Figure 1-14
Noise Sensitive Area Maps for V2F Project

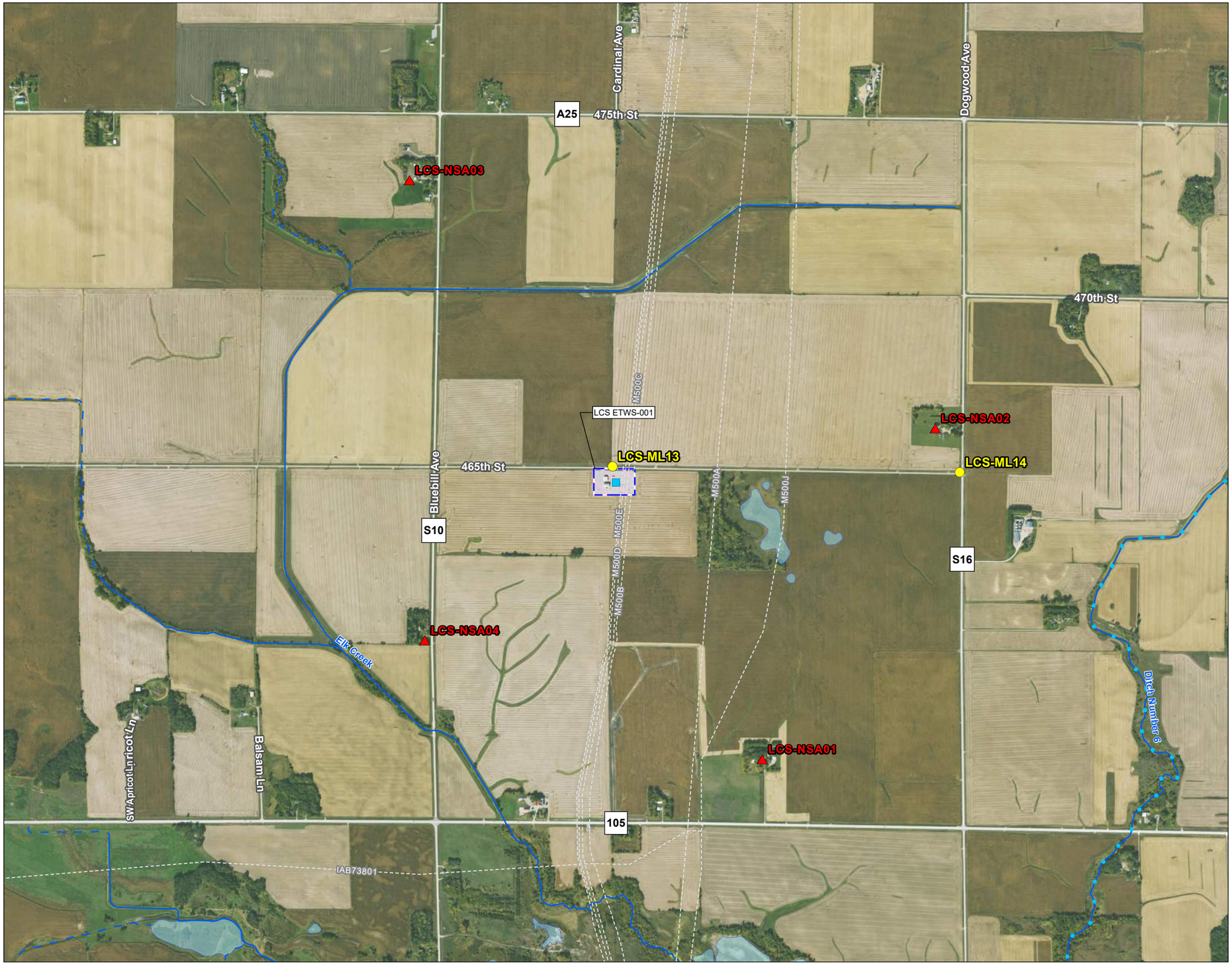


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : Temporary Compression Site Lake Mills Compressor Station

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Worth County, Iowa

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

0 750 1,500 Feet

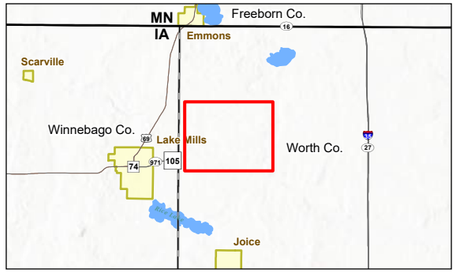
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Legend

- Environmental Survey Boundary
- Extra Temporary Workspace
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Temporary Compression
- Existing Pipeline

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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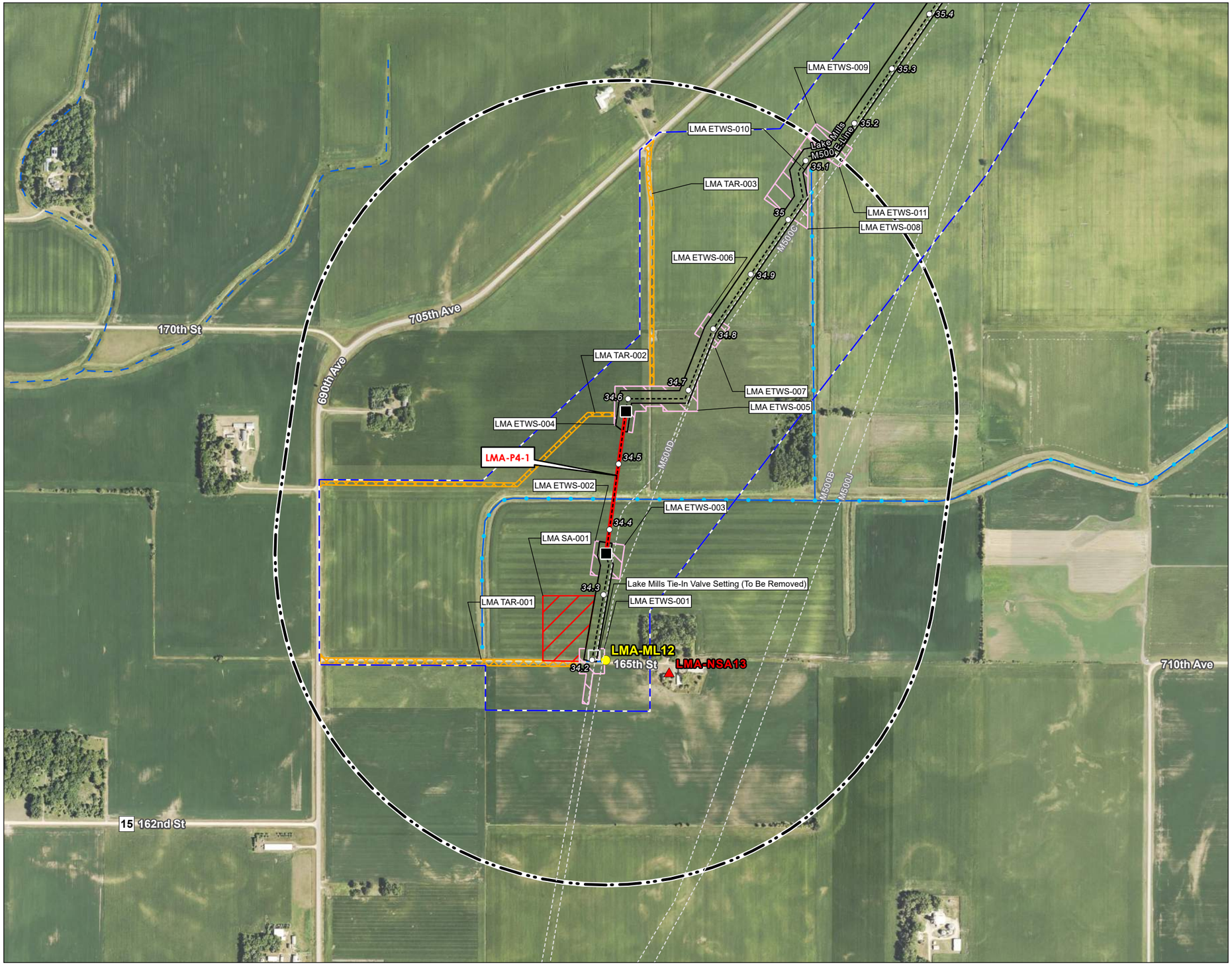


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-1

Client/Project

172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location

Freeborn County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

0 400 800 Feet

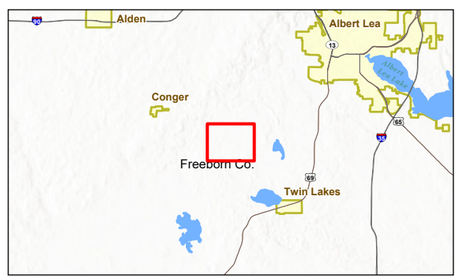
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Legend

- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Existing Access Road
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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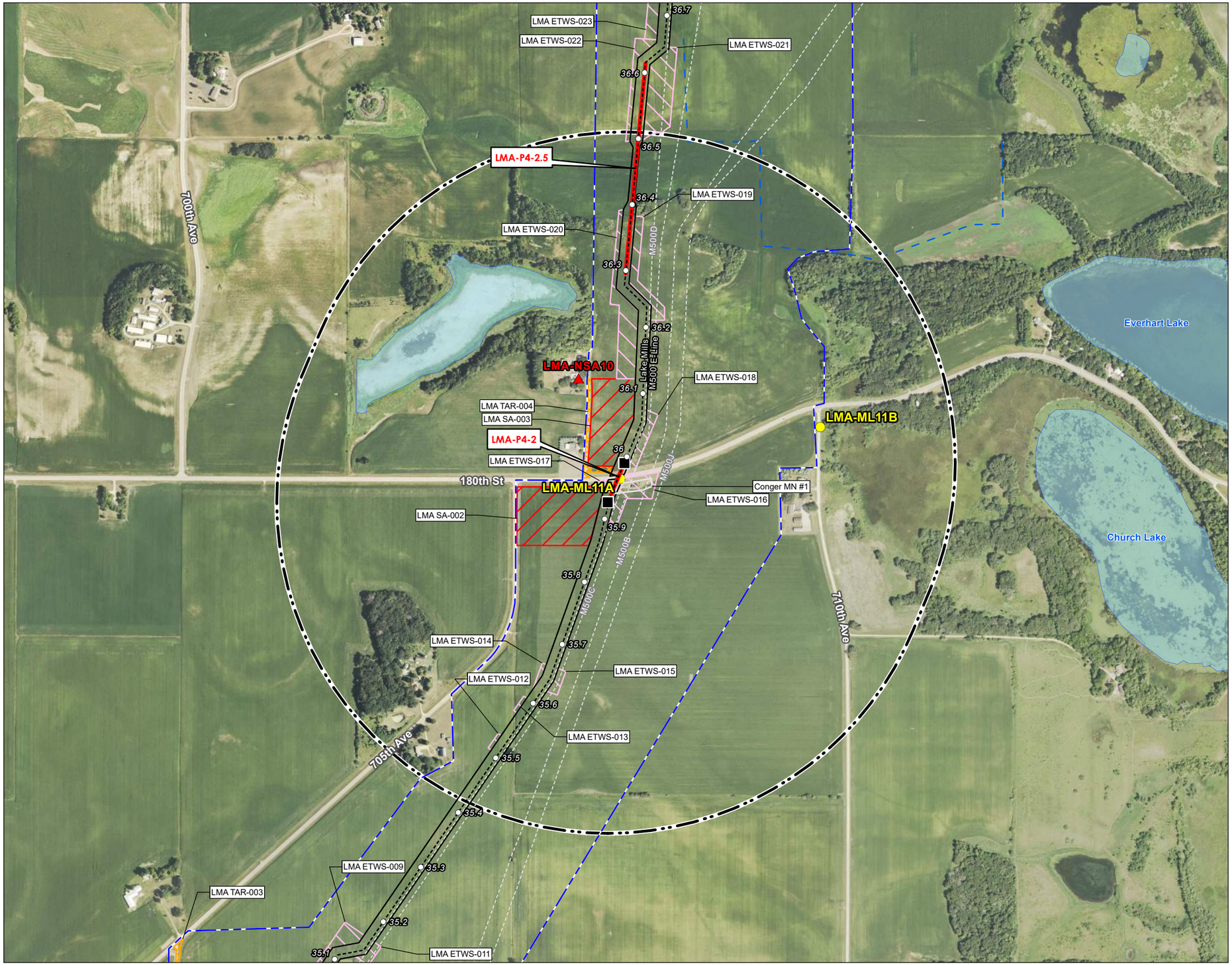


Figure No.
1-14

Title
Approximate Locations with Noise Sensitive Areas : LMA-P4-2

Client/Project 172608813
Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Freeborn County, Minnesota

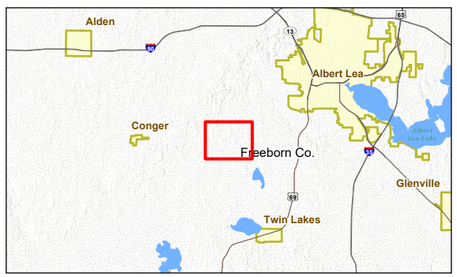
Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

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(At original document size of 11x17)
1:9,600

Legend
- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Existing Access Road
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-2.5

Client/Project

172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location

Freeborn County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

0 400 800 Feet

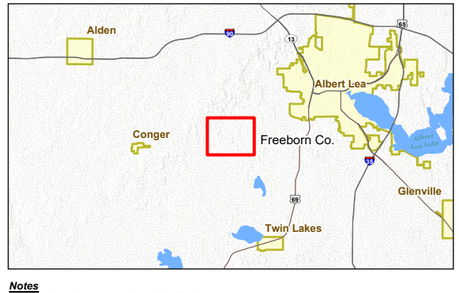
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Legend

- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Existing Access Road
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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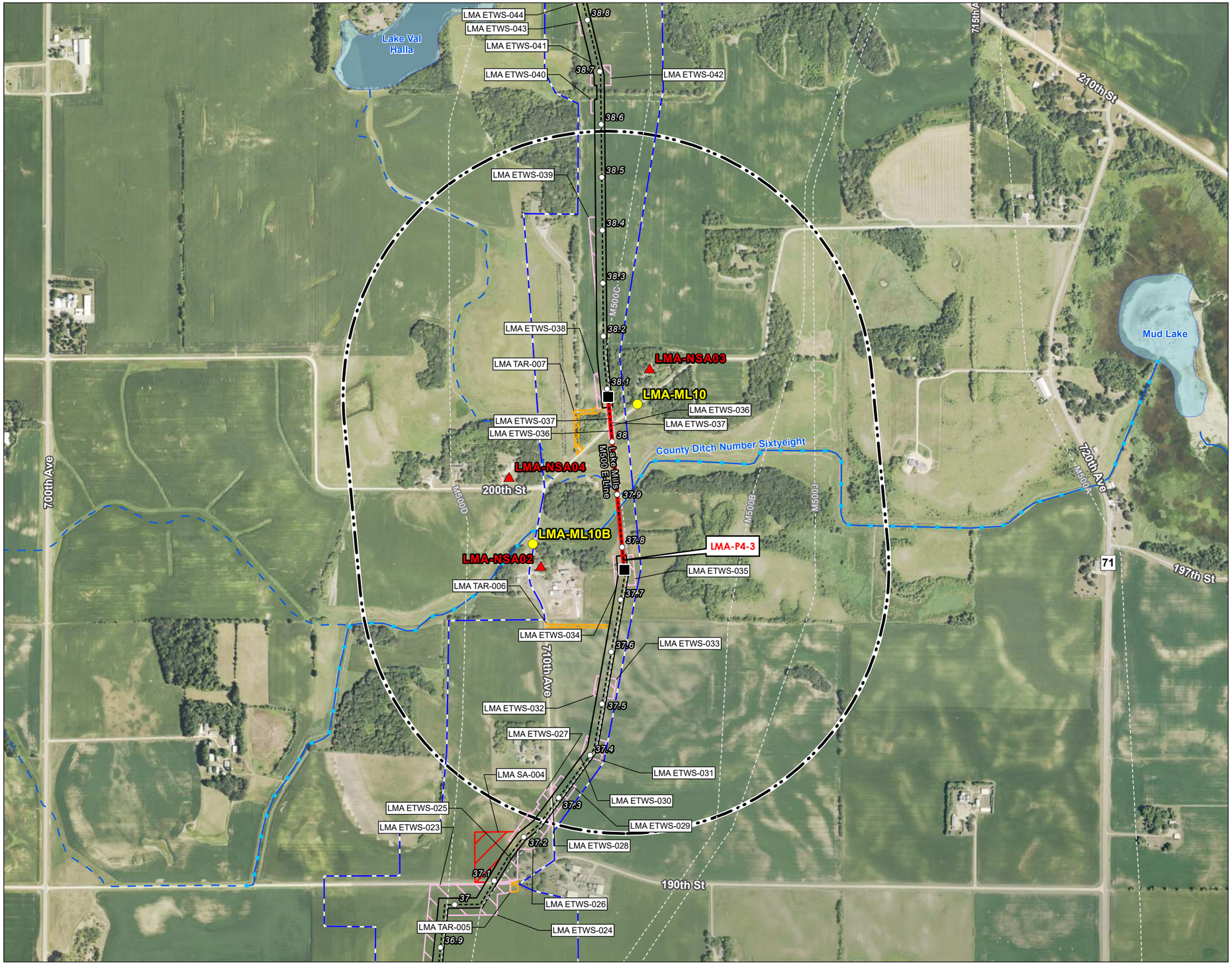


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-3

Client/Project

172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location

Freeborn County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

0 500 1,000 Feet

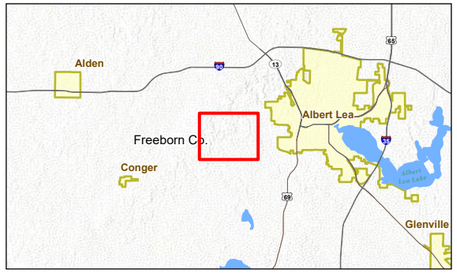
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Legend

- Environmental Survey Boundary
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-4

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Freeborn County, Minnesota

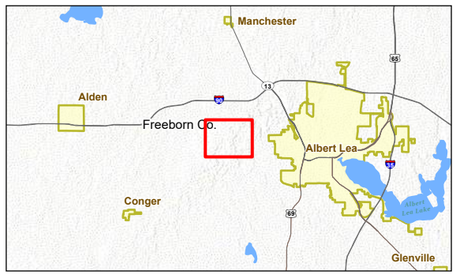
Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

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(At original document size of 11x17)
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Legend
- Environmental Survey Boundary
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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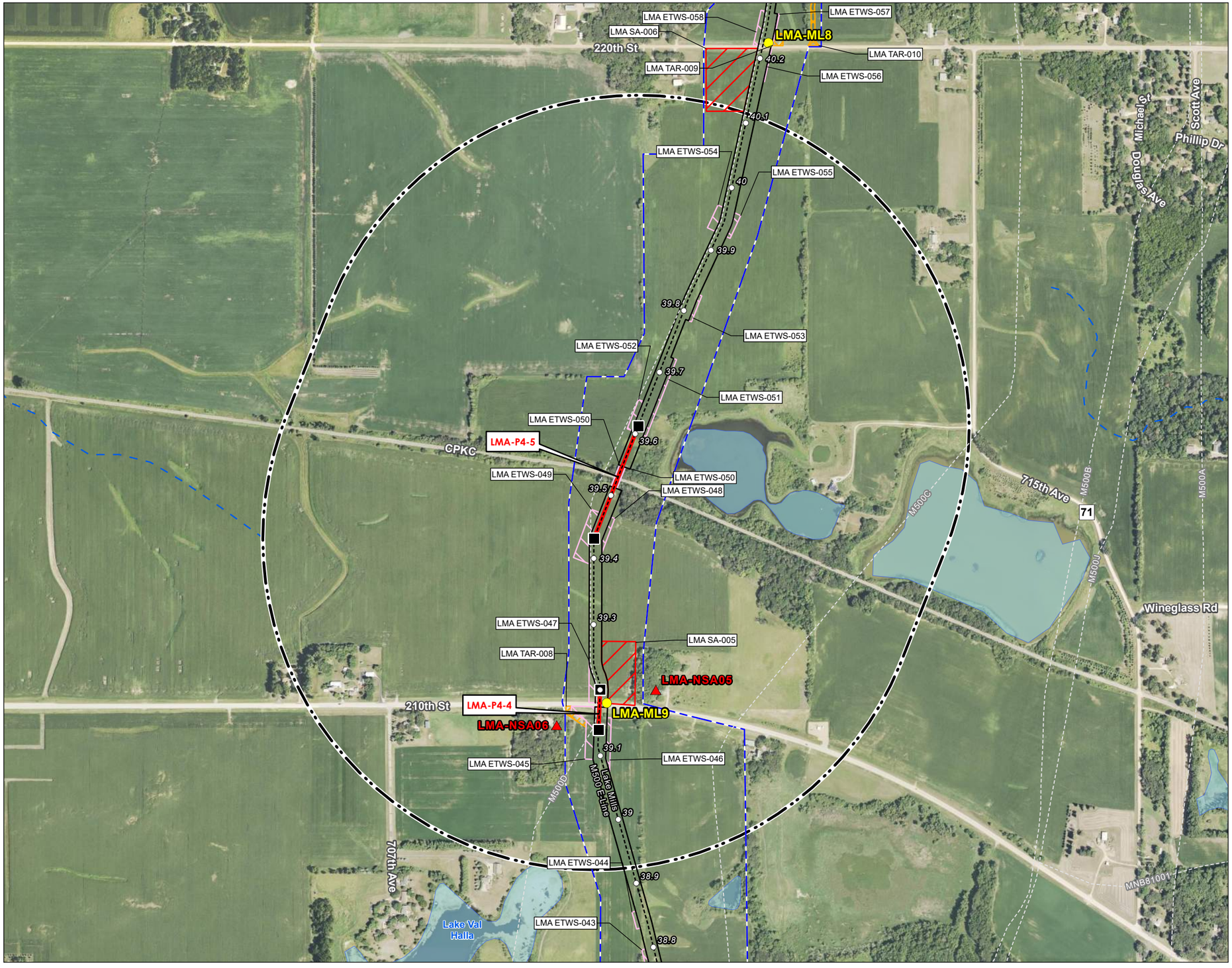


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-5

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Freeborn County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

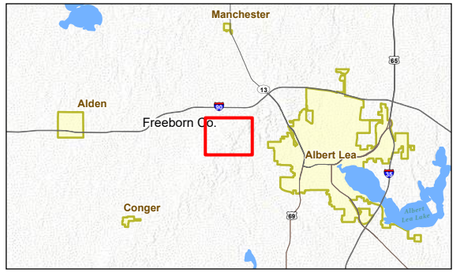
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(At original document size of 11x17)
1:9,600

Legend

- Environmental Survey Boundary
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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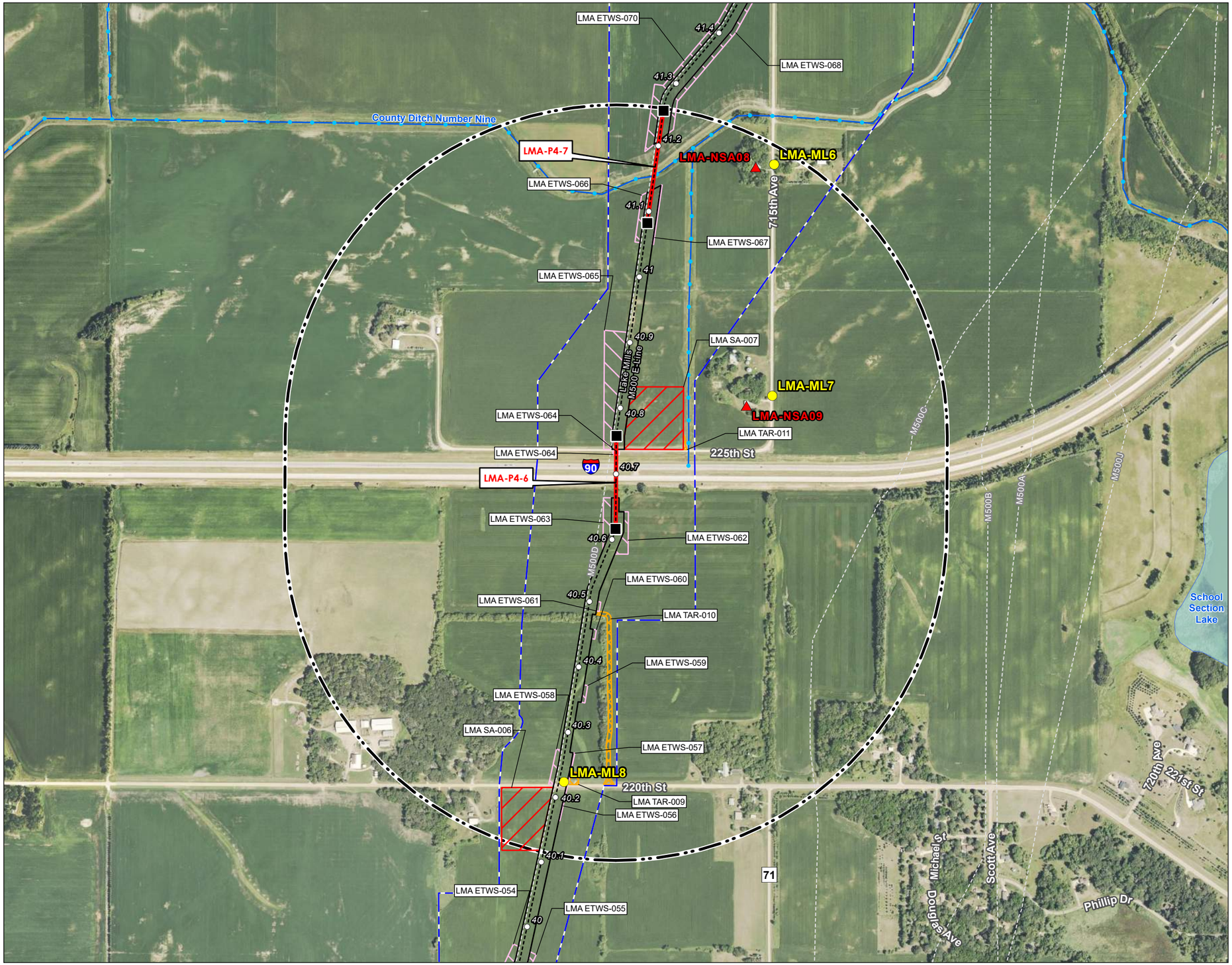


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-6

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Freeborn County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

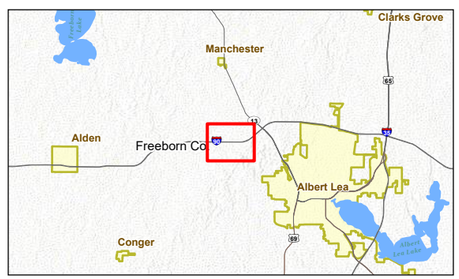
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(At original document size of 11x17)
1:9,600

Legend

- Environmental Survey Boundary
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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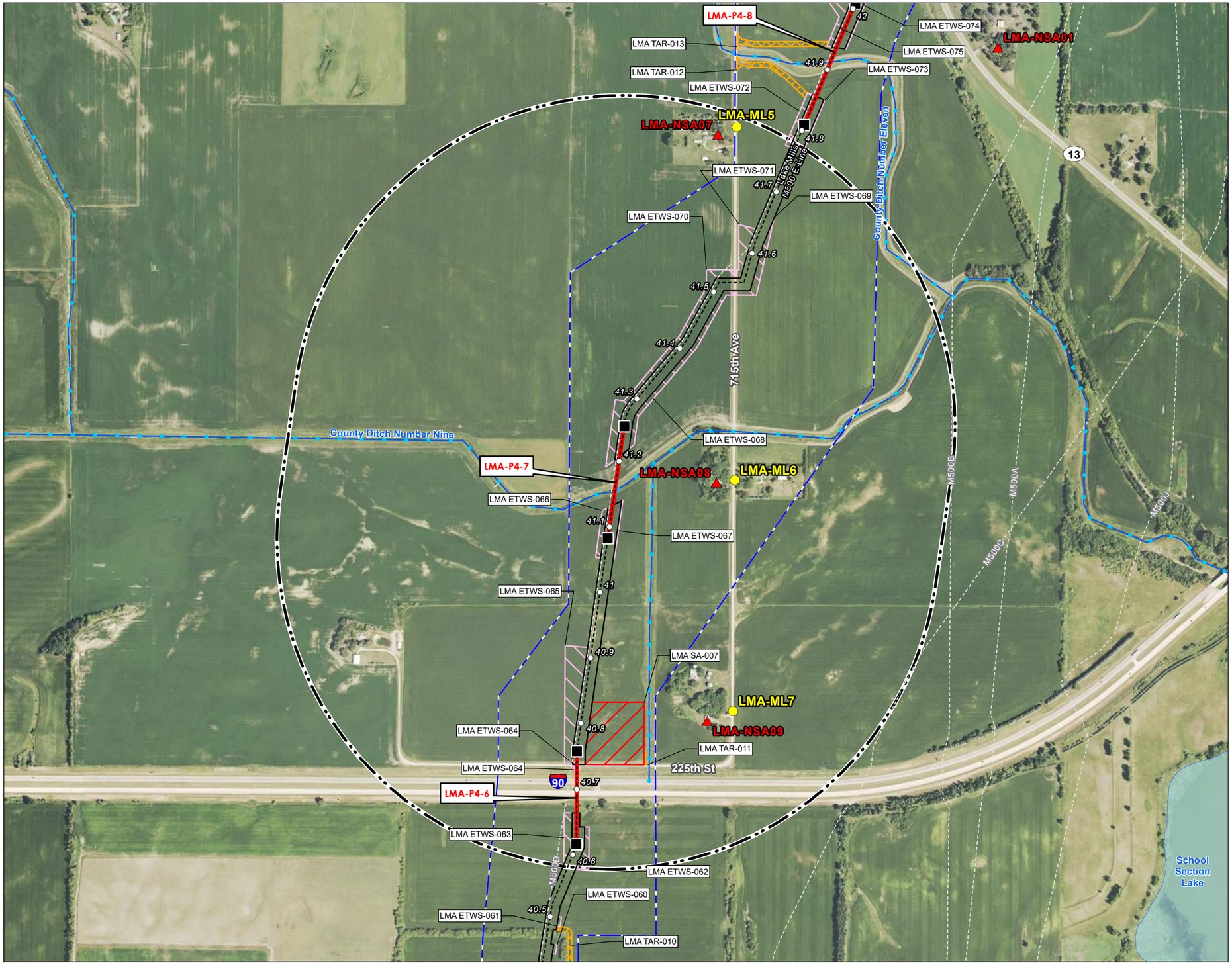


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-7

Client/Project

172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location

Freeborn County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

0 400 800 Feet

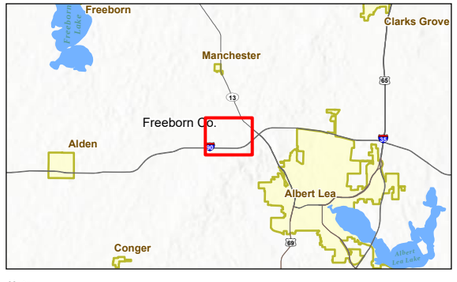
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1:9,600

Legend

- Environmental Survey Boundary
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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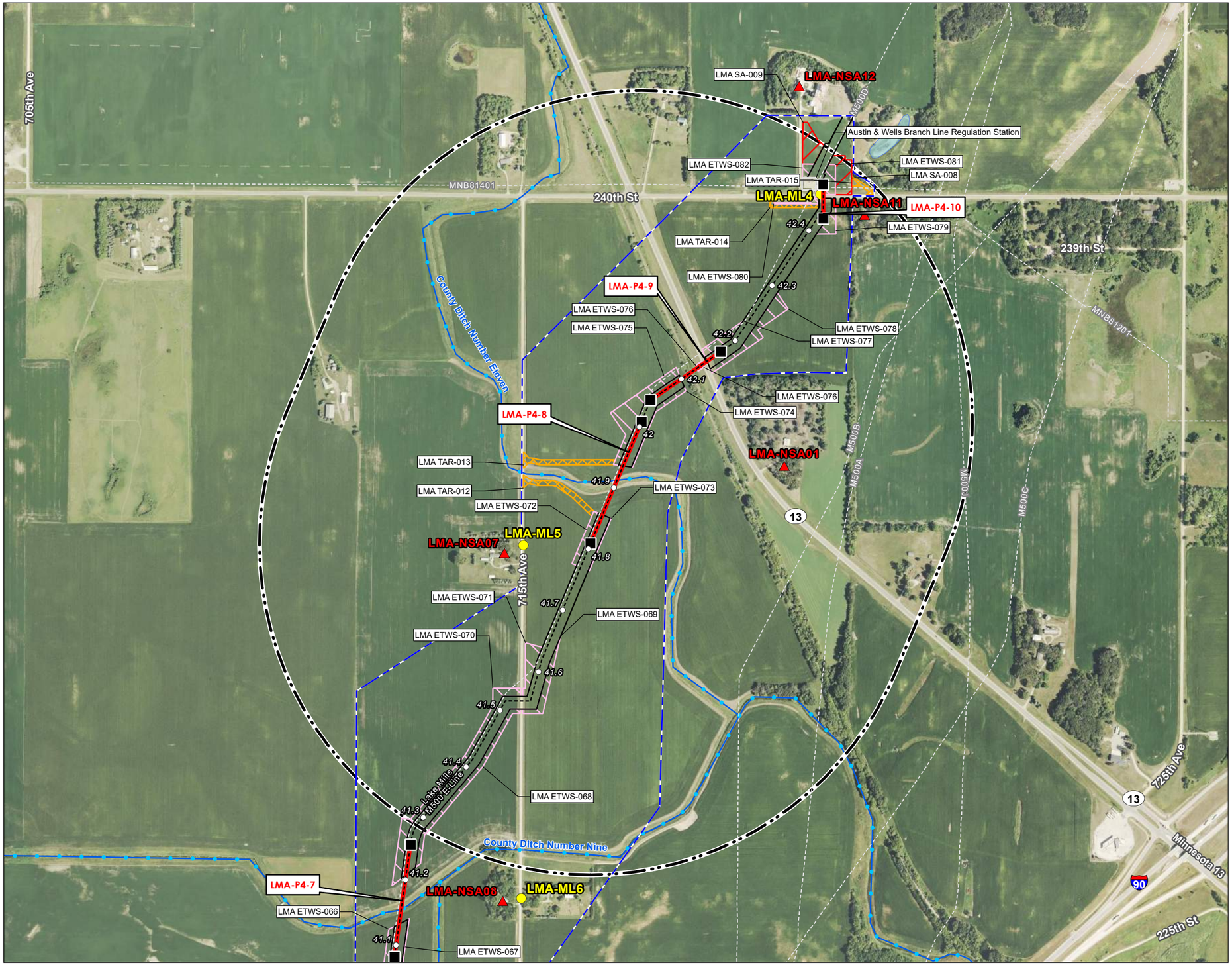


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-8

Client/Project

172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location

Freeborn County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

0 400 800 Feet

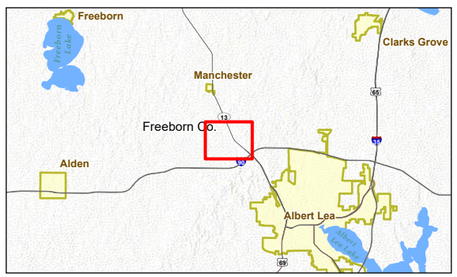
(At original document size of 11x17)
1:9,600

Legend

- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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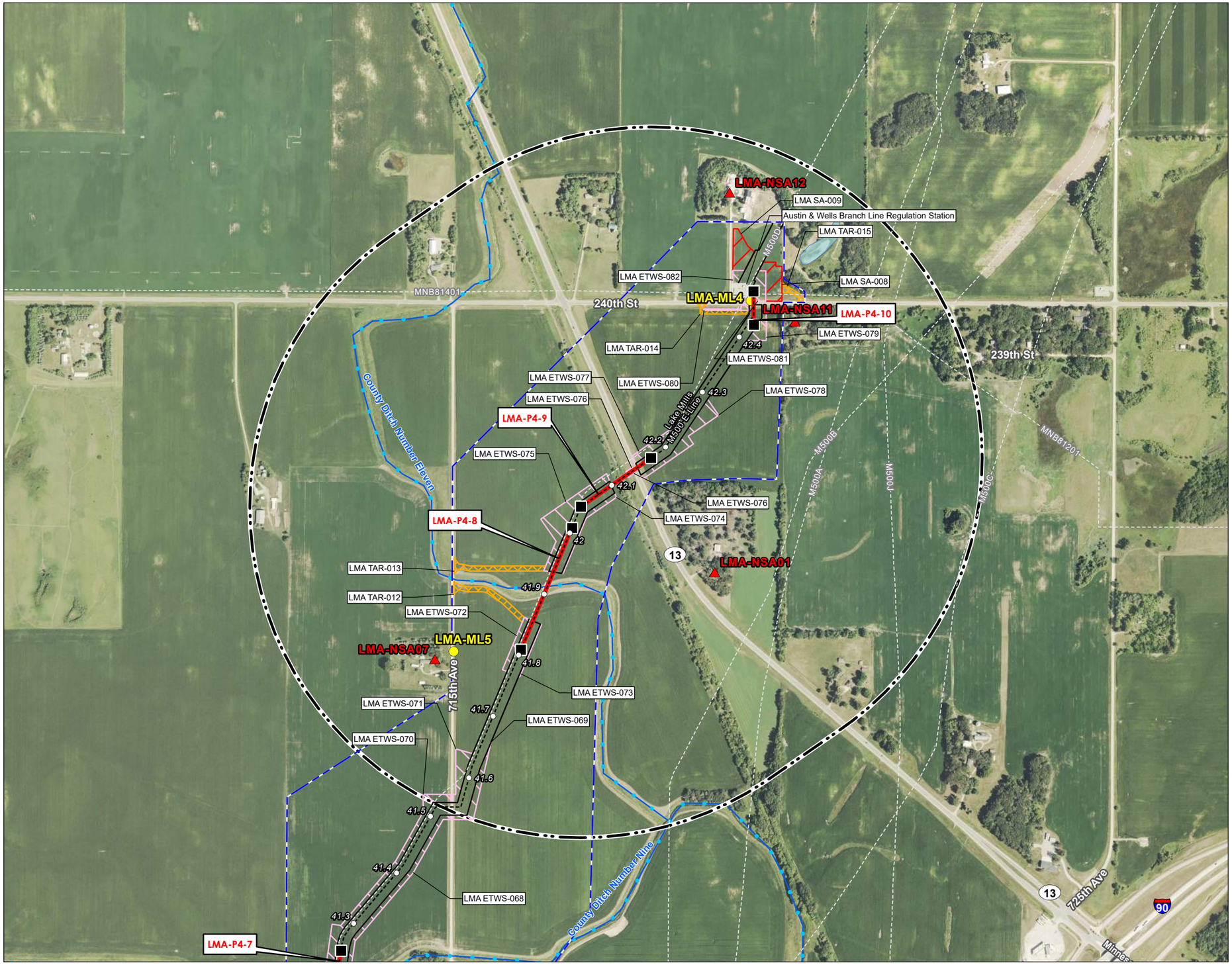


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-9

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Freeborn County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

0 400 800 Feet
(At original document size of 11x17)
1:9,600

Legend
- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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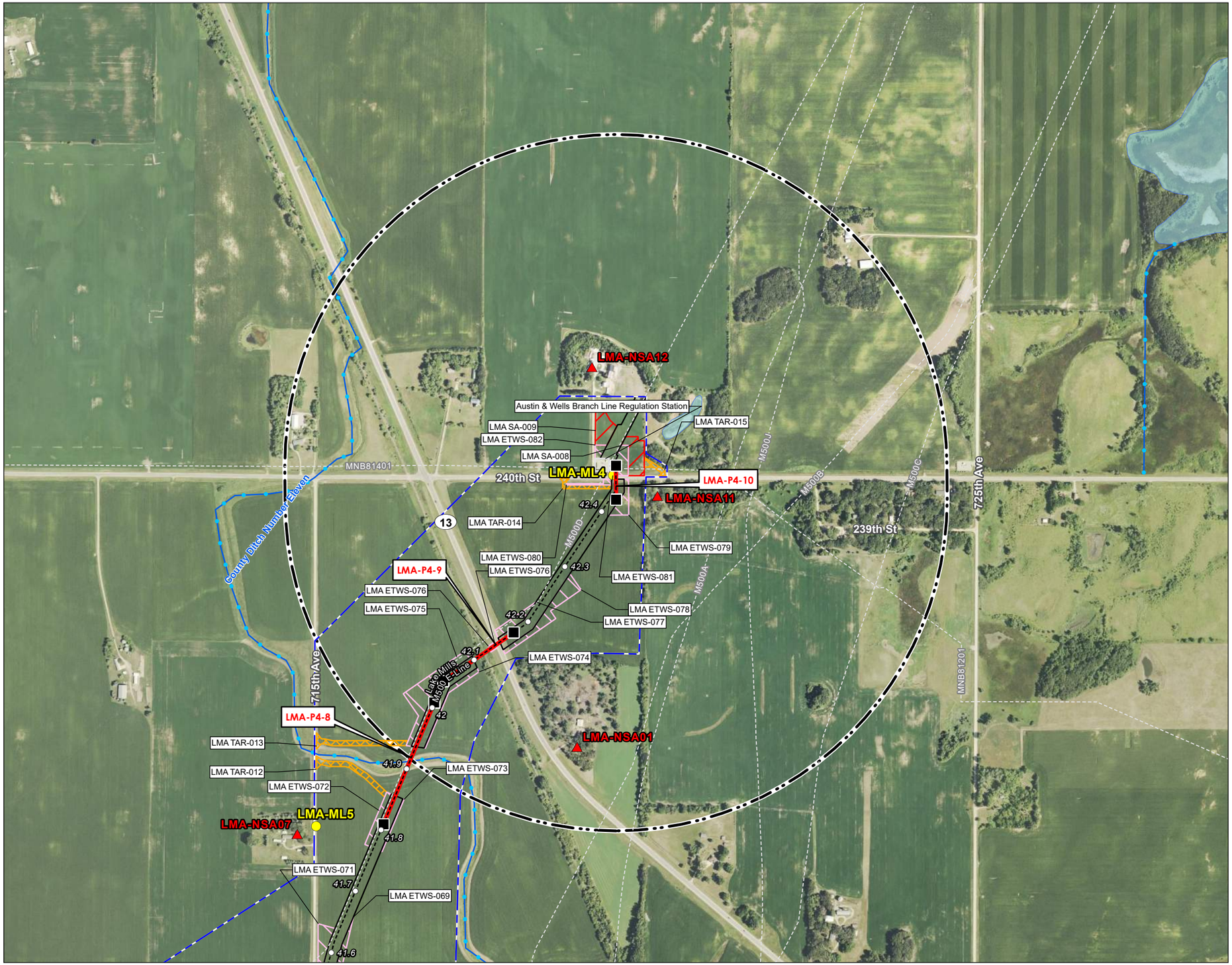


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-10

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Freeborn County, Minnesota

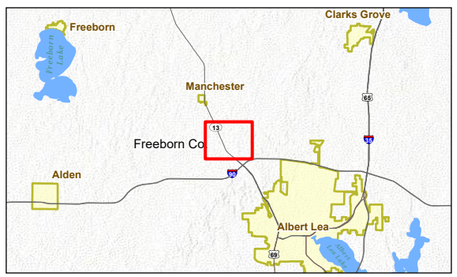
Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

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(At original document size of 11x17)
1:9,600

Legend
- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : ALO-P4-1

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Steele County, Minnesota

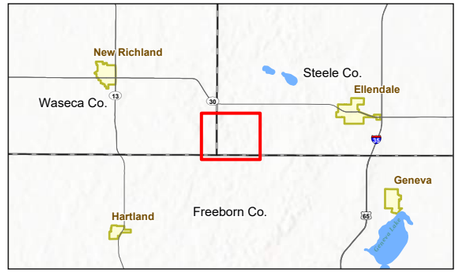
Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

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Legend
- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Existing Access Road
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : ALO-P4-2

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Steele County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

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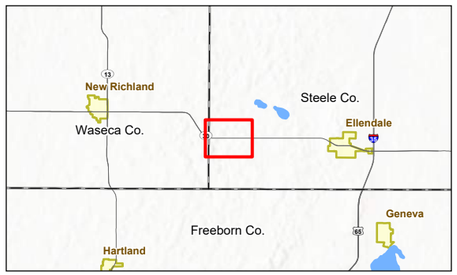
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Legend

- Environmental Survey Boundary
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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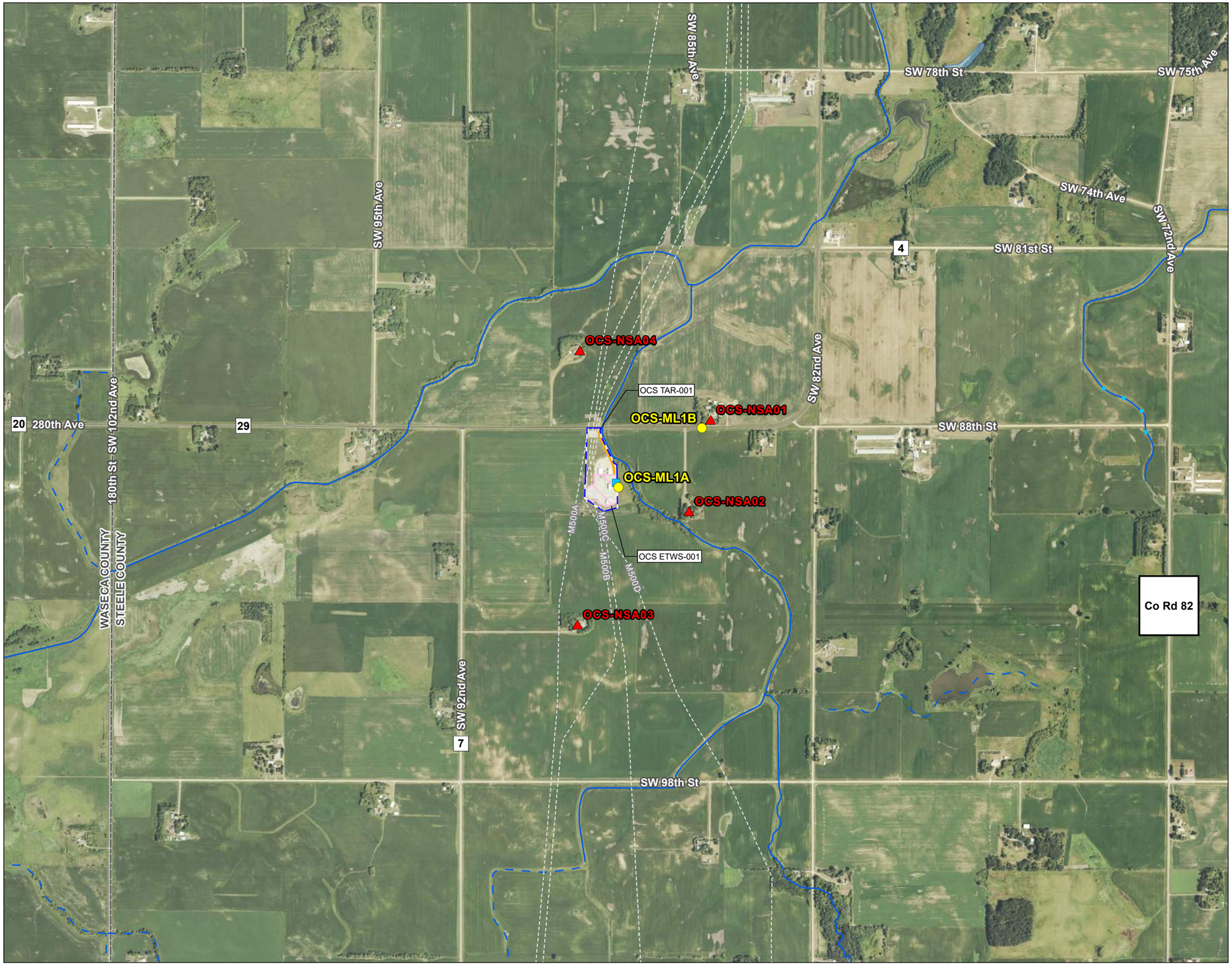


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : Temporary Compression Site Owatonna Compressor Station

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Steele County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

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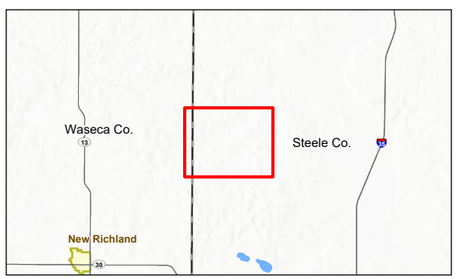
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Legend

- Environmental Survey Boundary
- Extra Temporary Workspace
- Temporary Access Road
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Temporary Compression
- Existing Pipeline
- Barrier

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

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Northern Natural Gas

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Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : Temporary Compression Site Northfield #1

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Dakota County, Minnesota

Prepared by JM on 2025-10-06
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IR by PW on 2025-11-13

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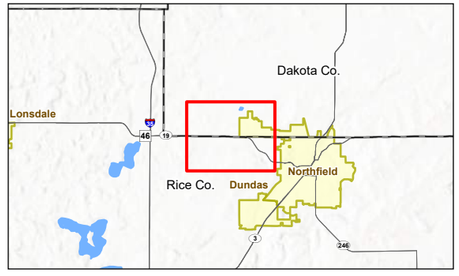
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Legend

- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Existing Access Road
- Temporary Access Road
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Temporary Compression
- Existing Pipeline
- Barrier

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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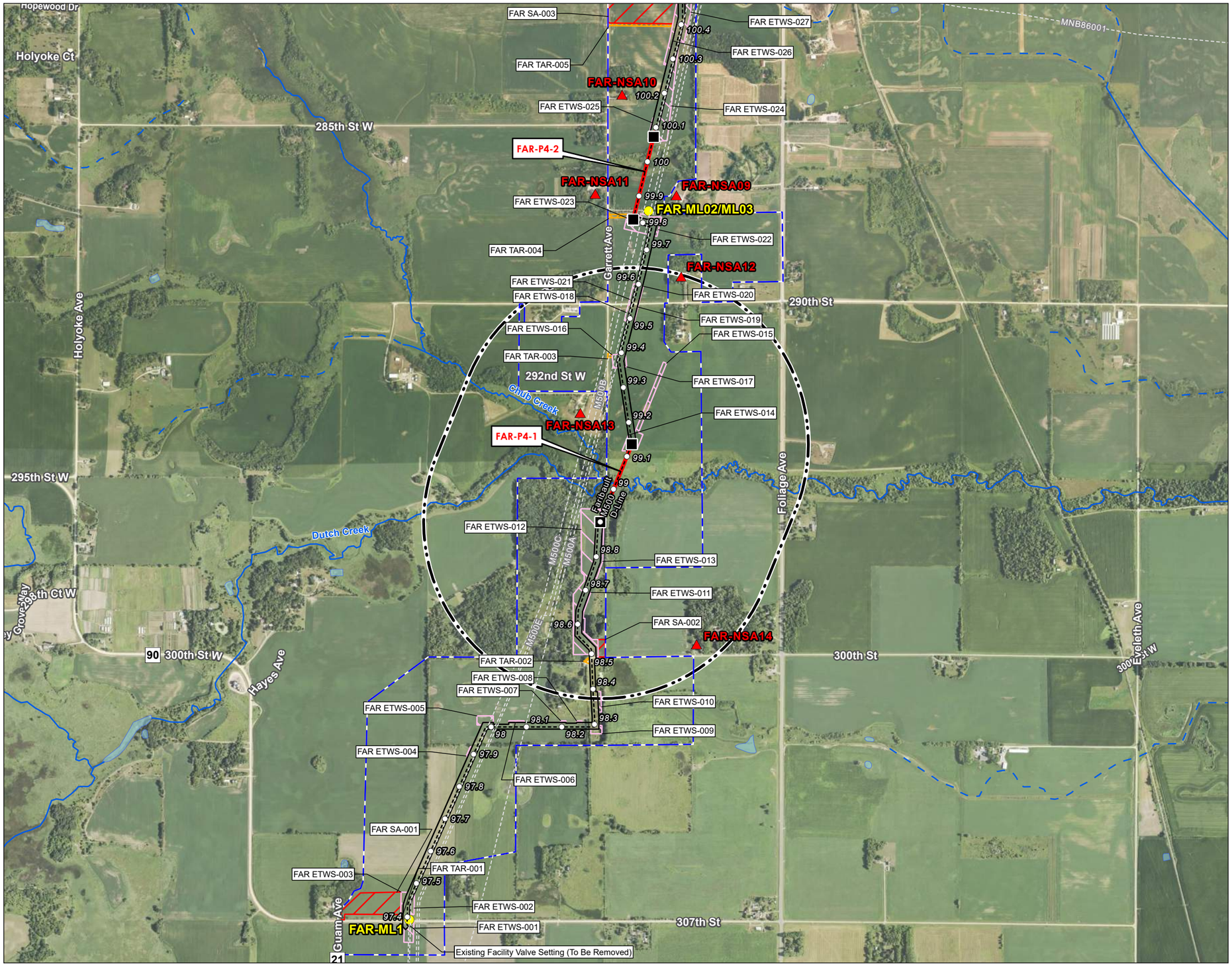


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : FAR-P4-1

Client/Project

172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location

Dakota County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

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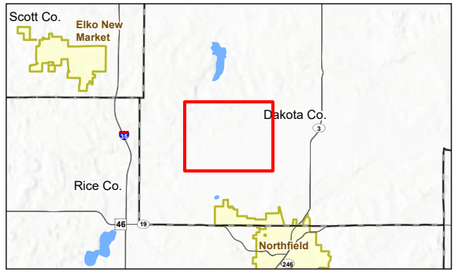
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Legend

- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Existing Access Road
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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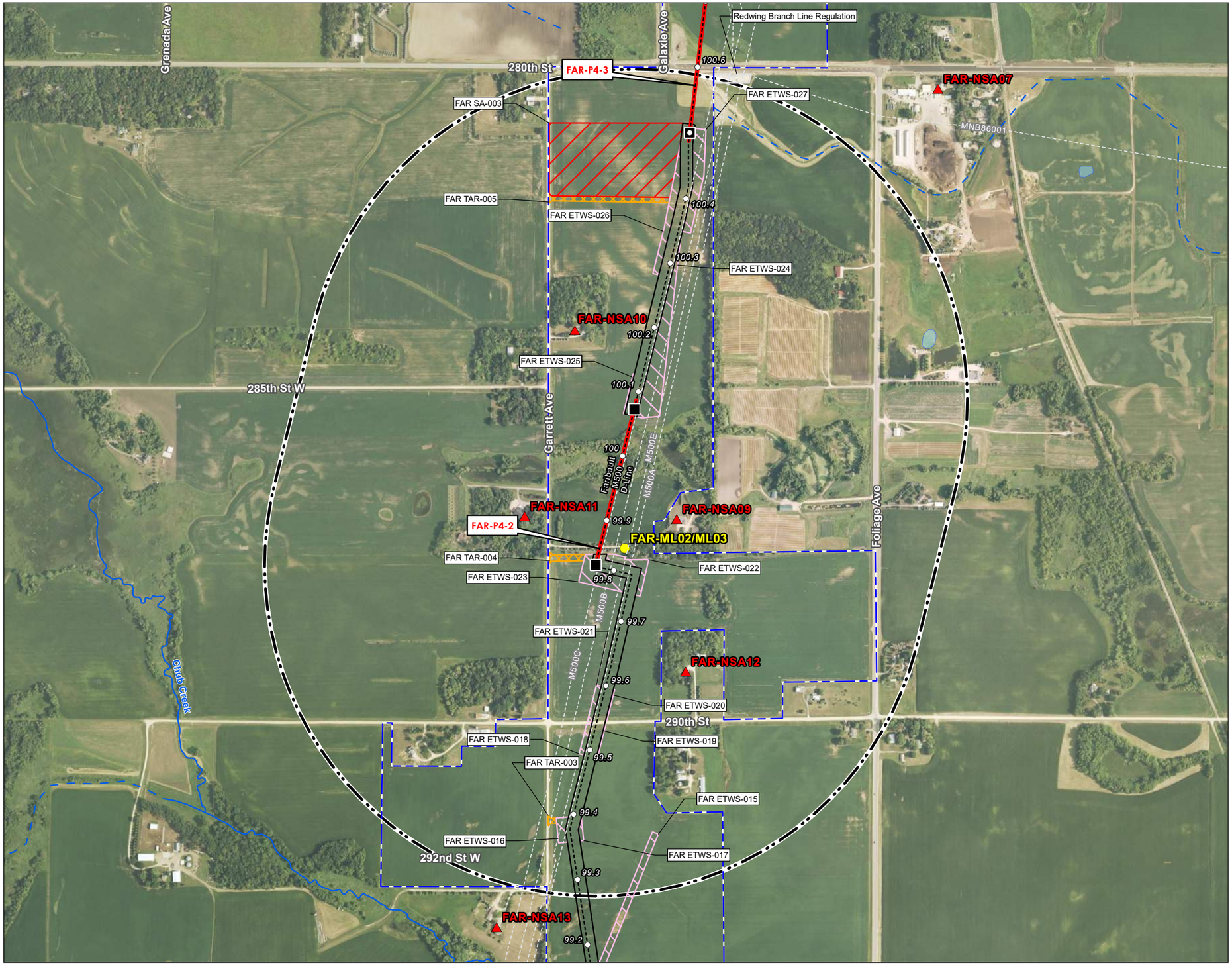


Figure No.
1-14

Title
Approximate Locations with Noise Sensitive Areas : FAR-P4-2

Client/Project 172608813
Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Dakota County, Minnesota

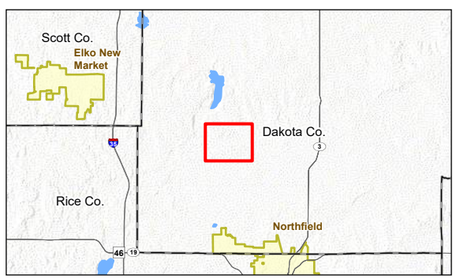
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TR by SF on 2025-10-24
IR by PW on 2025-11-13

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(At original document size of 11x17)
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Legend
- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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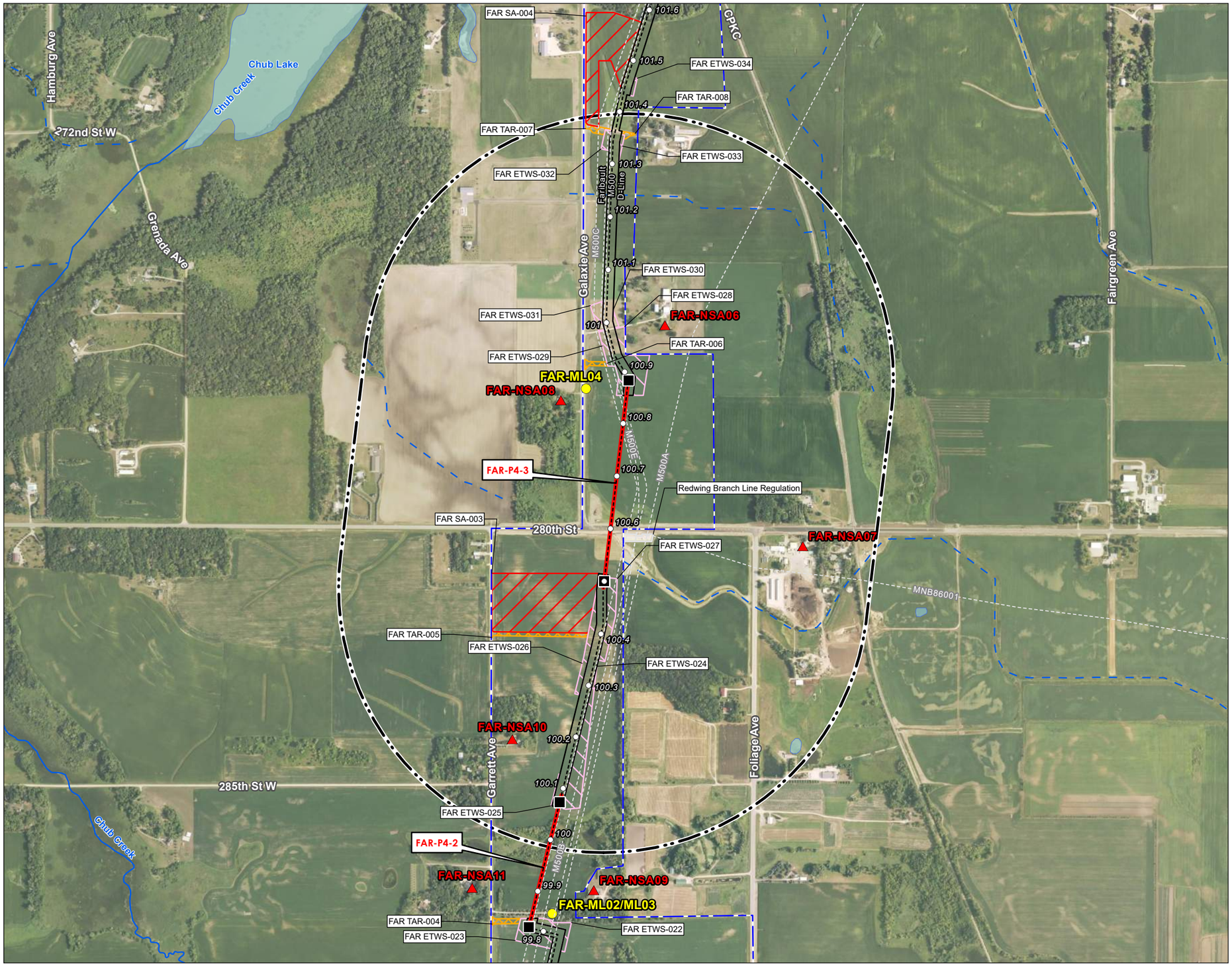


Figure No.
1-14

Title
Approximate Locations with Noise Sensitive Areas : FAR-P4-3

Client/Project
172608813
Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Dakota County, Minnesota

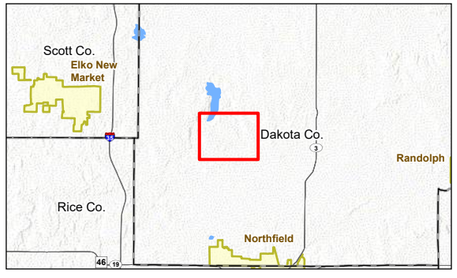
Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

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(At original document size of 11x17)
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Legend
- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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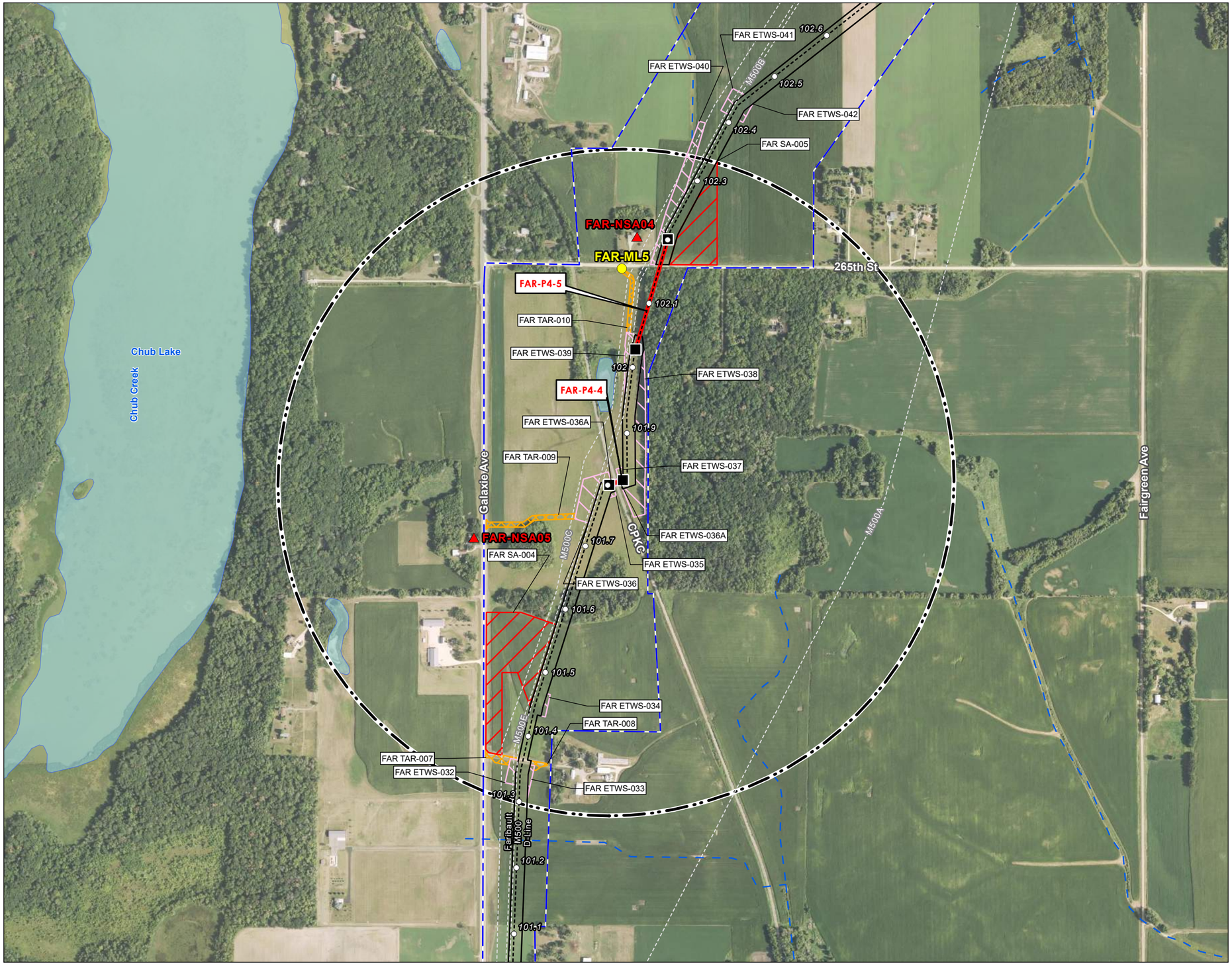


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : FAR-P4-4

Client/Project

172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location

Dakota County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

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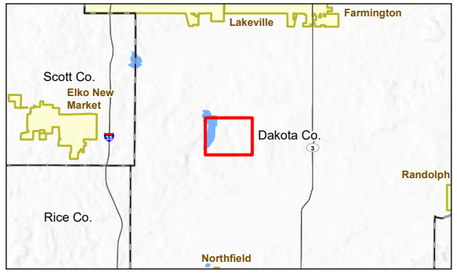
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Legend

- Environmental Survey Boundary
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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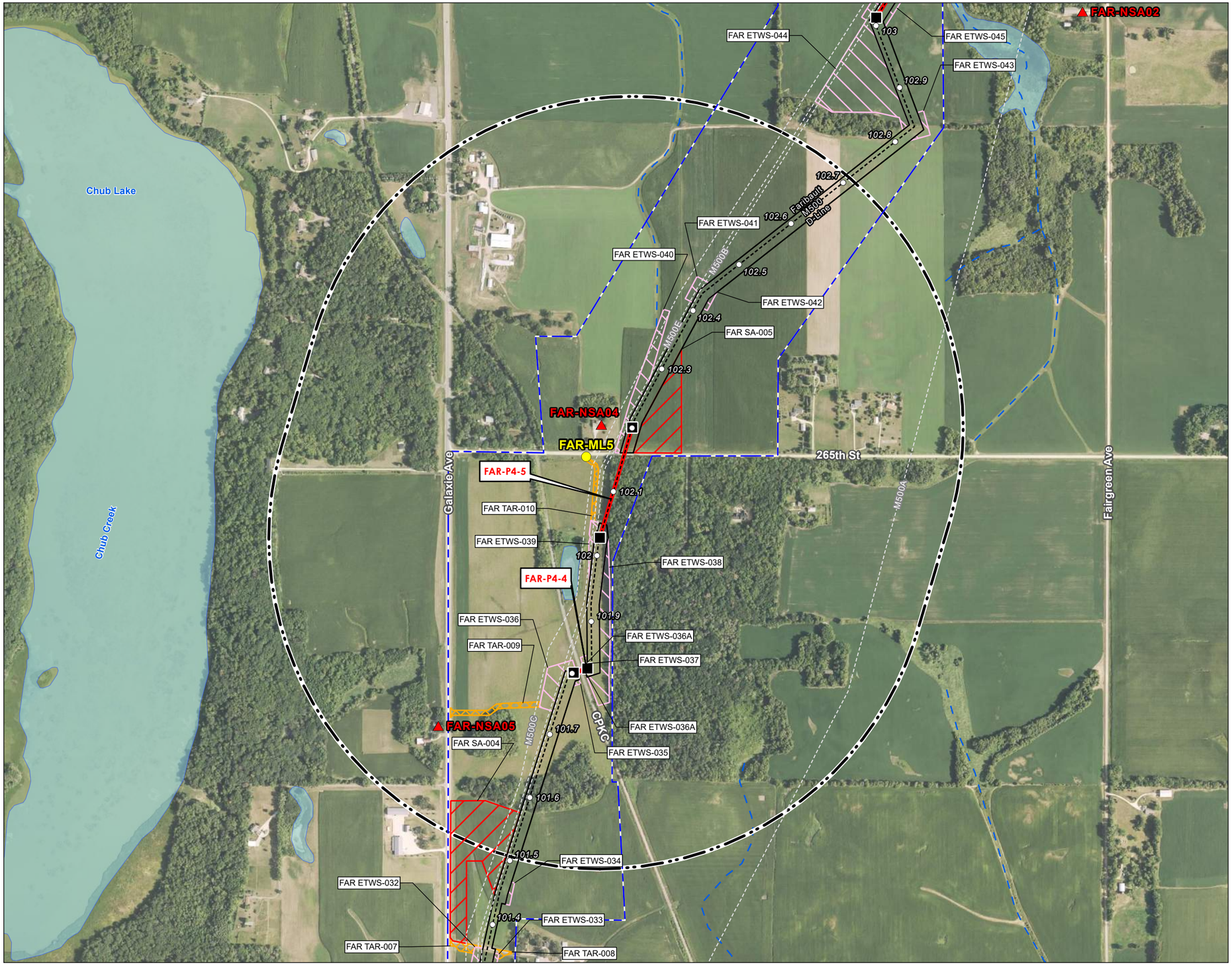


Figure No.
1-14

Title
Approximate Locations with Noise Sensitive Areas : FAR-P4-5

Client/Project
172608813
Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Dakota County, Minnesota

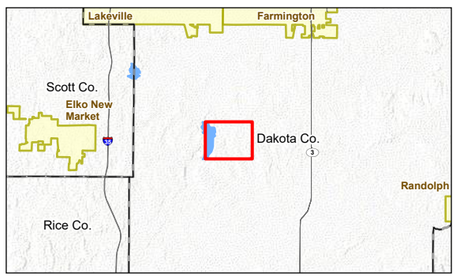
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TR by SF on 2025-10-24
IR by PW on 2025-11-13

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(At original document size of 11x17)
1:9,600

Legend
- Environmental Survey Boundary
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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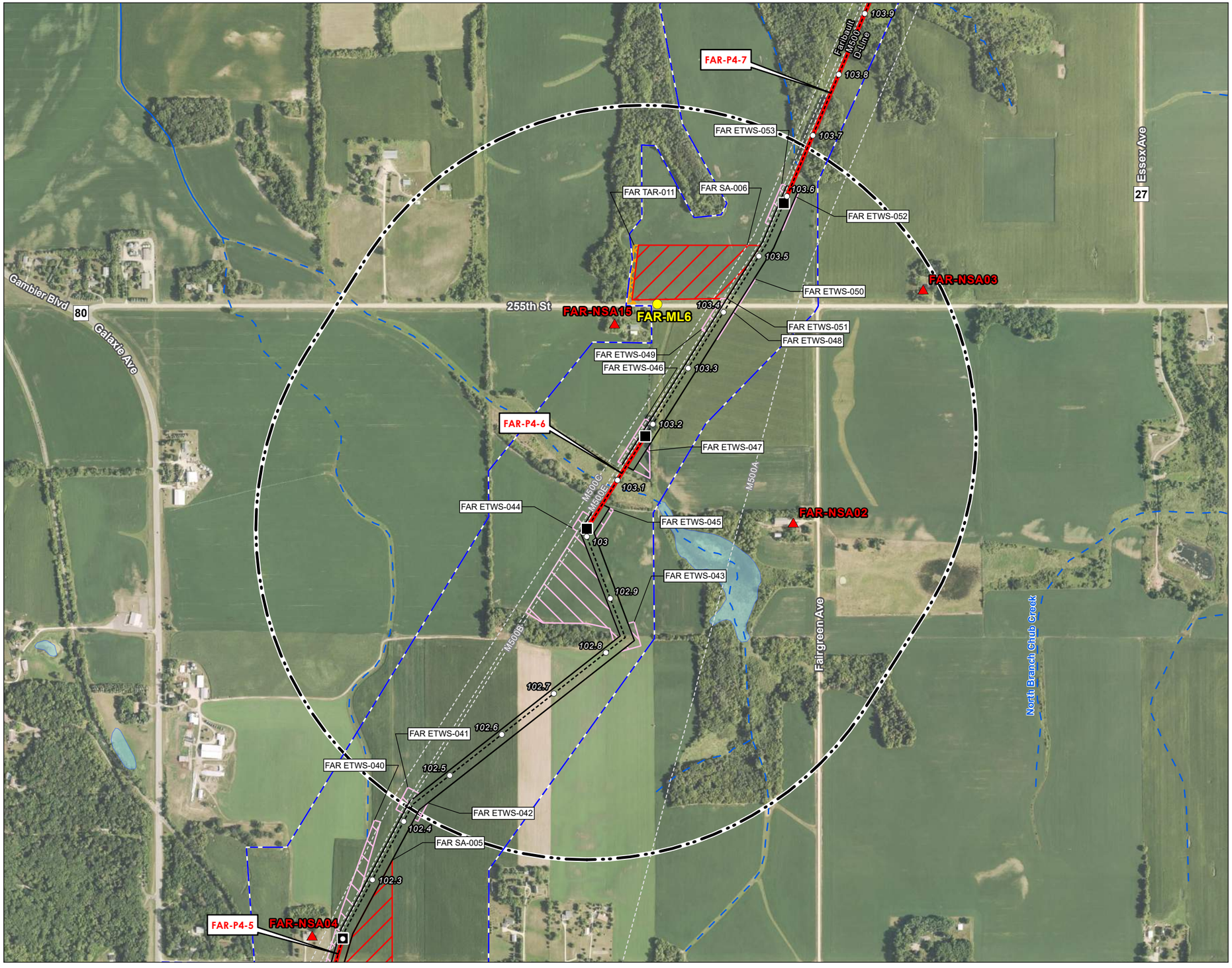


Figure No.
1-14

Title
Approximate Locations with Noise Sensitive Areas : FAR-P4-6

Client/Project
172608813
Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Dakota County, Minnesota

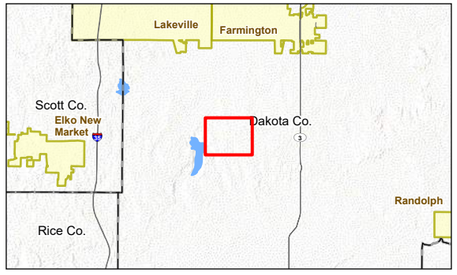
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TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

0 400 800 Feet
(At original document size of 11x17)
1:9,600

Legend
- Environmental Survey Boundary
- Extra Temporary Workspace
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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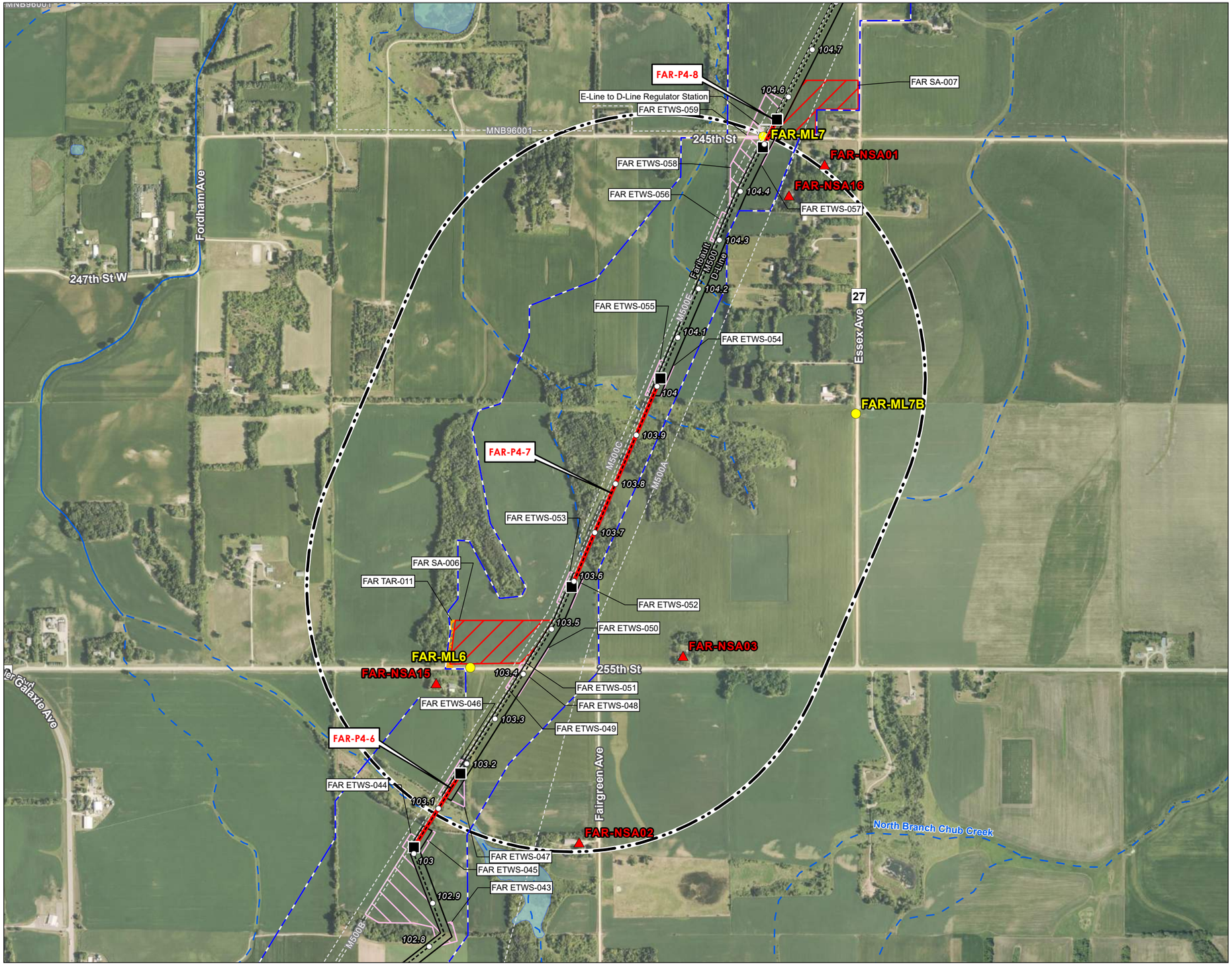


Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : FAR-P4-7

Client/Project

172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location

Dakota County, Minnesota

Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

N

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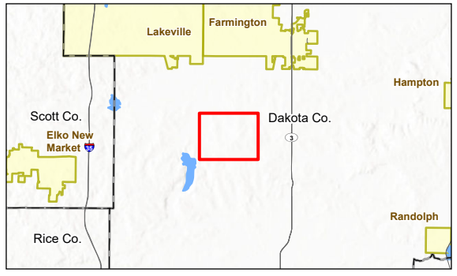
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Legend

- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Existing Access Road
- Staging Area
- Temporary Access Road
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



Notes

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

Stantec

Northern Natural Gas

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Figure No.

1-14

Title

Approximate Locations with Noise Sensitive Areas : FAR-P4-8

Client/Project 172608813

Northern Natural Gas
Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Dakota County, Minnesota

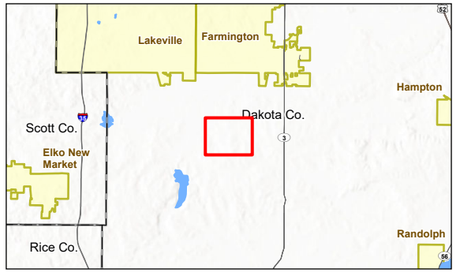
Prepared by JM on 2025-10-06
TR by SF on 2025-10-24
IR by PW on 2025-11-13

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Legend
- Environmental Survey Boundary
- Existing Lot
- Extra Temporary Workspace
- Existing Access Road
- Staging Area
- Temporary Workspace
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Measurement Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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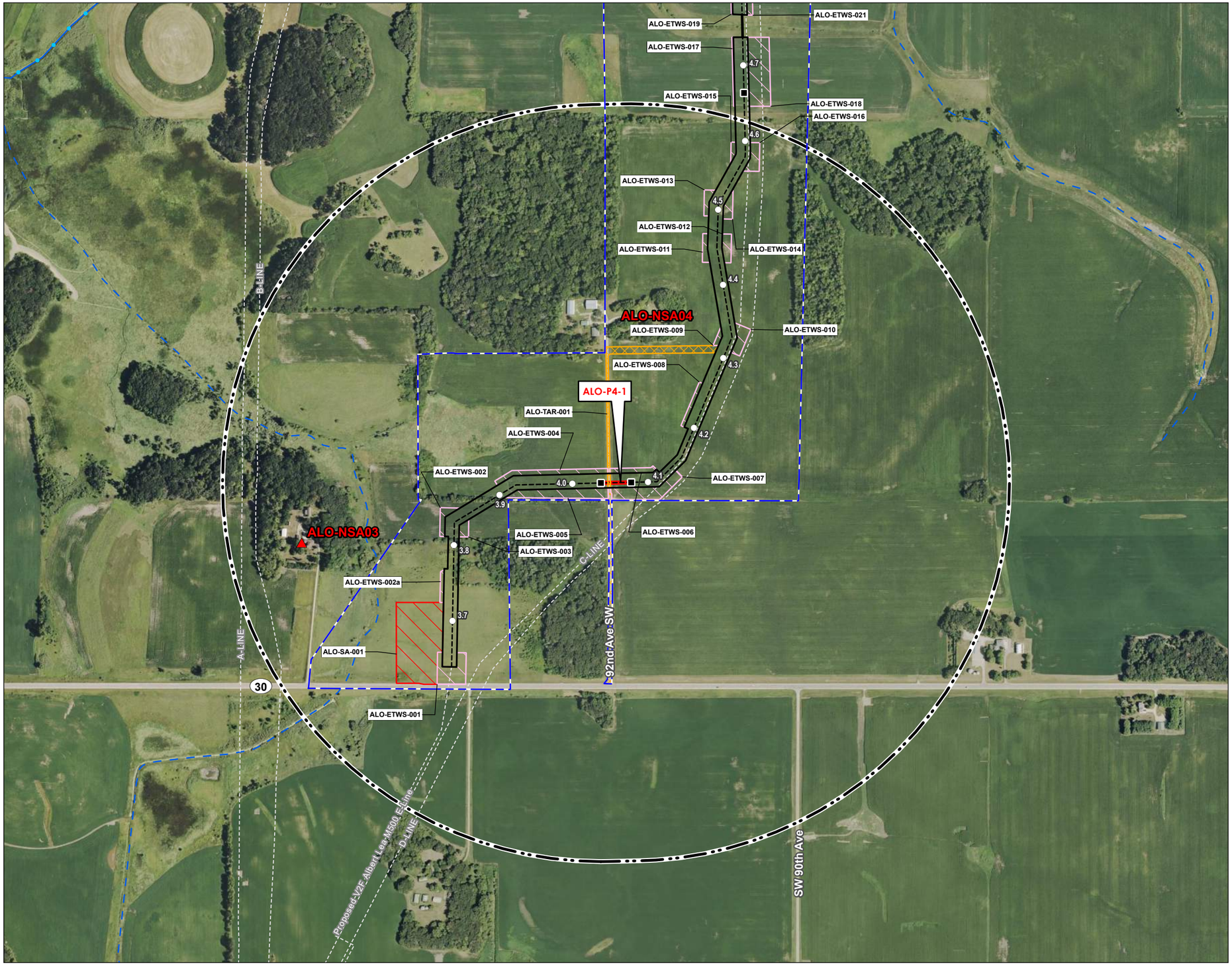


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : ALO-P4-1
NL27 - Albert Lea M500 E-line

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Steele County, Minnesota

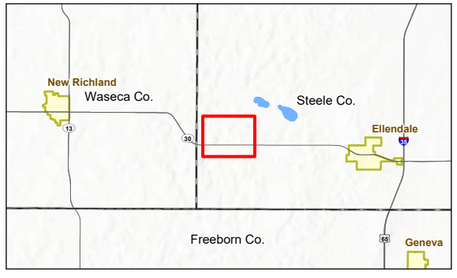
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TR by JM on 2026-01-09
IR by SK on 2026-02-06

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(At original document size of 11x17)
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Legend
- Environmental Survey Boundary
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : ALO-P4-2
NL27 - Albert Lea M500 E-line

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Steele County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

N

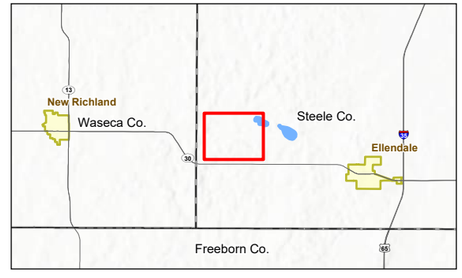
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Legend

- Environmental Survey Boundary
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : ALO-P4-3
NL27 - Albert Lea M500 E-line

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Steele County, Minnesota

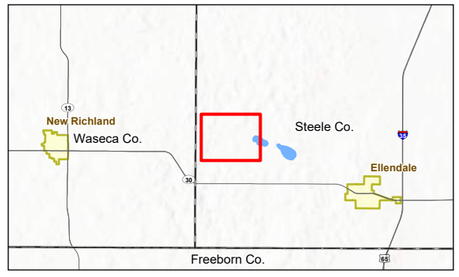
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IR by SK on 2026-02-06

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Legend
- Environmental Survey Boundary
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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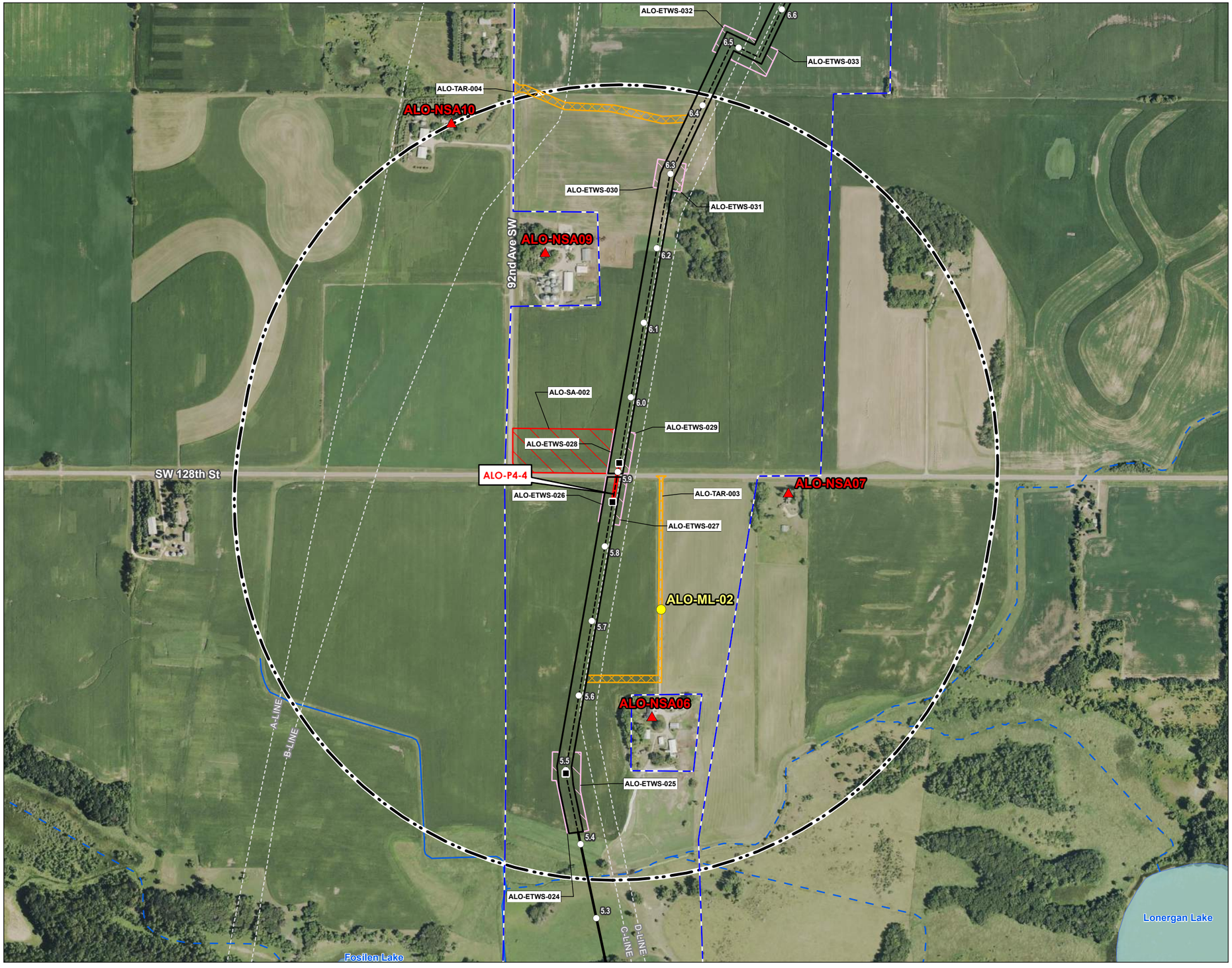


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : ALO-P4-4 NL27 - Albert Lea M500 E-line

Client/Project
172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Steele County, Minnesota

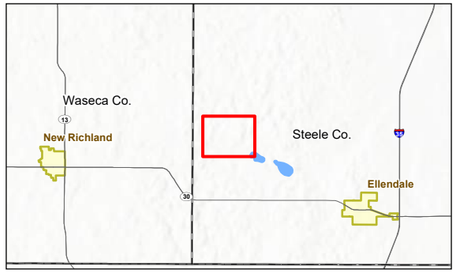
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TR by JM on 2026-01-09
IR by SK on 2026-02-06

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Legend
- Environmental Survey Boundary
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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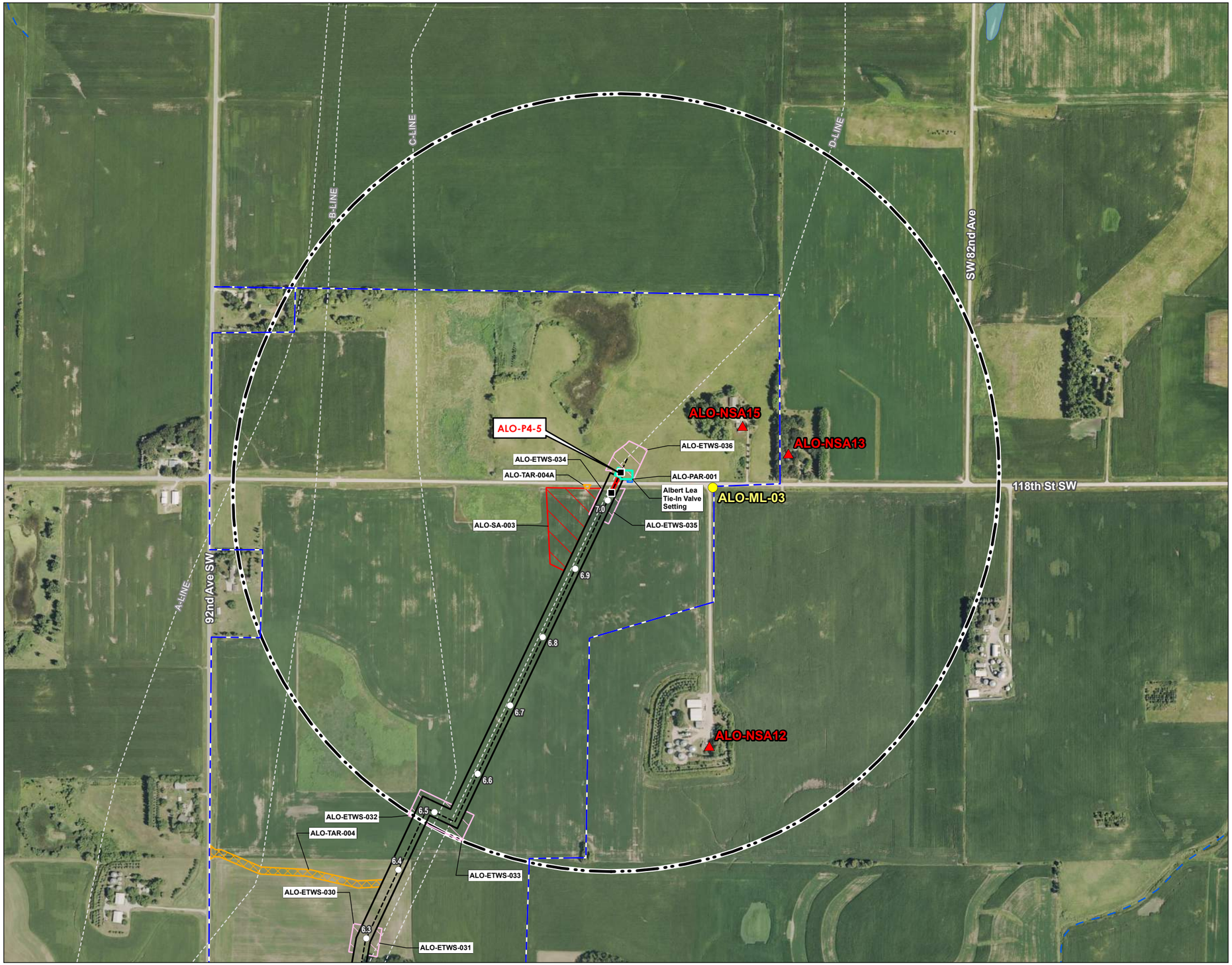


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : ALO-P4-5 NL27 - Albert Lea M500 E-line

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Steele County, Minnesota

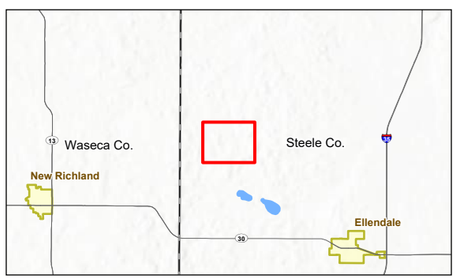
Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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Legend
- Environmental Survey Boundary
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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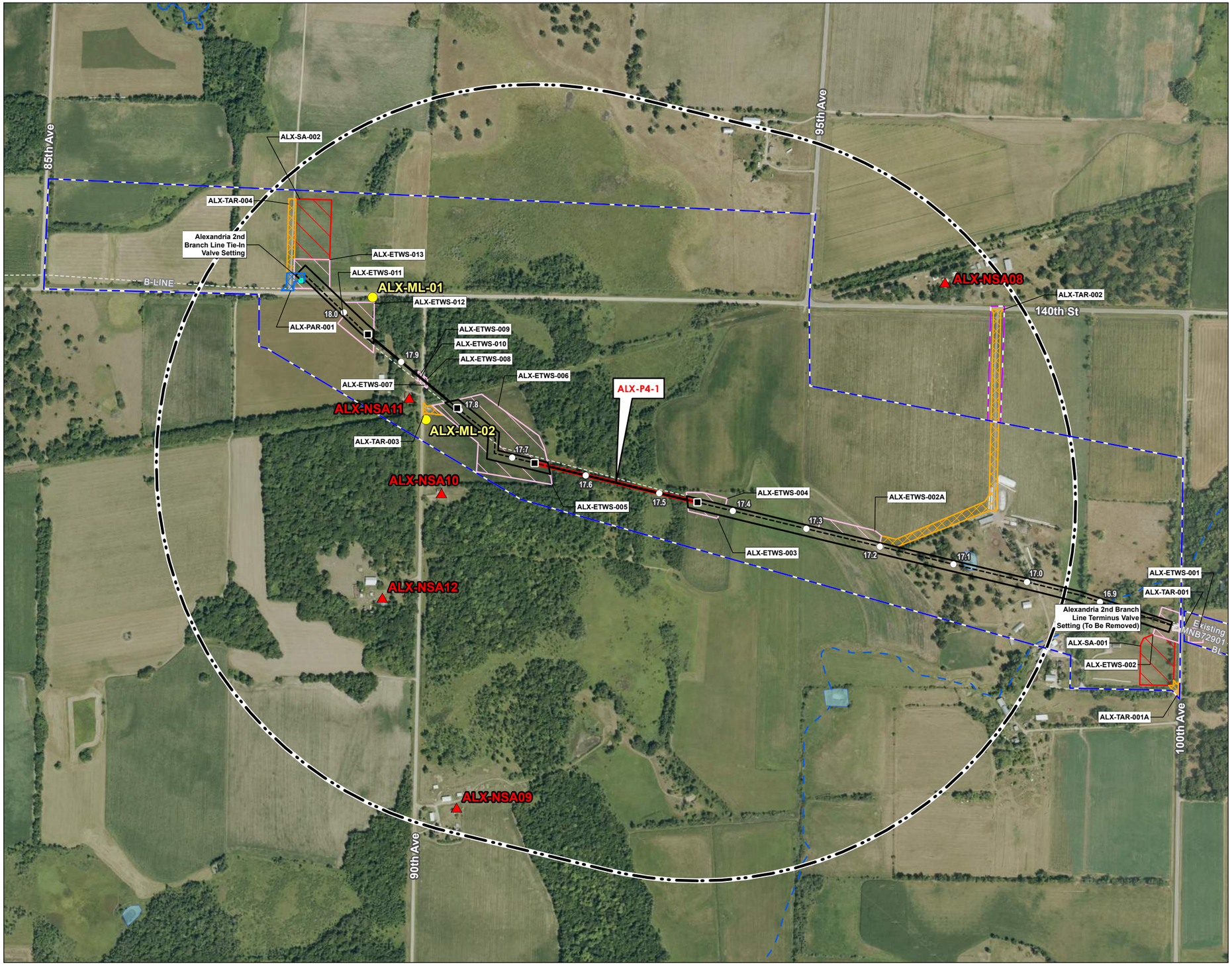


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : ALX-P4-1
NL27 - Alexandria 2nd Branch Line

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Morrison County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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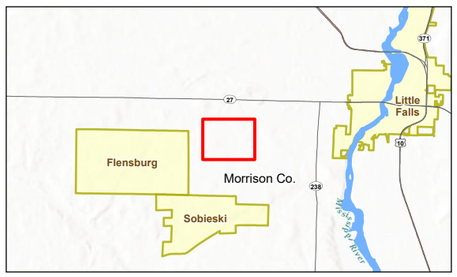
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Legend

- 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
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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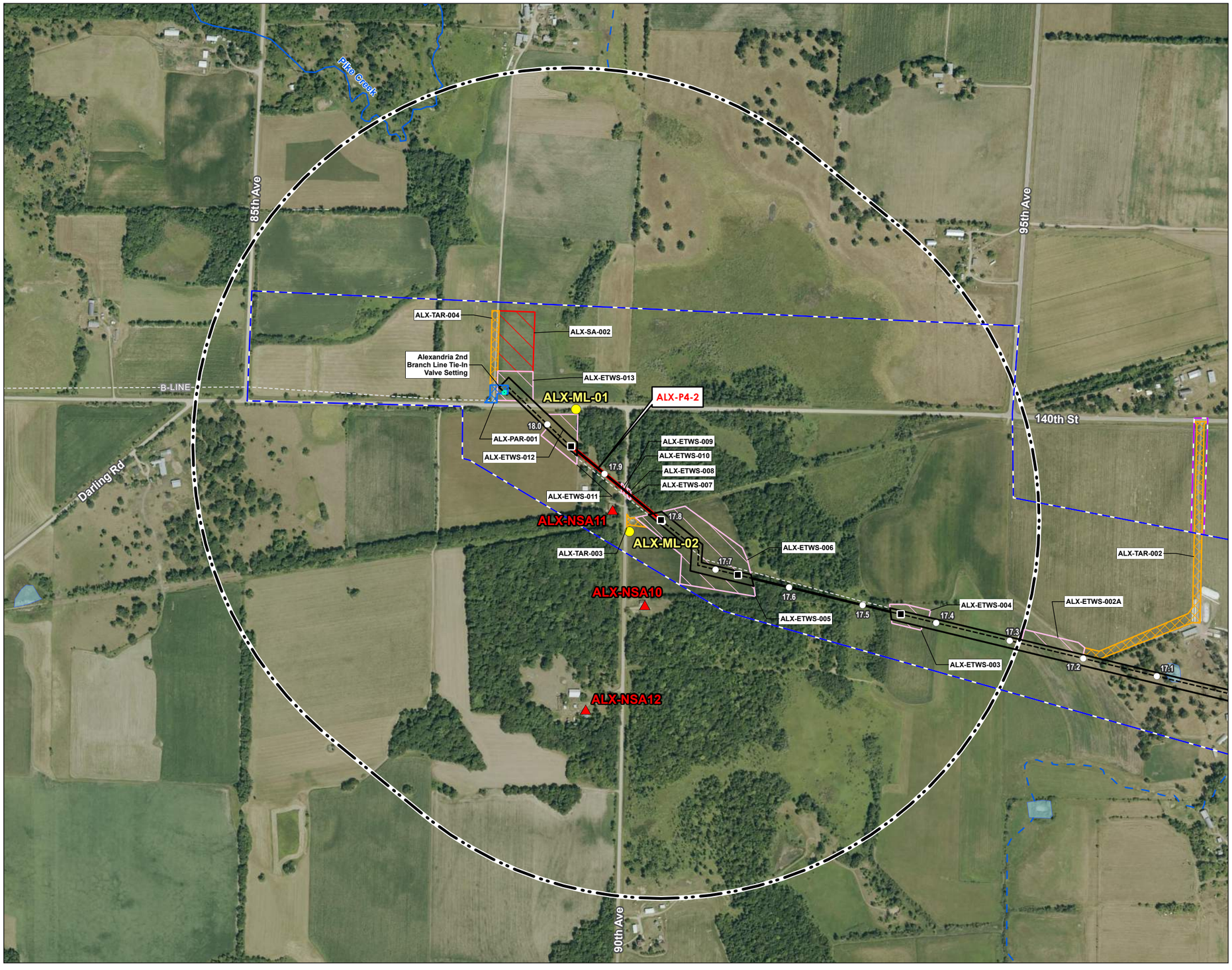


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : ALX-P4-2
NL27 - Alexandria 2nd Branch Line

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Morrison County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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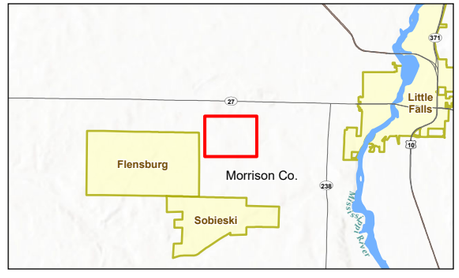
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Legend

- Environmental Survey Boundary
- Environmental Survey Boundary To Be Surveyed
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-1
NL27 - Lake Mills M500 E-line

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Lake Mills M500 E-line

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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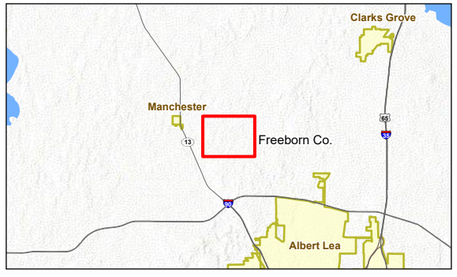
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Legend

- Environmental Survey Boundary
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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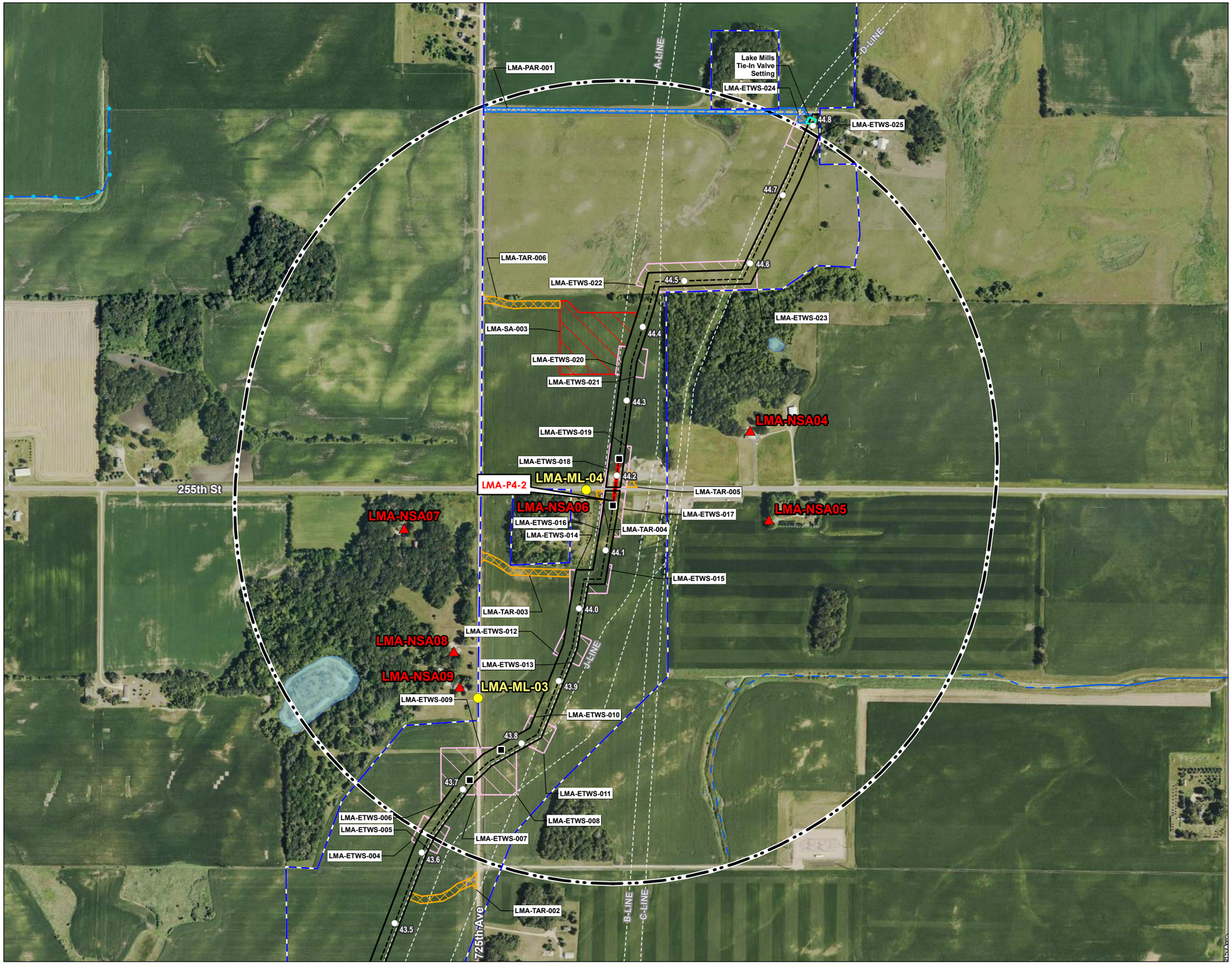


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : LMA-P4-2
NL27 - Lake Mills M500 E-line

Client/Project

172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Lake Mills M500 E-line

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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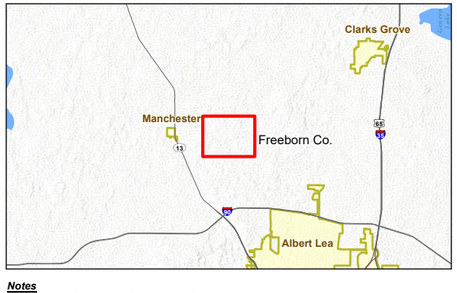
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Legend

- Environmental Survey Boundary
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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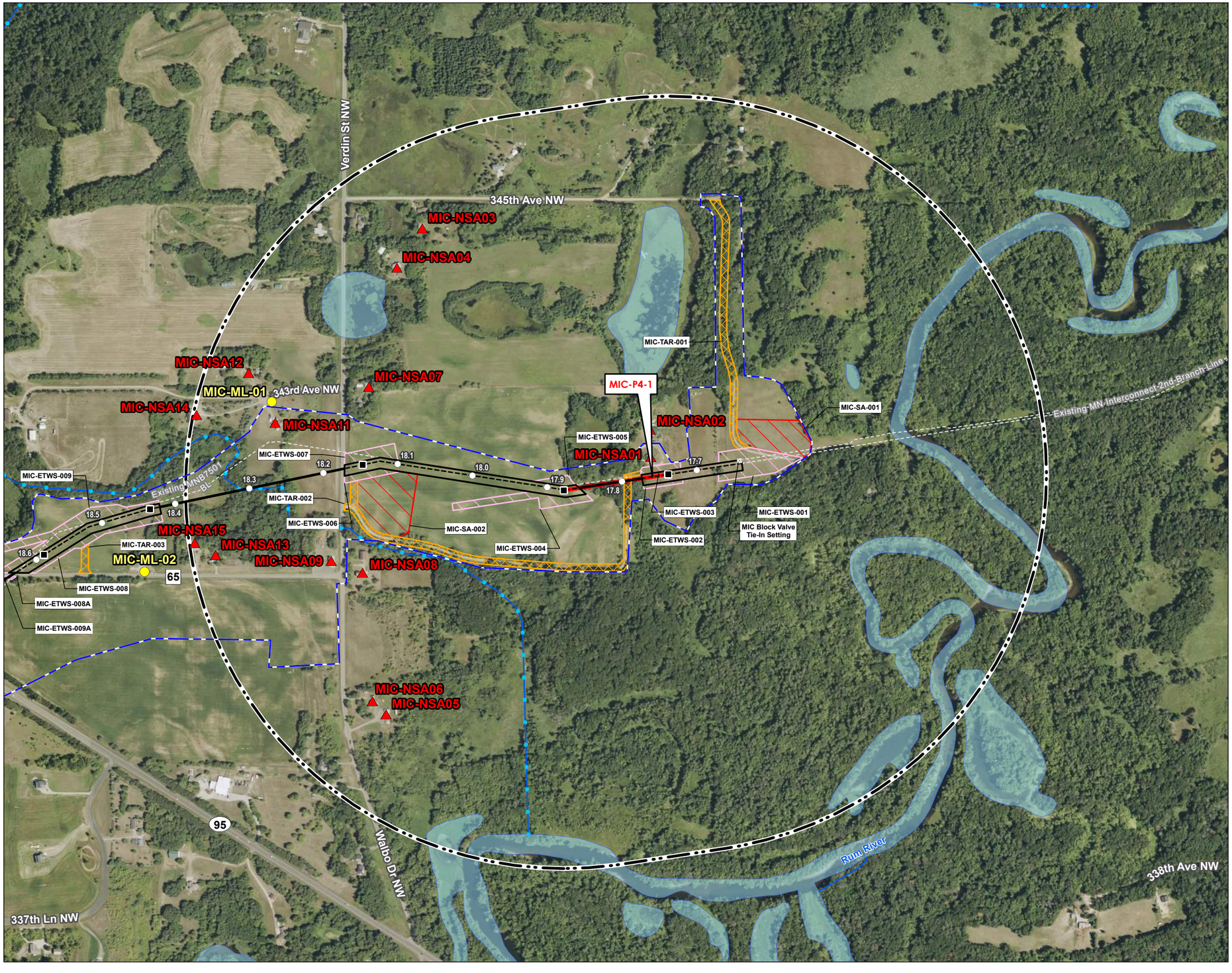


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : MIC-P4-1
NL27 - Minnesota Interconnect 2nd Branch Line

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Minnesota Interconnect 2nd Branch Line

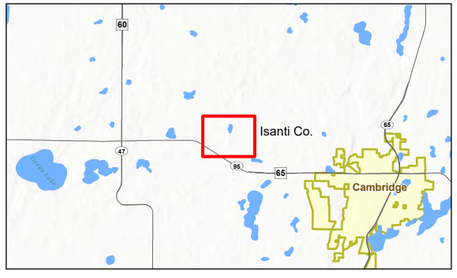
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TR by JM on 2026-01-09
IR by SK on 2026-02-06

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Legend
- Environmental Survey Boundary
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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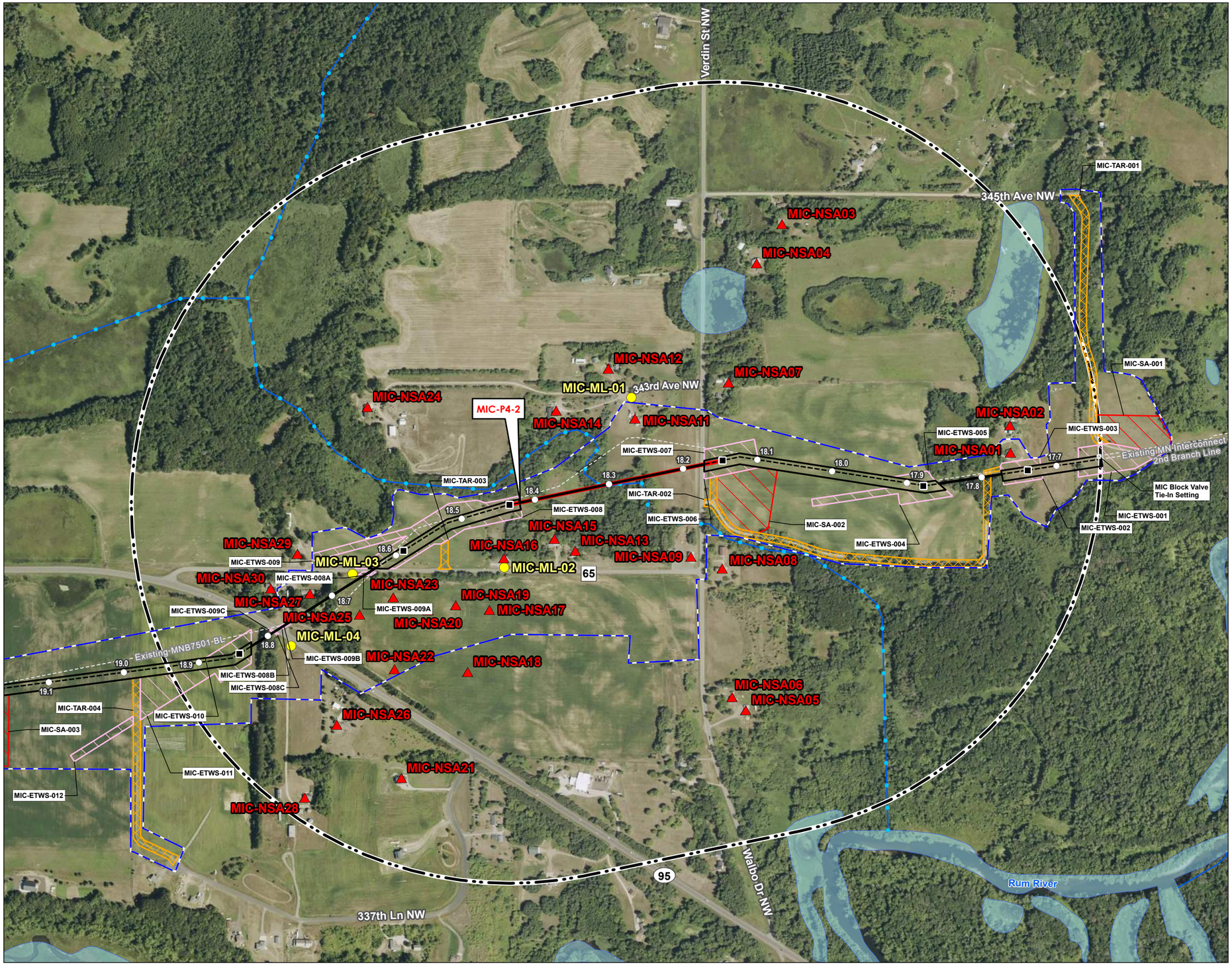


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : MIC-P4-2
NL27 - Minnesota Interconnect 2nd Branch Line

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Minnesota Interconnect 2nd Branch Line

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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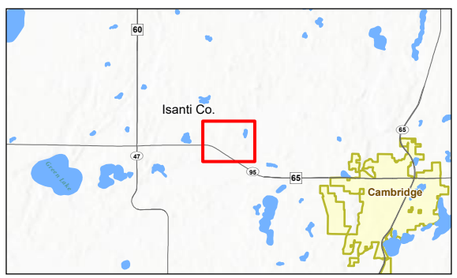
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Legend

- Environmental Survey Boundary
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : MIC-P4-3
NL27 - Minnesota Interconnect 2nd Branch Line

Client/Project
172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Minnesota Interconnect 2nd Branch Line

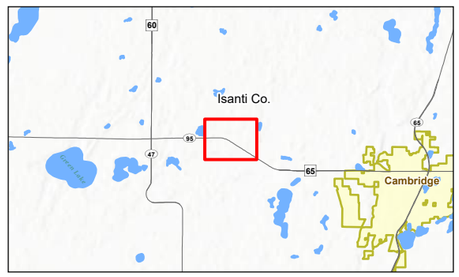
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TR by JM on 2026-01-09
IR by SK on 2026-02-06

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Legend
- Environmental Survey Boundary
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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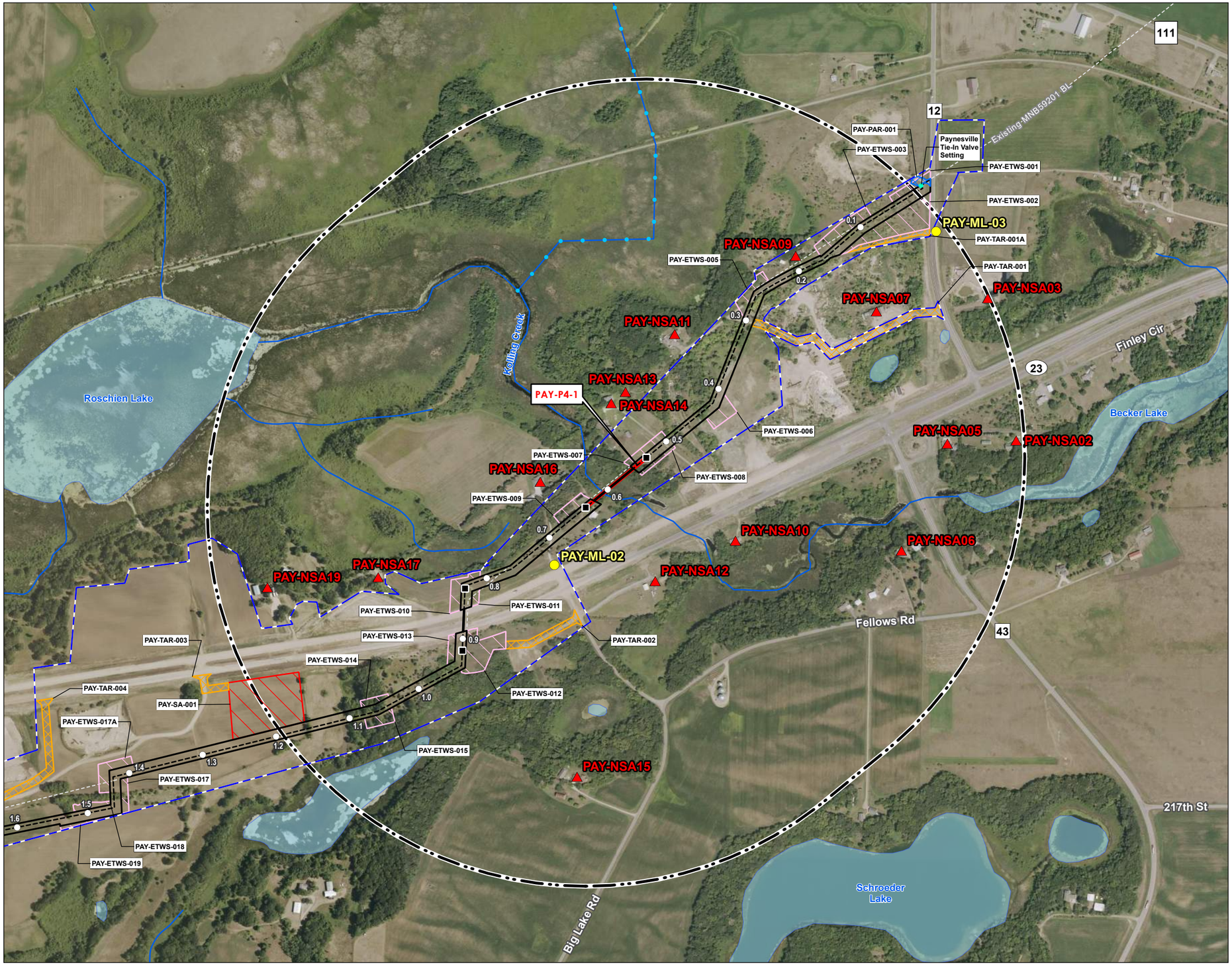


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : PAY-P4-1
NL27 - Paynesville 2nd Branch Line

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Stearns County, Minnesota

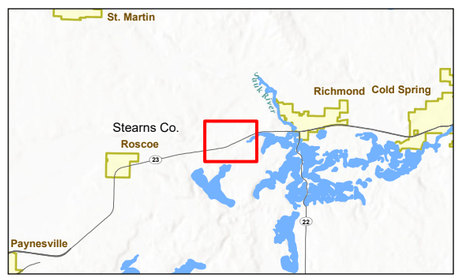
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TR by JM on 2026-01-09
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Legend
- Environmental Survey Boundary
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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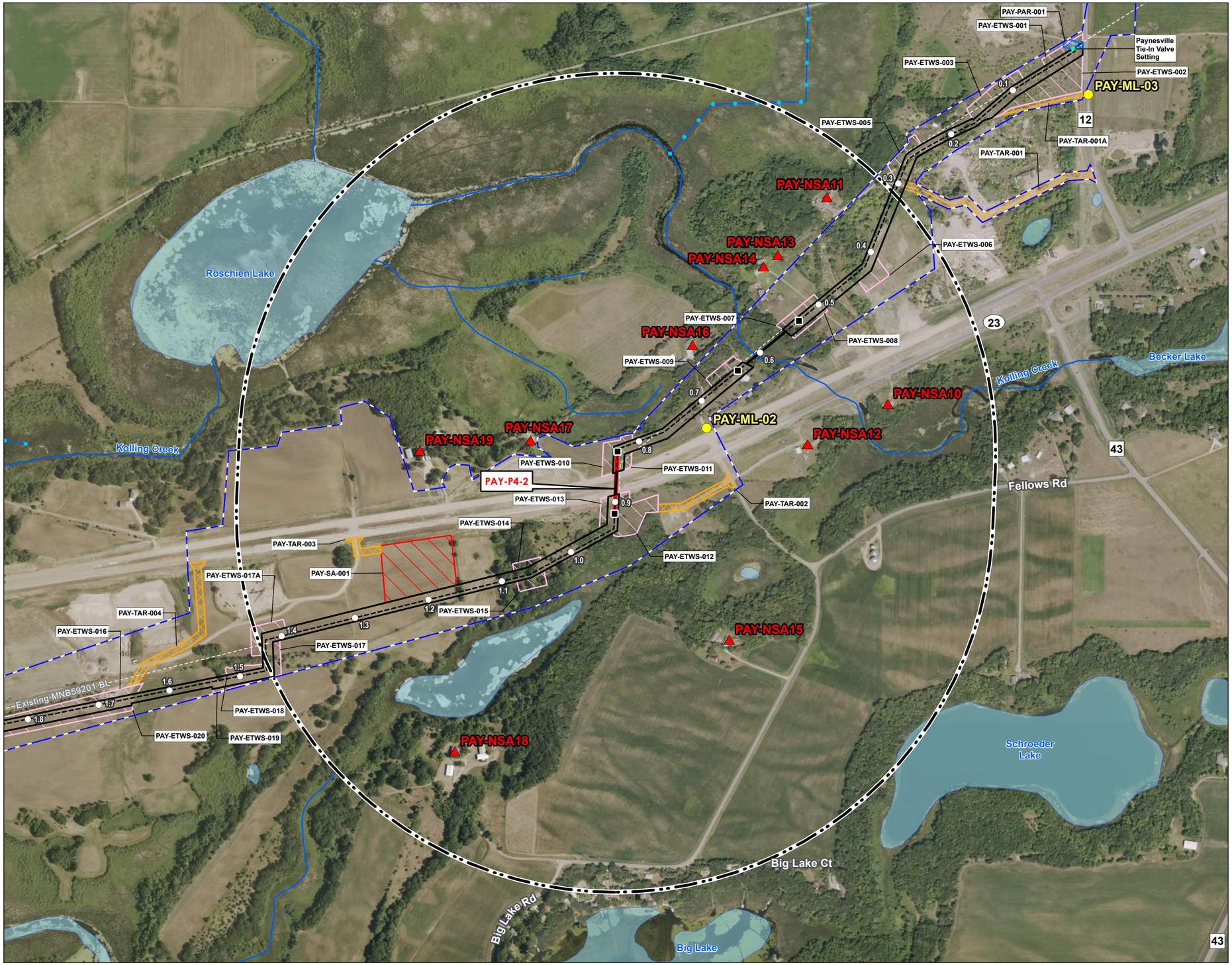


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : PAY-P4-2
NL27 - Paynesville 2nd Branch Line

Client/Project

172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Stearns County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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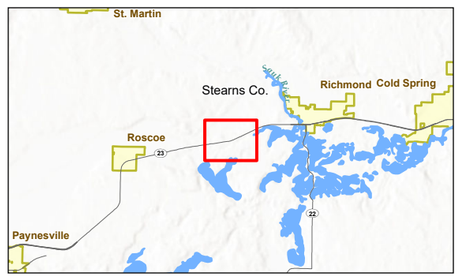
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Legend

- Environmental Survey Boundary
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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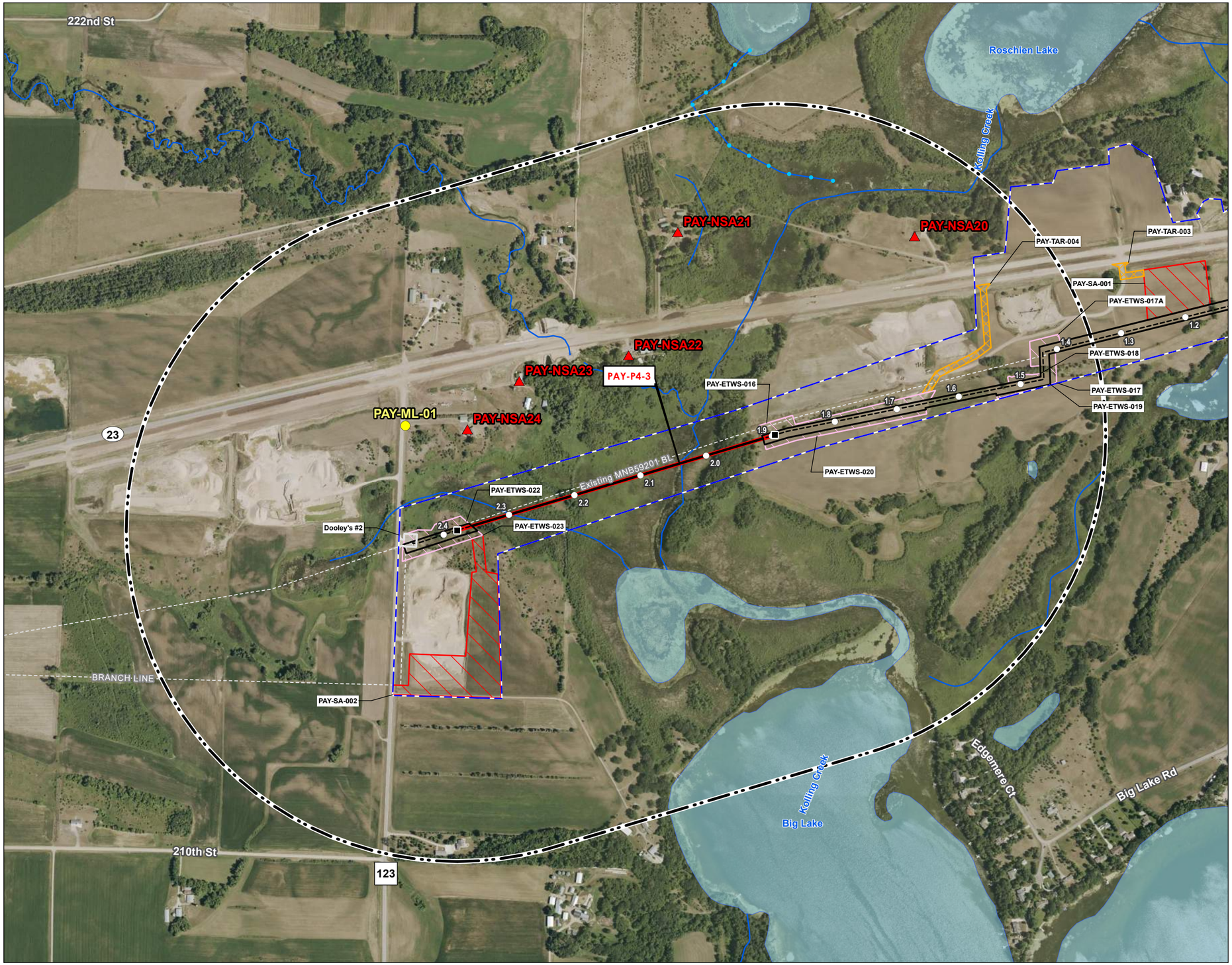


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : PAY-P4-3
NL27 - Paynesville 2nd Branch Line

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Stearns County, Minnesota

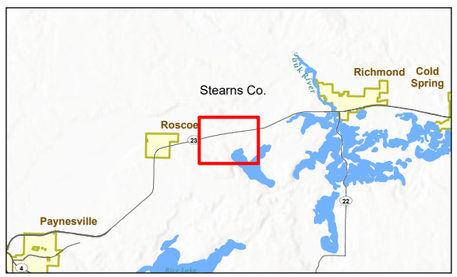
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IR by SK on 2026-02-06

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Legend
- Environmental Survey Boundary
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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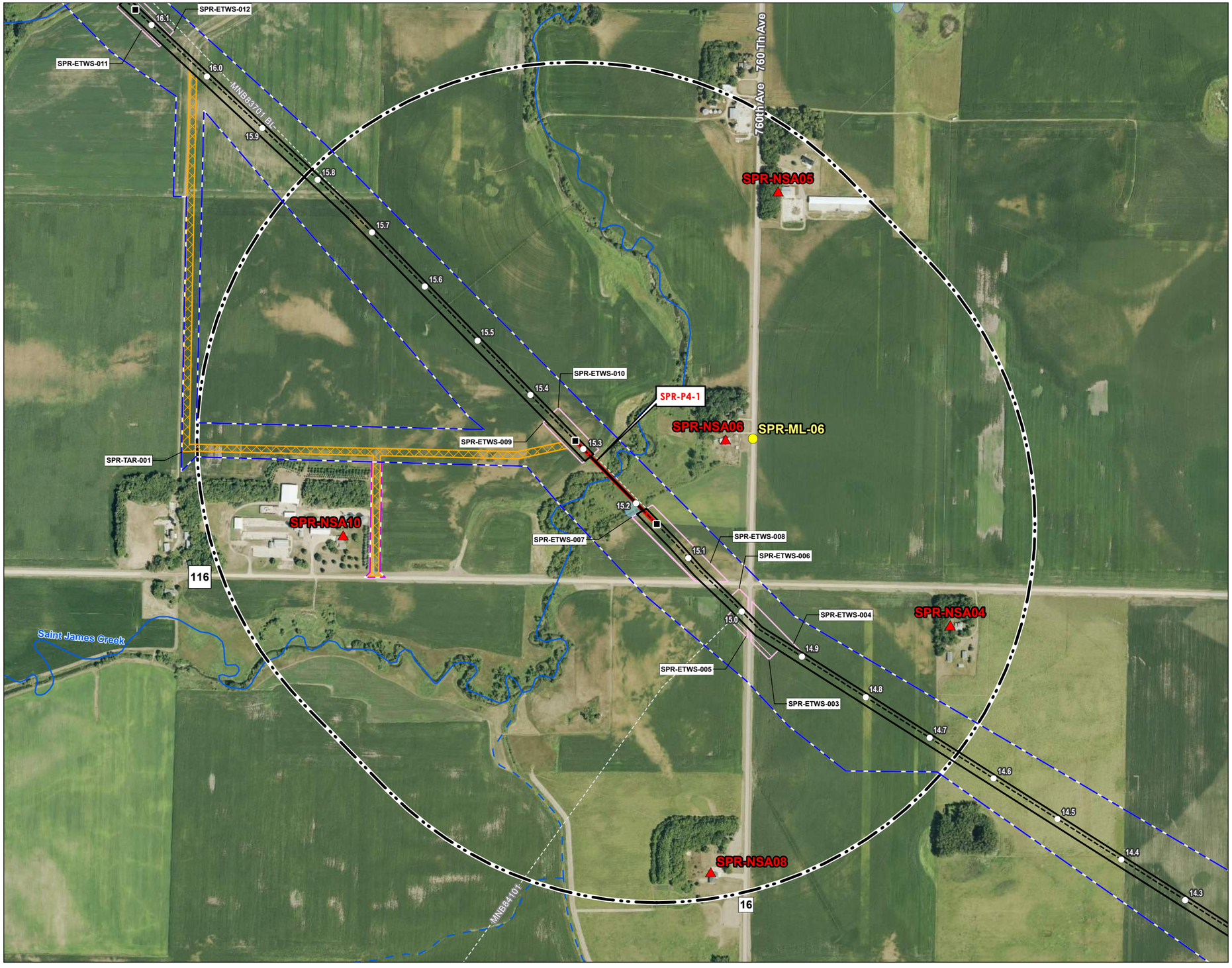


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : SPR-P4-1
NL27 - Springfield 2nd Branch Line

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Watonwan County, Minnesota

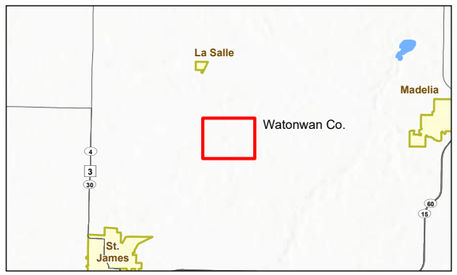
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Legend
- Environmental Survey Boundary
- Environmental Survey Boundary To Be Surveyed
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : SPR-P4-2
NL27 - Springfield 2nd Branch Line

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Watonwan County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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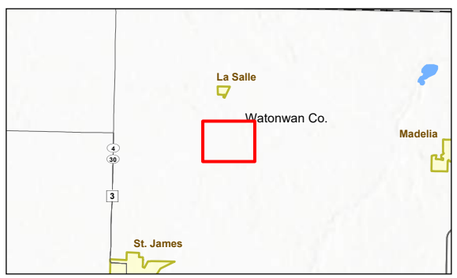
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Legend

- Environmental Survey Boundary
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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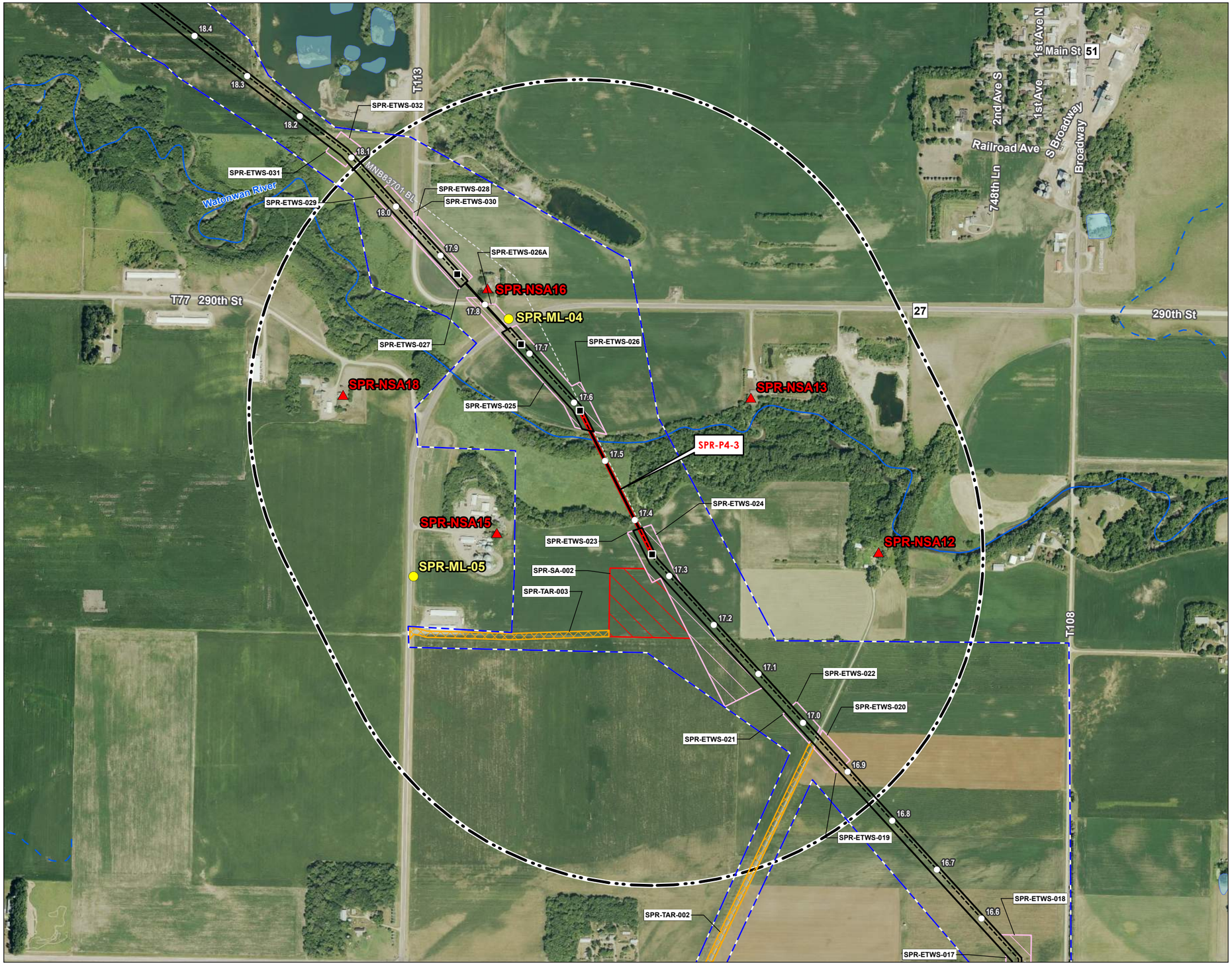


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : SPR-P4-3
NL27 - Springfield 2nd Branch Line

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Watonwan County, Minnesota

Prepared by SF on 2026-01-09
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IR by SK on 2026-02-06

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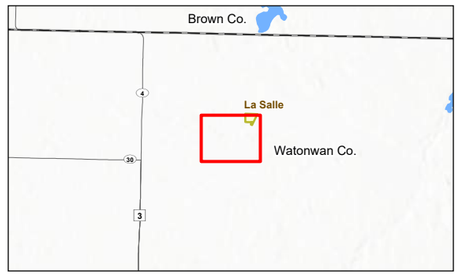
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Legend

- Environmental Survey Boundary
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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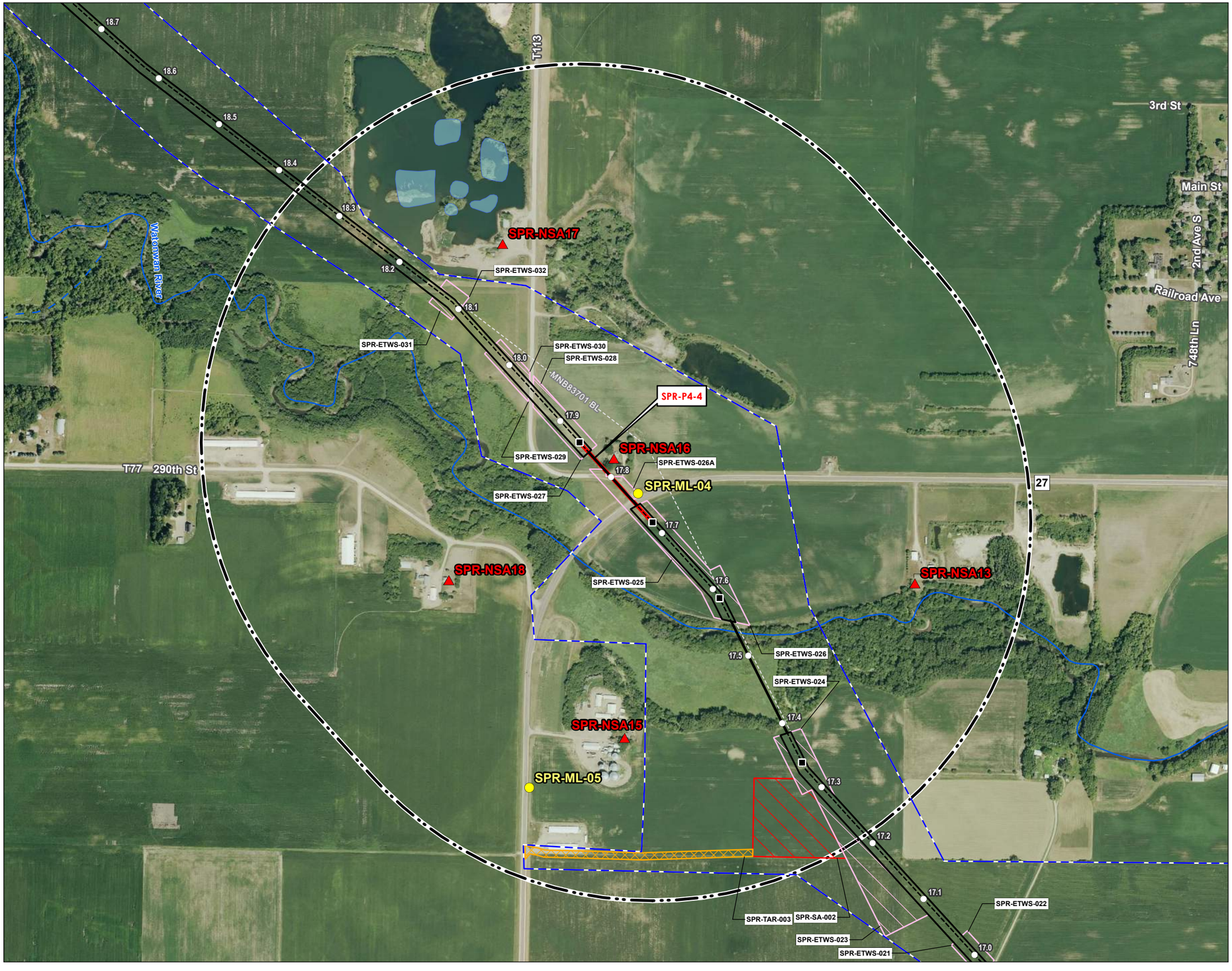


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : SPR-P4-4
NL27 - Springfield 2nd Branch Line

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Watonwan County, Minnesota

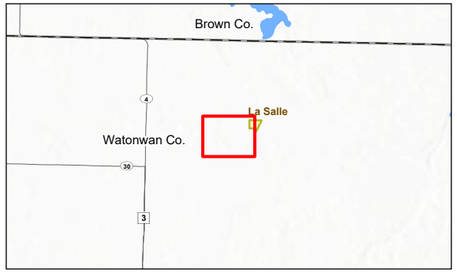
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Legend
- Environmental Survey Boundary
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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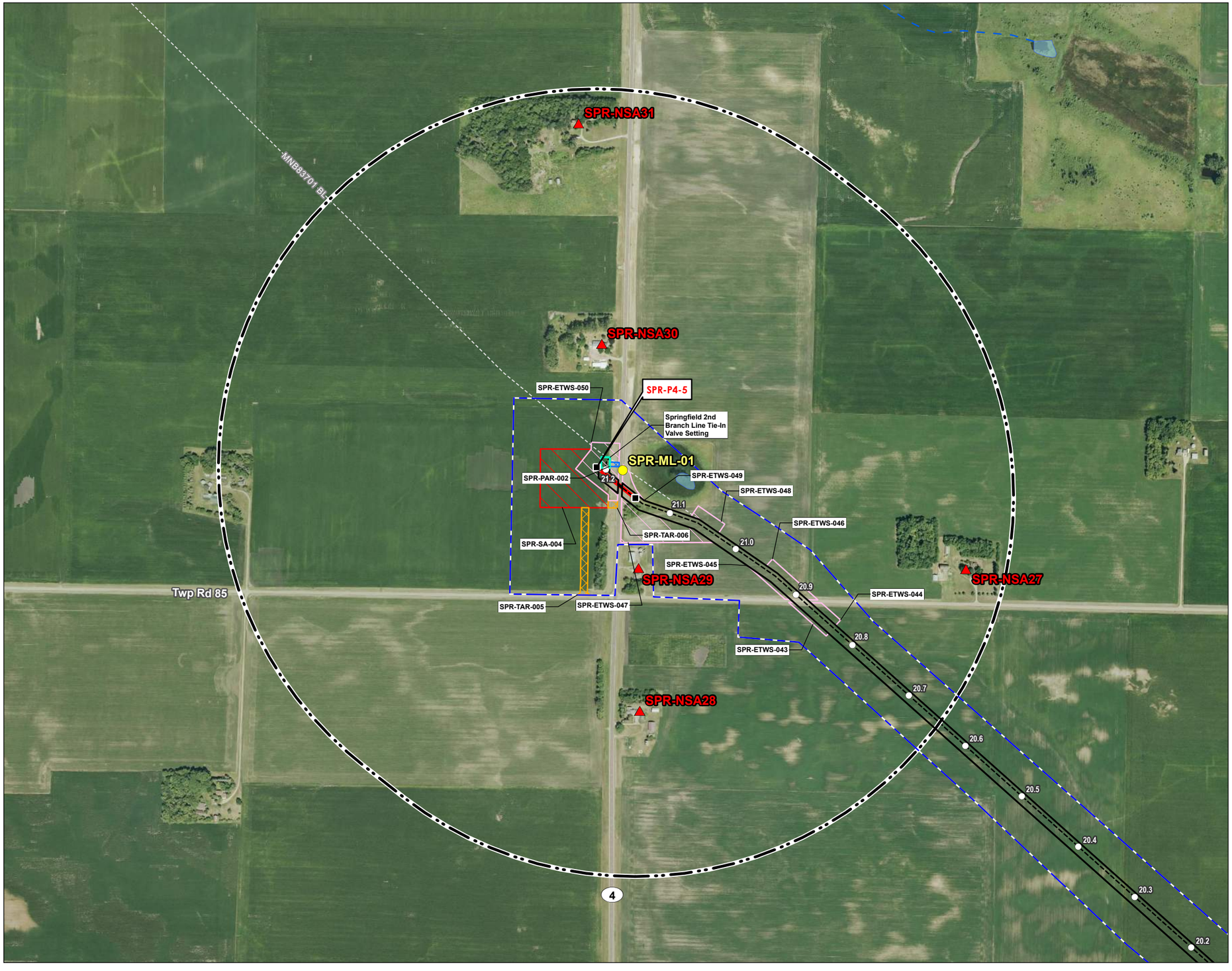


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : SPR-P4-5
NL27 - Springfield 2nd Branch Line

Client/Project
Northern Natural Gas
Northern Lights 2027 Expansion Project

172609138

Project Location
Watonwan County, Minnesota

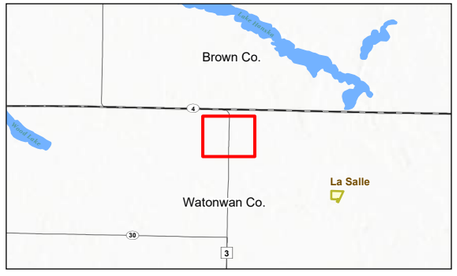
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IR by SK on 2026-02-06

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Legend
- Environmental Survey Boundary
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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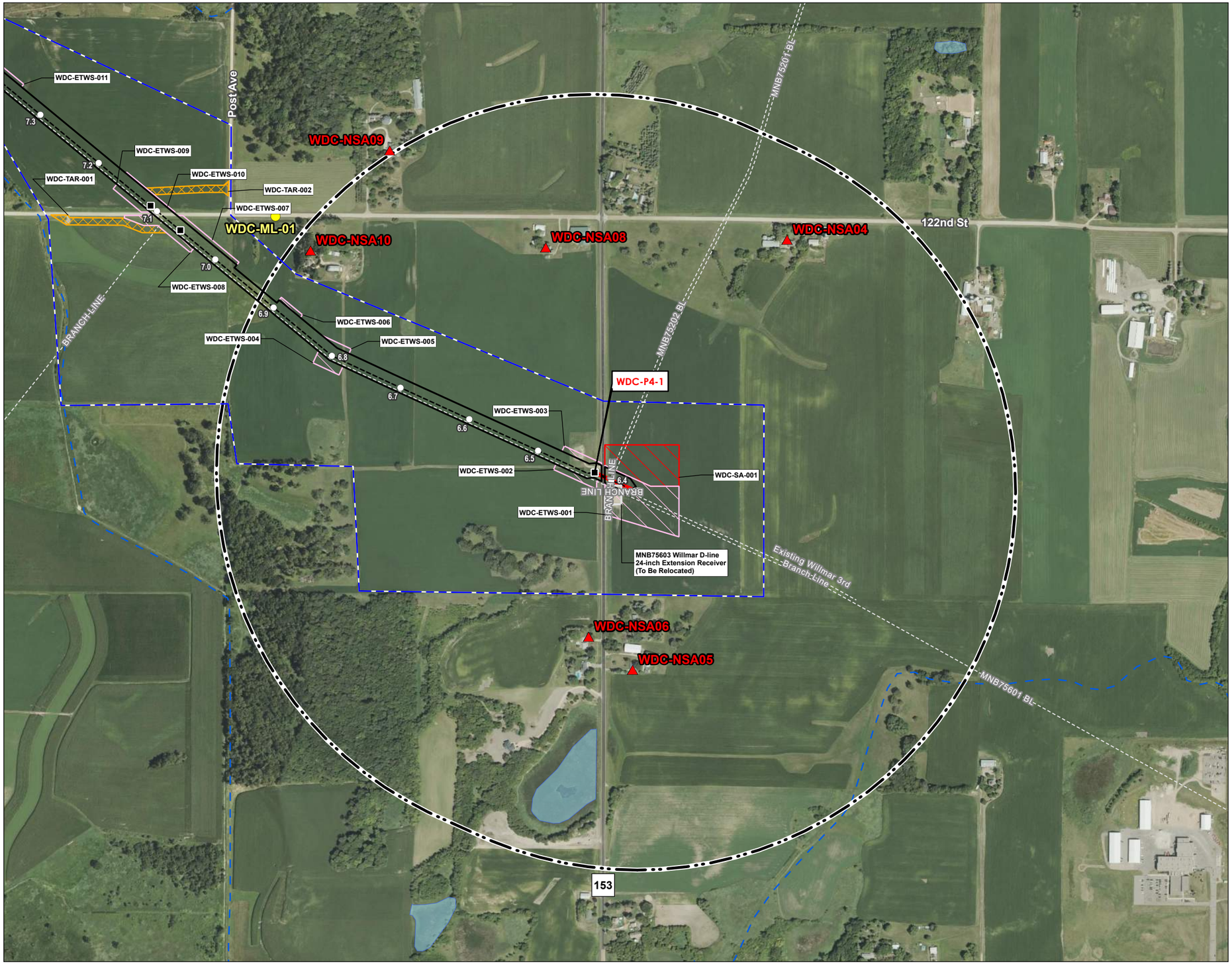


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : WDC-P4-1
NL27 - Willmar 3rd Branch Line Downstream

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Carver County, Minnesota

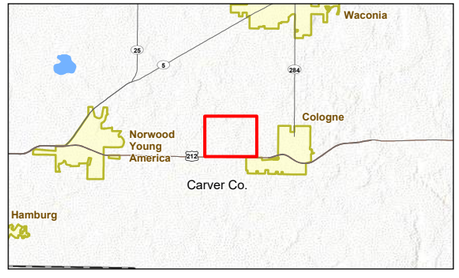
Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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(At original document size of 11x17)
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Legend
- Environmental Survey Boundary
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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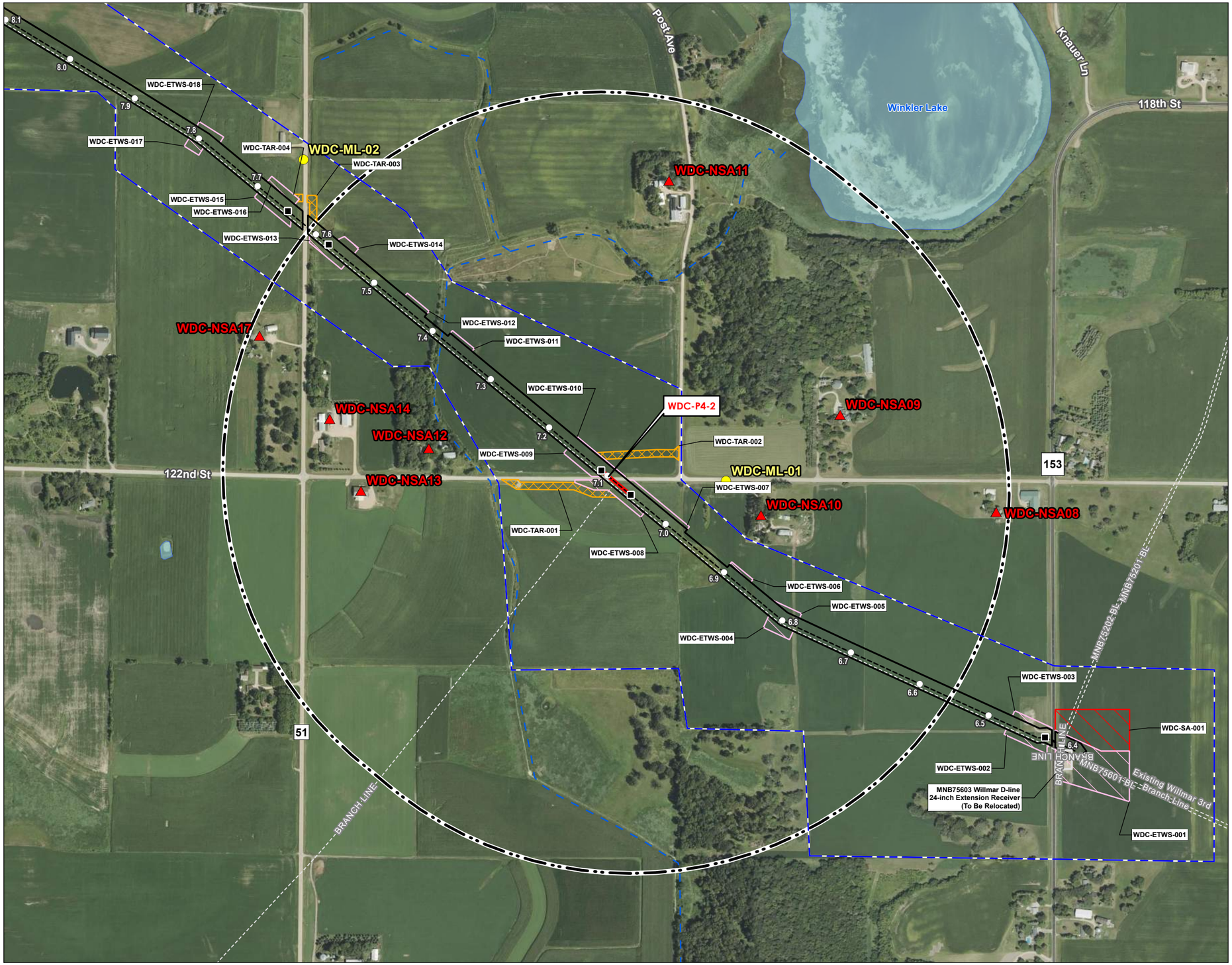


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : WDC-P4-2
NL27 - Willmar 3rd Branch Line Downstream

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Carver County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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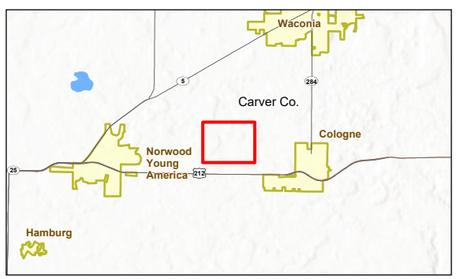
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Legend

- Environmental Survey Boundary
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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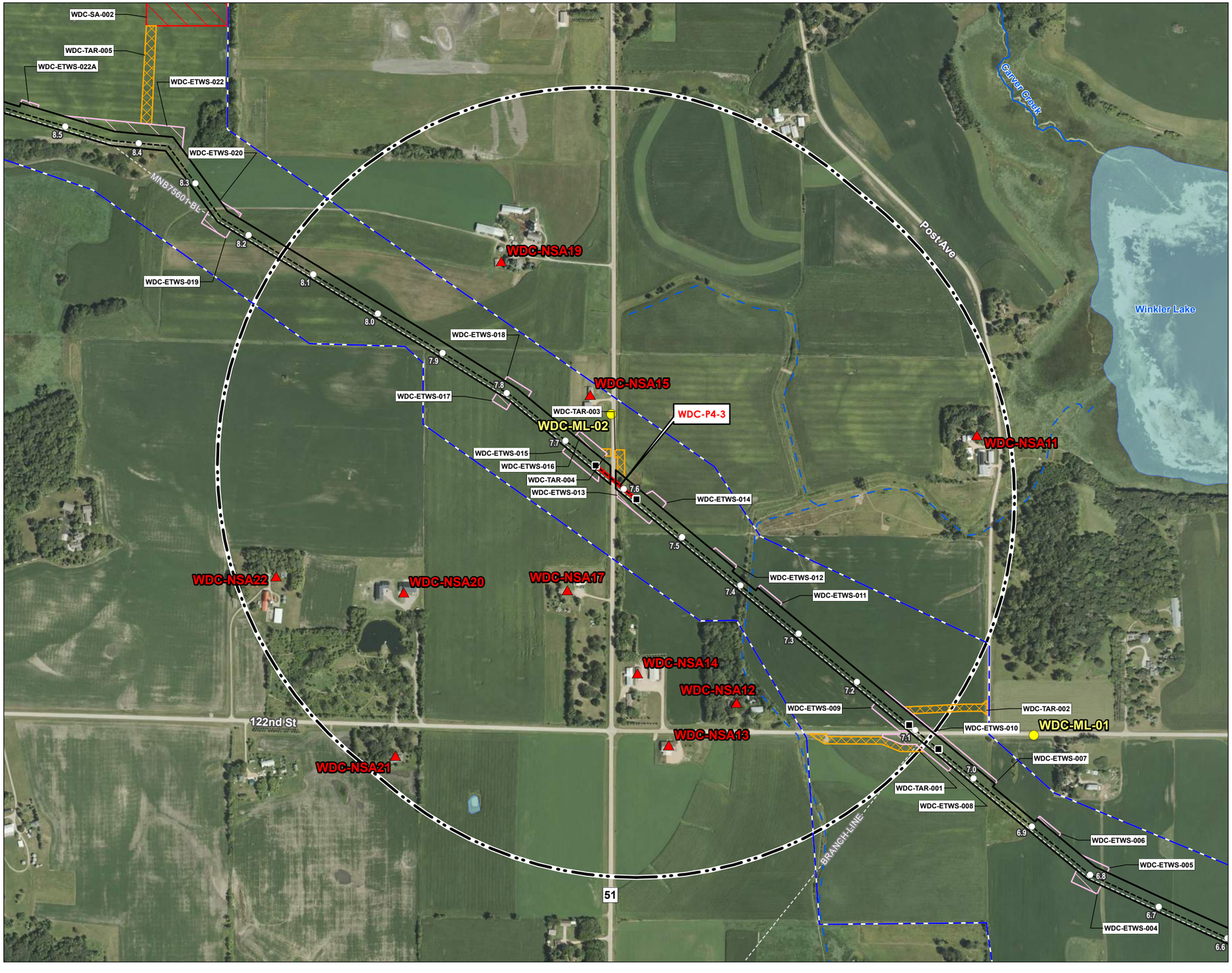


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : WDC-P4-3
NL27 - Willmar 3rd Branch Line Downstream

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Carver County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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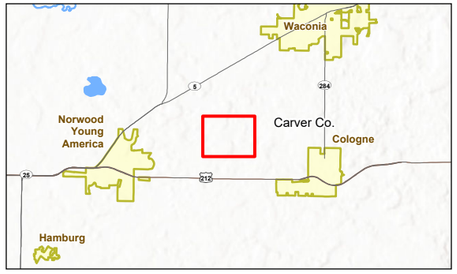
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Legend

- Environmental Survey Boundary
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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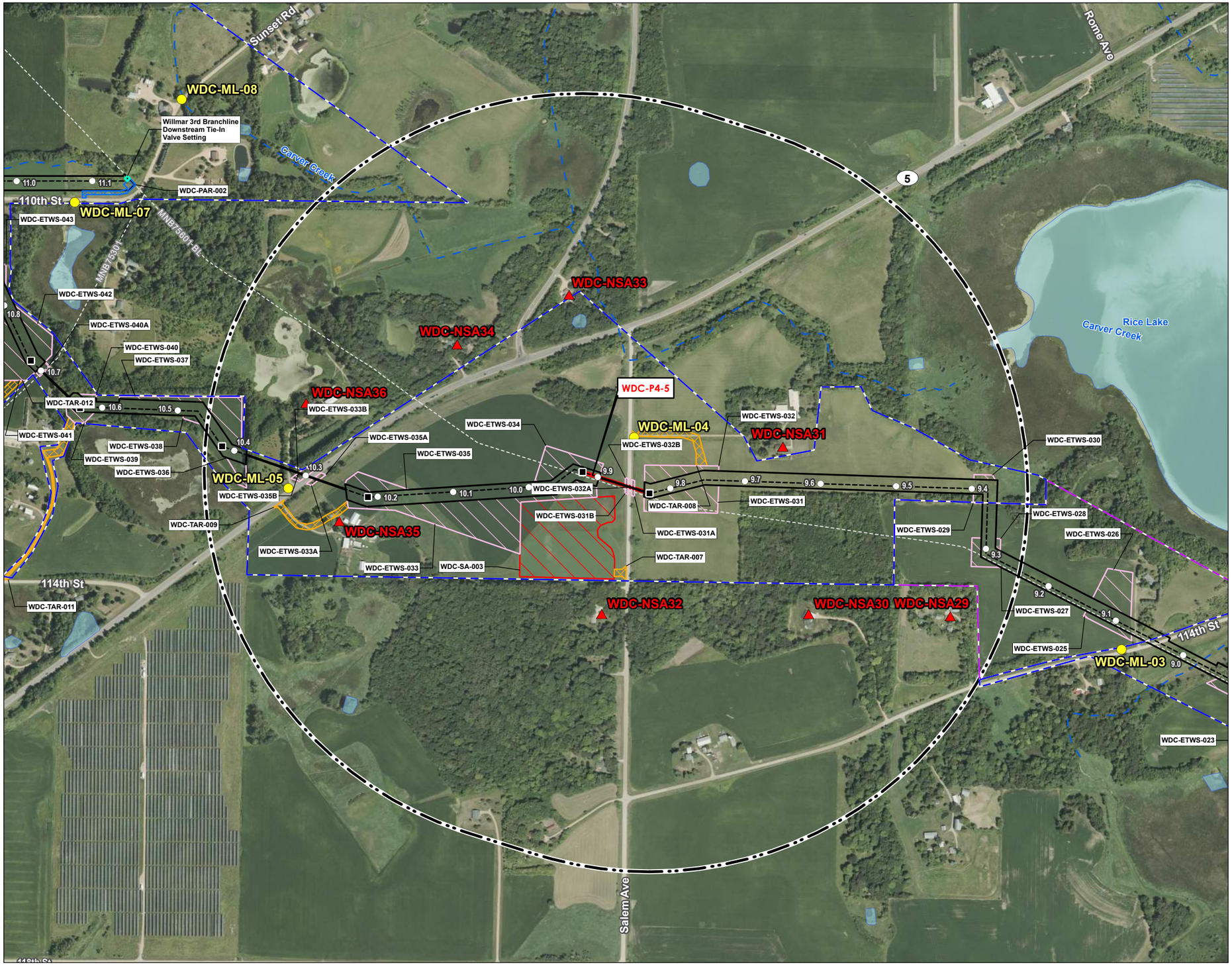


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : WDC-P4-5
NL27 - Willmar 3rd Branch Line Downstream

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Carver County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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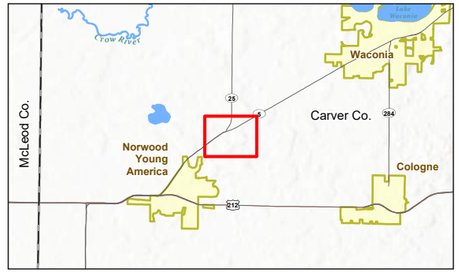
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Legend

- Environmental Survey Boundary
- Environmental Survey Boundary To Be Surveyed
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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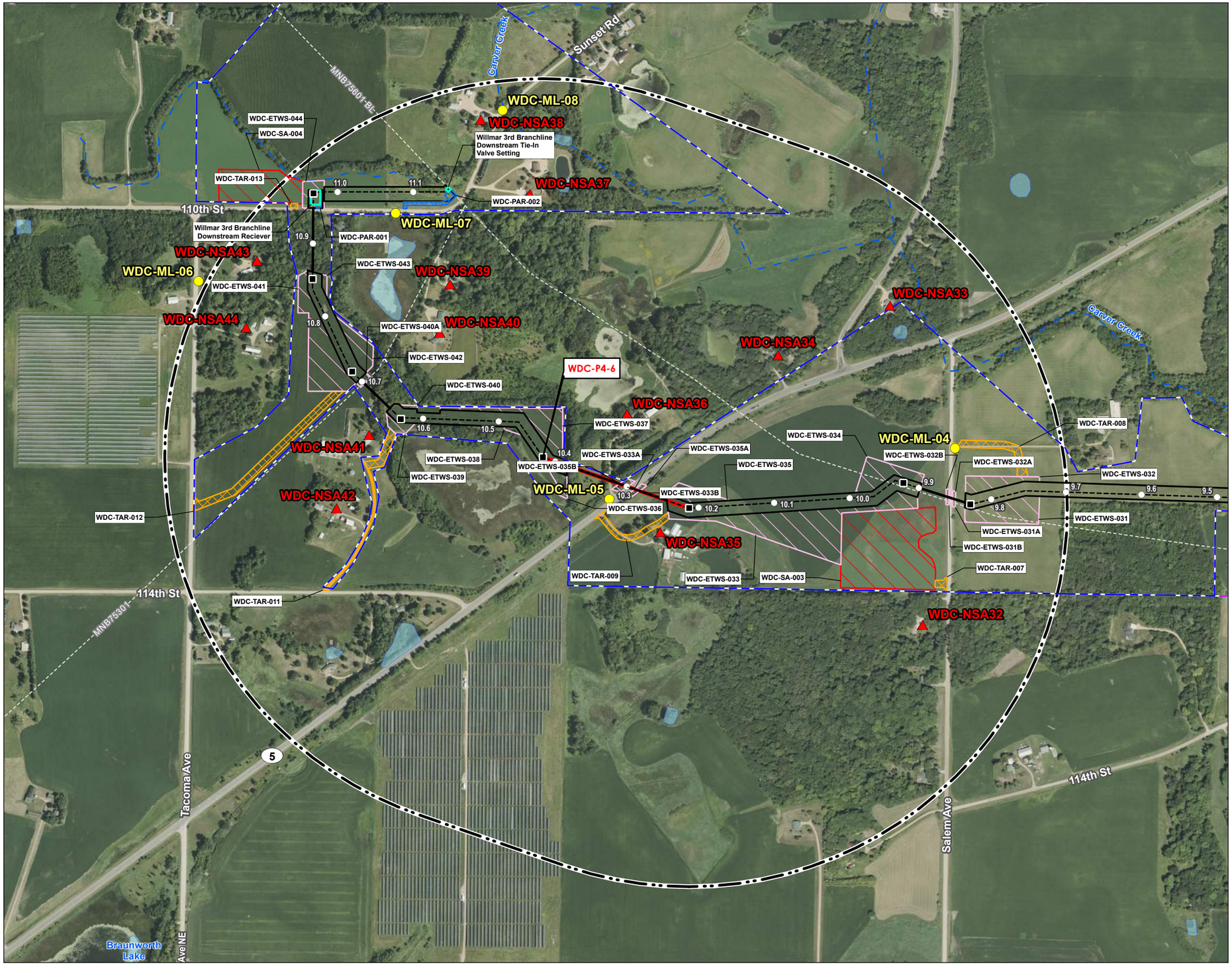


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : WDC-P4-6
NL27 - Willmar 3rd Branch Line Downstream

Client/Project

172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Carver County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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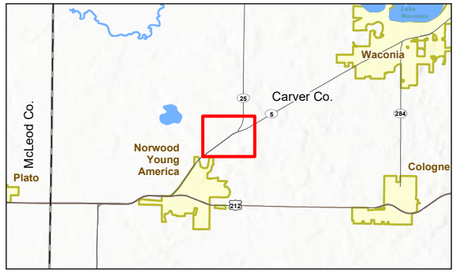
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Legend

- Environmental Survey Boundary
- Environmental Survey Boundary To Be Surveyed
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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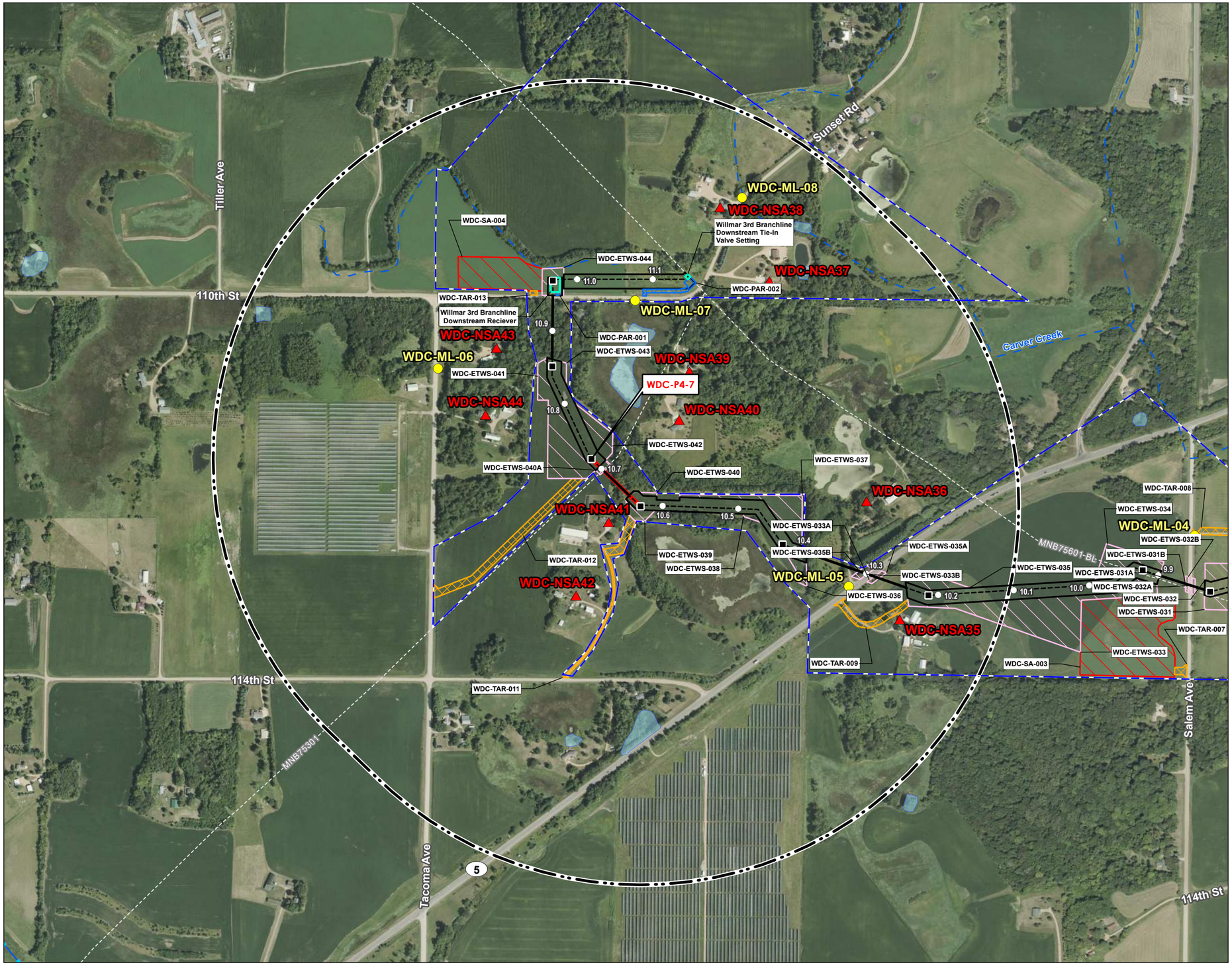


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : WDC-P4-7
NL27 - Willmar 3rd Branch Line Downstream

Client/Project

172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Carver County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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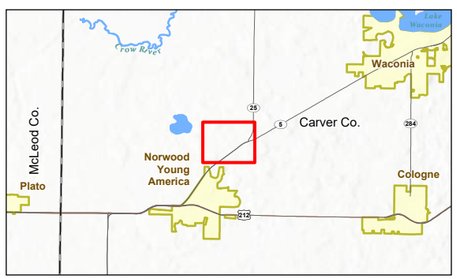
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Legend

- Environmental Survey Boundary
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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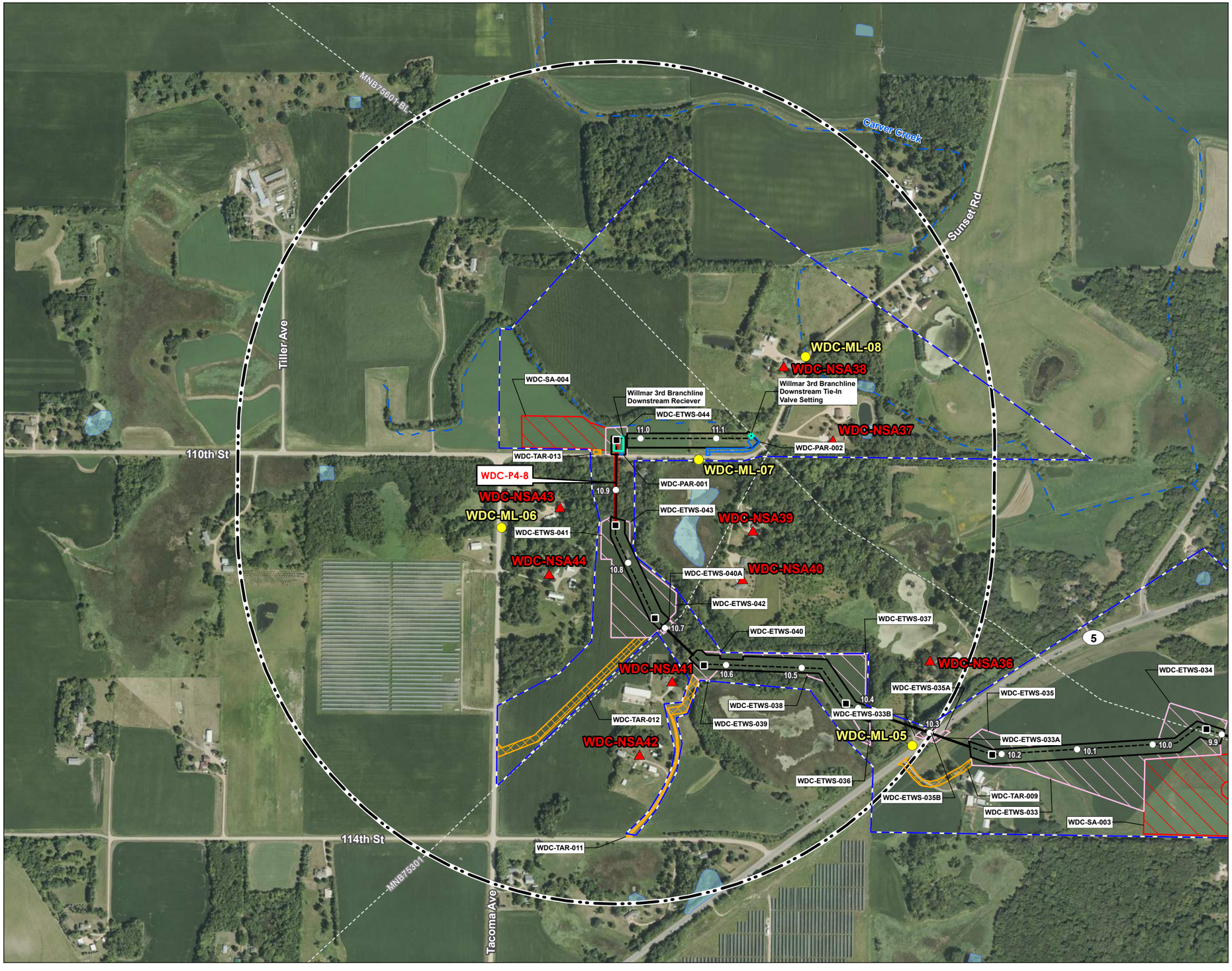


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : WDC-P4-8
NL27 - Willmar 3rd Branch Line Downstream

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Carver County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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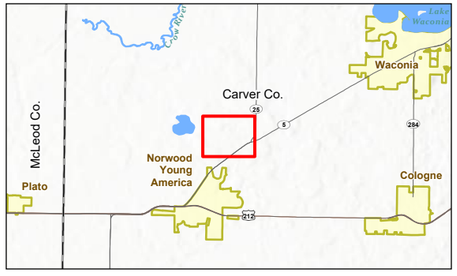
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Legend

- Environmental Survey Boundary
- Proposed Facility
- Permanent Access Road
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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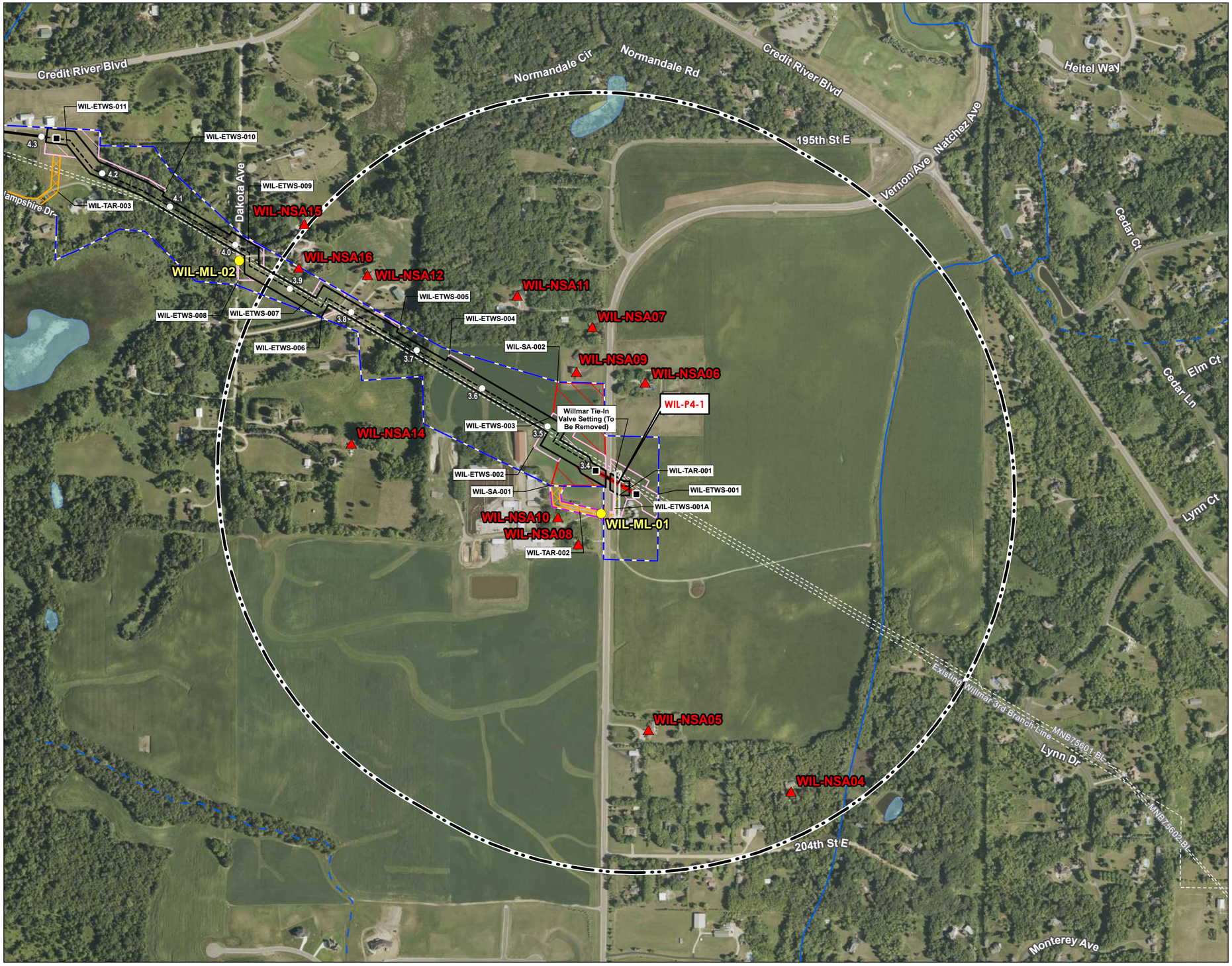


Figure No.
1-15

Title
Approximate Locations with Noise Sensitive Areas : WIL-P4-1
NL27 - Willmar 3rd Branch Line Upstream

Client/Project 172609138
Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Scott County, Minnesota

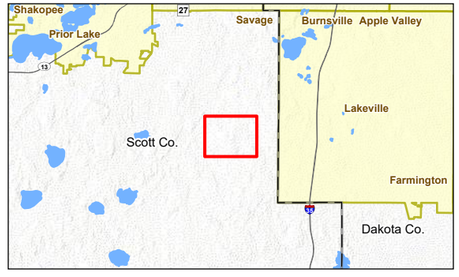
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TR by JM on 2026-01-09
IR by SK on 2026-02-06

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Legend
- Environmental Survey Boundary
- Environmental Survey Boundary To Be Surveyed
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec
Northern Natural Gas

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Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : WIL-P4-2
NL27 - Willmar 3rd Branch Line Upstream

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Scott County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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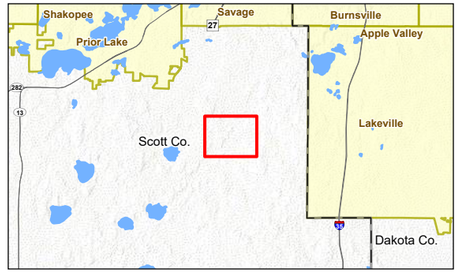
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Legend

- Environmental Survey Boundary
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

Stantec

Northern Natural Gas

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Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : WIL-P4-3 NL27 - Willmar 3rd Branch Line Upstream

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Scott County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

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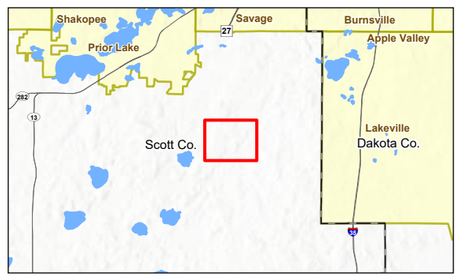
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Legend

- Environmental Survey Boundary
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

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Northern Natural Gas

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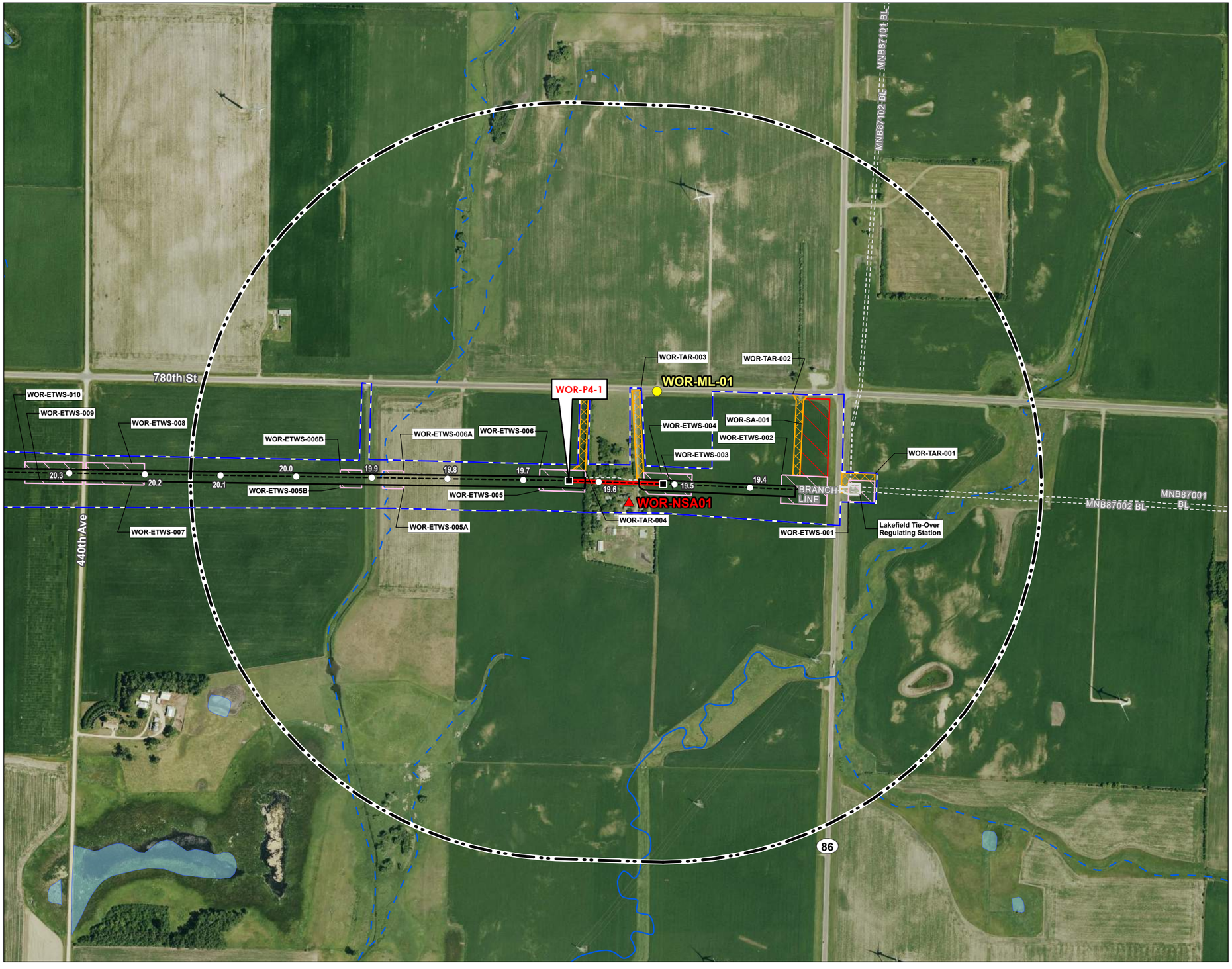


Figure No.

1-15

Title

Approximate Locations with Noise Sensitive Areas : WOR-P4-1
NL27 - Worthington 2nd Branch Line

Client/Project 172609138

Northern Natural Gas
Northern Lights 2027 Expansion Project

Project Location
Jackson County, Minnesota

Prepared by SF on 2026-01-09
TR by JM on 2026-01-09
IR by SK on 2026-02-06

N

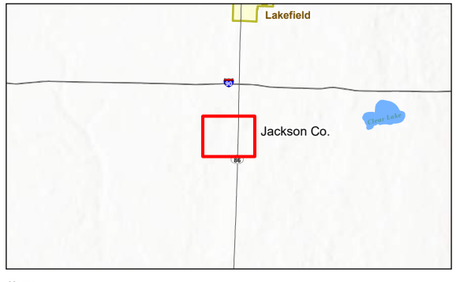
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Legend

- Environmental Survey Boundary
- Existing Facility
- Temporary Workspace
- Extra Temporary Workspace
- Temporary Access Road
- Staging Area
- Mile Post
- HDD
- Noise Sensitive Area (NSA)
- Noise Monitoring Location
- Proposed Pipeline
- Existing Pipeline
- HDD Segment
- HDD Half-Mile Buffer

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Canal/Ditch
- Waterbody



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

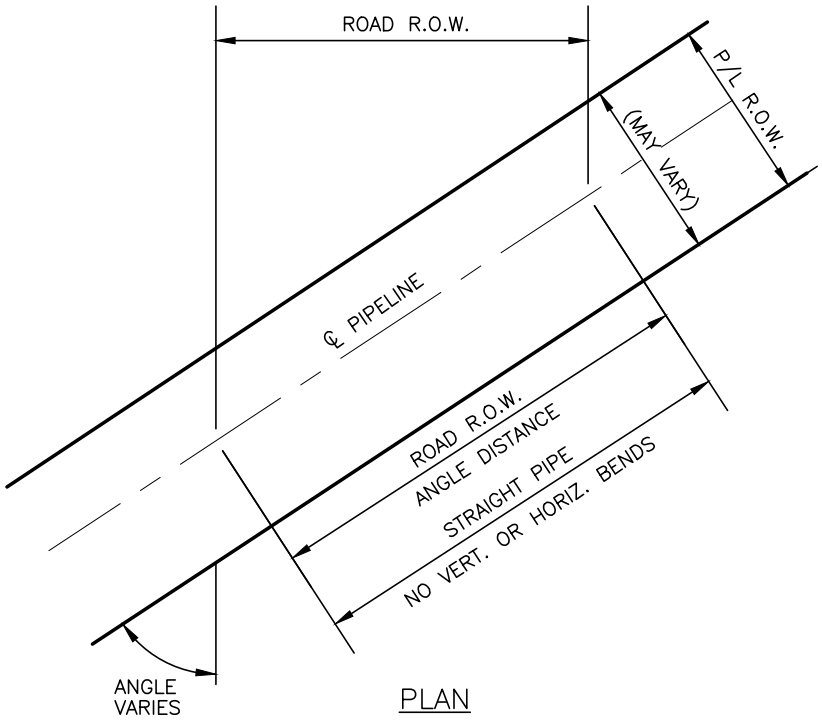
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Northern Natural Gas

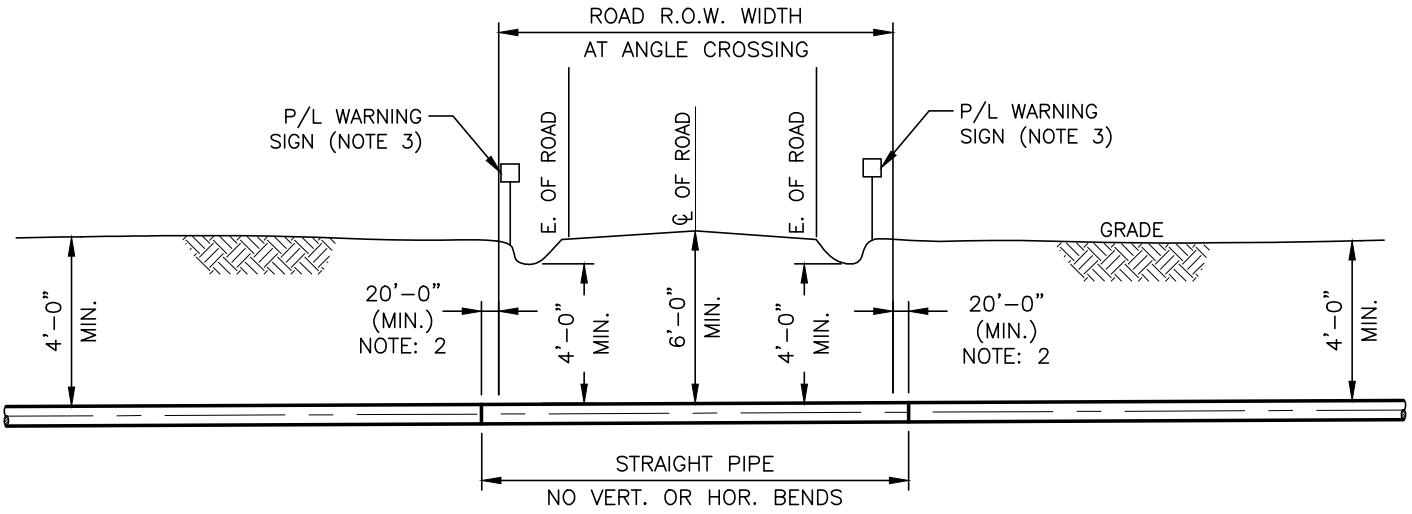
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Figure 1-16
Typical Open-Cut Road Crossings of Roads (V2F and NL27 Projects)



PLAN



SECTION

OPEN CUT ROAD R.O.W. CROSSING

NOTES:

1. MINIMUM PIPE COVER SHALL BE MAINTAINED OVER FULL WIDTH OF ROAD ALLOWANCE
2. WHEN PRACTICAL, THE STRAIGHT CROSSING PIPE SHALL EXTEND A MINIMUM OF 20' BEYOND THE ROAD R.O.W. LINE.
3. PIPELINE WARNING SIGNS TO BE INSTALLED AS PER NNG REQUIREMENTS AND TO BE INSTALLED ON R.O.W LINE NEXT TO A FENCE IF POSSIBLE.

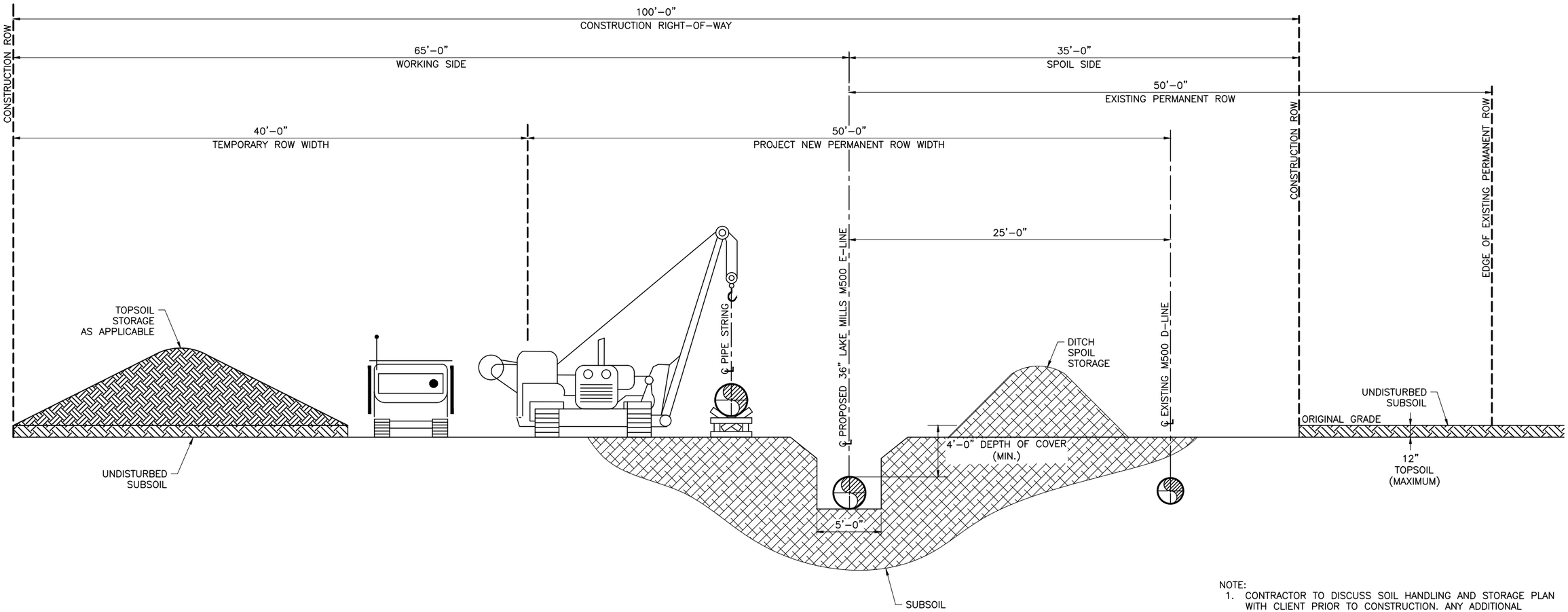
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SCALE: NTS		

Northern Natural Gas.

V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
NORTHERN LIGHTS 2027 EXPANSION PROJECT
OPEN CUT ROAD R.O.W. CROSSING, TYPICAL

Northern Natural Gas.
PROJECT NO.
FIGURE 1–16
DWG. NO.
TYP4
SHT. OF
F

Figure 1-17
Typical ROW Cross-Sectional Diagrams (V2F Project)



NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

CONSTRUCTION RIGHT-OF-WAY IN A WETLAND OR TREELINE

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
34.20	34.37	NORTH TO SOUTH	LMA–P3–1
34.63	35.02	NORTH TO SOUTH	LMA–P3–2 TO LMA–P3–3
35.12	36.21	NORTH TO SOUTH	LMA–P3–3 TO LMA–P3–6
36.65	36.98	SOUTH TO NORTH	LMA–P3–7 TO LMA–P3–8
39.19	39.43	SOUTH TO NORTH	LMA–P3–14 TO LMA–P3–15
39.79	40.46	SOUTH TO NORTH	LMA–P3–15 TO LMA–P3–17
40.49	40.52	SOUTH TO NORTH	LMA–P3–17
40.76	42.05	SOUTHWEST TO NORTHEAST	LMA–P3–18 TO LMA–P3–21

LEGEND
- TOPSOIL
- SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
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PL# MNB87703 | CONST. YR 2027
STA# N/A | POI# N/A N/A

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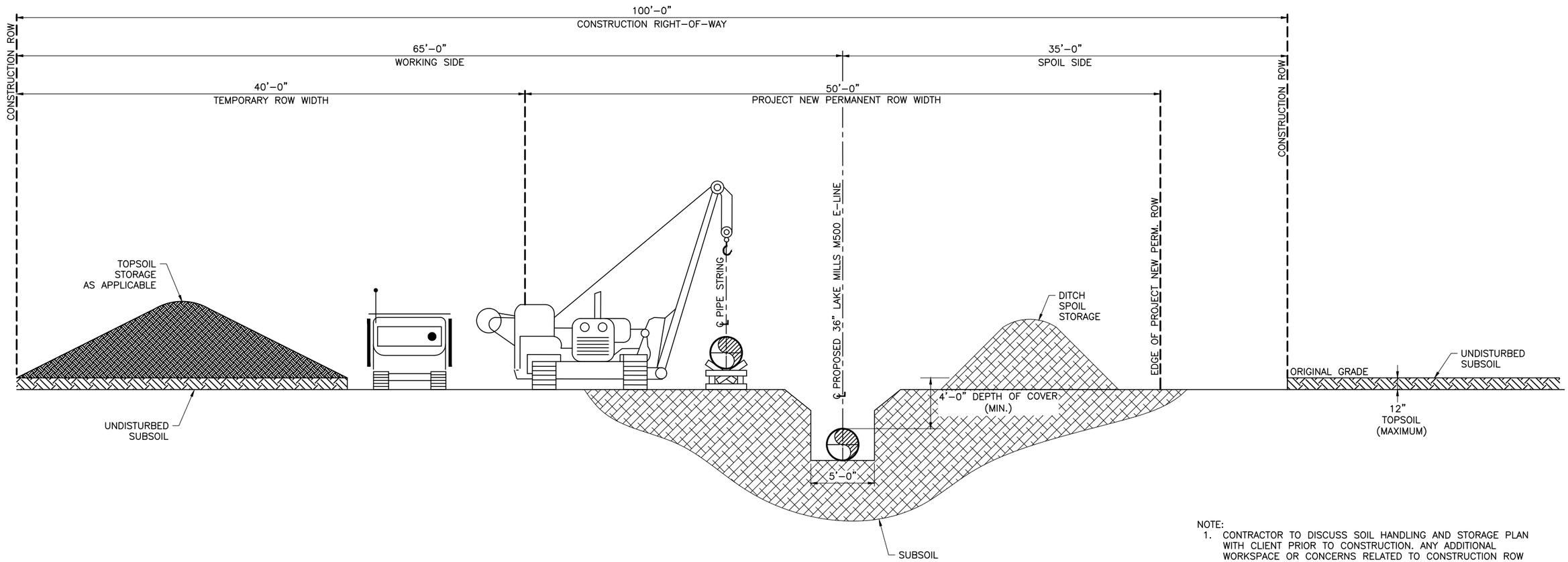
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V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 33, 34, 27, 22, 15, 14, 15, 11, 10, 3, 2, 35, 26 & 23, T102N & T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO. 01146979
DWG. NO. ROW1 (F)

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CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
34.52	34.63	NORTHEAST TO SOUTHWEST	LMA–P3–2
35.02	35.12	NORTH TO SOUTH	LMA–P3–3
36.21	36.30	NORTH TO SOUTH	LMA–P3–6
36.60	36.65	NORTH TO SOUTH	LMA–P3–7
36.98	38.65	NORTHEAST TO SOUTHEAST	LMA–P3–8 TO LMA–P3–12
38.68	39.12	NORTH TO SOUTH	LMA–P3–13 TO LMA–P3–14
39.12	39.16	SOUTH TO NORTH	LMA–P3–14
39.43	42.05	SOUTH TO NORTH	LMA–P3–15
40.52	40.76	SOUTH TO NORTH	LMA–P3–17 TO LMA–P3–18
42.05	42.49	SOUTHWEST TO NORTHEAST	LMA–P3–21 TO LMA–P3–22

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
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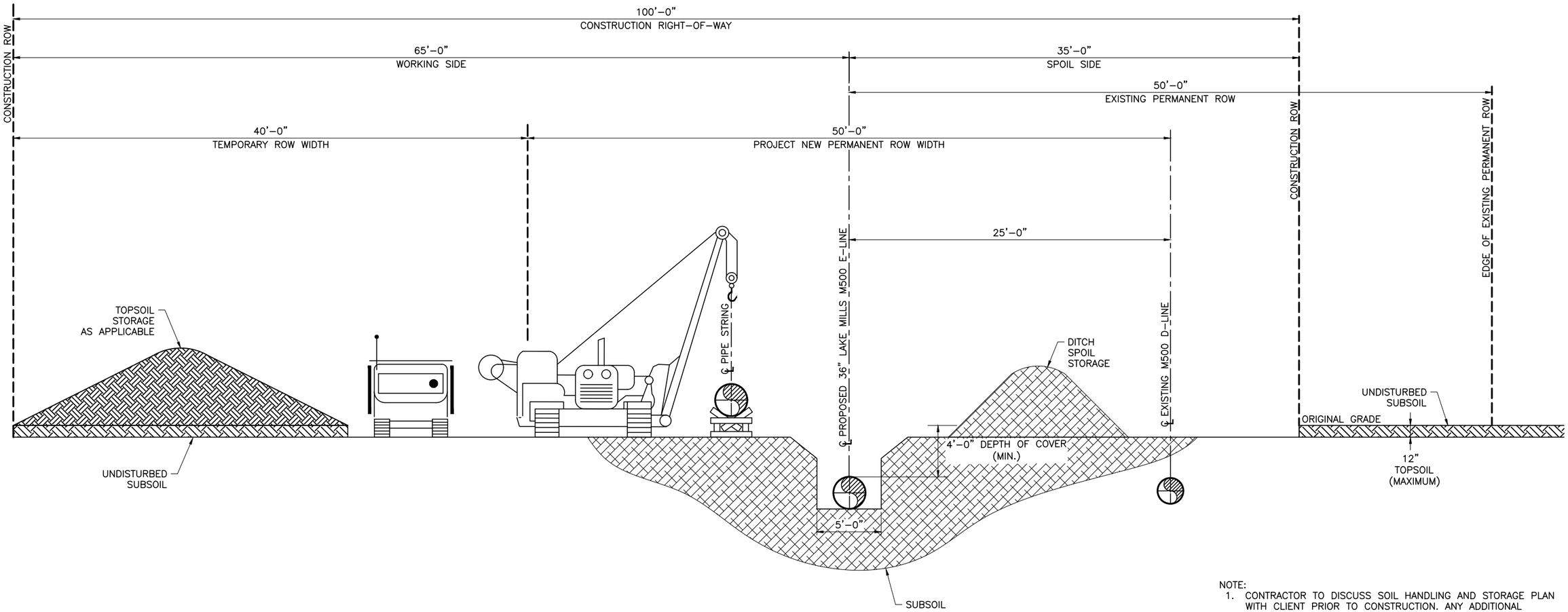
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 33, 34, 27, 22, 15, 14, 15, 11, 10, 3, 2, 35, 26 & 23, T102N & T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW2** F

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NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

CONSTRUCTION RIGHT-OF-WAY IN A WETLAND OR TREELINE

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
34.20	34.37	NORTH TO SOUTH	LMA–P3–1
34.63	35.02	NORTH TO SOUTH	LMA–P3–2 TO LMA–P3–3
35.12	36.21	NORTH TO SOUTH	LMA–P3–3 TO LMA–P3–6
36.65	36.98	SOUTH TO NORTH	LMA–P3–7 TO LMA–P3–8
39.19	39.43	SOUTH TO NORTH	LMA–P3–14 TO LMA–P3–15
39.79	40.46	SOUTH TO NORTH	LMA–P3–15 TO LMA–P3–17
40.49	40.52	SOUTH TO NORTH	LMA–P3–17
40.76	42.05	SOUTHWEST TO NORTHEAST	LMA–P3–18 TO LMA–P3–21

LEGEND
- TOPSOIL
- SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
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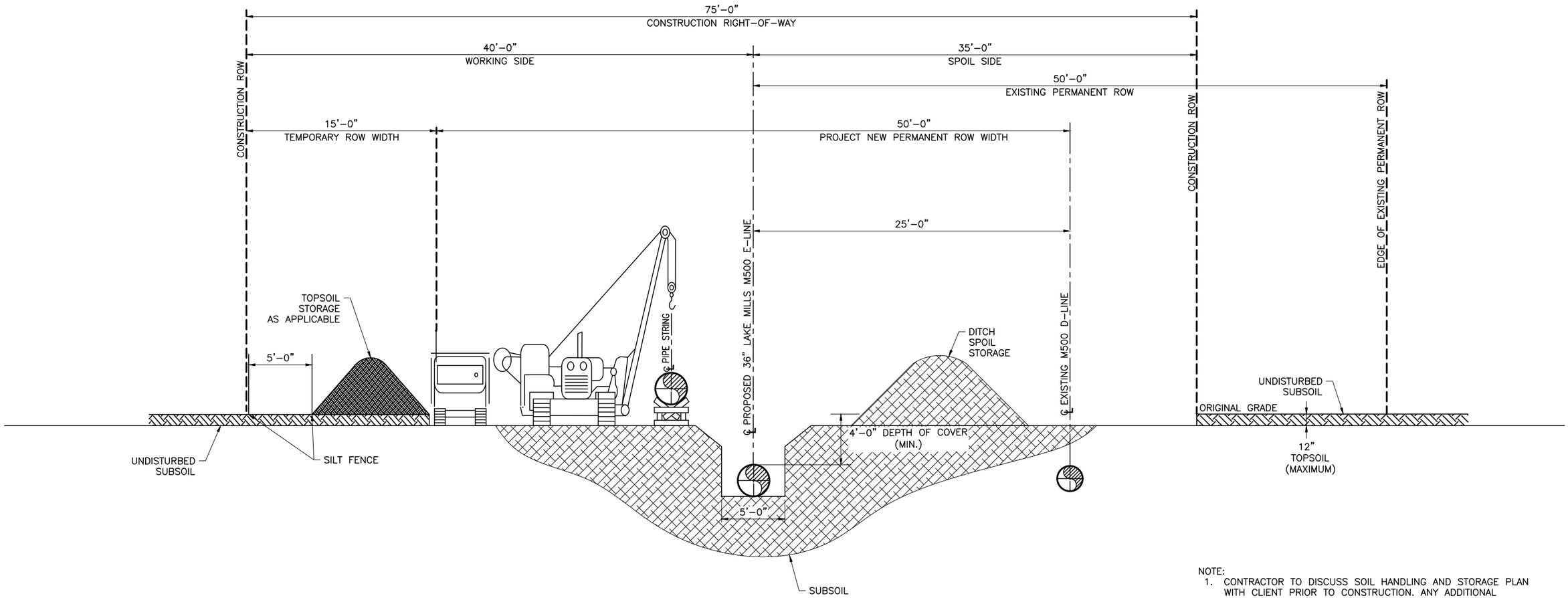
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V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 33, 34, 27, 22, 15, 14, 15, 11, 10, 3, 2, 35, 26 & 23, T102N & T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO. 01146979
DWG. NO. ROW1 F

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CONSTRUCTION RIGHT-OF-WAY IN A WETLAND OR TREELINE

NOTE:
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MP FROM	MP TO	DIRECTION OF LAY	REF DWG
38.65	38.68	NORTH TO SOUTH	LMA–P3–12 TO LMA–P3–13
39.73	39.79	SOUTH TO NORTH	LMA–P3–15
40.46	40.49	SOUTH TO NORTH	LMA–P3–17

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
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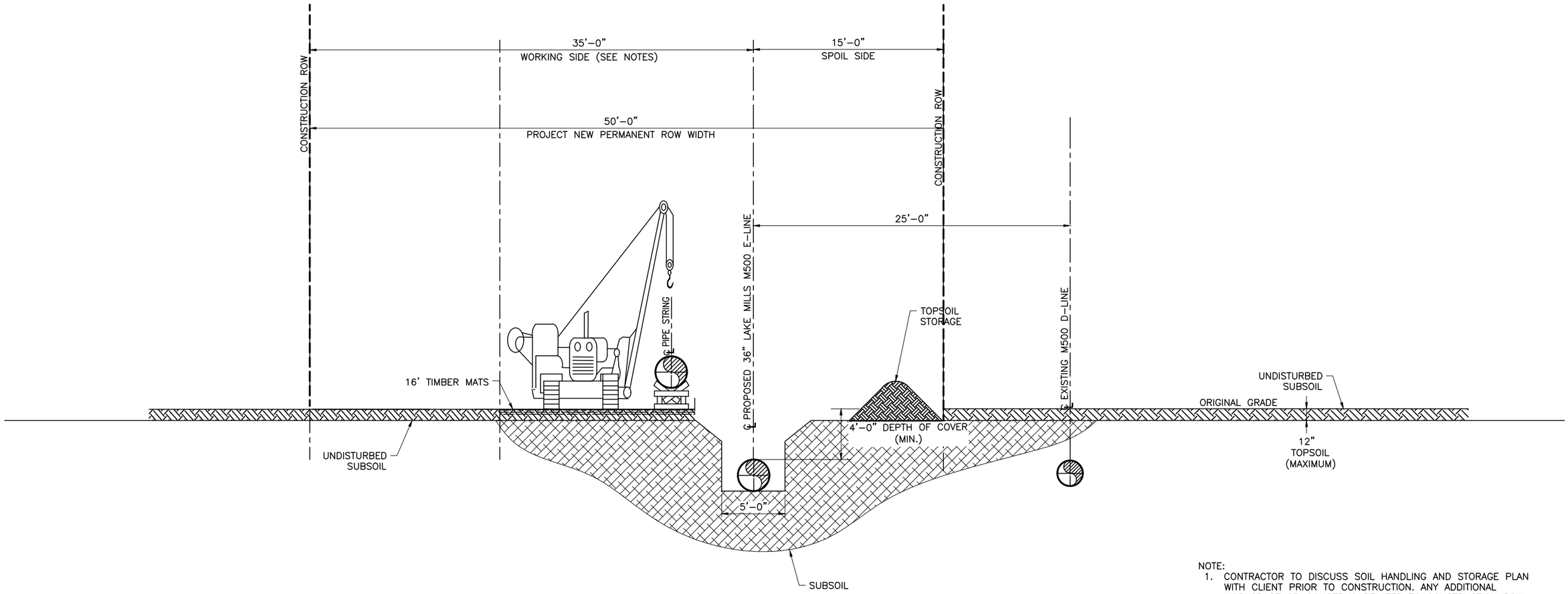
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LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 11, 10, 2 & 35, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO. 01146979

DWG. NO. ROW3 F

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NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

CONSTRUCTION RIGHT-OF-WAY IN A WETLAND OR TREELINE

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
36.38	36.47	SOUTH TO NORTH	LMA–P3–7

LEGEND

TOPSOIL

SUBSOIL

FREEBORN COUNTY, MINNESOTA

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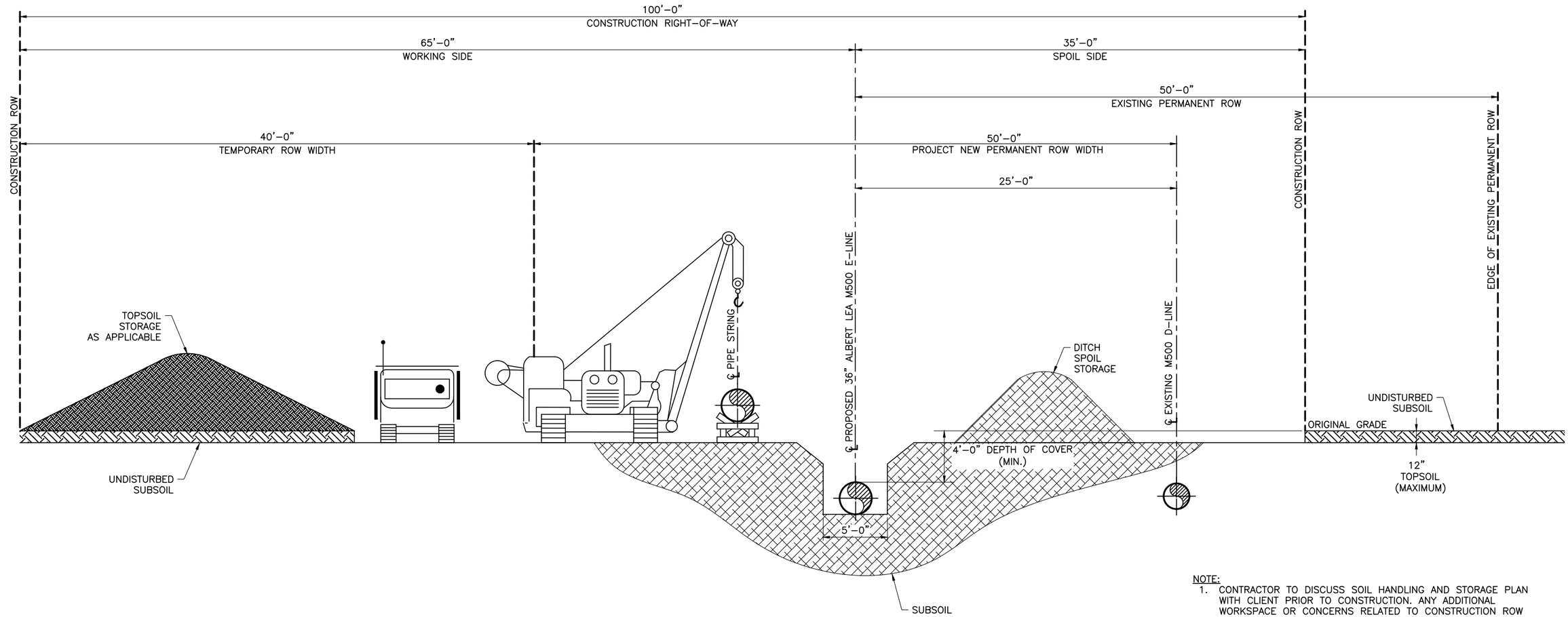
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LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 22, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.
A BERKSHIRE HATHAWAY ENERGY COMPANY

PROJECT NO. 01146979
DWG. NO. ROW3 F

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CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
1.55	2.09	SOUTH TO NORTH	ALO–P3–1 TO ALO–P3–2
2.47	2.72	SOUTH TO NORTH	ALO–P3–3 TO ALO–P3–4
2.77	3.24	SOUTH TO NORTH	ALO–P3–4 TO ALO–P3–5

LEGEND

TOPSOIL

SUBSOIL

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Figure 1-17

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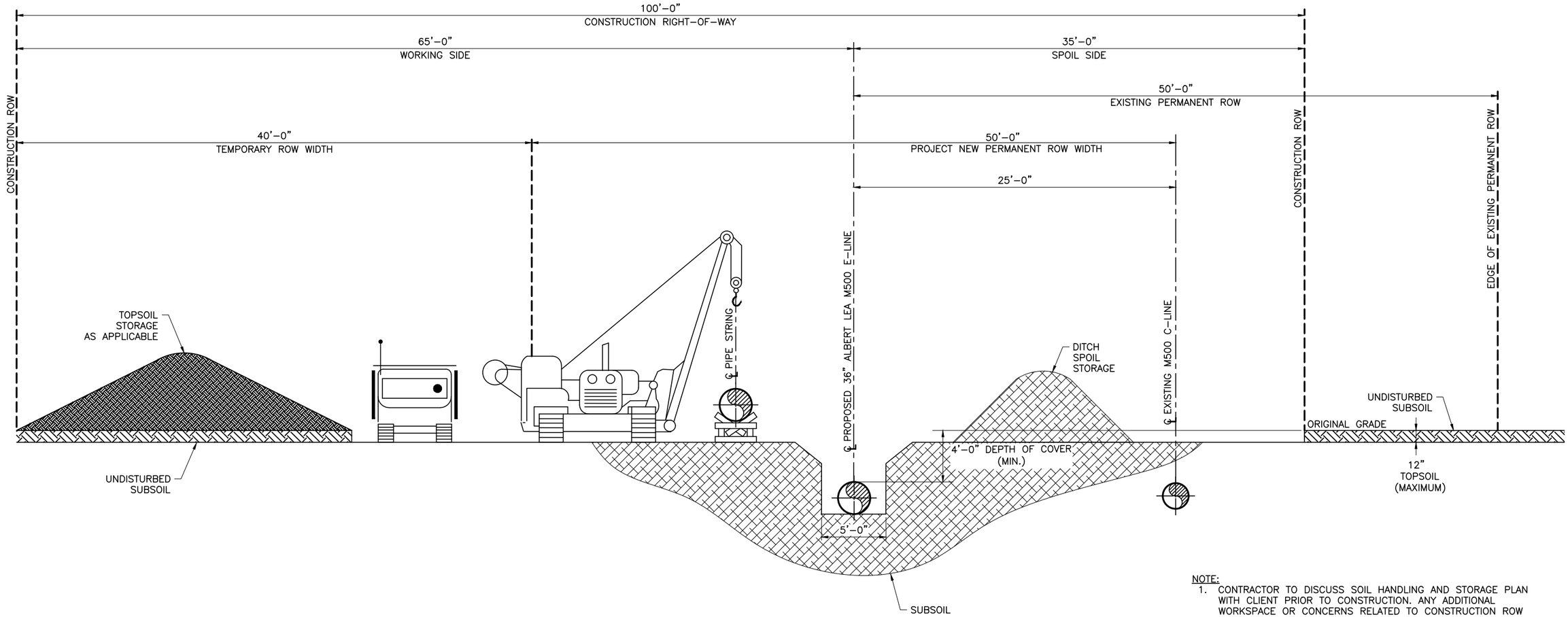
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ALBERT LEA M500 E-LINE
CONSTRUCTION ROW
SEC. 31, 30 & 19, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW1**

F



NOTE:
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CONSTRUCTION RIGHT-OF-WAY

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
3.24	3.45	NORTH TO SOUTH	ALO–P3–5 TO ALO–P3–6
3.47	3.68	NORTH TO SOUTH	ALO–P3–6

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
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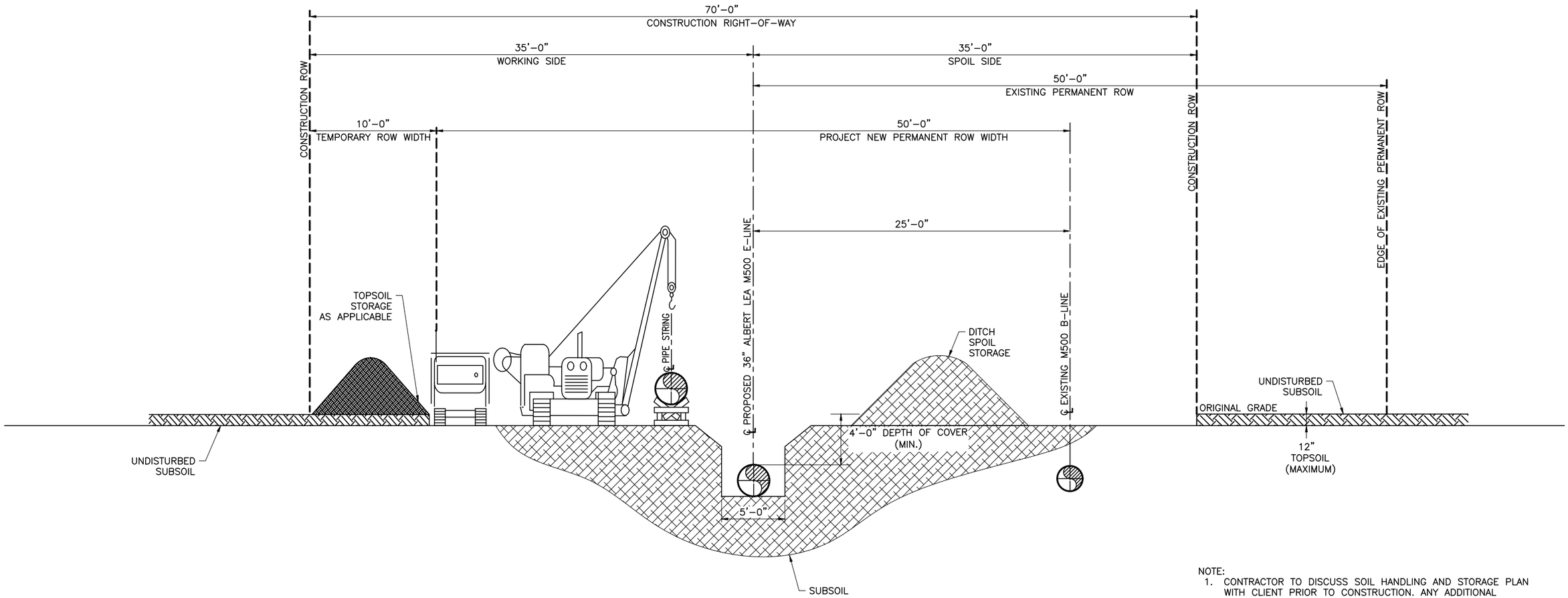
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
ALBERT LEA M500 E-LINE
CONSTRUCTION ROW
SEC. 31, 30 & 19, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW2** F

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CONSTRUCTION RIGHT-OF-WAY IN A WETLAND

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
2.72	2.77	SOUTH TO NORTH	ALO–P3–4

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
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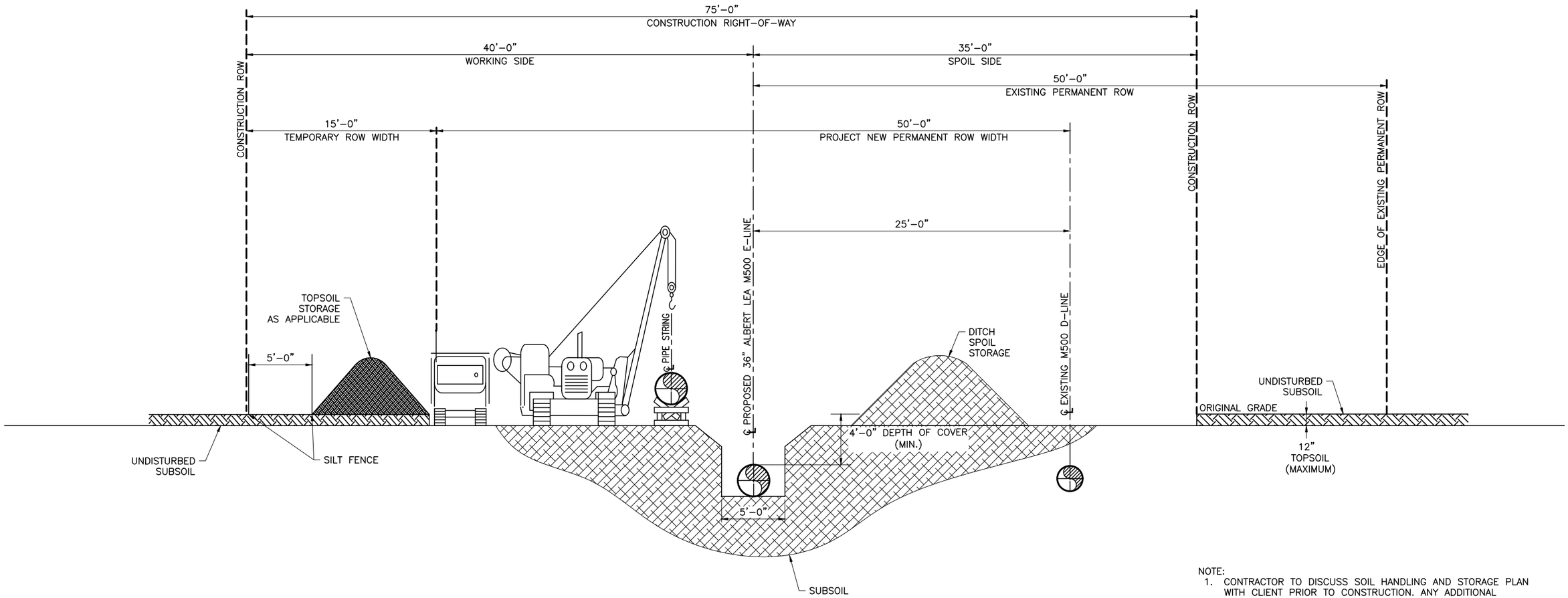
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
ALBERT LEA M500 E-LINE
CONSTRUCTION ROW
SEC. 31, 30 & 19, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW3** F

Chan, Ginger 2/19/2026 11:46 AM:\NNG V2F\8_RW CONFIGURATION\ALO\ALO ROW3



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND BUFFER

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
3.45	3.47	NORTH TO SOUTH	ALO–P3–6

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
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PL#
CONST. YR 2027
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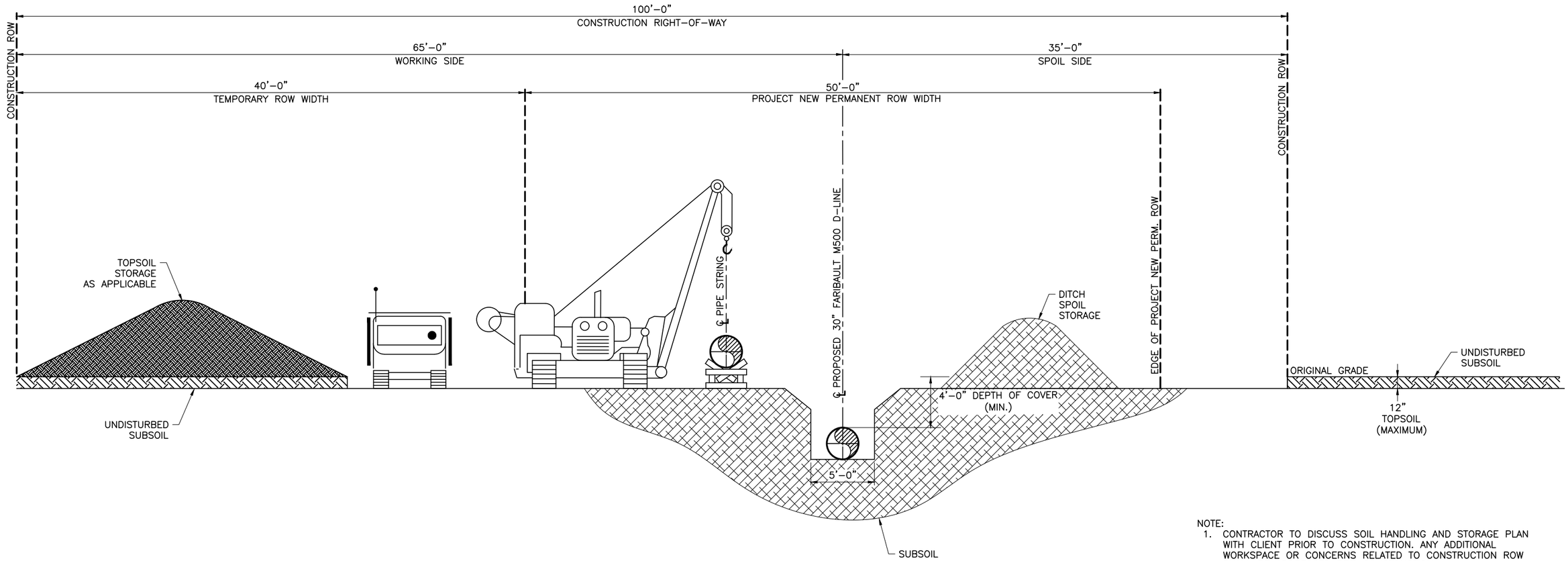
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
ALBERT LEA M500 E-LINE
CONSTRUCTION ROW
SEC. 31, 30 & 19, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW4** F

Chan, Ginger 2/19/2026 11:46 AM:\NNG V2F\8_RW CONFIGURATION\ALO\ALO ROW4



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
97.37	97.46	NORTH TO SOUTH	FAR–P3–1
97.94	98.29	EAST TO WEST	FAR–P3–2 TO FAR–P3–3
98.29	98.39	SOUTH TO NORTH	FAR–P3–3
98.48	99.38	SOUTH TO NORTH	FAR–P3–4 TO FAR–P3–6
99.77	99.83	EAST TO WEST	FAR–P3–7
100.44	100.53	NORTH TO SOUTH	FAR–P3–9
100.86	100.94	SOUTHEAST TO NORTHWEST	FAR 3–10
101.84	101.93	SOUTHWEST TO NORTHEAST	FAR–3–12 TO FAR–P3–13
102.44	103.01	SOUTHWEST TO NORTHEAST	FAR–P3–14 TO FAR–P3–15

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL# MNB87703		CONST. YR 2027	
STA# N/A		POI# N/A N/A	
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DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
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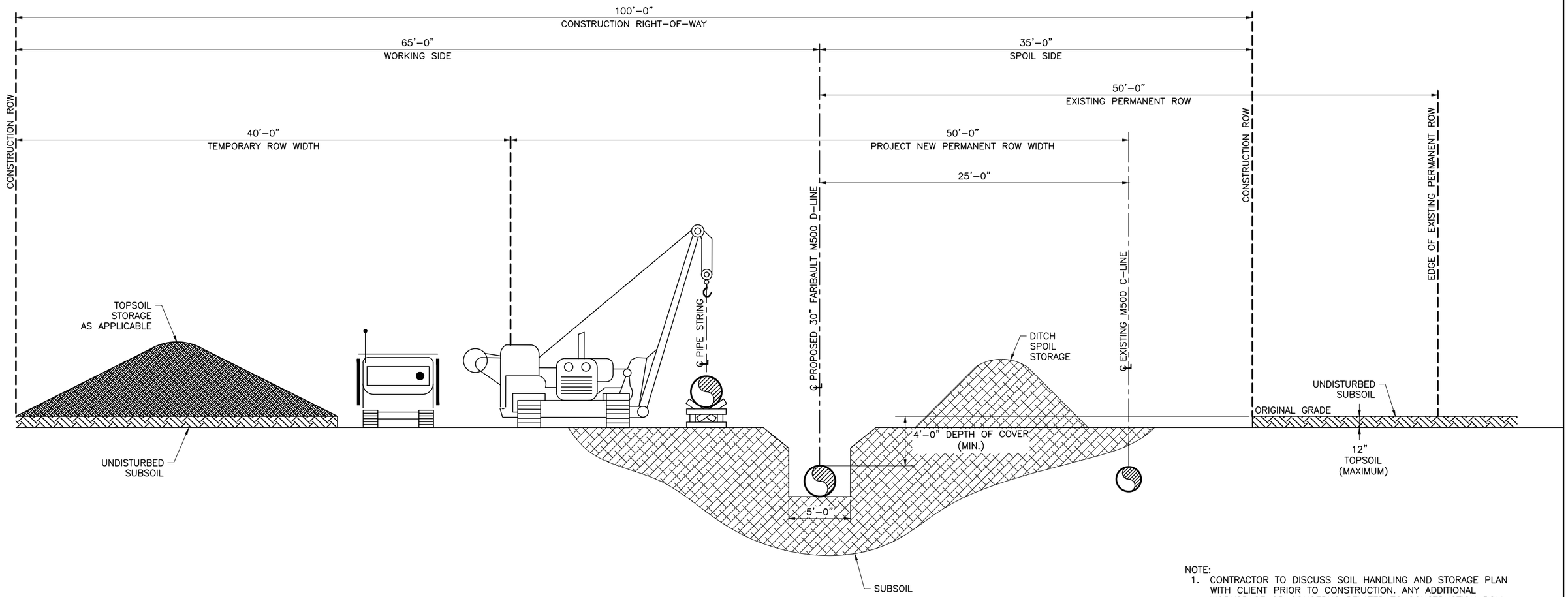
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
CONSTRUCTION ROW
SEC. 16, 15, 10, 3, 34, 27, 26, 23, 14, T112N & T113N, R20W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO. 01146979

DWG. NO. ROW1 F

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CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
97.46	97.94	NORTHEAST TO SOUTHWEST	FAR–P3–1 TO FAR–P3–2
100.06	100.44	NORTH TO SOUTH	FAR–P3–8 TO FAR–P3–9

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

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ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# MNB87703 | CONST. YR 2027
STA# N/A | POI# N/A N/A

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DESIGN	ED	
DRAWN	JM	
ASBUILT		

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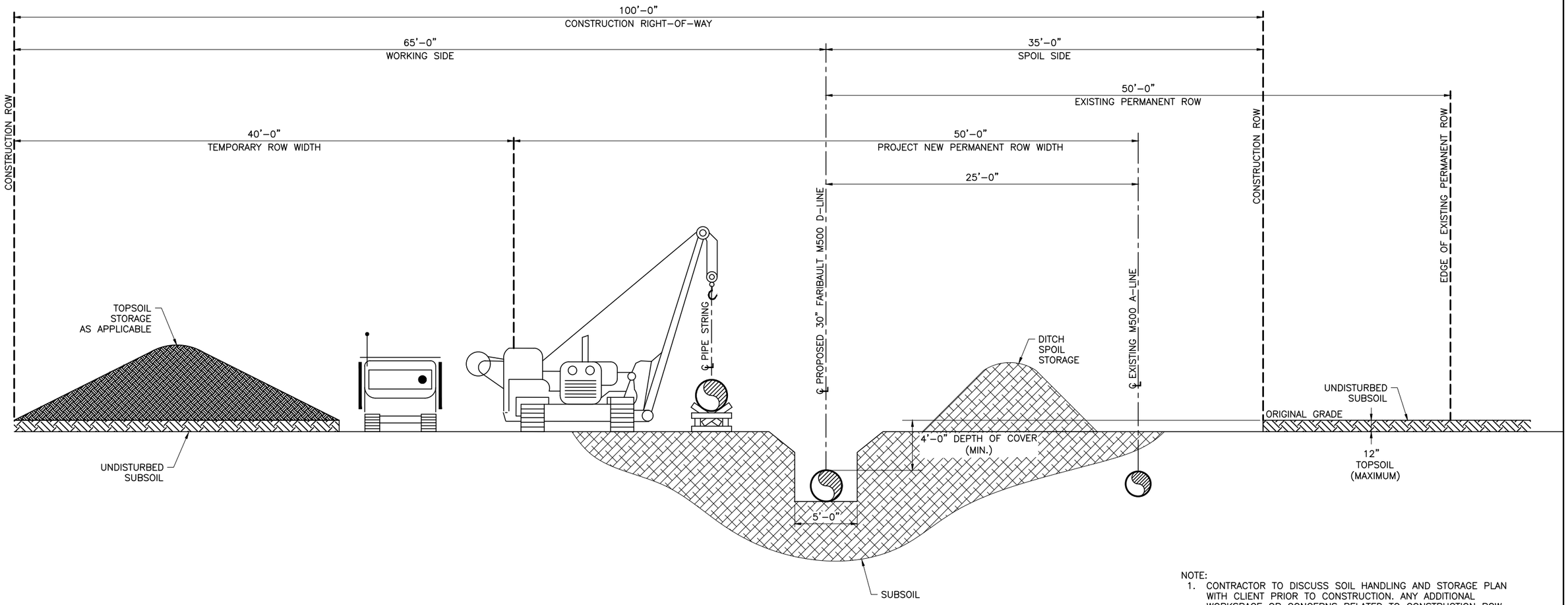
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
CONSTRUCTION ROW
SEC. 16, 15, 10, 3, 34, 27, 26, 23, 14, T112N & T113N, R20W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO. 01146979

DWG. NO. ROW2 F

Chan, Ginger 2/19/2026 11:46:44 AM N:\ENG V2F\8_RW CONFIGURATION\FAR\FAR ROW2.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
99.38	99.77	SOUTHWEST TO NORTHEAST	FAR–P3–6 TO FAR–P3–7

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL# MNB87703		CONST. YR 2027	
STA# N/A		PO# N/A N/A	
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DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
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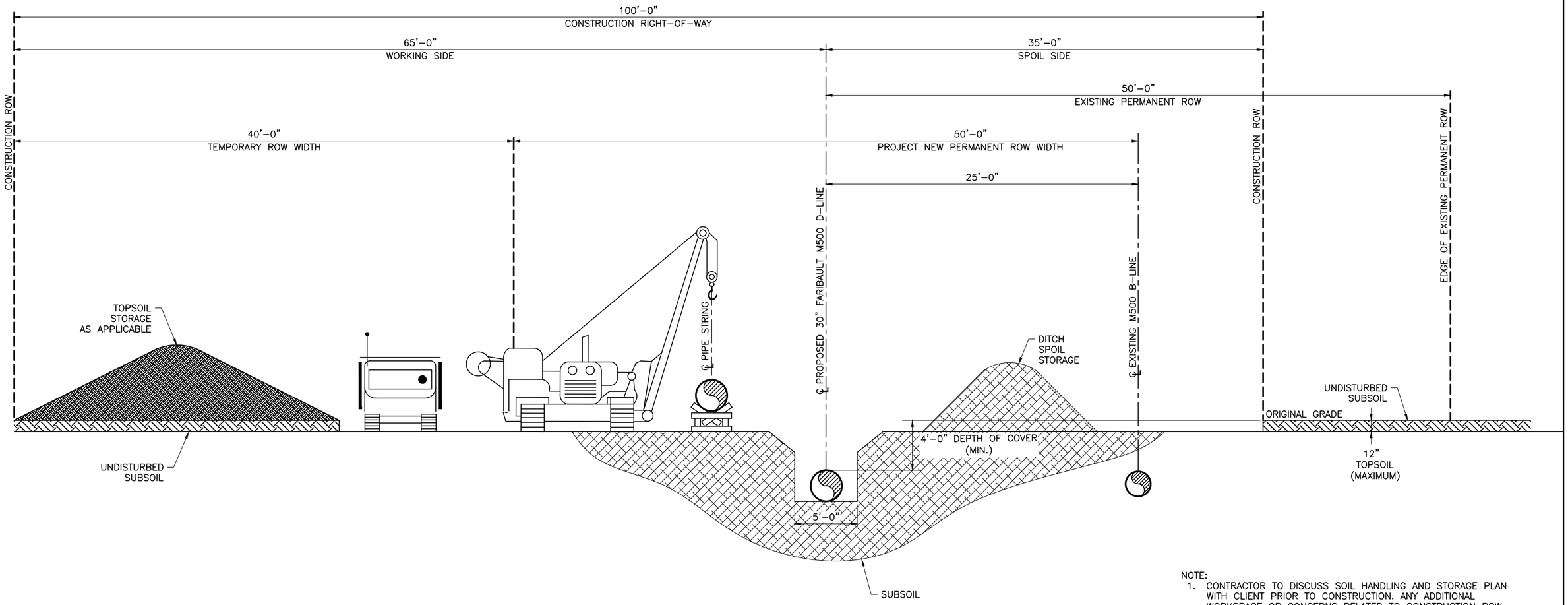
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
CONSTRUCTION ROW
SEC. 16, 15, 10, 3, 34, 27, 26, 23, 14, T112N & T113N, R20W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO. 01146979

DWG. NO. ROW3 F

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NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

CONSTRUCTION RIGHT-OF-WAY

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
100.94	101.37	SOUTH TO NORTH	FAR–P3–10 TO FAR–P3–11
101.43	101.84	SOUTH TO NORTH	FAR–P3–11 TO FAR–P3–12
101.93	102.44	SOUTHWEST TO NORTHEAST	FAR–P3–13 TO FAR–P3–14
103.17	104.54	SOUTHWEST TO NORTHEAST	FAR–P3–16 TO FAR–P3–20

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# MNB87703 | CONST. YR 2027
STA# N/A | POI# N/A N/A

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FILE NO.: N/A
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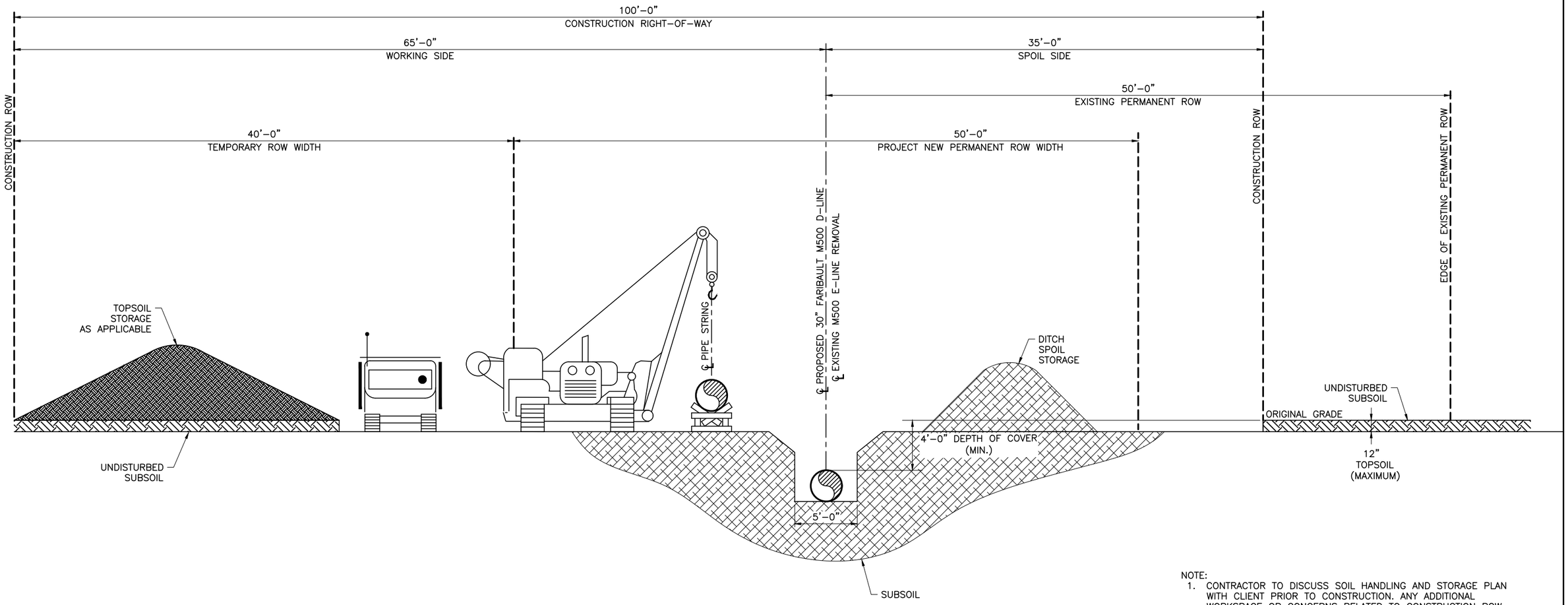
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
CONSTRUCTION ROW
SEC. 16, 15, 10, 3, 34, 27, 26, 23, 14, T112N & T113N, R20W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO. 01146979

DWG. NO. ROW4 F

Chan, Ginger 2/19/2026 11:46AM N:\ENG V2F\8_RW CONFIGURATION\FAR\FAR ROW4.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
104.54	104.88	SOUTHWEST TO NORTHEAST	FAR–P3–20

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

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BID				
CONST.				

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PL# MNB87703		CONST. YR 2027	
STA# N/A		POI# N/A N/A	
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ASBUILT			
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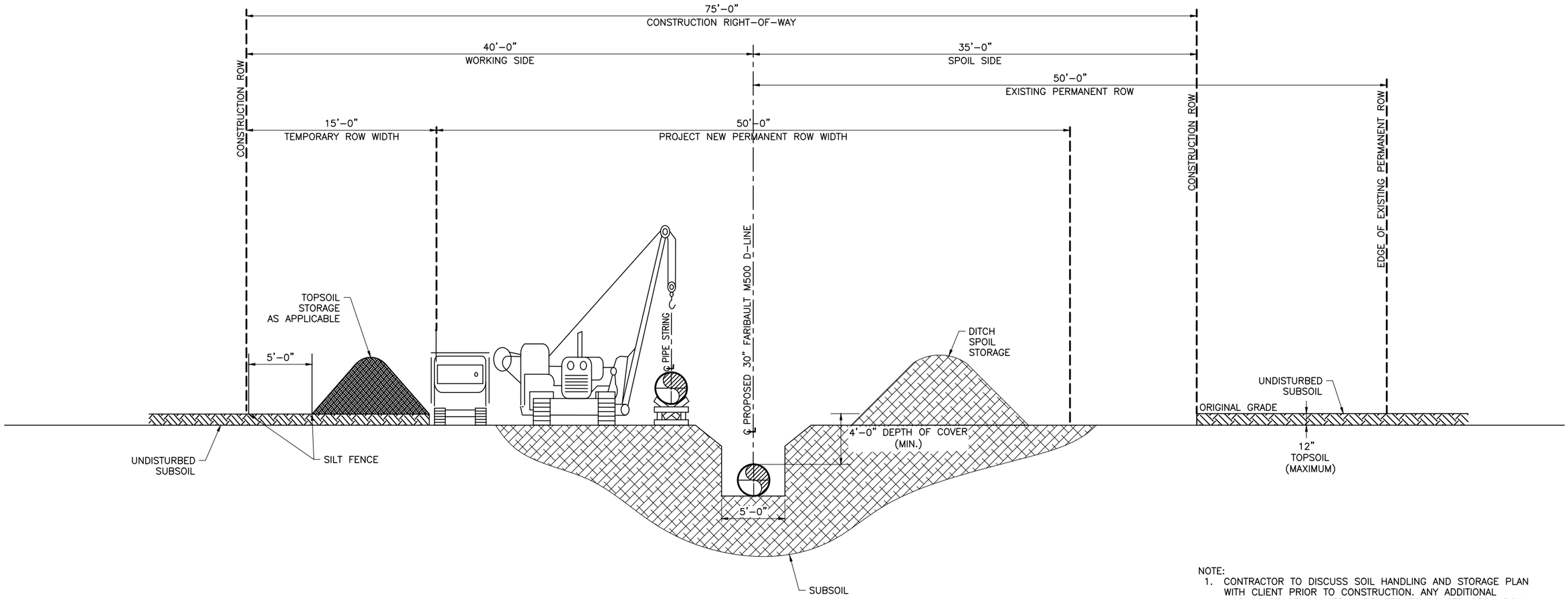
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
CONSTRUCTION ROW
SEC. 16, 15, 10, 3, 34, 27, 26, 23, 14, T112N & T113N, R20W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO. 01146979

DWG. NO. ROW5 F

Chan, Ginger 2/19/2026 11:46AM N:\ENG V2F\8_RW CONFIGURATION\FAR\FAR ROW5.DWG



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
98.39	98.48	SOUTH TO NORTH	FAR–P3–3 TO FAR–P3–4

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# MNB87703 | CONST. YR 2027
STA# N/A | POI# N/A N/A

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DESIGN	ED	
DRAWN	JM	
ASBUILT		

FILE NO.: N/A
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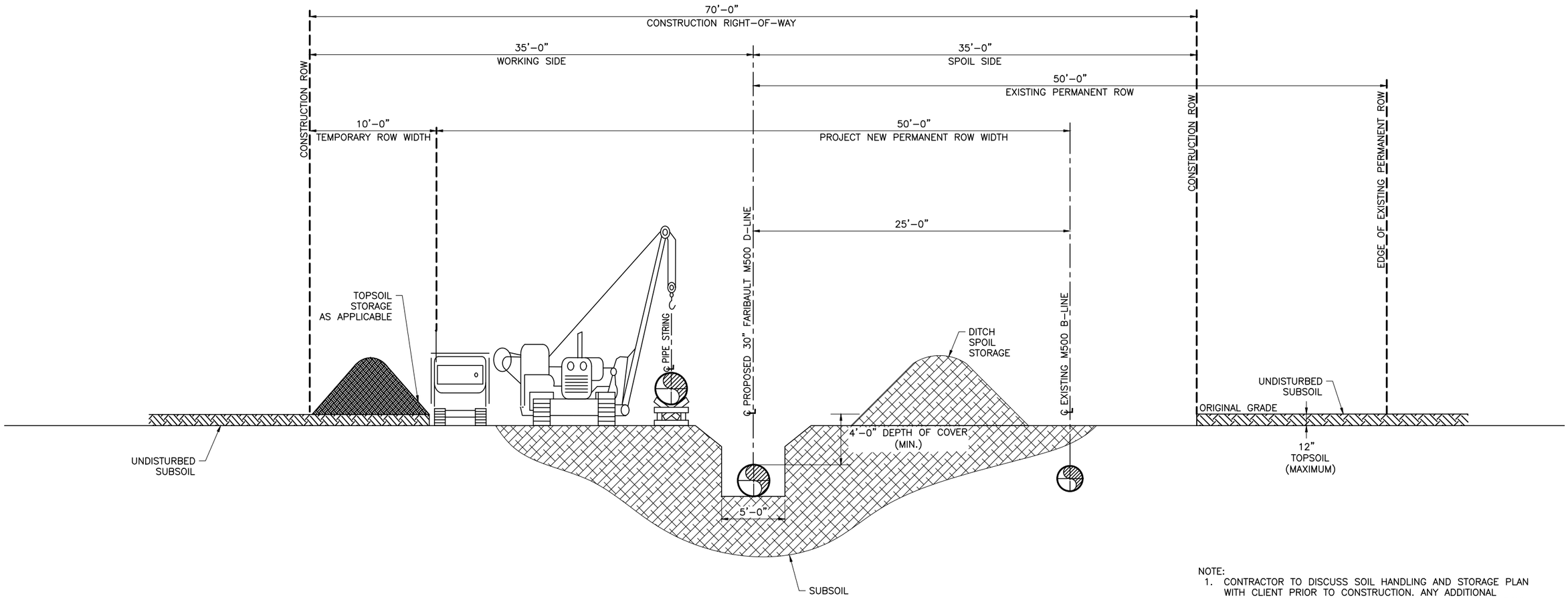
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
CONSTRUCTION ROW
SEC. 16, 15, 10, 3, 34, 27, 26, 23, 14, T112N & T113N, R20W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO. 01146979

DWG. NO. ROW6 F

Chan, Ginger 2/19/2026 11:46AM M:\ENG V2F\8_RW CONFIGURATION\FAR\FAR ROW6.DWG



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
101.37	101.43	SOUTH TO NORTH	FAR–P3–11

LEGEND

TOPSOIL

SUBSOIL

Figure 1-17

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

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PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# MNB87703 | CONST. YR 2027
STA# N/A | POI# N/A N/A

	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		

FILE NO.: N/A
SCALE: 1"=30'

V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
CONSTRUCTION ROW
SEC. 16, 15, 10, 3, 34, 27, 26, 23, 14, T112N & T113N, R20W
STEELE COUNTY, MINNESOTA

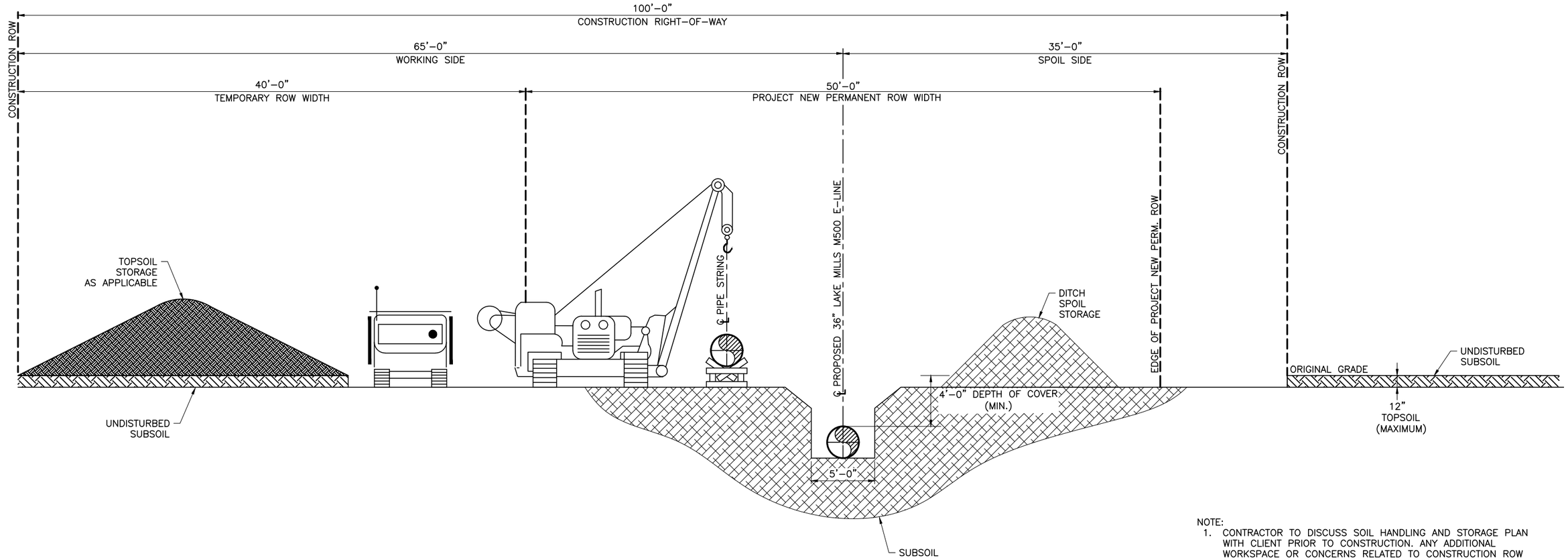
Northern Natural Gas.

PROJECT NO. 01146979

DWG. NO. ROW7 F

Chan, Ginger 2/19/2026 11:46AM N:\ENG V2F\8_RW CONFIGURATION\FAR\FAR ROW7.DWG

Figure 1-18
Typical ROW Cross-Sectional Diagrams (NL27 Project)



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
43.25	43.35	SOUTH TO NORTH	LMA–P3–3
44.05	44.57	SOUTH TO NORTH	LMA–P3–5 TO LMA–P3–6

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL# MNB87703		CONST. YR 2027
STA# N/A		POI# N/A N/A
	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		
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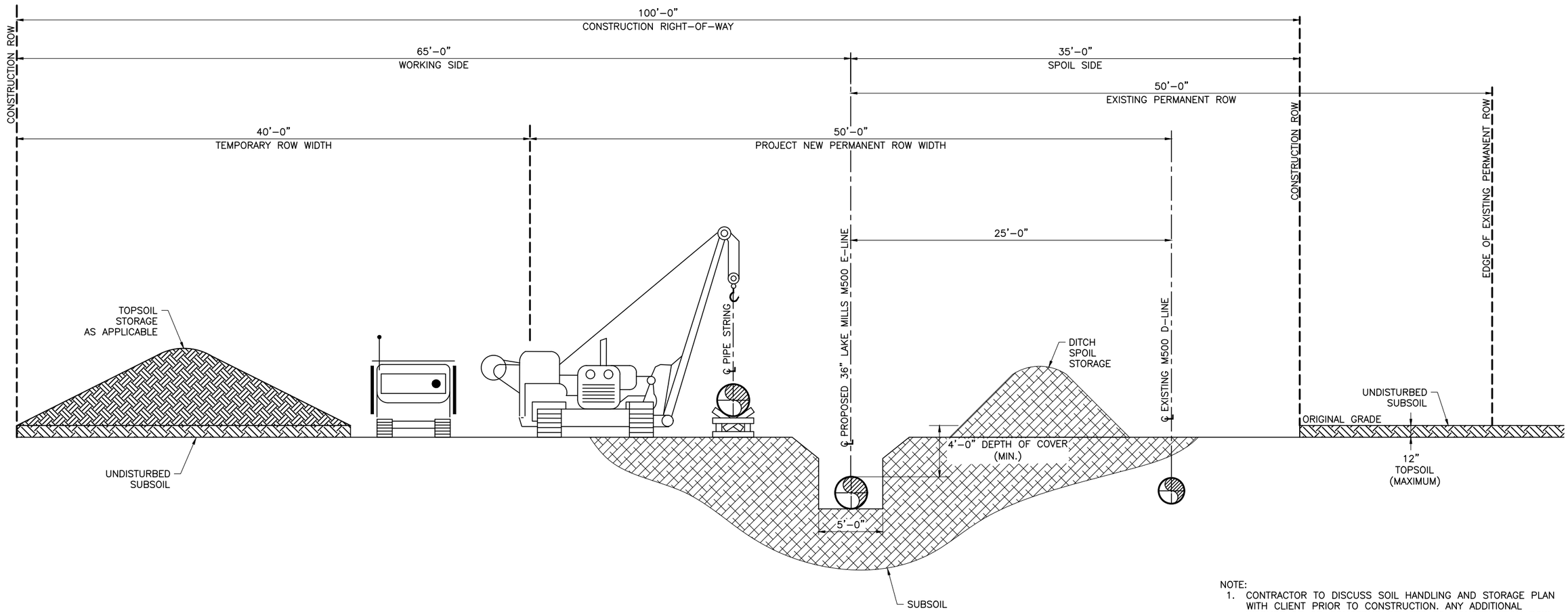
NORTHERN LIGHTS 2027 EXPANSION PROJECT
LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 24 & 13, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW1** F

Chan, Ginger 2/19/2026 1:02 PM N:\NNG 2027 NL\8_RW CONFIGURATION\LMA\LMA ROW1.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
42.50	42.55	SOUTH TO NORTH	LMA–P3–1
42.60	43.25	SOUTH TO NORTH	LMA–P3–1 TO LMA–P3–3
44.57	44.80	SOUTH TO NORTH	LMA–P3–6 TO LMA–P3–7

LEGEND

TOPSOIL

SUBSOIL

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NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
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PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
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STA# N/A | POI# N/A N/A

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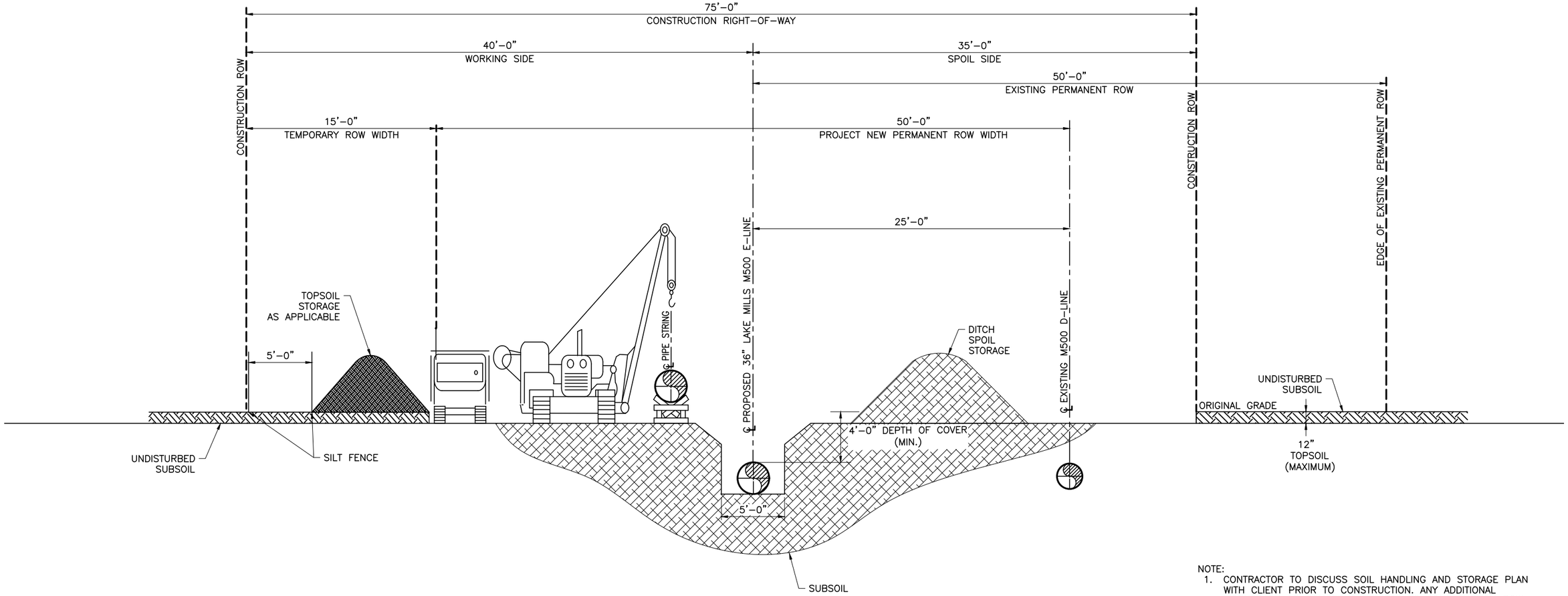
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NORTHERN LIGHT 2027 EXPANSION PROJECT
LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 24, 23 & 13 , T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW2** F



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND OR TREELINE

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
42.55	42.60	NORTH TO SOUTH	LMA–P3–1

LEGEND

TOPSOIL

SUBSOIL

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NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
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BID				
CONST.				

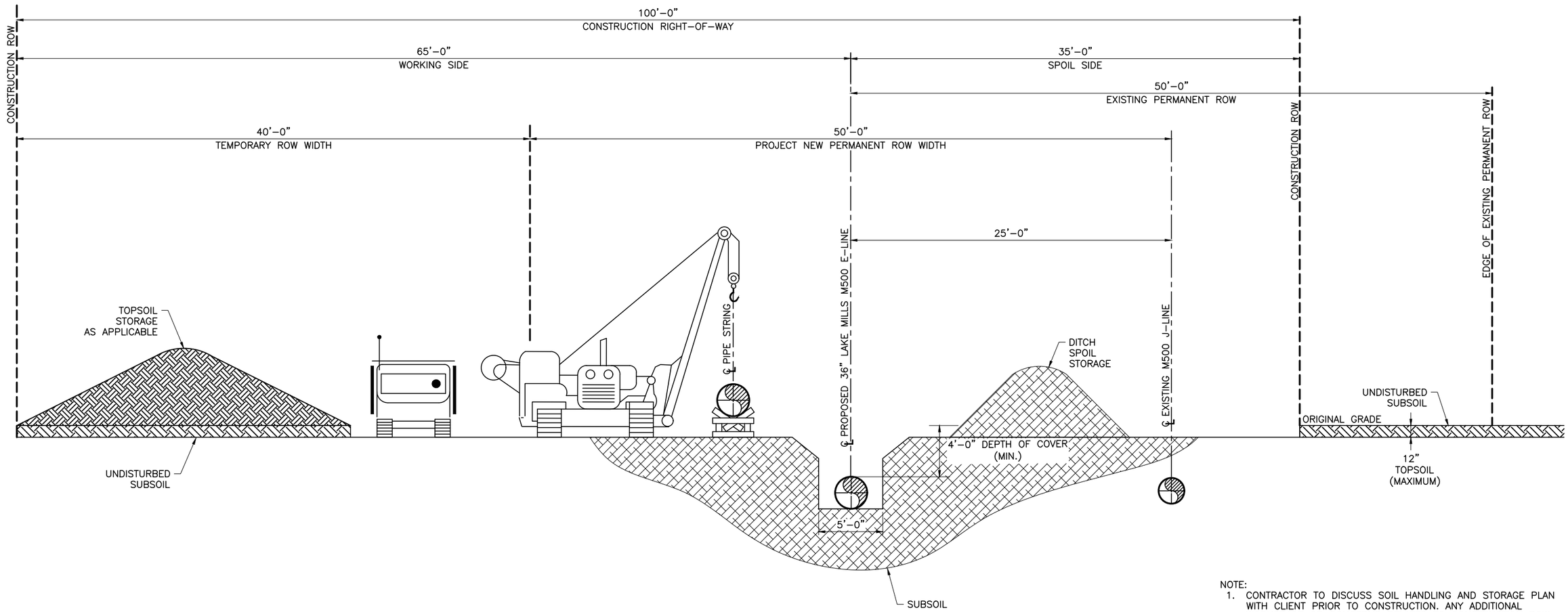
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DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
SCALE: 1"=30'			

NORTHERN LIGHTS 2027 EXPANSION PROJECT
LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 23, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
ROW3
F



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
43.35	43.82	SOUTH TO NORTH	LMA–P3–3 TO LMA–P3–4

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

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PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		POI# N/A N/A
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DESIGN	ED	
DRAWN	JM	
ASBUILT		
FILE NO.: N/A		
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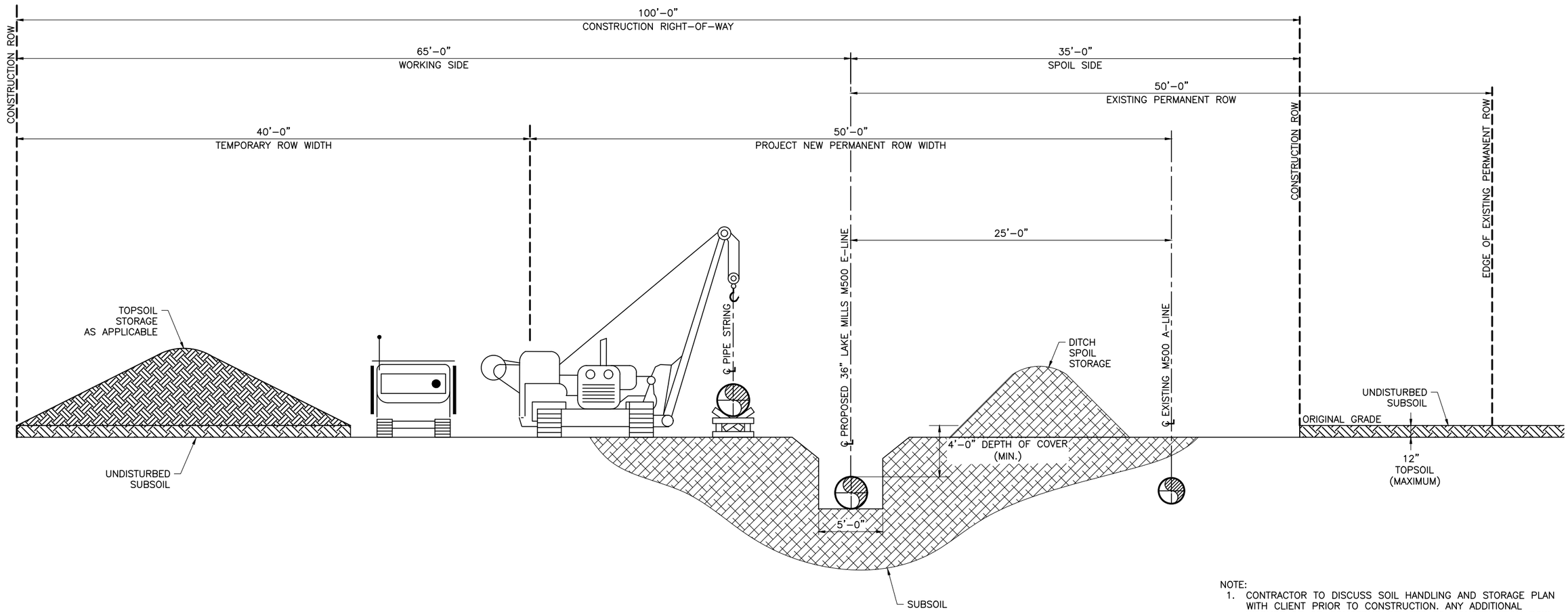
NORTHERN LIGHT 2027 EXPANSION PROJECT
LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 24, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW4** F

Chan, Ginger 1:1 11/19/2026 PATH\NNG 2027 NL\8_RW CONFIGURATION\LMA\LMA ROW2-5.DWG



NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

CONSTRUCTION RIGHT-OF-WAY

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
43.82	44.05	SOUTH TO NORTH	LMA–P3–4 TO LMA–P3–5

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
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BID				
CONST.				

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PL#		CONST. YR 2027
STA# N/A		POI# N/A N/A
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DESIGN	ED	
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ASBUILT		
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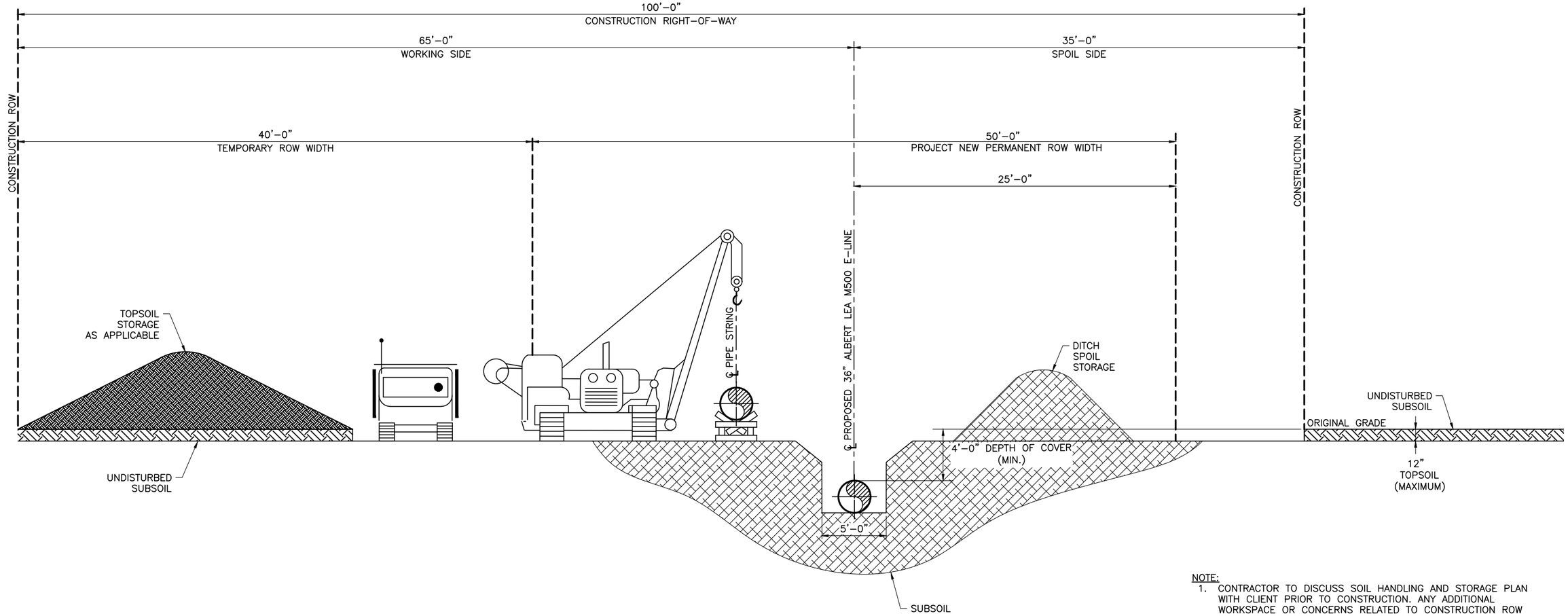
NORTHERN LIGHT 2027 EXPANSION PROJECT
LAKE MILLS M500 E-LINE
CONSTRUCTION ROW
SEC. 24, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW5** F

Chan, Ginger 1/19/2026 1:06 PM N:\NNG 2027 NL\8_RW CONFIGURATION\LMA\LMA ROW2-5.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
3.38	3.77	SOUTH TO NORTH	ALO–P3–1
3.81	4.12	SOUTH TO NORTH	ALO–P3–1 TO ALO–P3–2
4.33	4.58	SOUTH TO NORTH	ALO–P3–2 TO ALO–P3–3
5.05	5.58	SOUTH TO NORTH	ALO–P3–4 TO ALO–P3–6
6.25	6.49	SOUTH TO NORTH	ALO–P3–8

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		
	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		
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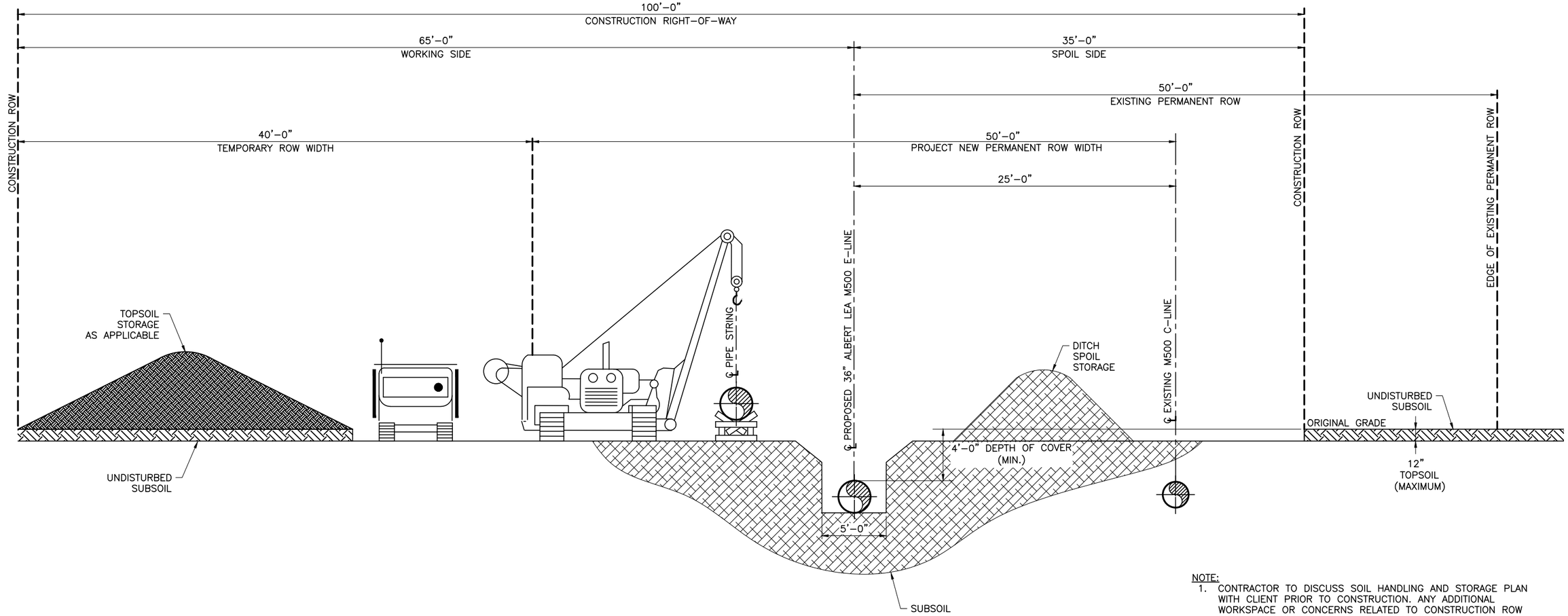
NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
CONSTRUCTION ROW
SEC. 20, 19, 17 & 8 T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW1** F

Chan, Ginger 2/19/2026 1:04 PM N:\NNG 2027 NL\8_RW CONFIGURATION\ALO\ALO ROW1



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
4.20	4.33	SOUTH TO NORTH	ALO–P3–2
4.58	5.05	SOUTH TO NORTH	ALO–P3–3 TO ALO–P3–4
5.58	6.25	SOUTH TO NORTH	ALO–P3–6 TO ALO–P3–7

LEGEND

TOPSOIL

SUBSOIL

Chan, Ginger 2/19/2026 1:12 PM I:\NNG 2027 NL\8_RW CONFIGURATION\ALO\ALO ROW2

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

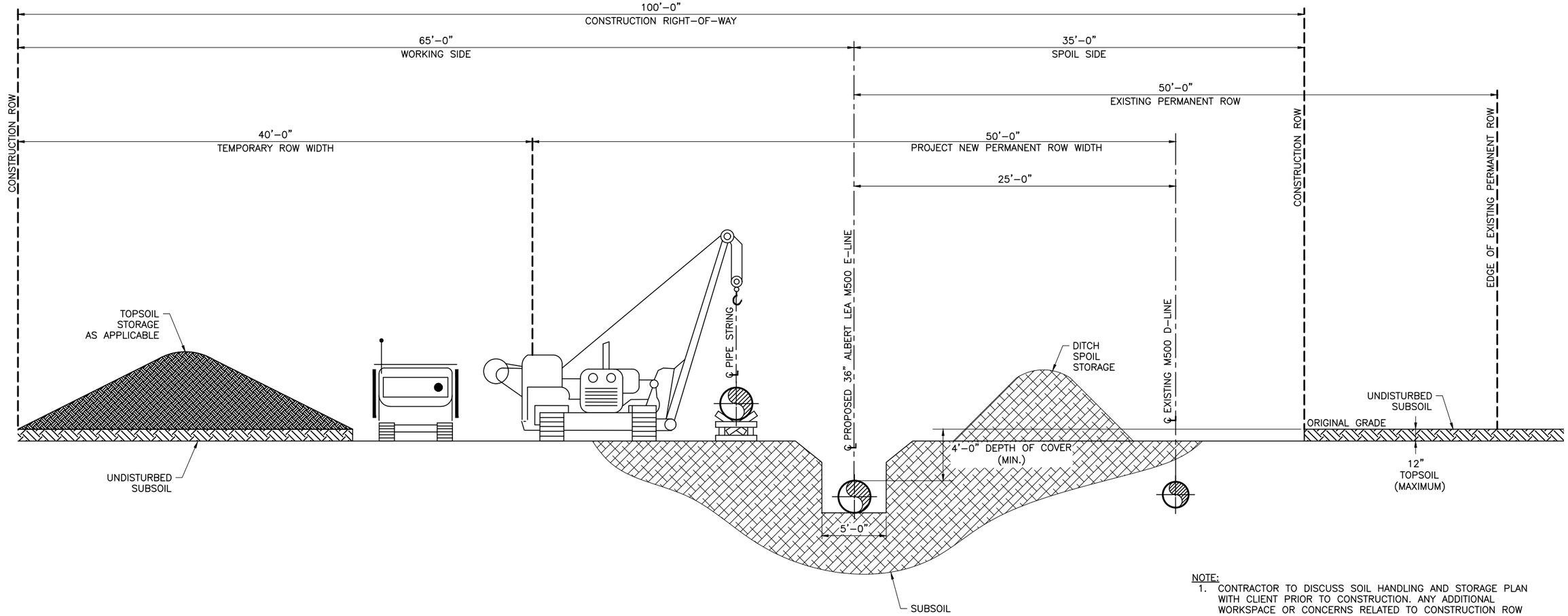
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PL#		CONST. YR 2027
STA# N/A		
	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		
FILE NO.: N/A		
SCALE: 1"=30'		

NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
CONSTRUCTION ROW
SEC. 20, 17 & 8 T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW2** F



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
6.49	7.04	NORTH TO SOUTH	ALO–P3–8 TO ALO–P3–10

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		
	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		
FILE NO.: N/A		
SCALE: 1"=30'		

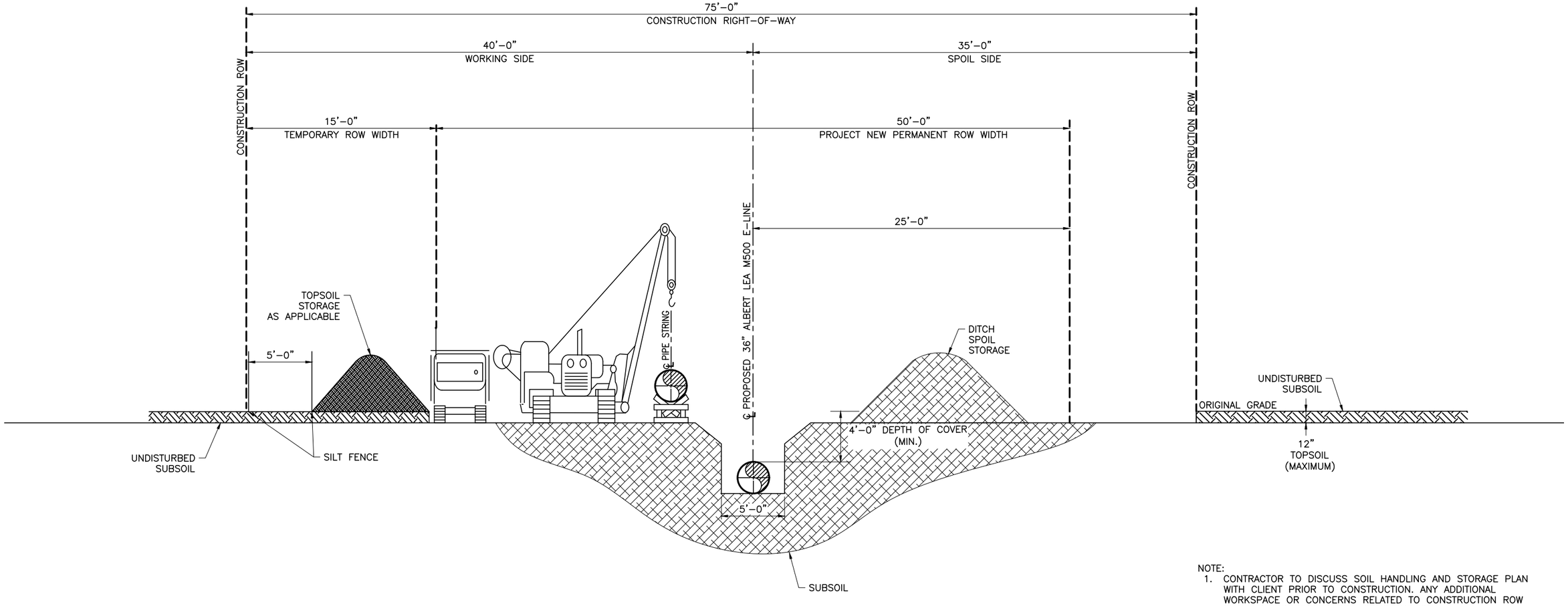
NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
CONSTRUCTION ROW
SEC. 8 & 5, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW3** F

Chan, Ginger 2/19/2026 1:06 PM I:\NNG 2027 NL\8_RW CONFIGURATION\ALO\ALO ROW3



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
3.77	3.81	SOUTH TO NORTH	ALO–P3–1

LEGEND

TOPSOIL

SUBSOIL

Chon, Ginger 2/19/2026 1:03 PM K:\NNG 2027 NL\8_RW CONFIGURATION\ALO\ALO ROW5

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# | CONST. YR 2027
STA# N/A

	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		

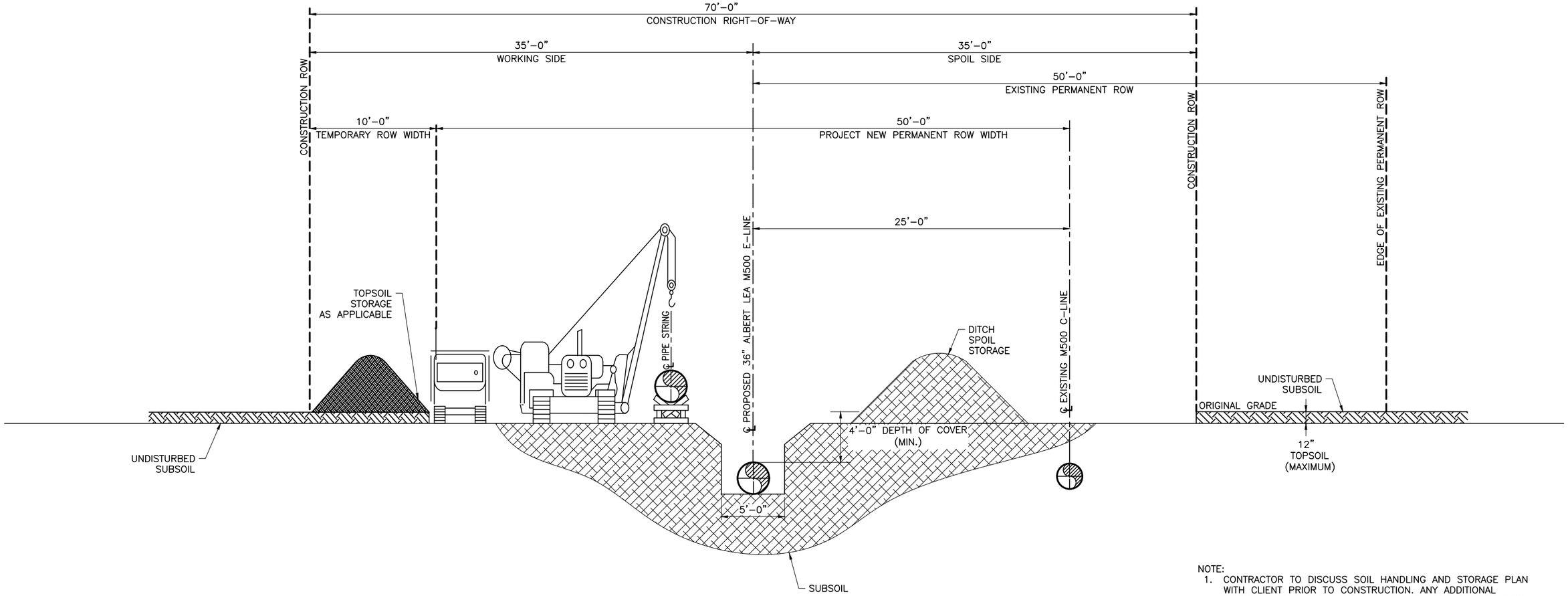
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NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
CONSTRUCTION ROW
SEC. 19, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW5** F



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
4.12	4.20	SOUTH TO NORTH	ALO–P3–2

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A			
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
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SCALE: 1"=30'			

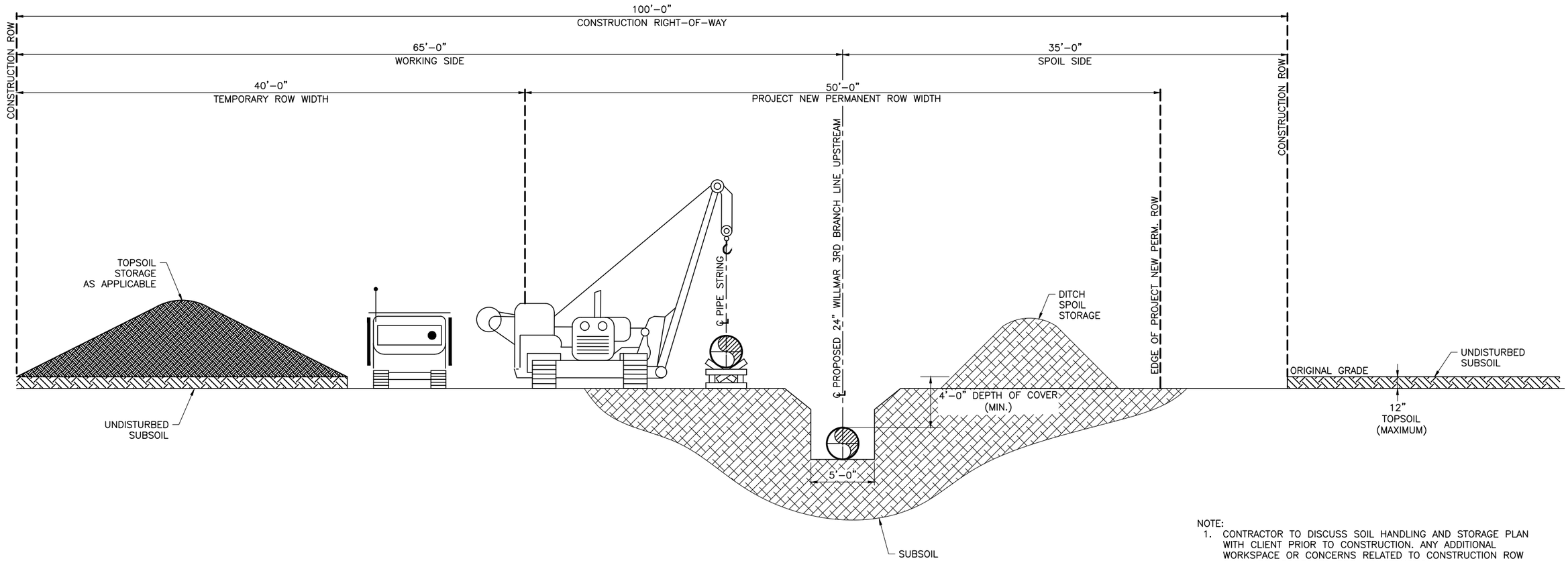
NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
CONSTRUCTION ROW
SEC. 20, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
ROW4
F

Chan, Ginger 2/19/2026 1:07 PM:\NNG 2027 NL\8_RW CONFIGURATION\ALO\ALO ROW4



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE-CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
3.35	3.41	EAST TO WEST	WIL-P3-1
4.13	5.02	WEST TO EAST	WIL-P3-3 TO WIL-P3-5

LEGEND

TOPSOIL

SUBSOIL

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NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

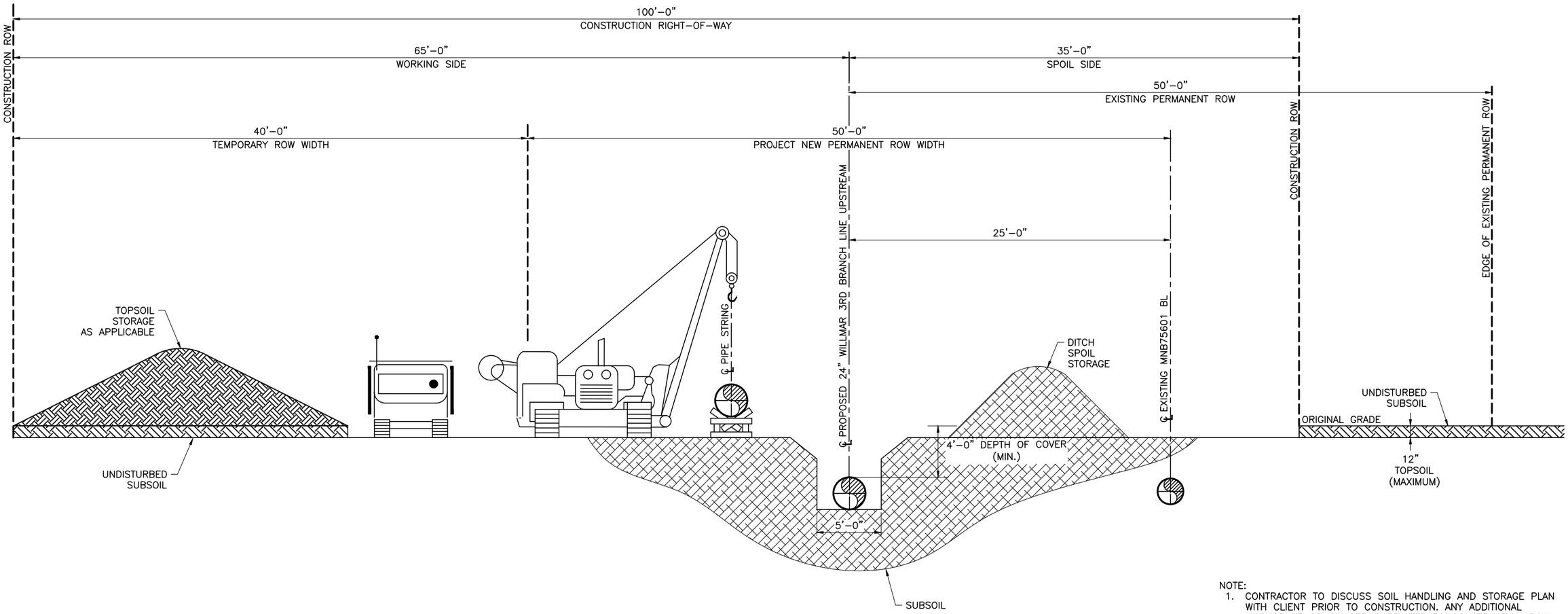
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PL#		CONST. YR 2027	
STA# N/A		POI# N/A N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
SCALE: 1"=30'			

NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE UPSTREAM
CONSTRUCTION ROW
SEC. 20, T114N, R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.
A BERKSHIRE HATHAWAY ENERGY COMPANY

PROJECT NO.

DWG. NO.
ROW1
F



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
3.41	3.49	EAST TO WEST	WIL–P3–1
3.84	3.98	EAST TO WEST	WIL–P3–2

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
SCALE: 1"=30'			

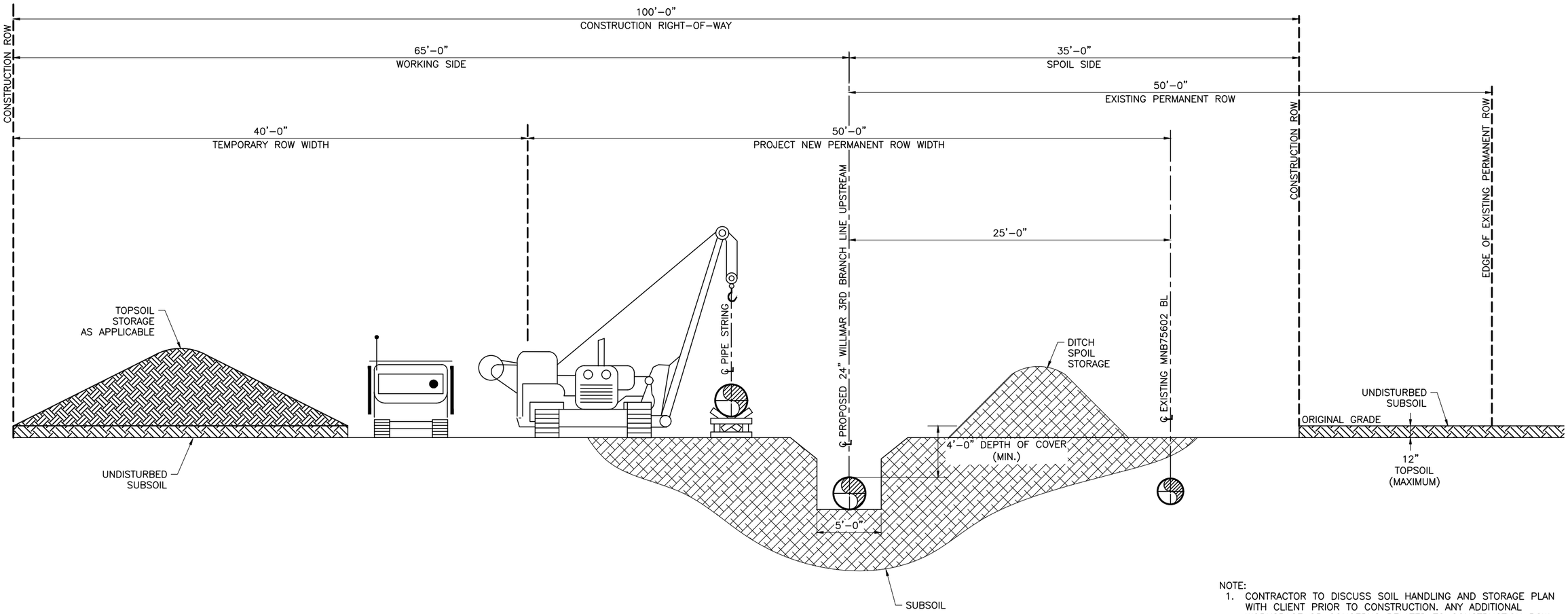
NORTHERN LIGHT 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE UPSTREAM
CONSTRUCTION ROW
SEC. 20 & 21, T114N, R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW2** F

Chan, Ginger 2/19/2026 1:04 PM NNG 2027 NL\8_RW CONFIGURATION\WIL\WIL ROW2–6.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
3.49	3.65	WEST TO EAST	WIL–P3–1 TO WIL–P3–2
3.74	3.84	WEST TO EAST	WIL–P3–2
3.98	4.01	WEST TO EAST	WIL–P3–3
4.11	4.13	WEST TO EAST	WIL–P3–3

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A N/A	
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DESIGN	ED		
DRAWN	JM		
ASBUILT			
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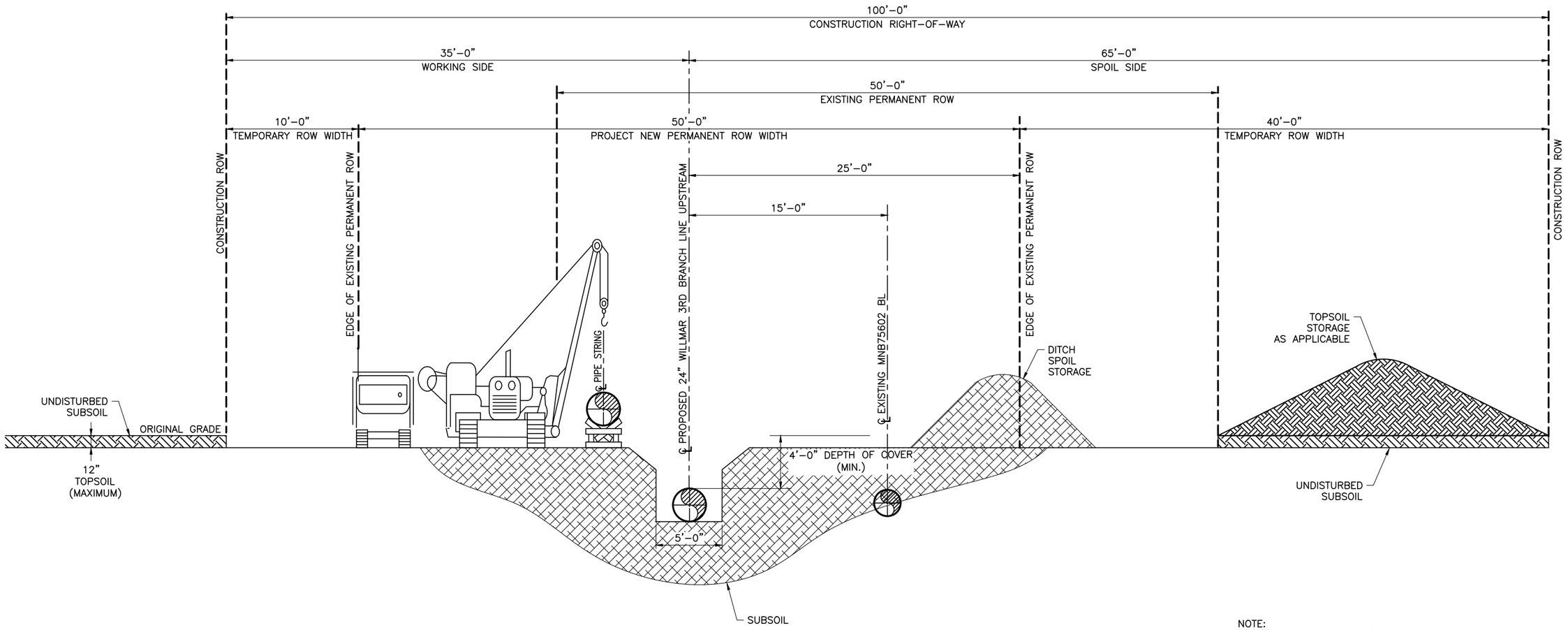
NORTHERN LIGHT 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE UPSTREAM
CONSTRUCTION ROW
SEC. 20 , T114N, R22W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW3** F

Chan, Ginger 2/19/2026 1:07 PM N:\NNG 2027 NL\8_RW CONFIGURATION\WIL\WIL ROW2–6.DWG



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
5.01	5.07	NORTH TO SOUTH	WIL–P3–5

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# | CONST. YR 2027
STA# N/A | POI# N/A N/A

	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		

FILE NO.: N/A
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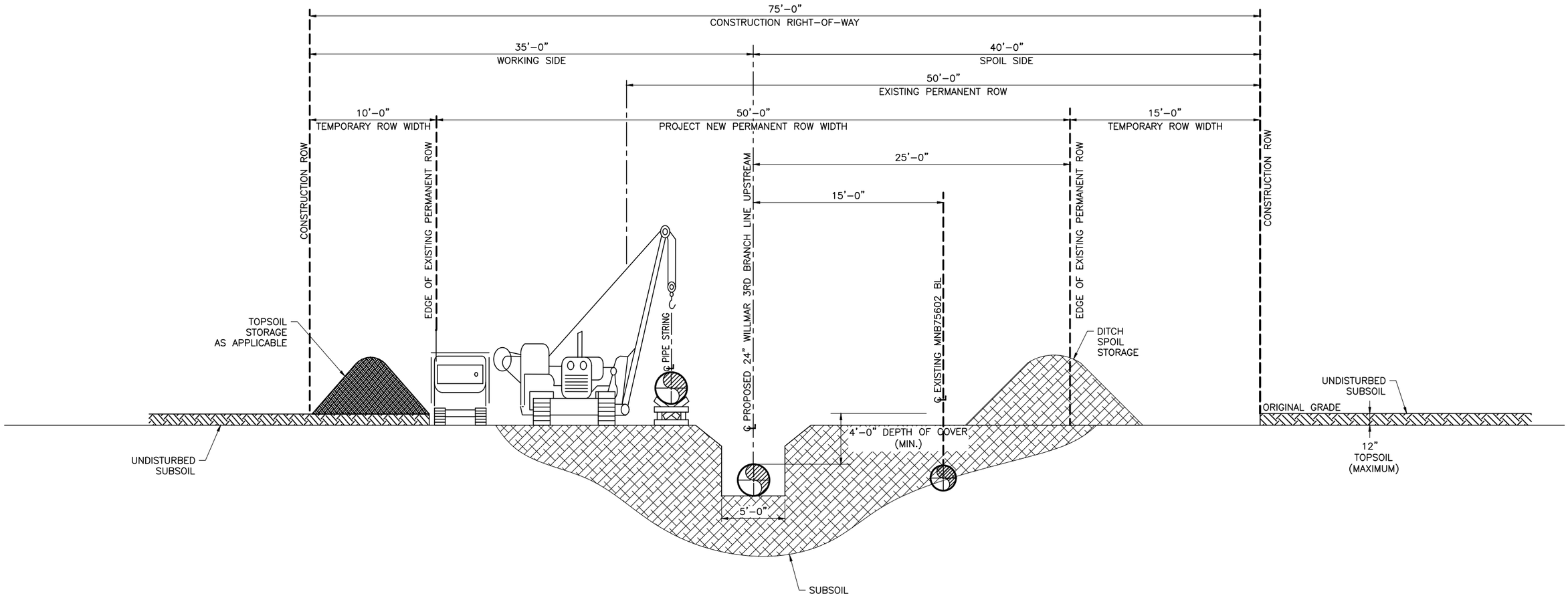
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE UPSTREAM
CONSTRUCTION ROW
SEC. 20, T114N, R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW6** F

Chan. Ginger 2/19/2026 1:12 PM NNG 2027 NL\8_RW CONFIGURATION\WIL\WIL ROW2–6.DWG



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
5.07	5.14	NORTH TO SOUTH	WIL–P3–5

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
SCALE: 1"=30'			

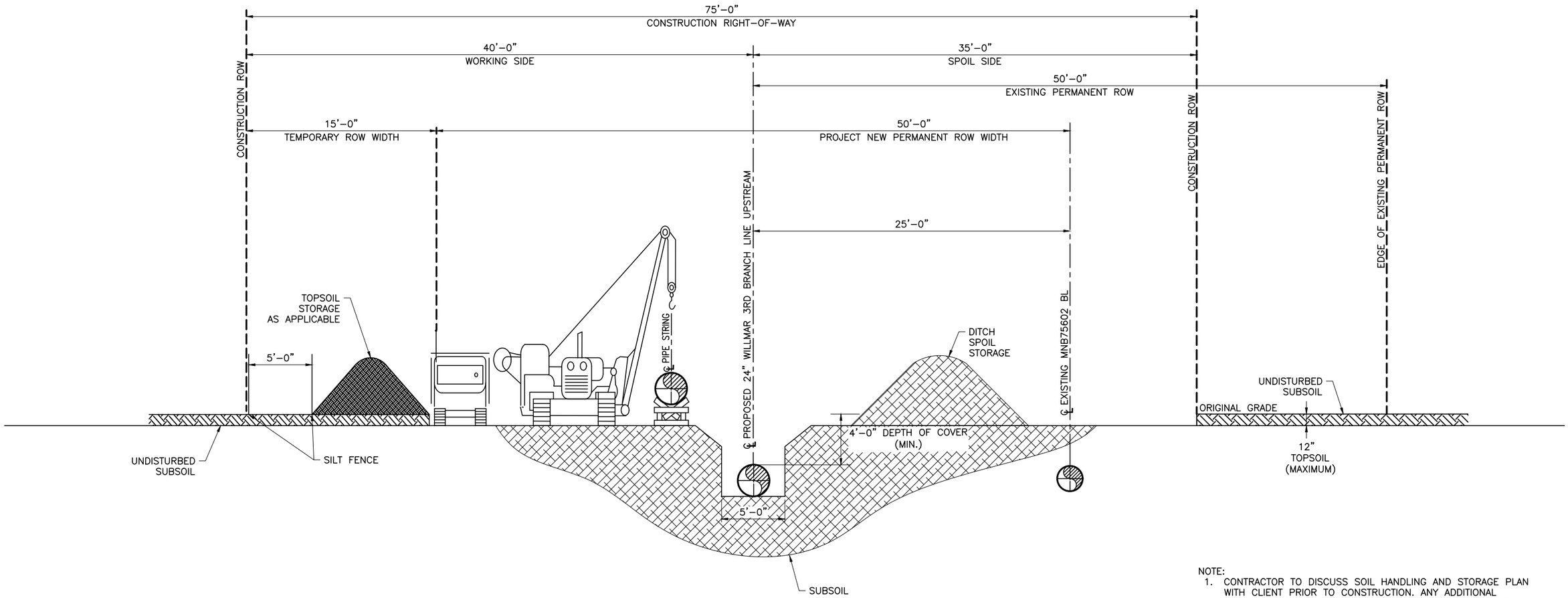
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE UPSTREAM
CONSTRUCTION ROW
SEC. 20, T114N, R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW6** F

Chan, Ginger 2/19/2026 1:04 PM J:\NNG 2027 NL\8_RW CONFIGURATION\WIL\WIL ROW2-6.DWG



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND OR TREELINE

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
3.65	3.74	WEST TO EAST	WIL–P3–2
4.01	4.11	WEST TO EAST	WIL–P3–3

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
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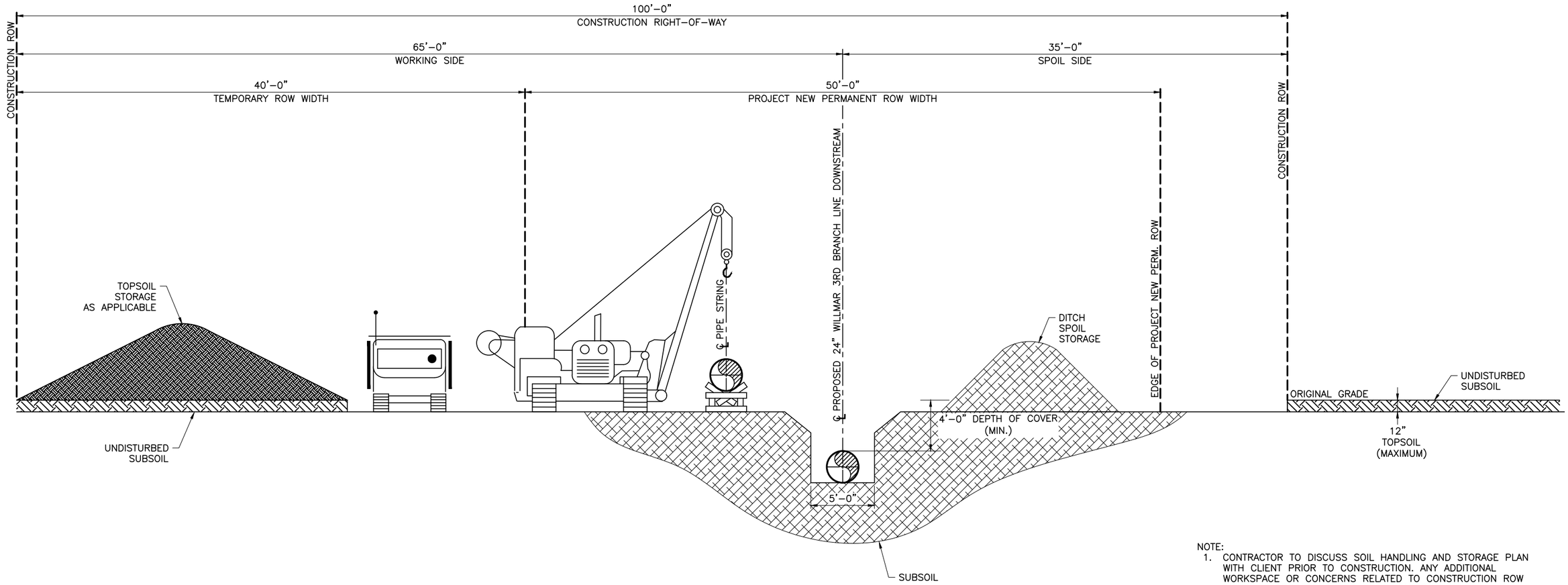
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE UPSTREAM
CONSTRUCTION ROW
SEC. 20, T114N, R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW4** F

Chan, Ginger 2/19/2026 1:03 PM NNG 2027 NL\8_RW CONFIGURATION\WIL\WIL ROW2–6.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
6.36	6.43	WEST TO EAST	WDC–P3–1
8.23	8.43	WEST TO EAST	WDC–P3–6
9.30	9.83	WEST TO EAST	WDC–P3–9 TO WDC–P3–10
9.93	10.42	EAST TO WEST	WDC–P3–10 TO WDC–P3–12
10.42	10.58	WEST TO EAST	WDC–P3–12
10.61	11.15	WEST TO EAST	WDC–P3–12 TO WDC–P3–13

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	1/12/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
SCALE: 1"=30'			

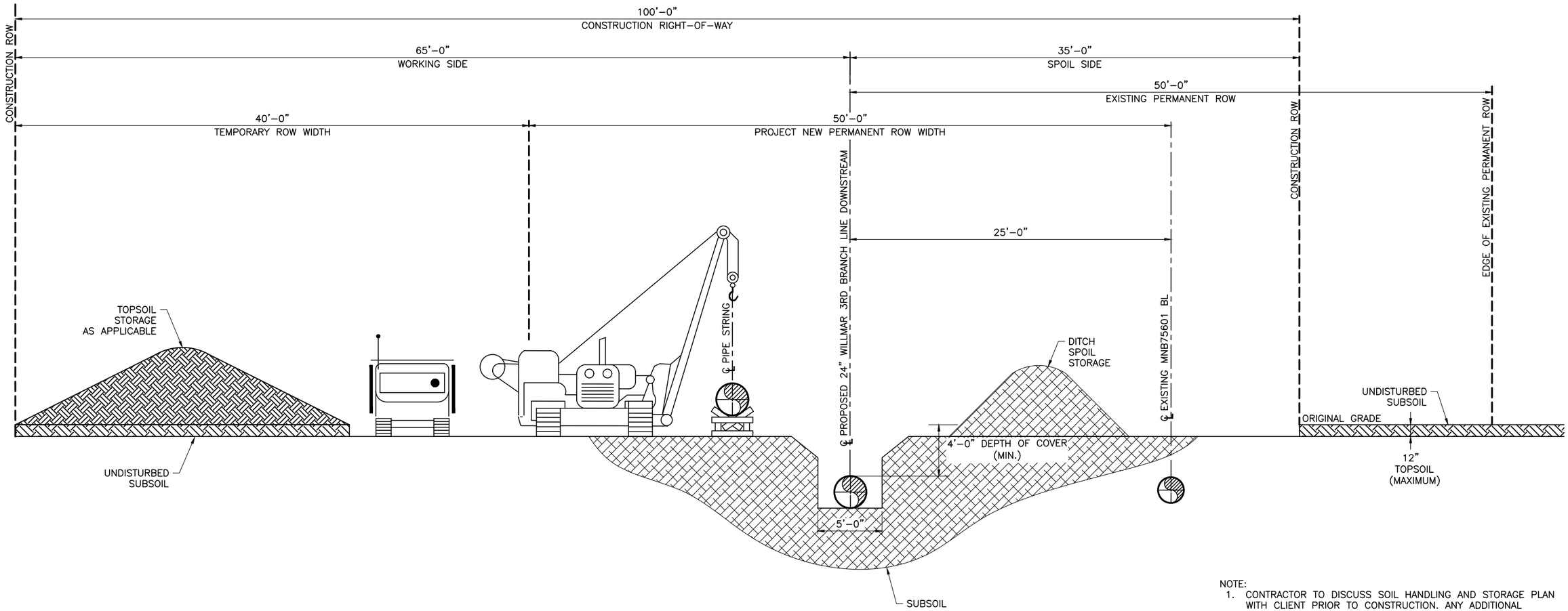
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD LINE BRANCH LINE DOWNSTREAM
CONSTRUCTION ROW
SEC. 5, 6, 1 & 36 T115N, R25W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW1** F

Chan, Ginger 2/19/2026 1:04 PM J:\NNG 2027 NL\8_RW CONFIGURATION\WDC\WDC ROW1.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
6.43	6.90	WEST TO EAST	WDC–P3–1 TO WDC–P3–2
6.98	7.38	WEST TO EAST	WDC–P3–2 TO WDC–P3–3
7.42	8.23	WEST TO EAST	WDC–P3–4 TO WDC–P3–6
8.43	8.95	WEST TO EAST	WDC–P3–6 TO WDC–P3–8
9.03	9.30	WEST TO EAST	WDC–P3–8 TO WDC–P3–9
9.83	9.93	WEST TO EAST	WDC–P3–10

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	1/12/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		POI# N/A N/A
	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		
FILE NO.: N/A		
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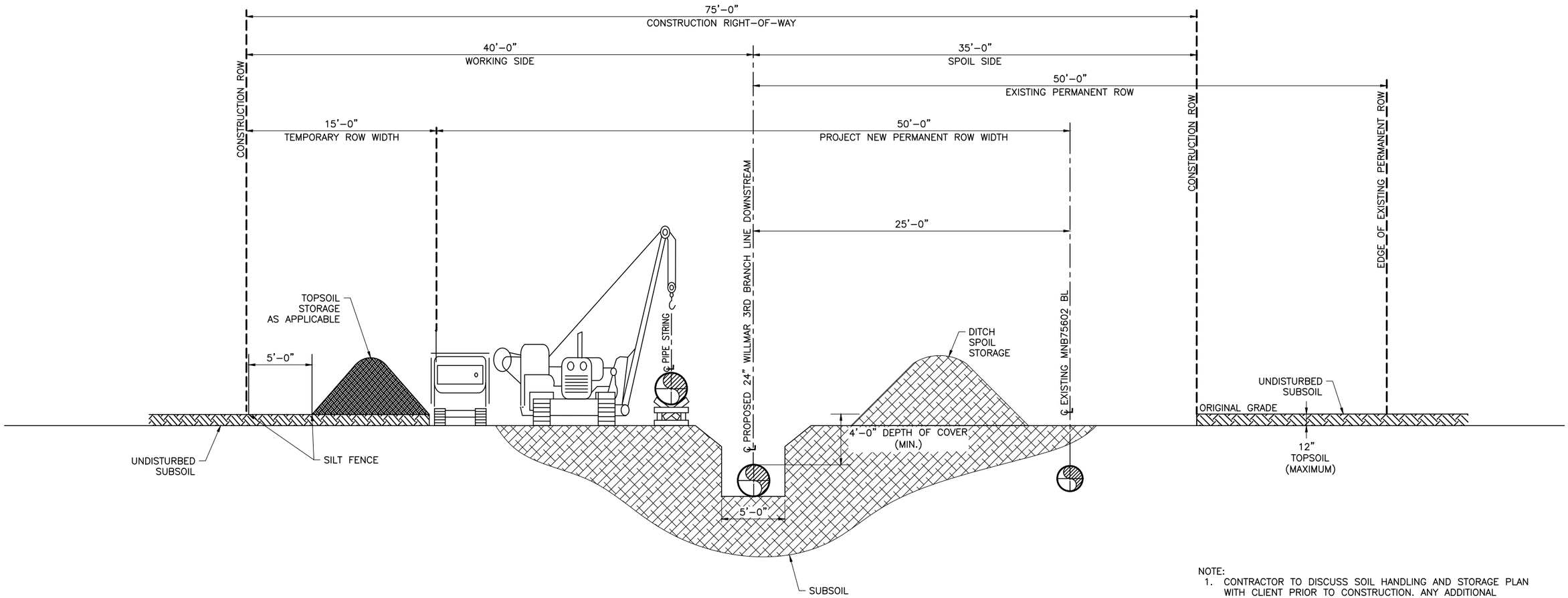
NORTHERN LIGHT 2027 EXPANSION PROJECT
WILLMAR 3RD LINE BRANCH LINE DOWNSTREAM
CONSTRUCTION ROW
SEC. 10, 9 , T115N, R25W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW2** F

Chan, Ginger 2/19/2026 1:02 PM N:\NNG 2027 NL\8_RW CONFIGURATION\WDC\WDC ROW2–3.DWG



CONSTRUCTION RIGHT-OF-WAY IN A WETLAND OR TREELINE

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
6.90	6.98	WEST TO EAST	WDC–P3–2
7.38	7.42	WEST TO EAST	WDC–P3–3 TO WDC–P3–4
8.95	9.03	WEST TO EAST	WDC–P3–8
10.58	10.61	WEST TO EAST	WDC–P3–12

LEGEND

TOPSOIL

SUBSOIL

Chan, Ginger 2/19/2026 1:10 PM NNG 2027 NL\8_RW CONFIGURATION\WDC\WDC ROW2–3.DWG

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	1/12/25	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# | CONST. YR 2027
STA# N/A | POI# N/A N/A

	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		

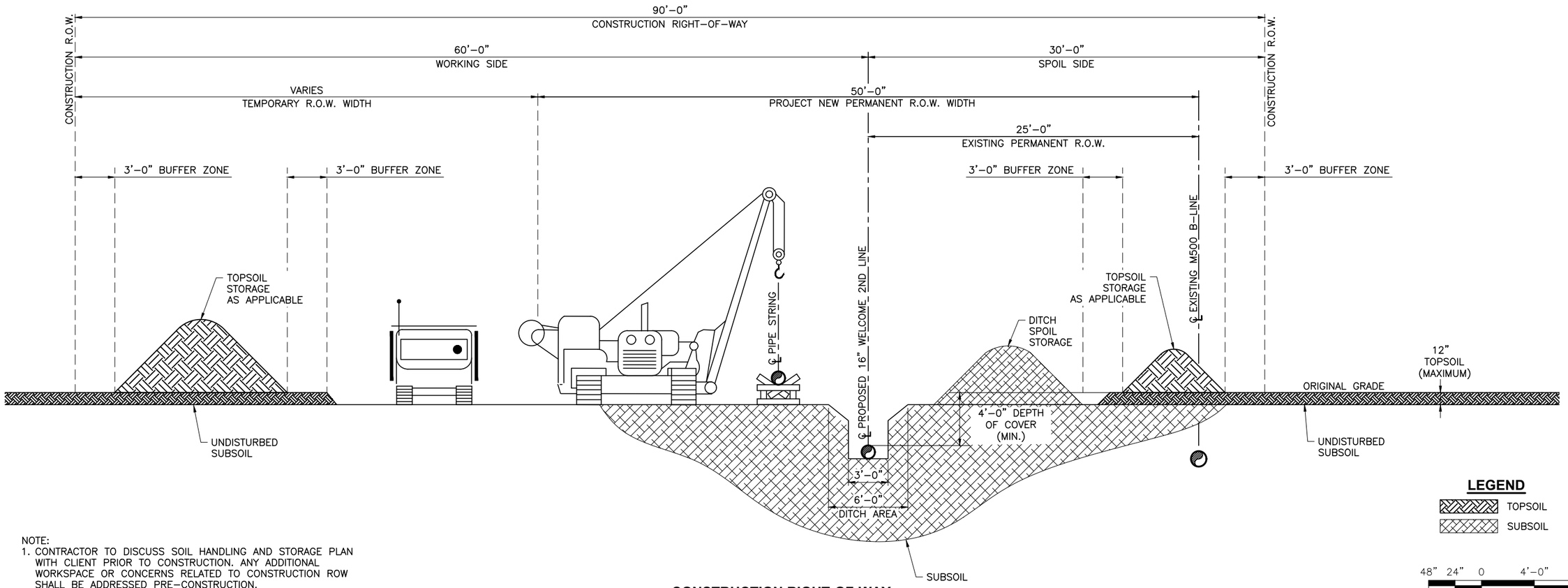
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NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
CONSTRUCTION ROW
SEC. 9 & 5 T115N, R25W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW3** F



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

48" 24" 0 4'–0" 8'–0"
SCALE: 1/4" = 1'–0"

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
10.48	11.70	WEST TO EAST	WBL–P3–1 TO WBL–P3–4

Chan, Ginger 2/19/2026 1:03 PM:\NNG 2027 NL\8_RW CONFIGURATION\WBL\WBL ROW1

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

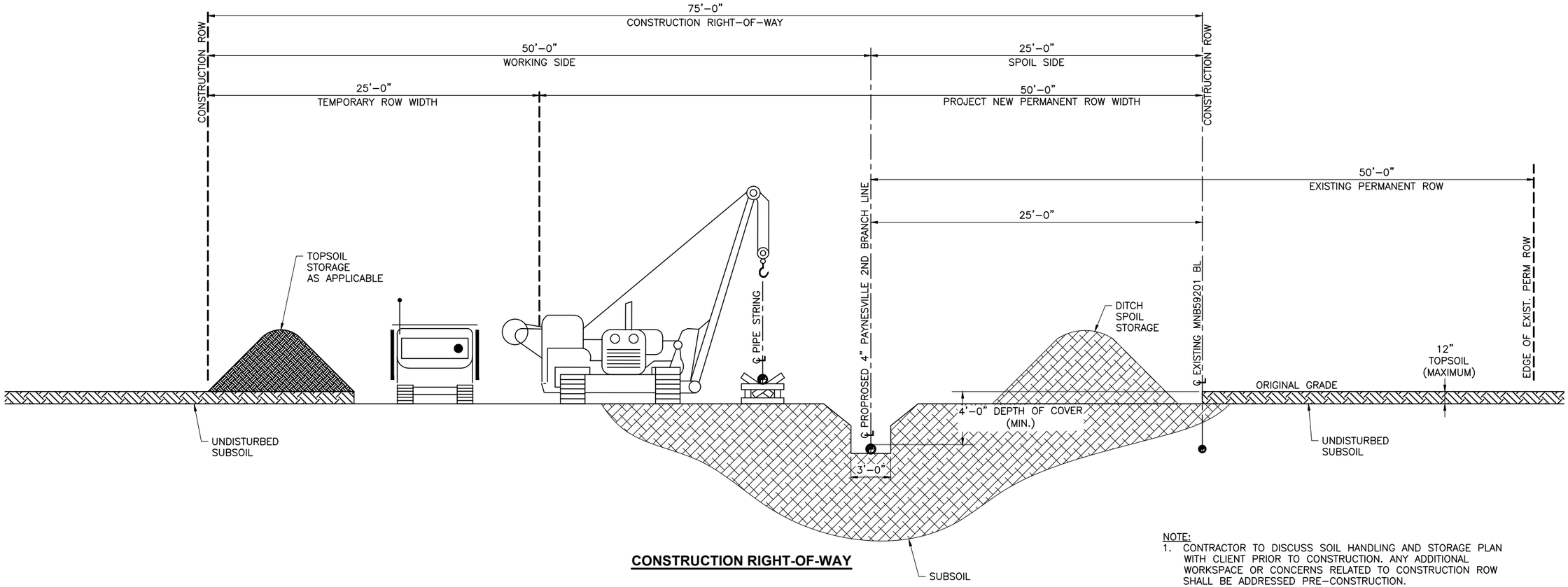
FAC. CODE: N/A
REL. W.O. N/A
PL#
CONST. YR 2027
STA# N/A

	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		

FILE NO.: N/A
SCALE: 1"=30'

NORTHERN LIGHTS 2027 EXPANSION PROJECT
WELCOME 2ND LINE
CONSTRUCTION ROW
SEC. 12 & 8, T101N, R33W
MARTIN COUNTY, MINNESOTA

Northern Natural Gas.
PROJECT NO.
DWG. NO. **ROW1** F



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
0.00	0.10	EAST TO WEST	PAY–P3–1
0.26	0.80	EAST TO WEST	PAY–P3–1 TO PAY–P3–3
0.80	1.42	WEST TO EAST	PAY–P3–3 TO PAY–P3–4
2.36	2.44	EAST TO WEST	PAY–P3–7

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
SCALE: 1"=30'			

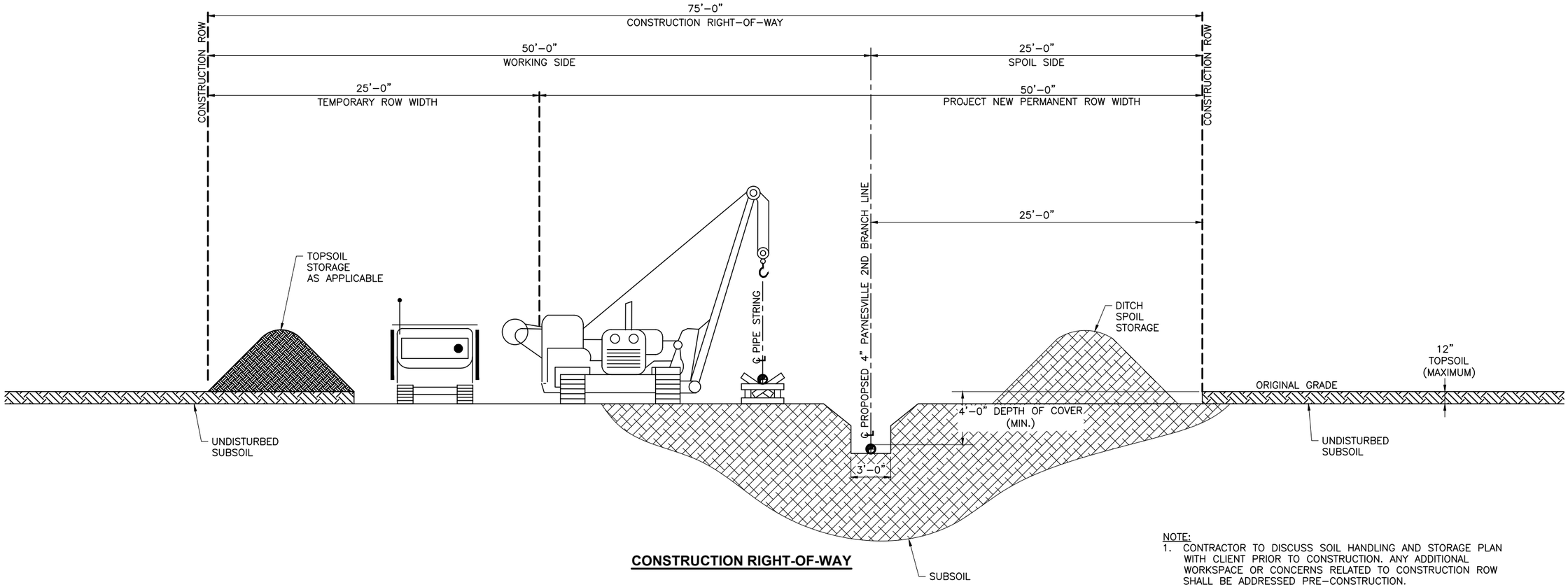
NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 22, 21, 28 & 29, T123N, R31W
STEARNS COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW1** F

Chan, Ginge 2/19/2026 1:06 PM N:\NNG 2027 NL\8_RW CONFIGURATION\PAY\PAY ROW1.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
1.42	1.54	WEST TO EAST	PAY–P3–4 TO PAY–P3–5
1.65	2.36	WEST TO EAST	PAY–P3–5 TO PAY–P3–7

LEGEND

TOPSOIL

SUBSOIL

Chan, Ginge 2/19/2026 1:10 PM NNG 2027 NL\8_RW CONFIGURATION\PAY\PAY ROW2.DWG

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
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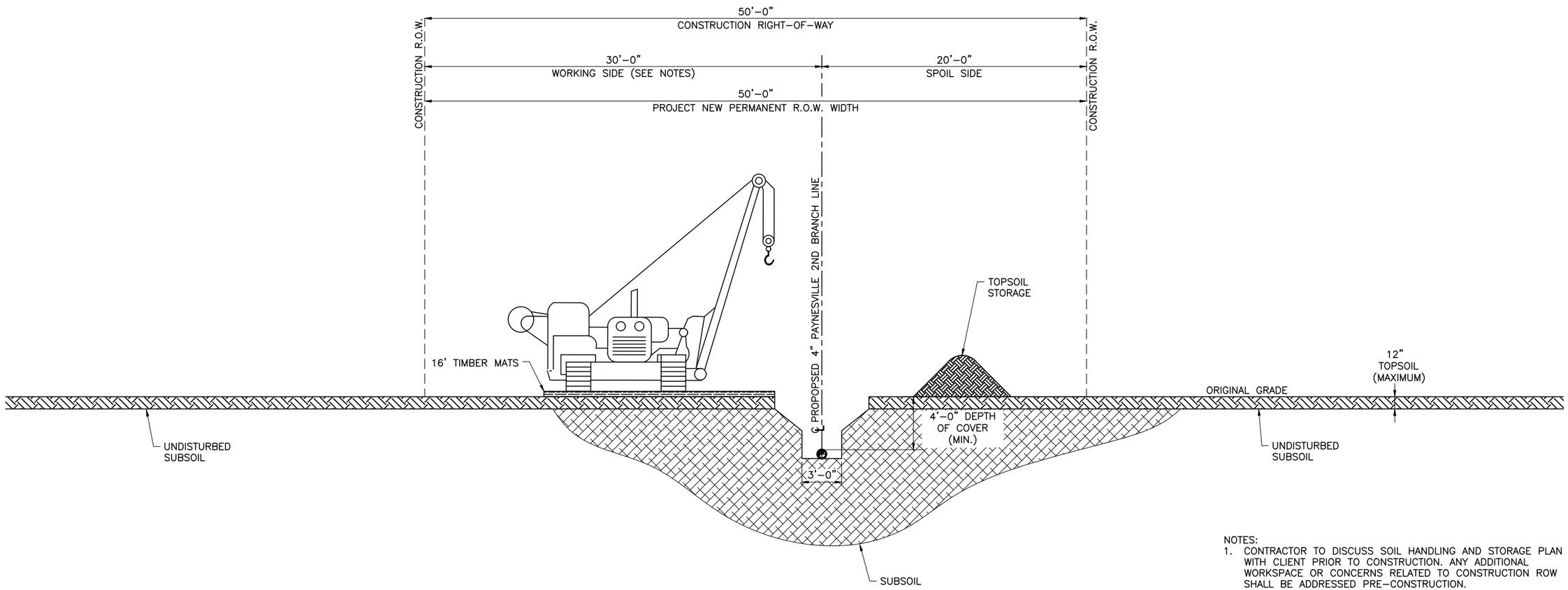
NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 28 & 29, T123N, R31W
STEARNS COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
ROW2

F



NOTES:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE-CONSTRUCTION.
2. DUE TO A REDUCED CONSTRUCTION RIGHT OF WAY WIDTH, SUBSOIL WILL BE STORED ON TIMBER MATS OR TRANSPORTED TO ADJACENT UPLANDS FOR STORAGE.

CONSTRUCTION RIGHT-OF-WAY WITHIN A WETLAND OR TREELINE

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
0.14	0.16	EAST TO WEST	PAY-P3-1

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A	REL. W.O. N/A
PL#	CONST. YR 2027
STA# N/A	POI# N/A
	BY / DATE
DESIGN	ED
DRAWN	JM
ASBUILT	
FILE NO.: N/A	
SCALE: 1"=30'	

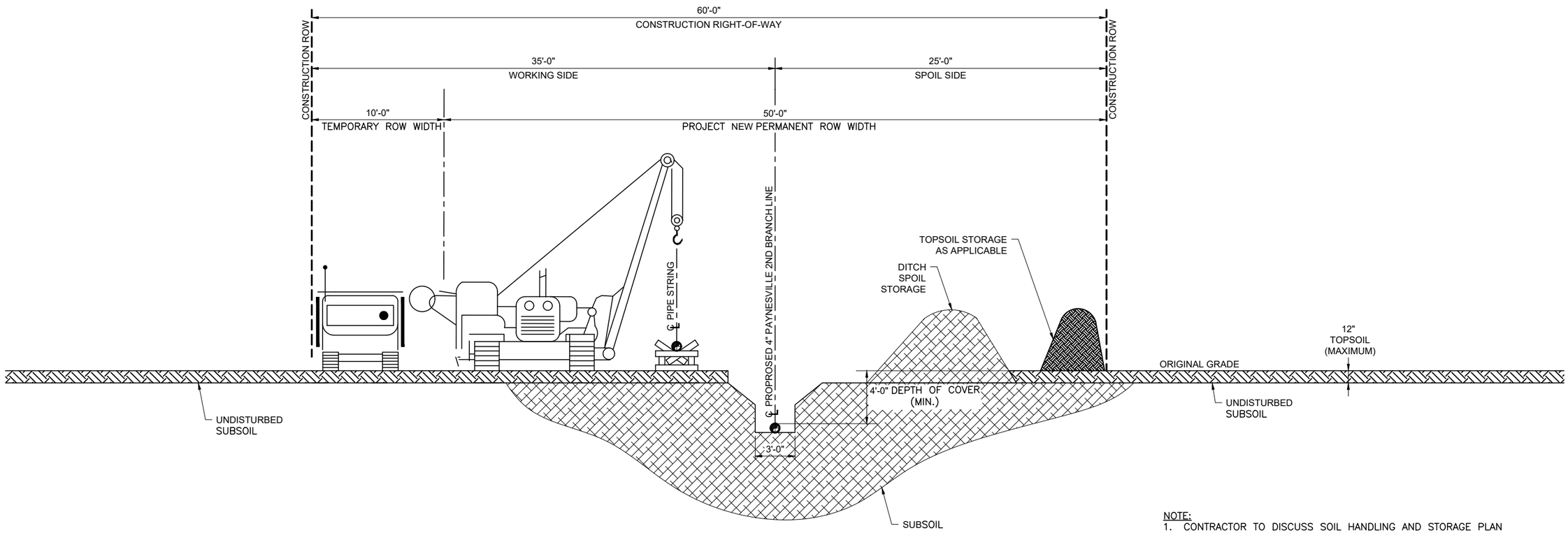
NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 22, T123N, R31W
STEARNS COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW3** F

Chan, Ginger 2/19/2026 1:11 PM NNG 2027 NL\8_RW CONFIGURATION\PAY\PAY ROW3.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
0.16	0.26	EAST TO WEST	PAY–P3–1
1.54	1.65	WEST TO EAST	PAY–P3–5

LEGEND

TOPSOIL

SUBSOIL

Chan, Ginger 2/19/2026 1:07 PM M:\NNG 2027 NL\8_RW CONFIGURATION\PAY\PAY ROW4.DWG

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		PO# N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
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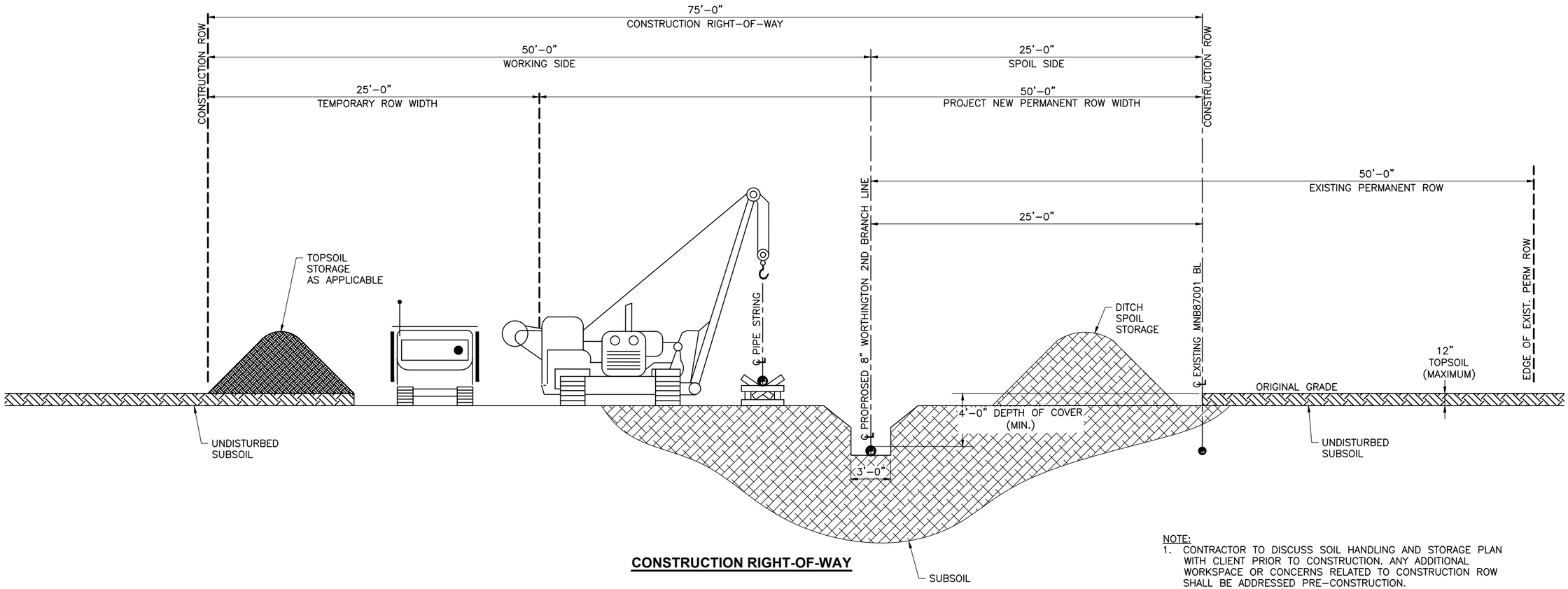
NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 28, T123N, R31W
STEARNS COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
ROW4

F



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
19.34	20.55	EAST TO WEST	WOR–P3–1 TO WOR–P3–4
20.90	21.51	EAST TO WEST	WOR–P3–5 TO WOR–P3–6

LEGEND

TOPSOIL

SUBSOIL

Chan, Ginge 2/19/2026 1:05 PM NNG 2027 NL\8_RW CONFIGURATION\WOR\WOR ROW1.DWG

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		
FILE NO.: N/A		
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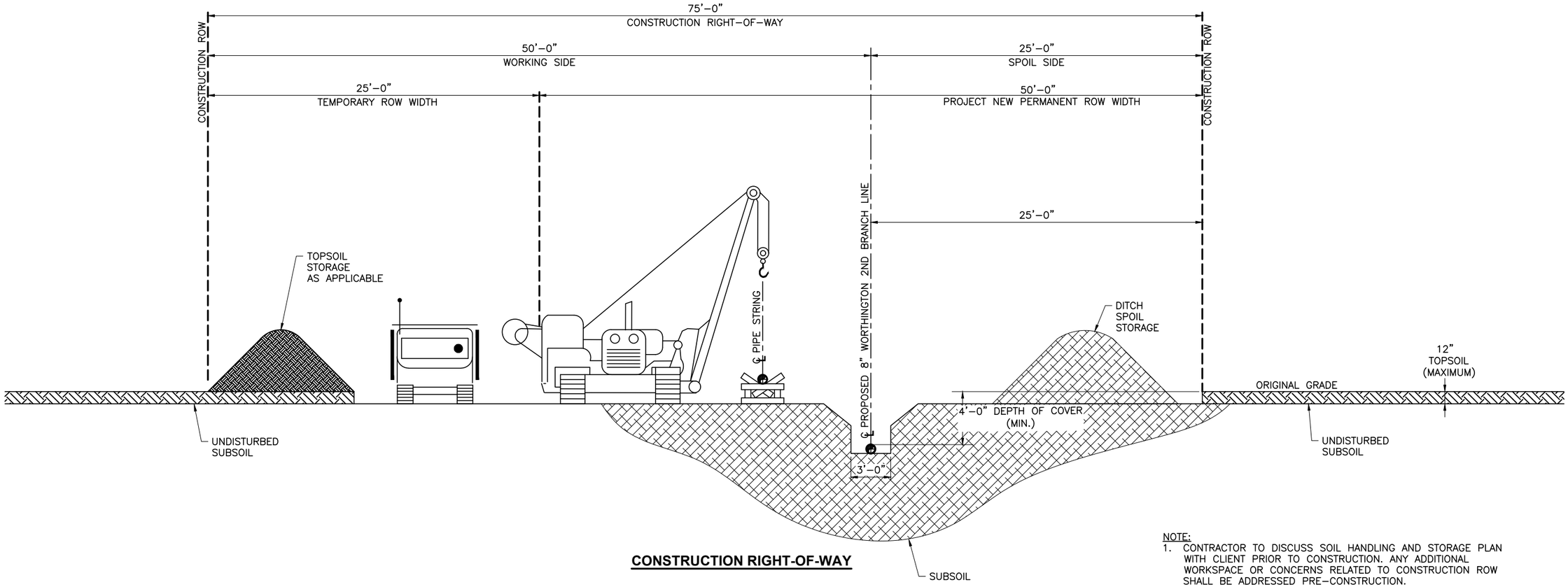
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WORTHINGTON 2ND BRANCH LINE EXTENSION
CONSTRUCTION ROW
SEC. 29, 30 & 30, T102N, R36W
JACKSON COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
ROW1

F



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
20.55	20.90	EAST TO WEST	WOR–P3–4 TO WOR–P3–5

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
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SCALE: 1"=30'			

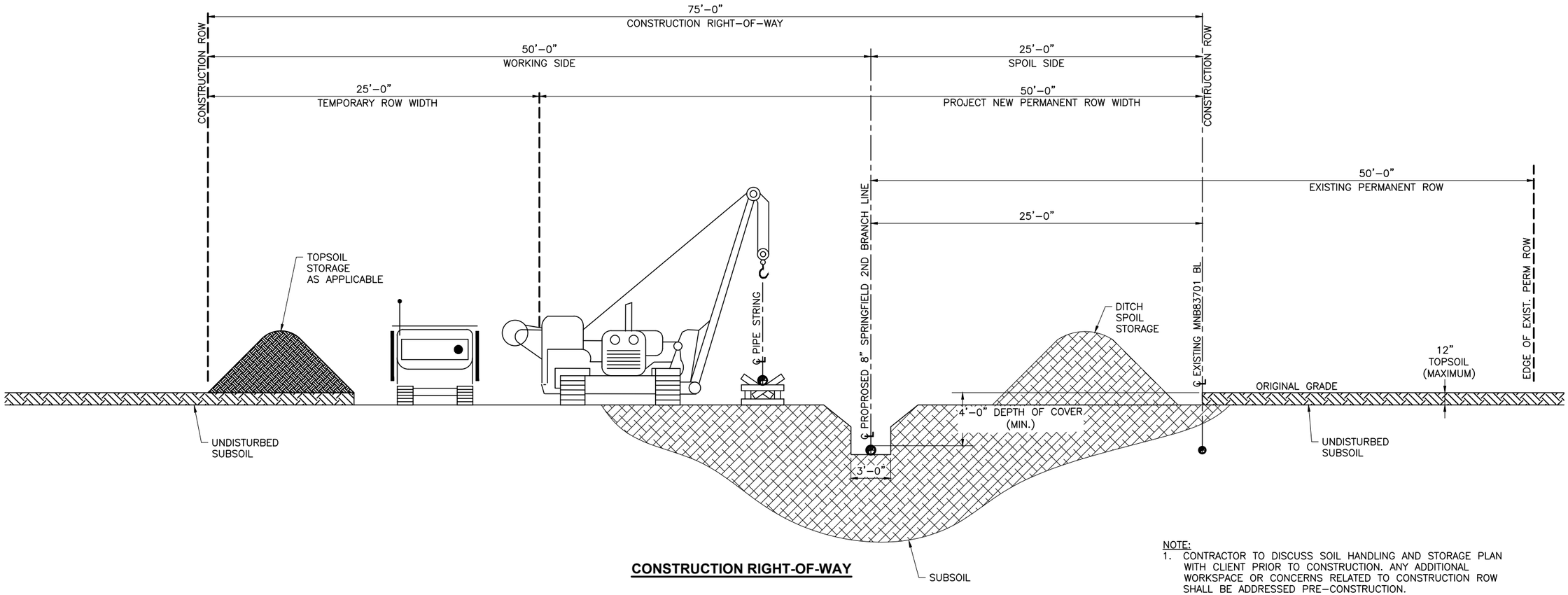
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WORTHINGTON 2ND BRANCH LINE EXTENSION
CONSTRUCTION ROW
SEC. 30, T102N, R36W
JACKSON COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW2** F

Chan, Ginge 2/19/2026 1:11 PM J:\NNG 2027 NL\8_RW CONFIGURATION\WOR\WOR ROW2.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
13.81	15.75	EAST TO WEST	SPR–P3–1 TO SPR–P3–6
16.52	17.59	EAST TO WEST	SPR–P3–8 TO SPR–P3–10
18.11	21.06	EAST TO WEST	SPR–P3–12 TO SPR–P3–20

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		PO# N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
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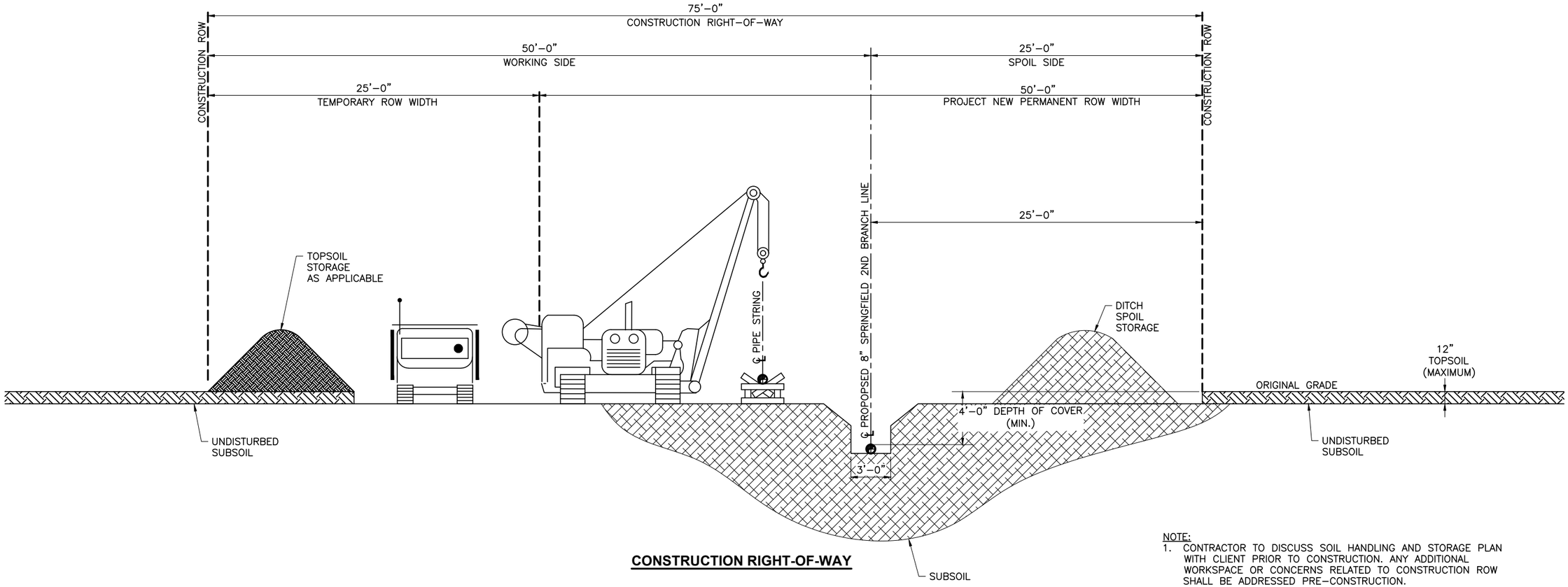
NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 34, 33, 28, 20, 18, 17, 12 & 1, T107N, R31W
WATONWAN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW1** F

Chan, Ginger 2/19/2026 1:12 PM NNG 2027 NL\8_RW CONFIGURATION\SPR\SPR ROW1.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
15.75	16.52	EAST TO WEST	SPR–P3–6 TO SPR–P3–8
17.59	18.11	EAST TO WEST	SPR–P3–10 TO SPR–P3–12
21.06	21.23	EAST TO WEST	SPR–P3–20

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A	REL. W.O. N/A
PL#	CONST. YR 2027
STA# N/A	POI# N/A

	BY	DATE
DESIGN	ED	
DRAWN	JM	
ASBUILT		

FILE NO.: N/A
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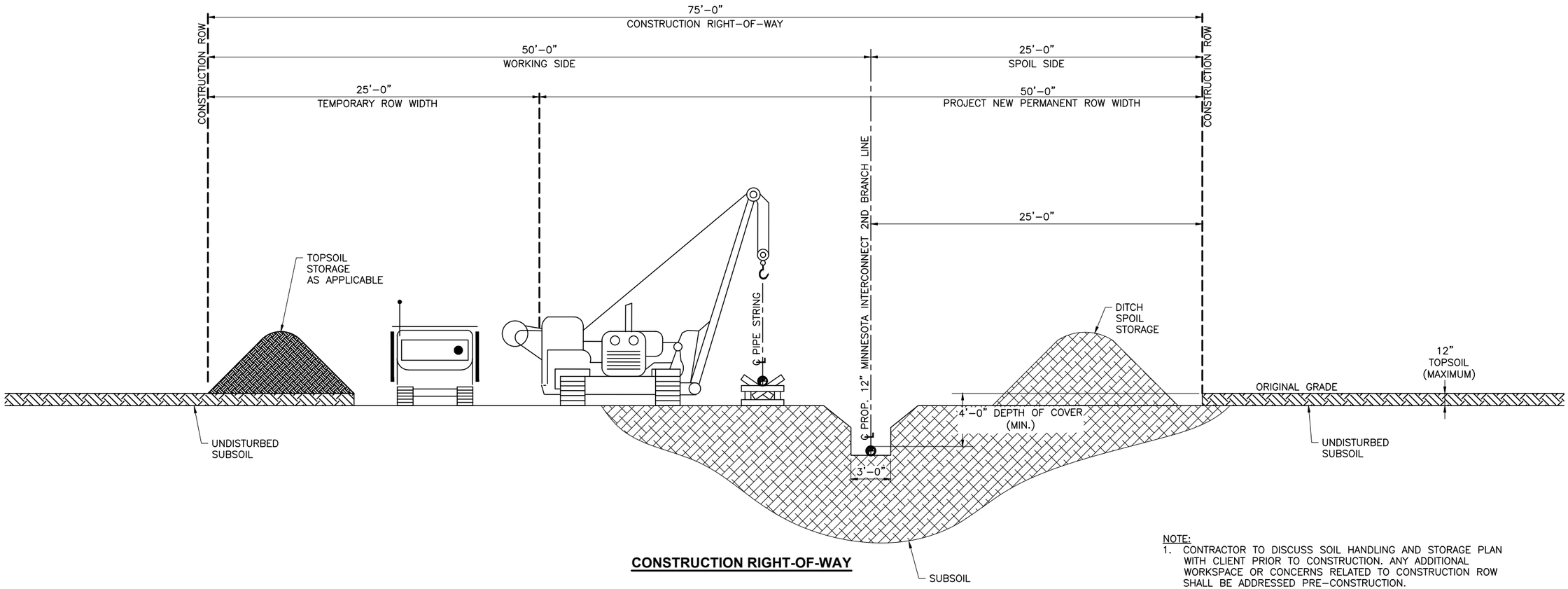
NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 28, 29, 20, 1 & 2, T107N, R31W
WATONWAN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW2** F

Chan, Ginge 2/19/2026 1:05 PM J:\NNG 2027 NL\8_RW CONFIGURATION\SPR\SPR ROW2.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
18.12	18.42	EAST TO WEST	MIC–P3–2 TO MIC–P3–3
18.52	19.19	EAST TO WEST	MIC–P3–3 TO MIC–P3–5

LEGEND

TOPSOIL

SUBSOIL

Chan, Ginge 2/19/2026 1:07 PM J:\NNG 2027 NL\8_RW CONFIGURATION\MIC\MIC ROW1.DWG

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
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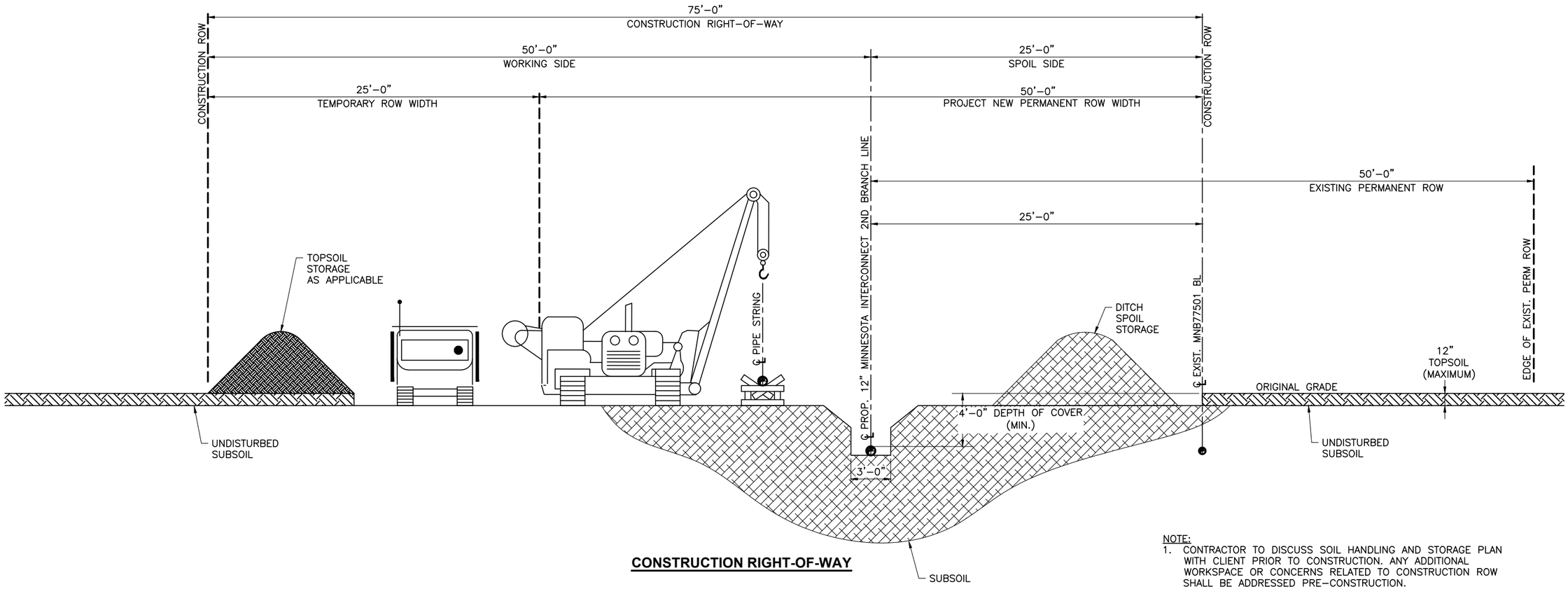
NORTHERN LIGHTS 2027 EXPANSION PROJECT
MINNESOTA INTERCONNECT 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 22, 21 & 28 T36N, R24W
ISANTI COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
ROW1

F



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
17.65	18.12	EAST TO WEST	MIC–P3–1 TO MIC–P3–2
18.42	18.52	EAST TO WEST	MIC–P3–3
19.19	19.23	EAST TO WEST	MIC–P3–5

LEGEND

TOPSOIL

SUBSOIL

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
SCALE: 1"=30'			

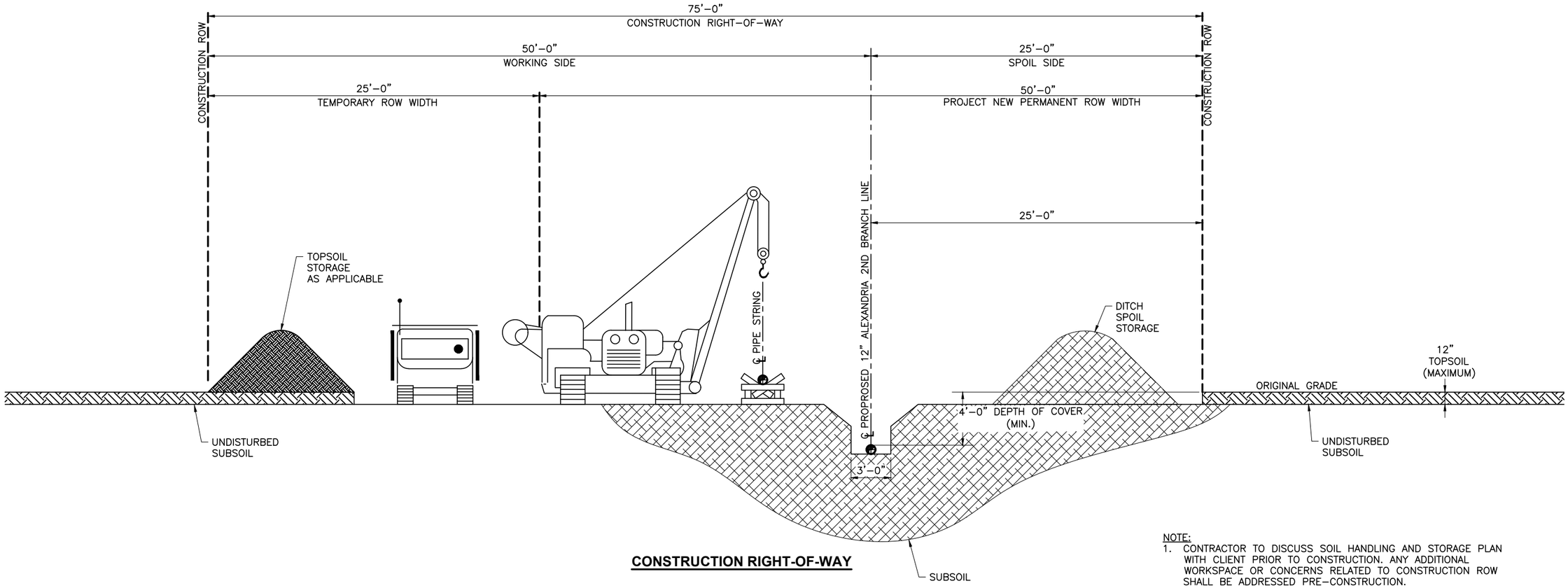
NORTHERN LIGHTS 2027 EXPANSION PROJECT
MINNESOTA INTERCONNECT 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 22, 21 & 28 T36N, R24W
ISANTI COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ROW2** F

Chan, Ginge 2/19/2026 1:12 PM N:\NNG 2027 NL\8_RW CONFIGURATION\MIC\MIC ROW2.DWG



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
17.65	17.73	WEST TO EAST	ALX–P3–3

LEGEND

TOPSOIL

SUBSOIL

Chan, Ginge2/19/2026 1:05 PM,NNG 2027 NL\8_RW CONFIGURATION\ALX\ALX ROW2.DWG

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

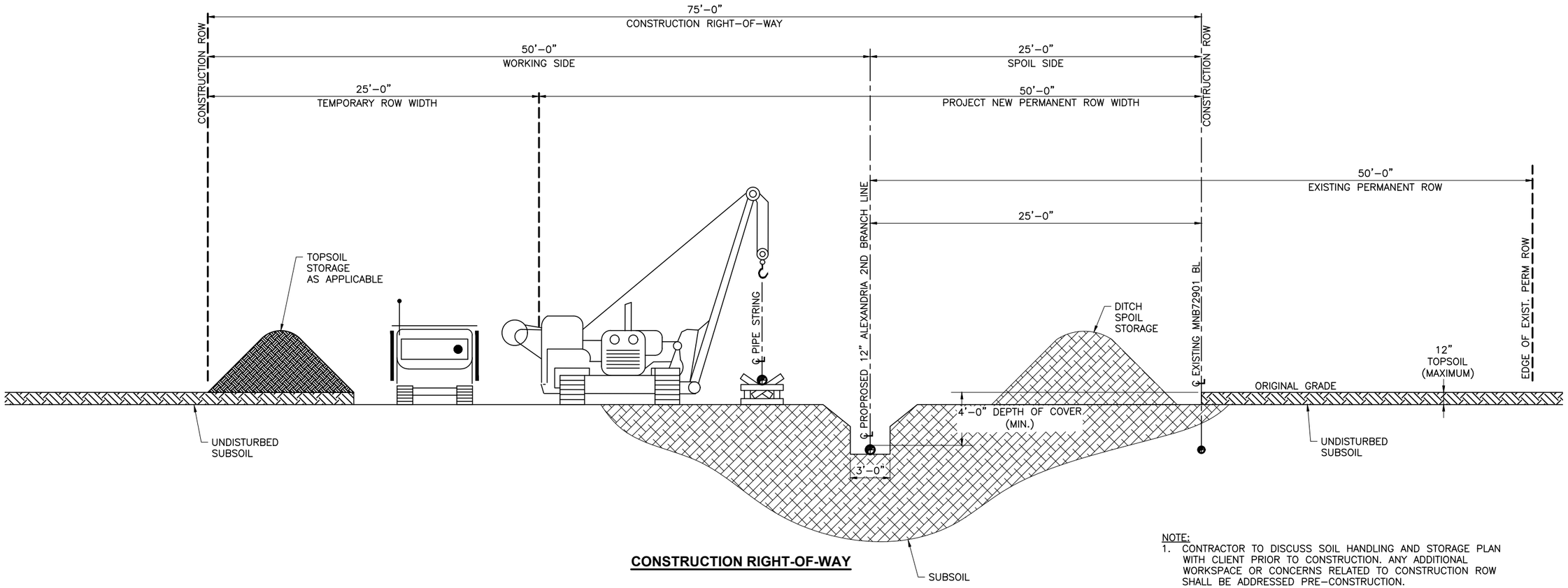
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PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
SCALE: 1"=30'			

NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALEXANDRIA 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 28, T129N, R30W
MORRISON COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
ROW2
F



CONSTRUCTION RIGHT-OF-WAY

NOTE:
1. CONTRACTOR TO DISCUSS SOIL HANDLING AND STORAGE PLAN WITH CLIENT PRIOR TO CONSTRUCTION. ANY ADDITIONAL WORKSPACE OR CONCERNS RELATED TO CONSTRUCTION ROW SHALL BE ADDRESSED PRE–CONSTRUCTION.

MP FROM	MP TO	DIRECTION OF LAY	REF DWG
16.80	17.47	EAST TO WEST	ALX–P3–1 TO ALX–P3–3
17.73	18.08	WEST TO EAST	ALX–P3–4 TO ALX–P3–5

LEGEND

TOPSOIL

SUBSOIL

Chan, Ginger 2/19/2026 1:11 PM N:\NNG 2027 NL\8_RW CONFIGURATION\ALX\ALX ROW1.DWG

NO.	REVISION – DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED		
DRAWN	JM		
ASBUILT			
FILE NO.: N/A			
SCALE: 1"=30'			

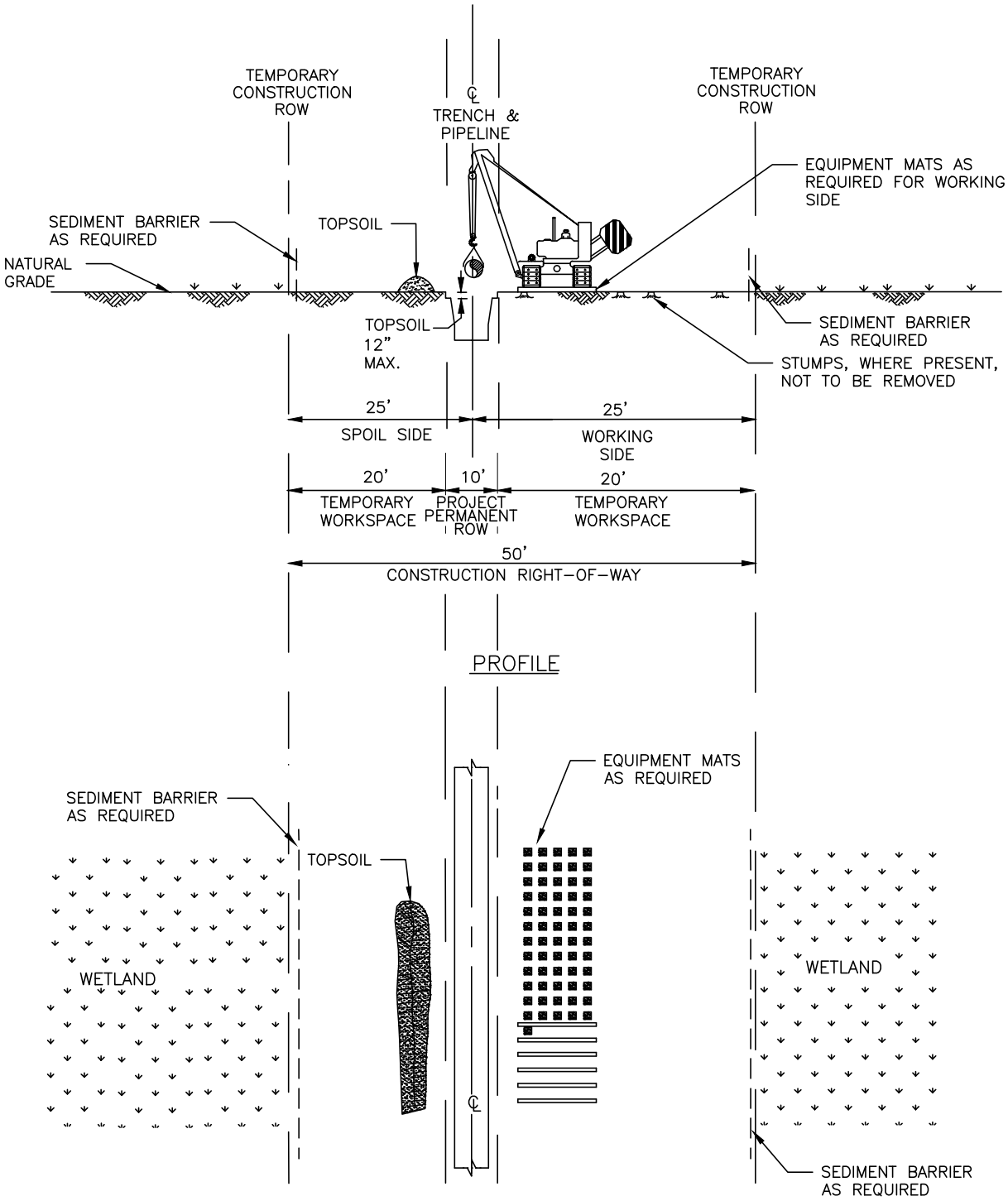
NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALEXANDRIA 2ND BRANCH LINE
CONSTRUCTION ROW
SEC. 28, 29 & 20, T129N, R30W
MORRISON COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
ROW1
F

Figure 1-19
Typical Open-Cut of Wetland Crossing (V2F and NL27 Projects)



NOTES:

1. REFER TO CONSTRUCTION ROW DRAWING FOR SPOIL AND TOPSOIL HANDLING AND STORAGE DETAILS

FAC. CODE : N/A		REL. W.O. N/A
PL#. N/A		CONST. YR
STA# N/A		
	BY	DATE
DESIGN	ED	12/28/25
DRAWN	MB	12/28/25
ASBUILT		
FILE NO.: N/A		
SCALE: NTS		

Northern Natural Gas.

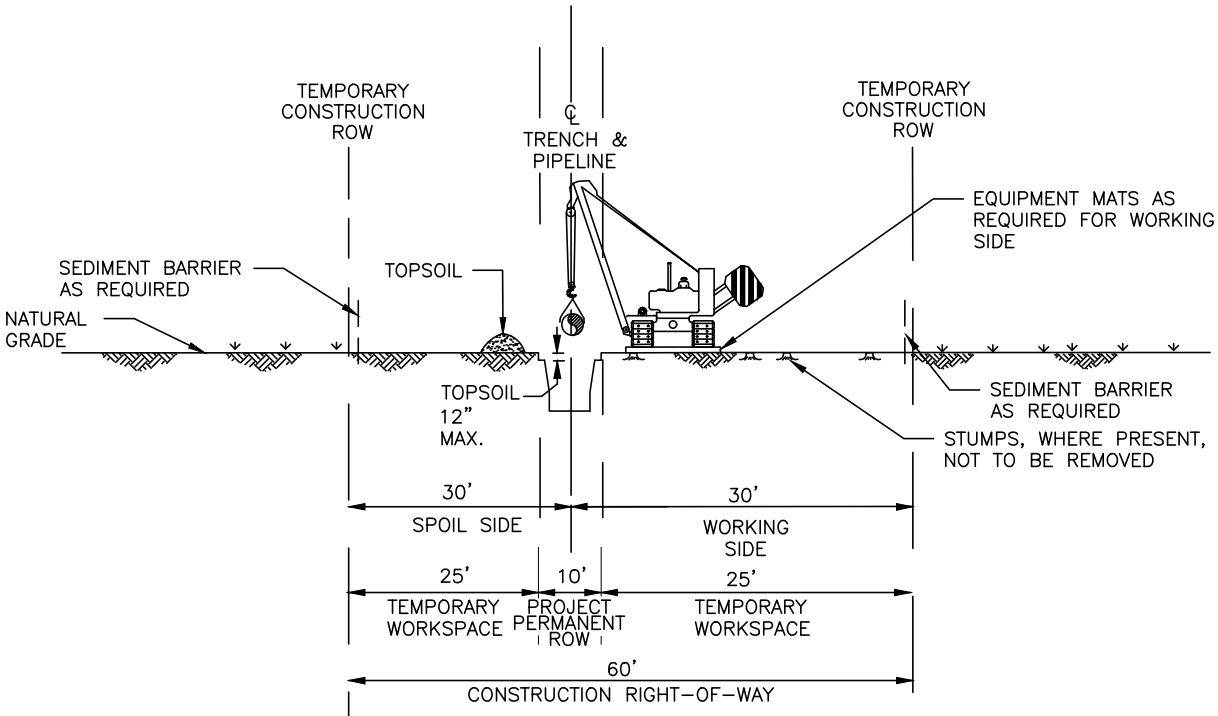
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
NORTHERN LIGHTS 2027 EXPANSION PROJECT
50' CONSTRUCTION ROW OPEN CUT
WETLAND CROSSING

Northern Natural Gas.

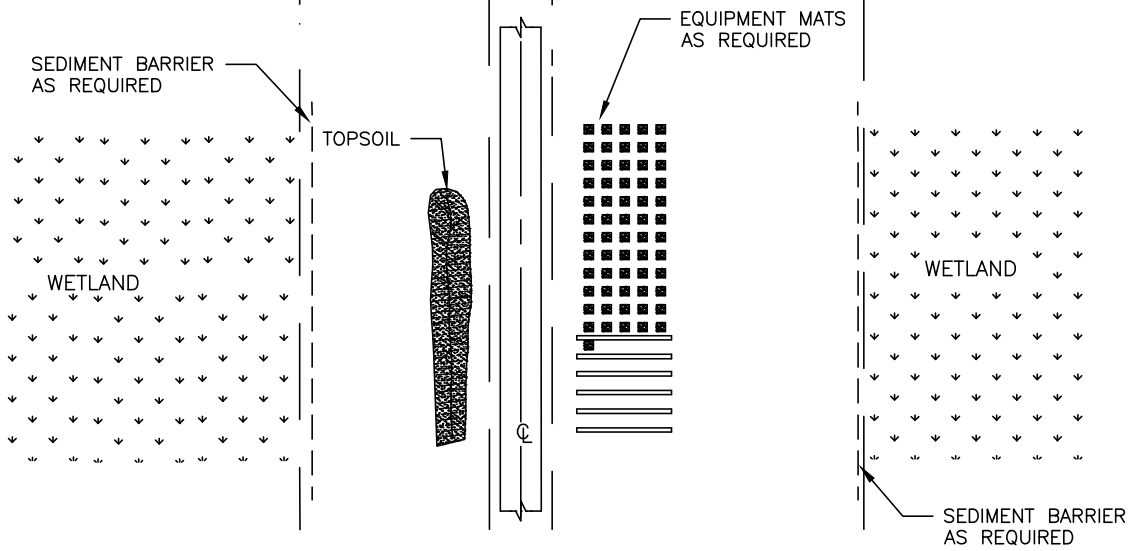
PROJECT NO.
FIGURE 1-19

DWG. NO.
TYP4
SHT. OF

F



PROFILE



PLAN VIEW

NOTES:

1. REFER TO CONSTRUCTION ROW DRAWING FOR SPOIL AND TOPSOIL HANDLING AND STORAGE DETAILS

FAC. CODE : N/A		REL. W.O. N/A
PL#. N/A		CONST. YR
STA# N/A		
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DRAWN	MB	12/28/25
ASBUILT		
FILE NO.: N/A		
SCALE: NTS		

Northern Natural Gas.

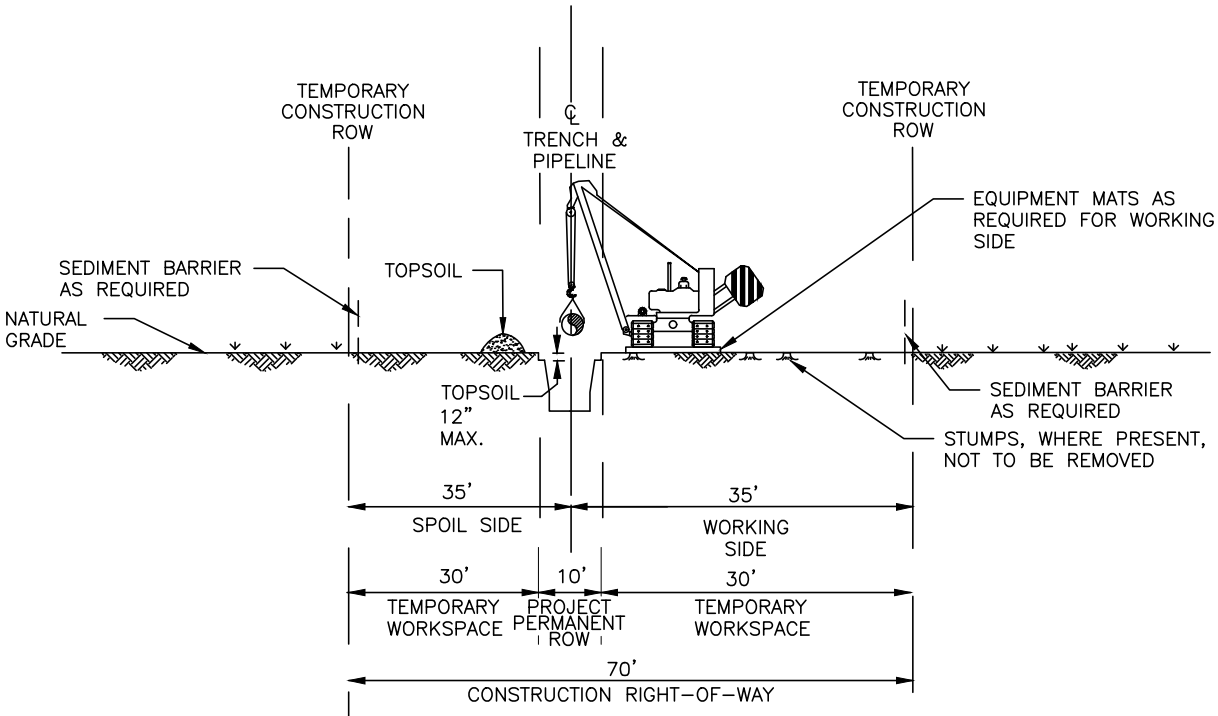
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
NORTHERN LIGHTS 2027 EXPANSION PROJECT
60' CONSTRUCTION ROW OPEN CUT
WETLAND CROSSING

Northern Natural Gas.

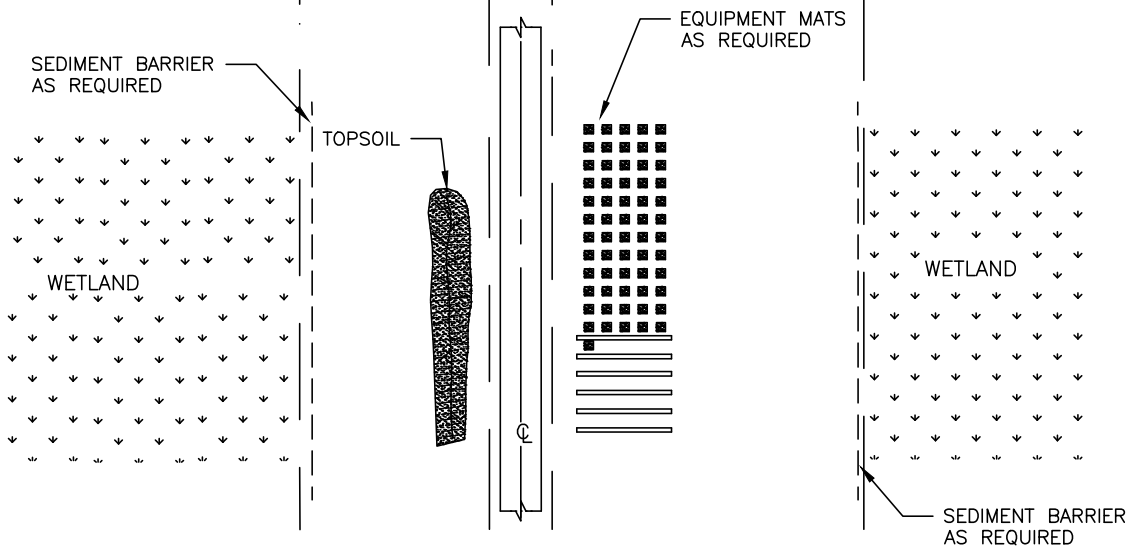
PROJECT NO.
FIGURE 1-19

DWG. NO.
TYP5
SHT. OF

F



PROFILE



PLAN VIEW

NOTES:

1. REFER TO CONSTRUCTION ROW DRAWING FOR SPOIL AND TOPSOIL HANDLING AND STORAGE DETAILS

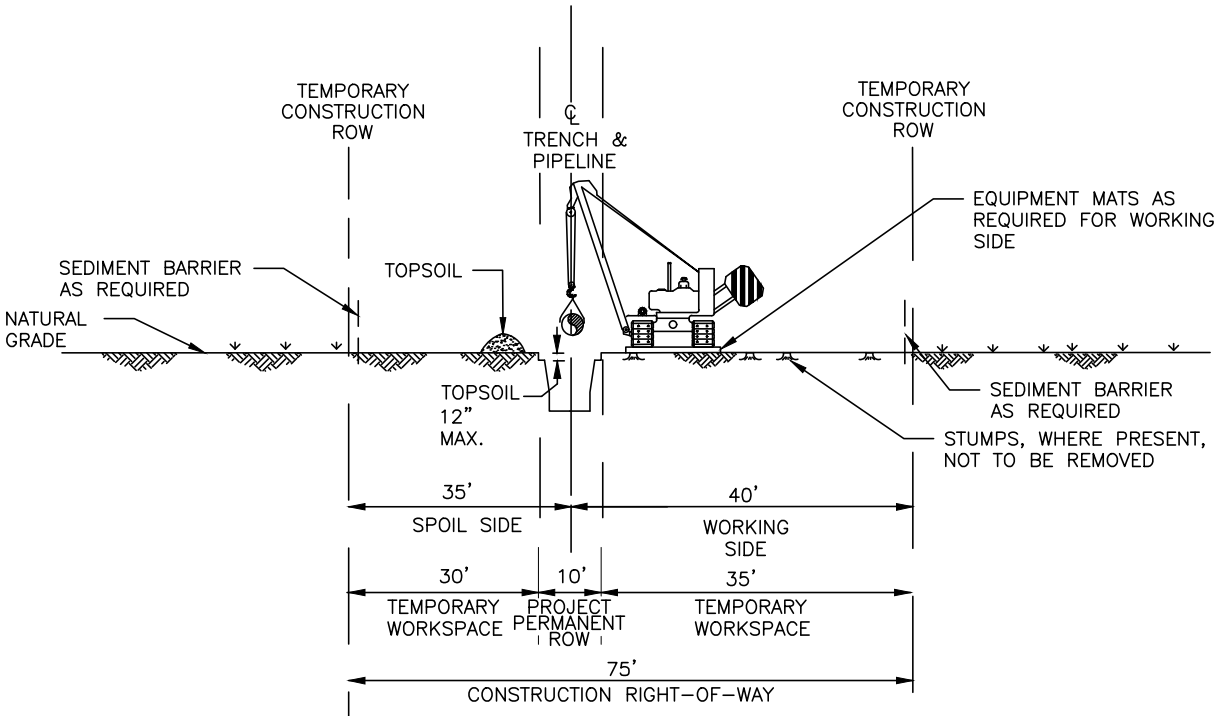
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SCALE: NTS		

Northern Natural Gas.

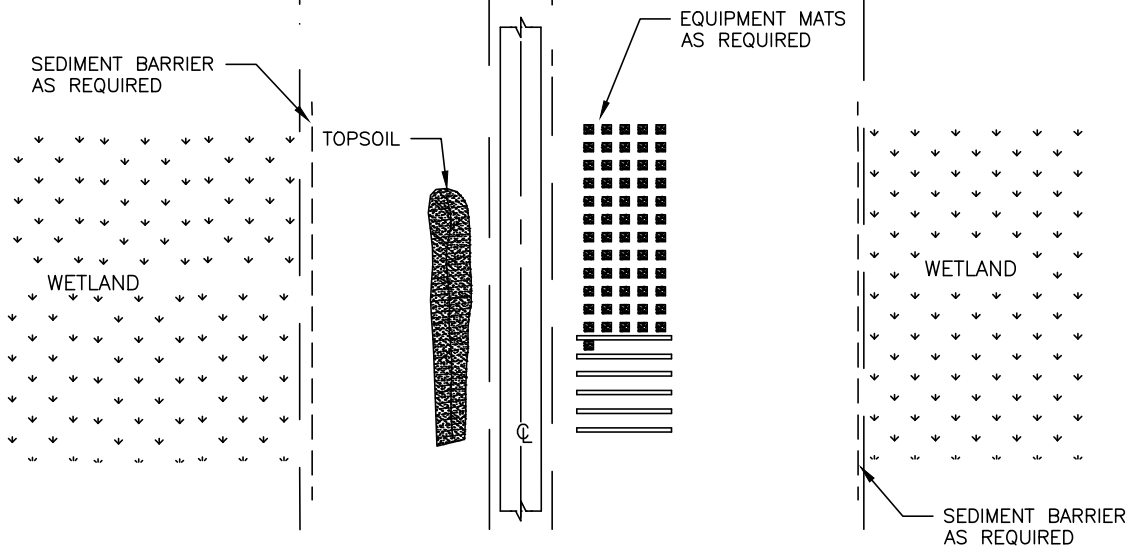
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
NORTHERN LIGHTS 2027 EXPANSION PROJECT
70' CONSTRUCTION ROW OPEN CUT
WETLAND CROSSING

Northern Natural Gas.
PROJECT NO.
FIGURE 1-19

DWG. NO.
TYP1
SHT. OF
F



PROFILE



PLAN VIEW

NOTES:

1. REFER TO CONSTRUCTION ROW DRAWING FOR SPOIL AND TOPSOIL HANDLING AND STORAGE DETAILS

FAC. CODE : N/A		REL. W.O. N/A
PL#. N/A		CONST. YR
STA# N/A		
	BY	DATE
DESIGN	ED	12/28/25
DRAWN	MB	12/28/25
ASBUILT		
FILE NO.: N/A		
SCALE: NTS		

Northern Natural Gas.

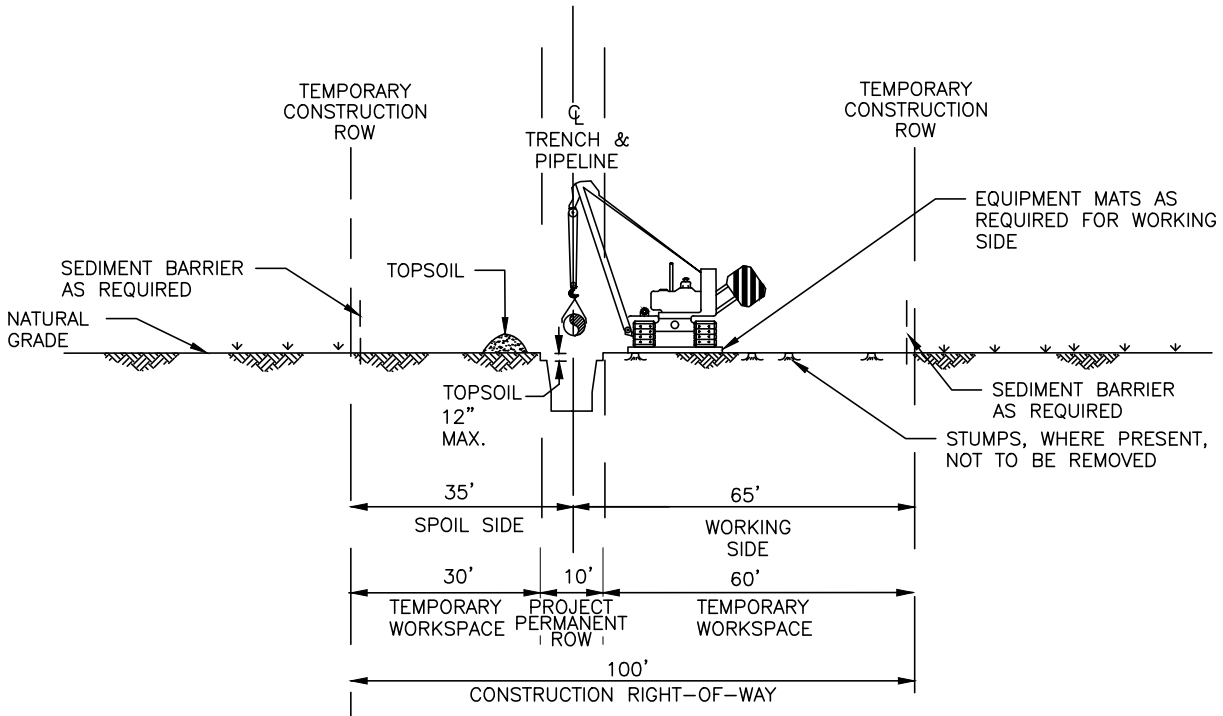
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
NORTHERN LIGHTS 2027 EXPANSION PROJECT
75' CONSTRUCTION ROW OPEN CUT
WETLAND CROSSING

Northern Natural Gas.

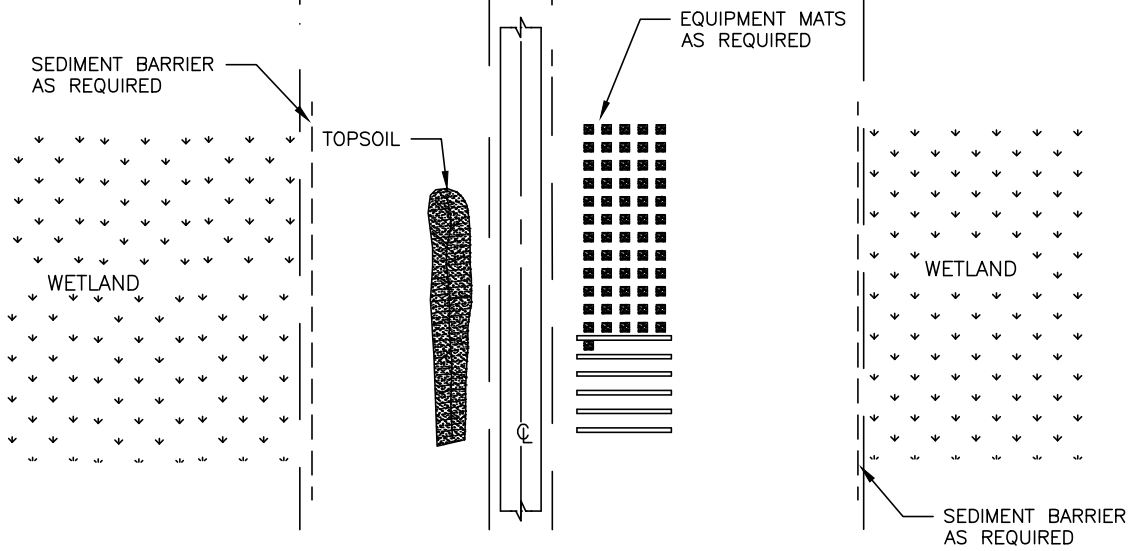
PROJECT NO.
FIGURE 1-19

DWG. NO.
TYP2
SHT. OF

F



PROFILE



PLAN VIEW

NOTES:

1. REFER TO CONSTRUCTION ROW DRAWING FOR SPOIL AND TOPSOIL HANDLING AND STORAGE DETAILS

FAC. CODE : N/A		REL. W.O. N/A
PL#. N/A		CONST. YR
STA# N/A		
	BY	DATE
DESIGN	ED	12/28/25
DRAWN	MB	12/28/25
ASBUILT		
FILE NO.: N/A		
SCALE: NTS		

Northern Natural Gas.

V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
NORTHERN LIGHTS 2027 EXPANSION PROJECT
100' CONSTRUCTION ROW OPEN CUT
WETLAND CROSSING

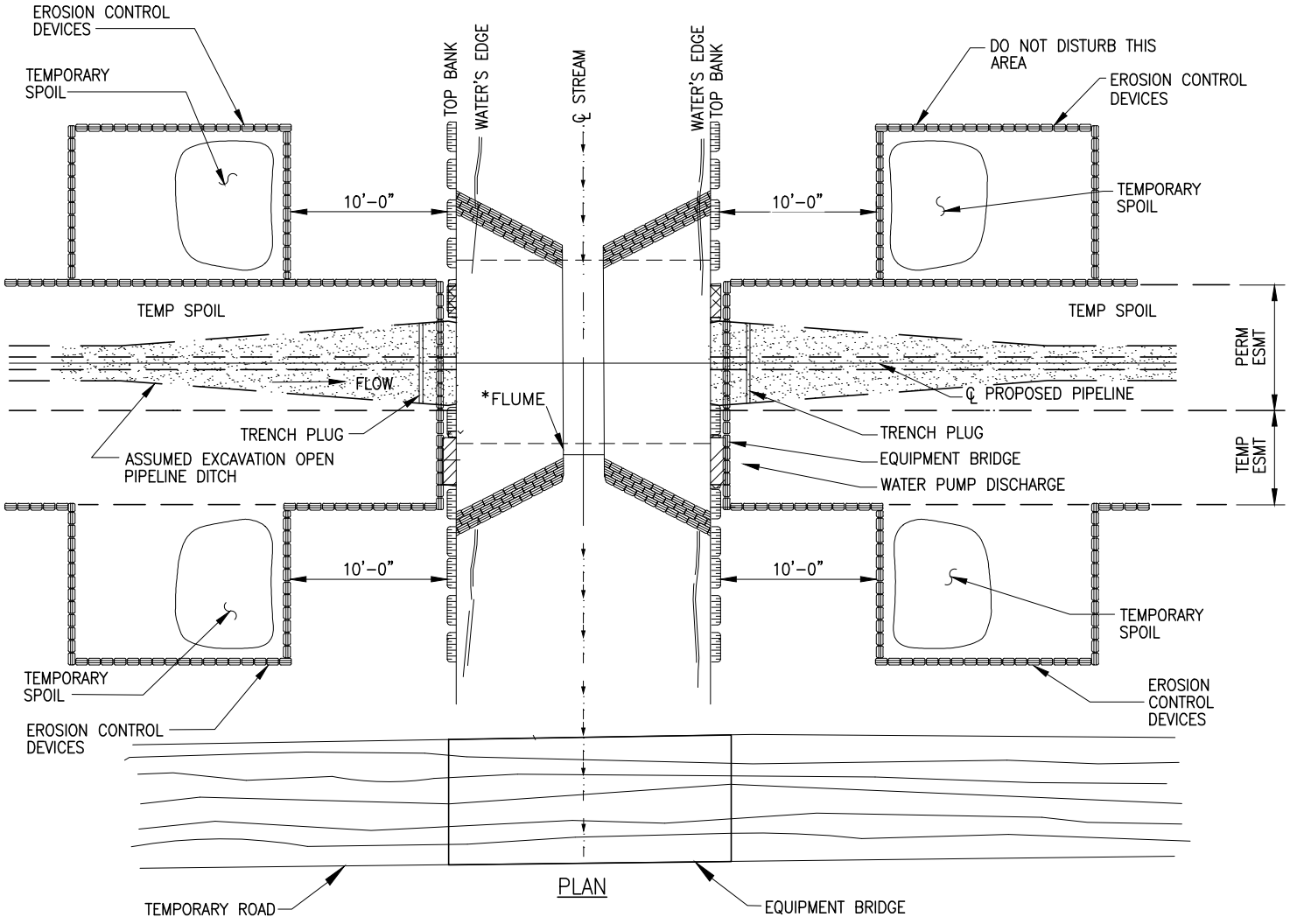
Northern Natural Gas.

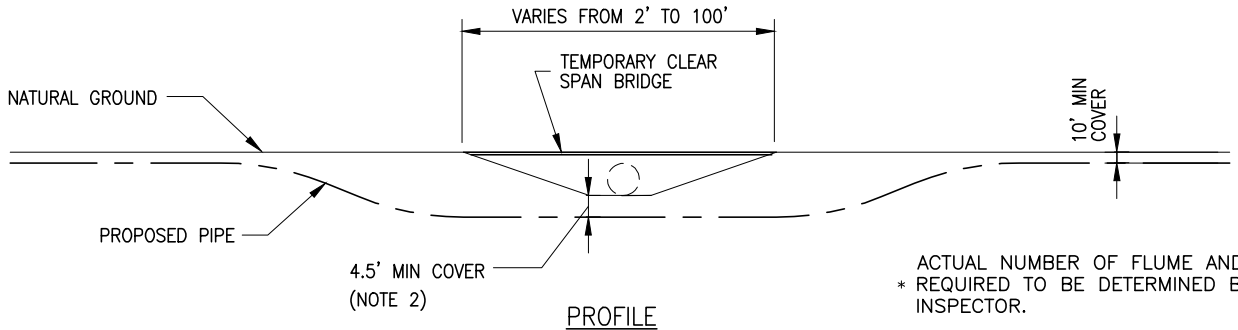
PROJECT NO.
FIGURE 1-19

DWG. NO.
TYP3
SHT. OF

F

Figure 1-20
Typical Dam and Flume of Open-Cut Waterbody Crossings
(V2F and NL27 Projects)





PROFILE

TYPICAL DAM AND FLUME

ACTUAL NUMBER OF FLUME AND CULVERT PIPES * REQUIRED TO BE DETERMINED BY EI OR CRAFT INSPECTOR.

NOTES:

1. CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE PLAN AND PROCEDURE
2. PIPE MAY BE CONCRETE COATED OR CONCRETE WEIGHTS MAY BE USED TO PREVENT FLOTATION.
3. CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL PERMITS. EROSION CONTROL DEVICES TO BE INSTALLED, AS REQUIRED.
4. FOR DETAILS OF EXTRA WORK SPACE REQUIREMENTS SEE ALIGNMENT SHEETS AND/OR PLAN PROFILE DRAWING.

FAC. CODE : N/A		REL. W.O. N/A
PL#. N/A		CONST. YR 2023
STA# N/A		
	BY	DATE
DESIGN	ED	12/28/25
DRAWN	AC	12/28/25
ASBUILT		
FILE NO.: N/A		
SCALE: NTS		

Northern Natural Gas.

NORTHERN LIGHTS 2027 EXPANSION PROJECT

"DRY" DITCH CROSSING

DAM AND FLUME

Northern Natural Gas.

PROJECT NO.

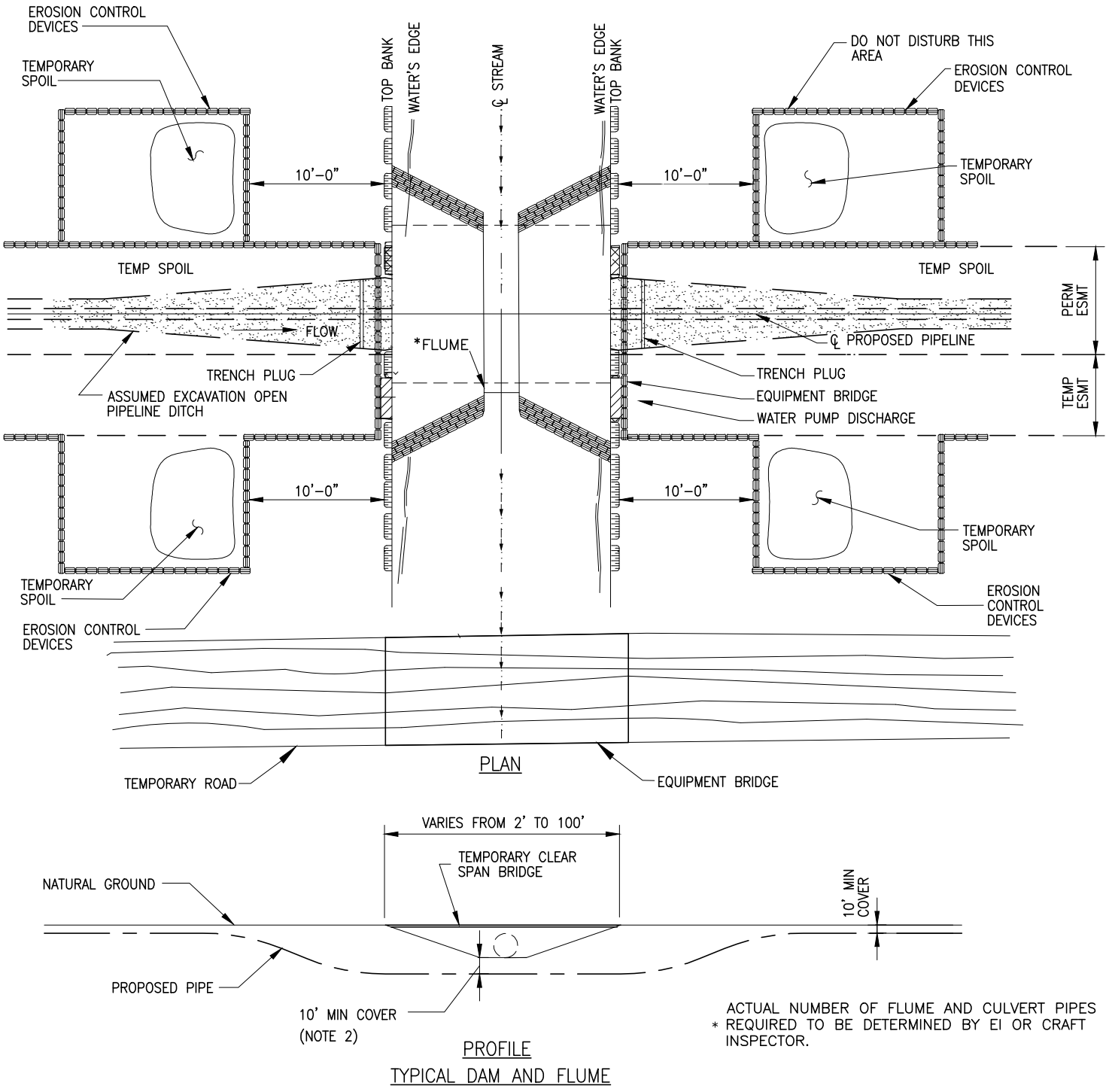
FIGURE 1-20

DWG. NO.

TYP5

SHT. OF

F



* ACTUAL NUMBER OF FLUME AND CULVERT PIPES REQUIRED TO BE DETERMINED BY EI OR CRAFT INSPECTOR.

NOTES:

1. CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE PLAN AND PROCEDURE
2. PIPE MAY BE CONCRETE COATED OR CONCRETE WEIGHTS MAY BE USED TO PREVENT FLOTATION.
3. CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL PERMITS. EROSION CONTROL DEVICES TO BE INSTALLED, AS REQUIRED.
4. FOR DETAILS OF EXTRA WORK SPACE REQUIREMENTS SEE ALIGNMENT SHEETS AND/OR PLAN PROFILE DRAWING.

FAC. CODE : N/A		REL. W.O. N/A
PL#. N/A		CONST. YR 2023
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	BY	DATE
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DRAWN	AC	12/28/25
ASBUILT		
FILE NO.: N/A		
SCALE: NTS		

Northern Natural Gas.

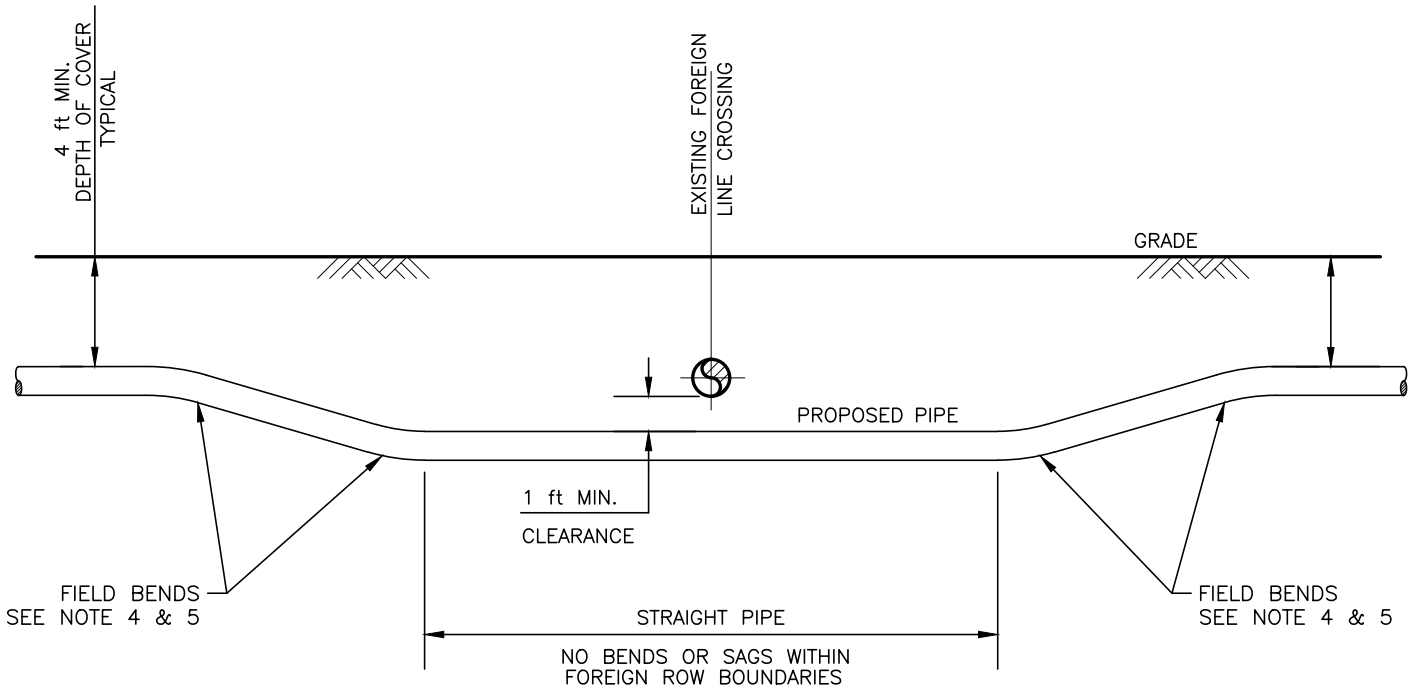
NORTHERN LIGHTS 2027 EXPANSION PROJECT
"DRY" DITCH CROSSING (PUBLIC WATER)
DAM AND FLUME

Northern Natural Gas.
PROJECT NO.
FIGURE 1-20

DWG. NO.
TYP6
SHT. OF

F

Figure 1-21
Typical Utility Crossings (V2F and NL27 Projects)



PROFILE

EXISTING PIPELINE CROSSING

NOTES:

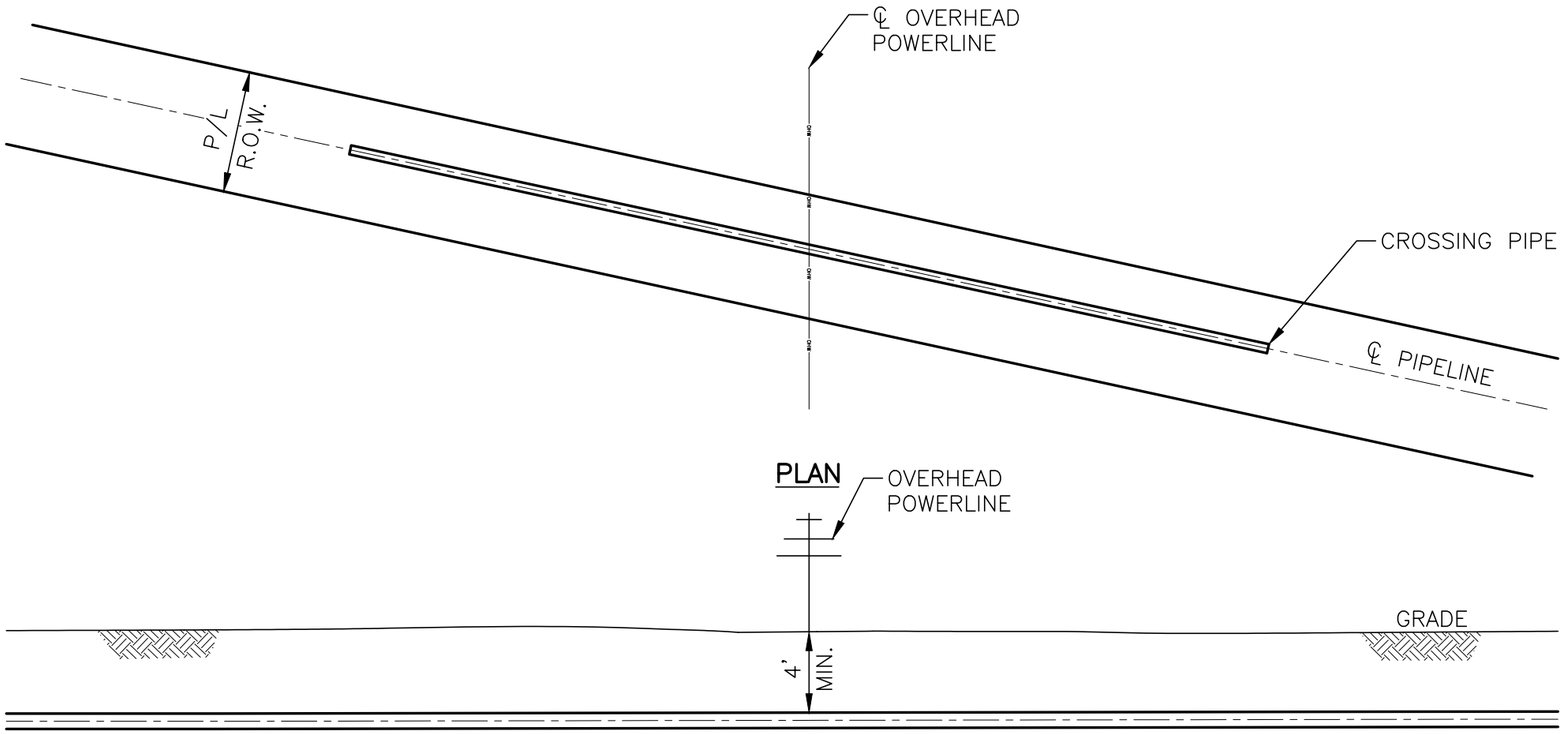
1. EXISTING PIPELINE LOCATIONS AND DEPTHS TO BE DETERMINED BY ELECTRONIC MEANS IN ADVANCE OF FULLY EXPOSING BY "HYDRO VAC".
2. OWNER OF EXISTING PIPELINE(S) SHALL BE NOTIFIED AT LEAST 72 HOURS IN ADVANCE OF EXCAVATION OF CROSSING, OR AS REQUIRED BY THE CROSSING AGREEMENT. THE EXISTING PIPELINE OWNER OR ITS REPRESENTATIVE SHALL BE PRESENT ON SITE WHEN THE CROSSING EXCAVATION TAKES PLACE UNLESS OTHERWISE APPROVED IN WRITING BY OWNER.
3. PROPOSED PIPELINE MAY ONLY CROSS ABOVE EXISTING PIPELINE(S) WHERE REQUESTED BY OR APPROVED BY EXISTING PIPELINE OWNER IN WRITING, PROVIDED THAT MINIMUM CLEARANCE AND COVER IS MAINTAINED.
4. CONTRACTOR MAY USE FIELD BENDS OR GRADUALLY SLOPE THE DITCH BOTTOM TO SUIT THE DIFFERENCES IN ELEVATION.
5. FIELD BENDS MUST NOT BE DEFLECTED MORE THAN 1.5° PER PIPE DIAMETER. MINIMUM SEPARATION BETWEEN BENDS IS 1.5 ft.

FAC. CODE : N/A		REL. W.O. N/A
PL#.		CONST. YR
STA# N/A		
	BY	DATE
DESIGN	ED	12/29/26
DRAWN	MB	12/29/26
ASBUILT		
FILE NO.: N/A		
SCALE: N/A		

Northern Natural Gas

V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
NORTHERN LIGHTS 2027 EXPANSION PROJECT
EXISTING PIPELINE
OPEN CUT CROSSING TYPICAL

Northern Natural Gas
PROJECT NO.
FIGURE 1-21
DWG. NO.
TYP7
F



SECTION

NOTES:

1. THE CONSTRUCTED PIPELINE SHALL BE STRAIGHT WITH NO VERTICAL OR HORIZONTAL BENDS.
2. REFER TO ALIGNMENT SHEET FOR CROSSING PIPE LENGTH AND MATERIAL INFORMATION AT EACH CROSSING.
3. WHEN PRACTICAL, ANGLE OF CROSSING SHALL BE CLOSE TO PERPENDICULAR AS POSSIBLE BUT NOT LESS THAN 45°.
4. CROSSINGS SHALL BE IN ACCORDANCE WITH THE DRAWINGS, ALL CONDITIONS OF THE CROSSING AGREEMENT(S) AND ALL REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
5. ALL WORK SHALL BE IN ACCORDANCE WITH NNG'S GROUND DISTURBANCE PROCEDURES & SPECIFICATIONS.
6. CONTRACTOR MAY USE FIELD BENDS OR GRADUALLY SLOPE THE DITCH BOTTOM TO SUIT THE DIFFERENCES IN ELEVATION.
7. MINIMUM SEPARATION DISTANCE OF PERSONS AND EQUIPMENT FROM THE POLE & TOWER BASE, OVERHEAD POWERLINE WARNING SIGNS, AND WARNING ROPE/FLAGGING AS PER NNG REQUIREMENTS AND THE CROSSING AGREEEMENT.

Chan, Ginger 2/19/2026 1:31 PM M:\NNG 2027 NL\4_PIPELINE_TYP\CAL\SIF\FIGURE 1-21

INTERNAL INFORMATION
DISTRIBUTION/COPIES LIMITED TO PROJECT NEEDS

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	MB	2/10/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		PO# N/A
	BY	DATE
DESIGN	ED	6/4/24
DRAWN	JM	6/4/25
ASBUILT		
FILE NO.: -		
SCALE: NTS.		

V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
NORTHERN LIGHTS 2027 EXPANSION PROJECT
TYPICAL OVERHEAD POWERLINE

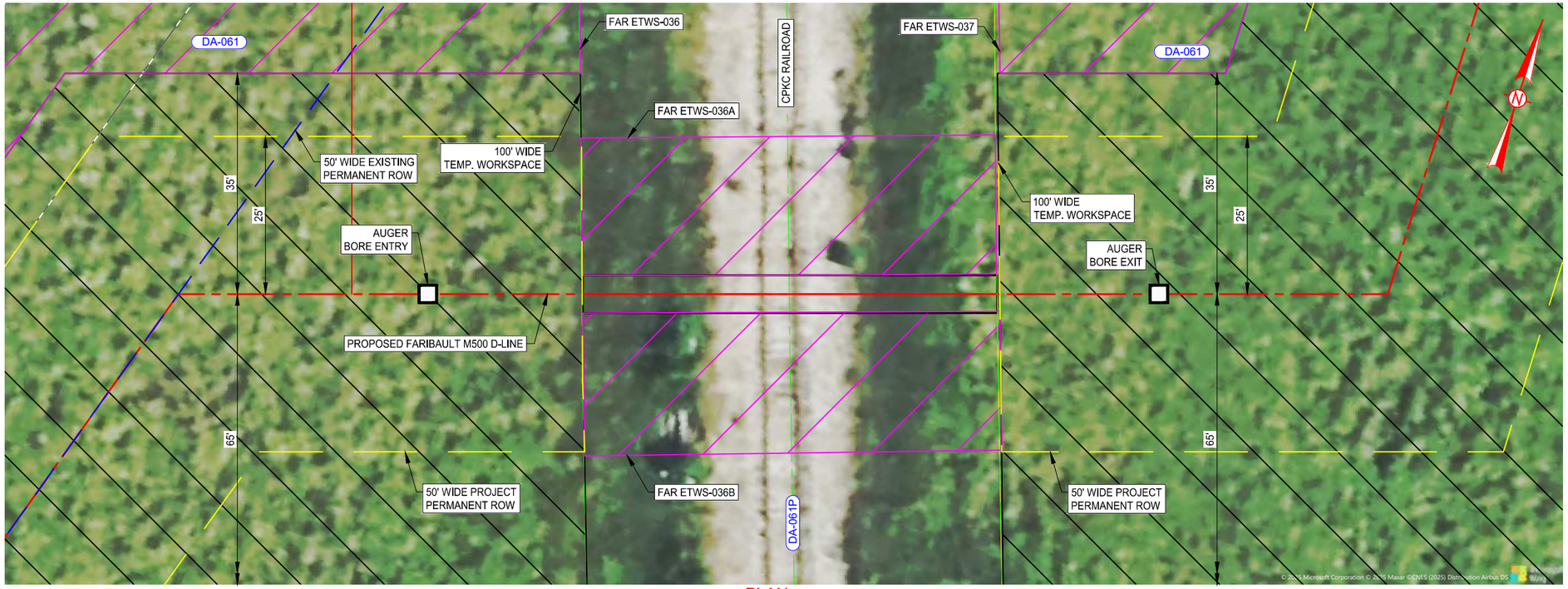
Northern Natural Gas.

PROJECT NO.
FIGURE 1-21

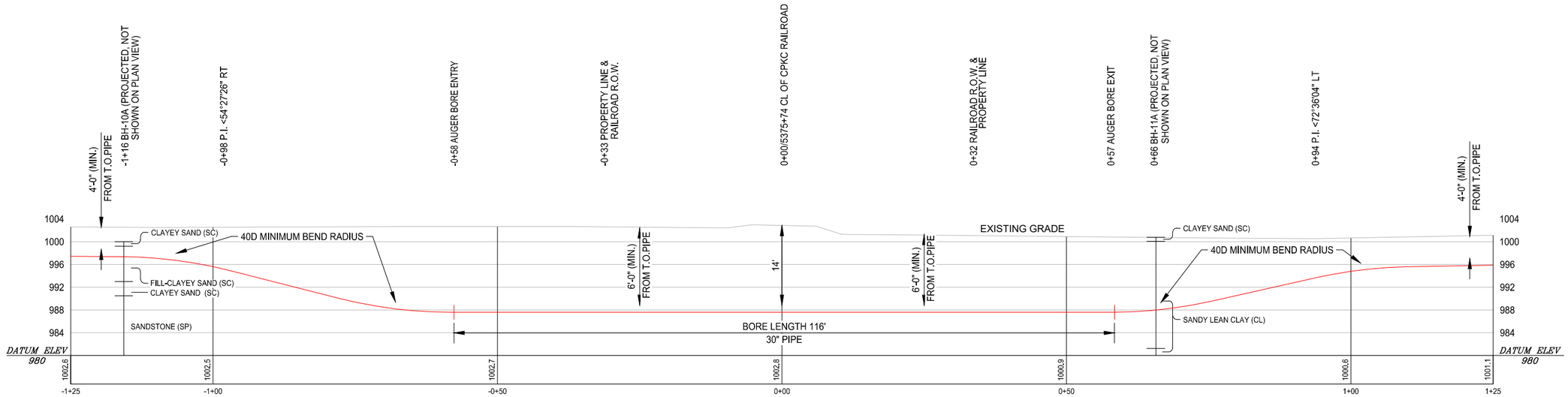
DWG. NO.
TYP8 F

Figure 1-22
Site-Specific Auger Bores (V2F Project)

PLAN & PROFILE CPKC RAILROAD



PLAN
SCALE : 1"=10'
REF. DWG. FAR-P3-12



PROFILE
SCALE (VERT): 1"=10'
SCALE (HORIZ): 1"=10'

FIGURE 1-22

LEGEND
- PROPOSED FARIBAULT M500 D-LINE
- PROPERTY LINE
- RAILROAD R.O.W.
- CL OF RAILROAD
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- AUGER BORE ENTRY/EXIT

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/9/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

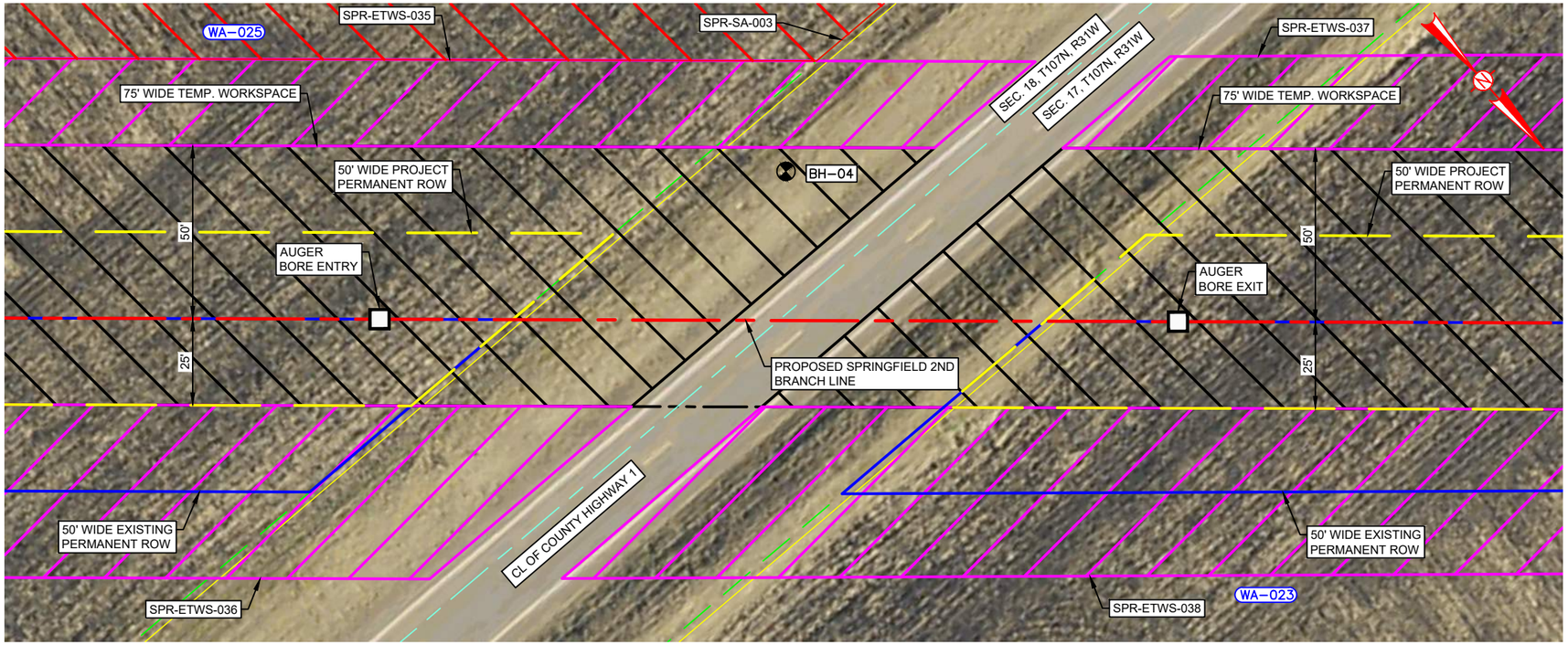
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STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	2/14/25	
DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
SCALE: 1"=10'			

V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
PLAN & PROFILE CPKC RAILROAD
SEC. 27, T113N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.
PROJECT NO.
DWG. NO. FAR-P4-4 CONV BORE

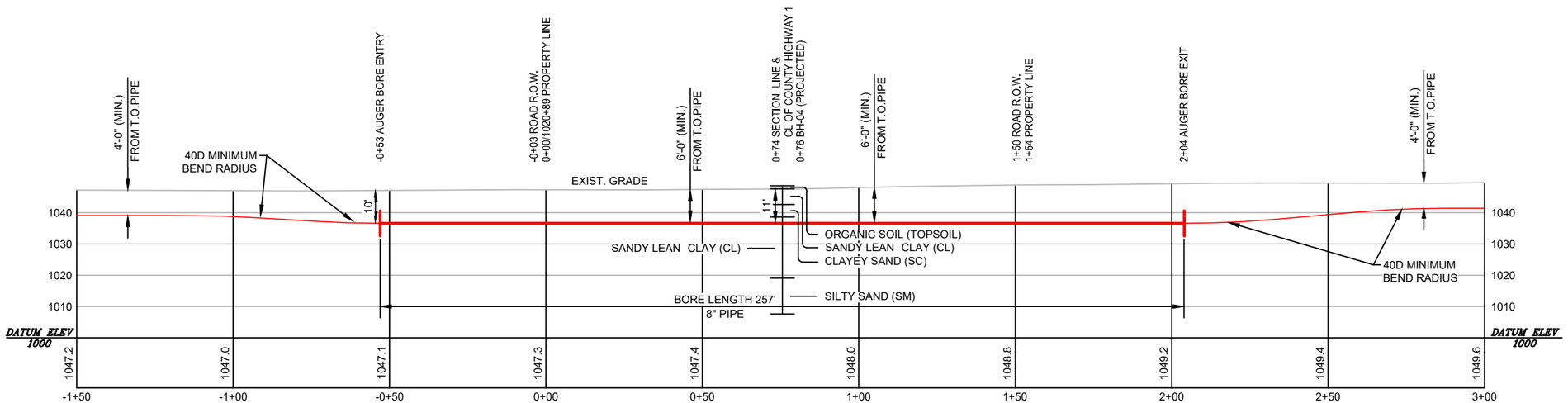
M:\NNG V2F\3_CROSSINGS\FAR PLAN & PROFILE.DWG
Chan, Ginger 2/19/2026 1:53 PM

PLAN & PROFILE COUNTY HIGHWAY 1



PLAN
SCALE : 1"=20'
REF. DWG. SPR-P3-15

LEGEND
- PROPOSED SPRINGFIELD 2ND BRANCH LINE
- PROPERTY LINE
- ROAD R.O.W.
- SECTION LINE
- WETLAND BUFFER
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- STAGING AREA
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- AUGER BORE ENTRY/EXIT
- BOREHOLE



PROFILE
SCALE (VERT): 1"=20'
SCALE (HORIZ): 1"=20'

FIGURE 1-22

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	2/20/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL# N/A		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	01/27/25
DRAWN	JM	01/28/26
ASBUILT		
FILE NO.:		
SCALE: 1"=20'		

NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND LINE EXTENSION
PLAN & PROFILE COUNTY HIGHWAY 1
SEC. 18 & 17, T107N, R31W
WATONWAN, MINNESOTA

Northern Natural Gas. A BERKSHIRE HATHAWAY ENERGY COMPANY

PROJECT NO.

DWG. NO. SPR-P4-4.5 F

INTERNAL INFORMATION
DISTRIBUTION/COPIES LIMITED TO PROJECT NEEDS

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Figure 1-23
Other Actions Considered in the Cumulative Impacts Analysis for the NL27 Project

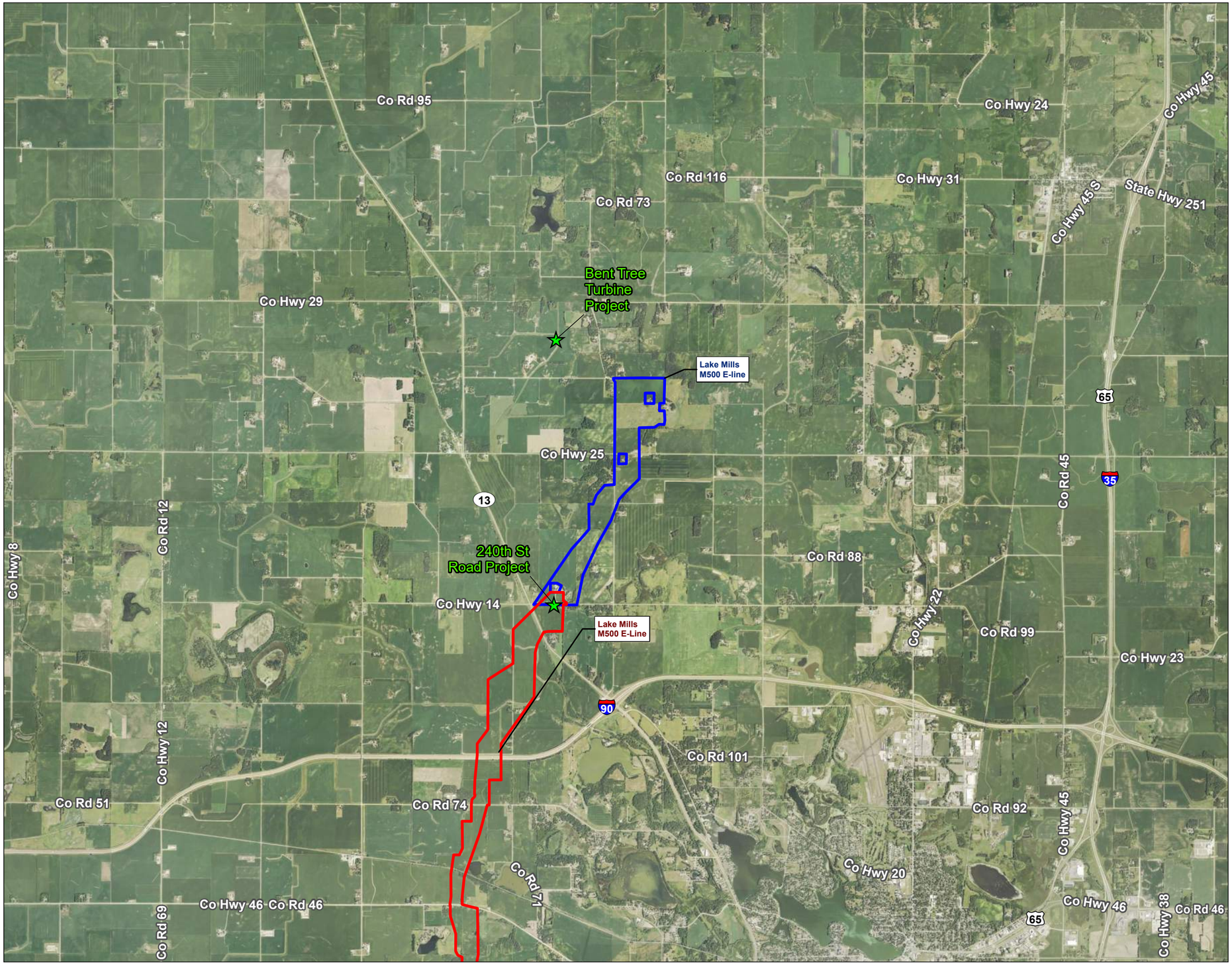


Figure No.
1-23

Title
Proposed Projects Considered for Cumulative Impacts Analysis - Freeborn County, MN

Client/Project 172608813
Northern Natural Gas
Northern Lights 2027 Expansion Project / Ventura to Farmington A-Line Abandonment & Capacity Replacement Project

Project Location
Freeborn County, Minnesota

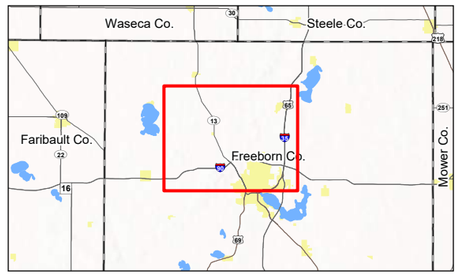
Prepared by JM on 2025-10-06
TR by SF on 2025-10-06
IR by XX on 2026-XX-XX

N

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

Legend

- Proposed Freeborn County, MN Projects
- Environmental Survey Boundary for Lake Mills M500 E-Line (V2F)
- Environmental Survey Boundary for Lake Mills M500 E-Line (NL27)



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

Stantec

Northern Natural Gas

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

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Appendix 1A-1
HDD Plan V2F Project



Horizontal Directional Drill Monitoring, Inadvertent Return Response and Contingency Plan

Ventura to Farmington A-Line Abandonment and Capacity Replacement Project

February 2026

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Abbreviations and Acronyms

API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
CI	Construction Inspector
CMT	Construction Management Team
CESCP	Construction Erosion and Sediment Control Plan
CWA	Clean Water Act
ESB	Environmental Survey Boundary
EI	environmental Inspector
EMT	Environmental Management Team
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
HDD	horizontal directional drill
HDD Plan	Horizontal Directional Drill Monitoring, Inadvertent Return Response and Contingency Plan
IR	inadvertent Release
MDNR	Minnesota Department of Natural Resources
MP	milepost
MPCA	Minnesota Pollution Control Agency
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NSF/ANSI	National Sanitation Foundation/American National Standards Institute
Northern	Northern Natural Gas
NRCS	Natural Resources Conservation Service
Plan	FERC Upland Erosion Control, Revegetation and Maintenance Plan
PRCI	Pipeline Research Council International
Procedures	FERC Wetland and Waterbody Construction and Mitigation Procedures
Project	Ventura to Farmington A-Line Abandonment and Capacity Replacement Project
RCRA	Resource Conservation and Recovery Act
ROW	right of way
SHPO	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
TBD	to be determined
TCLP	toxicity characteristic leaching protocol
TDS	total dissolved solids
TSS	total suspended solids
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1.0 GENERAL PROJECT DESCRIPTION

This HDD Plan presents a description of Northern's proposed HDD locations and describes the drilling composition, management, monitoring procedures, and response procedures for an IR of drilling fluid. The HDD Plan was prepared specifically for Northern's Project. Northern proposes to construct three pipeline components as listed in Table 1 below. The A-line abandonment, disconnect and temporary compression sites are not associated with HDD activities.

Table 1 Pipeline Components Proposed for the Project

Pipeline Component	Pipeline Diameter and Type	Maximum Allowable Operating Pressure	Approximate Length	County	State
Lake Mills M500 E-line	36-inch-diameter extension	1,050	8.29 miles	Freeborn	MN
Albert Lea M500 E-line	36-inch-diameter extension	1,050	2.09 miles	Steele	MN
Faribault M500 D-line	30-inch-diameter extension	800	7.50 miles	Dakota	MN

2.0 PURPOSE

The use of HDD can mitigate environmental and landowner impacts and avoids impacts on cultural resources through avoidance of land disturbance. However, HDD operations have a potential to release drilling fluids into the surface environment through IRs. An IR is a condition where drilling mud is released through fractured bedrock or other preferential pathways and travels toward the surface. Because drilling muds consist largely of a bentonite clay and water mixture, they are not toxic or hazardous substances. However, if released into waterbodies or wetlands, bentonite has the potential to adversely impact fish and invertebrates or their habitat.

While drilling fluid loss associated with an IR is most likely to occur near the HDD entry and exit points where the drill head is shallow, IRs can occur in any location along the HDD path. Northern will work to contain and address any IR. Northern will utilize HDD methods to minimize surface impacts on aquatic or other resources at designated crossing locations. Northern prepared the HDD Plan in accordance with the FERC Guidance for HDD Monitoring, Inadvertent Return Response, and Contingency Plan published October 2019. Northern also incorporated Section V.B.6.d of the Procedures into the HDD Plan, which includes a requirement to file site-specific plans for all HDD crossings of wetlands and waterbodies. In addition, Northern is providing information such as crossing-specific geotechnical information, crossing alignments and profiles, a feasibility report of the crossings, a hydrofracture and IR risk evaluation, and a summary of unique conditions found along the proposed HDD alignments.

This HDD Plan establishes operational procedures and responsibilities for the prevention, containment and clean-up of IRs associated with the directional drilling on the Project. All personnel responsible for the work will adhere to the HDD Plan during each HDD.

The specific objectives of this plan are to:

- Protect the environmentally sensitive areas
- Minimize the potential for IR associated with HDD activities
- Provide methods for timely detection of IRs
- Ensure an organized, timely and minimum-impact response in the event of an IR
- Ensure that notifications are made immediately to the appropriate project personnel

Northern will revise this HDD Plan, as necessary, if new information becomes available either during the course of the application review or the post-authorization period. Northern has provided additional guidance and expectations for its contractors during HDD activities. These documents are included in Attachment 4 and include a plan for the inadvertent release of drilling mud, the environmental expectations for HDD crossings, and an HDD daily report form template. Substantial revisions to Northern's HDD Plan will be submitted to FERC.

3.0 HDD PLAN

Compliance with this HDD Plan will require varying degrees of training, monitoring, communication, documentation and involvement from Northern's Project team, including the construction coordinator and inspectors, the project manager, regulatory, the environmental inspectors, and the manager of construction environmental compliance.

Information on the HDDs proposed for the Project, personnel and responsibilities and the preconstruction activities are described in the following section.

3.1 LIST OF HDDs

Northern will complete HDD crossings of wetlands, streams and public roads in accordance with the FERC Plan and its Procedures. A list of horizontally drilled crossings and locations are included in Table 2. All geotechnical investigations for the listed drills are complete.

Table 2 HDD Summary Table for the Project

Pipeline Facility	Crossing Number/ Ref. Drawing	Begin MP	End MP	Arc Drill Length (feet)	Drilling Mud Water Volume (gal)	Sensitive Resources Crossed	Duration of HDD[2]	Bore hole Log #
Lake Mills M500 E-line	LMA-P4-1	34.36	34.56	1,021	188,200	Stream LMA-S01, ESA-R Area	9 days	BH-00
	LMA-P4-2	35.95	35.99	219	46,700	180th Street	3 days	BH-02
	LMA-P4-3[1]	37.76	38.08	1,745	353,800	200th Street, Wetlands LMA-W20, LMA-W21, LMA-S03 (County Ditch #68/ Shoff Creek), LMA-S04	19 days	BH-05, BH-06, BH-07
	LMA-P4-4	39.15	39.20	249	44,100	210th Street	3 days	BH-08
	LMA-P4-5	39.45	39.61	880	178,200	Railroad	8 days	BH-09, BH-10
	LMA-P4-6	40.63	40.76	661	107,000	I90 Eastbound, I90 Westbound, 225th Street, Wetlands LMA-W41, LMA-W42	6 days	BH-11, BH-12
	LMA-P4-7	41.08	41.24	834	166,600	Stream LMA-S07, ESA-R Area	8 days	BH-13
	LMA-P4-8	41.81	41.99	975	194,500	Stream LMA-S08, ESA-R Area	9 days	BH-14, BH-15
	LMA-P4-9	42.06	42.17	609	94,400	State Highway 13, Railroad, Wetland LMA-W44	6 days	BH-15, BH-16
	LMA-P4-10	42.44	42.48	168	40,400	240th Street	3 days	BH-17

Pipeline Facility	Crossing Number/ Ref. Drawing	Begin MP	End MP	Arc Drill Length (feet)	Drilling Mud Water Volume (gal)	Sensitive Resources Crossed	Duration of HDD[2]	Bore hole Log #
Albert Lea M500 E-line	ALO-P4-1[1]	2.08	2.49	2,209	447,900	Stream ALO-S01, Wetland ALO-W04	23 days	BH-01, BH-02, BH-03
	ALO-P4-2	3.58	3.64	301	54,200	Highway 30, Wetland ALO-W16	3 days	BH-04
Faribault M500 D-line	FAR-P4-1[1]	98.90	99.14	1,265	196,400	Stream FAR-S02, Wetland FAR-W63	11 days	BH-02, BH-03
	FAR-P4-2[1]	99.83	100.06	1,231	191,100	Private Drive, Wetland FAR-W67	11 days	BH-04, BH-05, BH-06
	FAR-P4-3[1]	100.50	100.88	2,035	315,900	280th Street W, Wetland FAR-W69, FAR-W70 ESA-R Area	20 days	BH-07A, BH-08A
	FAR-P4-5	102.04	102.20	855	129,500	265th Street W	7 days	BH-10, BH-11, BH-12, BH-12A
	FAR-P4-6	103.02	103.17	791	123,200	Stream FAR-S05, Wetland FAR-W78	6 days	BH-13, BH-14
	FAR-P4-7[1]	103.59	104.02	2,139	332,000	Wooded Area, Wetland FAR-W80	22 days	BH-16, BH-17, BH-18
	FAR-P4-8	104.49	104.53	205	32,900	245th Street W	3 days	BH-19

[1] HDD operations expected to extend past 10 p.m. during drilling operations.
[2] HDD duration includes equipment set-up, pilot hole, reaming and cleaning, pullback, and testing, and ends with equipment demobilization.

Plan and profile drawings specific to each HDD are included in Attachment 1 and Attachment 5 (CUI//PRIV – DO NOT RELEASE). These drawings depict the approximate entry and exit locations[1], access roads, stringing areas, and other workspaces, as well as the profile of the proposed pipeline centerline and soil stratigraphy results from geotechnical investigations. Northern completed geotechnical borings for the proposed HDDs. The geotechnical data has been incorporated into the plan and profile designs for the HDDs. The reports from the geotechnical drilling are included in Attachment 2.

Seven HDDs will require 24-hour construction for pullback activities due to multiple pullback sections, settlement concerns or drill lengths. As discussed in Resource Report 9, Section 9.2, noise barriers will only be installed at two HDDs, LMA-P4-3 and FAR P4-2, if construction extends past 10 p.m. No HDDs have predicted noise levels that will exceed MPCA daytime criteria. The equipment required to be enclosed inside the noise barriers along with an approximate layout for the noise barriers are depicted on the site-specific HDD plans in Attachment 1. Noise control barriers are represented as sound barrier walls.

Northern anticipates the HDDs listed below will require 24-hour construction.

- Lake Mills M500 E-line
  - LMA-P4-3
- Albert Lea M500 E-line
  - ALO-P4-1

[1]The entry and exit points and proposed equipment layout may vary slightly based on contractor determinations related to site conditions such as topography. These minor changes will be within approved workspaces.

- Faribault M500 D-line
  - FAR-P4-1
  - FAR-P4-2
  - FAR-P4-3
  - FAR-P4-7

Pullback activities on all HDDs will planned to reduce the potential for nighttime noise impacts to NSAs. The Site-Specific Plans depict proposed equipment layout at the entry and exit points for each HDD, including a dimension and location for each containment pit berm. The HDD Site-Specific Plans are overlain on recent aerial photographs and are included in Attachment 1.

3.2 PERSONNEL AND RESPONSIBILITIES

The CMT and EMT are responsible for implementing the HDD Plan. The CMT includes the project manager, construction coordinator, and construction inspectors. The EMT includes the manager of environmental construction compliance, EIs and regulatory personnel. Any member of the EMT has stop-work authority to ensure compliance with the HDD Plan, the conditions of the FERC certificate and other environmental permits. The contractor also is responsible for HDD Plan as well as certificate condition and permit compliance. Additionally, all personnel on the Project, including the contractor, are responsible for maintaining compliance with this Plan along with the FERC certificate conditions and other environmental permits.

The shared responsibilities require the members of the CMT and EMT:

- Verify that all workers are properly trained and familiar with the implementation of the HDD Plan prior to and during drilling operations
- Ensure personnel engaged in HDD activities are familiar with the Plan
- Maintain consistent communication among CMT, EMT and contractor personnel when a suspected IR occurs
- Verify that drilling equipment, including annual pressure monitoring equipment, is working order
- Monitor the HDD alignment for IRs and other signs of unforeseen environmental impact
- Ensure the proper site personnel are informed if an IR occurs and, in the event of an IR, coordinate response, clean-up, and regulatory agency notifications
- Stop or change the drilling program in the event of an observed or anticipated IR
- Notify regulatory/and or resource agency staff in a timely manner, and respond to these staff regarding observed releases or other impacts
- Order and oversee corrective actions for an IR
- Verify waste materials are properly containerized, labelled and removed from the site to an approved facility
- Confirm that drill mud/spoils/cuttings associated with an HDD completed in an area of suspected contamination will be disposed of at an approved facility (landfill)
- Document which personnel have authority to stop work and commit the personnel and equipment necessary to implement the HDD Plan
- Verify a copy of this HDD Plan is available on-site and accessible to all construction personnel

3.3 PRE-CONSTRUCTION ACTIVITIES

3.3.1 Training

An EI trained in HDD and associated environmental protection measures will verify HDD Plan compliance throughout the drilling process. Prior to the commencement of drilling activities, the CMT, contractor, and EI will conduct training with the drilling and inspection personnel to ensure compliance. Such personnel will be thoroughly trained in the application of this HDD Plan. On-site safety and tailgate meetings will provide ongoing communication opportunities and discussions on awareness measures regarding prevention, mitigation and response associated with potential IR events. Training sessions will include the following subjects.

- Provisions of this HDD Plan as well as equipment maintenance and site-specific permit and monitoring requirements
- Approved drilling fluids list
- Inspection procedures including release prevention, monitoring, and containment equipment and materials
- Contractor obligation to immediately notify the CMT and EI upon first evidence of an IR and to implement steps necessary to minimize the impacts of the IR
- Contractor personnel individual responsibilities in event of an IR
- Required notification and response procedures
- Operation of release prevention and control equipment and the location of such materials
- Protocols for agency notification and communication with agency representatives who may be on-site during the clean-up effort

The contactor, CMT and EI will have job briefings to review the appropriate procedures to follow in case of an IR and/or to train new personnel on the HDD Plan. Northern will document these briefings through its environmental procedure 380.203h, Environmental Expectations for HDD Crossings, Tailgate Form (attachment 4). The contractor's failure to comply with the HDD Plan or other environmental procedures and permit conditions will result in an environmental stand-down and retraining of the applicable crew.

3.3.2 Site Inspection

Northern and its contractor will inspect each drill path prior to the start of HDD activities. If any site-specific conditions that may impede the ability to conduct visual inspections along the HDD alignment are identified, site-specific modifications to the proposed inspection plan will be developed and implemented and will be communicated to the contractor, CMT and EI. If previously unidentified unique conditions or features are identified in proximity to the drill path, Northern will coordinate with FERC to obtain variances if these conditions will require modifications to the approved HDD Plan.

Northern's contractor will assign personnel to continuously monitor the HDD activities. This will include walking the HDD path between the entry and exit points, where practicable, and visually inspecting for IRs. At road crossings, the contractor will ensure monitoring is conducted in accordance with all applicable safety requirements. At the waterbody crossing, visual inspections will be conducted from the waterbody banks. The contractor is responsible for determining a safe monitoring method. Northern's EI(s) will also monitor the drill path periodically, at least twice a day, for IRs and document the overall drilling progress, including rate of return and drill pressure. Northern anticipates that foot traffic or drones will be sufficient to monitor the drill paths. Drone

monitoring will be completed by licensed commercial drone pilots utilizing National Defense Authorization Act compliant unmanned aerial vehicle technology.

3.3.3 Landowner Notification

Northern will provide notification to landowners that will be impacted by the Project. The landowner mailings will include contact information for Northern representatives. An example letter that will be provided to affected landowners is included in Northern's environmental complaint resolution procedures, included in Appendix 1D, Resource Report 1.

Northern has informed/will inform all landowners of proposed HDD crossings to occur on their properties during landowner negotiations. Northern has identified nearby landowners and their contact information to facilitate notification should an IR occur on their property, or near their property as appropriate. Northern will complete additional coordination with landowners to discuss an IR event and any necessary remediation activities required to restore their property.

3.3.4 Agency Notification

Northern will continue its practice of identifying a construction activity projection in its construction status reports to FERC. This information includes proposed HDDs within the next reporting period.

In the event an IR occurs, Northern will notify FERC via the next environmental inspection report, and other appropriate resource agencies via telephone and/or email. The agency notifications will occur as required by state and federal regulations. The following information will be provided to agencies and FERC.

- Name and telephone number of the person reporting
- Location of the release
- Date and time of release
- Type, quantity and estimated size of release
- Source of the release
- Type of activity that was occurring at the time of the release
- Description of sensitive areas and their locations in relation to the release, if applicable
- Description of methods proposed or used to clean up or remediate the site
- Relevant permitting agencies notified

Northern will provide similar notifications to the USACE if an IR is discovered in a regulated surface water and will notify the USFWS if an IR occurs near a T&E habitat or species. The information also will be included in the construction reports filed with FERC.

3.4 DOCUMENTATION

The documentation detailed in Table 3 will be available and accessible to all construction personnel at each HDD crossing.

Table 3 Documentation Maintained

Procedure	Documentation	Personnel Responsible for Maintaining Documentation
Employee Training	All personnel on this Project will be trained for environmental compliance, including the HDD Plan. Record of the employee training including when the training was conducted, material covered and employees in attendance will be maintained.	EI and Construction Coordinator
HDD Visual and Pedestrian Monitoring	EIs and CIs will document on a daily basis (in daily reports), their IR monitoring efforts and their findings. An IR tracking log will be maintained.	Contractor and EI
HDD Instrument Logs	Pilot hole progression, drill string axial and dorsal loads, drilling fluid discharge rate and pressure, and down-hole annual pressure will be monitored and recorded during the drilling of the pilot hole	HDD Subcontractor
Drilling Fluid Composition	Monitoring logs of drilling fluid physical properties throughout drilling activities (e.g., mud weight, viscosity, sand content and pH).	HDD Subcontractor
	A clear description of the intent to reuse drilling fluid between HDD locations, as well as documented consultation, with local and state agencies for such reuse Laboratory results of sampled drilling fluid/source water for any inorganic and organic environmental constraints	
Public and Agency Inquires/Comments	A record of communication with the public and agencies that has occurred during HDD activities. This record will include inquiries and comments, as well as response actions.	EI and CMT as necessary

A summary of HDD-specific information will be included in the applicable construction status reports provided to FERC. This information will include: overall status, a summary of visual and pedestrian monitoring activities, issues encountered (including IRs), response actions, and complaints and how they were addressed.

3.5 DRILLING FLUID MANAGEMENT

3.5.1 Drilling Fluid Additives

Drilling fluid to be used for the Project will generally consist primarily of drinking water (source water to be permitted if required) and non-hazardous bentonite, a naturally occurring sedimentary clay. HDD drilling fluid additives may be required to control viscosity, returns on subsurface materials, and hole stability and could include wetting agents and dispersants. All proposed drilling fluid additives will be compliant with the ANSI/NSF 60 – Drinking Water Treatment Chemicals – Health Effects list and all joint lubricants must be ANSI/NSF 61 listed. Northern will not approve the use of drilling fluid additives containing cationic or anionic polyacrylamides for use under wetlands and waterbodies, nor allow additives that require flushing to be used after the initial pilot pass. All drilling fluid additives will be approved by Northern's environmental specialist responsible for permitting the Project. The drilling additives will be listed in the bi-weekly reports to FERC.

Exact mixtures of fluids and additives are determined by the drilling contractor and its mud engineer based on the anticipated and actual geological materials encountered within the HDD path.

3.5.2 Drilling Fluid Physical Properties

Raw drilling fluids are produced by adding small amounts of bentonite and/or additives to fresh water. The fluids are mixed and maintained within a holding tank. The drilling fluids are only used once the desired fluid properties have been achieved. Properties are site-specific and vary between HDDs.

The contractor will monitor the drilling fluid properties (fluid weight, viscosity, sand content and pH) during drilling operations. Generally, a mud engineer or similar subject-matter expert is consulted to ensure proper fluid chemical and physical properties are being maintained to optimize fluid pressure and minimize IRs. All water for drilling will be obtained from a regulated public water supply. Anticipated drilling mud water use volumes are provided in Table 2.

3.5.3 Drilling Fluid Management and Disposal

The contractor will continuously monitor drilling mud pressures and return flow during active drilling operations.

Monitoring and sampling procedures will include the following.

- The EI and contractor will complete visual inspections along the drill path, including monitoring wetlands, waterbodies and other sensitive resource areas, for evidence of an IR. Northern's contractor will assign specific personnel to continuously monitor the HDD activities. This will include walking the HDD path between the entry and exit points, where practicable, and visually inspecting for IRs. At road crossings, the contractor will ensure monitoring is conducted in accordance with all applicable safety requirements. In areas of open water visual inspections will be conducted from the waterbody banks. The contractor is responsible for determining a safe monitoring method. Northern's EI(s) also will monitor the drill path periodically, at least twice daily, for IRs and document the overall drilling progress, including rate of return and drill pressure.
- A down-hole annular pressure monitoring tool will be utilized during the HDD pilot hole to ensure the contractor can detect a decrease, loss, or spike in drilling fluid pressure and respond to a potential hydrofracture and IR.
- A drilling fluid specialist or mud engineer will review and assess drilling mud properties and will recommend changes to these properties based on conditions encountered during drilling. The specialist is responsible for sampling, testing and recording/documenting the fluid properties of the raw and returning drilling fluid during drilling operations. The properties typically include viscosity, fluid density (or mud weight), and sand content. The monitoring frequency of the drilling fluid properties varies depending on the conditions of the work and the subsurface features encountered.
- Status information regarding drill conditions, pressures, returns, and progress during the course of the drilling activities will be monitored, recorded and maintained by the contractor. The data will then be utilized to create a drill summary report that will be provided to Northern upon successful completion of the drill. Such materials will be available upon request.
- Drilling fluid may be recorded, recycled or reused to the extent possible. Waste drilling fluid will be disposed of in accordance with Section III.3 of the Plan.

Northern's contractor will be responsible for the disposal of the drilling mud. Northern may allow land application of drilling mud in upland areas with landowner approval. Northern will test for the following contaminants prior to off-site disposal: total petroleum hydrocarbons, benzene, toluene, ethylbenzene and xylene, RCRA TCLP metals, RCRA TCLP herbicides and pesticides.

Disposal sites will be limited to upland areas including mine reclamation sites, landfills and landspreading in upland agricultural areas with landowner approval.

3.5.4 Hydro-fracture Assessment and Geotechnial Conditions

The Hydro-Fracture Assessment and Geotechnical Conditions can be found within Section 7.0 of Attachment 3.

3.6 HDD OPERATIONAL CONDITIONS AND RESPONSE ACTIONS

Monitoring of the HDD alignment for an IR is an integral component of this HDD Plan and the success of an HDD. Monitoring frequency will vary depending upon a multitude of factors, and characterized by the operating conditions below:

- Condition 1: normal drilling (full drilling fluid circulation)
- Condition 2: loss of or diminished drilling fluid circulation
- Condition 3: IRs of drilling fluid

Each operating condition and the respective monitoring protocols are described below.

Monitoring Protocol for Condition 1

When HDD operations are in progress and full drilling fluid circulation is being maintained at either the HDD entry point or HDD exit point, the following monitoring protocol will be implemented.

- The presence of drilling fluid returns at the HDD entry and exit points will be continuously monitored by the contractor.
- Land-based portions of the drilled alignment will be walked at a frequency necessary to determine the presence of absence of IRs as determined by the EI. Visual inspections will be conducted to identify signs of an IR of drilling fluid, as well as surface heaving and settlement. Waterways will be visually inspected from the banks for a visible drilling fluid plume.
- Drilling fluid products present at each HDD will be documented.
- If an IR of drilling fluid is detected during routine monitoring, the monitoring protocol associated with Condition 3 will be implemented.

Monitoring Protocol for Condition 2

When HDD operations are in progress and full drilling fluid circulation to the HDD entry or exit points is notably lost or diminished, the following monitoring protocol will be implemented.

- The EI and contractor will immediately conduct a pedestrian survey along the drill alignment for an IR.
- If an IR is determined, HDD operations will be halted and the EI notified of lost returns of drilling fluid.
- Drilling operations will resume after the IR survey is complete and there has been a determination that there is no IR, or after the IR is sufficiently contained. The EI will document steps taken by the contractor to restore circulation. Should the contactor fail to

comply with the requirements of this HDD Plan, the EI will notify Northern's CMT and EMT so that appropriate actions can be taken.

- If circulation is regained, the EI, CMT and the contractor will resume the monitoring protocols associated with Condition 1.
- If circulation is not re-established, the EI will increase the frequency of visual inspection along the HDD alignment, as appropriate. Additionally, the EI will document periods of contractor downtime (during which no drilling fluid is pumped) and the contractor's drilling fluid pumping rates in case it should later become necessary to estimate lost circulation volumes. If an IR is not detected along the drill alignment, the EI, CMT and contractor will expand the survey area up to the full width of the ESB. The EI also will inspect the downstream stream and road intersections, if present, for signs of increased turbidity.

Monitoring Protocol for Condition 3

If an IR of drilling fluids is detected, the following monitoring and operational protocol will be implemented.

- Immediately on discovery, drilling operations will be suspended and containment measures will be implemented by the contractor. Documentation of any containment measured employed will be completed by the EI.
- The contractor and/or EI will notify the CI, Northern's EMT, and Northern's ROW department. Upon receiving a notification, Northern will complete external notifications per Sections 3.3.3 and 3.3.4 of this HDD Plan.
- The EI will document the location, approximate area impacted, approximate volume, and actual or potential IR impacts to aquatic or sensitive resources.
- The EI will periodically monitor and document both the IR and the effectiveness of the containment measures (further discussed in Sections 3.3.2 and 3.7.3). Periods of contractor downtime and contractor's drilling fluid pump rate will be documented in those instances where an IR threatens an environmentally sensitive resource or poses a risk to public health or safety. Drilling operations will resume when the return is contained and successfully remediated.

3.6.1 Monitoring and Pedestrian Surveys

Northern's contractor will assign personnel to continuously monitor the HDD activities. Monitoring will include walking the HDD path between the entry and exit points, where practicable, and visually inspecting for IR of drilling mud. At road crossings, the contractor will ensure monitoring is conducted in accordance with all applicable safety requirements. At the waterbody crossing, visual inspections will be conducted from the waterbody banks. The contractor is responsible for determining a safe monitoring method. Northern's EI(s) will also monitor the drill path periodically, at least twice a day, for IRs and document the overall drilling progress, including rate of return and drill pressure. Northern anticipates that foot traffic will be sufficient to monitor the drill paths.

3.7 RESPONDING TO INADVERTENT RELEASES

Northern and the contractor will address IRs immediately upon discovery. The actions taken will depend on the location of the IR, site-specific geological conditions, the estimated volume of the IR, the proximity of sensitive resources, if present, and whether the IR is within an approved construction footprint. Northern will notify and obtain approval from all applicable agencies, landowner and the FERC when performing cleanup activities outside of the approved construction workspace. In the

event an IR occurs, Northern will notify FERC via the next environmental inspection report, and other appropriate resource agencies via telephone and/or email. The agency notifications will occur as required by state and federal regulations.

Upon discovery of an IR, the drilling operation will be immediately stopped. Any IR will be immediately enclosed by an appropriate containment device. The device will be constructed from the on-site materials and supplies in a manner that minimizes impact on the surrounding environment. The device type and size will be determined by the severity of the release.

Following completion of containment, the drilling mud will be cleaned up and removed for proper disposal in compliance with the applicable local, state and federal regulations. Drilling will be allowed to continue once containment structures are in place while clean up, removal and disposal activities continue at the IR location. The containment structure will remain in place until the HDD operation is complete.

Upon resuming drilling operations, the contractor may reduce the gallons-per-minute or the delivery pressure of drilling mud to minimize the release of drilling mud to the surface. If flows cannot be sufficiently decreased and environmental conditions permit, a viscosifier (additive) may be added to the drilling mud to promote bore-hole stability. In cases where the release cannot be entirely stopped, the operation may proceed provided the containment structure is not breeched and mud is continuously removed from or maintained in the structure.

3.7.1 Response Materials and Equipment

Containment materials and equipment will be available at each HDD entry and exit point. Materials and equipment may include the following:

- Spill sorbent pads and booms
- Hand tools
- Push brooms
- Sandbags
- Hay bales (certified weed-free)
- Silt fence
- Buckets and wheelbarrows
- Plastic sheeting
- Turbidity curtains (for open water crossings)
- Lumber

The following mechanized and other equipment should be immediately available, as needed:

- Portable pumps
- Vacuum truck
- Rubber-tired or wide-tracked backhoe
- Skid steer
- Storage tanks

3.7.3 Release and Remediation Measures

The following sections identify measures that will be implemented to minimize or prevent further release, contain the release and remediate the affected area.

Upland Release

If an IR is identified within the HDD construction ROW, within upland areas, and without potential impact on aquatic resources (e.g., wetlands, ditches, streams, rivers, ponds), then notification, containment and remediation will be carried out as necessary and per this HDD Plan. The contractor, the CMT and the EI will work closely to determine the best course of action for IRs occurring within the upland areas. The contractor will take appropriate actions to eliminate, reduce, or control the release. The actions may include the following.

- Constructing a sandbag coffer dam around the release point; installing a section of silt fence and/or straw bales to trap as much drilling fluid as possible; and placing a pump hose in the pit to pump the drilling fluid back to the HDD entry or exit or temporary holding vessel
- If the amount of the release is not large enough to allow collection, the affected area will be diluted with fresh water and allowed to dry; sediment barriers will be installed to prevent silt-laden water from flowing into a wetland or waterbody
- Reducing drilling fluid pressures
- Adding pre-approved materials to the fluid mixture for circulation loss
- Once the pullback is complete, final steps to remediate the release will be completed. The contractor will remove the majority of the IR fluids, wash and squeegee remaining fluids from the area to remove the remaining fine particles from vegetation prior to removing the containment structure. Northern will consult with applicable regulatory agencies to determine any additional clean-up requirements for the IR

If public health and safety or sensitive environmental areas are threatened by an IR, drilling operations will be shut down until the threat is contained. Drilling fluid may be recovered, recycled and reused to the extent practicable.

Wetland or Waterbody Release

The successful use of the HDD method results in no planned impact on the banks, bed or water quality of the waterbody (or other feature) being crossed. However, the possibility exists for drilling mud to reach the surface via an IR. If an IR is identified within sensitive resources (e.g., wetlands or streams), drilling operations will be suspended to allow the EI to appropriately quantify the release, document its location, photograph the release, assess the potential impact on the aquatic resource and report the incident to the contractor, CMT and EMT. Information regarding the release will be recorded and updated to comply with this HDD Plan.

The contractor will take actions to eliminate, reduce or control the IR, including but not limited to, the following.

- Drilling mud returns will be collected at the drill entry location for future analysis, if required.
- The contractor will determine and implement modifications to the drilling technique or composition of drilling fluid (e.g., thickening the mud by increasing bentonite content) to minimize or prevent further releases of drilling mud.
- Reasonable measures will be taken to re-establish drilling mud circulation.
- The IR will be evaluated to determine if containment structures are warranted and can effectively contain the IR. When making this determination, Northern also will consider if placement of containment structures will cause additional adverse environmental impact.
- Approved activities only will be implemented under the full-time supervision of the EI.

- Drilling operations will resume when the IR is contained and initial steps to remediate the area are underway.
- The IR area will be monitored during the daily inspection.
- Once the pullback is complete, final steps to remediate the release will be completed. The contractor will remove the majority of the IR fluids, wash and squeegee remaining fluids from the area to remove the remaining fine particles from vegetation prior to removing the containment structure. Northern will consult with applicable regulatory agencies to determine any additional clean-up requirements for the IR.

T&E Species Resource

There are no critical habitat areas located in the Project area. The Project area contains potentially suitable habitat for the following federal or state-listed T&E species: Northern long-eared bat, edible valerian, Monarch butterfly, and Blanding's turtle. Northern is currently coordinating with the USFWS and MDNR to discuss potential impacts from HDDs or IRs on these species.

Outside of Approved Project Workspaces or Inaccessible Areas

If the IR occurs in an area outside of the approved Project workspaces or in inaccessible areas, the contractor will work directly with the EIs and Northern's CMT to immediately contain the drill mud. Northern's ROW group will coordinate with the affected landowner(s) to determine the least impactful method to remediate the released materials.

If an IR occurs in an inaccessible area, typical responses will include foot traffic to set up pumps with small hoses to transfer the release from the location of the IR back to an accessible location or use shovels, wheelbarrows, buckets, or pumps to transfer the released fluid to an accessible location. Construction of new access roads outside of permitted locations is not anticipated, as the mitigation equipment can generally be carried by hand. Once the drilling fluid is contained, Northern will notify the appropriate agencies; however, the contractor will begin the process of collecting the released drilling mud immediately following an IR.

For the areas that do not have existing environmental clearances, Northern will coordinate with the agencies, as required, to obtain the necessary clearances concurrently with the clean-up efforts. Upon completion of the initial containment/clean-up efforts, Northern will notify FERC and coordinate with FERC to obtain any necessary approvals to continue to monitor the IR once drilling activities resume. All areas disturbed will be restored per the Plan and Procedures, or as directed by applicable agencies and landowner request.

Releases within or adjacent to Water Supply Well

The successful use of the HDD method results in no planned impact on water supply wells within or adjacent to the Project. However, the possibility exists for drilling mud to reach the surface via an IR. If an IR is identified within or adjacent to a water supply well, drilling operations will be suspended to allow the EI to appropriately quantify the release, document its location, photograph the release, assess the potential impact on the water supply well and report the incident to the contractor, CMT and EMT. Information regarding the release will be recorded and updated to comply with this HDD Plan.

The contractor will take actions to eliminate, reduce or control the IR, including but not limited to, the following.

- Drilling mud returns will be collected at the drill entry location for future analysis, if required.
- The contractor will determine and implement modifications to the drilling technique or composition of drilling fluid (e.g., thickening the mud by increasing bentonite content) to minimize or prevent further releases of drilling mud.
- Reasonable measures will be taken to re-establish drilling mud circulation.
- The IR will be evaluated to determine if containment structures are warranted and can effectively contain the IR. Any containment structures used will remain in place until the HDD operation is complete.
- Approved activities only will be implemented under the full-time supervision of the EI.
- Drilling operations will resume when the IR is contained and initial steps to remediate the area are underway.
- The IR area will be monitored during the daily inspection.
- Once the pullback is complete, final steps to remediate the release will be completed. The contractor will remove the majority of the IR fluids, wash and squeegee remaining fluids from the area to remove the remaining fine particles from vegetation prior to removing the containment structure.

Northern will complete the following actions:

- Northern will notify the landowner of the water supply well immediately, either via telephone call or in-person contact. The communication will provide detail on the IR, timeline, and proposed remediation activities.
- Northern also will contain the IR and collect water samples from the well as appropriate. The water samples will be analyzed for TDS and TSS and be visually inspected for clarity and color.
- Northern will document and report any increase in TDS, TSS or change in visual clarity from preconstruction conditions.
- Northern will provide an alternate water source to the landowner until the IR is remediated and water quality concerns are resolved.
- Northern will consult with the landowner to determine any additional clean-up requirements for the IR.

3.8 RESTORATION

Areas affected by IRs will be restored to pre-existing conditions and contours to the extent practicable in accordance with the Plan and Procedures and applicable permits. Upland areas will be restored through typical ROW restoration procedures such as grading, seeding, and temporary or permanent erosion control devices, as necessary. Similarly, wetlands and waterbodies will be restored to pre-existing conditions and contours to the extent practicable.

After each segment of pipeline has been installed and backfilled, the areas disturbed by construction, including those used for HDDs, will be final graded. Original land contours will be restored, as near as practicable, to conform to adjacent areas. Non-cultivated land will be reseeded in accordance with individual landowner requirements, land management agency requirements, AIMP requirements, or NRCS recommendations. Construction debris will be removed for proper disposal. All construction equipment will be removed following final clean-up activities.

Heavy equipment traffic may compact the subsoil on agricultural land. Topsoil and subsoil will be tested for compaction following construction in agricultural areas. Northern will decompact subsoil

in accordance with the soil compaction mitigation procedures described in the Plan. These include use of appropriate deep-tillage equipment such as a paraplow or chisel plow. Compaction testing will be conducted to verify compaction is relieved to a level equal to or better than adjacent undisturbed areas. Once decompaction of the subsoil is complete, the segregated topsoil will be returned. Decompaction will be completed on the restored topsoil using shallow-ripping tools. Northern will remove excess rock from the upper 12 inches of soil in all cultivated cropland, pastures and hayfields. The final surface will be examined to verify that native rock visible on the surface is similar in size, density and distribution to that in undisturbed areas adjacent to the ROW.

Clean-up will include restoring the slope, contour, grade, and drainage of the ROW as near as practicable to preconstruction conditions. Temporary and permanent erosion and sediment control measures, which may include silt fencing and/or diversion terraces, will be installed along the entire ROW at this time. Final erosion and sediment control measures will also be installed in accordance with the Plan and Procedures and the Project SWPPPs, including site-specific contouring, permanent slope breakers, mulch, and reseeding or sodding to stabilize the disturbed soils. The erosion control measures used will be in accordance with the Project SWPPPs approved by the local soil conservation district, appropriate state agencies and Northern's construction procedures. Non-cropland will be revegetated in compliance with seed, fertilizer, and soil additive recommendations obtained from the local soil conservation authority or as requested by the landowner. Northern will work with landowners to determine if their property will need to be seeded with a native grass seed mix.

The Project areas will be cleaned and restored in accordance with applicable state and federal permits and plans. Final grading will be completed, gravel surfaces refreshed (as needed) and grass or appropriate vegetation seeded per specifications. Compliance with the Project SWPPPs and other permanent mitigation measures according to local, state and federal permits will be verified.

3.9 CONTINGENCY PLAN

Northern may opt to abandon the drillhole and consider alternative construction measures. Northern's contractor will submit their methodology to abandon the borehole to Northern for approval. Abandonment procedures and alternative measures will be discussed with appropriate permitting and regulatory agencies and approvals from the agencies will be secured. Abandonment procedures and alternative crossings are described in the subsequent sub-sections.

Generally, there are three kinds of failure during the HDD process: the pilot hole installation, hole opening or expansion and the pullback processes.

3.9.1 Pilot Hole Failure

During the pilot hole drilling, the hole may collapse on the drill rod. This collapse is typically caused by the failure of the drilling fluid to keep the drill hole stable, unfavorable drilling stratum containing glacial till or cobbles or multiple changes in strata combined with long drill lengths. If the hole collapses on the drill rod and creates friction, the torque required to spin the drill rod will increase. The increased friction could become great enough to prevent the drill rod from being removed. In an effort to free the drill rod, torque and tension are applied to the drill rod by the drill rig. The combined stress load exerted upon the drill rod may exceed the strength of the drill rod and may cause the drill rod to either shear or twist into pieces.

In the event the drill rod jams, the contractor will work to dislodge the drill rod. If the effort(s) is unsuccessful (i.e., the drill rod breaks and cannot be retrieved from the pilot hole), the initial pilot

hole will be abandoned, according to procedures detailed below. Northern will conduct a root cause analysis of the failed attempt to minimize the risks of subsequent failures and develop alternatives for the subsequent attempt. Following the root cause analysis, another pilot hole will be drilled. The contractor will shift the drilling rig laterally and drill the pilot hole along a track that parallels the previous pilot hole. The lateral separation will depend upon the cause of the failure. The depth of the drill may be adjusted, and the distance between the entry and exit points may be extended or shortened. Prior to initiation of drilling of any additional pilot holes, Northern will document that the alignment/construction workspaces remain within the environmentally and culturally cleared areas, conduct additional surveys as required, and modify existing permits as needed. Proposed modifications to the bore profile (entry/exit angles, depths, bend radii) or drilling parameters (bit size/type, drilling fluid viscosity, etc.) will be evaluated to so that modifications satisfy acceptability criteria for stress and annular pressure.

The Feasibility Report (see Attachment 3) confirms the proposed HDD designs should maintain an acceptable geometric profile within suitable material and avoid identified gravel and rock strata, mitigating the risk of failure during pilot hole operations and providing a high probability of successful HDDs.

3.9.2 Pilot Hole Enlargement (Reaming) Failure

In certain soil formations, the reaming process may stall and the hole may become enlarged. The unconsolidated material may slough into the hole. The large volumes of drilling mud used to maintain borehole stability can wash out unconsolidated material. If the soils cannot be bridged, the hole may become more unstable and prevent drilling mud from returning to the entry or exit points. If the drilling mud is no longer able to transport the drill cuttings out of the hole, the cuttings will build up in the bottom of the hole. The build-up may increase friction and cause additional wear on the drill rod. In addition, the increased friction can cause the drill rod to slow or stop rotation to a point where the drill rig cannot supply enough torque to continue drilling. Subsequently, the drill rod may suffer shear or plastic failure.

In the event the drill rod jams during the reaming process, the contractor will work to dislodge the drill rod. If the reaming drill head is separated from the drill rod, the contractor will work to fish the tool from the drill hole. If the effort(s) is unsuccessful (i.e., the drill rod or drill head break and cannot be retrieved from the borehole), the borehole will be abandoned. The borehole will be grouted during abandonment or the pipe will be left in place to minimize subsidence concerns. A root-cause analysis will be conducted, a new drilling location will be determined, and the HDD process will return to the pilot hole stage for a subsequent drilling attempt as described in the previous section of this plan.

The Feasibility Report indicates the proposed HDD designs should maintain an acceptable geometric profile within suitable material and avoid identified gravel and rock strata, mitigating the risk of failure during the reaming process and providing a high probability of successful HDDs.

3.9.3 Pipe Pullback Failure

Failure during the pullback process may occur if the pipe becomes lodged in the hole and cannot be moved in either direction. If the pipe encounters an obstruction preventing further movement, the pull of the drilling rig may increase to a level that causes the connection to the pipe to break or the obstruction may simply result in the drill not being capable of exerting the force required to pull the pipe.

In the event the pipe becomes jammed during the pipe-pull process, the contractor will work to dislodge the pipe. The drill rig may be moved to the opposite side of the crossing in an attempt to pull the pipe back out of the drill hole. Additionally, a pneumatic hammer or pulley system/snatch block may be used in lieu of or in combination with the drill rig to assist in pushing or pulling the pipe. Limitations on the applied force and duration of hammering activities will be provided based on the strain limits of the pipe and welding procedures. Should hammering be required, Northern will implement noise monitoring and mitigation. If the efforts are unsuccessful (i.e., the pipe cannot be retrieved from the hole), the pipe will be abandoned. A root-cause analysis will be conducted, a new drilling location will be determined, and the HDD process will return to the pilot hole stage for a subsequent drilling attempt as previously described.

The Feasibility Report confirms the proposed HDD designs should maintain an acceptable geometric profile within suitable material and avoid identified gravel and rock strata, mitigating the risk of failure during the pipe pullback process and providing a high probability of successful HDDs.

3.9.4 Abandonment Procedures

While any HDD installation has the potential to be unsuccessful, the determining factors are dependent on the location of the HDD and include encountering soil conditions not conducive to boring, caving of the borehole, loss of the drill string in the borehole, loss of drilling mud circulation, and pullback refusal. Many of these potential failures can be avoided or mitigated by making appropriate adjustments to the operation of the HDD equipment. In the event the adjustments do not correct the problem, the borehole may be moved to an adjacent location within a previously approved workspace.

The following procedures will be implemented to abandon the drill hole(s) and pipeline.

- For abandonment resulting from the pilot hole drilling stage, the hole will be filled with cuttings, drilling mud, and/or low-density cement grout and sealed.
- For abandonment resulting from the pilot hole enlargement stage, the hole will be filled with cuttings and drilling mud and/or cement grout and sealed.
- For abandonment resulting from the pipe pullback stage, the section of the hole with pipe will be cut a minimum of three feet below grade, filled with drilling mud and/or cement grout and capped; the section without pipe will be filled with cuttings and drilling mud and sealed.

At all abandoned drill holes, the entry location will be finished with topsoil, graded and seeded to match original contours and conditions or per landowner requirements.

3.9.5 Alternative Crossings

Northern's contingency plan consists of multiple attempts, as deemed necessary, to complete the HDD crossings. Before any determination of alternative crossings, an attempt will be made to identify and assess the reason for the drill failure as this may be critical for selection of the alternative. Consideration of alternatives will include but not be limited to:

- Horizontal relocation of the drill hole
- Changing the drill profile (depth of hole)
- Changing drill procedures (e.g., mud viscosity/pressure/flow velocity, bit rotation/velocity)
- Open cut from banks with pipe pulled across
- Partial stream diversion using cofferdams with pipe tie-in it during second diversion

In developing the appropriate alternative, consideration will be given to:

- Stream bank type, flow width, depth, velocity, and flow volume
- Surrounding topography
- Condition of riparian areas
- Condition and extent of wetlands if any
- Permitting requirements
- Aquatic biota
- Downstream water uses or needs

These and other factors will be considered and discussed with appropriate regulatory agencies in order to minimize environmental and public convenience impacts.

Northern completed an HDD Feasibility Report that indicates that the HDDs, as designed, have a high probability of success; therefore, Northern determined that HDD is the best-suited construction methodology to complete the eleven crossings to minimize environmental impact on the sensitive features. More information can be found in the HDD Feasibility Report (Attachment 3).

4.0 PERMITS AND APPROVALS

Throughout the permitting process, various regulatory agencies, including FERC, USACE, USFWS, the Minnesota SHPO, and various other state and local agencies, may require additional resource protection measures. These additional measures will be provided to Northern's CMT. Specifications in the construction procedures will be implemented along the length of the Project as a general construction document and integrated into contractor training protocols.

The Project will require numerous regulatory reviews and approvals. Table 4 provides a summary of the major permits and the current status of each application or consultation that may specifically be required to complete the proposed HDDs.

Table 4 Required Permits and Clearances

Responsible Agency	Permit or Clearance Required	Status of Permit/Clearance	Anticipated Permit Receipt Date
Federal			
FERC	Certificate for abandonment and capacity replacement of interstate natural gas transmission pipeline facilities	Section 7 application will be filed February 2026	February 2027
EPA	Clean Air Act permits and approvals	Delegated to the state (MPCA/IDNR)	N/A
	CWA Section 401 Water Quality Certification	Delegated to the state (MPCA/IDNR)	N/A
	CWA Section 402 permits for wastewater or stormwater discharges	Delegated to the state (MPCA/IDNR)	N/A

Responsible Agency	Permit or Clearance Required	Status of Permit/Clearance	Anticipated Permit Receipt Date
NRCS	Conservation Easement Program and seeding recommendations	NA	Northern utilizing responses provided for previous Northern Lights Expansion Projects as they had similar footprints
USACE – St. Paul District	CWA Section 404 – Dredge and Fill Permit	USACE notification submitted February 2026	Wetland impacts will qualify under the Regional General Permit 3 – Non-Reporting; no permit or authorization required
USACE – Rock Island District	CWA Section 404 – Dredge and Fill Permit	USACE notification submitted February 2026	Wetland impacts will qualify under the Nationwide Permit 12 – Non-Reporting; no permit or authorization required
USFWS – Twin Cities Field Office	Section 7 Endangered Species Act, BGEPA and MBTA – consultation clearance request for Minnesota	Initial coordination submitted January/February 2025; D-keys and species survey protocols received	No effect determination on all federal species; consultation complete
USFWS – Rock Island Field Office	Section 7 Endangered Species Act, BGEPA and MBTA – consultation clearance request for Iowa	Initial coordination submitted January/February 2025; D-keys and species survey protocols received	No effect determination on all federal species; consultation complete
Native American Tribes	NHPA Section 106 consultation to determine impacts on Traditional Cultural Properties	Submission of cultural reports and UDPs completed February 2026	Responses anticipated March/April 2026
State – Minnesota			
MPCA	Clean Air Act, Prevention of Significant Deterioration Minor/Title V Major Air Construction Permit	No compressor/compressor station(s)	N/A
	Section 401 Water Quality Certification	Authorization concurrent with USACE Section 404 Approval	No USACE Preconstruction Notification; therefore, Northern will adhere to the Section 401 provisions of the Utility Regional General Permit

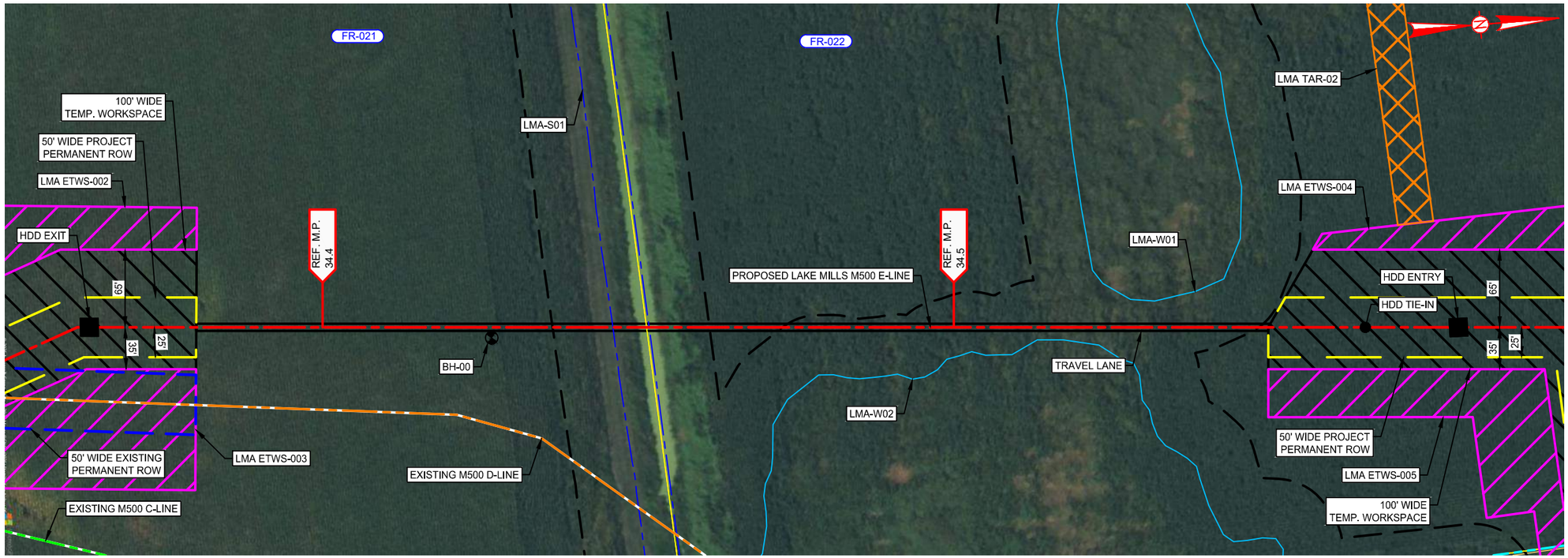
Responsible Agency	Permit or Clearance Required	Status of Permit/Clearance	Anticipated Permit Receipt Date
	NPDES Stormwater Permit MNR100001	Permit application submittals anticipated February/March 2027	Responses anticipated March 2027
	NPDES Trench Water Discharge Permit	Dewatering information included with stormwater permit application	Authorization included with stormwater permit
MDNR	MPARS Water Appropriation Permit for Pit Trench Water	Permit application submittals anticipated February/March 2027	Responses anticipated March 2027
	State Protected Species Consultation	Consultation letters submitted February 2026	Consultation ongoing, expect final responses summer 2026 after plant surveys complete
State Historical Society of Minnesota	Section 106 Consultation, NHPA	Submission of cultural reports and UDP February 9, 2026	Response anticipated April/May 2026
MDA	Comments on Northern's Noxious Weed Mitigation Plan	Coordination initiated February 17, 2026	Response anticipated April 2026
Iowa			
IDNR	IPDES Air Permits	No compressor/compressor station(s)	N/A
	Section 401 Water Quality Certification	No wetland impacts in Iowa; permit not required	N/A
	Section 402 of the Clean Water Act, National Pollution Discharge Elimination System	Environmental Review request via IA PERMT database submitted May 2025	Response received May 2025
	Iowa General Permit No. 2 stormwater discharge associated with construction activities	Permit application submittals anticipated February/March 2026	Response anticipated April 2026
	Water Allocation and Use Permit	Permit application submittals anticipated Q3 2026	Authorization anticipated Q3 2026

	Floodplain Development Permit	Environmental Review request via IA PERMT database submitted May 2025	Response received May 2025
Iowa State Historical Society	Section 106 Consultation, NHPA	Submission of cultural reports and UDP February 16, 2026	Response anticipated March 2026
Local			
CPKC	Public works and utility crossing permit	Anticipate submittal Q3 2026	Response anticipate early 2027

Attachment 1

HDD Plans and Profiles and Site-Specific Plans

PLAN & PROFILE STREAM LMA-S01



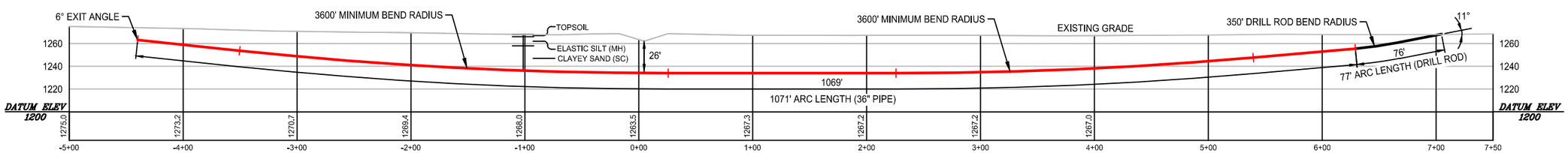
LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- EXISTING M500 C-LINE
- PROPERTY LINE
- WETLAND
- STREAM
- WETLAND BUFFER
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- TEMP. ACCESS ROAD
- HDD ENTRY/EXIT
- BOREHOLE

PLAN

SCALE : 1"=50'
REF. DWG. LMA-P3-1 & LMA-P3-2

-4+40 HDD EXIT
-3+51 END 0° TO 6° ARC
-2+43 REF MP 34.4
-1+02 BH-00 (PROJECTED)
-0+51 WETLAND BUFFER
0+00 /1818+75 STREAM
0+26 START 0° TO 6° ARC
0+28 PROPERTY LINE
0+30 STREAM
0+81 WETLAND BUFFER
1+42 WETLAND BUFFER
2+26 END 5° TO 0° ARC
2+85 REF MP 34.5
5+40 WETLAND BUFFER & START 5° TO 0° ARC
6+29 END 11° TO 5° ARC (DRILL ROD) & HDD TIE-IN
6+66 START 11° TO 5° ARC (DRILL ROD)
7+05 HDD ENTRY



PROFILE

SCALE (VERT): 1"=50'
SCALE (HORIZ): 1"=50'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PI#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	2/14/25	
DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
SCALE: 1"=50'			

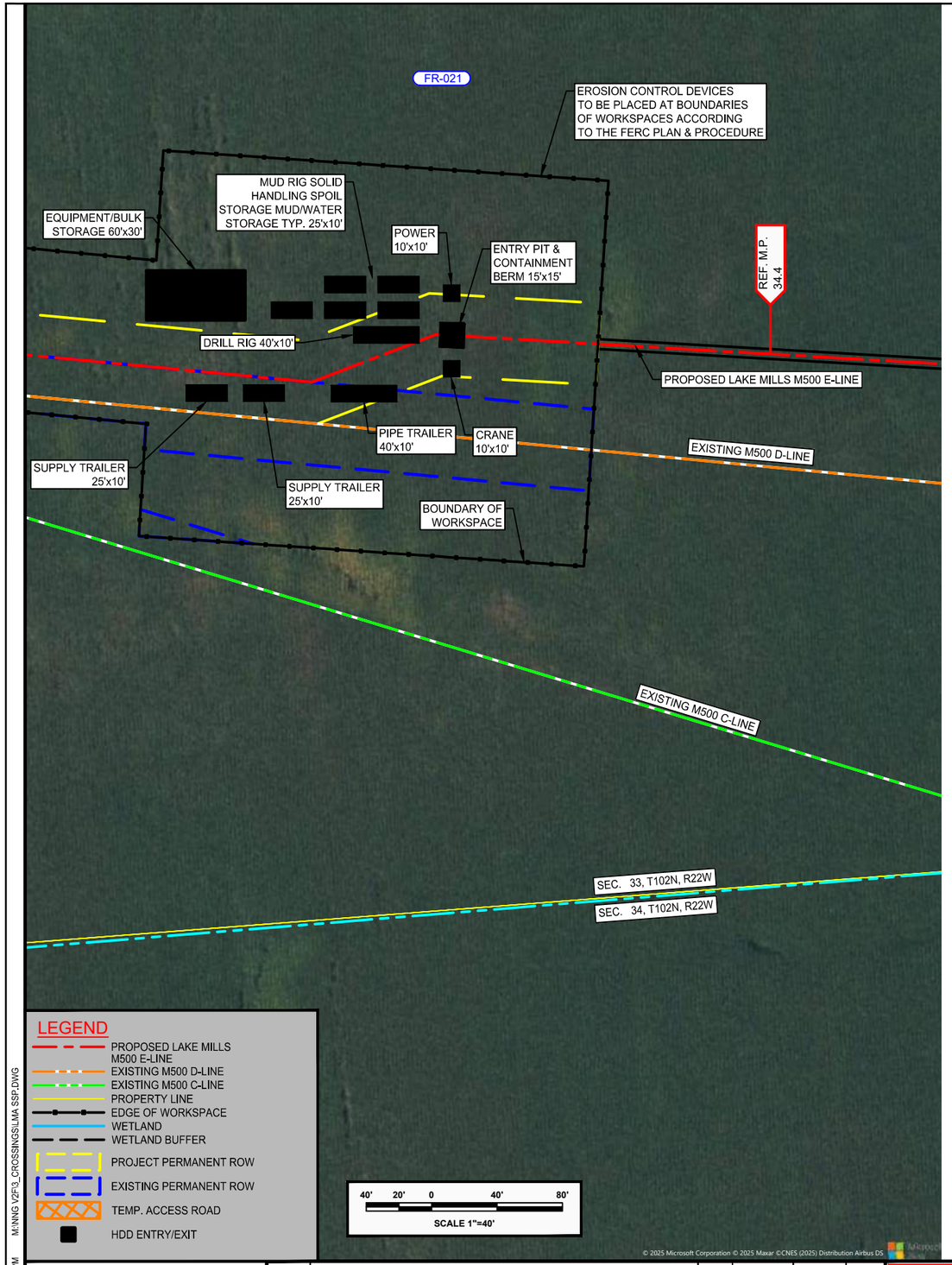
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE WETLAND LMA-S01
SEC. 33, T102N, R22W
FREEBORN COUNTY, MINNESOTA

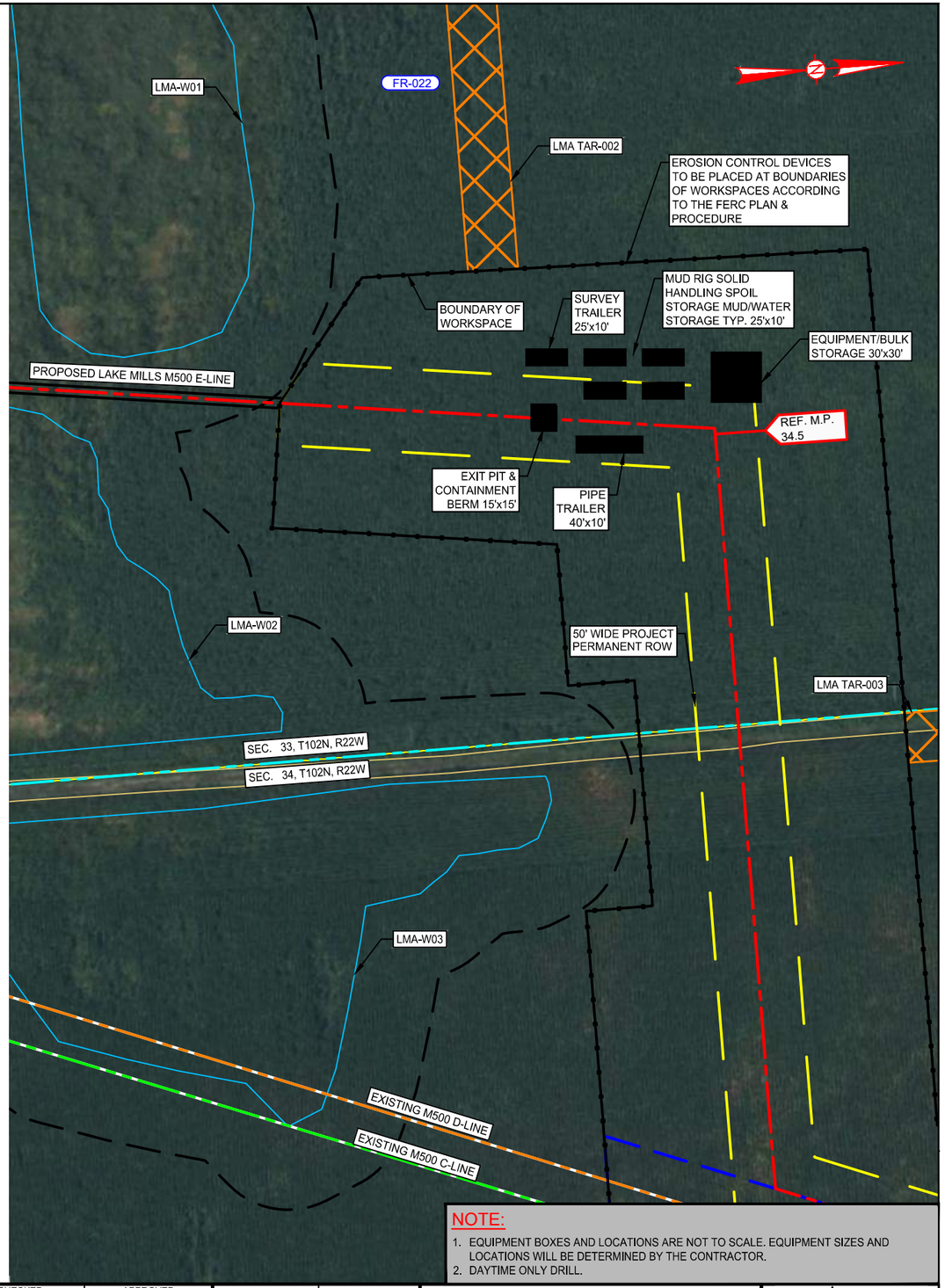
Northern Natural Gas.

PROJECT NO.

DWG. NO. LMA-P4-1 F

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Wong, Alice 2/23/2026 6:21 PM





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/23/2026 8:59 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
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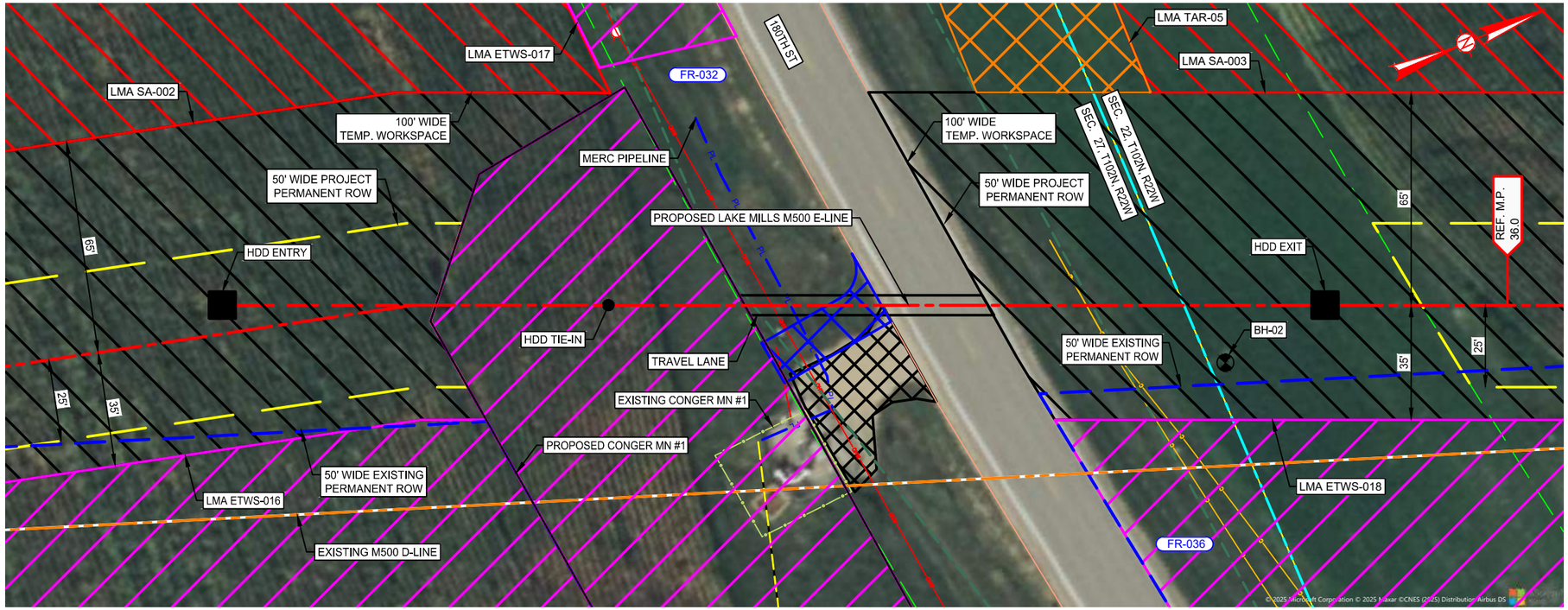
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE WETLAND LMA-S01
SEC. 33, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

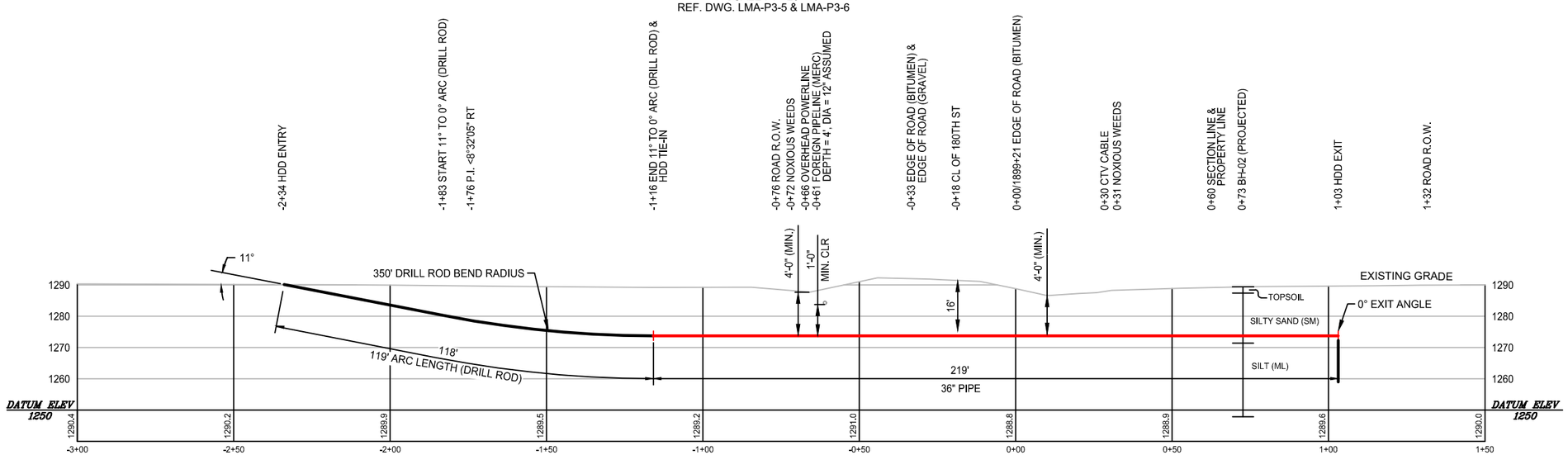
PROJECT NO.

DWG. NO.
LMA-SSP-1
F

PLAN & PROFILE 180TH ST



PLAN
SCALE : 1"=20'
REF. DWG. LMA-P3-5 & LMA-P3-6



PROFILE
SCALE (VERT): 1"=20'
SCALE (HORIZ): 1"=20'

LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- PL — FOREIGN PIPELINE
- SECTION LINE
- MATCHLINE
- EDGE OF ROAD (GRAVEL)
- EDGE OF ROAD (BITUMEN)
- OHW — OVERHEAD POWERLINE
- ROAD R.O.W.
- E — BURIED ELECTRIC
- CHAINLINK FENCE
- MATCHLINE
- C — CTV
- NOXIOUS WEEDS
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- STAGING AREA
- PROPOSED LOT
- EXISTING LOT
- PROPOSED DRIVE
- TEMP. ACCESS ROAD
- EXISTING DRIVE
- HDD ENTRY/EXIT
- POWER POLE
- BOREHOLE

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2/23/2026 6:03 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

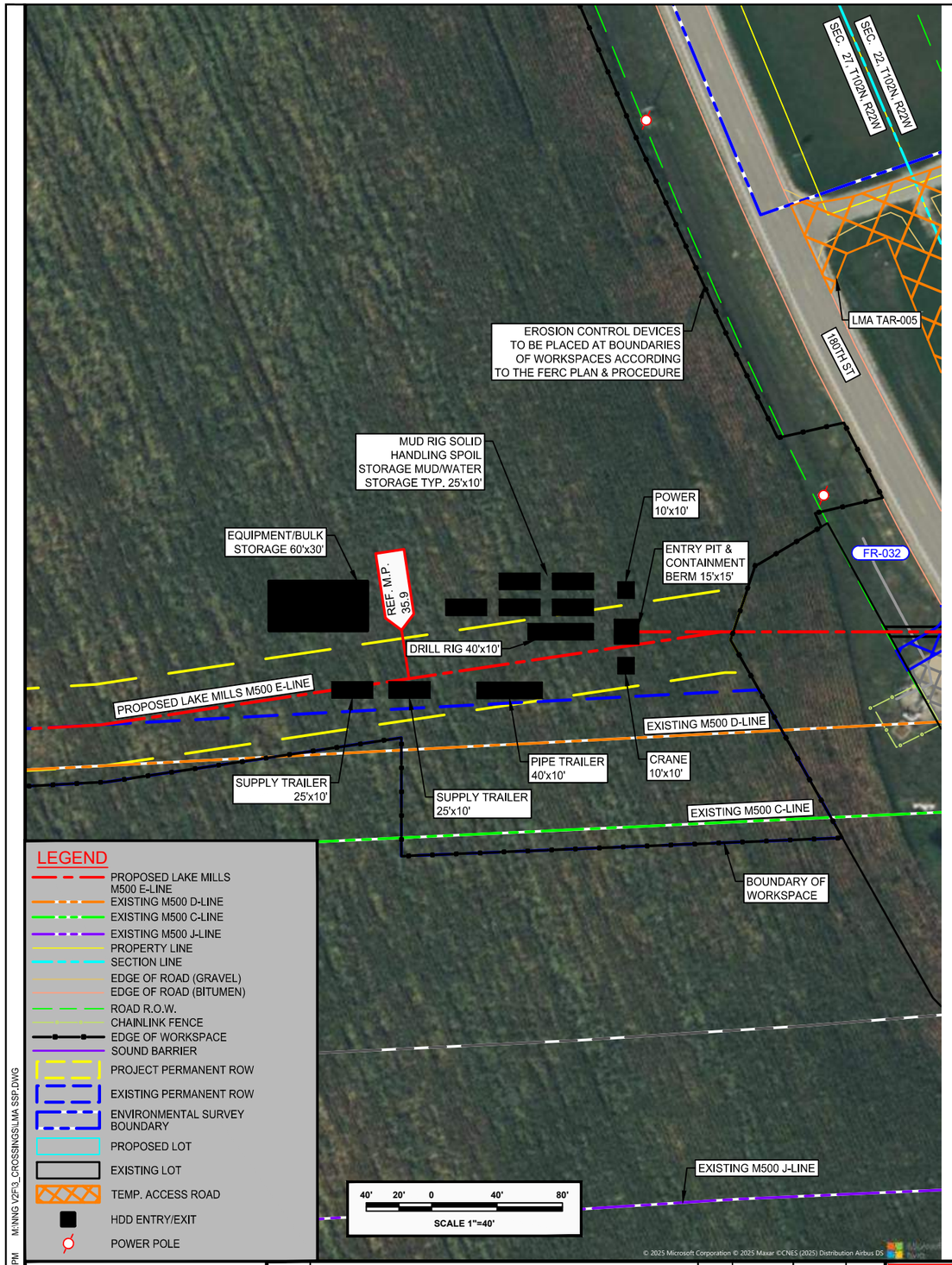
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STA# N/A		POI# N/A	
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DRAWN	JM	2/14/25	
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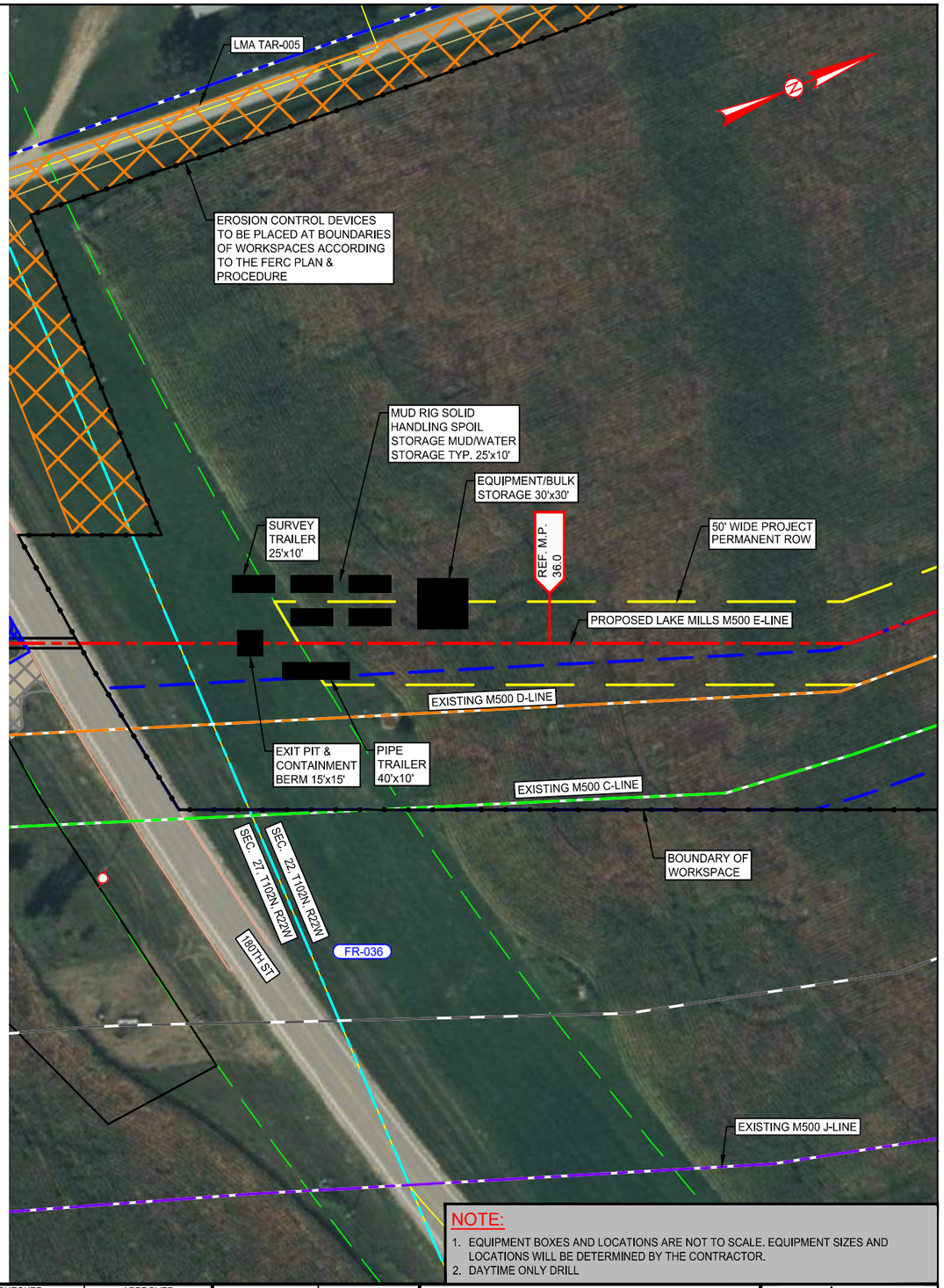
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE 180TH ST
SEC. 27 & 22, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
LMA-P4-2
F





LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 J-LINE
- PROPERTY LINE
- SECTION LINE
- EDGE OF ROAD (GRAVEL)
- EDGE OF ROAD (BITUMEN)
- ROAD R.O.W.
- CHAINLINK FENCE
- EDGE OF WORKSPACE
- SOUND BARRIER
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- PROPOSED LOT
- EXISTING LOT
- TEMP. ACCESS ROAD
- HDD ENTRY/EXIT
- POWER POLE

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL

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2/24/2026 12:00 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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FILED WITH FERC
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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI#		CONST. YR 2027
STA# N/A		POI# N/A
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DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
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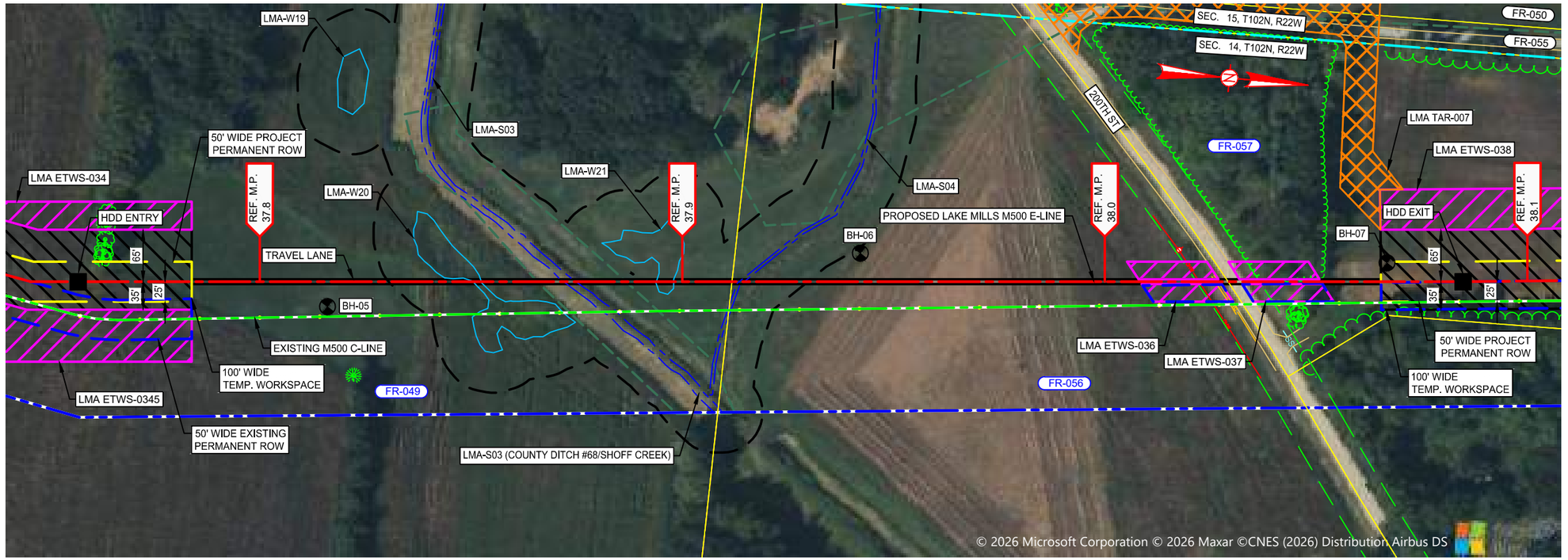
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LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE 180TH ST
SEC. 27 & 22, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
LMA-SSP-2
F

PLAN & PROFILE STREAM LMA-S03,LMA-S04 & 200TH ST



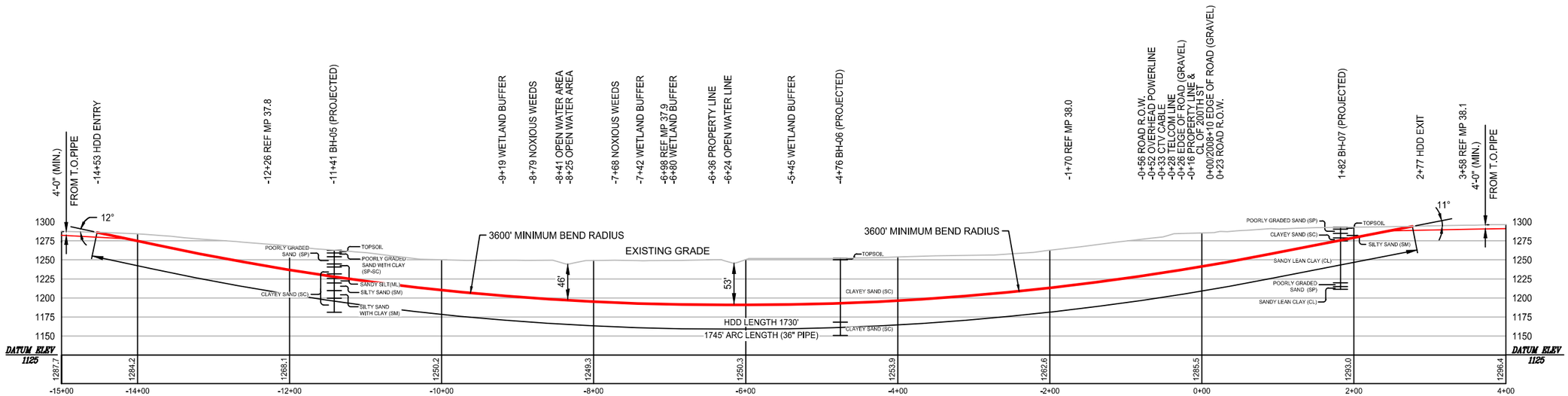
LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 C-LINE
- PROPERTY LINE
- WETLAND
- STREAM
- WETLAND/STREAM BUFFER
- TREELINE
- EDGE OF ROAD (GRAVEL)
- SECTION LINE
- CULVERT
- TELCOM CABLE
- ROAD R.O.W.
- NOXIOUS WEEDS
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- TEMP. ACCESS ROAD
- HDD ENTRY/EXIT
- TREE
- POWER POLE
- GUY WIRE
- ELECTRIC BOX
- BOREHOLE

PLAN

SCALE : 1"=75'

REF. DWG. LMA-P3-10 & LMA-P3-11



PROFILE

SCALE (VERT): 1"=75'

SCALE (HORIZ): 1"=75'

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Wong, Alice 2/23/2026 6:21 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
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	CHECKED		APPROVED	
STATUS	BY	DATE	BY	DATE
PRELIM				
BID				
CONST.				

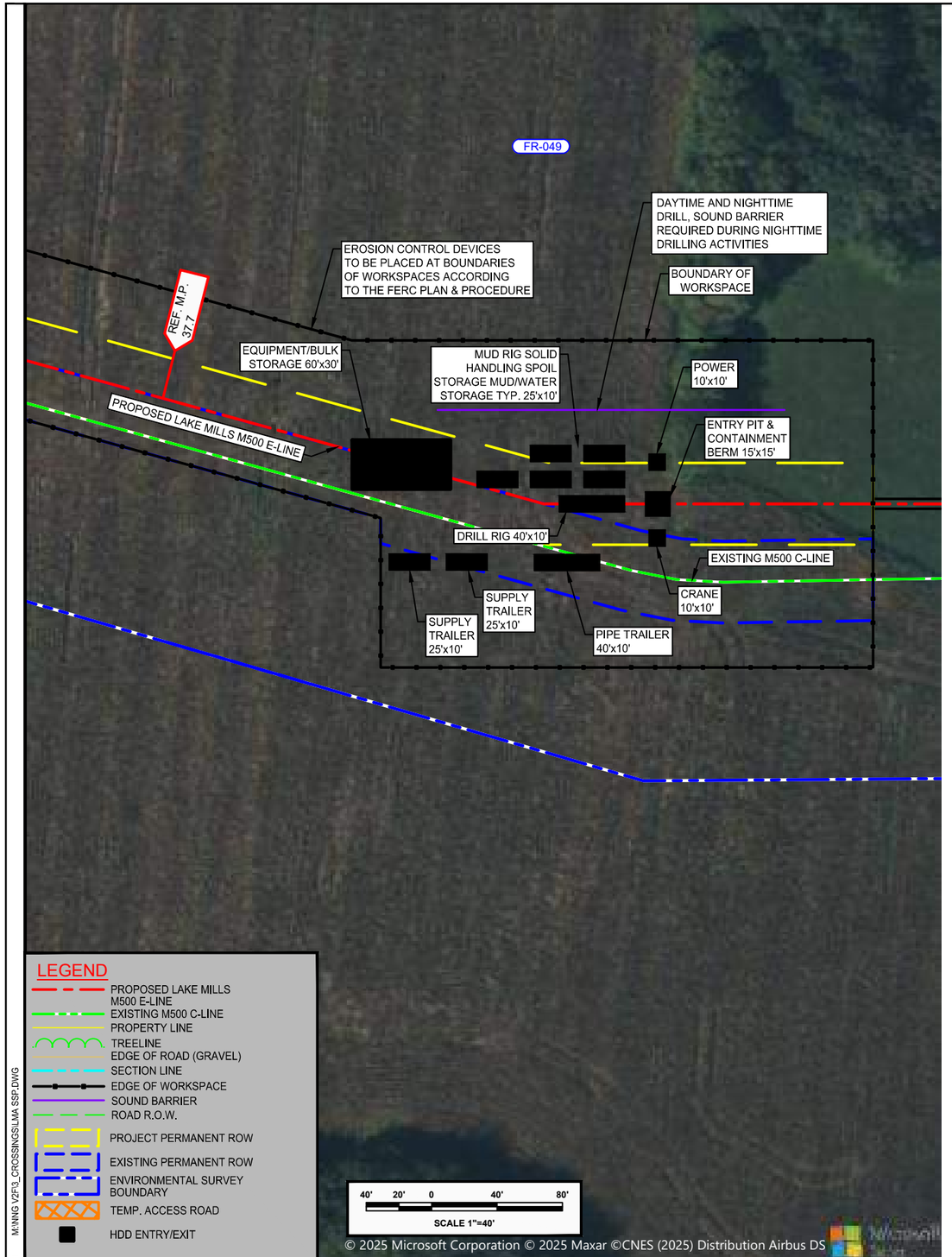
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DRAWN	JM	2/14/25	
ASBUILT			
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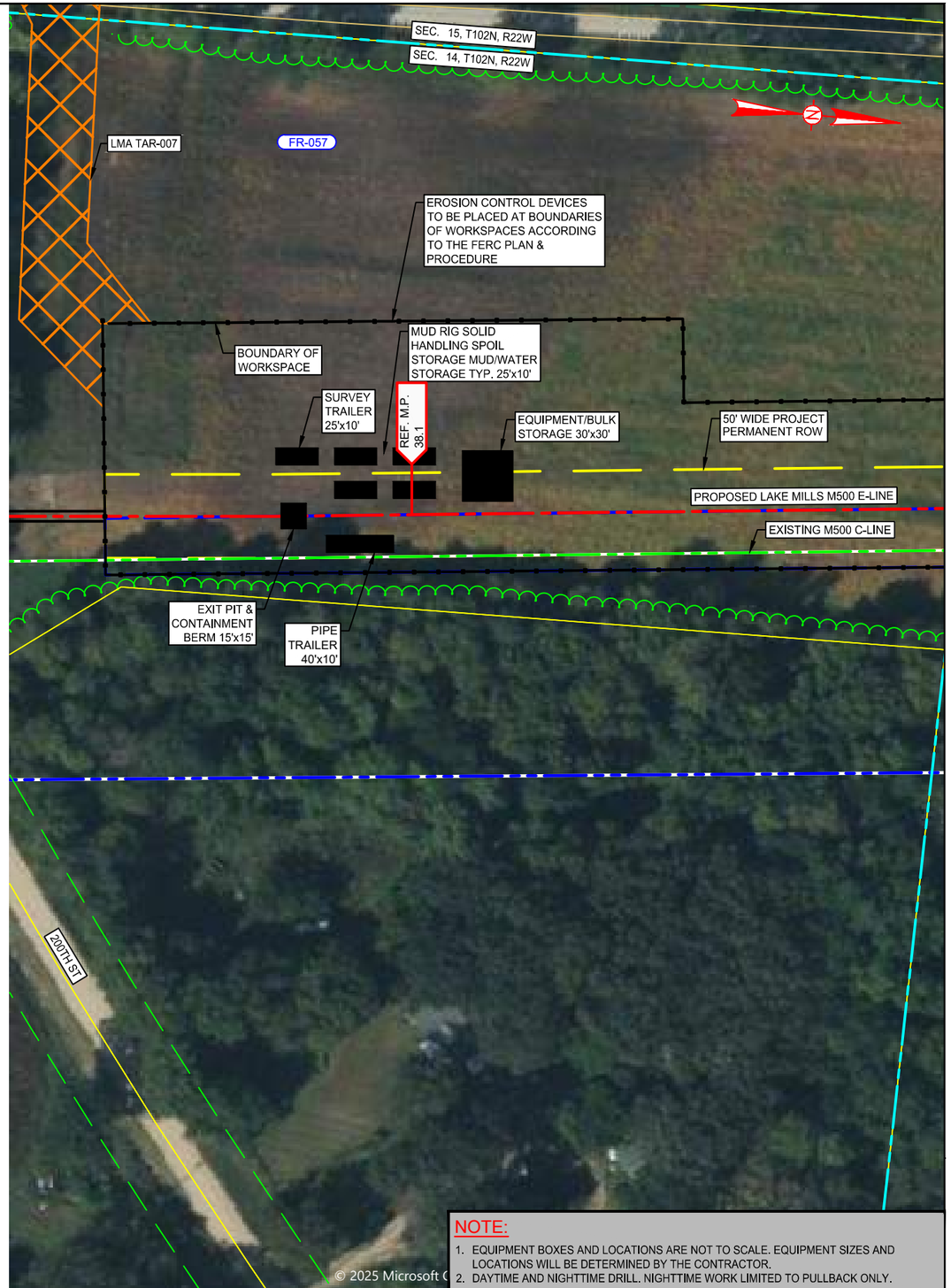
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE STREAM LMA-S03,LMA-S04 & 200TH ST
SEC. 14, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **LMA-P4-3** F





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME AND NIGHTTIME DRILL. NIGHTTIME WORK LIMITED TO PULLBACK ONLY.

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2/23/2026 8:20 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		PO# N/A
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DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
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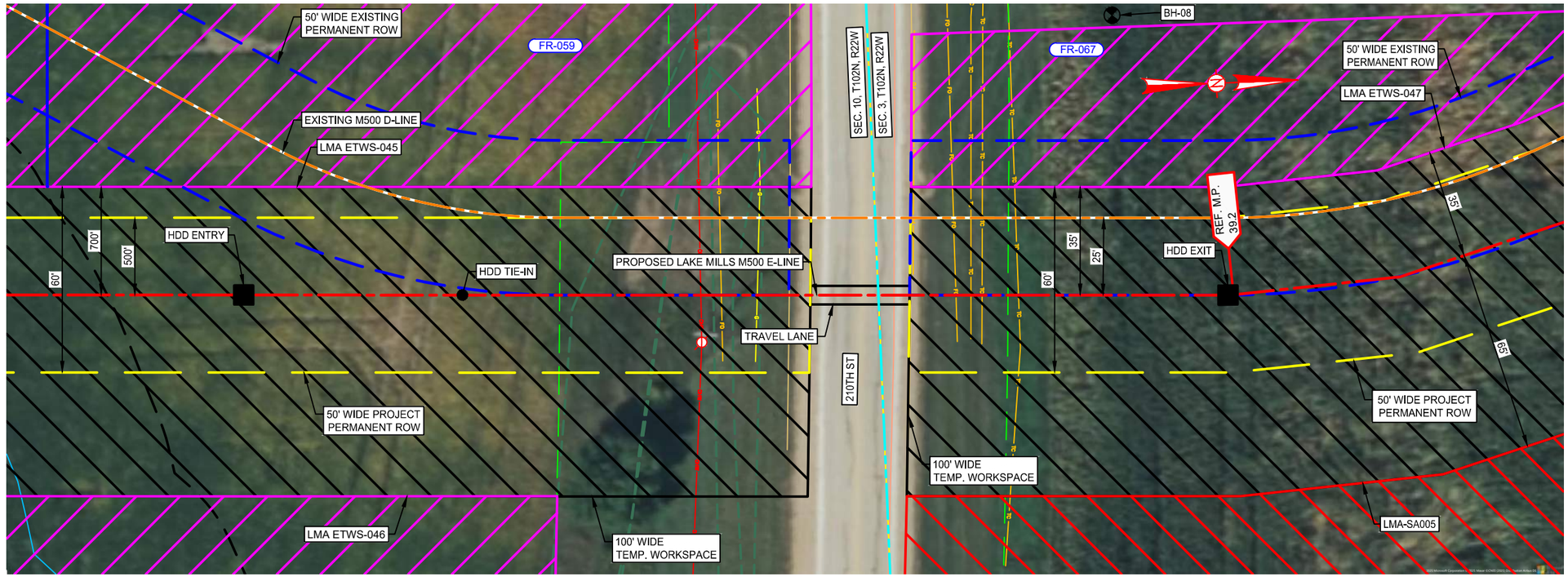
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LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE STREAM & W HIGHWAY 30
SEC. 14, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
LMA-SSP-3
F

PLAN & PROFILE 210TH ST

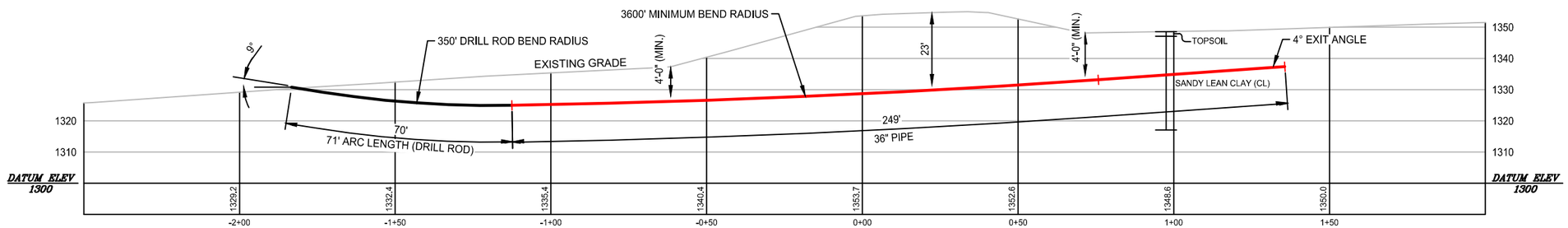


PLAN
SCALE : 1"=20'
REF. DWG. LMA-P3-14

LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- SECTION LINE
- NOXIOUS WEEDS
- FO — FIBRE OPTIC CABLE
- ROAD R.O.W.
- TC — TELCOM CABLE
- OHW — OVERHEAD POWERLINE
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- WETLAND
- WETLAND BUFFER
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- HDD ENTRY/EXIT
- GUY WIRE
- POWER POLE
- BOREHOLE

-1+83 HDD ENTRY
-1+73 START 9° TO 1° ARC (DRILL ROD)
-1+13 END 9° TO 1° ARC (DRILL ROD) & HDD TIE-IN & START 1° TO 4° ARC (DRILL ROD)
-0+74 ROAD R.O.W.
-0+68 NOXIOUS WEEDS
-0+41 NOXIOUS WEEDS
-0+29 OVERHEAD POWERLINE
-0+25 NOXIOUS WEEDS
-0+22 FIBRE OPTIC CABLE
-0+18 NOXIOUS WEEDS
-0+10 A-UTIL-0418
-0+09 NOXIOUS WEEDS
0+00/2068+32 EDGE OF ROAD (GRAVEL)
0+07 EDGE OF ROAD (BITUMEN)
0+21 CL OF 210TH ST
0+29 SECTION LINE & PROPERTY LINE
0+34 EDGE OF ROAD (BITUMEN)
0+39 EDGE OF ROAD (GRAVEL)
0+54 FIBRE OPTIC CABLE
0+59 TELCOM LINE
0+62 TELCOM LINE
0+71 ROAD R.O.W.
0+74 TELCOM LINE
0+76 END 1° TO 4° ARC
0+98 BH-08 (PROJECTED)
1+36 HDD EXIT
1+44 REF MP 39.2



PROFILE
SCALE (VERT): 1"=20'
SCALE (HORIZ): 1"=20'

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Wong, Alice 2/23/2026 6:19 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
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BID				
CONST.				

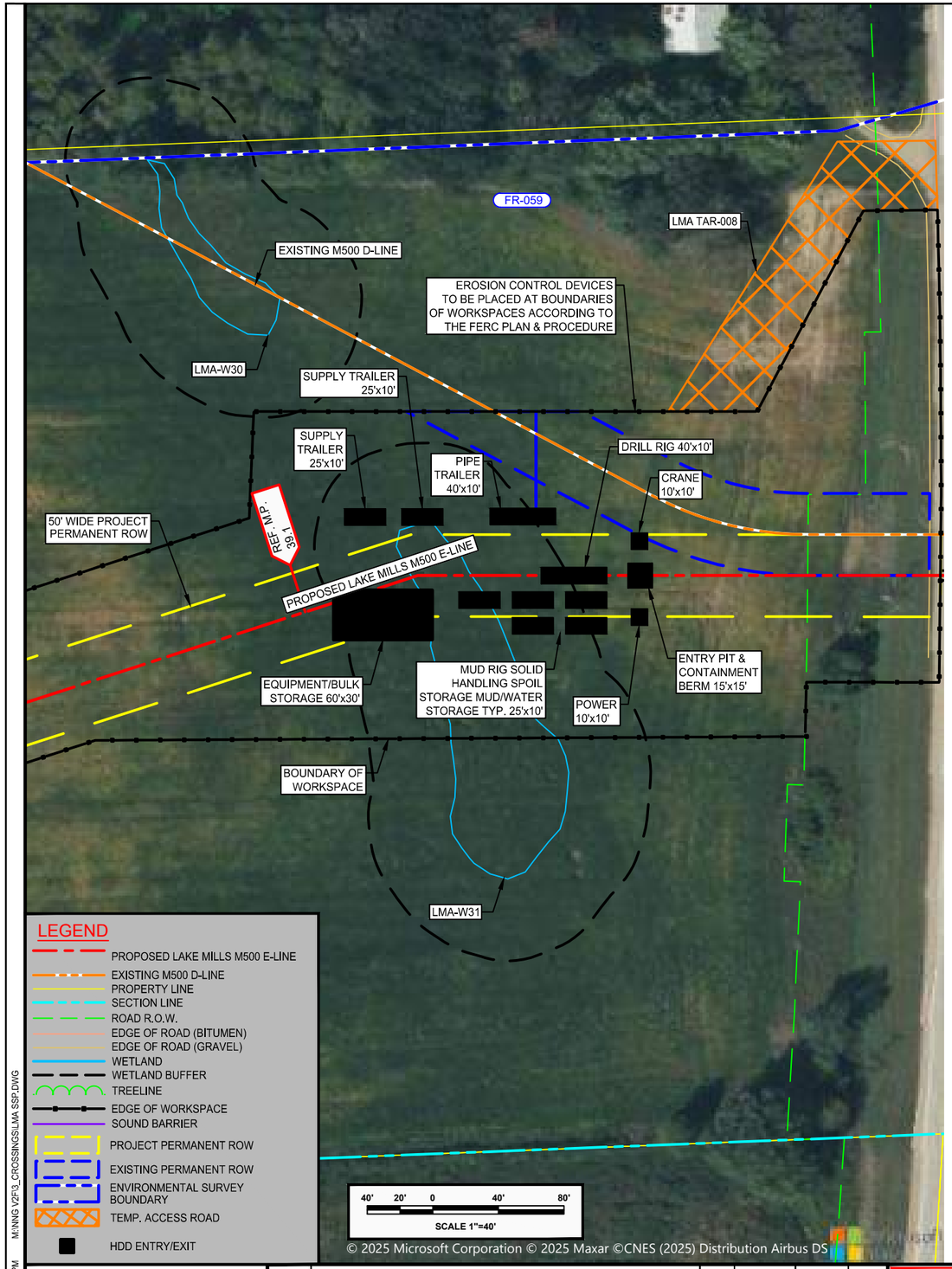
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DRAWN	JM	2/14/25
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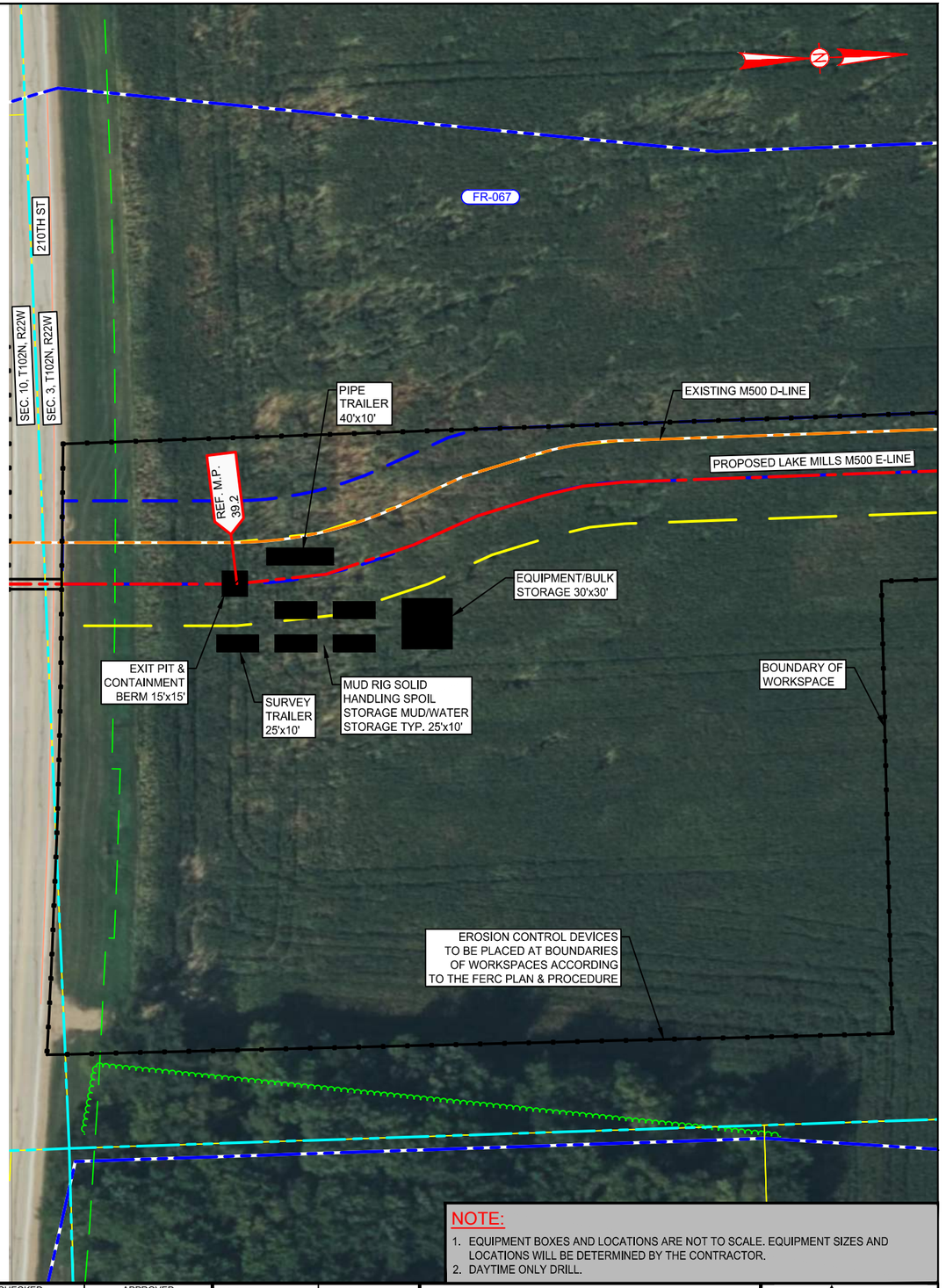
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE 210TH ST
SEC. 10 & 3, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. LMA-P4-4 F





LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- SECTION LINE
- ROAD R.O.W.
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- WETLAND
- WETLAND BUFFER
- TREELINE
- EDGE OF WORKSPACE
- SOUND BARRIER
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- TEMP. ACCESS ROAD
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/23/2026 8:21 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI#		CONST. YR 2027
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DRAWN	JM	2/14/25
ASBUILT		
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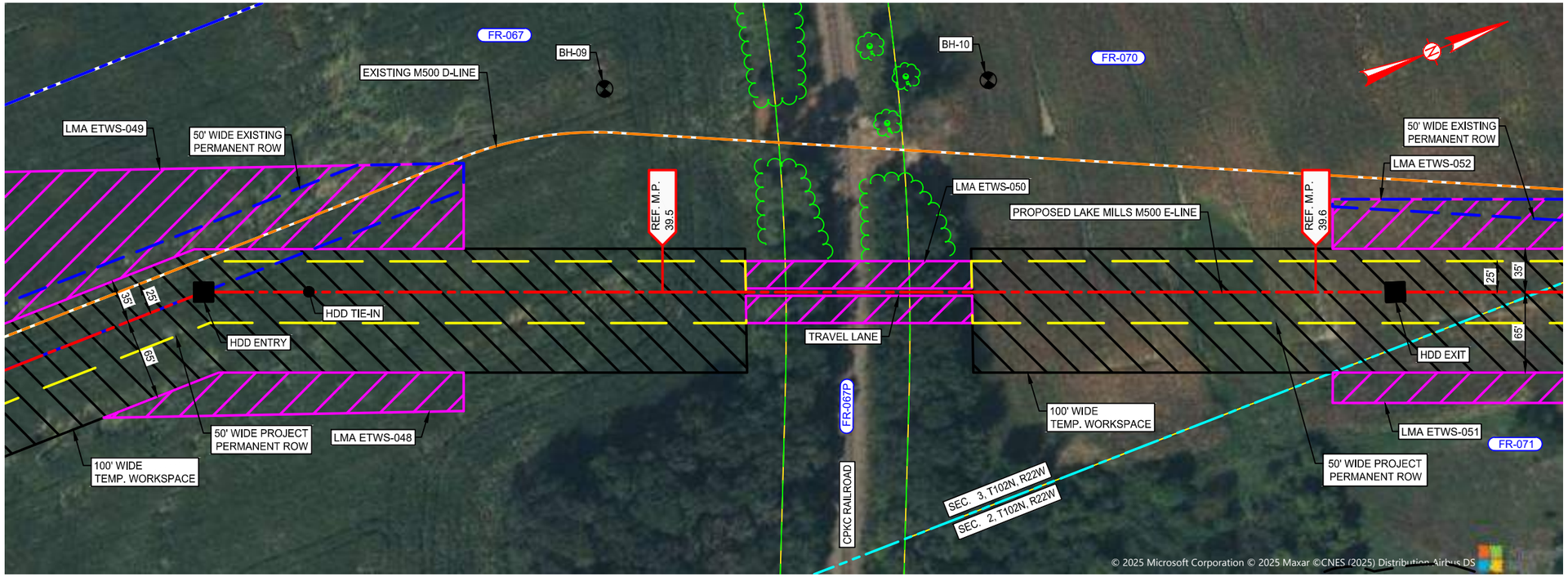
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LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE 110TH ST
SEC. 10 & 3, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

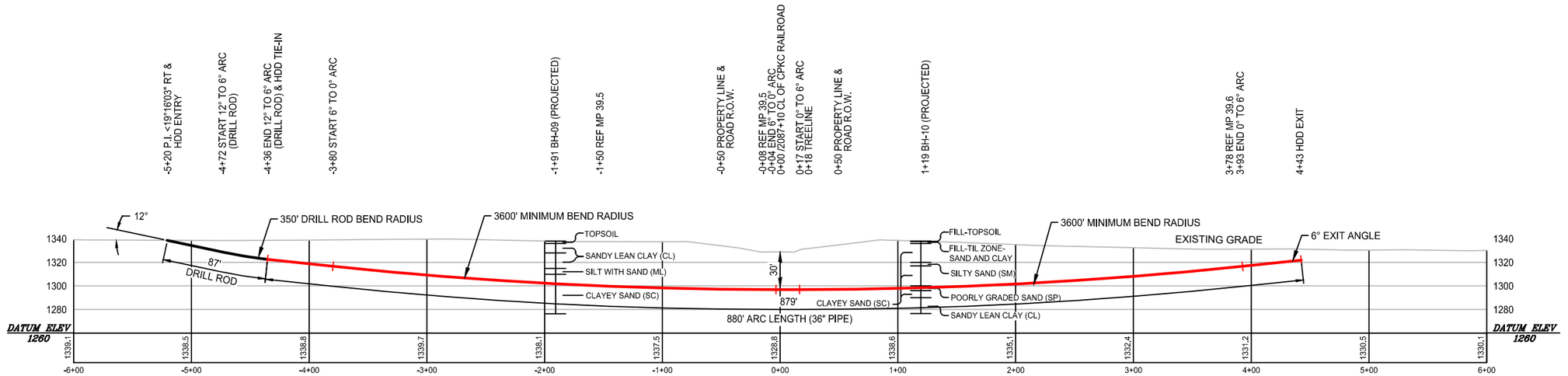
PROJECT NO.

DWG. NO.
LMA-SSP-4
F

PLAN & PROFILE CPKC RAILROAD



PLAN
SCALE : 1"=50'
REF. DWG. LMA-P3-15



PROFILE
SCALE (VERT): 1"=50'
SCALE (HORIZ): 1"=50'

LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- SECTION LINE
- RAILROAD R.O.W.
- TREELINE
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- V — VENT
- TREE
- HDD ENTRY/EXIT
- BOREHOLE

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2/23/2026 6:08 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PI# | CONST. YR 2027
STA# N/A | POI# N/A

	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		

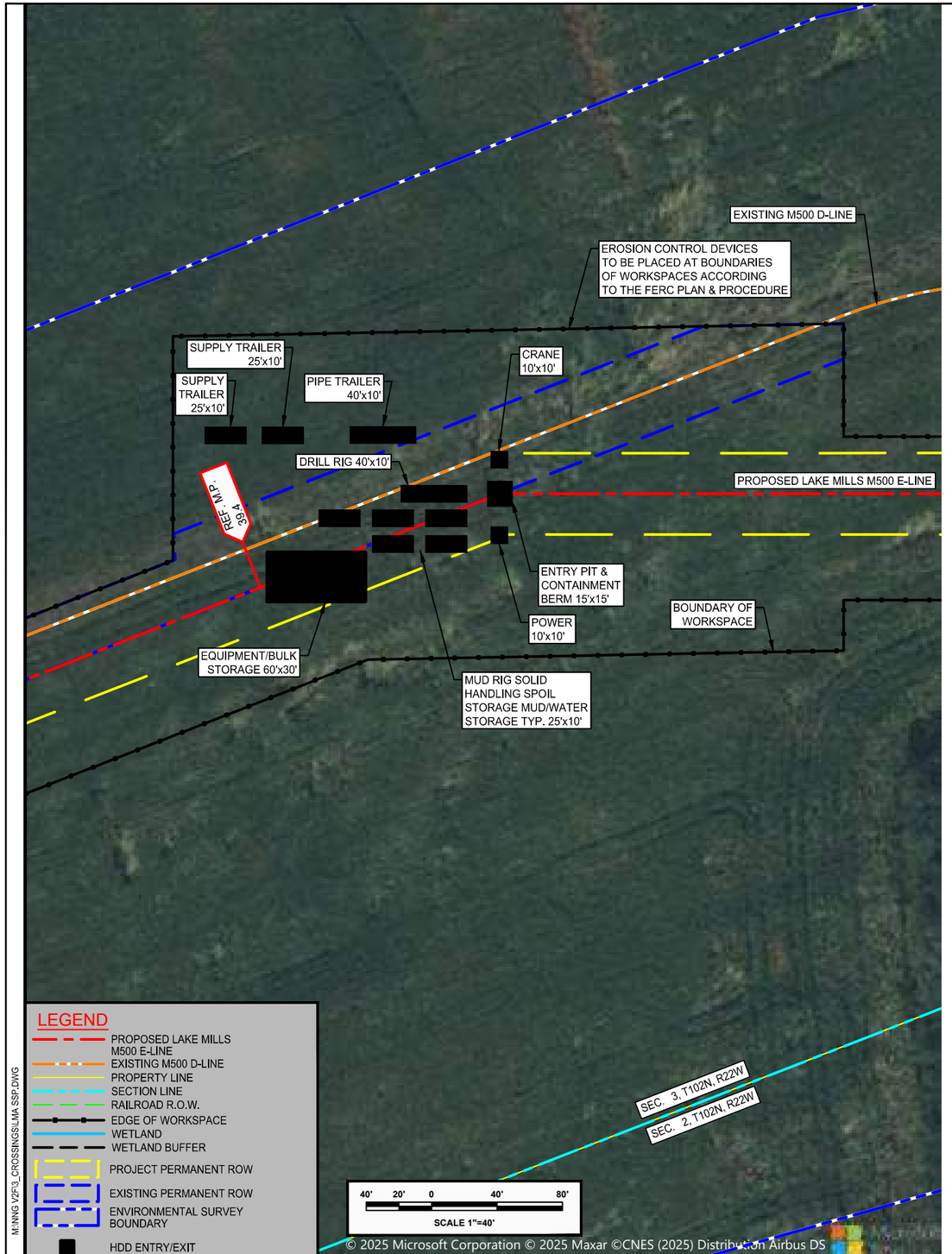
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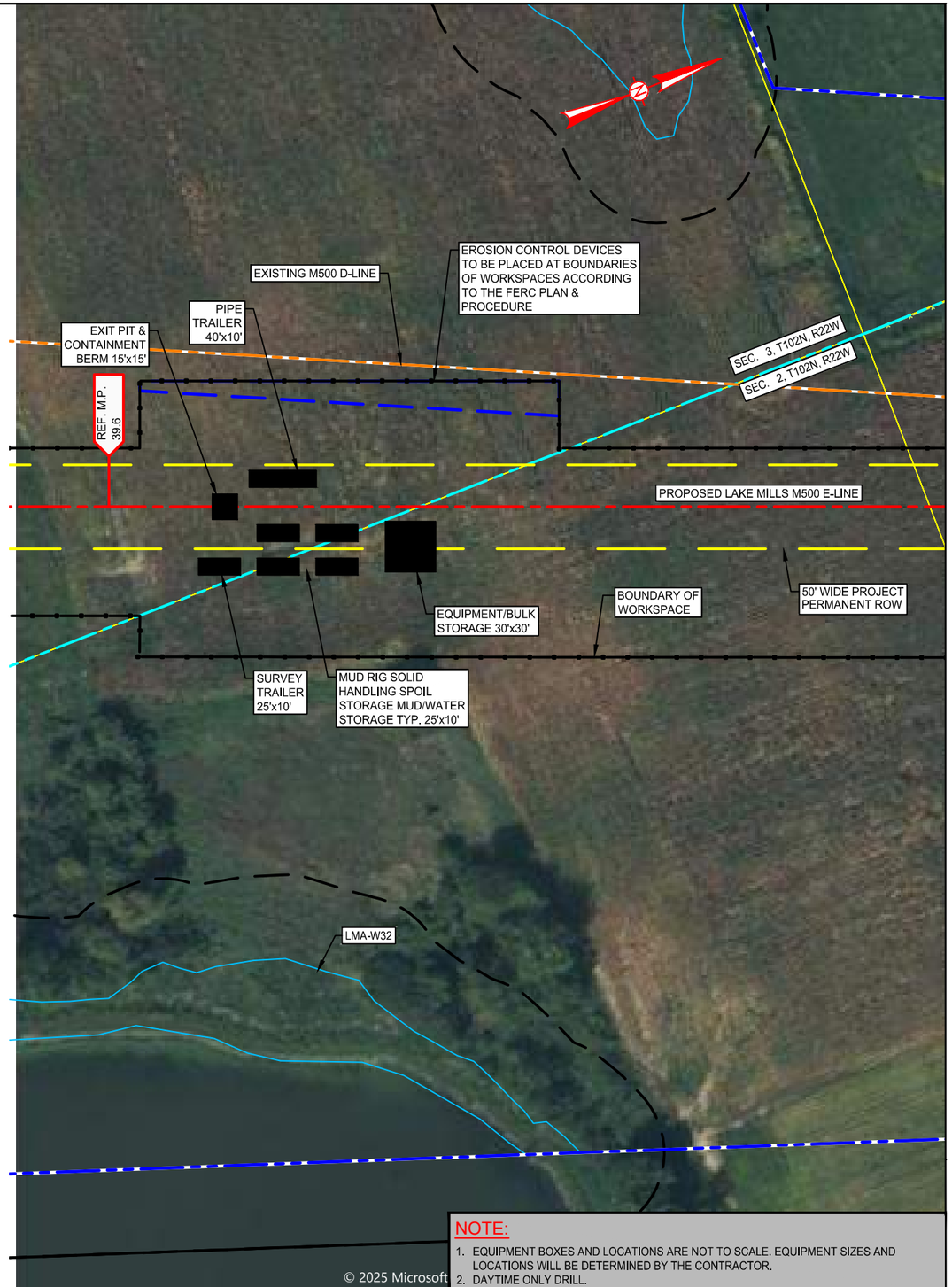
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE CPKC RAILROAD
SEC. 3 & 2, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. LMA-P4-5 F





LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- SECTION LINE
- RAILROAD R.O.W.
- EDGE OF WORKSPACE
- WETLAND
- WETLAND BUFFER
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

M:\NNG V2F3_CROSSINGS\LMA SSP.DWG
2/23/2026 9:01 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# | CONST. YR 2027
STA# N/A | POI# N/A

	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		

FILE NO.: P:105
SCALE: 1"=40'

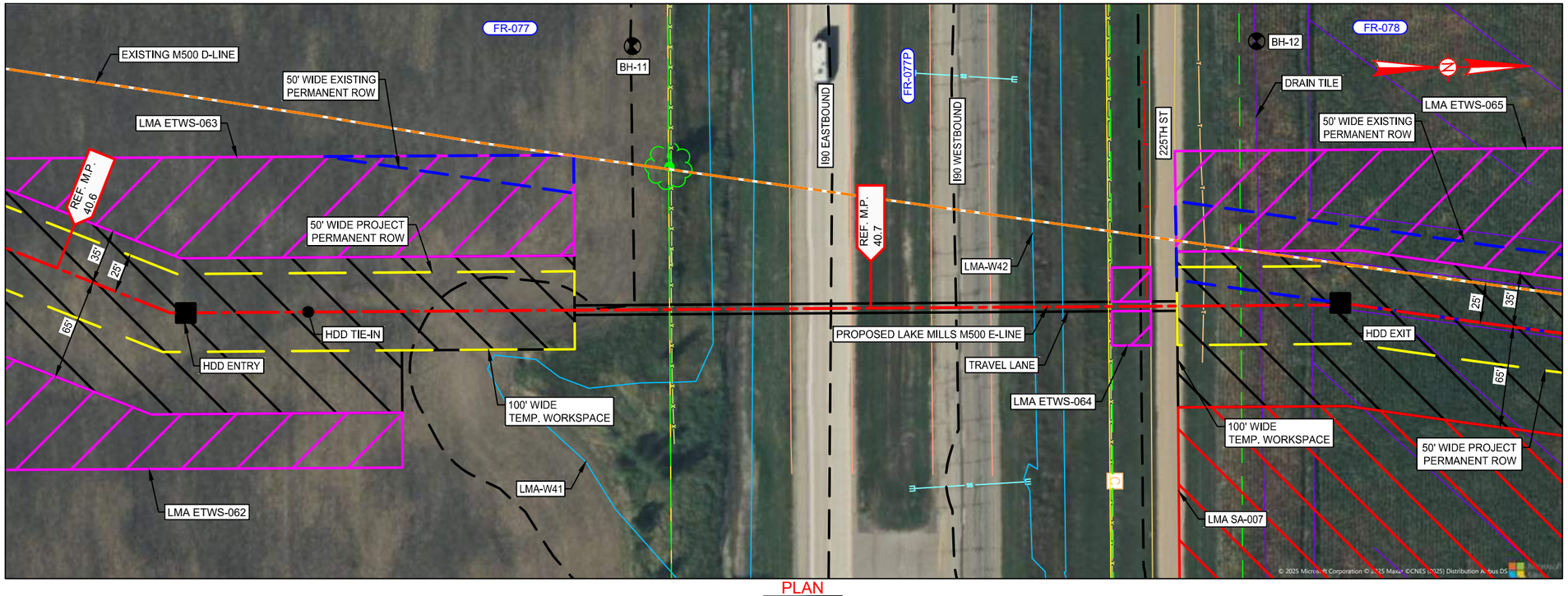
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE RAILROAD
SEC. 3 & 2, T102N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

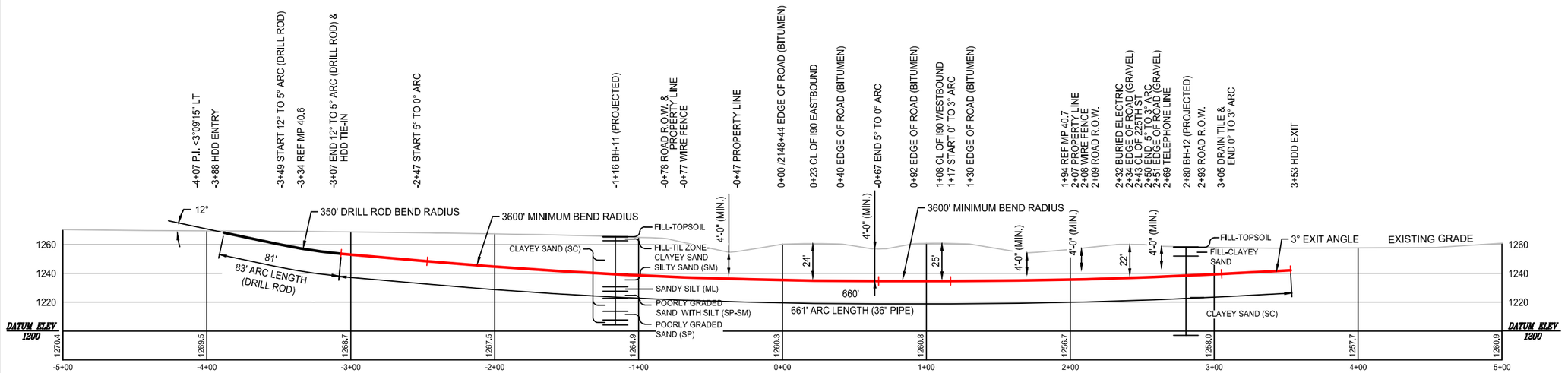
PROJECT NO.

DWG. NO.
LMA-SSP-5
F

PLAN & PROFILE I90 & 225TH ST



PLAN
SCALE : 1"=40'
REF. DWG. LMA-P3-18



PROFILE
SCALE (VERT): 1"=40'
SCALE (HORIZ): 1"=40'

LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- ROAD R.O.W.
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- BURIED ELECTRIC
- CULVERT
- WIRE FENCE
- TELEPHONE CABLE
- DRAIN TILE
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- STAGING AREA
- COMMUNICATION BOX
- TREE
- HDD ENTRY/EXIT
- BOREHOLE

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

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PL# | CONST. YR 2027
STA# N/A | POI# N/A

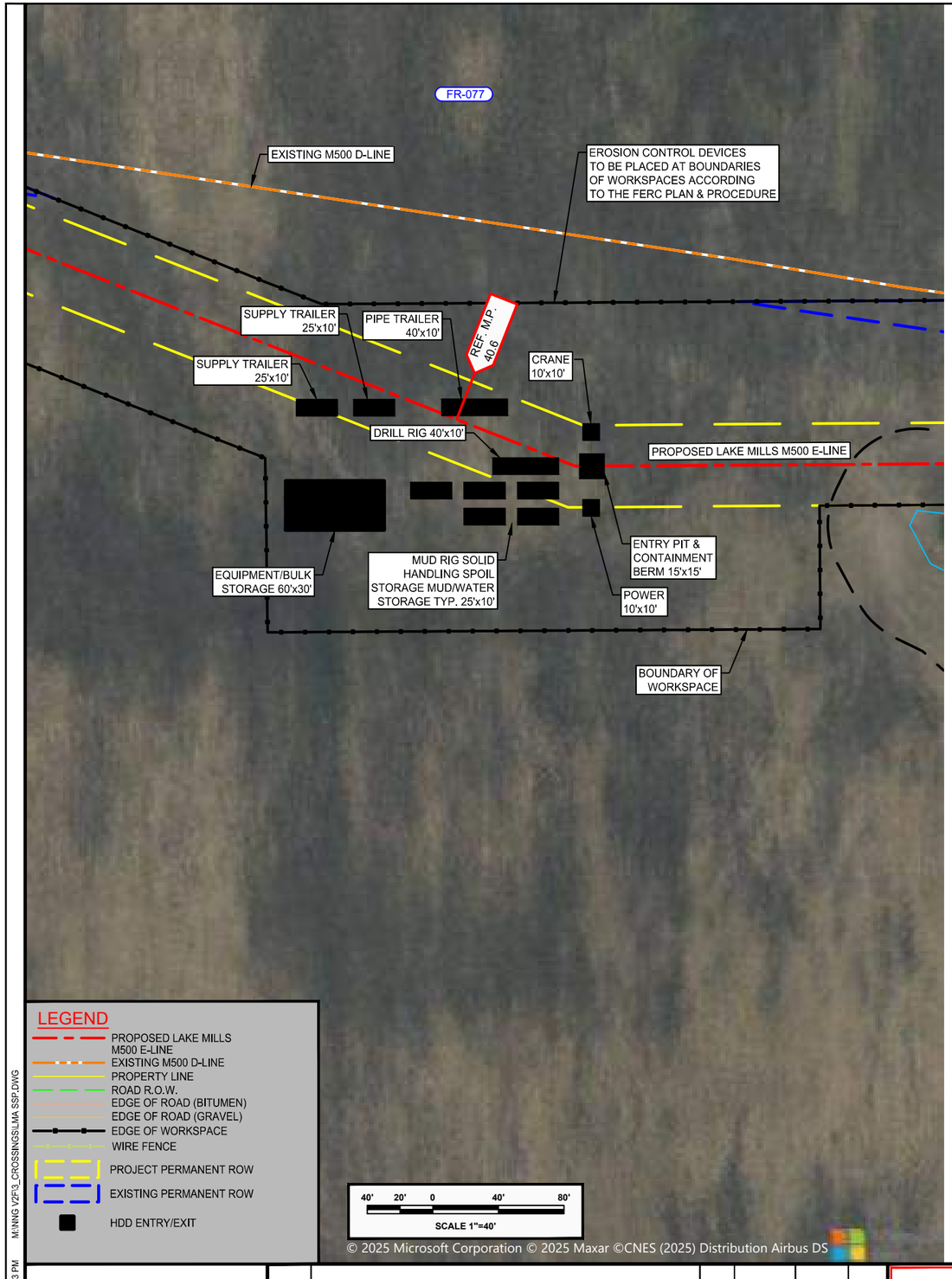
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		

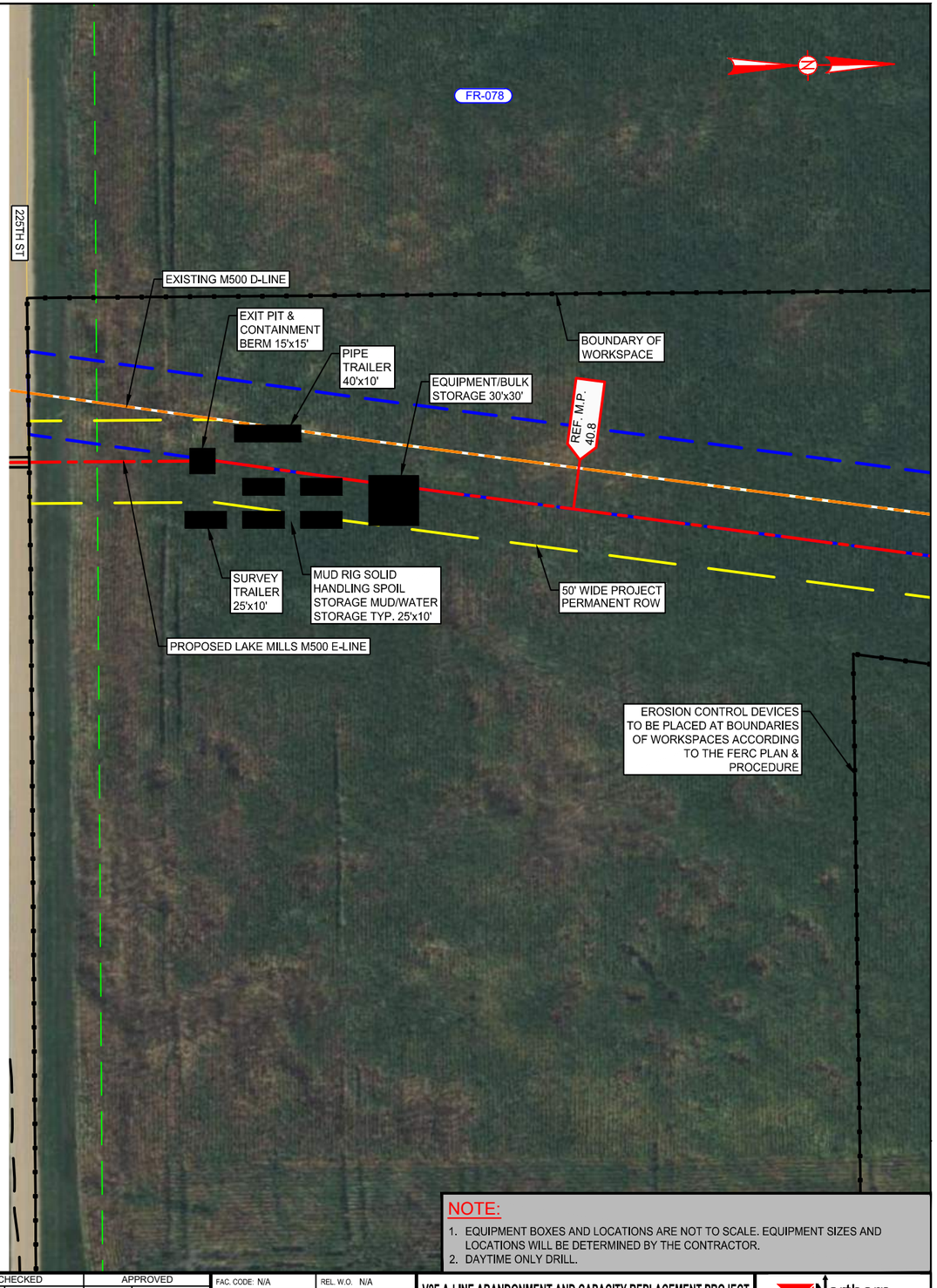
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V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE I90 & 225TH ST
SEC. 35, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.
PROJECT NO.
DWG. NO. LMA-P4-6
F

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Wong, Alice 2/23/2026 6:09 PM





LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- ROAD R.O.W.
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- EDGE OF WORKSPACE
- WIRE FENCE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI#		CONST. YR 2027
STA# N/A		PO# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE I90 & 225TH ST
SEC. 35, T103N, R22W
FREEBORN COUNTY, MINNESOTA

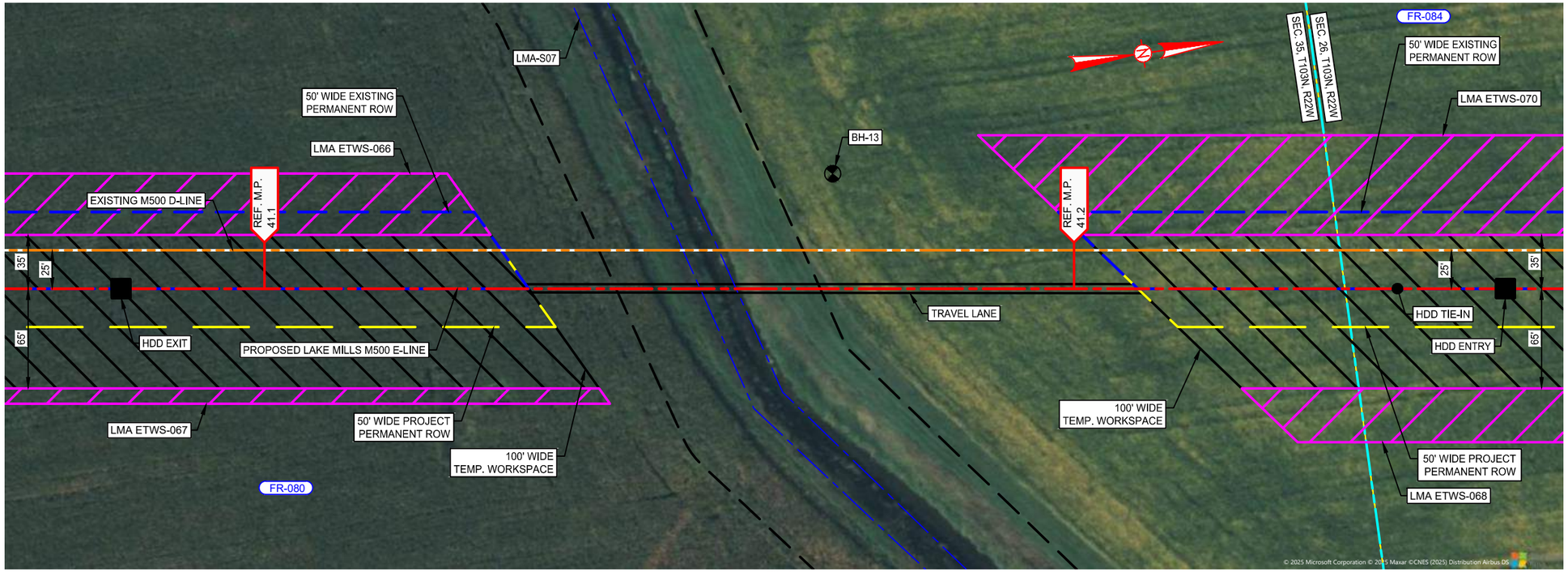
Northern Natural Gas.

PROJECT NO.

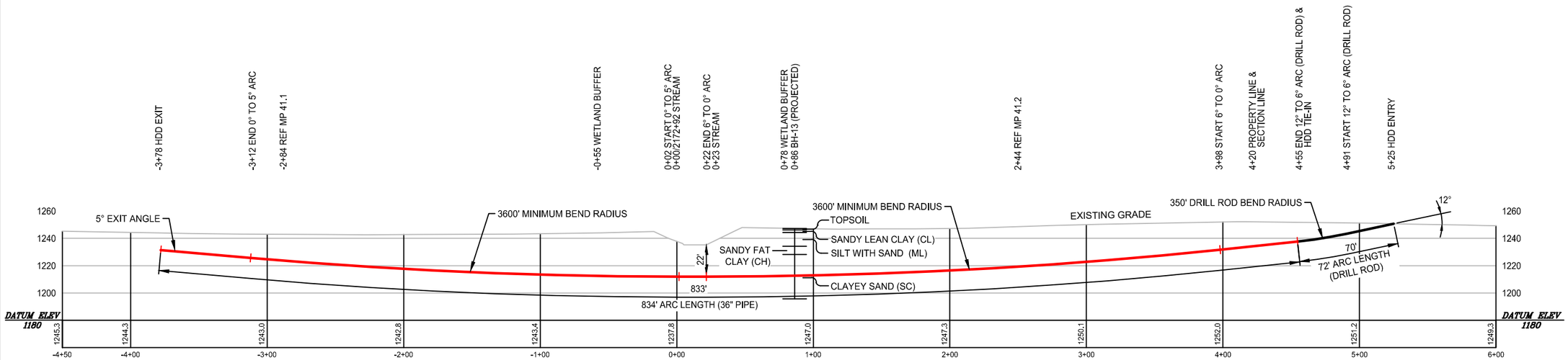
DWG. NO. **LMA-SSP-6** F

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2/23/2026 8:23 PM
Wong, Alice

PLAN & PROFILE STREAM LMA-S07



PLAN
SCALE : 1"=40'
REF. DWG. LMA-P3-19



PROFILE
SCALE (VERT): 1"=40'
SCALE (HORIZ): 1"=40'

LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- SECTION LINE
- WETLAND
- STREAM
- STREAM BUFFER
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- TEMP. ACCESS ROAD
- HDD ENTRY/EXIT
- BOREHOLE

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Wong, Alice 2/23/2026 6:22 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

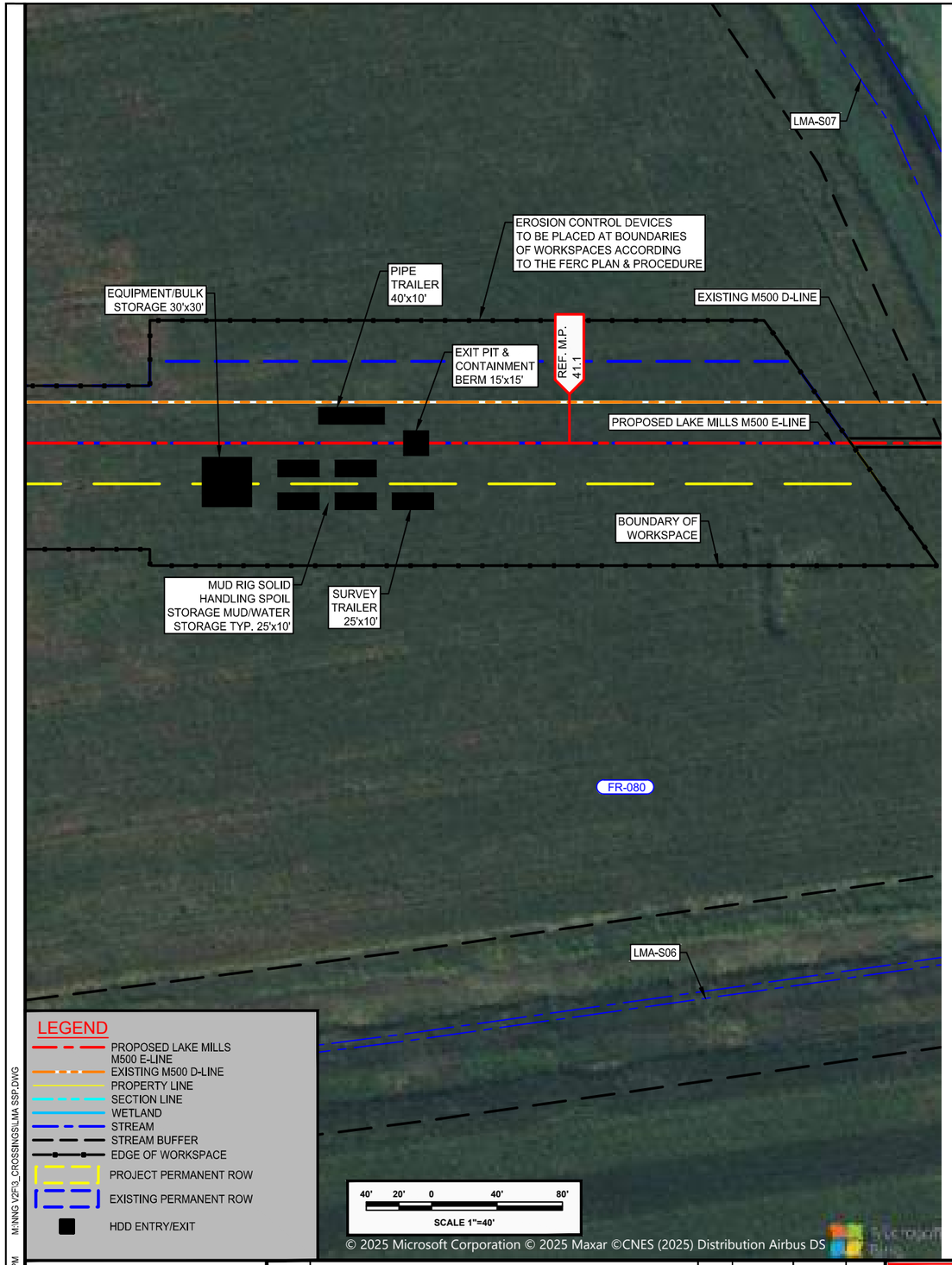
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	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

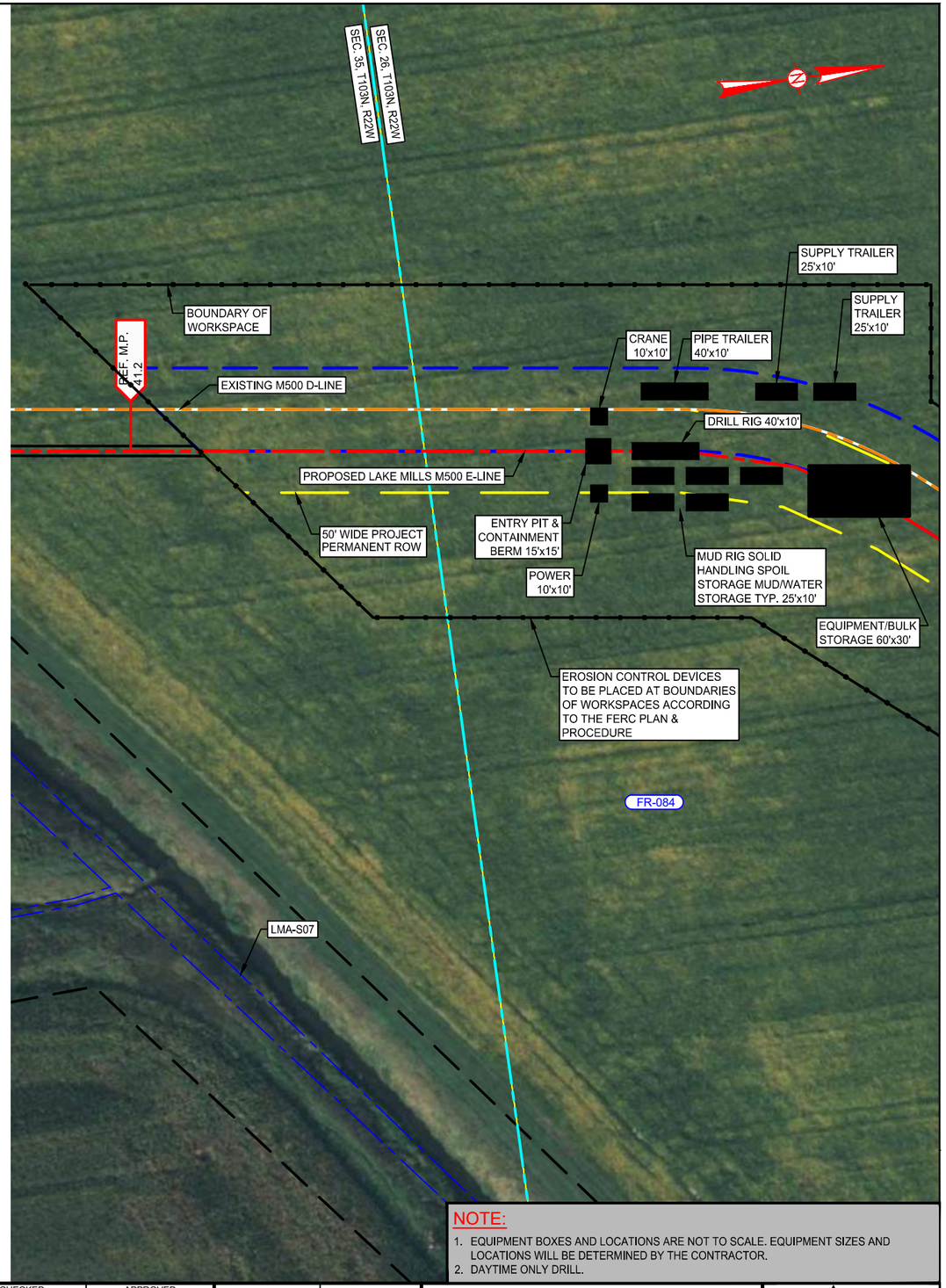
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE STREAM LMA-S07
SEC. 35 & 26, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. LMA-P4-7 F





NOTE:
1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/23/2026 9:03 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

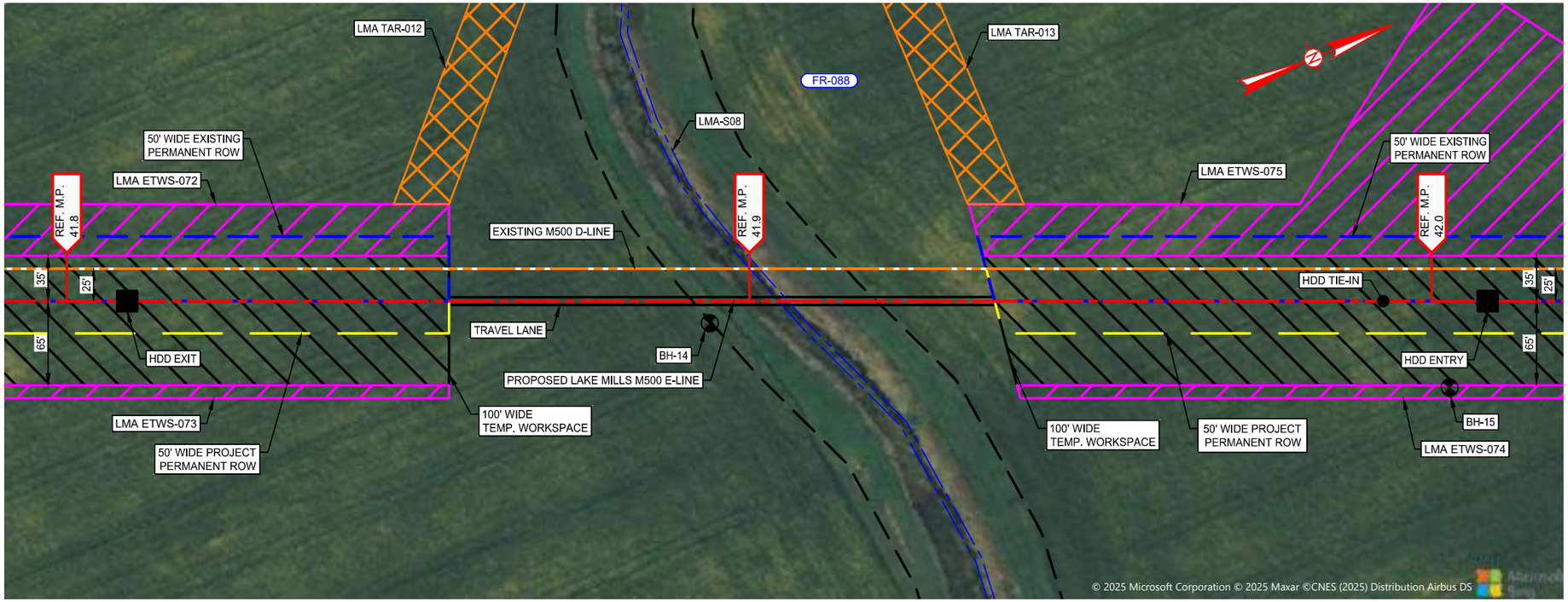
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE STREAM LMA-S07
SEC. 35 & 26, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

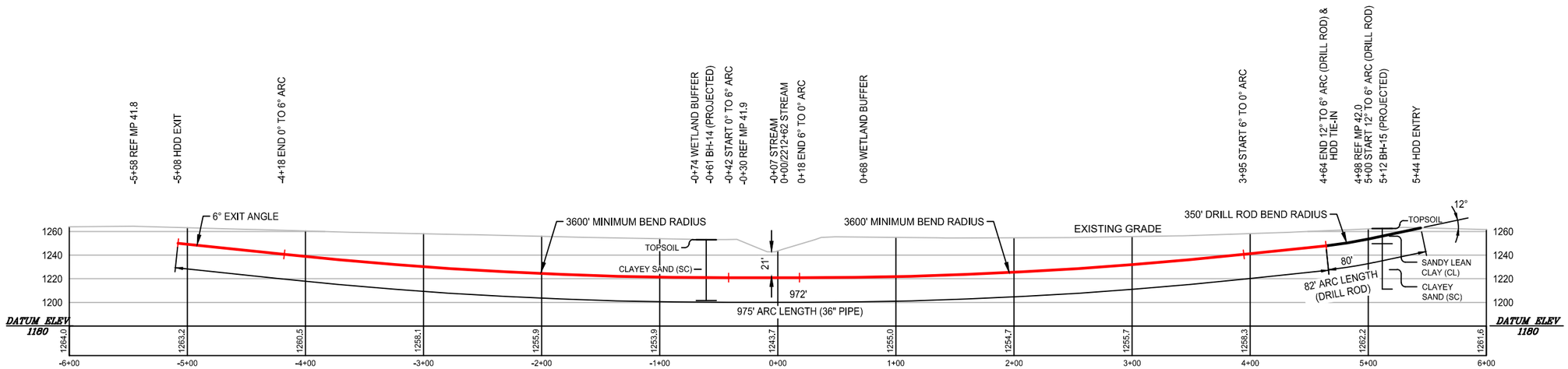
DWG. NO.
LMA-SSP-7
F

PLAN & PROFILE STREAM LMA-S08



PLAN
SCALE : 1"=50'
REF. DWG. LMA-P3-21

LEGEND
- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- STREAM
- STREAM BUFFER
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- TEMP. ACCESS ROAD
- HDD ENTRY/EXIT
- BOREHOLE



PROFILE
SCALE (VERT): 1"=50'
SCALE (HORIZ): 1"=50'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		PO# N/A	
	BY	DATE	
DESIGN	ED	2/14/25	
DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
SCALE: 1"=50'			

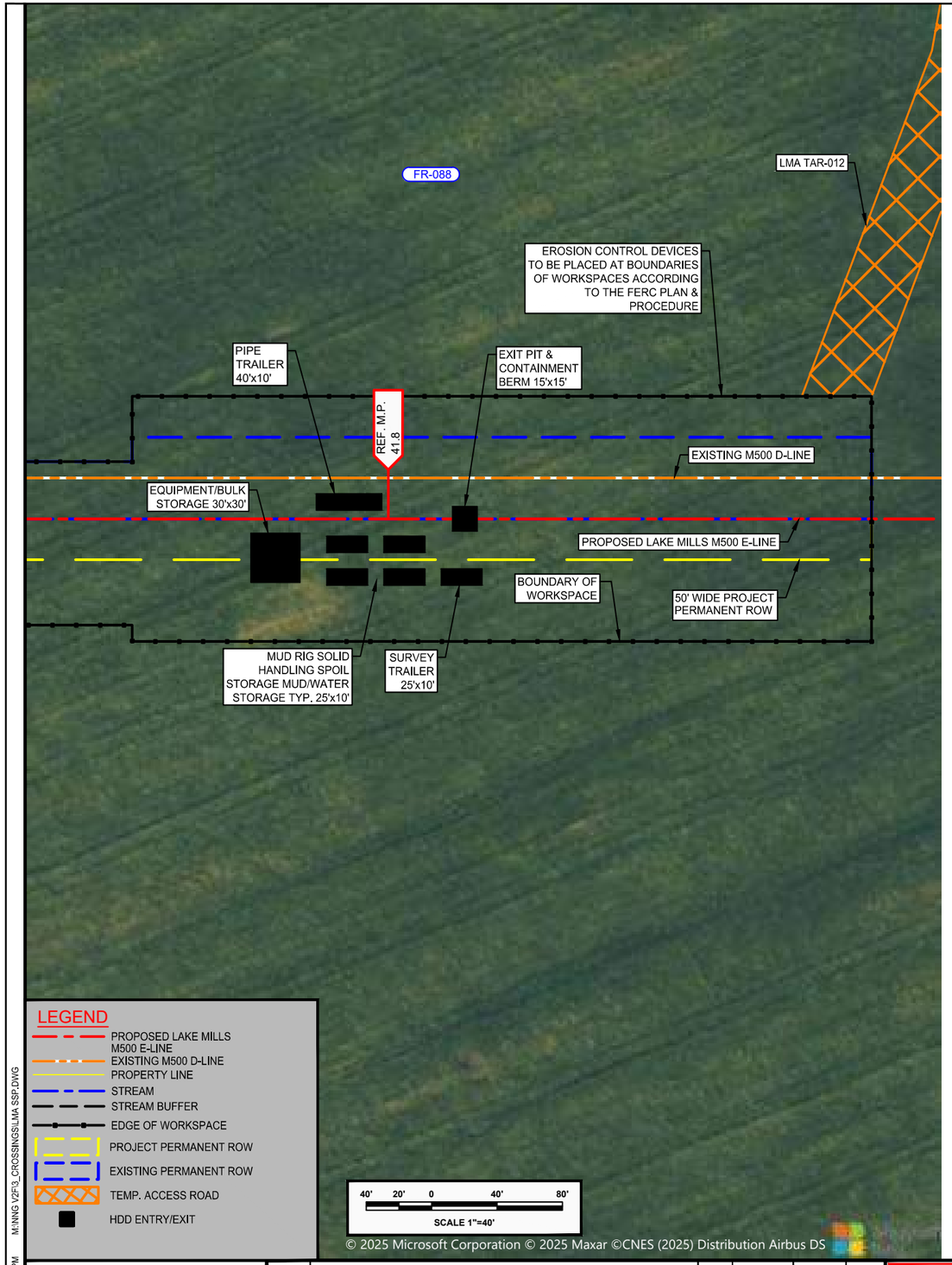
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE STREAM LMA-S08
SEC. 26, T103N, R22W
FREEBORN COUNTY, MINNESOTA

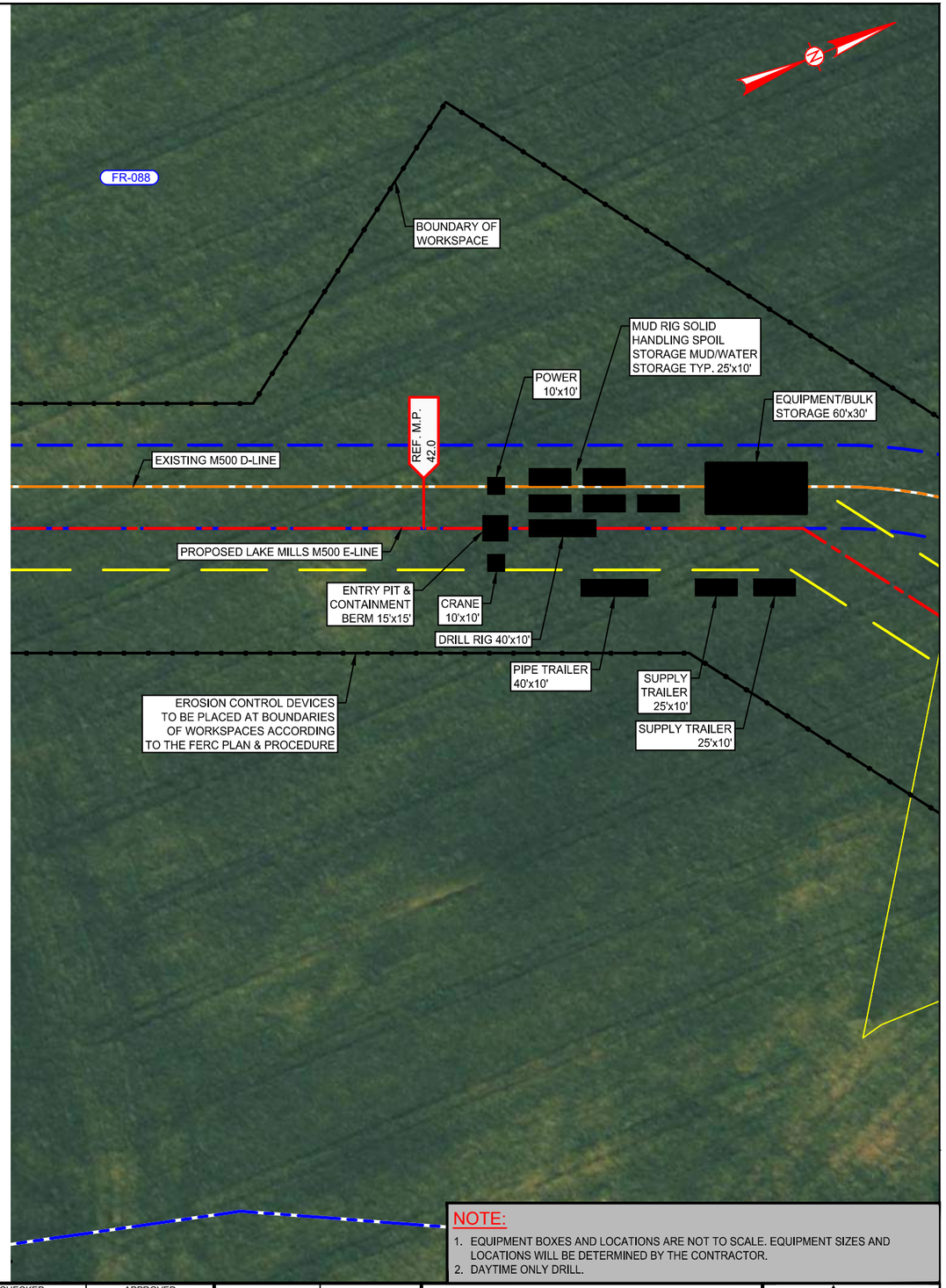
Northern Natural Gas.

PROJECT NO.

DWG. NO. LMA-P4-8 F

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Wong, Alice 2/23/2026 6:23 PM





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/23/2026 9:05 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PI#:		CONST. YR 2027	
STA#: N/A		POI#: N/A	
	BY	DATE	
DESIGN	ED	2/14/25	
DRAWN	JM	2/14/25	
ASBUILT			
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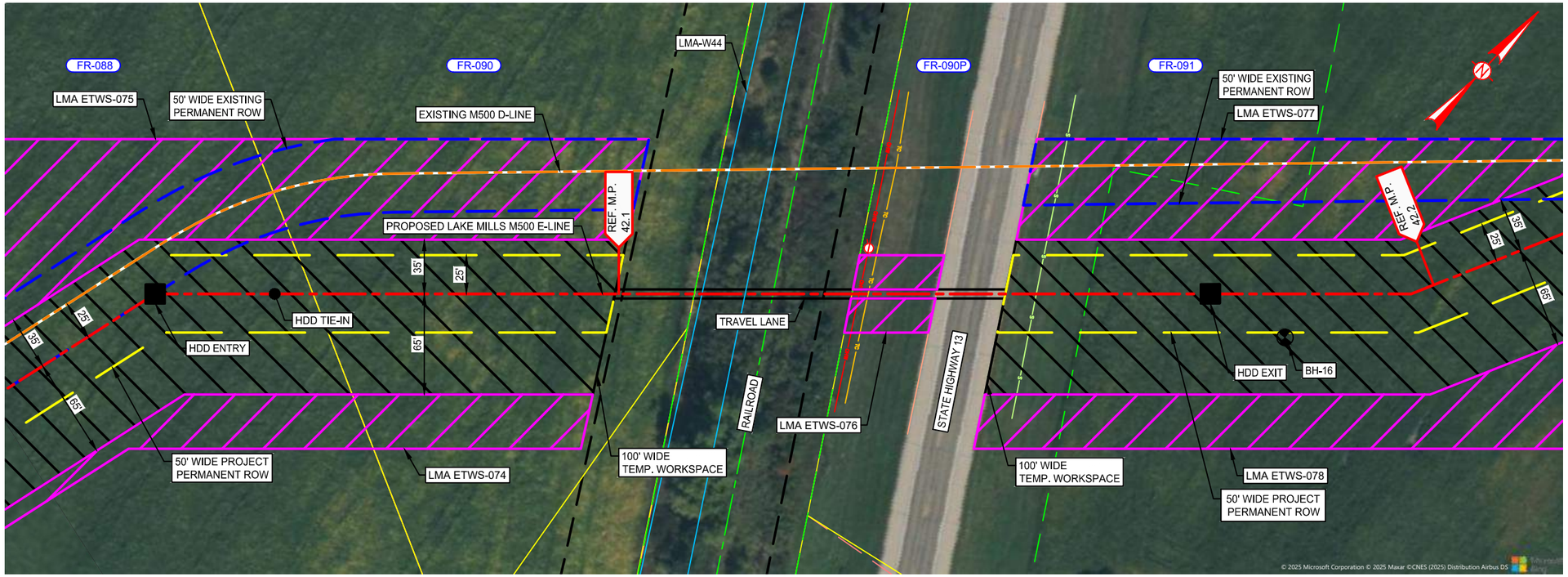
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE STREAM LMA-S08
SEC. 26, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
LMA-SSP-8
F

PLAN & PROFILE RAILROAD & STATE HIGHWAY 13



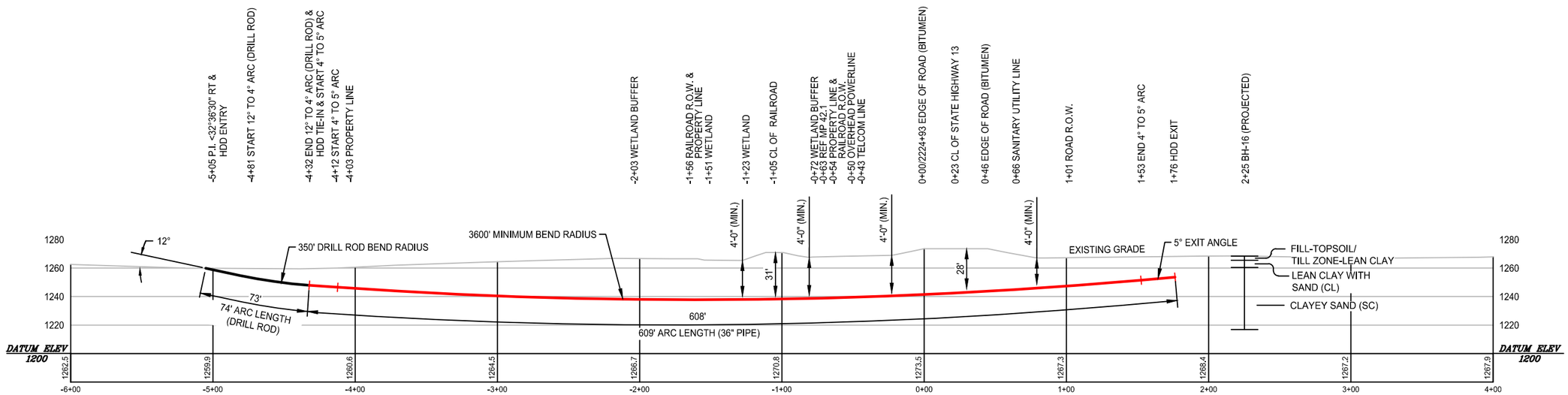
LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- ROAD/RAILROAD R.O.W.
- WETLAND
- WETLAND BUFFER
- TELCOM CABLE
- OVERHEAD POWERLINE
- MATCHLINE
- EDGE OF ROAD (BITUMEN)
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- POWER POLE
- VENT
- HDD ENTRY/EXIT
- BOREHOLE

PLAN

SCALE : 1"=40'

REF. DWG. LMA-P3-21 & LMA-P3-22



PROFILE

SCALE (VERT): 1"=40'

SCALE (HORIZ): 1"=40'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

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ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
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DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
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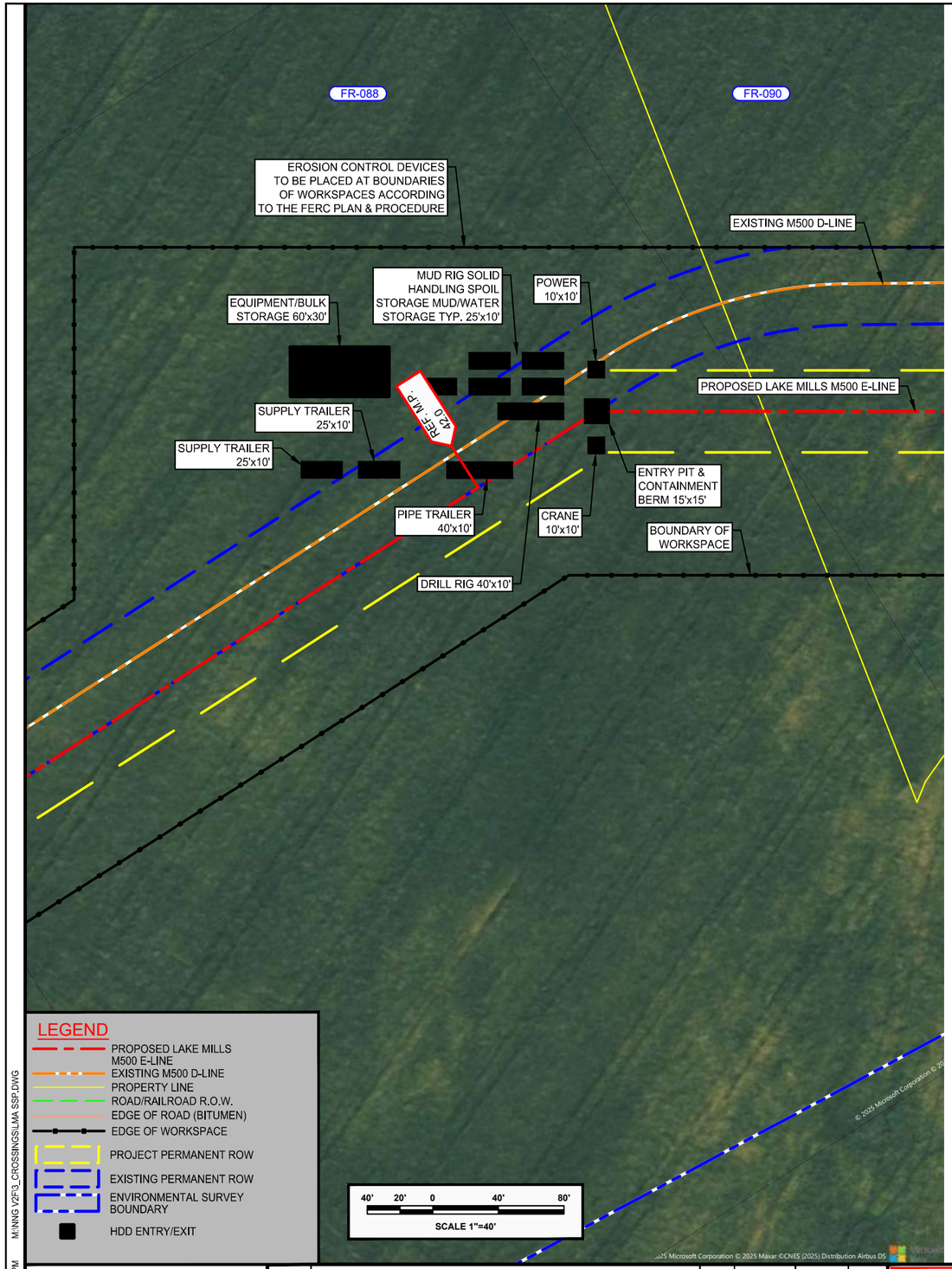
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE RAILROAD & STATE HIGHWAY 13
SEC. 26, T103N, R22W
FREEBORN COUNTY, MINNESOTA

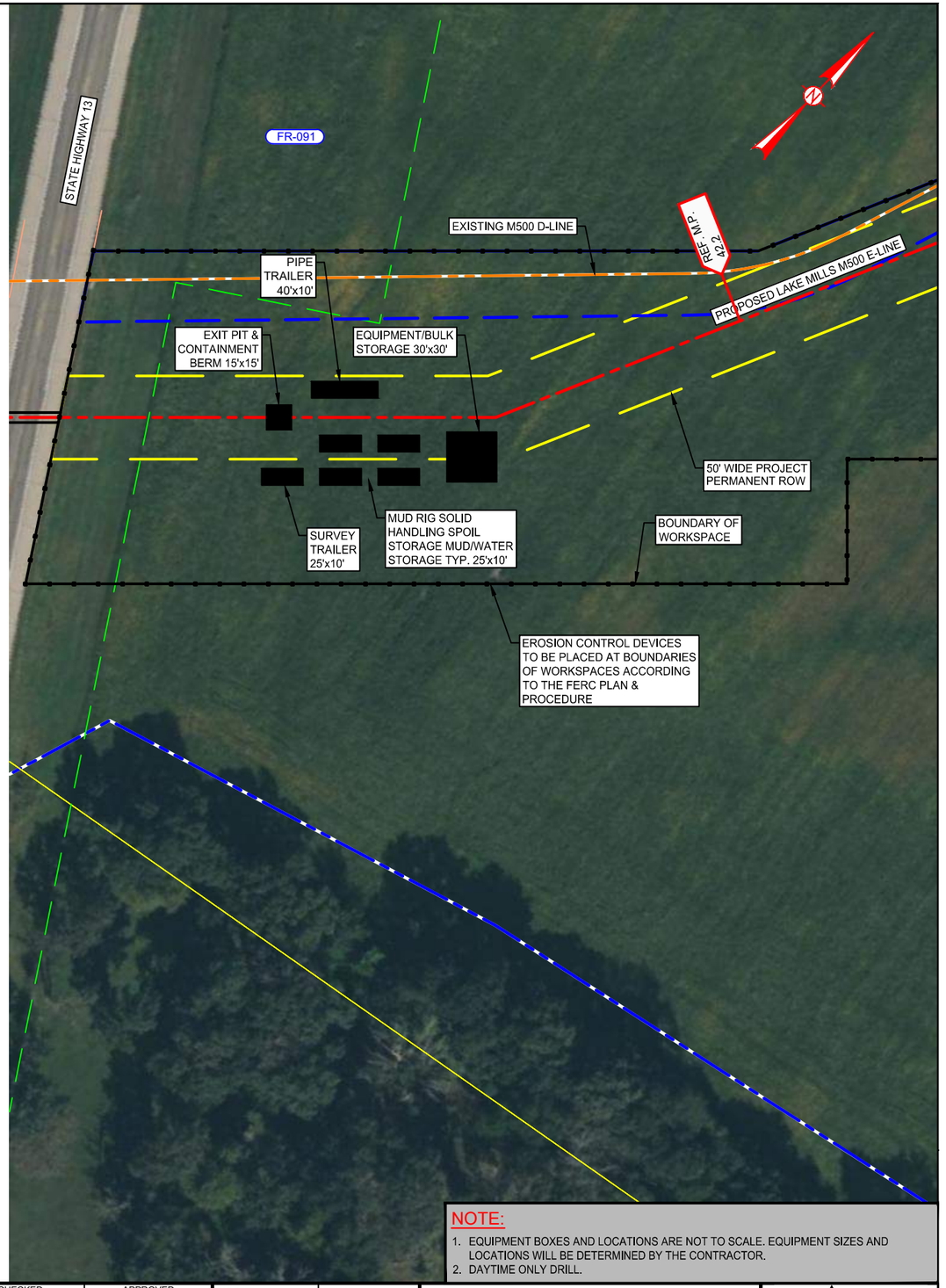
Northern Natural Gas.

PROJECT NO.

DWG. NO. LMA-P4-9 F

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2/23/2026 6:17 PM
Wong, Alice





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/23/2026 9:07 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
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STA# N/A		PO# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
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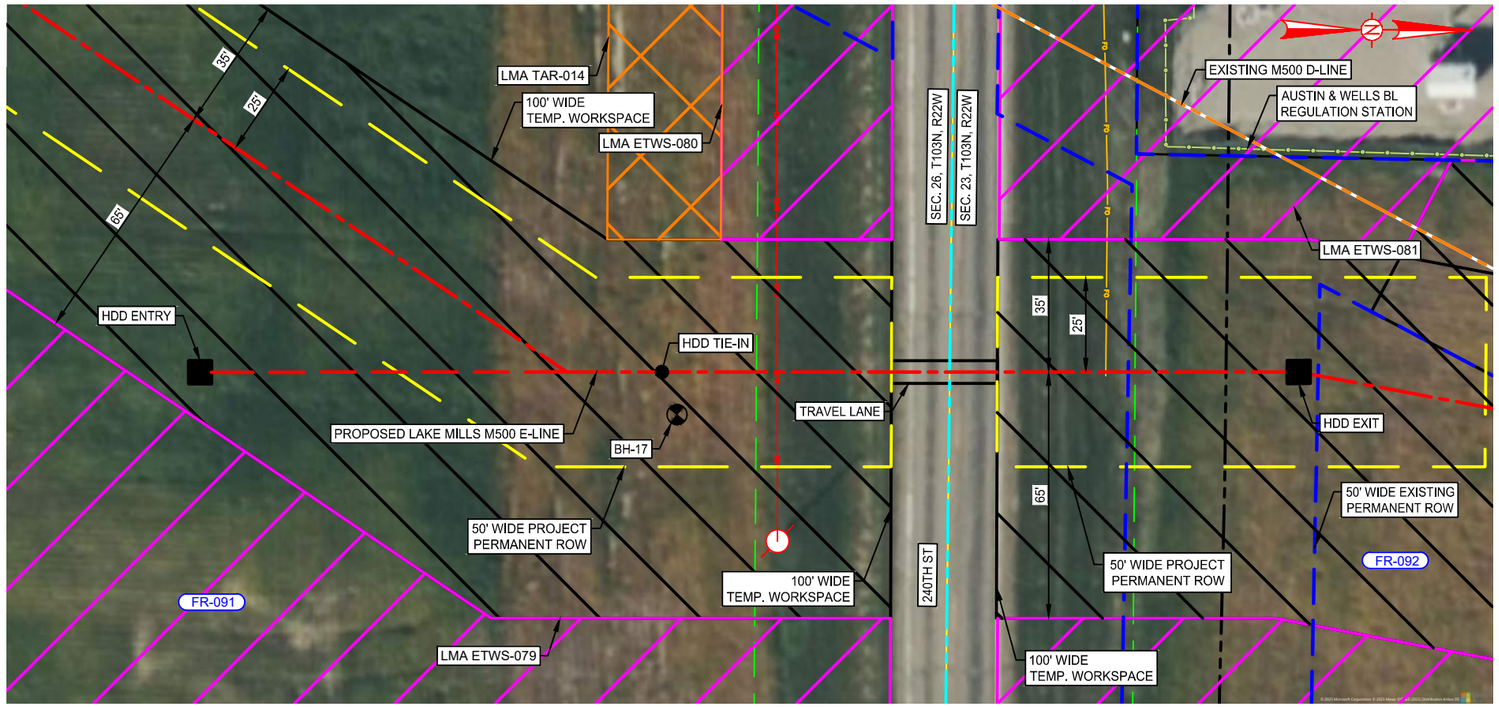
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LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE RAILROAD & STATE HIGHWAY 13
SEC. 26, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

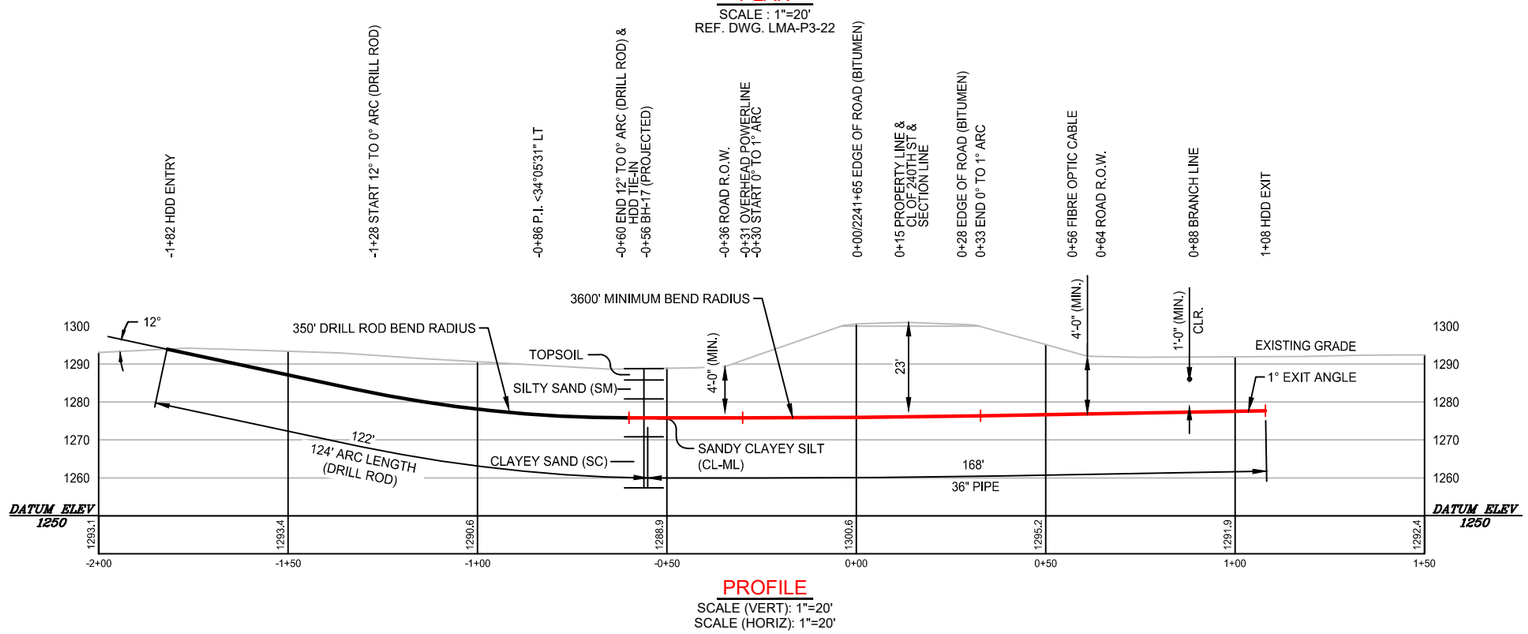
PROJECT NO.

DWG. NO.
LMA-SSP-9
F

PLAN & PROFILE 240TH ST



PLAN
SCALE : 1"=20'
REF. DWG. LMA-P3-22



PROFILE
SCALE (VERT): 1"=20'
SCALE (HORIZ): 1"=20'

LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- BRANCH LINE
- PROPERTY LINE
- SECTION LINE
- FO — FIBRE OPTIC CABLE
- ROAD R.O.W.
- CHAINLINK FENCE
- OHW — OVERHEAD POWERLINE
- EDGE OF ROAD (BITUMEN)
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- PROPOSED LOT
- EXISTING LOT
- POWER POLE
- HDD ENTRY/EXIT
- BOREHOLE

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Wong, Alice 2/23/2026 6:18 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

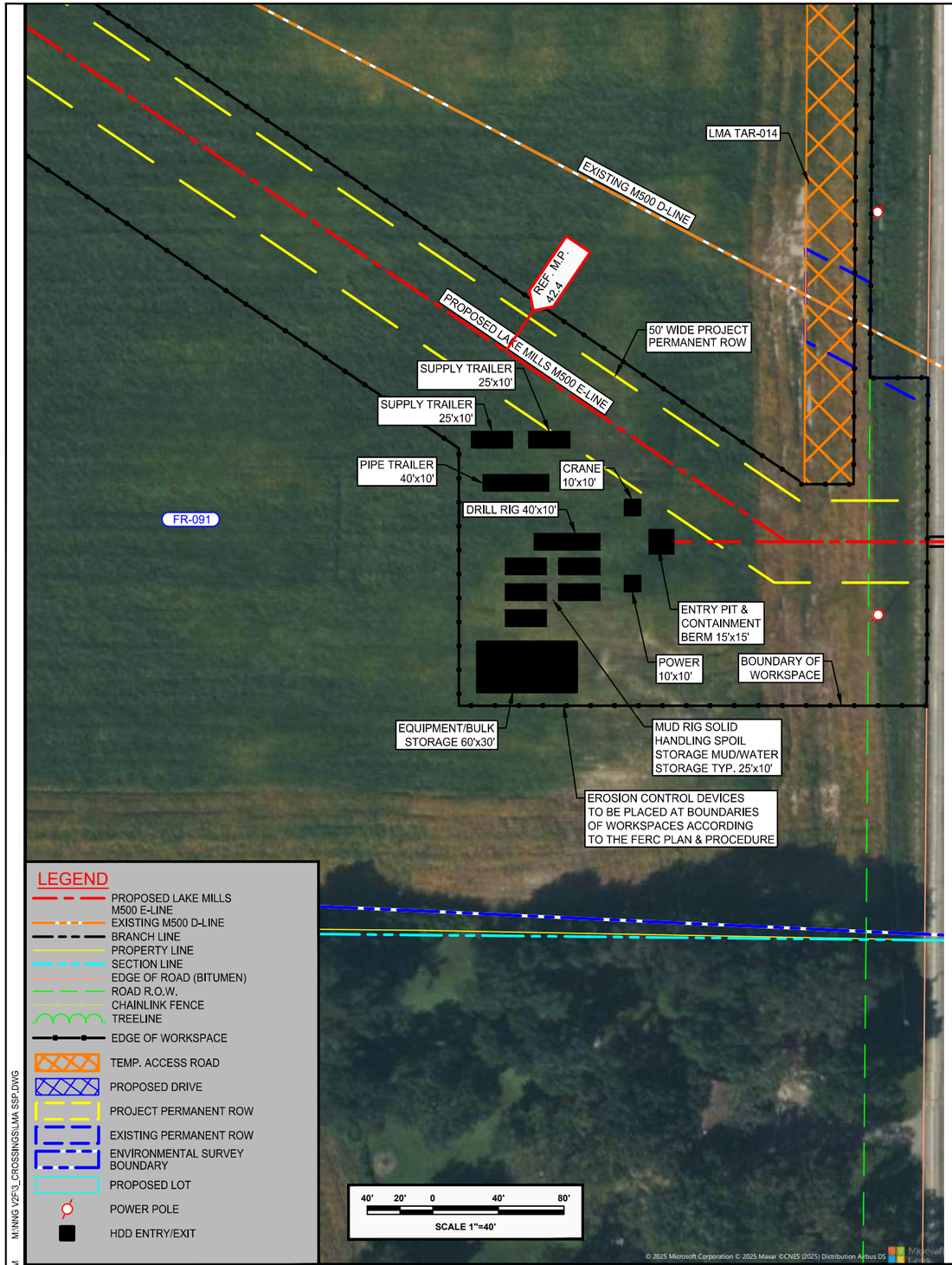
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DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
SCALE: 1"=20'			

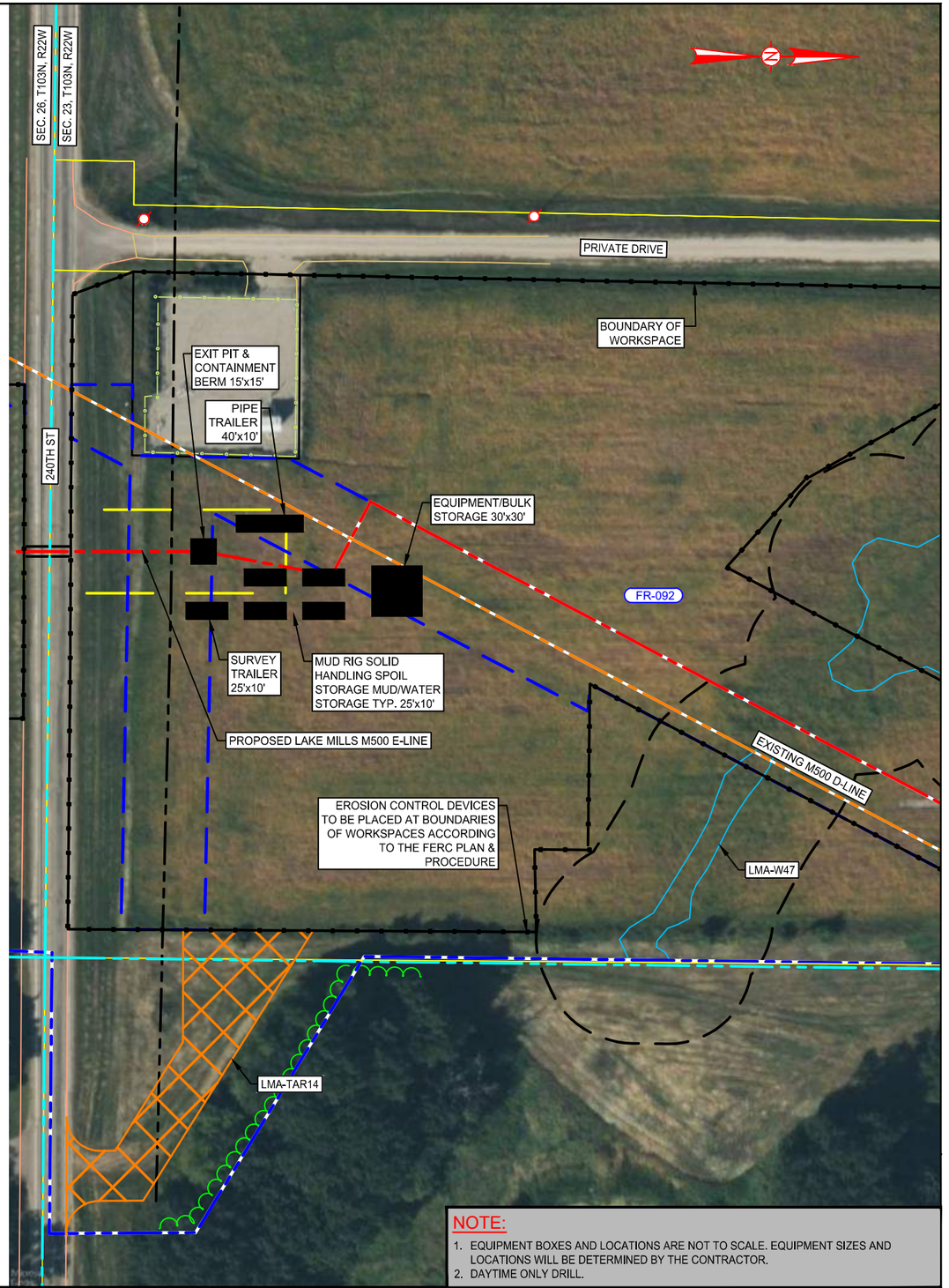
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE 240TH ST
SEC. 26 & 23, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. LMA-P4-10 F





LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 D-LINE
- BRANCH LINE
- PROPERTY LINE
- SECTION LINE
- EDGE OF ROAD (BITUMEN)
- ROAD R.O.W.
- CHAINLINK FENCE
- TREELINE
- EDGE OF WORKSPACE
- TEMP. ACCESS ROAD
- PROPOSED DRIVE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- PROPOSED LOT
- POWER POLE
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

M:\NNG V2F\3_CROSSINGS\LMA SSP.DWG
2/23/2026 8:32 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PI#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
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DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
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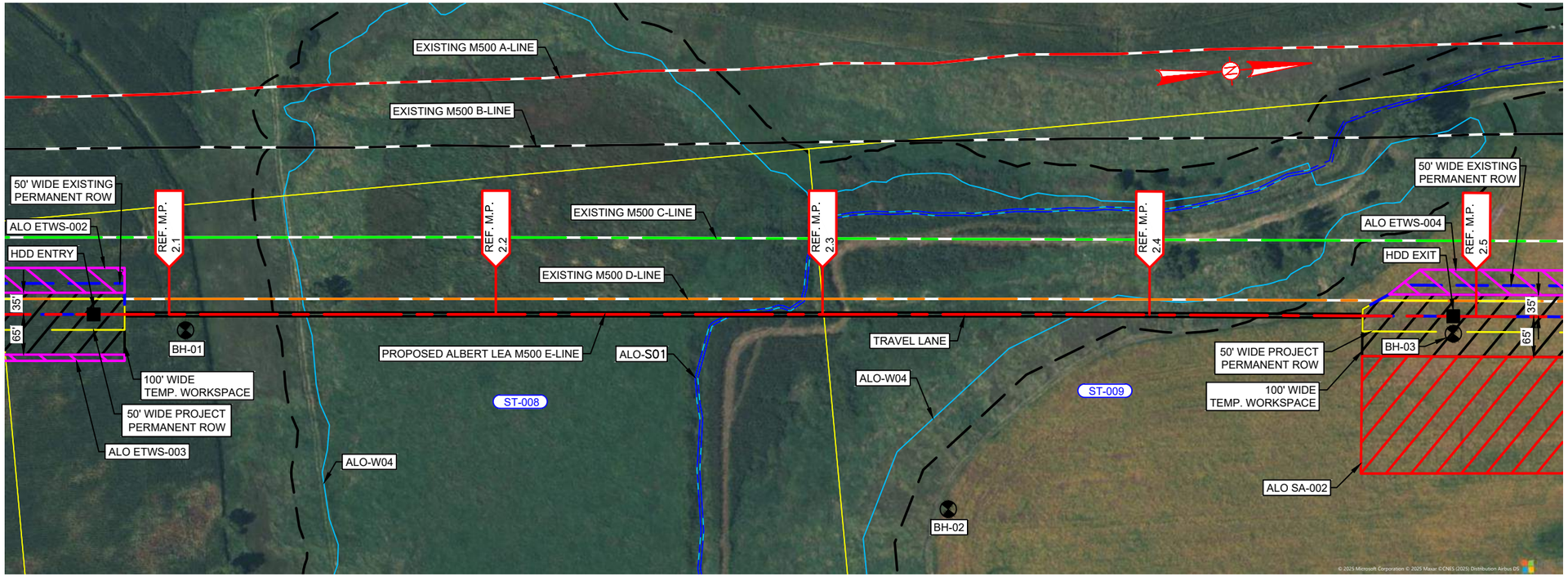
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
LAKE MILLS M500 E-LINE
HDD SSP PLAN & PROFILE 240TH ST
SEC. 26 & 23, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
LMA-SSP-10
F

PLAN & PROFILE WETLAND & STREAM



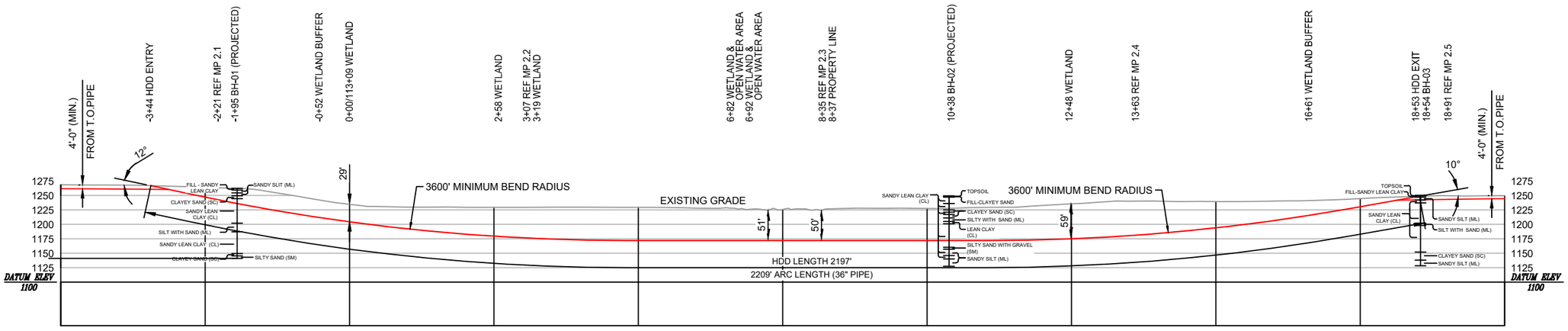
LEGEND

- PROPOSED ALBERT LEA M500 E-LINE
- EXISTING M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 A-LINE
- EXISTING M500 B-LINE
- PROPERTY LINE
- WETLAND
- STREAM
- WETLAND/STREAM BUFFER
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- STAGING AREA
- HDD ENTRY/EXIT
- BOREHOLE

PLAN

SCALE : 1"=100'

REF. DWG. ALO-P3-2 & ALO-P3-3



PROFILE

SCALE (VERT): 1"=100'

SCALE (HORIZ): 1"=100'

M:\NNG V2F\3_CROSSINGS\ALO PLAN & PROFILE.DWG
Wong, Alice 2/23/2026 5:09 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

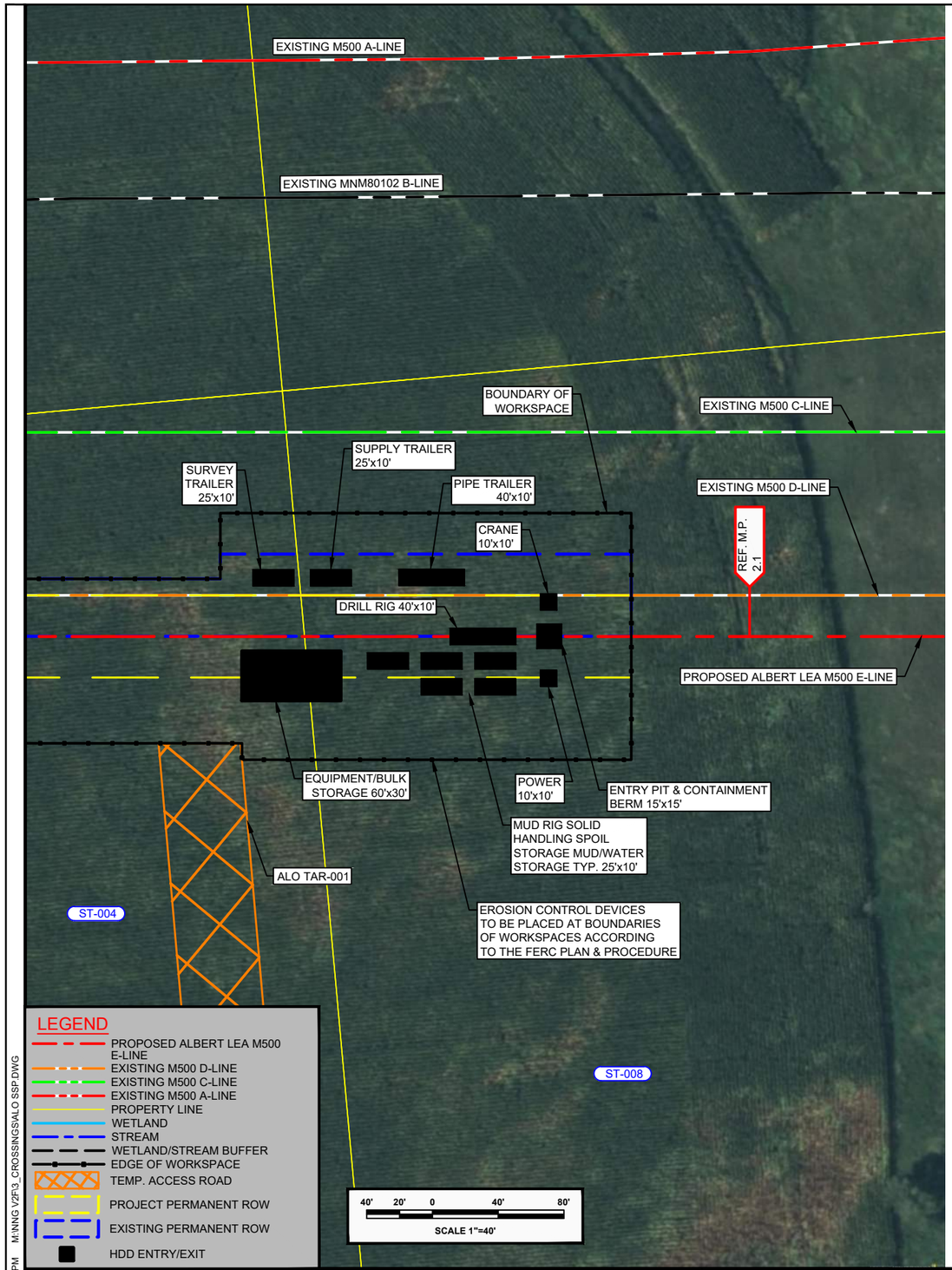
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DRAWN	JM	2/14/25
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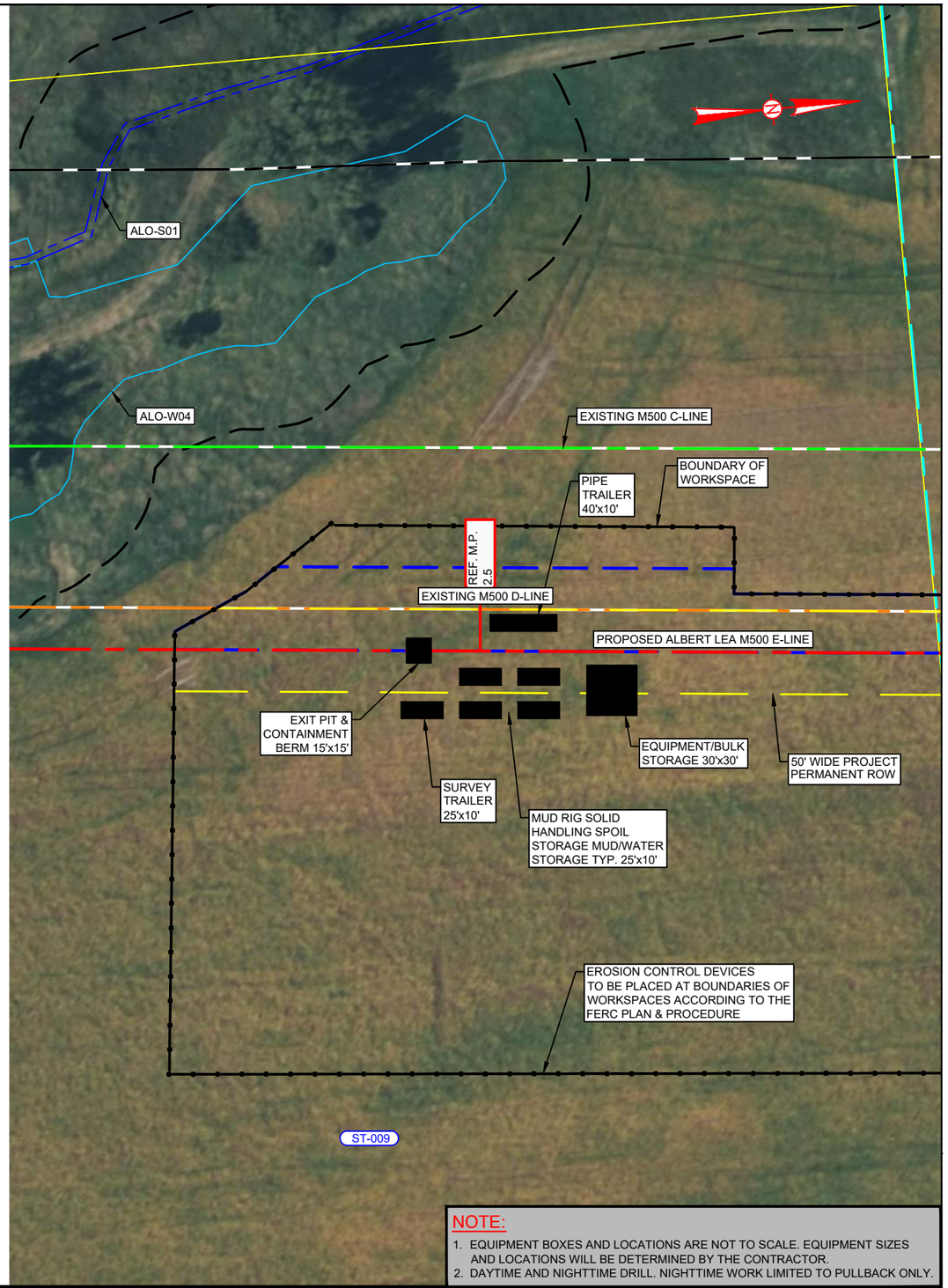
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
ALBERT LEA M500 E-LINE
PLAN & PROFILE WETLAND & STREAM
SEC. 31, T105N, R21W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ALO-P4-1** F





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME AND NIGHTTIME DRILL. NIGHTTIME WORK LIMITED TO PULLBACK ONLY.

M:\NNG V2F\3_CROSSINGS\ALO SSP.DWG
2/23/2026 6:57 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

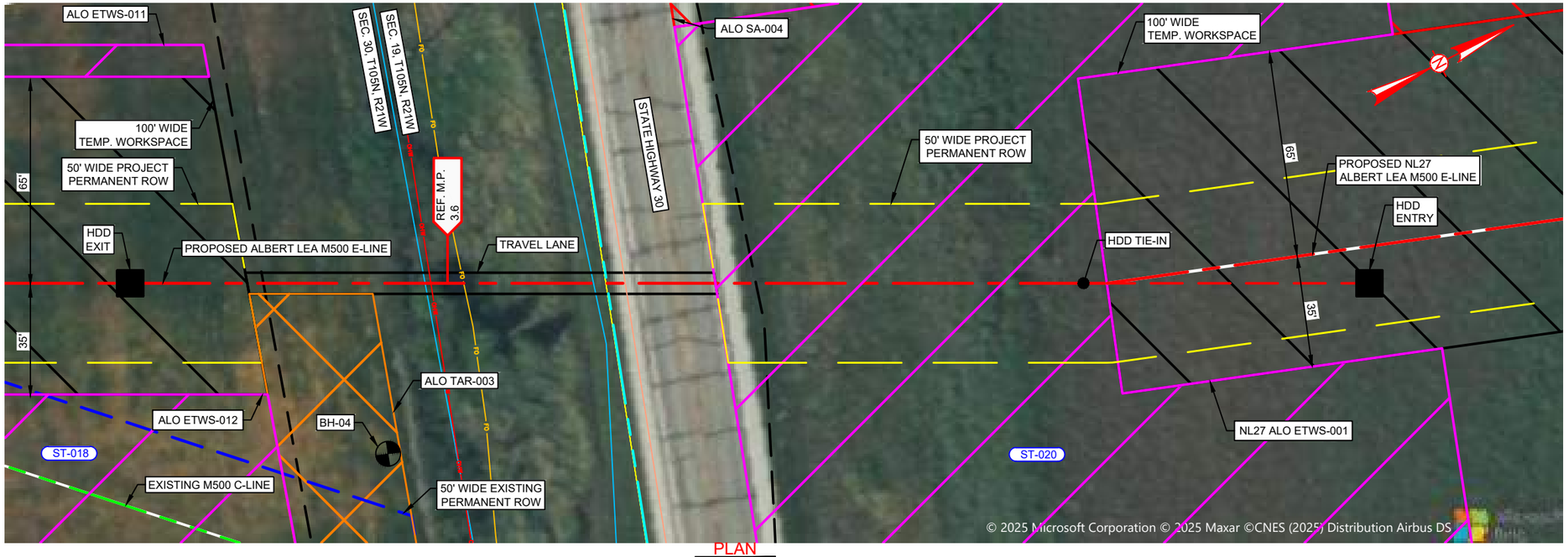
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ALBERT LEA M500 E-LINE
HDD SSP PLAN & PROFILE WETLAND & STREAM
SEC. 31, T105N, R21W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

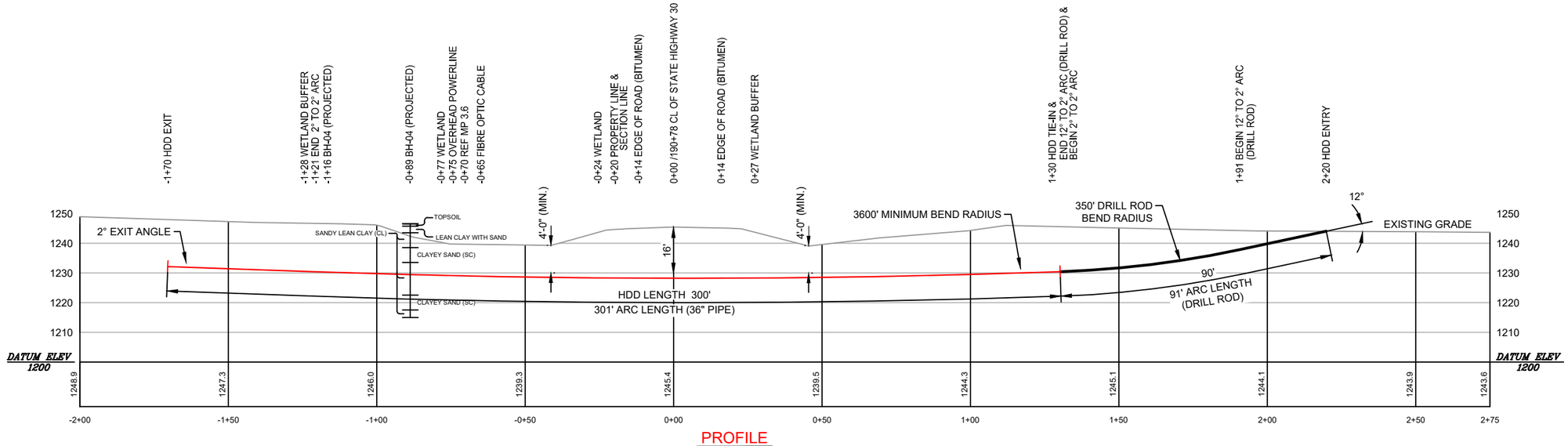
PROJECT NO.

DWG. NO.
ALO-SSP-1
F

PLAN & PROFILE STATE HIGHWAY 30



PLAN
SCALE : 1"=20'
REF. DWG. ALO-P3-6



PROFILE
SCALE (VERT): 1"=20'
SCALE (HORIZ): 1"=20'

LEGEND

- PROPOSED ALBERT LEA M500 E-LINE
- PROPOSED NL27 ALBERT LEA M500 E-LINE
- EXISTING M500 C-LINE
- PROPERTY LINE
- SECTION LINE
- WETLAND
- WETLAND BUFFER
- FIBRE OPTIC CABLE
- OVERHEAD POWERLINE
- CULVERT
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- TEMP. ACCESS ROAD
- STAGING AREA
- HDD ENTRY/EXIT
- BOREHOLE

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	2/14/25	
DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
SCALE: 1"=20'			

V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
ALBERT LEA M500 E-LINE
PLAN & PROFILE STATE HIGHWAY 30
SEC. 30 & 19, T105N, R21W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ALO-P4-2** F

Wong, Alice 2/23/2026 5:41 PM M:\NNG V2F\3_CROSSINGS\ALO PLAN & PROFILE.DWG

ALO-W13
ALO-W16
W HIGHWAY 30
ALO-W15
ALO-W14
REF. M.P. 3.6
50' WIDE PROJECT PERMANENT ROW
EROSION CONTROL DEVICES TO BE PLACED AT BOUNDARIES OF WORKSPACES ACCORDING TO THE FERC PLAN & PROCEDURE
ENTRY PIT & CONTAINMENT BERM 15'x15'
PROPOSED ALBERT LEA M500 E-LINE
EXISTING M500 C-LINE
BOUNDARY OF WORKSPACE
PIPE TRAILER 40'x10'
EQUIPMENT/BULK STORAGE 30'x30'
REF. M.P. 3.6
ST-018
ALO TAR-003
SURVEY TRAILER 25'x10'
MUD RIG SOLID HANDLING SPOIL STORAGE MUD/WATER STORAGE TYP. 25'x10'
PRIVATE DRIVE
EXISTING M500 D-LINE
ALO-W16
40' 20' 0 40' 80'
SCALE 1"=40'

LEGEND
- PROPOSED ALBERT LEA M500 E-LINE
- PROPOSED NL27 ALBERT LEA M500 E-LINE
- EXISTING M500 C-LINE
- EXISTING M500 D-LINE
- PROPERTY LINE
- SECTION LINE
- WETLAND
- WETLAND BUFFER
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- EDGE OF WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- TEMP. ACCESS ROAD
- PROPOSED DRIVE
- PROPOSED LOT
- HDD ENTRY/EXIT
- POWER POLE
- GUY POLE

EROSION CONTROL DEVICES TO BE PLACED AT BOUNDARIES OF WORKSPACES ACCORDING TO THE FERC PLAN & PROCEDURE
ST-020
MUD RIG SOLID HANDLING SPOIL STORAGE MUD/WATER STORAGE TYP. 25'x10'
SUPPLY TRAILER 25'x10'
PIPE TRAILER 40'x10'
SURVEY TRAILER 25'x10'
CRANE 10'x10'
PROPOSED NL27 ALBERT LEA M500 E-LINE
PROPOSED ALBERT LEA M500 E-LINE
EXIT PIT & CONTAINMENT BERM 15'x15'
EQUIPMENT/BULK STORAGE 60'x30'
DRILL RIG 40'x10'
ALO-W16
POWER 10'x10'
BOUNDARY OF WORKSPACE
EXISTING M500 C-LINE
ALO TAR-003
ALO-W16
EXISTING M500 D-LINE
W HIGHWAY 30
SEC. 19, T105N, R21W
SEC. 30, T105N, R21W

NOTE:
1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

M:\NNG V2F\3_CROSSINGS\ALO SSP.DWG
2/24/2026 9:48 AM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

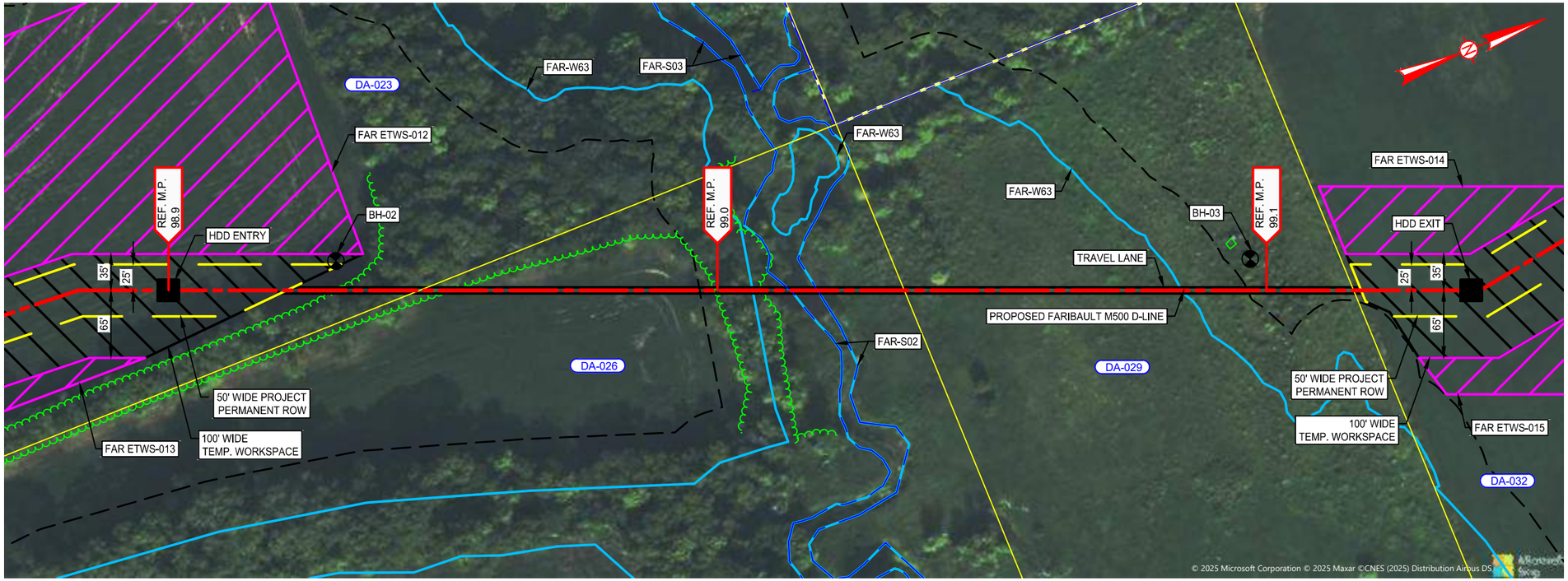
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BID				
CONST.				

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STA# N/A		POI# N/A
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DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

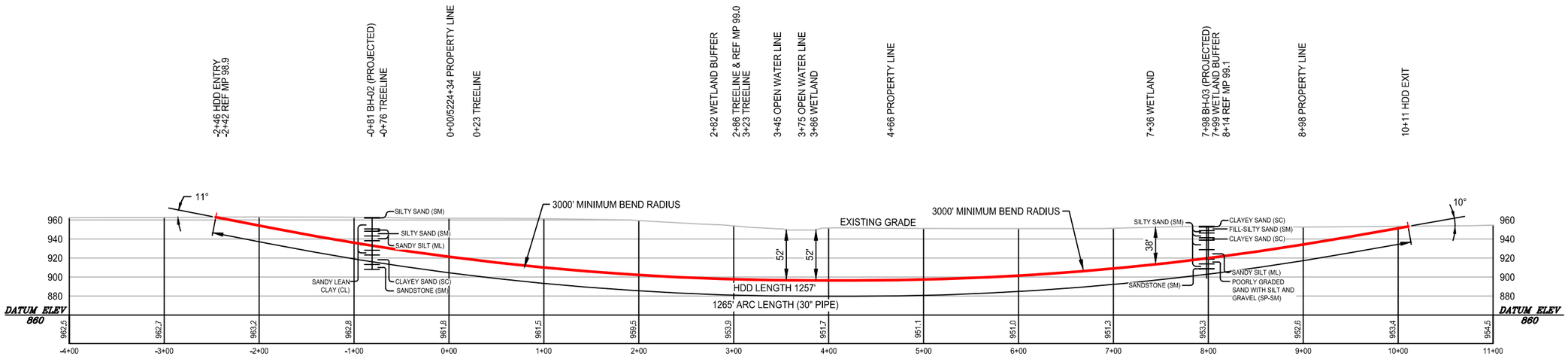
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
ALBERT LEA M500 E-LINE
HDD SSP PLAN & PROFILE W HIGHWAY 30
SEC. 30 & 19, T105N, R21W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.
PROJECT NO.
DWG. NO. ALO-SSP-2
F

PLAN & PROFILE STREAM FAR-S02 & WETLAND FAR-W63



PLAN
SCALE : 1"=60'
REF. DWG. FAR-P3-5



PROFILE
SCALE (VERT): 1"=60'
SCALE (HORIZ): 1"=60'

LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- PROPERTY LINE
- WETLAND
- STREAM
- WETLAND/STREAM BUFFER
- TREELINE
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- TREE
- HDD ENTRY/EXIT
- BOREHOLE

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Wong, Alice 2/23/2026 6:38 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PI# | CONST. YR 2027
STA# N/A | PO# N/A

	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		

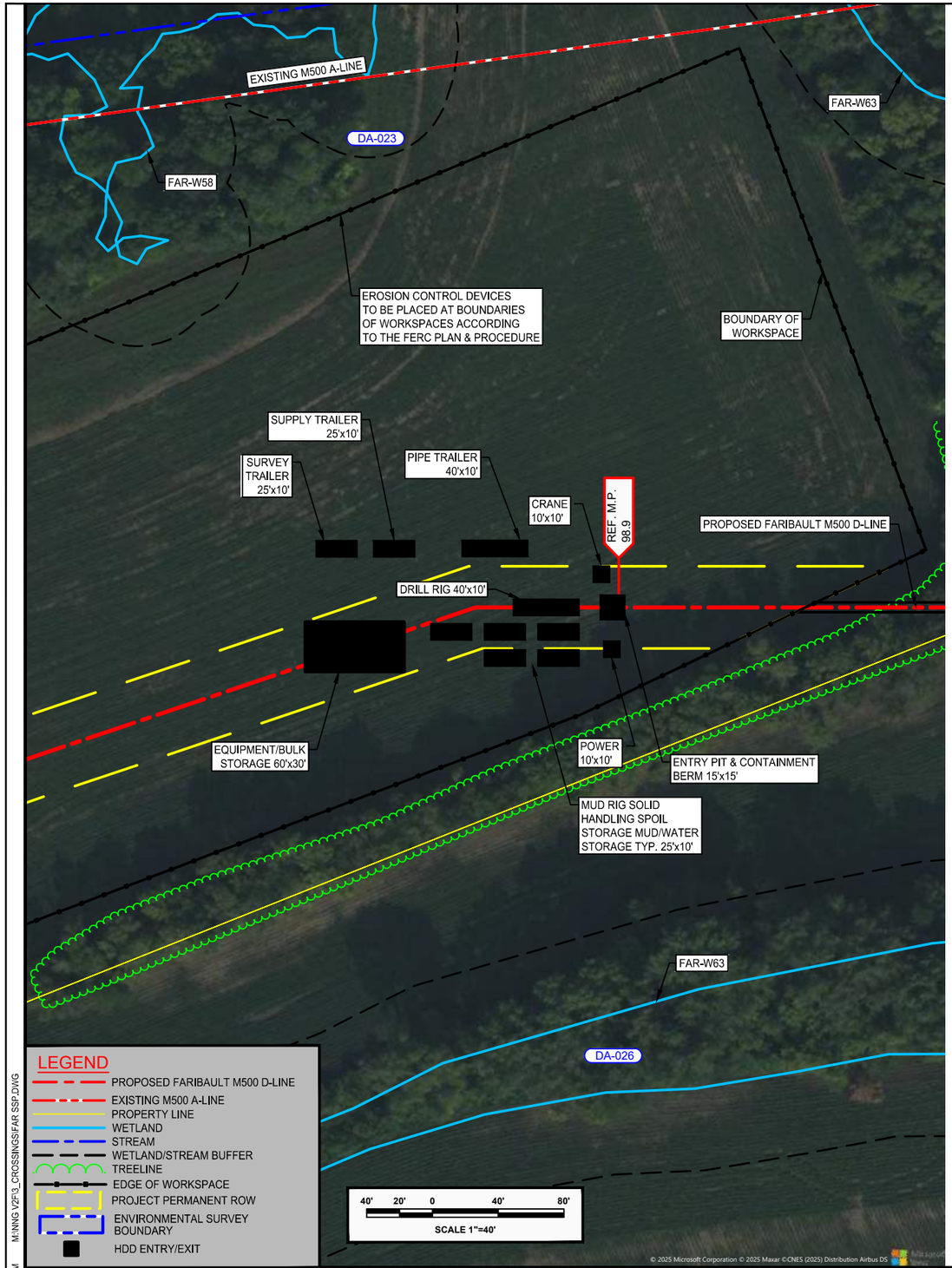
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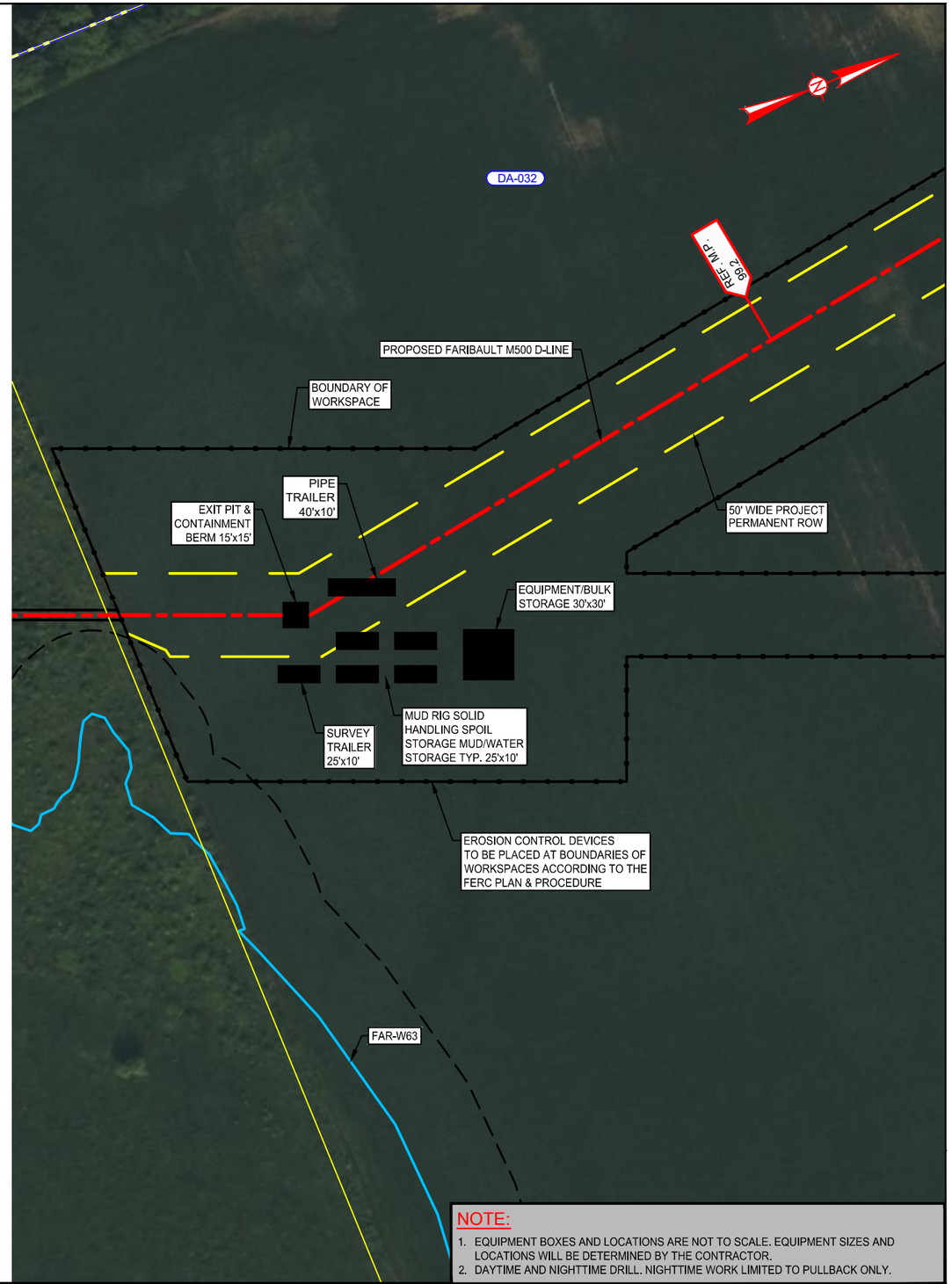
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FARIBAULT M500 D-LINE
PLAN & PROFILE STREAM FAR-S02 & WETLAND FAR-W63
SEC. 10, T112N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **FAR-P4-1** F





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME AND NIGHTTIME DRILL. NIGHTTIME WORK LIMITED TO PULLBACK ONLY.

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2/23/2026 7:01 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
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DRAWN	JM	2/14/25	
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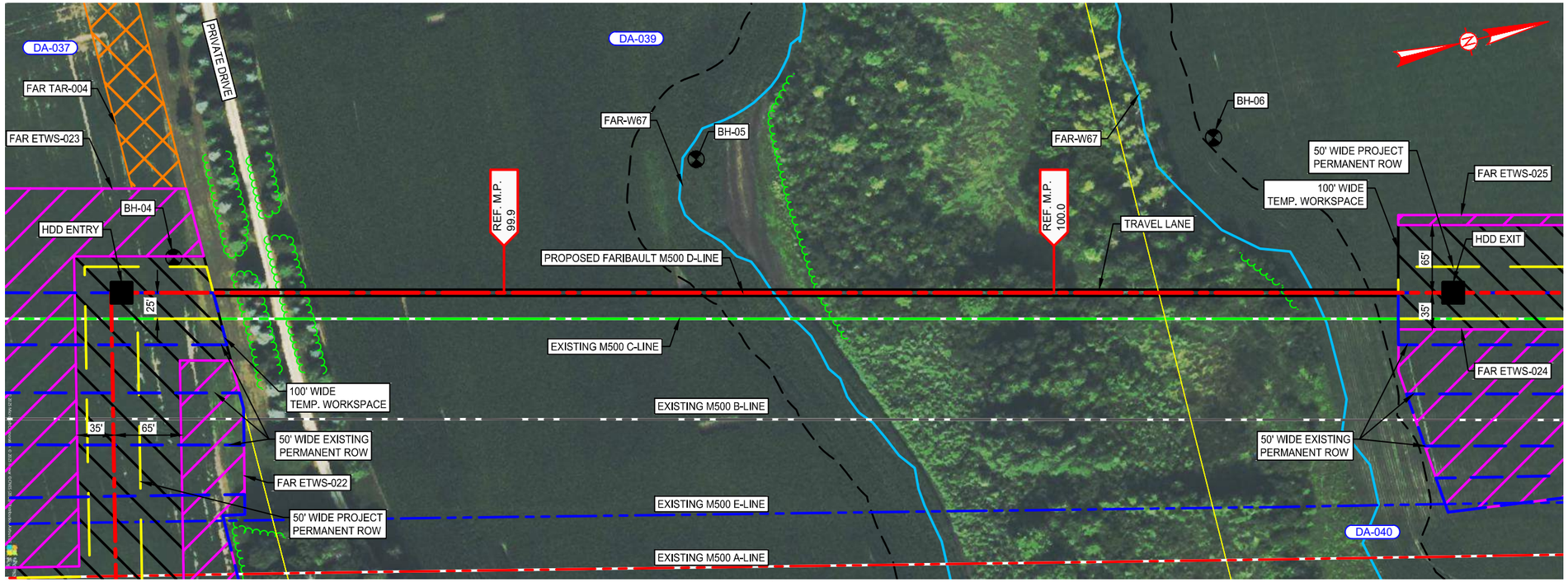
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FARIBAULT M500 D-LINE
HDD SPP PLAN & PROFILE STREAM FAR-S02 & WETLAND FAR-W63
SEC. 10, T112N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
FAR-SSP-1
F

PLAN & PROFILE PRIVATE DRIVE & WETLAND FAR-W67



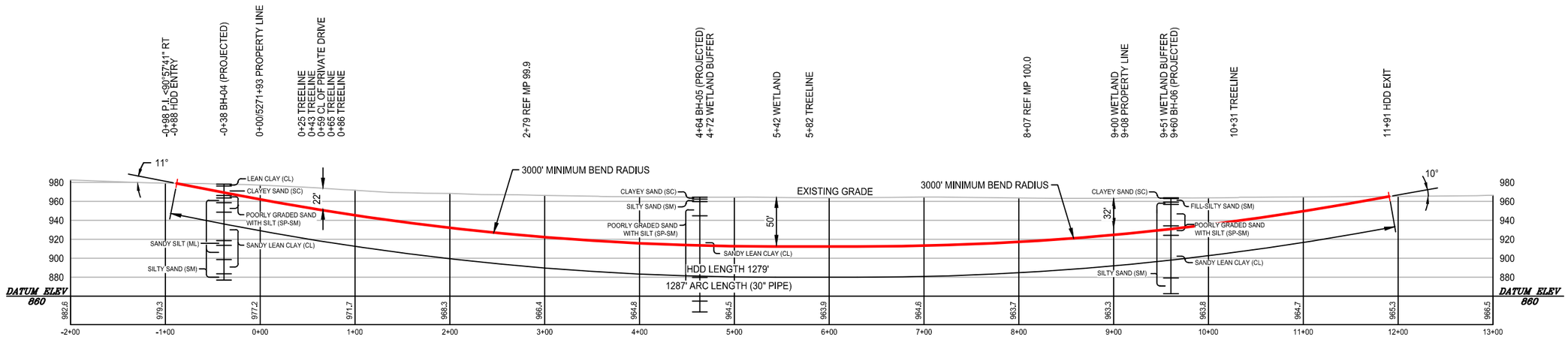
LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 B-LINE
- EXISTING M500 E-LINE
- EXISTING M500 A-LINE
- PROPERTY LINE
- WETLAND
- WETLAND BUFFER
- TREELINE
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- STAGING AREA
- TEMP. ACCESS ROAD
- TREE
- HDD ENTRY/EXIT
- BOREHOLE

PLAN

SCALE : 1"=60'

REF. DWG. FAR-P3-7 & FAR-P3-8



PROFILE

SCALE (VERT): 1"=60'

SCALE (HORIZ): 1"=60'

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Wong, Alice 2/23/2026 6:35 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

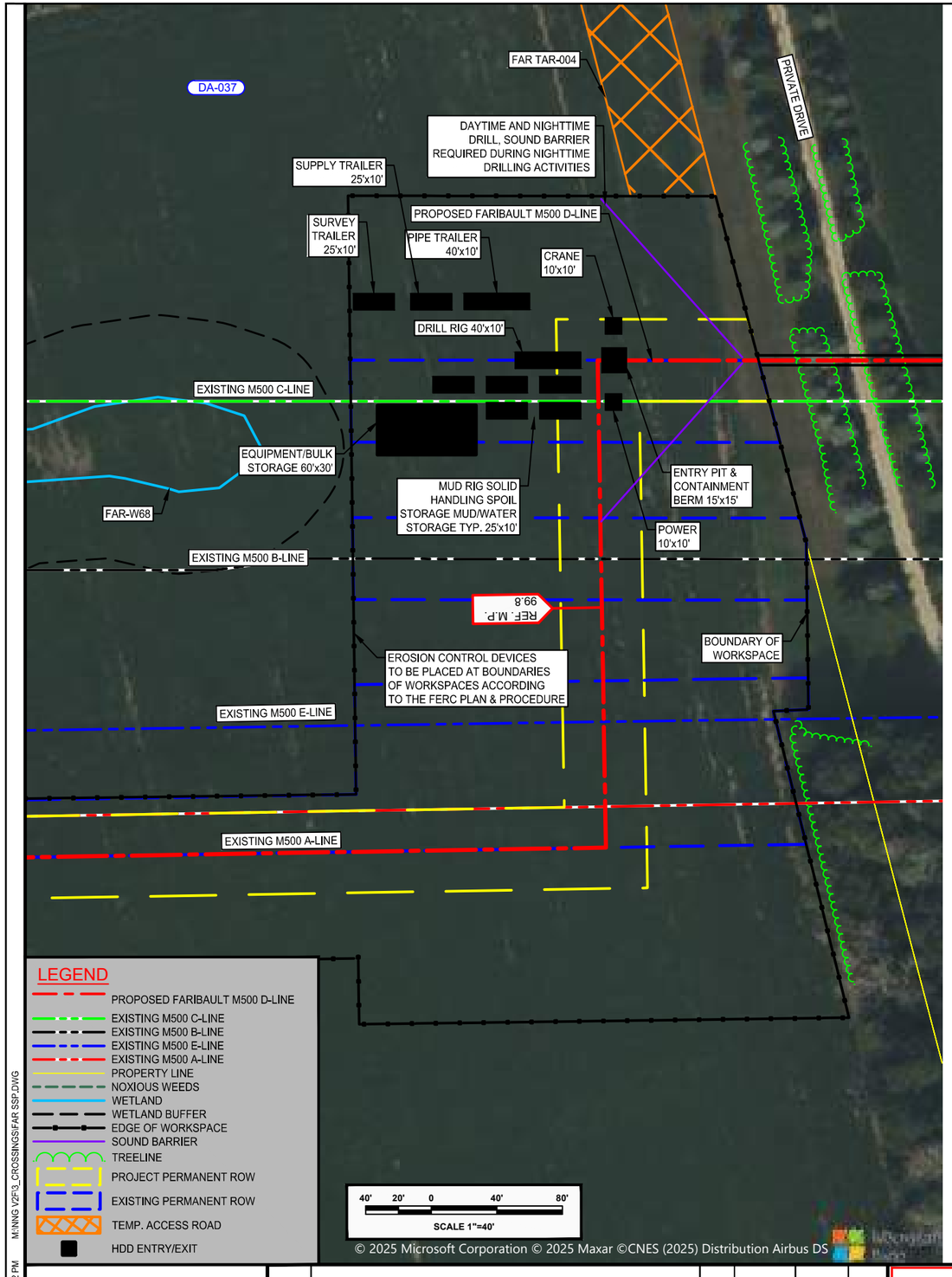
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DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
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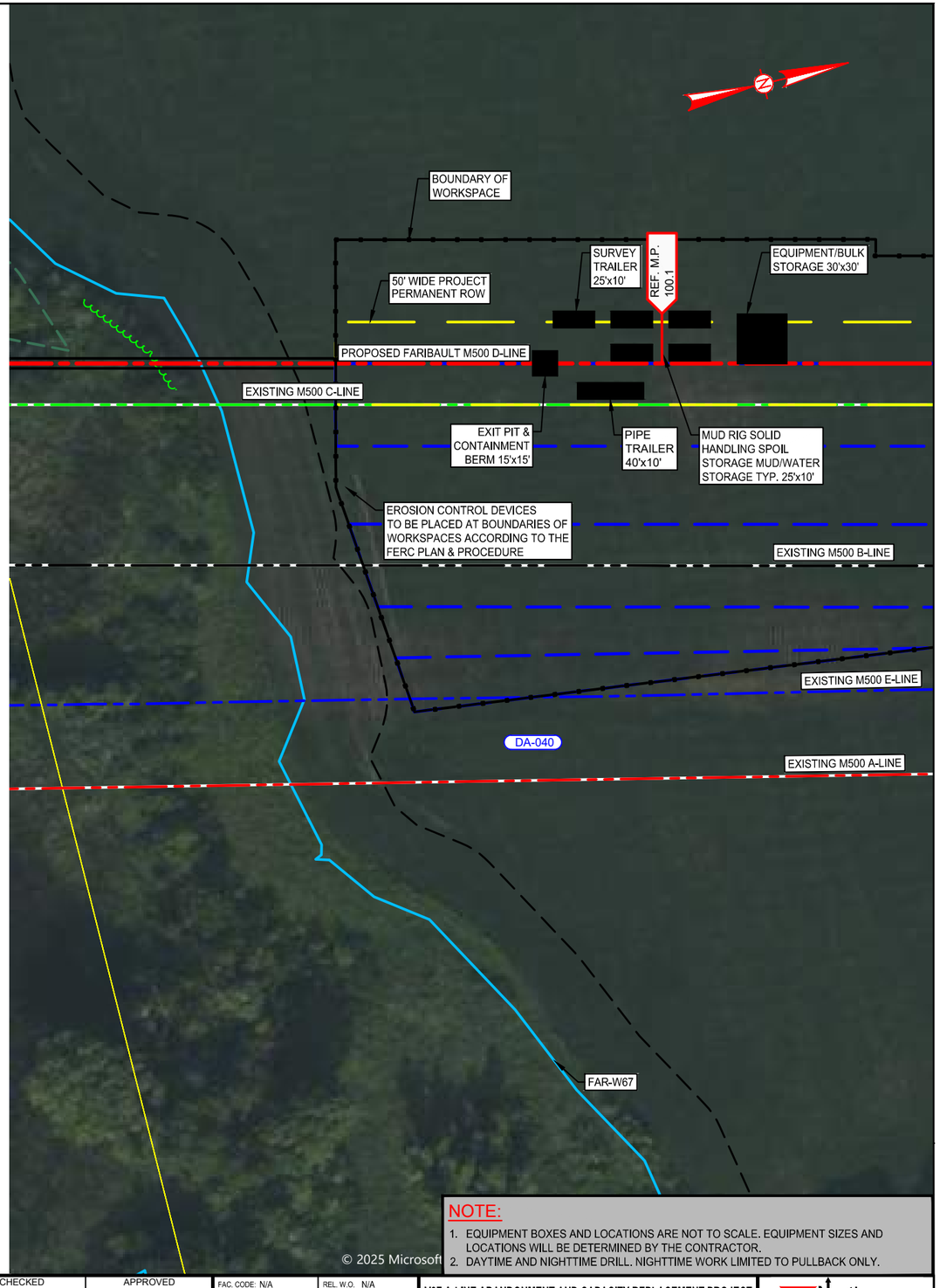
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
PLAN & PROFILE PRIVATE DRIVE & WETLAND FAR-W67
SEC. 3, T112N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **FAR-P4-2** F





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME AND NIGHTTIME DRILL. NIGHTTIME WORK LIMITED TO PULLBACK ONLY.

M:\NNG V2F\3_CROSSINGS\FAR SSP.DWG
2/23/2026 7:02 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI#		CONST. YR 2027
STA# N/A		PO# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

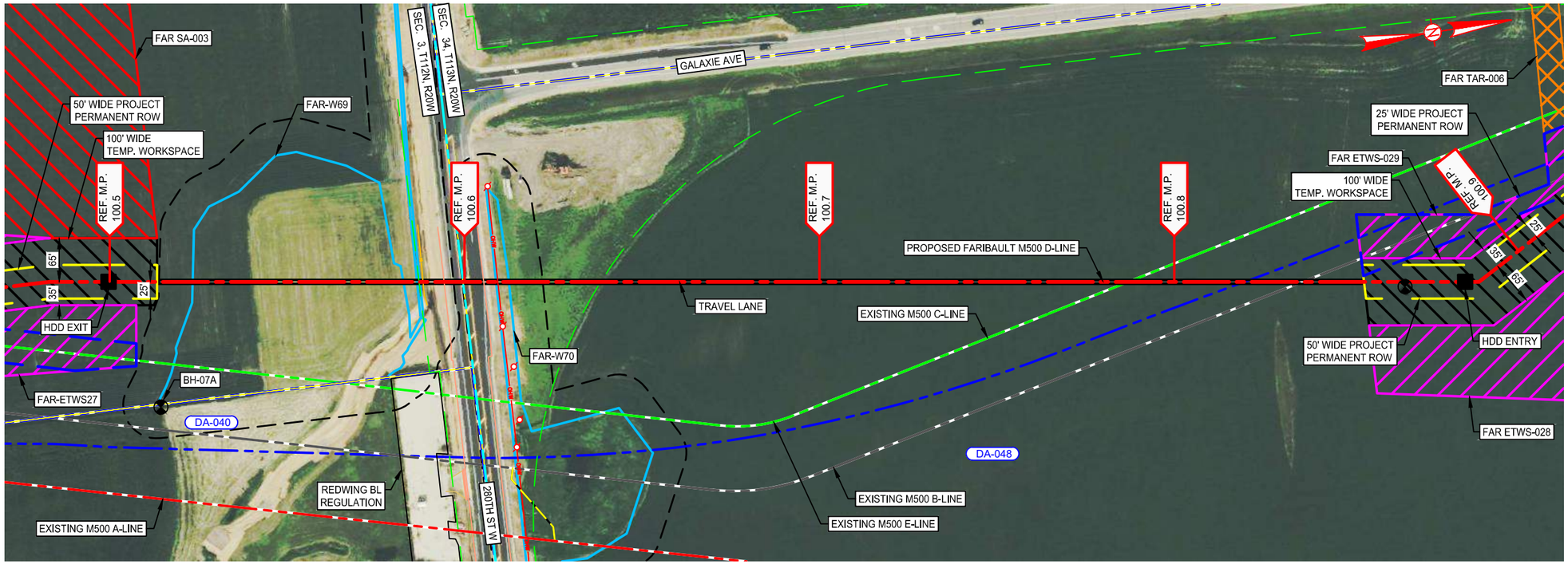
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FARIBAULT M500 D-LINE
HDD SPP PLAN & PROFILE PRIVATE DRIVE & WETLAND FAR-W67
SEC. 3, T112N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
FAR-SSP-2
F

PLAN & PROFILE 280TH ST W, WETLAND FAR-W70



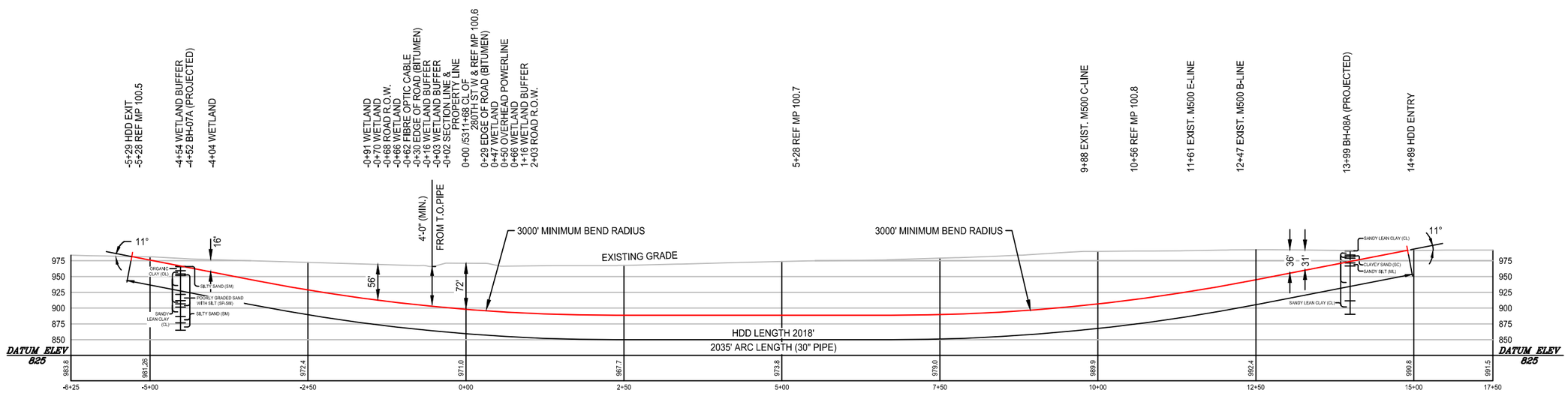
PLAN

SCALE : 1"=90'

REF. DWG. FAR-P3-9 & FAR-P3-10

LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 E-LINE
- EXISTING M500 B-LINE
- EXISTING M500 A-LINE
- PROPERTY LINE
- SECTION LINE
- OHW — OVERHEAD POWERLINE
- WETLAND
- WETLAND BUFFER
- ROAD R.O.W.
- EDGE OF ROAD (GRAVEL)
- EDGE OF ROAD (BITUMEN)
- CHAINLINK FENCE
- FO — FIBRE OPTIC CABLE
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- TEMP. ACCESS ROAD
- STAGING AREA
- POWER POLE
- HDD ENTRY/EXIT
- BOREHOLE



PROFILE

SCALE (VERT): 1"=90'

SCALE (HORIZ): 1"=90'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PI#		CONST. YR 2027	
STA# N/A		POI# N/A	
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DRAWN	JM	2/14/25	
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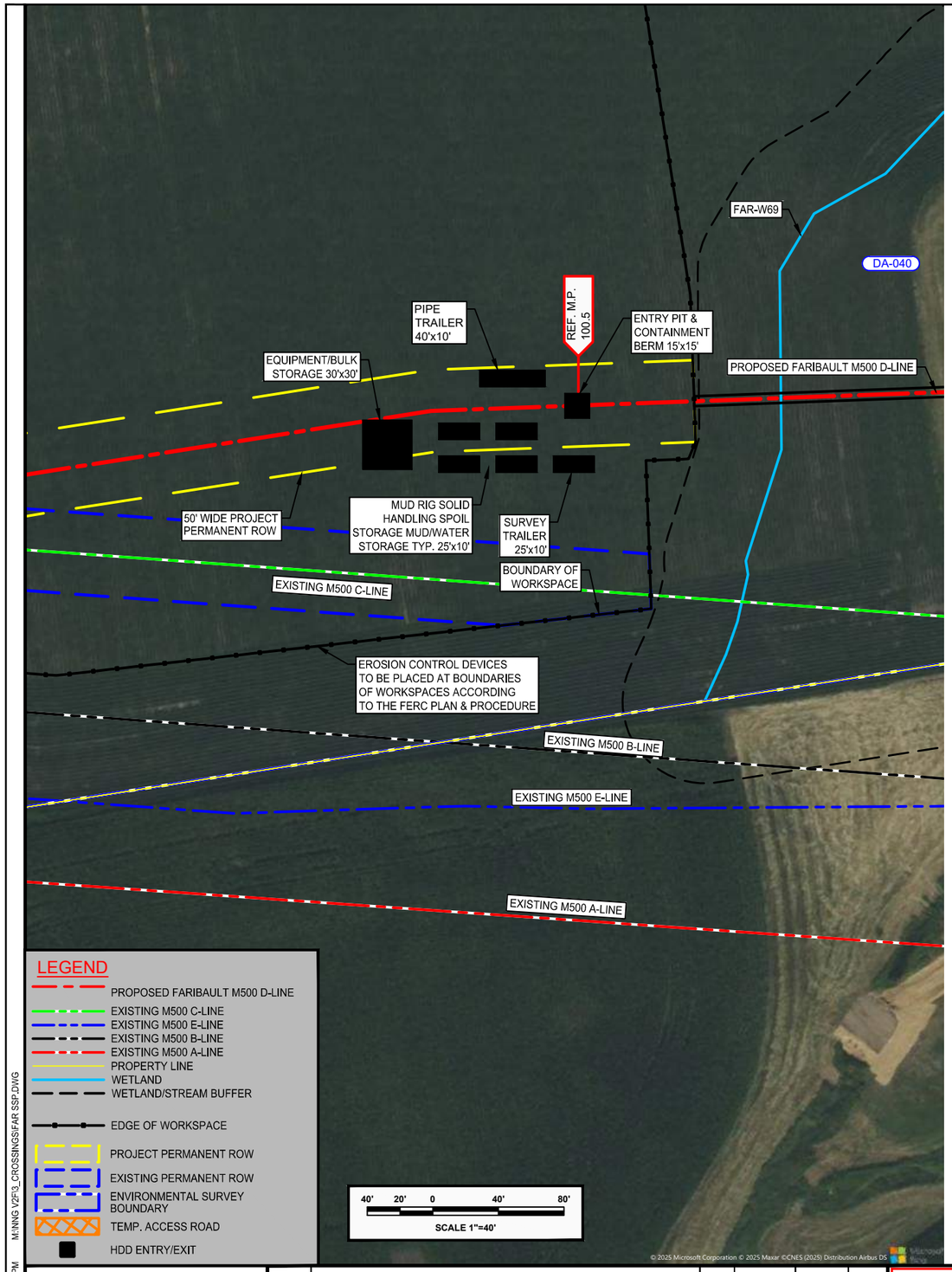
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
PLAN & PROFILE 280TH ST W, WETLAND FAR-W70
SEC. 3 & 34, T112N & T113N, R20W
DAKOTA COUNTY, MINNESOTA

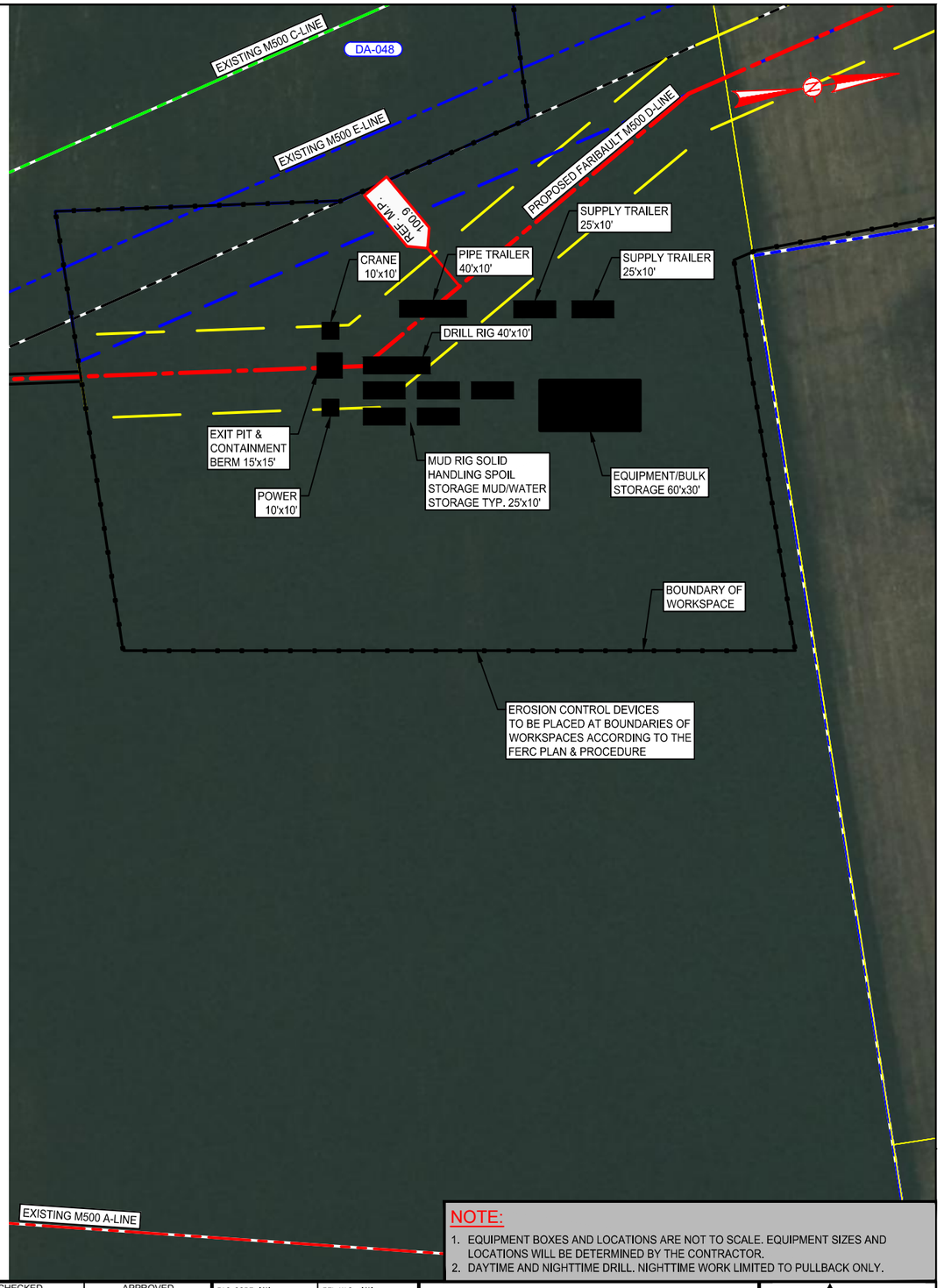
Northern Natural Gas.

PROJECT NO.

DWG. NO. **FAR-P4-3** F

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2/24/2026 11:28 AM
Wong, Alice





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME AND NIGHTTIME DRILL. NIGHTTIME WORK LIMITED TO PULLBACK ONLY.

M:\NNG V2F3_CROSSINGS\FAR SSP.DWG
2/23/2026 7:02 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

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PI#		CONST. YR 2027
STA# N/A		POI# N/A
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DESIGN	ED	2/14/25
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ASBUILT		
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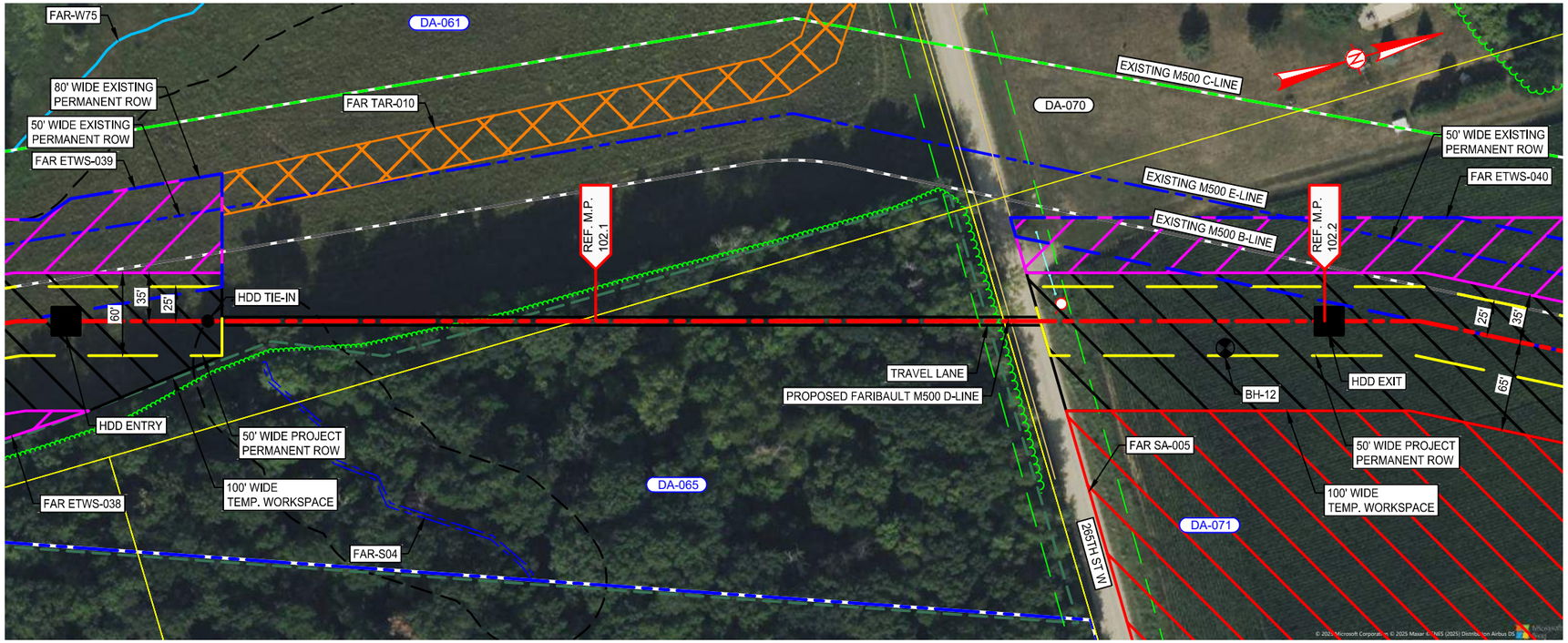
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FARIBAULT M500 D-LINE
HDD SSP PLAN & PROFILE 280TH ST W, WETLAND FAR-W70
SEC. 34, T113N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

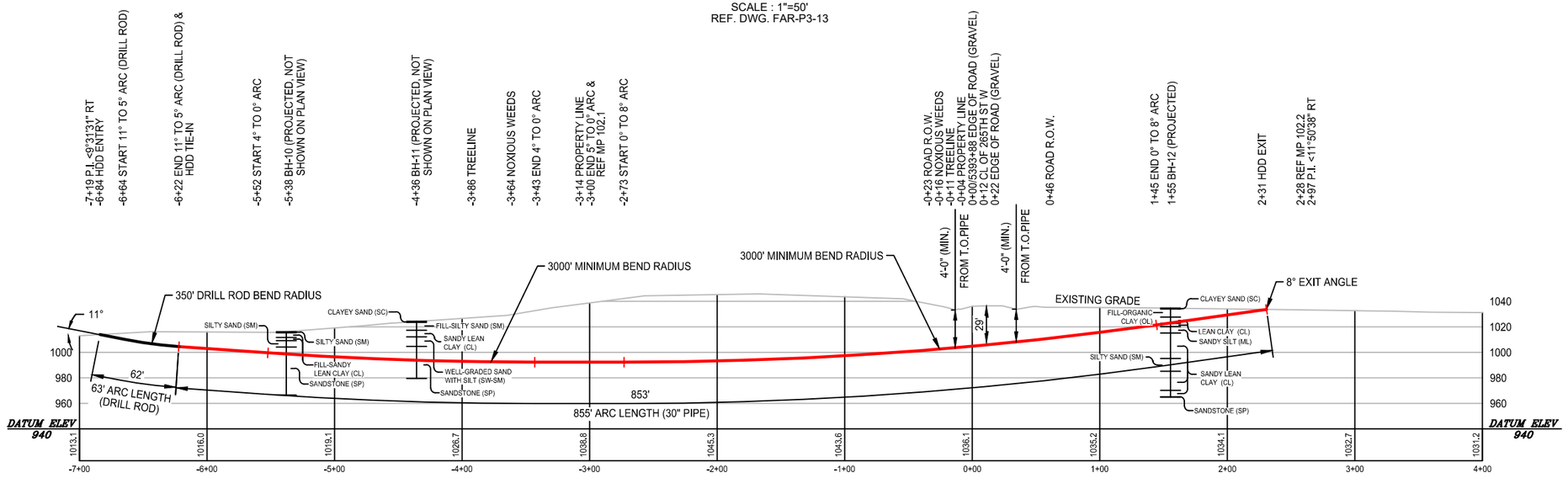
DWG. NO.
FAR-SSP-3
F

PLAN & PROFILE 265TH ST W



PLAN

SCALE : 1"=50'
REF. DWG. FAR-P3-13



PROFILE

SCALE (VERT): 1"=50'
SCALE (HORIZ): 1"=50'

LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 E-LINE
- EXISTING M500 B-LINE
- PROPERTY LINE
- NOXIOUS WEEDS
- EDGE OF ROAD (GRAVEL)
- ROAD R.O.W.
- TREELINE
- CULVERT
- STREAM
- STREAM BUFFER
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- STAGING AREA
- POWER POLE
- TREE
- HDD ENTRY/EXIT
- BOREHOLE

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
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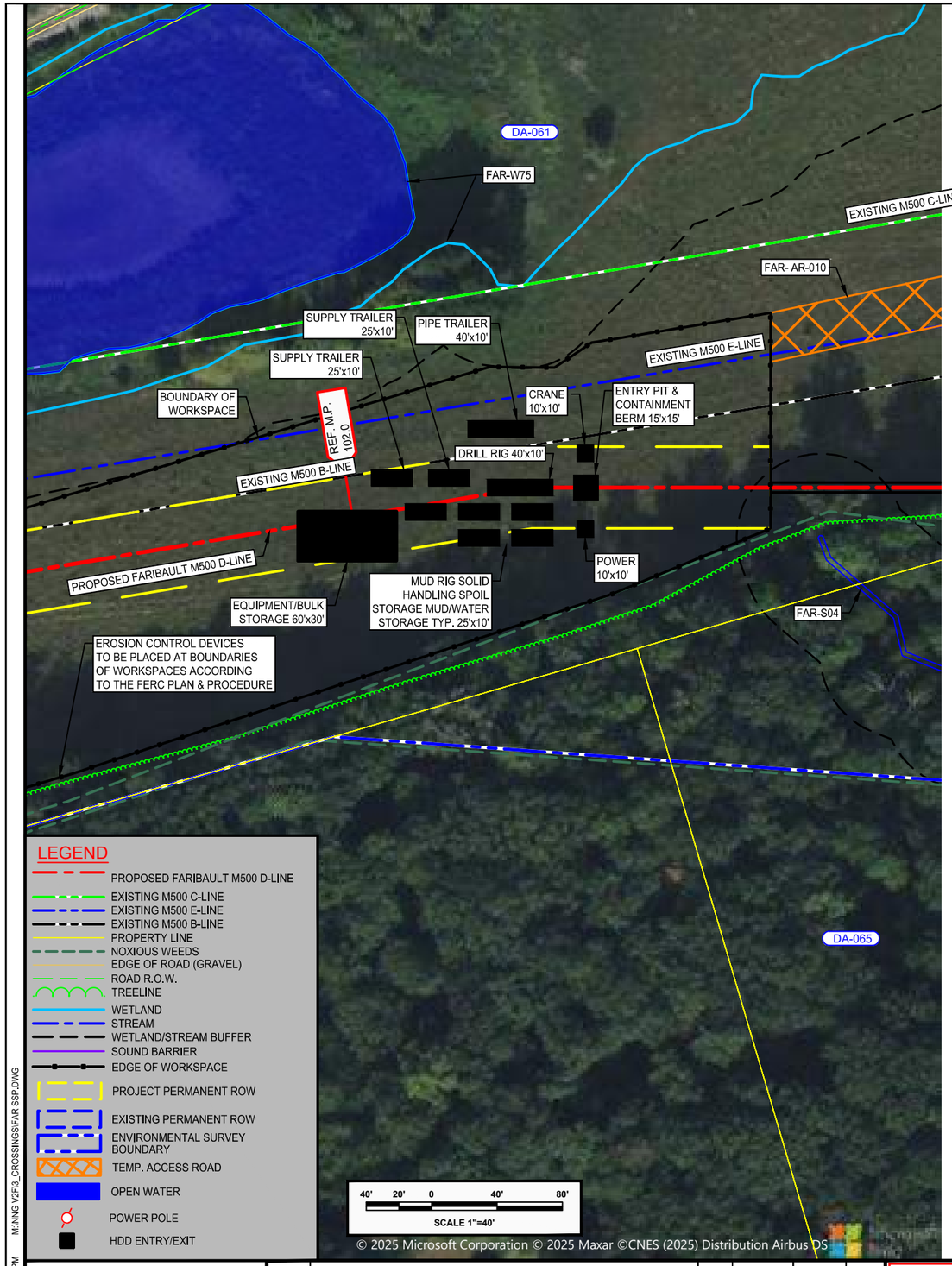
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
PLAN & PROFILE 265TH ST W
SEC. 27, T113N, R20W
DAKOTA COUNTY, MINNESOTA

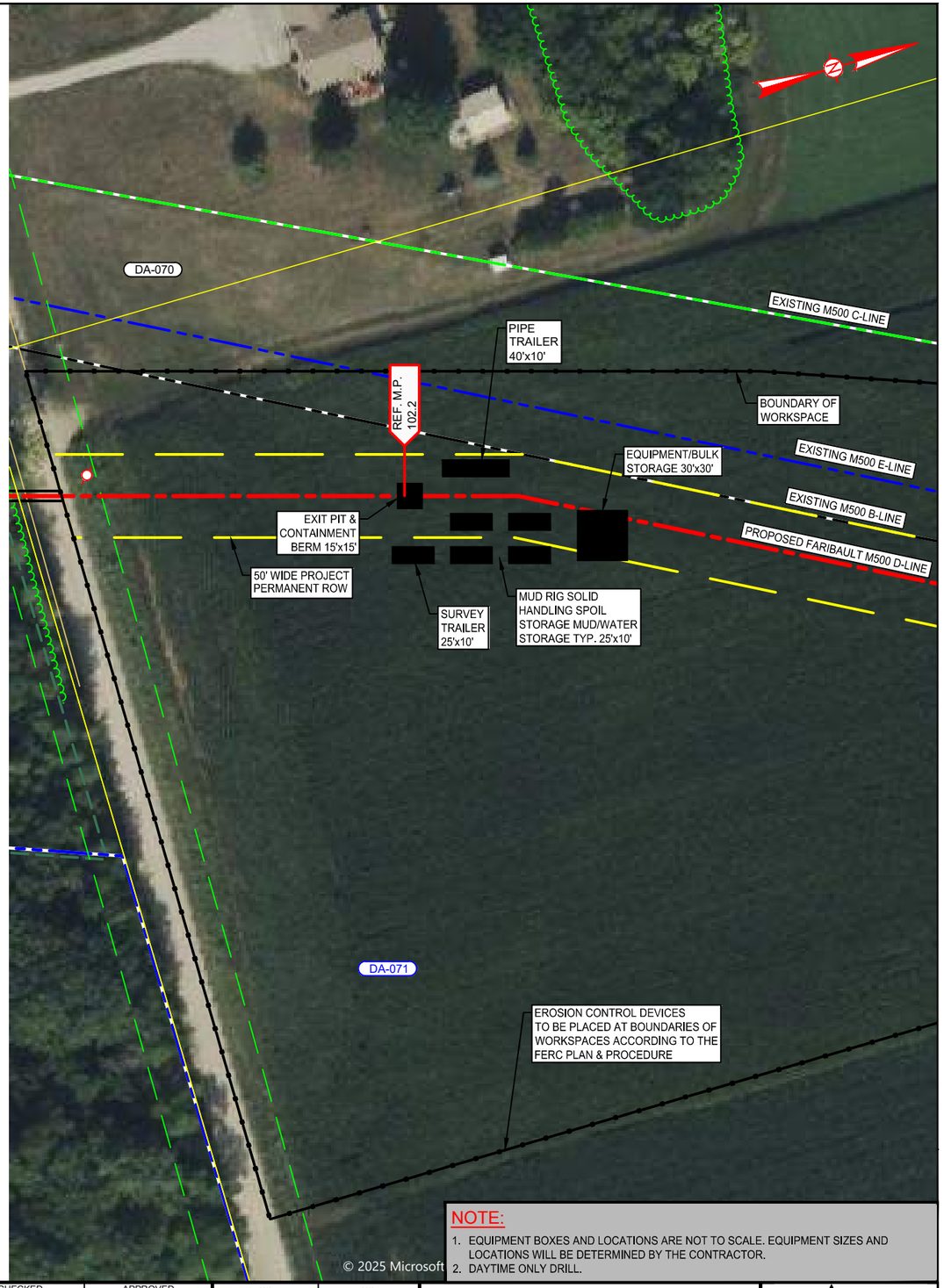
Northern Natural Gas.

PROJECT NO.

DWG. NO. **FAR-P4-5** F

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Wong, Alice 2/23/2026 6:39 PM





LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 E-LINE
- EXISTING M500 B-LINE
- PROPERTY LINE
- NOXIOUS WEEDS
- EDGE OF ROAD (GRAVEL)
- ROAD R.O.W.
- TREELINE
- WETLAND
- STREAM
- WETLAND/STREAM BUFFER
- SOUND BARRIER
- EDGE OF WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- TEMP. ACCESS ROAD
- OPEN WATER
- POWER POLE
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/23/2026 7:05 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
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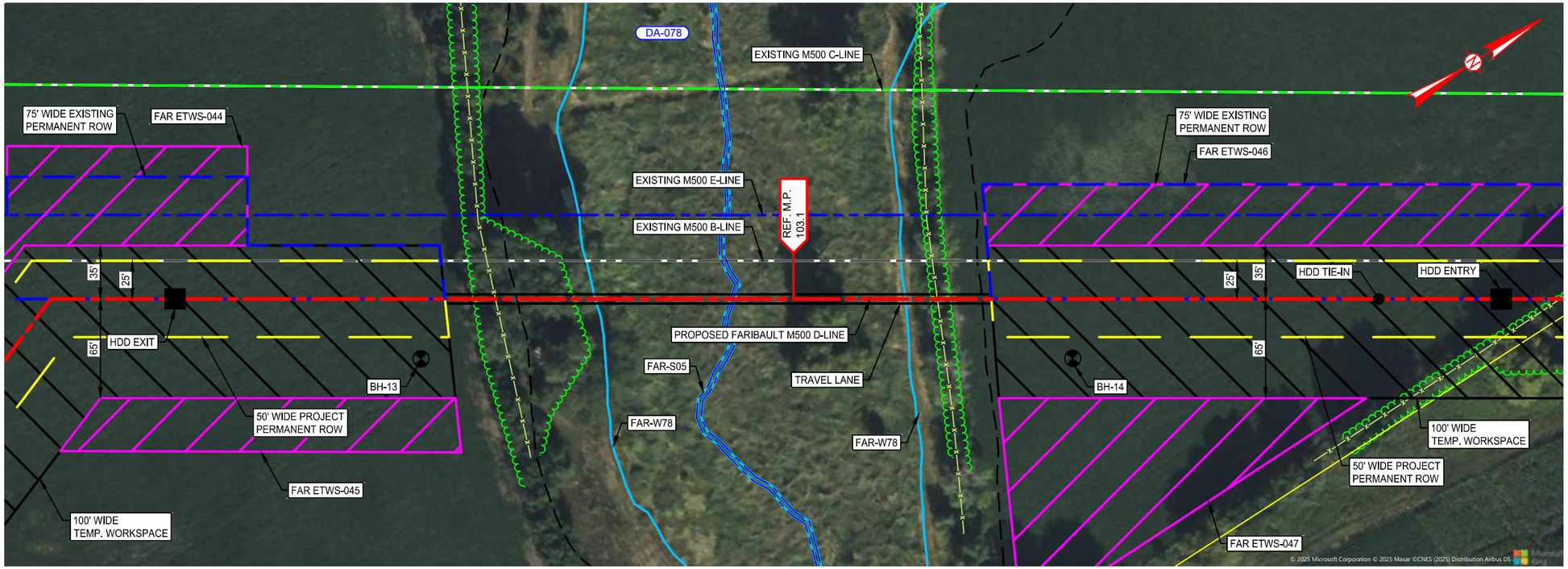
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FARIBAULT M500 D-LINE
HDD SSP PLAN & PROFILE 265TH ST W
SEC. 27, T113N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
FAR-SSP-5
F

PLAN & PROFILE WETLAND FAR-W78 & STREAM FAR-S05



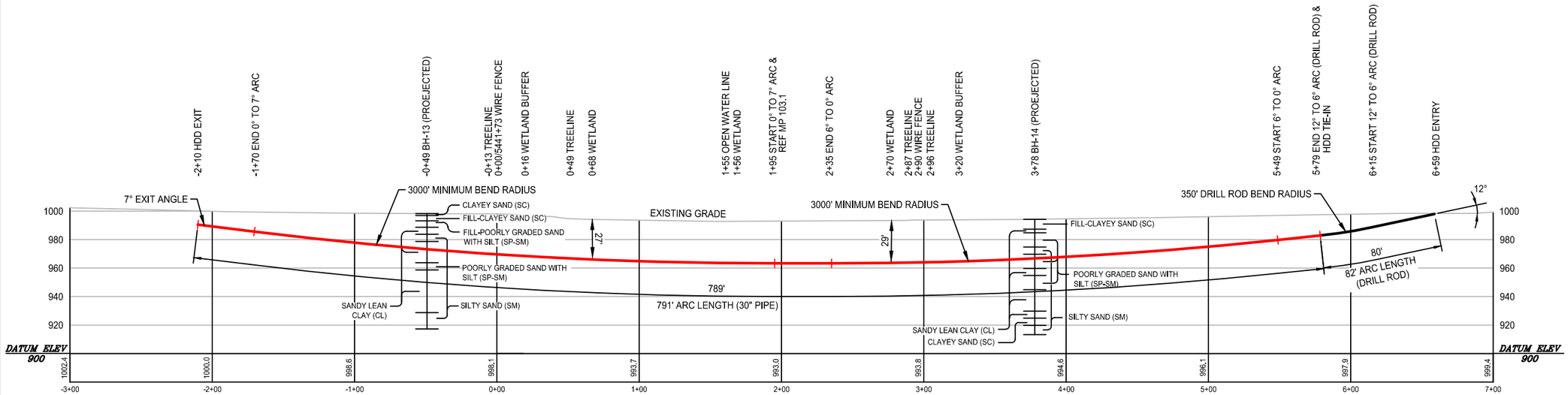
LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 E-LINE
- EXISTING M500 B-LINE
- PROPERTY LINE
- TREELINE
- WIRE FENCE
- STREAM
- WETLAND
- WETLAND/STREAM BUFFER
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- TREE
- HDD ENTRY/EXIT
- BOREHOLE

PLAN

SCALE : 1"=40'

REF. DWG. FAR-P3-15 & FAR-P3-16



PROFILE

SCALE (VERT): 1"=40'

SCALE (HORIZ): 1"=40'

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Wong, Alice 2/23/2026 6:52 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PI#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	2/14/25	
DRAWN	JM	2/14/25	
ASBUILT			
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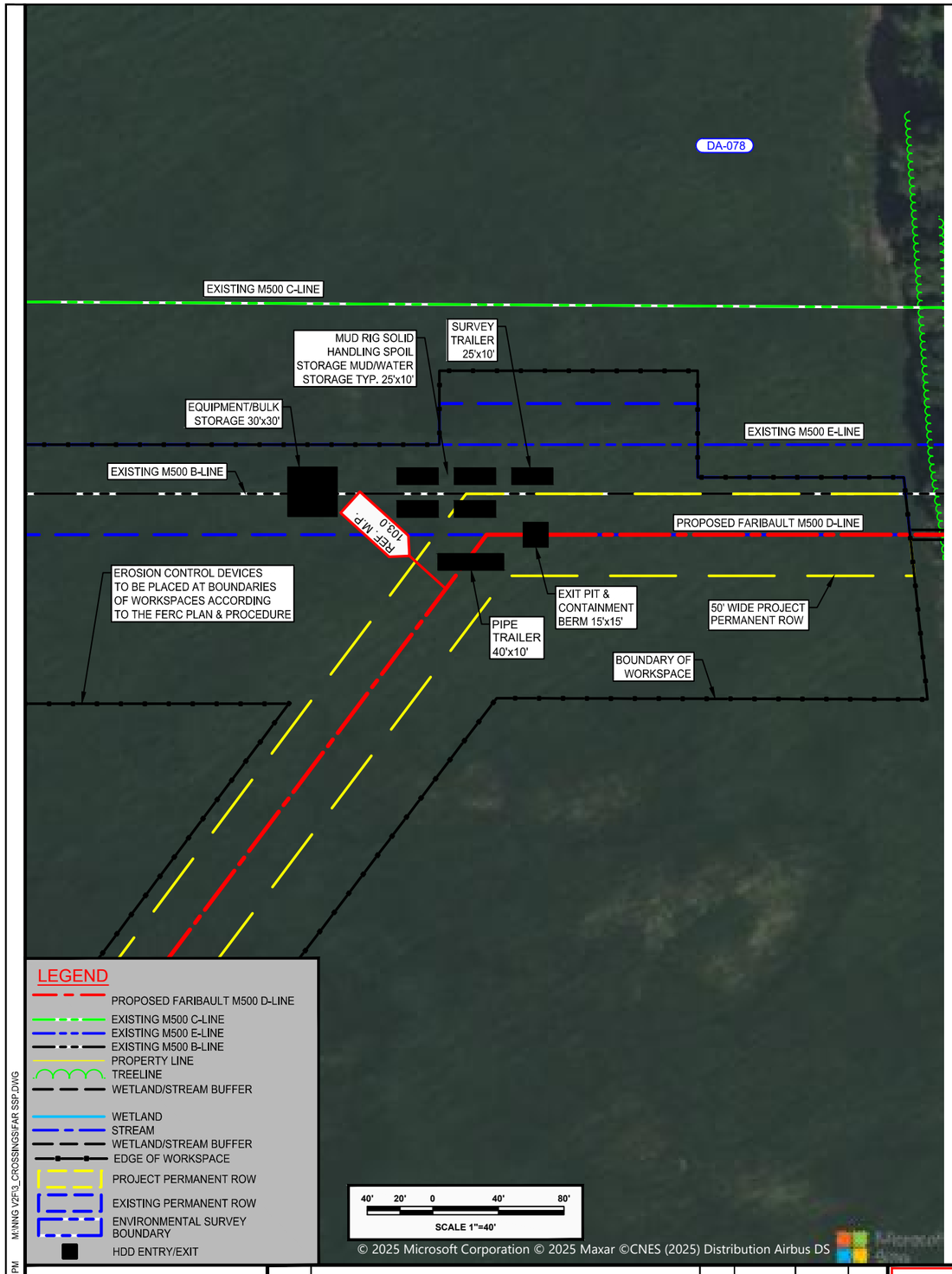
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
PLAN & PROFILE WETLAND FAR-W78 & STREAM FAR-S05
SEC. 23, T113N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. FAR-P4-6

F





LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 E-LINE
- EXISTING M500 B-LINE
- PROPERTY LINE
- TREELINE
- WETLAND/STREAM BUFFER
- WETLAND
- STREAM
- WETLAND/STREAM BUFFER
- EDGE OF WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/23/2026 7:05 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A	REL. W.O. N/A	
PI#	CONST. YR 2027	
STA# N/A	POI# N/A	
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DRAWN	JM	2/14/25
ASBUILT		
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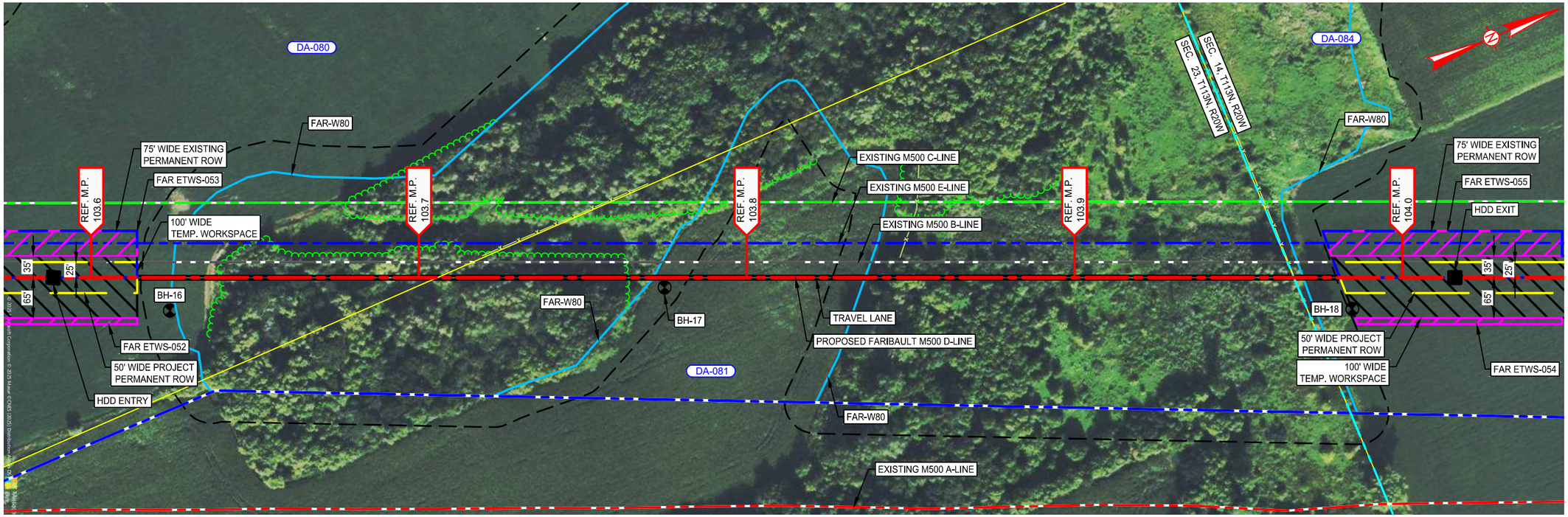
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FARIBAULT M500 D-LINE
HDD SSP PLAN & PROFILE WETLAND FAR-W78 & STREAM FAR-S05
SEC. 23, T113N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

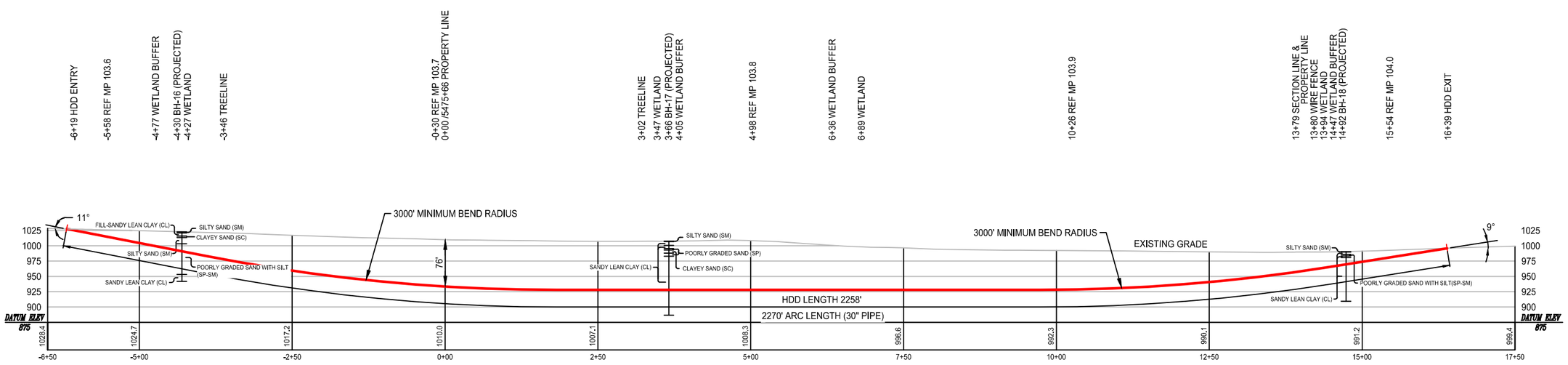
PROJECT NO.

DWG. NO. **FAR-SSP-6** F

PLAN & PROFILE WETLAND FAR-W80 & TREES



PLAN
SCALE : 1"=90'
REF. DWG. FAR-P3-17 & FAR-P3-18



PROFILE
SCALE (VERT): 1"=90'
SCALE (HORIZ): 1"=90'

LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 E-LINE
- EXISTING M500 B-LINE
- EXISTING M500 A-LINE
- PROPERTY LINE
- TREELINE
- WIRE FENCE
- SECTION LINE
- WETLAND
- STREAM
- WETLAND/STREAM BUFFER
- TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXTRA TEMP. WORKSPACE
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- TREE
- HDD ENTRY/EXIT
- BOREHOLE

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Wong, Alice 2/23/2026 6:30 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

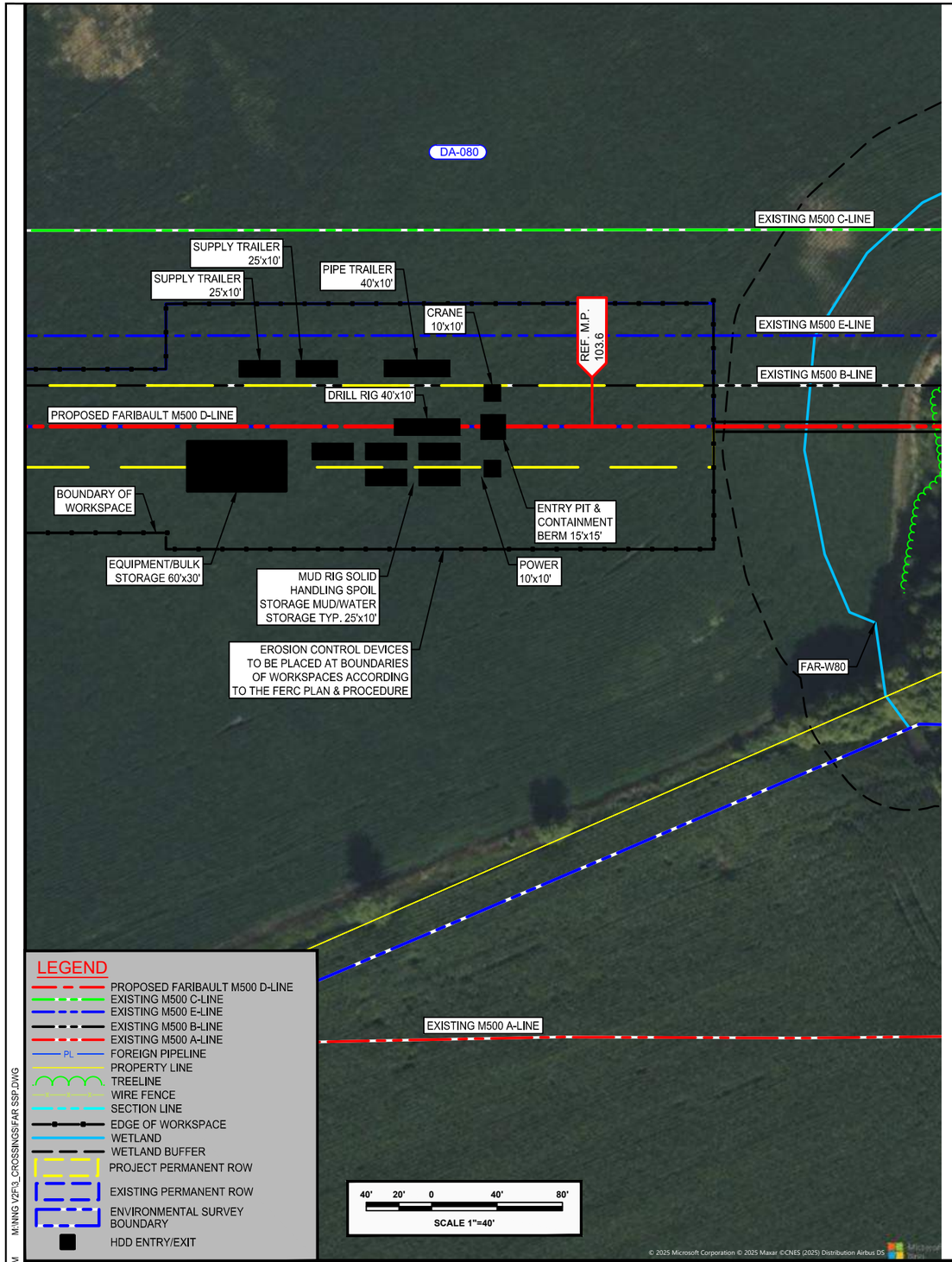
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DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
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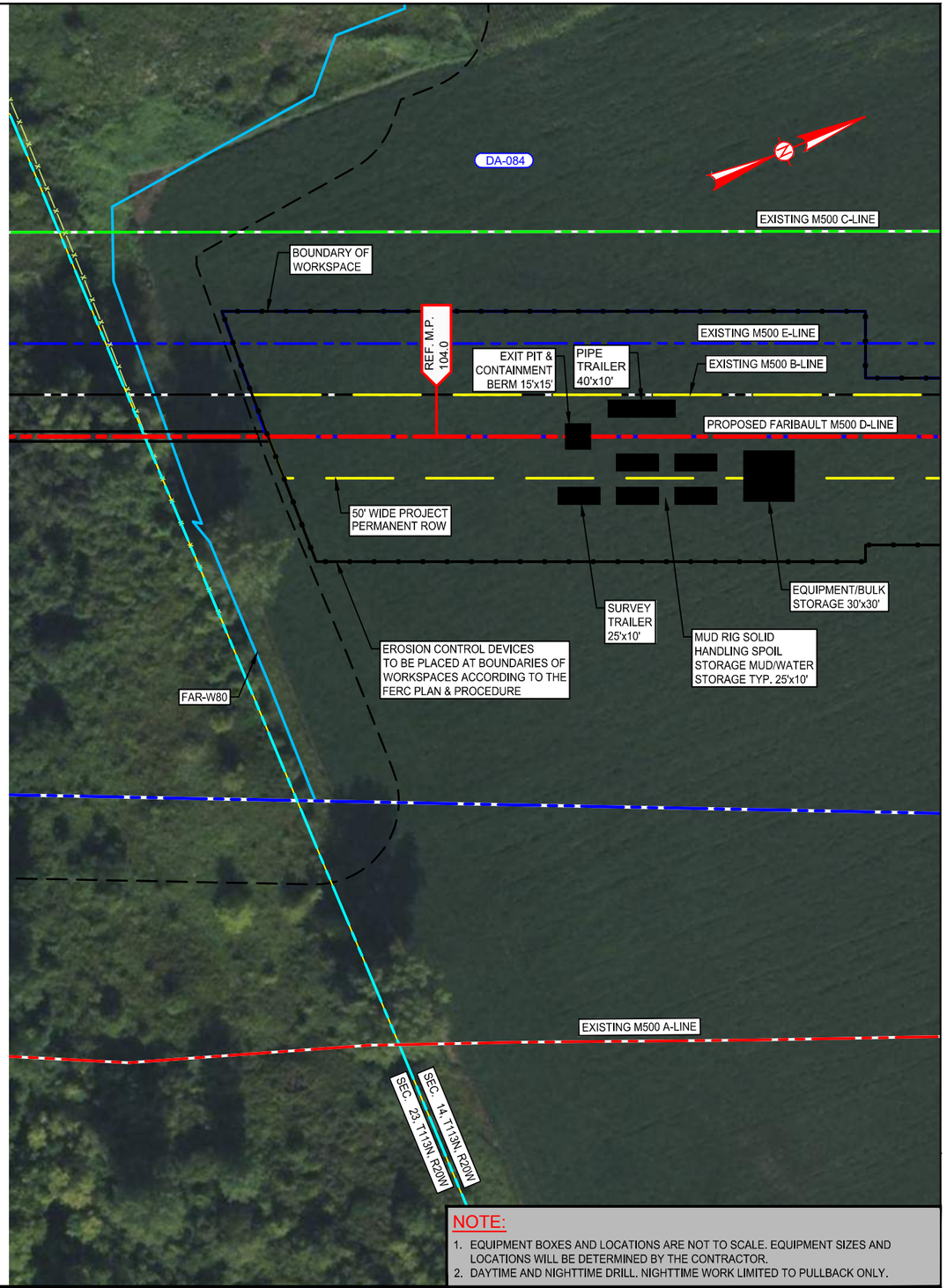
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FARIBAULT M500 D-LINE
PLAN & PROFILE WETLAND FAR-W80 & TREES
SEC. 23 & 14, T113N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
FAR-P4-7
F





LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 C-LINE
- EXISTING M500 E-LINE
- EXISTING M500 B-LINE
- EXISTING M500 A-LINE
- PL FOREIGN PIPELINE
- PROPERTY LINE
- TREELINE
- WIRE FENCE
- SECTION LINE
- EDGE OF WORKSPACE
- WETLAND
- WETLAND BUFFER
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME AND NIGHTTIME DRILL. NIGHTTIME WORK LIMITED TO PULLBACK ONLY.

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2/23/2026 7:06 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		PO# N/A
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DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
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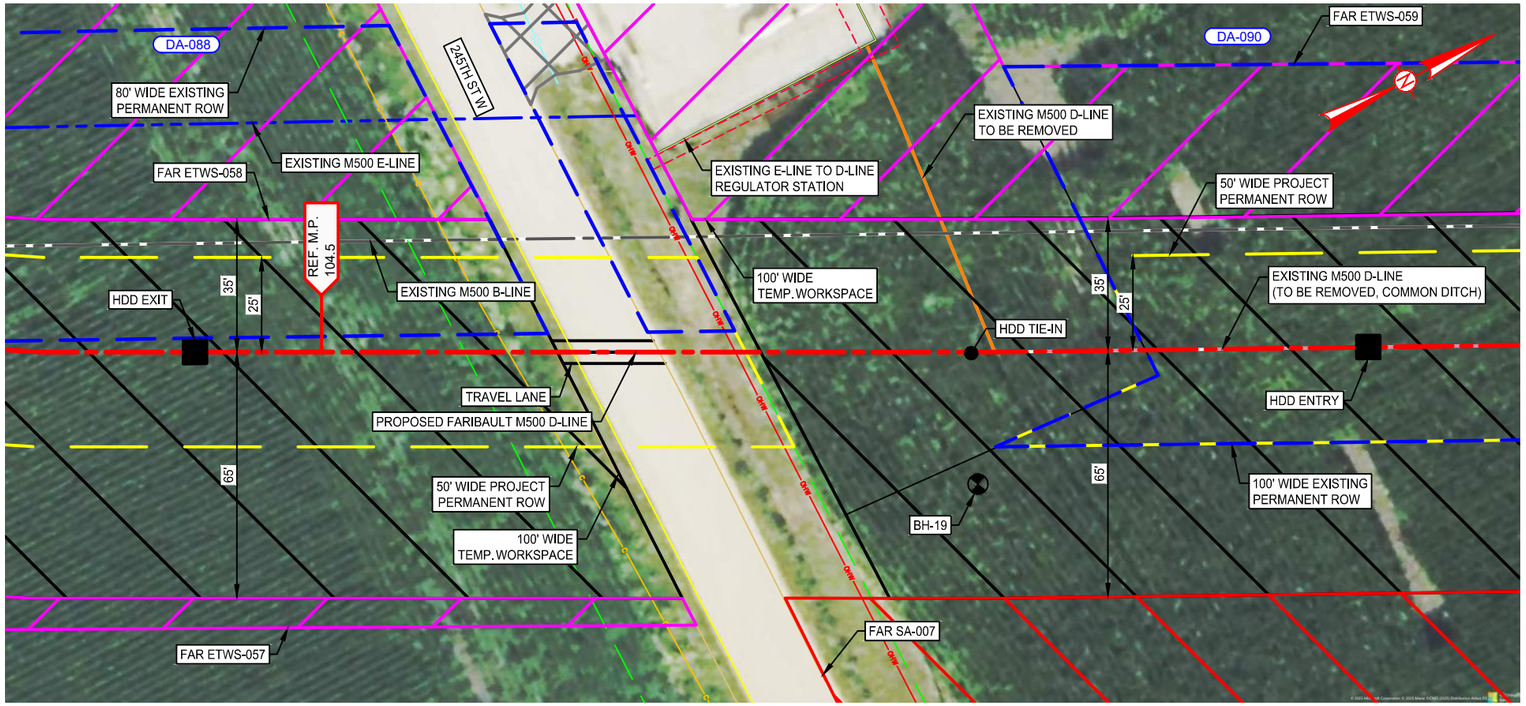
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FARIBAULT M500 D-LINE
HDD SSP PLAN & PROFILE WETLAND FAR-W80 & TREES
SEC. 23 & 14, T113N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
FAR-SSP-7
F

PLAN & PROFILE 245TH ST W



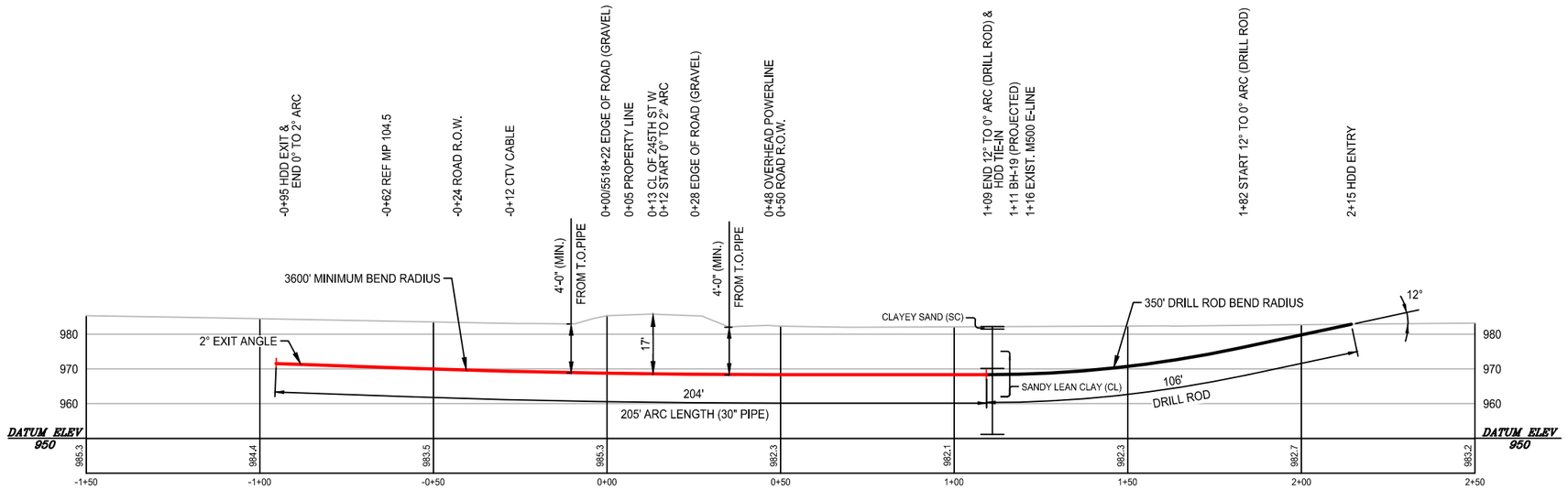
PLAN

SCALE : 1"=20'

REF. DWG. FAR-P3-19 & FAR-P3-20

LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 E-LINE
- EXISTING M500 B-LINE
- EXISTING M500 D-LINE
- PL — FOREIGN PIPELINE
- PROPERTY LINE
- SECTION LINE
- CHAINLINK FENCE
- EDGE OF ROAD (GRAVEL)
- E — BURIED ELECTRIC
- OHW — OVERHEAD POWERLINE
- PIPELINE REMOVAL
- SS — CULVERT
- ROAD R.O.W.
- C — CTV
- WETLAND BUFFER
- EXISTING LOT
- EXISTING DRIVE
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- STAGING AREA
- HDD ENTRY/EXIT
- BOREHOLE



PROFILE

SCALE (VERT): 1"=20'

SCALE (HORIZ): 1"=20'

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Wong, Alice 2/23/2026 6:31 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O.: N/A
PL# | CONST. YR: 2027
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	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		

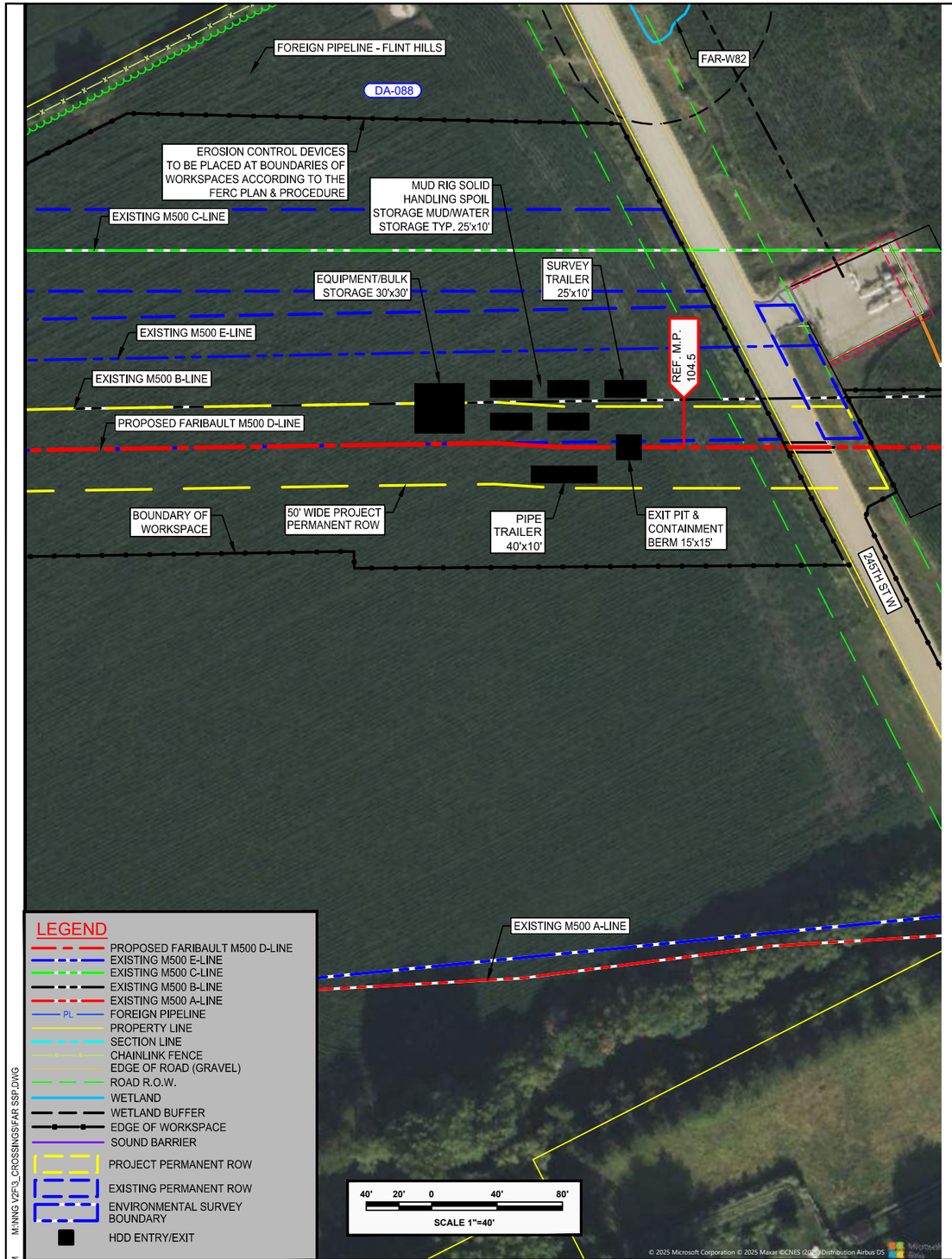
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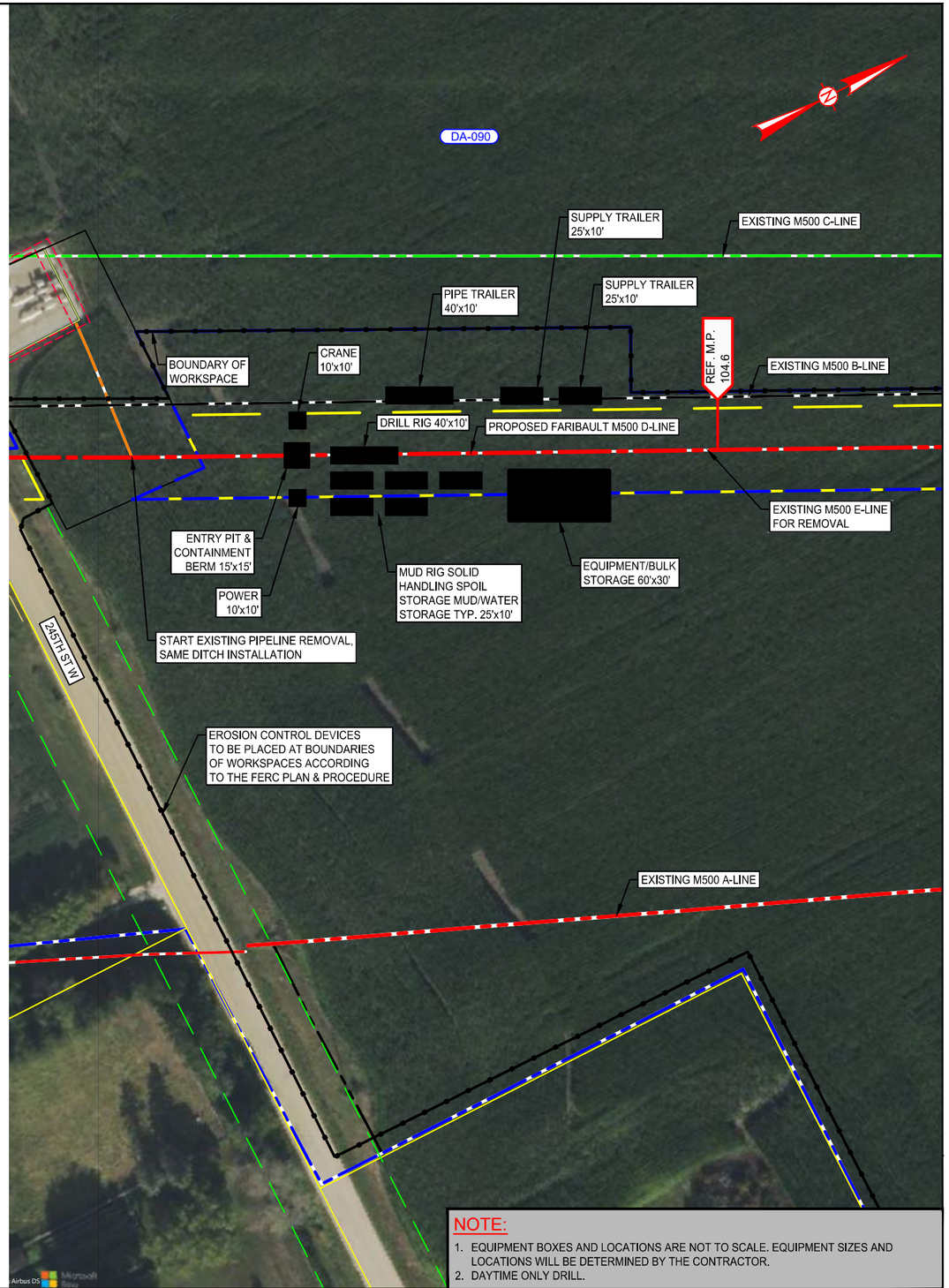
V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
PLAN & PROFILE 245TH ST W
SEC. 14, T113N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. FAR-P4-8 F





LEGEND

- PROPOSED FARIBAULT M500 D-LINE
- EXISTING M500 E-LINE
- EXISTING M500 C-LINE
- EXISTING M500 B-LINE
- EXISTING M500 A-LINE
- PL FOREIGN PIPELINE
- PROPERTY LINE
- SECTION LINE
- CHAINLINK FENCE
- EDGE OF ROAD (GRAVEL)
- ROAD R.O.W.
- WETLAND
- WETLAND BUFFER
- EDGE OF WORKSPACE
- SOUND BARRIER
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

M:\NNG V2F\3_CROSSINGS\FAR SSP.DWG
2/23/2026 7:07 PM
Wong, Alice

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
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V2F A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT
FARIBAULT M500 D-LINE
HDD SSP PLAN & PROFILE 245TH ST W
SEC. 14, T113N, R20W
DAKOTA COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **FAR-SSP-8** F

Attachment 2
Subsurface Exploration Reports

For filing purposes, these reports are included
in Resource Report 6, Appendix 6B.

Attachment 3
HDD Feasibility Report

Horizontal Directional Drill Feasibility Report Northern Natural Gas Ventura to Farmington A-Line Abandonment and Capacity Replacement Project

Freeborn County, Minnesota
Steele County, Minnesota
Dakota County, Minnesota

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HORIZONTAL DIRECTIONAL DRILL FEASIBILITY REPORT NORTHERN NATURAL GAS VENTURA TO FARMINGTON A-LINE ABANDONMENT AND CAPACITY REPLACEMENT PROJECT

This document entitled Horizontal Directional Drill Feasibility Report Northern Natural Gas Ventura to Farmington A-Line Abandonment and Capacity Replacement Project was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Northern Natural Gas (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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Acronyms List

ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
Cp	Centipoise
DOT	Department of Transportation
ERT	Electric Resistivity Tomography
°F	Fahrenheit
Fbg	Feet below grade
HDD	Horizontal directional drill
HD Bore	Horizontal directional bore
Lbf/100ft2	Pound-force per 100 square feet
MAOP	Maximum Allowable Operating Pressure
MOP	Manual of Practice
MP	Milepost
N/A	Not applicable
Northern	Northern Natural Gas
Ppg	Pounds per gallon
PRCI	Pipeline Research Council International
Project	Ventura to Farmington A-Line Abandonment and Capacity Replacement Project
Psi	Pound-force per square inch
SMYS	Specified Minimum Yield Strength
Stantec	Stantec Consulting Services Inc.

1.0 Project Description

Northern Natural Gas (Northern) proposes to install and operate three pipeline components as part of its Ventura to Farmington A-Line Abandonment and Capacity Replacement Project which consists of (1) a 8.29-mile extension of its 36-inch-diameter pipeline Lake Mills M500 E-line in Freeborn County, Minnesota; (2) a 2.09-mile extension of its 36-inch-diameter pipeline Albert Lea M500 E-line in Steele County, Minnesota; and (3) a 7.50-mile extension of its 30-inch-diameter pipeline Faribault M500 D-line in Dakota County, Minnesota.

Table 1 below provides the pipeline facilities and number of proposed HDDs.

Table 1 – Pipeline Components and Number of Proposed HDDs

Pipeline Component	Pipeline Diameter and Type	MAOP (psig)	Approx. Length	County	State	Number of HDDs
Lake Mills M500 E-line	36-inch-diameter extension	1,050	8.29 miles	Freeborn	MN	10
Albert Lea M500 E-line	36-inch-diameter extension	1,050	2.09 miles	Steele	MN	2
Faribault M500 D-line	30-inch-diameter extension	800	7.50 miles	Dakota	MN	7

2.0 Purpose and Scope

A total of 19 horizontal directional drills (HDD) are proposed for three pipeline components comprising the Project. This report summarizes the feasibility of the HDD designs, addresses anticipated installation loads, installation and operating stresses, comparison of modelled formation limiting pressure vs. minimum annular pressure requirements, and potential mitigation measures for the 19 proposed HDD crossings.

Northern proposes to use auger bore techniques to cross one railroad. This auger bore crossing is considered feasible and is not included in the scope of this report.

3.0 Design Parameters

The design methodology is in accordance with the following standards and guidelines:

- Department of Transportation (DOT) Regulations 49 CFR Part 192
- American Society of Mechanical Engineers (ASME) B31.8 (2016)
- “Installation of Pipelines by Horizontal Directional Drilling – An Engineering Design Guide” Pipeline Research Council International (PRCI) PR-227-9424 (2008)
- “Pipeline Design for Installation by Horizontal Directional Drilling” American Society of Civil Engineers (ASCE) Manual of Practice (MOP) 108 (2014)

Crossing design parameters are provided in Table .

Additional crossing design parameters specific to each pipeline facility are provided in Table .

Table 2 – General HDD Design Parameters for the Ventura to Farmington A-Line Abandonment and Capacity Replacement Project

Parameter	Unit	Value
Maximum Design Temperature	°F (Fahrenheit)	100
HDD Restraint Temperature	°F (Fahrenheit)	40
Density of Drilling Mud	Ppg (Pounds per gallon)	9.5
Viscosity of Drilling Mud	cP (Centipoise)	20.0
Drilling Fluid Yield Point	Lbf/100ft^2 (Pound-force per 100 square feet)	14.6
Coefficient of Friction (Pipe to Soil)	N/A	0.3
Coefficient of Friction (Pipe to Rollers)	N/A	0.1
Coefficient of Fluidic Drag	Psi (Pound-force per square inch)	0.025

Table 3 – Pipeline-Specific HDD Design Parameters for the Ventura to Farmington A-Line Abandonment and Capacity Replacement Project

Pipeline Facility	Pipe OD (inches)	Pipe WT (inches)	Pipe Grade (psi)	Service
Lake Mills M500 E-line	36	0.625	65,000	Natural gas
Albert Lea M500 E-line	36	0.625	65,000	Natural gas
Faribault M500 D-line	30	0.625	65,000	Natural gas

Ground profiles are based on civil survey and contour data, or public contour data where applicable.

4.0 Geotechnical Conditions

A geotechnical investigation, consisting of 42 vertical soil borings, was completed between December 2024 and February 2025. The results of the geotechnical field and laboratory analysis are provided in the geotechnical reports. The geotechnical borings for Lake Mills M500 E-line and Albert Lea M500 E-line were completed by Terracon while the geotechnical borings for Faribault M500 D-line were completed by Braun Intertec. The geotechnical investigation reports are included in Attachment 2 of the Horizontal Directional Drill Monitoring, Inadvertent Return

Response and Contingency Plan. The results of the geotechnical reports were incorporated in the hydro-fracture assessment that can be found in Section 7.0 of this document.

The results of the geotechnical investigation are summarized below.

Lake Mills M500 E-line

A total of 17 soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of clayey sand and sandy lean clay with variable layers of silty sand and sandy silt.

Bedrock was not encountered in any of the soil borings which reached depths of 31 to 101 fbg. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally medium stiff to stiff.

Groundwater was observed in 13 soil borings at depths ranging from 3 to 53 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Albert Lea M500 E-line

A total of 17 soil borings four soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of sandy lean clay with variable layers of clayey sand and silty sand.

Bedrock was not encountered in any of the soil borings which reached depths of 31 to 121 fbg. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally stiff to very stiff.

Groundwater was observed in all four soil borings at depths ranging from 21 to 26 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Faribault M500 D-line

A total of 21 soil borings were completed; geotechnical data was collected for the HDDs and auger bore. Soils encountered generally consisted of clayey sand and sandy lean clay with variable layers of silty sand and sandy silt and trace gravel. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally medium to very stiff.

Bedrock was encountered in eight of the boreholes which ranged from 9.5 to 69 fbg and consisted of sandstone that was retrieved as silty sand or poorly graded sand. The soil borings that encountered bedrock between 9.5 and 29.5 fbg terminated at depths of 40 and 54 fbg which shows the auger did not encounter refusal. The 13 soil borings that did not encounter bedrock reached depths of 31 to 121 fbg. The uneven boundary may be caused by an erosional event (glaciation or riverine environment) followed by an infilling of fine-grained material into the fractures. Deeper

troughs where glacial till deposits and interglacial buried outwash/river valleys are also observed in the data.

Groundwater was observed in 15 soil borings at depths ranging from 3 to 85 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Subsurface conditions are briefly summarized in Table 4 –4 below, focusing on qualitative features relevant to the feasibility of HDD construction. The evaluation of formation limiting pressure is based on simplified stratigraphies and what are considered to be conservative parameters for the soil properties for characteristic soils.

5.0 Crossing Design Summary

Summaries of each crossing design profile are provided in Table 4 –4 below. All unfactored pull forces were evaluated without the use of buoyancy control for this project. The minimum available rig size was assumed to be 200,000 lbf (pound-force).

Table 4 – Crossing Design and Bore Profile Summaries

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Lake Mills M500 E-line	LMA-P4-1	1,021	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 87,000 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-00 The principal strata encountered were elastic silt and clayey sand.
	LMA-P4-2	219	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 33,000 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-02 The principal strata encountered were silty sand and silt.
	LMA-P4-3	1,745	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 294,900 lbs Assumed Rig Size: 440,000 lbs	Boring Log No. BH-05, BH-06, BH-07 The principal strata encountered were clayey sand, sandy lean clay, poorly graded sand, poorly graded sand with clay, silty sand, sandy silt, silt with sand and silty sand with clay.
	LMA-P4-4	249	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 55,200 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-08 The principal strata encountered was sandy lean clay.

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Lake Mills M500 E-line	LMA-P4-5	880	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 72,200 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-09, BH-10 The principal strata encountered were sandy lean clay, silt with sand, clayey sand, silty sand, poorly graded sand.
	LMA-P4-6	661	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 69,600 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-11, BH-12 The principal strata encountered were clayey sand, silty sand, sandy silt, poorly graded sand and poorly graded sand with silt.
	LMA-P4-7	834	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 71,900 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-13 The principal strata encountered were sandy lean clay, silt with sand, sandy fat clay and clayey sand
	LMA-P4-8	975	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 79,211 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-14, BH-15 The principal strata encountered were clayey sand and sandy lean clay

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Lake Mills M500 E-line	LMA-P4-9	609	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 50,700 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-15, BH-16 The principal strata encountered were clayey sand, sandy lean clay and lean clay with sand.
	LMA-P4-10	168	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 62,400 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-17 The principal strata encountered were silty sand, sandy clayey silt and clayey sand.
Albert Lea M500 E-line	ALO-P4-1	2,209	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 353,800 lbs Assumed Rig Size: 440,000 lbs	Boring Log No. BH-01, BH-02, BH-03 The principal strata encountered were sandy silt, clayey sand, sandy lean clay, silt with sand, silty sand, silt with sand, lean clay, silty sand with gravel and sandy lean clay.
	ALO-P4-2	301	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 58,700 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-04 The principal strata encountered were sandy lean clay and clayey sand.

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Faribault M500 D-line	FAR-P4-1	1,265	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 144,500 lbs Assumed Rig Size: 220,000 lbs	Boring Log No. BH-02, BH-03 The principal strata encountered were sandy lean clay, sandy silt, silty sand, clayey sand, poorly graded sand with silt and gravel and sandstone.
	FAR-P4-2	1,231	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 140,300 lbs Assumed Rig Size: 220,000 lbs	Boring Log No. BH-04, BH-05, BH-06 The principal strata encountered were sandy lean clay, sandy silt, silty sand, clayey sand, poorly graded sand and poorly graded sand with silt.
	FAR-P4-3	2,035	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 224,800 lbs Assumed Rig Size: 440,000 lbs	Boring Log No. BH-07A, BH-08A The principal strata encountered were sandy lean clay, sandy silt, silty sand and poorly graded sand layers.

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Faribault M500 D-line	FAR-P4-5	855	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 42,300 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-10, BH-11, BH-12A The principal strata encountered were silty sand, clayey sand, sandy lean clay, lean clay, well-graded sand with silt and sandstone classified as "poorly graded sand".
	FAR-P4-6	791	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 44,000 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-13, BH-14 The principal strata encountered were sandy lean clay, silty sand, silty sand with gravel, clayey sand, poorly graded sand and poorly graded sand with silt.
	FAR-P4-7	2,139	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 228,400 lbs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-16, BH-17, BH-18 The principal strata encountered were clayey sand, silty sand, sandy lean clay, poorly graded sand and poorly graded sand with silt.

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Faribault M500 D-line	FAR-P4-8	205	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 37,600bs Assumed Rig Size: 200,000 lbs	Boring Log No. BH-19 The principal strata encountered was sandy lean clay.

6.0 Pipe Installation and Operating Stress

Installation and operating stresses for the pipe were evaluated for the HDDs based on the proposed drill profile. All acceptability requirements for stress, per ASME B31.8 and PRCI PR-227-9424, are satisfied. Secondary stresses have been assessed but are not included in the table below.

Table 5 below provides the maximum installation and operating stresses.

Table 5 – Maximum Installation and Operating Stress

Pipeline Facility	Crossing ID (Dwg #)	Maximum Installation Stress (Unity Check based on API allowable – See Notes 1 & 2)	Maximum Operating Stress (Unity Check based on PRCI shear stress allowable of 45% SMYS)
Lake Mills M500 E-line	LMA-P4-1	0.32	0.76
	LMA-P4-2	0.01	0.56
	LMA-P4-3	0.40	0.76
	LMA-P4-4	0.31	0.76
	LMA-P4-5	0.31	0.76
	LMA-P4-6	0.31	0.76
	LMA-P4-7	0.31	0.76
	LMA-P4-8	0.32	0.76
	LMA-P4-9	0.31	0.76
	LMA-P4-10	0.31	0.76
Albert Lea M500 E-line	ALO-P4-1	0.42	0.76
	ALO-P4-2	0.31	0.76
Faribault M500 D-line	FAR-P4-1	0.35	0.69
	FAR-P4-2	0.34	0.69
	FAR-P4-3	0.38	0.69
	FAR-P4-5	0.30	0.69
	FAR-P4-6	0.30	0.69
	FAR-P4-7	0.38	0.69
	FAR-P4-8	0.30	0.69

Notes:
1. A tensile stress limit of 60% of Specified Minimum Yield Strength (SMYS), based on API RP 2A-WSD R2014, is used instead of 90% of SMYS as per PRCI PR-227-9424 2008.

Pipeline Facility	Crossing ID (Dwg #)	Maximum Installation Stress (Unity Check based on API allowable – See Notes 1 & 2)	Maximum Operating Stress (Unity Check based on PRCI shear stress allowable of 45% SMYS)

2. The maximum recommended pull force for NPS 30 pipe specification is 750,000 lbs and for NPS 36 pipe specification is 900,000 lbs. In the case of the product pipe being stuck during pullback, more detailed evaluation may be required to determine limits for maximum pull force, maximum hammering loads and hammering duration.

7.0 Hydro-fracture Assessment

Hydro-fracture assessments are 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.

The maximum formation limiting pressure was modelled based on industry accepted cavity expansion model or "Delft equation." Evaluation of formation limiting pressure is based on simplified stratigraphies and what are considered to be conservative parameters for the soil properties for characteristic soils.

The minimum total annular pressure consists of components for static head and fluidic frictional losses during circulation in the bore. Parameters for the pilot bore diameter and drill rod size were assumed based on expected drill rig sizes. Parameters for drilling fluid density, viscosity and yield point were assumed based on typical values.

Table 6 below provides a summary of the hydro-fracture assessment, including the minimum factor of safety within the central length of the drill and potential mitigation options.

Factors of safety greater than 1.5 are considered to have a low risk for inadvertent releases with a competent standard of care. Factors of safety between 1.25 and 1.5 are considered to be medium risk, but manageable with attention to matching drilling production with fluid management. Factors of safety less than 1.25 are considered to be high risk and suggest re-evaluation of the bore profile but are still manageable by an experienced HDD contractor with appropriate mitigation measures. The minimum total annular pressure is based on assumed drilling parameters and should be re-evaluated based on the HDD contractor's execution plan.

Table 6 – Summary of Hydro-fracture Assessment

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
Lake Mills M500 E-line	LMA-P4-1	1.83 (Under Stream LMA-S01)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 30 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
			since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Lake Mills M500 E-line	LMA-P4-2	>3.00 (Under 180th Street)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 40 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Lake Mills M500 E-line	LMA-P4-3	1.66 (Under Wetland LMA-W20, Stream LMA-S03 (County ditch #68/ Shoff creek)	As modelled, there is a risk of an inadvertent release in the last 110 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 140 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Lake Mills M500 E-line	LMA-P4-4	>3.00 (Under 110th Street)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 10 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 30 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Lake Mills M500 E-line	LMA-P4-5	2.12 (Under Railroad)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 50 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 80 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Lake Mills M500 E-line	LMA-P4-6	1.78 (Under I90)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 50 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 80 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
Lake Mills M500 E-line	LMA-P4-7	1.90 (Under Stream LMA-S07)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 40 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 70 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Lake Mills M500 E-line	LMA-P4-8	1.67 (Under Stream LMA-S08)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 40 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 70 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Lake Mills M500 E-line	LMA-P4-9	>3.00 (Under Wetland LMA-W47)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 40 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Lake Mills M500 E-line	LMA-P4-10	>3.00 (Under 240th Street)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 10 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 30 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Albert Lea M500 E-line	ALO-P4-1	2.33 (Under Stream ALO-S01)	As modelled, there is a risk of an inadvertent release in the last 350 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 400 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Albert Lea M500 E-line	ALO-P4-2	1.48 (Under Highway 30)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 10 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 30 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
Faribault M500 D-line	FAR-P4-1	2.06 (Under Stream FAR-S02)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 90 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 130 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Faribault M500 D-line	FAR-P4-2	1.74 (Under Wetland FAR-W67)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 80 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 120 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Faribault M500 D-line	FAR-P4-3	1.52 (Under Wetland FAR-W69)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 280 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 330 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Faribault M500 D-line	FAR-P4-5	>3.00 (Under 265th Street W)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 10 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 30 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Faribault M500 D-line	FAR-P4-6	2.39 (Under Stream FAR-S05)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 50 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 80 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Faribault M500 D-line	FAR-P4-7	1.51 (Under Wetland FAR-W80)	As modelled, there is a risk of an inadvertent release in the last 310 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 350 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Faribault M500 D-line	FAR-P4-8	>3.00 (Under 245th Street)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 10 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
			pipe to clean/condition the bore prior to drilling the last 30 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.

Note 1:

Stantec has listed additional measures below which the contractor may choose to implement based on site/drilling conditions. All measures will increase the minimum factor of safety:

- Deeper entry/exit pits which may require sinking of the HDD rig.
- Manage drilling fluids by maintaining drilling fluid density and sand content, and balancing flow rates and drilling speed.
- Adjust fluid composition with changing soil conditions, considering the use of additives for lost circulation, viscosifiers, flocculants or coagulants.
- Reduce pumping for the last portion of the pilot drill, relying on tripping of the drill rod and minimal mud circulation to clean the pilot hole.
- Use conductor casing to stabilize the borehole for a portion of the straight tangent of the bore profile at the entry and/or exit. Conductor casing shall be sized based on the final reaming pass.

8.0 Conclusion and Recommendations

All of the proposed crossings in the Project are assumed to be feasible with a low risk of inadvertent release of drilling mud provided the recommendations in Table 6 (above) are met.

- Based on the subsurface investigation, the HDD profiles are expected to be drilled through formations that are suitable for HDD. The HDD drilling directions were selected based off the geology, topography and environmental constraints for each drill. The HDDs as designed show the least impact on the environment if completed according to the design. Therefore, Northern's contractor will provide a justification and demonstrate minimal impact to environmental resources before requesting to reverse any drilling direction. The soil conditions in the area are generally medium to stiff and the HDD Contractor should verify that they have the necessary equipment.
- All crossings on the Project were evaluated as an HDD.
- The specified HDD crossing pipe satisfies acceptability requirements for installation and operating stresses.
- Not all utility locations and depths were verified at the time of this report. Once all utilities are verified, the HDD profiles and entry/exit locations may require modification, as long as the modification stays within the approved workspace.

General recommendations for the operator in preparation for construction include:

- Allowing adequate time for regulatory and permitting requirements;

- Ensuring that HDD contractor execution plans reflect practical implementations of the HDD design, and re-evaluation of hydro-fracture assessments based on the HDD contractor's execution and fluid management plans;
- Ensuring a clear understanding of the roles of the Pipeline contractor, HDD contractor, Environmental inspector, HDD construction inspector and other company representatives with respect to safety and mitigation/response plans.

Figure 1
Profile and Hydro-Fracture Assessment

Figure 1

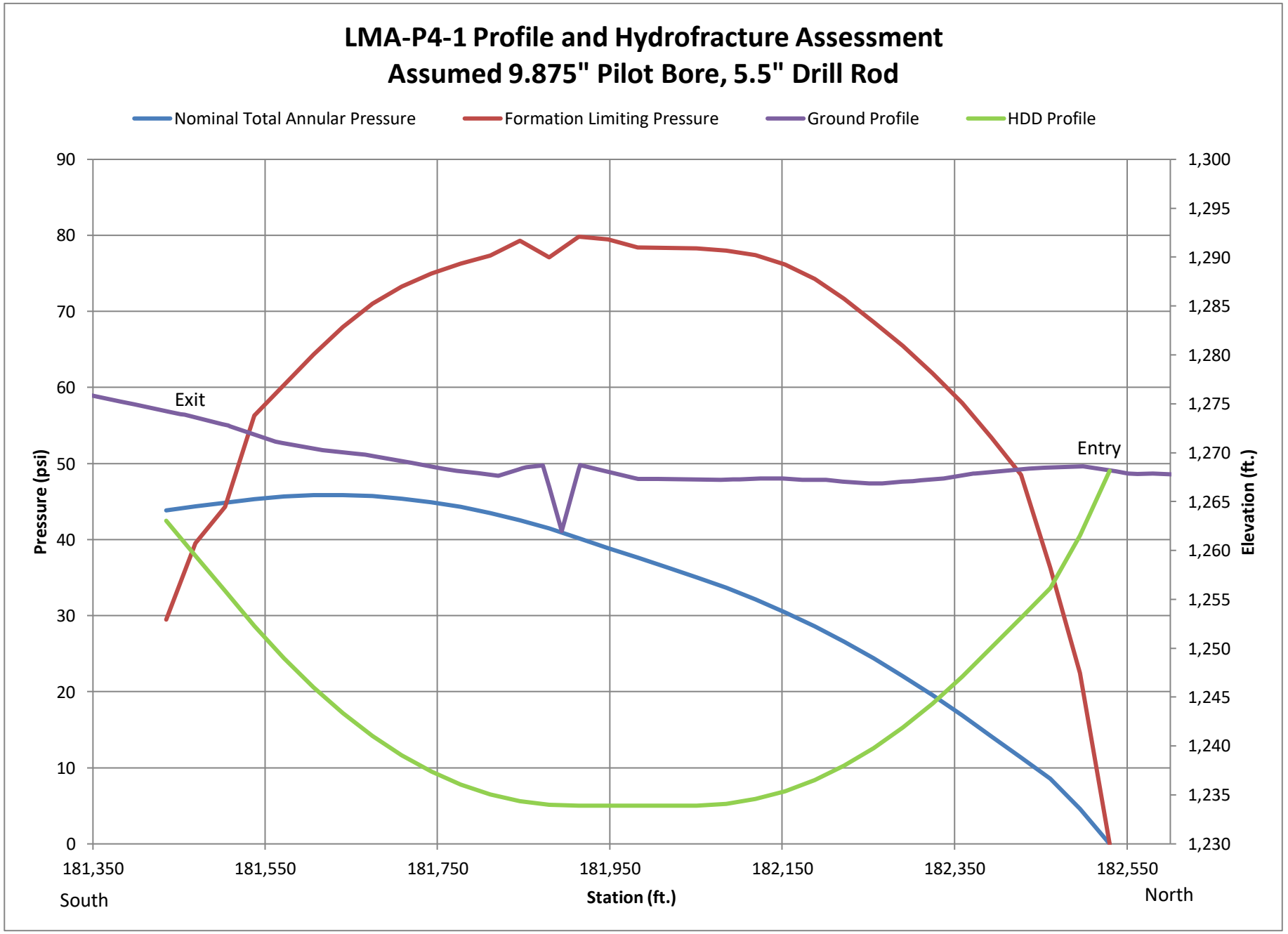

LMA-P4-1 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
10
20
30
40
50
60
70
80
90
1,230
1,235
1,240
1,245
1,250
1,255
1,260
1,265
1,270
1,275
1,280
1,285
1,290
1,295
1,300
181,350
181,550
181,750
181,950
182,150
182,350
182,550

Figure 1

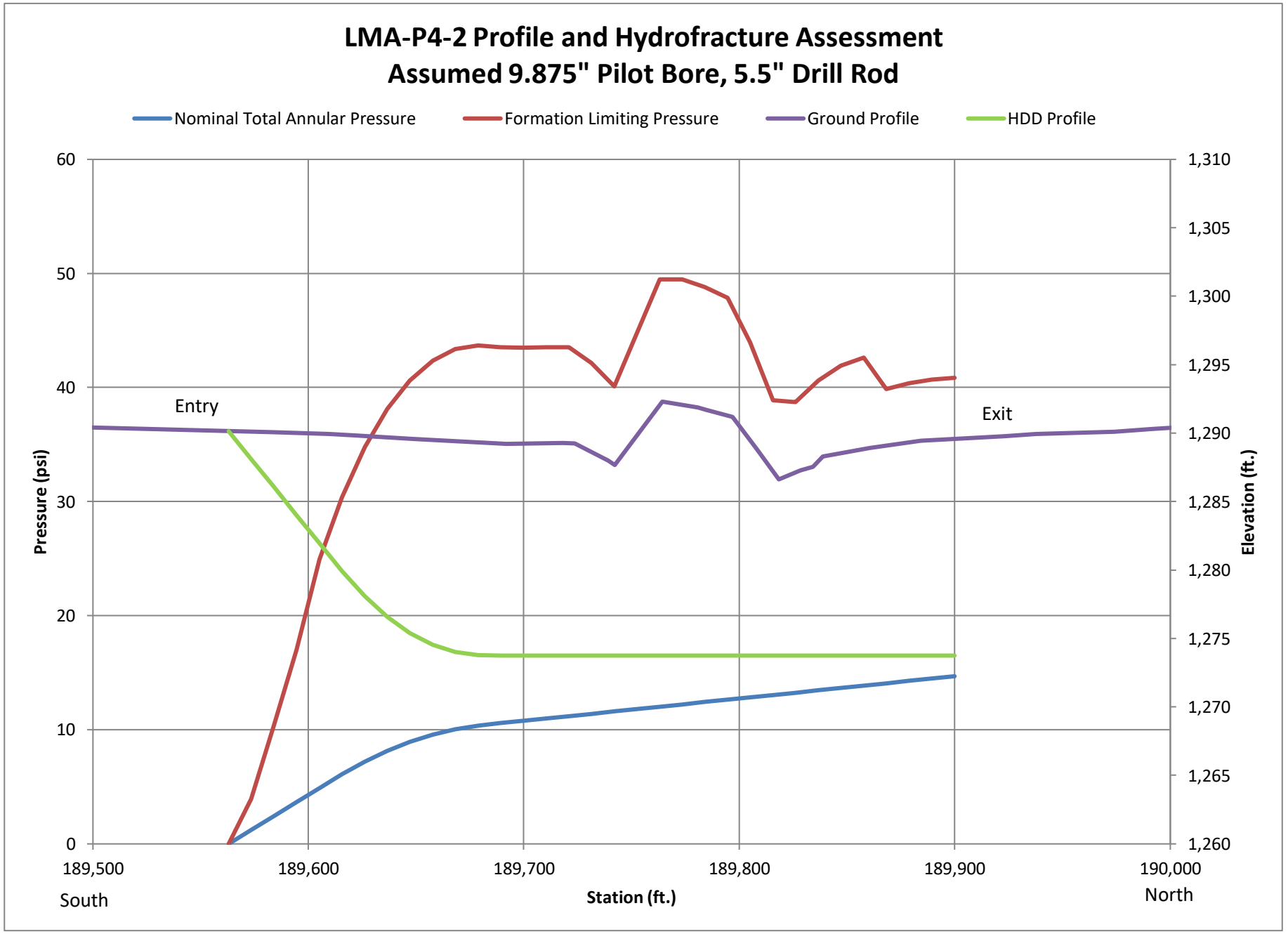

LMA-P4-2 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
10
20
30
40
50
60
1,260
1,265
1,270
1,275
1,280
1,285
1,290
1,295
1,300
1,305
1,310
189,500
189,600
189,700
189,800
189,900
190,000

Figure 1

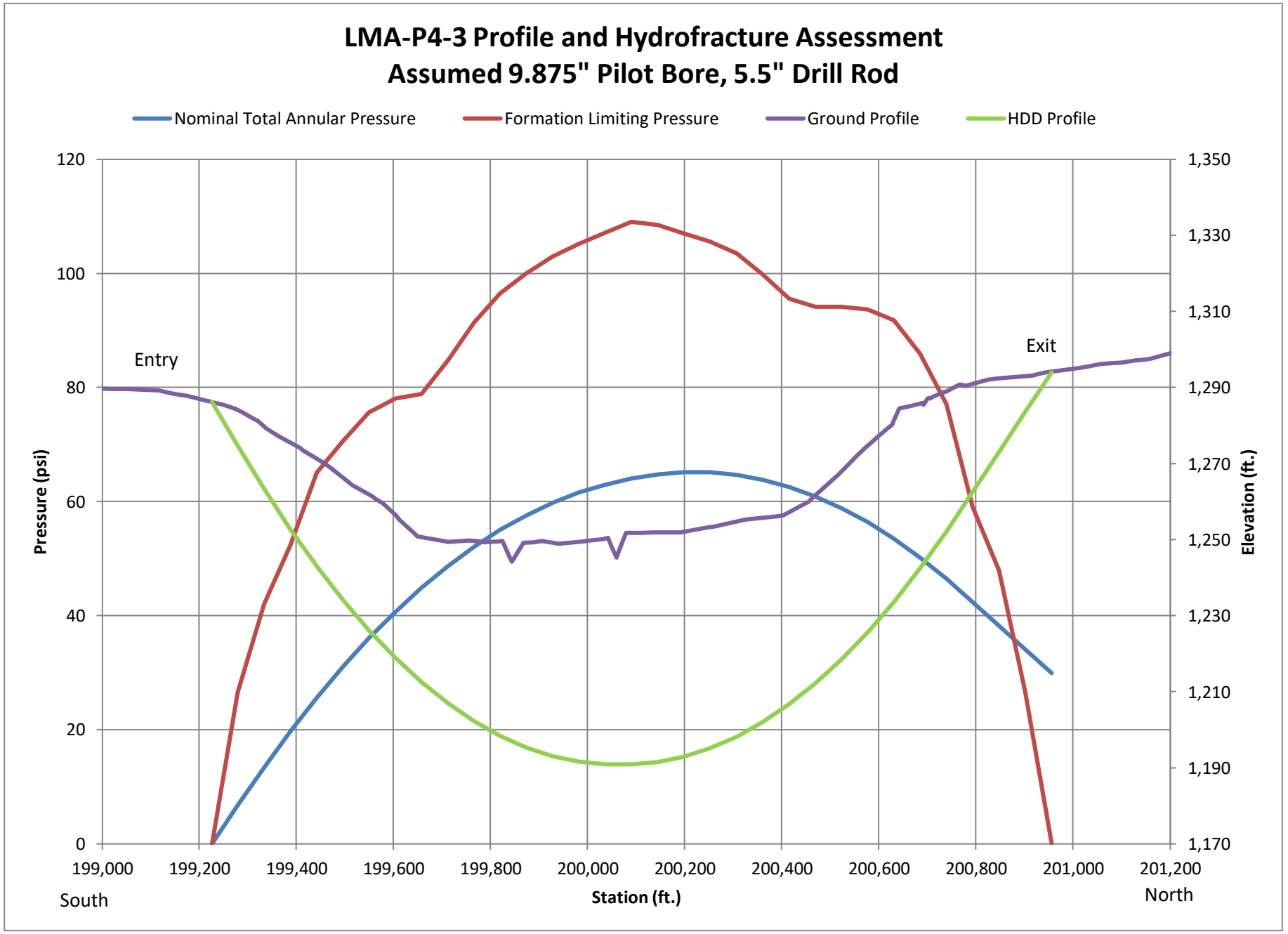

LMA-P4-3 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
120
100
80
60
40
20
0
1,350
1,330
1,310
1,290
1,270
1,250
1,230
1,210
1,190
1,170
199,000
199,200
199,400
199,600
199,800
200,000
200,200
200,400
200,600
200,800
201,000
201,200

Figure 1

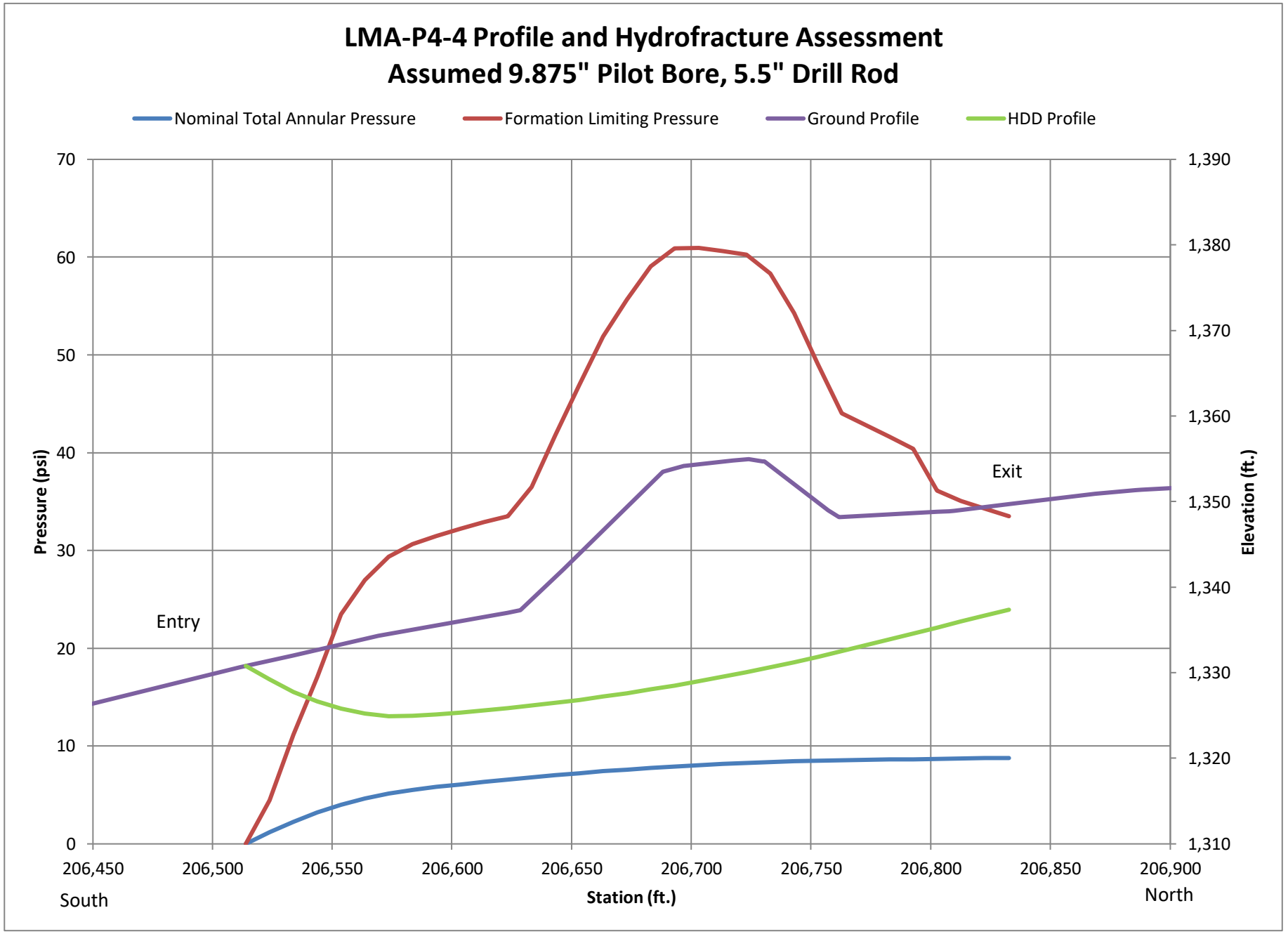

LMA-P4-4 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Pressure (psi)
Elevation (ft.)
Station (ft.)
Entry
Exit
South
North
0
10
20
30
40
50
60
70
1,310
1,320
1,330
1,340
1,350
1,360
1,370
1,380
1,390
206,450
206,500
206,550
206,600
206,650
206,700
206,750
206,800
206,850
206,900

Figure 1

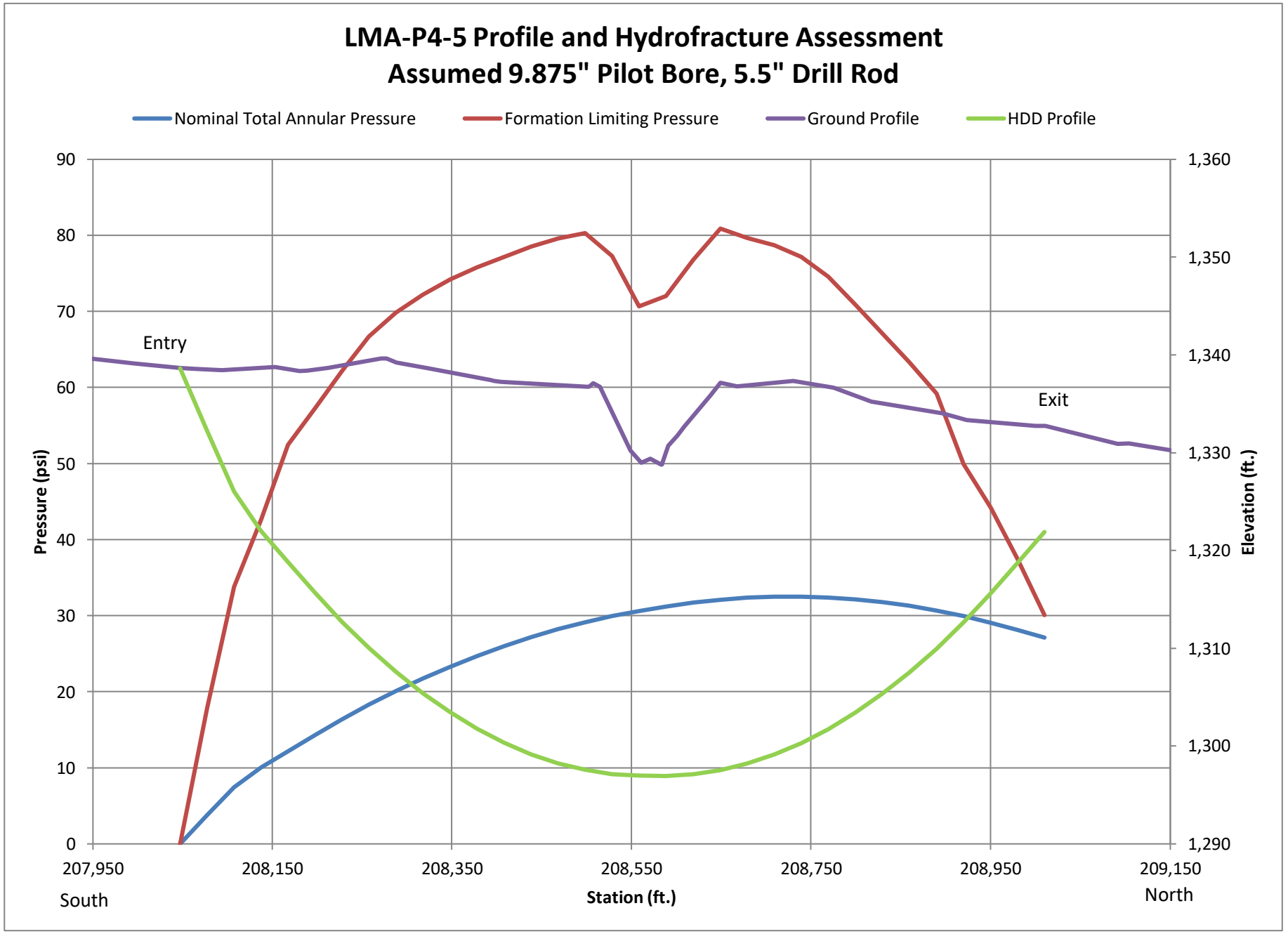

LMA-P4-5 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
10
20
30
40
50
60
70
80
90
1,290
1,300
1,310
1,320
1,330
1,340
1,350
1,360
207,950
208,150
208,350
208,550
208,750
208,950
209,150

Figure 1

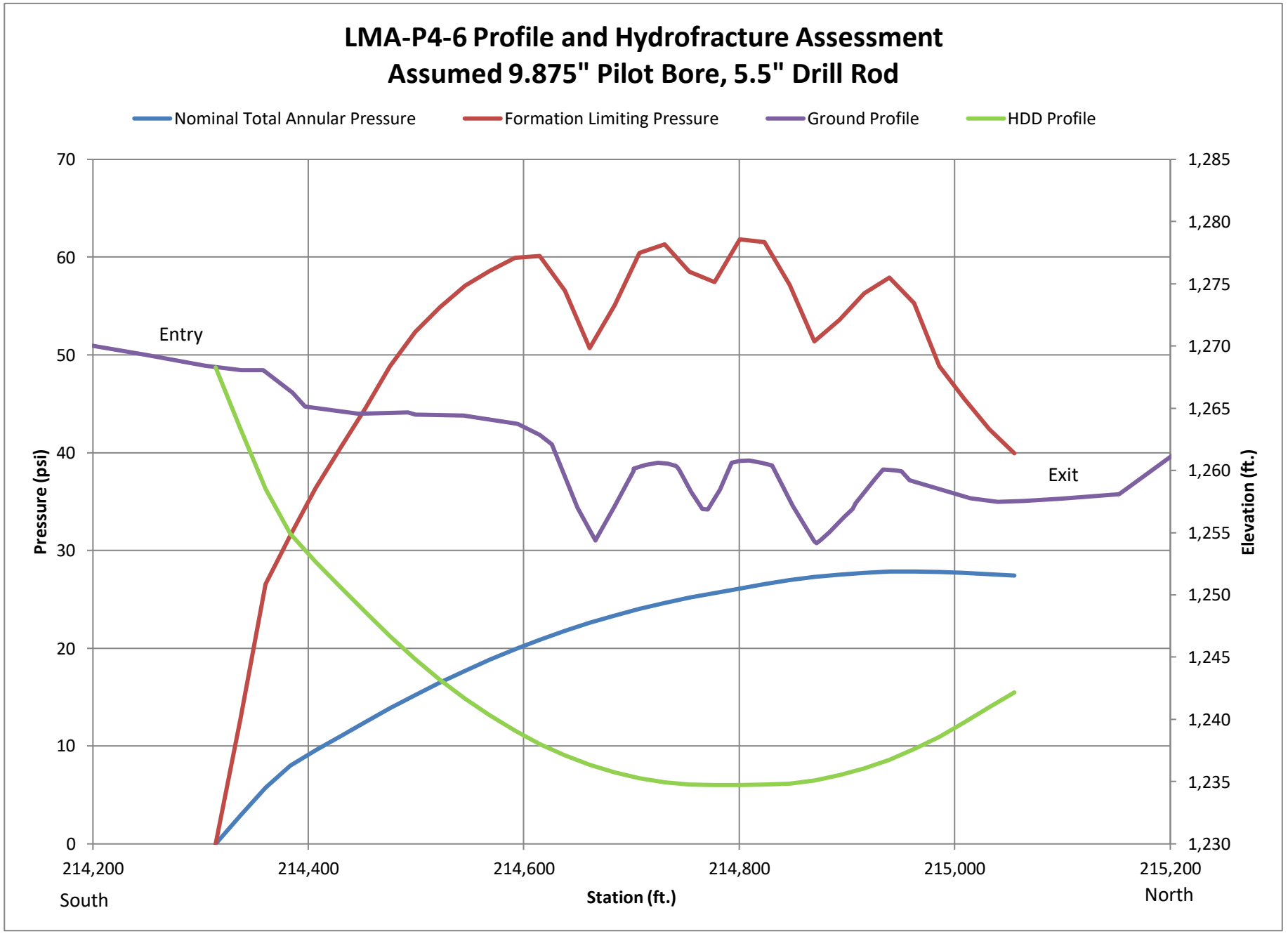

LMA-P4-6 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
10
20
30
40
50
60
70
1,230
1,235
1,240
1,245
1,250
1,255
1,260
1,265
1,270
1,275
1,280
1,285
214,200
214,400
214,600
214,800
215,000
215,200

Figure 1

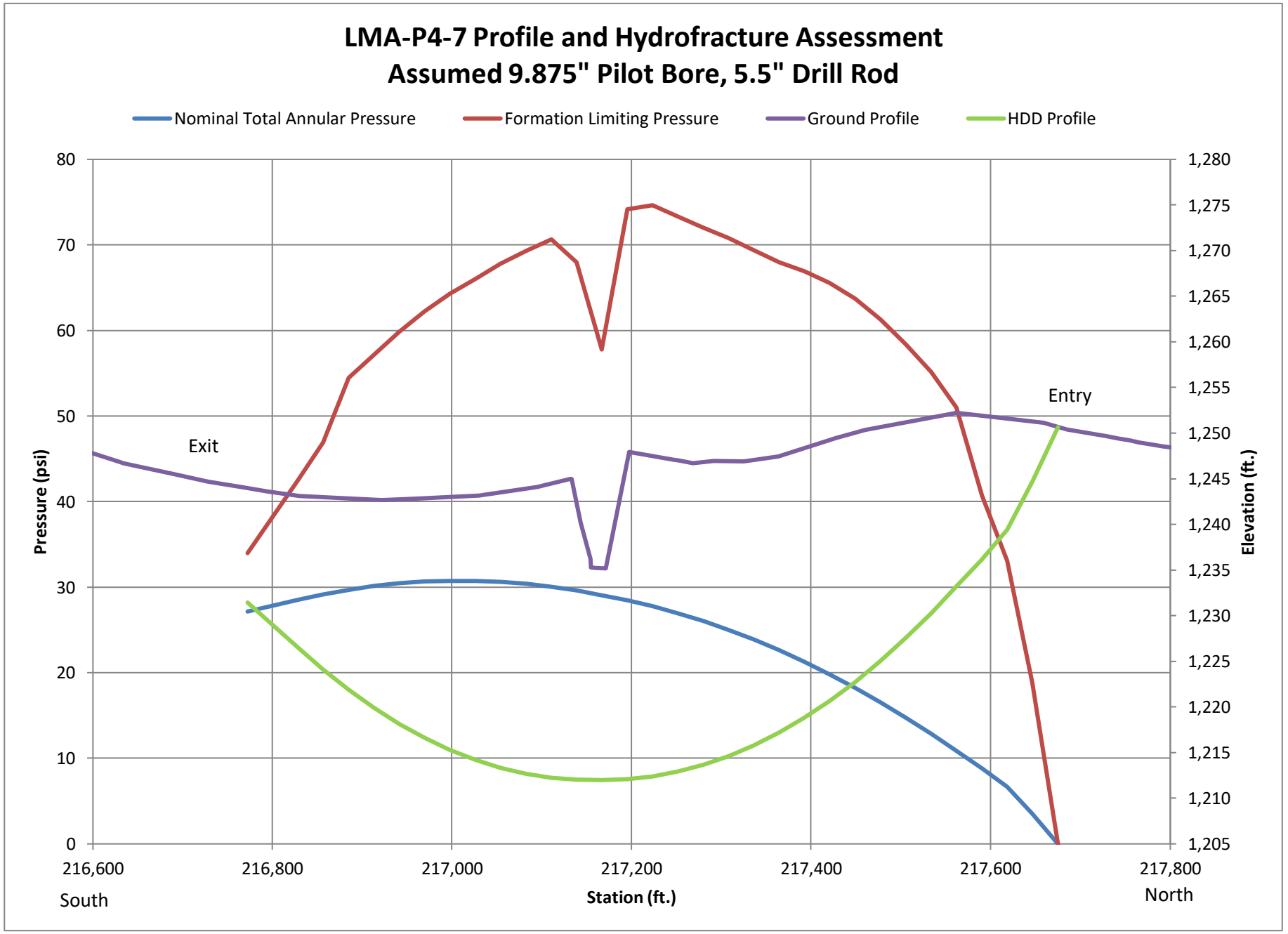

LMA-P4-7 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
10
20
30
40
50
60
70
80
1,205
1,210
1,215
1,220
1,225
1,230
1,235
1,240
1,245
1,250
1,255
1,260
1,265
1,270
1,275
1,280
216,600
216,800
217,000
217,200
217,400
217,600
217,800

Figure 1

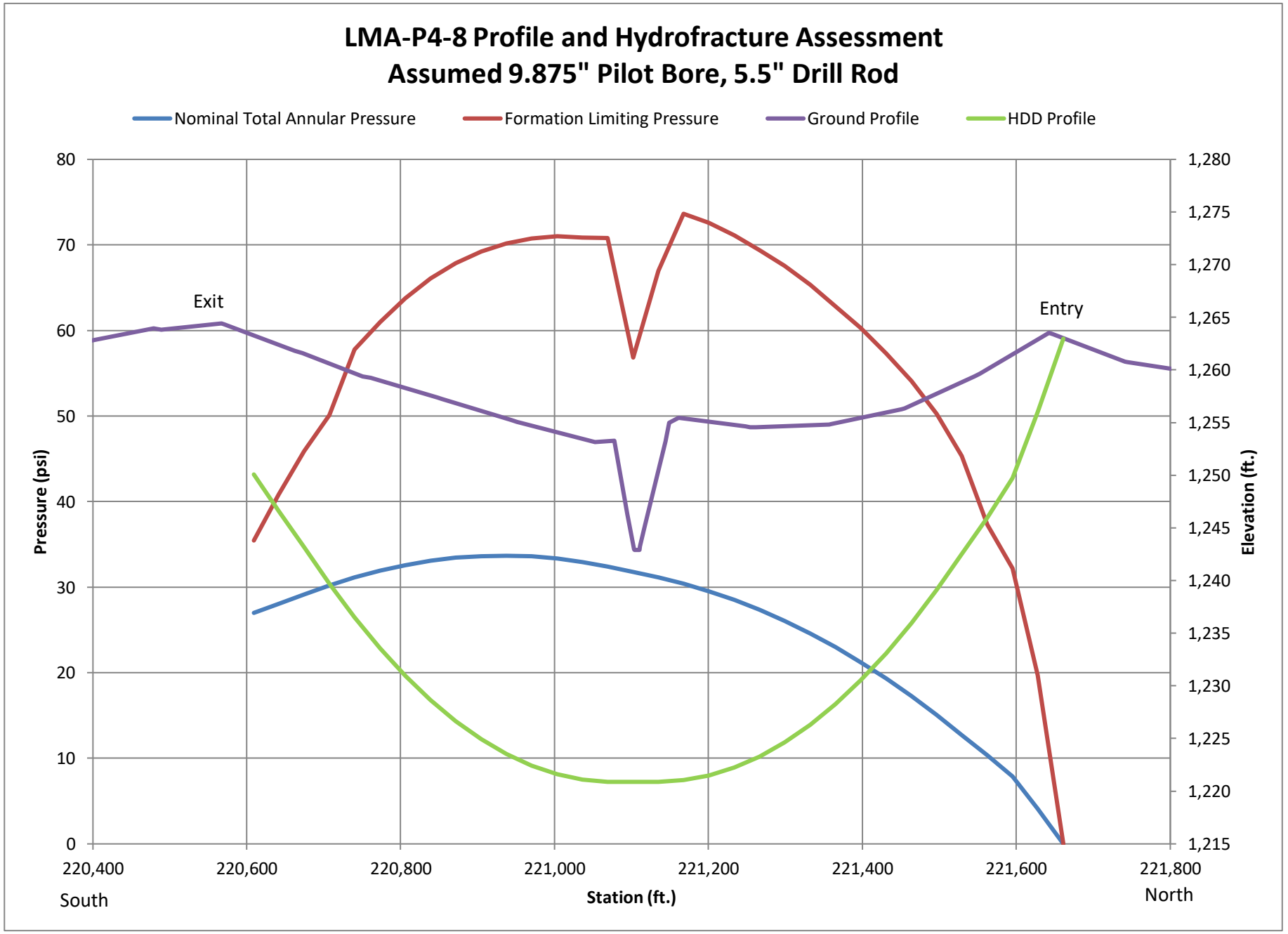

LMA-P4-8 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
10
20
30
40
50
60
70
80
1,215
1,220
1,225
1,230
1,235
1,240
1,245
1,250
1,255
1,260
1,265
1,270
1,275
1,280
220,400
220,600
220,800
221,000
221,200
221,400
221,600
221,800

Figure 1

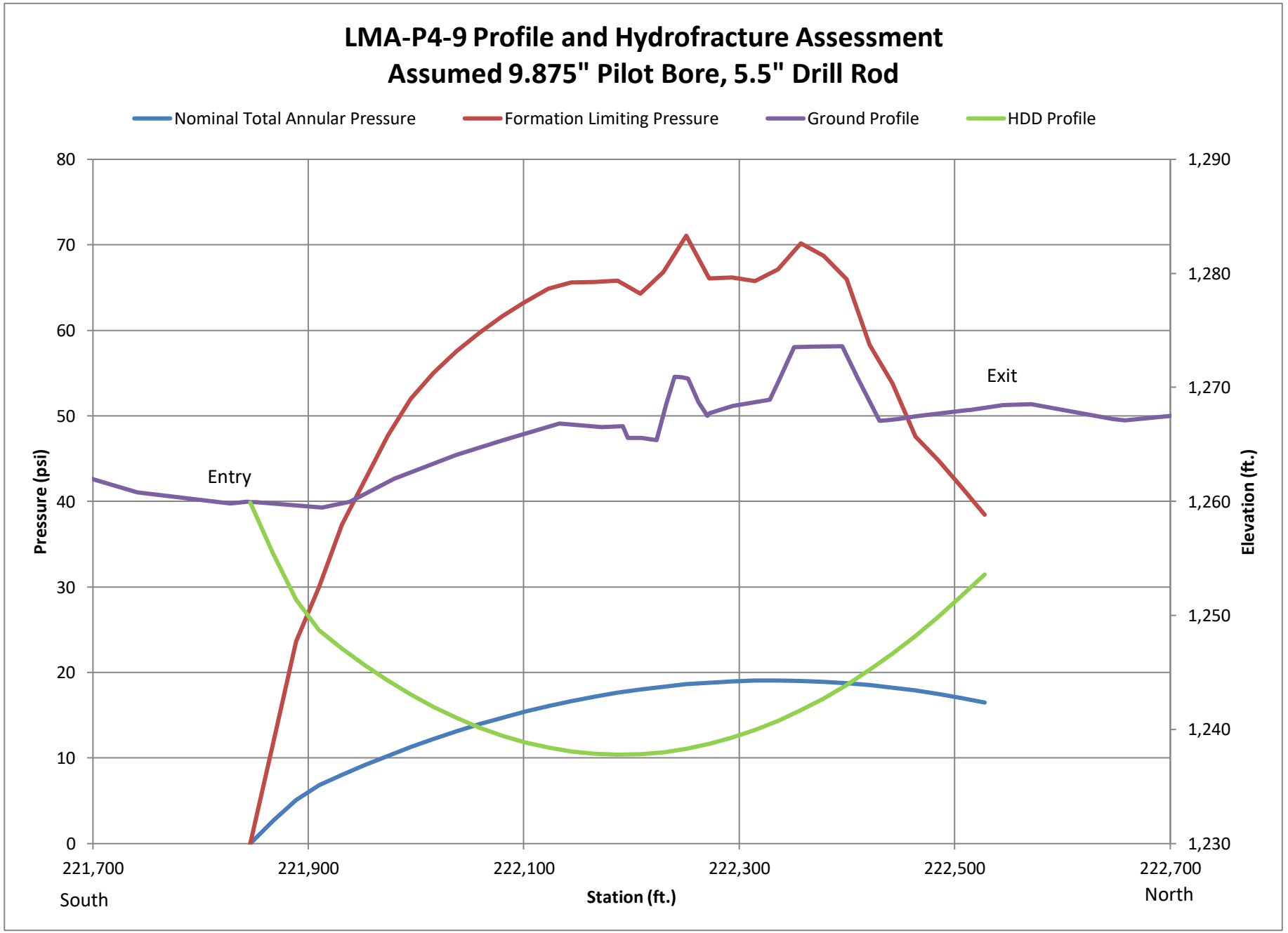

LMA-P4-9 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Pressure (psi)
Elevation (ft.)
Station (ft.)
Entry
Exit
South
North
0
10
20
30
40
50
60
70
80
1,230
1,240
1,250
1,260
1,270
1,280
1,290
221,700
221,900
222,100
222,300
222,500
222,700

Figure 1

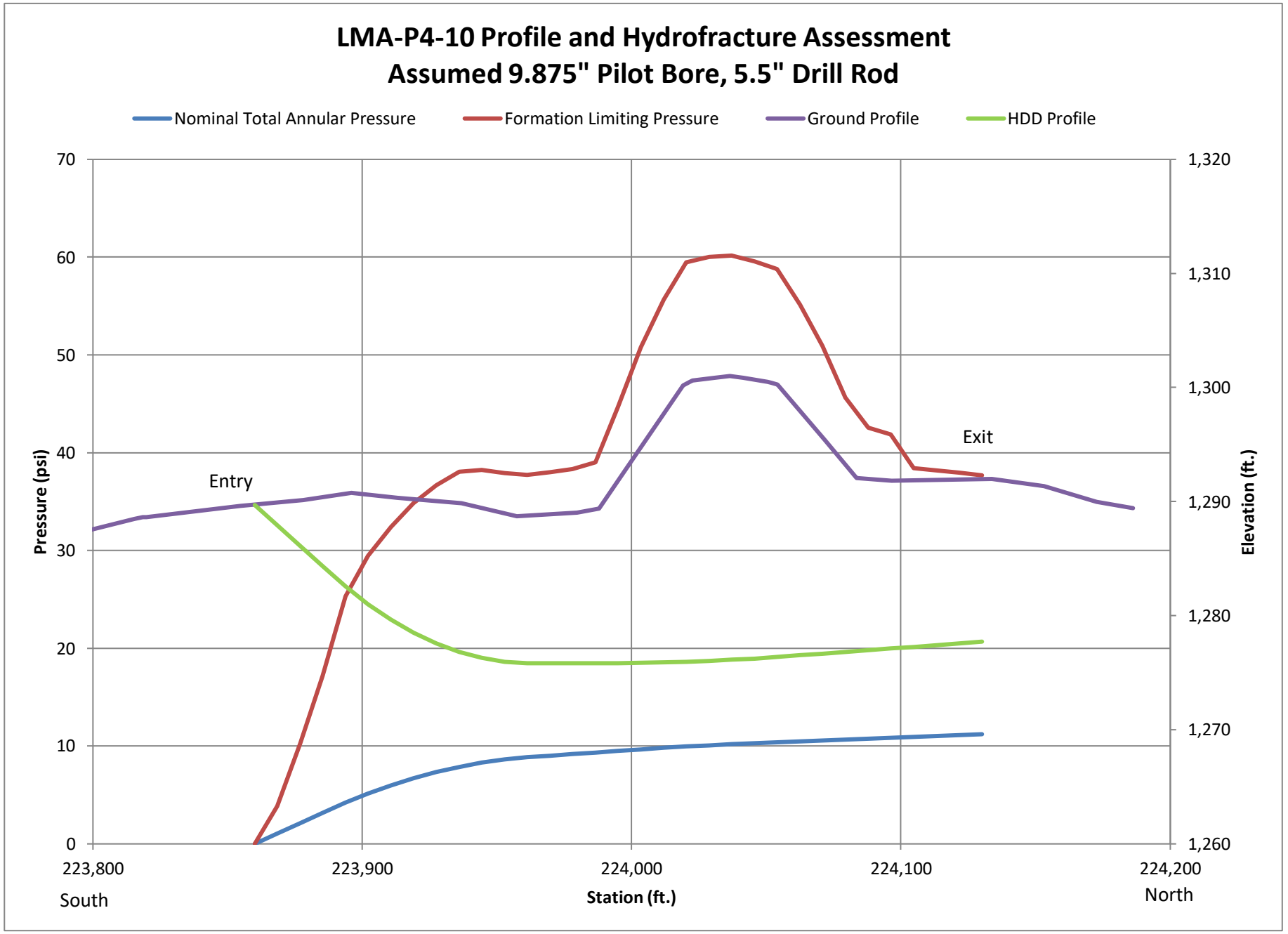

LMA-P4-10 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Pressure (psi)
Elevation (ft.)
70
60
50
40
30
20
10
0
1,320
1,310
1,300
1,290
1,280
1,270
1,260
Entry
Exit
223,800
223,900
224,000
224,100
224,200
South
Station (ft.)
North

Figure 1

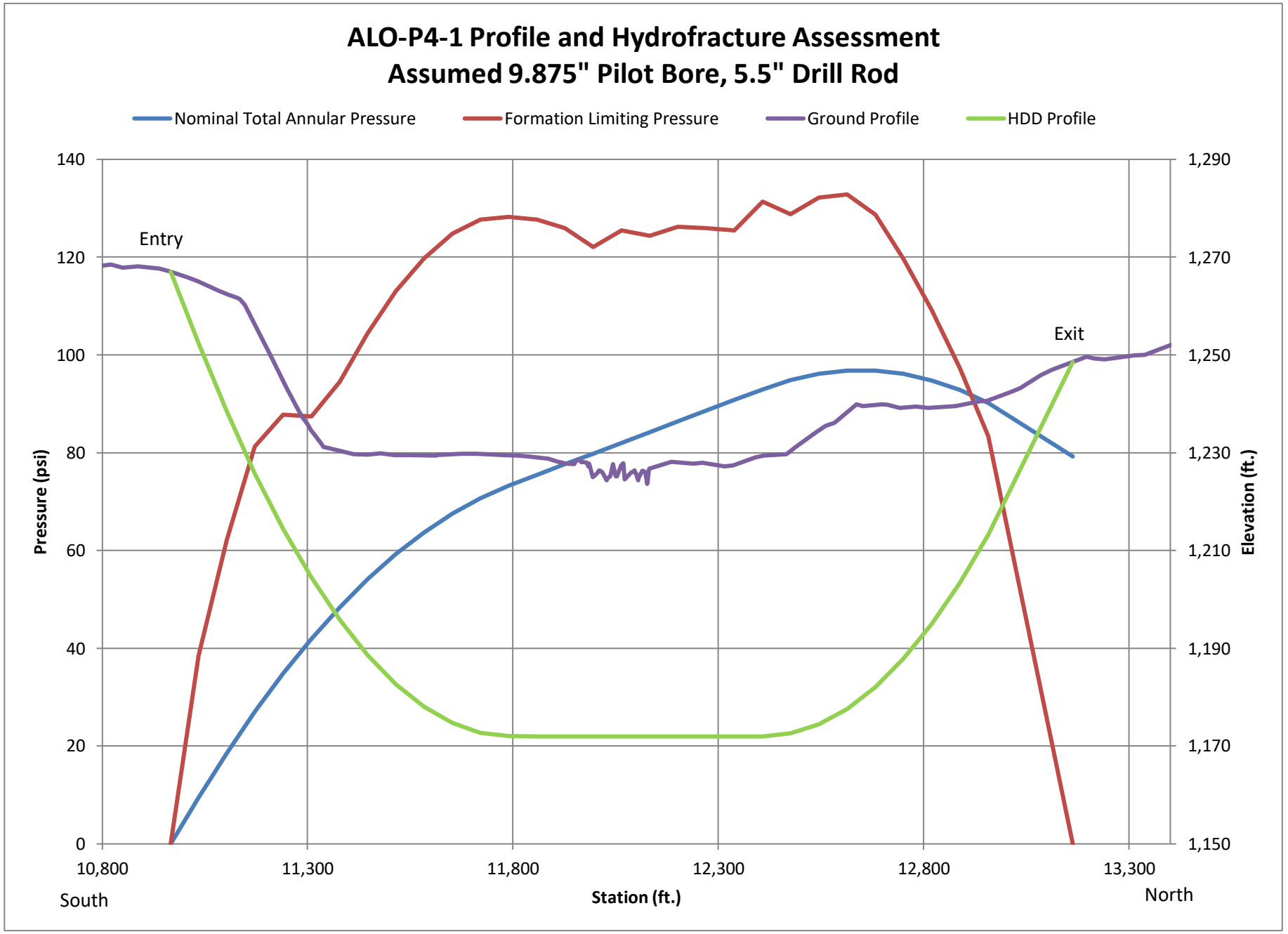

ALO-P4-1 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
140
120
100
80
60
40
20
0
1,290
1,270
1,250
1,230
1,210
1,190
1,170
1,150
10,800
11,300
11,800
12,300
12,800
13,300
South
Station (ft.)
North

Figure 1

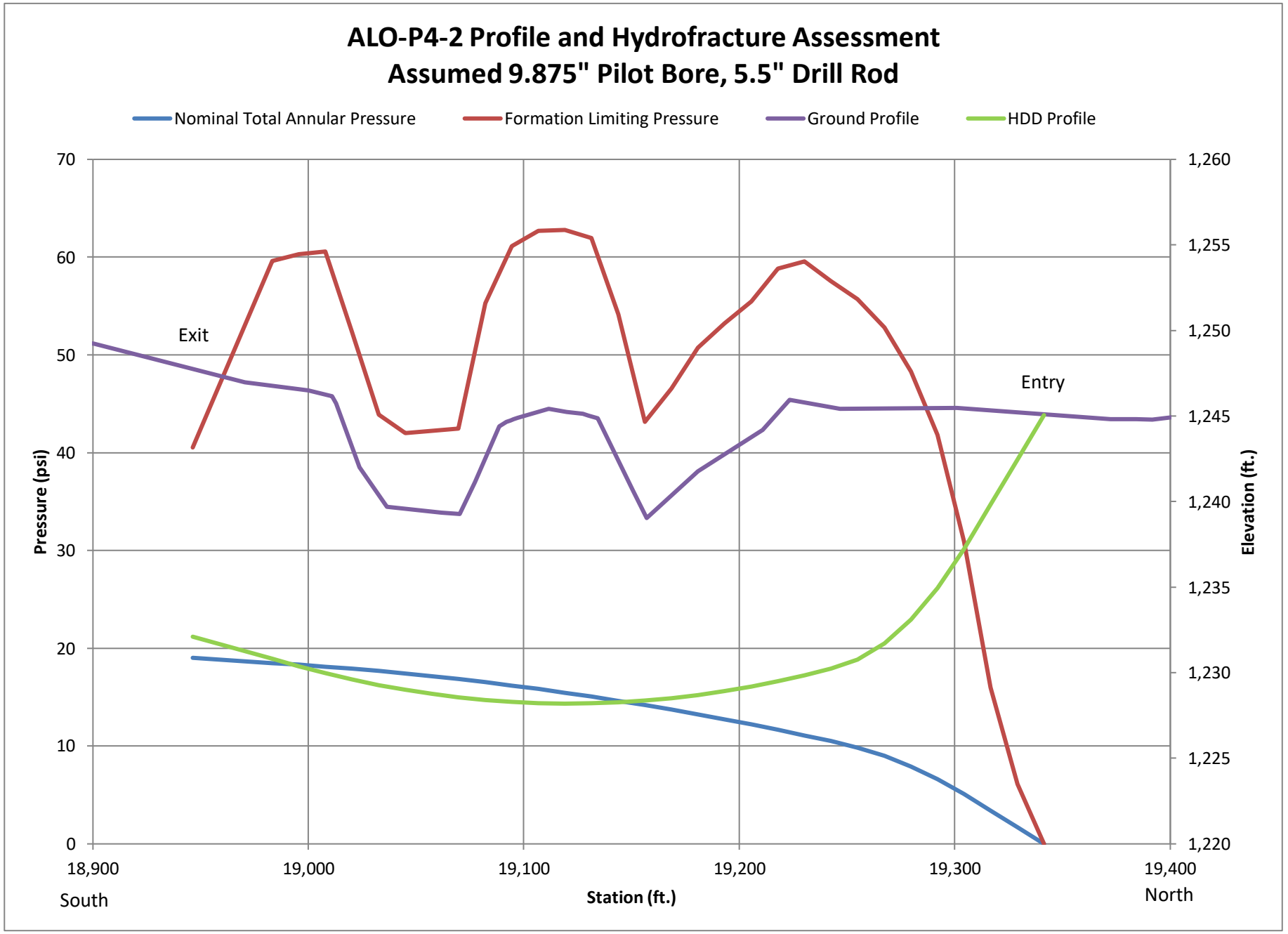

ALO-P4-2 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
70
60
50
40
30
20
10
0
1,260
1,255
1,250
1,245
1,240
1,235
1,230
1,225
1,220
18,900
19,000
19,100
19,200
19,300
19,400

Figure 1

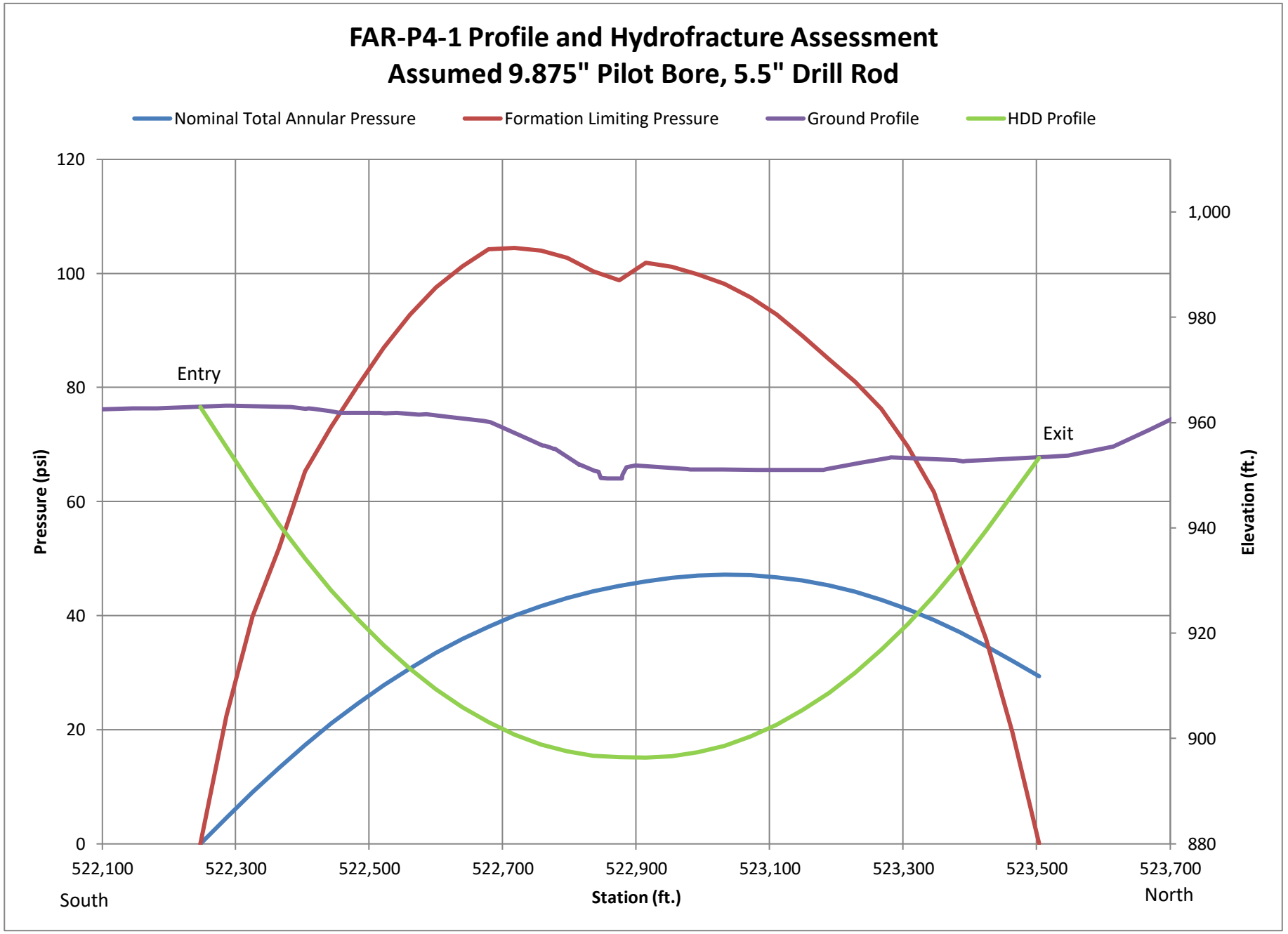

FAR-P4-1 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
120
100
80
60
40
20
0
1,000
980
960
940
920
900
880
522,100
522,300
522,500
522,700
522,900
523,100
523,300
523,500
523,700
South
Station (ft.)
North

Figure 1

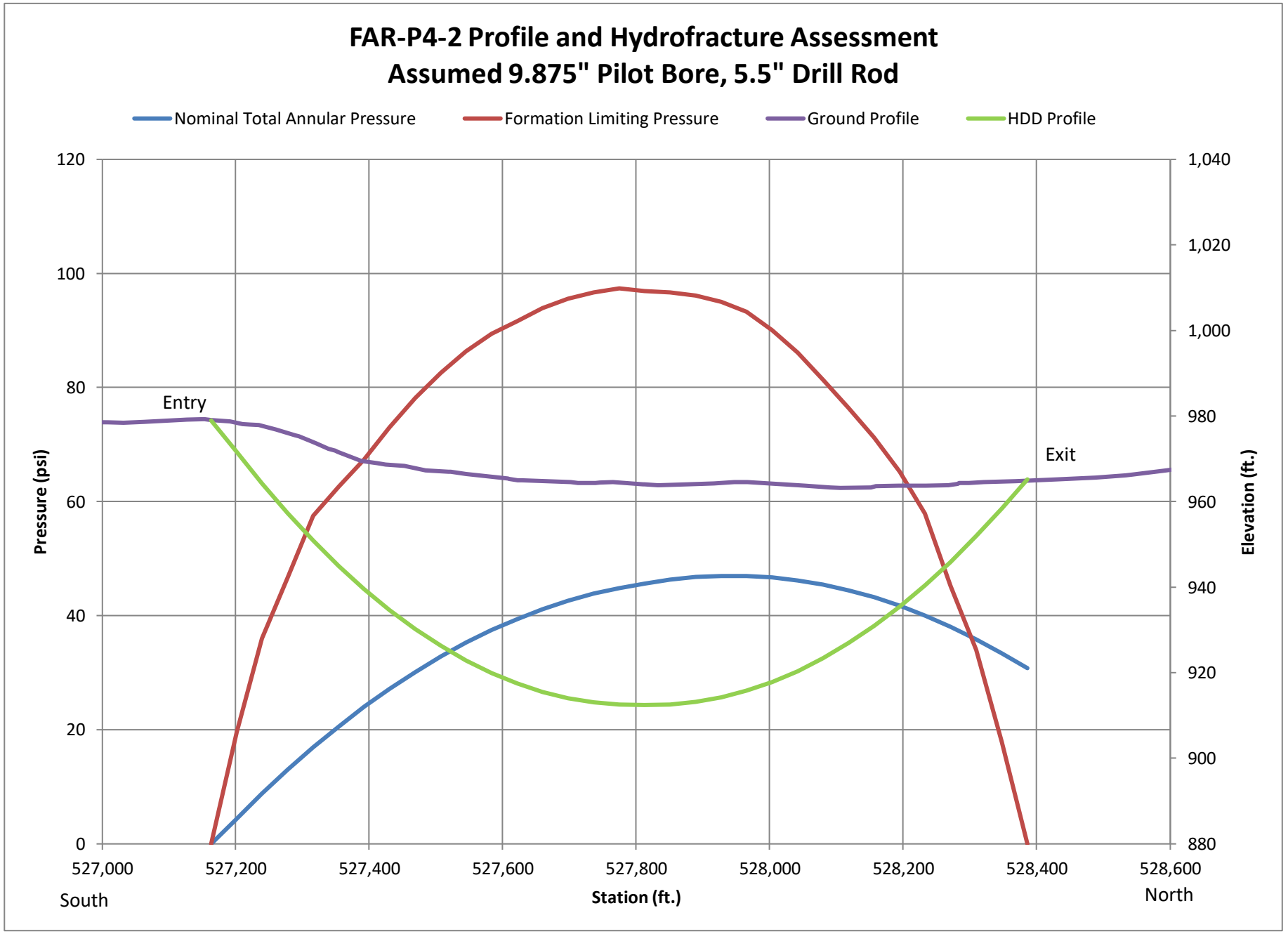

FAR-P4-2 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
120
100
80
60
40
20
0
1,040
1,020
1,000
980
960
940
920
900
880
527,000
527,200
527,400
527,600
527,800
528,000
528,200
528,400
528,600

Figure 1

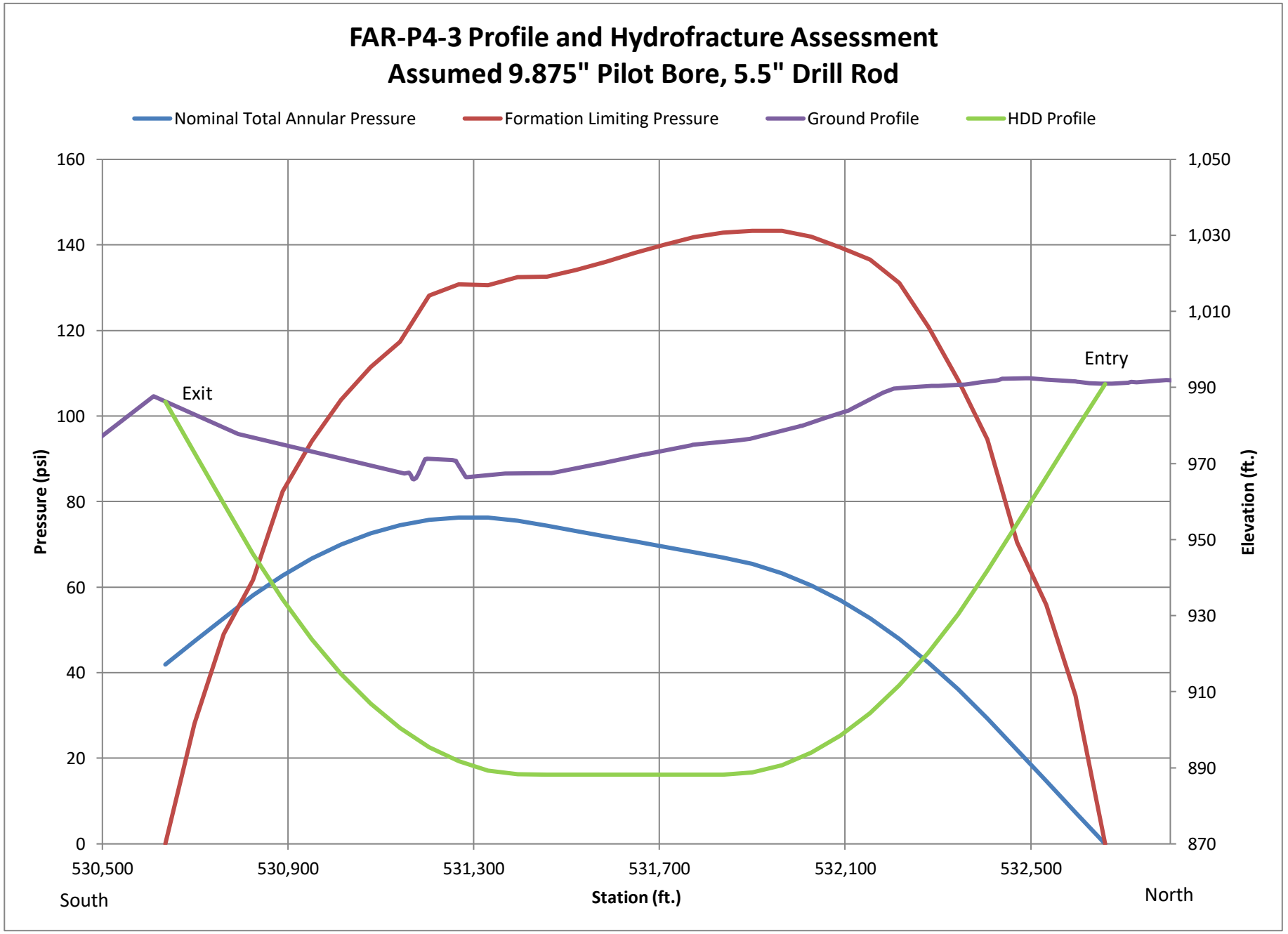

FAR-P4-3 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Pressure (psi)
Elevation (ft.)
160
140
120
100
80
60
40
20
0
1,050
1,030
1,010
990
970
950
930
910
890
870
Exit
Entry
530,500
530,900
531,300
531,700
532,100
532,500
South
Station (ft.)
North

Figure 1

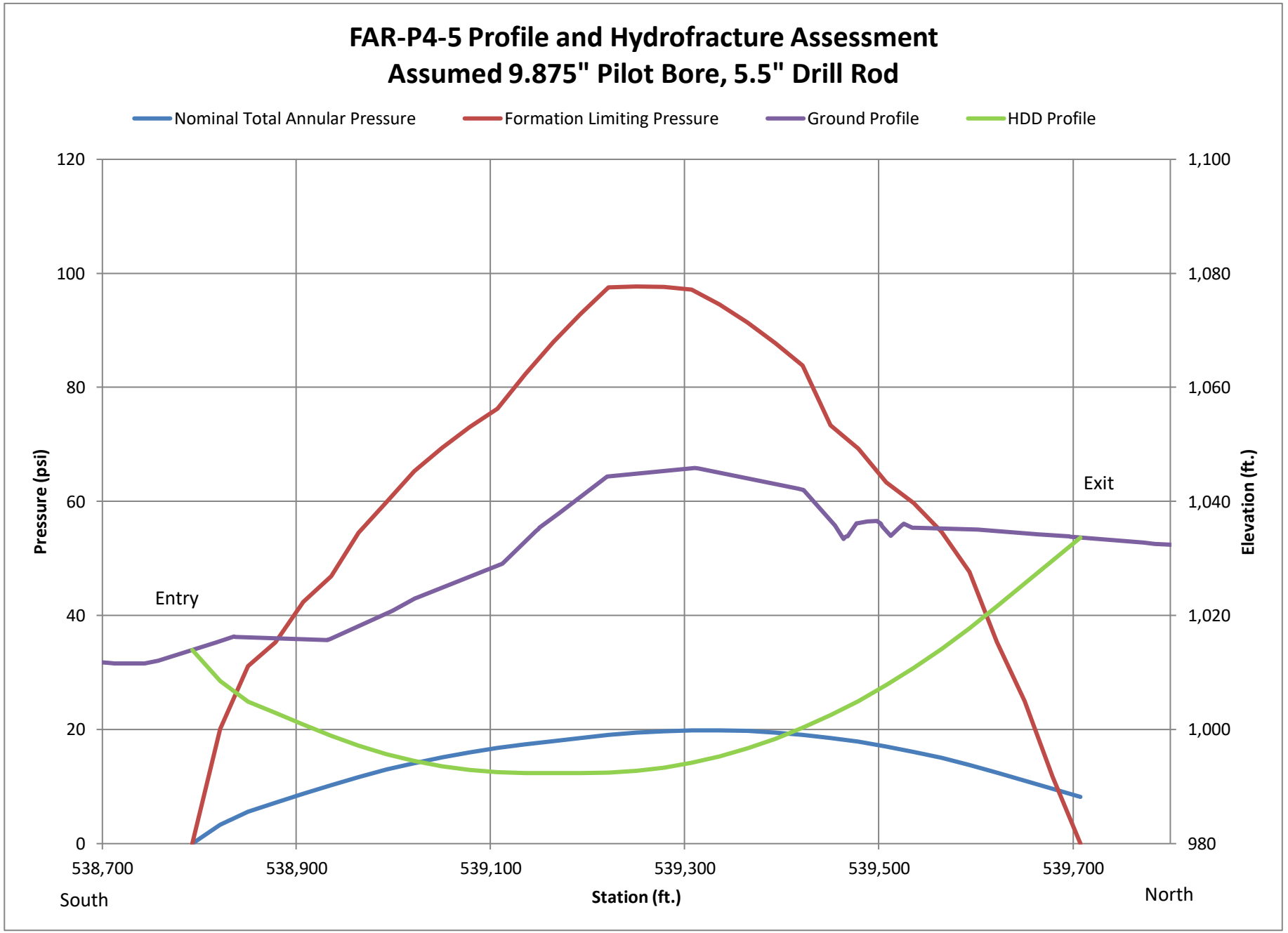

FAR-P4-5 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Pressure (psi)
Elevation (ft.)
120
100
80
60
40
20
0
1,100
1,080
1,060
1,040
1,020
1,000
980
Entry
Exit
538,700
538,900
539,100
539,300
539,500
539,700
South
Station (ft.)
North

Figure 1

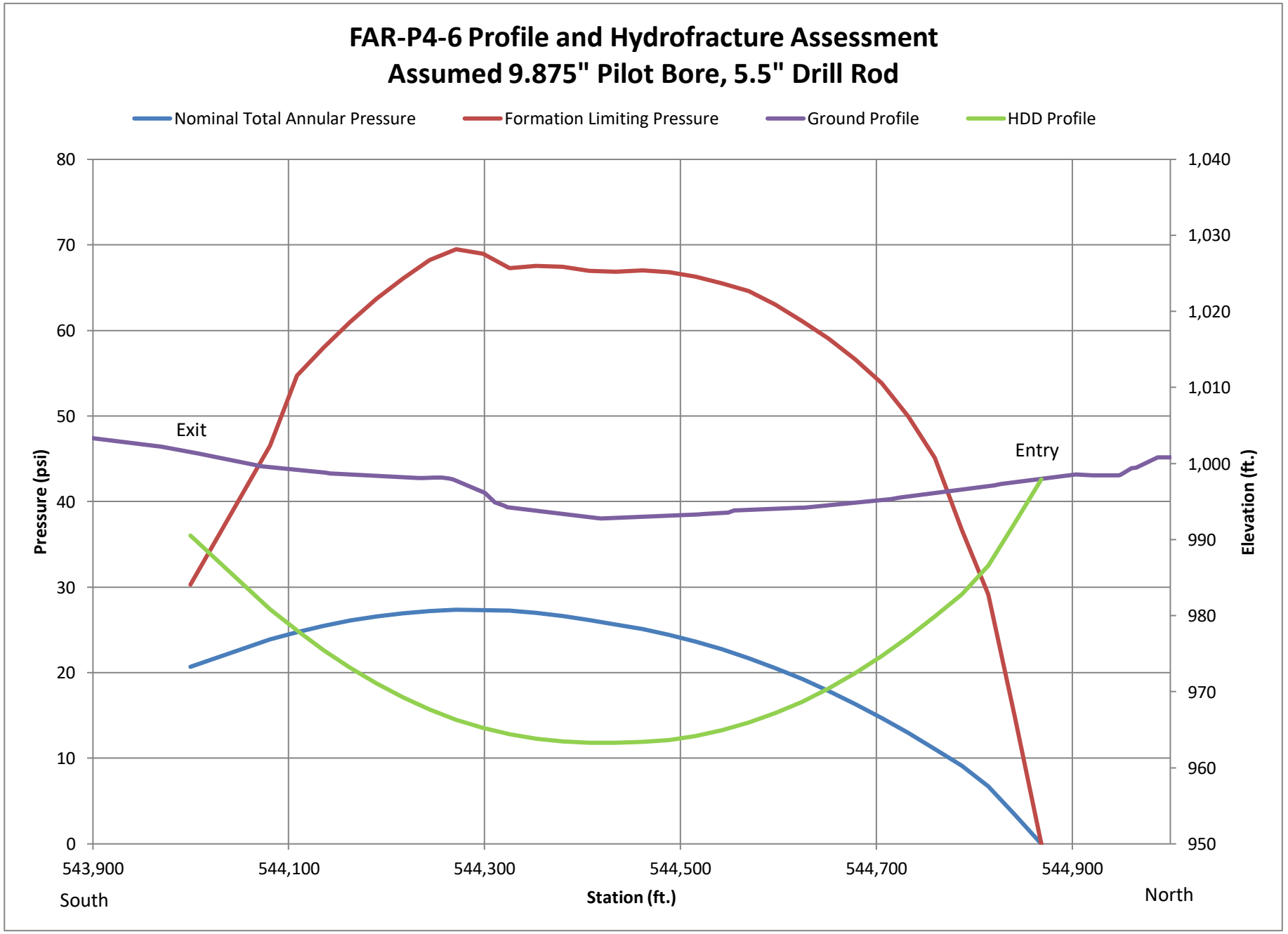

FAR-P4-6 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
10
20
30
40
50
60
70
80
950
960
970
980
990
1,000
1,010
1,020
1,030
1,040
543,900
544,100
544,300
544,500
544,700
544,900

Figure 1

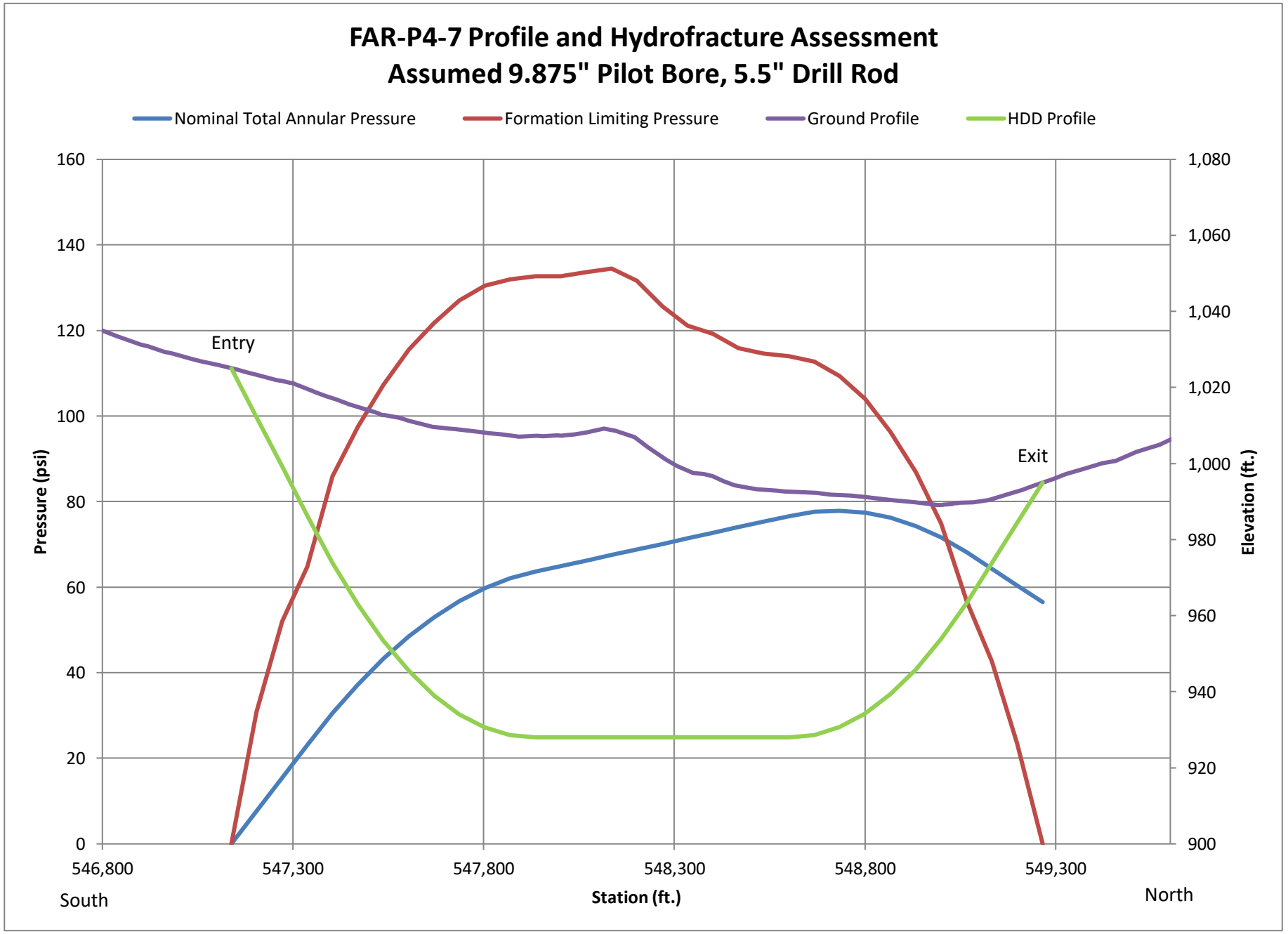
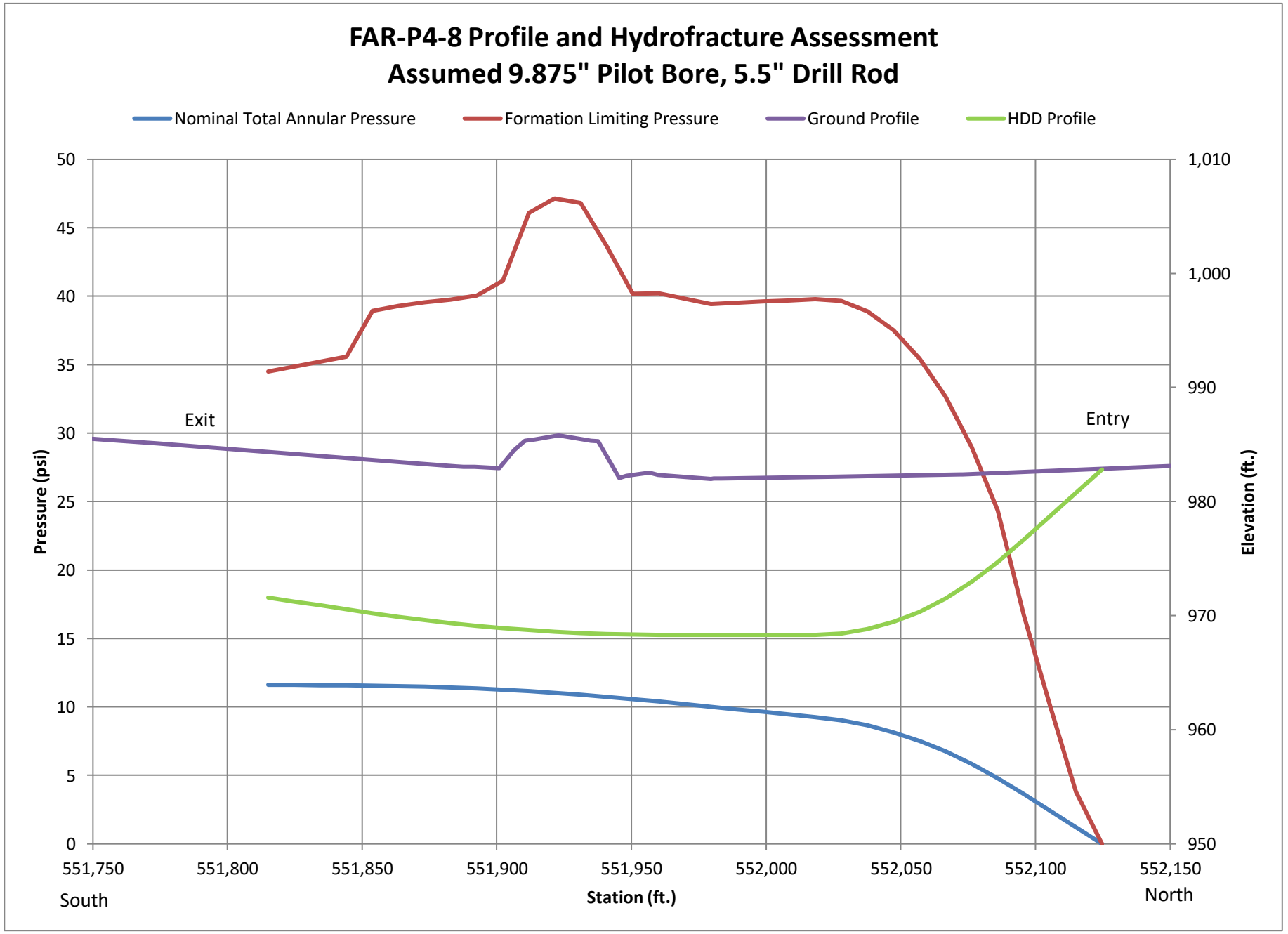

FAR-P4-7 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
160
140
120
100
80
60
40
20
0
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
546,800
547,300
547,800
548,300
548,800
549,300
South
Station (ft.)
North

Figure 1


FAR-P4-8 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
5
10
15
20
25
30
35
40
45
50
950
960
970
980
990
1,000
1,010
551,750
551,800
551,850
551,900
551,950
552,000
552,050
552,100
552,150

Attachment 4
Northern's Procedures for HDD

Northern Natural Gas
Plan for Inadvertent Release of Drilling Mud

The purpose of this plan is to outline the company, contractor and third-party inspector responsibilities pertaining to preparation, monitoring, management and clean-up of inadvertent releases of drilling mud from horizontal directional drill (HDD) activities. The plan will be provided to company, contractor and inspection personnel prior to the commencement of HDD activities.

Contractors are required to conduct HDD activities in compliance with the applicable environmental guidelines set forth in the Federal Energy Regulatory Commission's Upland Erosion Control, Revegetation, and Maintenance Plan (FERC Plan) and Wetland and Waterbody Construction and Mitigation Procedures (FERC Procedures) and any applicable local, state and federal regulations concerning HDD activities.

1.0 Requirements Prior to On-site HDD Activities

1.1 Through the environmental permitting process and/or consultation with the applicable state agency, Northern will determine agency-specific requirements prior to beginning of HDD activities.

1.2 The environmental inspector (EI) will conduct an on-site tailgate meeting with the contractor HDD crew and inspection personnel to review the following: spill prevention; inadvertent release monitoring responsibilities, containment and clean-up procedures; approved drilling fluids; and required notifications.

1.3 The contractor will have sufficient spill containment material and supplies as required to contain any inadvertent release. These may include, but are not limited to, pumps and hoses, sandbags, straw bales, silt fence and turbidity curtain.

1.4 The contractor will have a vacuum truck on-site or on-call within a reasonable distance to assist with recovery of inadvertent release drilling mud.

1.5 The contractor will provide Northern Natural Gas with safety data sheets (SDS) for the drilling mud and any additives. Copies of all safety data sheets will be kept on site.

1.6 The contractor will submit for approval, through the Request For Information (RFI) process, all proposed HDD drilling mud additives prior to bringing them onsite. The company representative will route the RFI for approval to the environmental specialist responsible for permitting the project.

1.6.1 Only drilling fluids listed on the ANSI/NSF 60 list will be approved.

1.6.2 The environmental specialist may further restrict approvals based upon site and regulatory conditions.

1.6.3 FERC must also approve the drilling fluids when they are to be utilized on a FERC-filed project.

2.0 Monitoring Requirements

2.1 The contractor will assign personnel to continuously monitor the HDD activities. This includes walking the HDD path between entry and exit points (where practical) and visually inspecting for inadvertent releases. At road crossings, the contractor will ensure monitoring is conducted in accordance with all applicable safety requirements. In areas of open water, at a minimum, visual inspections will be conducted from the waterbody banks. The contractor is responsible for determining a safe monitoring method.

2.2 The EI will document inadvertent release incidents including initial containment and final clean-up and the information will be documented using EA 380.203a, Appendix A: Environmental Inspection Daily Report.

2.3 The EI will monitor all initial inadvertent release containment and final clean-up activities to ensure that they are completed safely, promptly and in compliance with all project permits.

3.0 Initial Inadvertent Release Management

3.1 Upon discovery of an inadvertent release, the drilling operation will be immediately stopped. Any inadvertent release will be immediately contained by appropriate means.

3.1.1 The structure will be constructed from the on-site material and supplies in a manner which minimizes impact to the surrounding environment.

3.1.2 The structure type and size will be determined by the location and severity of the release.

3.1.3 In cases where inadvertent releases occur along stream banks, turbidity curtains will be used in an effort to contain the mud within the bank area.

3.2 *Report all inadvertent releases to the OCC (888) 367-6671 who will in turn contact the DES, or designee.

3.2.1 The DES or designee will determine if the event is reportable, and if so, the DES or designee will report the inadvertent release to the appropriate agency or agencies.*

3.3 *The drilling mud will be cleaned up and removed for proper disposal in compliance with the applicable state and federal regulations. The containment structure will remain in place until the HDD operation is complete.*

3.4 *Northern will advise the contractor when the drilling operation is allowed to resume.*

3.5 Upon resuming drilling operations, the contractor will reduce the gallons-per-minute of drilling mud to minimize the release of drilling mud to the surface.

3.6 If inadvertent release flows cannot be sufficiently decreased, and environmental conditions permit, a viscosifier (additive) may be added to the drilling mud to promote borehole stability.

3.7 In cases where the release cannot be entirely stopped, the operation may proceed with environmental specialist's approval, provided the mud is continuously

recovered from within the containment structure and the containment structure remains sufficient for site conditions.

3.8 If the operation is deemed unsuccessful, the existing bore hole will be plugged and/or abandoned, dependent on the size and location, and another attempt at boring will be made. The subsequent attempt will occur within the environmentally cleared and approved right of way (ROW). Any plugging and/or abandonment of a HDD hole will be in compliance with all applicable state and federal permits, laws, and regulations and is subject to Northern approval.

4.0 Requirements Following HDD Completion

4.1 Upon completion of drilling activities, all containment structures and drilling mud remaining within the structures will be removed. The inadvertent release site will be returned to the original grade and, where applicable, the disturbed area will be reseeded and mulched. The EI will monitor these activities to ensure proper clean-up and restoration.

4.2 All drilling mud captured as a result of inadvertent release clean-up, including that captured within the HDD entry and exit pits, will be removed from the site for proper disposal.

4.3 The contractor will provide Northern with information of the proposed disposal site for drilling mud for approval.

4.3.1 *Land application is only permitted in certain locations with prior landowner approval obtained by Northern's right of way department. The environmental specialist will provide any specific restrictions and/or requirements.*

4.3.2 *Drilling mud that is to be disposed of at a permitted landfill must be tested and meet all parameters required by the receiving landfill.*

4.3.3 *For projects in South Dakota, all drilling mud must be disposed of at a regional landfill, unless otherwise approved by the environmental specialist. Refer to EA 500.110 South Dakota State Specific Guidelines.*

5.0 REVISION HISTORY:

Responsibility for Procedure:

Address all questions on this procedure to the director of environmental affairs.

Revisions:

Rev. 0	12/14/12	Publish Only: Original procedure released.
Rev. 1	02/07/18	Publish Only: Revised to reflect FERC guidance
Rev. 2	01/13/22	Publish Only: Revised to document approval of drilling fluids
Rev. 3	11/15/23	Publish Only: Revised to document disposal of drilling fluids

Environmental Expectations for HDD Crossings

Date: _____ **Project:** _____

Contractor: _____ **WO #:** _____

Foreman: _____ **Env. Insp.:** _____

Crew Members (Print, Sign and Date)	Tailgate Meeting Agenda
	• Review environmental procedure 380.203i, Appendix I: Plan for Inadvertent Release of Drilling Mud. • List names of personnel assigned to monitor for inadvertent releases _____ _____ _____ _____ _____ • Confirm location(s) of on-site containment material _____ _____ _____ • Confirm the location of the vacuum truck _____ _____ • *Confirm approved drilling fluids* _____ _____ _____ _____ • Confirm the mud disposal site _____ _____ • List the agency(ies) to be notified _____ _____

Complete a new form whenever crew, drilling fluids, or conditions change

Project:		WO:	

Drill:		Date:		Footage:		Depth:		Phase:	

Drilling Fluids:		
		Approved by DES
		Approved by DES
		Approved by DES

Person Walking Drill Path		Role		Frequency		IR Detected	

NSA#	Time	1:00	3:00	5:00	7:00	9:00	11:00	13:00	15:00	17:00	19:00	21:00	23:00	Daytime Average	Nightime Average
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!

Notes:

Attachment 5
HDD Plans and Profiles and Site-Specific Plans
Filed as CUI//PRIV – DO NOT RELEASE

Appendix 1A-2
HDD Plan for NL27 Project



Horizontal Directional Drill Monitoring, Inadvertent Return Response and Contingency Plan

Northern Lights 2027 Expansion Project

February 2026

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Abbreviations and Acronyms

API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
CI	Construction Inspector
CMT	Construction Management Team
CESCP	Construction Erosion and Sediment Control Plan
CWA	Clean Water Act
ESB	Environmental Survey Boundary
EI	environmental Inspector
EMT	Environmental Management Team
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
HDD	horizontal directional drill
HDD Plan	Horizontal Directional Drill Monitoring, Inadvertent Return Response and Contingency Plan
IR	inadvertent Release
MDNR	Minnesota Department of Natural Resources
MP	milepost
MPCA	Minnesota Pollution Control Agency
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NSF/ANSI	National Sanitation Foundation/American National Standards Institute
Northern	Northern Natural Gas
NRCS	Natural Resources Conservation Service
Plan	FERC Upland Erosion Control, Revegetation and Maintenance Plan
PRCI	Pipeline Research Council International
Procedures	FERC Wetland and Waterbody Construction and Mitigation Procedures
Project	Northern Lights 2027 Expansion Project

ROW	right of way
SHPO	State Historic Preservation Office
SSP	Site-Specific Plan (for HDDs)
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
TBD	To Be Determined
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1.0 GENERAL PROJECT DESCRIPTION

This HDD Plan presents a description of Northern's proposed HDD locations and describes the drilling composition, management, monitoring procedures, and response procedures for an IR of drilling fluid. The HDD Plan was prepared specifically for Northern's Project. Northern proposes to construct 10 pipeline components as listed in Table 1 below. The abandonment, disconnect and temporary compression sites are not associated with HDD activities.

Table 1 Pipeline Components Proposed for the Project

Pipeline Component	Pipeline Diameter and Type	Maximum Allowable Operating Pressure	Approximate Length	County	State
Lake Mills M500 E-line	36-inch-diameter extension	1,050	2.32 miles	Freeborn	MN
Albert Lea M500 E-line	36-inch-diameter extension	1,050	3.42 miles	Steele	MN
Willmar 3rd Branch Line Upstream	24-inch-diameter extension	950	1.78 miles	Scott	MN
Willmar 3rd Branch Line Downstream	24-inch-diameter extension	950	4.78 miles	Carver	MN
Welcome 2nd Line	16-inch-diameter extension	1,440	1.24 miles	Martin	MN
Paynesville 2nd Branch Line	4-inch-diameter extension	950	2.45 miles	Stearns	MN
Worthington 2nd Branch Line	8-inch-diameter extension	800	2.17 miles	Jackson	MN
Springfield 2nd Branch Line	8-inch-diameter extension	796	7.40 miles	Watonwan	MN
Minnesota Interconnect 2nd Branch Line	12-inch-diameter extension	1,062	1.59 miles	Isanti	MN
Alexandria 2nd branch Line	8-inch-diameter extension	1,050	1.28 miles	Morrison	MN

2.0 PURPOSE

The use of HDD can mitigate environmental and landowner impacts and avoids impacts on cultural resources through avoidance of land disturbance. However, HDD operations have a potential to release drilling fluids into the surface environment through IRs. An IR is a condition where drilling mud is released through fractured bedrock or other preferential pathways and travels toward the surface. Because drilling muds consist largely of a bentonite clay and water mixture, they are not toxic or hazardous substances. However, if released into waterbodies or wetlands, bentonite has the potential to adversely impact fish and invertebrates or their habitat.

While drilling fluid loss associated with an IR is most likely to occur near the HDD entry and exit points where the drill head is shallow, IRs can occur in any location along the HDD path. Northern will work to contain and address any IR. Northern will utilize HDD methods to minimize surface impacts on aquatic or other resources at designated crossing locations. Northern prepared the HDD Plan in accordance with the FERC Guidance for HDD Monitoring, Inadvertent Return Response, and Contingency Plan published October 2019. Northern also incorporated Section V.B.6.d of the Procedures into the HDD Plan, which includes a requirement to file site-specific plans for all HDD crossings of wetlands and waterbodies. In addition, Northern is providing information such as crossing-specific geotechnical information, crossing alignments and profiles, a feasibility report of the crossings, a hydrofracture and IR risk evaluation, and a summary of unique conditions found along the proposed HDD alignments.

This HDD Plan establishes operational procedures and responsibilities for the prevention, containment and clean-up of IRs associated with the directional drilling on the Project. All personnel responsible for the work will adhere to the HDD Plan during each HDD.

The specific objectives of this plan are to:

- Protect the environmentally sensitive areas
- Minimize the potential for IR associated with HDD activities
- Provide methods for timely detection of IRs
- Ensure an organized, timely and minimum-impact response in the event of an IR
- Ensure that notifications are made immediately to the appropriate project personnel

Northern will revise this HDD Plan, as necessary, if new information becomes available either during the course of the application review or the post-authorization period. Northern has provided additional guidance and expectations for its contractors during HDD activities. These documents are included in Attachment 4 and include a plan for the inadvertent release of drilling mud, the environmental expectations for HDD crossings, and an HDD daily report form template. Revisions to Northern's HDD Plan will be submitted to FERC for approval.

3.0 HDD PLAN

Compliance with this HDD Plan will require varying degrees of training, monitoring, communication, documentation and involvement from Northern's Project team, including the construction coordinator and inspectors, the project manager, regulatory, the environmental inspectors, and the manager of construction environmental compliance.

Information on the HDDs proposed for the Project, personnel and responsibilities and the preconstruction activities are described in the following section.

3.1 LIST OF HDDs

Northern will complete HDD crossings of wetlands, streams and public roads in accordance with the FERC Plan and its Procedures. A list of HDD crossings and locations are included in Table 2. All geotechnical investigations for the listed drills are complete.

Table 2 HDD Summary Table for the Project

Pipeline Component	Crossing Number/ Ref. Drawing	Begin MP	End MP	Arc Drill Length (feet)	Drilling Mud Water Volume (gal)	Sensitive Resources Crossed	Duration of HDD[2]	Bore hole Log #
Lake Mills M500 E-line	LMA-P4-1	43.72	43.75	183	58,600	725th Avenue	4 days	BH-10
	LMA-P4-2	44.16	44.20	228	63,700	255th Street	5 days	BH-09
Albert Lea M500 E-line	ALO-P4-1	4.04	4.06	115	41,000	92nd Avenue SW	5 days	None
	ALO-P4-2	4.69	4.84	791	174,400	Stream ALO-S03	6 days	BH-01
	ALO-P4-3[1]	5.18	5.50	1,685	372,700	Wetland ALO-W26, Stream ALO-S02	19 days	BH-02, BH-03
	ALO-P4-4	5.88	5.91	166	53,000	128th Street SW	5 days	BH-04
	ALO-P4-5	7.01	7.03	128	38,900	118th Street SW	4 days	BH-07A
Willmar 3rd Branch Line Upstream	WIL-P4-1	3.36	3.40	214	36,100	Vernon Avenue	4 days	BH-10
	WIL-P4-2[1]	4.28	4.63	1,870	237,200	Hampshire Drive, Stream WIL-ST08, Treed Area	16 days	BH-04, BH-05

Pipeline Component	Crossing Number/ Ref. Drawing	Begin MP	End MP	Arc Drill Length (feet)	Drilling Mud Water Volume (gal)	Sensitive Resources Crossed	Duration of HDD[2]	Bore hole Log #
	WIL-P4-3	4.79	5.00	1,117	141,700	Southfork Drive, Wetland WIL-W09, Open Water WIL-OW02, Stream WIL-ST09	12 days	BH-02, BH-03
Willmar 3rd Branch Line Downstream	WDC-P4-1	6.38	6.42	233	37,000	County Road 153	4 days	BH-01
	WDC-P4-2	7.08	7.11	184	33,700	122nd Street	4 days	BH-02
	WDC-P4-3	7.60	7.65	251	40,800	County Road 151, Wetland WDC-W12	4 days	BH-03
	WDC-P4-5	9.83	9.91	425	60,900	Salem Avenue, Wetland WDC-W24, Wetland WDC-W34	4 days	BH-06
	WDC-P4-6	10.21	10.42	1,083	131,600	State Highway 5 & 25, Wetland WDC-W31, Wetland WDC-W32	11 days	BH-07A, BH-07C
	WDC-P4-7	10.64	10.72	397	52,700	Treed Area	5 days	BH-07B
	WDC-P4-8	10.85	10.95	524	66,100	110th Street, Treed Area	5 days	BH-07D, BH-07E
Welcome 2nd Line	No Drills							
Paynesville 2nd Branch Line	PAY-P4-1	0.53	0.64	580	3,500	Wetland PAY-W08, Stream PAY-S02 (Kolling Creek)	4 days	BH-05
	PAY-P4-2	0.83	0.91	436	2,600	State Highway 23 Westbound and Eastbound	3 days	BH-04
	PAY-P4-3[1]	1.88	2.38	2,657	18,700	Wetland PAY-W01, Stream PAY-S01 (Kolling Creek)	15 days	BH-01, BH-02
Worthington 2nd Branch Line	WOR-P4-1	19.52	19.65	668	9,000	Treed Area, Private Drive	5 days	BH-04
Springfield 2nd Branch Line	SPR-P4-1	15.16	15.31	824	11,100	Wetland SPR-W12, Stream SPR-S04	8 days	BH-13, BH-14
	SPR-P4-2	16.12	16.28	832	11,700	Wetland SPR-W14, Wetland SPR-W13, Stream SPR-S03, Stream SPR-S04	9 days	BH-11, BH-12
	SPR-P4-3	17.34	17.58	1,295	18,200	Wetland SPR-W05, Stream SPR-S02	10 days	BH-07, BH-08
	SPR-P4-4	17.72	17.86	764	10,300	County Highway 27, T77	7 days	BH-05, BH-06, BH-07
	SPR-P4-5	21.15	21.21	326	5,200	State Highway 4	4 days	BH-01
Minnesota Interconnect 2nd Branch Line	MIC-P4-1	17.73	17.87	744	22,600	Wetland MIC-W05, Treed Area	9 days	BH-30
	MIC-P4-2	18.15	18.43	1,525	52,400	Vernon St NW, Wetland MIC-W03, Stream MIC-S01	14 days	BH-28A, BH-29

Pipeline Component	Crossing Number/ Ref. Drawing	Begin MP	End MP	Arc Drill Length (feet)	Drilling Mud Water Volume (gal)	Sensitive Resources Crossed	Duration of HDD[2]	Bore hole Log #
	MIC-P4-3	18.59	18.84	1,360	46,700	County Road 65, State Highway 95	12 days	BH-26, BH-27, BH-28
Alexandria 2nd Branch Line	ALX-P4-1	17.45	17.67	1,179	18,000	Treed Area	10 days	BH-03A, BH-04A
	ALX-P4-2	17.81	17.96	817	11,500	90th Ave, Treed Area	8 days	BH-01A, BH-02A

[1] HDD operations expected to extend past 7 p.m. during drilling operations.
[2] HDD duration includes equipment set-up, pilot hole, reaming and cleaning, pullback, and testing, and ends with equipment demobilization.

Plan and profile drawings specific to each HDD are included in Attachment 1 and Attachment 5 (CUI//PRIV – DO NOT RELEASE). These drawings depict the approximate entry and exit locations[1], access roads, stringing areas, and other workspaces, as well as the profile of the proposed pipeline centerline and soil stratigraphy results from geotechnical investigations. Northern completed geotechnical borings for the proposed HDDs. The geotechnical data has been incorporated into the plan and profile designs for the HDDs. The reports from the geotechnical drilling are included in Attachment 2.

Three HDDs will require 24-hour construction for pullback activities due to multiple pullback sections, settlement concerns or drill lengths. As discussed in Resource Report 9, Section 9.2, noise barriers will be installed at two HDDs, MIC-P4-1 and WIL-P4-2, for all drilling activities. Additionally, noise barriers will only be installed on ALO-P4-3 if construction extends past 10 p.m. No HDDs have predicted noise levels that will exceed MPCA daytime criteria. The equipment required to be enclosed inside the noise barriers along with an approximate layout for the noise barriers are depicted on the site-specific HDD plans in Attachment 1. Noise control barriers are represented as sound barrier walls.

Northern anticipates the HDDs listed below will require 24-hour construction.

- Albert Mills M500 E-line
  - ALO P4-3
- Willmar 3rd branch line upstream
  - WIL P4-2
- Paynesville 2nd branch line
  - PAY P4-3

Pullback activities on all HDDs will planned to reduce the potential for nighttime noise impacts to NSAs. The SSPs depict proposed equipment layout at the entry and exit points for each HDD, including a dimension and location for each containment pit berm. The HDD SSPs are overlain on recent aerial photographs and are included in Attachment 1. Northern will monitor noise levels throughout each drill.

3.2 PERSONNEL AND RESPONSIBILITIES

The CMT and EMT are responsible for implementing the HDD Plan. The CMT includes the project manager, construction coordinator, and construction inspectors. The EMT includes the manager of environmental construction compliance, EIs .and regulatory personnel. Any member of the EMT has stop-work authority to ensure compliance with the HDD Plan, the conditions of the FERC certificate

[1]The entry and exit points and proposed equipment layout may vary slightly based on contractor determinations related to site conditions such as topography. These minor changes will be within approved workspaces.

and other environmental permits. The contractor also is responsible for HDD Plan, as well as certificate condition and permit compliance. Additionally, all personnel on the Project, including the contractor, are responsible for maintaining compliance with this Plan along with the FERC certificate conditions and other environmental permits.

The shared responsibilities require the members of the CMT and EMT:

- Verify that all workers are properly trained and familiar with the implementation of the HDD Plan prior to and during drilling operations
- Ensure personnel engaged in HDD activities are familiar with the Plan
- Maintain consistent communication among CMT, EMT and contractor personnel when a suspected IR occurs
- Verify that drilling equipment, including annual pressure monitoring equipment, is working order
- Monitor the HDD alignment for IRs and other signs of unforeseen environmental impact
- Ensure the proper site personnel are informed if an IR occurs and, in the event of an IR, coordinate response, clean-up, and regulatory agency notifications
- Stop or change the drilling program in the event of an observed or anticipated IR
- Notify regulatory/and or resource agency staff in a timely manner, and respond to these staff regarding observed releases or other impacts
- Order and oversee corrective actions for an IR
- Verify waste materials are properly containerized, labelled and removed from the site to an approved facility
- Confirm that drill mud/spoils/cuttings associated with an HDD completed in an area of suspected contamination will be disposed of at an approved facility (landfill)
- Document which personnel have authority to stop work and commit the personnel and equipment necessary to implement the HDD Plan
- Verify a copy of this HDD Plan is available on-site and accessible to all construction personnel

3.3 PRE-CONSTRUCTION ACTIVITIES

3.3.1 Training

An EI trained in HDD and associated environmental protection measures will verify HDD Plan compliance throughout the drilling process. Prior to the commencement of drilling activities, the CMT, contractor and EI will conduct training with the drilling and inspection personnel to ensure compliance. Such personnel will be thoroughly trained in the application of this HDD Plan. On-site safety and tailgate meetings will provide ongoing communication opportunities and discussions on awareness measures regarding prevention, mitigation and response associated with potential IR events. Training sessions will include the following subjects.

- Provisions of this HDD Plan as well as equipment maintenance and site-specific permit and monitoring requirements
- Approved drilling fluids list
- Inspection procedures including release prevention, monitoring, and containment equipment and materials
- Contractor obligation to immediately notify the CMT and EI upon first evidence of an IR and to implement steps necessary to minimize the impacts of the IR
- Contractor personnel individual responsibilities in event of an IR
- Required notification and response procedures

- Operation of release prevention and control equipment and the location of such materials
- Protocols for agency notification and communication with agency representatives who may be on-site during the clean-up effort

The contactor, CMT and EI will have job briefings to review the appropriate procedures to follow in case of an IR and/or to train new personnel on the HDD Plan. Northern will document these briefings through its environmental procedure 380.203h, Environmental Expectations for HDD Crossings, Tailgate Form (attachment 4). The contractor's failure to comply with the HDD Plan or other environmental procedures and permit conditions will result in an environmental stand-down and retraining of the applicable crew.

3.3.2 Site Inspection

Northern and its contractor will inspect each drill path prior to the start of HDD activities. If any site-specific conditions that may impede the ability to conduct visual inspections along the HDD alignment are identified, site-specific modifications to the proposed inspection plan will be developed and implemented and will be communicated to the contractor, CMT and EI. If previously unidentified unique conditions or features are identified in proximity to the drill path, Northern will coordinate with FERC to obtain variances if these conditions will require modifications to the approved HDD Plan.

Northern's contractor will assign personnel to continuously monitor the HDD activities. This will include walking the HDD path between the entry and exit points, where practicable, and visually inspecting for IRs. At road crossings, the contractor will ensure monitoring is conducted in accordance with all applicable safety requirements. At the waterbody crossing, visual inspections will be conducted from the waterbody banks. The contractor is responsible for determining a safe monitoring method. Northern's EI(s) will also monitor the drill path periodically, at least twice a day, for IRs and document the overall drilling progress, including rate of return and drill pressure. Northern anticipates that foot traffic or drones will be sufficient to monitor the drill paths. Drone monitoring will be completed by licensed commercial drone pilots utilizing National Defense Authorization Act compliant unmanned aerial vehicle technology.

3.3.3 Landowner Notification

Northern will provide notification to landowners that will be impacted by the Project. The landowner mailings will include contact information for Northern representatives. An example letter that will be provided to affected landowners is included in Northern's environmental complaint resolution procedures, included in Appendix 1D, Resource Report 1.

Northern has informed/will inform all landowners of proposed HDD crossings to occur on their properties during landowner negotiations. Northern has identified nearby landowners and their contact information to facilitate notification should an IR occur on their property, or near their property as appropriate. Northern will complete additional coordination with landowners to discuss an IR event and any necessary remediation activities required to restore their property.

3.3.4 Agency Notification

Northern will continue its practice of identifying a construction activity projection in its construction status reports to FERC. This information includes proposed HDDs within the next reporting period.

In the event an IR occurs, Northern will notify FERC via the next environmental inspection report, and other appropriate resource agencies via telephone and/or email. The agency notifications will occur as

required by state and federal regulations. The following information will be provided to agencies and FERC.

- Name and telephone number of the person reporting
- Location of the release
- Date and time of release
- Type, quantity and estimated size of release
- Source of the release
- Type of activity that was occurring at the time of the release
- Description of sensitive areas and their locations in relation to the release, if applicable
- Description of methods proposed or used to clean up or remediate the site
- Relevant permitting agencies notified

Northern will provide similar notifications to the USACE if an IR is discovered in a regulated surface water and will notify the USFWS if an IR occurs near a T&E habitat or species. The information also will be included in the construction reports filed with FERC.

3.4 DOCUMENTATION

The documentation detailed in Table 3 will be available and accessible to all construction personnel at each HDD crossing.

Table 3 Documentation Maintained

Procedure	Documentation	Personnel Responsible for Maintaining Documentation
Employee Training	All personnel on this Project will be trained for environmental compliance, including the HDD Plan. Record of the employee training including when the training was conducted, material covered and employees in attendance will be maintained.	EI and Construction Coordinator
HDD Visual and Pedestrian Monitoring	EIs and CIs will document on a daily basis (in daily reports), their IR monitoring efforts and their findings. An IR tracking log will be maintained.	Contractor and EI
HDD Instrument Logs	Pilot hole progression, drill string axial and dorsal loads, drilling fluid discharge rate and pressure, and down-hole annual pressure will be monitored and recorded during the drilling of the pilot hole	HDD Subcontractor
Drilling Fluid Composition	Monitoring logs of drilling fluid physical properties throughout drilling activities (e.g., mud weight, viscosity, sand content and pH).	HDD Subcontractor
	A clear description of the intent to reuse drilling fluid between HDD locations, as well as documented consultation, with local and state agencies for such reuse Laboratory results of sampled drilling fluid/source water for any inorganic and organic environmental constraints	

Procedure	Documentation	Personnel Responsible for Maintaining Documentation
Public and Agency Inquires/Comments	A record of communication with the public and agencies that has occurred during HDD activities. This record will include inquiries and comments, as well as response actions.	EI and CMT as necessary

A summary of HDD-specific information will be included in the applicable construction status reports provided to FERC. This information will include: overall status, a summary of visual and pedestrian monitoring activities, issues encountered (including IRs), response actions, and complaints and how they were addressed.

3.5 DRILLING FLUID MANAGEMENT

3.5.1 Drilling Fluid Additives

Drilling fluid to be used for the Project will generally consist primarily of drinking water (source water to be permitted if required) and non-hazardous bentonite, a naturally occurring sedimentary clay. HDD drilling fluid additives may be required to control viscosity, returns on subsurface materials, and hole stability and could include wetting agents and dispersants. All proposed drilling fluid additives will be compliant with the ANSI/NSF 60 – Drinking Water Treatment Chemicals – Health Effects list and all joint lubricants must be ANSI/NSF 61 listed. Northern will not approve the use of drilling fluid additives containing cationic or anionic polyacrylamides for use under wetlands and waterbodies, nor allow additives that require flushing to be used after the initial pilot pass. All drilling fluid additives will be approved by Northern's environmental specialist responsible for permitting the Project. The drilling additives will be listed in the bi-weekly reports to FERC.

Exact mixtures of fluids and additives are determined by the drilling contractor and its mud engineer based on the anticipated and actual geological materials encountered within the HDD path.

3.5.2 Drilling Fluid Physical Properties

Raw drilling fluids are produced by adding small amounts of bentonite and/or additives to fresh water. The fluids are mixed and maintained within a holding tank. The drilling fluids are only used once the desired fluid properties have been achieved. Properties are site-specific and vary between HDDs.

The contractor will monitor the drilling fluid properties (fluid weight, viscosity, sand content and pH) during drilling operations. Generally, a mud engineer or similar subject-matter expert is consulted to ensure proper fluid chemical and physical properties are being maintained to optimize fluid pressure and minimize IRs. All water for drilling will be obtained from a regulated public water supply. Anticipated drilling mud water use volumes are provided in Table 2.

3.5.3 Drilling Fluid Management and Disposal

The contractor will continuously monitor drilling mud pressures and return flow during active drilling operations.

Monitoring and sampling procedures will include the following.

- The EI and contractor will complete visual inspections along the drill path, including monitoring wetlands, waterbodies and other sensitive resource areas, for evidence of an IR.

Northern's contractor will assign specific personnel to continuously monitor the HDD activities. This will include walking the HDD path between the entry and exit points, where practicable, and visually inspecting for IRs. At road crossings, the contractor will ensure monitoring is conducted in accordance with all applicable safety requirements. In areas of open water visual inspections will be conducted from the waterbody banks. The contractor is responsible for determining a safe monitoring method. Northern's EI(s) also will monitor the drill path periodically, at least twice daily, for IRs and document the overall drilling progress, including rate of return and drill pressure.

- A down-hole annular pressure monitoring tool will be utilized during the HDD pilot hole to ensure the contractor can detect a decrease, loss, or spike in drilling fluid pressure and respond to a potential hydrofracture and IR.
- A drilling fluid specialist or mud engineer will review and assess drilling mud properties and will recommend changes to these properties based on conditions encountered during drilling. The specialist is responsible for sampling, testing and recording/documenting the fluid properties of the raw and returning drilling fluid during drilling operations. The properties typically include viscosity, fluid density (or mud weight), and sand content. The monitoring frequency of the drilling fluid properties varies depending on the conditions of the work and the subsurface features encountered.
- Status information regarding drill conditions, pressures, returns, and progress during the course of the drilling activities will be monitored, recorded and maintained by the contractor. The data will then be utilized to create a drill summary report that will be provided to Northern upon successful completion of the drill. Such materials will be available upon request.
- Drilling fluid may be recorded, recycled or reused to the extent possible. Waste drilling fluid will be disposed of in accordance with Section III.3 of the Plan.

Northern's contractor will be responsible for the disposal of the drilling mud. Northern may allow land application of drilling mud in upland areas with landowner approval. Northern will test for the following contaminants prior to off-site disposal: total petroleum hydrocarbons, benzene, toluene, ethylbenzene and xylene, RCRA TCLP metals, RCRA TCLP herbicides and pesticides.

Disposal sites will be limited to upland areas including mine reclamation sites, landfills and landspreading in upland agricultural areas with landowner approval.

3.5.4 Hydro-fracture Assessment and Geotechnial Conditions

The Hydro-Fracture Assessment and Geotechnical Conditions can be found within Section 7.0 of Attachment 3.

3.6 HDD OPERATIONAL CONDITIONS AND RESPONSE ACTIONS

Monitoring of the HDD alignment for an IR is an integral component of this HDD Plan and the success of an HDD. Monitoring frequency will vary depending upon a multitude of factors, and characterized by the operating conditions below:

- Condition 1: normal drilling (full drilling fluid circulation)
- Condition 2: loss of or diminished drilling fluid circulation
- Condition 3: IRs of drilling fluid

Each operating condition and the respective monitoring protocols are described below.

Monitoring Protocol for Condition 1

When HDD operations are in progress and full drilling fluid circulation is being maintained at either the HDD entry point or HDD exit point, the following monitoring protocol will be implemented.

- The presence of drilling fluid returns at the HDD entry and exit points will be continuously monitored by the contractor.
- Land-based portions of the drilled alignment will be walked at a frequency necessary to determine the presence of absence of IRs as determined by the EI. Visual inspections will be conducted to identify signs of an IR of drilling fluid, as well as surface heaving and settlement. Waterways will be visually inspected from the banks for a visible drilling fluid plume.
- Drilling fluid products present at each HDD will be documented.
- If an IR of drilling fluid is detected during routine monitoring, the monitoring protocol associated with Condition 3 will be implemented.

Monitoring Protocol for Condition 2

When HDD operations are in progress and full drilling fluid circulation to the HDD entry or exit points is notably lost or diminished, the following monitoring protocol will be implemented.

- The EI and contractor will immediately conduct a pedestrian survey along the drill alignment for an IR.
- If an IR is determined, HDD operations will be halted and the EI notified of lost returns of drilling fluid.
- Drilling operations will resume after the IR survey is complete and there has been a determination that there is no IR, or after the IR is sufficiently contained. The EI will document steps taken by the contractor to restore circulation. Should the contactor fail to comply with the requirements of this HDD Plan, the EI will notify Northern's CMT and EMT so that appropriate actions can be taken.
- If circulation is regained, the EI, CMT and the contractor will resume the monitoring protocols associated with Condition 1.
- If circulation is not re-established, the EI will increase the frequency of visual inspection along the HDD alignment, as appropriate. Additionally, the EI will document periods of contractor downtime (during which no drilling fluid is pumped) and the contractor's drilling fluid pumping rates in case it should later become necessary to estimate lost circulation volumes. If an IR is not detected along the drill alignment, the EI, CMT and contractor will expand the survey area up to the full width of the ESB. The EI also will inspect the downstream stream and road intersections, if present, for signs of increased turbidity.

Monitoring Protocol for Condition 3

If an IR of drilling fluids is detected, the following monitoring and operational protocol will be implemented.

- Immediately on discovery, drilling operations will be suspended and containment measures will be implemented by the contractor. Documentation of any containment measured employed will be completed by the EI.
- The contractor and/or EI will notify the CI, Northern's EMT, and Northern's ROW department. Upon receiving a notification, Northern will complete external notifications per Sections 3.3.3 and 3.3.4 of this HDD Plan.
- The EI will document the location, approximate area impacted, approximate volume, and actual or potential IR impacts to aquatic or sensitive resources.

- The EI will periodically monitor and document both the IR and the effectiveness of the containment measures (further discussed in Sections 3.3.2 and 3.7.3). Periods of contractor downtime and contractor's drilling fluid pump rate will be documented in those instances where an IR threatens an environmentally sensitive resource or poses a risk to public health or safety. Drilling operations will resume when the return is contained and successfully remediated.

3.6.1 Monitoring and Pedestrian Surveys

Northern's contractor will assign personnel to continuously monitor the HDD activities. Monitoring will include walking the HDD path between the entry and exit points, where practicable, and visually inspecting for IR of drilling mud. At road crossings, the contractor will ensure monitoring is conducted in accordance with all applicable safety requirements. At the waterbody crossing, visual inspections will be conducted from the waterbody banks. The contractor is responsible for determining a safe monitoring method. Northern's EI(s) will also monitor the drill path periodically, at least twice a day, for IRs and document the overall drilling progress, including rate of return and drill pressure. Northern anticipates that foot traffic or personnel in boats will be sufficient to monitor the drill paths.

3.7 RESPONDING TO INADVERTENT RELEASES

Northern and the contractor will address IRs immediately upon discovery. The actions taken will depend on the location of the IR, site-specific geological conditions, the estimated volume of the IR, the proximity of sensitive resources, if present, and whether the IR is within an approved construction footprint. Northern will notify and obtain approval from all applicable agencies, landowner and the FERC when performing cleanup activities outside of the approved construction workspace. In the event an IR occurs, Northern will notify FERC via the next environmental inspection report, and other appropriate resource agencies via telephone and/or email. The agency notifications will occur as required by state and federal regulations.

Upon discovery of an IR, the drilling operation will be immediately stopped. Any IR will be immediately enclosed by an appropriate containment device. The device will be constructed from the on-site materials and supplies in a manner that minimizes impact on the surrounding environment. The device type and size will be determined by the severity of the release.

Following completion of containment, the drilling mud will be cleaned up and removed for proper disposal in compliance with the applicable local, state and federal regulations. Drilling will be allowed to continue once containment structures are in place while clean up, removal and disposal activities continue at the IR location. The containment structure will remain in place until the HDD operation is complete.

Upon resuming drilling operations, the contractor may reduce the gallons-per-minute or the delivery pressure of drilling mud to minimize the release of drilling mud to the surface. If flows cannot be sufficiently decreased and environmental conditions permit, a viscosifier (additive) may be added to the drilling mud to promote bore-hole stability. In cases where the release cannot be entirely stopped, the operation may proceed provided the containment structure is not breeched and mud is continuously removed from or maintained in the structure.

3.7.1 Response Materials and Equipment

Containment materials and equipment will be available at each HDD entry and exit point. Materials and equipment may include the following:

- Spill sorbent pads and booms
- Hand tools
- Push brooms
- Sandbags
- Hay bales (certified weed-free)
- Silt fence
- Buckets and wheelbarrows
- Plastic sheeting
- Turbidity curtains (for open water crossings)
- Lumber

The following mechanized and other equipment should be immediately available, as needed:

- Portable pumps
- Vacuum truck
- Rubber-tired or wide-tracked backhoe
- Skid steer
- Storage tanks

3.7.3 Release and Remediation Measures

The following sections identify measures that will be implemented to minimize or prevent further release, contain the release and remediate the affected area.

Upland Release

If an IR is identified within the HDD construction ROW, within upland areas, and without potential impact on aquatic resources (e.g., wetlands, ditches, streams, rivers, ponds), then notification, containment and remediation will be carried out as necessary and per this HDD Plan. The contractor, the CMT and the EI will work closely to determine the best course of action for IRs occurring within the upland areas. The contractor will take appropriate actions to eliminate, reduce, or control the release. The actions may include the following.

- Constructing a sandbag coffer dam around the release point; installing a section of silt fence and/or straw bales to trap as much drilling fluid as possible; and placing a pump hose in the pit to pump the drilling fluid back to the HDD entry or exit or temporary holding vessel
- If the amount of the release is not large enough to allow collection, the affected area will be diluted with fresh water and allowed to dry; sediment barriers will be installed to prevent silt-laden water from flowing into a wetland or waterbody
- Reducing drilling fluid pressures
- Adding pre-approved materials to the fluid mixture for circulation loss
- Once the pullback is complete, final steps to remediate the release will be completed. The contractor will remove the majority of the IR fluids, wash and squeegee remaining fluids from the area to remove the remaining fine particles from vegetation prior to removing the containment structure. Northern will consult with applicable regulatory agencies to determine any additional clean-up requirements for the IR

If public health and safety or sensitive environmental areas are threatened by an IR, drilling operations will be shut down until the threat is contained. Drilling fluid may be recovered, recycled and reused to the extent practicable.

Wetland or Waterbody Release

The successful use of the HDD method results in no planned impact on the banks, bed or water quality of the waterbody (or other feature) being crossed. However, the possibility exists for drilling mud to reach the surface via an IR. If an IR is identified within sensitive resources (e.g., wetlands or streams), drilling operations will be suspended to allow the EI to appropriately quantify the release, document its location, photograph the release, assess the potential impact on the aquatic resource and report the incident to the contractor, CMT and EMT. Information regarding the release will be recorded and updated to comply with this HDD Plan.

The contractor will take actions to eliminate, reduce or control the IR, including but not limited to, the following.

- Drilling mud returns will be collected at the drill entry location for future analysis, if required.
- The contractor will determine and implement modifications to the drilling technique or composition of drilling fluid (e.g., thickening the mud by increasing bentonite content) to minimize or prevent further releases of drilling mud.
- Reasonable measures will be taken to re-establish drilling mud circulation.
- The IR will be evaluated to determine if containment structures are warranted and can effectively contain the IR. When making this determination, Northern also will consider if placement of containment structures will cause additional adverse environmental impact.
- Approved activities only will be implemented under the full-time supervision of the EI.
- Drilling operations will resume when the IR is contained and initial steps to remediate the area are underway.
- The IR area will be monitored during the daily inspection.
- Once the pullback is complete, final steps to remediate the release will be completed. The contractor will remove the majority of the IR fluids, wash and squeegee remaining fluids from the area to remove the remaining fine particles from vegetation prior to removing the containment structure. Northern will consult with applicable regulatory agencies to determine any additional clean-up requirements for the IR.

T&E Species Resource

There are no critical habitat areas within the Project component locations, with the exception of the NL27 Project's Willmar 3rd branch line upstream component, where a portion of the alignment lies within designated critical habitat and a high potential zone for the rusty patched bumble bee between MP 10.87 and the terminus east of Texas Avenue on the Willmar 3rd branch line upstream. The Project areas contains potentially suitable habitat for the following federal or state-listed T&E species: Northern long-eared bat, Monarch butterfly, edible valerian, great plains toad, pugnose shiner, creek heelsplitter, Hill's thistle, Gray's sedge and Blanding's turtle. Northern is currently coordinating with the USFWS and MDNR to discuss potential impacts from HDDs or IRs on these species.

Outside of Approved Project Workspaces or Inaccessible Areas

If the IR occurs in an area outside of the approved Project workspaces or in inaccessible areas, the contractor will work directly with the EIs and Northern's CMT to immediately contain the drill mud. Northern's ROW group will coordinate with the affected landowner(s) to determine the least impactful method to remediate the released materials.

If an IR occurs in an inaccessible area, typical responses will include foot traffic to set up pumps with small hoses to transfer the release from the location of the IR back to an accessible location or use shovels, wheelbarrows, buckets, or pumps to transfer the released fluid to an accessible location.

Construction of new access roads outside of permitted locations is not anticipated, as the mitigation equipment can generally be carried by hand. Once the drilling fluid is contained, Northern will notify the appropriate agencies; however, the contractor will begin the process of collecting the released drilling mud immediately following an IR.

For the areas that do not have existing environmental clearances, Northern will coordinate with the agencies, as required, to obtain the necessary clearances concurrently with the clean-up efforts. Upon completion of the initial containment/clean-up efforts, Northern will notify FERC and coordinate with FERC to obtain any necessary approvals to continue to monitor the IR once drilling activities resume. All areas disturbed will be restored per the Plan and Procedures, or as directed by applicable agencies and landowner request.

Releases within or adjacent to Water Supply Well

The successful use of the HDD method results in no planned impact on water supply wells within or adjacent to the Project. However, the possibility exists for drilling mud to reach the surface via an IR. If an IR is identified within or adjacent to a water supply well, drilling operations will be suspended to allow the EI to appropriately quantify the release, document its location, photograph the release, assess the potential impact on the water supply well and report the incident to the contractor, CMT and EMT. Information regarding the release will be recorded and updated to comply with this HDD Plan.

The contractor will take actions to eliminate, reduce or control the IR, including but not limited to, the following.

- Drilling mud returns will be collected at the drill entry location for future analysis, if required.
- The contractor will determine and implement modifications to the drilling technique or composition of drilling fluid (e.g., thickening the mud by increasing bentonite content) to minimize or prevent further releases of drilling mud.
- Reasonable measures will be taken to re-establish drilling mud circulation.
- The IR will be evaluated to determine if containment structures are warranted and can effectively contain the IR. Any containment structures used will remain in place until the HDD operation is complete.
- Approved activities only will be implemented under the full-time supervision of the EI.
- Drilling operations will resume when the IR is contained and initial steps to remediate the area are underway.
- The IR area will be monitored during the daily inspection.
- Once the pullback is complete, final steps to remediate the release will be completed. The contractor will remove the majority of the IR fluids, wash and squeegee remaining fluids from the area to remove the remaining fine particles from vegetation prior to removing the containment structure.

Northern will complete the following actions:

- Northern will notify the landowner of the water supply well immediately, either via telephone call or in-person contact. The communication will provide detail on the IR, timeline, and proposed remediation activities.
- Northern also will contain the IR and collect water samples from the well as appropriate. The water samples will be analyzed for TDS and TSS and be visually inspected for clarity and color.
- Northern will document and report any increase in TDS, TSS or change in visual clarity from preconstruction conditions.

- Northern will provide an alternate water source to the landowner until the IR is remediated and water quality concerns are resolved.
- Northern will consult with the landowner to determine any additional clean-up requirements for the IR.

3.8 RESTORATION

Areas affected by IRs will be restored to pre-existing conditions and contours to the extent practicable in accordance with the Plan and Procedures and applicable permits. Upland areas will be restored through typical ROW restoration procedures such as grading, seeding, and temporary or permanent erosion control devices, as necessary. Similarly, wetlands and waterbodies will be restored to pre-existing conditions and contours to the extent practicable.

After each segment of pipeline has been installed and backfilled, the areas disturbed by construction, including those used for HDDs, will be final graded. Original land contours will be restored, as near as practicable, to conform to adjacent areas. Non-cultivated land will be reseeded in accordance with individual landowner requirements, land management agency requirements or NRCS recommendations. Construction debris will be removed for proper disposal. All construction equipment will be removed following final clean-up activities.

Heavy equipment traffic may compact the subsoil on agricultural land. Topsoil and subsoil will be tested for compaction following construction in agricultural areas. Northern will decompact subsoil in accordance with the soil compaction mitigation procedures described in the Plan. These include use of appropriate deep-tillage equipment such as a paraplow or chisel plow. Compaction testing will be conducted to verify compaction is relieved to a level equal to or better than adjacent undisturbed areas. Once decompaction of the subsoil is complete, the segregated topsoil will be returned. Decompaction will be completed on the restored topsoil using shallow-ripping tools. Northern will remove excess rock from the upper 12 inches of soil in all cultivated cropland, pastures and hayfields. The final surface will be examined to verify that native rock visible on the surface is similar in size, density and distribution to that in undisturbed areas adjacent to the ROW.

Clean-up will include restoring the slope, contour, grade, and drainage of the ROW as near as practicable to preconstruction conditions. Temporary and permanent erosion and sediment control measures, which may include silt fencing and/or diversion terraces, will be installed along the entire ROW at this time. Final erosion and sediment control measures will also be installed in accordance with the Plan and Procedures and the Project SWPPPs and CESCP, including site-specific contouring, permanent slope breakers, mulch, and reseeding or sodding to stabilize the disturbed soils. The erosion control measures used will be in accordance with the Project SWPPPs and CESCP approved by the local soil conservation district, appropriate state agencies and Northern's construction procedures. Non-cropland will be revegetated in compliance with seed, fertilizer, and soil additive recommendations obtained from the local soil conservation authority or as requested by the landowner. Northern will work with landowners to determine if their property will need to be seeded with a native grass seed mix.

The Project areas will be cleaned and restored in accordance with applicable state and federal permits and plans. Final grading will be completed, gravel surfaces refreshed (as needed) and grass or appropriate vegetation seeded per specifications. Compliance with the Project SWPPPs and CESCP and other permanent mitigation measures according to local, state and federal permits will be verified.

3.9 CONTINGENCY PLAN

Northern may opt to abandon the drillhole and consider alternative construction measures. Northern's contractor will submit their methodology to abandon the borehole to Northern for approval. Abandonment procedures and alternative measures will be discussed with appropriate permitting and regulatory agencies and approvals from the agencies will be secured. Abandonment procedures and alternative crossings are described in the subsequent sub-sections.

Generally, there are three kinds of failure during the HDD process: the pilot hole installation, hole opening or expansion and the pullback processes.

3.9.1 Pilot Hole Failure

During the pilot hole drilling, the hole may collapse on the drill rod. This collapse is typically caused by the failure of the drilling fluid to keep the drill hole stable, unfavorable drilling stratum containing glacial till or cobbles or multiple changes in strata combined with long drill lengths. If the hole collapses on the drill rod and creates friction, the torque required to spin the drill rod will increase. The increased friction could become great enough to prevent the drill rod from being removed. In an effort to free the drill rod, torque and tension are applied to the drill rod by the drill rig. The combined stress load exerted upon the drill rod may exceed the strength of the drill rod and may cause the drill rod to either shear or twist into pieces.

In the event the drill rod jams, the contractor will work to dislodge the drill rod. If the effort(s) is unsuccessful (i.e., the drill rod breaks and cannot be retrieved from the pilot hole), the initial pilot hole will be abandoned, according to procedures detailed below. Northern will conduct a root cause analysis of the failed attempt to minimize the risks of subsequent failures and develop alternatives for the subsequent attempt. Following the root cause analysis, another pilot hole will be drilled. The contractor will shift the drilling rig laterally and drill the pilot hole along a track that parallels the previous pilot hole. The lateral separation will depend upon the cause of the failure. The depth of the drill may be adjusted, and the distance between the entry and exit points may be extended or shortened. Prior to initiation of drilling of any additional pilot holes, Northern will document that the alignment/construction workspaces remain within the environmentally and culturally cleared areas, conduct additional surveys as required, and modify existing permits as needed. Proposed modifications to the bore profile (entry/exit angles, depths, bend radii) or drilling parameters (bit size/type, drilling fluid viscosity, etc.) will be evaluated to so that modifications satisfy acceptability criteria for stress and annular pressure.

The Feasibility Report (see Attachment 3) confirms the proposed HDD designs should maintain an acceptable geometric profile within suitable material and avoid identified gravel and rock strata, mitigating the risk of failure during pilot hole operations and providing a high probability of successful HDDs.

3.9.2 Pilot Hole Enlargement (Reaming) Failure

In certain soil formations, the reaming process may stall and the hole may become enlarged. The unconsolidated material may slough into the hole. The large volumes of drilling mud used to maintain borehole stability can wash out unconsolidated material. If the soils cannot be bridged, the hole may become more unstable and prevent drilling mud from returning to the entry or exit points. If the drilling mud is no longer able to transport the drill cuttings out of the hole, the cuttings will build up in the bottom of the hole. The build-up may increase friction and cause additional wear on the drill rod. In addition, the increased friction can cause the drill rod to slow or stop rotation to a point where the drill

rig cannot supply enough torque to continue drilling. Subsequently, the drill rod may suffer shear or plastic failure.

In the event the drill rod jams during the reaming process, the contractor will work to dislodge the drill rod. If the reaming drill head is separated from the drill rod, the contractor will work to fish the tool from the drill hole. If the effort(s) is unsuccessful (i.e., the drill rod or drill head break and cannot be retrieved from the borehole), the borehole will be abandoned. The borehole will be grouted during abandonment or the pipe will be left in place to minimize subsidence concerns. A root-cause analysis will be conducted, a new drilling location will be determined, and the HDD process will return to the pilot hole stage for a subsequent drilling attempt as described in the previous section of this plan.

The Feasibility Report indicates the proposed HDD designs should maintain an acceptable geometric profile within suitable material and avoid identified gravel and rock strata, mitigating the risk of failure during the reaming process and providing a high probability of successful HDDs.

3.9.3 Pipe Pullback Failure

Failure during the pullback process may occur if the pipe becomes lodged in the hole and cannot be moved in either direction. If the pipe encounters an obstruction preventing further movement, the pull of the drilling rig may increase to a level that causes the connection to the pipe to break or the obstruction may simply result in the drill not being capable of exerting the force required to pull the pipe.

In the event the pipe becomes jammed during the pipe-pull process, the contractor will work to dislodge the pipe. The drill rig may be moved to the opposite side of the crossing in an attempt to pull the pipe back out of the drill hole. Additionally, a pneumatic hammer or pulley system/snatch block may be used in lieu of or in combination with the drill rig to assist in pushing or pulling the pipe. Limitations on the applied force and duration of hammering activities will be provided based on the strain limits of the pipe and welding procedures. Should hammering be required, Northern will implement noise monitoring and mitigation. If the efforts are unsuccessful (i.e., the pipe cannot be retrieved from the hole), the pipe will be abandoned. A root-cause analysis will be conducted, a new drilling location will be determined, and the HDD process will return to the pilot hole stage for a subsequent drilling attempt as previously described.

The Feasibility Report confirms the proposed HDD designs should maintain an acceptable geometric profile within suitable material and avoid identified gravel and rock strata, mitigating the risk of failure during the pipe pullback process and providing a high probability of successful HDDs.

3.9.4 Abandonment Procedures

While any HDD installation has the potential to be unsuccessful, the determining factors are dependent on the location of the HDD and include encountering soil conditions not conducive to boring, caving of the borehole, loss of the drill string in the borehole, loss of drilling mud circulation, and pullback refusal. Many of these potential failures can be avoided or mitigated by making appropriate adjustments to the operation of the HDD equipment. In the event the adjustments do not correct the problem, the borehole may be moved to an adjacent location within a previously approved workspace.

The following procedures will be implemented to abandon the drill hole(s) and pipeline.

- For abandonment resulting from the pilot hole drilling stage, the hole will be filled with cuttings, drilling mud, and/or low-density cement grout and sealed.

- For abandonment resulting from the pilot hole enlargement stage, the hole will be filled with cuttings and drilling mud and/or cement grout and sealed.
- For abandonment resulting from the pipe pullback stage, the section of the hole with pipe will be cut a minimum of three feet below grade, filled with drilling mud and/or cement grout and capped; the section without pipe will be filled with cuttings and drilling mud and sealed.

At all abandoned drill holes, the entry location will be finished with topsoil, graded and seeded to match original contours and conditions or per landowner requirements.

3.9.5 Alternative Crossings

Northern's contingency plan consists of multiple attempts, as deemed necessary, to complete the HDD crossings. Before any determination of alternative crossings, an attempt will be made to identify and assess the reason for the drill failure as this may be critical for selection of the alternative. Consideration of alternatives will include but not be limited to:

- Horizontal relocation of the drill hole
- Changing the drill profile (depth of hole)
- Changing drill procedures (e.g., mud viscosity/pressure/flow velocity, bit rotation/velocity)
- Open cut from banks with pipe pulled across
- Partial stream diversion using cofferdams with pipe tie-in it during second diversion

In developing the appropriate alternative, consideration will be given to:

- Stream bank type, flow width, depth, velocity, and flow volume
- Surrounding topography
- Condition of riparian areas
- Condition and extent of wetlands if any
- Permitting requirements
- Aquatic biota
- Downstream water uses or needs

These and other factors will be considered and discussed with appropriate regulatory agencies in order to minimize environmental and public convenience impacts.

Northern completed an HDD Feasibility Report that indicates that the HDDs, as designed, have a high probability of success; therefore, Northern determined that HDD is the best-suited construction methodology to complete the eleven crossings to minimize environmental impact on the sensitive features. More information can be found in the HDD Feasibility Report (Attachment 3).

4.0 PERMITS AND APPROVALS

Throughout the permitting process, various regulatory agencies, including FERC, USACE, USFWS, the Minnesota SHPO, and various other state and local agencies, may require additional resource protection measures. These additional measures will be provided to Northern's CMT. Specifications in the construction procedures will be implemented along the length of the Project as a general construction document and integrated into contractor training protocols.

The Project will require numerous regulatory reviews and approvals. Table 4 provides a summary of the major permits and the current status of each application or consultation that may specifically be required to complete the proposed HDDs.

Table 4 Required Permits and Clearances

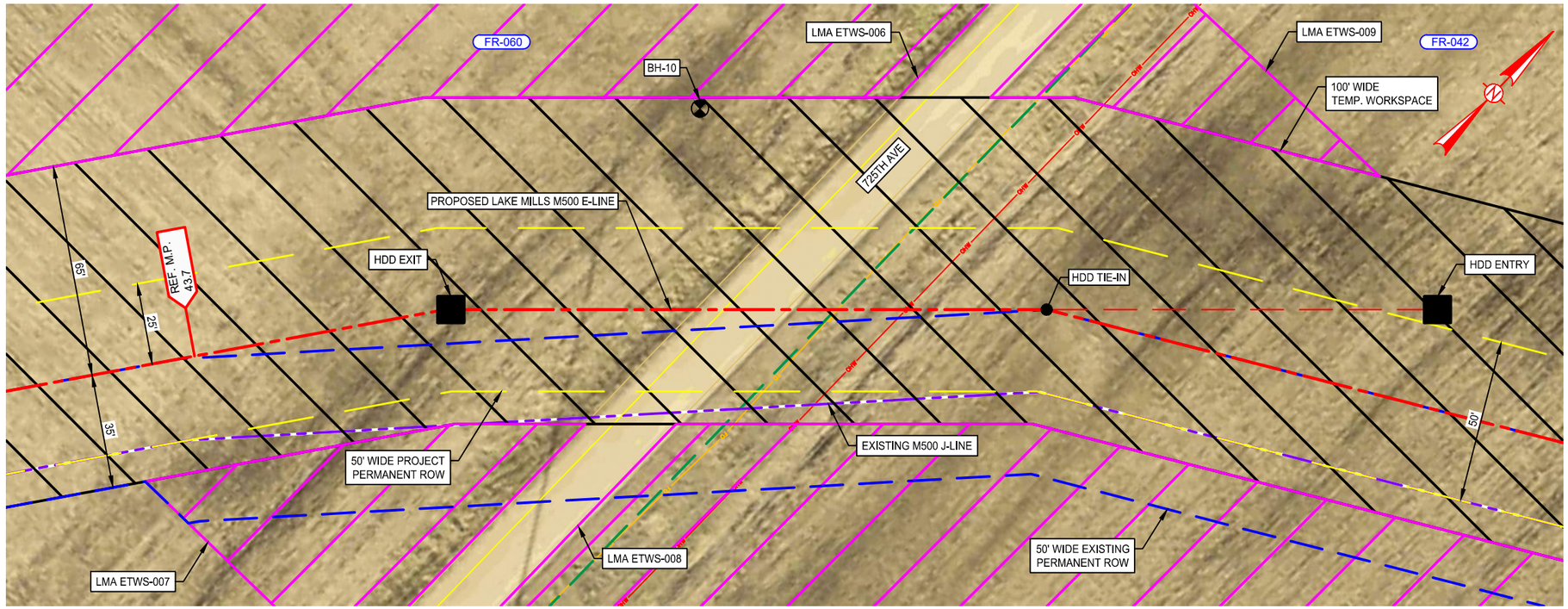
Responsible Agency	Permit or Clearance Required	Status of Permit/Clearance	Anticipated Permit Receipt Date
Federal			
FERC	Certificate for abandonment and capacity replacement of interstate natural gas transmission pipeline facilities	Section 7 application will be filed February 2026	February 2027
EPA	Clean Air Act permits and approvals	Delegated to the state (MPCA)	N/A
	CWA Section 401 Water Quality Certification	Delegated to the state (MPCA)	N/A
	CWA Section 402 permits for wastewater or stormwater discharges	Delegated to the state (MPCA)	N/A
NRCS	Conservation Easement Program and seeding recommendations	NA	Northern utilizing responses provided for previous Northern Lights Expansion Projects as they had similar footprints
USACE – St. Paul District	CWA Section 404 – Dredge and Fill Permit	Wetland impacts will qualify under the Regional General Permit 3 – Non-Reporting for 8 pipeline components; notifications submitted to USACE January 2026; Pre-Construction Notifications for Willmar 3rd branch line upstream and Alexandria 2nd branch line submitted January 2026. Northern will comply with the revised Utility Regional General Permit when published in 2028.	USACE confirmed no permit required for 8 components under Utility RGP. Response for the Willmar 3rd branch line upstream and Alexandria 2nd branch line anticipated July 2026
USFWS – Twin Cities Field Office	Section 7 Endangered Species Act, BGEPA and MBTA – consultation clearance request for Minnesota	Initial coordination submitted November/December 2025; D-keys and species survey protocols received	Rusty-patched bumblebee surveys on Willmar 3rd branch line upstream will start May 2026, NLEB surveys for Paynesville 2nd branch line
Native American Tribes	NHPA Section 106 consultation to determine impacts on Traditional Cultural Properties	Submission of cultural reports and UDP completed February 25, 2026	Responses anticipated April/May 2026
State – Minnesota			
MPCA	Clean Air Act, Prevention of Significant Deterioration Minor/Title V Major Air Construction Permit	Title V Major Air Construction Permit – anticipated to be submittal March 2026	Response anticipated September 2026

Responsible Agency	Permit or Clearance Required	Status of Permit/Clearance	Anticipated Permit Receipt Date
	Section 401 Water Quality Certification	Authorization concurrent with USACE Section 404 Approval. Northern will comply with the revised 401 permit conditions when published in 2028.	No USACE Preconstruction Notification; therefore, Northern will adhere to the Section 401 provisions of the Utility Regional General Permit for 8 components; Joint Application will be submitted for Willmar Upstream 3rd branch line and Alexandria 2nd branch line
	NPDES Stormwater Permit MNR100001	Permit application submittals anticipated February/March 2027	Responses anticipated March 2027
	NPDES Trench Water Discharge Permit	Dewatering information included with stormwater permit application	Authorization included with stormwater permit
MDNR	MPARS Water Appropriation Permit for Pit Trench Water	Permit application submittals anticipated February/March 2027	Responses anticipated March 2027
	State Protected Species Consultation	Consultation initiated January 2025	Consultation ongoing, expect final responses summer 2026
State Historical Society of Minnesota	Section 106 Consultation, NHPA	Submission of cultural reports and UDP February 25, 2026	Response anticipated May 2026
MDA	Comments on Northern's Noxious Weed Mitigation Plan	Coordination initiated February 17, 2026	Responses anticipated in March 2026
Local			
None	NA	NA	NA

Attachment 1

HDD Plans and Profiles and Site-Specific Plans

PLAN & PROFILE 725TH AVE

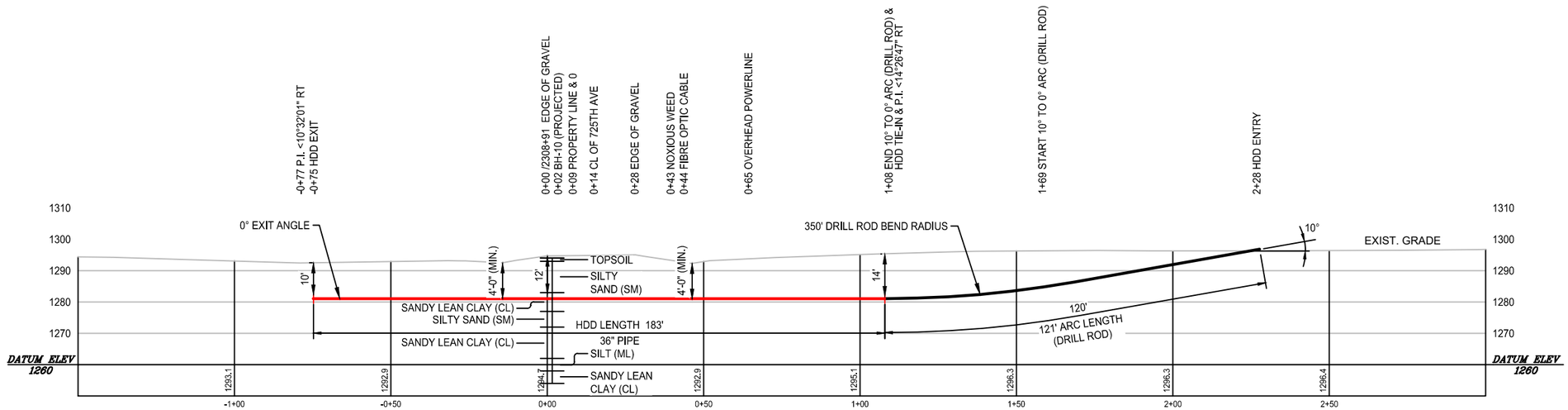


LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 J-LINE
- PROPERTY LINE
- EDGE OF ROAD (GRAVEL)
- NOXIOUS WEEDS
- OHW — OVERHEAD POWERLINE
- FO — FIBRE OPTIC CABLE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- BOREHOLE

PLAN

SCALE : 1"=20'
REF. DWG. LMA-P3-4



PROFILE

SCALE (VERT): 1"=20'
SCALE (HORIZ): 1"=20'

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2/19/2026 7:14 AM
Mesa, Marta

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
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BID				
CONST.				

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STA# N/A		POI# N/A
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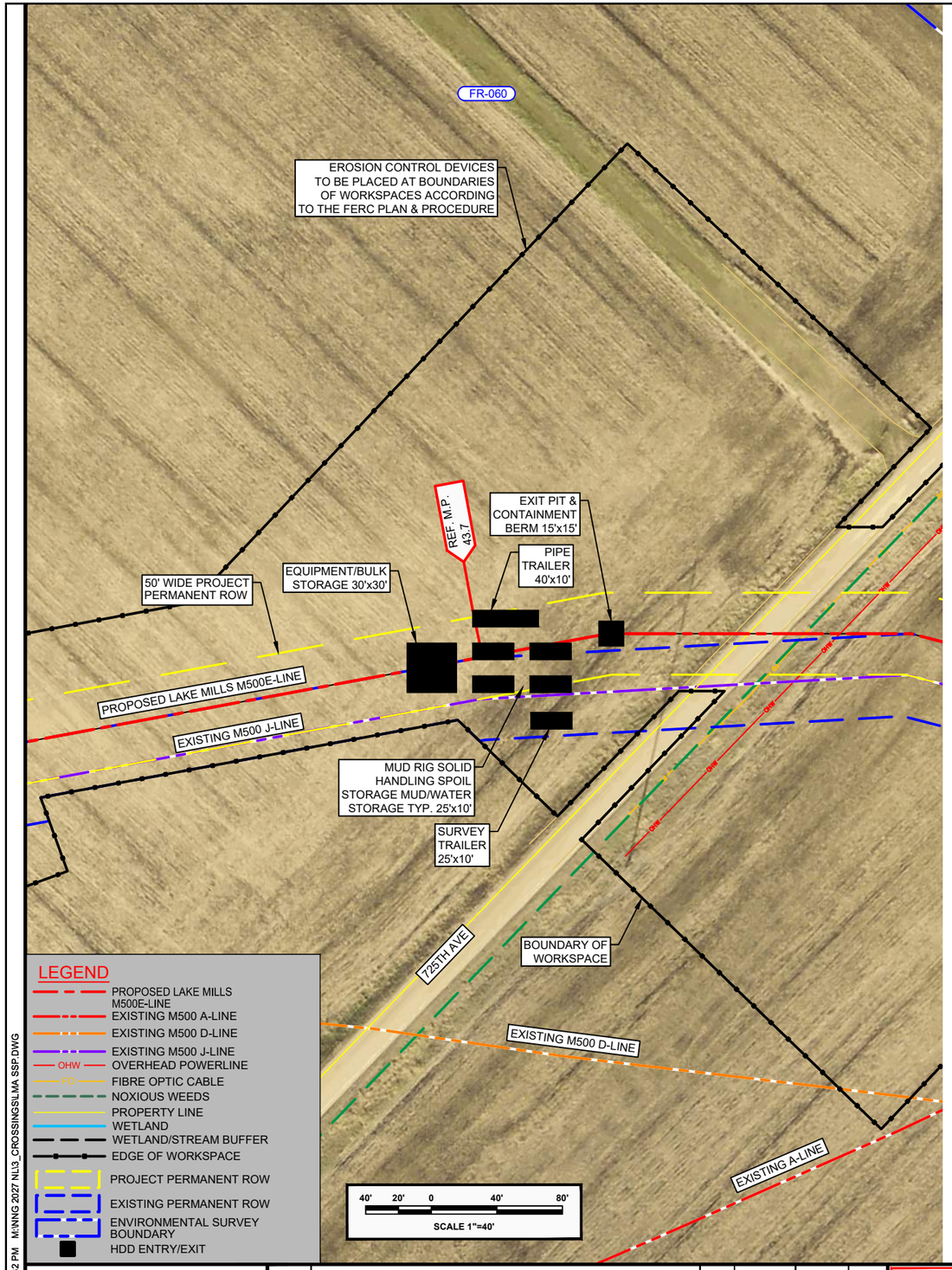
NORTHERN LIGHTS 2027 EXPANSION PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE 725TH AVE
SEC. 13, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

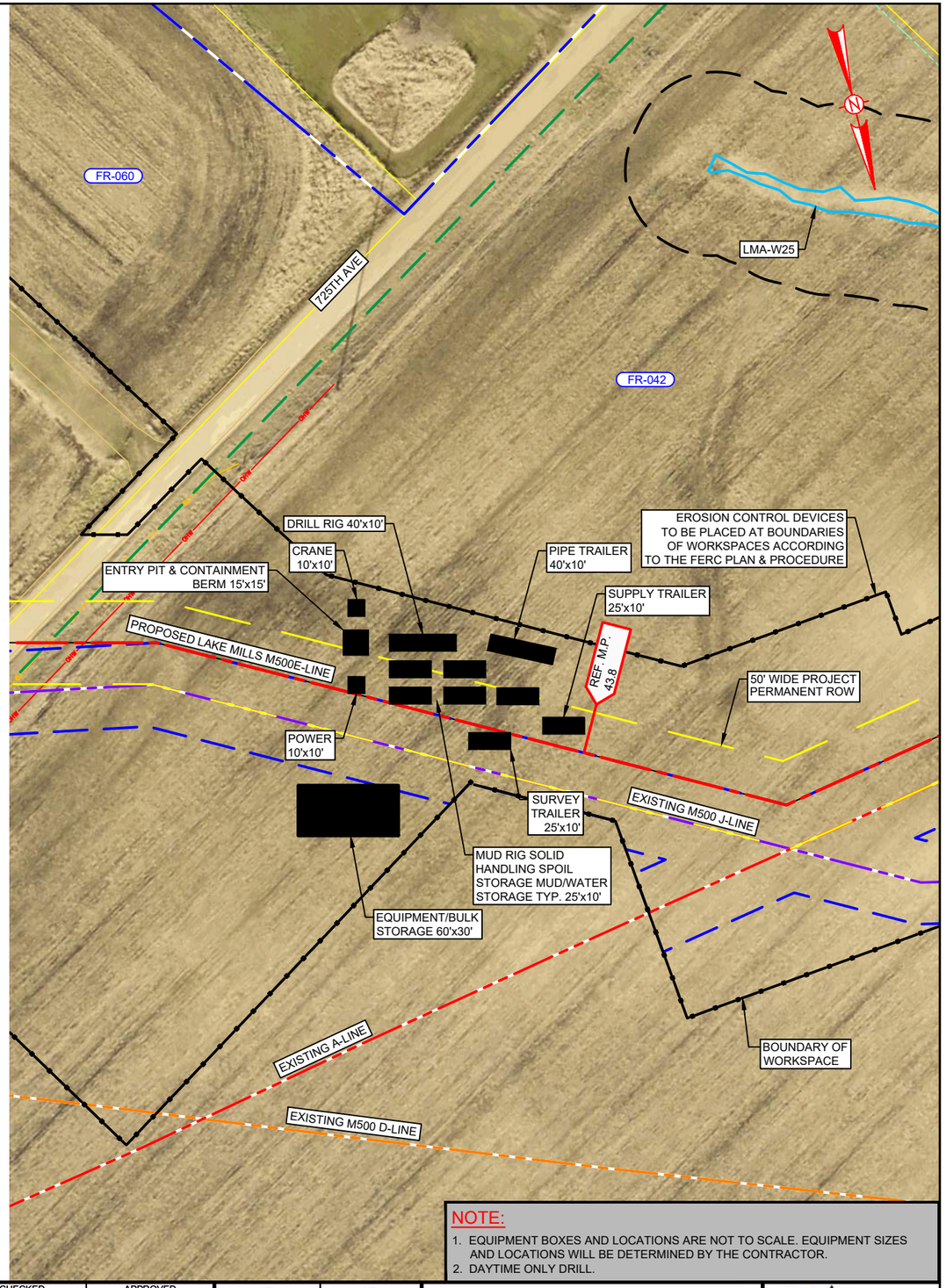
DWG. NO.
LMA-P4-1

F



LEGEND

- PROPOSED LAKE MILLS M500E-LINE
- EXISTING M500 A-LINE
- EXISTING M500 D-LINE
- EXISTING M500 J-LINE
- OHW — OVERHEAD POWERLINE
- FO — FIBRE OPTIC CABLE
- NOXIOUS WEEDS
- PROPERTY LINE
- WETLAND
- WETLAND/STREAM BUFFER
- EDGE OF WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT



NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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ATTACHMENT 1

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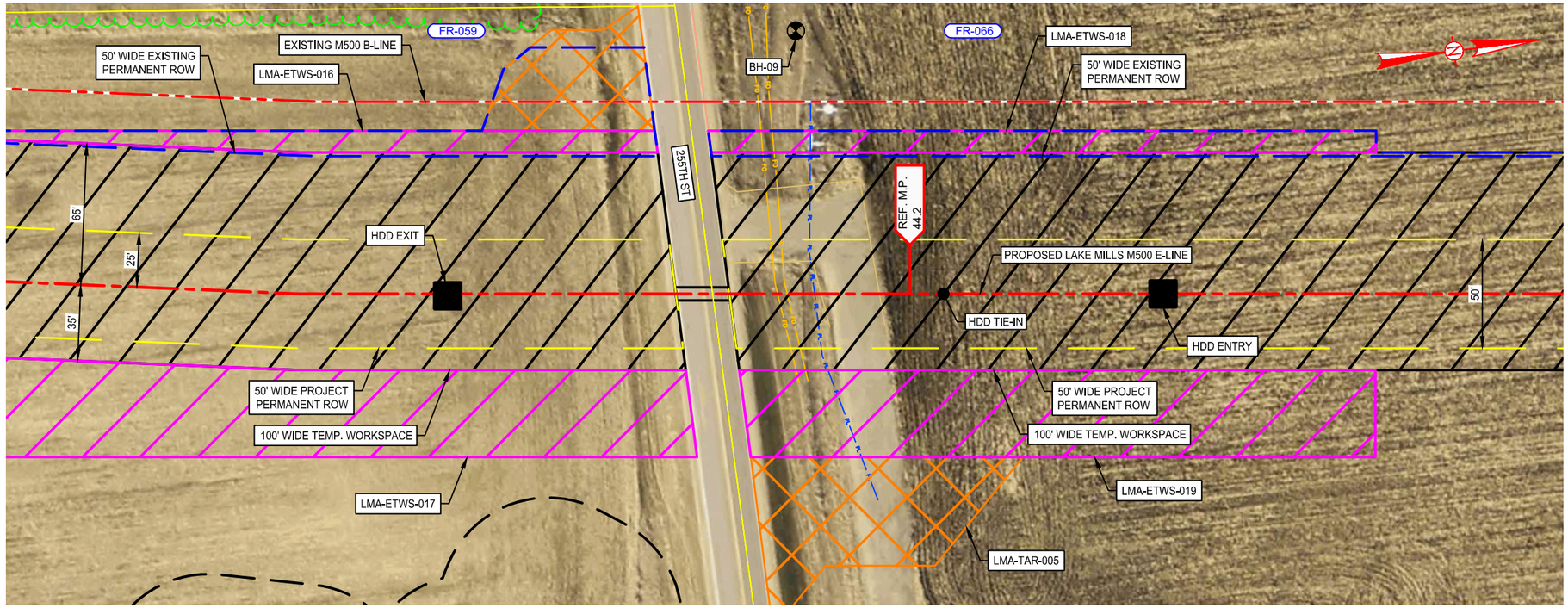
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LAKE MILLS M500E-LINE
HDD SSP PLAN & PROFILE 725TH AVE
SEC. 13, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

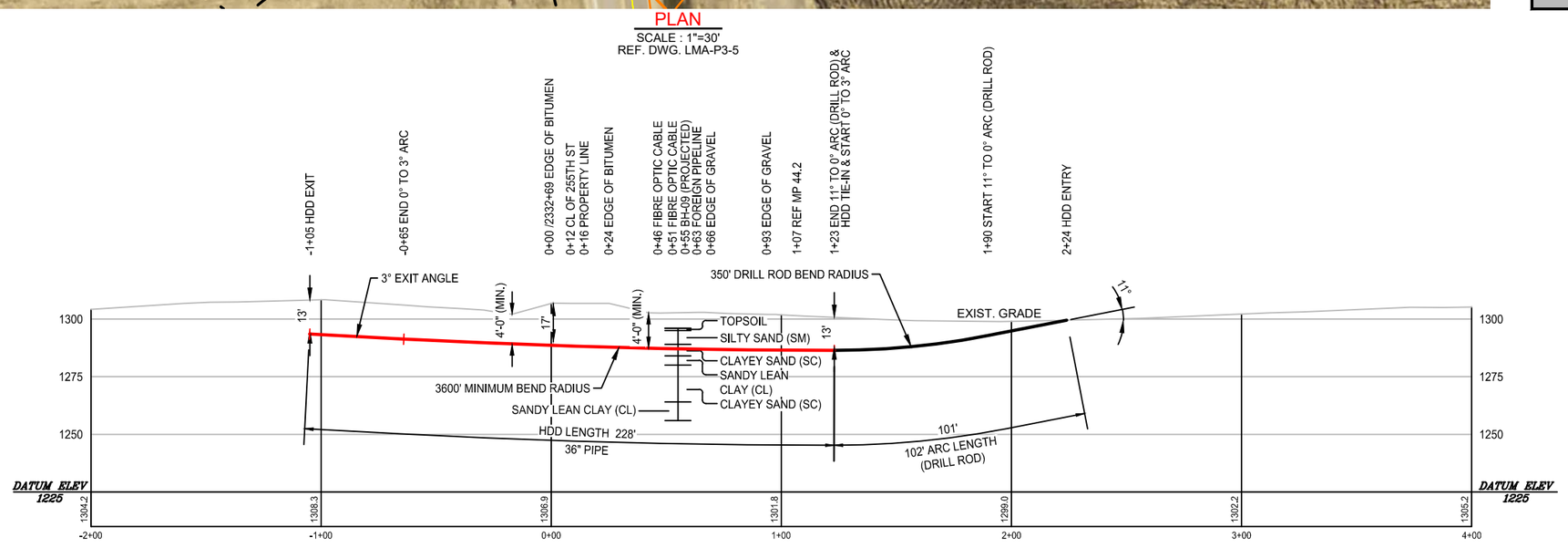
PROJECT NO.

DWG. NO. **LMA-SSP-1** F

PLAN & PROFILE 255TH ST



PLAN
SCALE : 1"=30'
REF. DWG. LMA-P3-5



PROFILE
SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

LEGEND

- PROPOSED LAKE MILLS M500 E-LINE
- EXISTING M500 B-LINE
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- WETLAND BUFFER
- PL FOREIGN PIPELINE
- FO FIBRE OPTIC CABLE
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- BOREHOLE

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Mesa, Marta

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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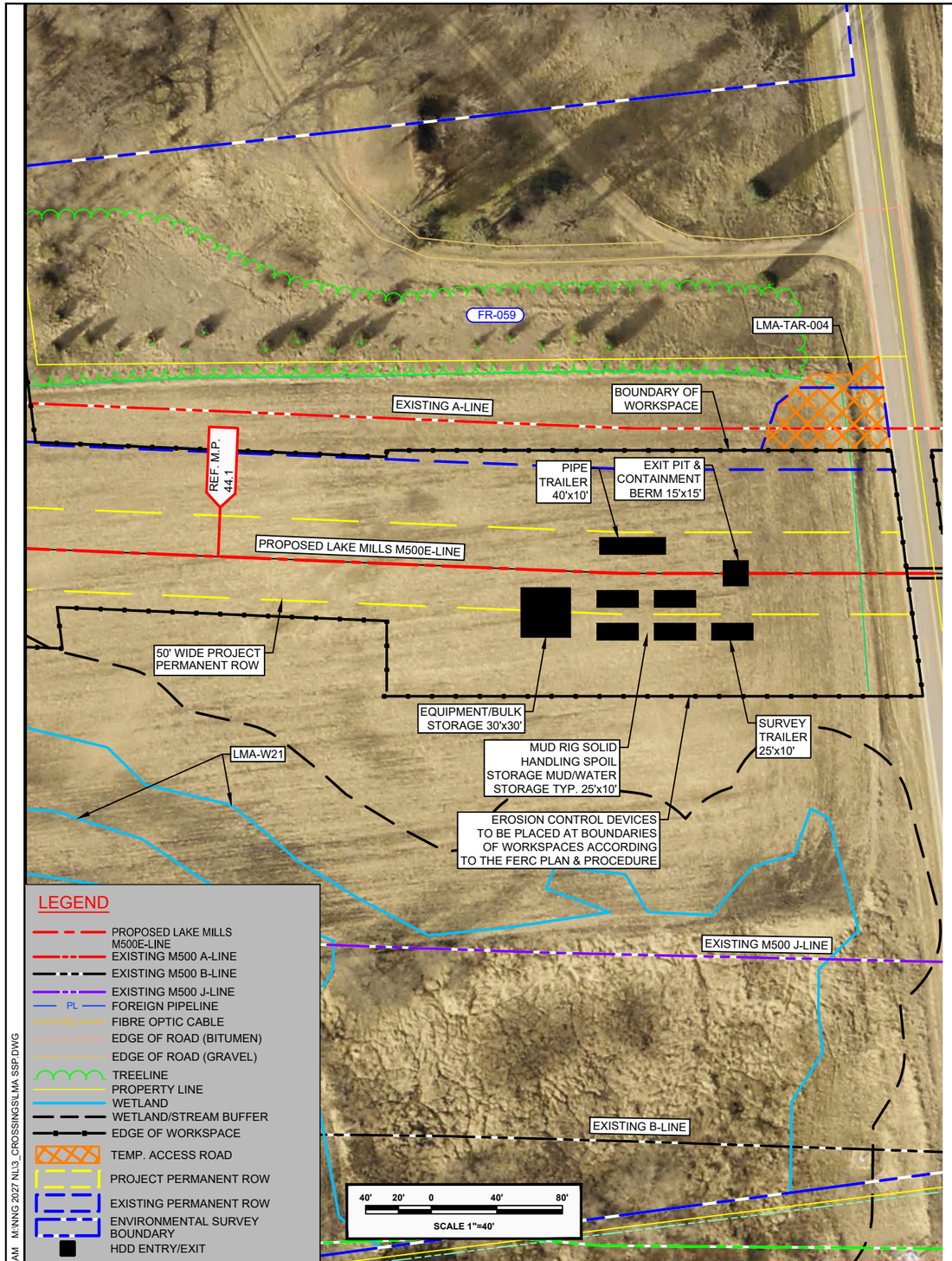
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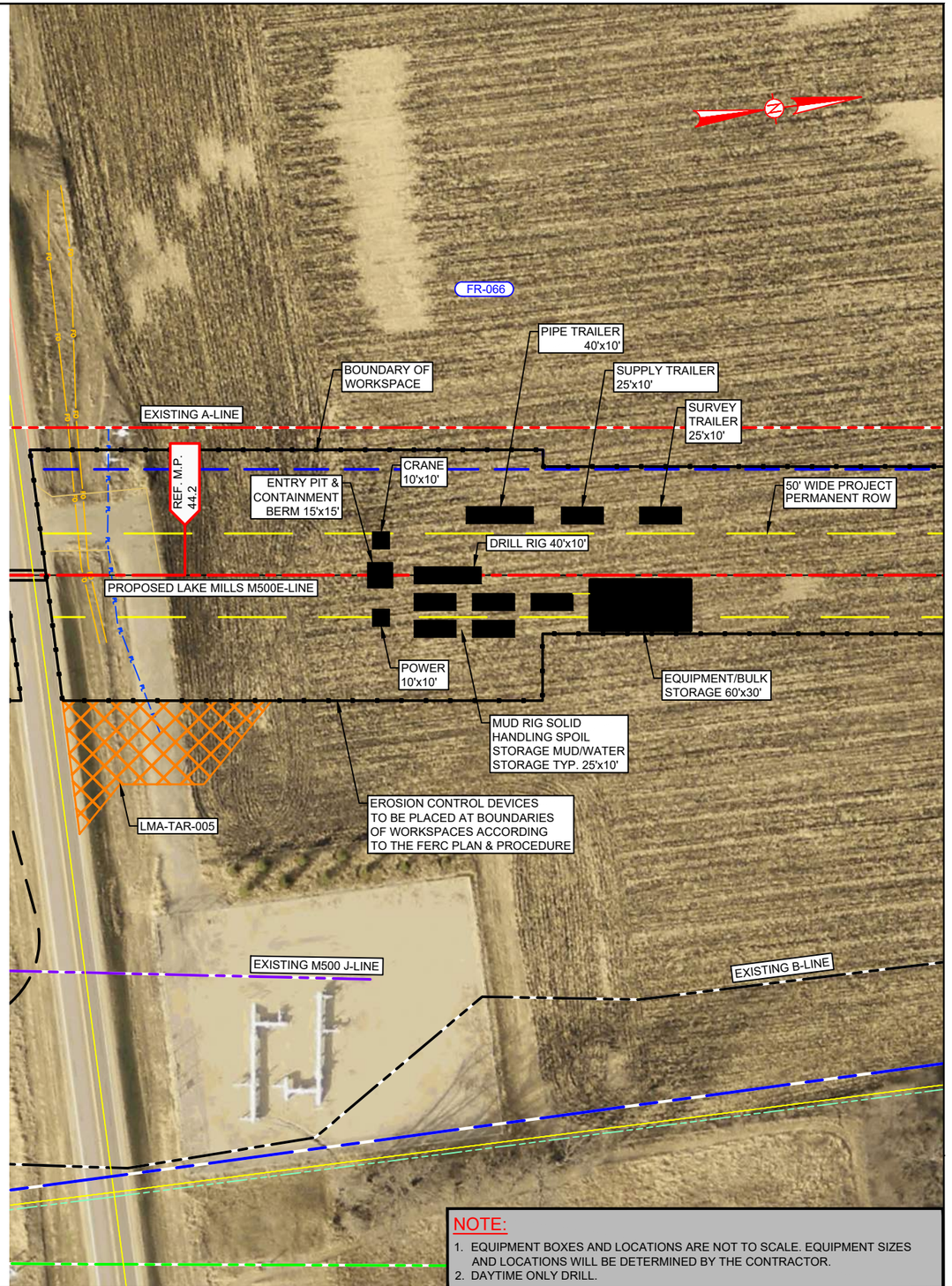
NORTHERN LIGHTS 2027 EXPANSION PROJECT
LAKE MILLS M500 E-LINE
PLAN & PROFILE 255TH ST
SEC. 13, T103N, R22W
FREEBORN COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
LMA-P4-2
F





LEGEND

- PROPOSED LAKE MILLS M500E-LINE
- EXISTING M500 A-LINE
- EXISTING M500 B-LINE
- EXISTING M500 J-LINE
- PL — FOREIGN PIPELINE
- FO — FIBRE OPTIC CABLE
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- TREELINE
- PROPERTY LINE
- WETLAND
- WETLAND/STREAM BUFFER
- EDGE OF WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

NOTE:

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2. DAYTIME ONLY DRILL.

ATTACHMENT 1

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ASBUILT		

FILE NO.: P:105
SCALE: 1"=40'

NORTHERN LIGHTS 2027 EXPANSION PROJECT
LAKE MILLS M500E-LINE
HDD SSP PLAN & PROFILE 255TH ST
SEC. 13, T103N, R22W
FREEBORN COUNTY, MINNESOTA

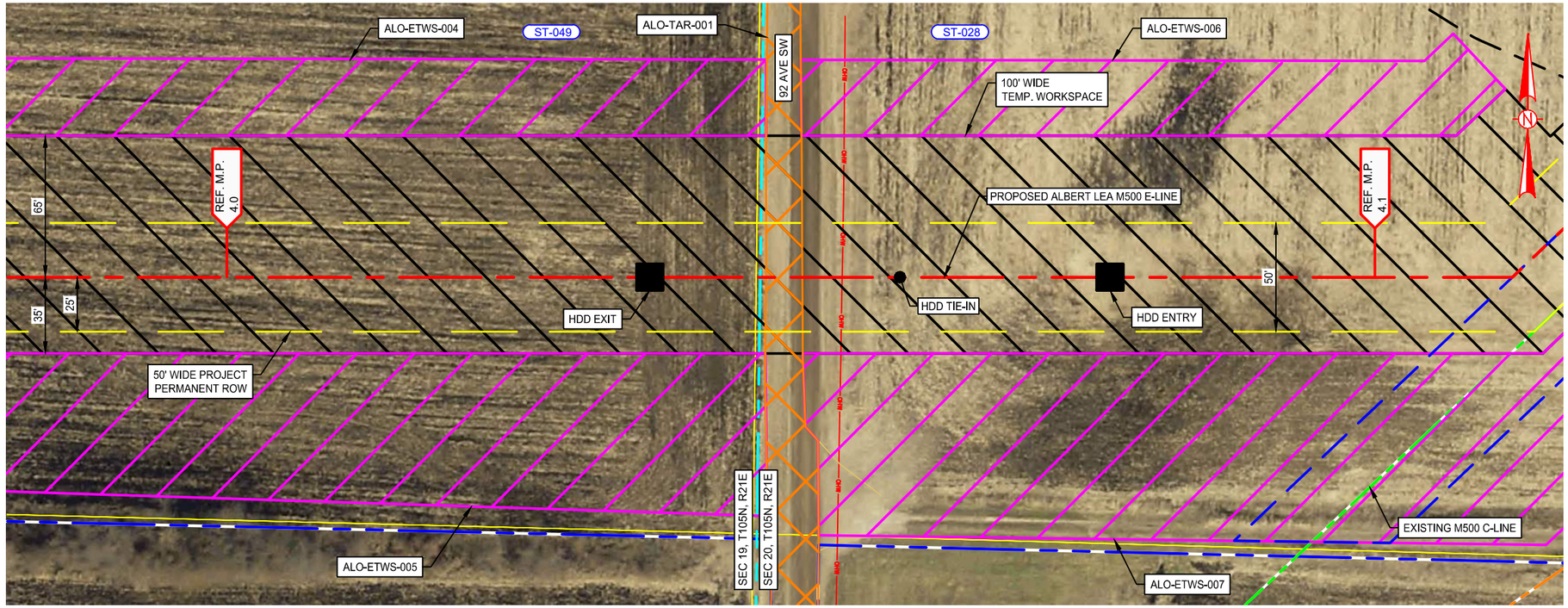
Northern Natural Gas.

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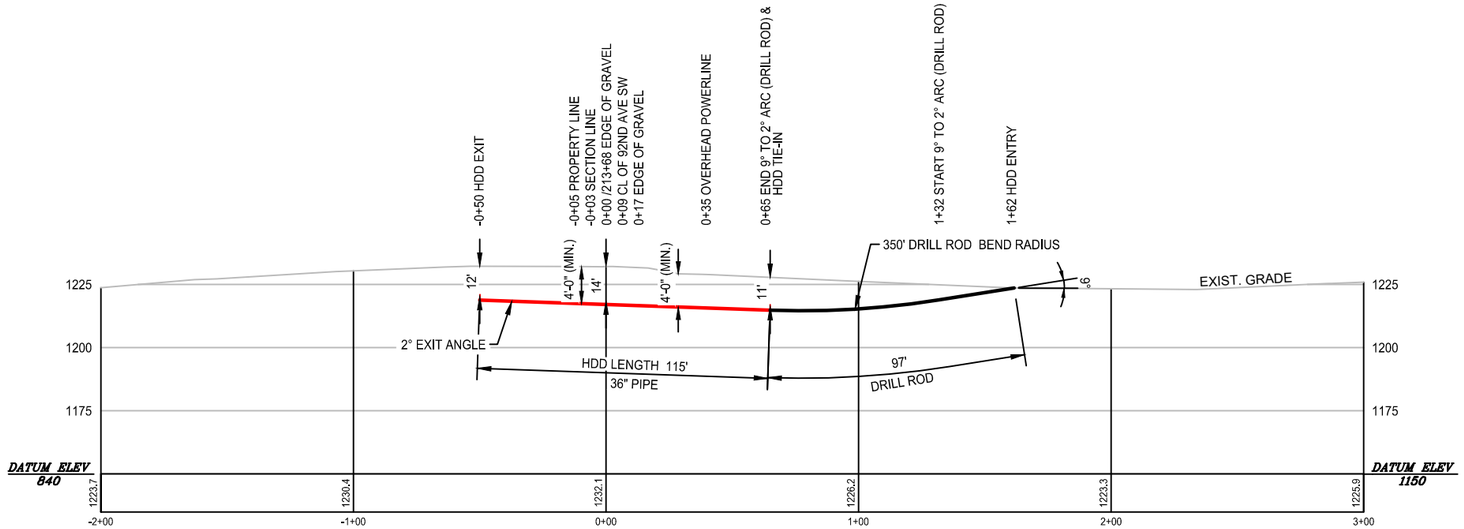
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PLAN & PROFILE 92ND AVE SW



PLAN
SCALE : 1"=30'
REF. DWG. ALO-P3-2



PROFILE
SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

LEGEND

- PROPOSED ALBERT LEA M500 E-LINE
- EXISTING M500 C-LINE
- EDGE OF ROAD (GRAVEL)
- OHW — OVERHEAD POWERLINE
- PROPERTY LINE
- SECTION LINE
- ROAD R.O.W.
- HDD ENTRY/EXIT
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- ENVIRONMENTAL SURVEY BOUNDARY
- TEMP. ACCESS ROAD

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Mesa, Marta

ATTACHMENT 1

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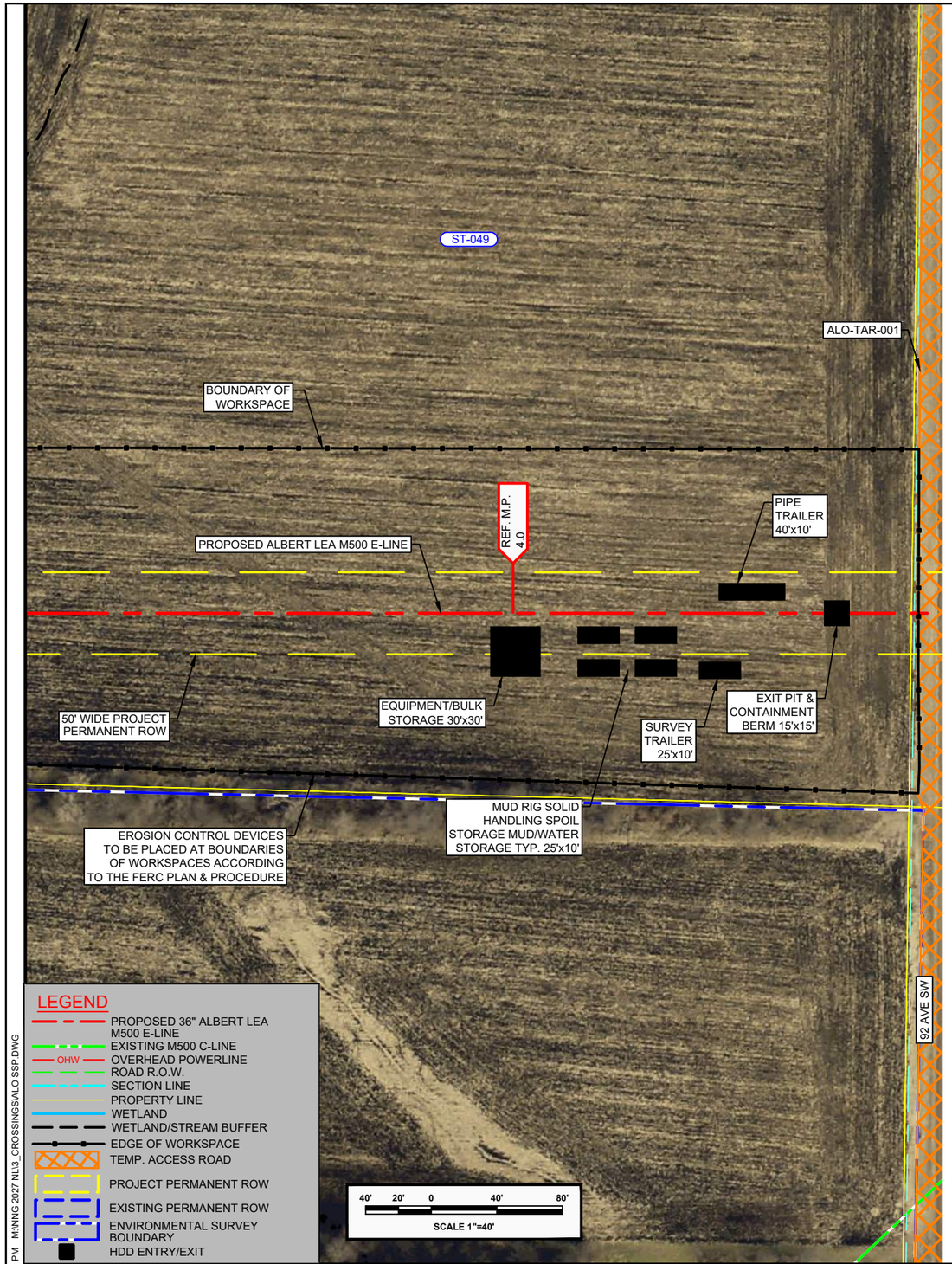
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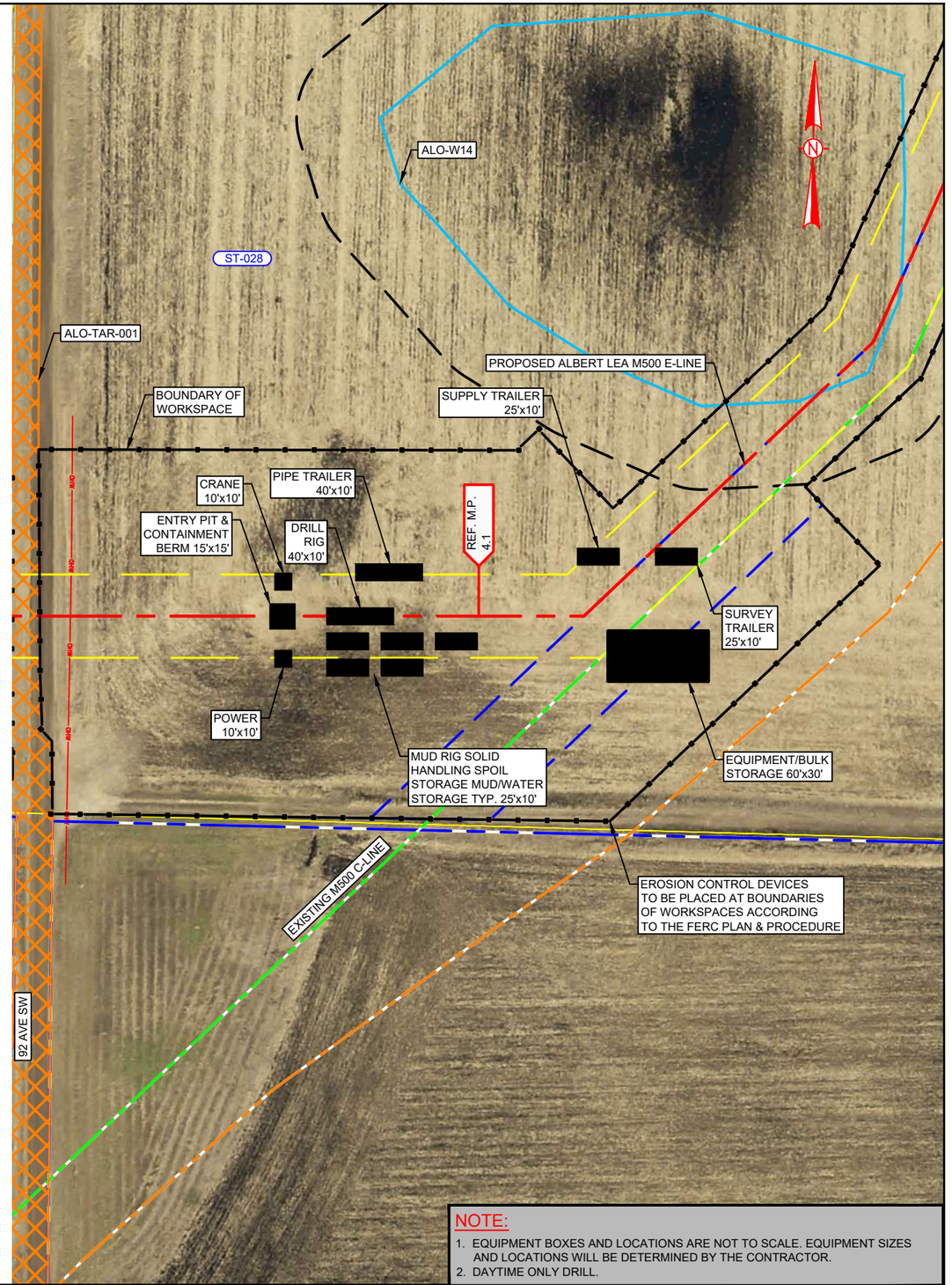
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ALBERT LEA M500 E-LINE
PLAN & PROFILE 92 AVE SW
SEC. 19 & 20, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
ALO-P4-1
F





LEGEND

- PROPOSED 36" ALBERT LEA M500 E-LINE
- EXISTING M500 C-LINE
- OHW — OVERHEAD POWERLINE
- ROAD R.O.W.
- SECTION LINE
- PROPERTY LINE
- WETLAND
- WETLAND/STREAM BUFFER
- EDGE OF WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

NOTE:

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2. DAYTIME ONLY DRILL.

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ATTACHMENT 1

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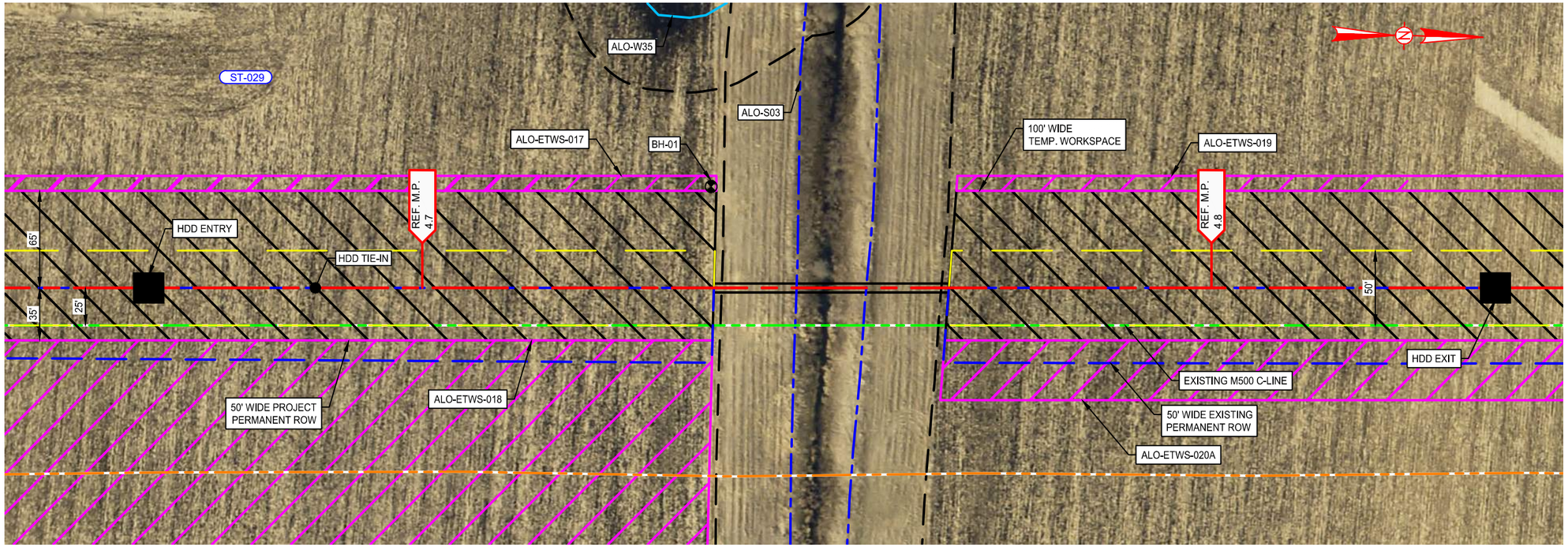
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SEC. 19 & 20, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

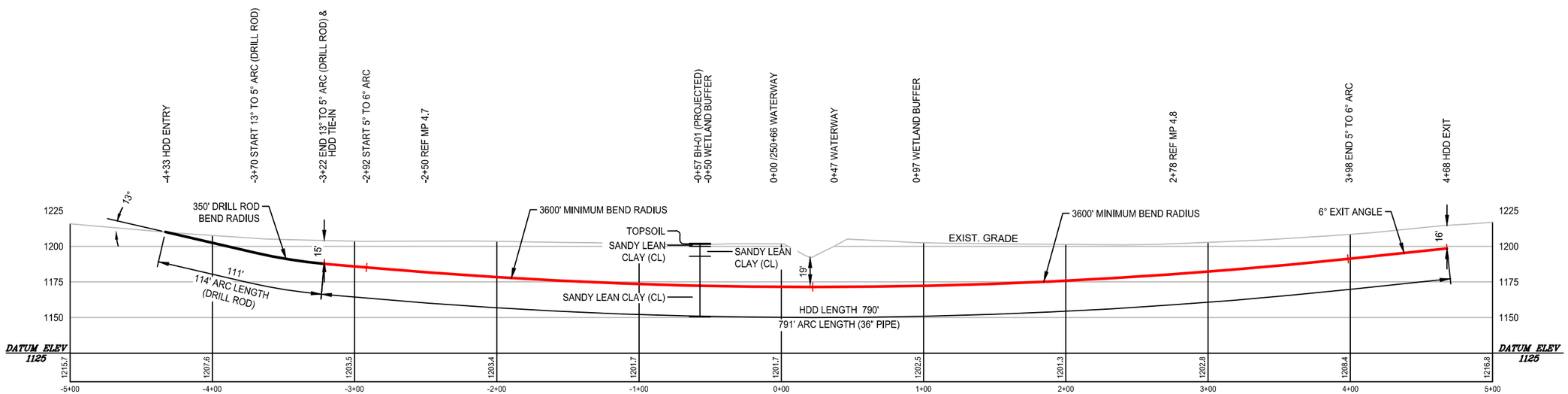
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DWG. NO. **ALO-SSP-1** F

PLAN & PROFILE STREAM



PLAN
SCALE : 1"=40'
REF. DWG. ALO-P3-3 & ALO-P3-4



PROFILE
SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

LEGEND

- PROPOSED ALBERT LEA M500 E-LINE
- EXISTING M500 C-LINE
- EDGE OF ROAD (GRAVEL)
- OHW — OVERHEAD POWERLINE
- PROPERTY LINE
- WATERWAY
- WETLAND BUFFER
- HDD ENTRY/EXIT
- EXISTING PERMANENT ROW
- PROJECT PERMANENT ROW
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- BOREHOLE

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

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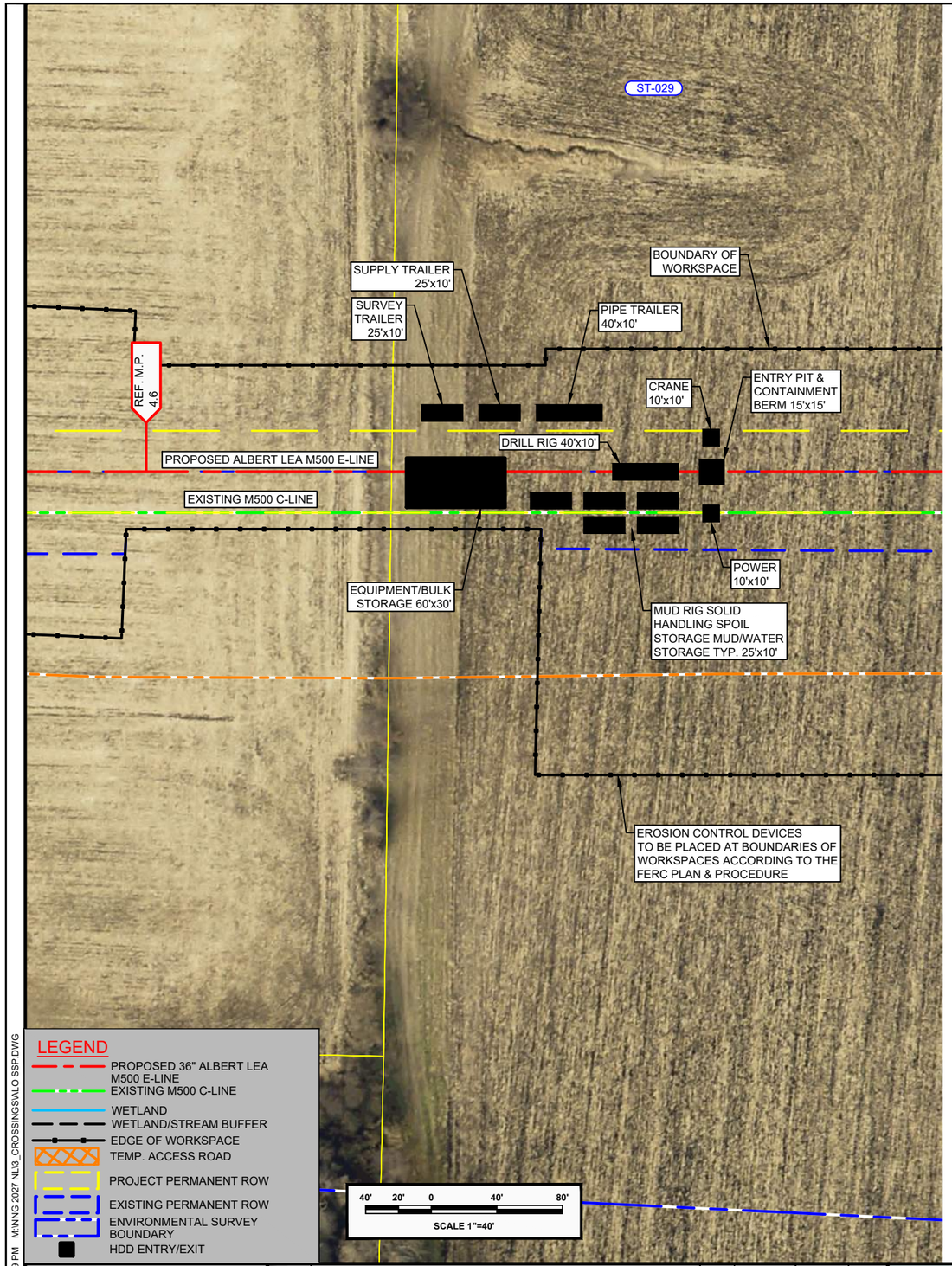
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ALBERT LEA M500 E-LINE
PLAN & PROFILE STREAM
SEC. 20, T105N, R21W
STEELE COUNTY, MINNESOTA

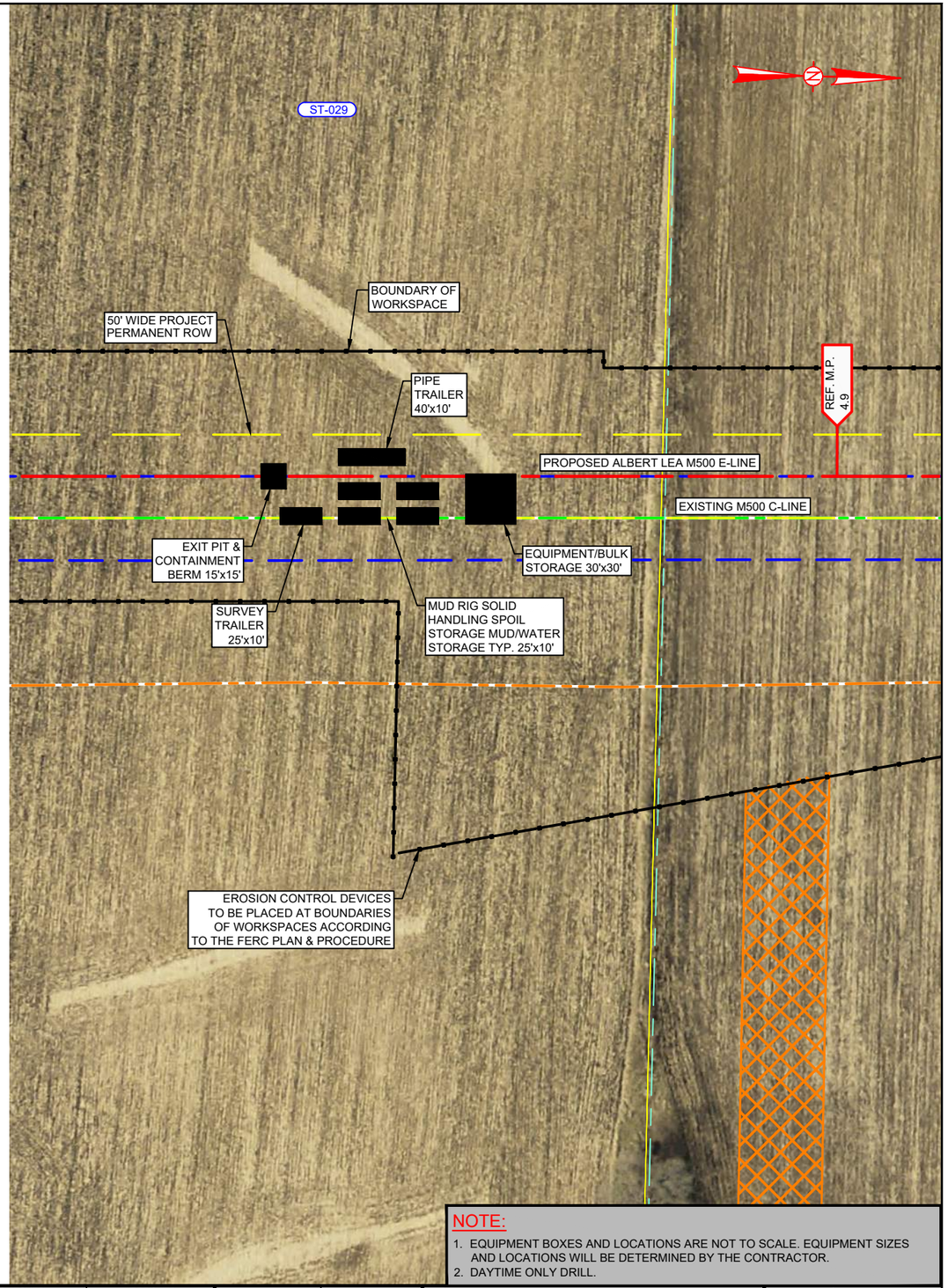
Northern Natural Gas.

PROJECT NO.

DWG. NO. ALO-P4-2 F

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NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

ATTACHMENT 1

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BID				
CONST.				

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CONST. YR 2027
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ASBUILT		

FILE NO.: P:105
SCALE: 1"=40'

NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
HDD SSP PLAN & PROFILE STREAM
SEC. 20, T105N, R21W
STEELE COUNTY, MINNESOTA

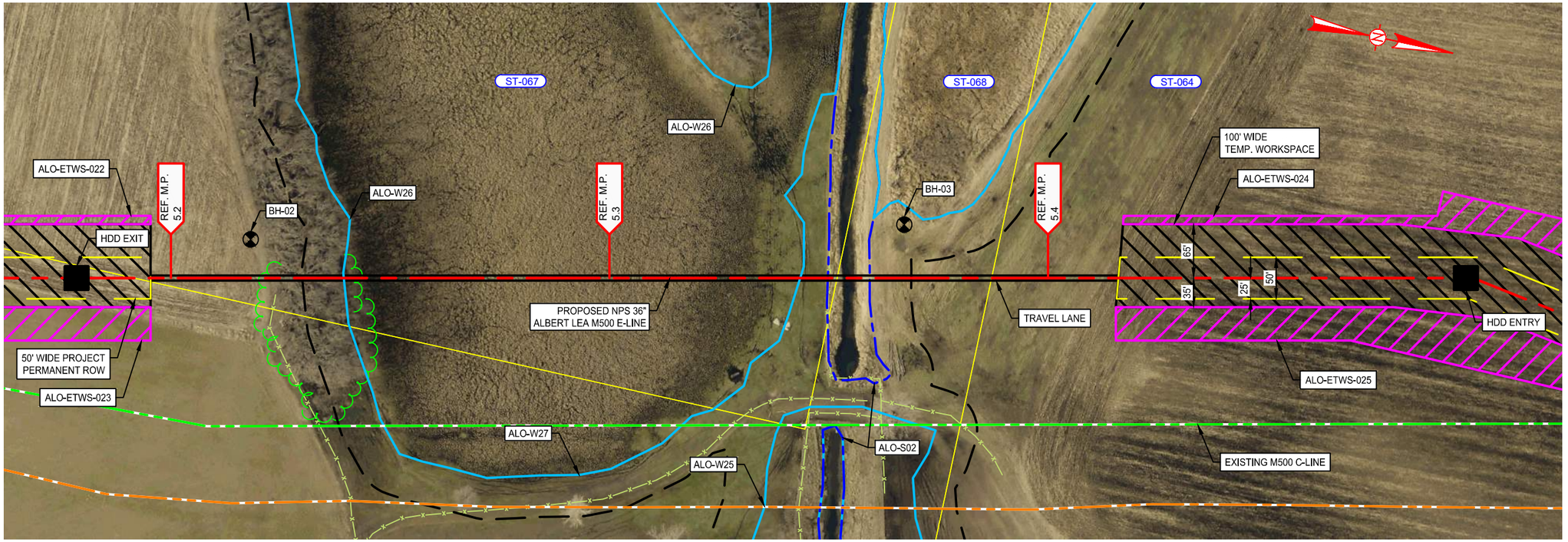
Northern Natural Gas.

PROJECT NO.

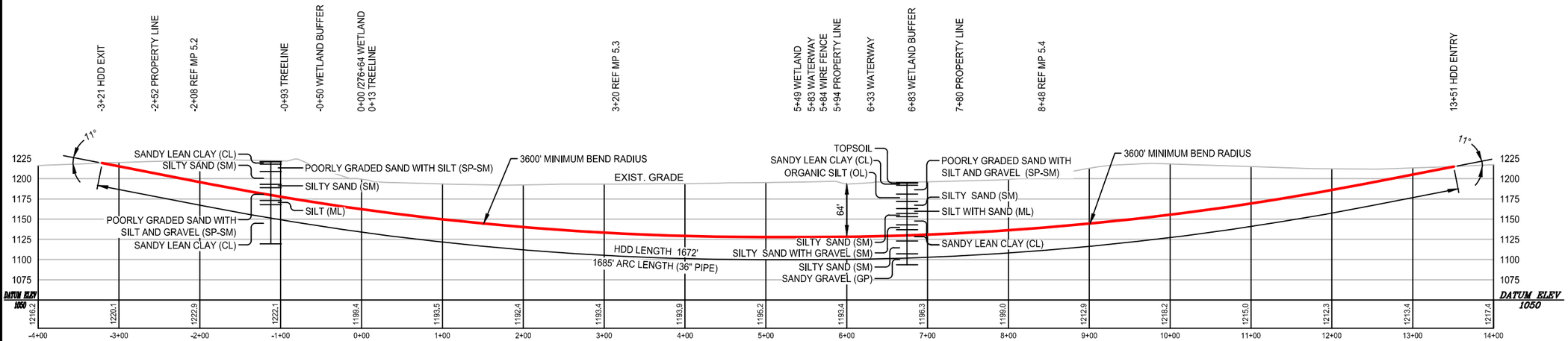
DWG. NO.
ALO-SSP-2
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PLAN & PROFILE WETLAND



PLAN
SCALE : 1"=70'
REF. DWG. ALO-P3-5 & ALO-P4-6



PROFILE
SCALE (VERT): 1"=70'
SCALE (HORIZ): 1"=70'

LEGEND

- PROPOSED ALBERT LEA M500 E-LINE
- EXISTING M500 C-LINE
- EDGE OF ROAD (GRAVEL)
- OHW — OVERHEAD POWERLINE
- WIRE FENCE
- PROPERTY LINE
- WETLAND
- WETLAND BUFFER
- WATERWAY
- HDD ENTRY/EXIT
- PROJECT PERMANENT ROW
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- BOREHOLE

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ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
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BID				
CONST.				

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PL# N/A | CONST. YR 2027
STA# N/A | POI# N/A

	BY	DATE
DESIGN	ED	10/27/25
DRAWN	JM	10/27/25
ASBUILT		

FILE NO.:
SCALE: 1"=70'

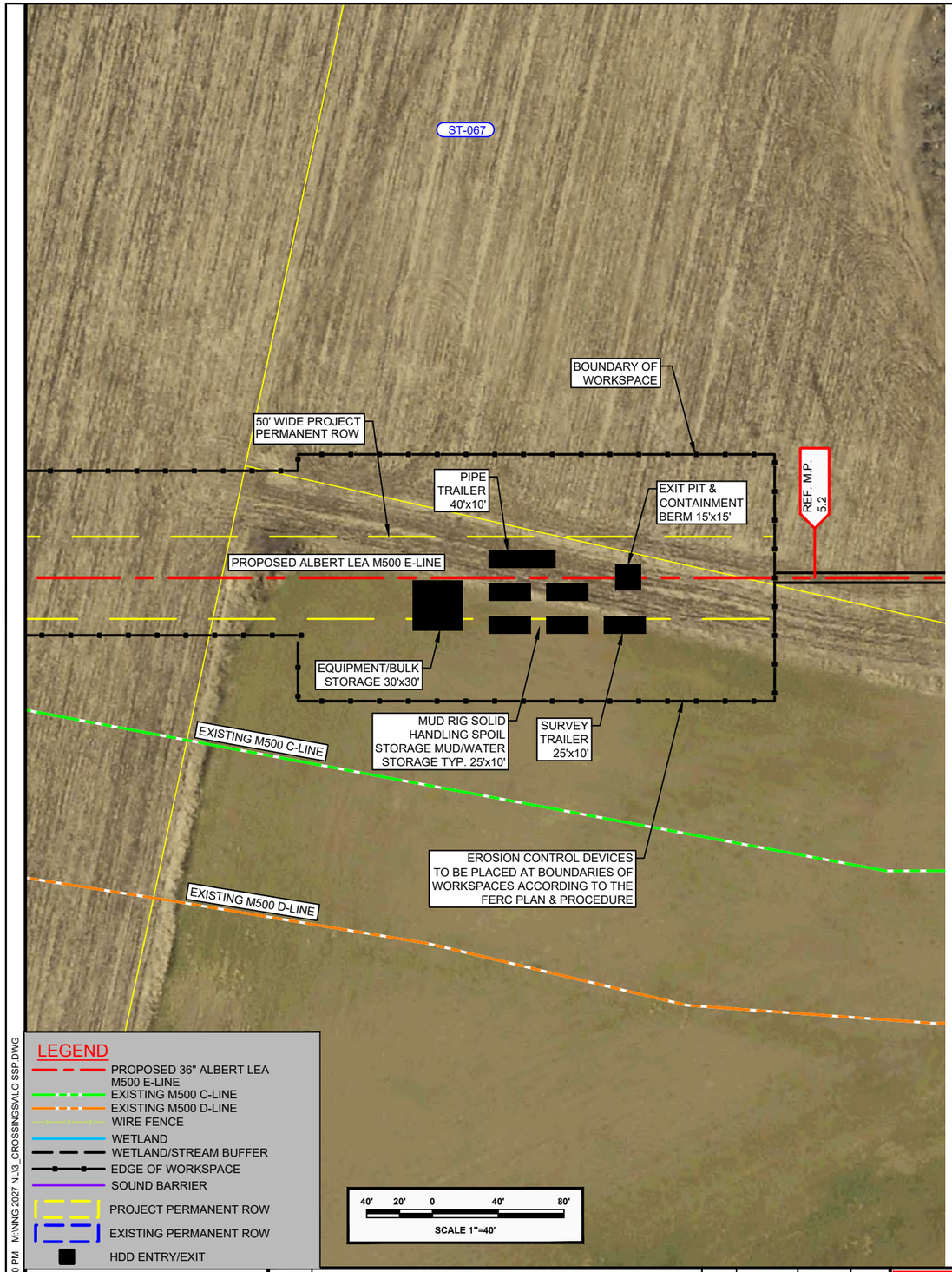
NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
PLAN & PROFILE WETLAND
SEC. 17, T105N, R21W
STEELE COUNTY, MINNESOTA

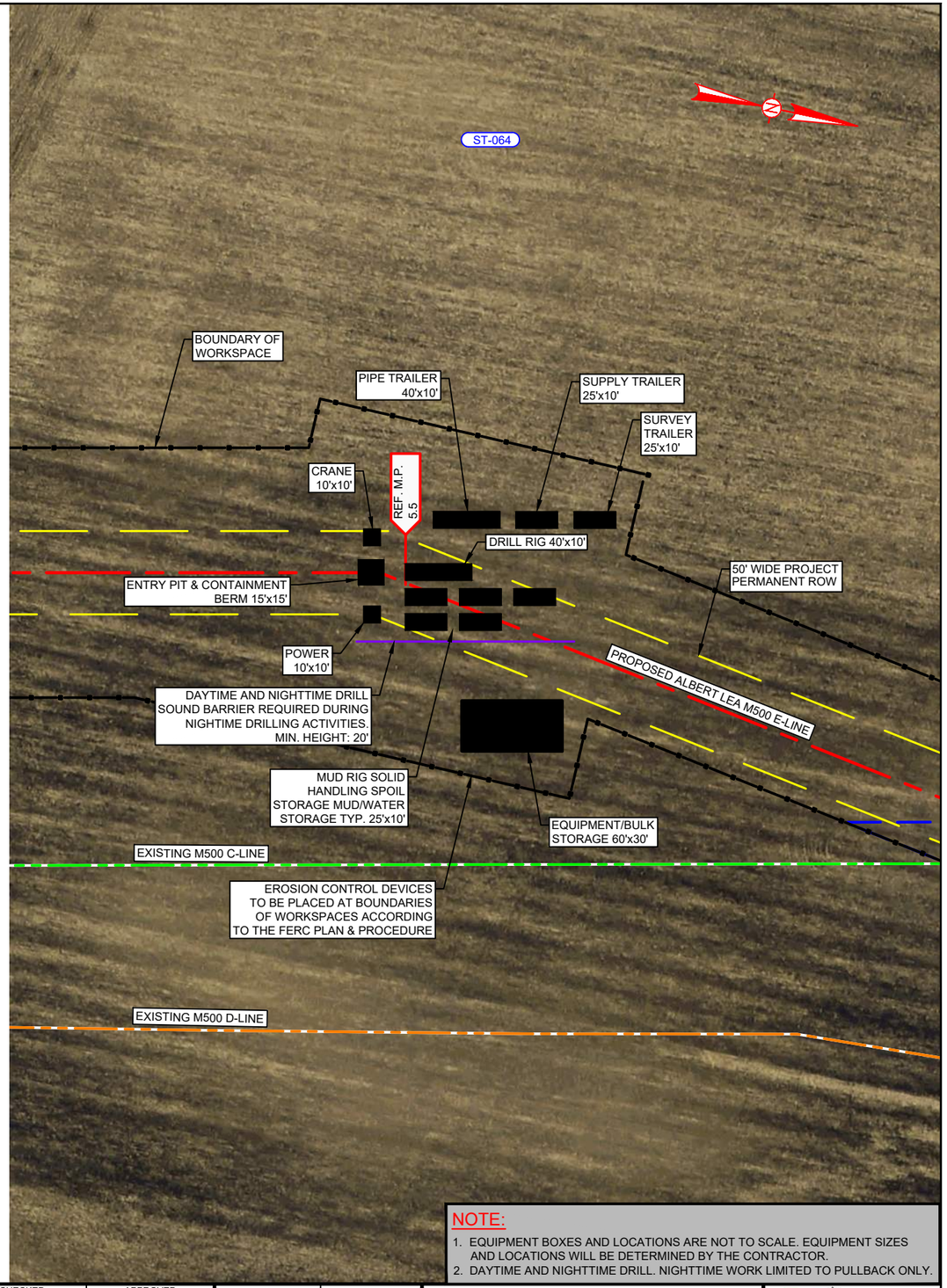
Northern Natural Gas.

PROJECT NO.

DWG. NO. ALO-P4-3

F





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME AND NIGHTTIME DRILL. NIGHTTIME WORK LIMITED TO PULLBACK ONLY.

M:\NNG 2027 NL\3_CROSSINGS\ALO SSP.DWG
Meriel, Jeffrey 2/19/2026 10:30 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
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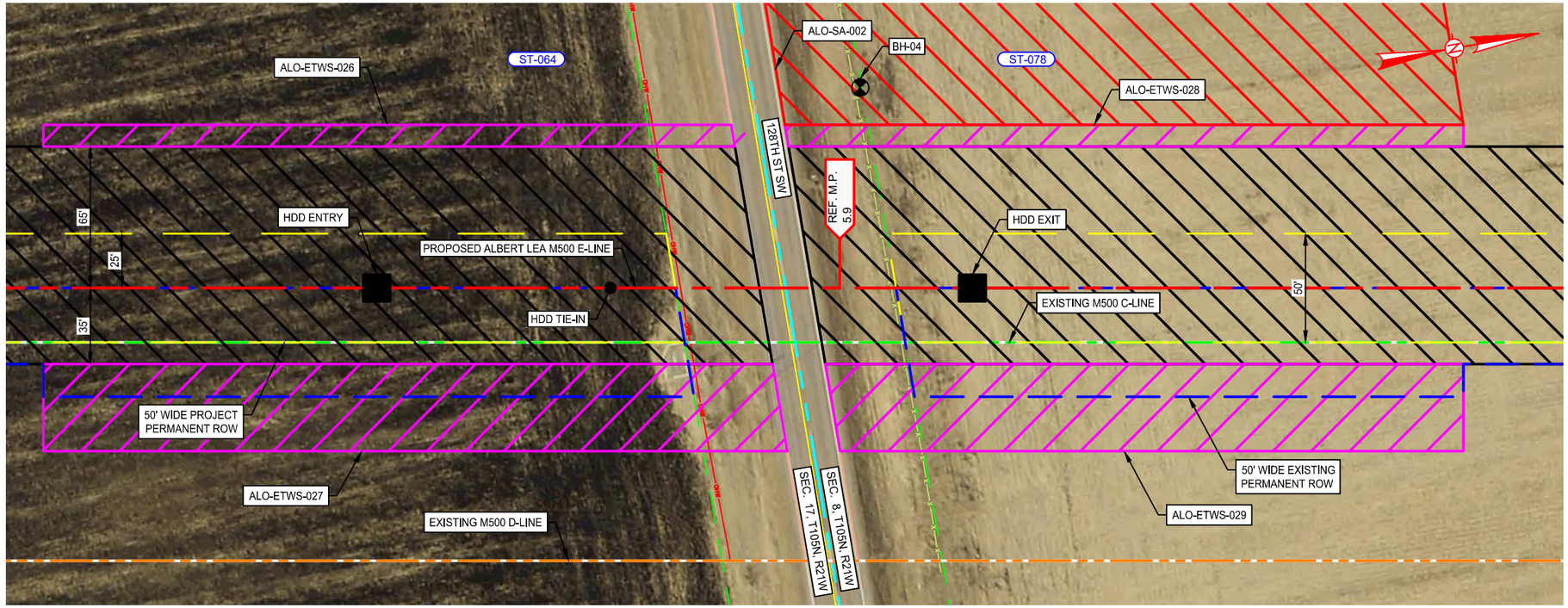
NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
HDD SSP PLAN & PROFILE WETLAND
SEC. 17, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. ALO-SSP-3 F

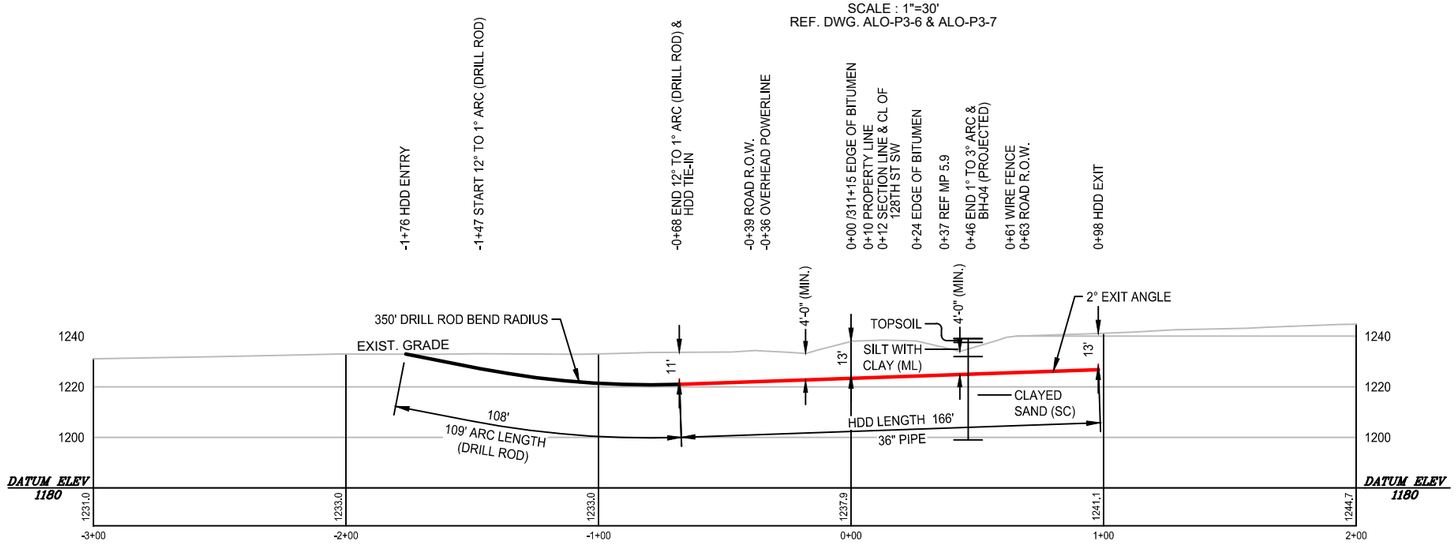
PLAN & PROFILE 128TH ST SW



PLAN

SCALE : 1"=30'

REF. DWG. ALO-P3-6 & ALO-P3-7



PROFILE

SCALE (VERT): 1"=30'

SCALE (HORIZ): 1"=30'

LEGEND

- PROPOSED ALBERT LEA M500 E-LINE
- EXISTING M500 C-LINE
- EXISTING M500 D-LINE
- EDGE OF ROAD (BITUMEN)
- OHW — OVERHEAD POWERLINE
- WIRE FENCE
- PROPERTY LINE
- SECTION LINE
- ROAD R.O.W.
- HDD ENTRY/EXIT
- EXISTING PERMANENT ROW
- PROJECT PERMANENT ROW
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- STAGING AREA
- BOREHOLE

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL# N/A		CONST. YR 2027
STA# N/A		POI# N/A
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DESIGN	ED	10/27/25
DRAWN	JM	10/28/25
ASBUILT		
FILE NO.:		
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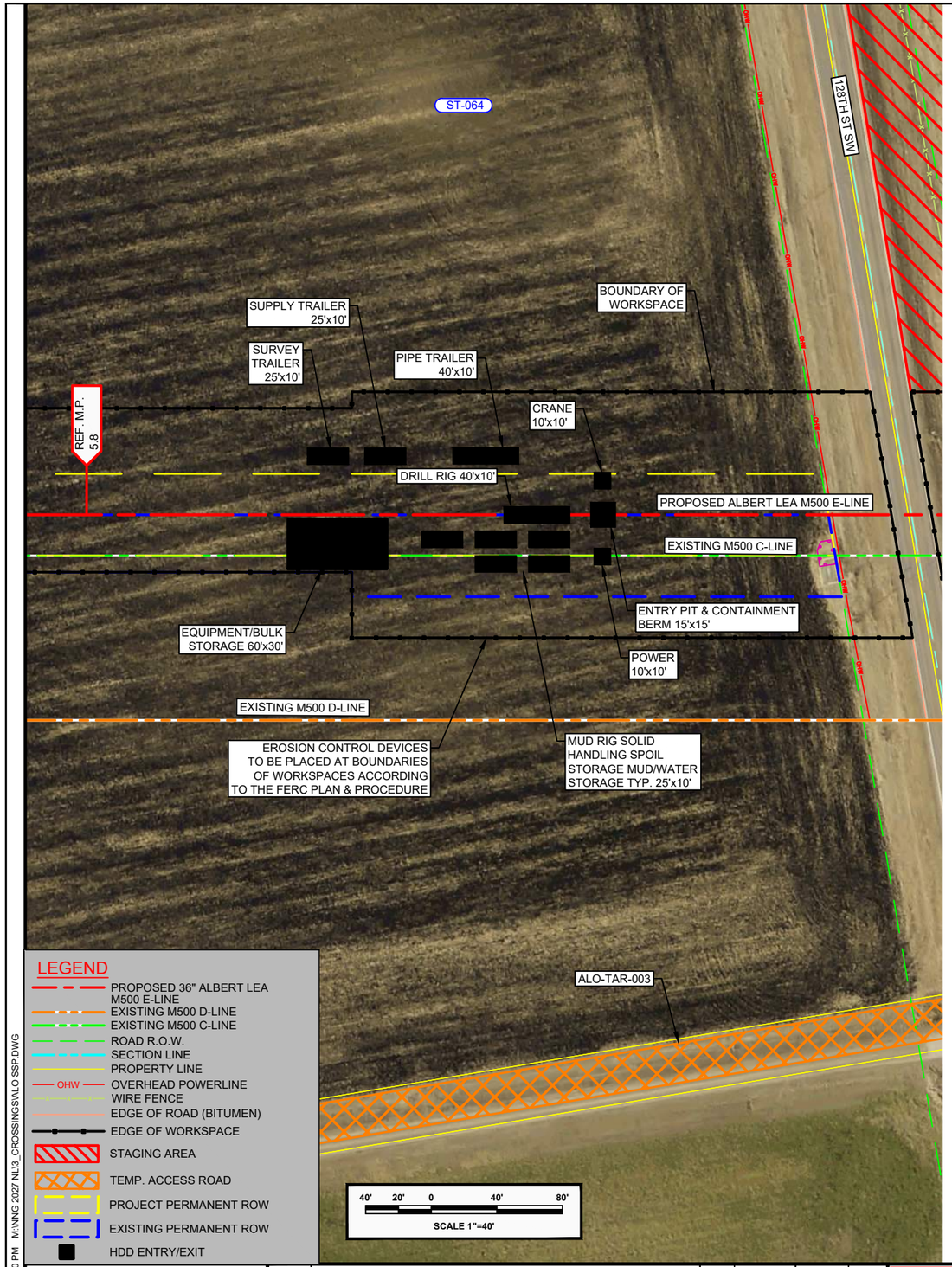
NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
PLAN & PROFILE 128TH ST SW
SEC. 17 & 8, T105N, R21W
STEELE COUNTY, MINNESOTA

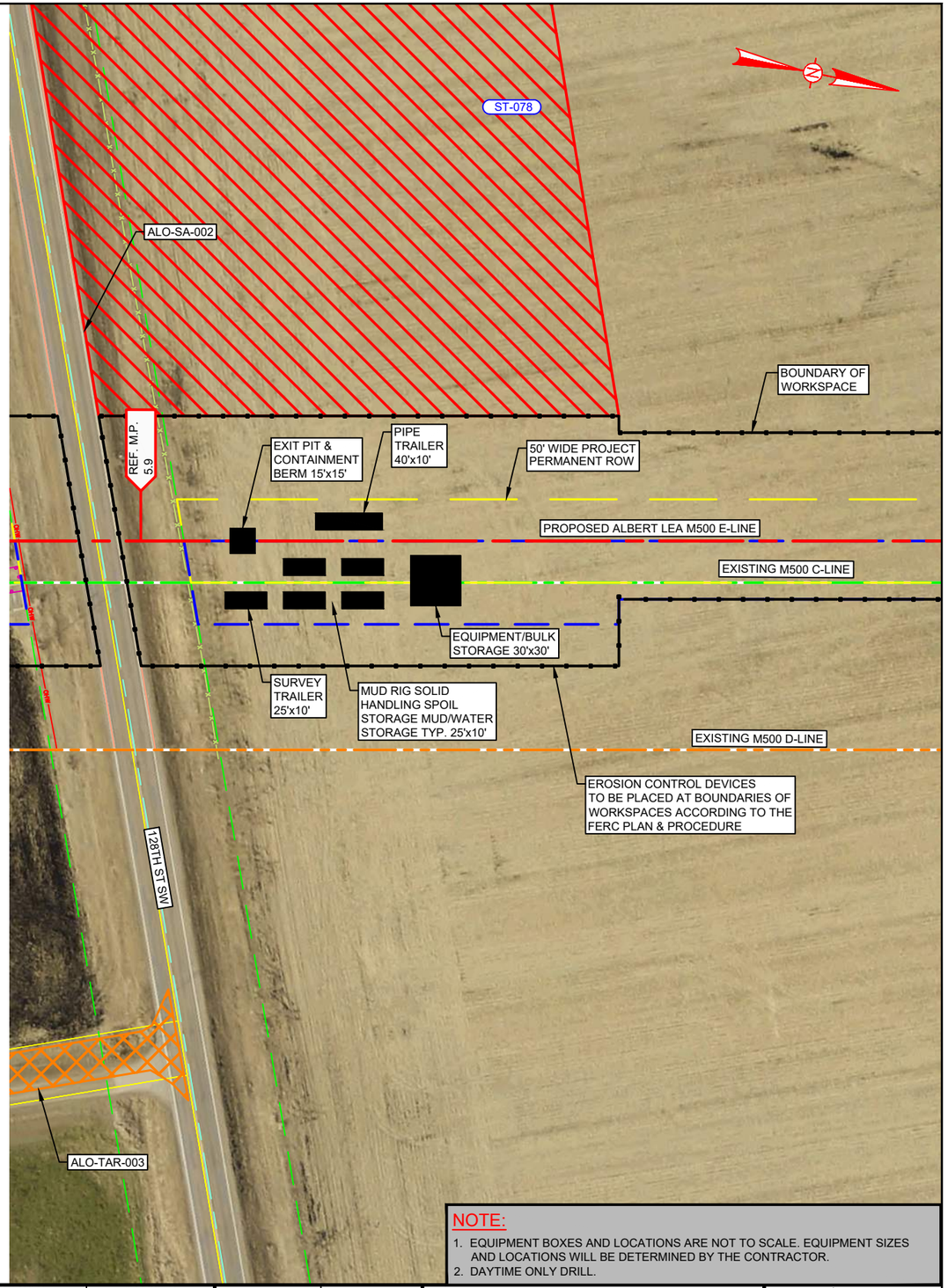
Northern Natural Gas.

PROJECT NO.

DWG. NO. ALO-P4-4 F

M:\NNG 2027 NL\3_CROSSINGS\ALO PLAN & PROFILE.DWG
2/19/2026 6:52 AM
Mesa, Marta





LEGEND

- PROPOSED 36" ALBERT LEA M500 E-LINE
- EXISTING M500 D-LINE
- EXISTING M500 C-LINE
- ROAD R.O.W.
- SECTION LINE
- PROPERTY LINE
- OHW — OVERHEAD POWERLINE
- WIRE FENCE
- EDGE OF ROAD (BITUMEN)
- EDGE OF WORKSPACE
- STAGING AREA
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
HDD SSP PLAN & PROFILE 128TH ST SW
SEC. 17, T105N, R21W
STEELE COUNTY, MINNESOTA

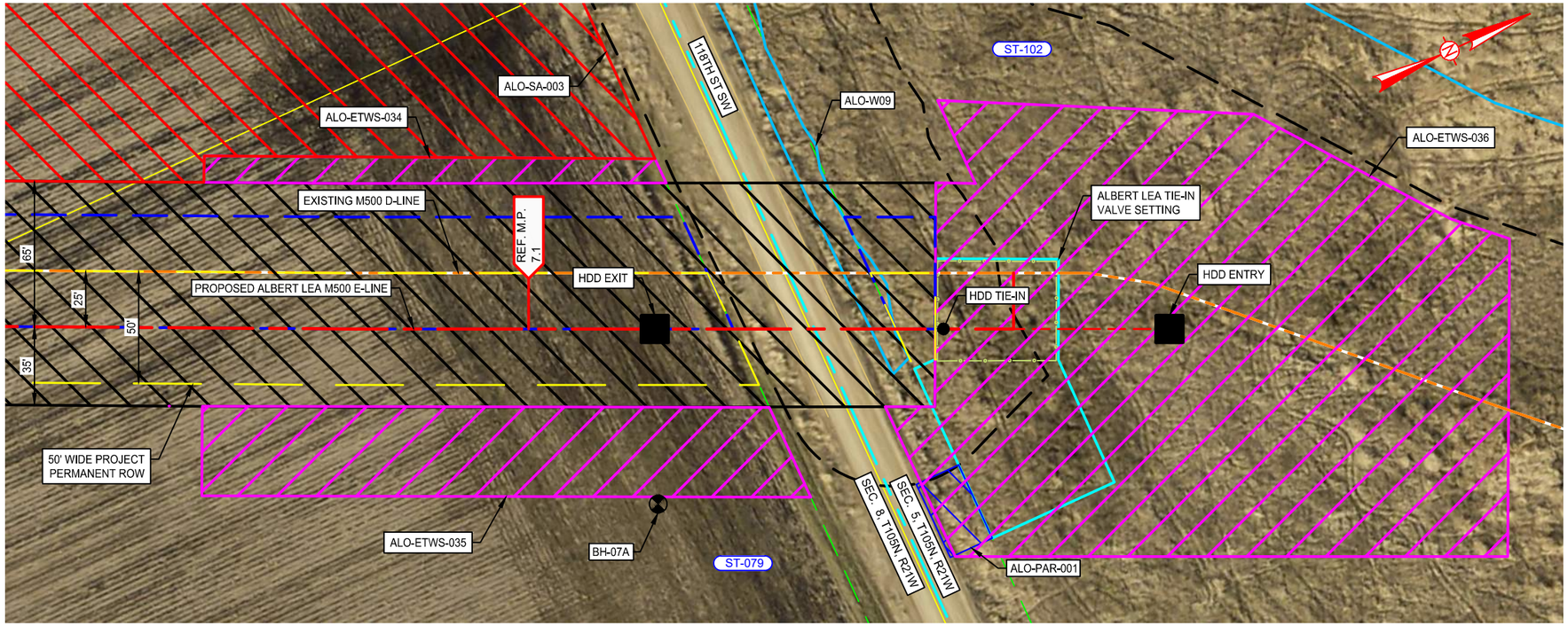
Northern Natural Gas.

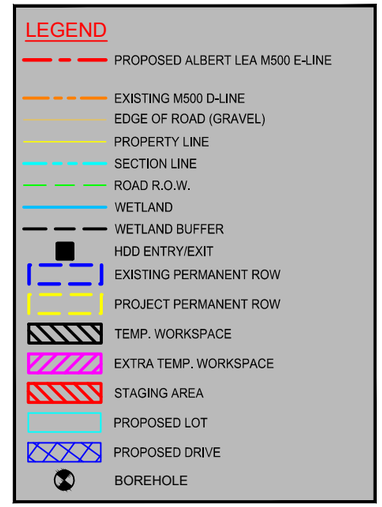
PROJECT NO.

DWG. NO. ALO-SSP-4 F

Mertel, Jeffrey 2/19/2026 10:30 PM M:\NNG 2027 NLI\3_CROSSINGS\ALO SSP.DWG

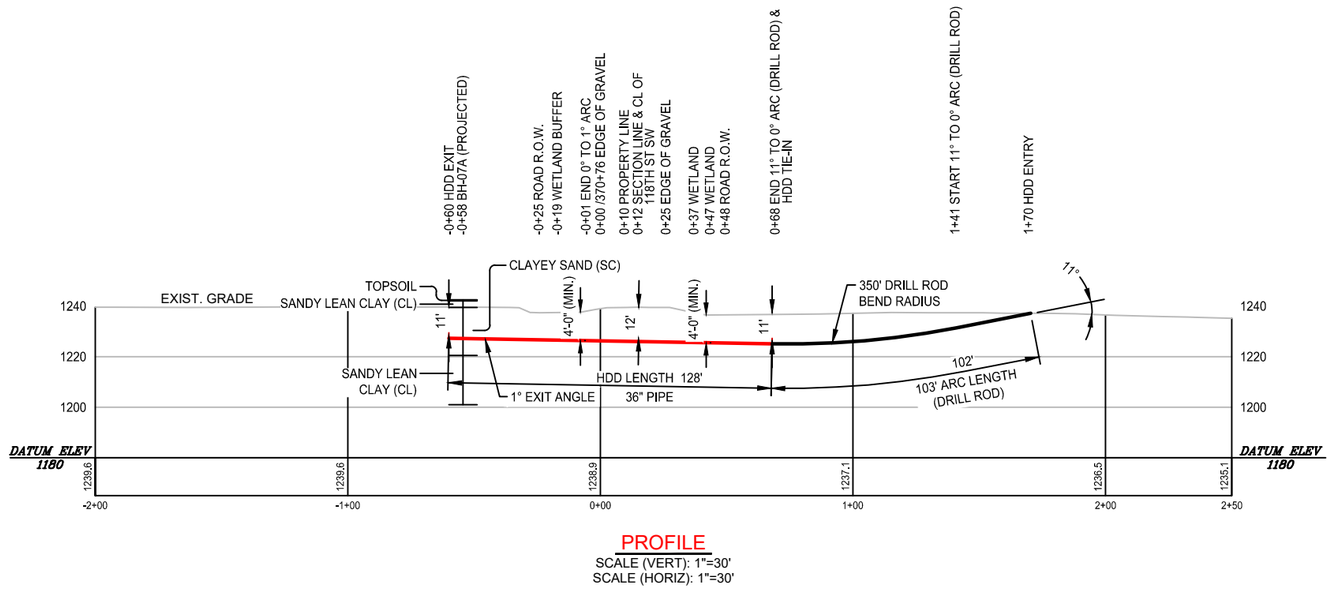
PLAN & PROFILE 118TH ST SW





PLAN

SCALE : 1"=30'
REF. DWG. ALO-P3-10



PROFILE

SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

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2/19/2026 6:53 AM
Mesa, Marta

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL W.O. N/A
PL# N/A | CONST. YR 2027
ST# N/A | POI# N/A

	BY	DATE
DESIGN	ED	10/27/25
DRAWN	JM	10/28/25
ASBUILT		

FILE NO.:
SCALE: 1"=30'

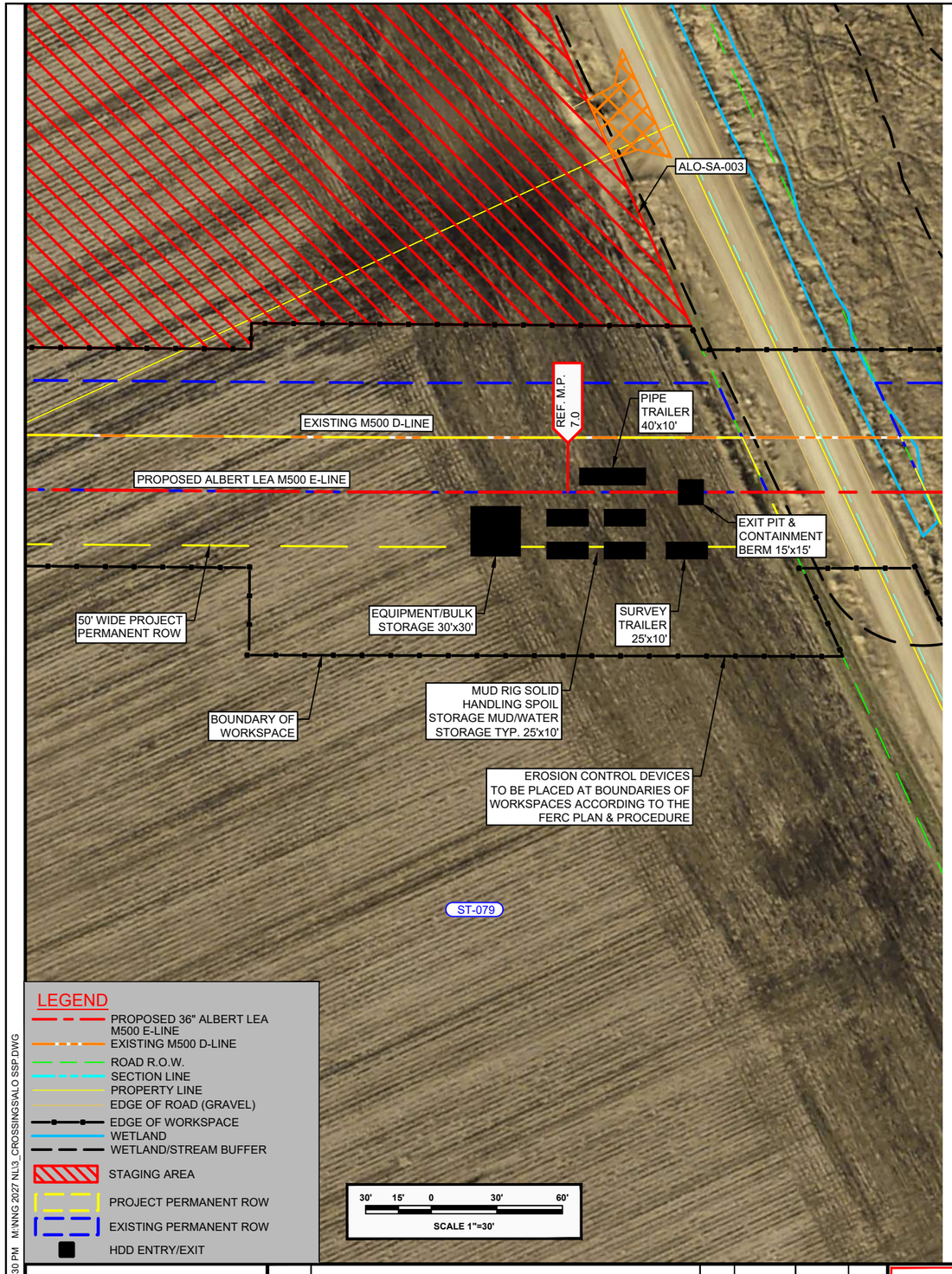
NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
PLAN & PROFILE 118TH ST SW
SEC. 8 & 5, T105N, R21W
STEELE COUNTY, MINNESOTA

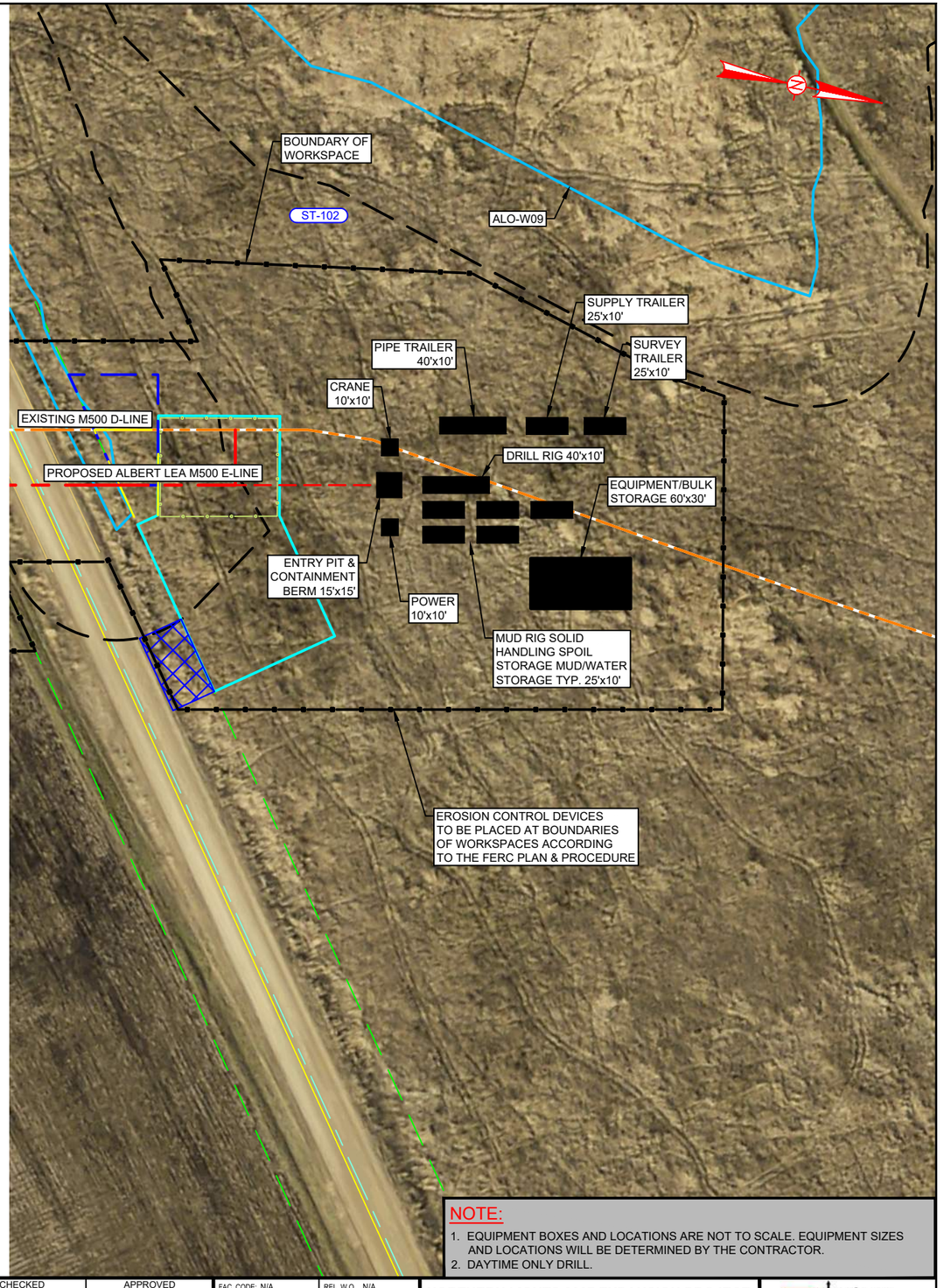
Northern Natural Gas.

PROJECT NO.

DWG. NO. ALO-P4-5

F





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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Meriel, Jeffrey 2/19/2026 10:30 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
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SCALE: 1"=30'		

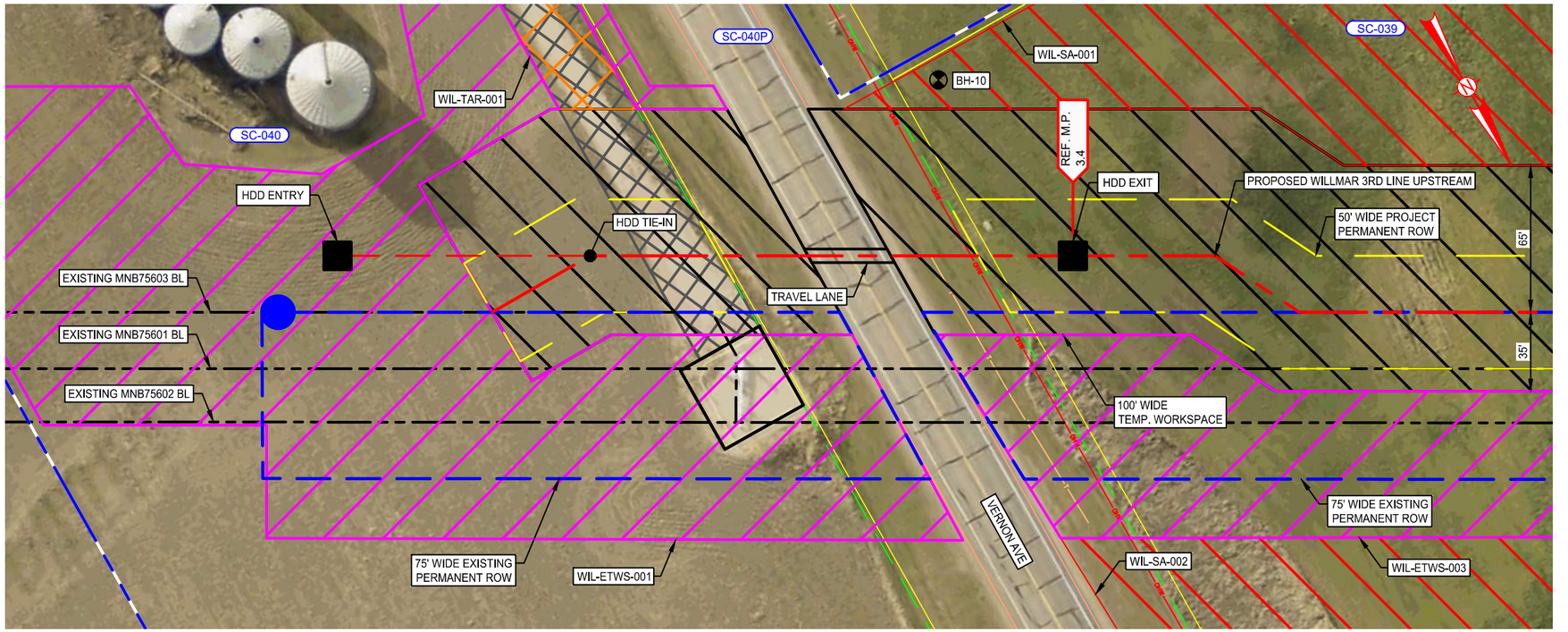
NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALBERT LEA M500 E-LINE
HDD SSP PLAN & PROFILE 118TH ST SW
SEC. 8 & 5, T105N, R21W
STEELE COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **ALO-SSP-5** F

PLAN & PROFILE VERNON AVE

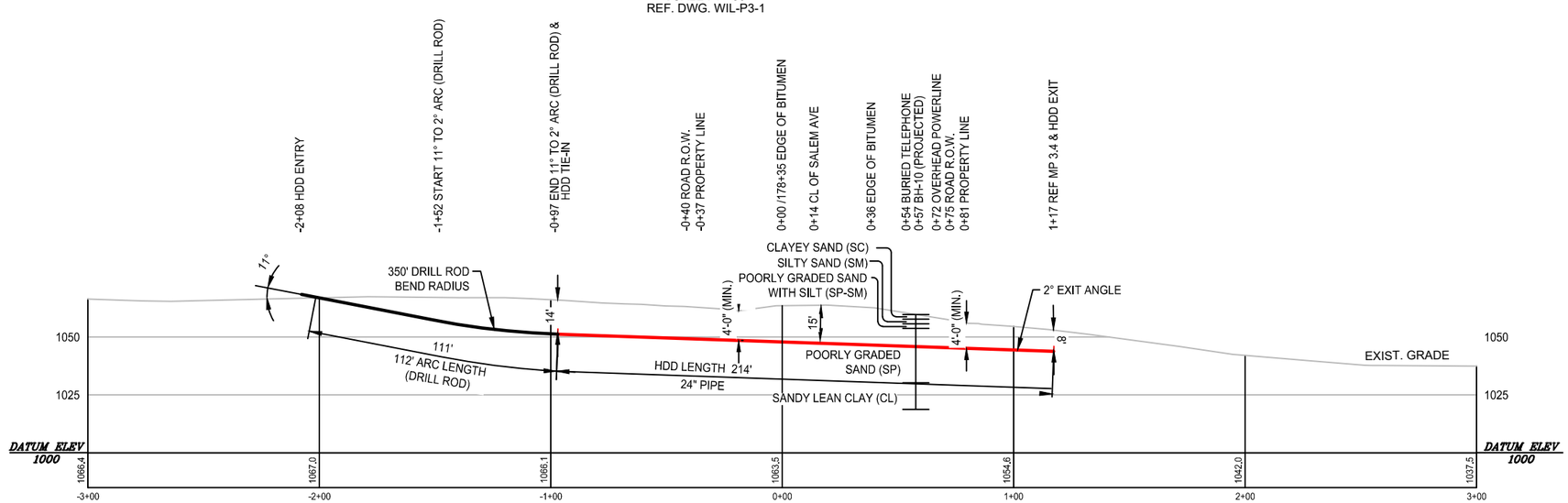


LEGEND

- PROPOSED 24" WILMAR 3RD LINE UPSTREAM
- EXISTING MNB75601 BL
- EXISTING MNB75602 BL
- EXISTING MNB75603 BL
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- SECTION LINE
- ROAD R.O.W.
- TELEPHONE CABLE
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- EXISTING LOT
- EXISTING DRIVE
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- STAGING AREA
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- LINE STOP
- BOREHOLE

PLAN

SCALE : 1"=30'
REF. DWG. WIL-P3-1



PROFILE

SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL# N/A		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	10/29/25
DRAWN	JM	01/05/26
ASBUILT		
FILE NO.:		
SCALE: 1"=30'		

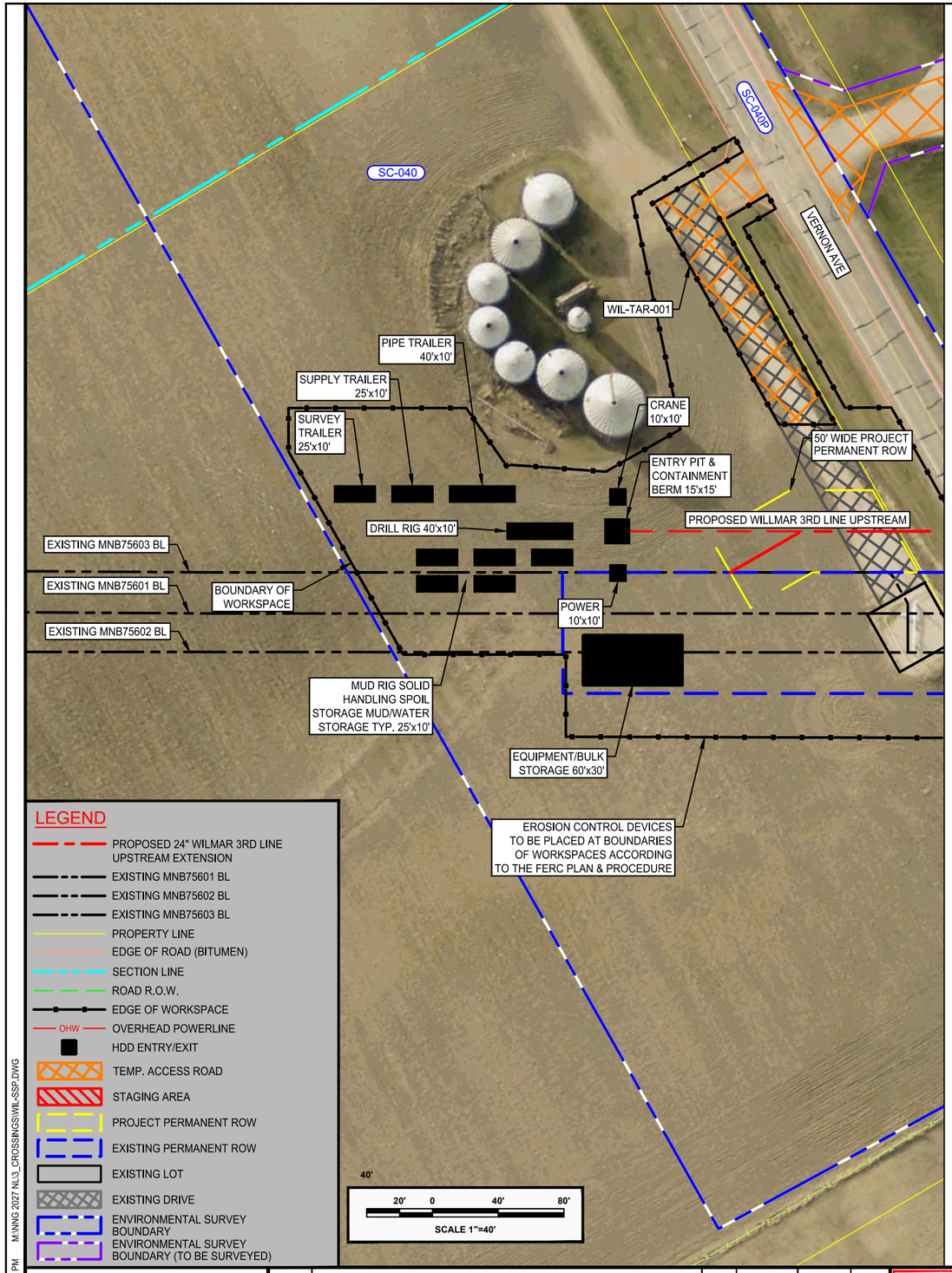
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE UPSTREAM
PLAN & PROFILE VERNON AVE
SEC. 21, T114N. R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

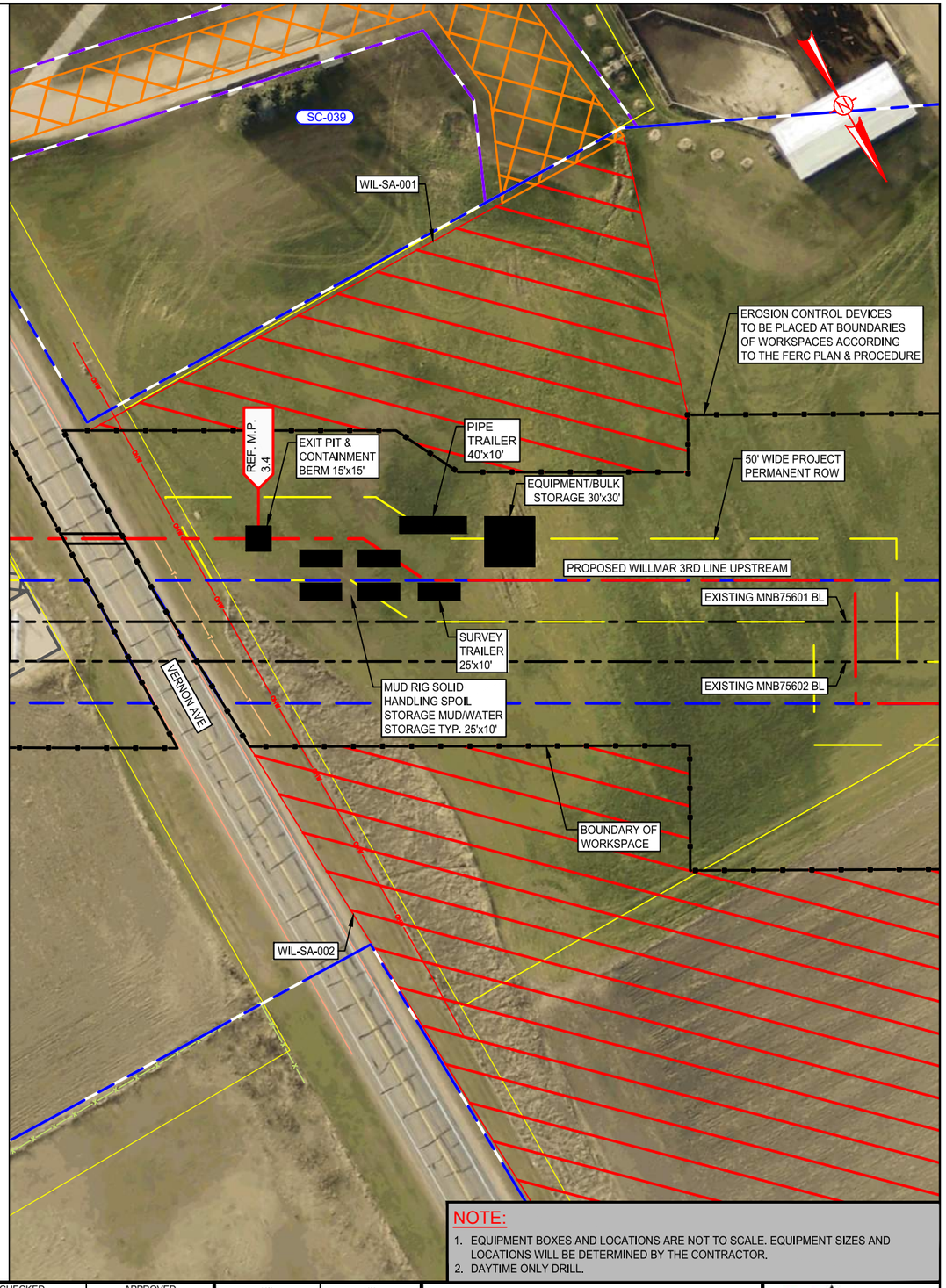
DWG. NO. WIL-P4-1 F

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Mesa, Marta 2/19/2026 9:03 AM



LEGEND

- PROPOSED 24" WILMAR 3RD LINE UPSTREAM EXTENSION
- EXISTING MNB75601 BL
- EXISTING MNB75602 BL
- EXISTING MNB75603 BL
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- SECTION LINE
- ROAD R.O.W.
- EDGE OF WORKSPACE
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. ACCESS ROAD
- STAGING AREA
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- EXISTING LOT
- EXISTING DRIVE
- ENVIRONMENTAL SURVEY BOUNDARY
- ENVIRONMENTAL SURVEY BOUNDARY (TO BE SURVEYED)



NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

M:\NNG 2027 NL\3_CROSSINGS\WIL-SSP.DWG
Meriel, Jeffrey 2/19/2026 10:51 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL# N/A		CONST. YR 2027
STA# N/A		POI# N/A
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DRAWN	JM	01/05/26
ASBUILT		
FILE NO.:		
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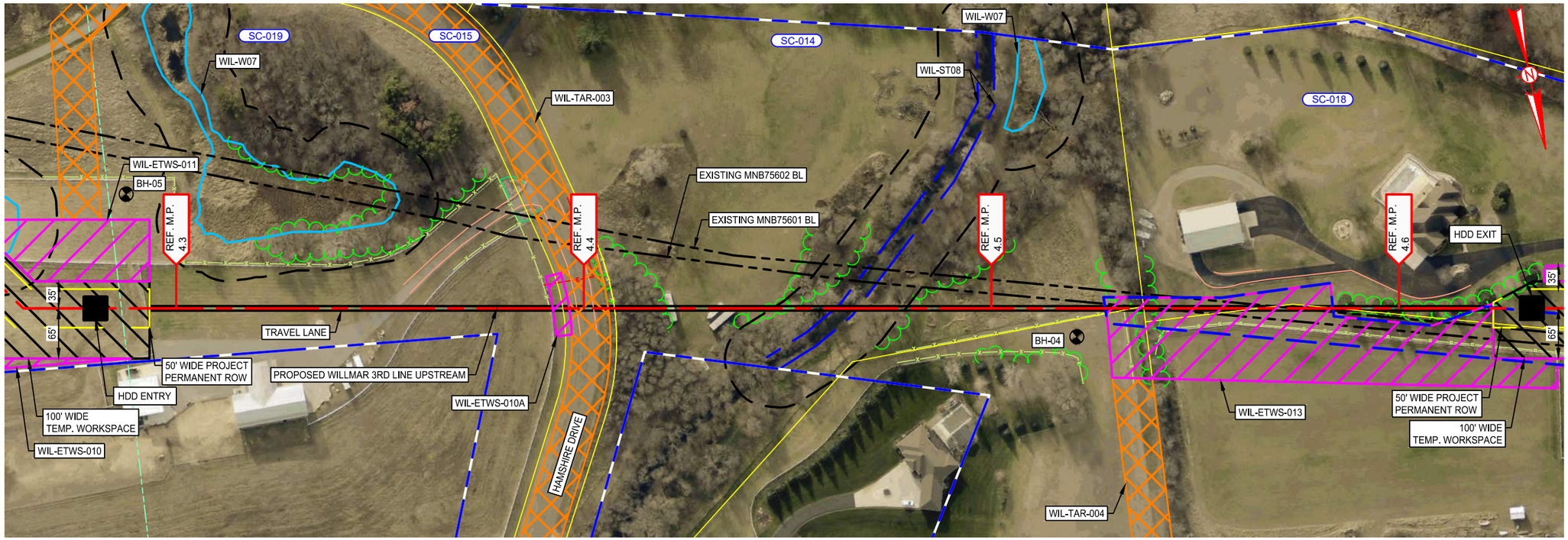
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD LINE UPSTREAM
PLAN & PROFILE VERNON AVE
SEC. 21, T114N. R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
WIL-SSP-1
F

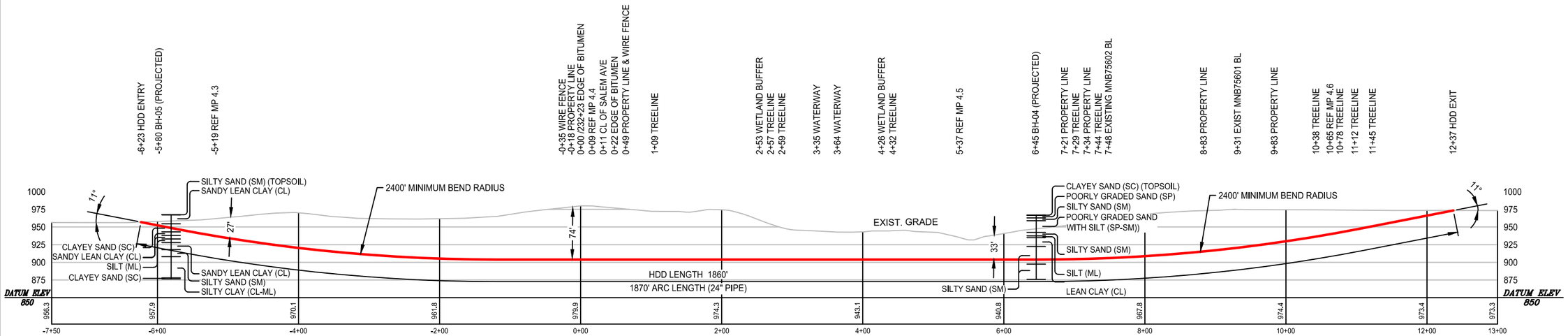
PLAN & PROFILE STREAM



LEGEND

- PROPOSED 24" WILMAR 3RD LINE UPSTREAM
- EXISTING MNB75601 BL
- EXISTING MNB75602 BL
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- SECTION LINE
- WETLAND
- WETLAND BUFFER
- STREAM
- WIRE FENCE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE

PLAN
SCALE : 1"=75'
REF. DWG. WIL-P3-3 & WIL-P3-4



PROFILE
SCALE (VERT): 1"=75'
SCALE (HORIZ): 1"=75'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# N/A | CONST. YR 2027
STA# N/A | POI# N/A

	BY	DATE
DESIGN	ED	10/29/25
DRAWN	JM	01/05/26
ASBUILT		

FILE NO.:
SCALE: 1"=70'

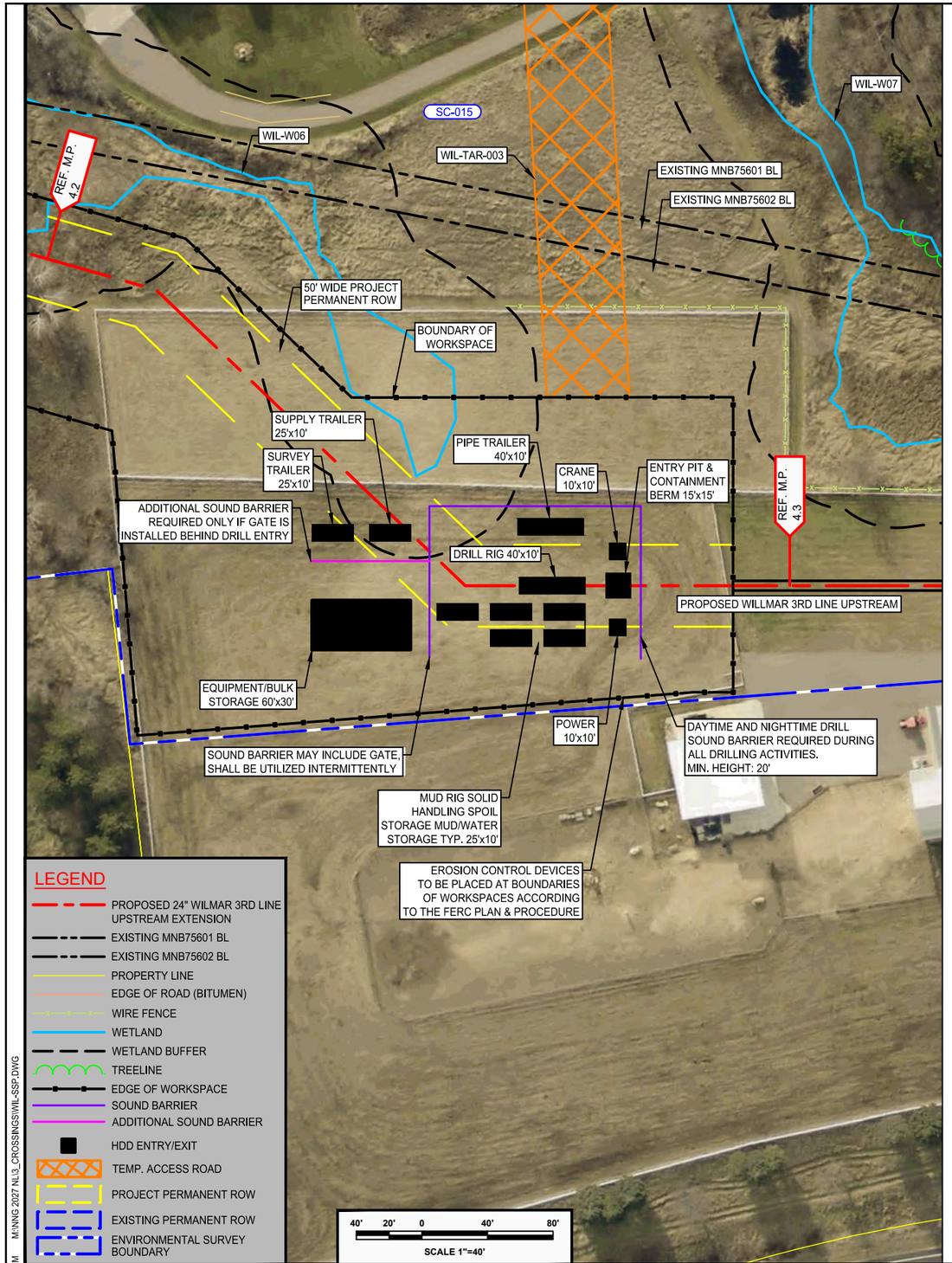
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE UPSTREAM
PLAN & PROFILE STREAM
SEC. 20, T114N. R21W
SCOTT COUNTY, MINNESOTA

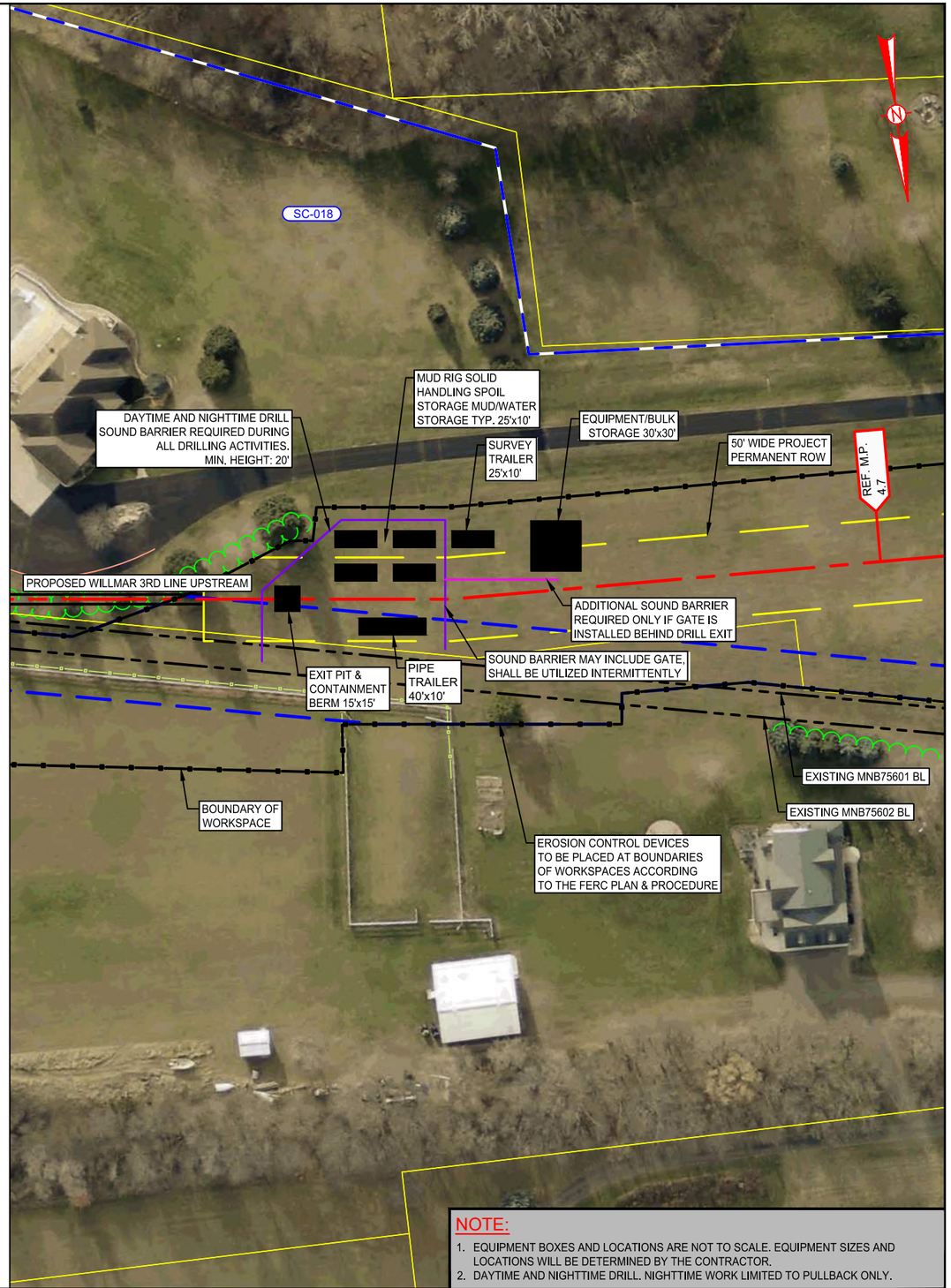
Northern Natural Gas.

PROJECT NO.

DWG. NO.
WIL-P4-2
F

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2/19/2026 9:02 AM
Mesa, Marta





LEGEND

- PROPOSED 24" WILMAR 3RD LINE UPSTREAM EXTENSION
- EXISTING MNB75601 BL
- EXISTING MNB75602 BL
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- WIRE FENCE
- WETLAND
- WETLAND BUFFER
- TREELINE
- EDGE OF WORKSPACE
- SOUND BARRIER
- ADDITIONAL SOUND BARRIER
- HDD ENTRY/EXIT
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME AND NIGHTTIME DRILL. NIGHTTIME WORK LIMITED TO PULLBACK ONLY.

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Meriel, Jeffrey 2/19/2026 10:52 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL# N/A		CONST. YR 2027
STA# N/A		POI# N/A
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DRAWN	JM	01/05/26
ASBUILT		
FILE NO.:		
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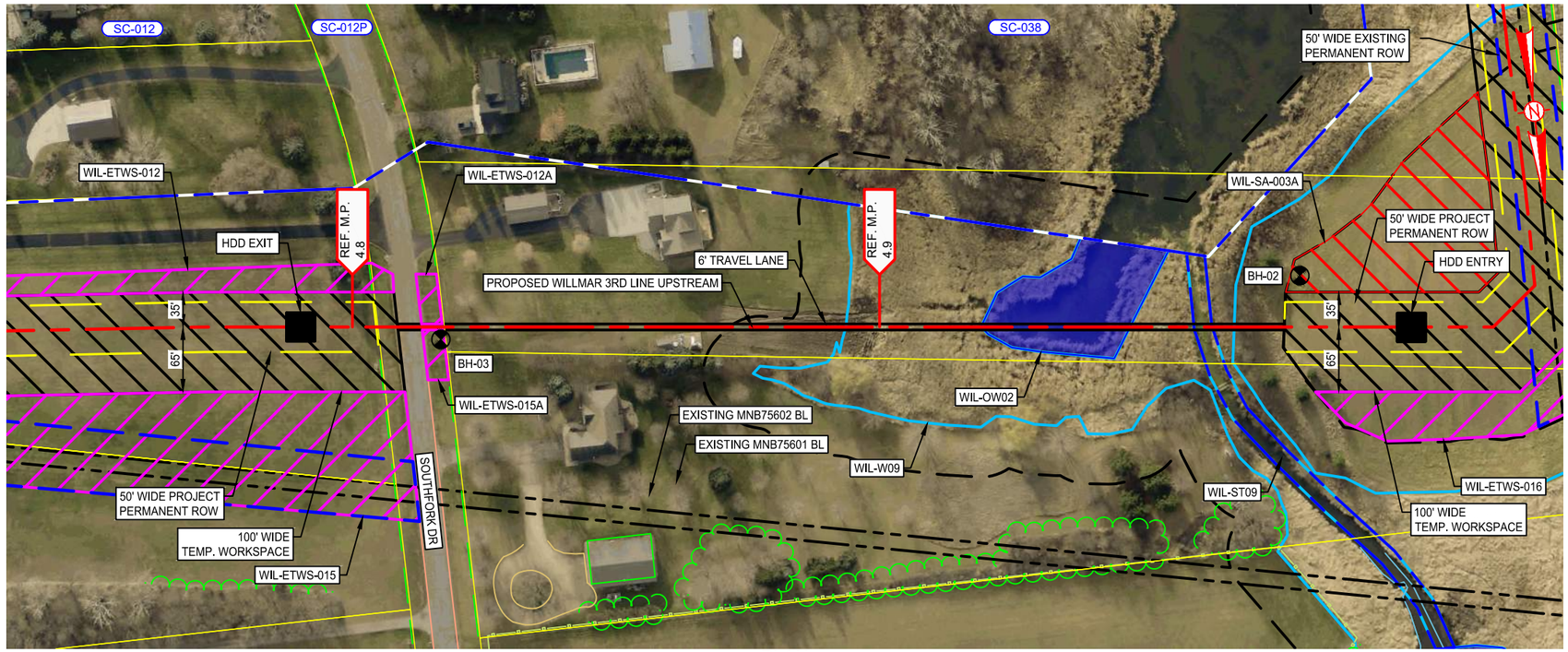
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD LINE UPSTREAM
HDD SSP PLAN & PROFILE STREAM
SEC. 20, T114N. R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
WIL-SSP-2
F

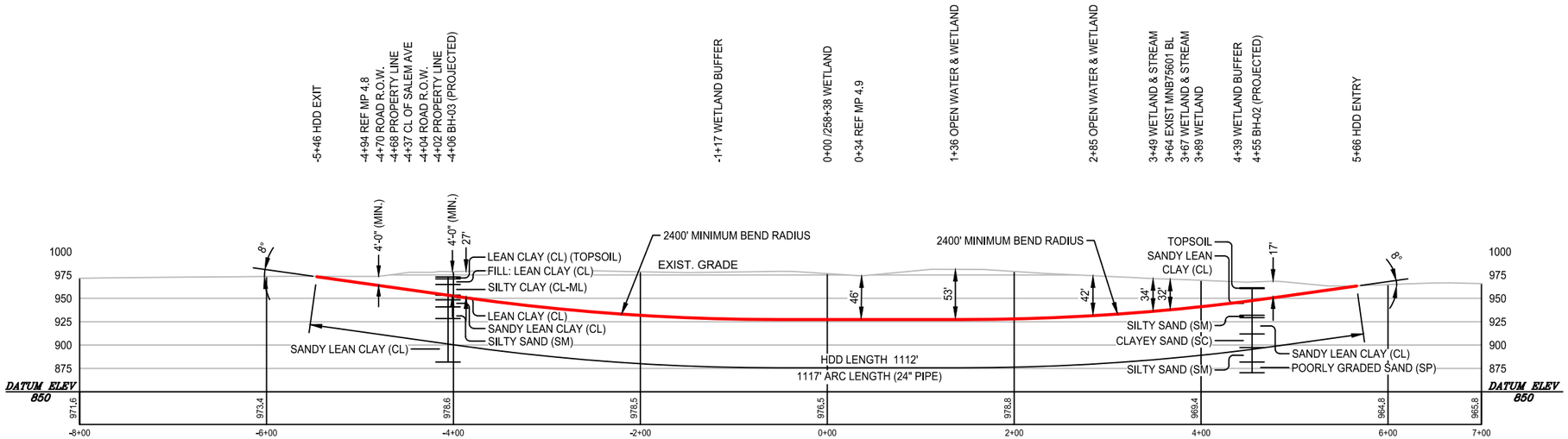
PLAN & PROFILE SOUTHFORK DR & WETLAND



PLAN
SCALE : 1"=70'
REF. DWG. WIL-P3-5

LEGEND

- PROPOSED WILIMAR 3RD LINE UPSTREAM
- EXISTING MNB75601 BL
- EXISTING MNB75602 BL
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- SECTION LINE
- WETLAND
- WETLAND BUFFER
- WATERWAY
- FOREIGN PIPELINE
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- STAGING AREA
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- OPEN WATER
- BOREHOLE



PROFILE
SCALE (VERT): 1"=70'
SCALE (HORIZ): 1"=70'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

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PL# N/A		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	10/29/25	
DRAWN	JM	01/05/26	
ASBUILT			
FILE NO.:			
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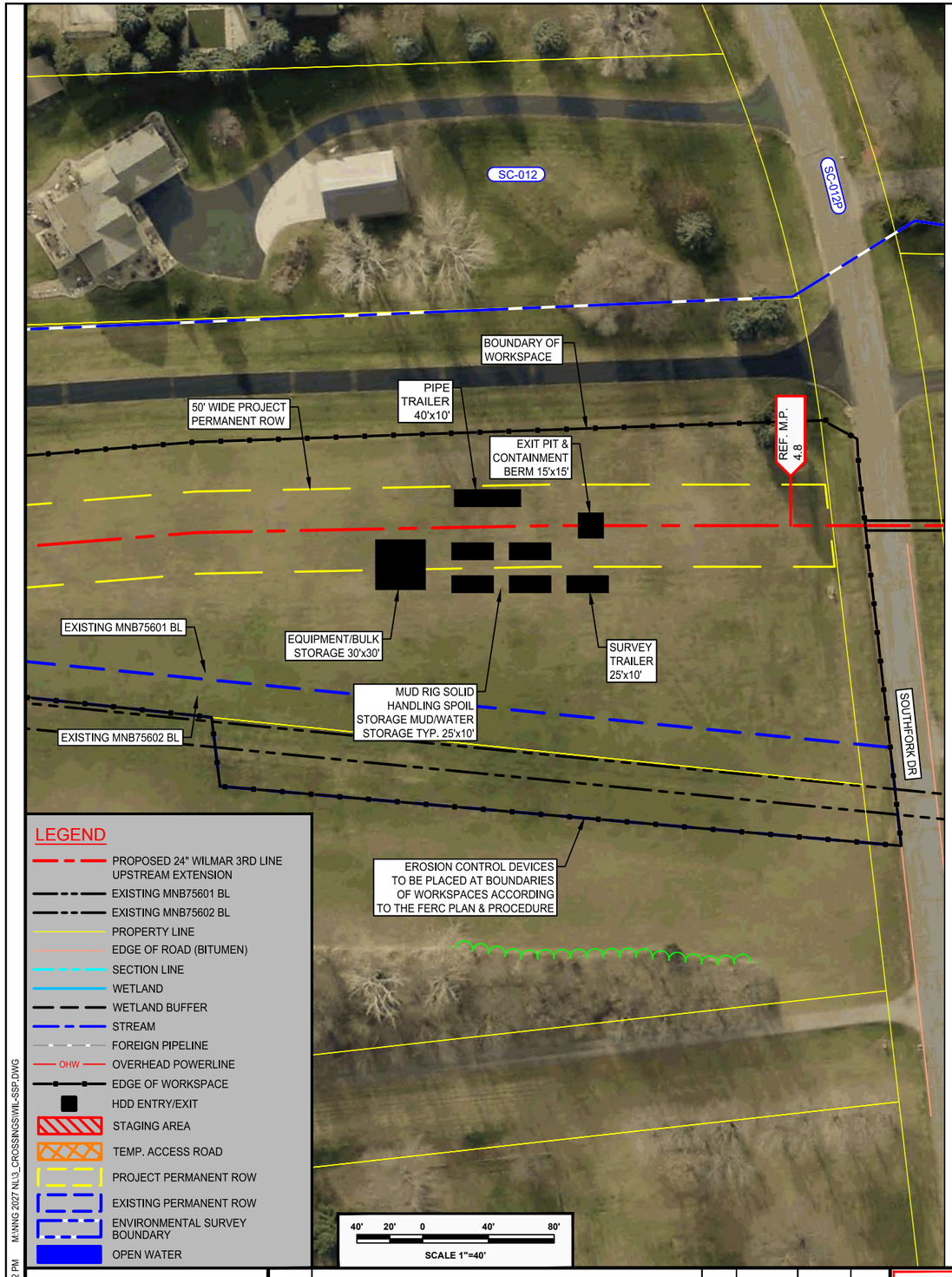
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE UPSTREAM
PLAN & PROFILES SOUTHFORK DR & WETLAND
SEC. 20, T114N. R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

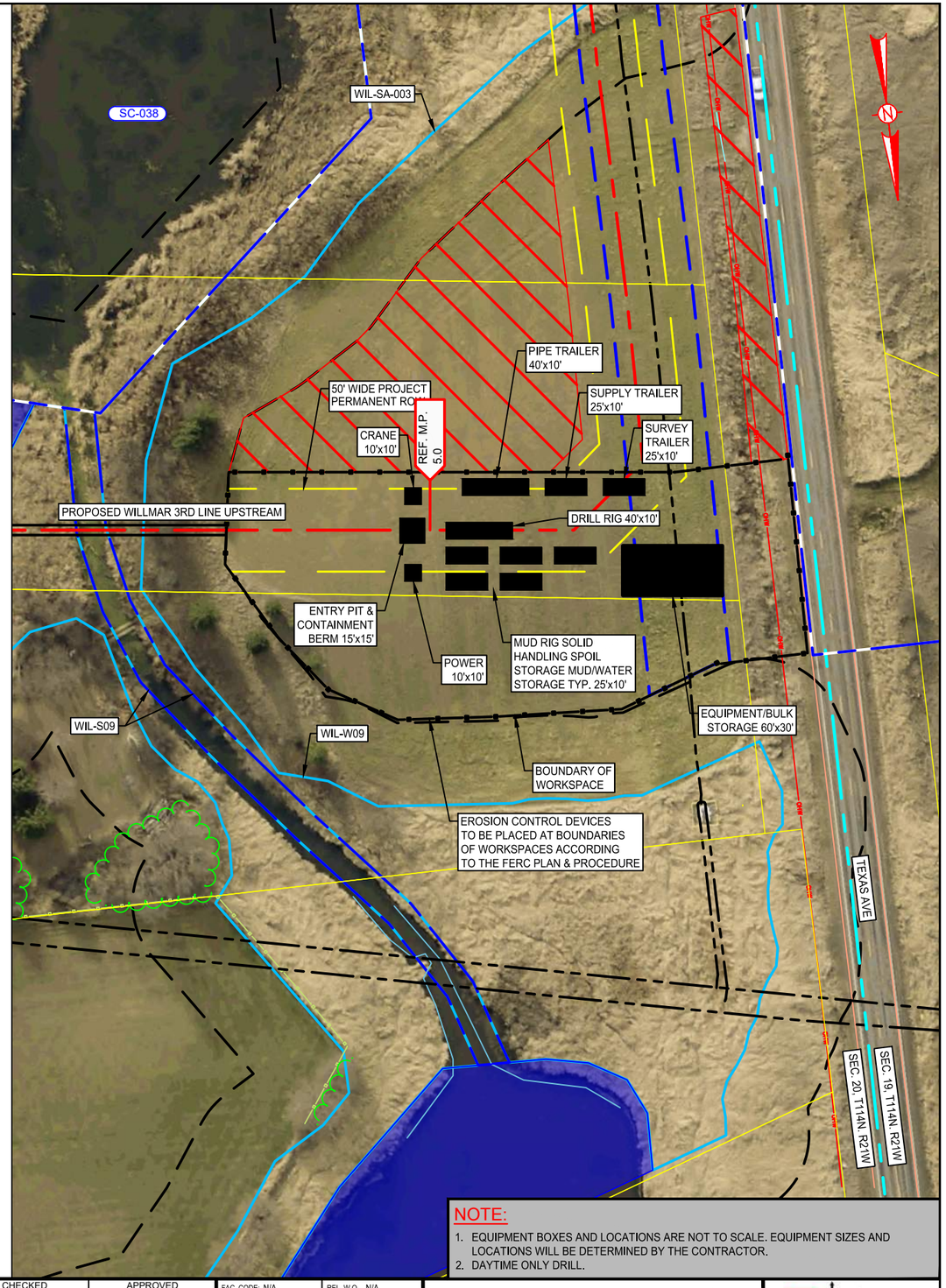
DWG. NO.
WIL-P4-3
F

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2/19/2026 9:02 AM
Mesa, Marta



LEGEND

- PROPOSED 24" WILMAR 3RD LINE UPSTREAM EXTENSION
- EXISTING MNB75601 BL
- EXISTING MNB75602 BL
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- SECTION LINE
- WETLAND
- WETLAND BUFFER
- STREAM
- FOREIGN PIPELINE
- OHW — OVERHEAD POWERLINE
- EDGE OF WORKSPACE
- HDD ENTRY/EXIT
- STAGING AREA
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- OPEN WATER



NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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Meriel, Jeffrey 2/19/2026 10:52 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

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PI# N/A		CONST. YR 2027
STA# N/A		POI# N/A
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DESIGN	ED	10/XX/25
DRAWN	JM	01/05/26
ASBUILT		
FILE NO.:		
SCALE: 1"=70'		

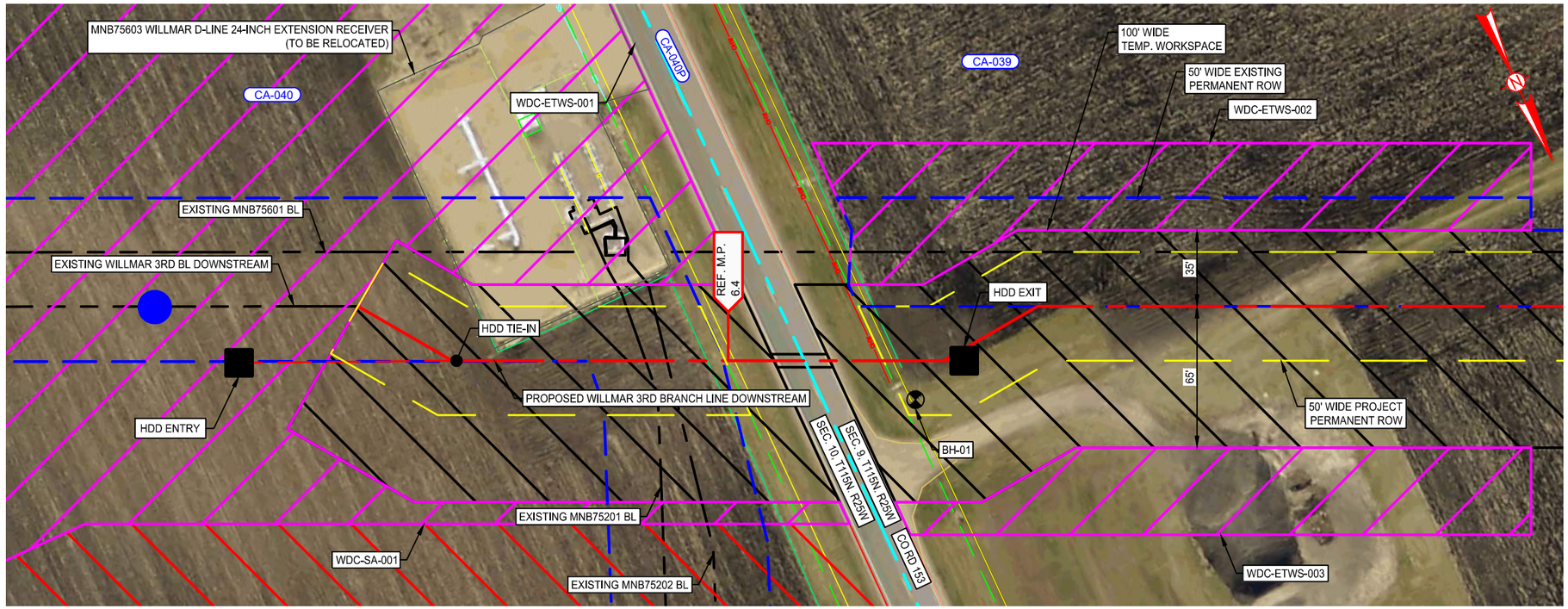
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD LINE UPSTREAM
HDD SSP PLAN & PROFILES SOUTHFORK DR & WETLAND
SEC. 20, T114N. R21W
SCOTT COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. WIL-SSP-3 F

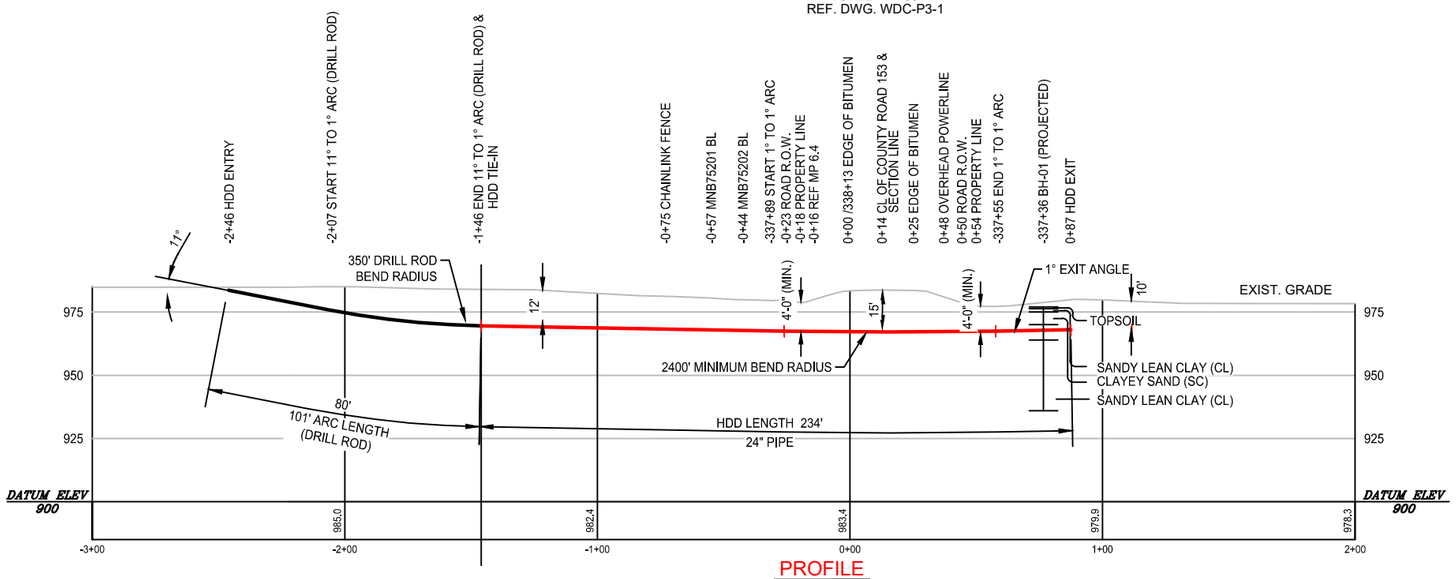
PLAN & PROFILE COUNTY ROAD 153



LEGEND

- PROPOSED WILLMAR 3RD BRANCH LINE DOWNSTREAM
- EXISTING MNB75201 BL
- EXISTING MNB75202 BL
- EXISTING WILLMAR 3RD BL DOWNSTREAM
- PROPERTY LINE
- CHAINLINK FENCE
- SECTION LINE
- EDGE OF ROAD (BITUMEN)
- ROAD R.O.W.
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- STAGING AREA
- TEMP. ACCESS ROAD
- EXISTING LOT
- EXISTING PERMANENT ROW
- BOREHOLE
- LINE STOP

PLAN
SCALE : 1"=30'
REF. DWG. WDC-P3-1



PROFILE
SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

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2/19/2026 8:54 AM
Mesa, Marta

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

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PRELIM				
BID				
CONST.				

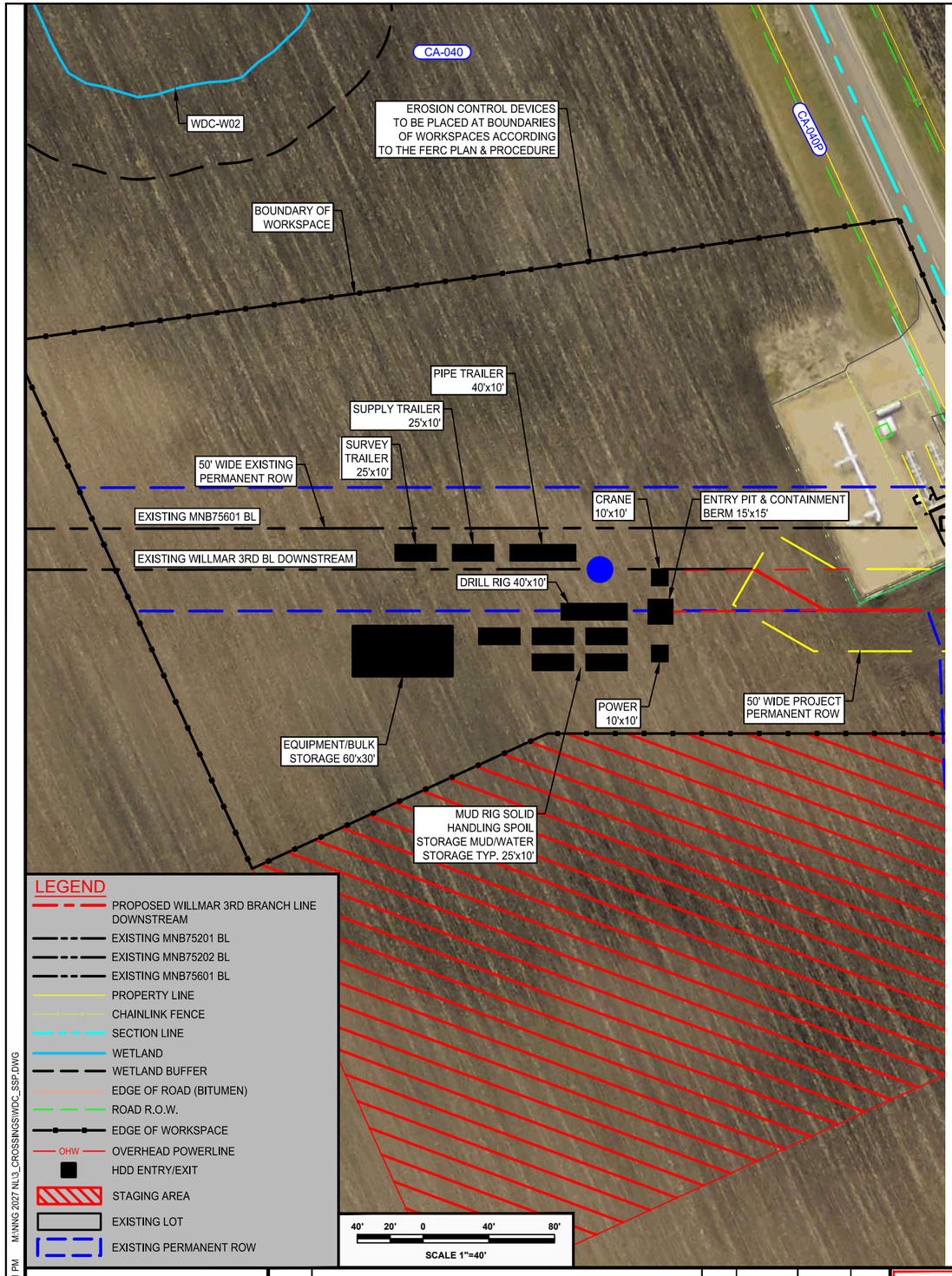
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DRAWN	JM	10/31/25
ASBUILT		
FILE NO.:		
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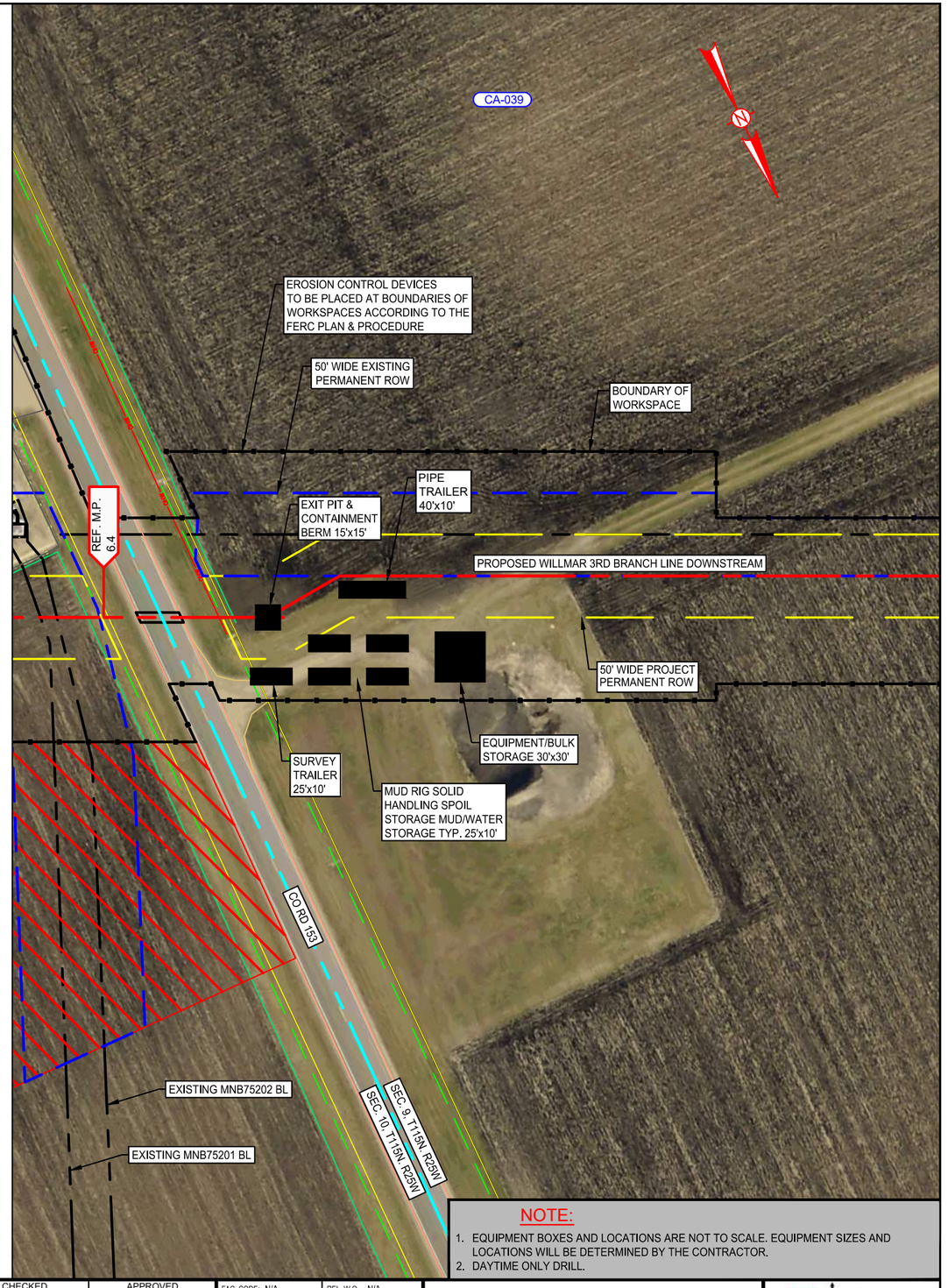
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
PLAN & PROFILE COUNTY ROAD 153
SEC. 10 & 9, T115N. R25W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
WDC-P4-1
F





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/19/2026 11:01 PM
Meriel, Jeffrey

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

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STA# N/A		POI# N/A
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DRAWN	JM	1/13/26
ASBUILT		
FILE NO.:		
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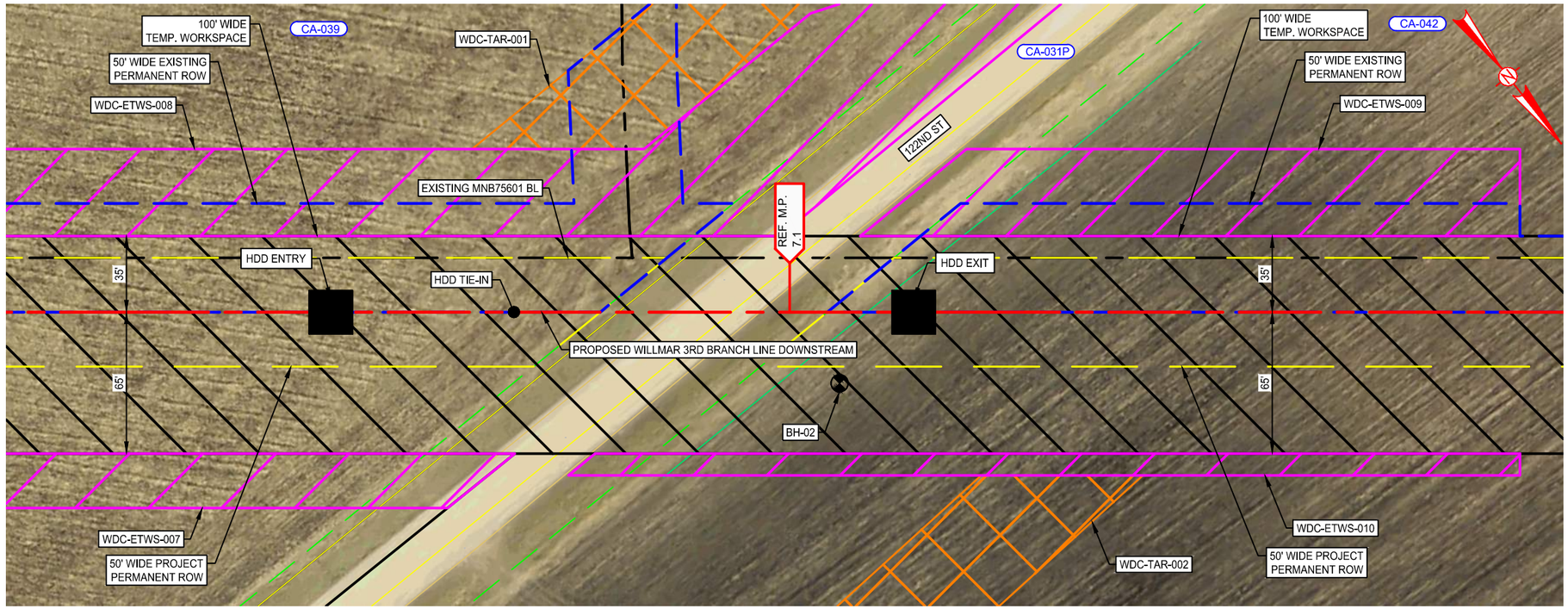
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WILLMAR 3RD BRANCH LINE DOWNSTREAM
HDD SSP PLAN & PROFILE COUNTY ROAD 153
SEC. 10 & 9, T115N. R25W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

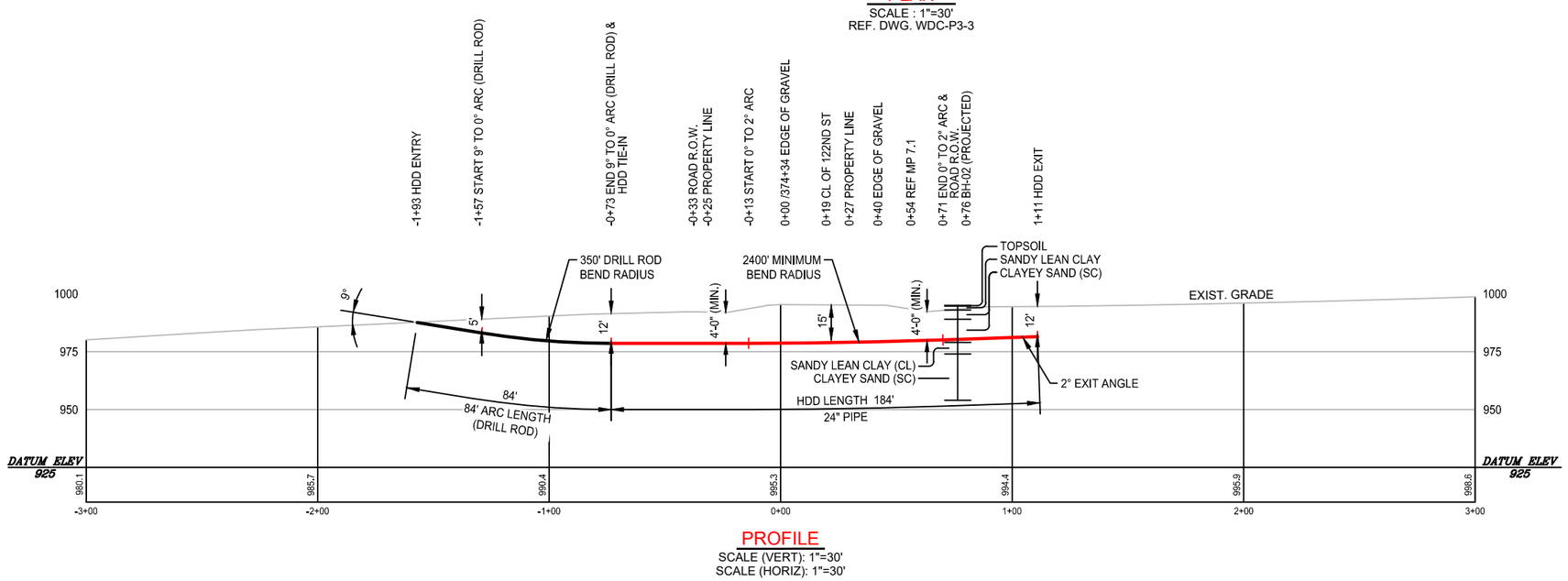
PROJECT NO.

DWG. NO.
WDC-SSP-1
F

PLAN & PROFILE 122ND ST



PLAN
SCALE : 1"=30'
REF. DWG. WDC-P3-3



PROFILE
SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL# N/A		CONST. YR 2027	
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ASBUILT			
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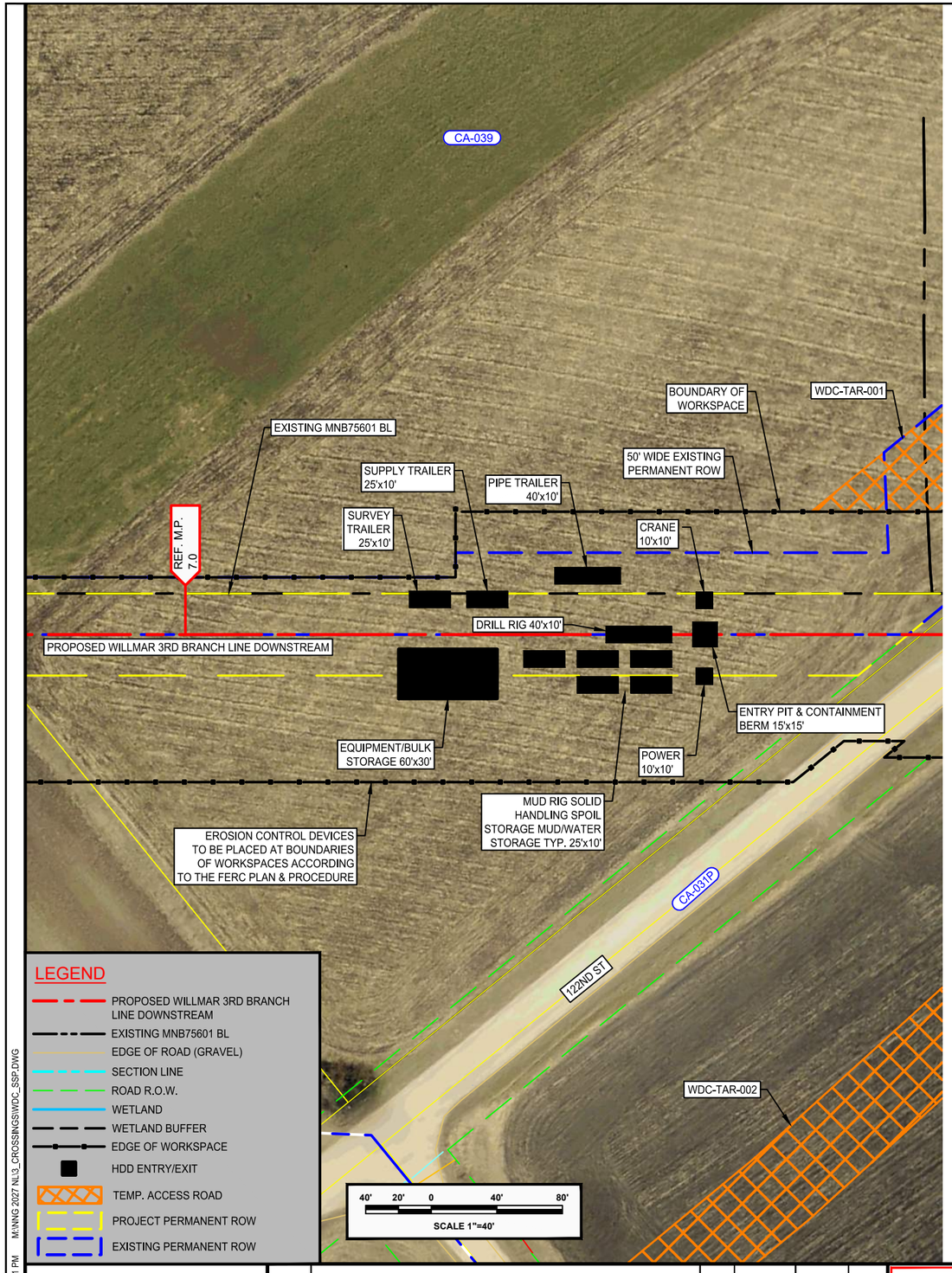
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WILLMAR 3RD BRANCH LINE DOWNSTREAM
PLAN & PROFILE 122ND ST
SEC. 9, T115N. R25W
CARVER COUNTY, MINNESOTA

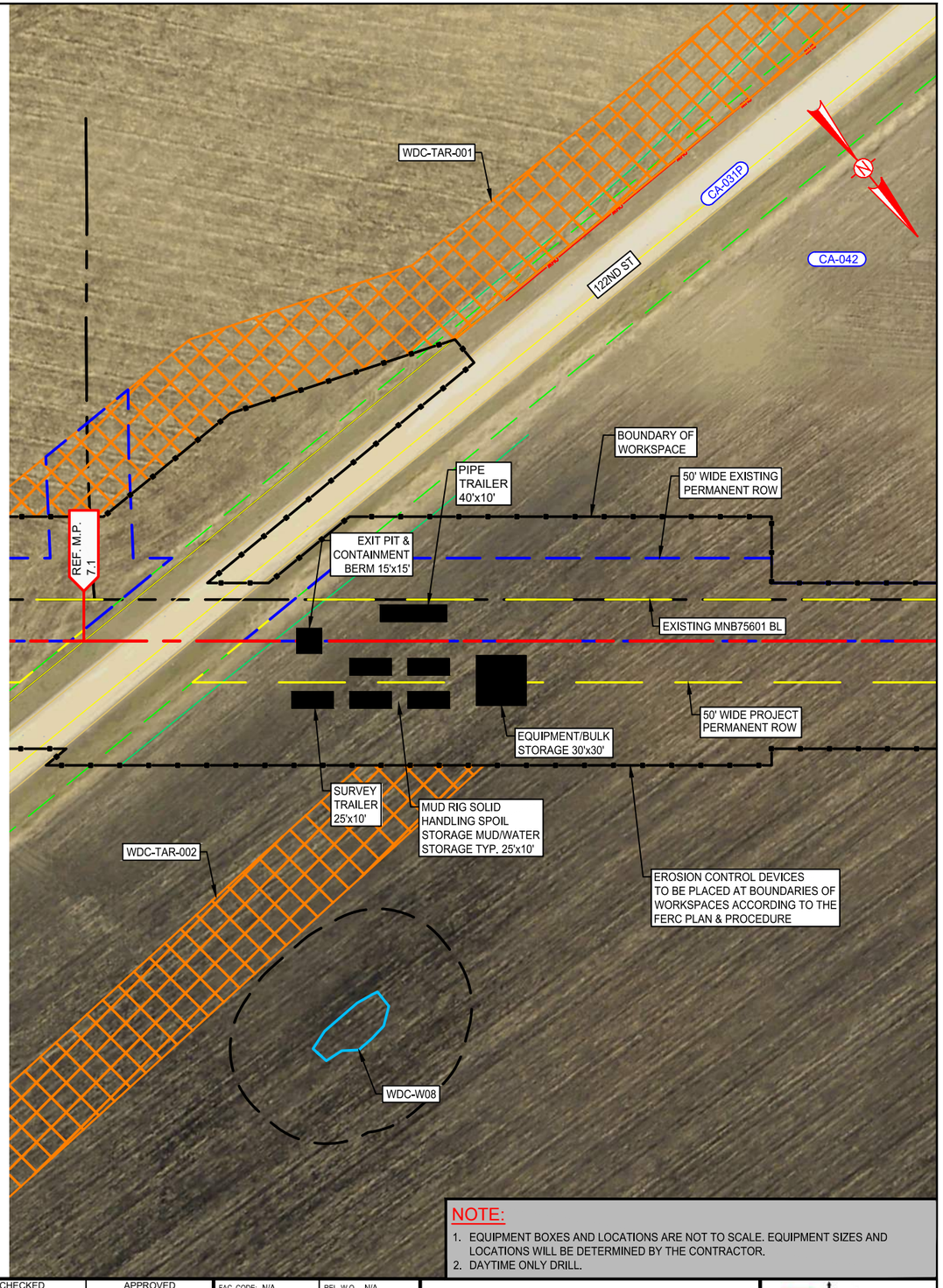
Northern Natural Gas.

PROJECT NO.

DWG. NO. **WDC-P4-2** F

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2/19/2026 8:55 AM
Mesa, Marta





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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Meriel, Jeffrey 2/19/2026 11:01 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
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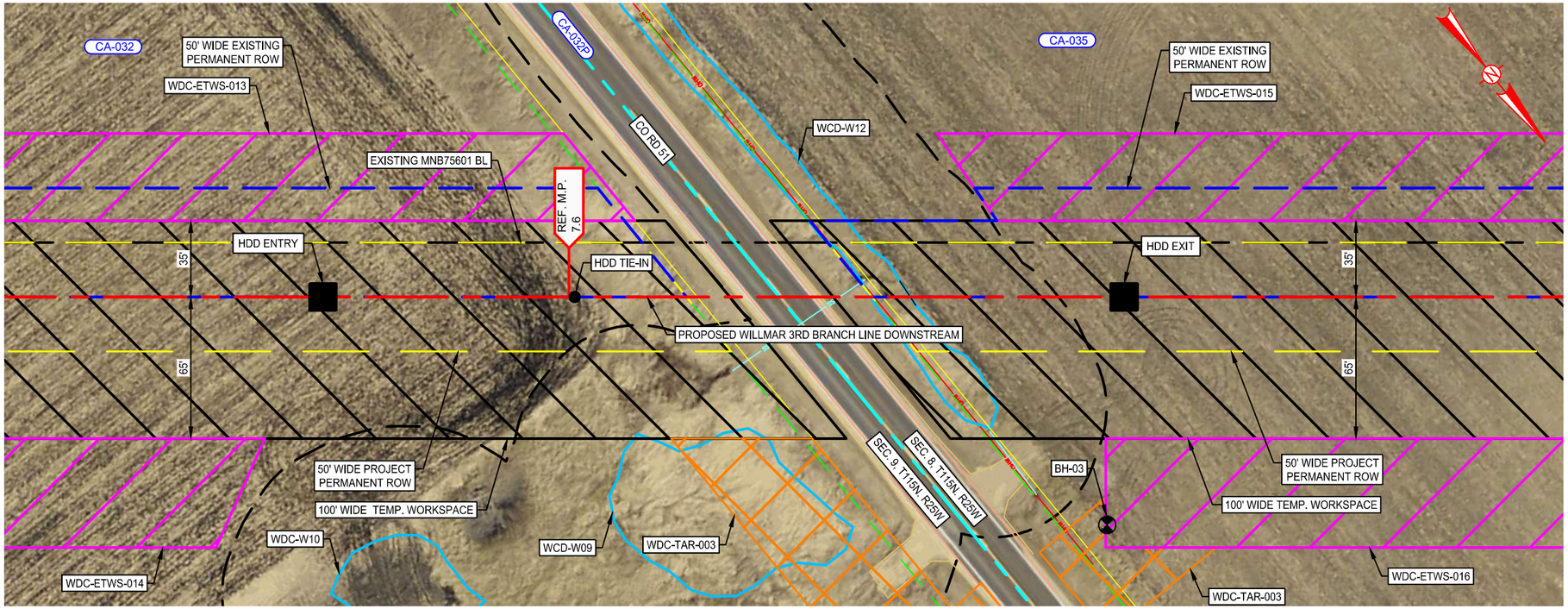
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
HDD SSP PLAN & PROFILE 122ND ST
SEC. 9, T115N. R25W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

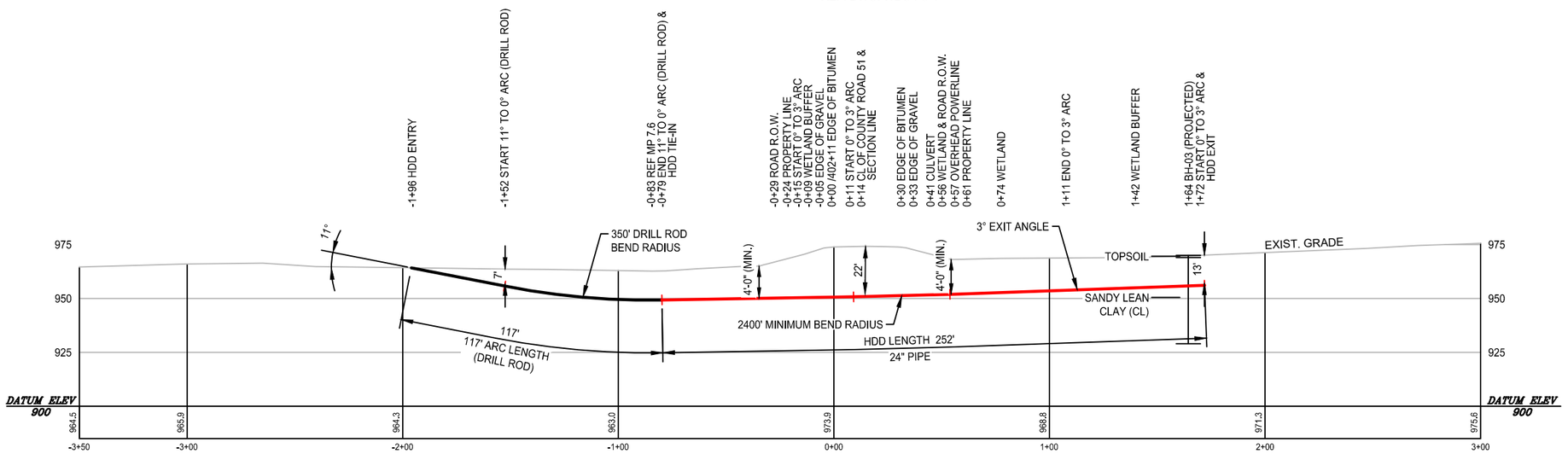
PROJECT NO.

DWG. NO. **WDC-SSP-2** F

PLAN & PROFILE COUNTY ROAD 51



PLAN
SCALE : 1"=30'
REF. DWG. WDC-P3-4



PROFILE
SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

LEGEND

- PROPOSED WILLMAR 3RD BRANCH LINE DOWNSTREAM
- EXISTING MNB75601 BL
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- WETLAND
- WETLAND BUFFER
- SECTION LINE
- ROAD R.O.W.
- CULVERT
- OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- BOREHOLE

M:\NNG 2027 NL\3_CROSSING\GS\WDC-PLAN&PROFILE.DWG
Mertel, Jeffrey 2/23/2026 6:37 AM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
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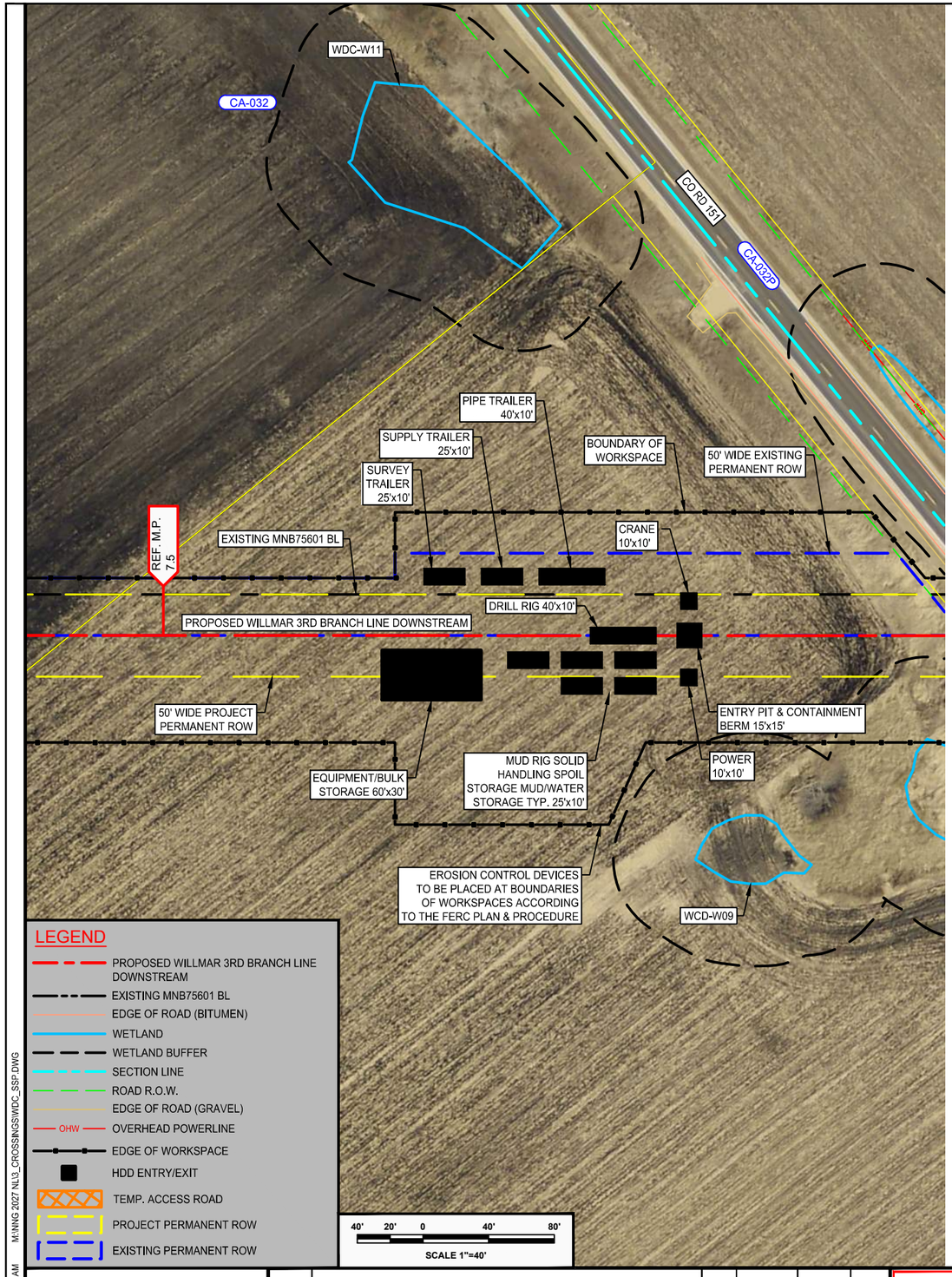
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DRAWN	JM	10/31/25
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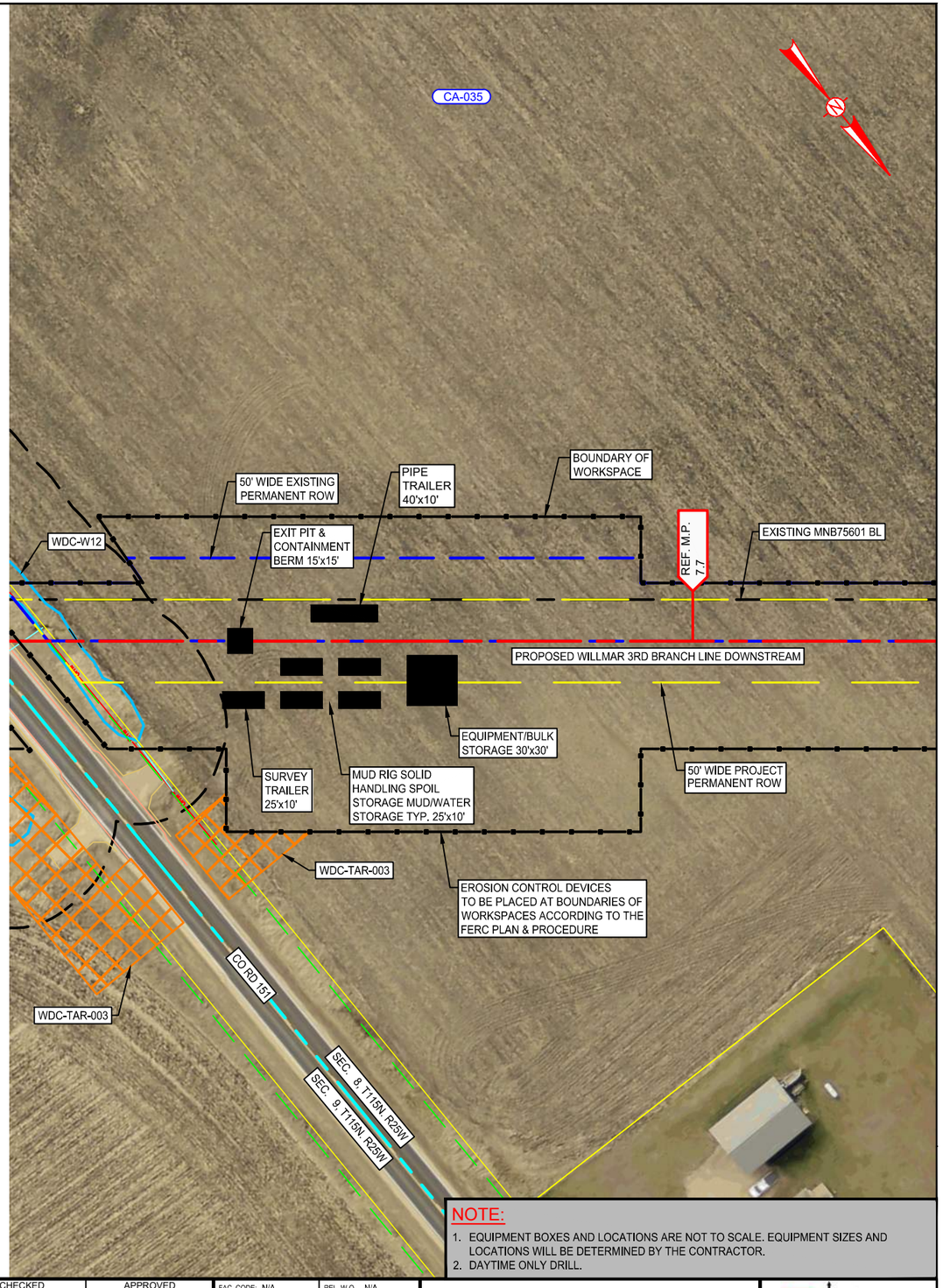
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
PLAN & PROFILE COUNTY ROAD 51
SEC. 9 & 8, T115N. R25W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. WDC-P4-3 F





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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Meriel, Jeffrey 2/23/2026 7:46 AM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
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BID				
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STA# N/A		POI# N/A
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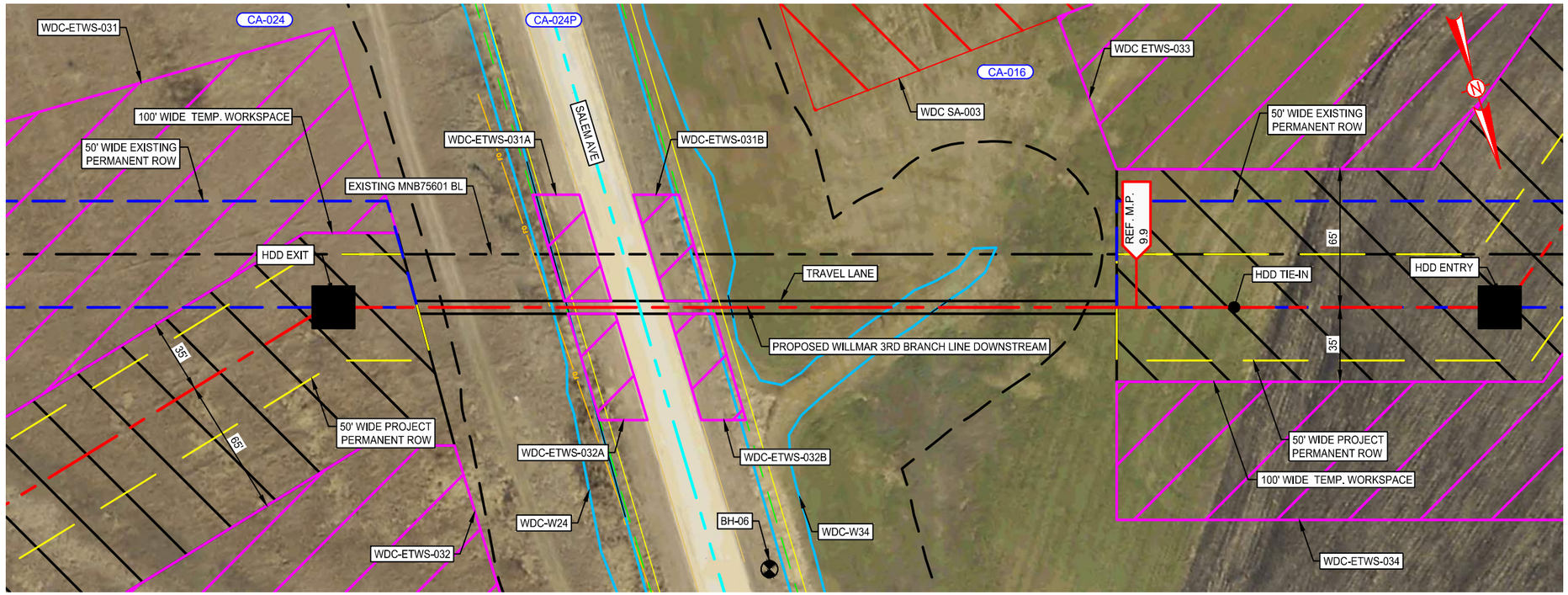
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WILLMAR 3RD BRANCH LINE DOWNSTREAM
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SEC. 9 & 8, T115N. R25W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

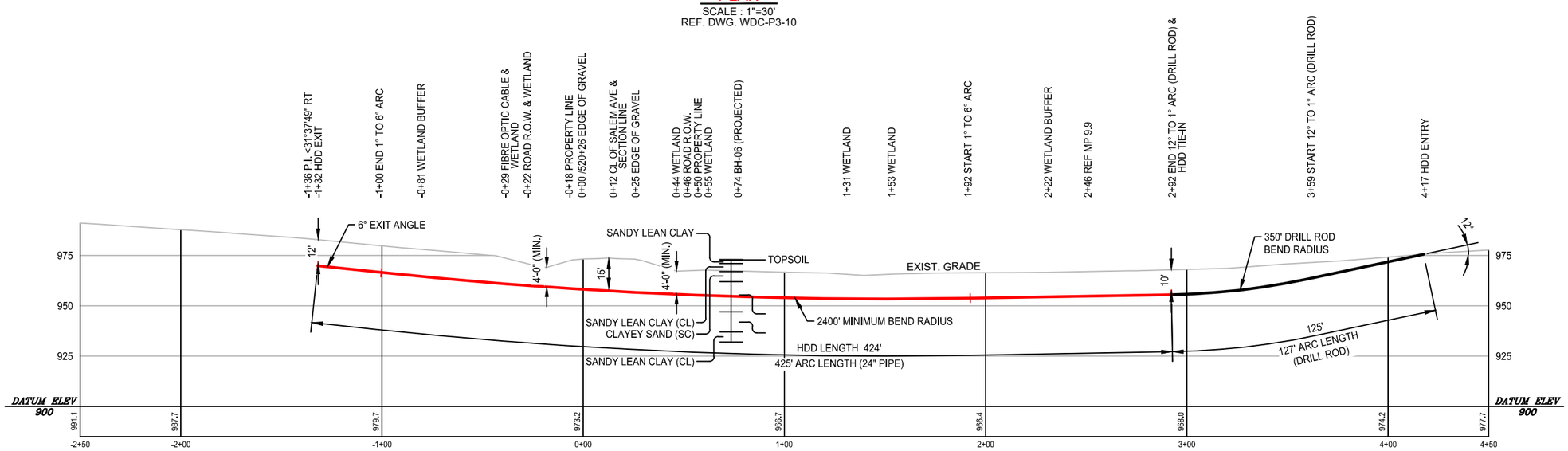
DWG. NO. **WDC-SSP-3** F

PLAN & PROFILE SALEM AVE



PLAN

SCALE : 1"=30'
REF. DWG. WDC-P3-10



PROFILE

SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

LEGEND

- PROPOSED WILLMAR 3RD BRANCH LINE DOWNSTREAM
- EXISTING MNB75601 BL
- PROPERTY LINE
- EDGE OF ROAD (GRAVEL)
- SECTION LINE
- ROAD R.O.W.
- FIBRE OPTIC CABLE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- STAGING AREA
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- BOREHOLE

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Merlel, Jeffrey 2/23/2026 7:55 AM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# N/A | CONST. YR 2027
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	BY	DATE
DESIGN	ED	10/31/25
DRAWN	JM	10/31/25
ASBUILT		

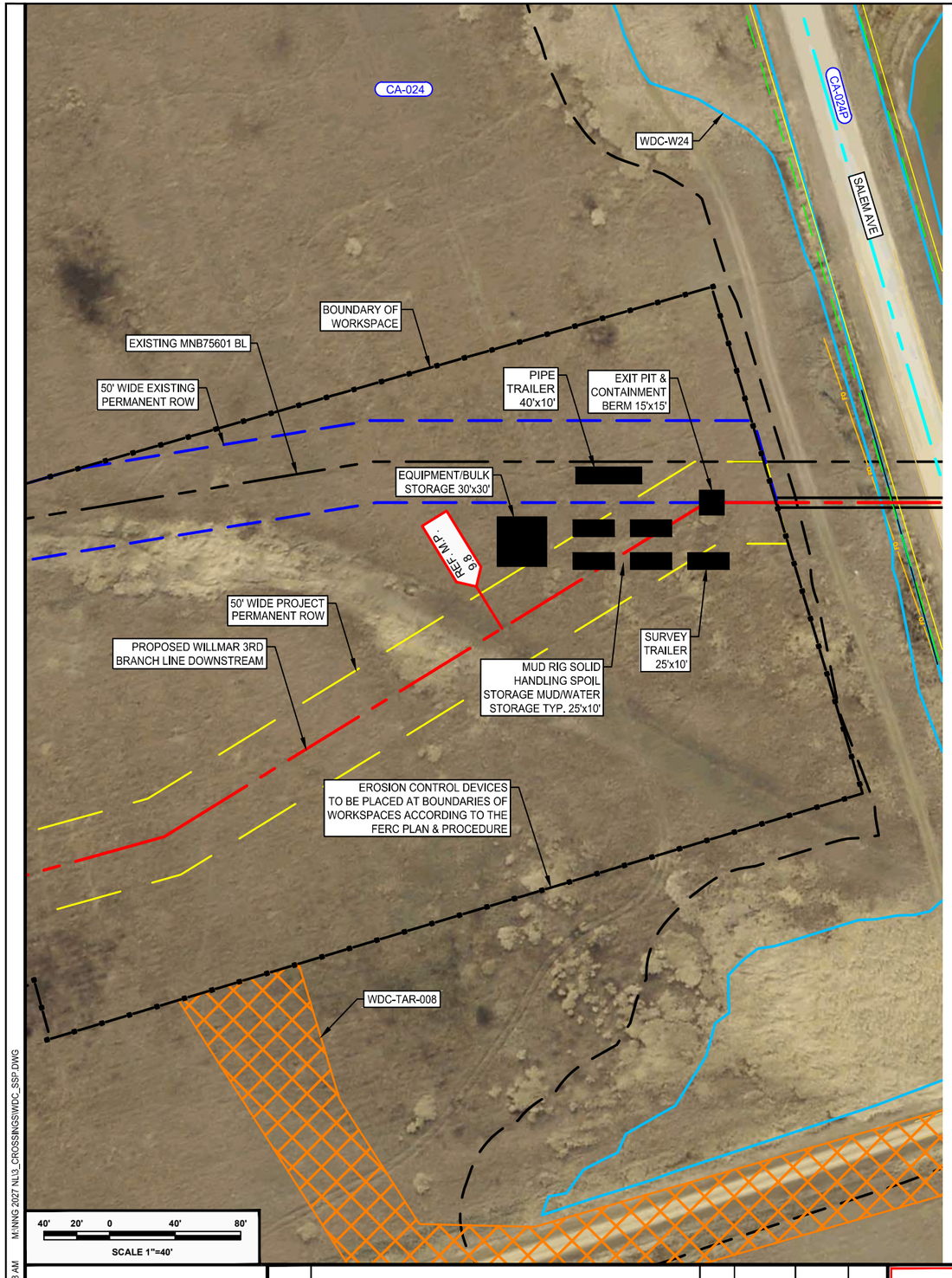
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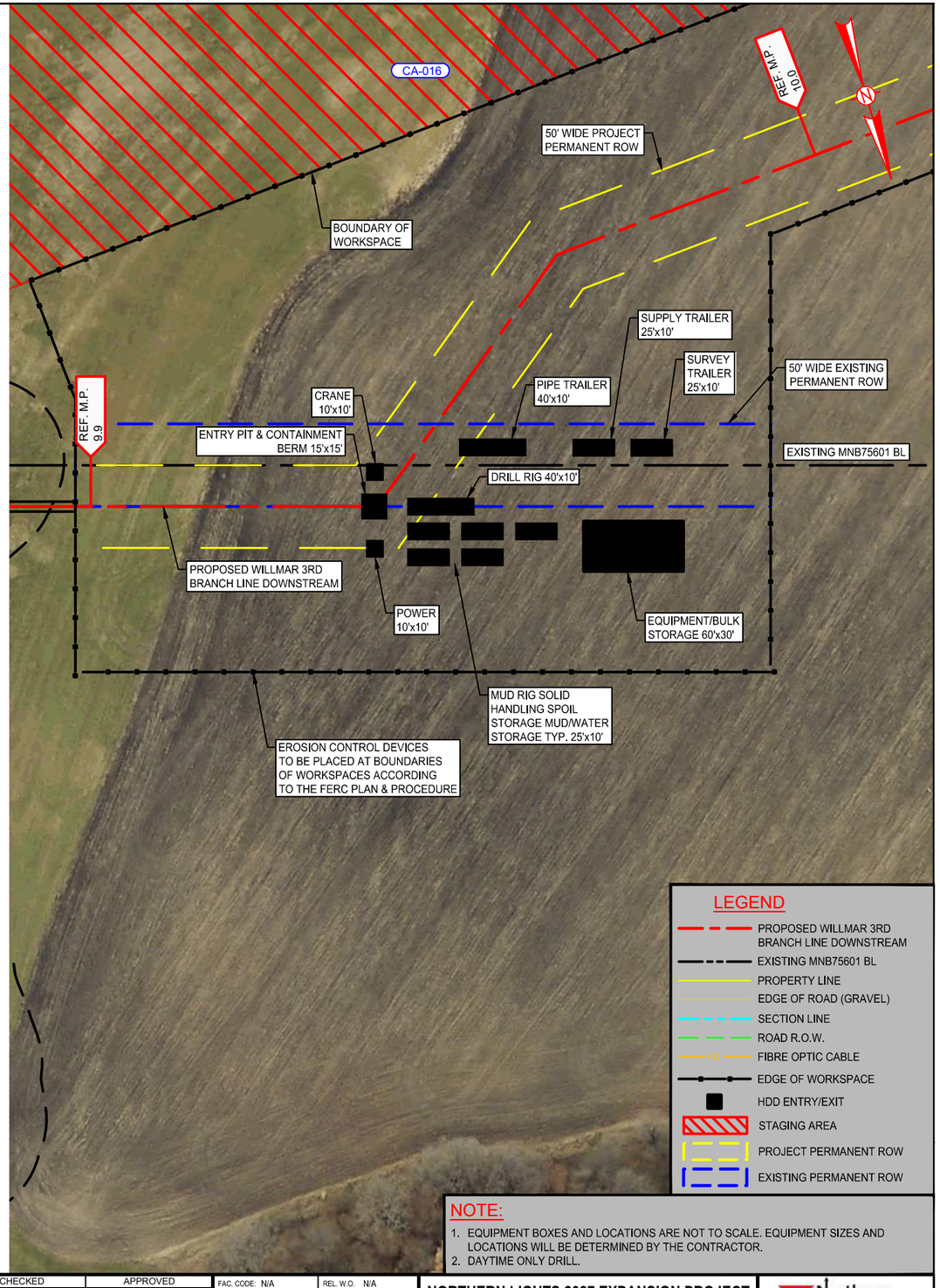
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
PLAN & PROFILE SALEM AVE
SEC. 6 & 1, T115N. R25 & 26W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **WDC-P4-5** F





LEGEND

- PROPOSED WILLMAR 3RD BRANCH LINE DOWNSTREAM
- EXISTING MNB75601 BL
- PROPERTY LINE
- EDGE OF ROAD (GRAVEL)
- SECTION LINE
- ROAD R.O.W.
- FIBRE OPTIC CABLE
- EDGE OF WORKSPACE
- HDD ENTRY/EXIT
- STAGING AREA
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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Meriel, Jeffrey 2/23/2026 7:58 AM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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FILED WITH FERC
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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

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DRAWN	JM	1/13/26	
ASBUILT			
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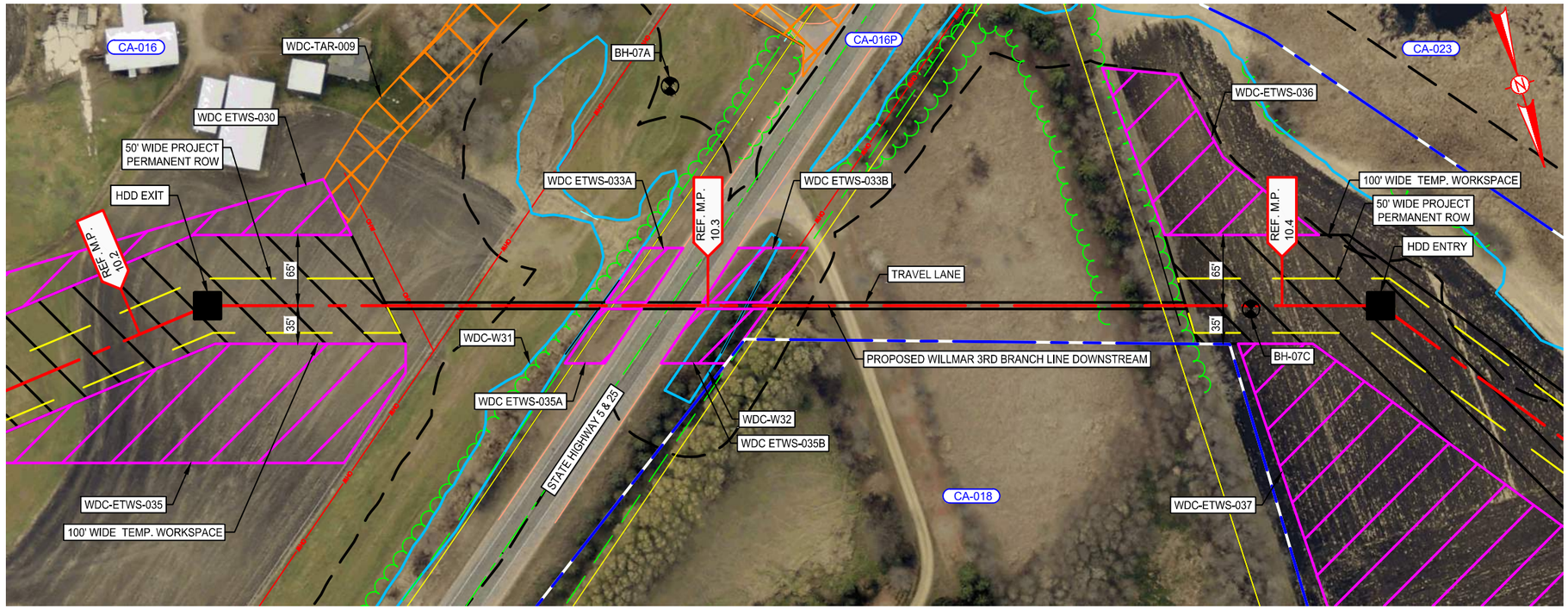
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
HDD SSP PLAN & PROFILE SALEM AVE
SEC. 6 & 1, T115N. R25 & 26W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

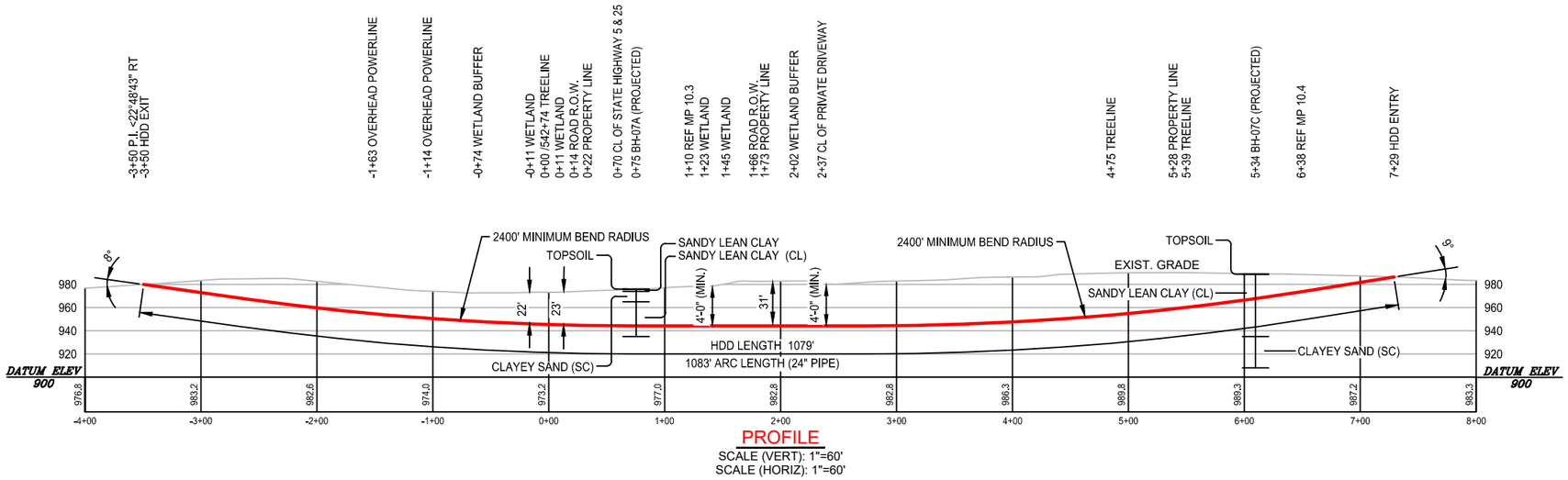
DWG. NO. **WDC-SSP-5** F

PLAN & PROFILE STATE HIGHWAY 5 & 25



PLAN

SCALE : 1"=60'
REF. DWG. WDC-P3-11 & WDC-P3-12



PROFILE

SCALE (VERT): 1"=60'
SCALE (HORIZ): 1"=60'

LEGEND

- PROPOSED WILLMAR 3RD BRANCH LINE DOWNSTREAM
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- WETLAND
- WETLAND BUFFER
- ROAD R.O.W.
- TREELINE
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE

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2/19/2026 8:58 AM
Mesa, Marta

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
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BID				
CONST.				

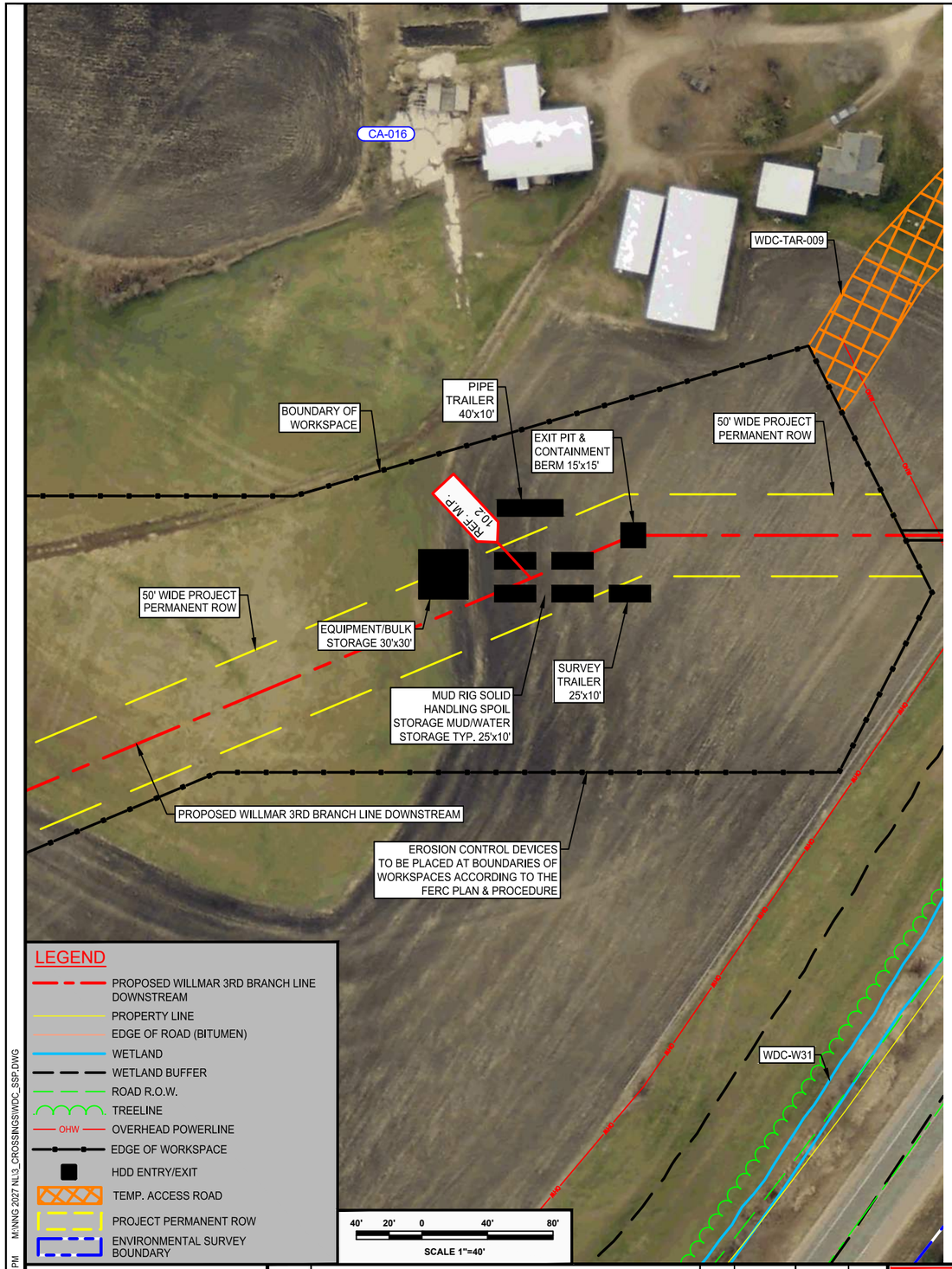
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DRAWN	JM	10/31/25
ASBUILT		
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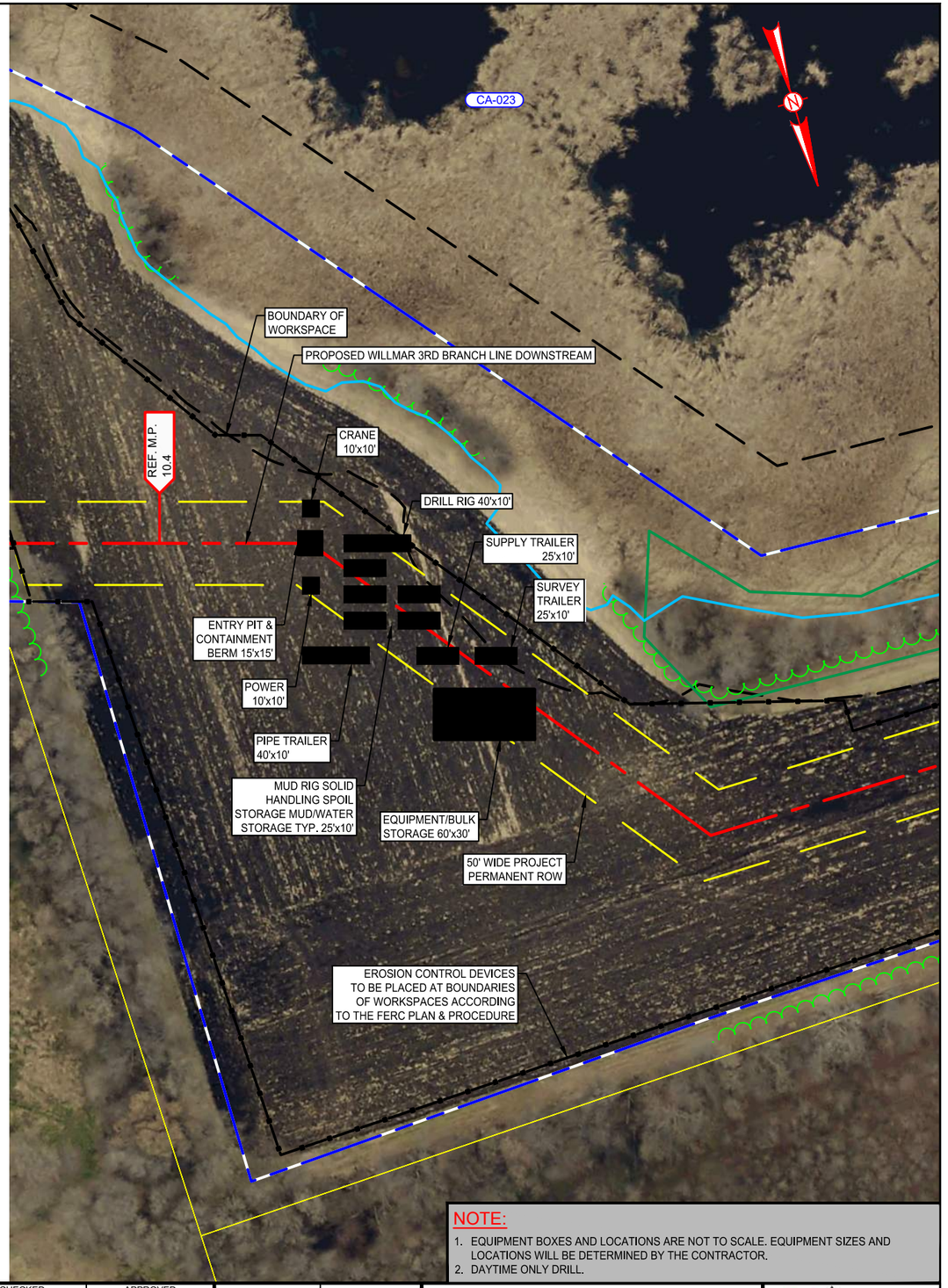
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
PLAN & PROFILE STATE HIGHWAY 5 & 25
SEC. 1, T115N. 26W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **WDC-P4-6** F





NOTE:
1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/19/2026 11:02 PM
Meriel, Jeffrey

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

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DRAWN	JM	1/13/26	
ASBUILT			
FILE NO.:			
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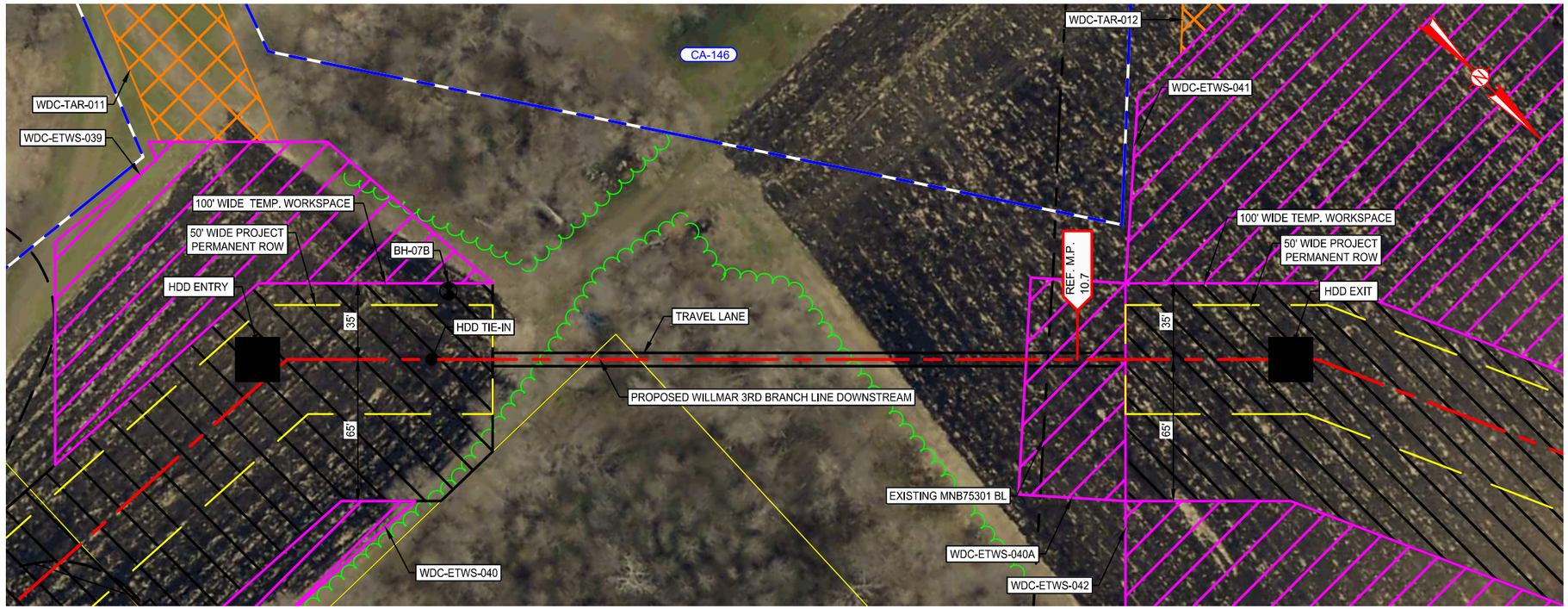
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
HDD SSP PLAN & PROFILE STATE HIGHWAY 5 & 25
SEC. 1, T115N. 26W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

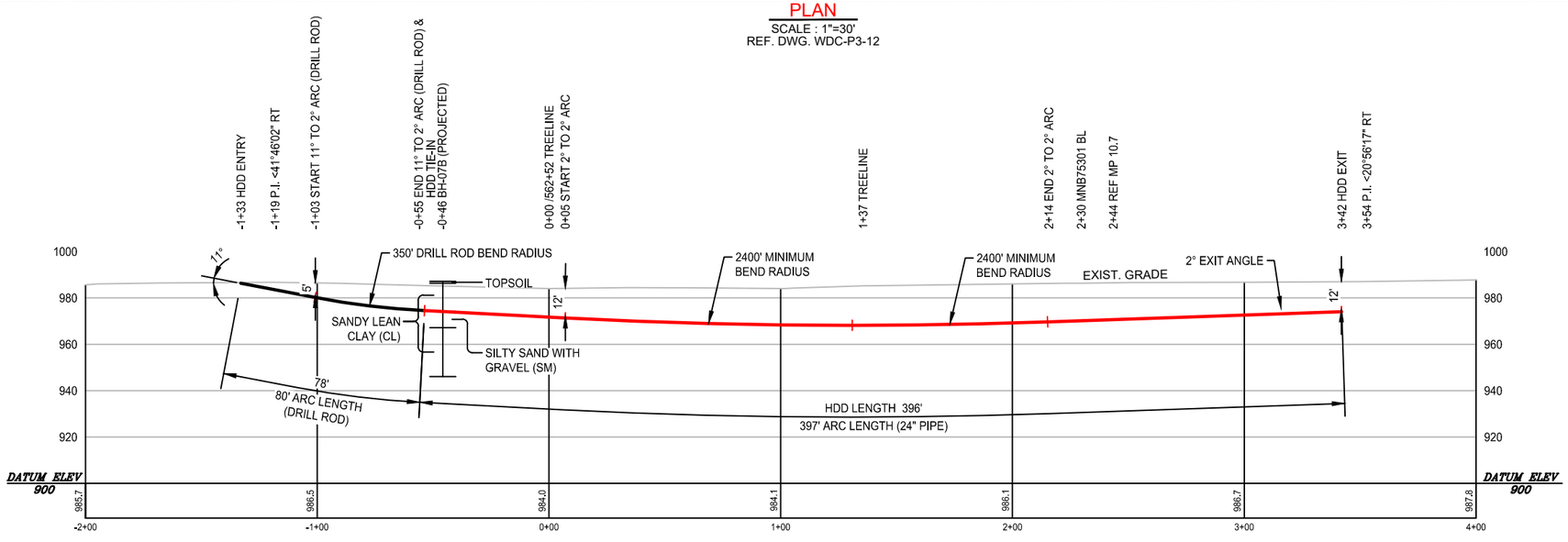
PROJECT NO.

DWG. NO.
WDC-SSP-6
F

PLAN & PROFILE TREE LINE



PLAN
SCALE : 1"=30'
REF. DWG. WDC-P3-12



PROFILE
SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

LEGEND

- PROPOSED WILLMAR 3RD BRANCH LINE DOWNSTREAM
- EXISTING MNB75301 BL
- WETLAND BUFFER
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE

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2/19/2026 8:58 AM
Mesa, Marta

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

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BID				
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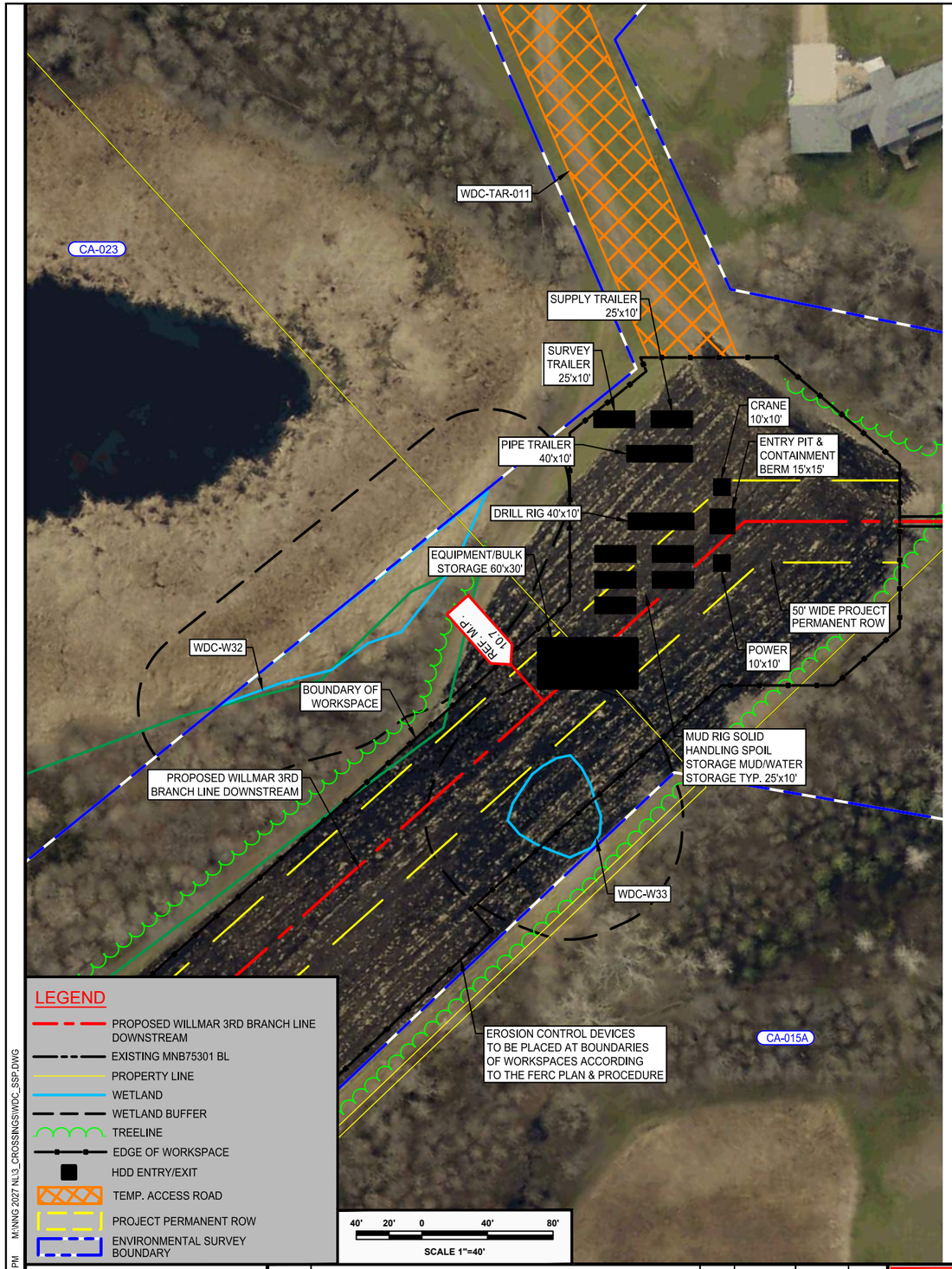
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DRAWN	JM	10/31/25	
ASBUILT			
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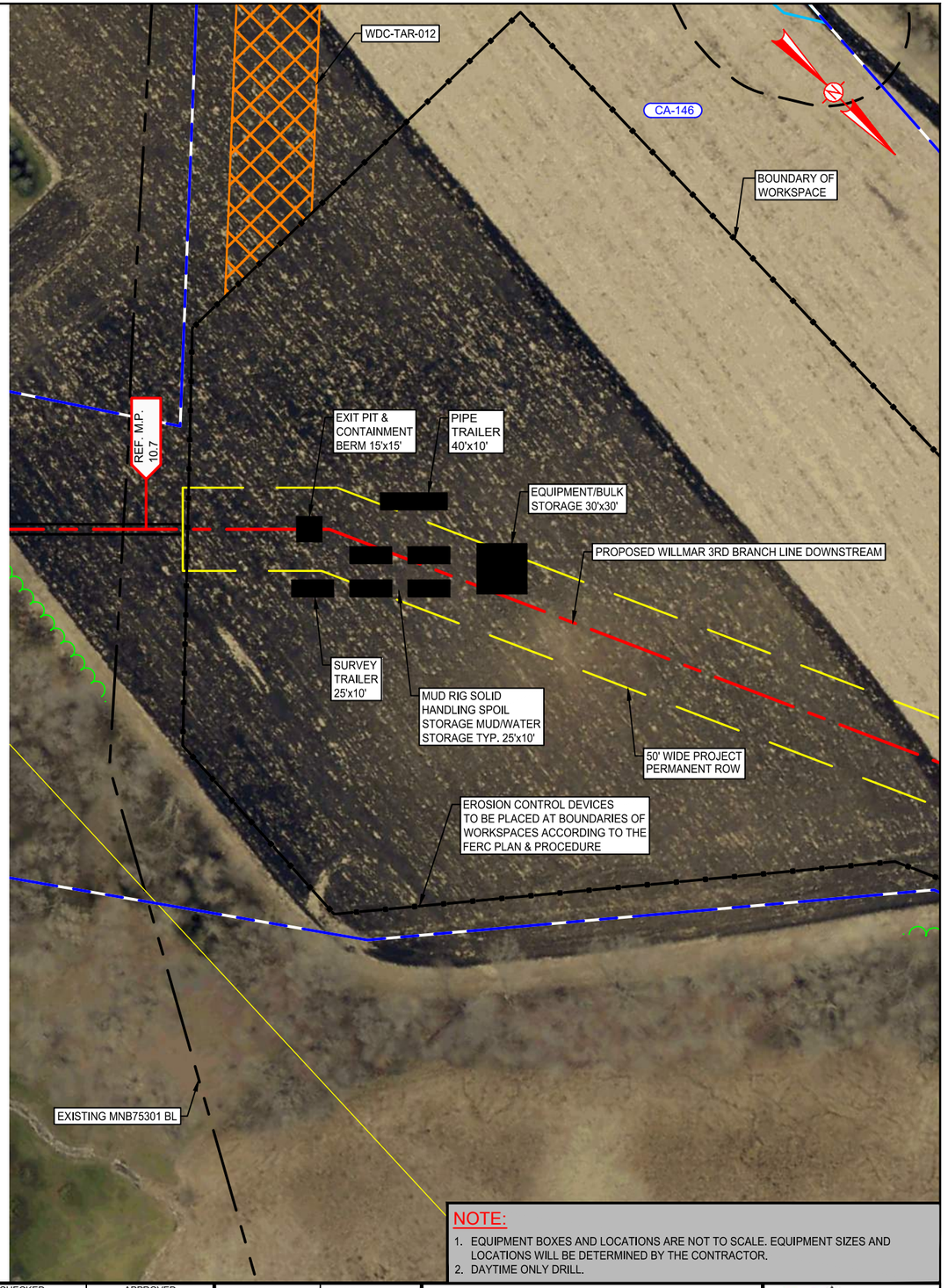
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
PLAN & PROFILE TREE LINE
SEC. 1, T115N. 26W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
WDC-P4-7
F





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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Meriel, Jeffrey 2/19/2026 11:02 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
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ST# N/A		POI# N/A
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DRAWN	JM	1/13/26
ASBUILT		
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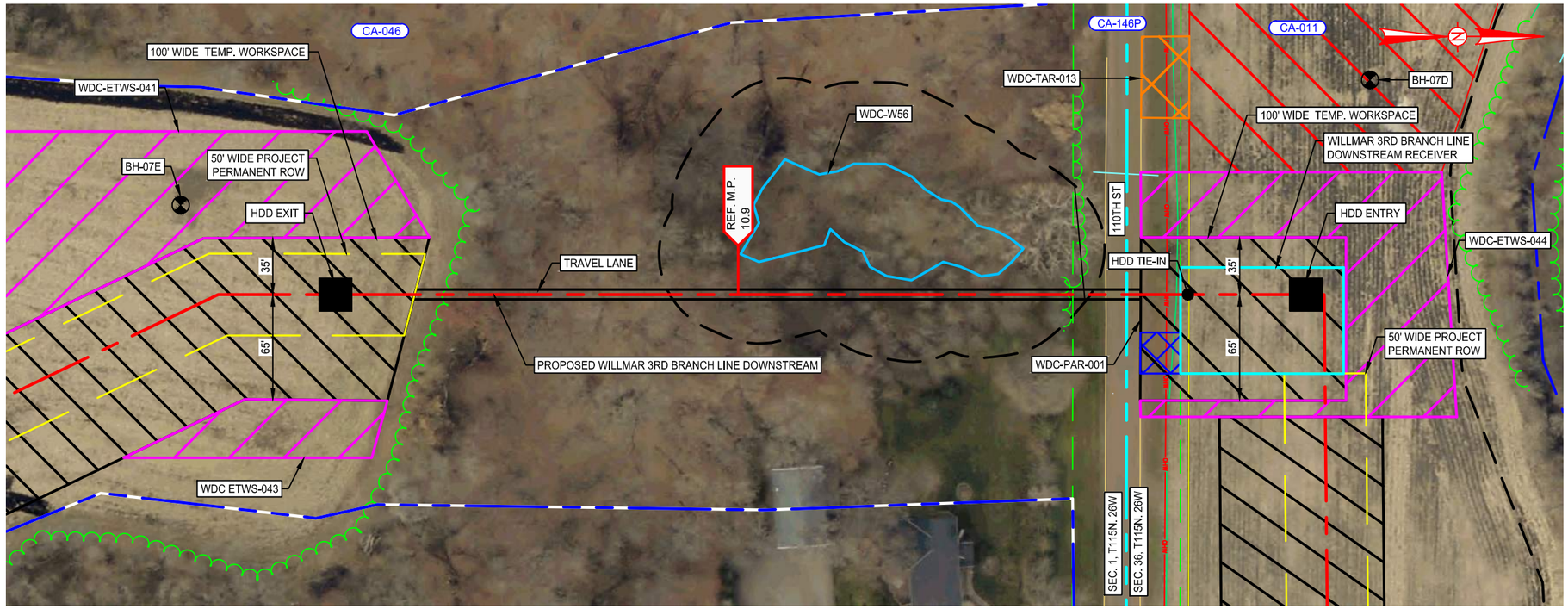
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
HDD SSP PLAN & PROFILE TREE LINE
SEC. 1, T115N. 26W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

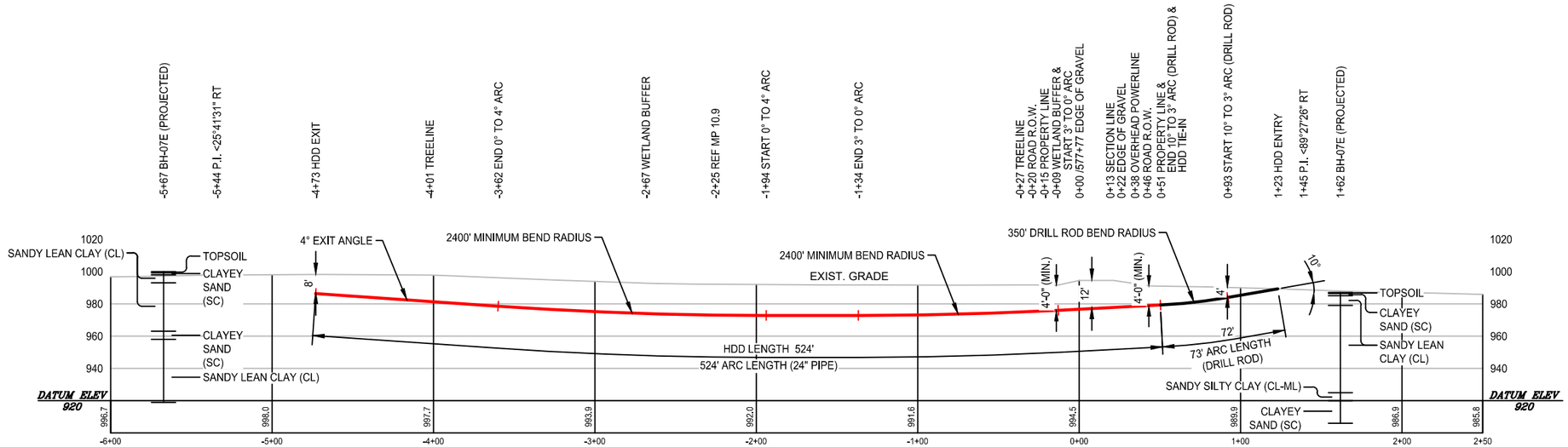
PROJECT NO.

DWG. NO.
WDC-SSP-7
F

PLAN & PROFILE STATE WETLAND & 110TH ST



PLAN
SCALE : 1"=40'
REF. DWG. WDC-P3-13



PROFILE
SCALE (VERT): 1"=40'
SCALE (HORIZ): 1"=40'

LEGEND

- PROPOSED WILLMAR 3RD BRANCH LINE DOWNSTREAM
- PROPERTY LINE
- EDGE OF ROAD (GRAVEL)
- WETLAND
- WETLAND BUFFER
- SECTION LINE
- ROAD R.O.W.
- TREELINE
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- PROPOSED LOT
- PROPOSED DRIVE
- BOREHOLE

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Mesa, Marta 2/19/2026 8:59 AM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
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FAC. CODE: N/A		REL. W.O. N/A	
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STA# N/A		POI# N/A	
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DRAWN	JM	10/31/25	
ASBUILT			
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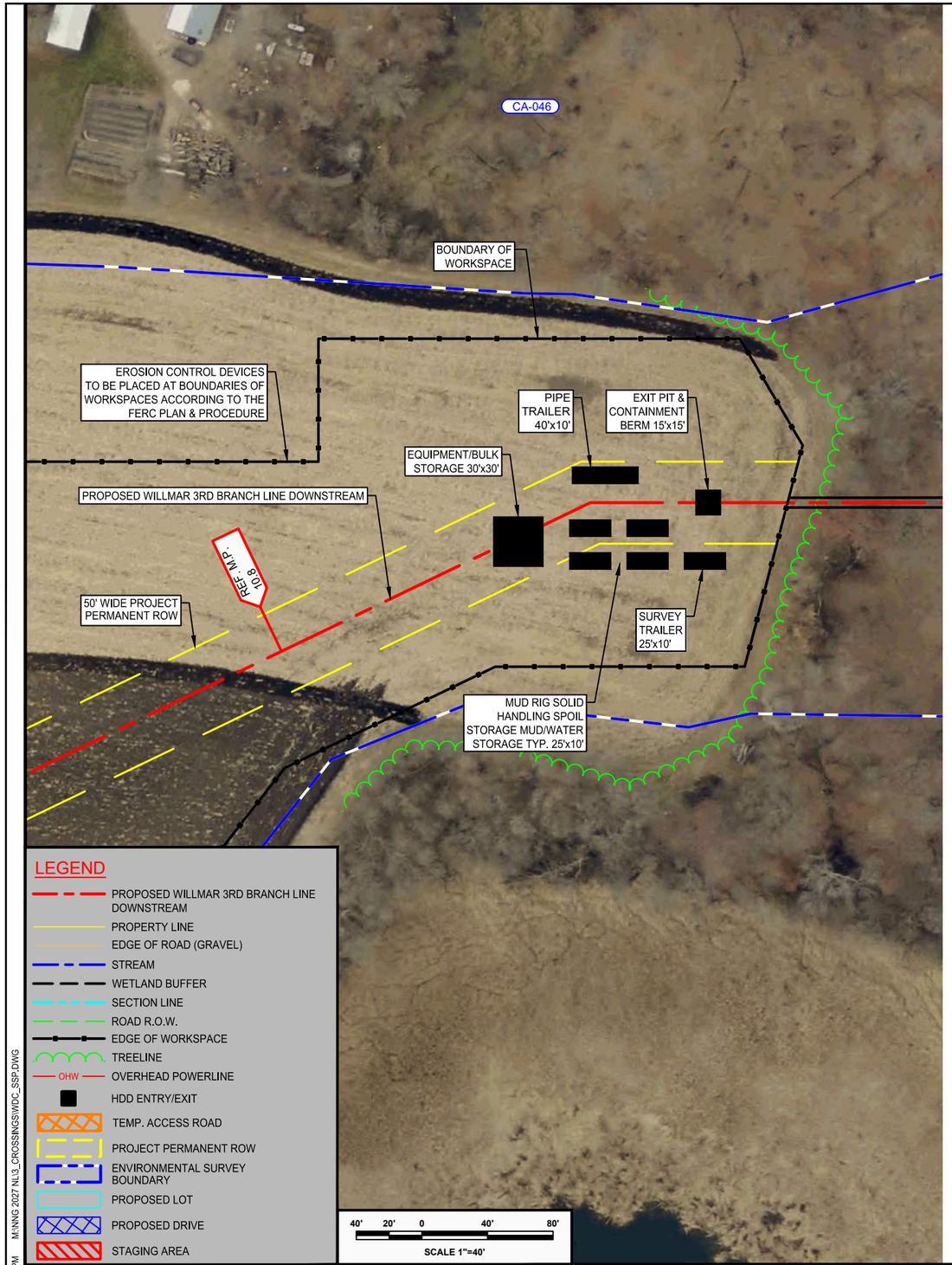
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
PLAN & PROFILE WETLAND & 110TH ST
SEC. 1 & 36, T115N. 26W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

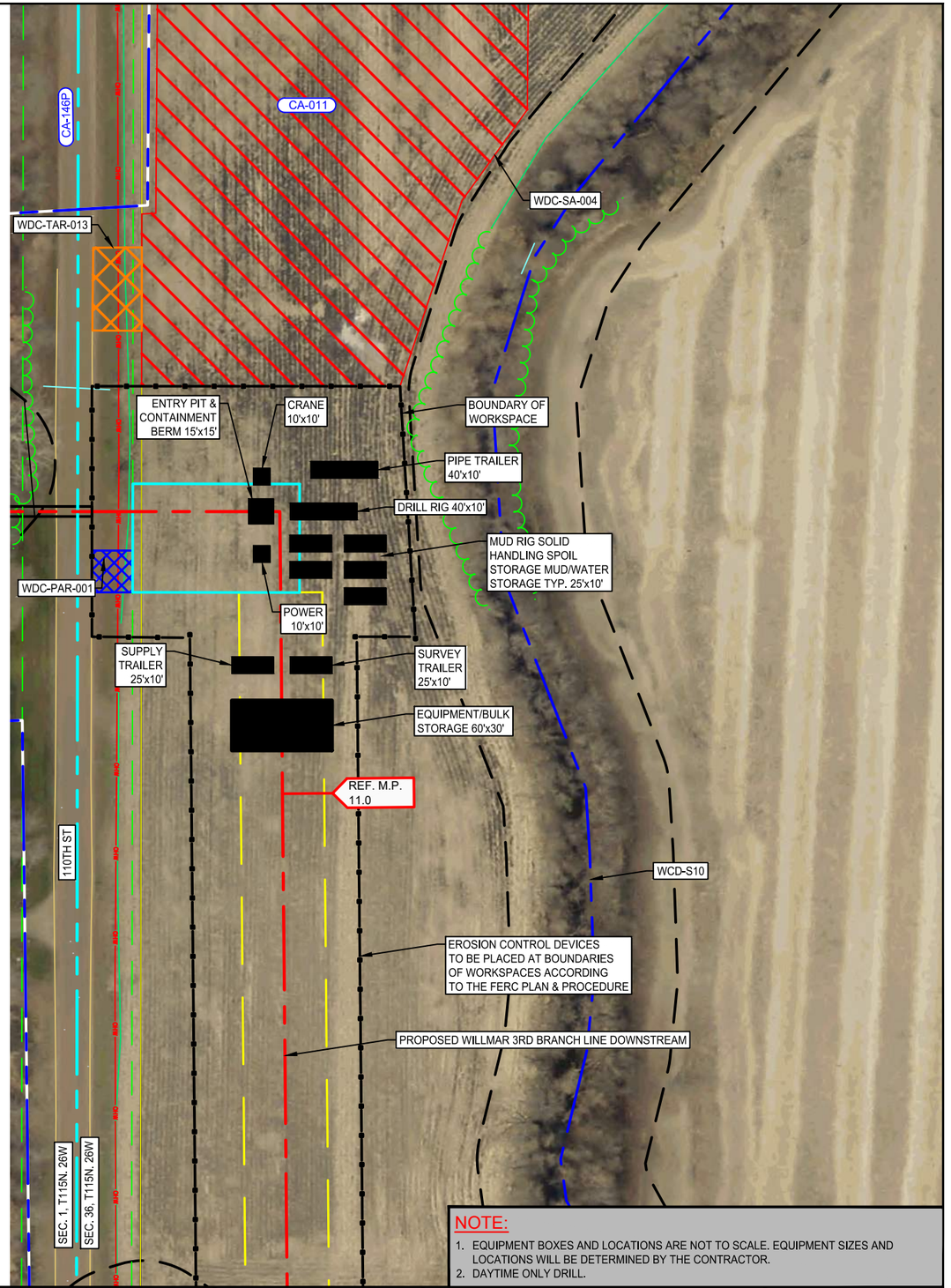
DWG. NO. WDC-P4-8

F



LEGEND

- PROPOSED WILLMAR 3RD BRANCH LINE DOWNSTREAM
- PROPERTY LINE
- EDGE OF ROAD (GRAVEL)
- STREAM
- WETLAND BUFFER
- SECTION LINE
- ROAD R.O.W.
- EDGE OF WORKSPACE
- TREELINE
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- PROPOSED LOT
- PROPOSED DRIVE
- STAGING AREA



NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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Meriel, Jeffrey 2/19/2026 11:02 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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FILED WITH FERC
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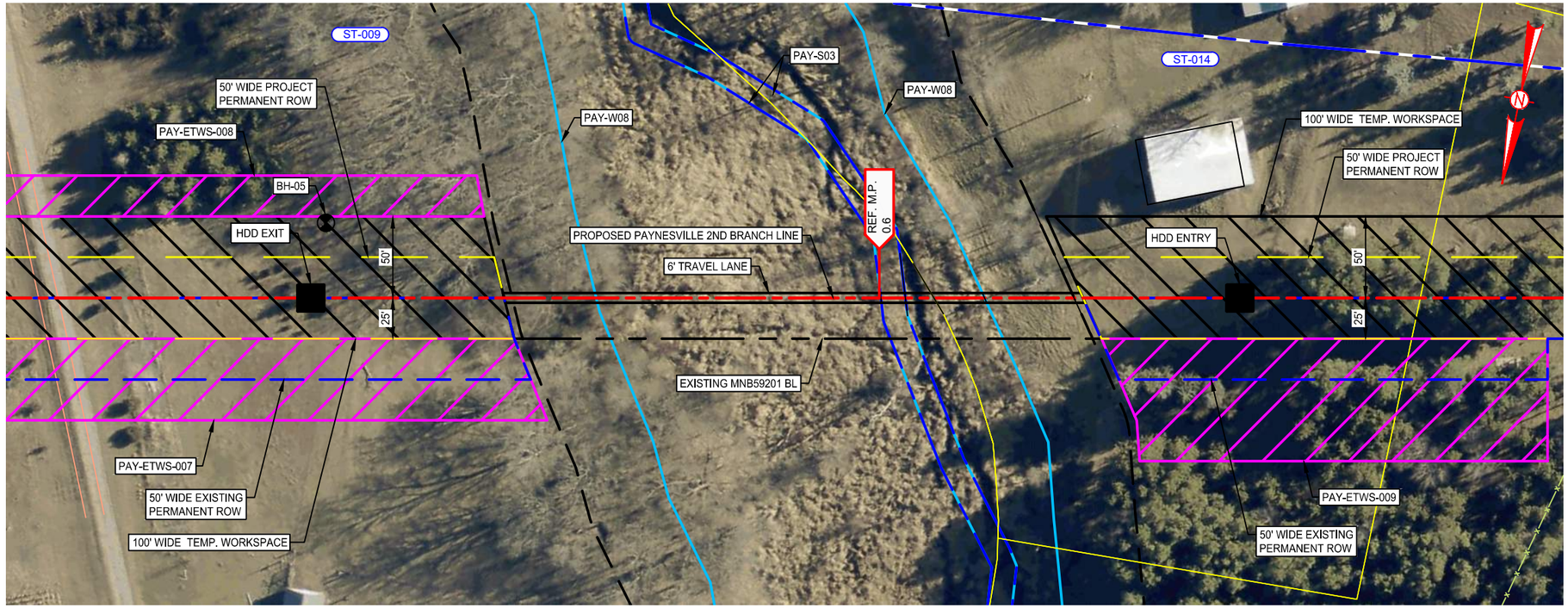
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WILLMAR 3RD BRANCH LINE DOWNSTREAM
HDD SSP PLAN & PROFILE WETLAND & 110TH ST
SEC. 1 & 36, T115N. 26W
CARVER COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. WDC-SSP-8 F

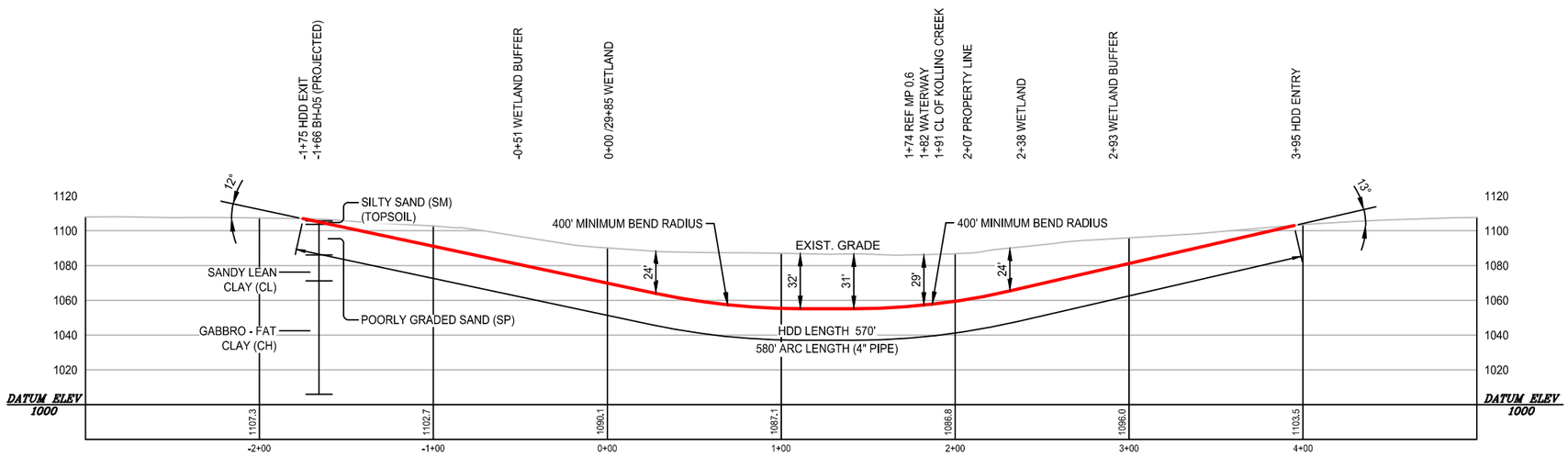
PLAN & PROFILE WETLAND & KOLLING CREEK



LEGEND

- PROPOSED PAYNESVILLE 2ND BRANCH LINE
- EXISTING MNB59201 BL
- PROPERTY LINE
- WETLAND
- STREAM
- WETLAND BUFFER
- WIRE FENCE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE

PLAN
SCALE : 1"=40'
REF. DWG. PAY-P3-2



PROFILE
SCALE (VERT): 1"=40'
SCALE (HORIZ): 1"=40'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
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BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
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DRAWN	JM	10/31/25	
ASBUILT			
FILE NO.:			
SCALE: 1"=40'			

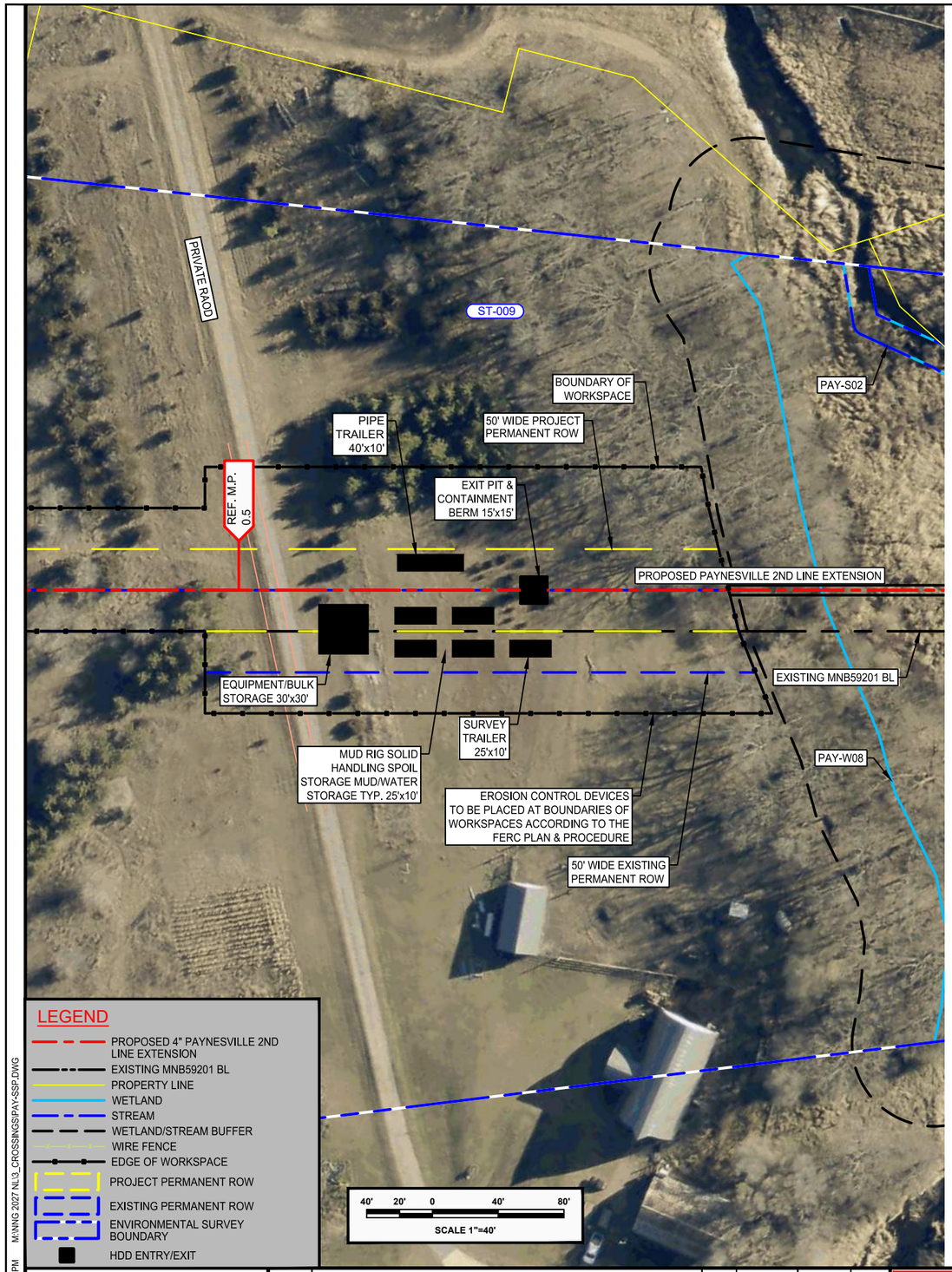
NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND BRANCH LINE
PLAN & PROFILE WETLAND & KOLLING CREEK
SEC. 22, T123N, R31W
STEAMS COUNTY, MINNESOTA

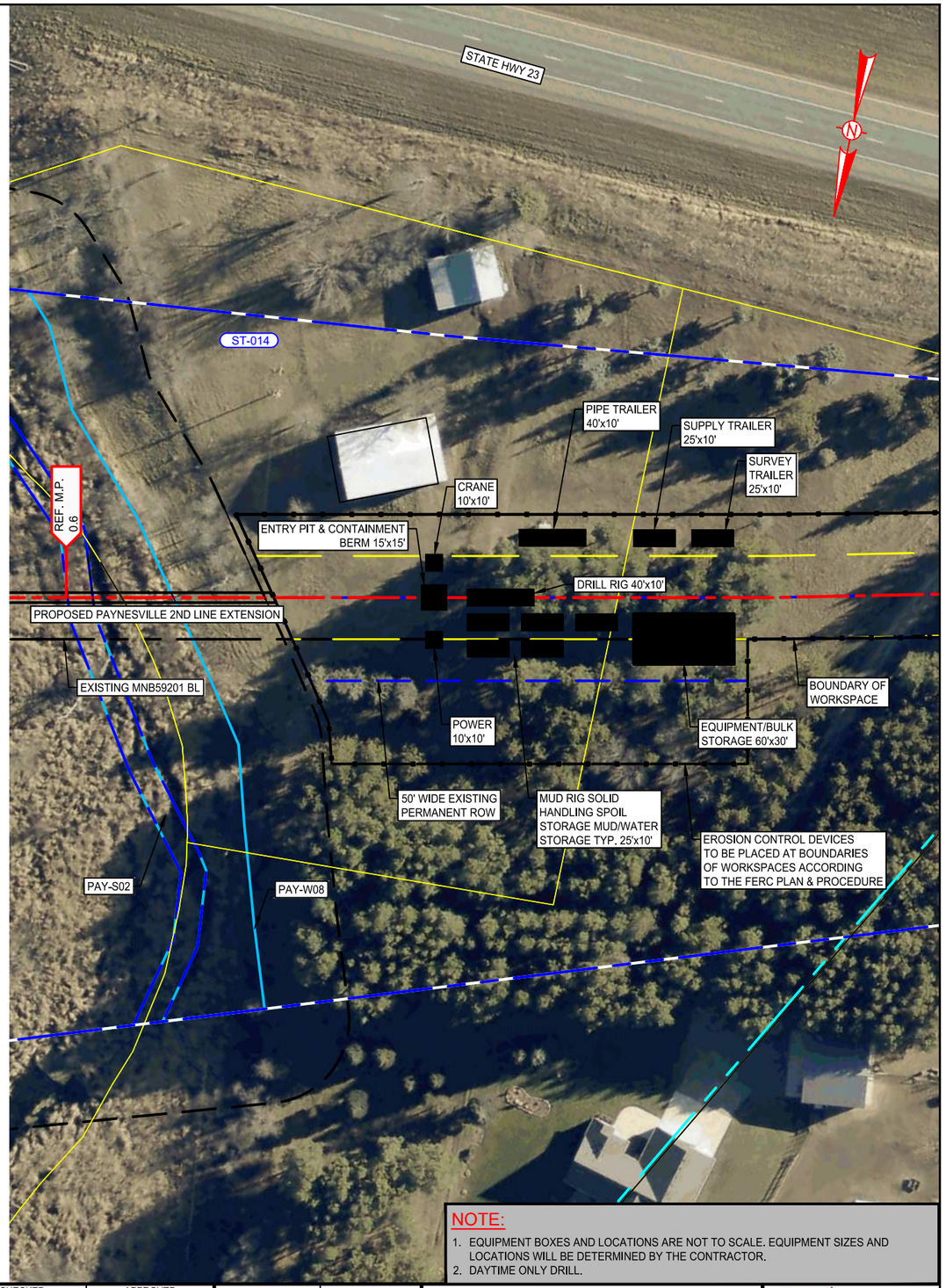
Northern Natural Gas.

PROJECT NO.

DWG. NO. PAY-P4-1 F

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2/19/2026 7:33 AM
Mesa, Marta





LEGEND

- PROPOSED 4" PAYNESVILLE 2ND LINE EXTENSION
- EXISTING MNB59201 BL
- PROPERTY LINE
- WETLAND
- STREAM
- WETLAND/STREAM BUFFER
- WIRE FENCE
- EDGE OF WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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2/19/2026 10:34 PM
Meriel, Jeffrey

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

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BID				
CONST.				

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ASBUILT		
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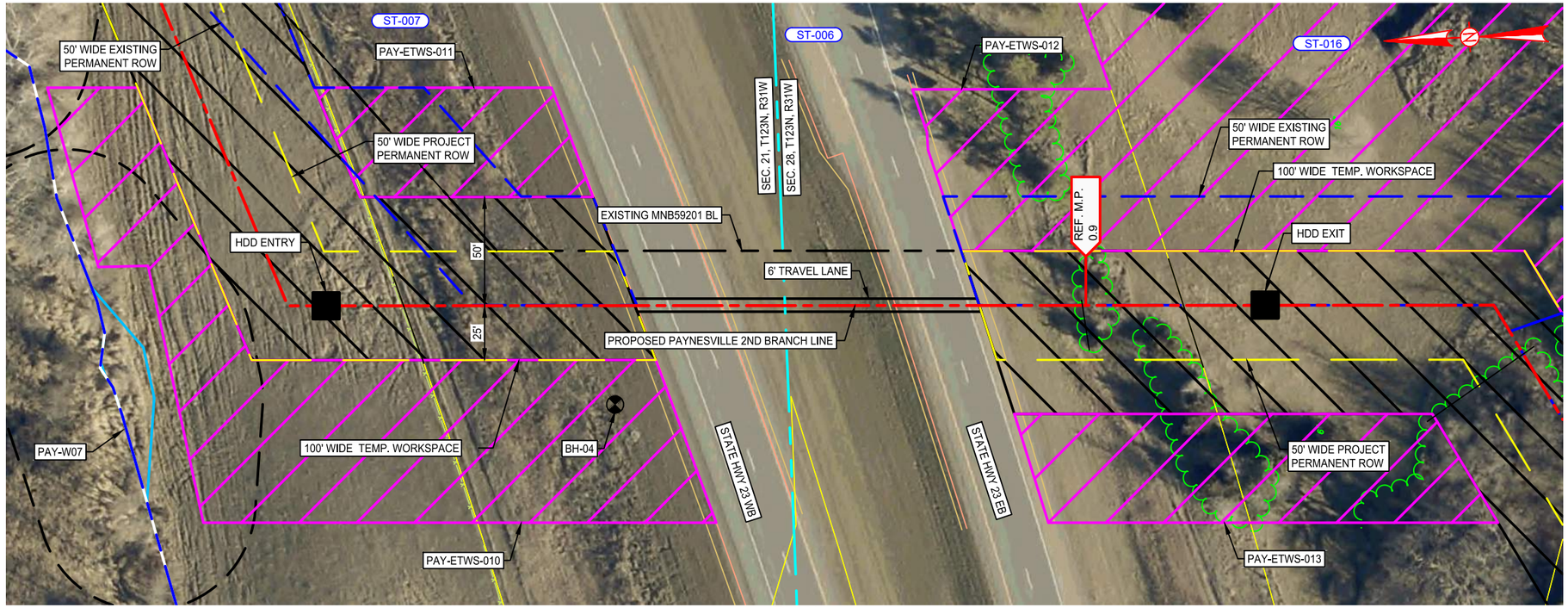
NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND LINE EXTENSION
HDD SSP PLAN COUNTY WETLAND & KOLLING CREEK
SEC. 22, T123N, R31W
STEAMS COUNTY, MINNESOTA

Northern Natural Gas.

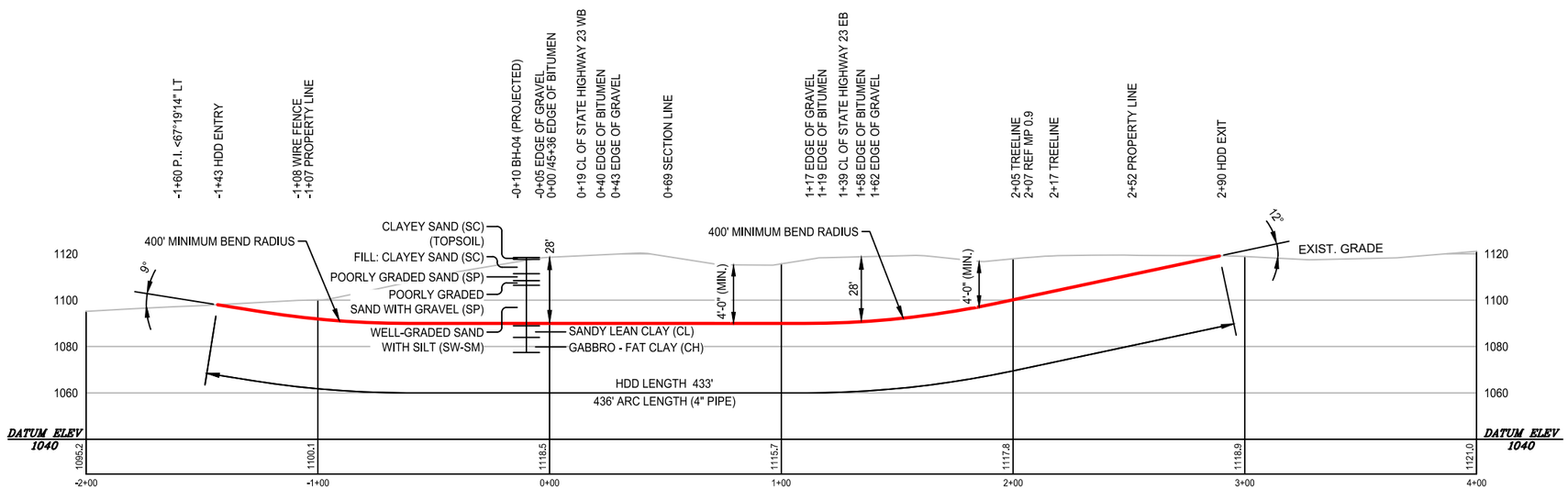
PROJECT NO.

DWG. NO. PAY-SSP-1 F

PLAN & PROFILE STATE HIGHWAY 23 WB & EB



PLAN
SCALE : 1"=30'
REF. DWG. PAY-P3-3



PROFILE
SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

LEGEND

- PROPOSED PAYNESVILLE 2ND BRANCH LINE
- EXISTING MNB59201 BL
- EDGE OF ROAD (GRAVEL)
- EDGE OF ROAD (BITUMEN)
- PROPERTY LINE
- WETLAND
- WETLAND BUFFER
- SECTION LINE
- WIRE FENCE
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
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STA# N/A		POI# N/A	
	BY	DATE	
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DRAWN	JM	10/31/25	
ASBUILT			
FILE NO.:			
SCALE: 1"=30'			

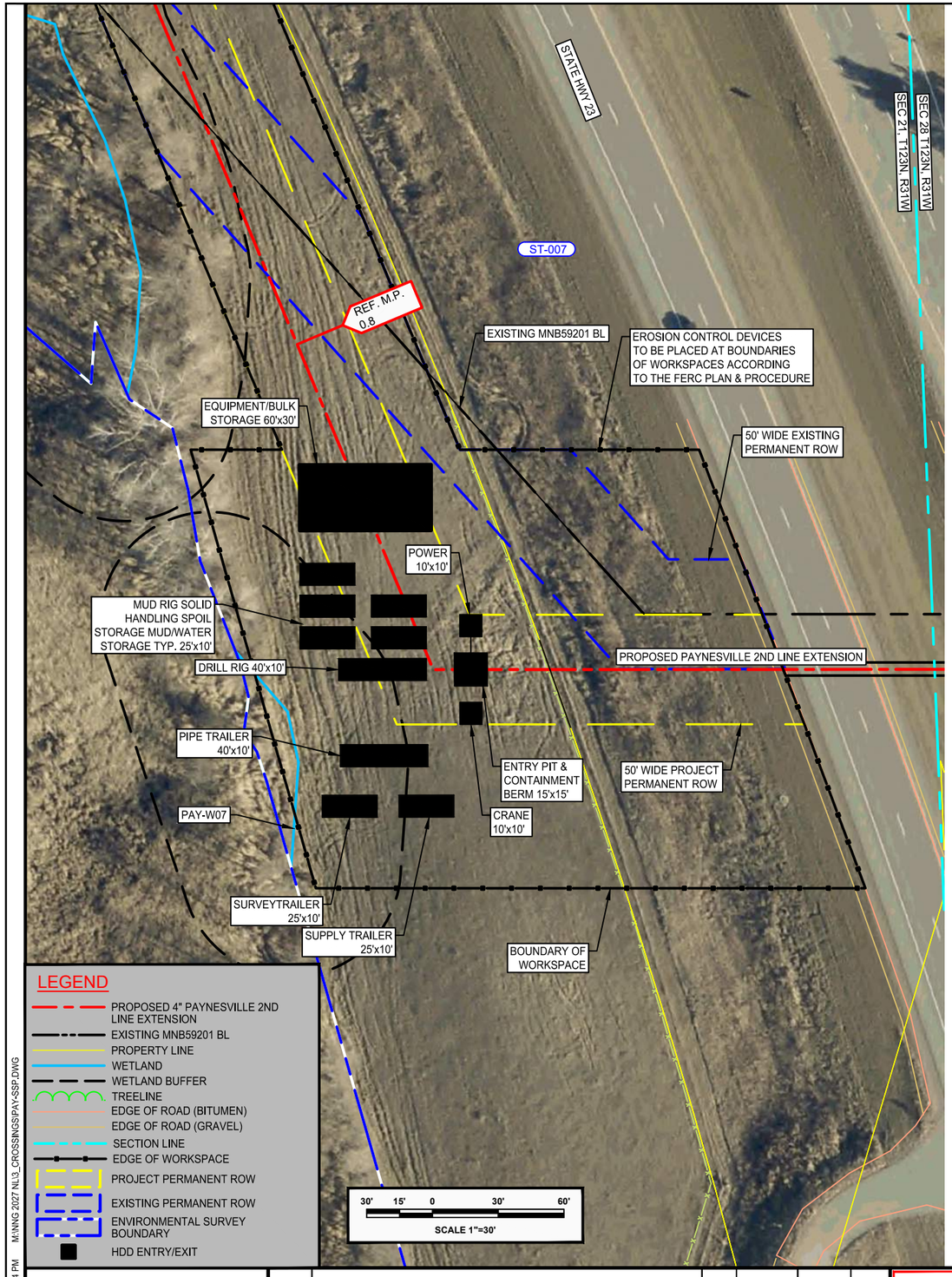
NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND BRANCH LINE
PLAN & PROFILE STATE HIGHWAY 23 WB & EB
SEC. 21 & 28, T123N, R31W
STEAMS COUNTY, MINNESOTA

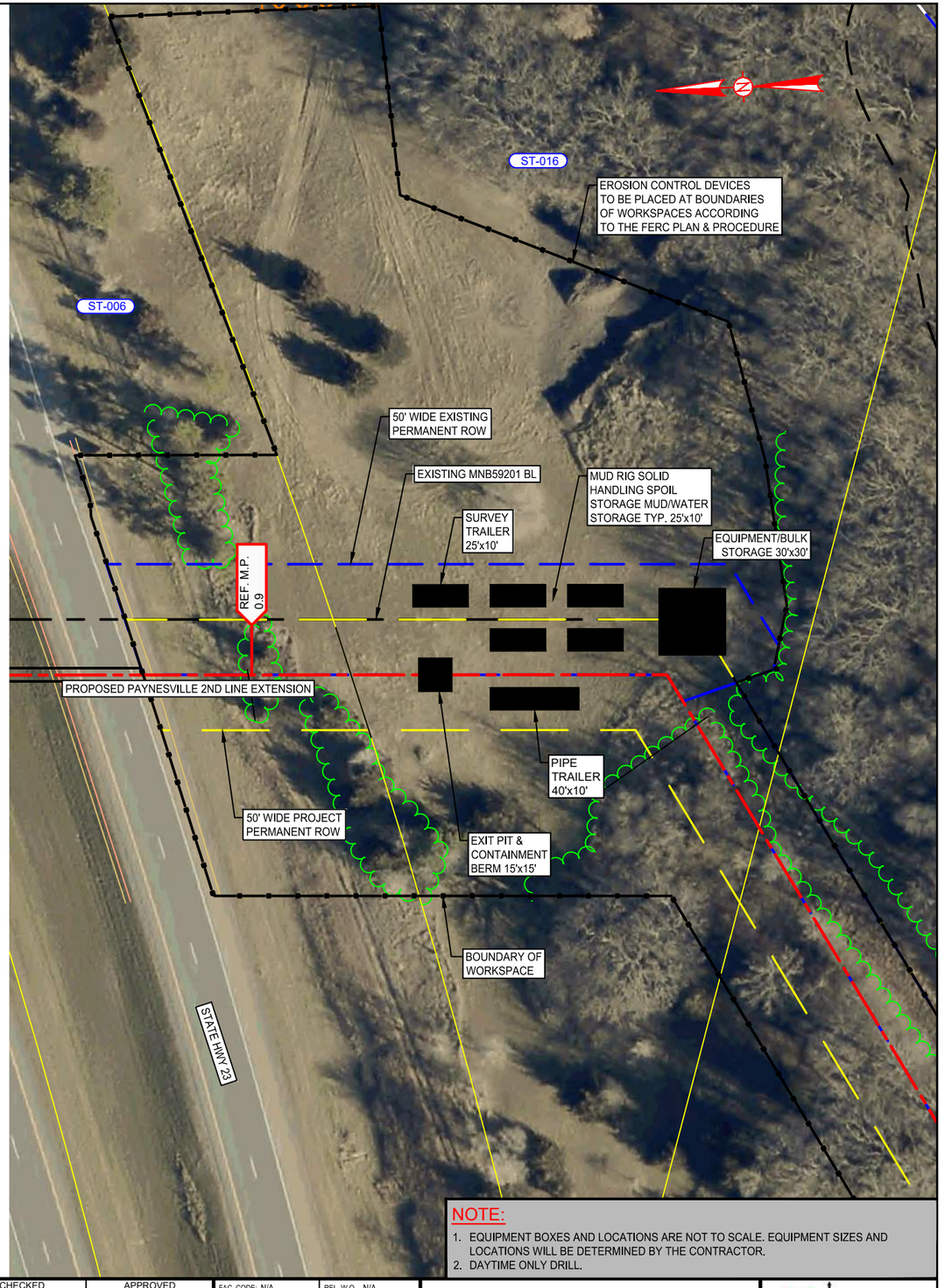
Northern Natural Gas.

PROJECT NO.

DWG. NO.
PAY-P4-2
F

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Mesa, Marta 2/19/2026 7:30 AM





LEGEND

- PROPOSED 4" PAYNESVILLE 2ND LINE EXTENSION
- EXISTING MNB59201 BL
- PROPERTY LINE
- WETLAND
- WETLAND BUFFER
- TREELINE
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- SECTION LINE
- EDGE OF WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

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	BY	DATE
DESIGN	ED	1/8/26
DRAWN	JM	1/8/26
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=30'		

NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND LINE EXTENSION
HDD SSP PLAN & PROFILE STATE HIGHWAY 23 WB & EB
SEC. 21 & 28, T123N, R31W
STEAMS COUNTY, MINNESOTA

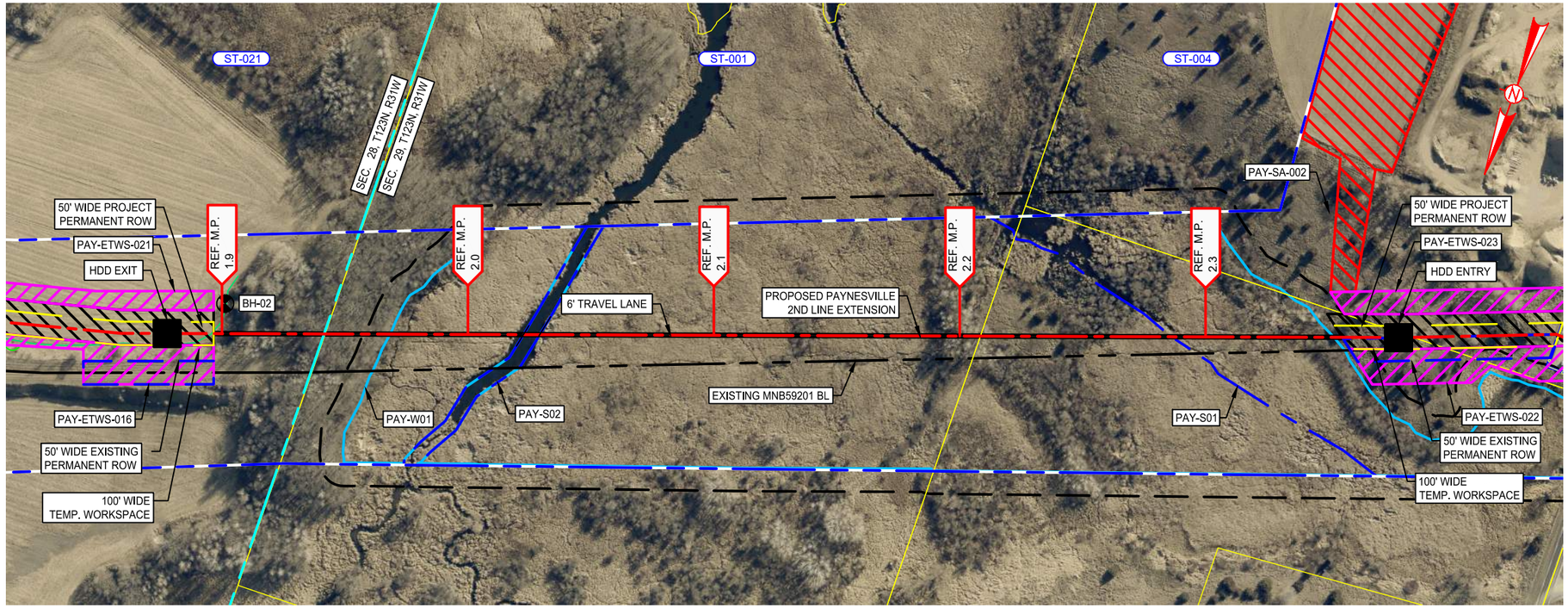
Northern Natural Gas.

PROJECT NO.

DWG. NO. **PAY-SSP-2** F

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Meriel, Jeffrey 2/19/2026 10:34 PM

PLAN & PROFILE STATE KOLLING CREEK



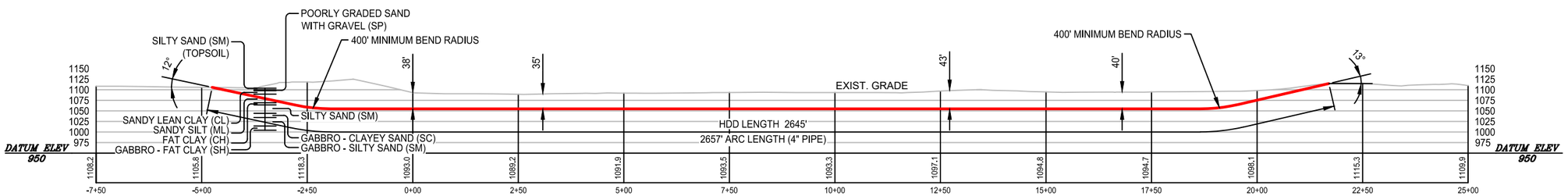
LEGEND

- PROPOSED PAYNESVILLE 2ND BRANCH LINE
- EXISTING BRANCH LINE
- PROPERTY LINE
- WETLAND
- WATERWAY
- WETLAND BUFFER
- SECTION LINE
- CHAINLINK FENCE
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- STAGING AREA
- EXISTING PERMANENT ROW
- PROJECT PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- EXISTING LOT
- BOREHOLE

PLAN

SCALE : 1"=140'
REF. DWG. PAY-P3-5, PAY-P3-6 & PAY-P3-7

-4+75 HDD EXIT
-3+51 REF MP 1.9
-3+50 BH-02 (PROJECTED)
-1+42 SECTION LINE
-1+39 PROPERTY LINE
-0+57 WETLAND BUFFER
0+00 /103+83 WETLAND
1+77 REF MP 2.0
2+86 WETLAND & WATERWAY
3+02 CL OF KOLLING CREEK
3+21 WETLAND & WATERWAY
7+05 REF MP 2.1
12+33 REF MP 2.2
12+68 PROPERTY LINE
16+78 WATERWAY
17+61 REF MP 2.3
20+27 WETLAND
20+92 WETLAND BUFFER
21+70 HDD ENTRY



PROFILE

SCALE (VERT): 1"=140'
SCALE (HORIZ): 1"=140'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A | REL. W.O. N/A
PL# N/A | CONST. YR 2027
STA# N/A | POI# N/A

	BY	DATE
DESIGN	ED	10/29/25
DRAWN	JM	10/31/25
ASBUILT		

FILE NO.:
SCALE: 1"=140'

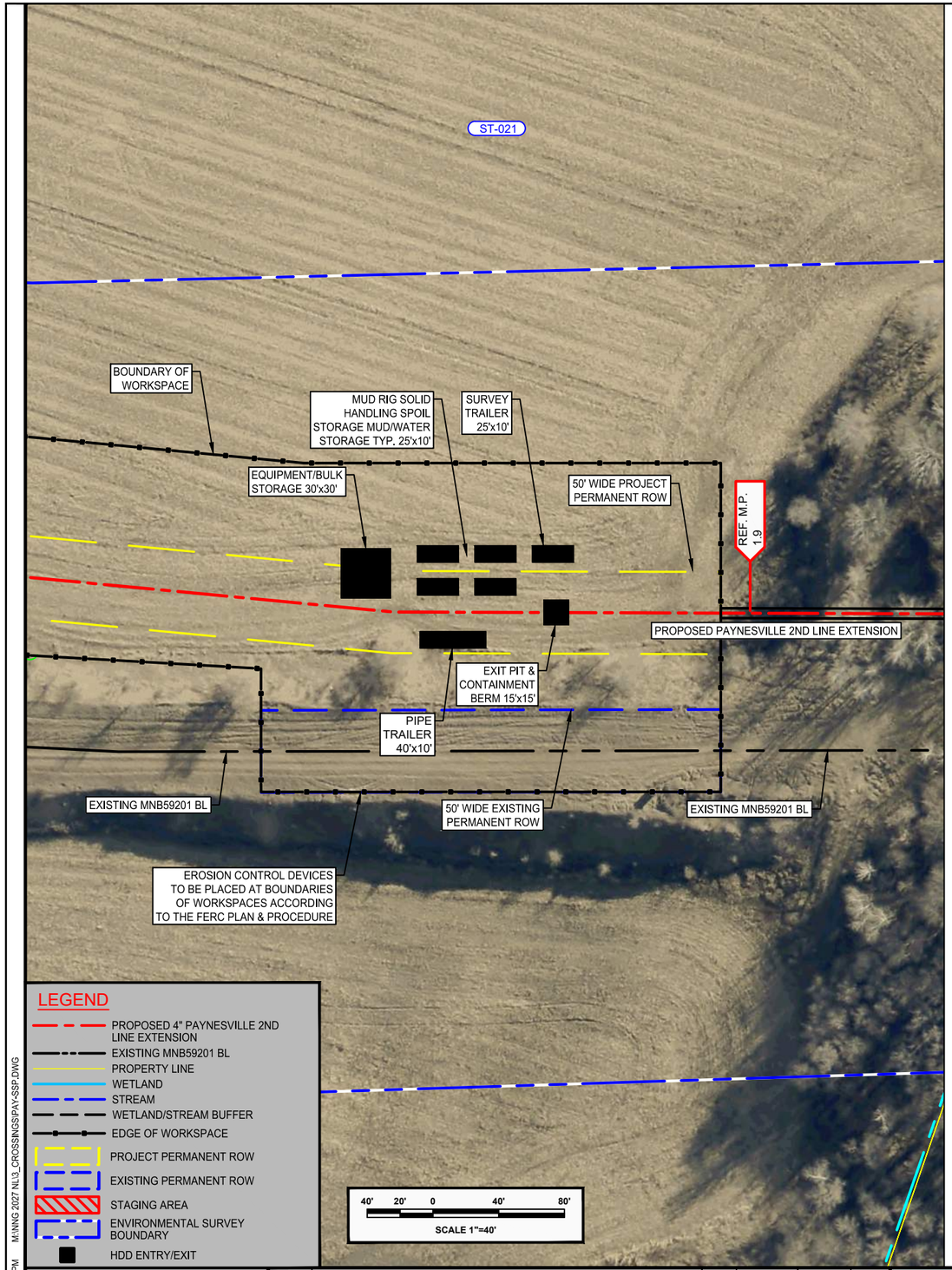
NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND BRANCH LINE
PLAN & PROFILE KOLLING CREEK
SEC. 28 & 29, T123N, R31W
STEAMS COUNTY, MINNESOTA

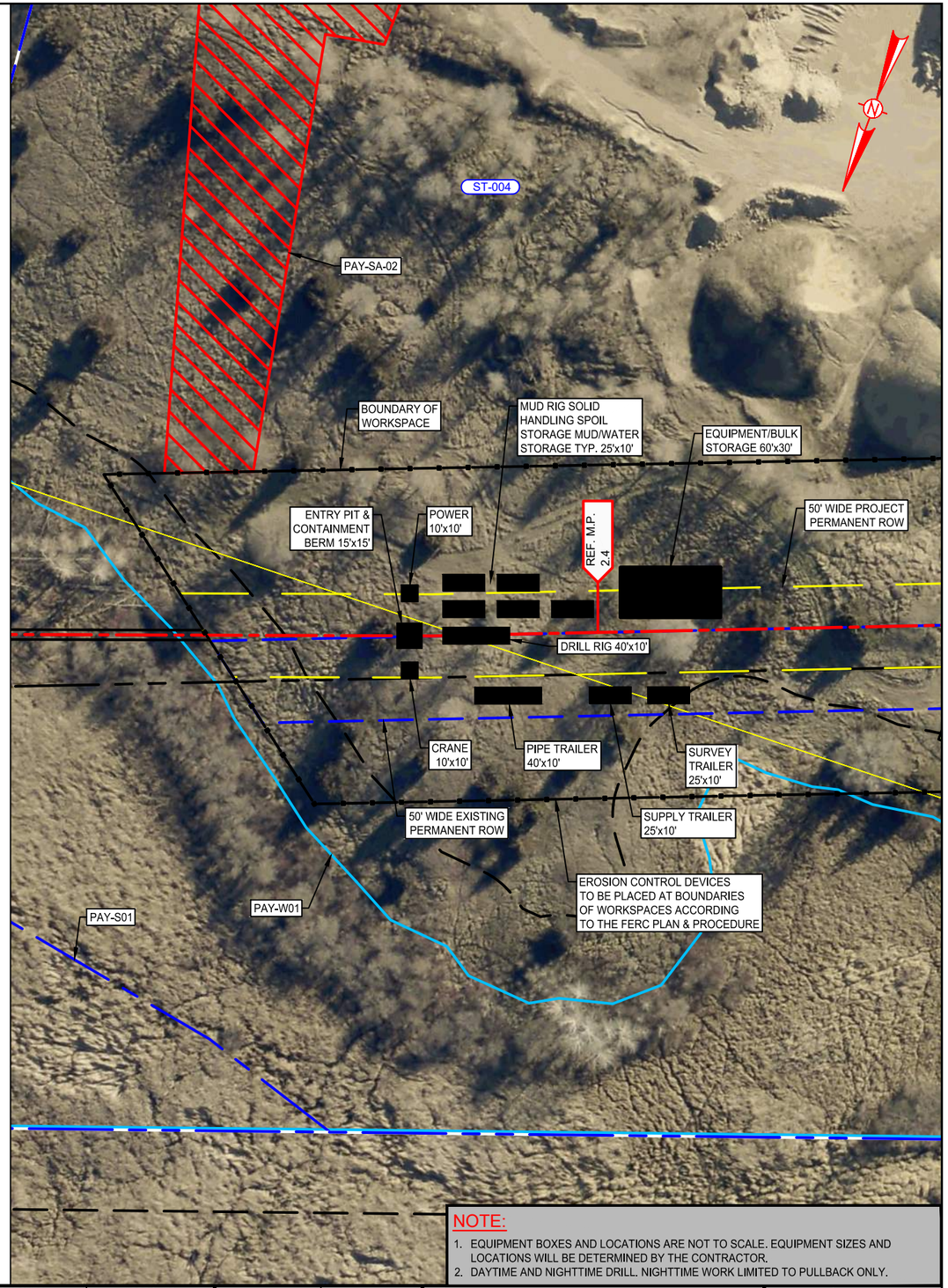
Northern Natural Gas.

PROJECT NO.

DWG. NO. **PAY-P4-3** F

M:\NNG 2027 NL\3_CROSSINGS\PAY-PLAN&PROFILE.DWG
2/19/2026 7:30 AM
Mesa, Marta





NOTE:
1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME AND NIGHTTIME DRILL. NIGHTTIME WORK LIMITED TO PULLBACK ONLY.

Meriel, Jeffrey 2/19/2026 10:35 PM M:\NNG 2027 NLI\3_CROSSINGS\PAY-SSP.DWG

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PI#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
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DRAWN	JM	1/8/26	
ASBUILT			
FILE NO.: P:105			
SCALE: 1"=30'			

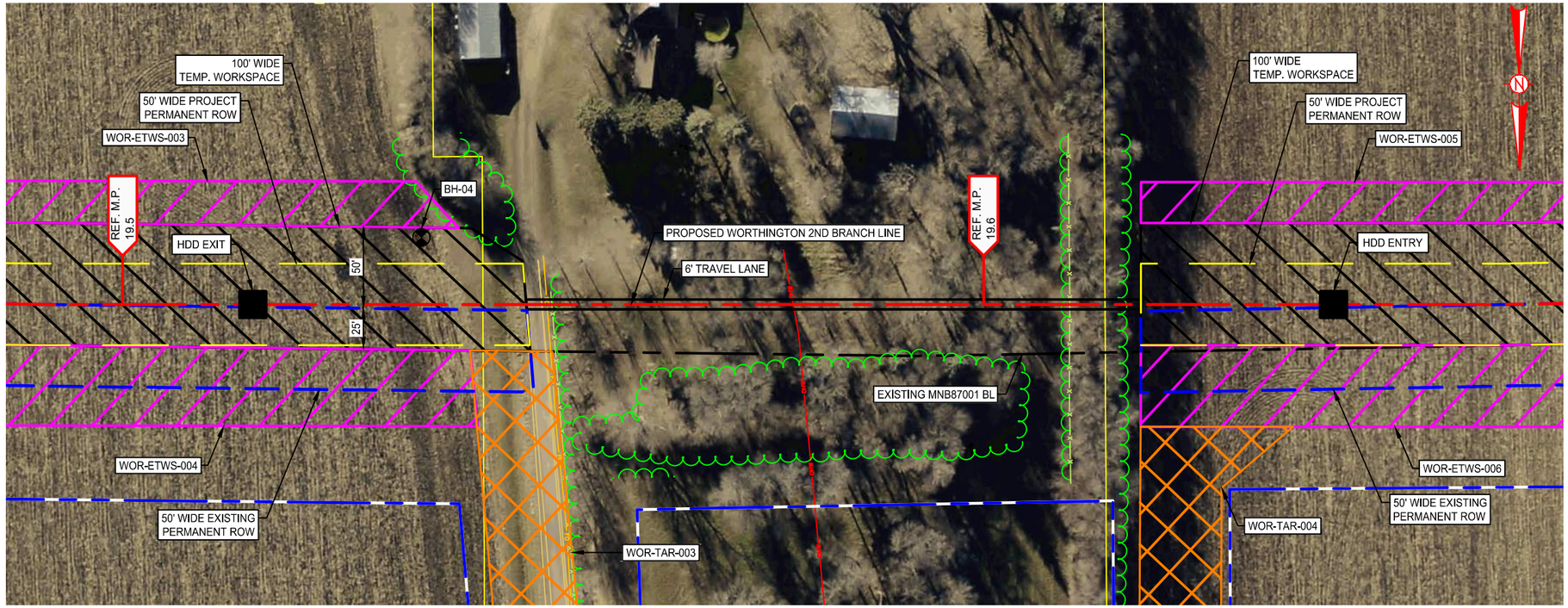
NORTHERN LIGHTS 2027 EXPANSION PROJECT
PAYNESVILLE 2ND LINE EXTENSION
HDD SSP PLAN & PROFILE KOLLING CREEK
SEC. 28 & 29, T123N, R31W
STEAMS COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. **PAY-SSP-3** F

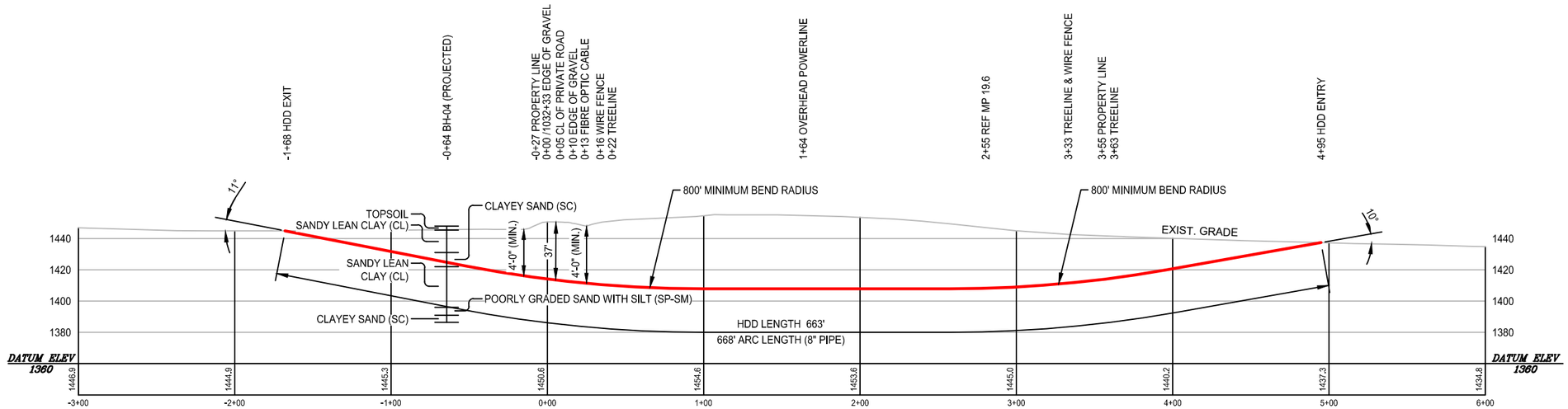
PLAN & PROFILE PRIVATE ROAD



PLAN
SCALE : 1"=40'
REF. DWG. WOR-P3-1

LEGEND

- PROPOSED WORTHINGTON 2ND BRANCH LINE
- EXISTING MNB87001 BL
- EDGE OF ROAD (GRAVEL)
- PROPERTY LINE
- EDGE OF ROAD (GRAVEL)
- TREELINE
- WIRE FENCE
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE



PROFILE
SCALE (VERT): 1"=40'
SCALE (HORIZ): 1"=40'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL# N/A		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	10/29/25
DRAWN	JM	10/31/25
ASBUILT		
FILE NO.:		
SCALE: 1"=40'		

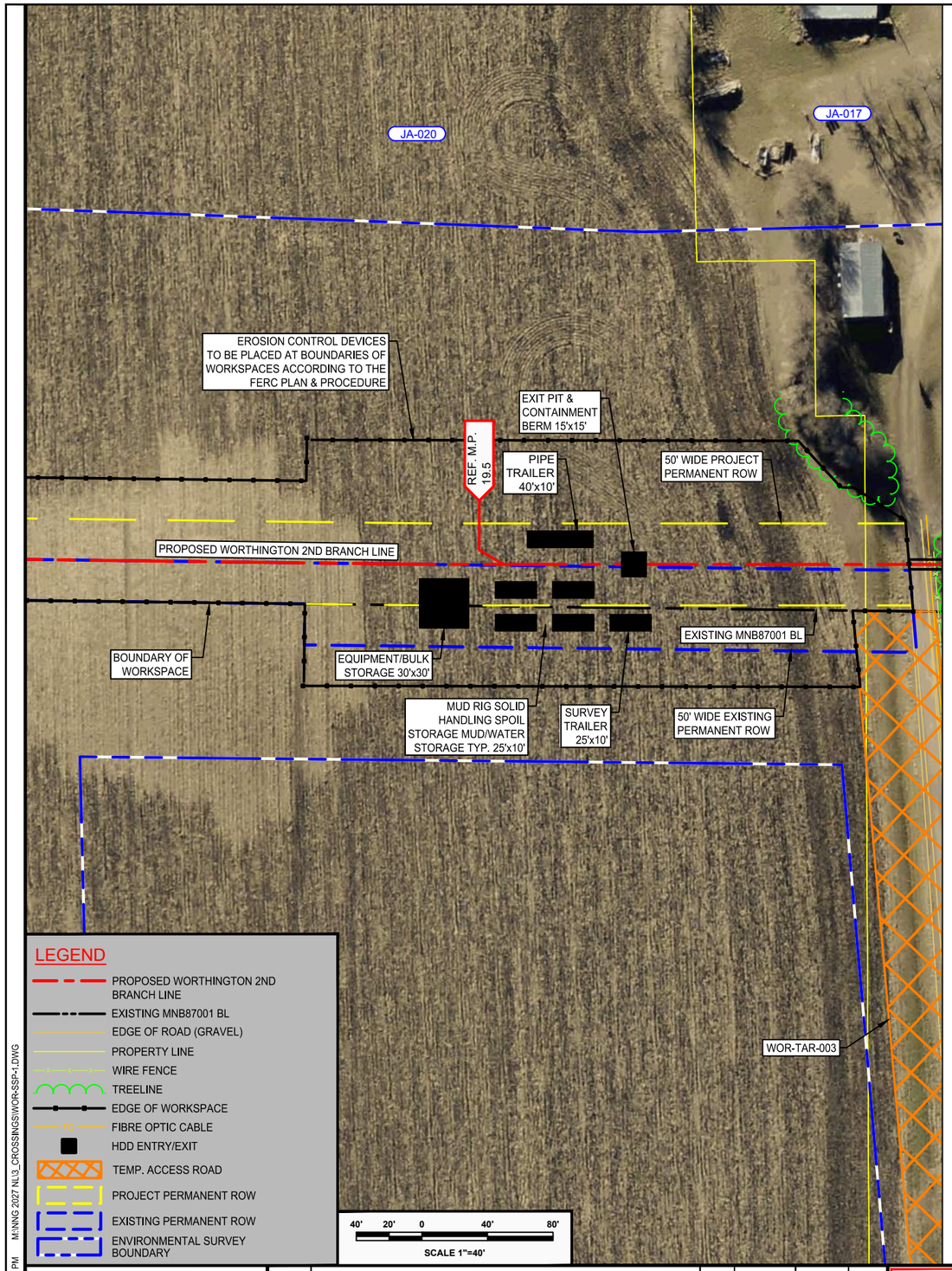
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WORTHINGTON 2ND BRANCH LINE
PLAN & PROFILE PRIVATE ROAD
SEC. 29, T102N, R36W
JACKSON COUNTY, MINNESOTA

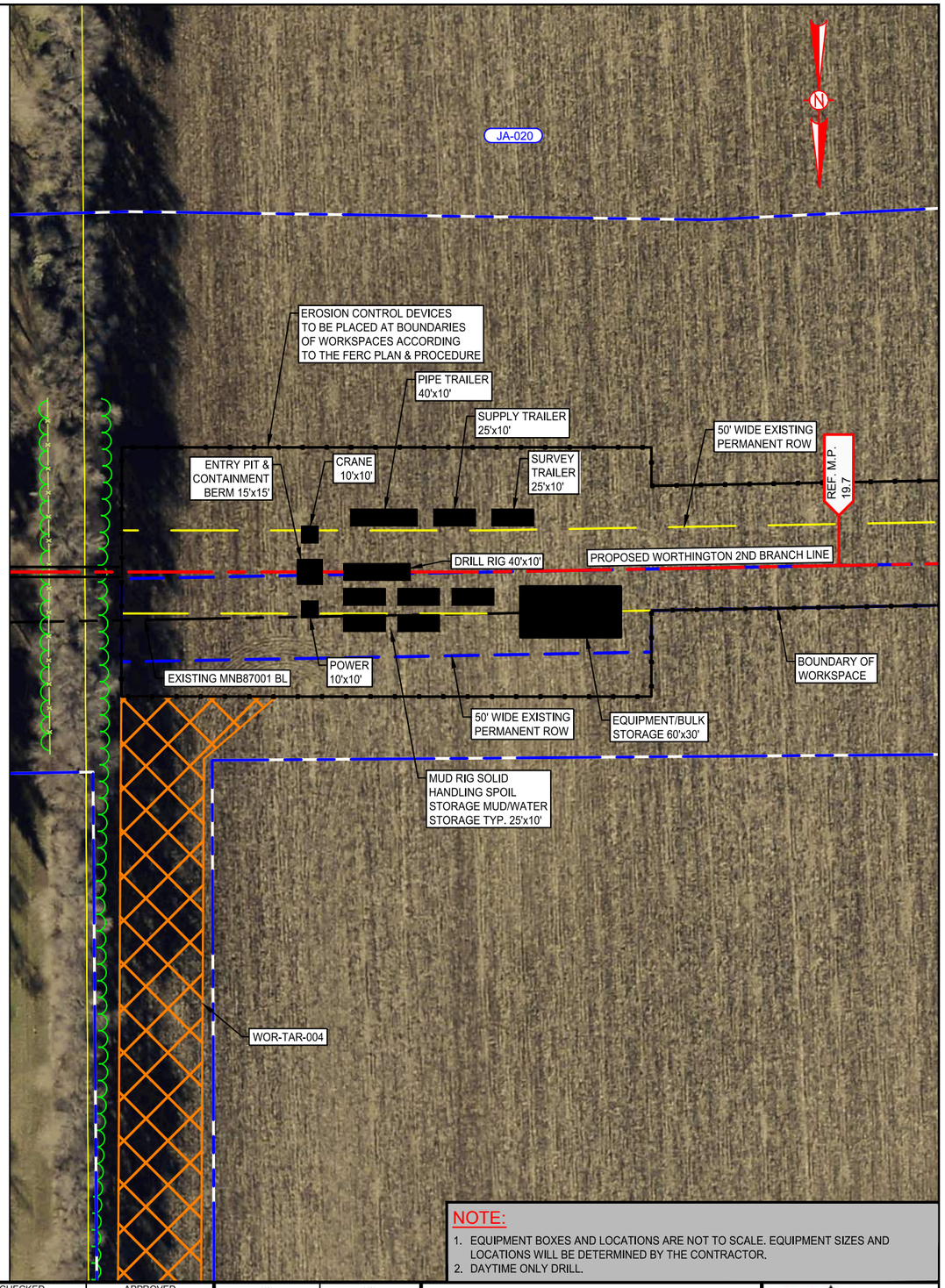
Northern Natural Gas.

PROJECT NO.

DWG. NO. **WOR-P4-1** F

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2/19/2026 9:09 AM
Mesa, Marta





LEGEND

- PROPOSED WORTHINGTON 2ND BRANCH LINE
- EXISTING MNB87001 BL
- EDGE OF ROAD (GRAVEL)
- PROPERTY LINE
- WIRE FENCE
- TREELINE
- EDGE OF WORKSPACE
- FIBRE OPTIC CABLE
- HDD ENTRY/EXIT
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

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Meriel, Jeffrey 2/19/2026 10:51 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI# N/A		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	10/XX/25
DRAWN	JM	10/31/25
ASBUILT		
FILE NO.:		
SCALE: 1"=40'		

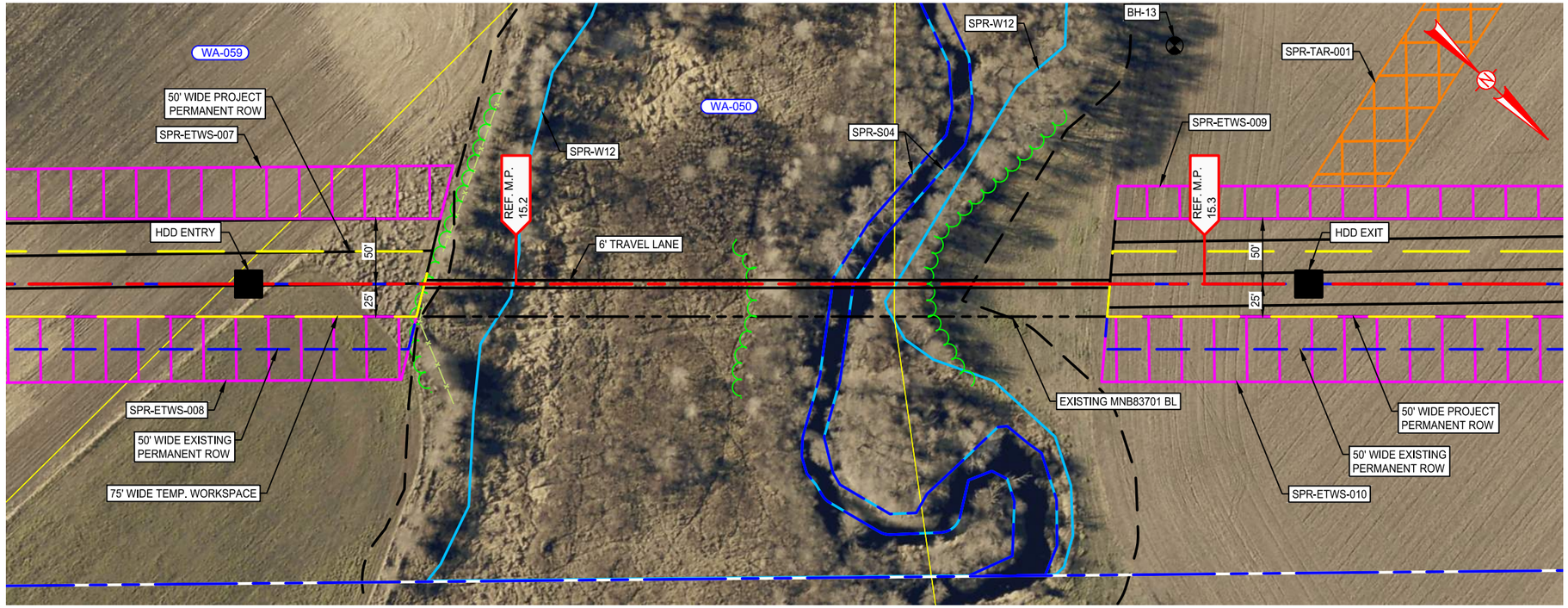
NORTHERN LIGHTS 2027 EXPANSION PROJECT
WORTHINGTON 2ND BRANCH LINE
HDD SSP PLAN & PROFILE PRIVATE ROAD
SEC. 29, T102N, R36W
JACKSON COUNTY, MINNESOTA

Northern Natural Gas.

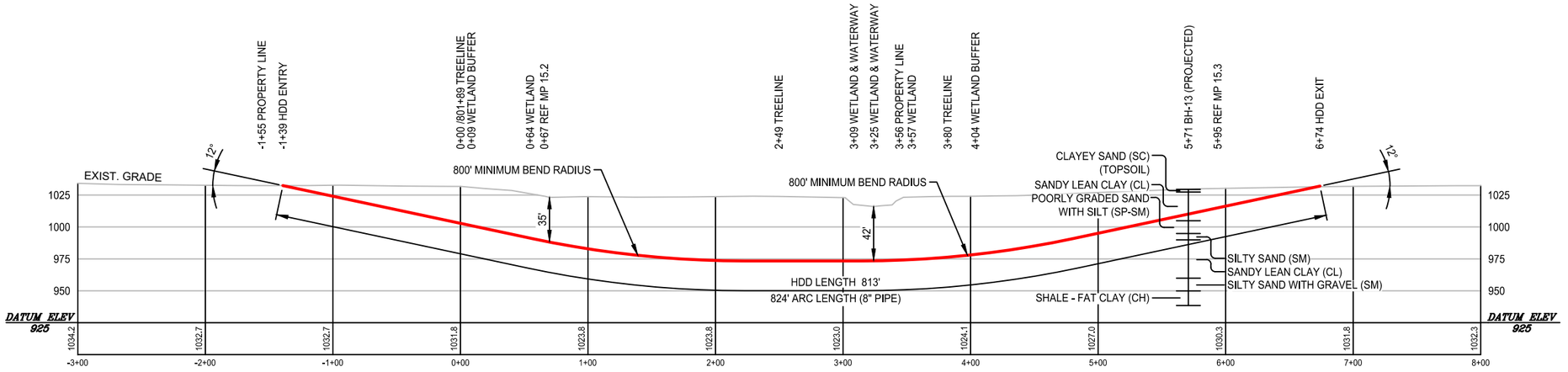
PROJECT NO.

DWG. NO.
WOR-SSP-1
F

PLAN & PROFILE WETLAND



PLAN
SCALE : 1"=50'
REF. DWG. P3-4



PROFILE
SCALE (VERT): 1"=50'
SCALE (HORIZ): 1"=50'

LEGEND

- PROPOSED SPRINGFIELD 2ND BRANCH LINE
- EXISTING MNB83701 BL
- PROPERTY LINE
- WETLAND
- WETLAND BUFFER
- STREAM
- TREELINE
- WIRE FENCE
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE

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2/19/2026 8:20 AM
Mesa, Marta

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

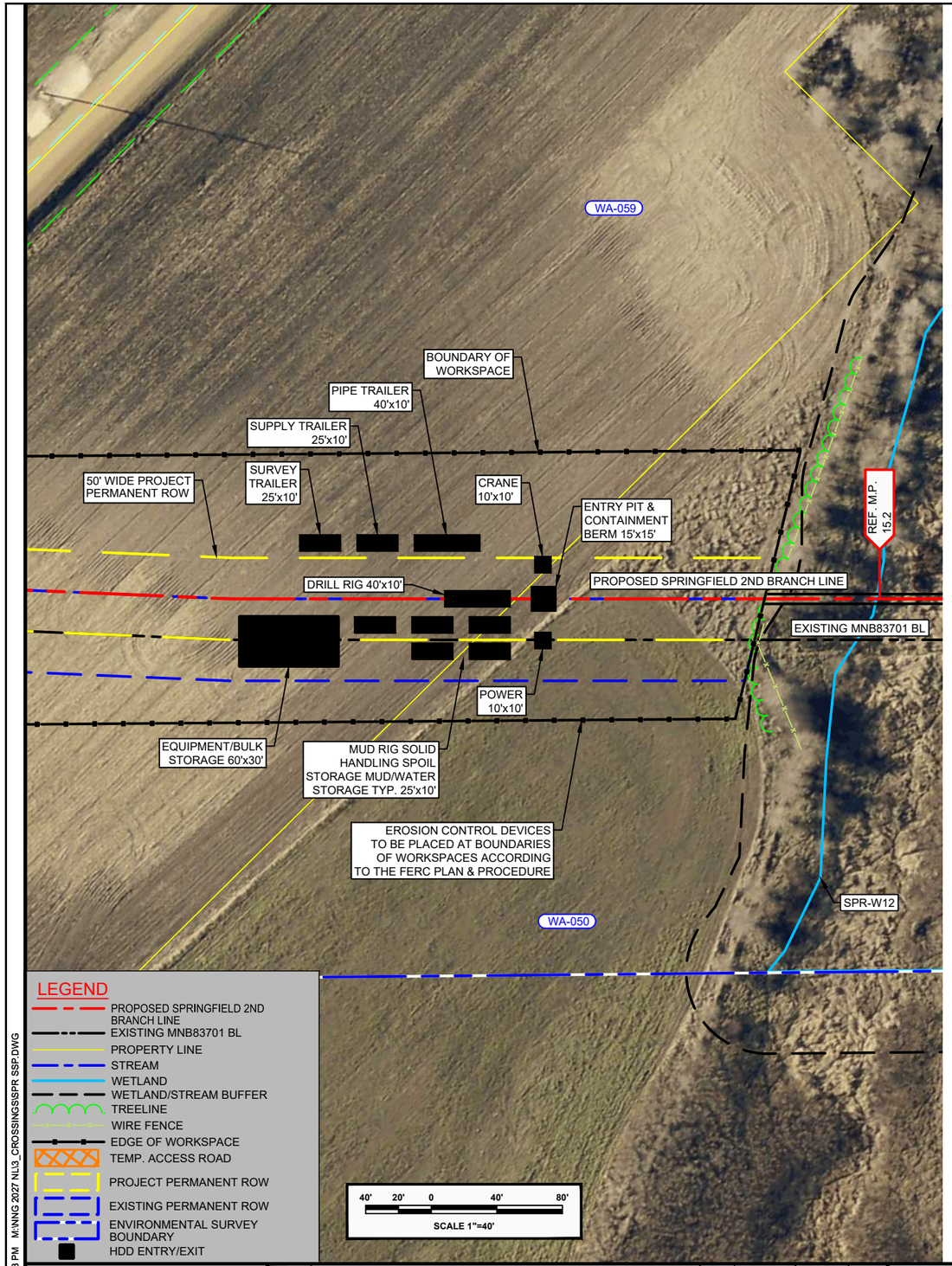
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STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	10/31/25	
DRAWN	JM	10/31/25	
ASBUILT			
FILE NO.:			
SCALE: 1"=50'			

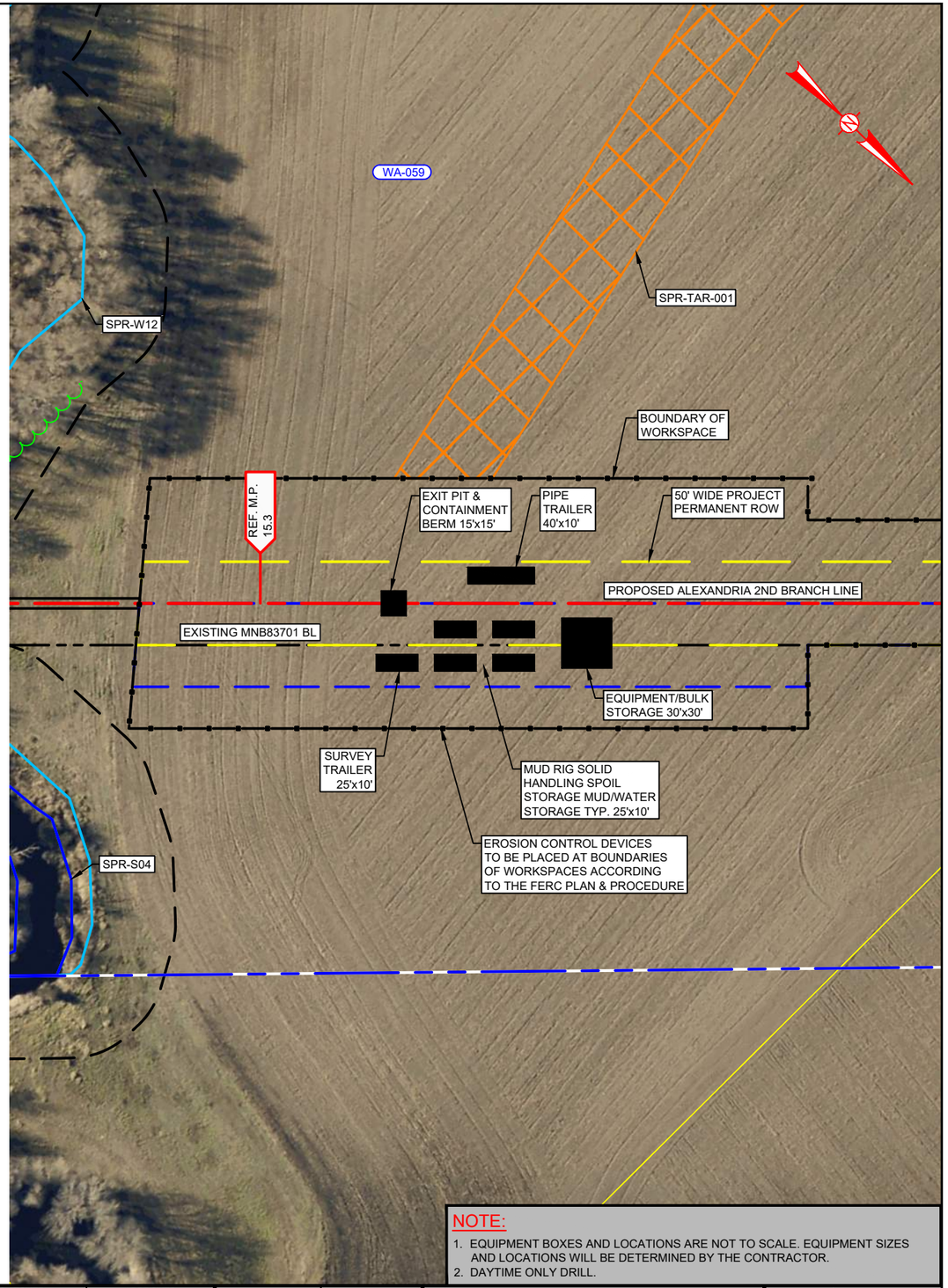
NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRACNH LINE
PLAN & PROFILE WETLAND
SEC. 34,33 & 28, T107N, R31W
WATONWAN, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
SPR-P4-1
F





NOTE:
1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

Meriel, Jeffrey 2/19/2026 10:38 PM M:\NNG 2027 NL\3_CROSSINGS\SPR SSP.DWG

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	2/14/25	
DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
SCALE: 1"=40'			

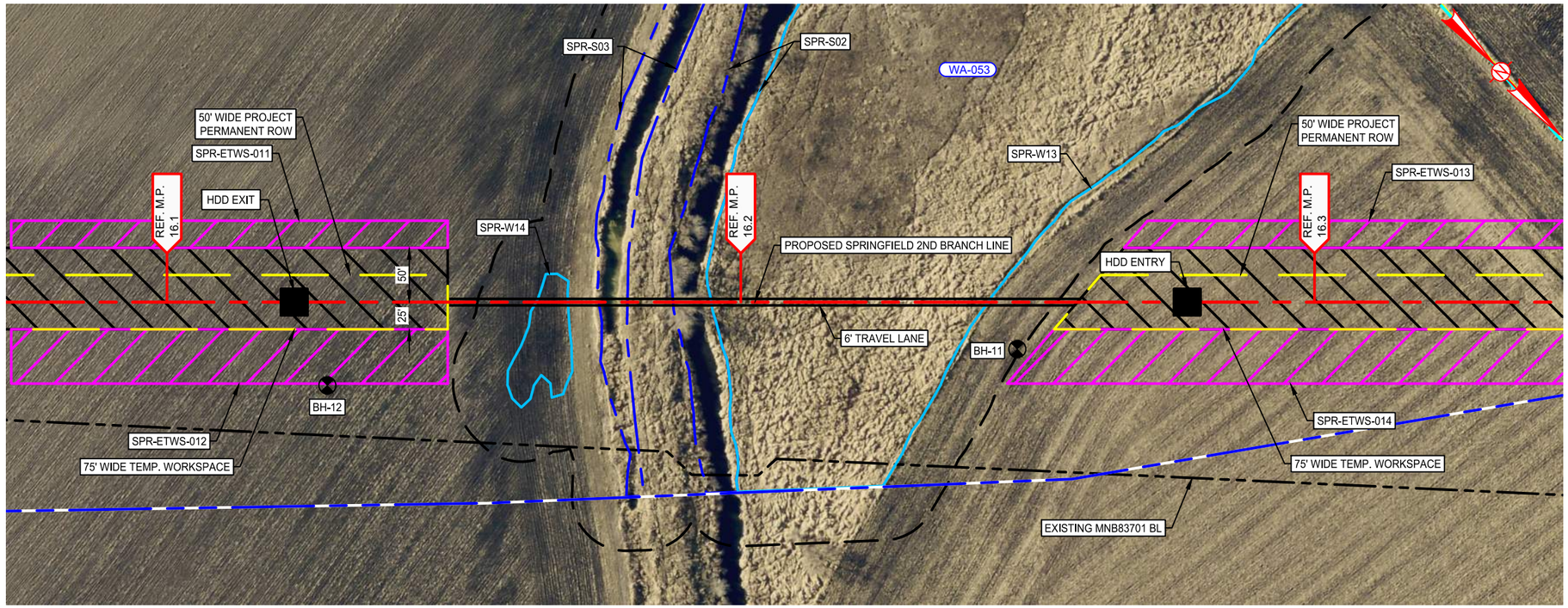
NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRANCH LINE
HDD SSP PLAN & PROFILE WETLAND
SEC. 34,33 & 28, T107N, R31W
WATONWAN, MINNESOTA

Northern Natural Gas.

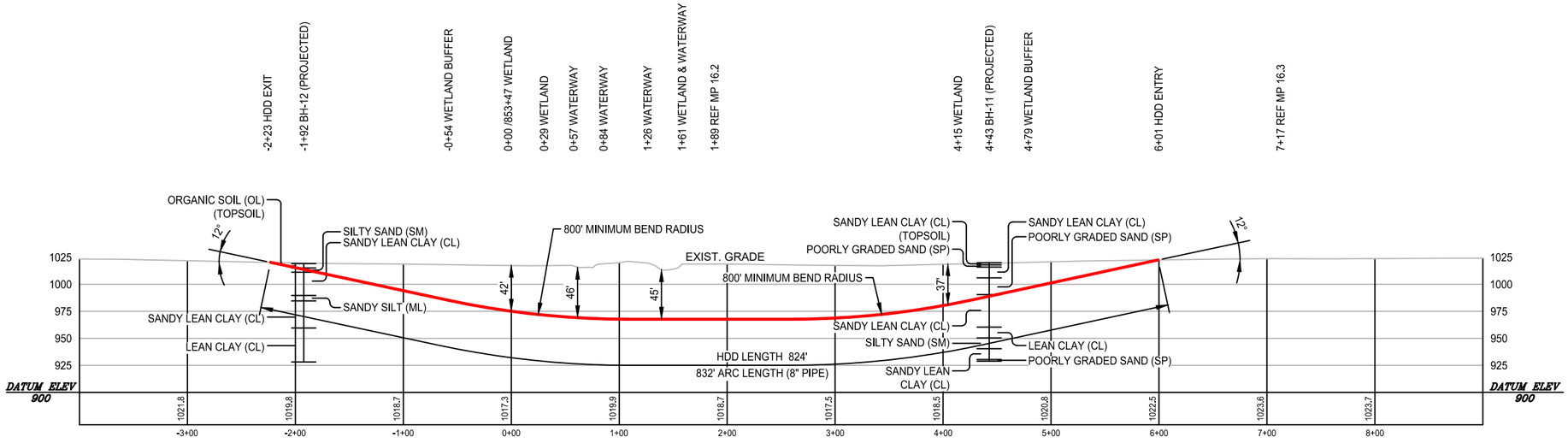
PROJECT NO.

DWG. NO. SPR-SSP-1 F

PLAN & PROFILE WETLAND & WATERWAY



PLAN
SCALE : 1"=60'
REF. DWG. P3-7



PROFILE
SCALE (VERT): 1"=60'
SCALE (HORIZ): 1"=60'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL# N/A		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	10/31/25	
DRAWN	JM	10/31/25	
ASBUILT			
FILE NO.:			
SCALE: 1"=60'			

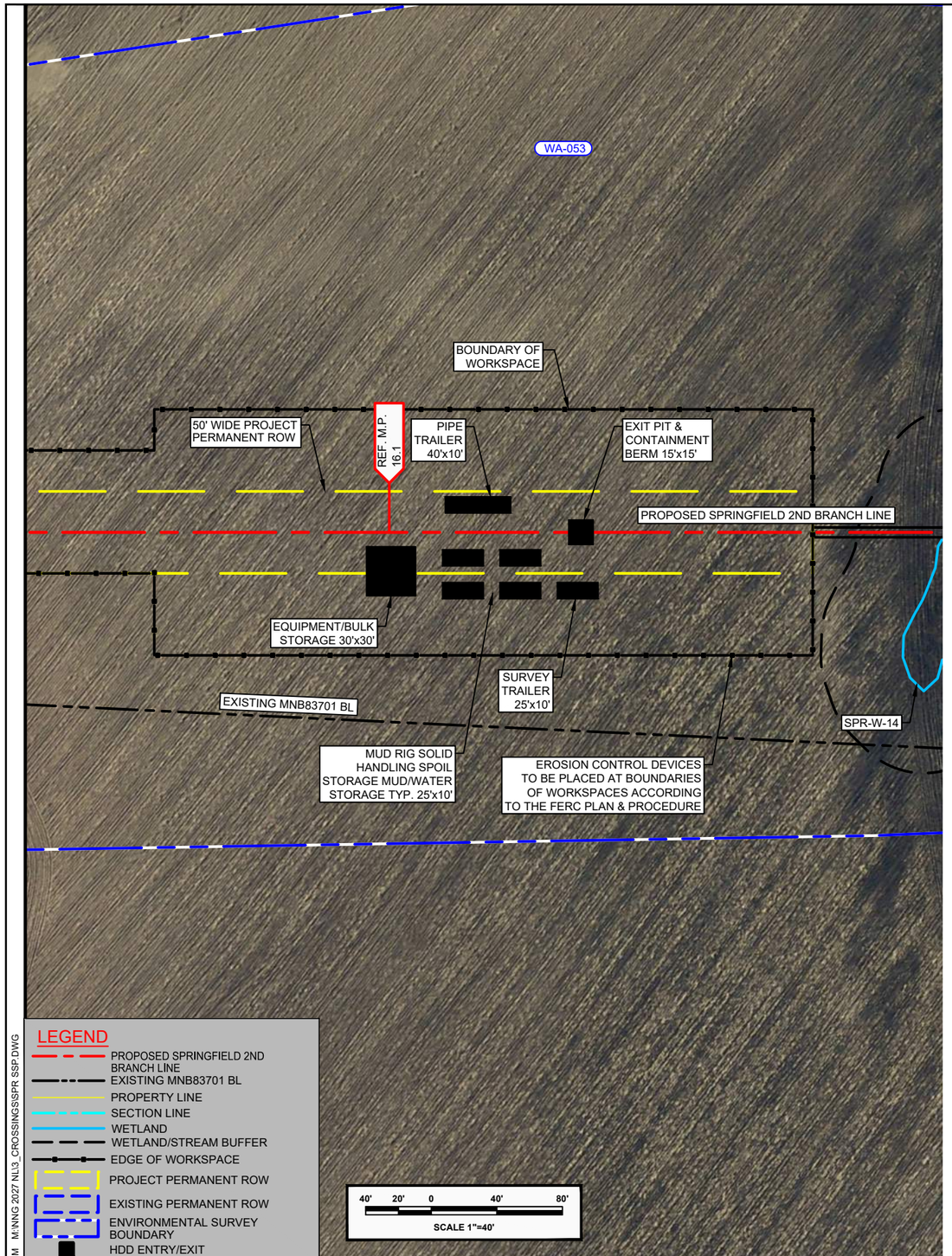
NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRACNH LINE
PLAN & PROFILE WETLAND & WATERWAY
SEC. 28 & 29, T107N, R31W
WATONWAN, MINNESOTA

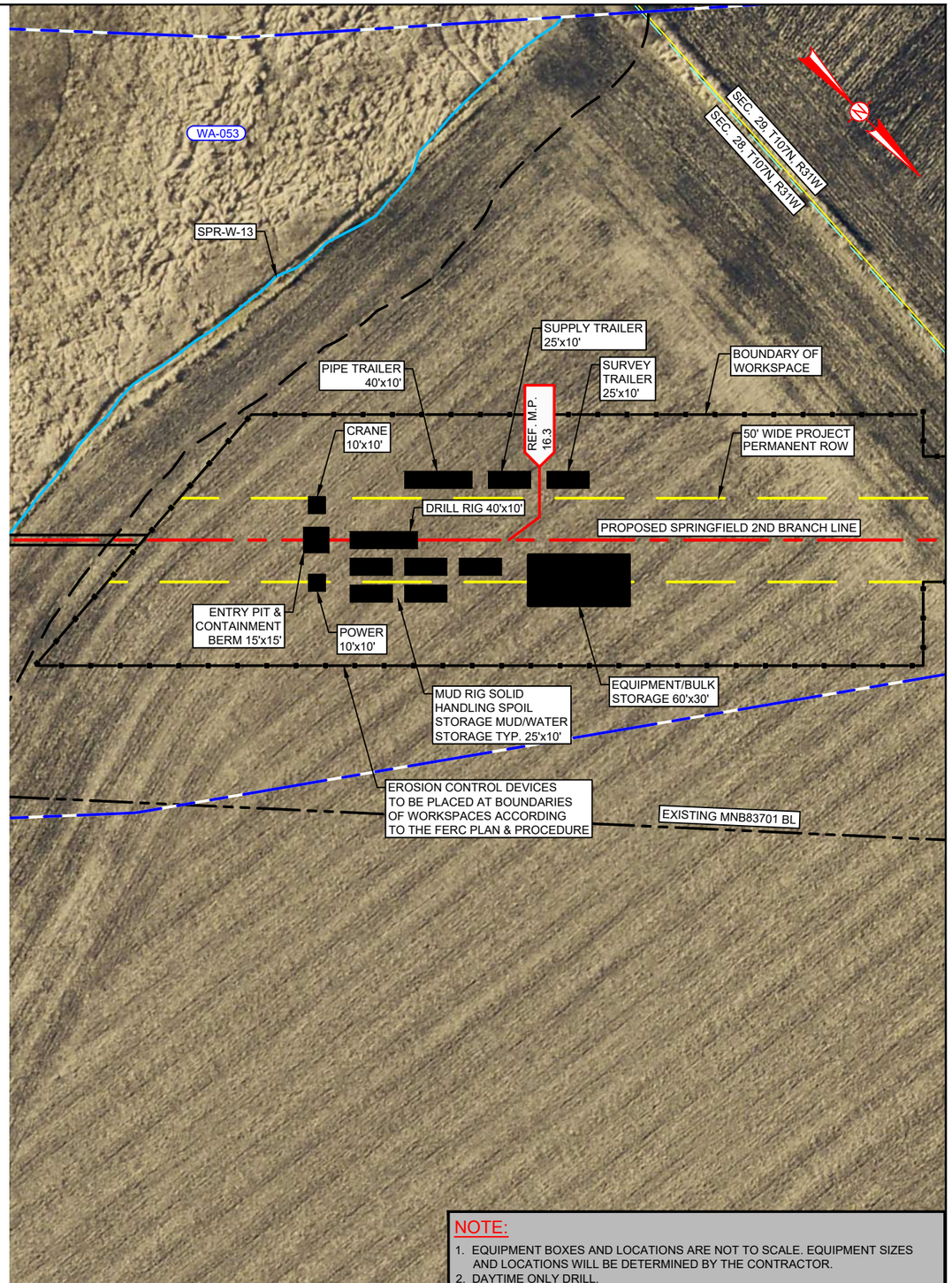
Northern Natural Gas.

PROJECT NO.

DWG. NO.
SPR-P4-2
F

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2/19/2026 8:20 AM
Mesa, Marta





LEGEND

- PROPOSED SPRINGFIELD 2ND BRANCH LINE
- EXISTING MNB83701 BL
- PROPERTY LINE
- SECTION LINE
- WETLAND
- WETLAND/STREAM BUFFER
- EDGE OF WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

40' 20' 0 40' 80'
SCALE 1"=40'

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRANCH LINE
HDD SSP PLAN & PROFILE WETLAND & WATERWAY
SEC. 28 & 29, T107N, R31W
WATONWAN, MINNESOTA

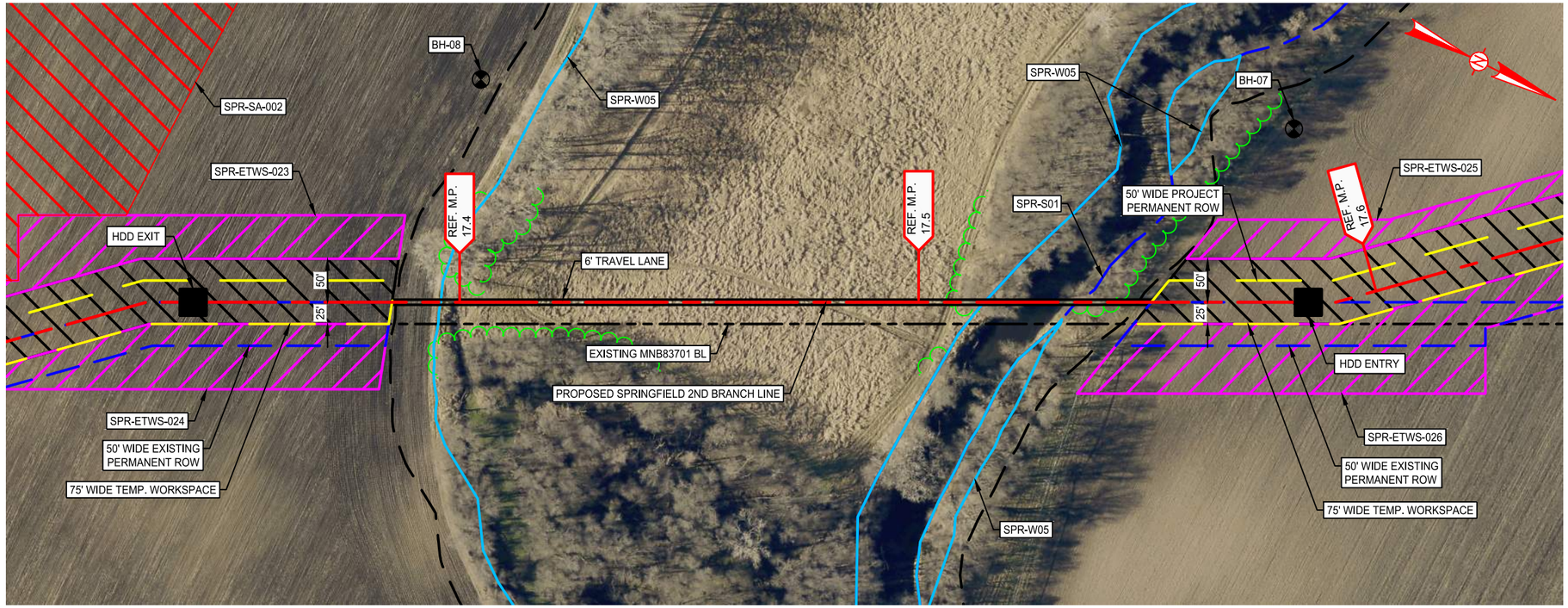
Northern Natural Gas.

PROJECT NO.

DWG. NO.
SPR-SSP-2
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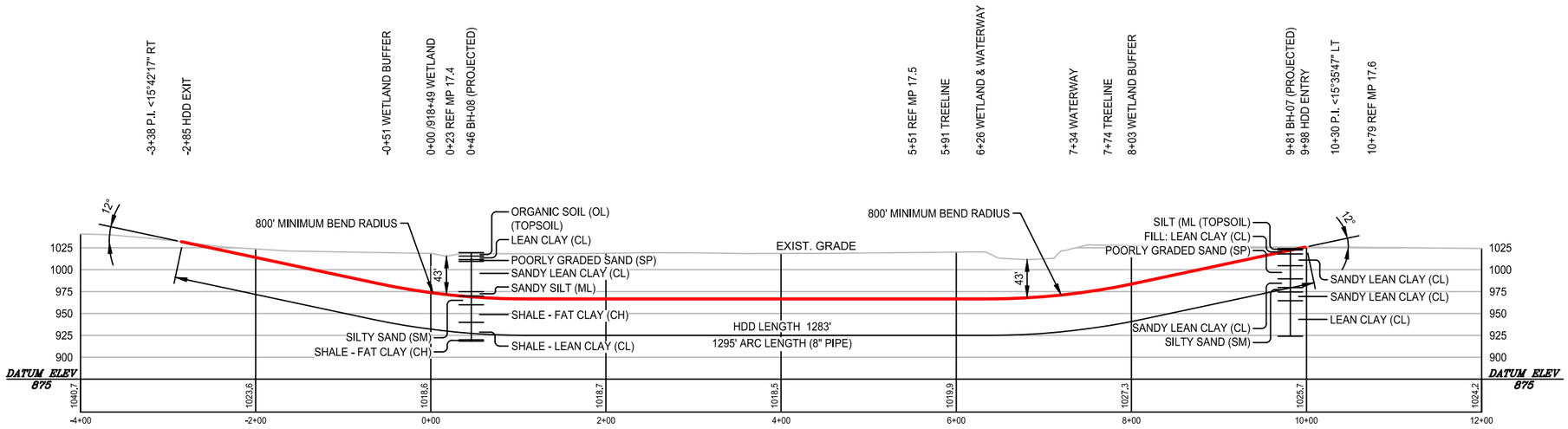
PLAN & PROFILE WETLAND & WATERWAY



PLAN
SCALE : 1"=75'
REF. DWG. P3-10

LEGEND

- PROPOSED SPRINGFIELD 2ND BRANCH LINE
- EXISTING MNB83701 BL
- PROPERTY LINE
- WETLAND
- WETLAND BUFFER
- STREAM
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE



PROFILE
SCALE (VERT): 1"=75'
SCALE (HORIZ): 1"=75'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

FILED WITH FERC
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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL# N/A		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	10/31/25	
DRAWN	JM	10/31/25	
ASBUILT			
FILE NO.:			
SCALE: 1"=75'			

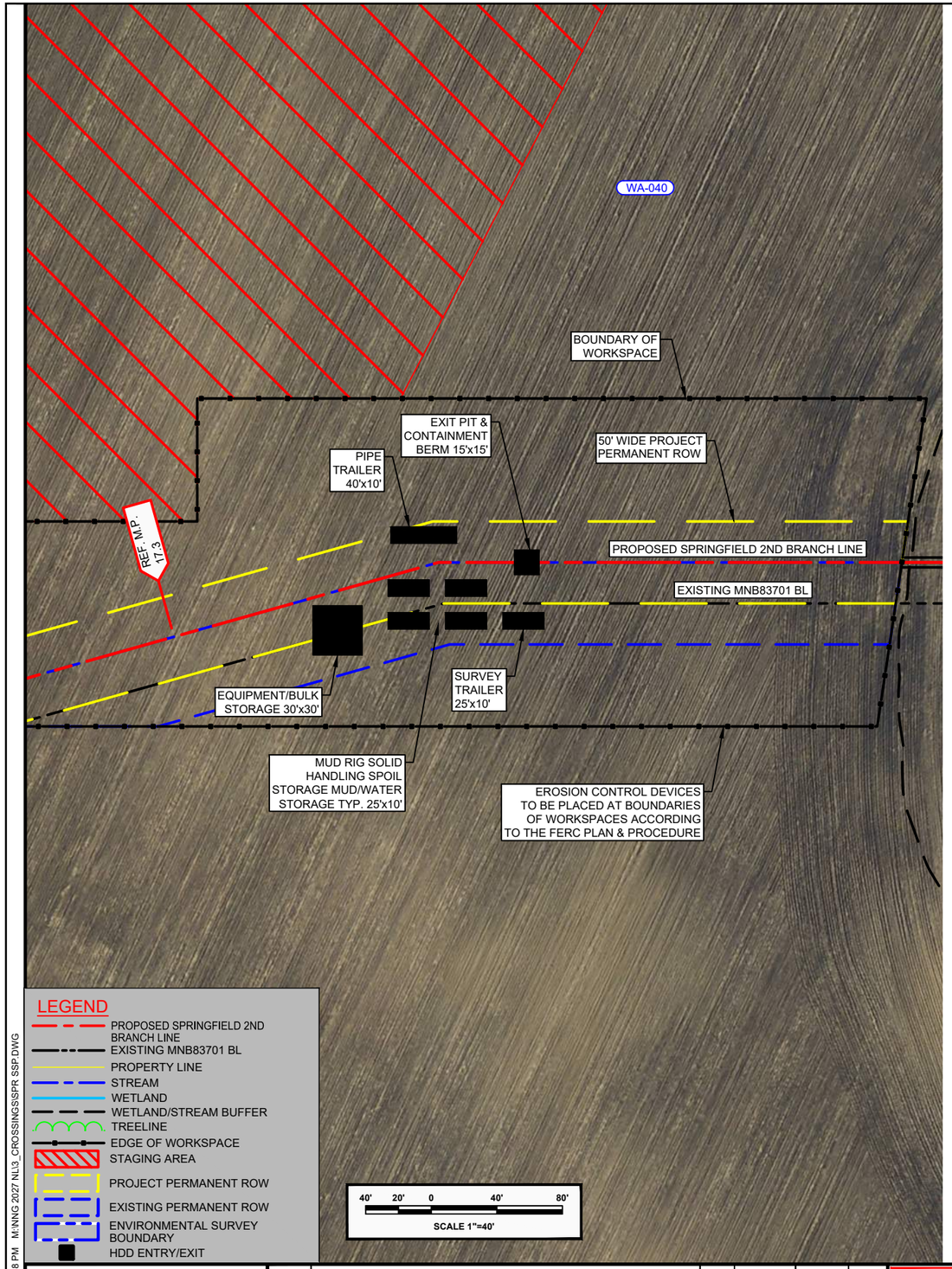
NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRACNH LINE
PLAN & PROFILE WETLAND & WATERWAY
SEC. 20, T107N, R31W
WATONWAN, MINNESOTA

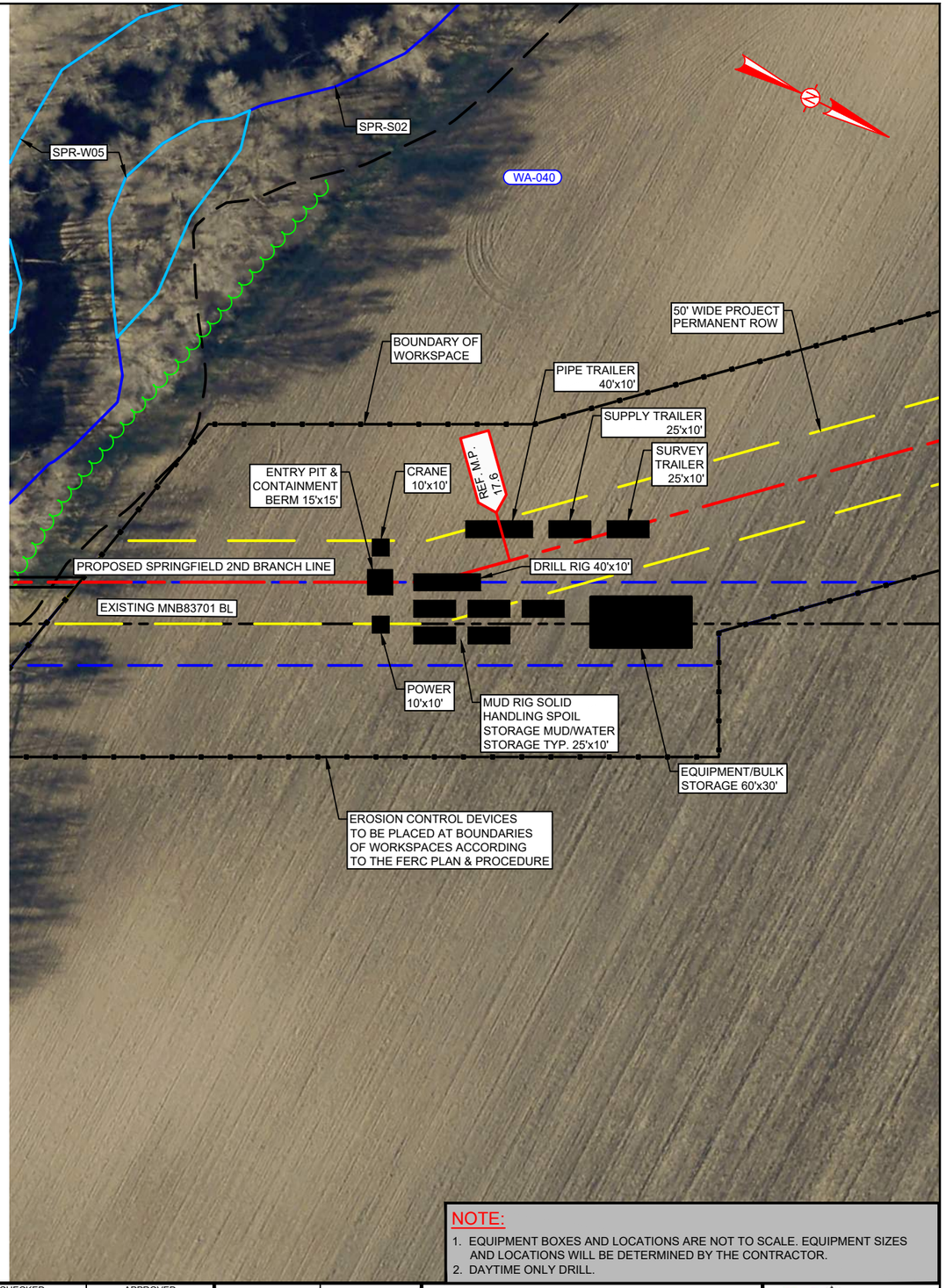
Northern Natural Gas.

PROJECT NO.

DWG. NO.
SPR-P4-3
F

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2/19/2026 8:20 AM
Mesa, Marta





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

M:\NNG 2027 NL\3_CROSSINGS\SPR SSP.DWG
Meriel, Jeffrey 2/19/2026 10:38 PM

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
ANY CHANGES FROM WHAT IS SHOWN MUST BE IDENTIFIED AND REVIEWED BY REGULATORY BEFORE IMPLEMENTATION

STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

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PI#		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

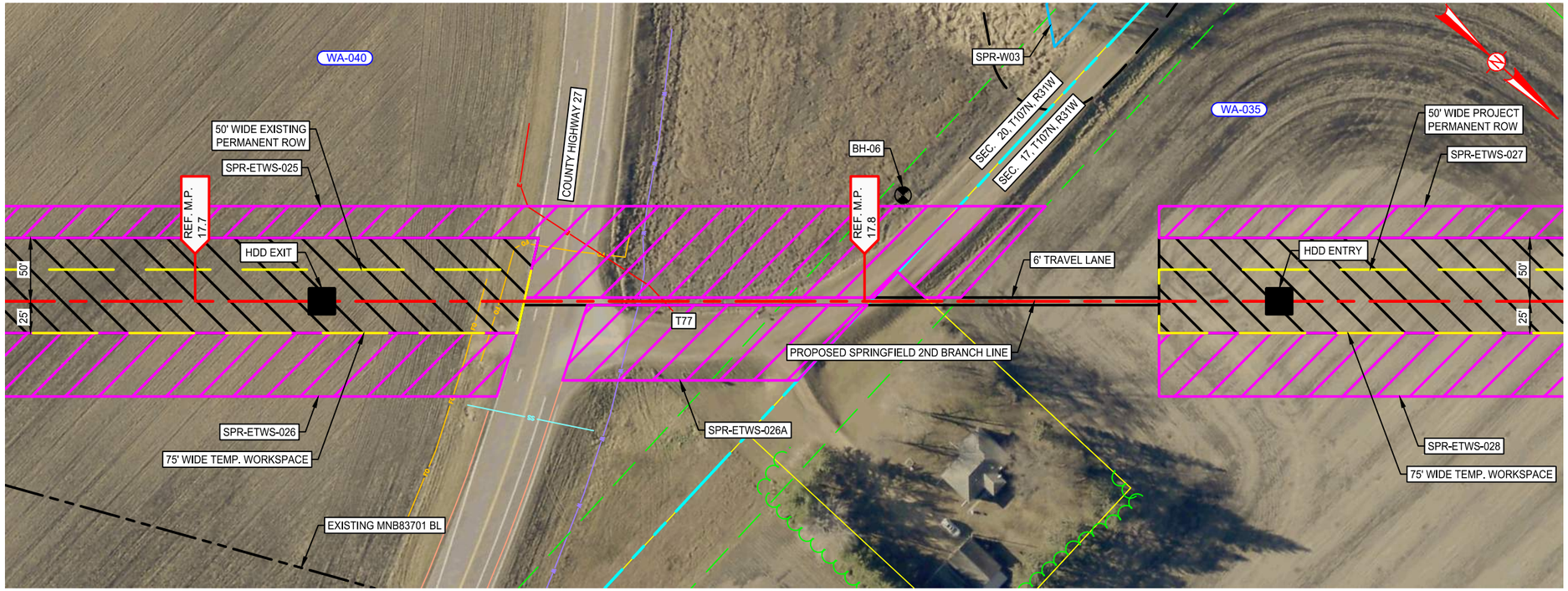
NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRANCH LINE
HDD SSP PLAN & PROFILE WETLAND & WATERWAY
SEC. 20, T107N, R31W
WATONWAN, MINNESOTA

Northern Natural Gas.

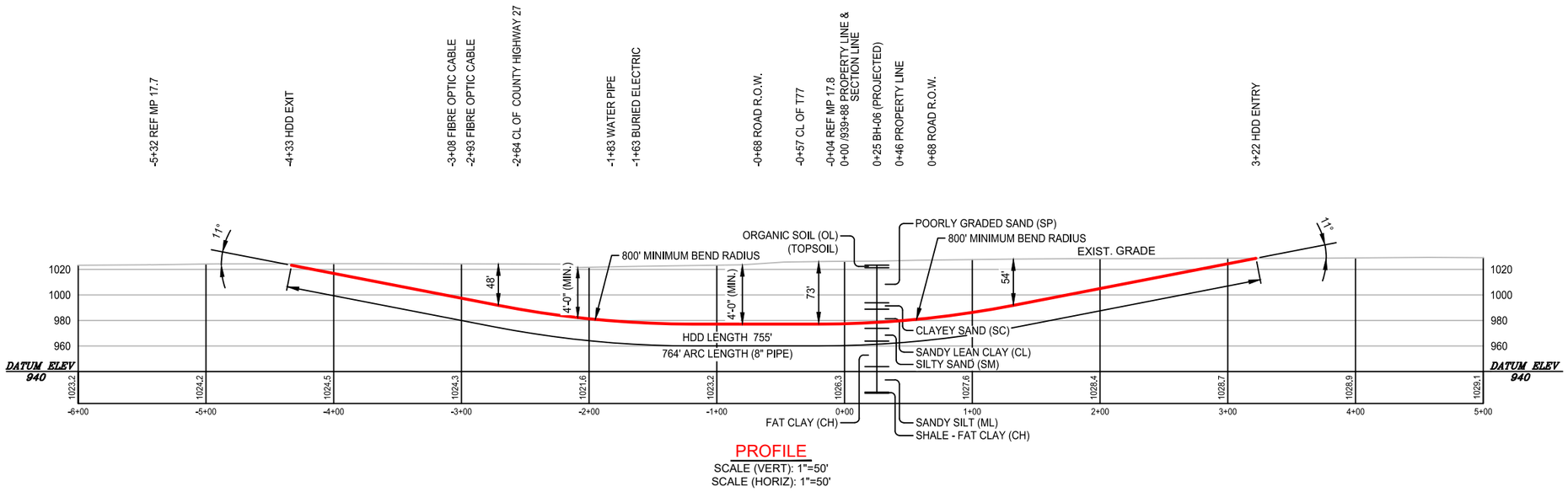
PROJECT NO.

DWG. NO.
SPR-SSP-3
F

PLAN & PROFILE COUNTY HIGHWAY 27



PLAN
SCALE : 1"=50'
REF. DWG. P3-11



PROFILE
SCALE (VERT): 1"=50'
SCALE (HORIZ): 1"=50'

LEGEND

- PROPOSED SPRINGFIELD 2ND BRANCH LINE
- EXISTING MNB83701 BL
- PROPERTY LINE
- SECTION LINE
- ROAD R.O.W.
- WETLAND
- WETLAND BUFFER
- TREELINE
- EDGE OF ROAD (BITUMEN)
- BURIED ELECTRIC
- FIBRE OPTIC CABLE
- CULVERT
- WETLAND
- WETLAND BUFFER
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- BOREHOLE

M:\NNG 2027 NL\3_CROSSINGS\SPR-PLAN&PROFILE.DWG
2/19/2026 8:20 AM Mesa, Marta

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PL# N/A		CONST. YR 2027
STA# N/A		POI# N/A
	BY	DATE
DESIGN	ED	10/31/25
DRAWN	JM	10/31/25
ASBUILT		
FILE NO.:		
SCALE: 1"=50'		

NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRACNH LINE
PLAN & PROFILE COUNTY HIGHWAY 27
SEC. 20,17 & 18, T107N, R31W
WATONWAN, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. SPR-P4-4 F

WA-040

BOUNDARY OF WORKSPACE

50' WIDE PROJECT PERMANENT ROW

REF. M.P. 17.7

PIPE TRAILER 40'x10'

EXIT PIT & CONTAINMENT BERM 15'x15'

PROPOSED SPRINGFIELD 2ND BRANCH LINE

EQUIPMENT/BULK STORAGE 30'x30'

MUD RIG SOLID HANDLING SPOIL STORAGE MUD/WATER STORAGE TYP. 25'x10'

SURVEY TRAILER 25'x10'

EROSION CONTROL DEVICES TO BE PLACED AT BOUNDARIES OF WORKSPACES ACCORDING TO THE FERC PLAN & PROCEDURE

EXISTING MNB83701 BL

COUNTY HIGHWAY 27

SEC. 20, T107N, R31W

SEC. 17, T107N, R31W

40' 20' 0 40' 80'

SCALE 1"=40'

LEGEND

- PROPOSED SPRINGFIELD 2ND BRANCH LINE
- EXISTING MNB83701 BL
- PROPERTY LINE
- SECTION LINE
- ROAD R.O.W.
- FIBRE OPTIC CABLE
- BURIED ELECTRIC
- CULVERT
- WETLAND
- WETLAND BUFFER
- TREELINE
- EDGE OF WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

WA-035

SPR-W03

SEC. 18, T107N, R31W

SEC. 17, T107N, R31W

T113

PIPE TRAILER 40'x10'

SUPPLY TRAILER 25'x10'

ENTRY PIT & CONTAINMENT BERM 15'x15'

CRANE 10'x10'

SURVEY TRAILER 25'x10'

REF. M.P. 17.9

50' WIDE PROJECT PERMANENT ROW

PROPOSED SPRINGFIELD 2ND BRANCH LINE

DRILL RIG 40'x10'

POWER 10'x10'

MUD RIG SOLID HANDLING SPOIL STORAGE MUD/WATER STORAGE TYP. 25'x10'

EQUIPMENT/BULK STORAGE 60'x30'

EROSION CONTROL DEVICES TO BE PLACED AT BOUNDARIES OF WORKSPACES ACCORDING TO THE FERC PLAN & PROCEDURE

EXISTING MNB83701 BL

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

M:\NNG 2027 NL\3_CROSSINGS\SPR SSP.DWG
Mesa, Marta 2/19/2026 7:46 AM

INTERNAL INFORMATION
DISTRIBUTION/COPIES LIMITED TO PROJECT NEEDS

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

FILED WITH FERC
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PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PI#		CONST. YR 2027	
STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	2/14/25	
DRAWN	JM	2/14/25	
ASBUILT			
FILE NO.: P:105			
SCALE: 1"=40'			

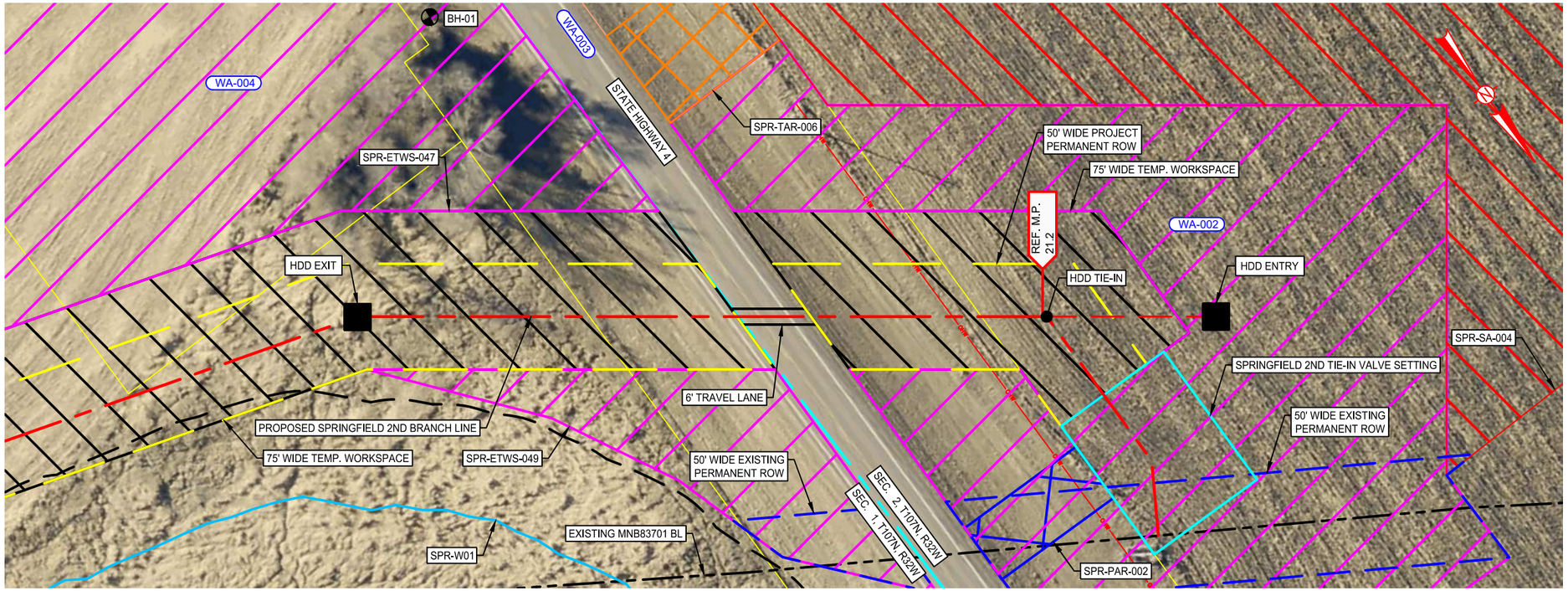
NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRANCH LINE
HDD SSP PLAN & PROFILE COUNTY HIGHWAY 27
SEC. 20,17 & 18, T107N, R31W
WATONWAN, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
SPR-SSP-4
F

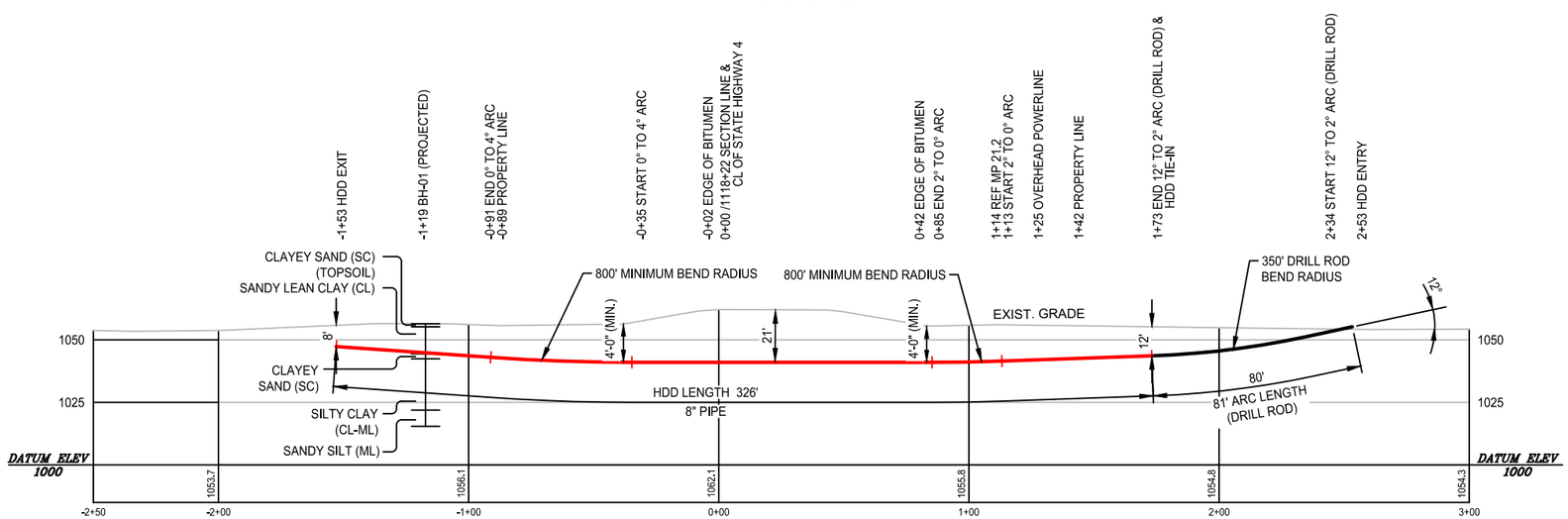
PLAN & PROFILE STATE HIGHWAY 4



PLAN
SCALE : 1"=30'
REF. DWG. P3-20

LEGEND

- PROPOSED SPRINGFIELD 2ND BRANCH LINE
- EXISTING MNB83701 BL
- PROPERTY LINE
- SECTION LINE
- WETLAND
- WETLAND BUFFER
- ROAD R.O.W.
- EDGE OF ROAD (BITUMEN)
- OHW — OVERHEAD POWERLINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- STAGING AREA
- TEMP. ACCESS ROAD
- PROPOSED LOT
- PROPOSED DRIVE
- BOREHOLE



PROFILE
SCALE (VERT): 1"=30'
SCALE (HORIZ): 1"=30'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

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STATUS	CHECKED BY	CHECKED DATE	APPROVED BY	APPROVED DATE
PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A	
PL# N/A		CONST. YR 2027	
STA# N/A		POI# N/A	
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DRAWN	JM	10/31/25	
ASBUILT			
FILE NO.:			
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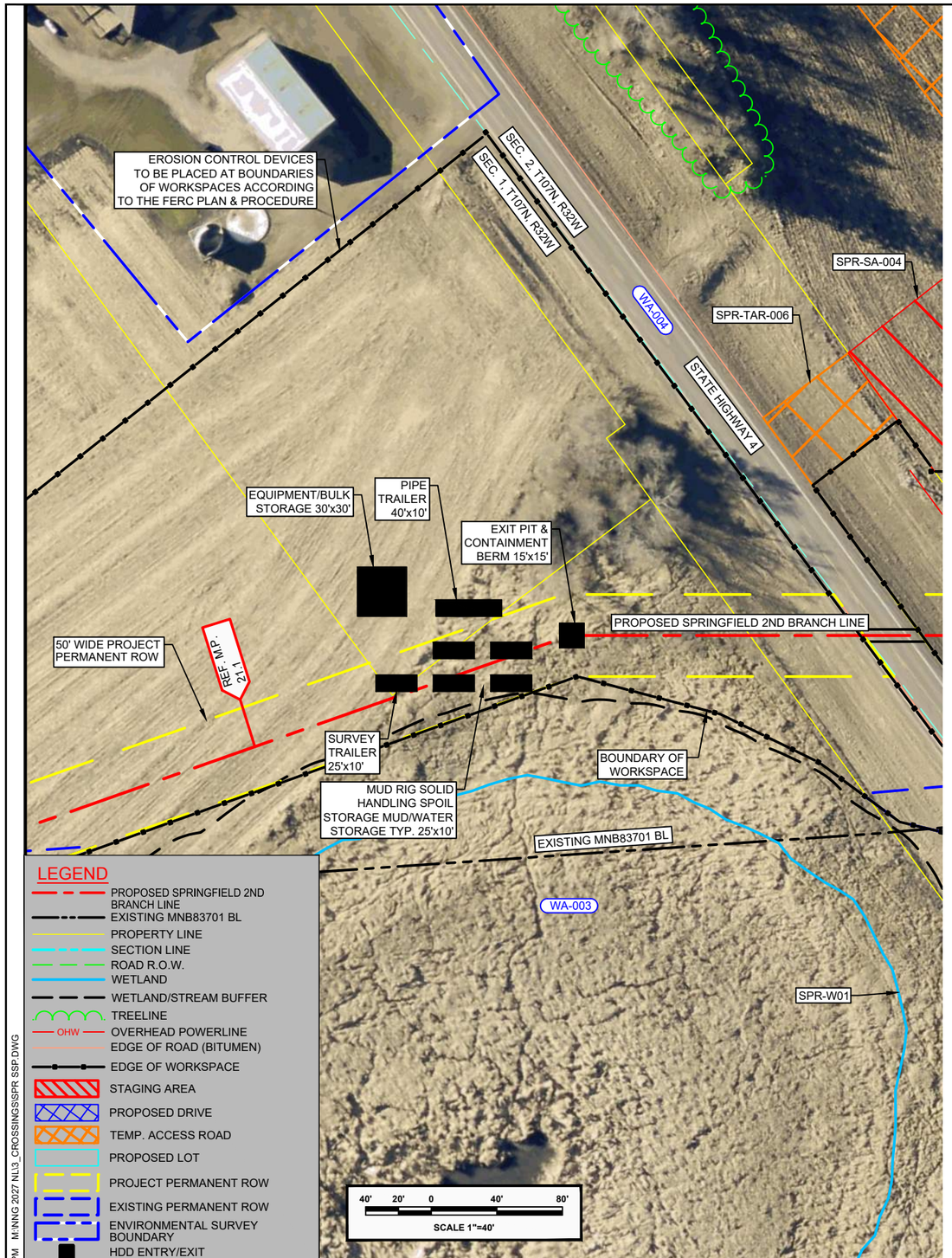
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SPRINGFIELD 2ND BRACNH LINE
PLAN & PROFILE STATE HIGHWAY 4
SEC. 1 & 2, T107N, R32W
WATONWAN, MINNESOTA

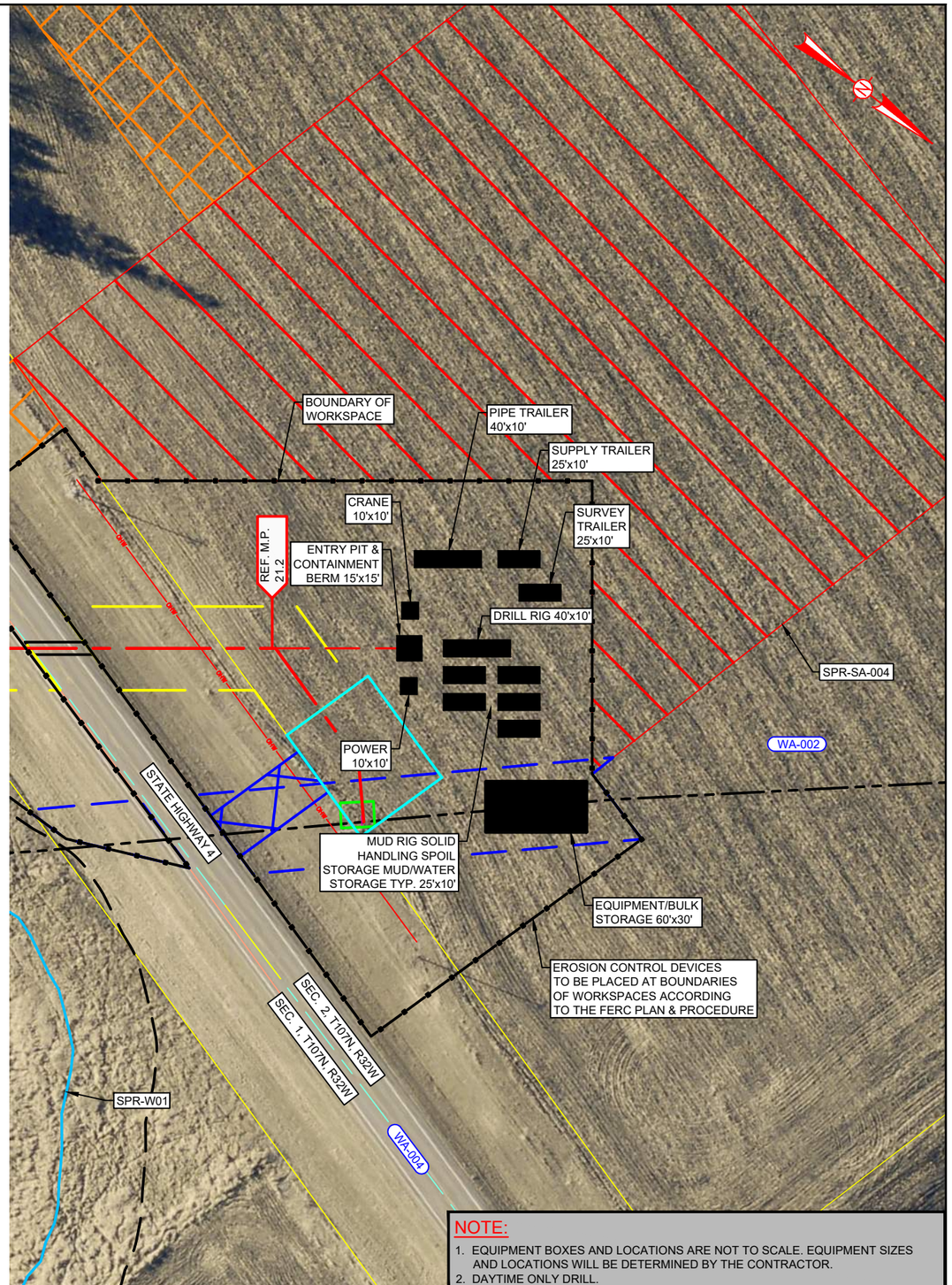
Northern Natural Gas.

PROJECT NO.

DWG. NO.
SPR-P4-5
F

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2/19/2026 8:20 AM
Mesa, Marta





LEGEND

- PROPOSED SPRINGFIELD 2ND BRANCH LINE
- EXISTING MNB83701 BL
- PROPERTY LINE
- SECTION LINE
- ROAD R.O.W.
- WETLAND
- WETLAND/STREAM BUFFER
- TREELINE
- OHW — OVERHEAD POWERLINE
- EDGE OF ROAD (BITUMEN)
- EDGE OF WORKSPACE
- STAGING AREA
- PROPOSED DRIVE
- TEMP. ACCESS ROAD
- PROPOSED LOT
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- HDD ENTRY/EXIT

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

ATTACHMENT 1

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F	ISSUED FOR FERC	JM	3/6/26	ED	GC

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DESIGN	ED	2/14/25
DRAWN	JM	2/14/25
ASBUILT		
FILE NO.: P:105		
SCALE: 1"=40'		

NORTHERN LIGHTS 2027 EXPANSION PROJECT
SPRINGFIELD 2ND BRANCH LINE
HDD SSP PLAN & PROFILE STATE HIGHWAY 4
SEC. 1 & 2, T107N, R32W
WATONWAN, MINNESOTA

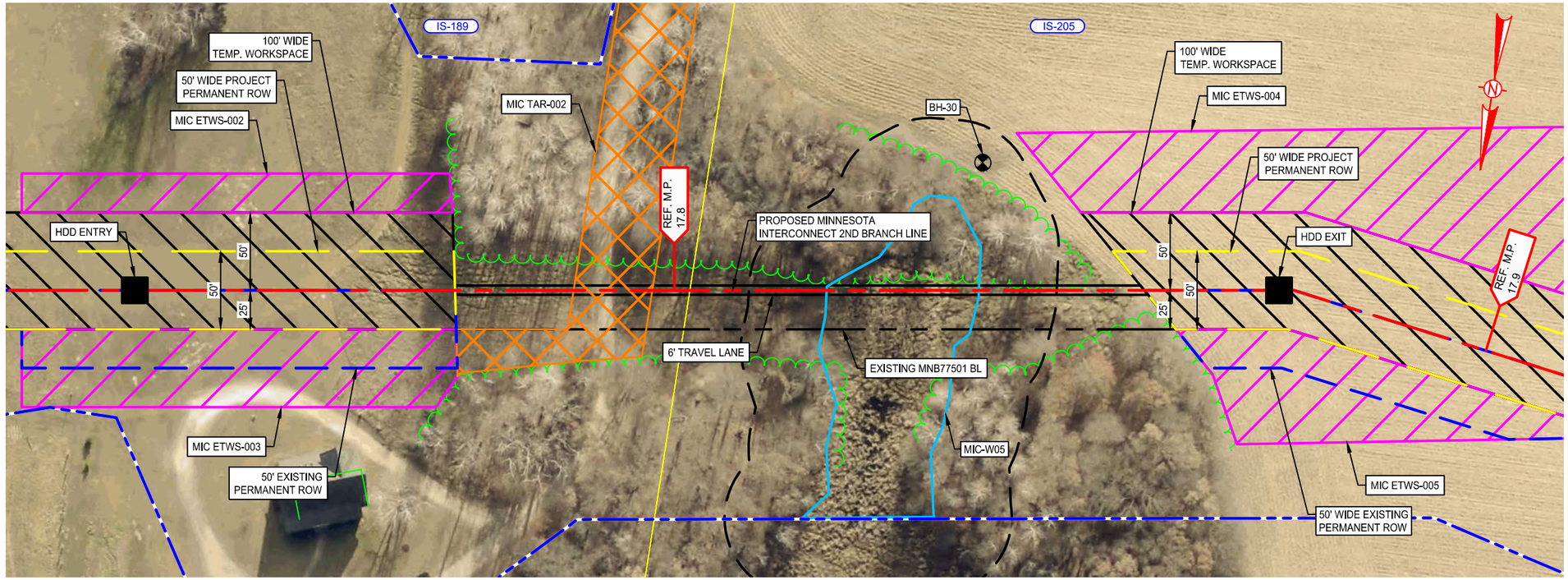
Northern Natural Gas.

PROJECT NO.

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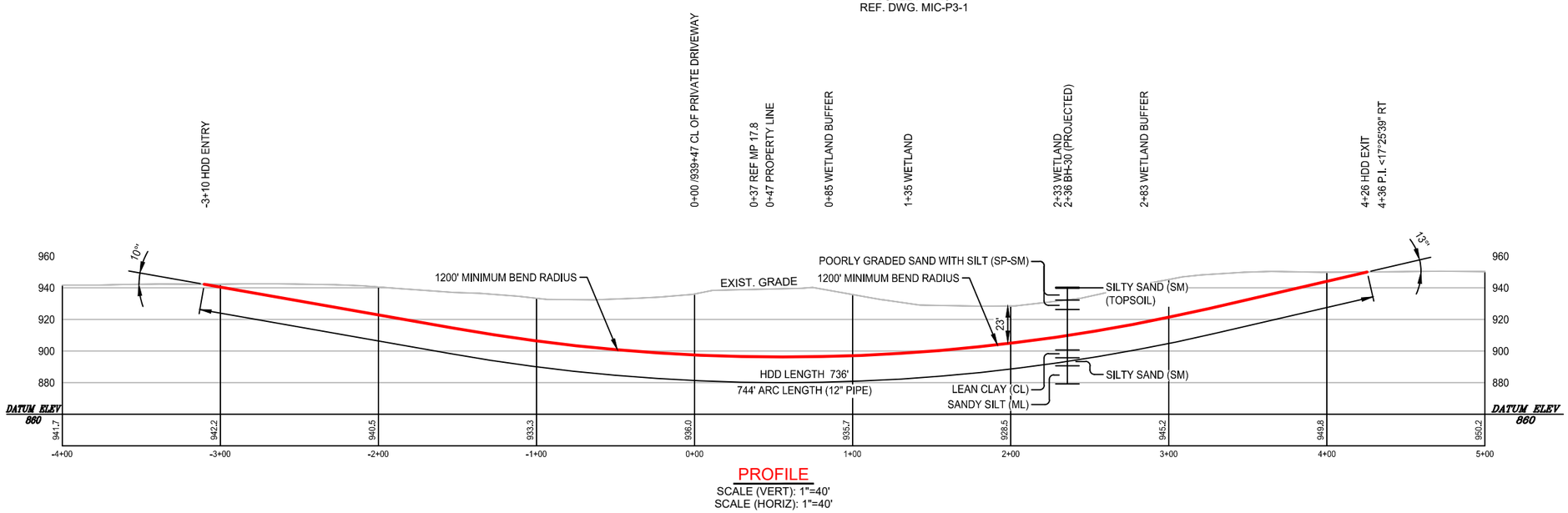
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PLAN & PROFILE WETLAND



PLAN
SCALE : 1"=40'
REF. DWG. MIC-P3-1

LEGEND
- PROPOSED MINNESOTA INTERCONNECT 2ND BRANCH LINE
- EXISTING MNB77501 BL
- PROPERTY LINE
- WETLAND
- WETLAND BUFFER
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE



PROFILE
SCALE (VERT): 1"=40'
SCALE (HORIZ): 1"=40'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

ATTACHMENT 1

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	BY	DATE
DESIGN	ED	10/29/25
DRAWN	JM	10/29/25
ASBUILT		
FILE NO.:		
SCALE: 1"=40'		

NORTHERN LIGHTS 2027 EXPANSION PROJECT
MINNESOTA INTERCONNECT 2ND BRANCH LINE
PLAN & PROFILE WETLAND
SEC. 22, T36N, R24W
ISANTI COUNTY, MINNESOTA

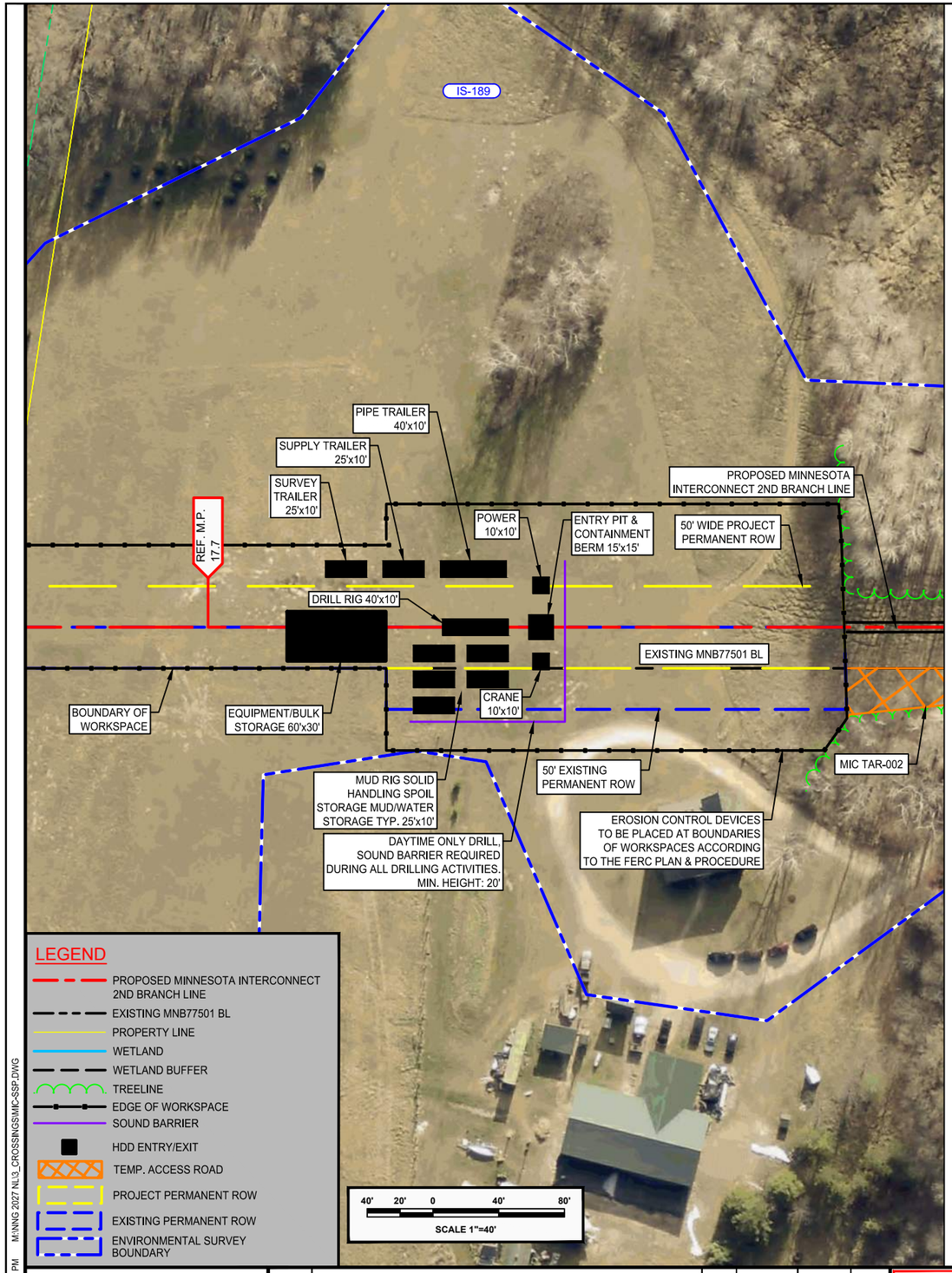
Northern Natural Gas.

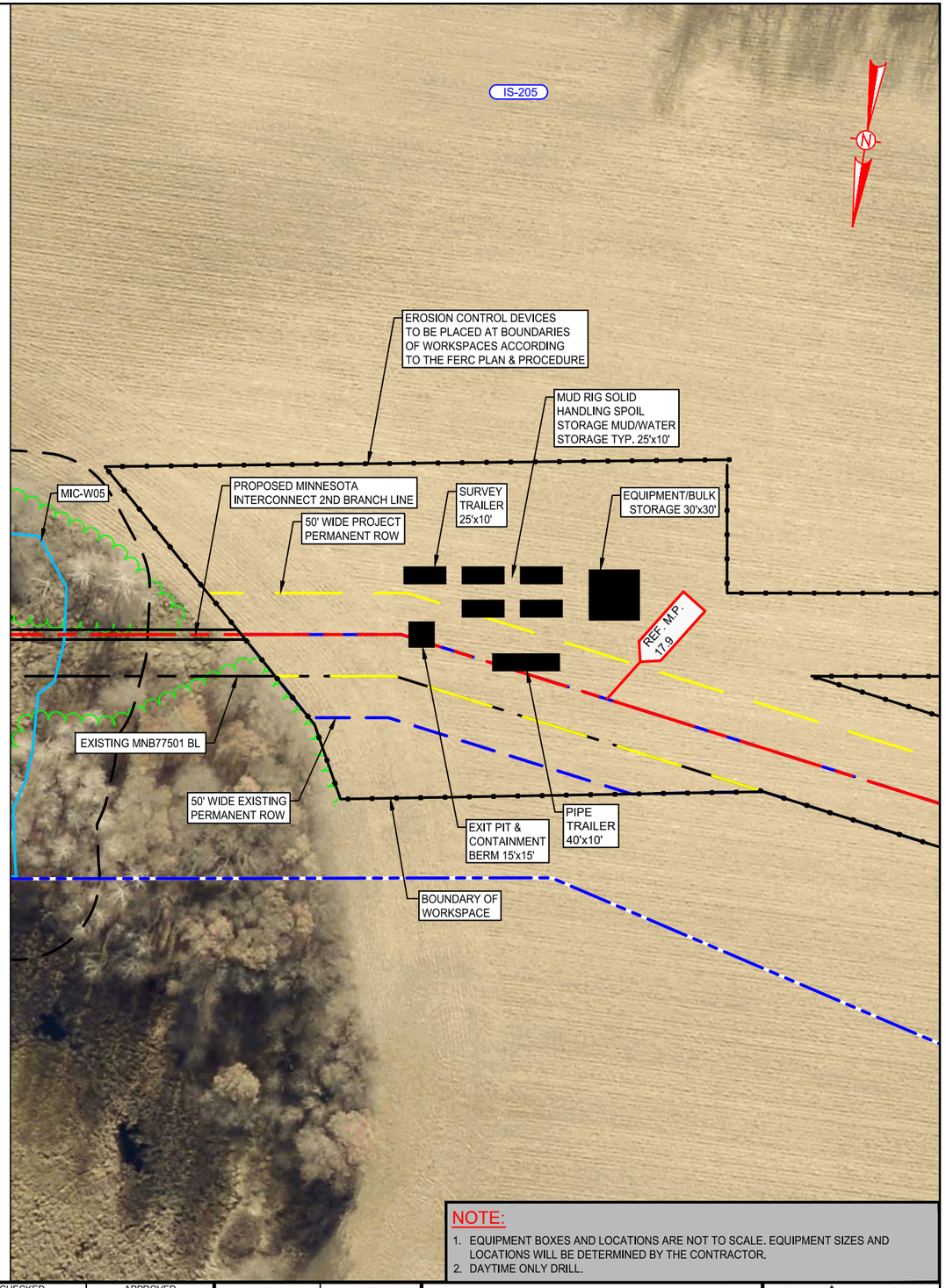
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DWG. NO. MIC-P4-1

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2/19/2026 7:19 AM
Mesa, Marta





NOTE:
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2. DAYTIME ONLY DRILL.

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2/19/2026 10:33 PM
Meriel, Jeffrey

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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ASBUILT		
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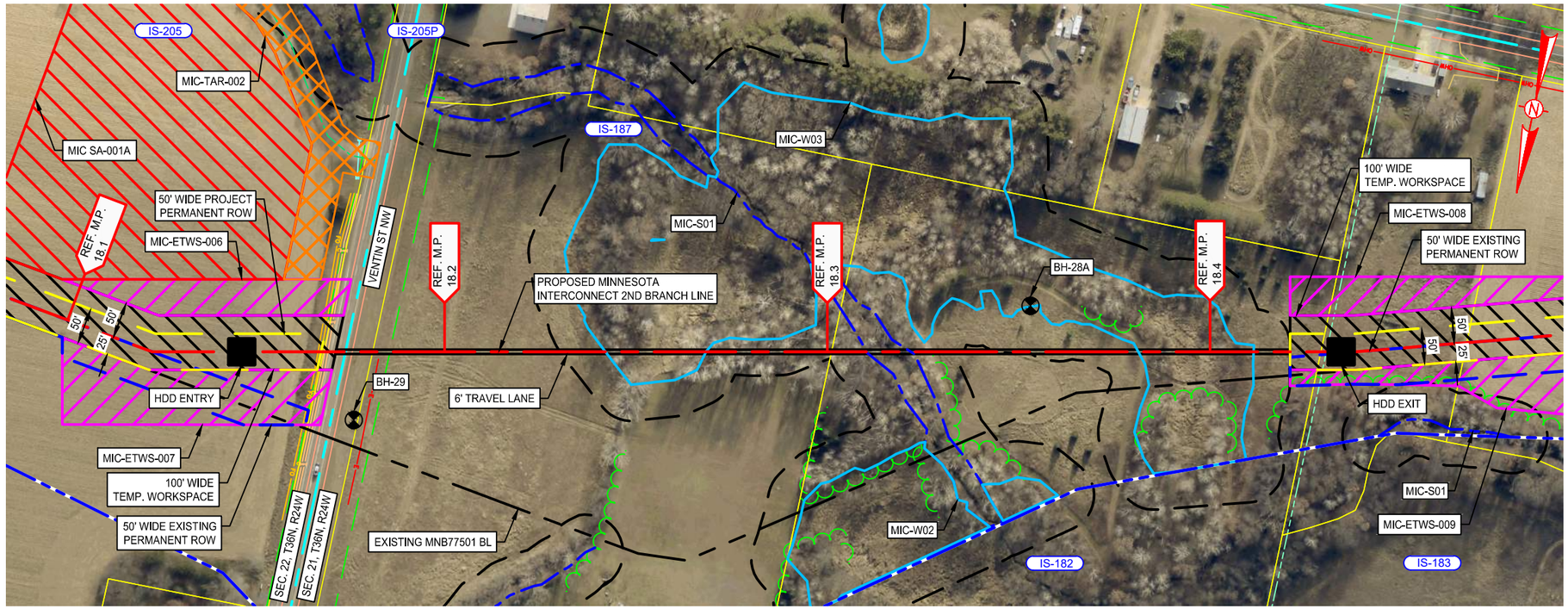
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MINNESOTA INTERCONNECT 2ND BRANCH LINE
HDD SSP PLAN & PROFILE WETLAND
SEC. 22, T36N, R24W
ISANTI COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO.
MIC-SSP-1
F

PLAN & PROFILE VERDIN ST NW & WETLAND



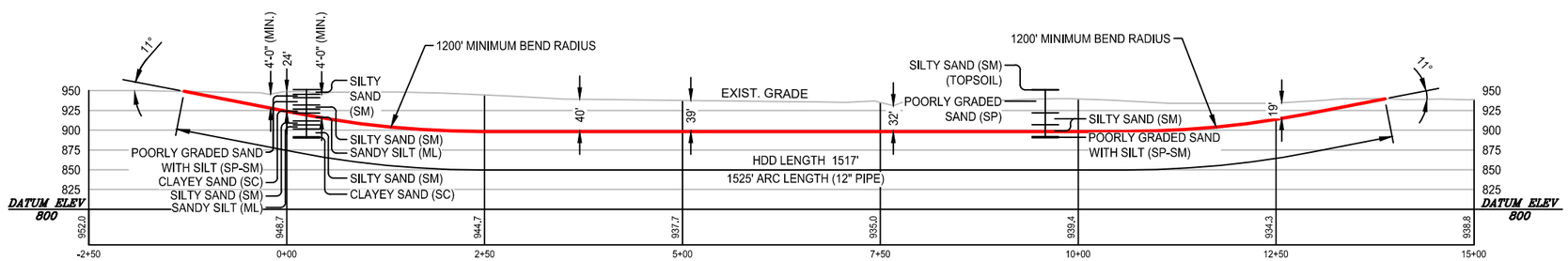
LEGEND

- PROPOSED MINNESOTA INTERCONNECT 2ND BRANCH LINE
- EXISTING MNB77501 BL
- PROPERTY LINE
- WETLAND
- WETLAND BUFFER
- STREAM
- EDGE OF ROAD (BITUMEN)
- SECTION LINE
- ROAD R.O.W.
- CTV
- FIBRE OPTIC CABLE
- TELEPHONE CABLE
- BURIED ELECTRIC
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- STAGING AREA
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE

PLAN

SCALE : 1"=90'
REF. DWG. MIC-P3-2 & MIC-P3-3

-1+30 HDD ENTRY
-0+25 FIBRE OPTIC CABLE
-0+20 ROAD R.O.W. & CTV CABLE
-0+17 PROPERTY LINE
-0+15 BURIED TELEPHONE
-0+11 BURIED TELEPHONE
0+01 (959+45 EDGE OF BITUMEN
0+13 SECTION LINE & CL OF VERDIN ST NW
0+23 EDGE OF BITUMEN
0+25 BH-29 (PROJECTED)
0+51 PROPERTY LINE
0+75 ROAD R.O.W.
1+50 REF MP 18.2
3+10 WETLAND BUFFER
3+72 WETLAND
5+11 WETLAND
6+78 REF MP 18.3
6+84 PROPERTY LINE
7+32 WATERWAY
7+93 WATERWAY
8+66 WETLAND BUFFER
9+16 WETLAND BUFFER
9+45 WETLAND BUFFER
9+56 WETLAND BUFFER
9+58 BH-28A (PROJECTED)
11+07 WETLAND
12+06 REF MP 18.4
12+66 WETLAND
13+16 WETLAND BUFFER
13+59 PROPERTY LINE
13+87 HDD EXIT



PROFILE

SCALE (VERT): 1"=90'
SCALE (HORIZ): 1"=90'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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CONST.				

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STA# N/A		POI# N/A	
	BY	DATE	
DESIGN	ED	10/29/25	
DRAWN	JM	10/29/25	
ASBUILT			
FILE NO.:			
SCALE: 1"=90'			

NORTHERN LIGHTS 2027 EXPANSION PROJECT
MINNESOTA INTERCONNECT 2ND BRANCH LINE
PLAN & PROFILE VERDIN ST NW & WETLAND
SEC. 22 & 21, T36N, R24W
ISANTI COUNTY, MINNESOTA

Northern Natural Gas.

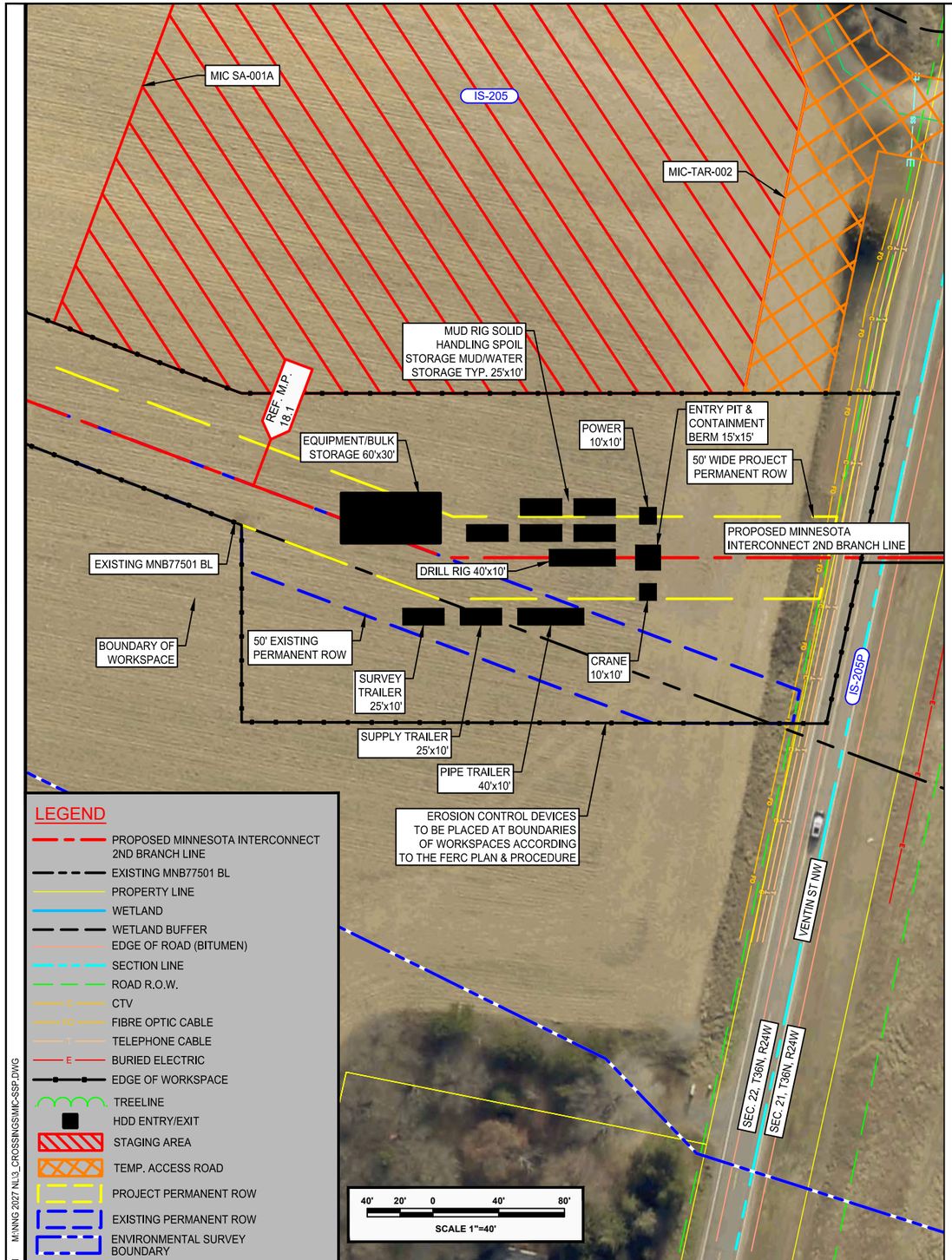
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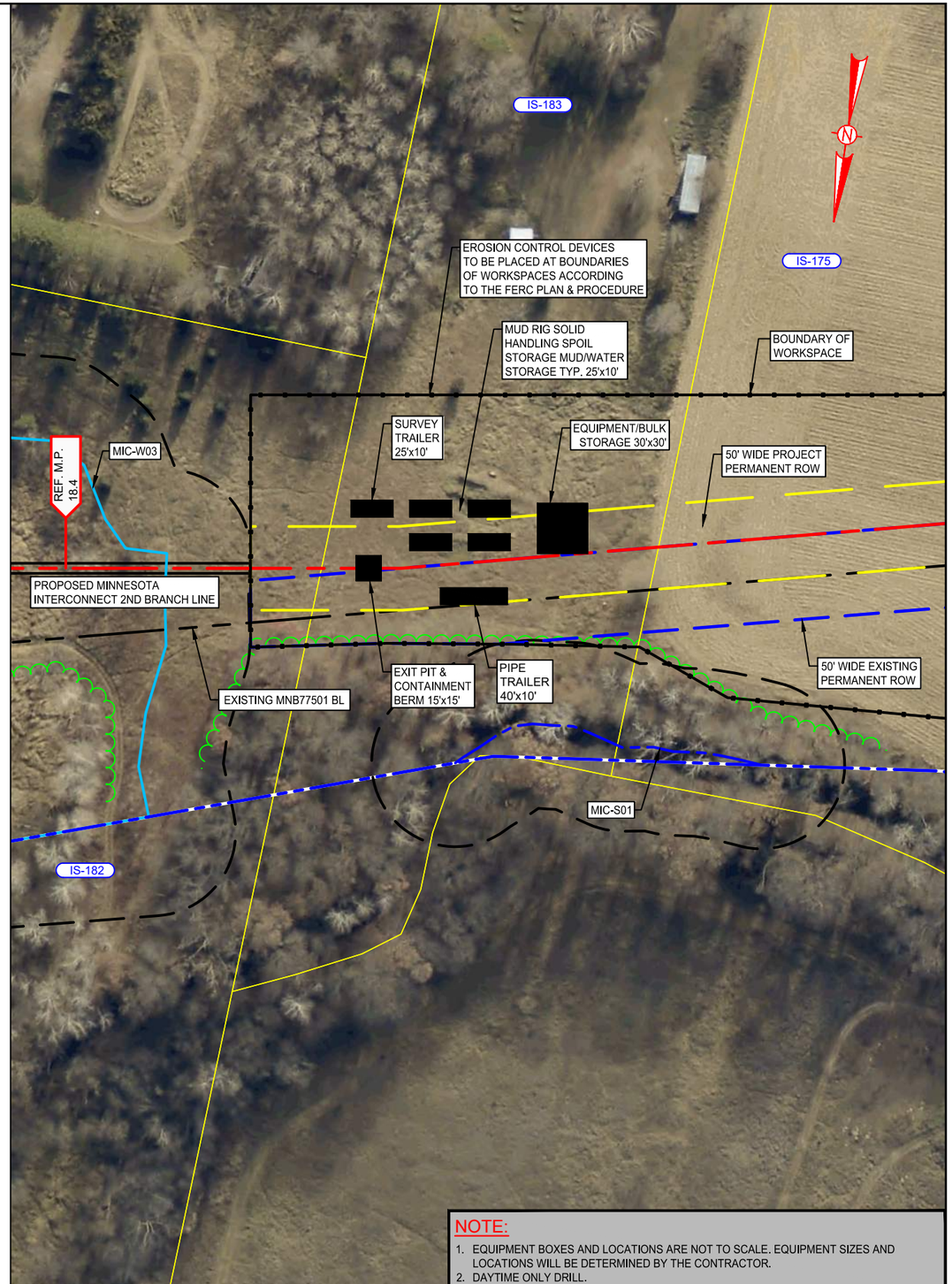
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F

ATTACHMENT 1

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2/19/2026 7:19 AM
Mesa, Marta





NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

M:\NNG 2027 NL\3_CROSSINGS\MIC-SSP.DWG
2/19/2026 10:33 PM
Meriel.Jeffrey

ATTACHMENT 1

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
F	ISSUED FOR FERC	JM	3/6/26	ED	GC

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PRELIM				
BID				
CONST.				

FAC. CODE: N/A		REL. W.O. N/A
PI#		CONST. YR 2027
STA# N/A		POI# N/A
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DRAWN	JM	1/8/26
ASBUILT		
FILE NO.: P:105		
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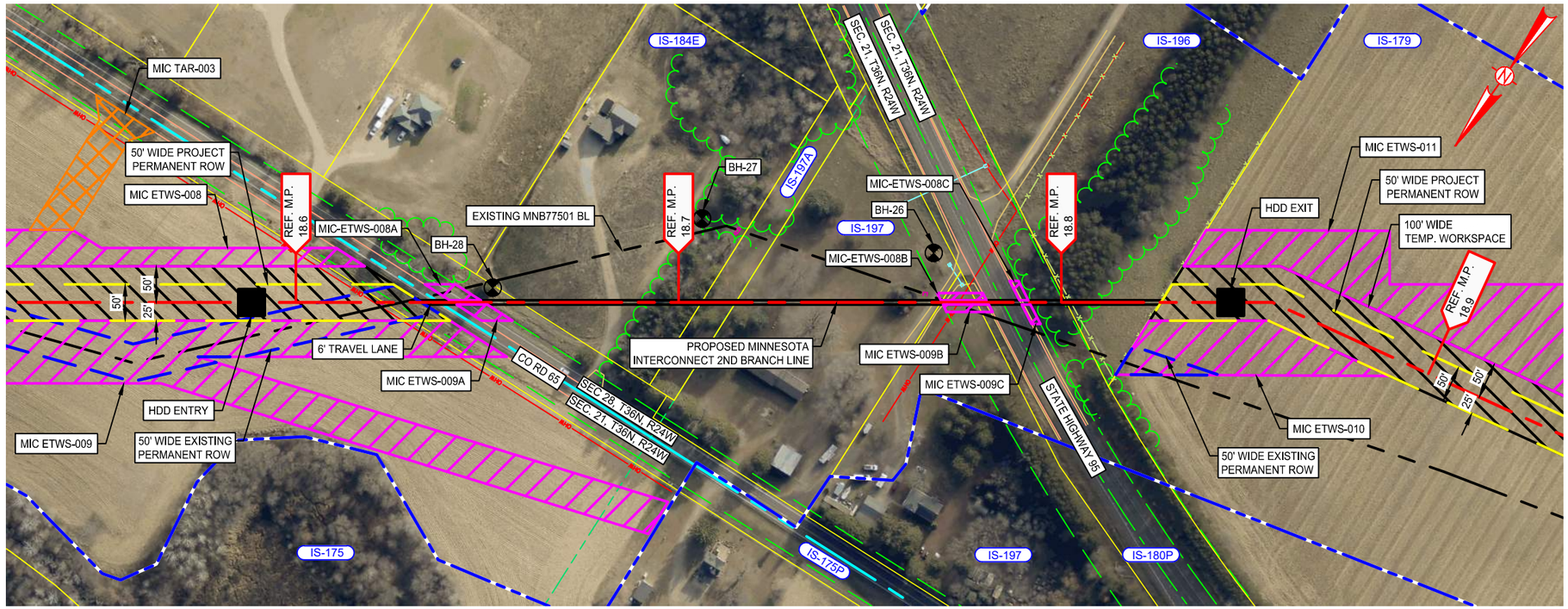
NORTHERN LIGHTS 2027 EXPANSION PROJECT
MINNESOTA INTERCONNECT 2ND BRANCH LINE
HDD SSP PLAN & PROFILE VERDIN ST NW & WETLAND
SEC. 22 & 21, T36N, R24W
ISANTI COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. MIC-SSP-2 F

PLAN & PROFILE CO RD 65 & STATE HIGHWAY 95

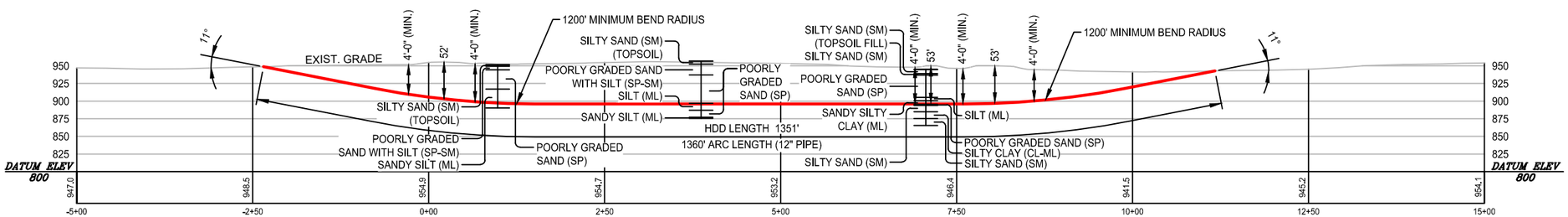


PLAN
SCALE : 1"=90'
REF. DWG. MIC-P3-3 & MIC-P3-4

LEGEND

- PROPOSED MINNESOTA INTERCONNECT 2ND BRANCH LINE
- EXISTING MNB77501 BL
- PROPERTY LINE
- EDGE OF ROAD (BITUMEN)
- EDGE OF ROAD (GRAVEL)
- SECTION LINE
- ROAD R.O.W.
- OHW — OVERHEAD POWERLINE
- WIRE FENCE
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE

-2+34 HDD ENTRY
-1+73 REF MP 18.6
-0+65 OVERHEAD POWERLINE
-0+52 PROPERTY LINE
-0+36 ROAD R.O.W.
-0+27 EXISTING BL
0+00 /983+81 EDGE OF BITUMEN
0+22 CL OF CO RD 65
0+25 SECTION LINE
0+44 EDGE OF BITUMEN
0+87 ROAD R.O.W.
0+98 BH-28 (PROJECTED)
1+37 PROPERTY LINE
3+14 TREELINE
3+55 REF MP 18.7
3+86 PROPERTY LINE
3+87 BH-27 (PROJECTED)
4+34 PROPERTY LINE
7+06 BH-26 (PROJECTED)
7+07 EDGE OF GRAVEL
7+17 CL OF PRIVATE DRIVEWAY & PROPERTY LINE & PROPERTY LINE
7+18 ROAD R.O.W.
7+22 EDGE OF GRAVEL
7+29 EXISTING BL
7+41 OVERHEAD POWERLINE
7+66 PROPERTY LINE
7+78 EDGE OF GRAVEL
7+81 EDGE OF BITUMEN
8+02 CL OF STATE HIGHWAY 95
8+27 EDGE OF BITUMEN
8+30 EDGE OF GRAVEL
8+56 TREELINE
8+83 REF MP 18.8
8+86 ROAD R.O.W.
8+90 PROPERTY LINE
8+96 WIRE FENCE
9+25 TREELINE
10+18 WIRE FENCE
10+20 PROPERTY LINE
11+17 HDD EXIT



PROFILE
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SCALE (HORIZ): 1"=90'

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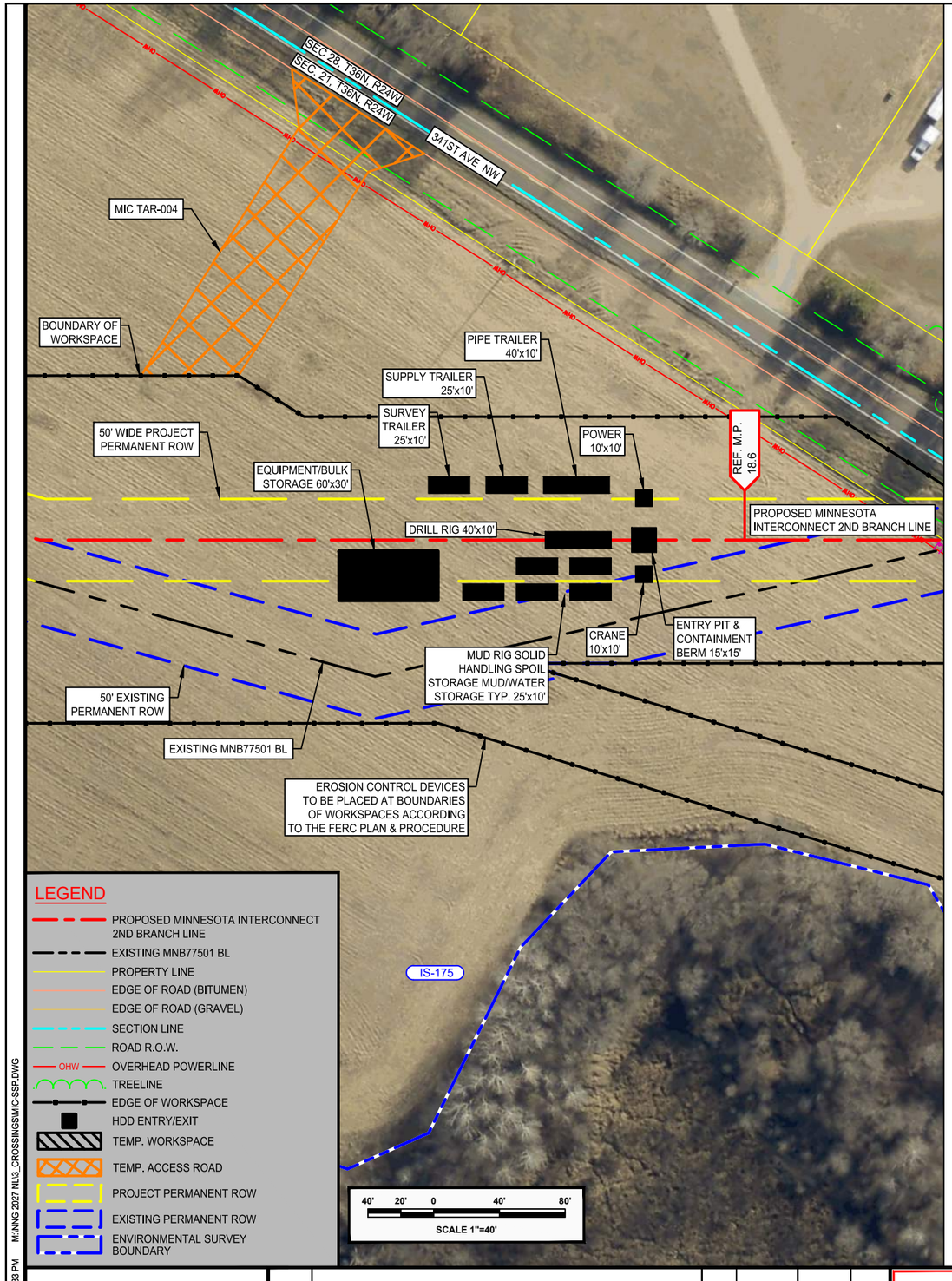
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SEC. 21 & 28, T36N, R24W
ISANTI COUNTY, MINNESOTA

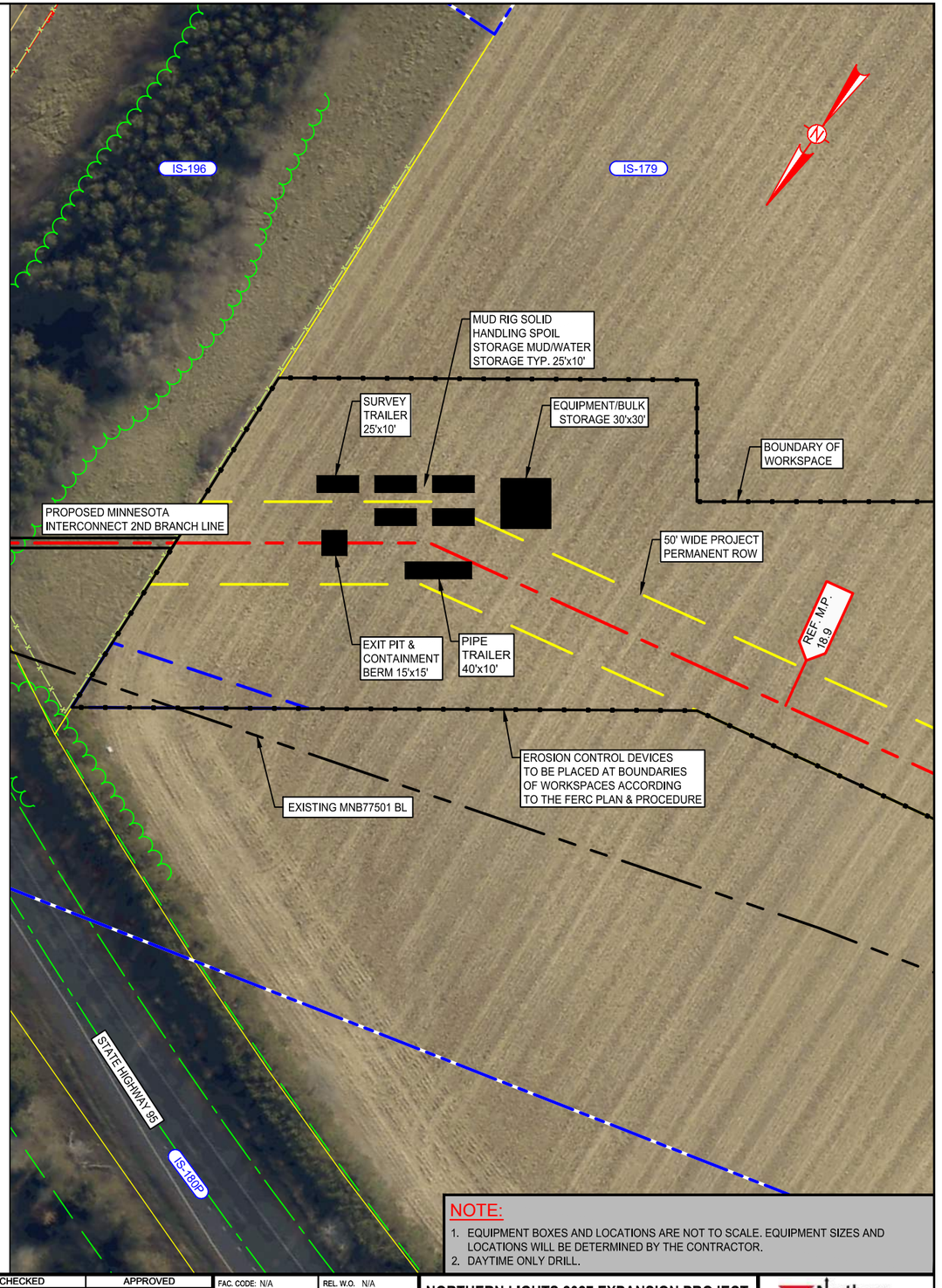
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- PROPERTY LINE
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- EDGE OF ROAD (GRAVEL)
- SECTION LINE
- ROAD R.O.W.
- OHW — OVERHEAD POWERLINE
- TREELINE
- EDGE OF WORKSPACE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY

NOTE:

1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
2. DAYTIME ONLY DRILL.

ATTACHMENT 1

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NORTHERN LIGHTS 2027 EXPANSION PROJECT
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HDD SSP PLAN & PROFILE CO RD 65 & STATE HIGHWAY 95
SEC. 21 & 28, T36N, R24W
ISANTI COUNTY, MINNESOTA

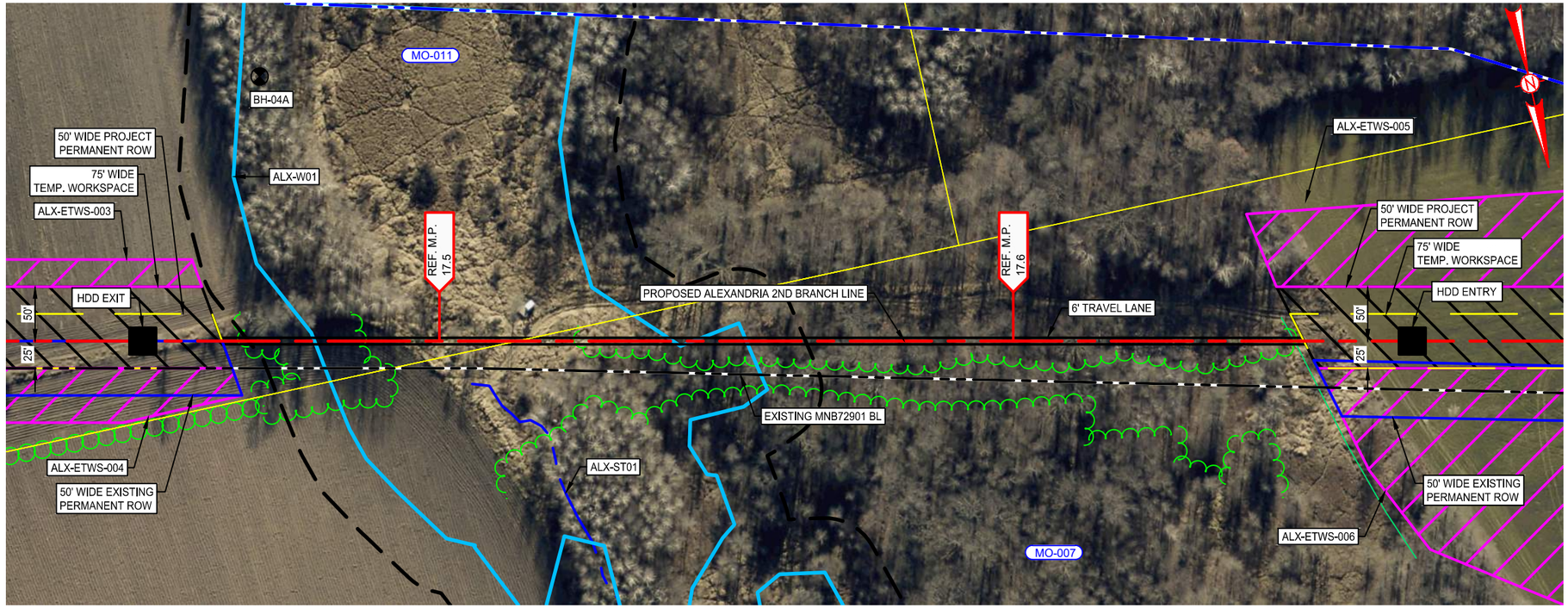
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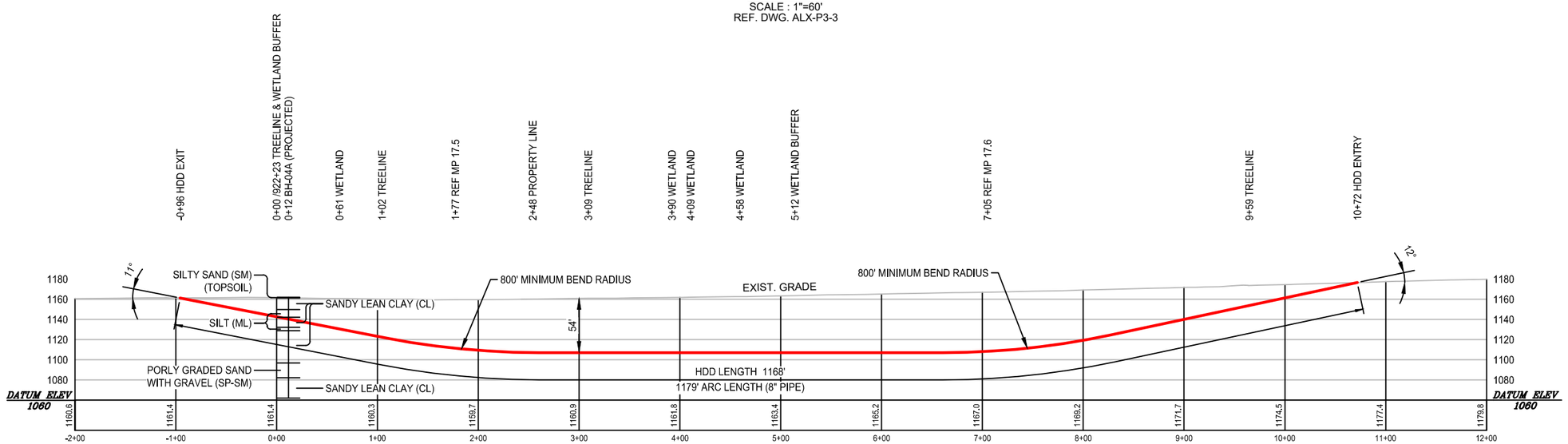
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REF. DWG. ALX-P3-3

LEGEND

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- EXISTING MNB72901 BL
- PROPERTY LINE
- STREAM
- WETLAND
- WETLAND/STREAM BUFFER
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW
- ENVIRONMENTAL SURVEY BOUNDARY
- BOREHOLE



PROFILE
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SCALE (HORIZ): 1"=60'

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PLAN & PROFILE TREE LINE
SEC. 28, T129N, R30W
MORRISON COUNTY, MINNESOTA

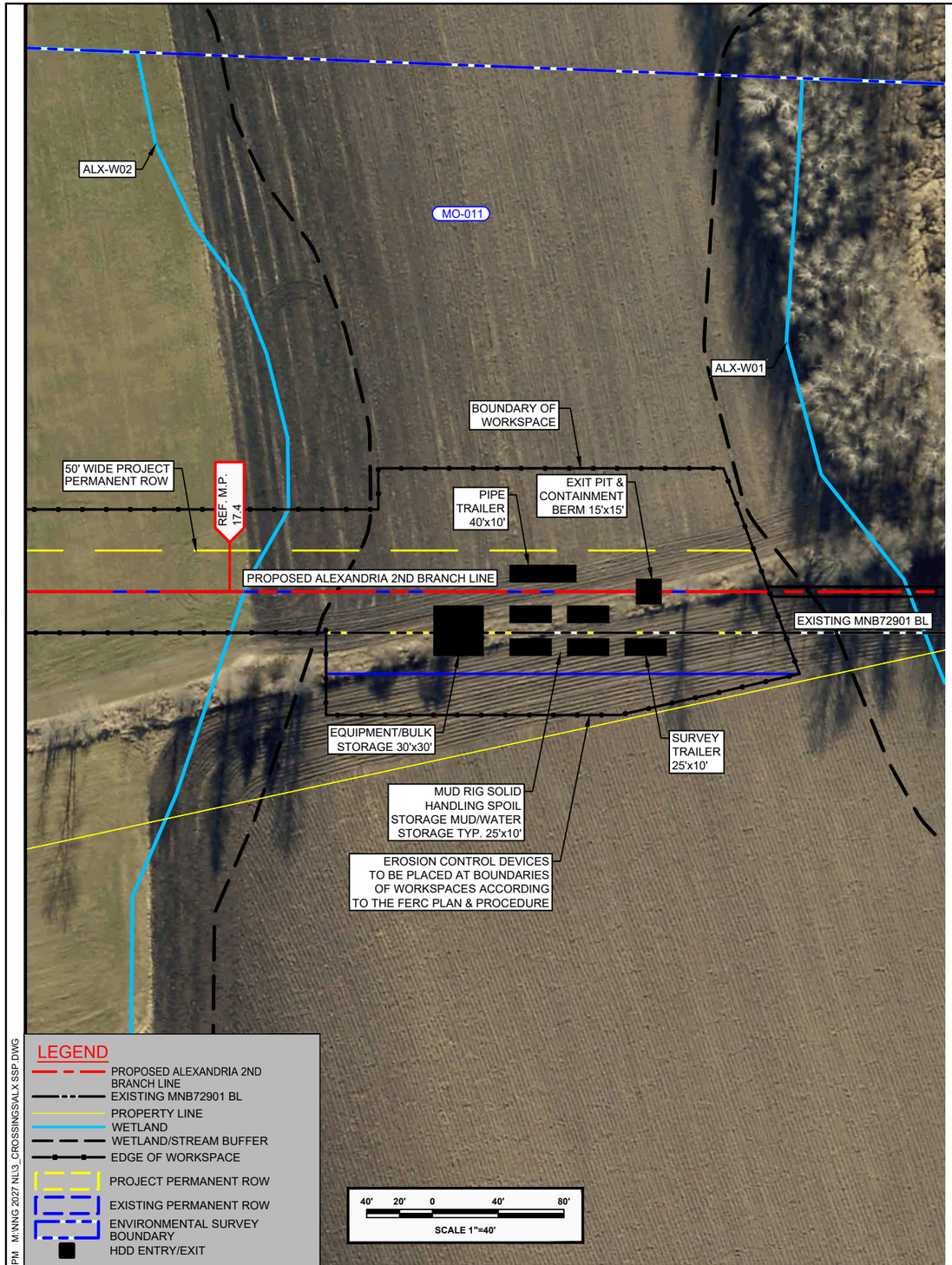
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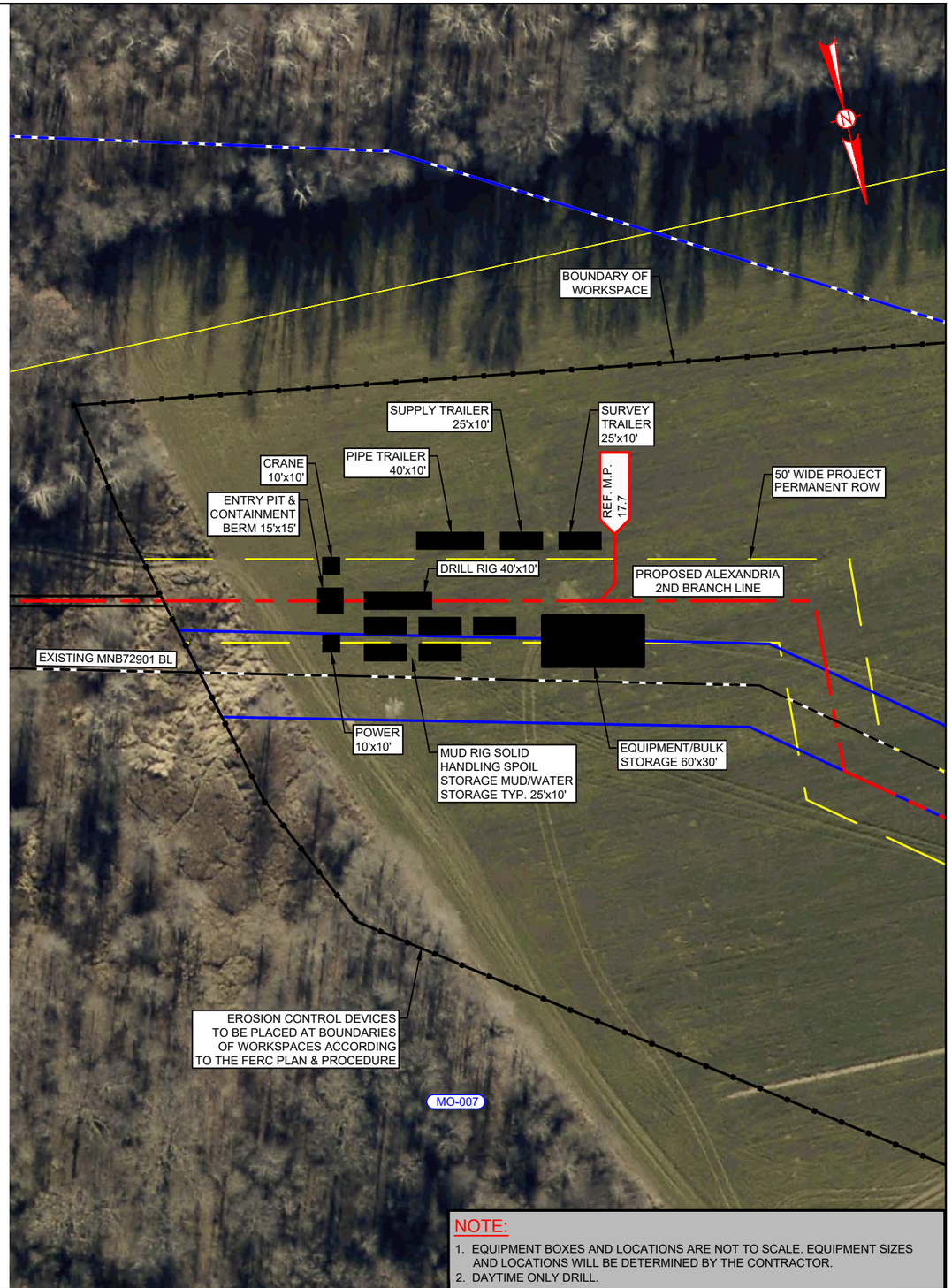
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1. EQUIPMENT BOXES AND LOCATIONS ARE NOT TO SCALE. EQUIPMENT SIZES AND LOCATIONS WILL BE DETERMINED BY THE CONTRACTOR.
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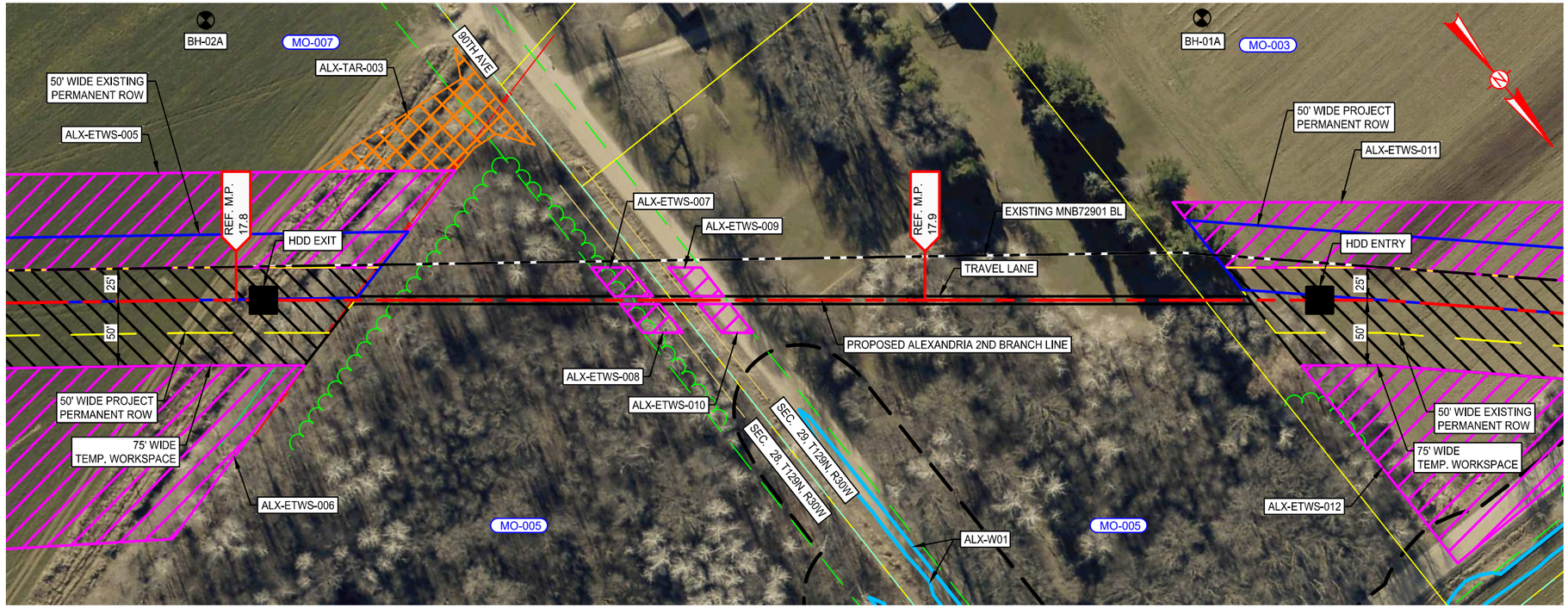
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SEC. 28, T129N, R30W
MORRISON COUNTY, MINNESOTA

Northern Natural Gas.

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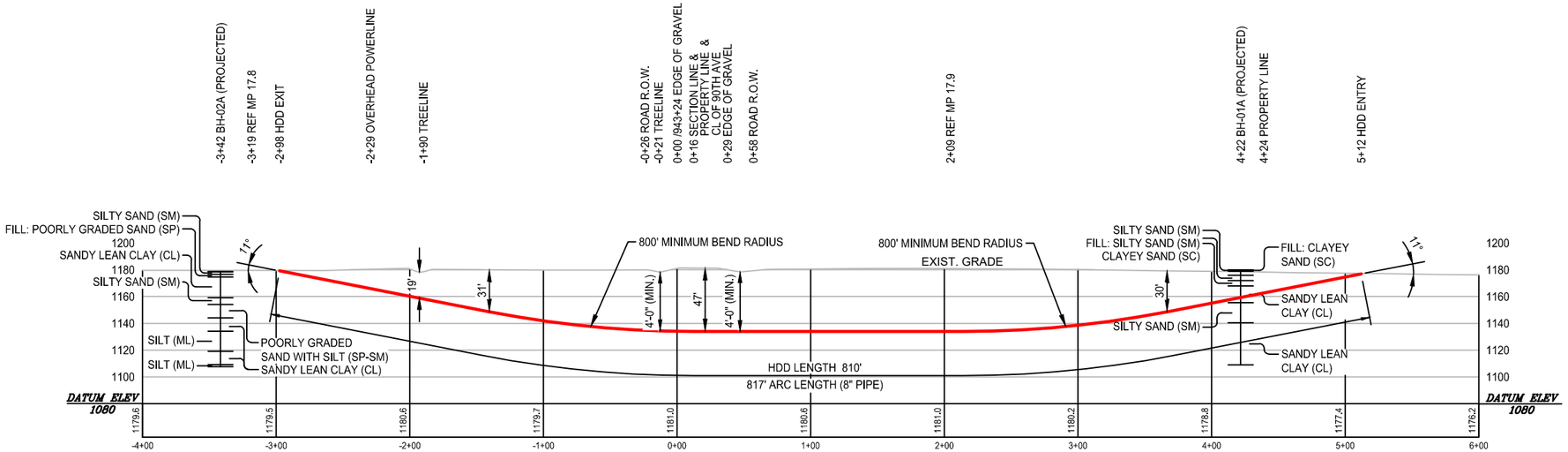
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REF. DWG. ALX-P3-4

LEGEND

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- EXISTING MNB72901 BL
- PROPERTY LINE
- EDGE OF ROAD (GRAVEL)
- SECTION LINE
- ROAD R.O.W.
- OHW — OVERHEAD POWERLINE
- TREELINE
- HDD ENTRY/EXIT
- TEMP. WORKSPACE
- EXTRA TEMP. WORKSPACE
- TEMP. ACCESS ROAD
- STAGING AREA
- PROJECT PERMANENT ROW
- EXISTING PERMANENT ROW



PROFILE
SCALE (VERT): 1"=50'
SCALE (HORIZ): 1"=50'

NO.	REVISION - DESCRIPTION	BY	DATE	CHK'D	APP'D
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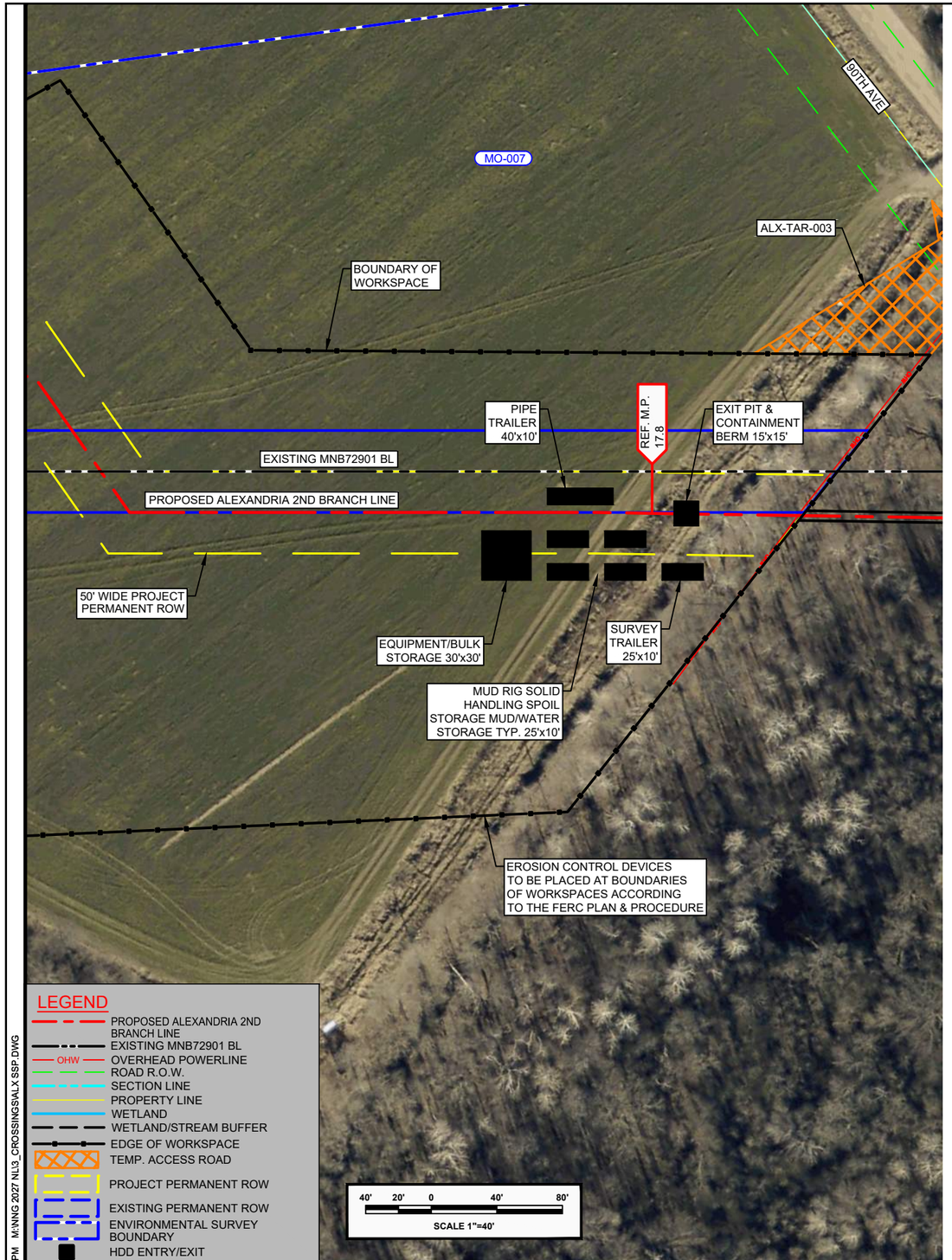
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ALEXANDRIA 2ND BRANCH LINE
PLAN & PROFILE 90TH AVE & TREE LINE
SEC. 28,29 & 20, T129N, R30W
MORRISON COUNTY, MINNESOTA

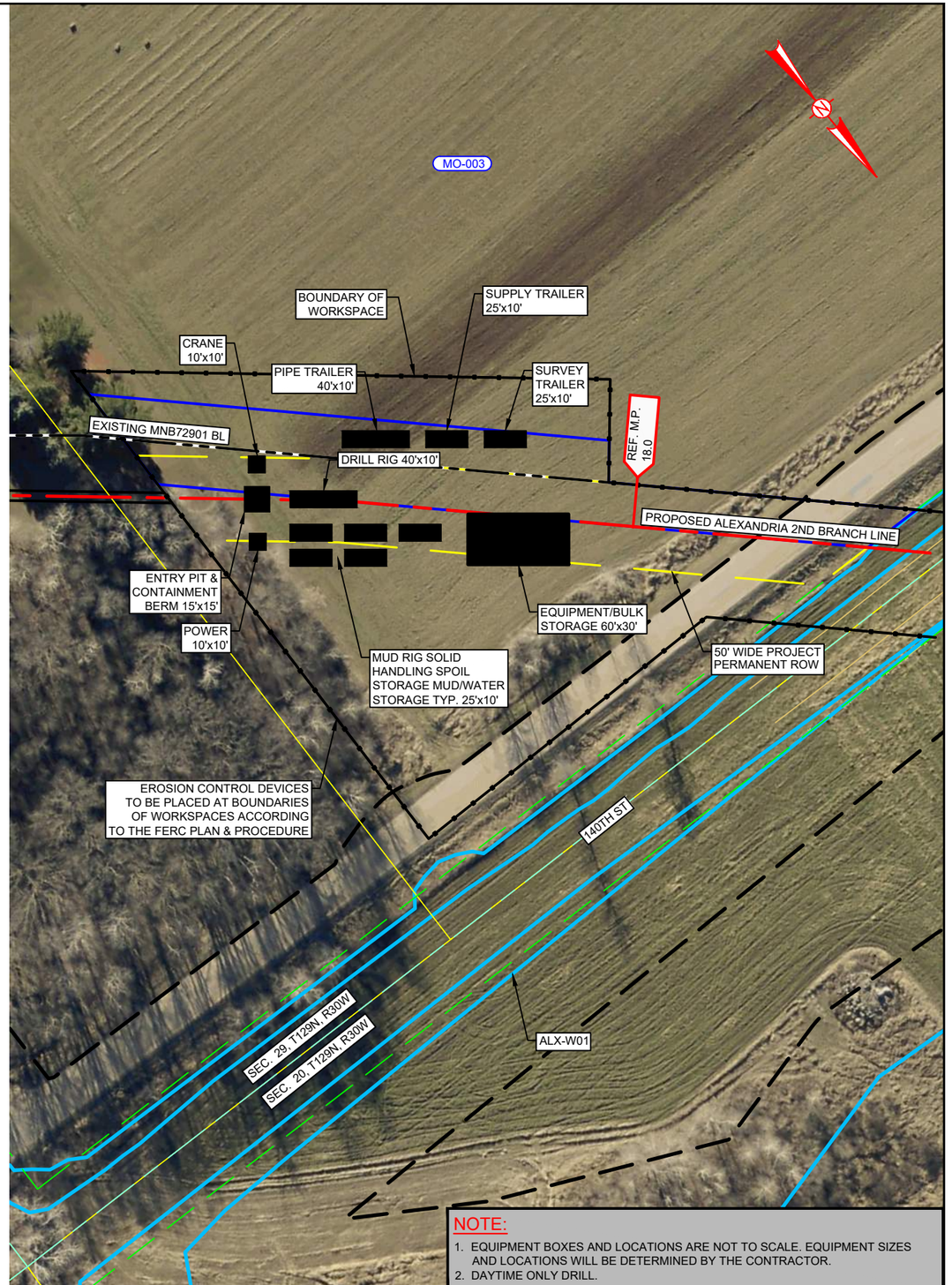
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NORTHERN LIGHTS 2027 EXPANSION PROJECT
ALEXANDRIA 2ND BRANCH LINE
HDD SSP PLAN & PROFILE 90TH AVE & TREE LINE
SEC. 28,29 & 20, T129N, R30W
MORRISON COUNTY, MINNESOTA

Northern Natural Gas.

PROJECT NO.

DWG. NO. ALX-SSP-2 F

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Attachment 2
Subsurface Exploration Reports

For filing purposes, these reports are included
in Resource Report 6, Appendix 6C.

Attachment 3
HDD Feasibility Report

Horizontal Directional Drill Feasibility Report Northern Natural Gas Northern Lights 2027 Expansion Project

Freeborn County, Minnesota
Steele County, Minnesota
Scott County, Minnesota
Carver County, Minnesota
Martin County, Minnesota
Stearns County, Minnesota
Jackson County, Minnesota
Watonwan County, Minnesota
Isanti County, Minnesota
Morrison County, Minnesota

Stantec

Stantec Consulting Services Inc.

Prepared by:
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Prepared for:
Northern Natural Gas
1111 South 103rd Street
Omaha, Nebraska 68124

February 16, 2026
Revision: 0

HORIZONTAL DIRECTIONAL DRILL FEASIBILITY REPORT NORTHERN NATURAL GAS NORTHERN LIGHTS 2027 EXPANSION PROJECT

This document entitled Horizontal Directional Drill Feasibility Report Northern Natural Gas Northern Lights 2027 Expansion Project was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Northern Natural Gas (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by _____

Evan Dutchak
Crossing Engineer-in-Training

Reviewed by _____

Robin Clysdale
Crossing Engineer

Approved by _____

Ginger Chan
Assistant Project Manager

Table of Contents

1.0 PROJECT DESCRIPTION 1

2.0 PURPOSE AND SCOPE 2

3.0 DESIGN PARAMETERS 2

4.0 GEOTECHNICAL CONDITIONS 3

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8.0 CONCLUSION AND RECOMMENDATIONS 23

List of Figures

Figure 1 – Profile and Hydro-Fracture Assessment

Acronyms List

ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
Cp	Centipoise
DOT	Department of Transportation
ERT	Electric Resistivity Tomography
°F	Fahrenheit
Fbg	Feet below grade
HDD	Horizontal directional drill
HD Bore	Horizontal directional bore
Lbf/100ft2	Pound-force per 100 square feet
MAOP	Maximum Allowable Operating Pressure
MOP	Manual of Practice
MP	Milepost
N/A	Not applicable
Northern	Northern Natural Gas
Ppg	Pounds per gallon
PRCI	Pipeline Research Council International
Project	Northern Lights 2027 Expansion Project
Psi	Pound-force per square inch
SMYS	Specified Minimum Yield Strength
Stantec	Stantec Consulting Services Inc.

1.0 Project Description

Northern Natural Gas (Northern) proposes to install and operate ten pipeline components as part of its Northern Lights 2027 Expansion Project which will consist of (1) a 2.32-mile extension of its 36-inch-diameter Lake Mills M500 E-line in Freeborn County, Minnesota; (2) a 3.42-mile extension of its 36-inch-diameter Albert Lea M500 E-line in Steele County, Minnesota; (3) a 1.76 mile extension of its 24-inch Wilmar 3rd branch line upstream in Scott County, Minnesota; (4) a 4.77 mile extension of its 24-inch Wilmar 3rd branch line downstream in Carver County, Minnesota; (5) a 1.24 mile extension of its 16-inch Welcome 2nd branch line in Martin County, Minnesota; (6) a 2.44 mile extension of its 4-inch Paynesville 2nd branch line in Stearns County, Minnesota; (7) a 2.17 mile extension of its 8-inch Worthington 2nd branch line in Jackson County, Minnesota; (8) a 7.39 mile extension of its 8-inch-diameter Springfield 2nd branch line in Watonwan County, Minnesota; (9) a 1.59 mile extension of its 12-inch-diameter Minnesota Interconnect 2nd branch line in Isanti County, Minnesota; (10) a 1.28 mile extension of its 8-inch-diameter Alexandria 2nd branch line in Morrison County, Minnesota.

Table 1 below provides the pipeline facilities and number of proposed HDDs.

Table 1 – Pipeline Components and Number of Proposed HDDs

Pipeline Component	Pipeline Diameter and Type	MAOP (psig)	Approx. Length	County	State	Number of HDDs
Lake Mills M500E-line	36-inch-diameter extension	1,050	2.32 miles	Freeborn	MN	2
Albert Lea M500E-line	36-inch-diameter extension	1,050	3.42 miles	Steele	MN	5
Willmar 3rd Branch Line Upstream	24-inch-diameter extension	950	1.76 miles	Scott	MN	3
Willmar 3rd Branch Line Downstream	24-inch-diameter extension	950	4.77 miles	Carver	MN	7
Welcome 2nd branch line	16-inch-diameter extension	1,440	1.24 miles	Martin	MN	0
Paynesville 2nd branch line	4-inch-diameter extension	950	2.44 miles	Stearns	MN	3
Worthington 2nd branch line	8-inch-diameter extension	800	2.17 miles	Jackson	MN	1
Springfield 2nd branch line	8-inch-diameter extension	796	7.39 miles	Watonwan	MN	5
Minnesota Interconnect 2nd branch line	12-inch-diameter extension	1,062	1.59 miles	Isanti	MN	3
Alexandria 2nd branch line	8-inch-diameter extension	1,050	1.28 miles	Morrison	MN	2

2.0 Purpose and Scope

A total of 31 horizontal directional drills (HDD) are proposed for ten pipeline components comprising the Project, as shown above in Table 1. This report summarizes the feasibility of the HDD designs, addresses anticipated installation loads, installation and operating stresses, comparison of modelled formation limiting pressure vs. minimum annular pressure requirements, and potential mitigation measures for the 31 proposed crossings.

Northern proposes to use auger bore techniques to cross one road. This auger bore crossing is considered feasible and is not included in the scope of this report.

3.0 Design Parameters

The design methodology is in accordance with the following standards and guidelines:

- Department of Transportation (DOT) Regulations 49 CFR Part 192
- American Society of Mechanical Engineers (ASME) B31.8 (2016)
- "Installation of Pipelines by Horizontal Directional Drilling – An Engineering Design Guide" Pipeline Research Council International (PRCI) PR-227-9424 (2008)
- "Pipeline Design for Installation by Horizontal Directional Drilling" American Society of Civil Engineers (ASCE) Manual of Practice (MOP) 108 (2014)

Crossing design parameters are provided in Table .

Additional crossing design parameters specific to each pipeline facility are provided in Table .

Table 2 – General HDD Design Parameters for the Northern Lights 2027 Expansion Project

Parameter	Unit	Value
Maximum Design Temperature	°F (Fahrenheit)	100
HDD Restraint Temperature	°F (Fahrenheit)	40
Density of Drilling Mud	Ppg (Pounds per gallon)	9.5
Viscosity of Drilling Mud	cP (Centipoise)	20.0
Drilling Fluid Yield Point	$Lbf/100ft^2$ (Pound-force per 100 square feet)	14.6
Coefficient of Friction (Pipe to Soil)	N/A	0.3
Coefficient of Friction (Pipe to Rollers)	N/A	0.1
Coefficient of Fluidic Drag	Psi (Pound-force per square inch)	0.025

Table 3 – Pipeline-Specific HDD Design Parameters for the Northern Lights 2027 Expansion Project

Pipeline Facility	Pipe OD (inches)	Pipe WT (inches)	Pipe Grade (psi)	Service
Lake Mills M500E-line	36	0.625	65,000	Natural gas
Albert Lea M500E-line	36	0.625	65,000	Natural gas
Willmar 3rd Branch Line Upstream	24	0.500	52,000	Natural gas
Willmar 3rd Branch Line Downstream	24	0.500	52,000	Natural gas
Welcome 2nd branch line	16	0.375	65,000	Natural gas
Paynesville 2nd branch line	4	0.237	52,000	Natural gas
Worthington 2nd branch line	8	0.322	52,000	Natural gas
Springfield 2nd branch line	8	0.322	52,000	Natural gas
Minnesota Interconnect 2nd branch line	12	0.375	52,000	Natural gas
Alexandria 2nd branch line	8	0.322	52,000	Natural gas

Ground profiles are based on civil survey and contour data, or public contour data where applicable.

4.0 Geotechnical Conditions

A geotechnical investigation, consisting of 70 vertical soil borings, was completed between July 2025 and November 2025. The results of the geotechnical field and laboratory analysis are provided in the geotechnical reports. The geotechnical borings for Lake Mills M500 E-line, Albert Lea M500 E-line, Willmar 3rd Branch Line Downstream and Worthington 2nd branch line were completed by Terracon while the geotechnical borings for Willmar 3rd Branch Line Upstream, Welcome 2nd branch line, Paynesville 2nd branch line, Springfield 2nd branch line, Minnesota Interconnect 2nd branch line, Minnesota Interconnect 2nd branch line and Alexandria 2nd branch line were completed by Braun Intertec. The geotechnical investigation reports are included in Attachment 2 of the Horizontal Directional Drill Monitoring, Inadvertent Return Response and Contingency Plan. The results of the geotechnical reports were incorporated in the hydro-fracture assessment that can be found in Section 7.0 of this document.

The results of the geotechnical investigation are summarized below.

Lake Mills M500 E-line

A total of three soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of clayey sand and sandy lean clay with variable layers of silt. BH-11 encountered layers of sand with gravel at a depth of 1 to 11 fbg.

Bedrock was not encountered in any of the soil borings which reached depths of 40 fbg. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally medium stiff to stiff.

Groundwater was observed in all three soil borings at depths ranging from 2 to 37 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Albert Lea M500 E-line

A total of six soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of clayey sand and sandy lean clay with variable layers of silt and silty sand.

Bedrock was not encountered in any of the soil borings which reached depths of 40 to 101 fbg. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally stiff to very stiff.

Groundwater was observed in three soil borings at depths ranging from 23 to 46 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Willmar 3rd Branch Line Upstream

A total of nine soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of sandy lean clay, clayey sand and poorly graded sand with variable layers of silty sand and silt.

Bedrock was encountered in one of the soil borings at a depth of 100 fbg. The eight soil borings that did not encounter bedrock reached depths of 81 to 150 fbg. The uneven boundary may be caused by an erosional event (glaciation or riverine environment) followed by an infilling of fine-grained material into the fractures. Deeper troughs where glacial till deposits and interglacial buried outwash/river valleys are also observed in the data.

Groundwater was observed in seven soil borings at depths ranging from 6 to 38 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Willmar 3rd Branch Line Downstream

A total of 11 soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of sandy lean clay with variable layers of clayey sand.

Bedrock was not encountered in any of the soil borings which reached depths of 41 to 101 fbg. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally stiff to very stiff.

Groundwater was observed in one soil boring at a depth of 27 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Welcome 2nd branch line

A total of two soil borings were completed; geotechnical data was collected for potential HDDs but will not be analyzed further in this report as there are no proposed HDDs in this segment.

Paynesville 2nd branch line

A total of seven soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of poorly graded sand, silty clay, sandy silt and gabbro with variable layers of fat clay and sandy lean clay.

Bedrock was encountered in all seven of the soil borings at depths ranging from 8 to 33 feet. The bedrock encountered during the geotechnical investigation consisted of only gabbro and the samples retrieved from the apparent bedrock were classified as sandy silt, clayey sand, and fat clay. Most samples were also noted to be moist, decomposed and hand deformed. All borings did not meet refusal and reached depths of 41 to 120fbg.

Groundwater was observed in five soil borings at depths ranging from 8 to 33 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Worthington 2nd branch line

A total of four soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of clayey sand and sandy lean clay with variable layers of sandy silt.

Bedrock was not encountered in any of the soil borings which reached depths of 41 to 61 fbg. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally stiff to very stiff.

Groundwater was observed in one soil boring at a depth of 27 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Springfield 2nd branch line

A total of 14 soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of sandy lean clay and poorly graded sand with variable layers of silty sand, fat clay and sandy silt.

Bedrock was encountered in six of the soil borings at depths ranging from 60 to 100 feet. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally stiff to very stiff. All five HDDs were designed to be above the bedrock layer.

Groundwater was observed in all 15 soil borings at depths ranging from 4 to 35 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Minnesota Interconnect 2nd branch line

A total of six soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of poorly graded sand, silty sand and silt with variable layers of lean clay.

Bedrock was not encountered in any of the soil borings which reached depths of 60 to 80 fbg. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally stiff to very stiff.

Groundwater was observed in all six soil borings at depths ranging from 16 to 33 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Alexandria 2nd branch line

A total of seven soil borings were completed; geotechnical data was collected for the HDDs. Soils encountered generally consisted of sandy silt, clayey sand, poorly graded sand, sandy lean clay with variable layers of silt.

Bedrock was not encountered in any of the soil borings which reached depths of 41 to 141 fbg. The unconfined compressive strength and in-situ SPT blow count of the underlying layers were generally stiff to very stiff.

Groundwater was observed in six soil borings at depths ranging from 16 to 33 feet. Groundwater elevation fluctuations often occur due to seasonal variations and variations from the identified water table are anticipated during drilling operations.

Subsurface conditions are briefly summarized in Table 4 –4 below, focusing on qualitative features relevant to the feasibility of HDD construction. The evaluation of formation limiting pressure is based on simplified stratigraphies and what are considered to be conservative parameters for the soil properties for characteristic soils.

5.0 Crossing Design Summary

Summaries of each crossing design profile are provided in Table 4 –4 below. All unfactored pull forces were evaluated without the use of buoyancy control for this project. The minimum available rig size was assumed to be 100,000 lbf (pound-force).

Table 4 – Crossing Design and Bore Profile Summaries

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Lake Mills M500E-line	LMA-P4-1	183	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 28,000 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-10 The principal strata encountered were silty sand and sandy lean clay.
	LMA-P4-2	228	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 51,700 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-09 The principal strata encountered were silty sand and clayey sand.
Albert Lea M500E Extension	ALO-P4-1	115	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 19,200 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. V2F Albert Lea M500 E-Line BH-04 The principal strata encountered were sandy lean clay and clayey sand.
	ALO-P4-2	791	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 130,800 lbs Assumed Rig Size: 220,000 lbs	Boring Log No. BH-01 The principal strata encountered was sandy lean clay.
	ALO-P4-3	1,685	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 283,100 lbs Assumed Rig Size: 440,000 lbs	Boring Log No. BH-02, BH-03 The principal strata encountered were poorly graded sand with silt, silty sand, silt and poorly graded sand with silt and gravel.

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Albert Lea M500E Extension	ALO-P4-4	166	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 27,000 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-04 The principal strata encountered was clayey sand.
	ALO-P4-5	128	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 20,700 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-07A The principal strata encountered were clayey sand and sandy lean clay.
Willmar 3rd Branch Line Upstream	WIL-P4-1	214	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 15,000 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-10 The principal strata encountered were sandy lean clay, lean clay and clayey sand.
	WIL-P4-2	1,870	Alignment is straight and workspace is considered adequate.	Two pullback sections are expected.	Unfactored Pull Force: 141,700 lbs Assumed Rig Size: 440,000 lbs	Boring Log No. BH-04, BH-05 The principal strata encountered were poorly graded sand, silty sand, clayey sand, silt, lean clay and silty clay.
	WIL-P4-3	1,117	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 95,300 lbs Assumed Rig Size: 220,000 lbs	Boring Log No. BH-02, BH-03 The principal strata encountered were sandy lean clay, silty clay, lean clay, silty sand and clayey sand,

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Willmar 3rd Branch Line Downstream	WDC-P4-1	233	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 51,900 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-01 The principal strata encountered were lean clay with sand, clayey sand and sandy lean clay.
	WDC-P4-2	184	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 20,500 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-02 The principal strata encountered were clayey sand and sandy lean clay.
	WDC-P4-3	251	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 37,200 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-03 The principal strata encountered was sandy lean clay.
	WDC-P4-5	425	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 52,500 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-06 The principal strata encountered were clayey sand and sandy lean clay.
	WDC-P4-6	1,083	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 83,600 lbs Assumed Rig Size: 220,000 lbs	Boring Log No. BH-07A, BH-07C The principal strata encountered were clayey sand and sandy lean clay.

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Willmar 3rd Branch Line Downstream	WDC-P4-7	397	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 35,400 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-07B The principal strata encountered were sandy lean clay and silty sand.
	WDC-P4-8	524	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 23,500 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-07D, BH-07E The principal strata encountered were sandy lean clay and clayey sand.
Welcome 2nd branch line	No HDDs					
Paynesville 2nd branch line	PAY-P4-1	580	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 3,900 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-05 The principal strata encountered were poorly graded sand, sandy lean clay and gabbro.
	PAY-P4-2	436	Alignment is straight and workspace is considered adequate.	Two pullback sections are expected.	Unfactored Pull Force: 3,000 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-04 The principal strata encountered were clayey sand, poorly graded sand, sandy lean clay and well-graded sand with silt and gravel.

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Paynesville 2nd branch line	PAY-P4-3	2,657	Alignment is straight and workspace is considered adequate.	Two pullback sections are expected.	Unfactored Pull Force: 18,000 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-01, BH-02 The principal strata encountered were silty sand, sandy silt, sandy lean clay, fat clay, poorly graded sand with gravel, poorly graded sand with silt, silty clay and gabbro.
Worthington 2nd branch line	WOR-P4-1	668	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 9,100 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-04 The principal strata encountered were sandy lean clay and clayey sand.
Springfield 2nd branch line	SPR-P4-1	824	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 10,900 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-13, BH-14 The principal strata encountered were sandy lean clay, poorly graded sand with silt and silty sand.
	SPR-P4-2	832	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 11,100 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-11, BH-12 The principal strata encountered were sandy lean clay, poorly graded sand, lean clay and sandy silt.
	SPR-P4-3	1,295	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 16,700 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-07, BH-08 The principal strata encountered were sandy lean clay, poorly graded sand, silty sand, sandy silt, lean clay and shale.

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Springfield 2nd branch line	SPR-P4-4	764	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 10,200 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-05, BH-06, BH-07 The principal strata encountered were poorly graded sand with silt, clayey sand, sandy lean clay, silty sand, fat clay, sandy silt and shale.
	SPR-P4-5	326	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 4,500 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-01 The principal strata encountered were sandy lean clay, clayey sand and silty clay.
Minnesota Interconnect 2nd branch line	MIC-P4-1	744	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 19,200 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-30 The principal strata encountered were poorly graded sand with silt, poorly graded sand, lean clay and silty sand.
	MIC-P4-2	1,525	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 36,700 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-28A, BH-29 The principal strata encountered were silty sand, poorly graded sand, poorly graded sand with silt, silty sand, clayey sand and sandy silt.
	MIC-P4-3	1,360	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 33,100 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-26, BH-27, BH-28 The principal strata encountered were poorly graded sand, silty sand, silt, sandy silty clay, silty clay

Pipeline Facility	Crossing ID (Dwg #)	Approx. Crossing Distance (ft)	Notes on Crossing Alignment, Profile and Workspace	Notes on Drilling/ Boring and Pullback Operations	Unfactored Pull Force & Anticipated Drill Rig Size (for site layout and drill parameter assumptions)	Relevant Soil Borings & Notes on Geotechnical Conditions
Alexandria 2nd branch line	ALX-P4-1	1,179	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 15,200 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-03A, BH-04A The principal strata encountered were sandy lean clay, silt, silty sand and poorly graded gravel with sand.
	ALX-P4-2	817	Alignment is straight and workspace is considered adequate.	One pullback section is expected.	Unfactored Pull Force: 11,500 lbs Assumed Rig Size: 100,000 lbs	Boring Log No. BH-01A, BH-02A The principal strata encountered were clayey sand, sandy lean clay, silty sand, silt and poorly graded sand with silt.

6.0 Pipe Installation and Operating Stress

Installation and operating stresses for the pipe were evaluated for the HDDs based on the proposed drill profile. All acceptability requirements for stress, per ASME B31.8 and PRCI PR-227-9424, are satisfied. Secondary stresses have been assessed but are not included in the table below.

Table 5 below provides the maximum installation and operating stresses.

Table 5 – Maximum Installation and Operating Stress

Pipeline Facility	Crossing ID (Dwg #)	Maximum Installation Stress (Unity Check based on API allowable – See Notes 1 & 2)	Maximum Operating Stress (Unity Check based on PRCI shear stress allowable of 45% SMYS)
Lake Mills M500E-line	LMA-P4-1	0.01	0.56
	LMA-P4-2	0.31	0.76
Albert Lea M500E Extension	ALO-P4-1	0.01	0.56
	ALO-P4-2	0.32	0.76
	ALO-P4-3	0.39	0.76
	ALO-P4-4	0.01	0.56
	ALO-P4-5	0.01	0.56
Willmar 3rd Branch Line Upstream	WIL-P4-1	0.01	0.58
	WIL-P4-2	0.46	0.84
	WIL-P4-3	0.42	0.84
Willmar 3rd Branch Line Downstream	WDC-P4-1	0.38	0.84
	WDC-P4-2	0.35	0.84
	WDC-P4-3	0.36	0.84
	WDC-P4-5	0.38	0.84
	WDC-P4-6	0.41	0.84
	WDC-P4-7	0.36	0.84
	WDC-P4-8	0.35	0.84
Welcome 2nd branch line	No HDDs		

Pipeline Facility	Crossing ID (Dwg #)	Maximum Installation Stress (Unity Check based on API allowable – See Notes 1 & 2)	Maximum Operating Stress (Unity Check based on PRCI shear stress allowable of 45% SMYS)
Paynesville 2nd branch line	PAY-P4-1	0.38	0.67
	PAY-P4-2	0.38	0.67
	PAY-P4-3	0.52	0.67
Worthington 2nd branch line	WOR-P4-1	0.37	0.68
Springfield 2nd branch line	SPR-P4-1	0.37	0.68
	SPR-P4-2	0.37	0.68
	SPR-P4-3	0.39	0.68
	SPR-P4-4	0.37	0.68
	SPR-P4-5	0.38	0.68
Minnesota Interconnect 2nd branch line	MIC-P4-1	0.37	0.76
	MIC-P4-2	0.41	0.76
	MIC-P4-3	0.40	0.76
Alexandria 2nd branch line	ALX-P4-1	0.38	0.73
	ALX-P4-2	0.37	0.73

Notes:
1. A tensile stress limit of 60% of Specified Minimum Yield Strength (SMYS), based on API RP 2A-WSD R2014, is used instead of 90% of SMYS as per PRCI PR-227-9424 2008.
2. In the case of the product pipe being stuck during pullback, more detailed evaluation may be required to determine limits for maximum pull force, maximum hammering loads and hammering duration.

7.0 Hydro-fracture Assessment

Hydro-fracture assessments are 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.

The maximum formation limiting pressure was modelled based on industry accepted cavity expansion model or “Delft equation.” Evaluation of formation limiting pressure is based on simplified stratigraphies and what are considered to be conservative parameters for the soil properties for characteristic soils.

The minimum total annular pressure consists of components for static head and fluidic frictional losses during circulation in the bore. Parameters for the pilot bore diameter and drill rod size were assumed based on expected drill rig sizes. Parameters for drilling fluid density, viscosity and yield point were assumed based on typical values.

Table 6 below provides a summary of the hydro-fracture assessment, including the minimum factor of safety within the central length of the drill and potential mitigation options.

Factors of safety greater than 1.5 are considered to have a low risk for inadvertent releases with a competent standard of care. Factors of safety between 1.25 and 1.5 are considered to be medium risk, but manageable with attention to matching drilling production with fluid management. Factors of safety less than 1.25 are considered to be high risk and suggest re-evaluation of the bore profile but are still manageable by an experienced HDD contractor with appropriate mitigation measures. The minimum total annular pressure is based on assumed drilling parameters and should be re-evaluated based on the HDD contractor's execution plan.

Table 6 – Summary of Hydro-fracture Assessment

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
Lake Mills M500 E-line	LMA-P4-1	2.38 (Under 725th Ave)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (southwest) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Lake Mills M500 E-line	LMA-P4-2	>3.00 (Under 255th Street)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Albert Lea M500E Extension	ALO-P4-1	>3.00 (Under 82nd Ave SW)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (west) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
Albert Lea M500E Extension	ALO-P4-2	1.53 (Under Stream ALO-S03)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 100 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 130 ft of the drill at reduced pressures and before drilling under Stream ALO-S03. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Albert Lea M500E Extension	ALO-P4-3	1.56 (Under Stream ALO-S02)	As modelled, there is a risk of an inadvertent release in the last 400 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 460 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Albert Lea M500E Extension	ALO-P4-4	>3.00 (Under 128th Street SW)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (north) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Albert Lea M500E Extension	ALO-P4-5	>3.00 (Under 118th Street SW)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Willmar 3rd Branch Line Upstream	WIL-P4-1	2.13 (Under Vernon Ave)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 60 ft on the exit (west) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 90 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
Willmar 3rd Branch Line Upstream	WIL-P4-2	1.52 (Under Stream WIL-ST08)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 600 ft on the exit (west) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 660 ft of the drill at reduced pressures and before drilling under Stream WIL-ST08. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Willmar 3rd Branch Line Upstream	WIL-P4-3	1.81 (Under Stream WIL-ST09)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 160 ft on the exit (east) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 200 ft of the drill at reduced pressures and before drilling under Stream WIL-ST09. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Willmar 3rd Branch Line Downstream	WDC-P4-1	2.35 (Under County Road 153)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (northwest) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Willmar 3rd Branch Line Downstream	WDC-P4-2	>3.00 (Under 122nd Street)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (northwest) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Willmar 3rd Branch Line Downstream	WDC-P4-3	>3.00 (Under County Road 151)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (northwest) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Willmar 3rd Branch Line Downstream	WDC-P4-5	1.83 (Under Salem Ave, Wetland WDC-W34)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 140

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
			ft on the exit (east) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 190 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Willmar 3rd Branch Line Downstream	WDC-P4-6	1.71 (Under State Highway 5 & 25, Wetland WDC-W31)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 360 ft on the exit (southeast) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 420 ft of the drill at reduced pressures and before drilling under wetland WDC-W31. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Willmar 3rd Branch Line Downstream	WDC-P4-7	2.33 (Under Treeline)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (northwest) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Willmar 3rd Branch Line Downstream	WDC-P4-8	2.67 (Under 110th Street, Treeline)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 90 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 120 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Welcome 2nd branch line	No HDDS		
Paynesville 2nd branch line	PAY-P4-1	1.83 (Under Stream PAY-S03)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 240 ft on the exit (northeast) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 300 ft of the drill at reduced pressures and before drilling under Stream PAY-S03. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Paynesville 2nd branch line	PAY-P4-2	>3.00 (Under State Highway 23)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 20 ft on the exit (south) side. Recommended mitigation options are partially tripping the drill pipe to

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
			clean/condition the bore prior to drilling the last 50 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Paynesville 2nd branch line	PAY-P4-3	1.51 (Under Stream PAY-S01, Stream PAY-S02)	As modelled, there is a risk of an inadvertent release in the last 630 ft on the exit (northeast) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 700 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Worthington 2nd branch line	WOR-P4-1	>3.00 (Under Treeline)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 60 ft on the exit (east) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 100 ft of the drill at reduced pressures and before drilling under Stream PAY-S03. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Springfield 2nd branch line	SPR-P4-1	2.07 (Under Stream SPR-S04)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 120 ft on the exit (northwest) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 180 ft of the drill at reduced pressures and before drilling under Stream SPR-S04. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Springfield 2nd branch line	SPR-P4-2	2.21 (Under Stream SPR-S02, Stream SPR-03)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 90 ft on the exit (southeast) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 150 ft of the drill at reduced pressures and before drilling under Stream SPR-S04. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Springfield 2nd branch line	SPR-P4-3	2.16 (Under Stream SPR-S02)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 240 ft on the exit (southeast) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 300 ft of the drill at reduced pressures and before drilling under Stream SPR-S02. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Springfield 2nd branch line	SPR-P4-4	2.45 (Under County Highway 27, T77)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 80 ft on the exit (southeast) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 140 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)
			the risk of an inadvertent release and increase the minimum factor of safety.
Springfield 2nd branch line	SPR-P4-5	>3.00 (Under State Highway 4)	Crossing has been designed to be completed as an HD Bore with low-pressure jetting techniques with excavated pit at exit side. As modelled, there is a risk of an inadvertent release in the last 30 ft on the exit (southeast) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 60 ft of the drill at reduced pressures. Having the excavated exit pit reduces the pressure since the drilling pressure head does not rise further to the ground elevation. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Minnesota Interconnect 2nd branch line	MIC-P4-1	1.67 (Under Wetland MIC-W05)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 300 ft on the exit (west) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 360 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Minnesota Interconnect 2nd branch line	MIC-P4-2	1.52 (Under Stream MIC-S01)	As modelled, there is a risk of an inadvertent release in the last 720 ft on the exit (west) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 790 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Minnesota Interconnect 2nd branch line	MIC-P4-3	1.66 (Under 341st Ave NW, State Highway 95)	As modelled, there is a risk of an inadvertent release in the last 400 ft on the exit (west) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 460 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Alexandria 2nd branch line	ALX-P4-1	1.72 (Under Wetland ALX-W01)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 240 ft on the exit (east) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 300 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.
Alexandria 2nd branch line	ALX-P4-2	2.58 (Under 90th Ave, Treeline)	Crossing has been designed to be completed with low-pressure jetting techniques. As modelled, there is a risk of an inadvertent release in the last 60 ft on the exit (southeast) side. Recommended mitigation options are partially tripping the drill pipe to clean/condition the bore prior to drilling the last 90 ft of the drill at reduced pressures. The above mitigations will decrease the annular pressure in this segment which will reduce the risk of an inadvertent release and increase the minimum factor of safety.

Pipeline Facility	Crossing ID (Dwg #)	Minimum Factor of Safety (Formation Limiting Pressure / Total Annular Pressure)	Issues and Mitigation Options (See Note 1)

Note 1:

Stantec has listed additional measures below which the contractor may choose to implement based on site/drilling conditions. All measures will increase the minimum factor of safety:

- Deeper entry/exit pits which may require sinking of the HDD rig.
- Manage drilling fluids by maintaining drilling fluid density and sand content, and balancing flow rates and drilling speed.
- Adjust fluid composition with changing soil conditions, considering the use of additives for lost circulation, viscosifiers, flocculants or coagulants.
- Reduce pumping for the last portion of the pilot drill, relying on tripping of the drill rod and minimal mud circulation to clean the pilot hole.
- Use conductor casing to stabilize the borehole for a portion of the straight tangent of the bore profile at the entry and/or exit. Conductor casing shall be sized based on the final reaming pass.

8.0 Conclusion and Recommendations

All of the proposed crossings in the Project are assumed to be feasible with a low risk of inadvertent release of drilling mud provided the recommendations in Table 6 (above) are met.

- Based on the subsurface investigation, the HDD profiles are expected to be drilled through formations that are suitable for HDD. The HDD drilling directions were selected based off the geology, topography and environmental constraints for each drill. The HDDs as designed show the least impact on the environment if completed according to the design. Therefore, Northern's contractor will provide a justification and demonstrate minimal impact to environmental resources before requesting to reverse any drilling direction. The soil conditions in the area are generally medium to stiff and the HDD Contractor should verify that they have the necessary equipment.
- All crossings on the Project were evaluated as an HDD.
- The specified HDD crossing pipe satisfies acceptability requirements for installation and operating stresses.
- Not all utility locations and depths were verified at the time of this report. Once all utilities are verified, the HDD profiles and entry/exit locations may require modification, as long as the modification stays within the approved workspace.

General recommendations for the operator in preparation for construction include:

- Allowing adequate time for regulatory and permitting requirements;
- Ensuring that HDD contractor execution plans reflect practical implementations of the HDD design, and re-evaluation of hydro-fracture assessments based on the HDD contractor's execution and fluid management plans;
- Ensuring a clear understanding of the roles of the Pipeline contractor, HDD contractor, Environmental inspector, HDD construction inspector and other company representatives with respect to safety and mitigation/response plans.

Figure 1
Profile and Hydro-Fracture Assessment

FIGURE 1

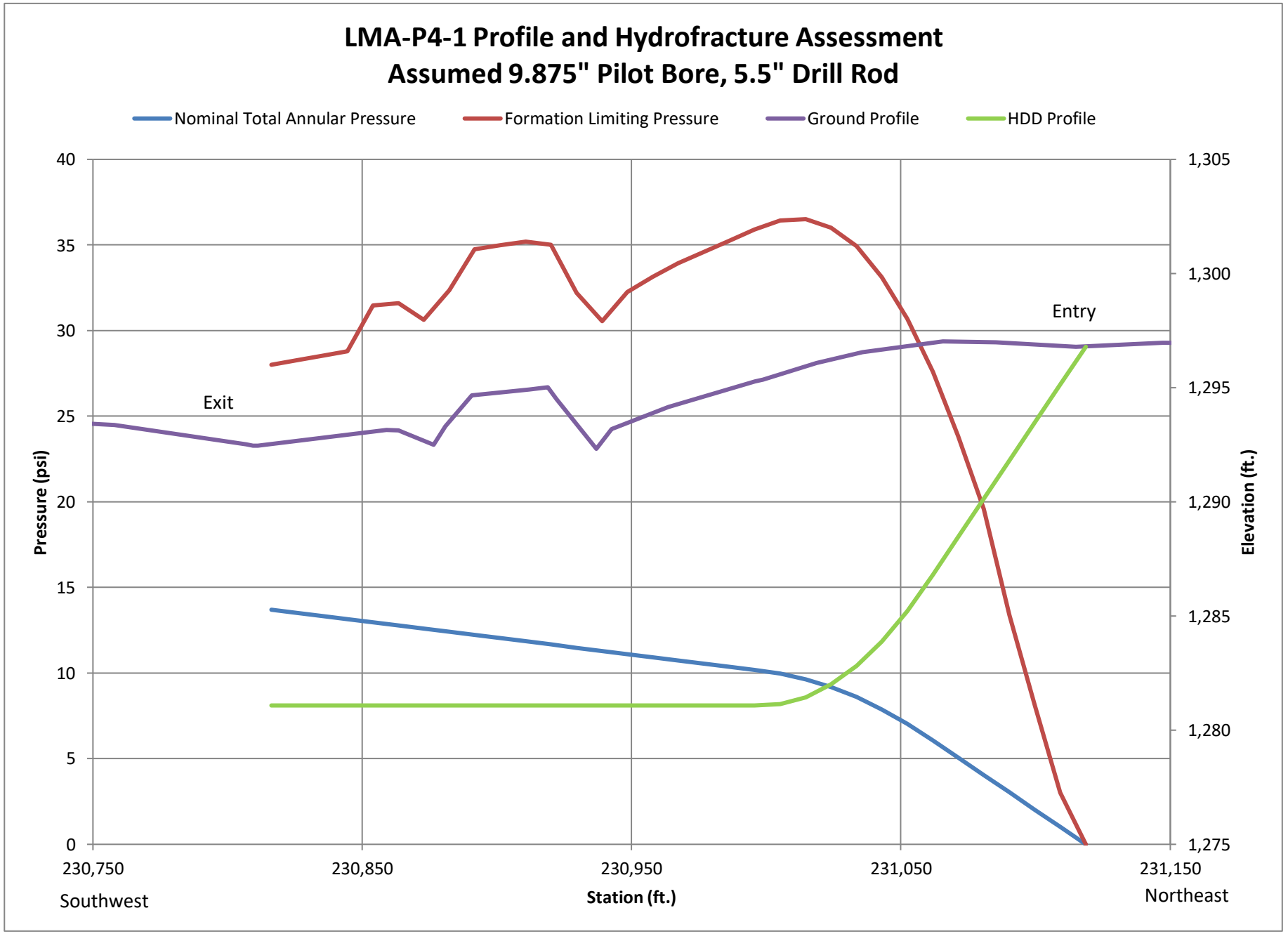

LMA-P4-1 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
Southwest
Northeast
40
35
30
25
20
15
10
5
0
1,305
1,300
1,295
1,290
1,285
1,280
1,275
230,750
230,850
230,950
231,050
231,150

FIGURE 1

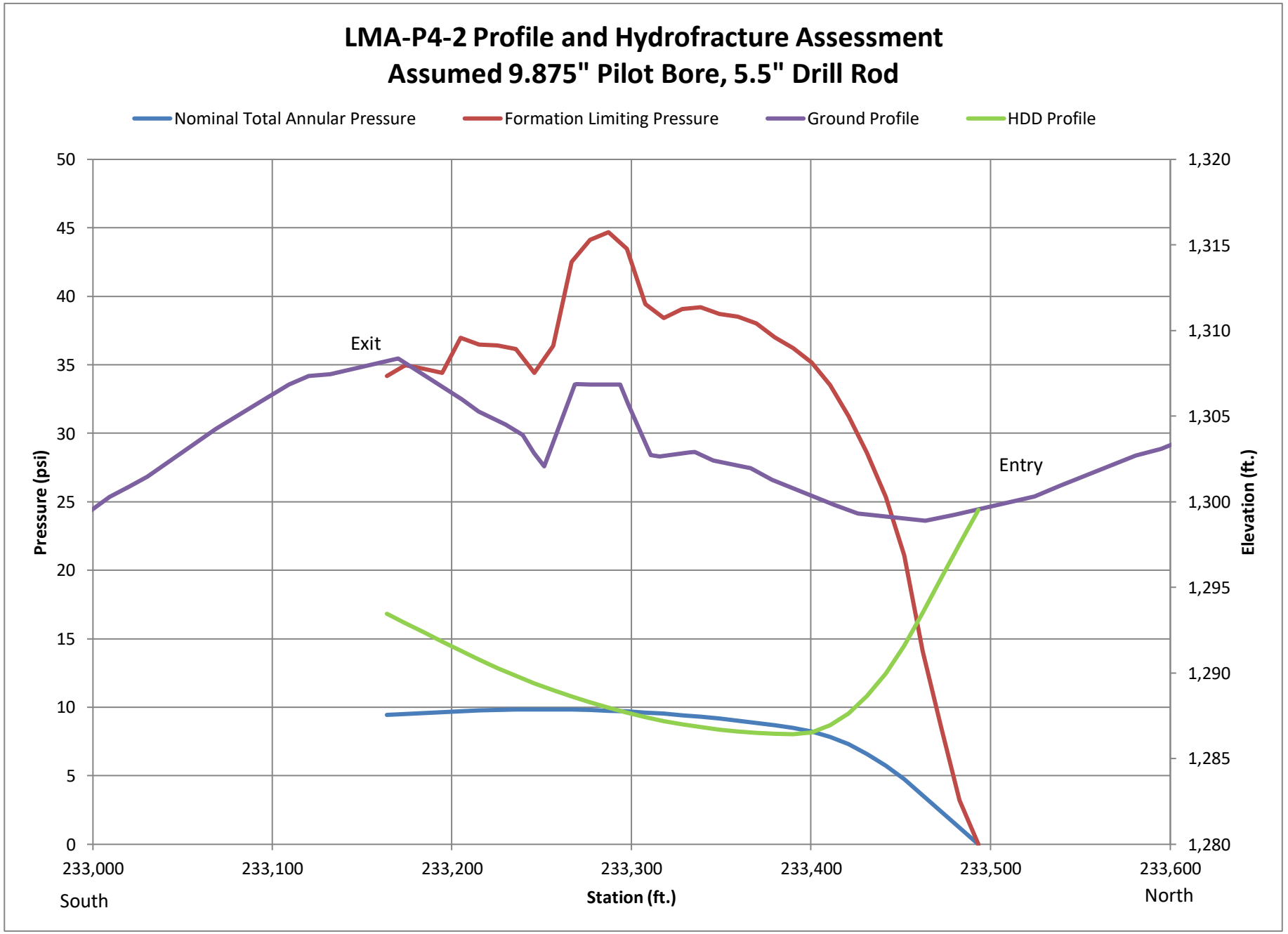

LMA-P4-2 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
5
10
15
20
25
30
35
40
45
50
1,280
1,285
1,290
1,295
1,300
1,305
1,310
1,315
1,320
233,000
233,100
233,200
233,300
233,400
233,500
233,600

FIGURE 1

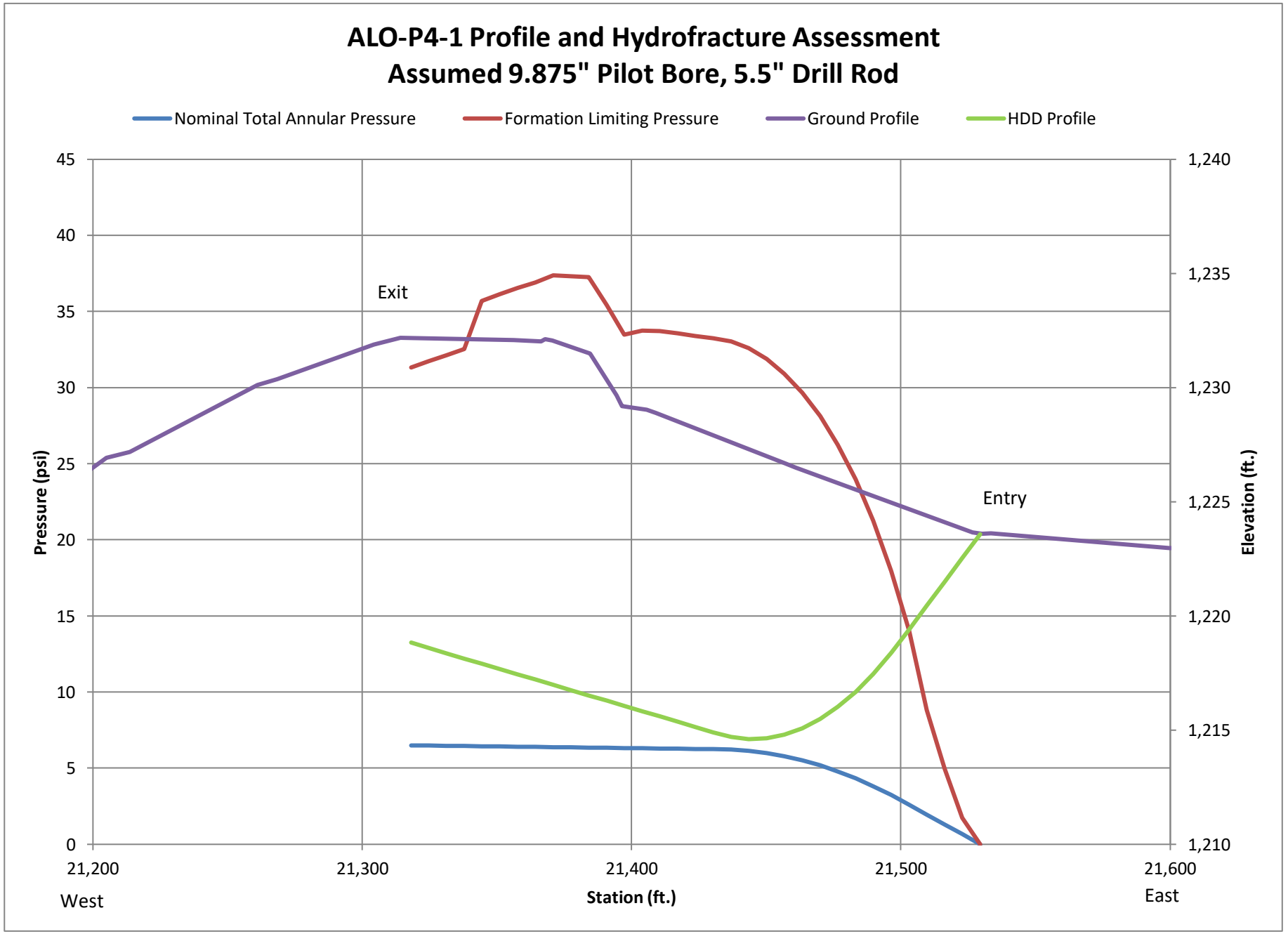

ALO-P4-1 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
West
East
45
40
35
30
25
20
15
10
5
0
1,240
1,235
1,230
1,225
1,220
1,215
1,210
21,200
21,300
21,400
21,500
21,600

FIGURE 1

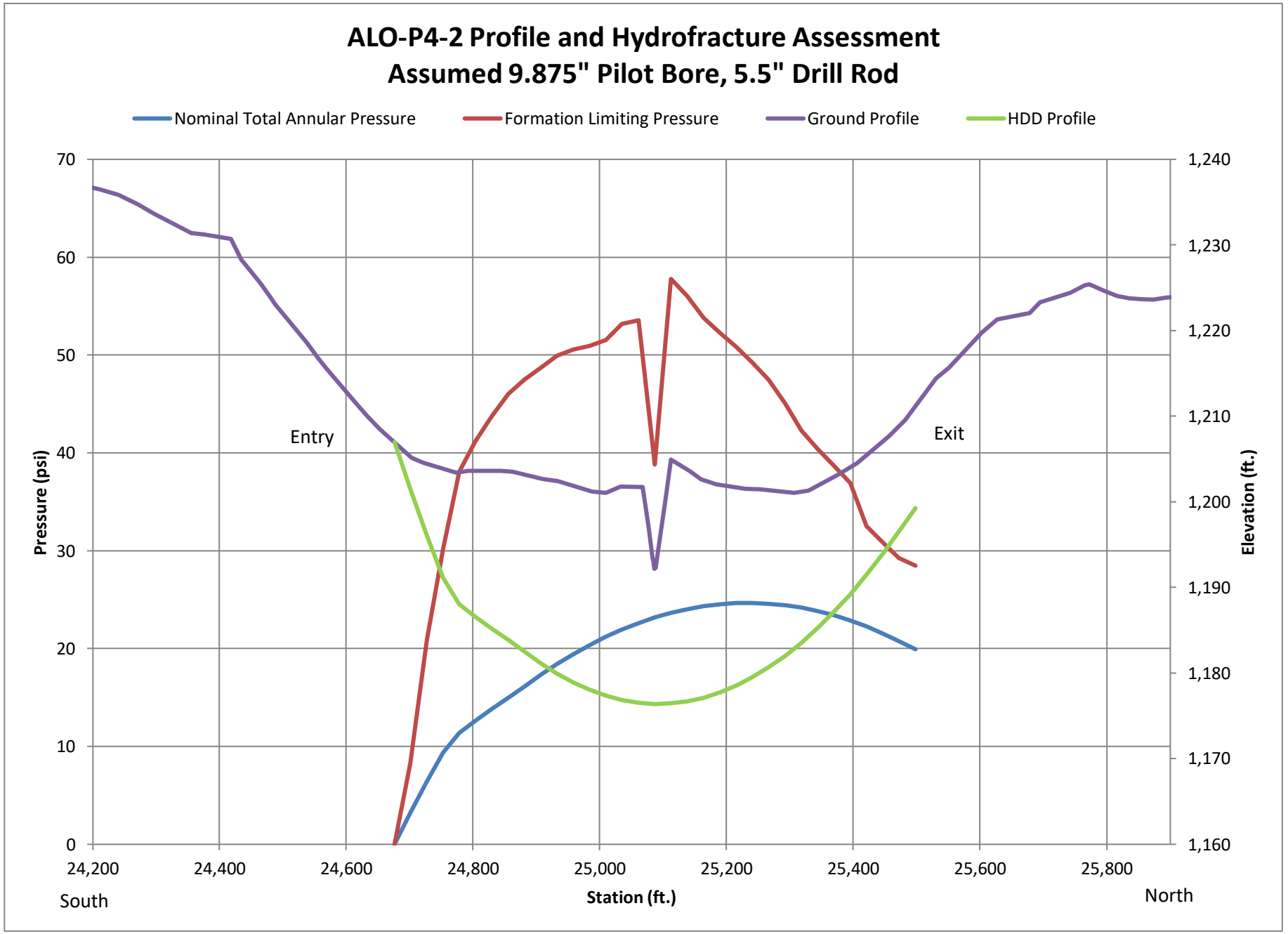

ALO-P4-2 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Pressure (psi)
Elevation (ft.)
Station (ft.)
Entry
Exit
South
North
70
60
50
40
30
20
10
0
1,240
1,230
1,220
1,210
1,200
1,190
1,180
1,170
1,160
24,200
24,400
24,600
24,800
25,000
25,200
25,400
25,600
25,800

FIGURE 1

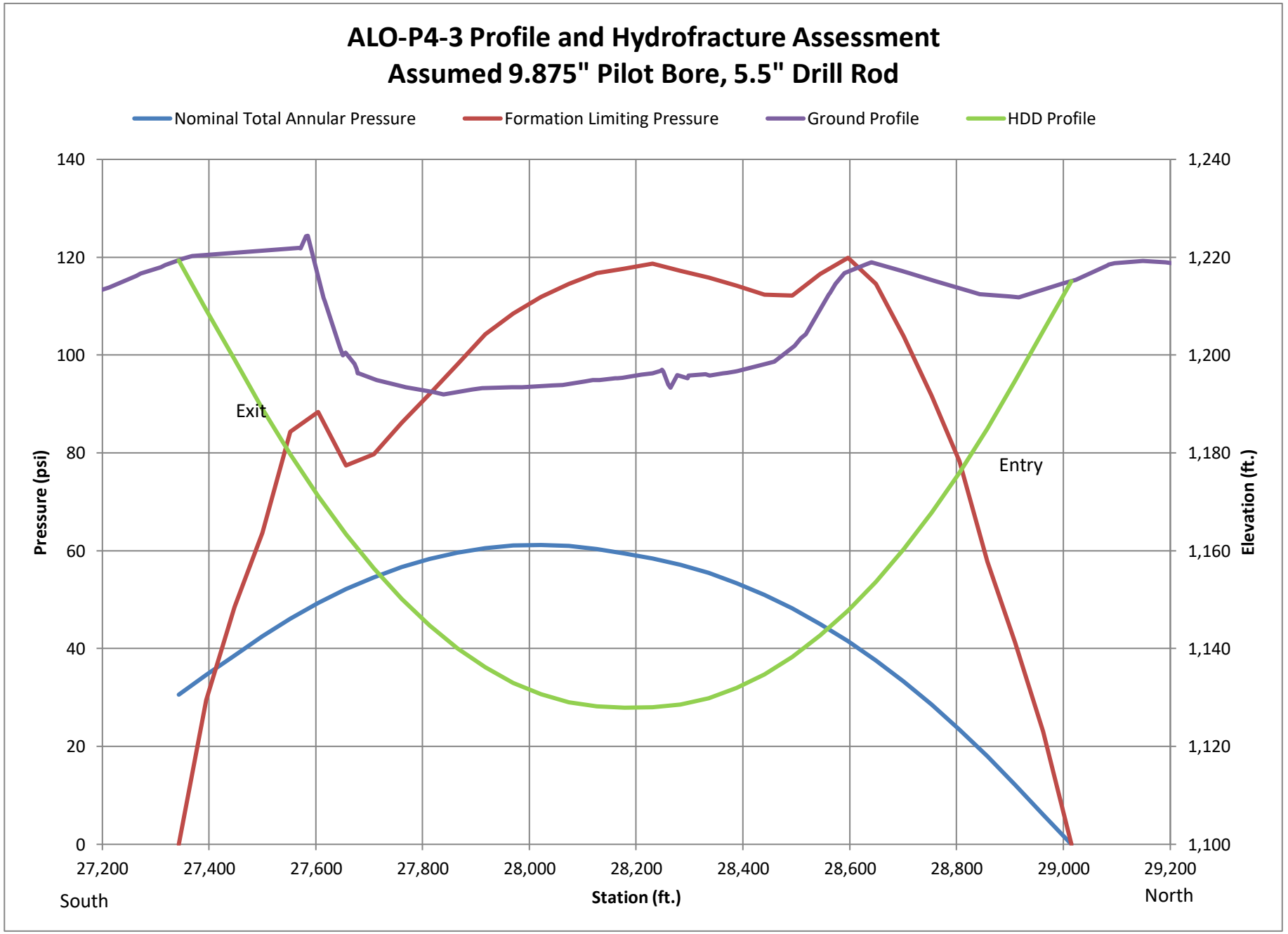

ALO-P4-3 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
20
40
60
80
100
120
140
1,100
1,120
1,140
1,160
1,180
1,200
1,220
1,240
27,200
27,400
27,600
27,800
28,000
28,200
28,400
28,600
28,800
29,000
29,200

FIGURE 1

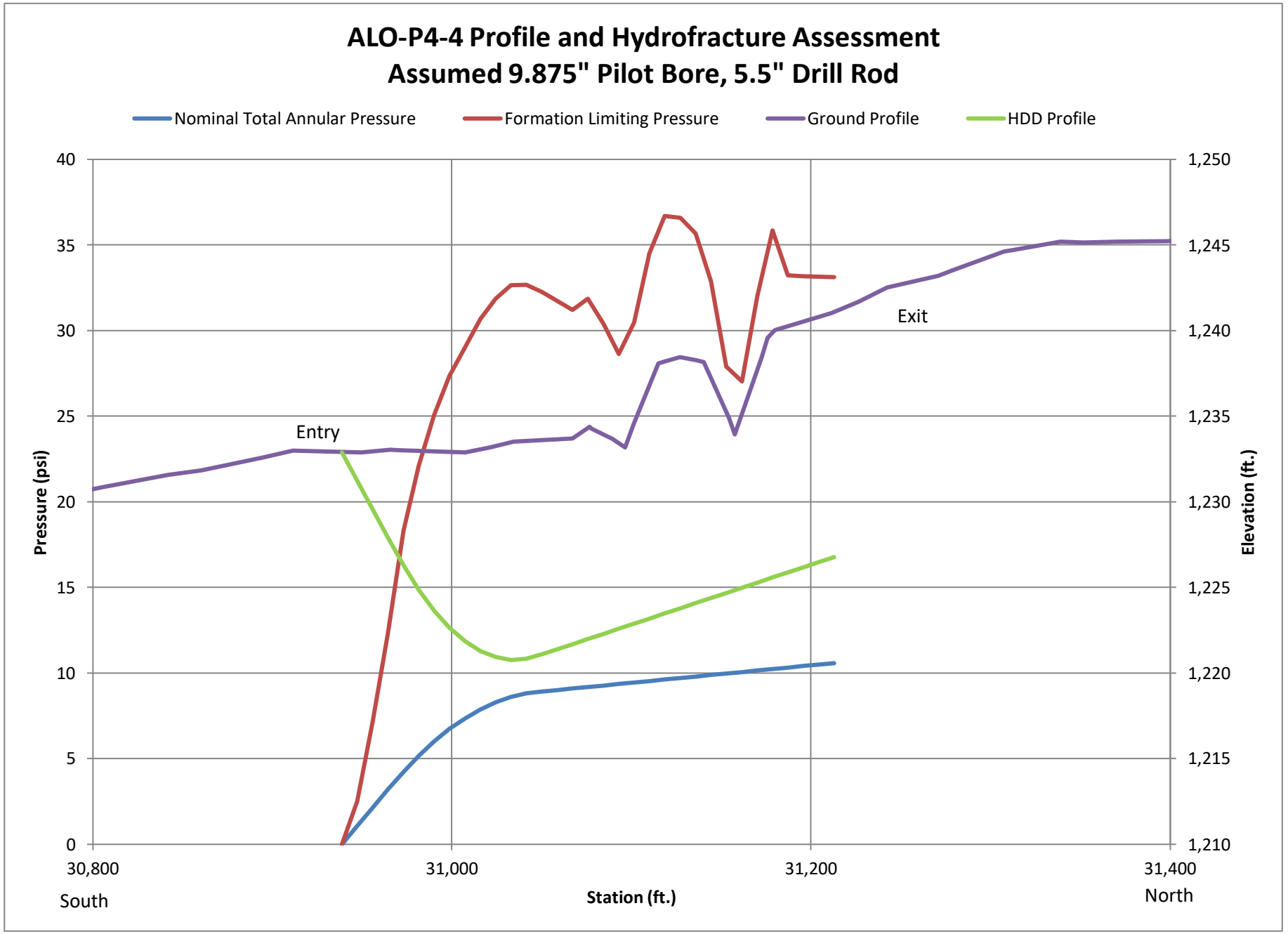

ALO-P4-4 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
5
10
15
20
25
30
35
40
1,210
1,215
1,220
1,225
1,230
1,235
1,240
1,245
1,250
30,800
31,000
31,200
31,400

FIGURE 1

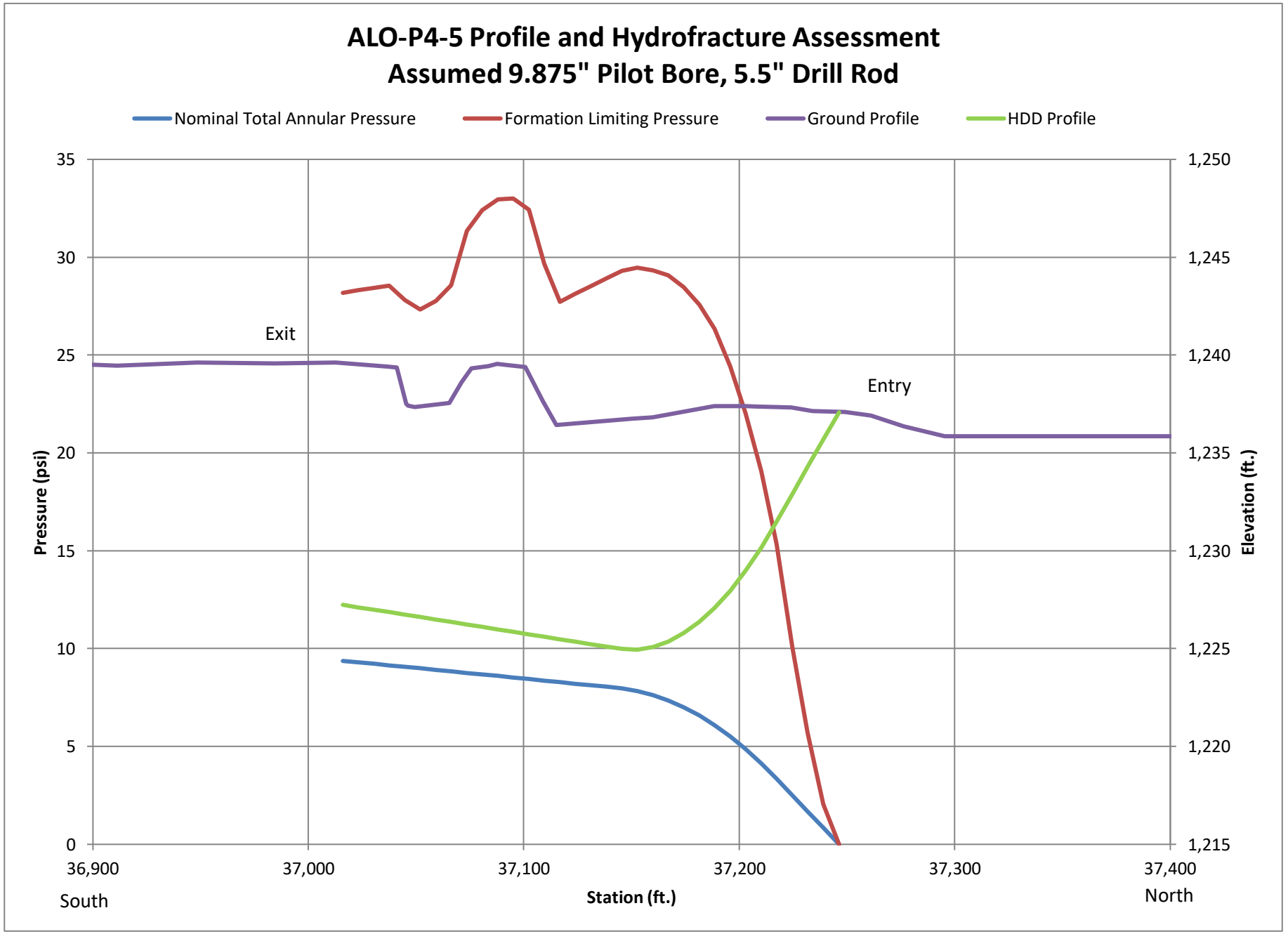

ALO-P4-5 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
35
30
25
20
15
10
5
0
1,250
1,245
1,240
1,235
1,230
1,225
1,220
1,215
36,900
37,000
37,100
37,200
37,300
37,400

FIGURE 1

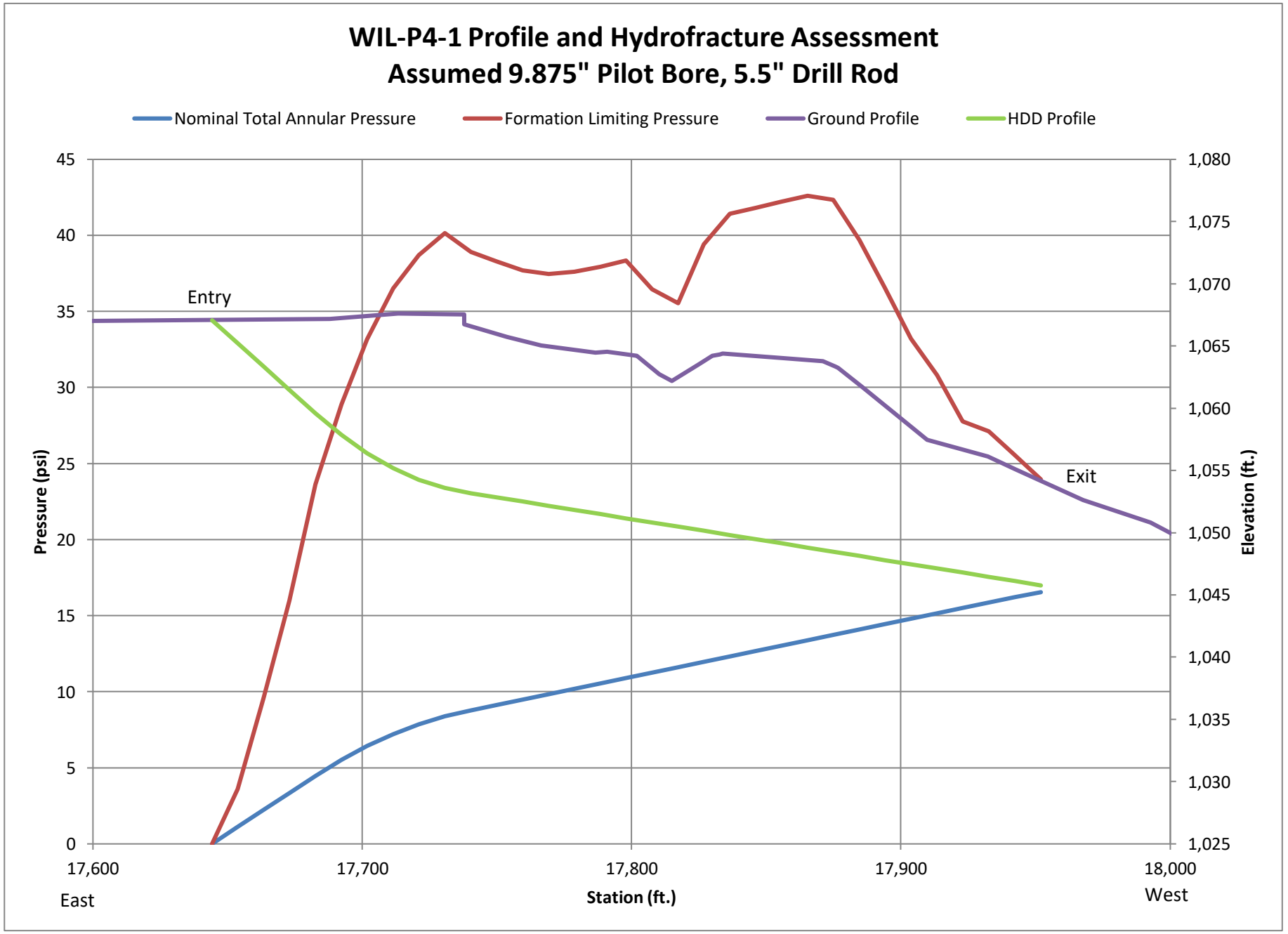

WIL-P4-1 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
East
West
45
40
35
30
25
20
15
10
5
0
1,080
1,075
1,070
1,065
1,060
1,055
1,050
1,045
1,040
1,035
1,030
1,025
17,600
17,700
17,800
17,900
18,000

FIGURE 1

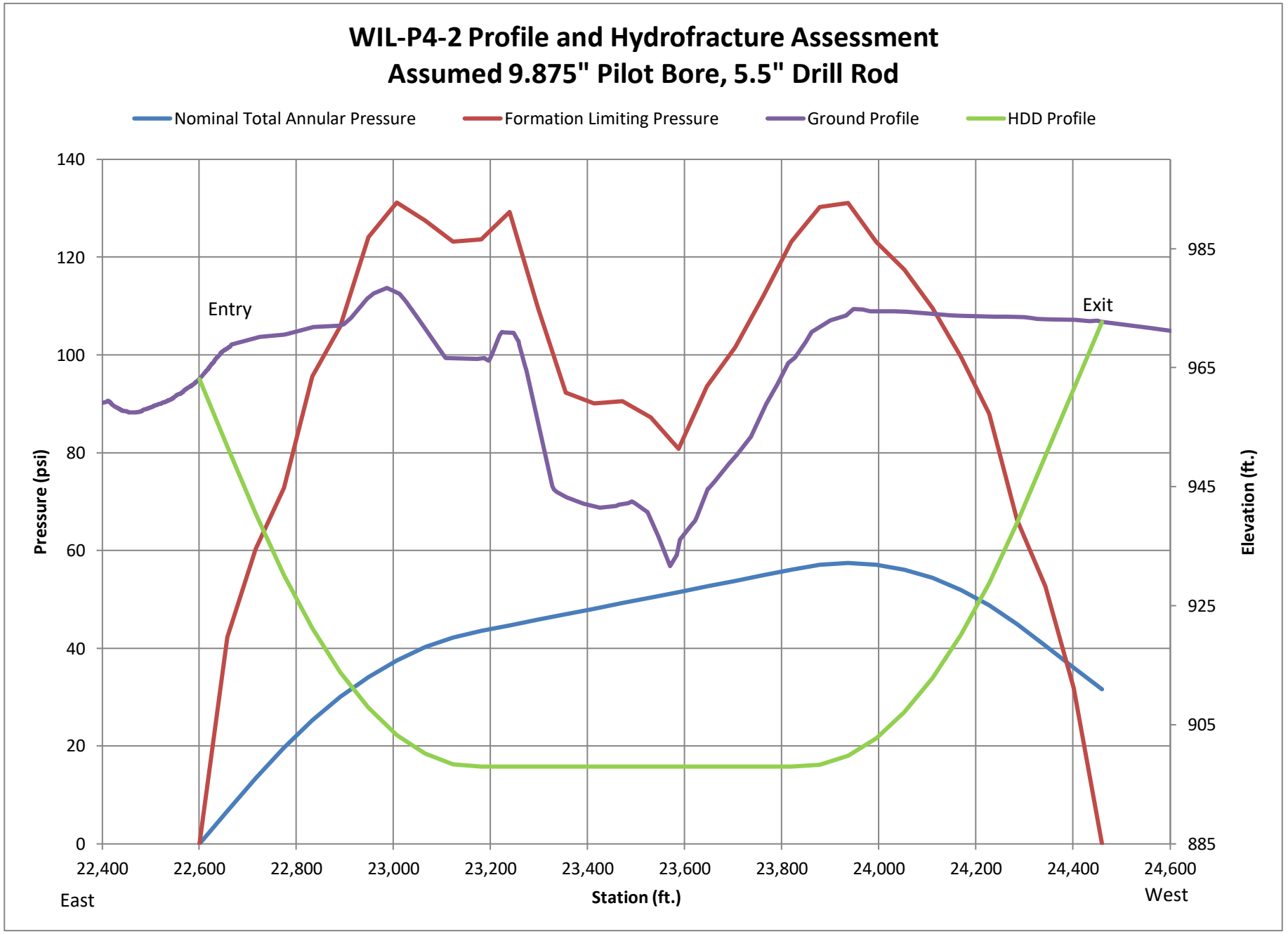

WIL-P4-2 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
East
West
0
20
40
60
80
100
120
140
885
905
925
945
965
985
22,400
22,600
22,800
23,000
23,200
23,400
23,600
23,800
24,000
24,200
24,400
24,600

FIGURE 1

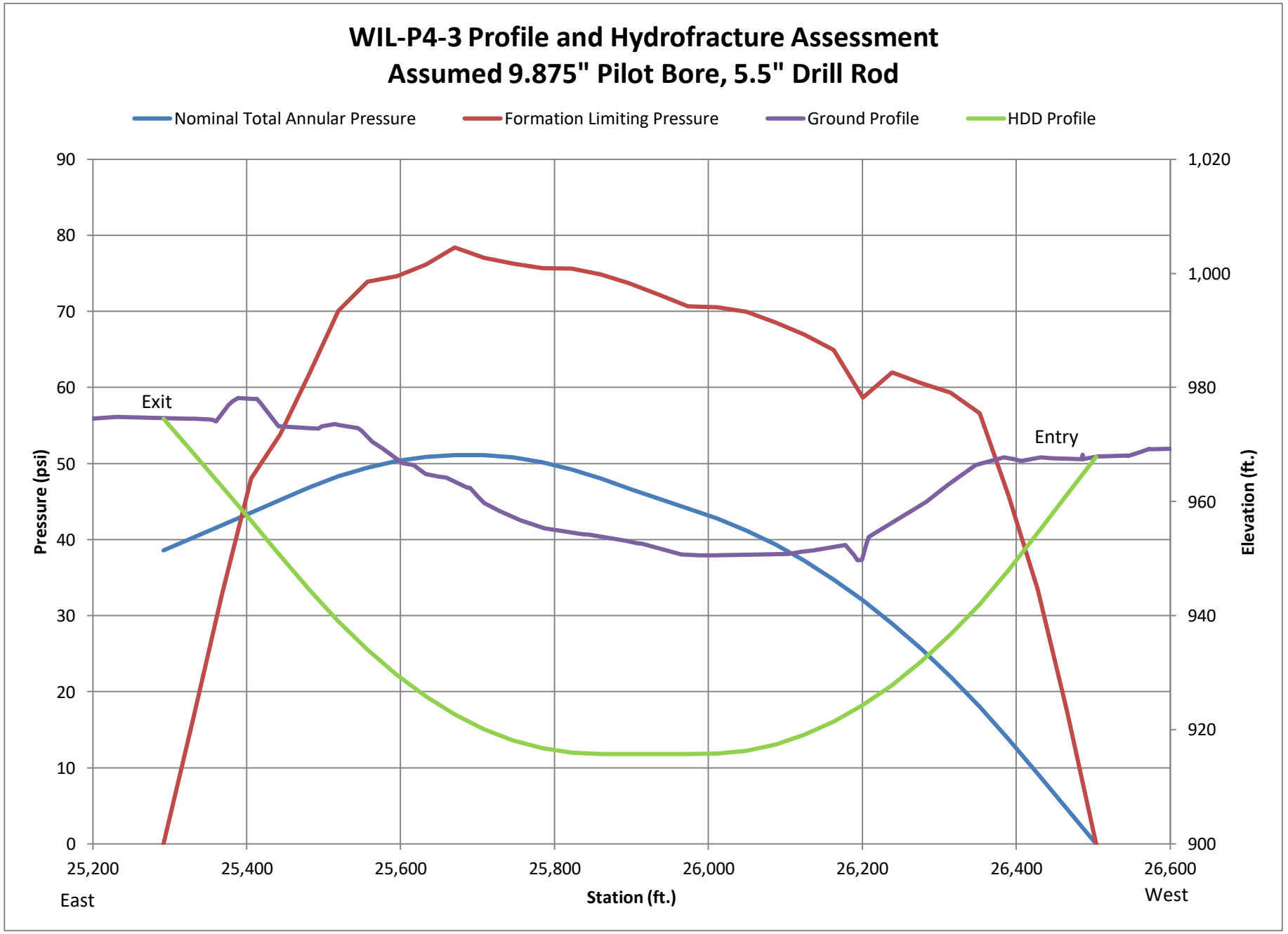

WIL-P4-3 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
East
West
0
10
20
30
40
50
60
70
80
90
900
920
940
960
980
1,000
1,020
25,200
25,400
25,600
25,800
26,000
26,200
26,400
26,600

FIGURE 1

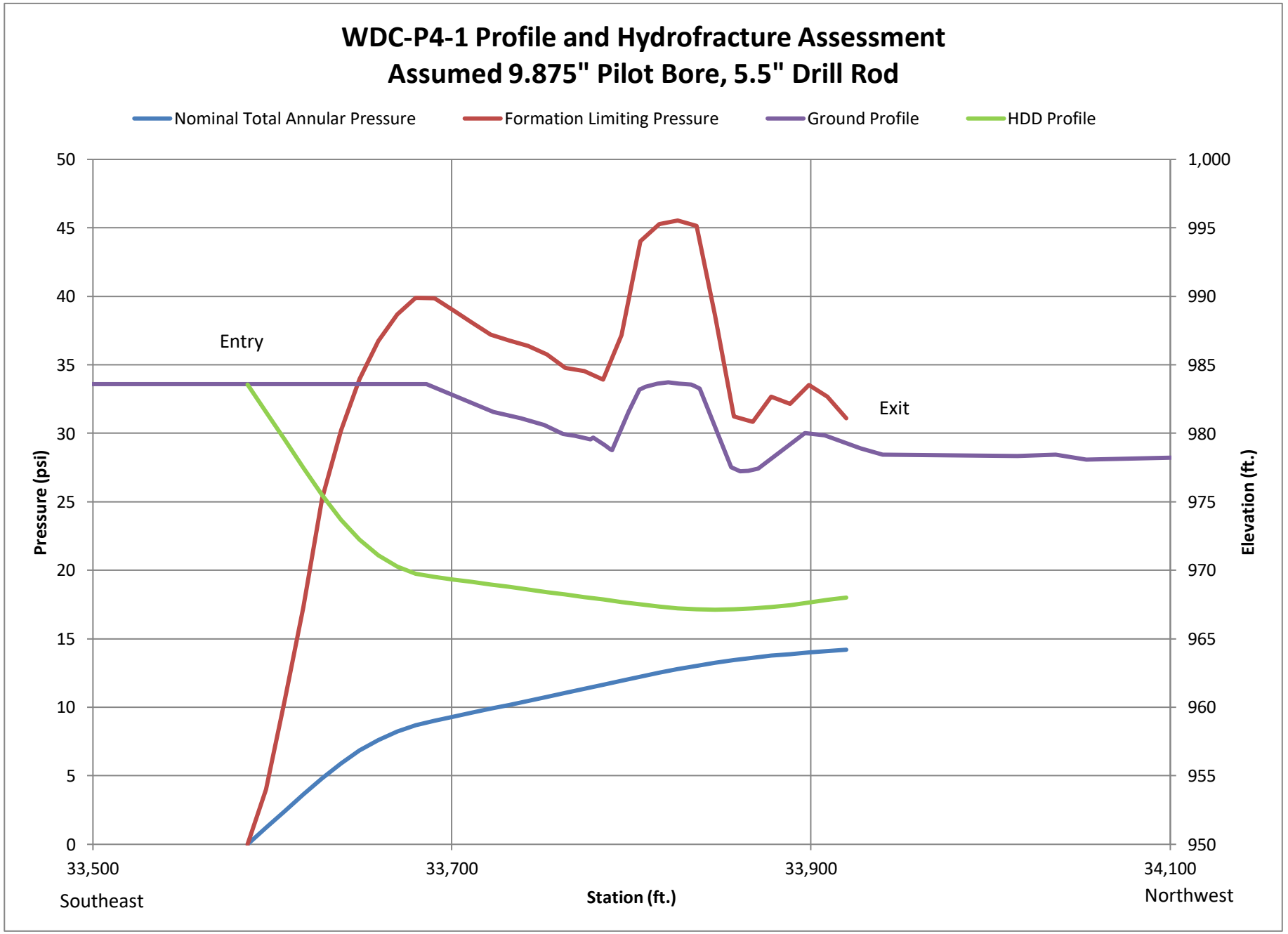

WDC-P4-1 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
Southeast
Northwest
50
45
40
35
30
25
20
15
10
5
0
1,000
995
990
985
980
975
970
965
960
955
950
33,500
33,700
33,900
34,100

FIGURE 1

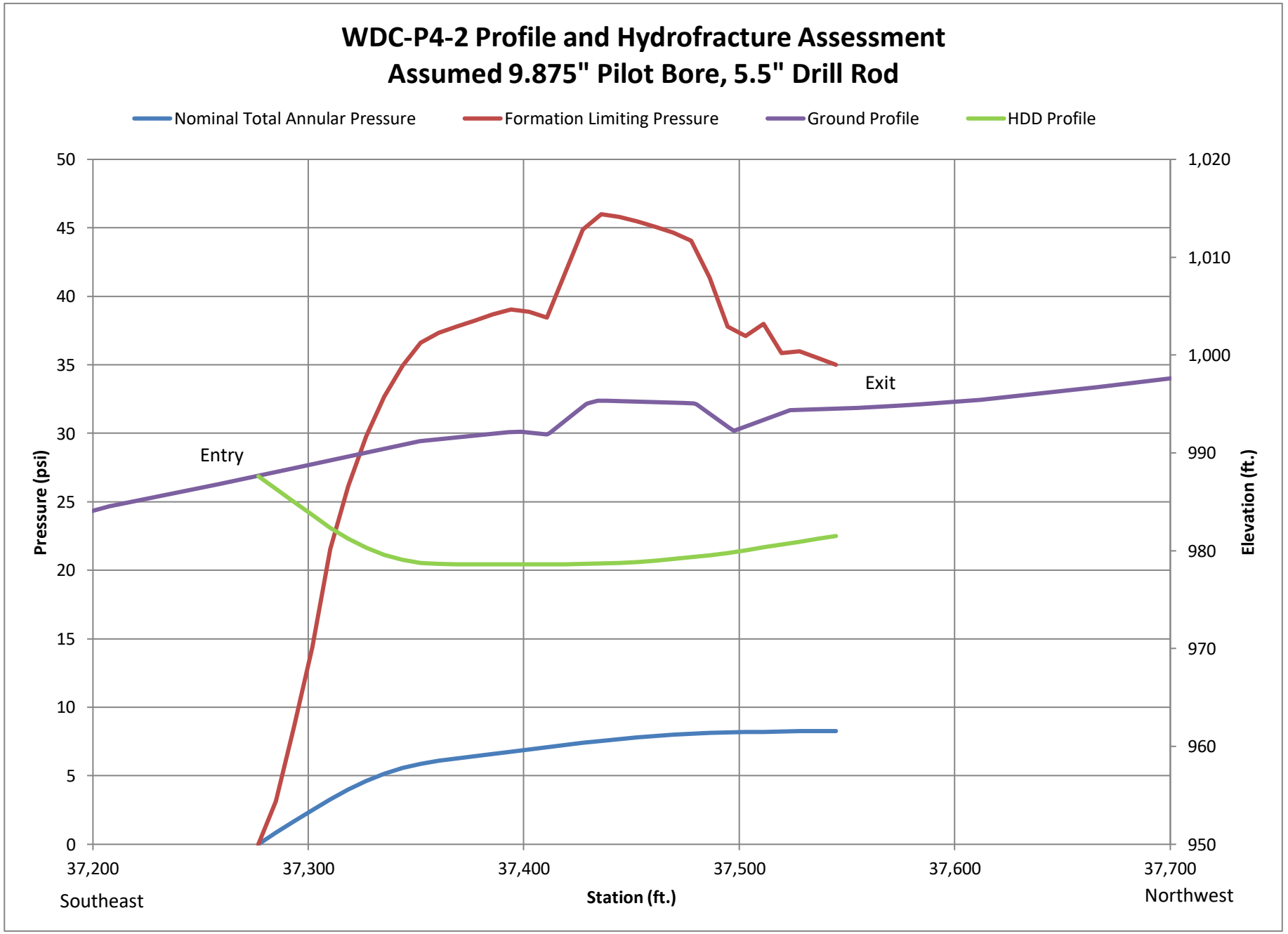

WDC-P4-2 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
Southeast
Northwest
0
5
10
15
20
25
30
35
40
45
50
950
960
970
980
990
1,000
1,010
1,020
37,200
37,300
37,400
37,500
37,600
37,700

FIGURE 1

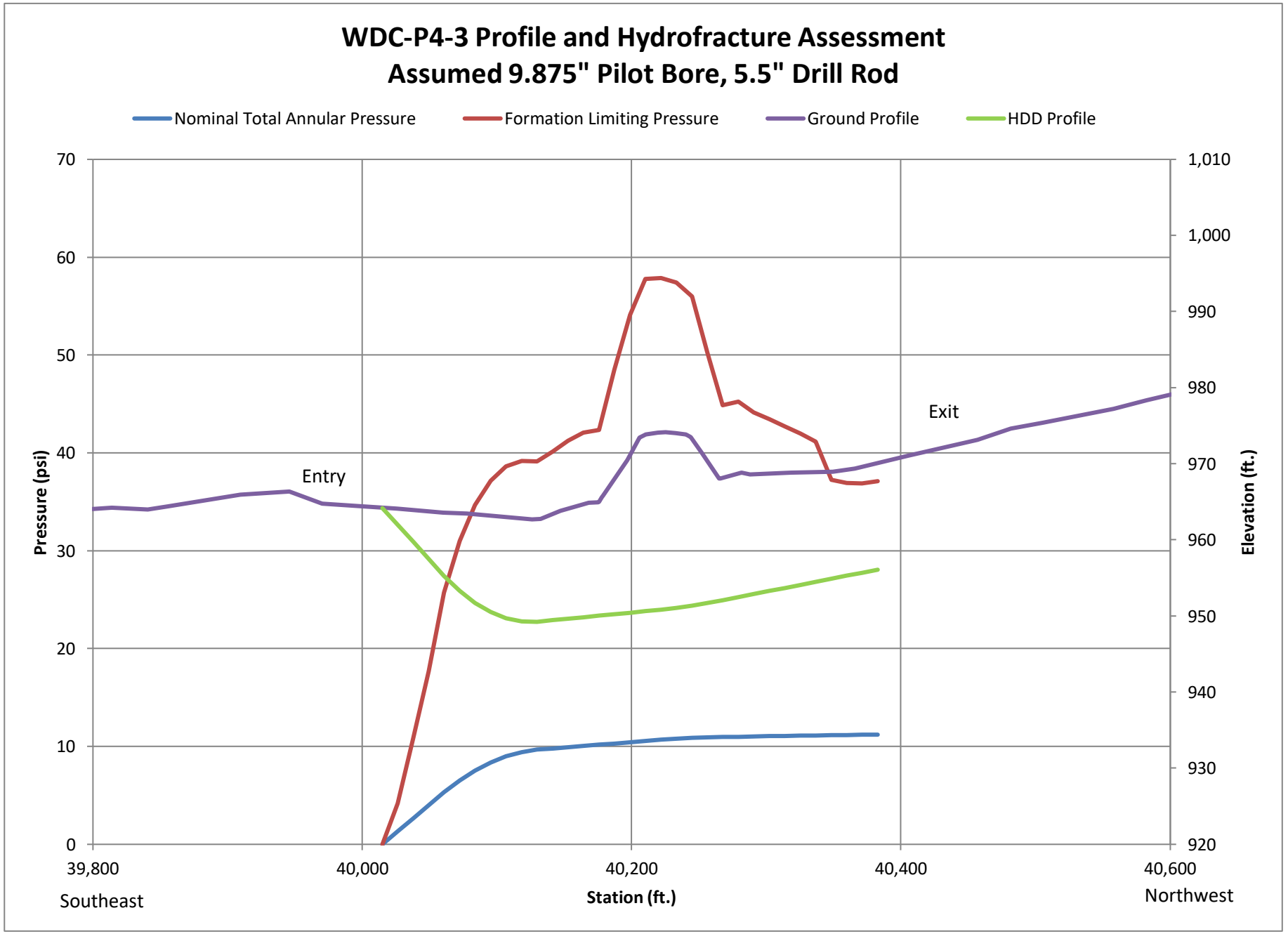

WDC-P4-3 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Pressure (psi)
Elevation (ft.)
Station (ft.)
Entry
Exit
Southeast
Northwest
70
60
50
40
30
20
10
0
1,010
1,000
990
980
970
960
950
940
930
920
39,800
40,000
40,200
40,400
40,600

FIGURE 1

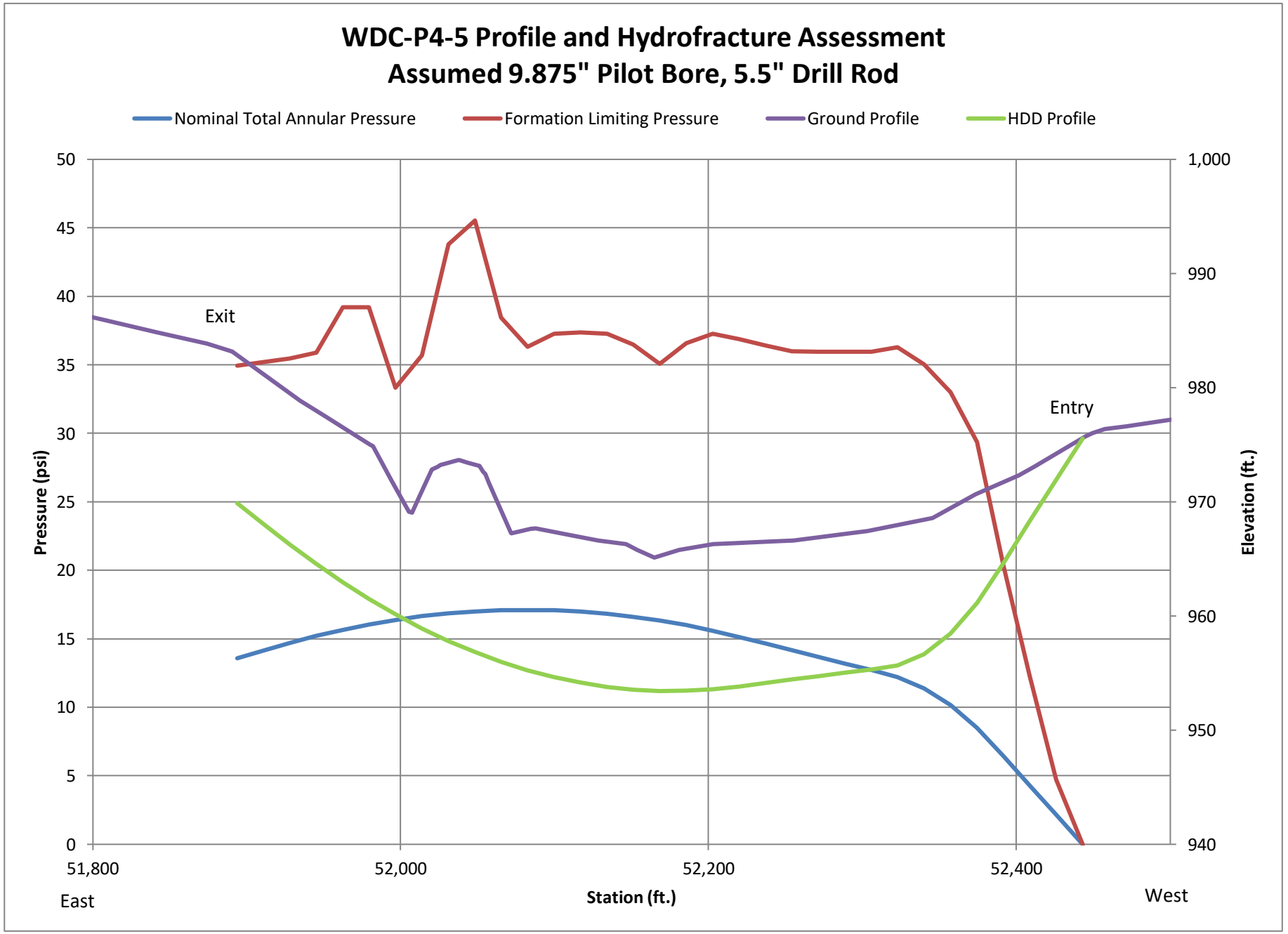

WDC-P4-5 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
East
West
50
45
40
35
30
25
20
15
10
5
0
1,000
990
980
970
960
950
940
51,800
52,000
52,200
52,400

FIGURE 1

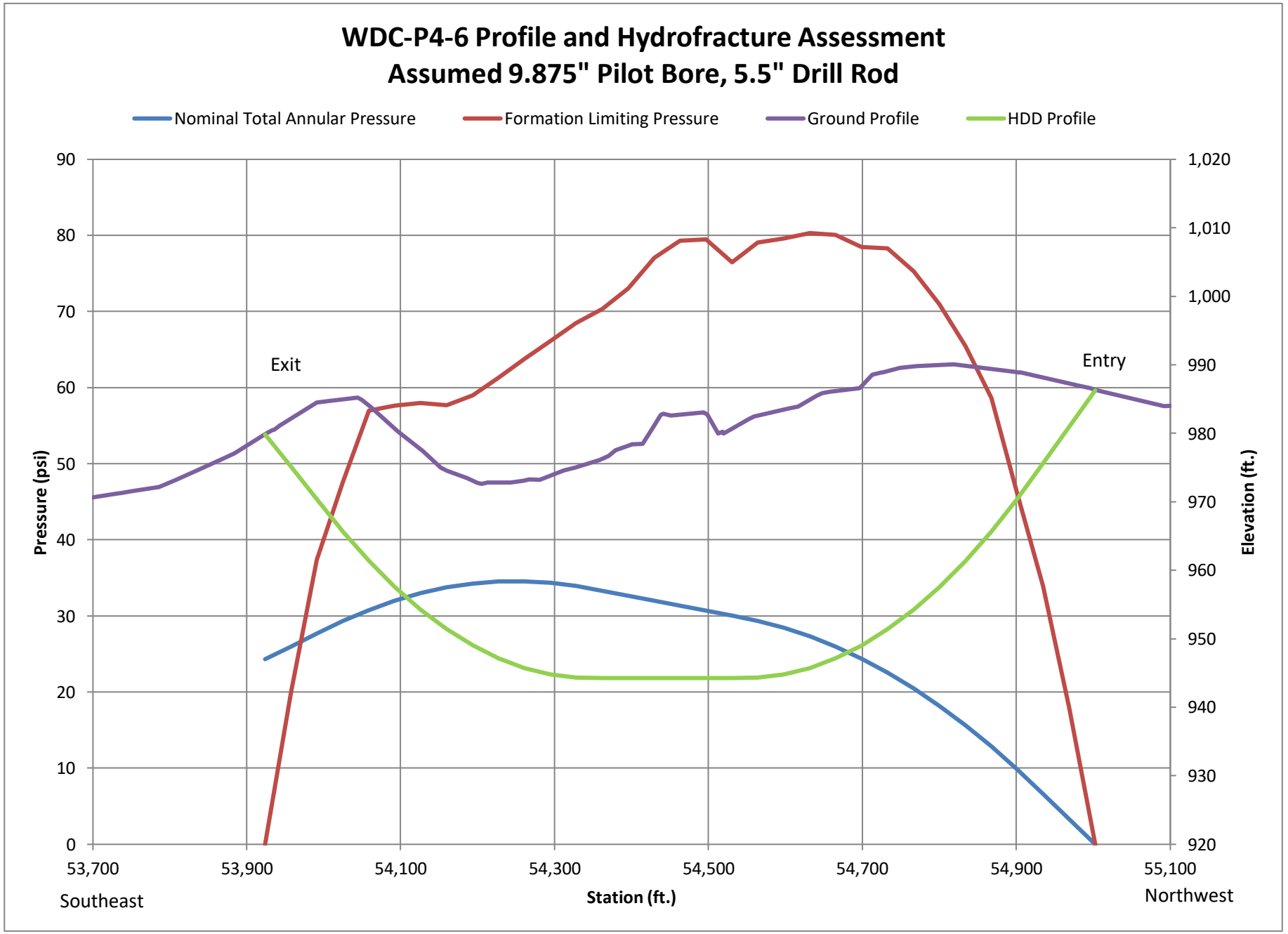

WDC-P4-6 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
Southeast
Northwest
0
10
20
30
40
50
60
70
80
90
920
930
940
950
960
970
980
990
1,000
1,010
1,020
53,700
53,900
54,100
54,300
54,500
54,700
54,900
55,100

FIGURE 1

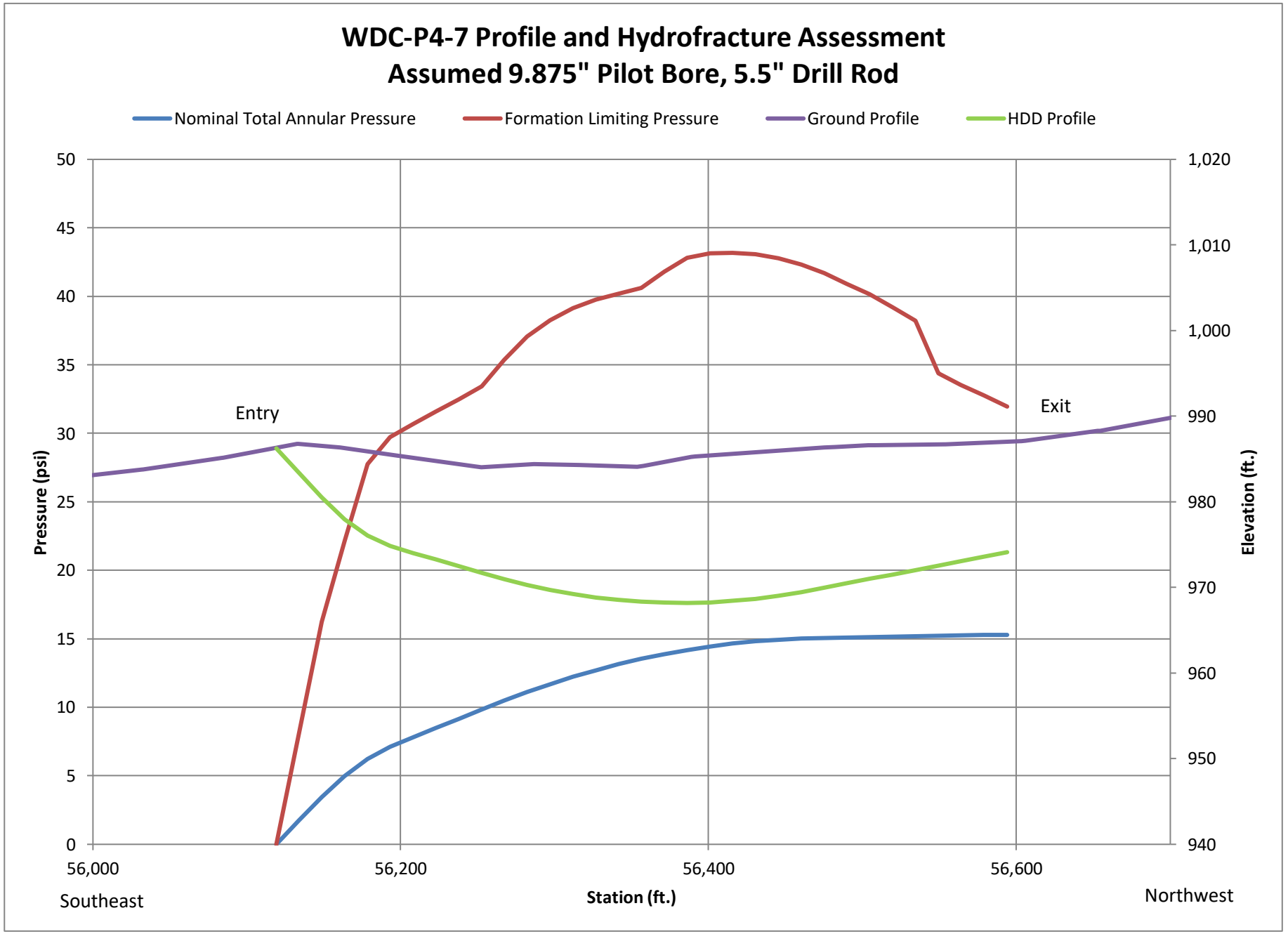

WDC-P4-7 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
50
45
40
35
30
25
20
15
10
5
0
1,020
1,010
1,000
990
980
970
960
950
940
56,000
56,200
56,400
56,600
Station (ft.)
Southeast
Northwest

FIGURE 1

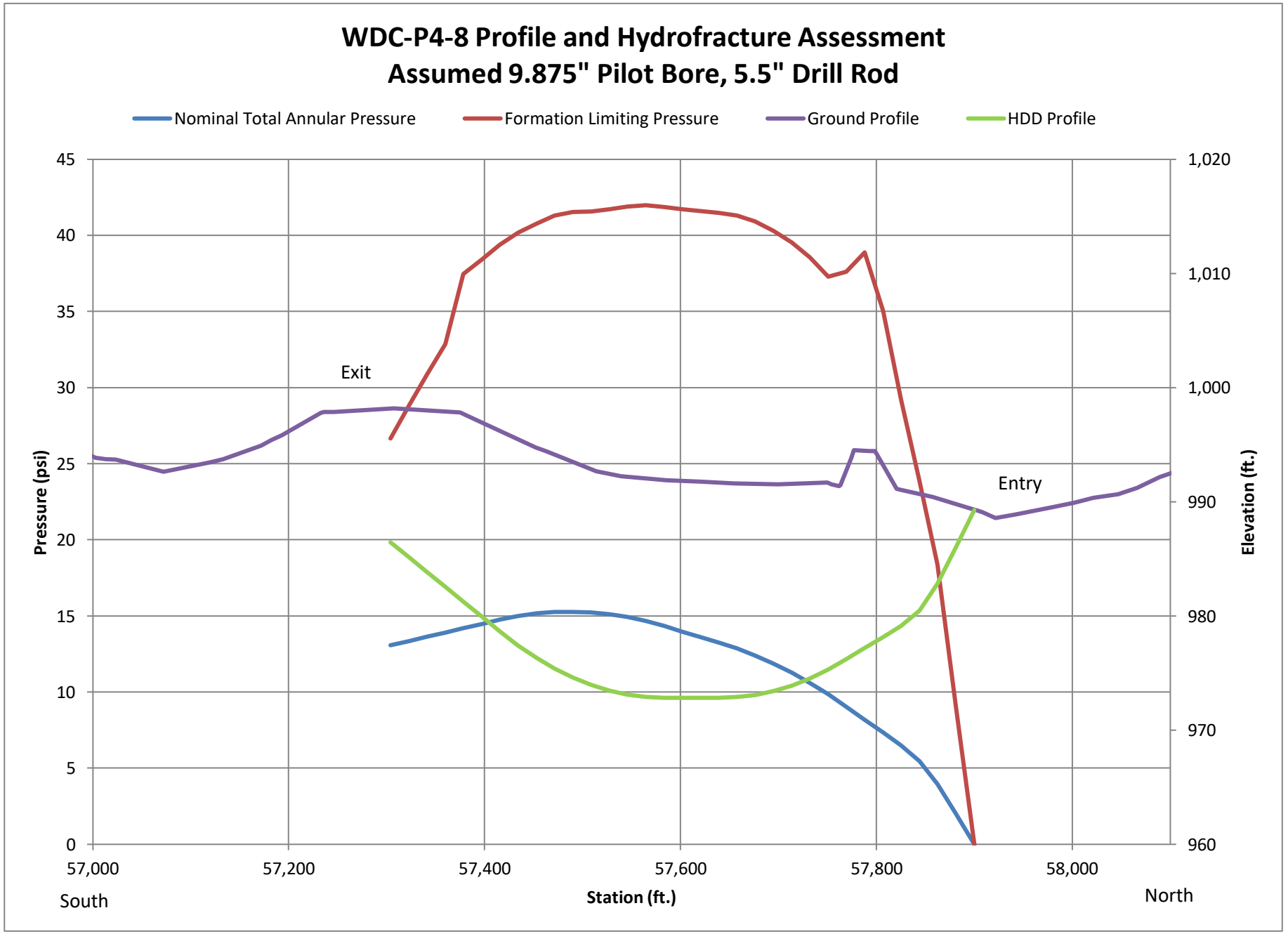

WDC-P4-8 Profile and Hydrofracture Assessment
Assumed 9.875" Pilot Bore, 5.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
South
North
0
5
10
15
20
25
30
35
40
45
960
970
980
990
1,000
1,010
1,020
57,000
57,200
57,400
57,600
57,800
58,000

FIGURE 1

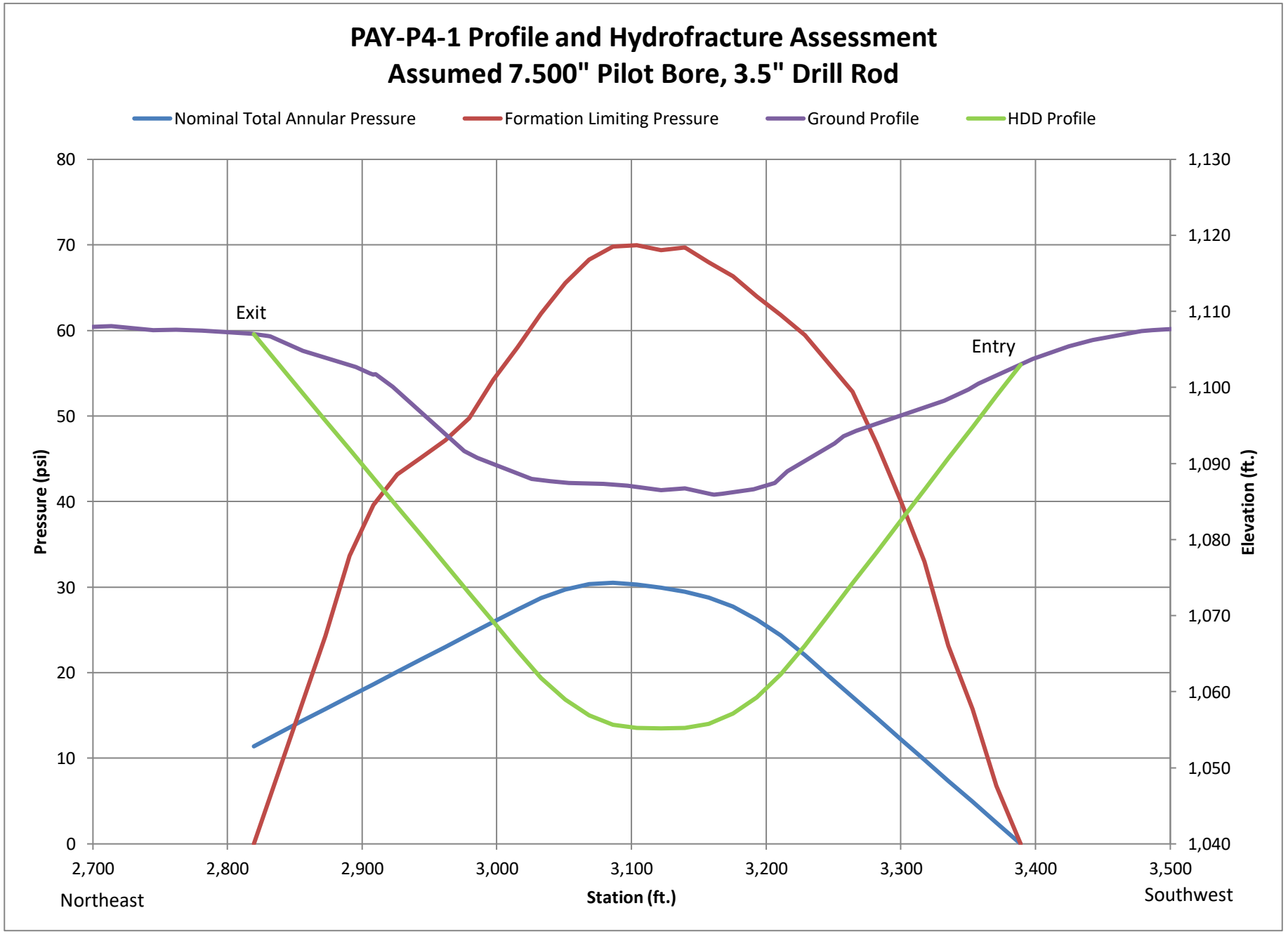

PAY-P4-1 Profile and Hydrofracture Assessment
Assumed 7.500" Pilot Bore, 3.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
Northeast
Southwest
0
10
20
30
40
50
60
70
80
1,040
1,050
1,060
1,070
1,080
1,090
1,100
1,110
1,120
1,130
2,700
2,800
2,900
3,000
3,100
3,200
3,300
3,400
3,500

FIGURE 1

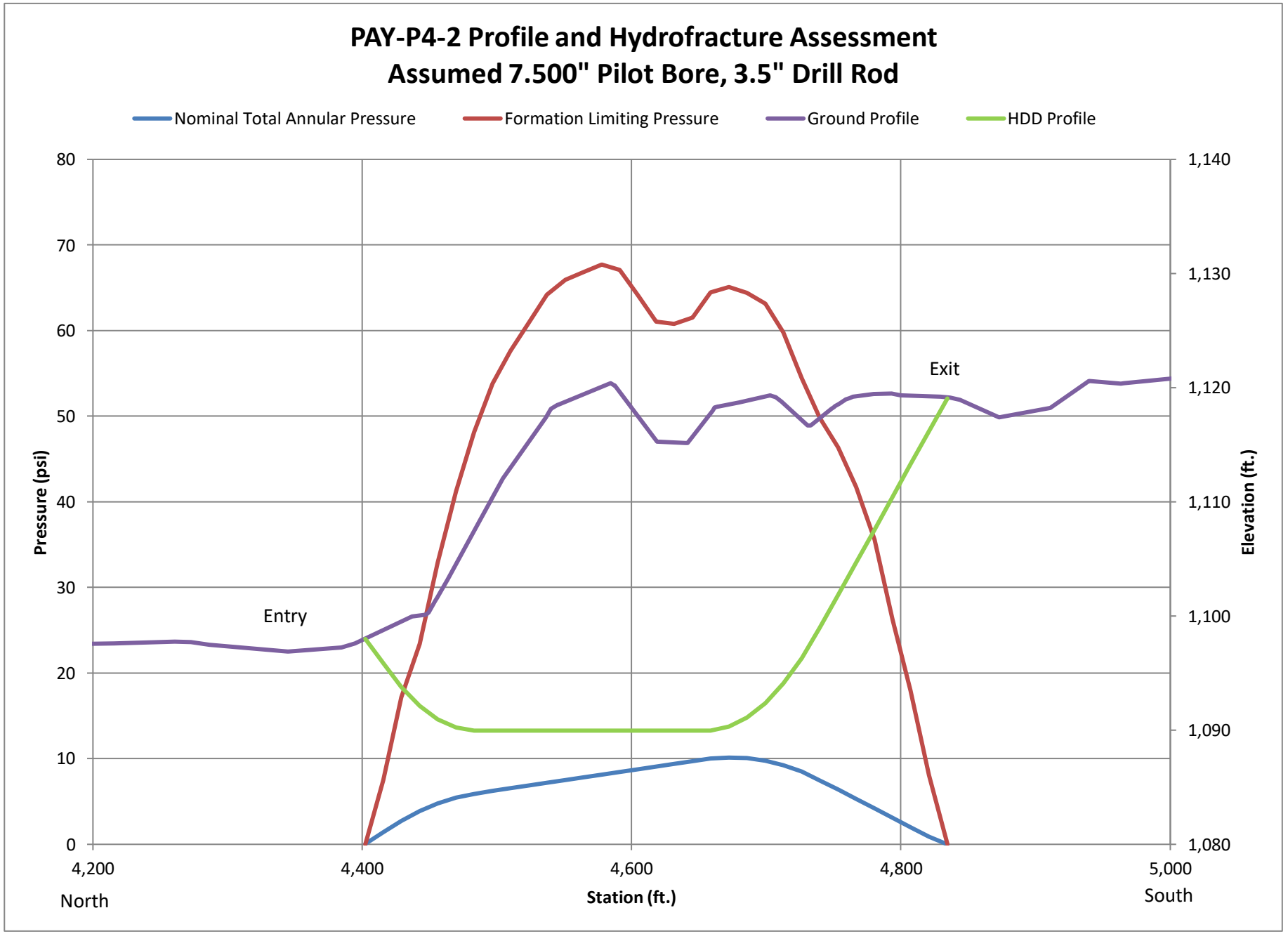

PAY-P4-2 Profile and Hydrofracture Assessment
Assumed 7.500" Pilot Bore, 3.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Pressure (psi)
Elevation (ft.)
Station (ft.)
Entry
Exit
North
South
0
10
20
30
40
50
60
70
80
1,080
1,090
1,100
1,110
1,120
1,130
1,140
4,200
4,400
4,600
4,800
5,000

FIGURE 1

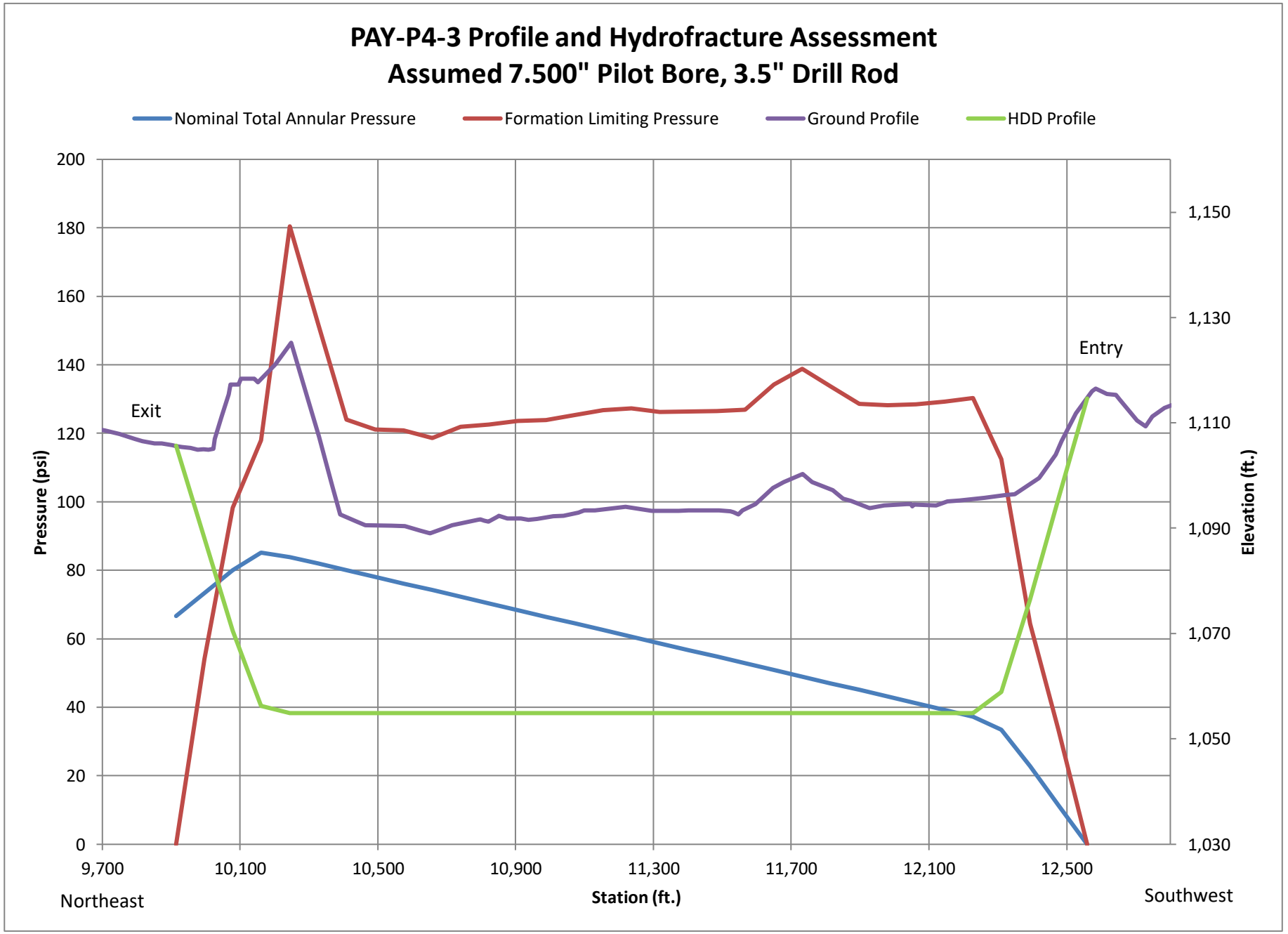

PAY-P4-3 Profile and Hydrofracture Assessment
Assumed 7.500" Pilot Bore, 3.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
Northeast
Southwest
0
20
40
60
80
100
120
140
160
180
200
1,030
1,050
1,070
1,090
1,110
1,130
1,150
9,700
10,100
10,500
10,900
11,300
11,700
12,100
12,500

FIGURE 1

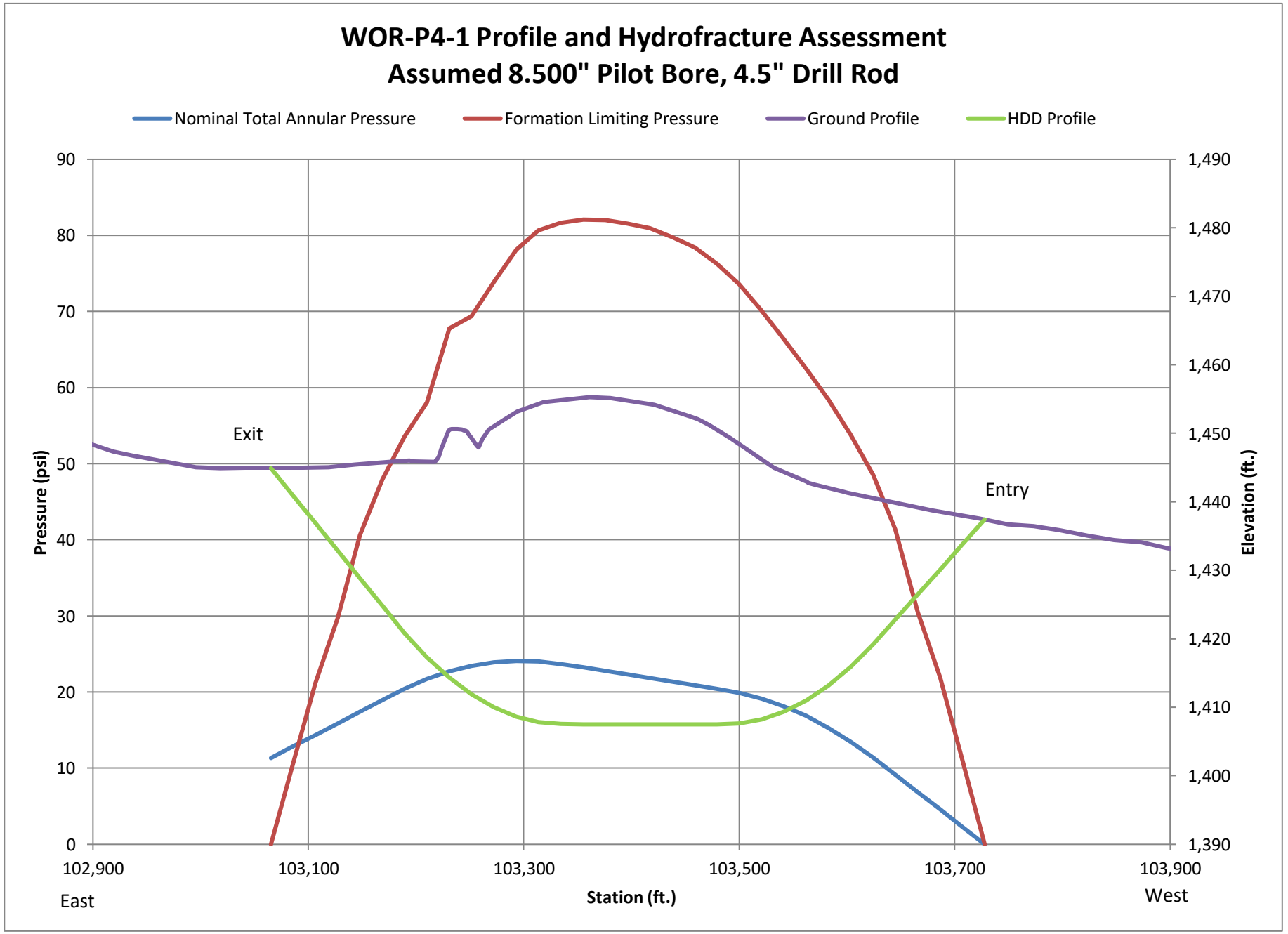

WOR-P4-1 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
East
West
0
10
20
30
40
50
60
70
80
90
1,390
1,400
1,410
1,420
1,430
1,440
1,450
1,460
1,470
1,480
1,490
102,900
103,100
103,300
103,500
103,700
103,900

FIGURE 1

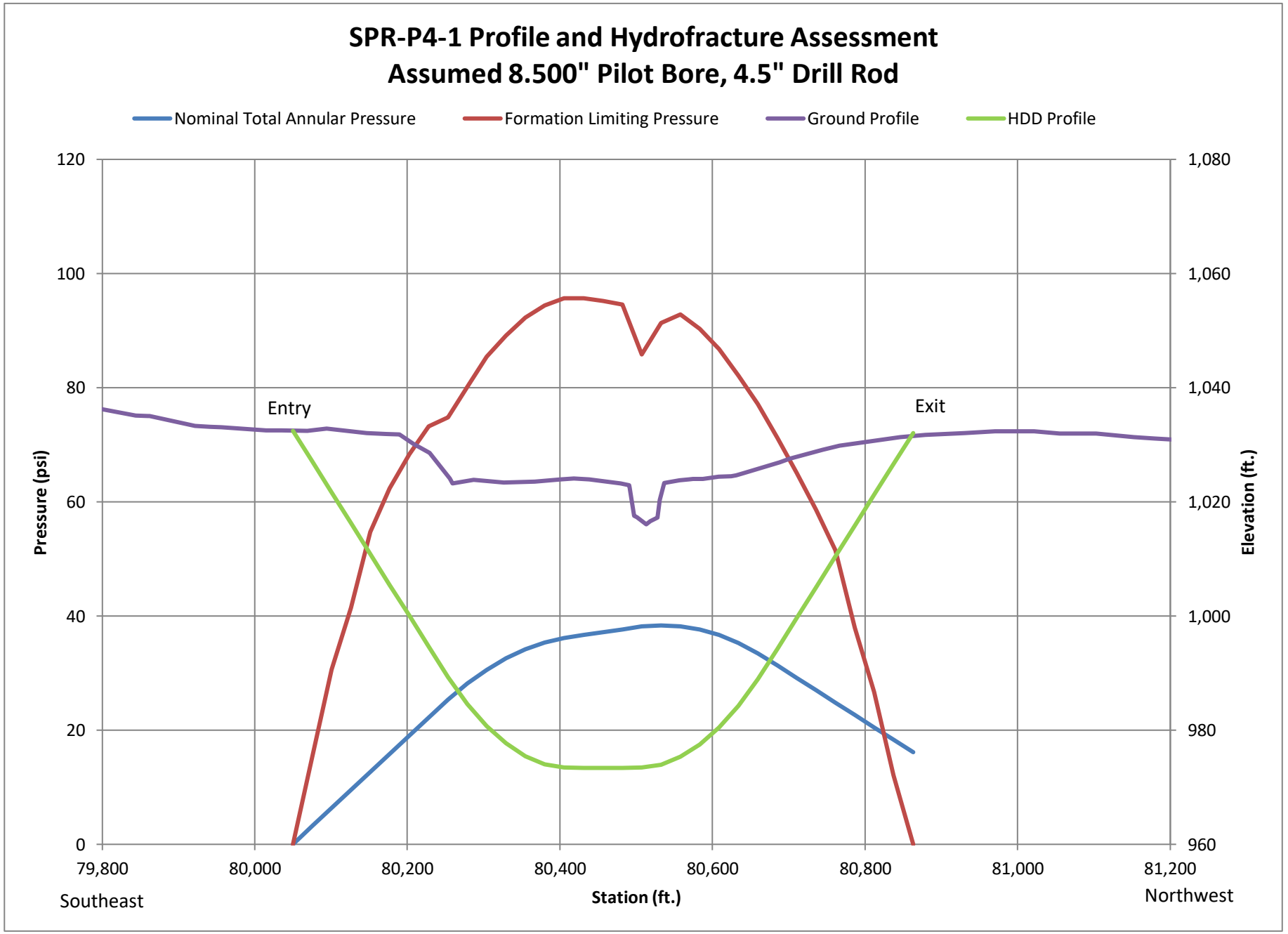

SPR-P4-1 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
120
100
80
60
40
20
0
1,080
1,060
1,040
1,020
1,000
980
960
79,800
80,000
80,200
80,400
80,600
80,800
81,000
81,200
Station (ft.)
Southeast
Northwest

FIGURE 1

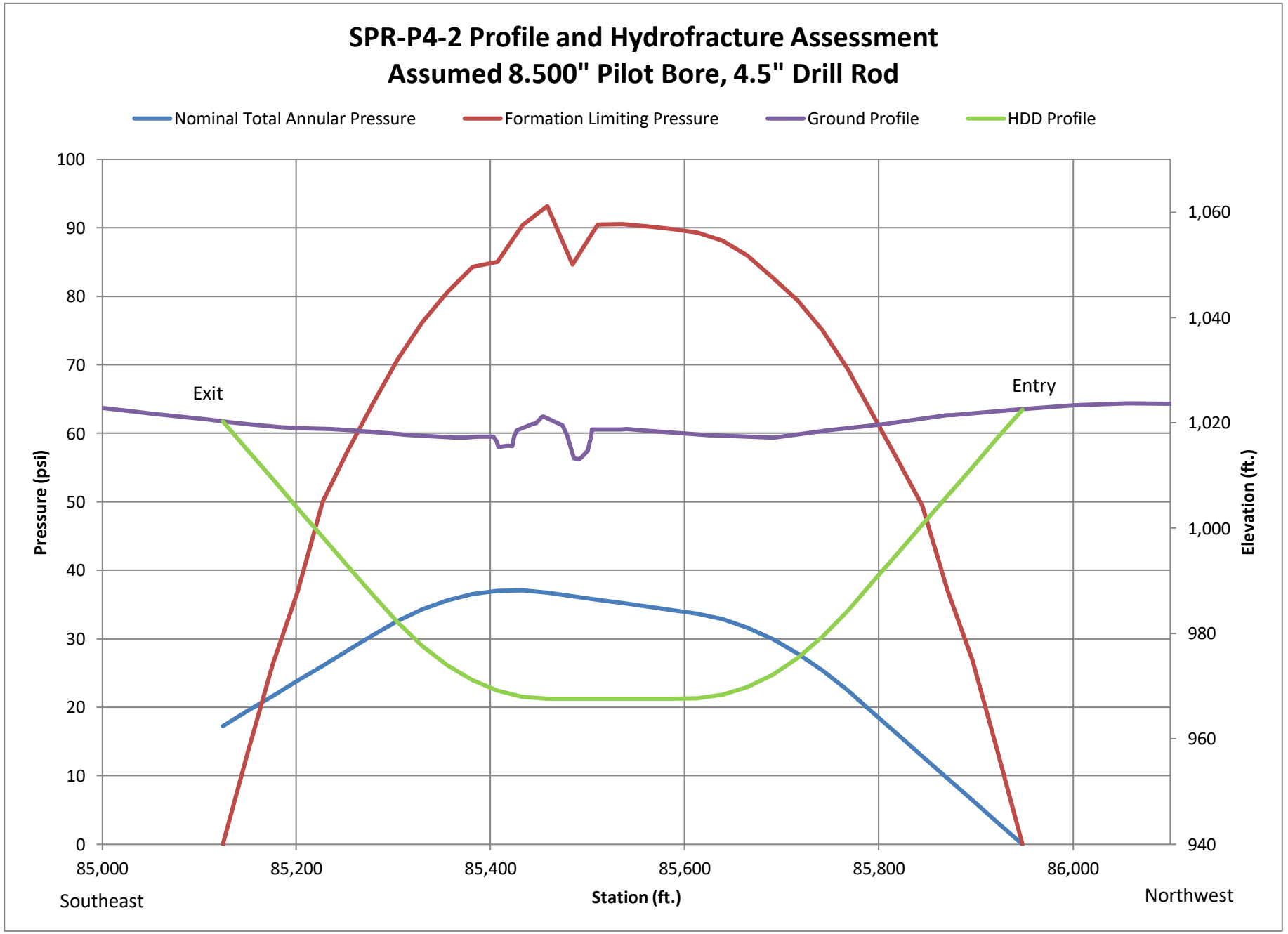

SPR-P4-2 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
Southeast
Northwest
100
90
80
70
60
50
40
30
20
10
0
1,060
1,040
1,020
1,000
980
960
940
85,000
85,200
85,400
85,600
85,800
86,000

FIGURE 1

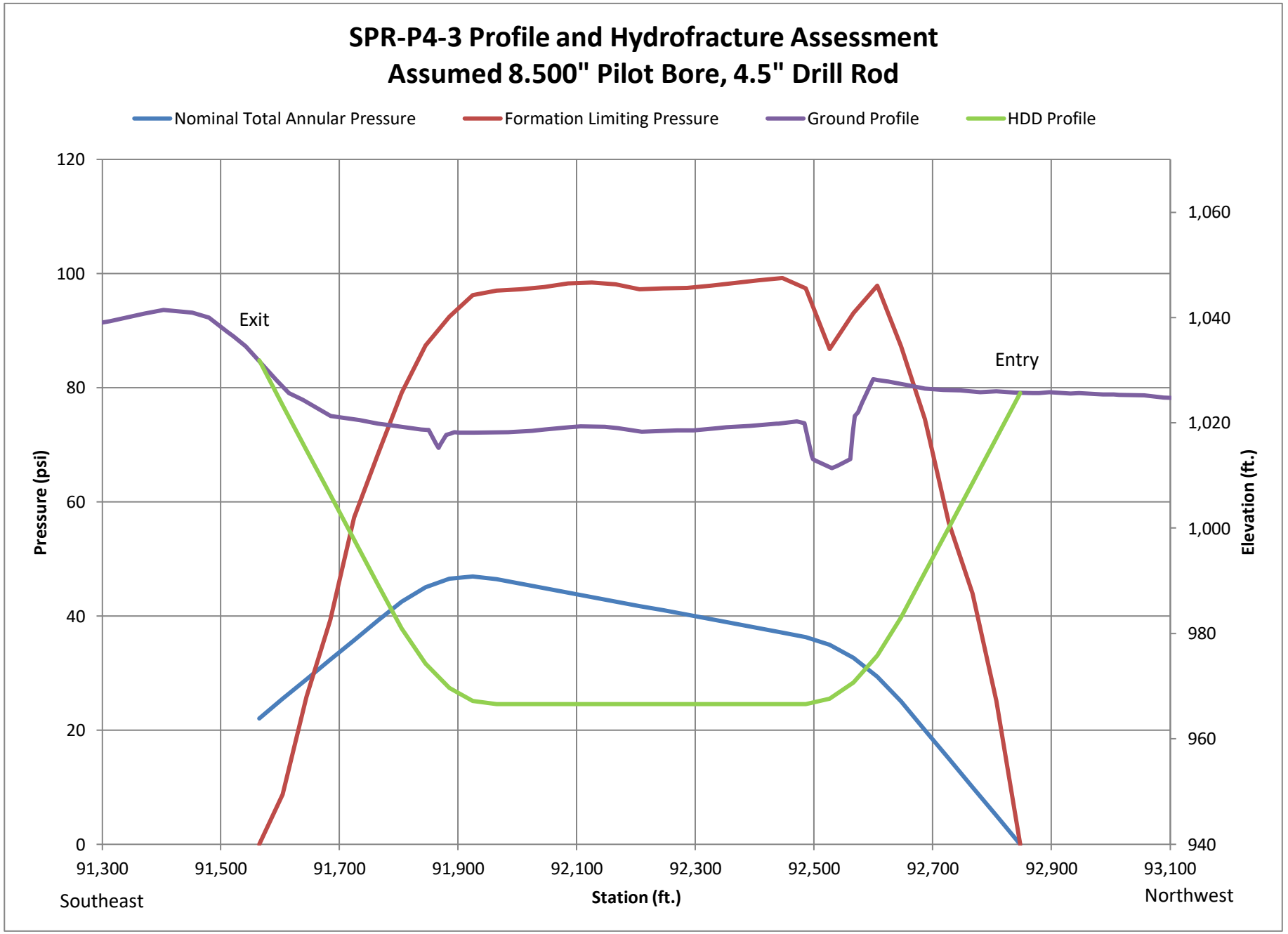

SPR-P4-3 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
120
100
80
60
40
20
0
1,060
1,040
1,020
1,000
980
960
940
91,300
91,500
91,700
91,900
92,100
92,300
92,500
92,700
92,900
93,100
Station (ft.)
Southeast
Northwest

FIGURE 1

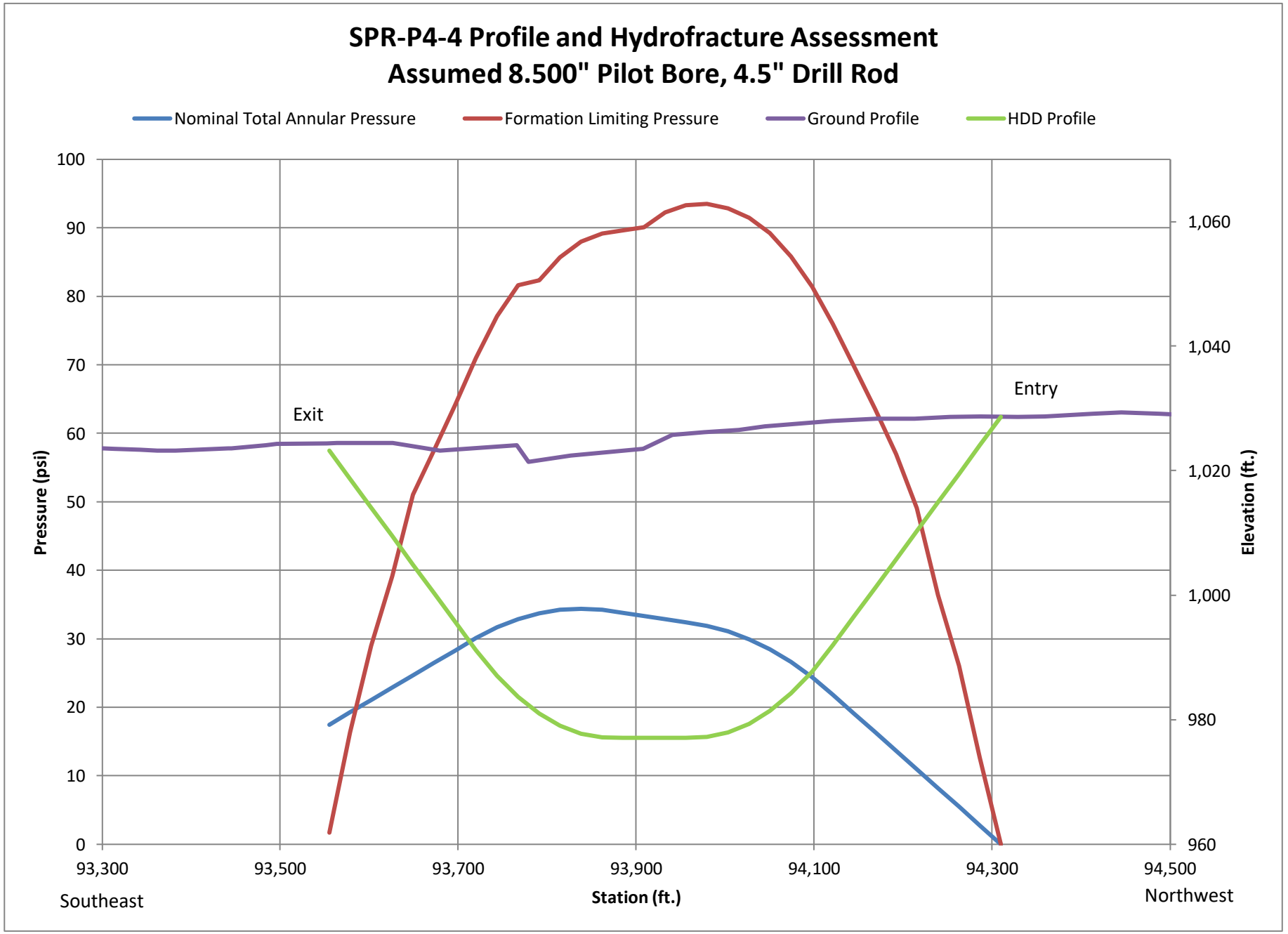

SPR-P4-4 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
Southeast
Northwest
0
10
20
30
40
50
60
70
80
90
100
960
980
1,000
1,020
1,040
1,060
93,300
93,500
93,700
93,900
94,100
94,300
94,500

FIGURE 1

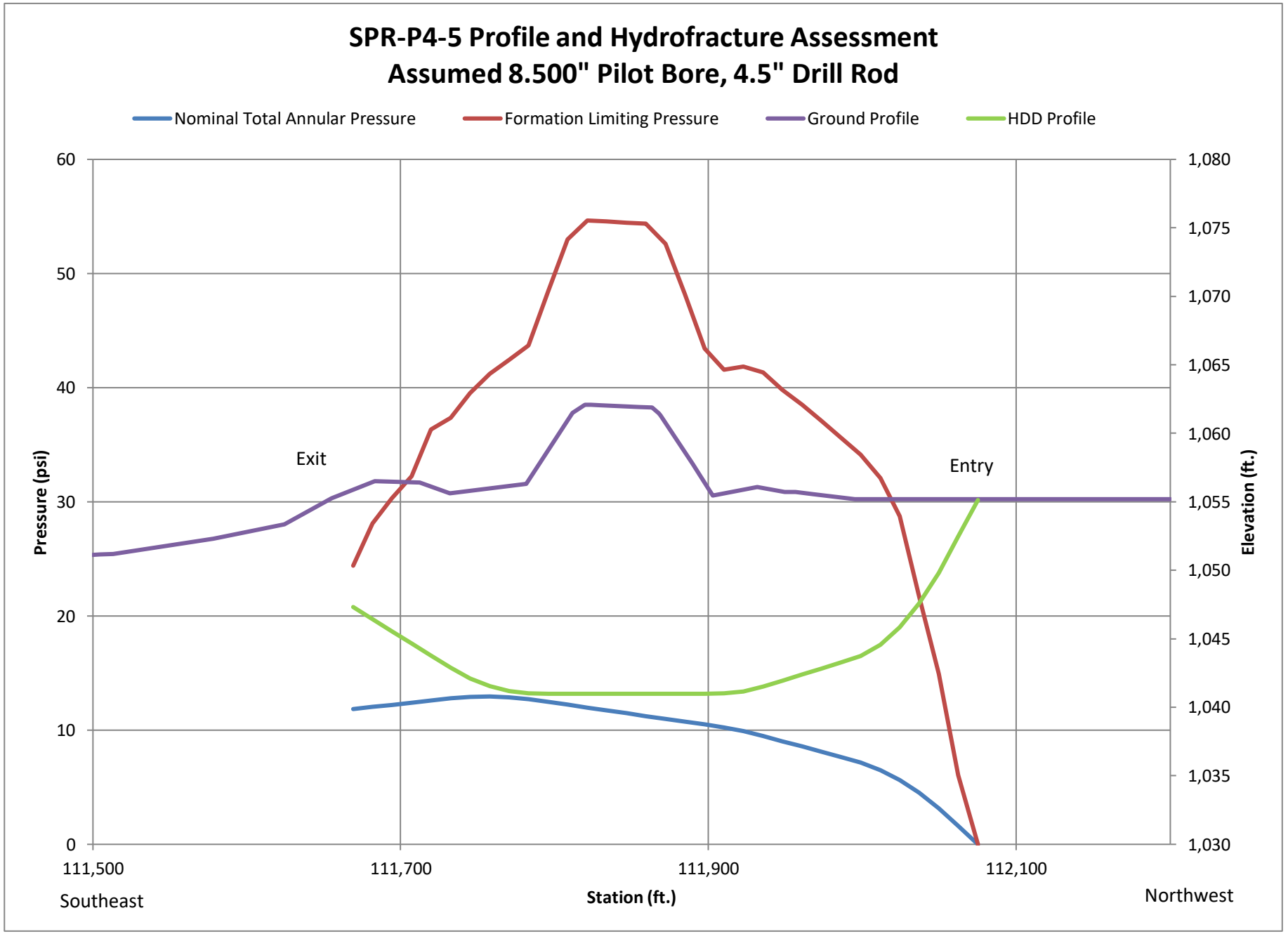

SPR-P4-5 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Pressure (psi)
Elevation (ft.)
60
50
40
30
20
10
0
1,080
1,075
1,070
1,065
1,060
1,055
1,050
1,045
1,040
1,035
1,030
Exit
Entry
111,500
111,700
111,900
112,100
Southeast
Station (ft.)
Northwest

FIGURE 1

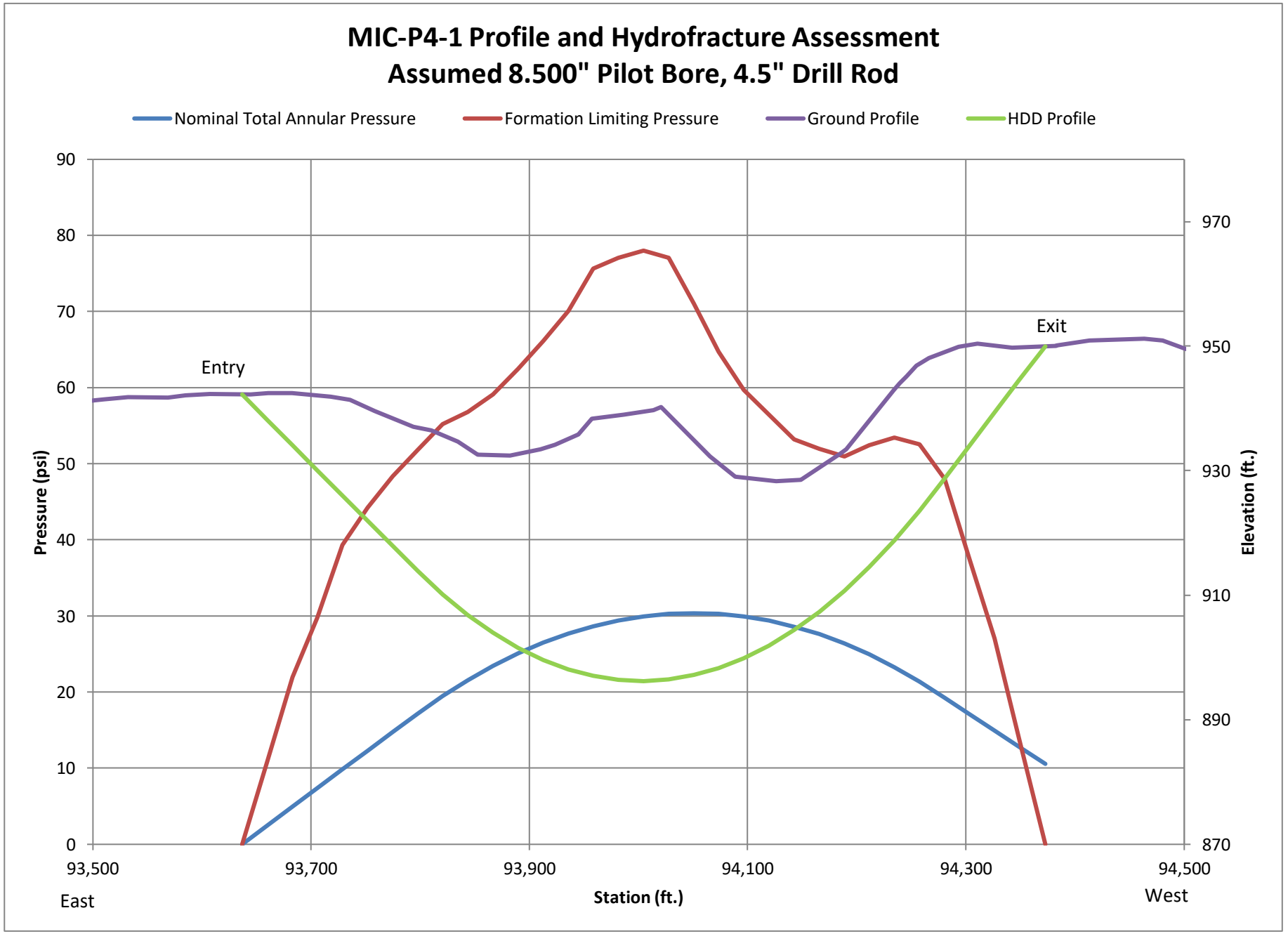

MIC-P4-1 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
East
West
0
10
20
30
40
50
60
70
80
90
870
890
910
930
950
970
93,500
93,700
93,900
94,100
94,300
94,500

FIGURE 1

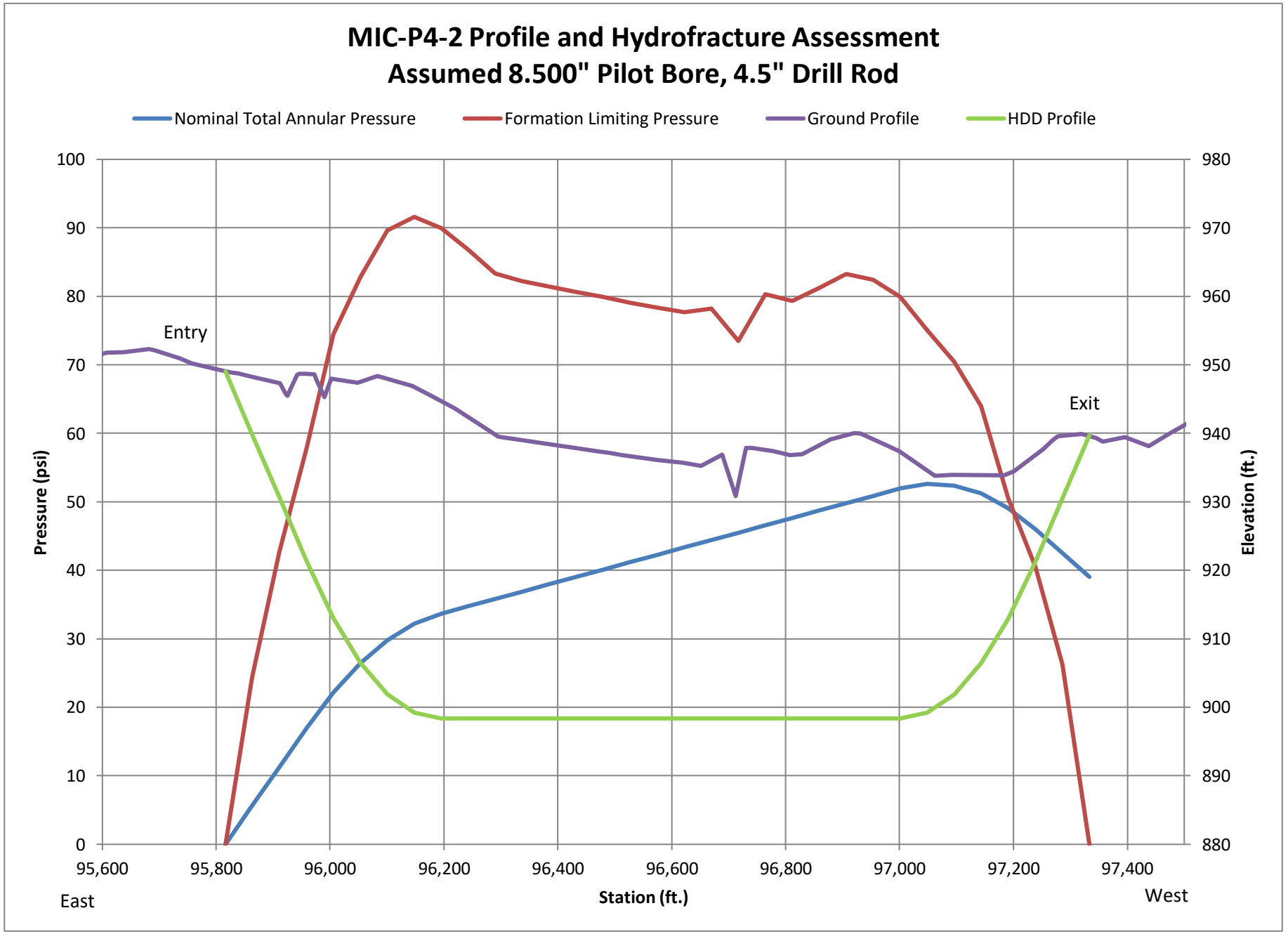

MIC-P4-2 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
East
West
100
90
80
70
60
50
40
30
20
10
0
980
970
960
950
940
930
920
910
900
890
880
95,600
95,800
96,000
96,200
96,400
96,600
96,800
97,000
97,200
97,400

FIGURE 1

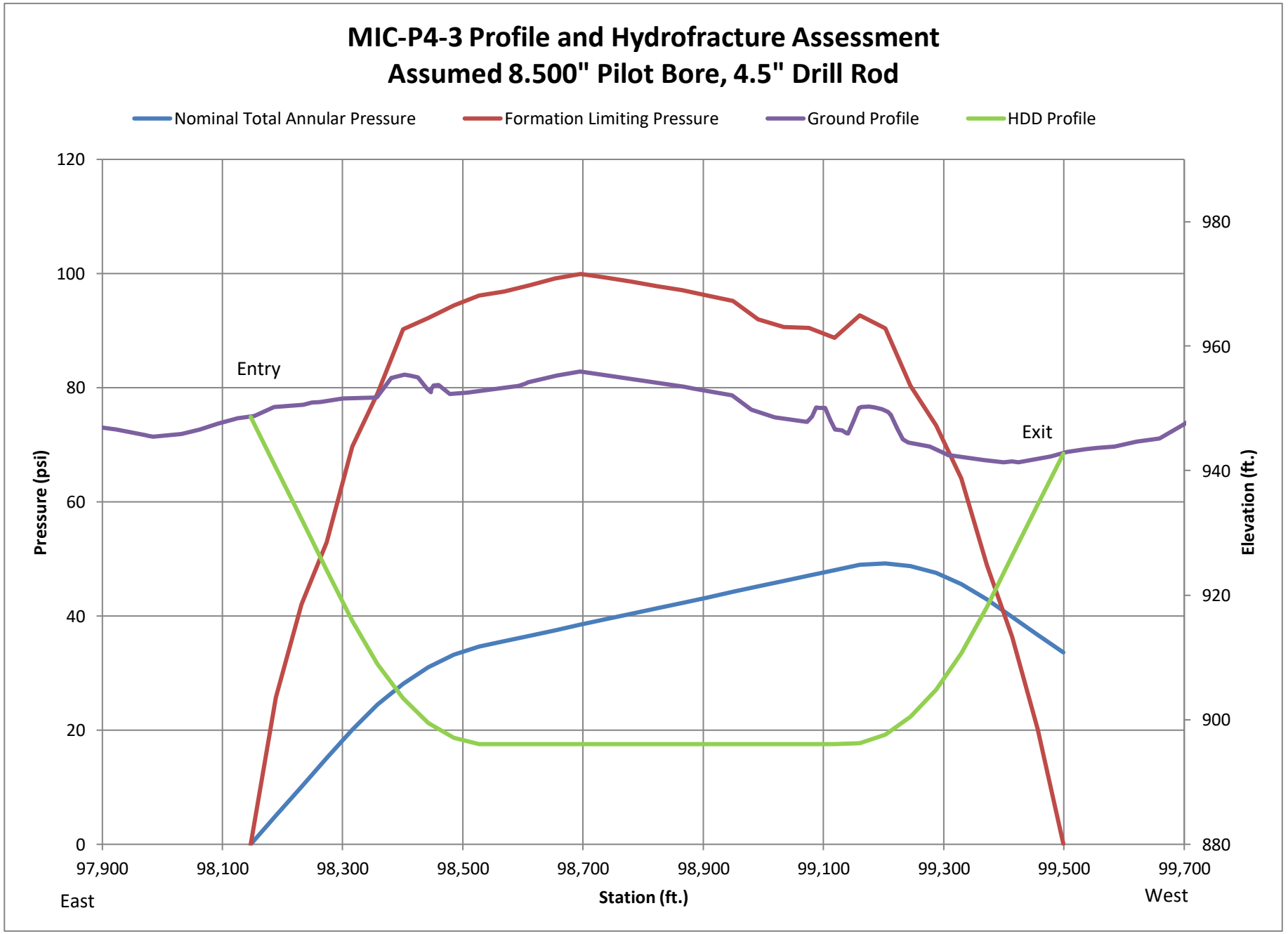

MIC-P4-3 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Entry
Exit
Pressure (psi)
Elevation (ft.)
Station (ft.)
East
West
120
100
80
60
40
20
0
980
960
940
920
900
880
97,900
98,100
98,300
98,500
98,700
98,900
99,100
99,300
99,500
99,700

FIGURE 1

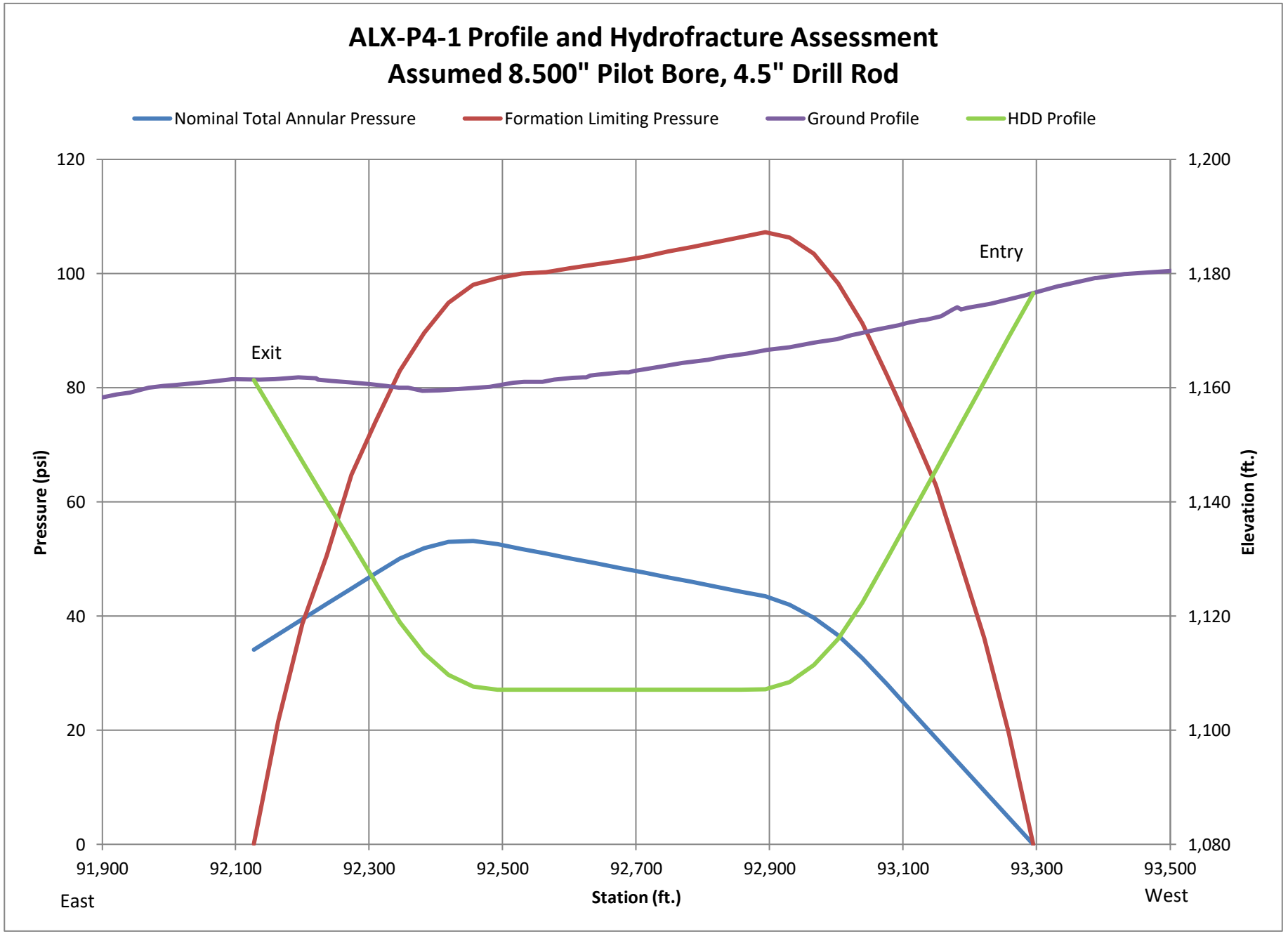
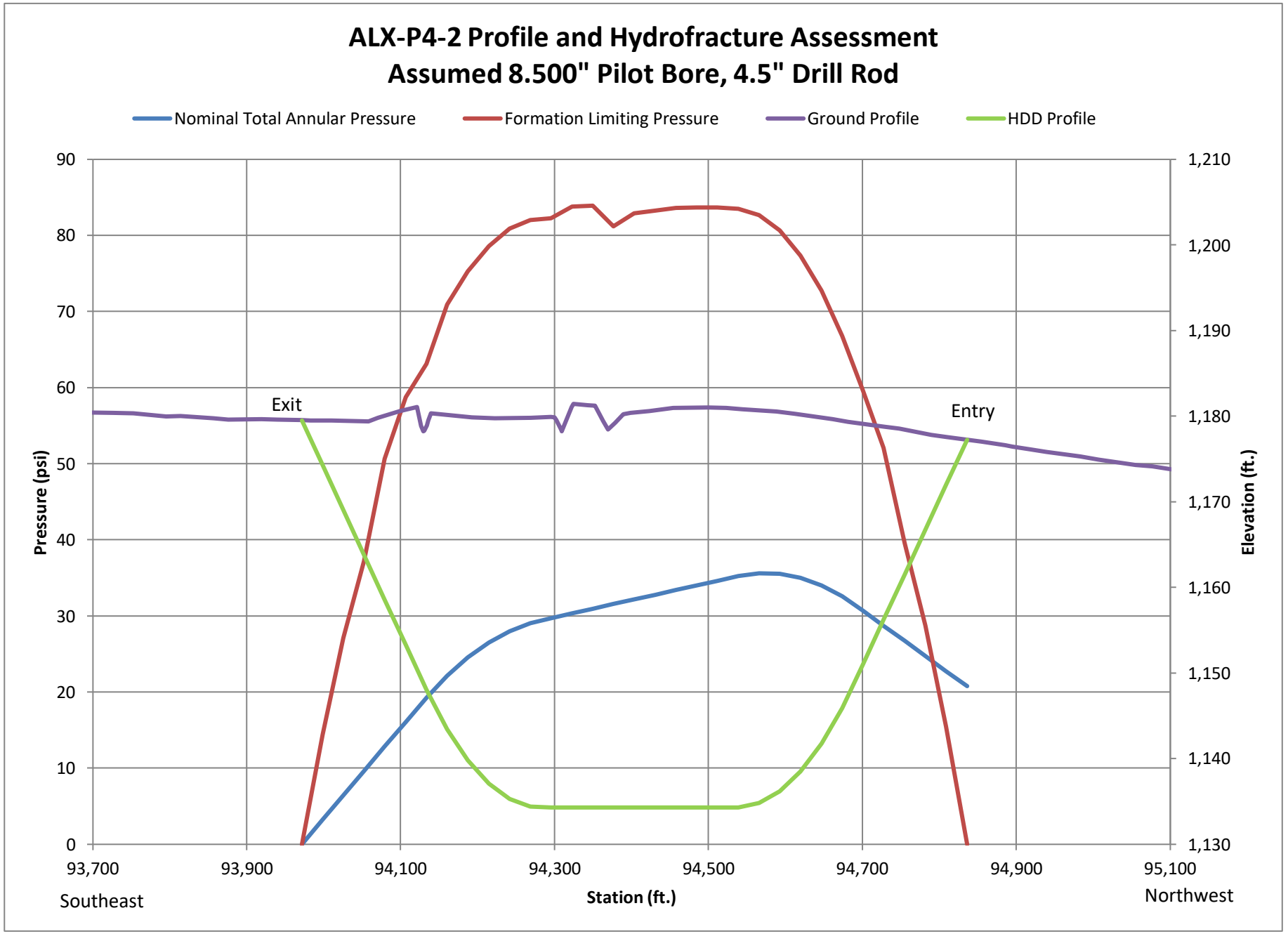

ALX-P4-1 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
East
West
120
100
80
60
40
20
0
1,200
1,180
1,160
1,140
1,120
1,100
1,080
91,900
92,100
92,300
92,500
92,700
92,900
93,100
93,300
93,500

FIGURE 1


ALX-P4-2 Profile and Hydrofracture Assessment
Assumed 8.500" Pilot Bore, 4.5" Drill Rod
Nominal Total Annular Pressure
Formation Limiting Pressure
Ground Profile
HDD Profile
Exit
Entry
Pressure (psi)
Elevation (ft.)
Station (ft.)
Southeast
Northwest
0
10
20
30
40
50
60
70
80
90
1,130
1,140
1,150
1,160
1,170
1,180
1,190
1,200
1,210
93,700
93,900
94,100
94,300
94,500
94,700
94,900
95,100

Attachment 4
Northern's Procedures for HDD

Northern Natural Gas
Plan for Inadvertent Release of Drilling Mud

The purpose of this plan is to outline the company, contractor and third-party inspector responsibilities pertaining to preparation, monitoring, management and clean-up of inadvertent releases of drilling mud from horizontal directional drill (HDD) activities. The plan will be provided to company, contractor and inspection personnel prior to the commencement of HDD activities.

Contractors are required to conduct HDD activities in compliance with the applicable environmental guidelines set forth in the Federal Energy Regulatory Commission's Upland Erosion Control, Revegetation, and Maintenance Plan (FERC Plan) and Wetland and Waterbody Construction and Mitigation Procedures (FERC Procedures) and any applicable local, state and federal regulations concerning HDD activities.

1.0 Requirements Prior to On-site HDD Activities

1.1 Through the environmental permitting process and/or consultation with the applicable state agency, Northern will determine agency-specific requirements prior to beginning of HDD activities.

1.2 The environmental inspector (EI) will conduct an on-site tailgate meeting with the contractor HDD crew and inspection personnel to review the following: spill prevention; inadvertent release monitoring responsibilities, containment and clean-up procedures; approved drilling fluids; and required notifications.

1.3 The contractor will have sufficient spill containment material and supplies as required to contain any inadvertent release. These may include, but are not limited to, pumps and hoses, sandbags, straw bales, silt fence and turbidity curtain.

1.4 The contractor will have a vacuum truck on-site or on-call within a reasonable distance to assist with recovery of inadvertent release drilling mud.

1.5 The contractor will provide Northern Natural Gas with safety data sheets (SDS) for the drilling mud and any additives. Copies of all safety data sheets will be kept on site.

1.6 The contractor will submit for approval, through the Request For Information (RFI) process, all proposed HDD drilling mud additives prior to bringing them onsite. The company representative will route the RFI for approval to the environmental specialist responsible for permitting the project.

1.6.1 Only drilling fluids listed on the ANSI/NSF 60 list will be approved.

1.6.2 The environmental specialist may further restrict approvals based upon site and regulatory conditions.

1.6.3 FERC must also approve the drilling fluids when they are to be utilized on a FERC-filed project.

2.0 Monitoring Requirements

2.1 The contractor will assign personnel to continuously monitor the HDD activities. This includes walking the HDD path between entry and exit points (where practical) and visually inspecting for inadvertent releases. At road crossings, the contractor will ensure monitoring is conducted in accordance with all applicable safety requirements. In areas of open water, at a minimum, visual inspections will be conducted from the waterbody banks. The contractor is responsible for determining a safe monitoring method.

2.2 The EI will document inadvertent release incidents including initial containment and final clean-up and the information will be documented using EA 380.203a, Appendix A: Environmental Inspection Daily Report.

2.3 The EI will monitor all initial inadvertent release containment and final clean-up activities to ensure that they are completed safely, promptly and in compliance with all project permits.

3.0 Initial Inadvertent Release Management

3.1 Upon discovery of an inadvertent release, the drilling operation will be immediately stopped. Any inadvertent release will be immediately contained by appropriate means.

3.1.1 The structure will be constructed from the on-site material and supplies in a manner which minimizes impact to the surrounding environment.

3.1.2 The structure type and size will be determined by the location and severity of the release.

3.1.3 In cases where inadvertent releases occur along stream banks, turbidity curtains will be used in an effort to contain the mud within the bank area.

3.2 *Report all inadvertent releases to the OCC (888) 367-6671 who will in turn contact the DES, or designee.

3.2.1 The DES or designee will determine if the event is reportable, and if so, the DES or designee will report the inadvertent release to the appropriate agency or agencies.*

3.3 *The drilling mud will be cleaned up and removed for proper disposal in compliance with the applicable state and federal regulations. The containment structure will remain in place until the HDD operation is complete.*

3.4 *Northern will advise the contractor when the drilling operation is allowed to resume.*

3.5 Upon resuming drilling operations, the contractor will reduce the gallons-per-minute of drilling mud to minimize the release of drilling mud to the surface.

3.6 If inadvertent release flows cannot be sufficiently decreased, and environmental conditions permit, a viscosifier (additive) may be added to the drilling mud to promote borehole stability.

3.7 In cases where the release cannot be entirely stopped, the operation may proceed with environmental specialist's approval, provided the mud is continuously

recovered from within the containment structure and the containment structure remains sufficient for site conditions.

3.8 If the operation is deemed unsuccessful, the existing bore hole will be plugged and/or abandoned, dependent on the size and location, and another attempt at boring will be made. The subsequent attempt will occur within the environmentally cleared and approved right of way (ROW). Any plugging and/or abandonment of a HDD hole will be in compliance with all applicable state and federal permits, laws, and regulations and is subject to Northern approval.

4.0 Requirements Following HDD Completion

4.1 Upon completion of drilling activities, all containment structures and drilling mud remaining within the structures will be removed. The inadvertent release site will be returned to the original grade and, where applicable, the disturbed area will be reseeded and mulched. The EI will monitor these activities to ensure proper clean-up and restoration.

4.2 All drilling mud captured as a result of inadvertent release clean-up, including that captured within the HDD entry and exit pits, will be removed from the site for proper disposal.

4.3 The contractor will provide Northern with information of the proposed disposal site for drilling mud for approval.

4.3.1 *Land application is only permitted in certain locations with prior landowner approval obtained by Northern's right of way department. The environmental specialist will provide any specific restrictions and/or requirements.*

4.3.2 *Drilling mud that is to be disposed of at a permitted landfill must be tested and meet all parameters required by the receiving landfill.*

4.3.3 *For projects in South Dakota, all drilling mud must be disposed of at a regional landfill, unless otherwise approved by the environmental specialist. Refer to EA 500.110 South Dakota State Specific Guidelines.*

5.0 REVISION HISTORY:

Responsibility for Procedure:

Address all questions on this procedure to the director of environmental affairs.

Revisions:

Rev. 0	12/14/12	Publish Only: Original procedure released.
Rev. 1	02/07/18	Publish Only: Revised to reflect FERC guidance
Rev. 2	01/13/22	Publish Only: Revised to document approval of drilling fluids
Rev. 3	11/15/23	Publish Only: Revised to document disposal of drilling fluids

Environmental Expectations for HDD Crossings

Date: _____ **Project:** _____

Contractor: _____ **WO #:** _____

Foreman: _____ **Env. Insp.:** _____

Crew Members (Print, Sign and Date)	Tailgate Meeting Agenda
	• Review environmental procedure 380.203i, Appendix I: Plan for Inadvertent Release of Drilling Mud. • List names of personnel assigned to monitor for inadvertent releases _____ _____ _____ _____ _____ • Confirm location(s) of on-site containment material _____ _____ _____ • Confirm the location of the vacuum truck _____ _____ • *Confirm approved drilling fluids* _____ _____ _____ _____ • Confirm the mud disposal site _____ _____ • List the agency(ies) to be notified _____ _____

Complete a new form whenever crew, drilling fluids, or conditions change

Project:		WO:	

Drill:		Date:		Footage:		Depth:		Phase:	

Drilling Fluids:		
		Approved by DES
		Approved by DES
		Approved by DES

Person Walking Drill Path		Role		Frequency		IR Detected	

NSA#	Time	1:00	3:00	5:00	7:00	9:00	11:00	13:00	15:00	17:00	19:00	21:00	23:00	Daytime Average	Nightime Average
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!
														#DIV/0!	#DIV/0!

Notes:

Attachment 5
HDD Plans and Profiles and Site-Specific Plans
Filed as CUI//PRIV – DO NOT RELEASE

Appendix 1B
Federal and State Agency Contact List and Stakeholders for both Projects

Contact Name	(Blank)	Contact Title	Contact Organization	PO BOX	Address Line 1	Address Line 2	City	Zip	Zip2	State	Docket
Bill Albrecht		Regional President	Adams Publishing Group of East Central Minnesota		4095 Coon Rapids Boulevard		Coon Rapids	55433		MN	
John Eddins		Program Analyst	Advisory Council on Historic Preservation		401 F Street NW, Suite 308		Washington, D.C	20001		DC	
Annice Sevett		Library Director	Albert Lea Public Library		211 E. Clark Street		Albert Lea	56007		MN	
Crystal Miller		Publisher	Albert Lea Tribune		808 W Front Street		Albert Lea	56007		MN	
Durell Cooper		Chairman	Apache Tribe of Oklahoma		511 East Colorado		Anadarko	73005		OK	
Robert Blanchard		Chairman	Bad River Band of the Lake Superior Tribe of Chippewa Indians of the Bad River Reservation, Wisconsin		72682 Maple Street		Ashland	54806		WI	
Edith Leoso		THPO	Bad River Band of the Lake Superior Tribe of Chippewa Indians of the Bad River Reservation, Wisconsin	PO Box 39			Odanah	54861		WI	
			Britt News Tribune		42 Center Street West		Britt	50423		IA	
Allison Kletscher		Local Government Unit	Brown County (Represents Watowan County SWCD)	PO Box 248	14 South State Street		New Ulm	56073		MN	
Tammie Poitra			Bureau of Indian Affairs – Midwest Region		5600 W. American Boulevard, Suite 500		Bloomington	55437		MN	
			Cambridge Public Library		111 N Delwood Street		Cambridge	55008		MN	
David Hemze		County Administrator	Carver County		602 East 4th Street		Chaska	55318		MN	
Lisa Anderson		Commissioner, District 1	Carver County Board of Commissioners		602 East 4th Street		Chaska	55318		MN	
Tom Workman		Commissioner, District 2	Carver County Board of Commissioners		602 East 4th Street		Chaska	55318		MN	
Matt Udermann		Commissioner, District 3	Carver County Board of Commissioners		602 East 4th Street		Chaska	55318		MN	
Tim Lynch		Commissioner, District 4	Carver County Board of Commissioners		602 East 4th Street		Chaska	55318		MN	
John Fahey		Commissioner, District 5	Carver County Board of Commissioners		602 East 4th Street		Chaska	55318		MN	
Abigail Ernst		Local Government Unit	Carver County Water Management Organization		600 East Fourth Street		Chaska	55318		MN	
Aaron Bernstein		Director	CDC-National Center for Environmental Health		4770 Buford Hwy NE		Atlanta	30341		GA	
Max Bear		THPO	Cheyenne and Arapaho Tribes, Oklahoma		700 Black Kettle Boulevard		Concho	73022		OK	
Reggie Wassana		Governor	Cheyenne and Arapaho Tribes, Oklahoma		700 Black Kettle Boulevard		Concho	73022		OK	
Nikki McDermond-Spies		Local Government Unit	City of Credit River (Delegated to Hakanson Anderson Associates)		3601 Thurston Avenue		Anoka	55303		MN	
Valerie Neppl		Groundwater Protection Unit Supervisor	Dakota County		14955 Galaxie Avenue		Apple Valley	55124		MN	
Mike Slavic		District 1 Representative	Dakota County Board of Commissioners		1590 Highway 55		Hastings	55033		MN	
Joe Atkins		District 2 Representative	Dakota County Board of Commissioners		1590 Highway 55		Hastings	55033		MN	
Laurie Halverson		District 3 Representative	Dakota County Board of Commissioners		1590 Highway 55		Hastings	55033		MN	
William Droste		District 4 Representative	Dakota County Board of Commissioners		1590 Highway 55		Hastings	55033		MN	
Liz Workman		District 5 Representative	Dakota County Board of Commissioners		1590 Highway 55		Hastings	55033		MN	
Mary Liz Holberg		District 6 Representative	Dakota County Board of Commissioners		1590 Highway 55		Hastings	55033		MN	
Mary Hamann-Roland		District 7 Representative	Dakota County Board of Commissioners		1590 Highway 55		Hastings	55033		MN	
Jeff Dunn		Water Resource Engineer	Dakota County Exension & Conservation Center		4100 220th Street West #103		Farmington	55024		MN	
Heidi Welsch		County Manager	Dakota County Office of the County Manager		1590 Highway 55		Hastings	55033		MN	
David Holmen		Local Government Unit	Dakota County Soil and Water Conservation District		4100 220th Street West #102		Farmington	55024		MN	
Thomas Mariani		Chief, Environmental Enforcement Section	Dept. of Justice - Environment and Natural Resources Division		950 Pennsylvania Avenue NW		Washington, D.C	20530			
			DOE - Office of Oil and Natural Gas		Forrestal Bldg, 1000 Independence Ave SW		Washington, D.C	20585			
			DOI Indian Affairs-Division of Energy and Mineral Development		13922 Denver West Parkway, Suite 200		Lakewood	80401		CO	
Stephen G. Tryon		Director	DOI - Office of Environmental Policy and Compliance		1849 C Street NW MS 5538		Washington, D.C	20240			
Martha Williams		Director	DOI - USFWS		1849 C Street NW, Room 3331		Washington, D.C	20240			
			Elko New Market Library		110 J. Roberts Way		Elko New Market	55054		MN	
			Fairmount Sentinel	PO Box 681	64 Downtown Plaza		Fairmount	56031		MN	
			Farmington Public Library		508 3rd Street		Farmington	55024		MN	
Garrie Kills-A-Hundred		THPO	Flandreau Santee Sioux Tribe of South Dakota	PO Box 283			Flandreau	57028		SD	
Anthony Reider		President	Flandreau Santee Sioux Tribe of South Dakota	PO Box 283			Flandreau	57028		SD	
Bruce Savage		Chairman	Fond du Lac Band of the Minnesota Chippewa Tribe		1720 Big Lake Rd		Cloquet	55720		MN	
Evan Schroeder		THPO	Fond du Lac Band of the Minnesota Chippewa Tribe		1720 Big Lake Rd		Cloquet	55720		MN	
Michael Blackwolf		THPO	Fort Belknap Indian Community of the Fort Belknap Reservation of Montana		656 Agency Main Street		Harlem	59526		MT	
Jeffery Stiffarm		President	Fort Belknap Indian Community of the Fort Belknap Reservation of Montana		656 Agency Main Street		Harlem	59526		MT	
Rachel Wehner		Local Government Unit	Freeborn County	PO Box 1147	411 Broadway South		Albert Lea	56007		MN	
Melanie Aeschliman		County Administrator	Freeborn County		411 Broadway South		Albert Lea	56007		MN	
Brad Edwin		Commissioner	Freeborn County Board of Commissioners		72458 239th Street		Albert Lea	56007		MN	
Christopher Shoff		Commissioner	Freeborn County Board of Commissioners		405 Garden Road		Albert Lea	56007		MN	
Dawn Kaasa		Commissioner	Freeborn County Board of Commissioners		81025 140th Street		Glenville	56036		MN	
John Forman		Commissioner	Freeborn County Board of Commissioners		117 Bridge Avenue		Albert Lea	56007		MN	
Nicole Eckstrom		Commissioner	Freeborn County Board of Commissioners		72099 Wineglass Road		Albert Lea	56007		MN	
			Globe Gazette		687 S Taft Avenue, Suite 2		Mason City	50401		IA	

Contact Name	(Blank)	Contact Title	Contact Organization	PO BOX	Address Line 1	Address Line 2	City	Zip	Zip2	State	Docket
Robert Deschampe		Chairman	Grand Portage Band of the Minnesota Chippewa Tribe		83 Steven Road		Grand Portage	55605		MN	
Rob Hull		THPO	Grand Portage Band of the Minnesota Chippewa Tribe	PO Box 428			Grand Portage	55605		MN	
			Great River Regional Library - Little Falls		108 NE 3rd Street		Little Falls	56345		MN	
			Great River Regional Library - Richmond		63 Hall Avenue SW		Richmond	56368		MN	
Rachel Martinez		County Attorney	Hancock County		855 State Street		Garner	50438		IA	
Florence Greiman		Chair	Hancock County Board of Supervisors		855 State Street		Garner	50438		IA	
Osmund Jermelan		Supervisor	Hancock County Board of Supervisors		855 State Street		Garner	50438		IA	
Gary Rayhons		Supervisor	Hancock County Board of Supervisors		855 State Street		Garner	50438		IA	
Krisin Fontenot		Director	HUD - Office of Environment and Energy		451 7th Street SW, Room 7212		Washington, D.C	20410			
John Doershuk		Archaeologist	Iowa - The Office of the State Archaeologist		700 South Clinton Street		Iowa City	52242		IA	
Casey Laskowski		Environmental Specialist	Iowa DNR - Conservation and Recreation Division		6200 Park Avenue		Des Moines	50321		IA	
Missty Slater		Chairperson	Iowa Tribe of Kansas and Nebraska		3345 B Thrasher Rd		White Cloud	66094		KS	
Alan Kelley		THPO	Iowa Tribe of Kansas and Nebraska		3345 B Thrasher Rd		White Cloud	66094		KS	
Amanda Usher		County Administrator	Isanti County		555 18th Avenue SW		Cambridge	55008		MN	
Holly Nelson		Local Government Unit	Isanti County		555 18th Avenue SW		Cambridge	55008		MN	
Bill Berg		Commissioner, District 1	Isanti County Board of Commissioners		555 18th Avenue SW		Cambridge	55008		MN	
Alan Duff		Commissioner, District 2	Isanti County Board of Commissioners		555 18th Avenue SW		Cambridge	55008		MN	
Kristi LaRowe		Commissioner, District 3	Isanti County Board of Commissioners		555 18th Avenue SW		Cambridge	55008		MN	
Todd Christensen		Commissioner, District 4	Isanti County Board of Commissioners		555 18th Avenue SW		Cambridge	55008		MN	
Steve Westerberg		Commissioner, District 5	Isanti County Board of Commissioners		555 18th Avenue SW		Cambridge	55008		MN	
			Isanti County News		930 South Cleveland		Cambridge	55008		MN	
Ryan Krosch		County Administrator	Jackson County		405 Fourth Street		Jackson	56143		MN	
Kent Bargfrede		Commissioner, District 1	Jackson County Board of Commissioners		405 Fourth Street		Jackson	56143		MN	
Don Wachal		Commissioner, District 2	Jackson County Board of Commissioners		405 Fourth Street		Jackson	56143		MN	
Roger Pohlman		Commissioner, District 3	Jackson County Board of Commissioners		405 Fourth Street		Jackson	56143		MN	
Phil Nasby		Commissioner, District 4	Jackson County Board of Commissioners		405 Fourth Street		Jackson	56143		MN	
Larry Liepold		Commissioner, District 5	Jackson County Board of Commissioners		405 Fourth Street		Jackson	56143		MN	
			Jackson County Pilot	PO Box 208			Jackson	56143		MN	
			Jackson Public Library		311 3rd Street		Jackson	56143		MN	
Daniel Bartosch		Local Government Unit	Jackson Soil and Water Conservation District		603 South Highway 86		Lakefield	56150		MN	
Doreen Baker		President	Keweenaw Bay Indian Community, Michigan		16429 Beartown Road		Baraga	49908		MI	
Alden Connor		THPO	Keweenaw Bay Indian Community, Michigan		16429 Beartown Road		Baraga	49908		MI	
			La Crescent Public Library		321 Main Street		La Crescent	55947		MN	
Mike Poellinger		Mayor	La Crescent, MN		315 Main St		La Crescent	55947		MN	
John Johnson		President	Lac du Flambeau Band of Lake Superior Chippewa Indians of the Lac du Flambeau Reservation of Wisconsin		418 Little Pines Road		Lac du Flambeau	54538		WI	
Sarah Thompson		THPO	Lac du Flambeau Band of Lake Superior Chippewa Indians of the Lac du Flambeau Reservation of Wisconsin	PO Box 67			Lac du Flambeau	54538		WI	
James Williams		Chairman	Lac Vieux Desert Band of Lake Superior Chippewa Indians of Michigan		N4698 US Highway 45		Watersmeet	49969		MI	
Alina Shively		THPO Director	Lac Vieux Desert Band of Lake Superior Chippewa Indians of Michigan	P.O. Box 249			Watersmeet	49969		MI	
Faron Jackson		Chairman	Leech Lake Band of the Minnesota Chippewa Tribe		190 Sailstar Drive		Cass Lake	56633		MN	
Gina Lemon		THPO	Leech Lake Band of the Minnesota Chippewa Tribe		190 Sailstar Drive		Cass Lake	56633		MN	
Cheyanne St. John		THPO	Lower Sioux Indian Community in the State of Minnesota	Po Box 308	39527 Reservation Highway 1		Morton	56270		MN	
Robert Larsen		President	Lower Sioux Indian Community in the State of Minnesota		39527 Reservation Highway 1		Morton	56270		MN	
			Marine Community Library		121 Judd Street		Marine on Saint C	55047		MN	
Kevin Kristenson		Commissioner, District 1	Martin County Board of Commissioners		201 Lake Avenue		Fairmount	56031		MN	
Jaime Bleess		Commissioner, District 2	Martin County Board of Commissioners		201 Lake Avenue		Fairmount	56031		MN	
Joe Loughmiller		Commissioner, District 3	Martin County Board of Commissioners		201 Lake Avenue		Fairmount	56031		MN	
Richard Koons		Commissioner, District 4	Martin County Board of Commissioners		201 Lake Avenue		Fairmount	56031		MN	
Billeye Rabbe		Commissioner, District 5	Martin County Board of Commissioners		201 Lake Avenue		Fairmount	56031		MN	
			Martin County Library - Sherburn		21 East First Street		Sherburn	56171		MN	
Dustin Benes		Local Government Unit	Martin Soil and Water Conservation District		923 North State Street		Fairmount	56031		MN	
John Pazlar		Chair	May Township, Washington County	P.O. Box 60			Marine on Croix	55047	0060	MN	
James Drake		Natural Heritage Review Specialist	MDNR - Division of Ecological & Water Resources	Box 25	500 Lafayette Road		St. Paul	55155		MN	
Lisa Joyal		Natural Heritage Information System Data Distribution Coordinator	MDNR - Division of Ecological & Water Resources		500 Lafayette Road		St. Paul	55155		MN	
Joseph Henderson		Director	MDNR - Division of Lands and Minerals		500 Lafayette Road		St. Paul	55155		MN	
Susan Damon		Assistant Director	MDNR - Division of Lands and Minerals		500 Lafayette Road		St. Paul	55155		MN	

Contact Name	(Blank)	Contact Title	Contact Organization	PO BOX	Address Line 1	Address Line 2	City	Zip	Zip2	State	Docket
Haley Byron			MDNR - Threatened and Endangered Species		117 Rogers Street		Mankato	56001		MN	
Melissa Collins			MDNR - Threatened and Endangered Species		1200 Warner Road		St. Paul	55106		MN	
Tom Hovey		Unit Supervisor	MDNR - Water Appropriations Permit Program		520 Lafayette Road North		St. Paul	55155		MN	
Cynthia Warzecha		Energy Projects Planner	MDNR-Ecological and Water Resources Division		500 Lafayette Road		St Paul	55155		MN	
David Grignon		THPO	Menominee Indian Tribe of Wisconsin		W2908 Tribal Office Loop		Keshena	54135		WI	
Gena Kakkak		Chairwoman	Menominee Indian Tribe of Wisconsin		W2908 Tribal Office Loop		Keshena	54135		WI	
Melanie Benjamin		Chief Executive	Mille Lacs Band of Ojibwe (The Mille Lacs Band of the Minnesota Chippewa Tribe Mille Lacs Band of Ojibwe)		43408 Oodena Drive		Onamia	56359		MN	
Mike Wilson		THPO	Mille Lacs Band of Ojibwe (The Mille Lacs Band of the Minnesota Chippewa Tribe Mille Lacs Band of Ojibwe)		43408 Oodena Drive		Onamia	56359		MN	
John Jaschke		Executive Director	Minnesota Board of Water and Soil Resources		520 Lafayette Road North		St. Paul	55155		MN	
Alyssa Core		Wetland Specialist	Minnesota Board of Water and Soil Resources		520 Lafayette Road North		Saint Paul	55155		MN	
Ben Meyer		Wetland Specialist	Minnesota Board of Water and Soil Resources		520 Lafayette Road North		Saint Paul	55155		MN	
Jed Chesnut		Wetland Specialist	Minnesota Board of Water and Soil Resources		520 Lafayette Road North		Saint Paul	55155		MN	
Dilan Christiansen		Wetland Specialist	Minnesota Board of Water and Soil Resources		110 Second Street South	Suite 307	Waite Park	56387		MN	
Cade Steffenson		Wetland Specialist	Minnesota Board of Water and Soil Resources		1601 Minnesota Drive		Brainerd	56401		MN	
Devin Ryan		Wetland Specialist	Minnesota Board of Water and Soil Resources		607 Main Street	Suite 103	Marshall	56258		MN	
Catherine Chavers		President	Minnesota Chippewa Tribe		15542 State 371 NW		Cass Lake	56633		MN	
Rob Hull		THPO	Minnesota Chippewa Tribe	Po Box 482			Grand Portage	55605		MN	
Mark Wettlaufer		Aquifer Analysis and Watershed Planning Supervisor Source Water	Minnesota Department of Health	PO Box 64975			St. Paul	55164		MN	
Abby Shea		Planner Source Water Proection	Minnesota Department of Health	PO Box 64975			St.Paul	55164		MN	
Anneka Munsell		Hydrologist Source Water Protection	Minnesota Department of Health	PO Box 64975			St.Paul	55164		MN	
Isaac Weston		Cultural Resource Manager	Minnesota Indian Affairs Council		161 Rondo Avenue, Suite 919		St. Paul	55103		MN	
Greg Davids		Representative	Minnesota Legislature		283 State Office Building		St. Paul	55155		MN	
Patti Anderson		Representative	Minnesota Legislature		387 State Office Building		St. Paul	55155		MN	
Peggy Bennett		Representative	Minnesota Legislature		307 State Office Building		St. Paul	55155		MN	
Amanda Gronhovd		Minnesota State Archaeologist	Minnesota Office of the State Archaeologist		328 Kellogg Boulevard		St. Paul	55102		MN	
Leslie Coburn		Environmental Review Coordinator	Minnesota State Historic Preservation Office		50 Sherburne Avenue	Administration Bldg #203	St. Paul	55155		MN	
Sarah Beimers		Program Analyst/SHPO Liaison	Minnesota State Historic Preservation Office		50 Sherburne Avenue	Administration Bldg #203	St. Paul	55155		MN	
Kelly Gragg-Johnson		Environmental Review Specialist	Minnesota State Historic Preservation Office		50 Sherburne Avenue	Administration Bldg #203	St. Paul	55155		MN	
Gene Dornink		Senator	Minnesota State Senate		3411 Minnesota Senate Bldg.		St. Paul	55155		MN	
Jeremy R. Miller		Senator	Minnesota State Senate		2215 Minnesota Senate Bldg.		St. Paul	55155		MN	
Karin Housley		Senator	Minnesota State Senate		2213 Minnesota Senate Bldg.		St. Paul	55155		MN	
Anthony Cortilet		Supervisor, Noxious Weed Program	MN Department of Agriculture		625 Robert Street North		St. Paul	55155		MN	
Margaret Wagner		Environmental Planner	MN Department of Agriculture		625 Robert Street North		St. Paul	55155		MN	
Michelle Gransee		Deputy Commissioner	MN Department of Commernce		85 7th Place East, Suite 280		St. Paul	55101		MN	
Kirsten Barta		MPCA - 401 Certification Program Coor	MN Pollution Control Agency - 401 Water Quality Certification		520 Lafayette Road North		St Paul	55155		MN	
Brenda Vaness		MPCA	MN Pollution Control Agency - Air Resources		520 Lafayette Road North		St. Paul	55155		MN	
Michael Findorff		Engineer	MN Pollution Control Agency - BMP		520 Lafayette Road North		St. Paul	55155		MN	
Todd Smith		Engineer	MN Pollution Control Agency - BMP		520 Lafayette Road North		St. Paul	55155		MN	
Duane Duncanson		MS4 Stormwater Supervisor	MN Pollution Control Agnecy - Stormwater		520 Lafayette Road North		St. Paul	55155		MN	
John Tuma		Commissioner	MN Public Utilities Commission		141 7th Place East, Suite 350		St. Paul	55101		MN	
Katie Sieben		Chairperson	MN Public Utilities Commission		141 7th Place East, Suite 350		St. Paul	55101		MN	
Matt Schuerger		Commissioner	MN Public Utilities Commission		141 7th Place East, Suite 350		St. Paul	55101		MN	
Valerie Means		Commissioner	MN Public Utilities Commission		141 7th Place East, Suite 350		St. Paul	55101		MN	
Matt LeBlanc		County Administrator	Morrison County		213 1st Avenue SE		Little Falls	56345		MN	
Mike LeMieur		Commissioner, District 1	Morrison County Board of Commissioners		213 1st Avenue SE		Little Falls	56345		MN	
Ed Moran		Commissioner, District 2	Morrison County Board of Commissioners		213 1st Avenue SE		Little Falls	56345		MN	
Randy Winscher		Commissioner, District 3	Morrison County Board of Commissioners		213 1st Avenue SE		Little Falls	56345		MN	
Robert Kasper		Commissioner, District 4	Morrison County Board of Commissioners		213 1st Avenue SE		Little Falls	56345		MN	
Greg Blaine		Commissioner, District 5	Morrison County Board of Commissioners		213 1st Avenue SE		Little Falls	56345		MN	
			Morrison County Record		216 SE First Street		Little Falls	56345		MN	
Shannon Wettstein		Local Government Unit	Morrison Soil and Water Conservation District		16776 Heron Road		Little Falls	56345		MN	
Brenda Mallory		Chair	NEPA Oversight Council on Environmental Quality		1600 Pennsylvania Ave NW		Washington, D.C	20500		DC	
			New Richland Public Library		119 Broadway Ave South		New Richland	56072		MN	
Samual Rauch III		Asst. Director for Regulatory Programs	NOAA National Marine Fisheries Service		1315 East-West Highway, Room 14636		Silver Spring	20910		MD	

Contact Name	(Blank)	Contact Title	Contact Organization	PO BOX	Address Line 1	Address Line 2	City	Zip	Zip2	State	Docket
			Norwood Young America Public Library		314 Elm Street West		Norwood Young A	55368		MN	
Lous Aspey		Associate Chief for Conservation	NRCS		14th & Independence Ave SW, Room 5113-S		Washington, D.C	20250			
Gary Kurer		District Conservationist	NRCS - Albert Lea		1400 W Main Street		Albert Lea	56007	1816	MN	
Julie Reberg		District Conservationist	NRCS - Buffalo		311 Brighton Avenue, Suite C		Buffalo	55313		MN	
Gary Larson		District Conservationist	NRCS - Caledonia		805 N Highway 44/76		Caledonia	55921	1067	MN	
John Crellin		Area Resource Conservationist	NRCS - Elk River		14855 Highway 10		Elk River	55330		MN	
Jacob Stitch		District Conservationist	NRCS - Glencoe		1103 Gruenhagen Drive		Glencoe	55336		MN	
NA		District Conservationist	NRCS - Jordan		7151 W 190th Street, Suite 115		Jordan	55352		MN	
Becky Hanson		District Conservationist	NRCS - Northwood		1004 10TH ST S		Northwood	50459		MN	
Justin Olsen		District Conservationist	NRCS - Sparta		820 INDUSTRIAL DR		Sparta	54656	4216	MN	
Josh Bork		District Conservationist	NRCS- Cambridge		110 Buchanan Street N		Cambridge	55008	1773	MN	
Tim Walz		Governor	Office of the Governor		30 State Capitol	75 Rev Dr. Martin Luther King Jr. Blvd	St. Paul	55155		MN	
Kim Reynolds		Governor	Office of the Governor		1007 East Grand Avenue		Des Moines	50319		IA	
			Paynesville Press		211 Washburne Avenue		Paynesville	56362		MN	
Mike Burbach		Editor	Pioneer Press		1 West Water Street	Suite 200	St. Paul	55107		MN	
Randy Dick		Central Region Director	Pipeline and Hazardous Materials Safety Administration		901 Locust Street, Suite 462		Kansas City	64106		MO	
Noah White		THPO	Prairie Island Indian Community in the State of Minnesota		5636 Sturgeon Lake Road		Welch	55089		MN	
Johnny Johnson		President	Prairie Island Indian Community in the State of Minnesota		5636 Sturgeon Lake Road		Welch	55089		MN	
			Prior Lake American		12925 Eagle Creek Parkway		Savage	55378		MN	
Nicole Boyd		Chairwoman	Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin		88385 Pike Road Highway 13		Bayfield	54814		WI	
Marvin DeFoe		THPO	Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin		88385 Pike Road, Highway 13		Bayfield	54814		WI	
Larry Thomas		THPO	Santee Sioux Nation, Nebraska		425 Frazier Ave. N. Suite 2		Niobrara	68760		NE	
Alonzo Denney		Chairperson	Santee Sioux Nation, Nebraska		425 Frazier Ave. N. Suite 2		Niobrara	68760		NE	
Christine Maefsky		Mayor	Scandia, Washington County		12521 Mayberry Trail North		Scandia	55073		MN	
		County Administrator	Scott County		200 4th Avenue W		Shakopee	55379		MN	
Barb Weckman Brekke		Commissioner, District 1	Scott County Board of Commissioners		200 4th Avenue W		Shakopee	55379		MN	
Tom Wolf		Commissioner, District 2	Scott County Board of Commissioners		200 4th Avenue W		Shakopee	55379		MN	
Jody Brennan		Commissioner, District 3	Scott County Board of Commissioners		200 4th Avenue W		Shakopee	55379		MN	
Dave Beer		Commissioner, District 4	Scott County Board of Commissioners		200 4th Avenue W		Shakopee	55379		MN	
John Ulrich		Commissioner, District 5	Scott County Board of Commissioners		200 4th Avenue W		Shakopee	55379		MN	
Leonard Wabasha		THPO	Shakopee Mdewakanton Sioux Community of Minnesota		2330 Sioux Trail NW		Prior Lake	55372		MN	
Cole Miller		Chairman	Shakopee Mdewakanton Sioux Community of Minnesota		2330 Sioux Trail NW		Prior Lake	55372		MN	
			Shakopee Valley News		1221 E Fouth Avenue, Suite 155		Shakopee	55379		MN	
J. Garrett Renville		Tribal Chairman	Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, South Dakota		12554 Bia Highway 711		Agency Village	57262		SD	
Dianne Desrosiers		THPO	Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, South Dakota	PO Box 907			Agency Village	57262		SD	
Robert Vanzile		Chairman	Sokaogon Chippewa Community, Wisconsin		3051 Sand Lake Road		Crandon	54520		WI	
Michael Laronge		THPO	Sokaogon Chippewa Community, Wisconsin		3051 Sand Lake Road		Crandon	54520		WI	
Kenneth Graywater		Interim THPO	Spirit Lake Tribe, North Dakota	PO Box 198			Fort Totten	58335		ND	
Lonna Street		Chairperson	Spirit Lake Tribe, North Dakota		816 - 3rd Avenue North		Fort Totten	58335		ND	
			St. Cloud Times		703 West Street Germain		St. Cloud	56301		MN	
			St. James Plainsdealer		201 S Armstrong Blvd		St. James	56081		MN	
Heather Gibb		SHPO	State Histroical Society of Iowa		600 East Locust Street		Des Moines	50319		IA	
Michael Williams		County Administrator	Stearns County		705 Courthouse Square, Room 121		St. Cloud	56303		MN	
Tarryl Clark		Commissioner, District 1	Stearns County Board of Commissioners		705 Courthouse Square, Room 121		St. Cloud	56303		MN	
Joe Perske		Commissioner, District 2	Stearns County Board of Commissioners		705 Courthouse Square, Room 121		St. Cloud	56303		MN	
Jeff Betram		Commissioner, District 3	Stearns County Board of Commissioners		705 Courthouse Square, Room 121		St. Cloud	56303		MN	
Bob Johnson		Commissioner, District 4	Stearns County Board of Commissioners		705 Courthouse Square, Room 121		St. Cloud	56303		MN	
Steve Notch		Commissioner, District 5	Stearns County Board of Commissioners		705 Courthouse Square, Room 121		St. Cloud	56303		MN	
Shelby Richard-Hoffman		Local Government Unit	Stearns County Environmental Services Department		3301 County Road 138		Waite Park	56387		MN	
Renae Fry		County Administrator	Steele County		630 Florence Avenue		Owatonna	55060		MN	
James Brady		Commissioner	Steele County Board of Commissioners		9106 NW 66th Street		Waseca	56093		MN	
John Glynn		Commissioner	Steele County Board of Commissioners		4146 Lemond Rd.		Owatonna	55060		MN	
Josh Prokopek		Commissioner	Steele County Board of Commissioners		850 SW Riverwood Pl		Owatonna	55060		MN	
Jim Abbe		Commissioner	Steele County Board of Commissioners		413 Pebble Beach Dr.		Owatonna	55060		MN	
Greg Krueger		Commissioner	Steele County Board of Commissioners		1365 Edinburgh Pl NE		Owatonna	55060		MN	
Eric Gulbransen		Local Government Unit	Steele County Soil and Water Conservation District		235 Cedardale Drive SE		Owatonna	55060		MN	
			Sun Thisweek		15322 Galaxie Avenue	Suite 219	Apple Valley	55124		MN	
Rich Murray		Mayor	Town of Albert Lea, Freeborn County		124 Ridge Road		Albert Lea	56007		MN	

Contact Name	(Blank)	Contact Title	Contact Organization	PO BOX	Address Line 1	Address Line 2	City	Zip	Zip2	State	Docket
Chris Magnus		Commissioner	U.S. Customs and Border Protection		1300 Pennyslvania Ave West		Washington, D.C	20229			
Brad Finstad		Representative	U.S. House of Representatives		2746 Superior Dr. NW	Suite 100	Rochester	55901		MN	
Derrick Van Orden		Representative	U.S. House of Representatives		1513 Longworth House Office Building		Washington	20515		DC	
Amy Klobuchar		Senator, MN	U.S. Senate		1200 Washington Avenue South	Room 250	Minneapolis	55415		MN	
Ron Johnson		Senator, WI	U.S. Senate		328 Hart Senate Office Building		Washington	20510		DC	
Tammy Baldwin		Senator, WI	U.S. Senate		709 Hart Senate Office Building		Washington	20510		DC	
Tina Smith		Senator, MN	U.S. Senate		60 Plato Boulevard East	Suite 220	St. Paul	55017		MN	
Kevin Jensvold		Chairman	Upper Sioux Community Pezihutazizi Oyate		5722 Travers Lane		Granite Falls	56241		MN	
Samantha Odegard		THPO	Upper Sioux Community Pezihutazizi Oyate	PO Box 147	5722 Travers Lane		Granite Falls	56241		MN	
Sharunda Buchanan, MS, PhD		Office of Environmental Justice Interim Director	US Department of Health and Human Services		200 Independence Avenue SW	Room 315B.13	Washington, D.C	20201			
Joe Manchin		Chairwoman	US Senate Committedd on Energy and Natural Resources		304 Dirksen Senate Bldg		Washington, D.C	20510			
		Regulatory and Permits	USACE - Rock Island District	P.O. Box 2004	Clock Tower Building		Rock Island	61204	2004	IL	
Ryan Huber		Project Manager	USACE - St. Paul District		332 Minnesota Street	Suite E1500	St. Paul	55101		MN	
Peyton Hamm		Project Manager	USACE - St. Paul District		332 Minnesota Street	Suite E1500	St. Paul	55101		MN	
Trace Strahle		Project Manager	USACE - St. Paul District		332 Minnesota Street	Suite E1500	St. Paul	55101		MN	
		Regulatory and Permits	USACE - St. Paul District		332 Minnesota Street	Suite E1500	St. Paul	55101		MN	
		Assistant Director	USDA Forest Service		Yates Bldy. 3CEN	201 14th Street SW	Washington, D.C	20250		DC	
Isabel Benemelis			USDA FSA Public Affairs		1400 Independence Avenue SW, STOP 0506		Washington, D.C	20250			
Christopher Coes		Assistant Secretary	USDOT Office of the Assistant Secretary for Transportation Policy		1200 New Jersey Avenue SE		Washington, D.C	20590			
Dan Richards		Central Region-Community Liaison	USDOT PHMSA Community Liaison Services		1200 New Jersey Avenue SE		Washington, D.C	20590			
Danielle Gosselin		Director	USDOT Surface Transportation Board - Office of Environmental Analysis		395 E Street SW		Washington, D.C	20423			
Edward H. Chu		Deputy Regional Administrator - Region 7	USEPA		11201 Renner Boulevard		Lenexa	66219		KS	
Jerome Blackman		Manager, Natural Gas STAR Program	USEPA		MC 6207A, 1200 Pennsylvania Avenue NW		Washington, D.C	20460			
Kathy Kowal		NEPA Reviewer - Region 5	USEPA		OECA (2251A) 1200 Pennsylvania Ave NW		Washington, D.C	20460			
David Uhlmann		Asst. Administrator	USEPA Office of Enforcement and Compliance Assurance		1200 Pennsylvania Ave NW, Mail code 2201A		Washington, D.C	20460			
Kraig McPeek		Field Office Supervisor	USFWS - Illinois-Iowa Ecological Services Field Office		1511 47th Ave		Moline	61265	7022	IL	
Rob Tawes		Field Supervisor	USFWS - Minnesota-Wisconsin Ecological Services Field Office		3815 American Blvd East		Bloomington	55425		MN	
Shauna Marquardt		Field Supervisor	USFWS - Minnesota-Wisconsin Ecological Services Field Office		3815 American Blvd East		Bloomington	55425		MN	
Nick Utrup		Fish and Wildlife Biologist	USFWS - Minnesota-Wisconsin Ecological Services Field Office		3815 American Blvd East		Bloomington	55425		MN	
			Ventura Public Library		7 West Ventura Street		Ventura	50842		IA	
			Waconia Patriot		8 South Elm Street		Waconia	55387		MN	
Kevin Corbid		County Administrator	Washington County		14949 62nd St. North		Stillwater	55082		MN	
Fran Miron		Commissioner	Washington County Board of Commissioners		14949 62nd St. North		Stillwater	55082		MN	
Gary Kriesel		Commissioner	Washington County Board of Commissioners		14949 62nd St. North		Stillwater	55082		MN	
Karla Bigham		Commissioner	Washington County Board of Commissioners		14949 62nd St. North		Stillwater	55082		MN	
Michelle Clasen		Commissioner	Washington County Board of Commissioners		14949 62nd St. North		Stillwater	55082		MN	
Stan Karwoski		Commissioner	Washington County Board of Commissioners		14949 62nd St. North		Stillwater	55082		MN	
Jim Pettersen		Commissioner, District 1	Watonwan County Board of Commissioners		203 Center Avenue N		Madelia	56062		MN	
Bill Miller		Commissioner, District 2	Watonwan County Board of Commissioners		33113 780th Avenue		Madelia	56062		MN	
Jim Branstad		Commissioner, District 3	Watonwan County Board of Commissioners		213 2nd Avenue		St. James	56081		MN	
Dillon Mellheim		Commissioner, District 4	Watonwan County Board of Commissioners		66372 380th Street		Butterfield	56120		MN	
Scott Westman		Commissioner, District 5	Watonwan County Board of Commissioners		1028 5th Street S		St. James	56081		MN	
			Watonwan County Library		125 5th Street South		St. James	56081		MN	
Michael Fairbanks		Chairman	White Earth Band of the Minnesota Chippewa Tribe		5500 Eagle View Road		White Earth	56591		MN	
Jaimie Arsenault		THPO	White Earth Band of the Minnesota Chippewa Tribe	PO Box 418			White Earth	56591		MN	
			Winona Daily News		279 E 3rd Street		Winona	55987		MN	
AJ Stone		Board Member, District 1	Worth County Board of Supervisors		1000 Central Avenue		Northwood	50459		IA	
Mark Smeby		Board Member, District 2	Worth County Board of Supervisors		1000 Central Avenue		Northwood	50459		IA	
Enos Loberg		Board Member, District 3	Worth County Board of Supervisors		1000 Central Avenue		Northwood	50459		IA	
Amy Moore		Chief Judge	Worth County County Clerk		1000 Central Avenue		Northwood	50459		IA	

Appendix 1C
Landowner List (Filed as CUI//PRIV – DO NOT RELEASE)
Both Projects

Appendix 1D
Environmental Complaint Resolution Procedure for both Projects

Northern Natural Gas Company
P.O. Box 3330
Omaha NE 68103-0330
402 398-7200

Date

Name Address City and State

Dear Landowner:

As you may know through previous communications, Northern Natural Gas (Northern) has proposed to abandon in-place approximately 131 miles of Northern's M500 A and J pipeline systems from Ventura, Iowa, to Farmington, Minnesota. To replace the capacity, Northern also proposed to construct three new pipeline extensions totaling 17.88 miles of 36-inch- and 30-inch-diameter pipelines in Freeborn, Steele and Dakota counties, Minnesota. The overall project, which has now been approved by the Federal Energy Regulatory Commission, is called the Ventura to Farmington A-line Abandonment and Capacity Replacement Project. As part of an ongoing communication effort, Northern is providing the enclosed document titled *Environmental Complaint Resolution Procedure*, to assist you in the event you have questions or concerns during the installation of facilities on your property and/or during the restoration of the right of way following construction. This process will ensure that the appropriate Northern personnel will timely and accurately respond to your questions. If you have questions or concerns, please follow the steps described below.

Environmental Complaint Resolution Procedure

1. Contact Northern's toll-free Hotline at 888-367-6671. This number will be answered by a Northern operator. Please provide your name, address, telephone number that you can be reached at during business hours, your concern, the best time of the day to reach you, and any other information that is requested. The operator will contact the appropriate Northern representative who will respond to your call within 24 hours.

2. Northern intends to provide you with a prompt and adequate response to your concern. However, if you are still not satisfied with Northern's response, please contact Northern's toll-free Hotline at 888-367-6671 a second time and inform the Northern operator that this is your second call. The operator will have the appropriate member of Northern's management team contact you to address your concern.

3. In the event you are still not satisfied with Northern's response, you may contact the Enforcement Hotline of the Federal Energy Regulatory Commission at 1-888-889-8030.

If a Northern representative has previously contacted you regarding activities on your property, you may contact the Northern representative who has been communicating with you regarding the construction project, instead of using Northern's Hotline number. The best

time to call is during Northern's normal office hours – between 8 a.m. and 5 p.m. Monday through Friday. However, Northern's Hotline number is available 24 hours a day.

Northern is committed to providing appropriate and timely information to you and to be available to answer your questions. Please feel free to use this process to contact us when needed.

Sincerely,

Bryan P. Kruger

Director
Right of Way and Land Records

ENVIRONMENTAL COMPLAINT RESOLUTION PROCEDURE

PURPOSE:

Northern Natural Gas (Northern) established an Environmental Complaint Resolution Procedure that provides landowners whose land will be crossed by a Northern project with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction or abandonment of the project and restoration of the right of way (ROW). This procedure identifies (1) the steps Northern will follow to inform landowners how and who to contact should they have environmental mitigation concerns or questions during construction or abandonment of the project and restoration of the ROW; and (2) how Northern will respond when a landowner calls Northern's toll-free Hotline with questions or concerns.

PROCEDURE:

I. Prior to construction or abandonment activities, Northern will mail a letter to each landowner whose land Northern will be crossing during the construction or abandonment activities of the project and restoration of the ROW. The letter will provide clear and simple procedures for identifying and resolving their environmental mitigation concerns during construction or abandonment activities of the project and restoration of the ROW. The letter will include Northern's toll-free telephone number (888-367-6671) and instructions on lodging a complaint or question. Northern also will include FERC's Enforcement Hotline telephone number (1-888-889-8030) for the landowner to call in the event the landowner is not satisfied with Northern's response using Northern's established environmental complaint resolution process.

II. Northern uses the telephone number for its Operations Communication Center (OCC) telephone number, which is continually staffed, for the environmental hotline. Once called, the OCC operator will immediately respond as follows:

   a. When a call is received regarding the Project, trained OCC personnel will record the information and notify the ROW department, the project manager and the regulatory analyst assigned to the project, who will either address the concern or contact the appropriate company subject-matter expert for a timely response. In the event a landowner is not satisfied with the initial response, the landowner will be requested to call Northern's 24-hour hotline again and inform the OCC operator that this is the second call on an issue. Upon learning that the call is from a landowner who is dissatisfied with the initial response, the OCC operator will call members of management associated with the project. The member of management who receives the call will be directly involved with the second response to the landowner.

   b. In the event any call is an environmental or project emergency requiring urgent mitigating measures, the OCC operator will follow operational procedures and

activate a call burst to the project manager, environmental compliance manager, the division environmental specialist, the construction coordinator, the ROW department, and the project director. The participants in that call may invite others to the call to resolve the issue or concern

III. The OCC will document the problem/concern in the emergency support program (ESP), complete with date and time of response. ESP will assign a ticket number for tracking purposes. The ticket will include:
   a. Identification of the problem/concern along with details provided by the caller
   b. Names of the involved parties
   c. Addresses and telephone numbers of the involved parties
   d. Company representative responding to the concern

IV. The ROW department or on-call representative will contact the involved parties within 24 hours of the notice of receipt of information on the initial call and address the problem or concern and document any response.

V. The ROW department will notify the chief inspector and the environmental inspector of the problem/concern and identify the response taken, or work with the inspectors to resolve the situation.

VI. The ROW department will advise the involved landowner of how and when the problem/concern will be resolved. ROW will notify the project manager, the regulatory analyst, and the environmental compliance manager regarding the resolution of the landowner concern.

VII. Northern will include in its status report that is filed with FERC the following information for each problem/concern:
   a. Date of the call
   b. Identification number from the certificated alignment sheets of the affected property
   c. A description of the problem/concern
   d. An explanation of how and when the problem was addressed and resolved, how it will be resolved, or why it has not been or cannot be resolved

Revised February 18, 2027

Northern Natural Gas Company
P.O. Box 3330
Omaha NE 68103-0330
402 398-7200

Date

Name Address City and State

Dear Landowner:

As you may know through previous communications, Northern Natural Gas (Northern) has proposed to build new, and modify existing facilities to accommodate energy needs in your area. The overall project, which has now been approved by the Federal Energy Regulatory Commission, is called the Northern Lights 2027 Expansion Project. As part of an ongoing communication effort, Northern is providing the enclosed document titled *Environmental Complaint Resolution Procedure*, to assist you in the event you have questions or concerns during the installation of facilities on your property and/or during the restoration of the right of way following construction. This process will ensure that the appropriate Northern personnel will timely and accurately respond to your questions. If you have questions or concerns, please follow the steps described below.

Environmental Complaint Resolution Procedure

1. Contact Northern's toll-free Hotline at 888-367-6671. This number will be answered by a Northern operator. Please provide your name, address, telephone number that you can be reached at during business hours, your concern, the best time of the day to reach you, and any other information that is requested. The operator will contact the appropriate Northern representative who will respond to your call within 24 hours.

2. Northern intends to provide you with a prompt and adequate response to your concern. However, if you are still not satisfied with Northern's response, please contact Northern's toll-free Hotline at 888-367-6671 a second time and inform the Northern operator that this is your second call. The operator will have the appropriate member of Northern's management team contact you to address your concern.

3. In the event you are still not satisfied with Northern's response, you may contact the Enforcement Hotline of the Federal Energy Regulatory Commission at 1-888-889-8030.

If a Northern representative has previously contacted you regarding activities on your property, you may contact the Northern representative who has been communicating with you regarding the construction project, instead of using Northern's Hotline number. The best time to call is during Northern's normal office hours – between 8 a.m. and 5 p.m. Monday through Friday. However, Northern's Hotline number is available 24 hours a day.

Northern is committed to providing appropriate and timely information to you and to be available to answer your questions. Please feel free to use this process to contact us when needed.

Sincerely,

Bryan P. Kruger

Director
Right of Way and Land Records

ENVIRONMENTAL COMPLAINT RESOLUTION PROCEDURE

PURPOSE:

Northern Natural Gas (Northern) established an Environmental Complaint Resolution Procedure that provides landowners whose land will be crossed by a Northern project with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the project and restoration of the right of way (ROW). This procedure identifies (1) the steps Northern will follow to inform landowners how and who to contact should they have environmental mitigation concerns or questions during construction of the project and restoration of the ROW; and (2) how Northern will respond when a landowner calls Northern's toll-free Hotline with questions or concerns.

PROCEDURE:

I. Prior to construction, Northern will mail a letter to each landowner whose land Northern will be crossing during the construction of the project and restoration of the ROW. The letter will provide clear and simple procedures for identifying and resolving their environmental mitigation concerns during construction of the project and restoration of the ROW. The letter will include Northern's toll-free telephone number (888-367-6671) and instructions on lodging a complaint or question. Northern also will include FERC's Enforcement Hotline telephone number (1-888-889-8030) for the landowner to call in the event the landowner is not satisfied with Northern's response using Northern's established environmental complaint resolution process.

II. Northern uses the telephone number for its Operations Communication Center (OCC) telephone number, which is continually staffed, for the environmental hotline. Once called, the OCC operator will immediately respond as follows:

   a. When a call is received regarding the Project, trained OCC personnel will record the information and notify the ROW department, the project manager and the regulatory analyst assigned to the project, who will either address the concern or contact the appropriate company subject-matter expert for a timely response. In the event a landowner is not satisfied with the initial response, the landowner will be requested to call Northern's 24-hour hotline again and inform the OCC operator that this is the second call on an issue. Upon learning that the call is from a landowner who is dissatisfied with the initial response, the OCC operator will call members of management associated with the project. The member of management who receives the call will be directly involved with the second response to the landowner.

   b. In the event any call is an environmental or project emergency requiring urgent mitigating measures, the OCC operator will follow operational procedures and activate a call burst to the project manager, environmental compliance manager, the

division environmental specialist, the construction coordinator, the ROW department, and the project director. The participants in that call may invite others to the call to resolve the issue or concern

III. The OCC will document the problem/concern in the emergency support program (ESP), complete with date and time of response. ESP will assign a ticket number for tracking purposes. The ticket will include:
   a. Identification of the problem/concern along with details provided by the caller
   b. Names of the involved parties
   c. Addresses and telephone numbers of the involved parties
   d. Company representative responding to the concern

IV. The ROW department or on-call representative will contact the involved parties within 24 hours of the notice of receipt of information on the initial call and address the problem or concern and document any response.

V. The ROW department will notify the chief inspector and the environmental inspector of the problem/concern and identify the response taken, or work with the inspectors to resolve the situation.

VI. The ROW department will advise the involved landowner of how and when the problem/concern will be resolved. ROW will notify the project manager, the regulatory analyst, and the environmental compliance manager regarding the resolution of the landowner concern.

VII. Northern will include in its status report that is filed with FERC the following information for each problem/concern:
   a. Date of the call
   b. Identification number from the certificated alignment sheets of the affected property
   c. A description of the problem/concern
   d. An explanation of how and when the problem was addressed and resolved, how it will be resolved, or why it has not been or cannot be resolved

Revised February 18, 2027

Appendix 1E
Agency Correspondence

From: Phil Wacholz
To: MacNeil, Laura
Cc: Mark Goskeson; Trevor Bordelon
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects Near Manchester, MN
Date: Tuesday, December 16, 2025 4:16:53 PM
Attachments: image001.png
image002.png
image003.png
image004.png

You don't often get email from philip.wacholz@co.freeborn.mn.us. Learn why this is important

Laura,

I have shared your message with our environmental Services staff who handle all land use, zoning, and building permits for our County. They will review their files and let you know if they know of anything in the area. I have Cc'd two primary contacts in the Environmental Services Office for your future use and follow up, if needed.

As for highway construction projects, we are planning road construction project on CSAH 14 (240th Street) in 2028. It looks like CSAH 14 is the south boundary of your project area. The project will involve the reconditioning or reconstruction of the road surface and could include work in the ditches or on the culverts to improve drainage. We are still two years away from designing this project so the exact scope is not known at this time.

I am also aware of a Wind Tower refurbishment project and a Wind Farm Expansion project. Both of these are occurring in the vicinity of your project location. The refurbishment project includes a like for like reconditioning of internal components of the turbines but will require a large mobilization effort of cranes, materials, and work crews. It does look like a couple of the towers planned for refurbishment are located within your project area. The existing tower locations are viewable on our GIS public site administered by Beacon. There is a layer under "other information" that can be turned on and you will see a plot of the tower locations. Then you can determine if additional coordination with the Alliant Energy is needed. The expansion project is not occurring in Manchester Township so I don't think there will be any impacts there.

This is all the information I have at this time. Please wait for a reply from our environmental services department for anything from their office.

Thanks,

Phil

Philip Wacholz, P.E. (MN)
Freeborn County Engineer/Director of Public Works
Ph. 507.377.5188

From: Kimberly Erickson <Kimberly.Erickson@co.freeborn.mn.us>
Sent: Tuesday, December 16, 2025 7:06 AM
To: Phil Wacholz <philip.wacholz@co.freeborn.mn.us>
Subject: FW: Inquiry on Planned or Anticipated Zoning Projects Near Manchester, MN

See below.

Thank you,

Kim Erickson
Freeborn County – Public Works
Sr. Account Technician
507-377-5188

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Monday, December 15, 2025 5:02 PM
To: Public Works <PublicWorks@co.freeborn.mn.us>
Subject: Inquiry on Planned or Anticipated Zoning Projects Near Manchester, MN

Good afternoon,
My name is Laura MacNeil, and I am a Senior Environmental Consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Manchester in Freeborn County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around Manchester and Pickerel Lake Townships that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.
I've attached a map with the approximate project location shown in blue.
If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
Thank you for your time and assistance. I look forward to your guidance.
Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

Stantec

From: MacNeil, Laura
To: "PublicWorks@co.freeborn.mn.us"
Subject: Inquiry on Planned or Anticipated Zoning Projects Near Manchester, MN
Date: Monday, December 15, 2025 5:01:00 PM
Attachments: image001.png
image002.png
image003.png
image004.png
Freeborn County-MN Project.png

Good afternoon,

My name is Laura MacNeil, and I am a Senior Environmental Consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Manchester in Freeborn County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around Manchester and Pickerel Lake Townships that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown in blue.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance. I look forward to your guidance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: MacNeil, Laura
To: "trevor.bordelon@co.freeborn.mn.us"
Subject: Inquiry on Planned or Anticipated Zoning Projects Near Manchester, MN
Date: Monday, December 15, 2025 4:44:00 PM
Attachments: image001.png
image002.png
image003.png
image004.png
Freeborn County-MN Project.png

Dear Mr. Bordelon,

My name is Laura MacNeil, and I am a Senior Environmental Consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Manchester in Freeborn County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around Manchester and Pickerel Lake Townships that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown in blue.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance. I look forward to your guidance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: b.eklund
To: MacNeil, Laura
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects Near Weston, MN
Date: Tuesday, December 16, 2025 9:12:08 AM
Attachments: image006.png
image007.png
image008.png
image009.png
SCANDIA_Zoning Map_2024_11X17L.pdf

Good morning Laura,
There are no upcoming municipal developments planned within the vicinity of the Northern Natural Gas utility shown on the map you provided.
I've attached the City of Scandia's zoning map which shows the most southern boundary of the city limits right at 180th Street.
I am not aware of any projects other than the proposed Northern Natural Gas odorizer station being built on a parcel immediately north of the existing substation on 180th Street.

Please let me know if you need anything additional.
Best regards,
Brenda

Brenda Eklund
City Clerk

City of Scandia
14727 209th Street North
Scandia, MN 55073
Phone: 651-433-2274 Fax: 651-433-5112
Web: www.cityofscandia.com
Email: b.eklund@ci.scandia.mn.us

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Monday, December 15, 2025 5:08 PM
To: b.eklund <b.eklund@ci.scandia.mn.us>
Subject: Inquiry on Planned or Anticipated Zoning Projects Near Weston, MN

Good afternoon Ms. Eklund,
My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Weston in Washington County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities,

residences, or renewable energy installations) in or around the May Township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.
I've attached a map with the approximate project location shown in pink.
If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
Thank you for your time and assistance.
Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From:	Kevin Peterson
To:	MacNeil, Laura
Cc:	Daniel Elder
Subject:	Re: Inquiry on Planned or Anticipated Zoning Projects Near Weston, MN
Date:	Tuesday, December 16, 2025 10:24:55 AM
Attachments:	image001.png image002.png image003.png image004.png Outlook-dqivn3wa.png

---

> You don't often get email from kevin.peterson@washingtoncountymn.gov. Learn why this is important

Laura,

A map of upcoming County Highway improvement projects can be found here - 5-Year-Capital-Improvement-Program-Road-and-Bridge-2026-2030-DRAFT-PDF. Please review and reach out to me for any additional information on specific County projects or locations.

Thank you.

Kevin Peterson, PE | Design Engineer
Pronouns: he, him, his
Washington County Public Works
11660 Myeron Road North, Stillwater, MN 55082
Phone: 651-430-4330 | Cell: 651-347-4330

Rooted in Connection, Growing with Direction

From: Daniel Elder <Daniel.Elder@washingtoncountymn.gov>
Sent: Tuesday, December 16, 2025 10:19 AM
To: Kevin Peterson <Kevin.Peterson@washingtoncountymn.gov>
Subject: Fw: Inquiry on Planned or Anticipated Zoning Projects Near Weston, MN

Kevin could you assist the person below.

Daniel Elder | Planner II
Washington County Public Works Department
11660 Myeron Road North, Stillwater, MN 55082
Office: 651-430-4307
Rooted in Connection, Growing with Direction

Book time to meet with me

From: PublicWorks <PublicWorks@washingtoncountymn.gov>
Sent: Tuesday, December 16, 2025 8:11 AM
To: Daniel Elder <Daniel.Elder@washingtoncountymn.gov>
Subject: FW: lnquiry on Planned or Anticipated Zoning Projects Near Weston, MN

FYI

Scott Molitor | Office Specialist
Washington County Public Works
11660 Myeron Rd N, Stillwater, MN 55082
Main: 651-430-4300 | Direct: 651-430-6893

To plan, build, and maintain a better Washington County

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Monday, December 15, 2025 5:03 PM
To: PublicWorks <PublicWorks@washingtoncountymn.gov>
Subject: lnquiry on Planned or Anticipated Zoning Projects Near Weston, MN

External message alert: This message originated from outside the Washington County email system. Use caution when clicking hyperlinks, downloading pictures or opening attachments.

Good afternoon,
My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Weston in Washington County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the May Township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.
I've attached a map with the approximate project location shown in pink.
If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
Thank you for your time and assistance.
Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: MacNeil, Laura
To: sanderson@ci.hugo.mn.us
Subject: Inquiry on Planned or Anticipated Zoning Projects Near Weston, MN
Date: Tuesday, December 16, 2025 7:27:00 AM
Attachments: Washington County-MN Project.png
image001.png
image002.png
image003.png
image004.png

Good morning Mr. Anderson,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Weston in Washington County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the May Township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown in pink.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

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Direct: 346-559-8559
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From: MacNeil, Laura
To: Amber.brooks@steelecountymn.gov; PZ.Director@SteeleCountyMn.gov
Subject: Inquiry on Planned or Anticipated Zoning Projects between New Richland and Ellendale, MN
Date: Tuesday, December 16, 2025 7:41:00 AM
Attachments: image001.png
image002.png
image003.png
image004.png
Steele County-MN Project.png

Good morning Ms. Brooks,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in between the tows of New Richland and Ellendale in Steele County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Berlin Township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown in blue.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: MacNeil, Laura
To: "planning@co.scott.mn.us"
Subject: Inquiry on Planned or Anticipated Zoning Projects near Credit River, MN
Date: Tuesday, December 16, 2025 7:54:00 AM
Attachments: image001.png
image002.png
image003.png
image004.png
Scott County -MN Project.png

Good morning Ms. Brooks,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Credit River in Scott County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Credit River town area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown in blue.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: MacNeil, Laura
To: "MSchmitz@co.scott.mn.us"
Subject: Inquiry on Planned or Anticipated Zoning Projects near Credit River, MN
Date: Tuesday, December 16, 2025 7:59:00 AM
Attachments: Scott County -MN Project.png
image001.png
image002.png
image003.png
image004.png

Good morning,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Credit River in Scott County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Credit River town area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown in blue.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: Ethan Nelson
To: MacNeil, Laura
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects near Norwood Young America, MN
Date: Friday, December 19, 2025 9:53:26 AM
Attachments: image001.png
image002.png
image003.png
image004.png

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Laura,

Thank you for the clarification. The areas you have outlined in blue are currently outside of any development planned in our 2040 Comprehensive Plan. The City currently has no planned projects within those outlined areas either.

Ethan Nelson
City Planner
City of Norwood Young America
310 W Elm Street, PO Box 59
Norwood Young America, MN 55368
www.cityofnya.com
Office: 952-467-1800
Direct: 952-467-4003

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Friday, December 19, 2025 9:04 AM
To: Ethan Nelson <cityplanner@cityofnya.com>
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects near Norwood Young America, MN

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Good morning Ethan,

We are actually on the SE side of Rice Lake close to the city.

Below is a more zoomed in screen shot of our project area.



Does that help?

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

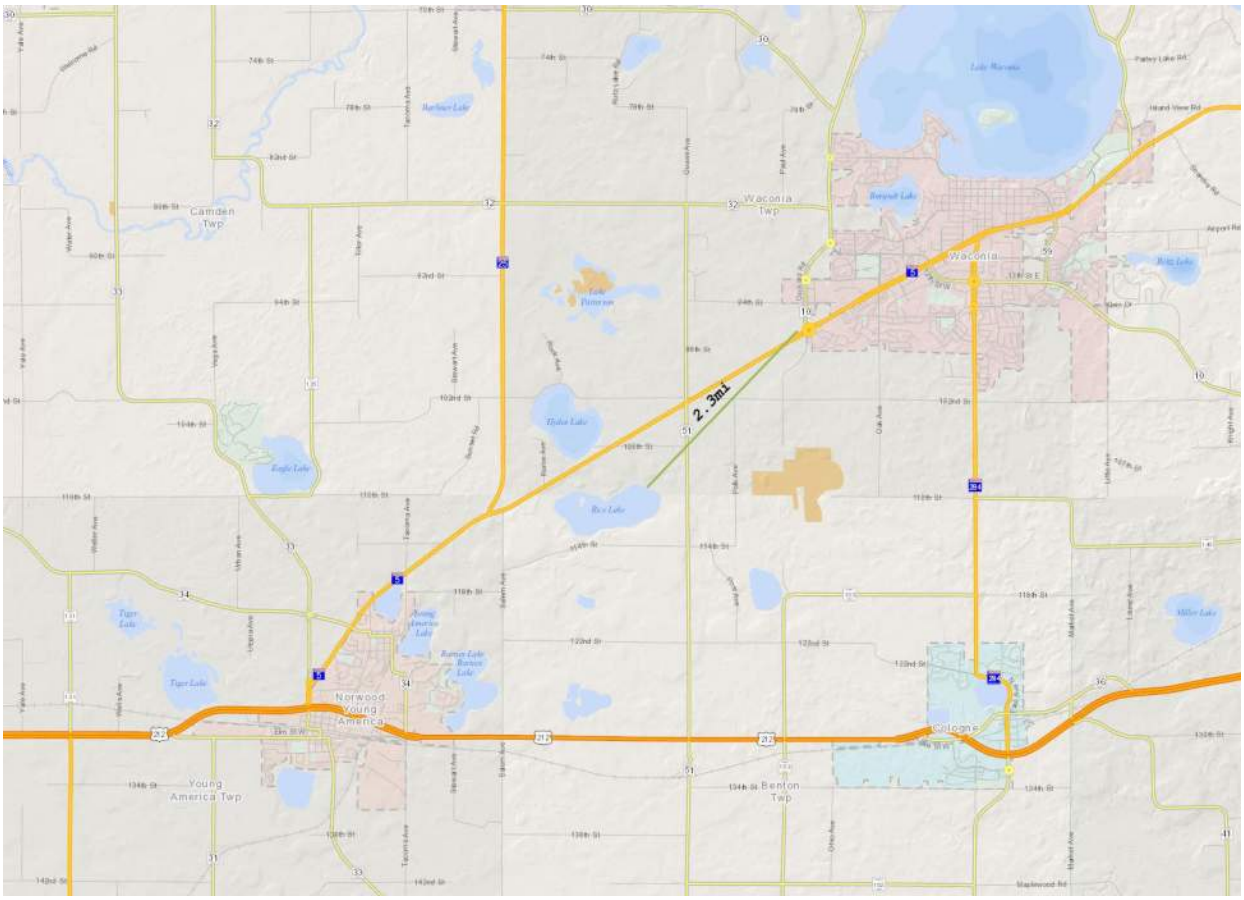
Stantec

From: Ethan Nelson <cityplanner@cityofnya.com>
Sent: Friday, December 19, 2025 8:58 AM
To: MacNeil, Laura <Laura.MacNeil@stantec.com>
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects near Norwood Young America, MN

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Good morning Laura,

I would be happy to provide the requested information. Before I start putting together planned or potential development data, can you clarify where specifically the project is located? In the attachment below, I noted 2.3 miles NE of Rice Lake, which would be located near the roundabout at the edge of Waconia's city limits. If that is correct, then I would tell you that Norwood Young America does not have any developments within the next 3 years that would impact your project as currently the only city related development would be projected to be within Young America Township area.



Ethan Nelson
City Planner
City of Norwood Young America
310 W Elm Street, PO Box 59
Norwood Young America, MN 55368
www.cityofnya.com
Office: 952-467-1800
Direct: 952-467-4003

From: Norwood Young America, MN <noreply@civicplus.com>
Sent: Wednesday, December 17, 2025 8:17 AM
To: Ethan Nelson <cityplanner@cityofnya.com>
Subject: Inquiry on Planned or Anticipated Zoning Projects near Norwood Young America, MN

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Name: Laura MacNeil
Email: laura.macneil@stantec.com

Message:

Good morning,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Norwood Young America in Carver County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Camden or Benton township areas that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

The project is located approximately 2.63 miles northeast of the town near Rice Lake.

If it would be easier to discuss by email or phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

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From: Drew Pflaumer
To: MacNeil, Laura
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects near Norwood Young America, MN
Date: Wednesday, December 17, 2025 8:06:35 AM
Attachments: image001.png
image002.png
image003.png
image004.png

You don't often get email from dpflaumer@carvercountymn.gov. Learn why this is important

Good morning, Laura,

We do not have any upcoming projects in this area, nor are we aware of any upcoming developments (I am sure you have also reached out to the City of Norwood Young America, who will be the authority on developments). You can find a map of all upcoming Carver County Public Works projects at the following link: Highway Projects

Thank you,
Drew

Drew Pflaumer | Transportation Planning Manager
Carver County Public Works | 11360 Highway 212 | Cologne, MN 55322
dpflaumer@carvercountymn.gov |c. 612.865.2247

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Tuesday, December 16, 2025 2:18 PM
To: Carver County Public Works <CarverCountyPW@carvercountymn.gov>
Subject: Inquiry on Planned or Anticipated Zoning Projects near Norwood Young America, MN

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Good afternoon,
My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Norwood Young America in Carver County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Camden or Benton township areas that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for

ongoing or upcoming land-use reviews you could share would be most helpful.
I've attached a map with the approximate project location shown in blue.
If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
Thank you for your time and assistance.
Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: MacNeil, Laura
To: "planning@carvercountymn.gov"; "landmanagement@carvercountymn.gov"
Subject: Inquiry on Planned or Anticipated Zoning Projects near Norwood Young America, MN
Date: Tuesday, December 16, 2025 8:25:00 AM
Attachments: image001.png
image002.png
image003.png
image004.png
Carver County - MN Project.png

Good morning,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Norwood Young America in Carver County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Camden or Benton township areas that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown in blue.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: MacNeil, Laura
To: "carvercountypw@carvercountymn.gov"
Subject: Inquiry on Planned or Anticipated Zoning Projects near Norwood Young America, MN
Date: Tuesday, December 16, 2025 2:18:00 PM
Attachments: Carver County - MN Project.png
image001.png
image002.png
image003.png
image004.png

Good afternoon,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Norwood Young America in Carver County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Camden or Benton township areas that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown in blue.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

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Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: Lynn Burg
To: MacNeil, Laura
Subject: Re: Inquiry on Planned or Anticipated Zoning Projects near Richmond, MN
Date: Thursday, December 25, 2025 9:07:57 PM
Attachments: image001.png
image002.png
image003.png
image004.png

You don't often get email from zoning@munsontownshipmn.gov. Learn why this is important

Laura,

I will bring this up at our next meeting in January to make sure there's no projects anyone knows about and get back to you. Our meeting is the third Monday of each month, but January falls on a holiday, so it will be Tuesday.

Thank you,

Get Outlook for iOS

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Friday, December 19, 2025 8:33 AM
To: zoning@munsontownshipmn.gov <zoning@munsontownshipmn.gov>
Subject: Inquiry on Planned or Anticipated Zoning Projects near Richmond, MN

Good morning Ms. Burg,
My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Richmond in Stearns County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Munson township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.
I've attached a map with the approximate project location shown in blue.
If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
Thank you for your time and assistance.
Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915

laura.macneil@stantec.com

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From: Buckentine, Jennifer
To: MacNeil, Laura
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects near Richmond, MN
Date: Friday, December 19, 2025 10:55:23 AM
Attachments: image001.png
image002.png
image003.png
image004.png

You don't often get email from jennifer.buckentine@stearnscountymn.gov. Learn why this is important

Hi Laura
The Biogasco project started construction in fall 2024 or spring 2025, so it may be finished by now. However we haven't received the certificate of occupancy, so I don't know for sure if it's complete.
Thanks

Jennifer Buckentine
Stearns County Environmental Services
P: 320.656.3613| 800.450.0852

From: ES - Land Use <EnvironmentalServices3@stearnscountymn.gov>
Sent: Friday, December 19, 2025 8:42 AM
To: Buckentine, Jennifer <Jennifer.Buckentine@stearnscountymn.gov>
Subject: FW: Inquiry on Planned or Anticipated Zoning Projects near Richmond, MN

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Friday, December 19, 2025 8:29 AM
To: ES - Land Use <EnvironmentalServices3@stearnscountymn.gov>
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects near Richmond, MN

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Good morning Jennifer,

Thank you for the quick response. Do you know what year the BioGas project is expected to start or be completed by?

I will check with the Munson Township as well!

Thanks,

Laura MacNeil

Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: ES - Land Use <EnvironmentalServices3@stearnscountymn.gov>
Sent: Thursday, December 18, 2025 3:09 PM
To: MacNeil, Laura <Laura.MacNeil@stantec.com>
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects near Richmond, MN

Hi Laura
The only land use project that comes to mind in this area is the BioGasCo project at the east end of your area of interest. 22590 County Rd 12, Richmond MN

If you haven't already, I suggest checking with Munson Township because they do most of the zoning permitting. https://www.stearnscountymn.gov/806/Munson

Jennifer Buckentine
Stearns County Environmental Services
P: 320.656.3613| 800.450.0852

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Tuesday, December 16, 2025 3:27 PM
To: ES - Land Use <EnvironmentalServices3@stearnscountymn.gov>
Subject: Inquiry on Planned or Anticipated Zoning Projects near Richmond, MN

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Good afternoon,
My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Richmond in Stearns County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities,

residences, or renewable energy installations) in or around the Munson township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.
I've attached a map with the approximate project location shown in blue.
If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
Thank you for your time and assistance.
Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: Wes Liepold
To: MacNeil, Laura
Cc: LMO@co.jackson.mn.us; engineer@co.jackson.mn.us
Subject: Re: Inquiry on Planned or Anticipated Zoning Projects near Lakefield, MN
Date: Wednesday, December 17, 2025 8:37:39 AM
Attachments: image001.png
image002.png
image003.png
image004.png

You don't often get email from wes.liepold@co.jackson.mn.us. Learn why this is important

We will have a bituminous overlay and shoulder widening taking place in the next 3 years on CSAH 34.

Wes Liepold
Office (507) 849-7261
Cell (763) 229-4076

On Tue, Dec 16, 2025 at 3:49 PM 'MacNeil, Laura' via PW Engineer <engineer@co.jackson.mn.us> wrote:

> Good afternoon,
>
> My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Lakefield in Jackson County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
>
> Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Rost and Hunter township areas that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.
>
> I've attached a map with the approximate project location shown in blue.
>
> If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
>
> Thank you for your time and assistance.
>
> Sincerely,
>
> **Laura MacNeil**
> Senior Environmental Consultant - Natural Resources
>
> Office: 713-346-7871
> Direct: 346-559-8559
> Mobile: 832-444-4915

laura.macneil@stantec.com

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From: Michael McCarty
To: MacNeil, Laura
Subject: RE: [EXTERNAL] Inquiry on Planned or Anticipated Zoning Projects near Godahl, La Salle, or Grogan MN
Date: Friday, December 19, 2025 10:55:58 AM
Attachments: image001.png
image002.png
image003.png
image004.png

Good morning Laura,

We do not have anything planned in that area.

Thanks,

Michael McCarty, PE
Public Works Director & County Engineer
Office: 507-942-2200
Cell:507-317-5587
1304 7th Ave. S
St. James, MN 56024

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Friday, December 19, 2025 10:22 AM
To: Michael McCarty <Michael.McCarty@watonwancountymn.gov>; David Haler <David.Haler@watonwancountymn.gov>
Subject: [EXTERNAL] Inquiry on Planned or Anticipated Zoning Projects near Godahl, La Salle, or Grogan MN

Good morning,
My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of La Salle in Watonwan County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Nelson or Riverdale township areas that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.
I've attached a map with the approximate project location shown in blue.
If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
Thank you for your time and assistance.
Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: David Haler
To: MacNeil, Laura
Subject: RE: [EXTERNAL] Inquiry on Planned or Anticipated Zoning Projects near Godahl, La Salle, or Grogan MN
Date: Monday, December 22, 2025 9:12:01 AM
Attachments: image001.png
image002.png
image003.png
image004.png

Hi Laura,

The Land Management/Zoning Department has not been made aware of any upcoming major zoning or land use projects or proposed new developments in this area.

David Haler

Watonwan County Land Management Director
108 8th St S
St. James, MN 56081
507-375-1225
David.Haler@watonwancountymn.gov

From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Friday, December 19, 2025 10:22 AM
To: Michael McCarty <Michael.McCarty@watonwancountymn.gov>; David Haler <David.Haler@watonwancountymn.gov>
Subject: [EXTERNAL] Inquiry on Planned or Anticipated Zoning Projects near Godahl, La Salle, or Grogan MN

Good morning,
My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of La Salle in Watonwan County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Nelson or Riverdale township areas that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.
I've attached a map with the approximate project location shown in blue.
If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
Thank you for your time and assistance.
Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From:	Justin Bergerson
To:	MacNeil, Laura
Cc:	Trina Bergloff
Subject:	RE: ExternalInquiry on Planned or Anticipated Zoning Projects near Walbo MN
Date:	Friday, December 19, 2025 1:32:25 PM
Attachments:	image006.png image007.png image008.png image009.png Isanti County Highway 5 Year Plan Map - 2025-2029.pdf

---

Hi Laura,

The Isanti County Highway Department has a planned roadway improvement project for County State-Aid Highway (CSAH) 1, beginning at Trunk Highway 95 and extending northerly to CSAH 6. This project is currently planned for construction in 2027. A map identifying the project limits is attached for your reference.

Any proposed improvements or work within the County Road right-of-way by NNG would require coordination with and permitting from the Isanti County Highway Department.

Please feel free to contact me if you have any questions or would like to discuss this further.

Justin Bergerson, PE
County Highway Engineer
Highway Department
232 Emerson St N | Cambridge, MN 55008
Phone: (763) 689-1870 | Direct: (763) 689-7970 | Fax: (763) 689-8226
Email: Justin.Bergerson@co.isanti.mn.us | Website: www.co.isanti.mn.us
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From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Friday, December 19, 2025 10:33 AM
To: Trina Bergloff <Trina.Bergloff@co.isanti.mn.us>; Justin Bergerson <justin.bergerson@co.isanti.mn.us>
Subject: ExternalInquiry on Planned or Anticipated Zoning Projects near Walbo MN

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Good morning,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Walbo in Isanti County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Springvale township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown in blue.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: Amy Kowalzek
To: MacNeil, Laura
Cc: Tony Hennen
Subject: RE: Inquiry on Planned or Anticipated Zoning Projects near Little Falls MN
Date: Monday, December 22, 2025 8:45:29 AM
Attachments: image006.png
image007.png
image008.png
image009.png

> You don't often get email from amy.kowalzek@morrisoncountymn.gov. Learn why this is important

Good Morning Laura,

Thank you for your email. Individual property owners drive land use/zoning projects, and we're aware of them when they approach the County with a proposed project. So, the answer I give you can change daily. As of now, there are no proposed projects of the type you inquire about in the area of interest.

Kind Regards,

Amy J. Kowalzek
Director
Morrison County Land Services
320.632.0171

MORRISON COUNTY

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From: Sharon Peterson <Sharon.Peterson@morrisoncountymn.gov>

Sent: Monday, December 22, 2025 8:27 AM
To: Amy Kowalzek <Amy.Kowalzek@morrisoncountymn.gov>
Subject: FW: Inquiry on Planned or Anticipated Zoning Projects near Little Falls MN

You are probable better to answer this e-mail than me.

Sharon Peterson
Planning & Zoning Specialist
Morrison County Land Services
320.632.0173

MORRISON COUNTY

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From: MacNeil, Laura <Laura.MacNeil@stantec.com>
Sent: Friday, December 19, 2025 10:49 AM
To: Sharon Peterson <Sharon.Peterson@morrisoncountymn.gov>; Tony Hennen <Tony.Hennen@morrisoncountymn.gov>
Subject: Inquiry on Planned or Anticipated Zoning Projects near Little Falls MN

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Good morning,
My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Little Falls in Morrison County, MN. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.
Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or

infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Pike Creek township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.
I've attached a map with the approximate project location shown in blue.
If it would be easier to discuss by phone, I would be glad to accommodate your schedule.
Thank you for your time and assistance.
Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: MacNeil, Laura
To: "buffingtona@hancocklaw-ia.com"
Subject: Inquiry on Planned or Anticipated Zoning Projects near Ventura, IA
Date: Thursday, February 26, 2026 9:12:00 AM
Attachments: image001.png
image002.png
image003.png
image004.png
Hancock County, IA Project Map.png

Good morning,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Ventura in Hancock County, IA. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Concord township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown as a pin.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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From: MacNeil, Laura
To: zoning@worthcountyiowa.gov
Subject: Inquiry on Planned or Anticipated Zoning Projects near Lake Mills, IA
Date: Thursday, February 26, 2026 9:17:00 AM
Attachments: Worth County, IA Project Map.png
image001.png
image002.png
image003.png
image004.png

Good morning,

My name is Laura MacNeil, and I am a consultant working on behalf of Northern Natural Gas for a proposed pipeline project in the vicinity of Lake Mills in Worth County, IA. As part of our compliance and due diligence efforts, I am reaching out to ensure we are fully informed of any proposed, planned, or scheduled municipal, developments, or county projects that might overlap with or affect our project area.

Could you please advise if there are any upcoming or anticipated zoning, land-use, transportation, or infrastructure initiatives (e.g., subdivisions, re-zoning applications, public facilities, roads, utilities, residences, or renewable energy installations) in or around the Silver Lake township area that we should be aware of for the next 3 years (2026-2028)? Any maps, project data, or contacts for ongoing or upcoming land-use reviews you could share would be most helpful.

I've attached a map with the approximate project location shown as a pin.

If it would be easier to discuss by phone, I would be glad to accommodate your schedule.

Thank you for your time and assistance.

Sincerely,

Laura MacNeil
Senior Environmental Consultant - Natural Resources

Office: 713-346-7871
Direct: 346-559-8559
Mobile: 832-444-4915
laura.macneil@stantec.com

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Appendix 1F
Winter Construction Plan and ROW Maintenance Procedures for both Projects



Winter Construction Plan

Ventura to Farmington A-line Abandonment and Capacity Replacement Project and Northern Lights 2027 Expansion Project

February 2026

Contents

1.0 INTRODUCTION 1
2.0 PURPOSE 1
3.0 GENERAL CONSTRUCTION AND RESTORATION MEASURES 2
3.1 TREE CLEARING 2
3.2 EROSION CONTROLS, MULCHING, AND SEEDING 2
4.0 SPRING THAW CONDITIONS 3
5.0 RIGHT OF WAY ASSESSMENT - SPRING 2028 AND 2029 3
6.0 MONITORING AND REPORTING 3
7.0 REFERENCES 3

1.0 INTRODUCTION

Northern Natural Gas (Northern) is planning construction of the Ventura to Farmington A-line Abandonment and Capacity Replacement Project (V2F Project) between 2027 through 2029 in Minnesota and Iowa. The proposed facilities include:

- Approximately 17.88 miles of pipeline extensions

Installation and removal of appurtenant facilities include:

- Disconnect activities for the A-line and J-line at two compressor stations
- Installing temporary compression to evacuate gas from the A-line to an adjacent mainline
- Three temporary compression sites for the installation of the extensions

Additionally, Northern is planning construction of the Northern Lights Expansion Project (NL27 Project) in 2027 in Minnesota. The proposed facilities include:

- Approximately 28.43 miles of pipeline extensions
- Uprate at Hugo compressor station

Installation and removal of appurtenant facilities include:

- Two new receiver facilities that include relocation of existing receivers
- Relocation of one existing receiver
- Nine new valve settings and associated valves and piping, including one new RMV facility
- Expansion of one existing block valve setting
- Removal of one receiver facility and three existing tie-in valve settings

2.0 SCHEDULE

Northern is planning a one-year construction schedule for each of the V2F pipeline extensions. Northern is planning to commence the pipeline extension construction activities in the spring of 2027 for the Lake Mills and Albert Lea M500 E-lines, or upon FERC authorization and be in service no later than November 1, 2027. Northern is planning to commence the pipeline extension construction activities in the spring of 2028 for the Faribault M500 D-line and be in service no later than November 1, 2028. Northern does not plan on completing pipeline construction activities during the winter; however, Northern plans to complete tree clearing for the three extensions in early 2027 to minimize impacts on proposed, threatened and endangered species. Although the in-service date is November 1, 2027, and November 1, 2028, restoration could extend into December 2027 or spring 2028 for the Lake Mills and Albert Lea M500 E lines and December 2028 or spring 2029 for the Faribault M500 D-line based on state restoration requirements (MNDOT Seeding Manual 2014 Edition and IADOT Seeding Standard Specifications).

For the NL27 Project, Northern will construct ten pipeline extensions and the Hugo compressor station uprate in 2027. Restoration may extend into 2028.

The purpose of this Winter Construction Plan is to identify best management practices for construction activities during the winter months. Under frozen soil conditions, the measures in this plan will supersede relevant or corresponding measures in the FERC Plan and Northern's Procedures. In the transitional period between non-frozen and frozen soil conditions, Northern will implement appropriate measures as described in the Plan, its Procedures, or this Winter Construction Plan based on site-specific conditions (e.g., soil stability) as determined by Northern's Environmental Inspectors

(EIs) and environmental compliance manager.

3.0 GENERAL CONSTRUCTION AND RESTORATION MEASURES

3.1 TREE CLEARING

Northern's construction contractors are expected to complete tree clearing for both Projects in February or March 2027. Project workspaces will be cleared of vegetation prior to construction activities. Access to clearing areas will occur via designated and approved access roads and the construction right of way, with temporary erosion control measures installed where necessary.

If deep snow conditions are present, snow may be removed from within the approved workspaces prior to tree clearing activities. Northern anticipates frozen ground conditions may be present during tree removal and does not plan to execute any ground disturbance activities during this timeframe. Therefore, Northern's contractors will not complete stump removal at the same time as tree clearing activities. The contractors will complete stump removal within the approved workspaces early summer 2027 for the Lake Mills and Albert Lea M500 E lines and early summer 2028 for the Faribault M500 D-line, prior to beginning pipeline construction.

3.2 EROSION CONTROLS, MULCHING AND SEEDING

V2F Project

Northern's construction contractors are expected to have completed construction and the majority of restoration activities by November 2027 for the Lake Mills and Albert Lea M500 E-lines and by November 2028 for the Faribault M500 D-line. This Winter Construction Plan is intended to address any areas of both Projects where final seeding is not completed prior to October 20, 2027, for Lake Mills and Albert Lea E-lines and September 20, 2028, for the Faribault D-line, which is the MNDOT window for dormant seeding in the north and south zones of Minnesota, respectively. The IADOT uses December 25, as the deadline for dormant seeding in Iowa provided snow is not present.

NL27 Project

For the NL27 Project, Northern will construct the ten pipeline extensions and the Hugo compressor station uprate in 2027. Restoration may extend into 2028.

Northern's EIs will be responsible for tracking areas that will be subject to the Winter Construction Plan and reporting back to Northern's project team. Northern will ensure the contractor follows the below listed procedures in these areas.

Temporary and permanent erosion and sedimentation control measures will be implemented in accordance with the FERC Plan and Northern's Procedures or as described below depending on ground conditions. The EIs for the V2F and NL27 Projects will verify that the erosion and sedimentation control measures are appropriate for the weather conditions. The following measures will be implemented in order for erosion control devices to be effective throughout the winter and able to withstand the runoff that accompanies spring thaw and snow melt conditions:

- Temporary erosion control devices (silt fences in non-frozen conditions or straw bales, straw logs, or snow berms in frozen conditions) will be installed where appropriate during grading activities to prevent the movement of disturbed soils off the right of way.
- Mulch will be applied to disturbed areas of the respective construction area where final

seeding is delayed until spring 2028 or spring 2029 due to seeding period restrictions.

- Mulch typically will be applied at a rate of 2 tons/acre. For winter stabilization, mulch will be applied at a rate of 4 tons/acre. Northern will plan to crimp the mulch in place. If conditions preclude crimping, Northern may spray water to freeze the mulch in place or apply a biodegradable tackifier.
- In spring 2028 and/or 2029, Northern will complete final seeding including the preparation of a seedbed and seeding activities using a drill seeding, a no-till seeder, or hydroseeding. These reseeding activities will be conducted in accordance with the Plan and Northern's Procedures.

4.0 SPRING THAW CONDITIONS

When possible, seeding during spring thaw conditions will be avoided or minimized. If conditions require spring work, the following procedures will be followed.

- Northern's contractors will use equipment best suited to existing ground conditions, e.g., low ground-pressure equipment.
- Northern's contractors will install mats to access seeding areas along the travel lane where soils are excessively wet and rutting is occurring to prevent mixing of topsoil and subsoil.
- If the EI and construction manager determine that muddy conditions are severe and rutting occurs, work will be suspended until conditions improve.
- The EI will monitor, report, and initiate repairs in problem areas associated with spring 2028 and 2029 thaws based on the respective construction seasons.

5.0 RIGHT OF WAY ASSESSMENT – SPRING 2028 and 2029

Northern will conduct pedestrian and windshield surveys along the construction right of way in spring 2028 for the V2F Lake Mills M500 E-line and Albert Lea M500 E-line and the ten NL27 pipeline extensions and 2029 for the V2F Faribault M500 D-line. The surveys will identify erosion control structures in need of repair, areas of slope instability along the construction right of way, areas where settling of soils or subsidence has occurred along the trench line, and areas where erosion is occurring. The EIs will determine the most effective means of correcting noted problems.

6.0 MONITORING AND REPORTING

Northern will conduct monitoring and reporting in accordance with the FERC Plan, its Procedures, the certificate, and permit conditions.

7.0 REFERENCES

https://edocs-public.dot.state.mn.us/edocs_public/DMResultSet/download?docId=38602255

https://ia.iowadot.gov/erl/archiveoct2011/US/content/9010.pdf

Appendix 1G
Traffic Control Plan for both Projects

Traffic Control Plan

Ventura to Farmington A-line Abandonment and Capacity Replacement Project and Northern Lights 2027 Expansion Project

February 2026

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1.0 INTRODUCTION

Northern Natural Gas (Northern) is planning construction of the Ventura to Farmington A-line Abandonment and Capacity Replacement Project (V2F Project) between 2027 and 2029 in Minnesota and Iowa. The proposed facilities include:

- Approximately 17.88 miles of pipeline extensions

Installation and removal of appurtenant facilities include:

- Disconnect activities for the A-line and J-line at two compressor stations
- Installing temporary compression to evacuate gas from the A-line to an adjacent mainline
- Three temporary compression sites for the installation of the extensions

Additionally, Northern is planning construction of the Northern Lights Expansion Project (NL27 Project) in 2027, in Minnesota. The proposed facilities include:

- Approximately 28.43 miles of pipeline extensions
- Uprate at the Hugo compressor station

Installation and removal of appurtenant facilities include:

- Two new receiver facilities that include relocation of existing receivers
- Relocation of one existing receiver
- Nine new valve settings and associated valves and piping, including one new RMV facility
- Expansion of one existing block valve setting
- Removal of one receiver facility and three existing tie-in valve settings

2.0 PURPOSE

V2F Project

Northern is planning to construct three pipeline extensions of the M500 D-line and M500 E-line pipeline and associated aboveground appurtenances to replace lost capacity and to enhance the safety, reliability, security, and operational efficiency of Northern's pipeline system by abandoning in-place approximately 131.11 miles of the A-line from Ventura, Iowa, to Farmington, Minnesota and extending its E- and D-lines, consisting of approximately 17.88 miles of pipeline in Freeborn, Steele, and Dakota counites, Minnesota. Northern is planning to commence the pipeline extension construction activities in the spring of 2027 for the Lake Mills and Albert Lea M500 E-lines, or upon FERC authorization and be in service no later than November 1, 2027. Northern is planning to commence the pipeline extension construction activities in the spring of 2028 for the Faribault M500 D-line and be in service no later than November 1, 2028. Northern plans to complete tree clearing activities for the three extensions in early 2027 to minimize impacts on proposed, threatened and endangered species.

NL27 Project

Northern is planning to construct ten pipeline extensions associated with its natural gas transmission pipeline system and associated aboveground facilities to serve the firm transportation requirements of Northern's customers in Minnesota. Northern is planning to commence construction of the pipeline extensions in the spring of 2027, or upon FERC authorization, and be in service no later than November 1, 2027. Northern plans to complete tree clearing activities for the pipeline components in

February and March 2027 to minimize impacts on proposed, threatened and endangered species. The uprate for the Hugo compressor station also will be completed in 2027.

Construction of the V2F and NL27 Projects will result in minor, short-term impacts on the transportation system in the V2F and NL27 Project areas. Potential temporary effects associated with roadway crossings include disruption of traffic flows, disturbance of existing underground utilities such as water and sewer lines, and hindrance of emergency vehicle access. In addition, construction employees will utilize approved access roads to maneuver crews and equipment to and from the proposed right of way (ROW). This Traffic Control Plan details the process Northern will enact to minimize impacts on traffic, emergency services and landowner access to residences while maintaining the safety of the public and Northern contractors and employees. Northern will comply with all requirements of the Minnesota and Iowa Departments of Transportation during construction and restoration of both Projects.

The purpose of this Traffic Control Plan is to identify best management practices for construction activities.

3.0 CONSTRUCTION OF PIPELINES ACROSS ROADWAYS

3.1 CROSSING METHODS

V2F Project

The decision to install the pipeline under public roadways, using either trenchless or open-cut methods, was based on site conditions, traffic flow and road crossing permit requirements. Northern will cross 8 public roadways and two private driveways via open-cut and the remaining public roads will be crossed via horizonal directional drill (HDD) methods. Generally, all paved public roads will be crossed using trenchless crossing methods. An open-cut road crossing will be used if a trenchless method is not feasible or where the open-cut crossing method is approved by the local regulatory agency. Resource Report 1, Table 1.5-9 lists the methods by which all public roads will be crossed by the V2F Project. The pipelines will be installed at least four feet below the roadside ditches and will be designed to withstand anticipated external loading pressures.

The construction methods for HDDs are discussed in Resource Report 1, Section 1.5.6.4, special construction techniques. Northern plans to open cut the four public road crossings on the Lake Mills M500E-line; four public road crossings on the Faribault M500D-line; no other components contain open-cut public road crossings. In addition to the methods described, Northern will require its contractor to employ signage, flagging, construction entrances, and barricades where necessary. All of these activities will comply with Minnesota or Iowa DOT and local jurisdiction requirements. Vehicles will not be allowed to park along the public roads but will be required to use the designated parking areas at each crossing. Northern will post reduced speed limit signage where appropriate. Northern does not propose to open-cut any public roads in Iowa.

NL27 Project

The decision to install the pipeline under public roadways, using either trenchless or open-cut methods, was based on site conditions, traffic flow and road crossing permit requirements. Northern will cross 11 public roadways and 12 private driveways via open-cut and the remaining public roads will be crossed via HDD methods. Generally, all paved public roads will be crossed using trenchless crossing methods. An open-cut road crossing will be used if a trenchless method is not feasible or where the open-cut crossing method is approved by the local regulatory agency. Resource Report 1,

Table 1.5-10 lists the methods by which all public roads will be crossed by the Project. The pipelines will be installed at least four feet below the roadside ditches and will be designed to withstand anticipated external loading pressures.

The construction methods for HDDs are discussed in Resource Report 1, Section 1.5.6.4, special construction techniques. Northern plans to open cut the 11 public road crossings between the NL27 pipeline extensions. In addition to the methods described, Northern will require its contractor to employ signage, flagging, construction entrances, and barricades where necessary. All of these activities will comply with Minnesota DOT and local jurisdiction requirements. Vehicles will not be allowed to park along the public roads but will be required to use the designated parking areas at each crossing. Northern will post reduced speed limit signage where appropriate.

For an open-cut road crossing associated with the Projects, Northern will provide two weeks' advance notice, or as required by the local permitting agency, to the residents and local authorities. To minimize traffic delays at open-cut road crossings, Northern will establish detours before initiating an open-cut of a road. Appropriate traffic management and signage will be set up and necessary safety measures will be developed in compliance with applicable permits for work in public roadways. Northern will comply with all applicable state, county and municipal requirements during construction of the Project. The One Call system for Minnesota will be contacted to allow utility operators to verify and mark all underground utilities (e.g., cables, conduits and pipelines) located within the construction work areas. If any utilities are inadvertently disrupted during construction, Northern will ensure that they are restored as quickly as possible. Construction work in roadways will be scheduled so as to avoid commuter traffic and schedules for school buses to the greatest extent practicable and to minimize landowner inconvenience if the road leads to a residence. In addition, steel plates will be maintained on-site to cover the open trench quickly should emergency vehicles need to travel through the work area.

Road crossings that will be open-cut involve the excavation of a trench across the roadway and will result in a temporary road closure for four to six hours during the excavation of the roadway. After the pipe is installed, steel plates will be placed on one side of the open excavation to allow the traffic flow to resume through one lane. Once the excavation is filled, the steel plates will be moved to the other side of the filled roadway and the remaining side will then be filled. The steel plates will remain in-place overnight. Northern intends to keep excess materials on-site to ensure the trench can be backfilled immediately after the pipe is installed to minimize the impacts to area traffic. The roadways will be rebuilt to the specifications of the county or local permitting agency.

3.2 UTILIZATION OF ROADWAYS DURING CONSTRUCTION

In addition to the traffic impacts caused by the open-cut road crossings, the movement of construction equipment and materials and the daily commuting of workers to and from the construction work areas may increase traffic volumes in localized areas throughout the V2F and NL27 Project areas. Both V2F and NL27 Project-related construction traffic will typically occur during the early morning hours and evening hours when construction workers commute to and from the construction work areas. Construction workers will be deployed in various locations along the pipeline such that no single area will experience significant traffic impacts. Access roads utilized during construction are pre-approved by FERC, landowners, and the appropriate permitting agencies, and Northern is responsible for ensuring the construction employees utilize only pre-approved access roads. Pipeline construction is typically scheduled to take advantage of daytime hours (six days a week). Because construction will move sequentially along the pipeline route, traffic flow impacts that do arise will be temporary on any given section of roadway. Accordingly, Northern does not anticipate significant traffic impacts

during construction. To maintain safe conditions, Northern will require its construction contractors to ensure enforcement of local weight restrictions and limitations by its vehicles. Specifically, Northern will require its contractors to obtain road and highway permits and bonding, as required, for the use of public roads to transport construction equipment and materials, especially for any overweight or oversized equipment. Damage to public and private roadways due to construction will be repaired by Northern's contractors. At points of access to the ROW from hard-surfaced roads, a stabilized construction entrance will be installed as a construction entrance to control dirt tracking onto the highway. Flagging and signage will be utilized as appropriate and in accordance with all applicable regulations.

4.0 POST-CONSTRUCTION

Northern is responsible for post-construction restoration and maintenance at any roads that are open cut during construction of the V2F and NL27 Projects. Northern will obtain all applicable state, county and local permits for utilization of and construction across roadways. Northern is currently communicating with the appropriate agencies and individuals at the state, county and municipal levels regarding road construction and post-construction restoration for public road crossings. Northern will continue this communication throughout the V2F and NL27 Projects.

5.0 ROAD CONDITION ASSESSMENT

Northern will conduct windshield surveys along the construction ROW in the spring following completion of construction (either 2028 or 2029) for all construction areas. The surveys will identify areas at public road crossings that may need repair. Northern will coordinate with its contractors and the roadway permitting agencies to complete these repairs.

Appendix 1H
Biological and Cultural Data by MP for the A-line for V2F Project

Cultural Data filed as CUI//PRIV - Do Not Release

Appendix 1H – Abandonment Segments					
Waterbodies Crossed by the A-line and J-line in MN and IA					
Facility, State, County, Milepost	**Waterbody Name**	**Flow Regime**	**303(d) List (Y/N)**	**Section 10 Water (Y/N)**	**Wild & Scenic River (Y/N)**
A-Line					
Hancock County, IA					
3.4	Winnebago River	Artificial Path	No	No	No
Worth County, IA					
7.0	<Null>	Intermittent	No	No	No
8.2	Beaver Creek	Intermittent	No	No	No
14.3	<Null>	Intermittent	No	No	No
16.5	<Null>	Intermittent	No	No	No
18.3	Elk Creek	Intermittent	No	No	No
18.3	Elk Creek	Intermittent	No	No	No
20.5	<Null>	Intermittent	No	No	No
Freeborn County, MN					
25.5	<Null>	Intermittent	No	No	No
26.2	<Null>	Intermittent	No	No	No
27.3	County Ditch Number Ten	Canal Ditch	No	No	No
28.6	Goose Creek	Connector	No	No	No
31.0	<Null>	Intermittent	No	No	No
34.0	County Ditch Number Sixtyeight	Canal Ditch	No	No	No
35.8	<Null>	Intermittent	No	No	No
37.5	<Null>	Canal Ditch	No	No	No
42.7	<Null>	Canal Ditch	No	No	No
46.0	<Null>	Intermittent	No	No	No
46.3	<Null>	Canal Ditch	No	No	No
47.2	<Null>	Canal Ditch	No	No	No
47.8	<Null>	Canal Ditch	Yes	No	No
Steele County, MN					
51.0	<Null>	Intermittent	No	No	No
51.7	<Null>	Canal Ditch	No	No	No
52.0	<Null>	Intermittent	No	No	No
52.4	<Null>	Intermittent	No	No	No
55.0	<Null>	Intermittent	No	No	No
57.2	<Null>	Intermittent	No	No	No
58.8	Little Le Sueur River	Intermittent	No	No	No
62.4	<Null>	Canal Ditch	Yes	No	No
62.7	<Null>	Canal Ditch	No	No	No
62.9	<Null>	Canal Ditch	No	No	No

Appendix 1H – Abandonment Segments					
Waterbodies Crossed by the A-line and J-line in MN and IA					
Facility, State, County, Milepost	**Waterbody Name**	**Flow Regime**	**303(d) List (Y/N)**	**Section 10 Water (Y/N)**	**Wild & Scenic River (Y/N)**
66.3	Crane Creek	Canal Ditch	No	No	No
66.6	<Null>	Connector	No	No	No
66.7	<Null>	Intermittent	No	No	No
68.0	<Null>	Canal Ditch	No	No	No
69.8	<Null>	Canal Ditch	No	No	No
Rice County, MN					
75.2	<Null>	Intermittent	No	No	No
75.5	<Null>	Intermittent	No	No	No
79.8	Cannon River	Artificial Path	Yes	No	Yes*
80.9	<Null>	Intermittent	Yes	No	No
83.0	<Null>	Intermittent	No	No	No
83.6	<Null>	Intermittent	No	No	No
84.0	<Null>	Intermittent	No	No	No
85.3	<Null>	Intermittent	No	No	No
88.3	Wolf Creek	Intermittent	Yes	No	No
88.5	<Null>	Intermittent	No	No	No
89.9	<Null>	Intermittent	Yes	No	No
92.6	Heath Creek	Intermittent	Yes	No	No
Dakota County, MN					
94.0	Mud Creek	Intermittent	No	No	No
94.4	<Null>	Intermittent	No	No	No
96.7	Dutch Creek	Perennial	Yes	No	No
96.8	Chub Creek	Perennial	Yes	No	No
98.2	<Null>	Perennial	No	No	No
98.9	<Null>	Perennial	No	No	No
99.1	<Null>	Perennial	No	No	No
100.2	<Null>	Perennial	No	No	No
100.5	<Null>	Perennial	No	No	No
101.4	<Null>	Perennial	No	No	No
105.1	Vermillion River	Perennial	Yes	Yes	No
J-Line					
Worth County, IA					
1.2	<Null>	Intermittent	No	No	No
2.9	Elk Creek	Perennial	No	No	No
5.2	<Null>	Perennial	No	No	No

Appendix 1H – Abandonment Segments					
Waterbodies Crossed by the A-line and J-line in MN and IA					
Facility, State, County, Milepost	**Waterbody Name**	**Flow Regime**	**303(d) List (Y/N)**	**Section 10 Water (Y/N)**	**Wild & Scenic River (Y/N)**
Freeborn County, MN					
15.9	<Null>	Canal Ditch	No	No	No
17.8	<Null>	Intermittent	No	No	No
19.3	County Ditch Number Sixtyeight	Canal Ditch	No	No	No
20.9	<Null>	Intermittent	No	No	No
22.4	<Null>	Canal Ditch	Yes	No	No

* This segment of the Cannon River is designated as “Recreational” as defined in Minn. Rules 6105.0060

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
A-Line			
Worth County, IA			
23.2	0*	0.25	PEM1A - Freshwater Emergent Wetland
23.3	100.17	0.53	PEM1A - Freshwater Emergent Wetland
Freeborn County, MN			
24.5	731.97	18.51	PEM1Af - Freshwater Emergent Wetland
24.5	0*	2.51	PEM1Af - Freshwater Emergent Wetland
25.0	0*	0.1	PEM1A - Freshwater Emergent Wetland
25.4	0*	<0.01	PFO1D - Freshwater Forested Wetland
27.8	272.59	1.14	PEM1A - Freshwater Emergent Wetland
27.8	63.49	0.4	PEM1Af - Freshwater Emergent Wetland
27.8	0*	0.63	PEM1A - Freshwater Emergent Wetland
27.8	0*	0.34	PEM1Af - Freshwater Emergent Wetland
27.9	0*	<0.01	PFO1A - Freshwater Forested Wetland
28.2	0*	0.02	PEM1D - Freshwater Emergent Wetland
28.2	0*	<0.01	PEM1D - Freshwater Emergent Wetland
28.3	57.72	0.33	PEM1A - Freshwater Emergent Wetland
28.3	54.04	0.54	PEM1D - Freshwater Emergent Wetland
28.3	55.32	0.59	PEM1C - Freshwater Emergent Wetland
28.3	95.51	0.69	PEM1C - Freshwater Emergent Wetland
28.3	53.29	0.37	PFO1A - Freshwater Forested Wetland
28.3	0*	0.18	PEM1A - Freshwater Emergent Wetland
28.3	0*	0.2	PEM1D - Freshwater Emergent Wetland
28.3	0*	0.17	PEM1C - Freshwater Emergent Wetland
28.3	0*	0.32	PEM1C - Freshwater Emergent Wetland
28.3	0*	0.17	PFO1A - Freshwater Forested Wetland
28.4	69.63	1.13	PFO1A - Freshwater Forested Wetland
28.4	0*	0.02	PEM1C - Freshwater Emergent Wetland
28.4	0*	0.24	PFO1A - Freshwater Forested Wetland
28.5	137.96	1.83	PEM1A - Freshwater Emergent Wetland
28.5	44.74	1.95	PFO1A - Freshwater Forested Wetland
28.5	48.17	0.12	PSS1A - Freshwater Shrub Wetland
28.5	17.02	0.68	R2UBH - Riverine
28.5	0*	<0.01	PEM1A - Freshwater Emergent Wetland
28.5	0*	0.41	PEM1A - Freshwater Emergent Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
28.5	0*	0.27	PFO1A - Freshwater Forested Wetland
28.5	0*	0.11	PSS1A - Freshwater Shrub Wetland
28.5	0*	0.07	R2UBH - Riverine
28.6	144.42	23.91	PEM1A - Freshwater Emergent Wetland
28.6	66.27	23.91	PEM1A - Freshwater Emergent Wetland
28.6	361.93	17.84	PEM1C - Freshwater Emergent Wetland
28.6	13.49	17.84	PEM1C - Freshwater Emergent Wetland
28.6	15.88	0.68	R2UBH - Riverine
28.6	0*	0.78	PEM1A - Freshwater Emergent Wetland
28.6	0*	0.1	PEM1C - Freshwater Emergent Wetland
28.6	0*	0.05	PFO1A - Freshwater Forested Wetland
28.6	0*	0.05	R2UBH - Riverine
28.7	488.62	23.91	PEM1A - Freshwater Emergent Wetland
28.7	0*	1.14	PEM1A - Freshwater Emergent Wetland
28.7	0*	1.03	PEM1C - Freshwater Emergent Wetland
28.7	0*	0.3	PFO1A - Freshwater Forested Wetland
28.8	0*	0.29	PSS1A - Freshwater Shrub Wetland
29.6	33.21	0.59	PEM1A - Freshwater Emergent Wetland
29.6	33.75	0.26	PEM1A - Freshwater Emergent Wetland
29.6	177.27	1.36	PFO1A - Freshwater Forested Wetland
29.6	0*	0.15	PUBFx - Freshwater Pond
29.6	0*	0.15	PEM1A - Freshwater Emergent Wetland
29.6	0*	0.11	PEM1A - Freshwater Emergent Wetland
29.6	0*	0.4	PFO1A - Freshwater Forested Wetland
30.0	220.35	1.71	PEM1A - Freshwater Emergent Wetland
30.0	0*	0.71	PEM1A - Freshwater Emergent Wetland
30.1	136.94	6.35	PEM1A - Freshwater Emergent Wetland
30.1	0*	0.38	PEM1A - Freshwater Emergent Wetland
30.1	0*	0.05	PEM1C - Freshwater Emergent Wetland
30.2	72.85	6.35	PEM1A - Freshwater Emergent Wetland
30.2	73.52	0.61	PEM1A - Freshwater Emergent Wetland
30.2	29.63	0.51	PEM1C - Freshwater Emergent Wetland
30.2	163.04	12.34	PEM1C - Freshwater Emergent Wetland
30.2	0*	0.28	PEM1A - Freshwater Emergent Wetland
30.2	0*	0.25	PEM1A - Freshwater Emergent Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
30.2	0*	0.11	PEM1C - Freshwater Emergent Wetland
30.2	0*	0.57	PEM1C - Freshwater Emergent Wetland
30.3	235.8	45.91	PEM1A - Freshwater Emergent Wetland
30.3	0*	0.8	PEM1A - Freshwater Emergent Wetland
30.5	127.39	45.91	PEM1A - Freshwater Emergent Wetland
30.5	147.77	45.91	PEM1A - Freshwater Emergent Wetland
30.5	233.52	5.88	PEM1C - Freshwater Emergent Wetland
30.5	30.41	0.77	PFO1A - Freshwater Forested Wetland
30.5	0*	0.43	PEM1A - Freshwater Emergent Wetland
30.5	0*	0.5	PEM1A - Freshwater Emergent Wetland
30.5	0*	0.74	PEM1C - Freshwater Emergent Wetland
30.5	0*	0.03	PEM1F - Freshwater Emergent Wetland
30.5	0*	0.13	PFO1A - Freshwater Forested Wetland
30.9	180.35	4.43	PEM1Af - Freshwater Emergent Wetland
30.9	0*	0.48	PEM1Af - Freshwater Emergent Wetland
31.0	0*	0.01	PEM1A - Freshwater Emergent Wetland
31.0	0*	0.52	PEM1A - Freshwater Emergent Wetland
31.1	236.22	2.31	PEM1A - Freshwater Emergent Wetland
31.1	0.83	0.17	PFO1A - Freshwater Forested Wetland
31.1	0*	0.1	PFO1A - Freshwater Forested Wetland
32.1	444.64	4.73	PEM1A - Freshwater Emergent Wetland
32.1	0*	1.47	PEM1A - Freshwater Emergent Wetland
32.8	25.47	3.89	PEM1Af - Freshwater Emergent Wetland
32.8	0*	0.15	PEM1Af - Freshwater Emergent Wetland
32.9	91.35	8.58	PEM1A - Freshwater Emergent Wetland
32.9	251.41	8.58	PEM1A - Freshwater Emergent Wetland
32.9	0*	0.31	PEM1A - Freshwater Emergent Wetland
32.9	0*	0.76	PEM1A - Freshwater Emergent Wetland
33.0	374.78	2.51	PEM1C - Freshwater Emergent Wetland
33.0	0*	1.26	PEM1C - Freshwater Emergent Wetland
33.1	642.14	14.82	PEM1A - Freshwater Emergent Wetland
33.1	0*	2.19	PEM1A - Freshwater Emergent Wetland
34.0	6.83	2.2	R2UBHx - Riverine
34.0	0*	0.02	R2UBHx - Riverine
34.8	787.3	8.96	PEM1A - Freshwater Emergent Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
34.8	0*	2.59	PEM1A - Freshwater Emergent Wetland
34.8	0*	0.09	PFO1A - Freshwater Forested Wetland
35.0	112.08	0.16	PEM1D - Freshwater Emergent Wetland
35.0	38.77	0.16	PEM1D - Freshwater Emergent Wetland
35.0	0*	0.16	PEM1D - Freshwater Emergent Wetland
35.8	0*	0.01	PFO1D - Freshwater Forested Wetland
35.9	0*	<0.01	PEM1C - Freshwater Emergent Wetland
35.9	0*	0.01	PEM1C - Freshwater Emergent Wetland
37.5	25.18	15.52	R2UBHx - Riverine
37.5	0*	0.08	R2UBHx - Riverine
38.3	0*	0.01	PFO1A - Freshwater Forested Wetland
41.0	173.05	1.2	PFO1A - Freshwater Forested Wetland
41.0	0*	0.56	PFO1A - Freshwater Forested Wetland
42.0	60.26	7.98	PEM1Af - Freshwater Emergent Wetland
42.1	0*	0.45	PEM1Af - Freshwater Emergent Wetland
43.1	156.37	3.37	PEM1A - Freshwater Emergent Wetland
43.1	0*	0.03	PUBF - Freshwater Pond
43.2	91.99	3.37	PEM1A - Freshwater Emergent Wetland
43.2	67.76	3.37	PEM1A - Freshwater Emergent Wetland
43.2	72.62	1.52	PEM1C - Freshwater Emergent Wetland
43.2	0*	0.21	PEM1A - Freshwater Emergent Wetland
43.2	0*	0.56	PEM1A - Freshwater Emergent Wetland
43.2	0*	0.1	PEM1C - Freshwater Emergent Wetland
43.2	0*	0.41	PEM1C - Freshwater Emergent Wetland
43.2	0*	<0.01	PUBF - Freshwater Pond
43.8	138.99	0.85	PEM1A - Freshwater Emergent Wetland
43.8	0*	0.45	PEM1A - Freshwater Emergent Wetland
43.8	0*	0.03	PEM1Af - Freshwater Emergent Wetland
47.2	0*	<0.01	PEM1A - Freshwater Emergent Wetland
Steele County, MN			
49.3	634.77	24.01	PEM1A - Freshwater Emergent Wetland
49.3	0*	1.8	PEM1A - Freshwater Emergent Wetland
49.3	0*	0.37	PEM1C - Freshwater Emergent Wetland
49.4	0*	0.03	PEM1A - Freshwater Emergent Wetland
49.6	0*	0.13	PEM1A - Freshwater Emergent Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
50.5	108.46	9.94	PEM1A - Freshwater Emergent Wetland
50.5	0*	0.02	PEM1A - Freshwater Emergent Wetland
50.5	0*	0.59	PEM1A - Freshwater Emergent Wetland
50.6	76	0.63	PSS1A - Freshwater Shrub Wetland
50.6	0*	0.22	PSS1A - Freshwater Shrub Wetland
50.9	0*	0.12	PFO1A - Freshwater Forested Wetland
51.0	439.37	199.65	PEM1A - Freshwater Emergent Wetland
51.0	0*	2.83	PEM1A - Freshwater Emergent Wetland
51.2	43.88	199.65	PEM1A - Freshwater Emergent Wetland
51.2	315.8	199.65	PEM1A - Freshwater Emergent Wetland
51.2	231.9	1.57	PEM1C - Freshwater Emergent Wetland
51.2	0*	0.73	PEM1C - Freshwater Emergent Wetland
51.3	197.35	199.65	PEM1A - Freshwater Emergent Wetland
51.3	213.71	1.38	PEM1C - Freshwater Emergent Wetland
51.3	0*	0.91	PEM1A - Freshwater Emergent Wetland
51.3	0*	0.58	PEM1C - Freshwater Emergent Wetland
51.3	0*	0.09	PEM1C - Freshwater Emergent Wetland
51.5	0*	4.1	PEM1A - Freshwater Emergent Wetland
51.5	0*	0.03	PFO1A - Freshwater Forested Wetland
51.7	1493.91	199.65	PEM1A - Freshwater Emergent Wetland
51.7	0*	0.23	PSS1A - Freshwater Shrub Wetland
52.0	238.46	199.65	PEM1A - Freshwater Emergent Wetland
52.0	81.31	2.32	PFO1A - Freshwater Forested Wetland
52.0	11.33	6.51	PFO1A - Freshwater Forested Wetland
52.0	59.61	6.51	PFO1A - Freshwater Forested Wetland
52.0	0*	0.63	PEM1A - Freshwater Emergent Wetland
52.0	0*	0.04	PEM1C - Freshwater Emergent Wetland
52.0	0*	0.28	PFO1A - Freshwater Forested Wetland
52.0	0*	0.41	PFO1A - Freshwater Forested Wetland
52.1	150.83	1.12	PEM1A - Freshwater Emergent Wetland
52.1	0*	0.51	PEM1A - Freshwater Emergent Wetland
53.2	137.36	2.89	PEM1A - Freshwater Emergent Wetland
53.2	49.13	0.17	PSS1A - Freshwater Shrub Wetland
53.2	0*	0.41	PEM1A - Freshwater Emergent Wetland
53.2	0*	0.16	PSS1A - Freshwater Shrub Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
54.0	105.4	0.85	PFO1A - Freshwater Forested Wetland
54.0	0*	0.32	PFO1A - Freshwater Forested Wetland
58.9	273.41	2.46	PEM1A - Freshwater Emergent Wetland
58.9	0*	0.91	PEM1A - Freshwater Emergent Wetland
59.0	182.72	1.36	PEM1A - Freshwater Emergent Wetland
59.0	0*	0.62	PEM1A - Freshwater Emergent Wetland
61.1	190.61	1.14	PEM1A - Freshwater Emergent Wetland
61.2	0*	0.64	PEM1A - Freshwater Emergent Wetland
61.3	0*	0.08	PEM1A - Freshwater Emergent Wetland
63.9	0*	0.03	PFO1A - Freshwater Forested Wetland
64.9	171.46	0.91	PEM1Af - Freshwater Emergent Wetland
64.9	0*	0.56	PEM1Af - Freshwater Emergent Wetland
66.3	39.79	63.05	R2UBHx - Riverine
66.3	0*	0.15	R2UBHx - Riverine
67.9	534.67	3.54	PEM1A - Freshwater Emergent Wetland
67.9	0*	1.43	PEM1A - Freshwater Emergent Wetland
71.8	0*	0.41	PEM1A - Freshwater Emergent Wetland
Rice County, MN			
73.3	474.47	8.4	PEM1Af - Freshwater Emergent Wetland
73.3	0*	1.62	PEM1Af - Freshwater Emergent Wetland
75.2	37.12	2.31	PEM1Ad - Freshwater Emergent Wetland
75.2	0*	0.13	PEM1Ad - Freshwater Emergent Wetland
75.5	70.05	0.32	PEM1Af - Freshwater Emergent Wetland
75.5	36.81	0.79	PEM1Af - Freshwater Emergent Wetland
75.5	0*	0.18	PEM1Af - Freshwater Emergent Wetland
75.5	0*	0.13	PEM1Af - Freshwater Emergent Wetland
76.8	138.97	0.76	PEM1Af - Freshwater Emergent Wetland
76.8	0*	0.34	PEM1Af - Freshwater Emergent Wetland
79.8	532.67	790	L2UBHh - Lake
79.8	0*	1.86	L2UBHh - Lake
79.9	21.13	0.96	PEM1A - Freshwater Emergent Wetland
79.9	0*	0.09	PEM1A - Freshwater Emergent Wetland
80.2	0*	0.18	PEM1Ad - Freshwater Emergent Wetland
80.8	420.49	8.65	PEM1C - Freshwater Emergent Wetland
80.8	0*	1.41	PEM1C - Freshwater Emergent Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
80.9	43.61	12.24	R2UBH - Riverine
80.9	0*	0.14	R2UBH - Riverine
81.0	100.17	4.58	PEM1A - Freshwater Emergent Wetland
81.0	43.91	4.58	PEM1A - Freshwater Emergent Wetland
81.0	0*	0.5	PEM1A - Freshwater Emergent Wetland
81.1	109.91	0.21	PABH - Freshwater Pond
81.1	78.41	0.7	PEM1C - Freshwater Emergent Wetland
81.1	43.76	0.7	PEM1C - Freshwater Emergent Wetland
81.1	212.35	4.58	PEM1A - Freshwater Emergent Wetland
81.1	0*	0.21	PABH - Freshwater Pond
81.1	0*	0.49	PEM1C - Freshwater Emergent Wetland
81.1	0*	0.8	PEM1A - Freshwater Emergent Wetland
81.4	0*	0.01	PEM1C - Freshwater Emergent Wetland
82.4	105.53	0.42	PEM1A - Freshwater Emergent Wetland
82.4	0*	0.34	PEM1A - Freshwater Emergent Wetland
83.0	95.12	2.77	PEM1Ad - Freshwater Emergent Wetland
83.0	0*	0.33	PEM1Ad - Freshwater Emergent Wetland
83.3	0*	0.05	PEM1C - Freshwater Emergent Wetland
83.6	281.12	4.26	PEM1C - Freshwater Emergent Wetland
83.6	0*	0.96	PEM1C - Freshwater Emergent Wetland
83.9	361.67	9.87	PEM1Ad - Freshwater Emergent Wetland
83.9	0*	1.13	PEM1Ad - Freshwater Emergent Wetland
84.0	435.82	22.92	PEM1Cd - Freshwater Emergent Wetland
84.0	0*	1.48	PEM1Cd - Freshwater Emergent Wetland
84.4	0*	0.06	PEM1Cd - Freshwater Emergent Wetland
85.0	308.93	4.22	PEM1Af - Freshwater Emergent Wetland
85.0	0*	1.15	PEM1Af - Freshwater Emergent Wetland
87.1	168.15	1.12	PEM1C - Freshwater Emergent Wetland
87.1	0*	0.55	PEM1C - Freshwater Emergent Wetland
87.2	181.71	0.88	PEM1Af - Freshwater Emergent Wetland
87.2	0*	0.59	PEM1Af - Freshwater Emergent Wetland
87.4	0*	0.21	PEM1Cd - Freshwater Emergent Wetland
87.5	353.67	1.21	PEM1Af - Freshwater Emergent Wetland
87.5	0*	1.03	PEM1Af - Freshwater Emergent Wetland
87.6	143.71	14.62	PEM1Cd - Freshwater Emergent Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
87.6	0*	0.64	PEM1Cd - Freshwater Emergent Wetland
87.7	0*	<0.01	PEM1A - Freshwater Emergent Wetland
88.3	22.91	1229.08	R2UBH - Riverine
88.3	0*	0.09	R2UBH - Riverine
88.4	188.23	2.14	PEM1C - Freshwater Emergent Wetland
88.4	0*	0.63	PEM1C - Freshwater Emergent Wetland
89.3	356.68	3.95	PEM1Ad - Freshwater Emergent Wetland
89.3	0*	1.2	PEM1Ad - Freshwater Emergent Wetland
89.3	0*	0.08	PEM1C - Freshwater Emergent Wetland
91.7	533.62	3.56	PEM1A - Freshwater Emergent Wetland
91.7	0*	1.5	PEM1A - Freshwater Emergent Wetland
91.8	0*	0.2	PEM1C - Freshwater Emergent Wetland
92.3	361.73	5.81	PEM1A - Freshwater Emergent Wetland
92.3	0*	1.12	PEM1A - Freshwater Emergent Wetland
92.6	55.98	1229.08	R2UBH - Riverine
92.6	30.73	1229.08	R2UBH - Riverine
92.6	0*	0.04	R2UBH - Riverine
92.6	0*	0.13	R2UBH - Riverine
92.6	0*	0.08	PEM1C - Freshwater Emergent Wetland
92.6	0*	0.03	PFO1A - Freshwater Forested Wetland
92.6	0*	0.09	PFO1A - Freshwater Forested Wetland
Dakota County, MN			
93.6	416.42	2.88	PEM1A - Freshwater Emergent Wetland
93.6	0*	1.24	PEM1A - Freshwater Emergent Wetland
94.0	70.93	7.85	PEM1Ad - Freshwater Emergent Wetland
94.0	0*	0.38	PEM1Ad - Freshwater Emergent Wetland
94.0	0*	0.02	PUBFx - Freshwater Pond
94.1	23.87	0.77	PEM1A - Freshwater Emergent Wetland
94.1	204.69	0.5	PSS1A - Freshwater Shrub Wetland
94.1	0*	0.02	PEM1A - Freshwater Emergent Wetland
94.1	0*	0.17	PEM1A - Freshwater Emergent Wetland
94.1	0*	0.48	PSS1A - Freshwater Shrub Wetland
94.8	29.23	8.18	R2UBFx - Riverine
94.8	63.95	0.22	PSS1A - Freshwater Shrub Wetland
94.8	87.2	1.76	PEM1Ad - Freshwater Emergent Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
94.8	65.33	1.76	PEM1Ad - Freshwater Emergent Wetland
94.8	7.73	1.76	PEM1Ad - Freshwater Emergent Wetland
94.8	0*	0.08	R2UBFx - Riverine
94.8	0*	0.06	PABHx - Freshwater Pond
94.8	0*	0.16	PSS1A - Freshwater Shrub Wetland
94.8	0*	0.29	PEM1Ad - Freshwater Emergent Wetland
94.8	0*	<0.01	PEM1Ad - Freshwater Emergent Wetland
94.8	0*	0.24	PEM1Ad - Freshwater Emergent Wetland
94.8	0*	0.02	PFO1A - Freshwater Forested Wetland
95.5	220.01	1.52	PEM1Af - Freshwater Emergent Wetland
95.5	0*	0.68	PEM1Af - Freshwater Emergent Wetland
95.8	357.9	6.74	PEM1Af - Freshwater Emergent Wetland
95.8	0*	1.22	PEM1Af - Freshwater Emergent Wetland
96.3	105.54	1.28	PEM1A - Freshwater Emergent Wetland
96.3	135.54	1.28	PEM1A - Freshwater Emergent Wetland
96.3	0*	0.12	PFO1A - Freshwater Forested Wetland
96.3	0*	0.65	PEM1A - Freshwater Emergent Wetland
96.4	60.19	0.07	PEM1A - Freshwater Emergent Wetland
96.4	0*	0.01	PFO1A - Freshwater Forested Wetland
96.4	0*	0.11	PEM1A - Freshwater Emergent Wetland
96.4	0*	0.07	PEM1A - Freshwater Emergent Wetland
96.5	119.18	0.35	PEM1C - Freshwater Emergent Wetland
96.5	52.63	0.71	PEM1A - Freshwater Emergent Wetland
96.5	19.82	0.71	PEM1A - Freshwater Emergent Wetland
96.5	0*	0.21	PSS1A - Freshwater Shrub Wetland
96.5	0*	0.29	PEM1C - Freshwater Emergent Wetland
96.5	0*	0.37	PEM1A - Freshwater Emergent Wetland
96.6	404.26	1.89	PFO1A - Freshwater Forested Wetland
96.6	0*	1.01	PFO1A - Freshwater Forested Wetland
96.7	28.09	1229.08	R2UBH - Riverine
96.7	26.99	0.61	PEM1A - Freshwater Emergent Wetland
96.7	99.46	0.61	PEM1A - Freshwater Emergent Wetland
96.7	8.88	0.2	PFO1A - Freshwater Forested Wetland
96.7	7.11	0.2	PFO1A - Freshwater Forested Wetland
96.7	163.55	33.72	PFO1A - Freshwater Forested Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
96.7	0*	0.07	R2UBH - Riverine
96.7	0*	0.03	R2UBH - Riverine
96.7	0*	0.48	PEM1A - Freshwater Emergent Wetland
96.7	0*	0.12	PFO1A - Freshwater Forested Wetland
96.7	0*	0.05	PEM1A - Freshwater Emergent Wetland
96.7	0*	0.46	PFO1A - Freshwater Forested Wetland
96.8	65.63	0.29	PEM1A - Freshwater Emergent Wetland
96.8	161.02	13.86	PFO1A - Freshwater Forested Wetland
96.8	517.7	13.86	PFO1A - Freshwater Forested Wetland
96.8	0*	<0.01	PEM1A - Freshwater Emergent Wetland
96.8	0*	0.04	PEM1A - Freshwater Emergent Wetland
96.8	0*	0.15	PEM1A - Freshwater Emergent Wetland
96.8	0*	0.56	PFO1A - Freshwater Forested Wetland
96.8	0*	1.63	PFO1A - Freshwater Forested Wetland
97.6	26.31	5.26	PEM1A - Freshwater Emergent Wetland
97.7	110.19	0.45	PSS1A - Freshwater Shrub Wetland
97.7	166.04	5.26	PEM1A - Freshwater Emergent Wetland
97.7	0*	0.36	PSS1A - Freshwater Shrub Wetland
97.7	0*	0.07	PFO1A - Freshwater Forested Wetland
97.7	0*	0.65	PEM1A - Freshwater Emergent Wetland
98.2	103.05	6.22	PEM1Ad - Freshwater Emergent Wetland
98.2	223.08	6.22	PEM1Ad - Freshwater Emergent Wetland
98.2	81.21	0.59	PSS1A - Freshwater Shrub Wetland
98.2	0*	1.14	PEM1Ad - Freshwater Emergent Wetland
98.2	0*	0.26	PSS1A - Freshwater Shrub Wetland
98.3	173.3	2.31	PEM1A - Freshwater Emergent Wetland
98.3	0*	0.5	PEM1A - Freshwater Emergent Wetland
99.6	58.23	8.03	PEM1A - Freshwater Emergent Wetland
99.6	0*	0.2	PEM1A - Freshwater Emergent Wetland
99.8	161.9	1.31	PEM1A - Freshwater Emergent Wetland
99.8	0*	0.37	PEM1A - Freshwater Emergent Wetland
100.2	0*	0.14	PEM1A - Freshwater Emergent Wetland
100.4	46.61	2.98	PFO1A - Freshwater Forested Wetland
100.4	89.55	2.98	PFO1A - Freshwater Forested Wetland
100.4	115.4	6.72	PEM1A - Freshwater Emergent Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
100.4	149.8	6.72	PEM1A - Freshwater Emergent Wetland
100.4	0*	0.75	PFO1A - Freshwater Forested Wetland
100.4	0*	0.86	PEM1A - Freshwater Emergent Wetland
100.4	0*	0.78	PFO1A - Freshwater Forested Wetland
100.5	33.49	6.72	PEM1A - Freshwater Emergent Wetland
100.5	274.27	3.38	PEM1C - Freshwater Emergent Wetland
100.5	282.45	1.21	PFO1A - Freshwater Forested Wetland
100.5	0*	0.03	PEM1A - Freshwater Emergent Wetland
100.5	0*	0.89	PEM1C - Freshwater Emergent Wetland
101.1	0*	0.03	PFO1/SS1A - Freshwater Forested/Shrub Wetland
101.3	288.27	4.67	PFO1/SS1A - Freshwater Forested/Shrub Wetland
101.3	30.2	14.01	PEM1A - Freshwater Emergent Wetland
101.3	0*	1.02	PFO1/SS1A - Freshwater Forested/Shrub Wetland
101.3	0*	0.13	PEM1A - Freshwater Emergent Wetland
101.4	140.88	14.01	PEM1A - Freshwater Emergent Wetland
101.4	154.88	14.01	PEM1A - Freshwater Emergent Wetland
101.4	35.29	4.37	PSS1A - Freshwater Shrub Wetland
101.4	0*	0.96	PEM1A - Freshwater Emergent Wetland
101.4	0*	0.2	PSS1A - Freshwater Shrub Wetland
101.7	0*	0.01	PEM1Ad - Freshwater Emergent Wetland
102.3	0*	0.21	PEM1Af - Freshwater Emergent Wetland
103.2	427.02	72.63	PSS1/EM1A - Freshwater Shrub/Emergent Wetland
103.2	0*	1.14	PSS1/EM1A - Freshwater Shrub/Emergent Wetland
104.0	39.61	10.72	PEM1A - Freshwater Emergent Wetland
104.0	0*	0.11	PEM1A - Freshwater Emergent Wetland
104.2	99.46	0.38	PEM1Af - Freshwater Emergent Wetland
104.2	0*	0.33	PEM1Af - Freshwater Emergent Wetland
104.3	159.37	2.03	PEM1C - Freshwater Emergent Wetland
104.3	0*	0.54	PEM1C - Freshwater Emergent Wetland
105.1	218.97	7.03	PSS1/EM1A - Freshwater Shrub/Emergent Wetland
105.1	251.67	16.79	PSS1Ad - Freshwater Shrub Wetland
105.1	63.6	45566.22	R2UBH - Riverine
105.1	0*	0.79	PSS1/EM1A - Freshwater Shrub/Emergent Wetland
105.1	0*	0.89	PSS1Ad - Freshwater Shrub Wetland
105.1	0*	0.15	R2UBH - Riverine

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
105.2	0*	0.11	PSS1A - Freshwater Shrub Wetland
105.3	542.81	4.81	PEM1A - Freshwater Emergent Wetland
105.3	0*	1.98	PEM1A - Freshwater Emergent Wetland
J-Line			
Worth County, IA			
7.9	0*	0.1	PEM1A - Freshwater Emergent Wetland
Freeborn County, MN			
10.3	0*	0.18	PEM1A - Freshwater Emergent Wetland
10.3	0*	0.18	PSS1A - Freshwater Shrub Wetland
12.0	0*	0.01	PEM1A - Freshwater Emergent Wetland
14.0	4.72	0.35	PEM1Af - Freshwater Emergent Wetland
14.0	0*	0.16	PEM1Af - Freshwater Emergent Wetland
15.5	95.25	1.29	PEM1Af - Freshwater Emergent Wetland
15.5	0*	0.35	PEM1Af - Freshwater Emergent Wetland
16.7	99.92	0.75	PEM1Af - Freshwater Emergent Wetland
16.7	0*	0.34	PEM1Af - Freshwater Emergent Wetland
17.7	576.43	39.29	PEM1Af - Freshwater Emergent Wetland
17.7	0*	1.98	PEM1Af - Freshwater Emergent Wetland
19.0	0*	0.02	PEM1D - Freshwater Emergent Wetland
19.0	0*	0.09	PEM1D - Freshwater Emergent Wetland
19.1	120.81	8.6	PEM1A - Freshwater Emergent Wetland
19.1	120.58	8.6	PEM1A - Freshwater Emergent Wetland
19.1	262.19	3.63	PEM1C - Freshwater Emergent Wetland
19.1	0*	0.73	PEM1A - Freshwater Emergent Wetland
19.1	0*	0.41	PEM1A - Freshwater Emergent Wetland
19.1	0*	0.9	PEM1C - Freshwater Emergent Wetland
19.2	40.13	8.6	PEM1A - Freshwater Emergent Wetland
19.3	6.6	2.2	R2UBHx - Riverine
19.3	0*	0.02	R2UBHx - Riverine
19.4	40.45	0.18	PEM1A - Freshwater Emergent Wetland
19.4	85.76	0.81	PEM1Af - Freshwater Emergent Wetland
19.4	0*	0.1	PEM1A - Freshwater Emergent Wetland
19.4	0*	0.33	PEM1Af - Freshwater Emergent Wetland
20.0	132.2	0.46	PEM1A - Freshwater Emergent Wetland
20.0	27.05	0.43	PEM1A - Freshwater Emergent Wetland

Appendix 1H – Abandonment Segments			
Wetlands Crossed by the A-line and J-line in Minnesota and Iowa			
Facility, State, County, Milepost	**Approximate Crossing Length (Feet)**	**Within 75-foot Construction Workspace (Acres)**	**Wetland Type**
20.0	92.94	0.72	PSS1A - Freshwater Shrub Wetland
20.0	0*	0.37	PEM1A - Freshwater Emergent Wetland
20.0	0*	0.19	PEM1A - Freshwater Emergent Wetland
20.0	0*	0.35	PSS1A - Freshwater Shrub Wetland
20.7	0*	0.02	L2UBH - Lake
20.7	0*	0.32	PEM1C - Freshwater Emergent Wetland
21.1	154.52	1.07	PEM1C - Freshwater Emergent Wetland
21.1	0*	0.48	PEM1C - Freshwater Emergent Wetland
22.3	0*	0.02	PEM1A - Freshwater Emergent Wetland
22.4	31.19	15.52	R2UBHx - Riverine
22.4	0*	0.1	R2UBHx - Riverine
22.5	0*	0.1	PEM1D - Freshwater Emergent Wetland
22.5	0*	0.09	PFO1C - Freshwater Forested Wetland
23.6	116.77	0.31	PFO1A - Freshwater Forested Wetland
23.6	0*	0.16	PEM1A - Freshwater Emergent Wetland
23.6	0*	0.14	PEM1Af - Freshwater Emergent Wetland
23.6	0*	0.23	PFO1A - Freshwater Forested Wetland
25.2	200.17	1.03	PEM1D - Freshwater Emergent Wetland
25.2	0*	0.58	PEM1D - Freshwater Emergent Wetland

0* = NWI feature is within 75' corridor but does not cross pipeline centerline.