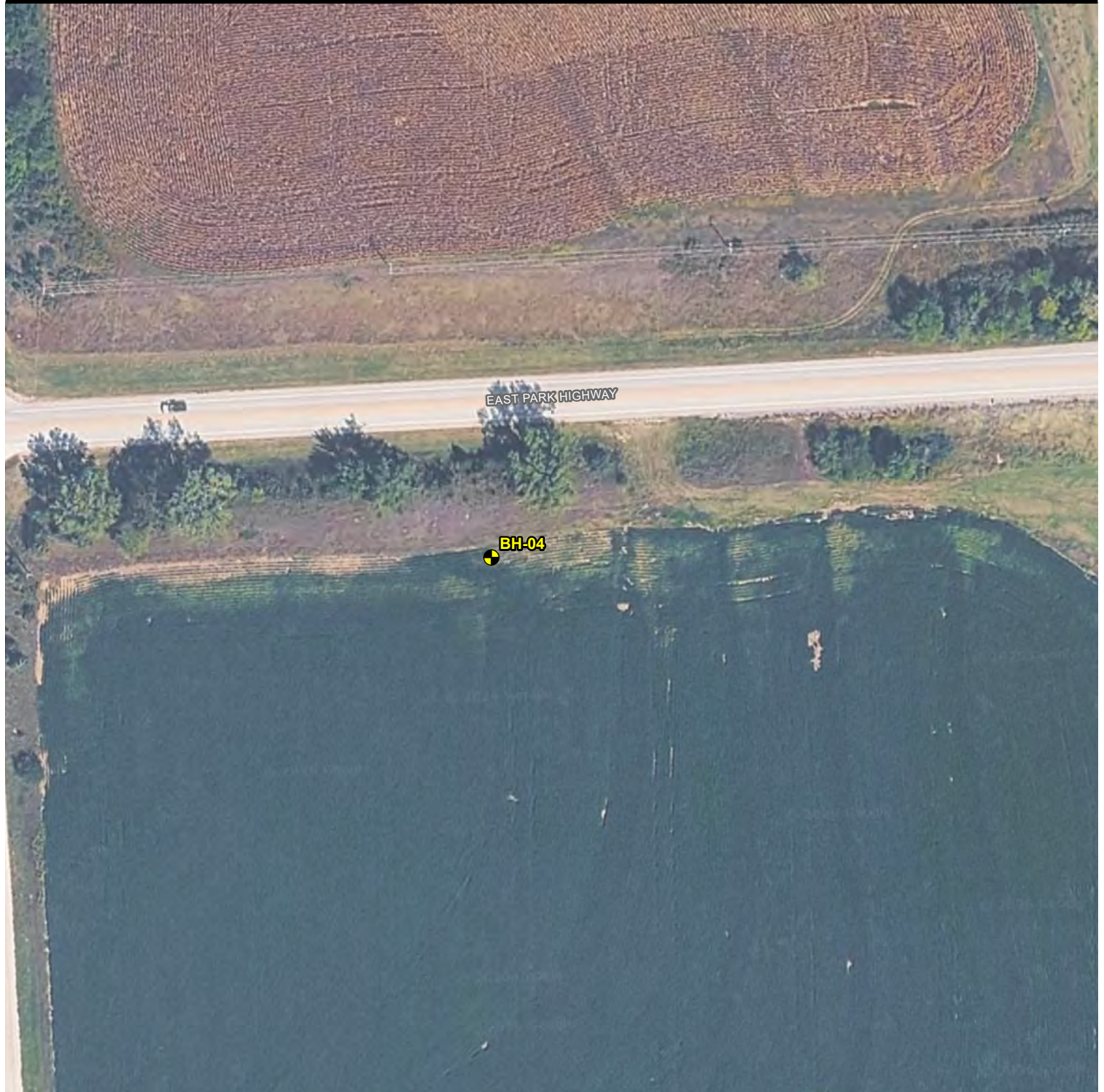
NNG CMC Corridor

NNG Omaha

South of Omaha, Nebraska

**Boring Location
Sketch**

Sheet:
3 of 7



 Soil Boring



0 25 50 100'



SCALE: 1" = 100'

Source: Google Earth Imagery

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Drawing No:
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Drawn By: ZS
Date Drawn: 10/1/2025
Checked By: RSJ
Last Modified: 1/22/2026

NNG CMC Corridor

NNG Omaha

South of Omaha, Nebraska

**Boring Location
Sketch**

Sheet:
4 of 7



 Soil Boring



0 100 200 400'



SCALE: 1" = 400'

Source: Google Earth Imagery



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Drawing No:
Boring Location Sketch Omaha

Drawn By: ZS
Date Drawn: 10/1/2025
Checked By: RSJ
Last Modified: 1/22/2026

NNG CMC Corridor

NNG Omaha

South of Omaha, Nebraska

**Boring Location
Sketch**

Sheet:
5 of 7



 Soil Boring



0 25 50 100'



SCALE: 1" = 100'

Source: Google Earth Imagery

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Drawing No:
Boring Location Sketch Omaha

Drawn By: ZS
Date Drawn: 10/1/2025
Checked By: RSJ
Last Modified: 1/22/2026

NNG CMC Corridor

NNG Omaha

South of Omaha, Nebraska

**Boring Location
Sketch**

Sheet:
6 of 7



● Soil Boring



0 155 310 620'



SCALE: 1" = 600'

Source: Google Earth Imagery

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Project No:
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Drawing No:
Boring Location Sketch Omaha

Drawn By: ZS
Date Drawn: 10/1/2025
Checked By: RSJ
Last Modified: 1/22/2026

NNG CMC Corridor

NNG Omaha

South of Omaha, Nebraska

**Boring Location
Sketch**

Sheet:
7 of 7

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-01	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 417098.9	EASTING: 2695027.0
Omaha, Nebraska				START DATE: 01/29/26	END DATE: 01/29/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia			SURFACING: Topsoil	WEATHER: 17°F
SURFACE ELEVATION: 1289.1 ft	RIG: 8504	METHOD: 3 1/4" HSA			

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
1282.1		FILL: LEAN CLAY with SAND (CL), dark brown to gray, moist		14-8-8-9 (16) 9"			BH-01 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2
				4-4-6-8 (10) 8"			
			5	3-6-6-6 (12) 6"			
				3-4-4-5 (8) 5"			
		LEAN CLAY (CL), gray, moist to wet, stiff to soft (LOESS)		4-3-3-6 (6) 12"			
			10	3-3-8-8 (11) 12"			
				3-3-3-4 (6) 10"	30	LL=39, PL=22, PI=17	
				2-3-3-3 (6) 11"	28	P200=98% %Sand=2%	
		Wet below 15 feet	15	0-1-1-2 (2) 10"			
				2-2-2-2 (4) 10"	30		
			25	SH			
1260.6		LEAN CLAY (CL), brown to dark brown, moist, medium (GLACIAL TILL)		3-5-5 (10) 12"			
28.5			30				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-01	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 417098.9	EASTING: 2695027.0
Omaha, Nebraska				START DATE: 01/29/26	END DATE: 01/29/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1289.1 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Topsoil		WEATHER: 17°F	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
1249.1		LEAN CLAY (CL), brown to dark brown, moist, medium (GLACIAL TILL)		3-5-5 (10) 8"			Water observed at 15.0 feet while drilling.
40.0		END OF BORING		4-5-6 (11)			
		Boring then backfilled with bentonite grout					

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-02	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 422338.2	EASTING: 2694372.5
Omaha, Nebraska				START DATE: 01/29/26	END DATE: 01/29/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1287.4 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Topsoil		WEATHER: 17°F	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
1280.4 7.0		FILL: LEAN CLAY (CL), with Sand, dark brown and gray, moist	5	5-6-6-6 (12) 8"			BH-02 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2
				6-7-7-8 (14) 2"			
				4-4-5-5 (9) 10"			
				4-4-5-5 (9) 10"			
		LEAN CLAY (CL), gray, moist, medium to stiff (LOESS)	10	3-8-5-5 (13) 6"		26	
				4-4-4-3 (8) 6"			
				4-5-5-5 (10) 6"		26	
			15	3-4-5-5 (9) 5"			
				3-4-4-4 (8) 5"			
				3-4-5-5 (9) 6"		27	
1262.9 24.5		LEAN CLAY with SAND (CL), brown, moist to wet, stiff (GLACIAL TILL)	25	5-6-7 (13) 7"			LL=43, PL=18, PI=25 P200=99% %Sand=1%
			30	5-6-8 (14) 6"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-02	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 422338.2	EASTING: 2694372.5
Omaha, Nebraska				START DATE: 01/29/26	END DATE: 01/29/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1287.4 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Topsoil		WEATHER: 17°F	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		LEAN CLAY with SAND (CL), brown, moist to wet, stiff (GLACIAL TILL)					
		<i>Wet below 34 feet</i>					
			35	5-5-6 (11) 8"			
			40	5-6-7 (13) 8"			
1247.4		END OF BORING					Water observed at 34.0 feet while drilling.
40.0		Boring then backfilled with bentonite grout					
			45				
			50				
			55				
			60				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-03	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 432910.9	EASTING: 2693549.6
Omaha, Nebraska				START DATE: 02/05/26	END DATE: 02/05/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1237.5 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Topsoil		WEATHER: 35°F	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks	
1233.5		FILL: LEAN CLAY (CL), with Sand, dark brown, moist		7-9-10-11 (19) 12"			BH-03 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2	
4.0		LEAN CLAY (CL), gray, moist, stiff (LOESS)	5	7-8-10-8 (18) 6"				
				5-6-6-7 (12) 8"				
				4-4-6-6 (10) 1"				
				4-5-7-8 (12) 11"				
			10	4-5-5-7 (10) 14"				
				3-4-5-7 (9) 15"		24		LL=41, PL=22, PI=19
				4-5-7-8 (12) 16"		22		P200=99% %Sand=1%
				4-5-7-9 (12) 16"				
				2-4-5-6 (9) 15"		23		
1214.0		LEAN CLAY (CL), brown, moist, medium to stiff (LOESS)	25	2-4-5 (9) 13"				
23.5				3-3-4 (7) 12"				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-03	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 432910.9	EASTING: 2693549.6
Omaha, Nebraska				START DATE: 02/05/26	END DATE: 02/05/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia		SURFACING: Topsoil		WEATHER: 35°F
SURFACE ELEVATION: 1237.5 ft	RIG: 8504	METHOD: 3 1/4" HSA			

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
1202.5		LEAN CLAY (CL), brown, moist, medium to stiff (LOESS)		3-5-6 (11) 10"			Water not observed while drilling.
35.0		END OF BORING					
		Boring then backfilled with bentonite grout					

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-04	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 440506.7	EASTING: 2690133.0
Omaha, Nebraska				START DATE: 02/05/26	END DATE: 02/05/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1185.8 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Topsoil		WEATHER: 43°F, sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
1181.8		FILL: LEAN CLAY with SAND (CL), dark brown to gray, moist		4-6-6-7 (12) 9"			BH-04 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2
4.0		LEAN CLAY (CL), brown to gray, moist, medium to stiff (LOESS)	5	4-5-6-6 (11) 10"			
				4-5-5-4 (10) 1"			
				4-3-4-4 (7) 8"			
			10	3-3-4-4 (7) 10"			
				3-4-3-3 (7) 11"			
				3-4-5-5 (9) 12"	18	LL=38, PL=20, PI=18	
			15	4-4-4-5 (8) 11"	18	P200=99% %Sand=1%	
				3-4-4-5 (8) 12"			
			20	3-4-5-6 (9) 14"	15		
1162.3		LEAN CLAY (CL), gray to brown, moist, medium to stiff (LOESS)	25	3-4-5 (9) 10"			
23.5			30	3-5-6 (11) 11"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-04	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 440506.7	EASTING: 2690133.0
Omaha, Nebraska				START DATE: 02/05/26	END DATE: 02/05/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia				
SURFACE ELEVATION: 1185.8 ft	RIG: 8504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 43°F, sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		LEAN CLAY (CL), gray to brown, moist, medium to stiff (LOESS)					
			35	4-6-11 (17) 13"			
			40	3-5-7 (12) 11"			
			45	3-6-6 (12) 9"			
1135.8			50	4-5-7 (12) 11"			
50.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with bentonite grout					
			55				
			60				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-05	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 443154.2	EASTING: 2689958.4
Omaha, Nebraska				START DATE: 02/04/26	END DATE: 02/04/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1167.3 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Topsoil		WEATHER: 38°F, drizzle	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks	
1163.3		FILL: LEAN CLAY (CL), with Sand, dark brown, dry to moist		3-3-4-3 (7) 6"			BH-05 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2	
4.0		LEAN CLAY (CL), light brown, moist, medium to stiff (LOESS)	5	3-3-4-3 (7) 11"				
				3-2-3-3 (5) 10"				
				3-4-3-3 (7) 14"				
			10	4-4-4-5 (8) 6"				
				4-5-6-7 (11) 11"				
				4-4-6-7 (10) 16"	19	LL=32, PL=21, PI=11		
			15	3-5-6-6 (11) 14"		21		P200=98% %Sand=2%
				3-4-5-5 (9) 16"				
			20	3-4-5-6 (9) 14"		19		
1143.8		LEAN CLAY with SAND (CL), trace Gravel, brown to gray, moist, stiff to hard (GLACIAL TILL)	25	3-6-6 (12) 16"				
23.5				5-9-11 (20) 13"				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-05	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 443154.2	EASTING: 2689958.4
Omaha, Nebraska				START DATE: 02/04/26	END DATE: 02/04/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1167.3 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Topsoil		WEATHER: 38°F, drizzle	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
1127.3 40.0		LEAN CLAY with SAND (CL), trace Gravel, brown to gray, moist, stiff to hard (GLACIAL TILL)	35	9-18-22 (40) 13"			
		END OF BORING	40	AU			Water not observed while drilling.
		Boring then backfilled with bentonite grout					
			45				
			50				
			55				
			60				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623					BORING: BH-06			
Geotechnical Evaluation					LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN			
NNG CMC Corridor					DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet			
Omaha Site					NORTHING: 445592.9	EASTING: 2689872.4		
Omaha, Nebraska					START DATE: 01/27/26	END DATE: 01/28/26		
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia		SURFACE ELEVATION: 1150.0 ft		RIG: 8504	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: 15°F
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks	
1141.0 9.0		FILL: LEAN CLAY (CL), trace roots, contains seams of Silt, light brown, moist	5	10-4-3-3 (7) 7" 6-4-5-4 (9) 6" 7-6-6-15 (12) 7" 4-4-5-6 (9) 6" 5-4-7-7 (11) 8"			BH-06 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2	
		SANDY SILT (ML), brown to light brown, moist, loose to medium dense (LOESS)	10	3-3-3-3 (6) 8" 3-3-3-4 (6) 9" 3-4-5-5 (9) 8"				
			15	4-5-6-6 (11) 10" 4-5-5-6 (10) 10"				
			20					
			25	8-8-7 (15) 6"				
			30	8-9-9 (18) 8"				
1126.5 23.5		LEAN CLAY with SAND (CL), brown, moist (GLACIAL TILL)						

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623					BORING: BH-06			
Geotechnical Evaluation					LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN			
NNG CMC Corridor					DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet			
Omaha Site					NORTHING: 445592.9	EASTING: 2689872.4		
Omaha, Nebraska					START DATE: 01/27/26	END DATE: 01/28/26		
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia		SURFACE ELEVATION: 1150.0 ft		RIG: 8504	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: 15°F
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks	
		LEAN CLAY with SAND (CL), brown, moist (GLACIAL TILL)	35	9-8-9 (17) 7"				
			40	9-9-10 (19) 8"				
1106.5		LEAN CLAY with SAND (CL), trace Gravel, reddish brown, moist, stiff (GLACIAL TILL)	45	5-6-7 (13) 9"				
43.5		<i>With Silt Seams from 48 1/2 to 50 feet</i>	50	5-7-7 (14) 10"				
			55					
1091.5		<i>Cobbles noted at 58 feet</i>	60	5-6-8 (14) 10"				
58.5		LEAN CLAY (CL), brown and gray, moist, stiff (RESIDUUM)						

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623					BORING: BH-06			
Geotechnical Evaluation					LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN			
NNG CMC Corridor					DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet			
Omaha Site					NORTHING: 445592.9		EASTING: 2689872.4	
Omaha, Nebraska					START DATE: 01/27/26		END DATE: 01/28/26	
DRILLER: D.M./H.S.		LOGGED BY: M. Garcia			SURFACING: Grass		WEATHER: 15°F	
SURFACE ELEVATION: 1150.0 ft		RIG: 8504		METHOD: 3 1/4" HSA				
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery		q _p tsf	MC %	Tests or Remarks
1082.0		LEAN CLAY (CL), brown and gray, moist, stiff (RESIDUUM)	65					Practical auger refusal at 72 feet
68.0		SANDSTONE, brown, slightly weathered, soft, very fine-grained, thin bedded, slightly fractured to moderately fractured	70	50/-6" (REF) 0"				
			75	80	100	2		Run 1
			80	78	100	2		Run 2
1068.0		SHALE, brown to gray, highly weathered to moderately weathered, soft, very fine-grained, thick bedded, slightly fractured	85	80	93	4		Run 3
82.0								
1063.0		SHALE, brown, highly weathered, soft, very fine-grained to fine-grained, thin bedded, slightly fractured to moderately fractured	90	20	87	4		Run 4
87.0								
1060.0		LIMESTONE, gray, slightly weathered, moderately hard, fine-grained, thick bedded, moderately fractured	95	80	100	5		Run 5
90.0								

Continued on next page

RQD % Recovery % Drilling Rate (min/ft) Bit Pressure (psi) Water Pressure (psi) Water Return % Remarks

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623					BORING: BH-06					
Geotechnical Evaluation					LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN					
NNG CMC Corridor					DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet					
Omaha Site					NORTHING: 445592.9		EASTING: 2689872.4			
Omaha, Nebraska					START DATE: 01/27/26		END DATE: 01/28/26			
DRILLER: D.M./H.S.		LOGGED BY: M. Garcia			SURFACING: Grass		WEATHER: 15°F			
SURFACE ELEVATION: 1150.0 ft		RIG: 8504		METHOD: 3 1/4" HSA						
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	RQD %	Recovery %	Drilling Rate (min/ft)	Bit Pressure (psi)	Water Pressure (psi)	Water Return %	Remarks
1048.0		LIMESTONE, gray, slightly weathered, moderately hard, fine-grained, thick bedded, moderately fractured	100	83	100	2				Run 6
1043.0		LIMESTONE, highly weathered to moderately weathered, hard, very fine-grained to fine-grained, with Shale interbedded, thick bedded, moderately fractured	105	80	100	4				Run 7 DD=154 pcf
1038.0		SHALE, slightly weathered to moderately weathered, soft, very fine-grained, thin bedded, moderately fractured	110	63	100					Run 8 DD=121 pcf
112.0		END OF CORING Boring then backfilled with bentonite grout	115							Water not observed while drilling.
			120							
			125							

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623					BORING: BH-07			
Geotechnical Evaluation					LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN			
NNG CMC Corridor					DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet			
Omaha Site					NORTHING: 448728.8	EASTING: 2693435.0		
Omaha, Nebraska					START DATE: 01/27/26	END DATE: 01/27/26		
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia		SURFACE ELEVATION: 1023.1 ft		RIG: 8504	METHOD: 3 1/4" HSA	SURFACING: Sand	WEATHER: 15°F, sunny
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks	
1017.1	∞	CLAYEY SAND (SC), fine to medium-grained, brown, moist to wet, medium dense (ALLUVIUM)	5	8-7-7-5 (14) 10"			BH-07 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2	
6.0		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, very loose to medium dense (ALLUVIUM) <i>Wet below 6 feet</i>	10	4-9-14-15 (23) 8" 2-4-7-8 (11) 9" 4-3-3-4 (6) 11"				Switched to mud rotary drilling at 6 feet
			15	8-11-16 (27) 5" 3-2-2 (4) 6"				
		<i>Fine to coarse-grained below 15 feet</i>	20	3-4-5 (9) 6"				
			25	6-7-9 (16) 9"				
			30	5-6-10 (16) 8"				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-07	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 448728.8	EASTING: 2693435.0
Omaha, Nebraska				START DATE: 01/27/26	END DATE: 01/27/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACING: Sand		WEATHER: 15°F, sunny	
SURFACE ELEVATION: 1023.1 ft	RIG: 8504	METHOD: 3 1/4" HSA			

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, very loose to medium dense (ALLUVIUM)					
			35	5-7-8 (15) 6"			
			40	3-4-5 (9) 7"			
			45	4-3-4 (7) 0"			No recovery at 43 feet
			50	4-5-5 (10) 6"			
			55				
			60	50/1" (REF) 0"			Obstruction encountered at 58 feet rock coring attempted but no recovery No recovery at 59 1/2 feet

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623					BORING: BH-07					
Geotechnical Evaluation					LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN					
NNG CMC Corridor					DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet					
Omaha Site					NORTHING: 448728.8	EASTING: 2693435.0				
Omaha, Nebraska					START DATE: 01/27/26	END DATE: 01/27/26				
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia		SURFACING: Sand		WEATHER: 15°F, sunny					
SURFACE ELEVATION: 1023.1 ft	RIG: 8504	METHOD: 3 1/4" HSA								
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks			
		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, very loose to medium dense (ALLUVIUM)	65							
			70	14-15-15 (30) 0"						
			75							
			80	15-7-8 (15) 4"						
			85							
937.1 86.0		SHALE, highly weathered, soft, very fine-grained to medium-grained, interbedded LIMESTONE layers, thin bedded		50/1" (REF) 0"			Run 1			
933.1 90.0		END OF CORING	90	0 21 2			Water observed at 6.0 feet while drilling.			
		Boring then backfilled with bentonite grout	95							
				RQD %	Recovery %	Drilling Rate (min/ft)	Bit Pressure (psi)	Water Pressure (psi)	Water Return %	Remarks

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-08			
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN			
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet			
Omaha Site				NORTHING: 449191.3	EASTING: 2689984.1		
Omaha, Nebraska				START DATE: 02/01/26	END DATE: 02/04/26		
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia		SURFACING: Sand		WEATHER: 35°F, sunny		
SURFACE ELEVATION: 1027.5 ft	RIG: 8504	METHOD: 3 1/4" HSA					
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND (SP), fine-grained, gray, dry to moist, medium dense to loose (ALLUVIUM)		5-6-6-7 (12) 10"			BH-08 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2
				5-6-7-7 (13) 10"			
			5	3-8-5-5 (13) 10"			
				3-3-2-2 (5) 10"			
				2-2-1-1 (3) 7"			
		Wet below 9 feet	10				
			15				
			20				
			25	6-6-7 (13) 11"			
			30	6-7-9 (16) 9"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-08	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 449191.3	EASTING: 2689984.1
Omaha, Nebraska				START DATE: 02/01/26	END DATE: 02/04/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACING: Sand		WEATHER: 35°F, sunny	
SURFACE ELEVATION: 1027.5 ft	RIG: 8504	METHOD: 3 1/4" HSA			

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND (SP), fine-grained, gray, dry to moist, medium dense to loose (ALLUVIUM)		8-9-11 (20) 10"			
			35				
				10-14-14 (28) 11"			
			40				
				11-16-17 (33) 10"			
			45				
		<i>Medium dense to dense below 45 feet</i>		22-12-13 (25) 9"			
			50				
			55				
				22-14-17 (31) 9"			
			60				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-08	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 449191.3	EASTING: 2689984.1
Omaha, Nebraska				START DATE: 02/01/26	END DATE: 02/04/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACING: Sand		WEATHER: 35°F, sunny	
SURFACE ELEVATION: 1027.5 ft	RIG: 8504	METHOD: 3 1/4" HSA			

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks	
		POORLY GRADED SAND (SP), fine-grained, gray, dry to moist, medium dense to loose (ALLUVIUM)	65					
			70	8-9-10 (19) 6"				
		<i>Fine to coarse-grained below 78 1/2 feet</i>	80	9-10-11 (21) 5"				
939.5								
88.0		SHALE, gray, decomposed		50/2" (REF) 4"				
938.5		LIMESTONE, slightly weathered to moderately weathered, moderately hard, fine-grained, thin bedded, slightly fractured	90					Run 1
89.0				82 100 4				
			95					

Continued on next page

RQD % Recovery % Drilling Rate (min/ft) Bit Pressure (psi) Water Pressure (psi) Water Return % Remarks

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-08	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 449191.3	EASTING: 2689984.1
Omaha, Nebraska				START DATE: 02/01/26	END DATE: 02/04/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia		SURFACING: Sand		WEATHER: 35°F, sunny
SURFACE ELEVATION: 1027.5 ft	RIG: 8504	METHOD: 3 1/4" HSA			

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	RQD %	Recovery %	Drilling Rate (min/ft)	Bit Pressure (psi)	Water Pressure (psi)	Water Return %	Remarks
927.0		LIMESTONE, slightly weathered to moderately weathered, moderately hard, fine-grained, thin bedded, slightly fractured								Run 2
100.5		SHALE, dark gray, decomposed, soft, very fine-grained, thick bedded, slightly fractured to moderately fractured		68	100	4				
920.5		LIMESTONE, gray, moderately weathered to highly weathered, hard, fine-grained, thick bedded, slightly fractured								Run 3
107.0		LIMESTONE, gray, moderately weathered to highly weathered, hard, fine-grained, thick bedded, moderately fractured		78	96	4				
918.5		LIMESTONE, brown, moderately weathered, moderately hard, fine-grained, moderately fractured								Run 4
109.0		SHALE, dark gray, moderately weathered to slightly weathered, very soft to soft, very fine-grained, thin bedded, slightly fractured		78	100	5				
908.5		LIMESTONE, gray to brown, slightly weathered, hard, fine-grained, thick bedded, moderately fractured								
119.0										
905.0										
122.5										
900.5										
127.0										

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-08			
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN			
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet			
Omaha Site				NORTHING: 449191.3		EASTING: 2689984.1	
Omaha, Nebraska				START DATE: 02/01/26		END DATE: 02/04/26	
DRILLER: D.M./H.S.		LOGGED BY: M. Garcia		SURFACING: Sand		WEATHER: 35°F, sunny	
SURFACE ELEVATION: 1027.5 ft		RIG: 8504		METHOD: 3 1/4" HSA			

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	RQD %	Recovery %	Drilling Rate (min/ft)	Bit Pressure (psi)	Water Pressure (psi)	Water Return %	Remarks
897.5		LIMESTONE, gray to brown, slightly weathered, hard, fine-grained, thick bedded, moderately fractured								Run 5
130.0		SHALE, dark gray, highly weathered to moderately weathered, hard, fine-grained to very fine-grained, thick bedded, slightly fractured		81	100	4				DD=160 pcf
889.5		LIMESTONE, white, moderately weathered, hard, fine-grained, thick bedded, moderately fractured								Water observed at 9.0 feet while drilling.
138.0		END OF CORING								
888.5		Boring then backfilled with auger cuttings								
139.0										

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-09	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 450198.6	EASTING: 2690087.5
Omaha, Nebraska				START DATE: 02/05/26	END DATE: 02/05/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1030.1 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Sand		WEATHER: 35°F	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks	
		POORLY GRADED SAND (SP), fine to medium-grained, gray, moist, loose to medium dense (ALLUVIUM)		7-5-4-5 (9) 10"			BH-09 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2	
				6-6-5-5 (11) 8"				
			5	5-6-6-4 (12) 10"				
				5-6-6-8 (12) 10"				
				5-6-3-2 (9) 10"				
			10					
1016.6	13.5	<i>Wet below 13 feet</i>		4-3-2 (5) 6"				Switched to mud rotary at 13 feet
		POORLY GRADED SAND (SP), fine-grained, gray, wet, very loose to loose (ALLUVIUM)						
				3-2-2 (4) 6"				
			20					
				3-3-3 (6) 7"				
			25					
				3-4-4 (8) 6"				
			30					

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-09	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 450198.6	EASTING: 2690087.5
Omaha, Nebraska				START DATE: 02/05/26	END DATE: 02/05/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1030.1 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Sand		WEATHER: 35°F	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND (SP), fine-grained, gray, wet, very loose to loose (ALLUVIUM)	35	3-2-2 (4) 7"			
			40	3-4-5 (9) 6"			
986.6 43.5		CLAYEY SAND (SC), dark gray, wet, medium (ALLUVIUM)	45	4-3-3 (6) 8"			
981.6 48.5		POORLY GRADED SAND (SP), fine to coarse-grained, gray, wet, medium dense (ALLUVIUM)	50	6-8-10 (18) 6"			
			55				
			60	16-12-10 (22) 8"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-09	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 450198.6	EASTING: 2690087.5
Omaha, Nebraska				START DATE: 02/05/26	END DATE: 02/05/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia		SURFACING: Sand		WEATHER: 35°F
SURFACE ELEVATION: 1030.1 ft	RIG: 8504	METHOD: 3 1/4" HSA			

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND (SP), fine to coarse-grained, gray, wet, medium dense (ALLUVIUM)	65				
			70	12-10-8 (18) 7"			
			75				
			80	8-8-7 (15) 6"			
			85				
			90	8-7-9 (16) 7"		20	%Sand=93% %Gravel=3% P200=4% Water observed at 13.0 feet while drilling.
940.1		END OF BORING					
90.0		Boring then backfilled with auger cuttings					
			95				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-10	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 451000.3	EASTING: 2691498.5
Omaha, Nebraska				START DATE: 01/29/26	END DATE: 01/29/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1026.3 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Sand		WEATHER: 63°F, sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND (SP), fine-grained, gray, moist to wet, loose (ALLUVIUM)		3-3-4-5 (7) 11"			BH-10 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2
				3-3-5-6 (8) 10"			
			5	3-3-4-5 (7) 11"			Switched to mud rotary at 6 feet
		Wet below 6 feet		6"			
			10	2-2-3 (5) 4"		14	
			15	2-3-3 (6) 6"		17	
			20	1-3-3 (6) 7"		2	P200=3% %Sand=97%
			25	2-3-3 (6) 8"			
			30	3-3-4 (7) 8"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-10	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 451000.3	EASTING: 2691498.5
Omaha, Nebraska				START DATE: 01/29/26	END DATE: 01/29/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1026.3 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Sand		WEATHER: 63°F, sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
991.8		POORLY GRADED SAND (SP), fine-grained, gray, moist to wet, loose (ALLUVIUM)		3-4-5 (9) 10"			
34.5		POORLY GRADED SAND (SP), fine to medium-grained, gray, wet, loose to medium dense (ALLUVIUM)	35				
			40	3-3-5 (8) 7"			
			45	3-4-5 (9) 10"			
			50	4-6-7 (13) 9"			
			55				
966.3			60	4-5-5 (10) 10"			
60.0		END OF BORING					Water observed at 6.0 feet while drilling.
		Boring then backfilled with auger cuttings					

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623 Geotechnical Evaluation NNG CMC Corridor Omaha Site Omaha, Nebraska				BORING: BH-11				
DRILLER: D.M./H.S. LOGGED BY: M. Garcia				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN				
				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet				
SURFACE ELEVATION: 1026.2 ft RIG: 8504 METHOD: 3 1/4" HSA				START DATE: 01/29/26	END DATE: 01/29/26			
				SURFACING: Topsoil	WEATHER: 40°F, sunny			
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks	
1025.9 0.3		Topsoil 3 inches FILL: LEAN CLAY (CL), with Sand, dark brown, moist		4-3-2-1 (5) 10"			BH-11 collected on 1/29/2026 for RCRA Metals, Pesticides, Herbicides, MDA List 1 Pesticides, OA-1 and OA-2	
				1-2-2-3 (4) 3"				
				0-1-2-2 (3) 12"				
1020.2 6.0	∇	POORLY GRADED SAND (SP), fine to medium-grained, gray, moist to wet, loose to very loose (ALLUVIUM) <i>Wet below 7 feet</i>	5	3-4-5-5 (9) 10"		15		Switched to mud rotary at 7 feet
				1-0-0-1 WOH/12" 9"				
				1-2-0-1 (2) 0"				
				2-4-2 (6) 8"				
1003.2 23.0		FAT CLAY (CH), dark gray, wet, medium (ALLUVIUM)		3-4-4 (8) 5"			LL=67, PL=24, PI=43	
998.2 28.0		POORLY GRADED SAND (SP), fine to coarse-grained, gray, wet, loose to medium dense (ALLUVIUM)		8-7-6 (13) 10"				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-11	
Geotechnical Evaluation				LOCATION: Captured with RTK GPS. Coordinates and elevations provided by EFN	
NNG CMC Corridor				DATUM: NAD 1983 StatePlane Nebraska FIPS 2600 Feet	
Omaha Site				NORTHING: 451382.3	EASTING: 2691527.8
Omaha, Nebraska				START DATE: 01/29/26	END DATE: 01/29/26
DRILLER: D.M./H.S.	LOGGED BY: M. Garcia	SURFACE ELEVATION: 1026.2 ft		RIG: 8504	METHOD: 3 1/4" HSA
		SURFACING: Topsoil		WEATHER: 40°F, sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND (SP), fine to coarse-grained, gray, wet, loose to medium dense (ALLUVIUM)					
			35	3-4-5 (9) 4"			
			40	5-5-4 (9) 7"			
			45	5-7-8 (15) 6"			
			50	9-9-10 (19) 9"			
			55				
			60	10-9-12 (21) 11"			
966.2		END OF BORING					
60.0		Boring then backfilled with auger cuttings					Water observed at 7.0 feet while drilling.

Client:

Stantec Consulting Services Inc.
733 Marquette Ave Ste 1000
Minneapolis, MN 55402

Project:

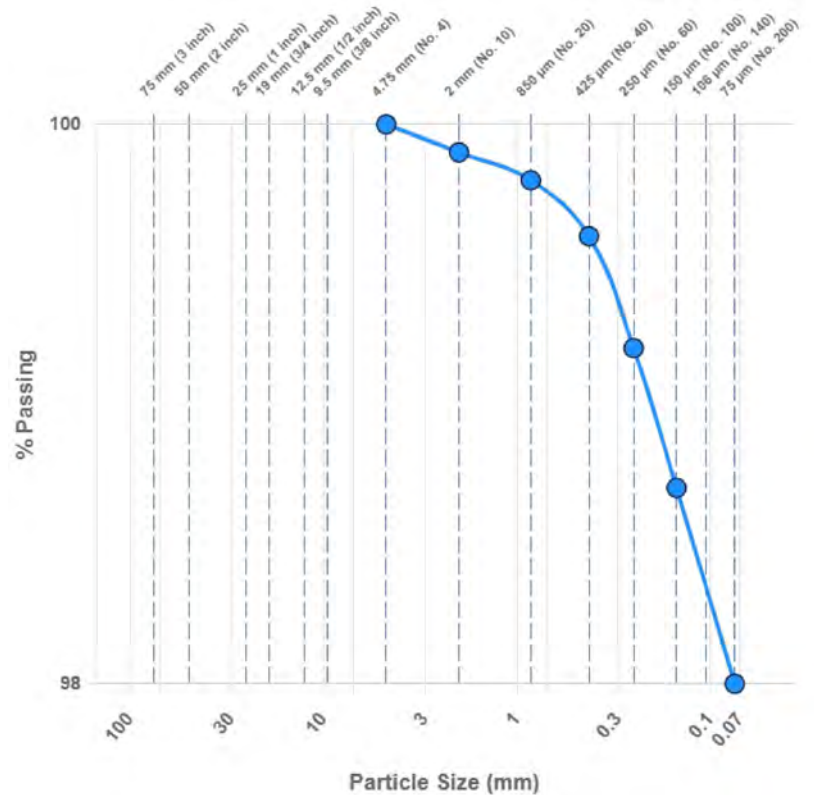
B2508623
NNG CMC Corridor
NNG Sheldon and NNG Omaha in Nebraska; NNG
De...

Sample Information

Sample Number: 717226 **Depth (ft):** 14
Sample From: Splitspoon **Sampled By:** Drill Crew
Boring Number: BH-1
Sample Date: 03/01/2026
Received Date: 03/18/2026 **Lab:** 10576 Justin Drive, Urbandale, IA, 50322
Tested Date: 03/18/2026 **Tested By:** Gabler, Robert

Laboratory Data

Sieve Size	Passing (%)	Specification
4.75 mm (No. 4)	100	
2 mm (No. 10)	99.9	
850 µm (No. 20)	99.8	
425 µm (No. 40)	99.6	
250 µm (No. 60)	99.2	
150 µm (No. 100)	98.7	
75 µm (No. 200)	98	



Sand (%) **Silt & Clay (%)**
 2 98

D10 **D30** **D60**
 0 0 0

Specimen Obtained: Oven Dry
Dispersion Apparatus: Shaking

Test Method: Method A (Composite Sieving)

General

Results: The test is for informational purposes.

Client:

Stantec Consulting Services Inc.
733 Marquette Ave Ste 1000
Minneapolis, MN 55402

Project:

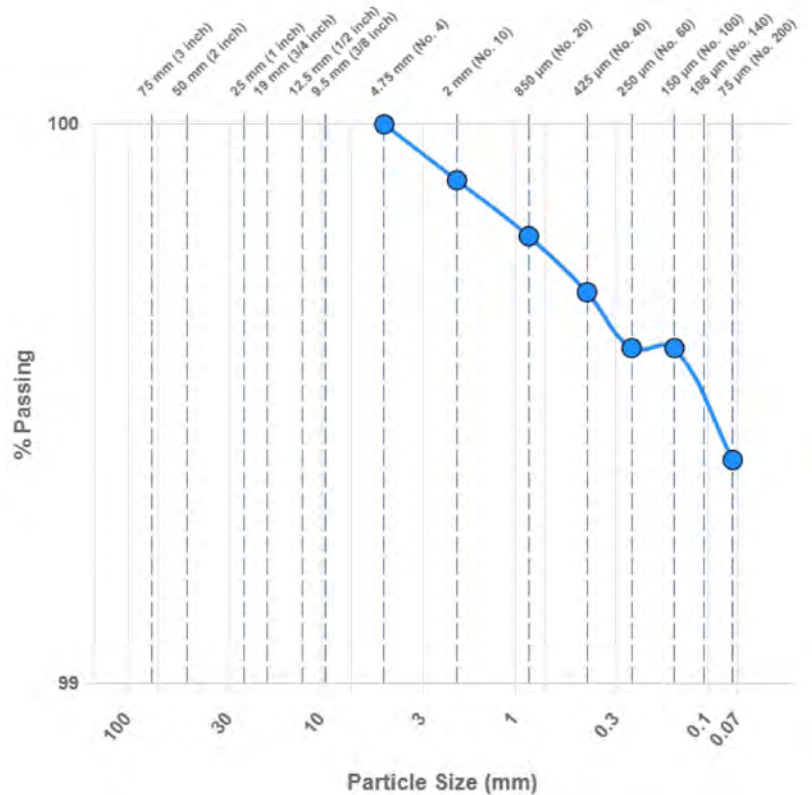
B2508623
NNG CMC Corridor
NNG Sheldon and NNG Omaha in Nebraska; NNG
De...

Sample Information

Sample Number: 717228 **Depth (ft):** 14
Sample From: Splitspoon **Sampled By:** Drill Crew
Boring Number: BH-2
Sample Date: 03/01/2026
Received Date: 03/18/2026 **Lab:** 10576 Justin Drive, Urbandale, IA, 50322
Tested Date: 03/18/2026 **Tested By:** Gabler, Robert

Laboratory Data

Sieve Size	Passing (%)	Specification
4.75 mm (No. 4)	100	
2 mm (No. 10)	99.9	
850 µm (No. 20)	99.8	
425 µm (No. 40)	99.7	
250 µm (No. 60)	99.6	
150 µm (No. 100)	99.6	
75 µm (No. 200)	99.4	



Sand (%) **Silt & Clay (%)**
0.6 99.4

D10 **D30** **D60**
0 0 0

Specimen Obtained: Oven Dry
Dispersion Apparatus: Shaking

Test Method: Method A (Composite Sieving)

General

Results: The test is for informational purposes.

Client:

Stantec Consulting Services Inc.
733 Marquette Ave Ste 1000
Minneapolis, MN 55402

Project:

B2508623
NNG CMC Corridor
NNG Sheldon and NNG Omaha in Nebraska; NNG
De...

Sample Information

Sample Number: 717230 **Depth (ft):** 14
Sample From: Splitspoon **Sampled By:** Drill Crew
Boring Number: BH-3
Sample Date: 03/01/2026
Received Date: 03/18/2026 **Lab:** 10576 Justin Drive, Urbandale, IA, 50322
Tested Date: 03/18/2026 **Tested By:** Gabler, Robert

Laboratory Data

Sieve Size	Passing (%)	Specification
2 mm (No. 10)	100	
850 µm (No. 20)	100	
425 µm (No. 40)	99.9	
250 µm (No. 60)	99.8	
150 µm (No. 100)	99.7	
75 µm (No. 200)	99.3	

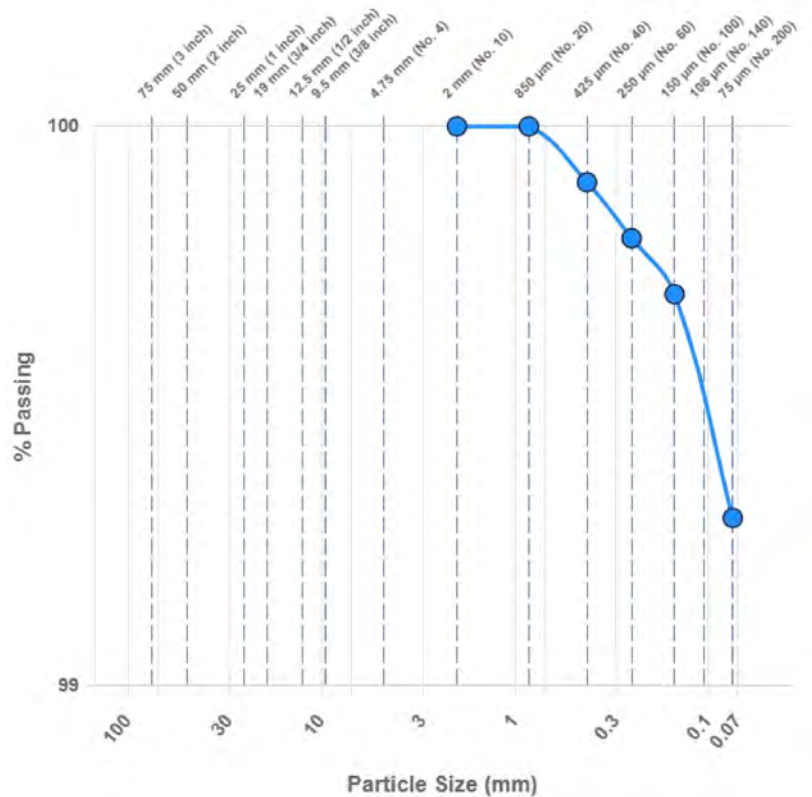
Gravel (%)
100

Silt & Clay (%)
99.3

D10
0

D30
0

D60
0



Specimen Obtained: Oven Dry

Test Method: Method A (Composite Sieving)

Dispersion Apparatus: Shaking

General

Results: The test is for informational purposes.

Client:

Stantec Consulting Services Inc.
733 Marquette Ave Ste 1000
Minneapolis, MN 55402

Project:

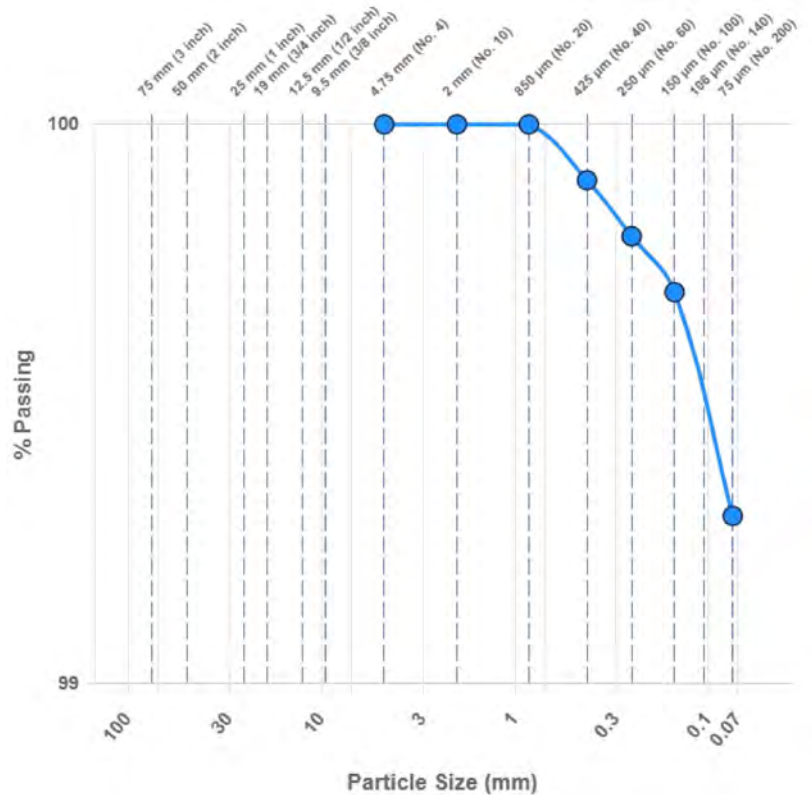
B2508623
NNG CMC Corridor
NNG Sheldon and NNG Omaha in Nebraska; NNG
De...

Sample Information

Sample Number: 717233 **Depth (ft):** 14
Sample From: Splitspoon **Sampled By:** Drill Crew
Boring Number: BH-4
Sample Date: 03/01/2026
Received Date: 03/18/2026 **Lab:** 10576 Justin Drive, Urbandale, IA, 50322
Tested Date: 03/18/2026 **Tested By:** Gabler, Robert

Laboratory Data

Sieve Size	Passing (%)	Specification
4.75 mm (No. 4)	100	
2 mm (No. 10)	100	
850 µm (No. 20)	100	
425 µm (No. 40)	99.9	
250 µm (No. 60)	99.8	
150 µm (No. 100)	99.7	
75 µm (No. 200)	99.3	



Sand (%) **Silt & Clay (%)**
0.7 99.3
D10 **D30** **D60**
0 0 0

Specimen Obtained: Oven Dry
Dispersion Apparatus: Shaking

Test Method: Method A (Composite Sieving)

General

Results: The test is for informational purposes.

Client:

Stantec Consulting Services Inc.
733 Marquette Ave Ste 1000
Minneapolis, MN 55402

Project:

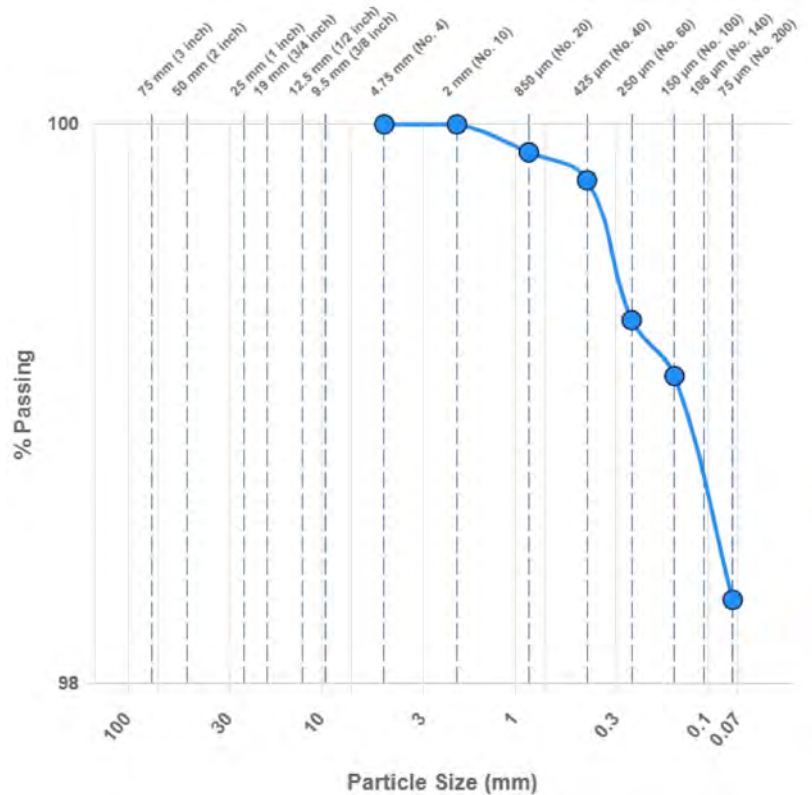
B2508623
NNG CMC Corridor
NNG Sheldon and NNG Omaha in Nebraska; NNG
De...

Sample Information

Sample Number: 717236 **Depth (ft):** 14
Sample From: Splitspoon **Sampled By:** Drill Crew
Boring Number: BH-5
Sample Date: 03/01/2026
Received Date: 03/18/2026 **Lab:** 10576 Justin Drive, Urbandale, IA, 50322
Tested Date: 03/18/2026 **Tested By:** Gabler, Robert

Laboratory Data

Sieve Size	Passing (%)	Specification
4.75 mm (No. 4)	100	
2 mm (No. 10)	100	
850 µm (No. 20)	99.9	
425 µm (No. 40)	99.8	
250 µm (No. 60)	99.3	
150 µm (No. 100)	99.1	
75 µm (No. 200)	98.3	



Sand (%) 1.7 **Silt & Clay (%)** 98.3
D10 0 **D30** 0 **D60** 0

Specimen Obtained: Oven Dry
Dispersion Apparatus: Shaking

Test Method: Method A (Composite Sieving)

General

Results: The test is for informational purposes.

Client:

Stantec Consulting Services Inc.
733 Marquette Ave Ste 1000
Minneapolis, MN 55402

Project:

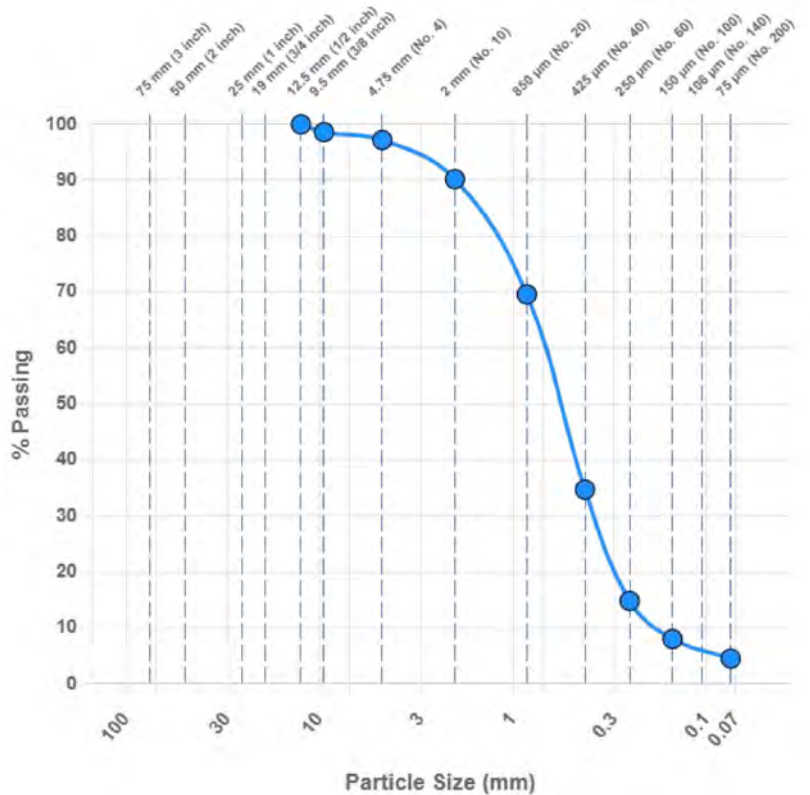
B2508623
NNG CMC Corridor
NNG Sheldon and NNG Omaha in Nebraska; NNG
De...

Sample Information

Sample Number: 717240 **Depth (ft):** 90
Sample From: Splitspoon **Sampled By:** Drill Crew
Boring Number: BH-9
Sample Date: 03/01/2026
Received Date: 03/18/2026 **Lab:** 10576 Justin Drive, Urbandale, IA, 50322
Tested Date: 03/18/2026 **Tested By:** Gabler, Robert

Laboratory Data

Sieve Size	Passing (%)	Specification
12.5 mm (1/2 inch)	100	
9.5 mm (3/8 inch)	98.6	
4.75 mm (No. 4)	97.2	
2 mm (No. 10)	90.2	
850 µm (No. 20)	69.6	
425 µm (No. 40)	34.7	
250 µm (No. 60)	14.8	
150 µm (No. 100)	8	
75 µm (No. 200)	4.5	



Gravel (%) 2.8	Sand (%) 92.7	Silt & Clay (%) 4.5
D10 0.179	D30 0.384	D60 0.733
C_U 4.09	C_C 1.12	

Specimen Obtained: Oven Dry
Dispersion Apparatus: Shaking

Test Method: Method A (Composite Sieving)

General

Results: The test is for informational purposes.

Client:

Stantec Consulting Services Inc.
733 Marquette Ave Ste 1000
Minneapolis, MN 55402

Project:

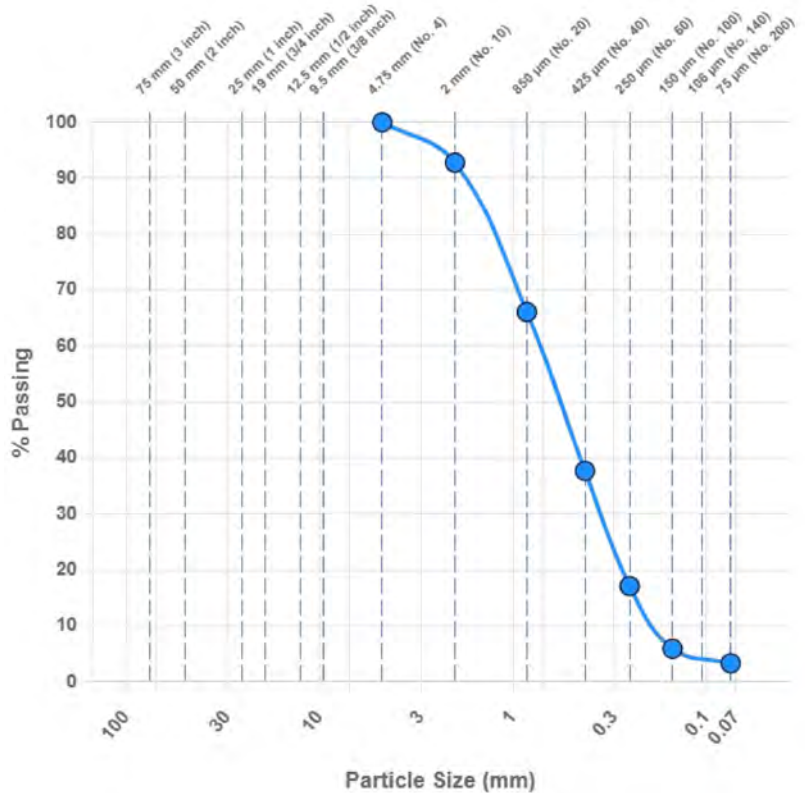
B2508623
NNG CMC Corridor
NNG Sheldon and NNG Omaha in Nebraska; NNG
De...

Sample Information

Sample Number: 717246 **Depth (ft):** 20
Sample From: Splitspoon **Sampled By:** Drill Crew
Boring Number: BH-10
Sample Date: 03/01/2026
Received Date: 03/18/2026 **Lab:** 10576 Justin Drive, Urbandale, IA, 50322
Tested Date: 03/18/2026 **Tested By:** Gabler, Robert

Laboratory Data

Sieve Size	Passing (%)	Specification
4.75 mm (No. 4)	100	
2 mm (No. 10)	92.8	
850 µm (No. 20)	66.1	
425 µm (No. 40)	37.7	
250 µm (No. 60)	17.1	
150 µm (No. 100)	5.9	
75 µm (No. 200)	3.3	



Sand (%) 96.7 **Silt & Clay (%)** 3.3
D10 0.187 **D30** 0.36 **D60** 0.759
C_U 4.06 **C_C** 0.91

Specimen Obtained: Oven Dry
Dispersion Apparatus: Shaking

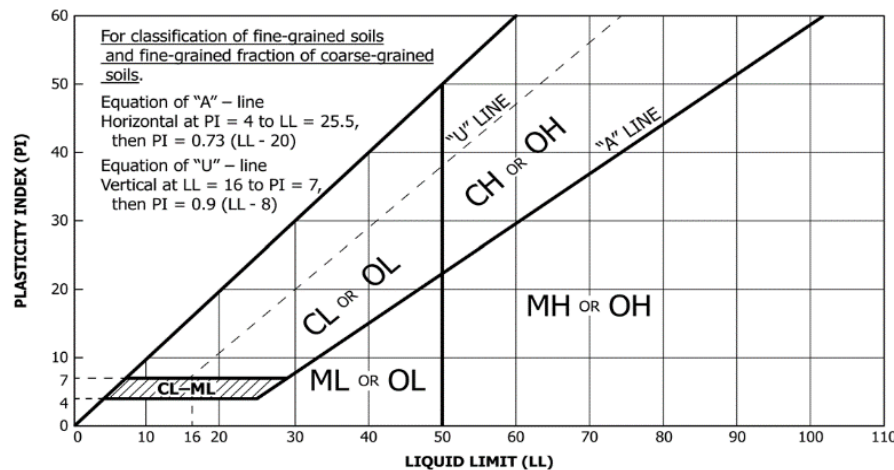
Test Method: Method A (Composite Sieving)

General

Results: The test is for informational purposes.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification	
				Group Symbol	Group Name ^B
Coarse-grained Soils (more than 50% retained on No. 200 sieve)	Gravels (More than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (Less than 5% fines ^C)	$C_u \geq 4$ and $1 \leq C_c \leq 3^D$	GW	Well-graded gravel ^E
			$C_u < 4$ and/or ($C_c < 1$ or $C_c > 3$) ^D	GP	Poorly graded gravel ^E
		Gravels with Fines (More than 12% fines ^C)	Fines classify as ML or MH	GM	Silty gravel ^{EFG}
			Fines Classify as CL or CH	GC	Clayey gravel ^{EFG}
	Sands (50% or more coarse fraction passes No. 4 sieve)	Clean Sands (Less than 5% fines ^H)	$C_u \geq 6$ and $1 \leq C_c \leq 3^D$	SW	Well-graded sand ^I
			$C_u < 6$ and/or ($C_c < 1$ or $C_c > 3$) ^D	SP	Poorly graded sand ^I
		Sands with Fines (More than 12% fines ^H)	Fines classify as ML or MH	SM	Silty sand ^{FGI}
			Fines classify as CL or CH	SC	Clayey sand ^{FGI}
Fine-grained Soils (50% or more passes the No. 200 sieve)	Silts and Clays (Liquid limit less than 50)	Inorganic	PI > 7 and plots on or above "A" line ^J	CL	Lean clay ^{KLM}
			PI < 4 or plots below "A" line ^J	ML	Silt ^{KLM}
		Organic	Liquid Limit – oven dried < 0.75	OL	Organic clay ^{KLMN}
			Liquid Limit – not dried < 0.75		Organic silt ^{KLMO}
	Silts and Clays (Liquid limit 50 or more)	Inorganic	PI plots on or above "A" line	CH	Fat clay ^{KLM}
			PI plots below "A" line	MH	Elastic silt ^{KLM}
		Organic	Liquid Limit – oven dried < 0.75	OH	Organic clay ^{KLMP}
			Liquid Limit – not dried < 0.75		Organic silt ^{KLMQ}
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor			PT	Peat

- A. Based on the material passing the 3-inch (75-mm) sieve.
- B. If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
- C. Gravels with 5 to 12% fines require dual symbols:
 - GW-GM well-graded gravel with silt
 - GW-GC well-graded gravel with clay
 - GP-GM poorly graded gravel with silt
 - GP-GC poorly graded gravel with clay
- D. $C_u = D_{60} / D_{10}$ $C_c = (D_{30})^2 / (D_{10} \times D_{60})$
- E. If soil contains $\geq 15\%$ sand, add "with sand" to group name.
- F. If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.
- G. If fines are organic, add "with organic fines" to group name.
- H. Sands with 5 to 12% fines require dual symbols:
 - SW-SM well-graded sand with silt
 - SW-SC well-graded sand with clay
 - SP-SM poorly graded sand with silt
 - SP-SC poorly graded sand with clay
- I. If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.
- J. If Atterberg limits plot in hatched area, soil is CL-ML, silty clay.
- K. If soil contains 15 to < 30% plus No. 200, add "with sand" or "with gravel", whichever is predominant.
- L. If soil contains $\geq 30\%$ plus No. 200, predominantly sand, add "sandy" to group name.
- M. If soil contains $\geq 30\%$ plus No. 200 predominantly gravel, add "gravelly" to group name.
- N. $PI \geq 4$ and plots on or above "A" line.
- O. $PI < 4$ or plots below "A" line.
- P. PI plots on or above "A" line.
- Q. PI plots below "A" line.



Laboratory Tests			
DD	Dry density, pcf	q_p	Pocket penetrometer strength, tsf
WD	Wet density, pcf	q_u	Unconfined compression test, tsf
P200	% Passing #200 sieve	LL	Liquid limit
MC	Moisture content, %	PL	Plastic limit
OC	Organic content, %	PI	Plasticity index

Particle Size Identification

- Boulders..... over 12"
- Cobbles..... 3" to 12"
- Gravel
 - Coarse..... 3/4" to 3" (19.00 mm to 75.00 mm)
 - Fine..... No. 4 to 3/4" (4.75 mm to 19.00 mm)
- Sand
 - Coarse..... No. 10 to No. 4 (2.00 mm to 4.75 mm)
 - Medium..... No. 40 to No. 10 (0.425 mm to 2.00 mm)
 - Fine..... No. 200 to No. 40 (0.075 mm to 0.425 mm)
- Silt..... No. 200 (0.075 mm) to .005 mm
- Clay..... < .005 mm

Relative Proportions^{L,M}

- trace..... 0 to 5%
- little..... 6 to 14%
- with..... $\geq 15\%$

Inclusion Thicknesses

- lens..... 0 to 1/8"
- seam..... 1/8" to 1"
- layer..... over 1"

Apparent Relative Density of Cohesionless Soils

- Very loose 0 to 4 BPF
- Loose 5 to 10 BPF
- Medium dense..... 11 to 30 BPF
- Dense..... 31 to 50 BPF
- Very dense..... over 50 BPF

Consistency of Cohesive Soils **Blows Per Foot** **Approximate Unconfined Compressive Strength**

- Very soft..... 0 to 1 BPF..... < 0.25 tsf
- Soft..... 2 to 4 BPF..... 0.25 to 0.5 tsf
- Medium..... 5 to 8 BPF 0.5 to 1 tsf
- Stiff..... 9 to 15 BPF..... 1 to 2 tsf
- Very Stiff..... 16 to 30 BPF..... 2 to 4 tsf
- Hard..... over 30 BPF..... > 4 tsf

Moisture Content:

- Dry:** Absence of moisture, dusty, dry to the touch.
- Moist:** Damp but no visible water.
- Wet:** Visible free water, usually soil is below water table.

Drilling Notes:

Blows/N-value: Blows indicate the driving resistance recorded for each 6-inch interval. The reported N-value is the blows per foot recorded by summing the second and third interval in accordance with the Standard Penetration Test, ASTM D1586.

Partial Penetration: If the sampler could not be driven through a full 6-inch interval, the number of blows for that partial penetration is shown as #/x" (i.e. 50/2"). The N-value is reported as "REF" indicating refusal.

Recovery: Indicates the inches of sample recovered from the sampled interval. For a standard penetration test, full recovery is 18", and is 24" for a thinwall/shelby tube sample.

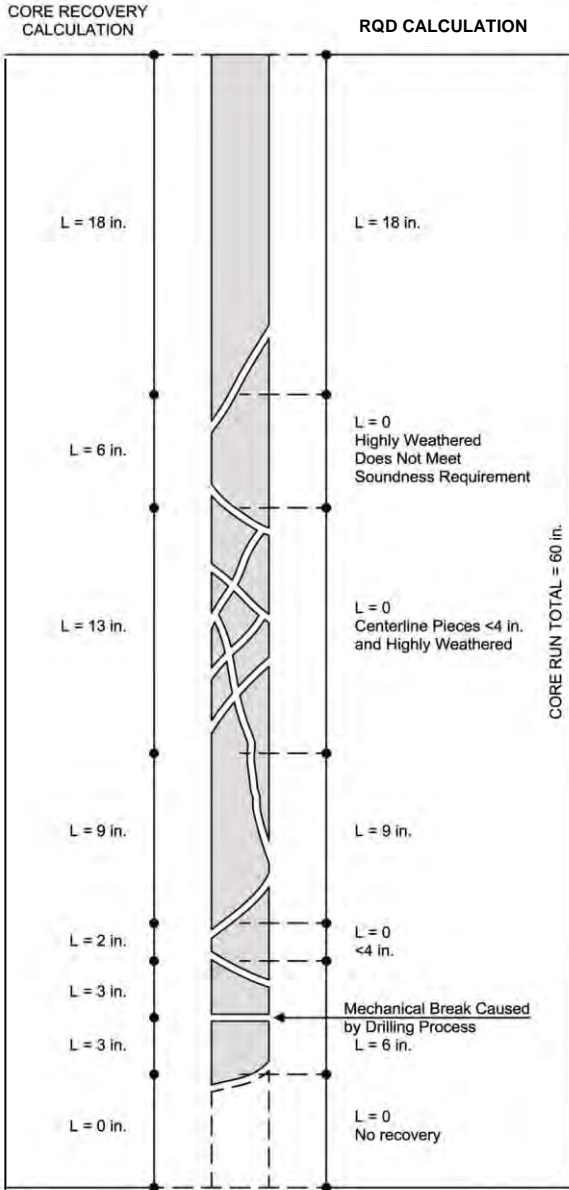
WOH: Indicates the sampler penetrated soil under weight of hammer and rods alone; driving not required.

WOR: Indicates the sampler penetrated soil under weight of rods alone; hammer weight and driving not required.

Water Level: Indicates the water level measured by the drillers either while drilling (☒), at the end of drilling (☑), or at some time after drilling (☒).

Sample Symbols

☒	Standard Penetration Test	☐	Rock Core
☒	Modified California (MC)	☐	Thinwall (TW)/Shelby Tube (SH)
☒	Auger	☒	Texas Cone Penetrometer
☒	Grab Sample	☒	Dynamic Cone Penetrometer



Weathering

Unweathered: No evidence of chemical or mechanical alteration.

Slightly weathered: Slight discoloration on surface, slight alteration along discontinuities, less than 10% of rock volume altered.

Moderately Weathered: Discoloration evident, surface pitted and altered with alteration penetrating well below rock surfaces, weathering halos evident, 10% to 50% of the rock altered.

Highly Weathered: Entire mass discolored, alteration pervading nearly all of the rock, with some pockets of slightly weathered rock noticeable, some mineral leached away.

Decomposed: Rock reduced to a soil consistency with relict rock texture, generally molded and crumbled by hand.

Hardness

- Very soft:* Can be deformed by hand
- Soft:* Can be scratched with a fingernail
- Moderately hard:* Can be scratched easily with a knife
- Hard:* Can be scratched with difficulty with a knife
- Very hard:* Cannot be scratched with a knife

Texture

<i>Sedimentary Rocks:</i>	<u>Grain Size</u>
Coarse grained	2 – 5 mm
Medium grained	0.4 – 2 mm
Fine grained	0.1 – 0.4 mm
Very fine grained	< 0.1 mm

<i>Igneous and Metamorphic Rocks:</i>	
Coarse grained	5 mm
Medium grained	1 – 5 mm
Fine grained	0.1 – 1 mm
Aphanitic	< 0.1 mm

Thickness of Bedding

- Massive:* 3 ft. thick or greater
- Thick bedded:* 1 to 3 ft. thick
- Medium bedded:* 4 in. to 1 ft. thick
- Thin bedded:* 4 in. thick or less

Degree of Fracturing (Jointing)

- Unfractured:* Fracture spacing 6 ft. or more
- Slightly fractured:* Fracture spacing 2 to 6 ft.
- Moderately fractured:* Fracture spacing 8 in. to 2 ft.
- Highly fractured:* Fracture spacing 2 in. to 8 in.
- Intensely fractured:* Fracture spacing 2 in. or less

Example Calculations

Core Recovery, CR = $\frac{\text{Total length of rock recovered}}{\text{Total core run length}}$

Example: $CR = \frac{(18 + 6 + 13 + 9 + 2 + 3 + 3)}{(60)}$

CR = 90%

RQD = $\frac{\text{Sum of sound pieces 4 inches or larger}}{\text{Total core run length}}$

<u>RQD Percent</u>	<u>Rock Quality</u>
< 25	very poor
25 < 50	poor
50 < 75	fair
75 < 90	good
90 < 100	excellent

Example: $RQD = \frac{(18 + 9 + 6)}{(60)}$

RQD = 55%

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-01 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/09/26	END DATE: 03/09/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 80°F, sunny	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
0.3		3 inches (TOPSOIL FILL)		5-6-7-9			
2.0		FILL: LEAN CLAY (CL), roots, dark brown and gray, dry to moist		(13) 18"			
		LEAN CLAY (CL), trace to with Sand, brown, dry to moist, stiff to very stiff (LOESS)		2-4-6-7			
				(10) 5"			
			5	3-4-4-6			
				(8) 10"			
				3-3-5-7			
				(8) 14"			
10.0		FAT CLAY (CH), with Sand, trace Gravel, brown to gray, moist, very stiff to hard (GLACIAL TILL)		4-7-9-10			
			10	(16) 15"			
				4-7-10-12			
				(17) 14"			
				3-7-11-13			
				(18) 15"			
			15	3-7-8-11			
				(15) 16"			
				6-10-13-17			
				(23) 18"			
				4-7-10-12			
			20	(17) 17"			
				8-11-15			
			25	(26) 15"			
				7-12-16			
			30	(28) 14"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-01 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia	START DATE: 03/09/26	END DATE: 03/09/26		
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 80°F, sunny	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
40.0		FAT CLAY (CH), with Sand, trace Gravel, brown to gray, moist, very stiff to hard (GLACIAL TILL)	35	8-10-15 (25) 13"			Water not observed while drilling.
			40	9-11-21 (32) 12"			
		END OF BORING Boring then backfilled with auger cuttings					
			45				
			50				
			55				
			60				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-01A Princeton			
Geotechnical Evaluation				LOCATION: See attached sketch			
NNG CMC Corridor				DATUM:			
Omaha, Nebraska				NORTHING: EASTING:			
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia	START DATE: 03/09/26	END DATE: 03/09/26				
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 79°F, sunny			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
0.4		5 inches (TOPSOIL FILL) FILL: LEAN CLAY (CL), roots, dark brown, dry to moist		3-4-5-5 (9) 11"			
4.0		FAT CLAY (CH), with Sand, brown, moist, very stiff to stiff (ALLUVIUM)	5	4-5-7-10 (12) 13"			
				5-7-9-11 (16) 13"			
				5-8-9-12 (17) 15"			
			10	3-6-7-9 (13) 15"			
				4-6-6-5 (12) 15"			
12.0		LEAN CLAY (CL), with Sand, trace Gravel, brown, moist, stiff to medium (ALLUVIUM)		3-3-4-5 (7) 14"			
				3-4-4-3 (8) 16"			
			15	2-2-3-4 (5) 15"			
				2-2-3-4 (5) 16"			
			20				
				3-5-6 (11) 14"			
			25				
28.0		POORLY GRADED SAND (SP), fine-grained, Silt, brown, moist, very dense (ALLUVIUM)		6-7-9 (16) 12"			
			30				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-01A Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/09/26	END DATE: 03/09/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 79°F, sunny	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
40.0		POORLY GRADED SAND (SP), fine-grained, Silt, brown, moist, very dense (ALLUVIUM)	35	3-7-8 (15) 10"			
		END OF BORING	40	4-9-11 (20) 11"			Water observed at 29.0 feet while drilling.
		Boring then backfilled with auger cuttings	45				
			50				
			55				
			60				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-04 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia	START DATE: 03/10/26	END DATE: 03/10/26		
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 39°F, sunny, windy	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
0.3		3 inches (TOPSOIL FILL) FILL: FAT CLAY (CH), dark brown, moist		3-5-5-6 (10) 5"			
4.0		LEAN CLAY (CL), with Sand, gray and brown, moist, medium to very stiff (LOESS)	5	3-6-10-13 (16) 11"			
			5	4-6-7-8 (13) 12"			
				3-4-6-6 (10) 15"			
				2-3-3-4 (6) 17"			
			10	1-2-2-3 (4) 17"			
				1-3-3-4 (6) 15"			
				2-4-5-7 (9) 14"			
			15	2-4-8-10 (12) 16"			
				4-6-7-9 (13) 16"			
			20				
				5-7-10 (17) 15"			
			25				
				3-5-7 (12) 11"			
			30				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-04 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/10/26	END DATE: 03/10/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 39°F, sunny, windy	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
40.0		LEAN CLAY (CL), with Sand, gray and brown, moist, medium to very stiff (LOESS)		4-5-8 (13) 12"			Water observed at 29.0 feet while drilling.
		END OF BORING		3-7-9 (16) 14"			
		Boring then backfilled with auger cuttings					

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-04A Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/10/26	END DATE: 03/10/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 40°F, sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
0.3		TOPSOIL, 4 inches		1-2-2-1 (4) 14"			
		LEAN CLAY (CL), trace Sand, light gray to gray, moist, soft to medium (ALLUVIUM)		0-0-0-2 WOH/18" 3"			
			5	1-1-1-2 (2) 16"			
				2-3-3-2 (6) 17"			
			10	2-3-3-3 (6) 23"			
			15	1-2-2 (4) 14"			
20.0		LEAN CLAY (CL), with Sand, trace Gravel, brown, moist, very stiff to stiff, iron oxide staining (GLACIAL TILL)	20	1-2-3 (5) 10"			
			25	6-9-10 (19) 13"			
30.0		FAT CLAY (CH), trace Gravel, gray, moist, very stiff (GLACIAL TILL)	30	5-7-8 (15) 14"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-04A Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/10/26	END DATE: 03/10/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 40°F, sunny	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		FAT CLAY (CH), trace Gravel, gray, moist, very stiff (GLACIAL TILL)					
			35	4-7-10 (17) 13"			
			40	5-8-13 (21) 11"			
			45	10-19-21 (40) 14"			
			50	2-11-14 (25) 11"			
			55				
60.0			60	11-14-14 (28) 14"			
		END OF BORING					
		Boring then backfilled with auger cuttings					
							Water observed at 9.0 feet while drilling.

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-05 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/10/26	END DATE: 03/10/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 67°F, sunny	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		LEAN CLAY (CL), trace Gravel, Sand, light brown, moist, very stiff, iron oxide staining (GLACIAL TILL)		6-9-13 (22) 11"			
			35				
				6-8-11 (19) 13"			
			40				
				5-4-12 (16) 12"			
			45				
				6-8-13 (21) 14"			
			50				
			55				
60.0		LEAN CLAY (CL), trace Gravel, Sand, light gray, moist, very stiff (GLACIAL TILL)		9-11-14 (25) 13"			
			60				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-05 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/10/26	END DATE: 03/10/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 67°F, sunny	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		LEAN CLAY (CL), trace Gravel, Sand, light gray, moist, very stiff (GLACIAL TILL)	65				
			70	11-13-17 (30) 12"			
			75				
80.0			80	10-14-14 (28) 14"			
		END OF BORING					
		Boring then backfilled with auger cuttings					
			85				
			90				
			95				

Water observed at 17.0 feet while drilling.

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-06 Princeton			
Geotechnical Evaluation				LOCATION: See attached sketch			
NNG CMC Corridor				DATUM:			
Omaha, Nebraska				NORTHING: EASTING:			
DRILLER: A.L./J.N.		LOGGED BY: M. Garcia		START DATE: 03/11/26	END DATE: 03/11/26		
SURFACE ELEVATION:		RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 32°F, cloudy		
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
0.4		5 inches (TOPSOIL FILL)		3-4-5-7			
2.0		FILL: FAT CLAY (CH), roots, dark brown, moist		(9) 2"			
		LEAN CLAY (CL), trace Sand, gray to brown, moist, very stiff to medium (LOESS)		3-7-4-11			
				(11) 18"			
			5	3-5-8-13			
				(13) 14"			
				3-4-3-3			
				(7) 16"			
10.0				4-5-6-7			
				(11) 17"			
		FAT CLAY (CH), gray to brown, moist, stiff to very stiff, iron oxide staining (LOESS)	10	3-6-7-8			
				(13) 17"			
				1-4-7-10			
				(11) 13"			
			15	3-5-7-8			
				(12) 17"			
				4-5-7-9			
				(12) 17"			
20.0				4-7-8-12			
				(15) 16"			
		LEAN CLAY (CL), trace Sand, light brown, moist, medium (LOESS)	20				
				2-3-4			
			25	(7) 13"			
30.0				9-11-13			
				(24) 12"			
		LEAN CLAY (CL), trace Gravel, Sand, gray to light brown, moist, stiff to very stiff (GLACIAL TILL)	30				

Drilling method switched to mud rotary at 20 feet

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-06 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/11/26	END DATE: 03/11/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 32°F, cloudy	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		LEAN CLAY (CL), trace Gravel, Sand, gray to light brown, moist, stiff to very stiff (GLACIAL TILL)					
			35	4-5-7 (12) 11"			
			40	3-4-7 (11) 9"			
			45	4-5-13 (18) 14"			
			50	8-10-13 (23) 13"			
			55				
			60	7-13-16 (29) 14"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-06 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/11/26	END DATE: 03/11/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 32°F, cloudy	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		LEAN CLAY (CL), trace Gravel, Sand, gray to light brown, moist, stiff to very stiff (GLACIAL TILL)	65				
			70	4-11-13 (24) 13"			
			75				
			80	8-9-13 (22) 11"			
			85				
			90	10-11-14 (25) 13"			
90.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			95				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-07 Princeton			
Geotechnical Evaluation				LOCATION: See attached sketch			
NNG CMC Corridor				DATUM:			
Omaha, Nebraska				NORTHING:	EASTING:		
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/03/26	END DATE: 03/03/26			
SURFACE ELEVATION:	RIG: 5501	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 50°, cloudy			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
0.3		TOPSOIL, 4 inches		3-5-6-7 (11) 14"			
		LEAN CLAY (CL), with Sand, gray, moist, stiff to medium (LOESS)		4-4-6-8 (10) 13"			
			5	3-4-5-6 (9) 12"			
				3-2-3-3 (5) 18"			
8.0		FAT CLAY (CH), with Sand, brown and gray, moist, very stiff to stiff, iron oxide staining (LOESS)		3-6-10-12 (16) 13"			
			10	4-6-9-10 (15) 12"			
				4-6-8-11 (14) 14"			
			15	4-4-5-10 (9) 15"			
				3-3-5-8 (8) 14"			
				2-4-5-6 (9) 17"			
20.0		LEAN CLAY (CL), trace Gravel, Sand, brown to light brown, moist, medium to hard, iron oxide staining (GLACIAL TILL)					
			20				
				3-5-7 (12) 11"			
			25				
				2-3-4 (7) 12"			
			30				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-07 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/03/26	END DATE: 03/03/26	
SURFACE ELEVATION:	RIG: 5501	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 50°, cloudy	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
50.0	▽	LEAN CLAY (CL), trace Gravel, Sand, brown to light brown, moist, medium to hard, iron oxide staining (GLACIAL TILL)	35	6-9-11 (20) 11"			
			40	6-8-10 (18) 10"			
			45	6-13-15 (28) 11"			
			50	8-14-18 (32) 13"			
		END OF BORING					
		Boring then backfilled with auger cuttings					
			55				
			60				
							Water observed at 34.0 feet while drilling.

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-08 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/11/26	END DATE: 03/11/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 44°F, sunny	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
0.4		5 inches (TOPSOIL FILL) FILL: LEAN CLAY (CL), with Sand, dark brown, dry to moist		4-5-6-6 (11) 13"			
				1-3-4-4 (7) 9"			
			5	3-4-4-5 (8) 14"			
				3-4-4-6 (8) 15"			
8.0		LEAN CLAY (CL), with Sand, trace Gravel, dark brown to gray, moist, stiff to soft (ALLUVIUM)		3-5-6-6 (11) 17"			
			10	3-4-5-5 (9) 16"			
				1-3-5-5 (8) 17"			
				1-3-4-4 (7) 16"			
			15	2-3-4-4 (7) 14"			
				1-2-3-3 (5) 17"			
			20				Drilling method switched to mud rotary at 20 feet
				1-2-1 (3) 11"			
			25				
				7-4-6 (10) 13"			
30.0		CLAYEY SAND (SC), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)					
			30				

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-08 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/11/26	END DATE: 03/11/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 44°F, sunny	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		CLAYEY SAND (SC), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)					
			35	11-14-17 (31) 9"			
			40	10-13-14 (27) 7"			
			45	38-46-52 (98) 11"			
			50	19-17-19 (36) 9"			
			55				
			60	5-6-7 (13) 8"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-08 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia		START DATE: 03/11/26	END DATE: 03/11/26	
SURFACE ELEVATION:	RIG: 7504	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 44°F, sunny	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
70.0		CLAYEY SAND (SC), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)	65	7-9-10 (19) 13"			Water not observed while drilling.
		END OF BORING Boring then backfilled with auger cuttings	70				
			75				
			80				
			85				
			90				
			95				

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-11 Princeton			
Geotechnical Evaluation				LOCATION: See attached sketch			
NNG CMC Corridor				DATUM:			
Omaha, Nebraska				NORTHING:	EASTING:		
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia	START DATE: 03/05/26	END DATE: 03/05/26				
SURFACE ELEVATION:	RIG: 5501	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 49°F, cloudy			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
0.3		4 inches (TOPSOIL FILL) FILL: FAT CLAY (CH), with Sand, dark brown, moist		4-7-9-10 (16) 5" 5-7-8-10 (15) 3" 5-7-9-11 (16) 10"			
6.0		LEAN CLAY (CL), with Sand, brown to gray, moist, medium to stiff, iron oxide staining (LOESS)	5	4-5-6-7 (11) 12" 2-3-3-4 (6) 18" 2-3-4-5 (7) 12" 2-3-5-7 (8) 13" 4-5-6-7 (11) 14" 3-4-5-6 (9) 11" 2-3-5-7 (8) 14"			
28.0		SILTY SAND (SM), fine-grained, Silt, gray, moist to dry, medium dense to dense (ALLUVIUM)	10 15 20 25 30	3-4-6 (10) 11" 8-16-12 (28) 14"			

Continued on next page

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2508623				BORING: BH-11 Princeton	
Geotechnical Evaluation				LOCATION: See attached sketch	
NNG CMC Corridor				DATUM:	
Omaha, Nebraska				NORTHING:	EASTING:
DRILLER: A.L./J.N.	LOGGED BY: M. Garcia	START DATE: 03/05/26	END DATE: 03/05/26		
SURFACE ELEVATION:	RIG: 5501	METHOD: 3 1/4" HSA	SURFACING: Topsoil	WEATHER: 49°F, cloudy	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q _p tsf	MC %	Tests or Remarks
		SILTY SAND (SM), fine-grained, Silt, gray, moist to dry, medium dense to dense (ALLUVIUM)					
			35	8-17-21 (38) 13"			
			40	9-14-13 (27) 10"			
			45	4-9-13 (22) 9"			
			50	10-21-23 (44) 8"			
			55				
60.0			60	11-22-25 (47) 9"			
		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					