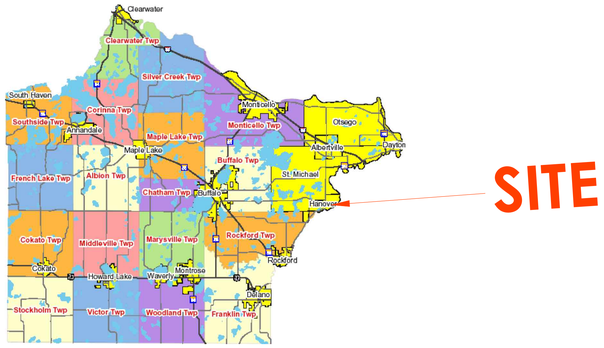
MAHLER AGGREGATE

MINE EXPANSION

CITY OF HANOVER, MN

MINNESOTA



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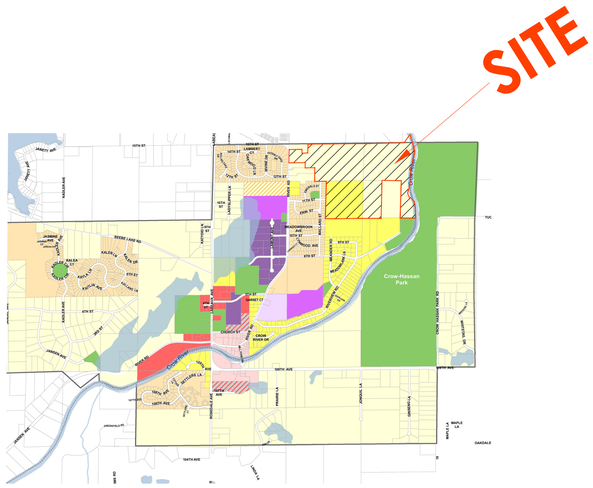
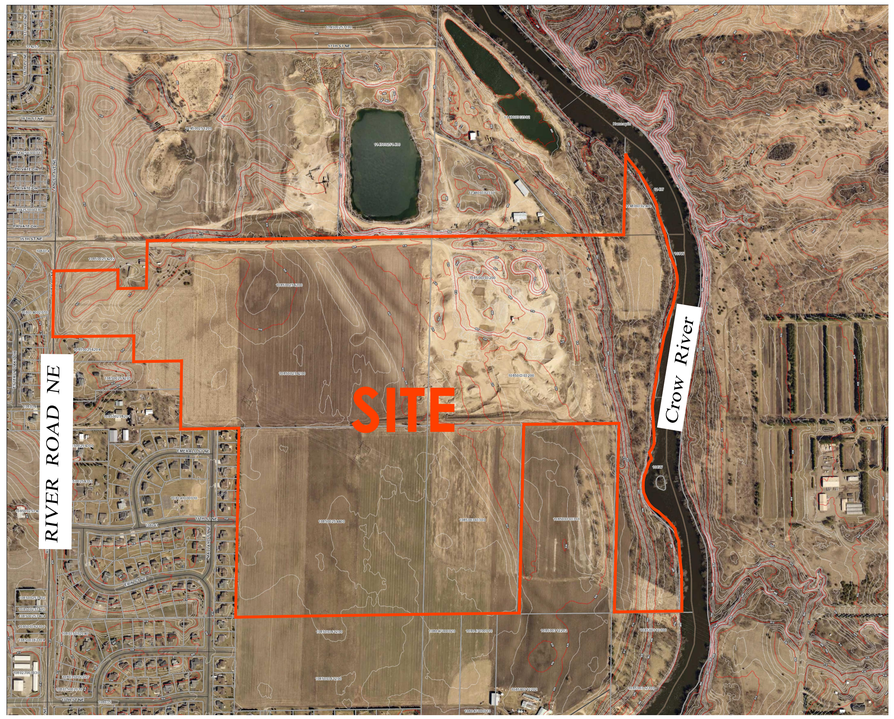


CITY OF HANOVER, MN



PROJECT LOCATION

INDEX OF CIVIL SITE DRAWINGS:

C0	PROJECT LOCATION PLAN
C1.0–C1.8	EXISTING CONDITIONS & CROSS SECTION
C2.0–C2.4	PROPOSED OPERATIONS
C3.0–C3.4	END USE PLAN
C4.1–C4.2	STORM WATER POLLUTION PREVENTION PLAN
C5.1	STORM SEWER PLAN

FEHN COMPANIES

Fehn Companies, Inc.
5050 Barthel Industrial Dr.
Albertville, MN 55301

Gary Fehn
612-282-6542
gfehn@fehncompanies.com

MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road
Hanover, MN 55341

PROJECT LOCATION PLAN

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

Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN

118 East Broadway St.
P.O. Box 1929
Monticello, Mn. 55362
Phone: 763-271-9929
www.civilsd.com

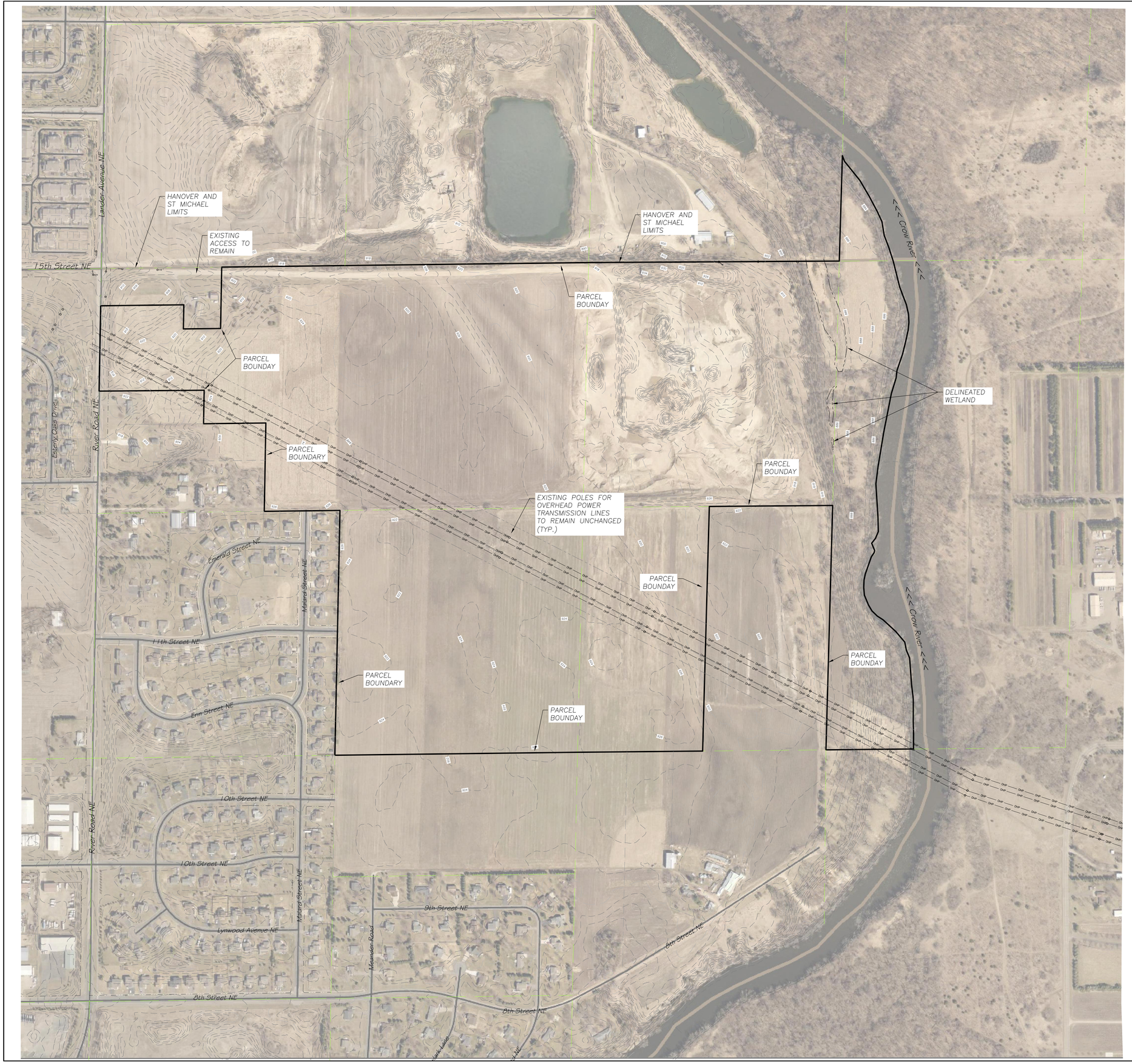
REVISIONS

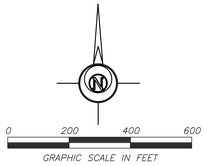
DATE	09/25/19
DRAWN BY	SD
DESIGNED BY	SD
CHECKED BY	SD

FILE NO. 00722

C0

Project Location Plan





EXISTING P.I.D. #S

108-500-303-200	HANOVER
108-500-254-200	HANOVER
108-500-254-400	HANOVER
108-500-303-300	HANOVER
114-800-302-400	ST MICHAEL

APPROXIMATE GROSS AREA

184.9 ACRES

PAGE LAYOUT:

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C1.3	C1.4

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MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road
Hanover, MN 55341

EXISTING CONDITIONS
OVERALL LAYOUT

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Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
118 East Broadway St.
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Monticello, Mn 55362
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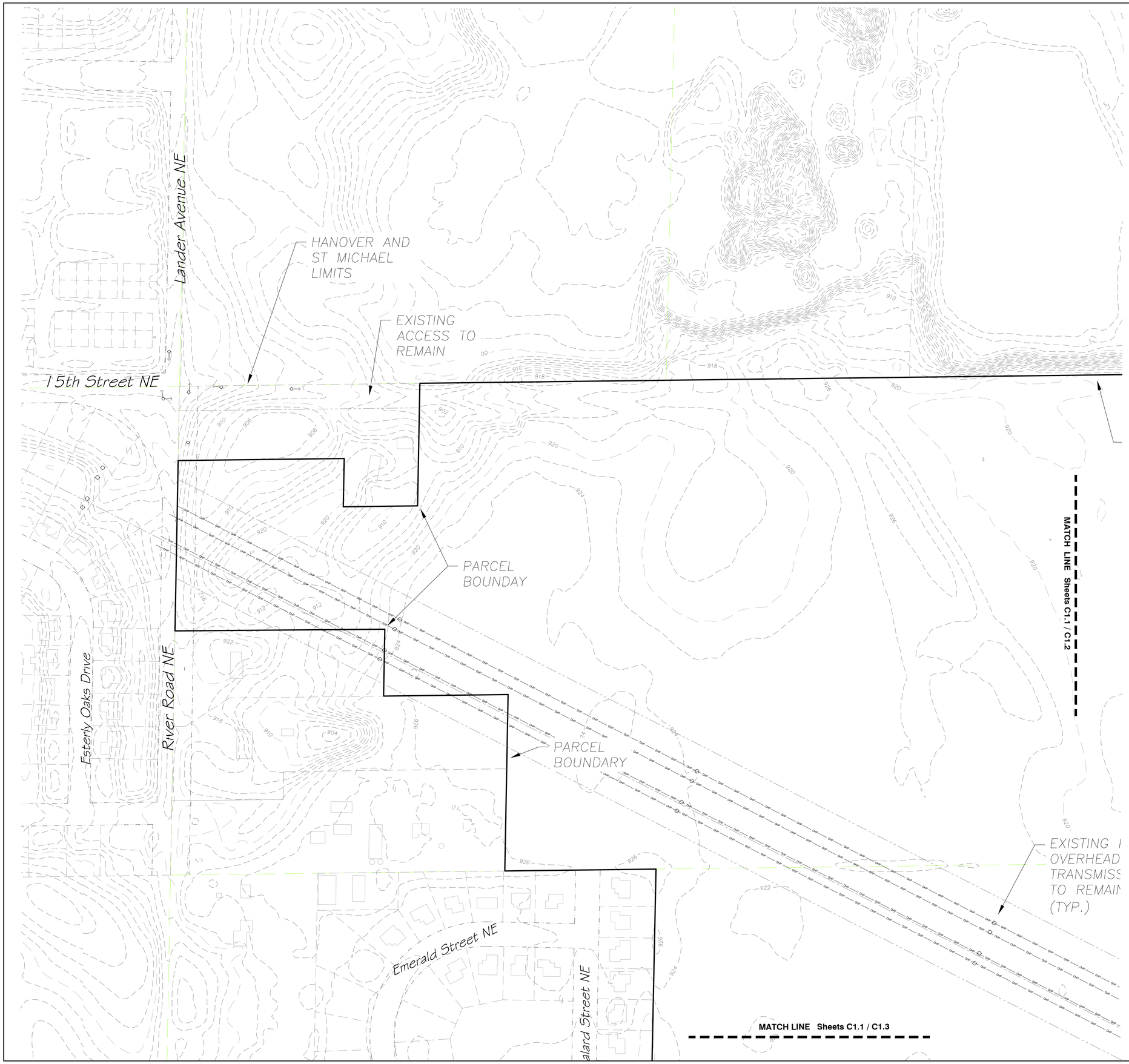
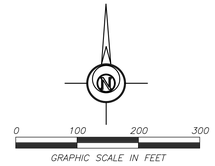
FILE NO. 00722

C1.0

Existing Conditions
Overall Layout





EXISTING P.I.D. #S

108-500-303-200	HANOVER
108-500-254-200	HANOVER
108-500-254-400	HANOVER
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APPROXIMATE GROSS AREA

184.9 ACRES

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118 East Broadway St.
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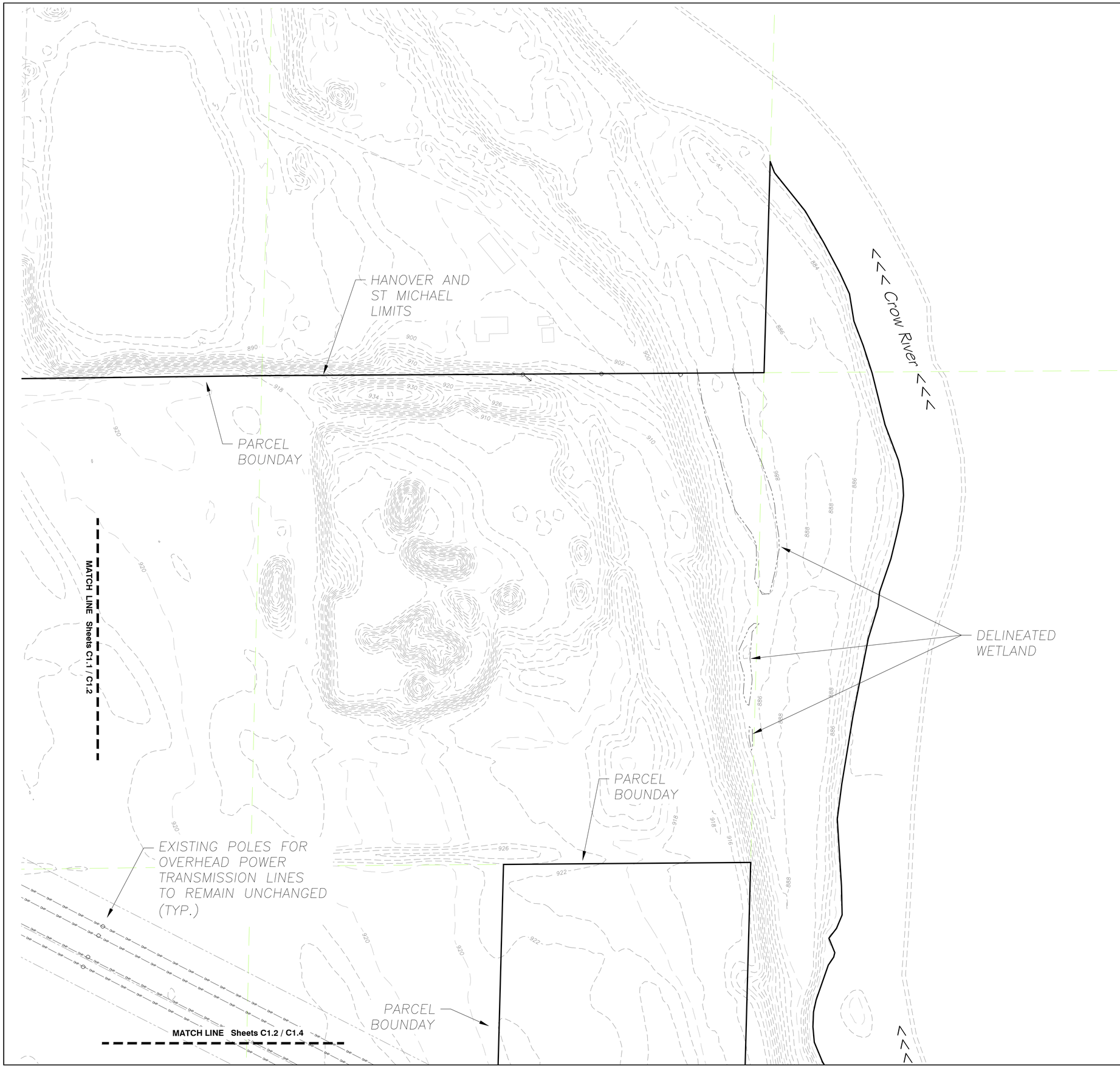
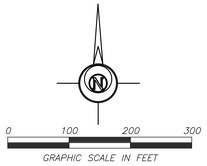
C1.1

Existing Conditions





EXISTING P.I.D. #S

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108-500-254-200	HANOVER
108-500-254-400	HANOVER
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APPROXIMATE GROSS AREA

184.9 ACRES

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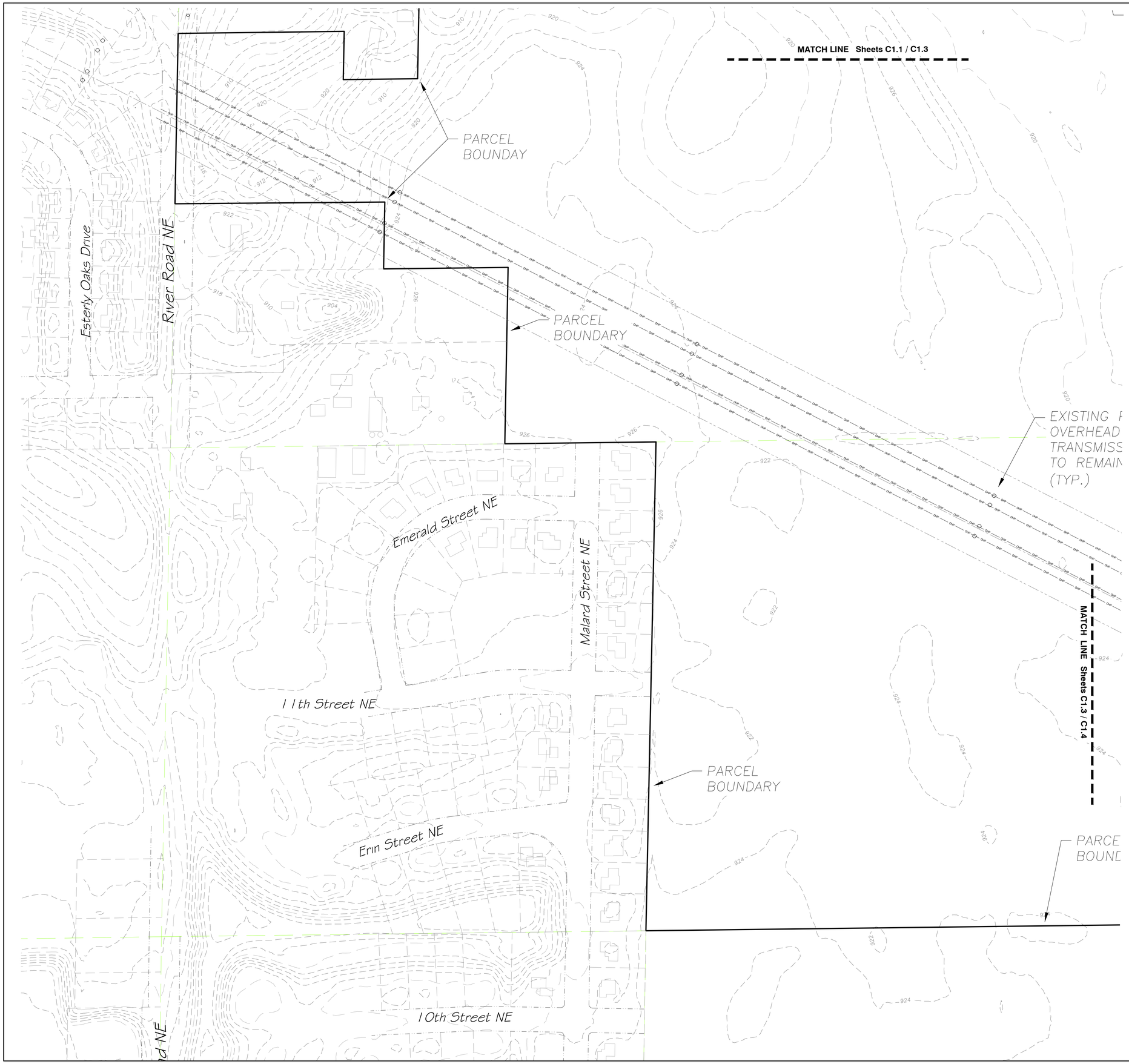
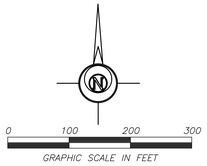
C1.2

Existing Conditions





EXISTING P.I.D. #S

108-500-303-200	HANOVER
108-500-254-200	HANOVER
108-500-254-400	HANOVER
108-500-303-300	HANOVER
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APPROXIMATE GROSS AREA

184.9 ACRES

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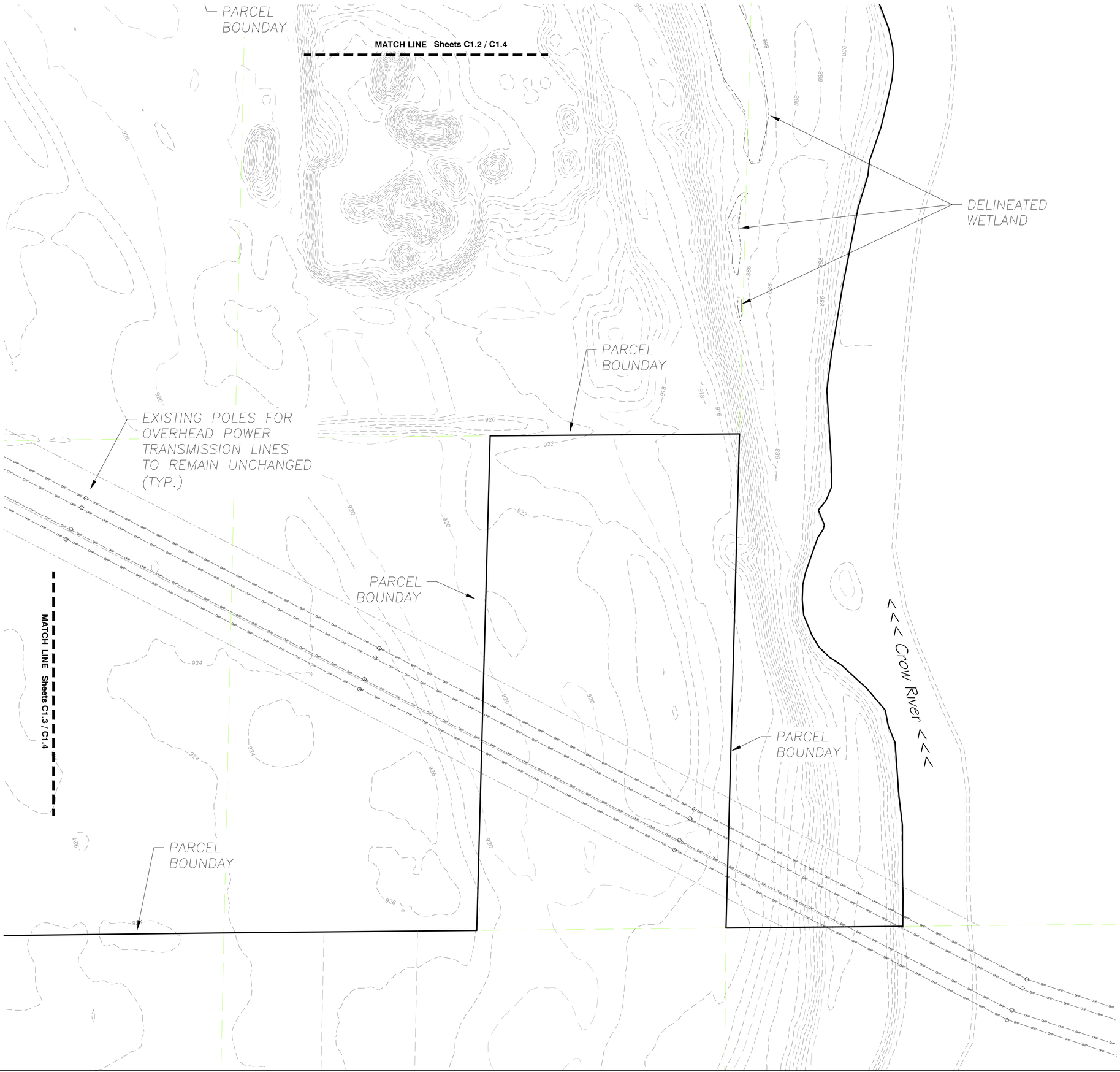
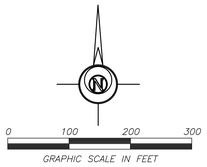
CHECKED BY	SD

FILE NO. 00722

C1.3

Existing Conditions





EXISTING P.I.D. #S

108-500-303-200	HANOVER
108-500-254-200	HANOVER
108-500-254-400	HANOVER
108-500-303-300	HANOVER
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APPROXIMATE GROSS AREA

184.9 ACRES

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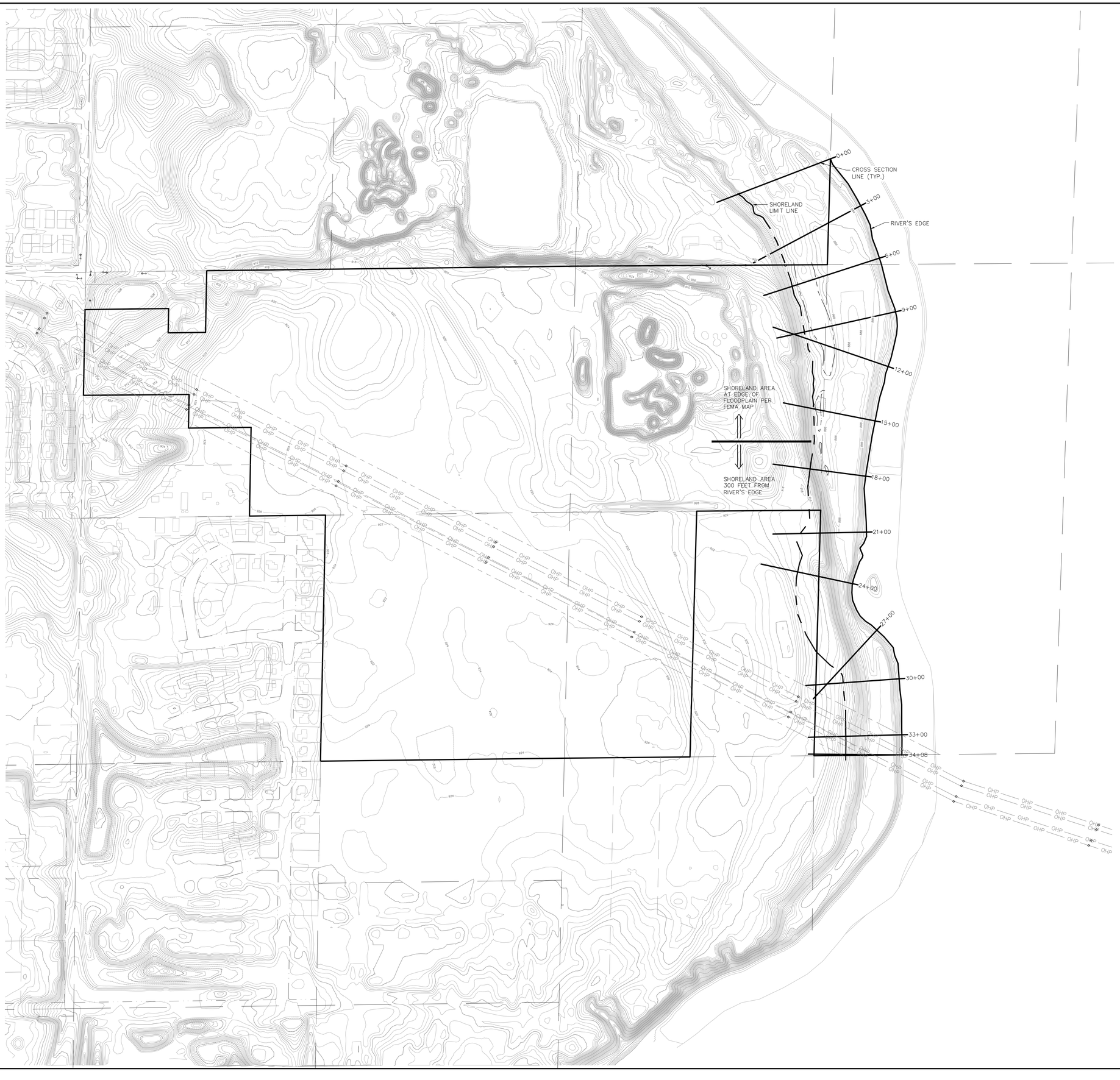
C1.4

Existing Conditions



0 200 400 600
GRAPHIC SCALE IN FEET

SUMMARY OF EVALUATION CRITERIA

TO BE CONSIDERED A BLUFF, ALL OF THE FOLLOWING CRITERIA MUST BE MET:

ANY PART OF BLUFF MUST BE LOCATED WITHIN THE SHORELAND AREA.

TOE OF BLUFF: THE LOWER POINT OF OF A 50-FOOT SEGMENT WITH AN AVERAGE SLOPE EXCEEDING 18 PERCENT OR OHWL, WHICHEVER IS HIGHER.

THE SLOPE RISES AT LEAST 25 FEET ABOVE THE TOE OF THE SLOPE.

THE GRADE OF THE SLOPE ANYWHERE ABOVE THE TOE OF THE SLOPE TO A POINT 25 FEET OR MORE ABOVE THAT POINT AVERAGES 30 PERCENT OR GREATER; EXCEPT THAT AN AREA WITH AN AVERAGE SLOPE OF LESS THAN 18 PERCENT OVER A DISTANCE OF 50 FEET OR MORE IS NOT CONSIDERED PART OF THE BLUFF.

INDEX OF CIVIL SITE DRAWINGS:

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MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road
Hanover, MN 55341

CROSS SECTIONS PLAN

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www.civilesd.com

REVISIONS

DATE 09/25/19
DRAWN BY SD
DESIGNED BY SD
CHECKED BY SD

FILE NO. 00722

C1.5
Cross Sections Plan

HORIZONTAL SCALE 1"=20'
VERTICAL SCALE 1"=10'

INDEX OF CIVIL SITE DRAWINGS:

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MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road
Hanover, MN 55341

CROSS SECTIONS

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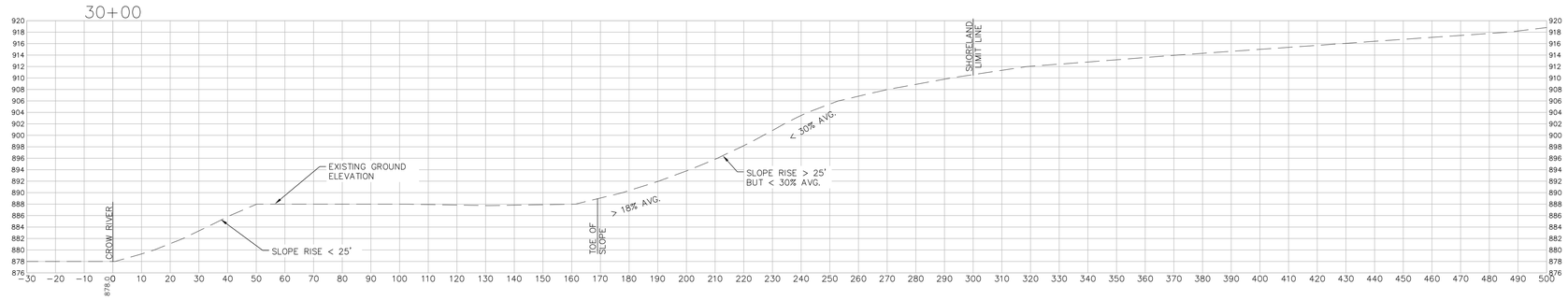
FILE NO. 00722

C1.6

Cross Sections

HORIZONTAL SCALE 1"=20'
VERTICAL SCALE 1"=10'

30+00



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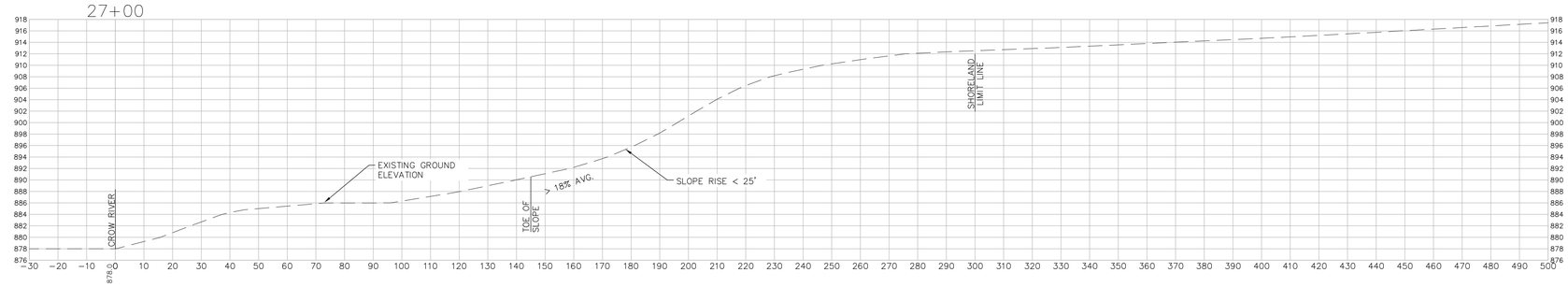

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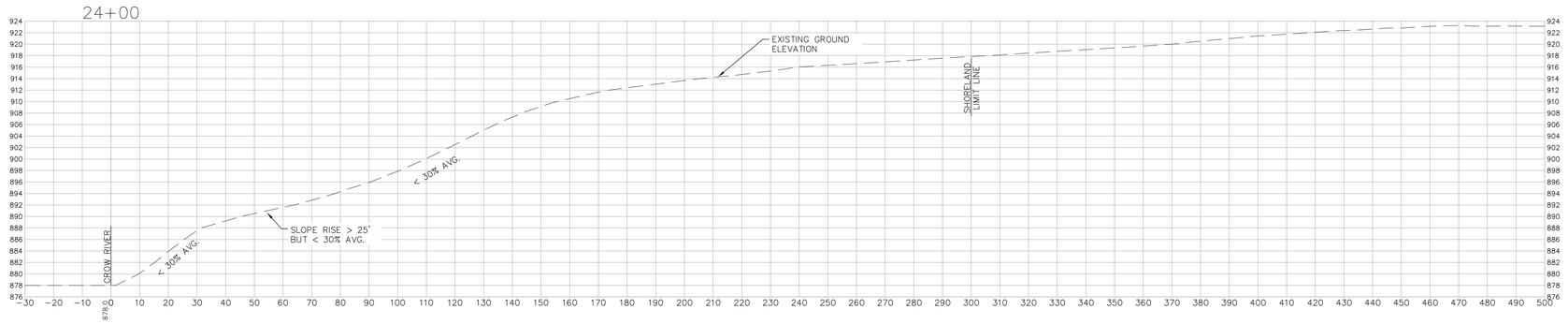

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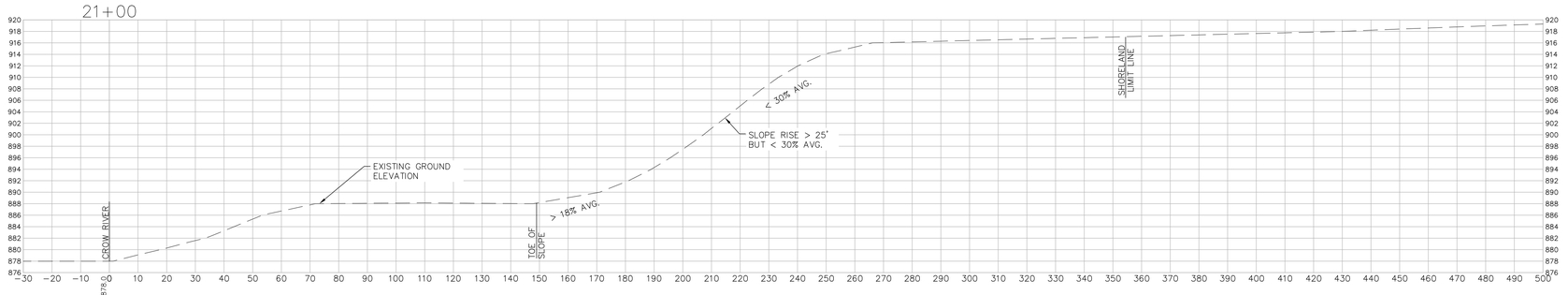

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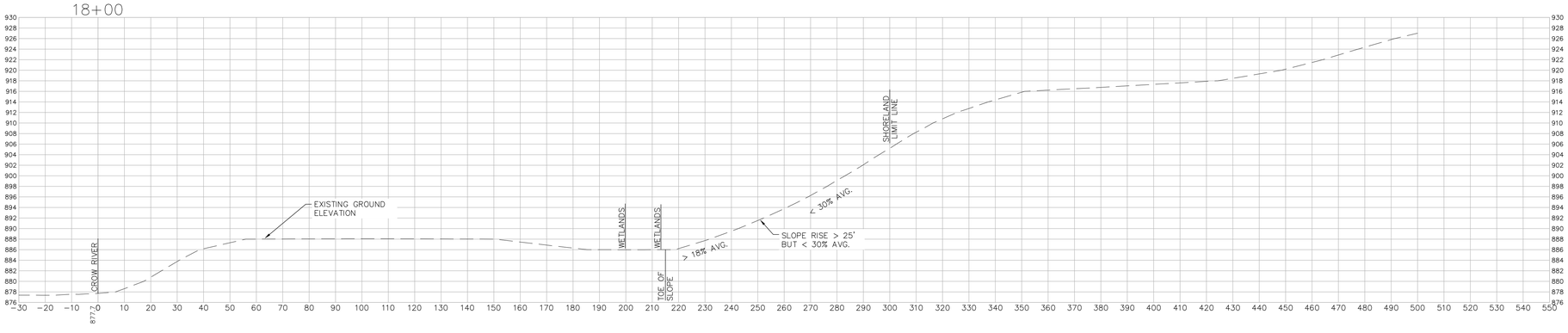

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MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road
Hanover, MN 55341

CROSS SECTIONS

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118 East Broadway St.
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DATE	09/25/19
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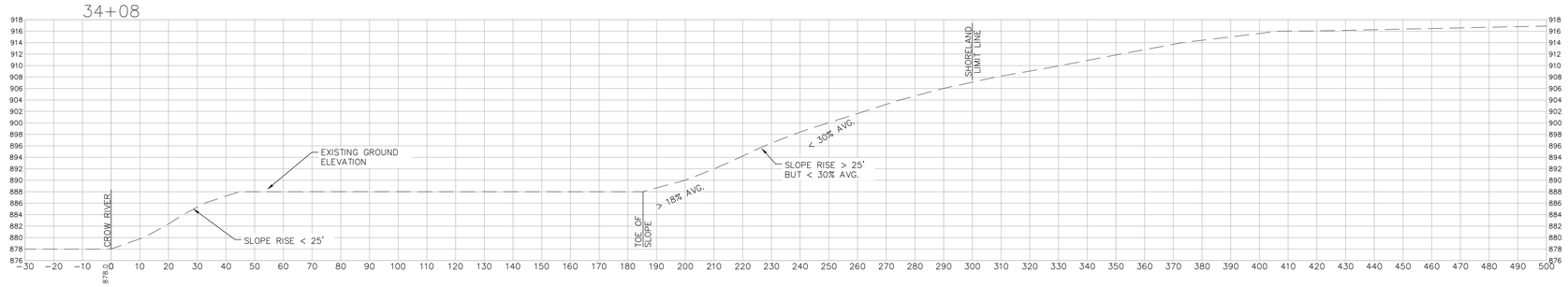
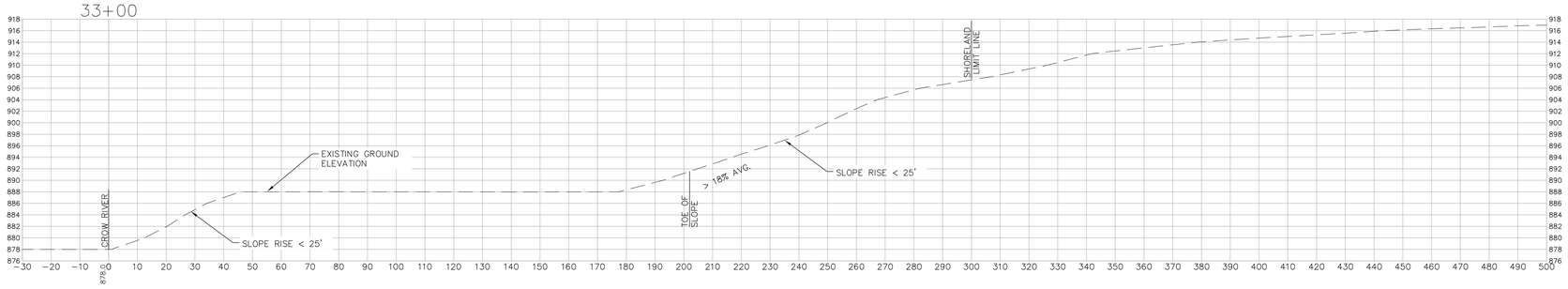
C1.7
Cross Sections

HORIZONTAL SCALE 1"=20'
VERTICAL SCALE 1"=10'





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CROSS SECTIONS

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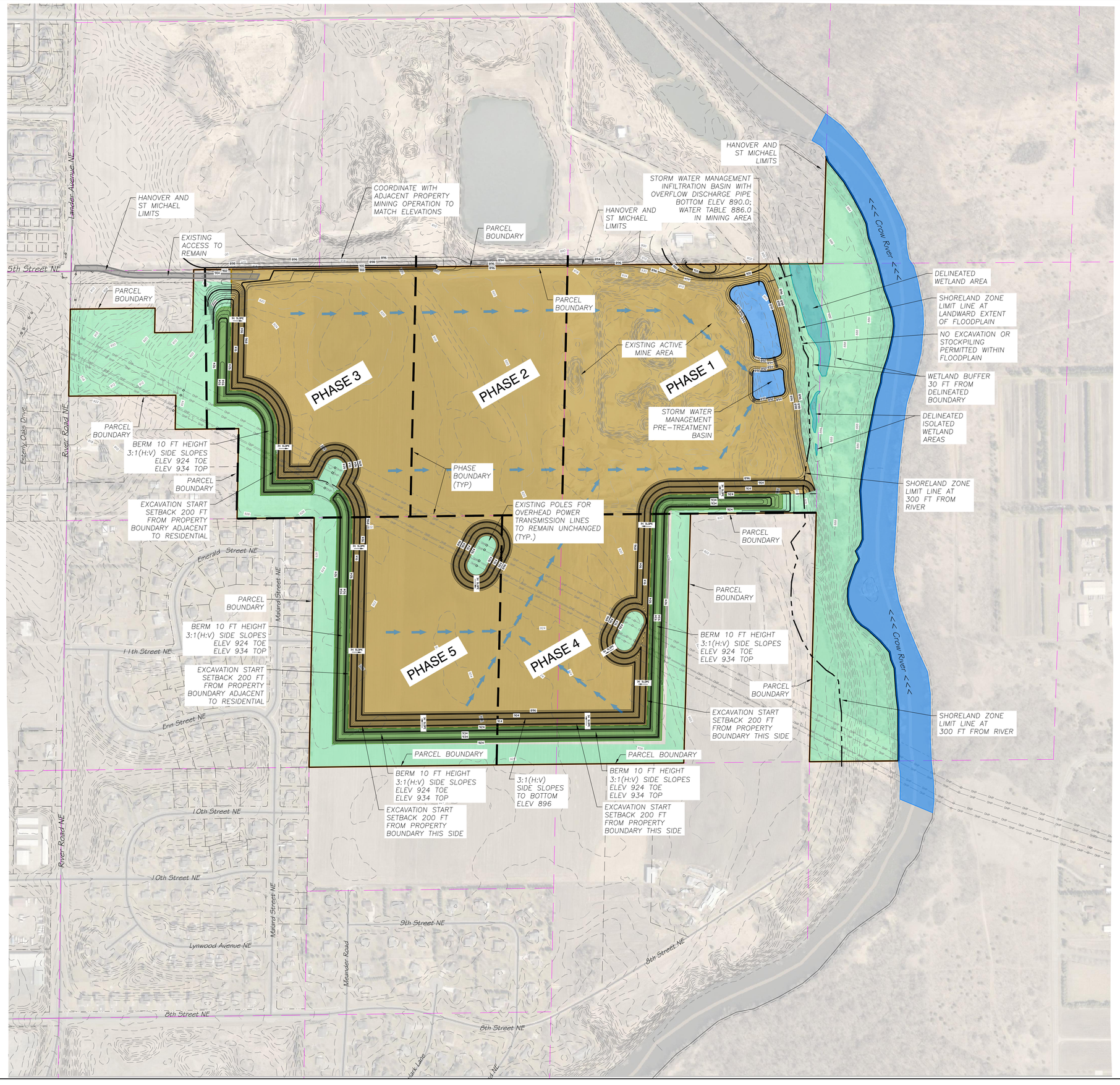
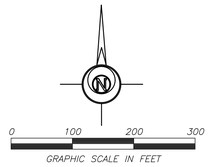
C1.8
Cross Sections





PAGE LAYOUT:

C2.1	C2.2
C2.3	C2.4

EXISTING P.I.D. #S

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114-800-302-400	ST MICHAEL

APPROXIMATE GROSS AREA

184.9 ACRES

APPROXIMATE EXCAVATION AREA

133.9 ACRES

EXCAVATION PHASE DATA

PHASE 1	36.5 AC	2019-2021 *	
PHASE 2	24.2 AC	2022-2024	
PHASE 3	31.2 AC	2025-2030	
PHASE 4	29.9 AC	2031-2034	
PHASE 5	29.9 AC	2035-2039	

* PHASE 1 AREA INCLUDES EXISTING ACTIVE MINE OPERATIONS

NOTE: 10 FT HIGH BERM TO BE REPOSITIONED IN CONJUCTION WITH EXCAVATION PHASE

EXCAVATION SETBACK

200 FEET TO A RESIDENCE OR RESIDENTIAL ZONING DISTRICT

100 FEET TO NON-RESIDENTIAL ZONING DISTRICTS OR AS APPROVED BY CITY

EXCAVATION ELEVATION DATA

MINE EXCAVATION BOTTOM ELEV 896.0

STORM WATER MANAGEMENT BASIN BOTTOM ELEV 890.0

WATER ELEVATION DATA

MINE AREA WATER TABLE ELEV 886.0

CROW RIVER TYPICAL WATER ELEV 876.0

CROW RIVER FEMA 100YR FLOOD ELEV 889.0

LEGEND:

- PROJECT PROPERTY BOUNDARY
- EXISTING CONTOUR INDEX
- EXISTING CONTOUR INTERMEDIATE
- PROPOSED CONTOUR INDEX
- PROPOSED CONTOUR INTERMEDIATE
- PROPOSED DRAINAGE DIRECTION
- STORM WATER MANAGEMENT BASIN
- CROW RIVER
- EXISTING WETLAND AREA
- BERM 10 FT HIGH
- MINE EXCAVATION AREA
- NON-MINED AREA
- ACCESS DRIVE
- PHASE LIMIT

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C2.0-C2.4	PROPOSED OPERATIONS
C3.0-C3.4	END USE PLAN
C4.1-C4.2	STORM WATER POLLUTION PREVENTION PLAN
C5.1	STORM SEWER PLAN

FEHN COMPANIES

Fehn Companies, Inc.
5050 Barthel Industrial Dr.
Albertville, MN 55301

Gary Fehn
612-282-6542
gfehn@fehncompanies.com

MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road
Hanover, MN 55341

PROPOSED OPERATIONS OVERALL LAYOUT

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

Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
118 East Broadway St.
P.O. Box 565
Monticello, MN 55362
Phone: 763-271-7927
www.civilsd.com

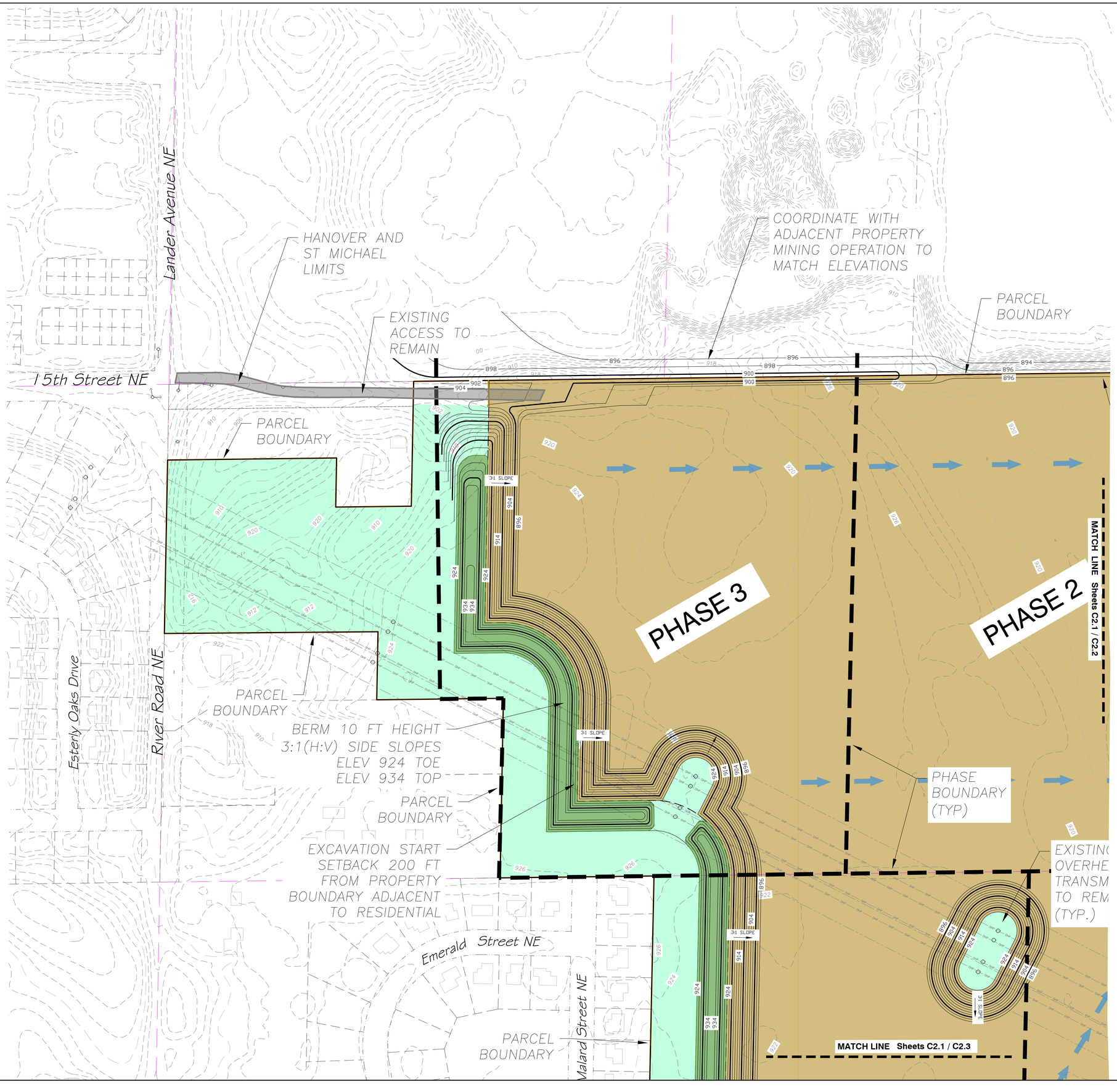
REVISIONS

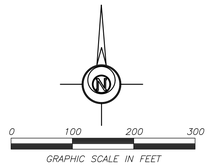
DATE 09/25/19	DRAWN BY SD	DESIGNED BY SD	CHECKED BY SD

FILE NO. 00722

C2.0

Proposed Operations Overall Layout





PAGE LAYOUT:

C2.1	C2.2
C2.3	C2.4

EXISTING P.I.D. #S

108-500-303-200	HANOVER
108-500-254-200	HANOVER
108-500-254-400	HANOVER
108-500-303-300	HANOVER
114-800-302-400	ST MICHAEL

APPROXIMATE GROSS AREA

184.9 ACRES

APPROXIMATE EXCAVATION AREA

133.9 ACRES

EXCAVATION PHASE DATA

PHASE 1	36.5 AC	2019-2021 *	
PHASE 2	24.2 AC	2022-2024	
PHASE 3	31.2 AC	2025-2030	
PHASE 4	29.9 AC	2031-2034	
PHASE 5	29.9 AC	2035-2039	

* PHASE 1 AREA INCLUDES EXISTING ACTIVE MINE OPERATIONS

NOTE: 10 FT HIGH BERM TO BE REPOSITIONED IN CONJUCTION WITH EXCAVATION PHASE

EXCAVATION SETBACK

200 FEET TO A RESIDENCE OR RESIDENTIAL ZONING DISTRICT

100 FEET TO NON-RESIDENTIAL ZONING DISTRICTS OR AS APPROVED BY CITY

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MAHLER AGGREGATE MINE EXPANSION

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Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
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Phone: 763-271-3929
www.civilsd.com

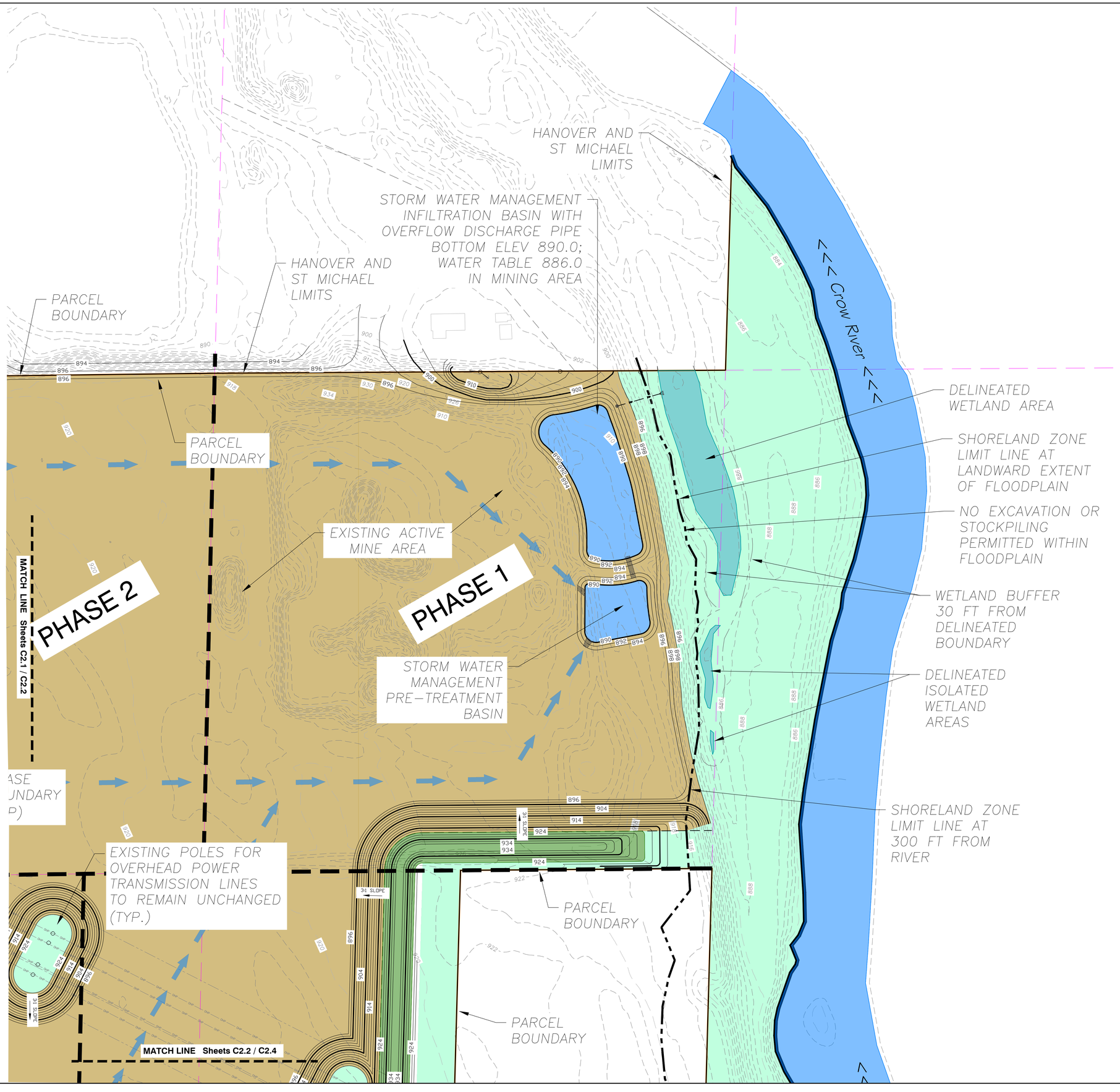
REVISIONS

DATE	DRAWN BY	DESIGNED BY	CHECKED BY
09/25/19	SD	SD	SD

FILE NO. 00722

C2.1

Proposed Operations



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GRAPHIC SCALE IN FEET

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108-500-303-200	HANOVER
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PROPOSED OPERATIONS

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Scott Dulek

Date: 09/25/19 Reg. No. 24348

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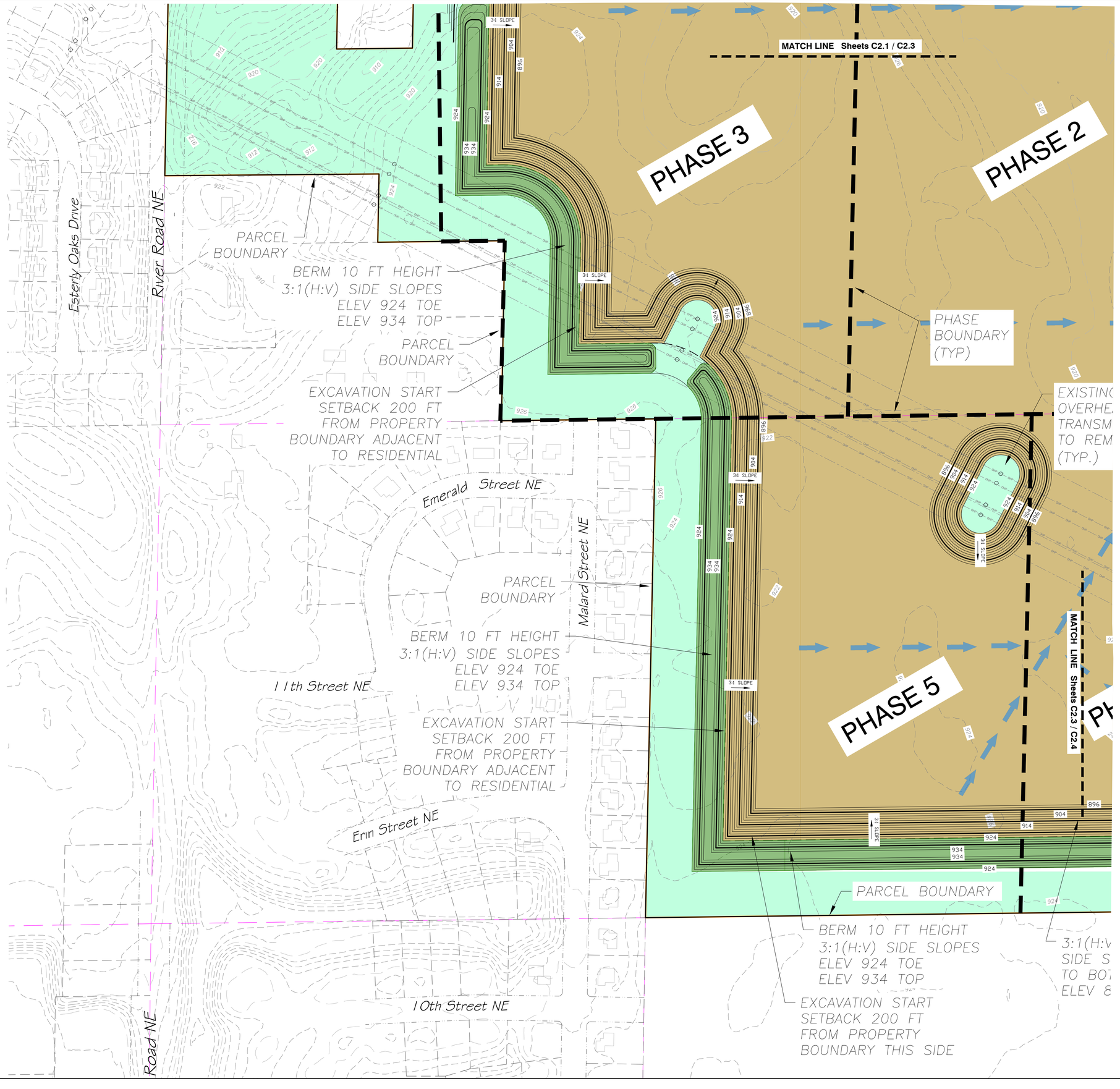
REVISIONS

DATE	DRAWN BY	DESIGNED BY	CHECKED BY
09/25/19	SD	SD	SD

FILE NO. 00722

C2.2

Proposed Operations



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GRAPHIC SCALE IN FEET

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EXISTING P.I.D. #S

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108-500-303-300 HANOVER
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APPROXIMATE GROSS AREA

184.9 ACRES

APPROXIMATE EXCAVATION AREA

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C5.1 STORM SEWER PLAN

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PROPOSED OPERATIONS

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Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
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Monticello, Mn 55362
Phone: 763-314-0929
www.civilesd.com

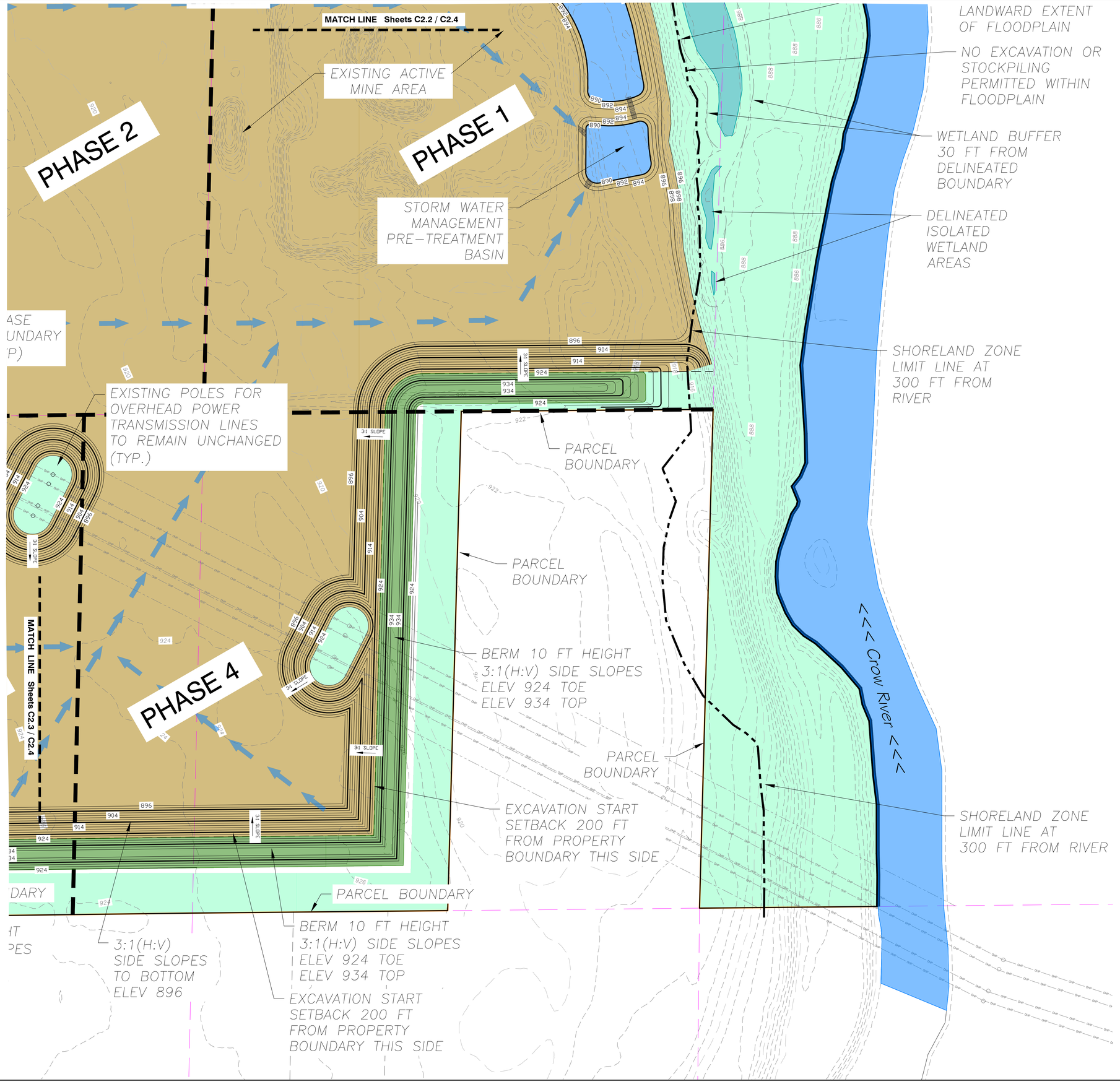
REVISIONS

DATE 09/25/19
DRAWN BY SD
DESIGNED BY SD
CHECKED BY SD

FILE NO. 00722

C2.3

Proposed Operations



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GRAPHIC SCALE IN FEET

PAGE LAYOUT:

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C2.3	C2.4

EXISTING P.I.D. #S

108-500-303-200 HANOVER
108-500-254-200 HANOVER
108-500-254-400 HANOVER
108-500-303-300 HANOVER
114-800-302-400 ST MICHAEL

APPROXIMATE GROSS AREA

184.9 ACRES

APPROXIMATE EXCAVATION AREA

133.9 ACRES

EXCAVATION PHASE DATA

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PHASE 4 29.9 AC 2031-2034
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EXCAVATION SETBACK

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WATER ELEVATION DATA

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CROW RIVER FEMA 100YR FLOOD ELEV 889.0

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INDEX OF CIVIL SITE DRAWINGS:

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C5.1	STORM SEWER PLAN

FEHN COMPANIES

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Albertville, MN 55301

Gary Fehn
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gfehn@fehncompanies.com

MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road
Hanover, MN 55341

PROPOSED OPERATIONS

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

Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
118 East Broadway St.
PO Box 566
Monticello, Mn 55362
Phone: 763-314-0929
www.civilesd.com

REVISIONS

DATE 09/25/19
DRAWN BY SD
DESIGNED BY SD
CHECKED BY SD

FILE NO. 00722

C2.4

Proposed Operations

0 200 400 600
GRAPHIC SCALE IN FEET

PAGE LAYOUT:

C3.1	C3.2
C3.3	C3.4

EXISTING P.I.D. #S

108-500-303-200 HANOVER
108-500-254-200 HANOVER
108-500-254-400 HANOVER
108-500-303-300 HANOVER
114-800-302-400 ST MICHAEL

APPROXIMATE GROSS AREA

184.9 ACRES

APPROXIMATE EXCAVATION AREA

138.2 ACRES

EXCAVATION ELEVATION DATA

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LEGEND:

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- CROW RIVER
- EXISTING WETLAND AREA
- RECLAIMED MINE EXCAVATION AREA
- NON-MINED AREA
- ACCESS DRIVE

VEGETATION GROUND COVER SCHEDULE

1. Stabilization of all exposed soil areas must be initiated immediately but in no case completed later than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased. Seeding and mulching shall conform to the latest NPDES requirements for installation schedule with regards to grading.
2. Permanent turf ground cover shall include all disturbed areas be covered with a minimum 6" topsoil and seeded as allowed by City, or as proposed on City approved landscape plan for the project. If not otherwise specified, turf seed to be MnDOT mix 25-121 applied at 61 lbs/ac. Infiltration basin seed to be 33-261 applied at 35 lbs/ac with bottom of basin mulched with clean grain straw (Mn/DOT Type 3) applied at 2 tons/ac. MnDOT Type 1 mulch shall be applied at 2 tons/ac and disc anchored in areas not covered by erosion blanket. Seeding and mulching shall conform to the latest NPDES requirements for installation schedule with regards to grading.
3. Temporary ground cover to be MnDOT seed mix 22-111 shall be applied at 31 lbs/ac, or equivalent as approved by City. MnDOT Type 1 mulch shall be applied at 2 tons/ac and disc anchored in areas not covered by sod or erosion blanket.
4. Fertilizer for turf shall be MnDOT Type 3 22-5-10 and applied at 350 lb/ac. Disc fertilizer into top 3" of soil. Specification reference is MnDOT 2574.
5. Dormant seed mix shall be used after November 1 or when temperatures do not exceed 40° F, using same rates specified above. No seed shall be placed on snow or ice greater than 2" in depth.
6. Any seeded areas that do not become established with vegetation shall be re-seeded at Contractor's expense.
7. Erosion blanket shall be installed in seed areas with ground surface slopes of 4H:1V or steeper.

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MAHLER AGGREGATE MINE EXPANSION

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END USE PLAN
OVERALL LAYOUT

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Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
118 East Broadway St.
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Monticello, Mn 55362
Phone: 763-295-2929
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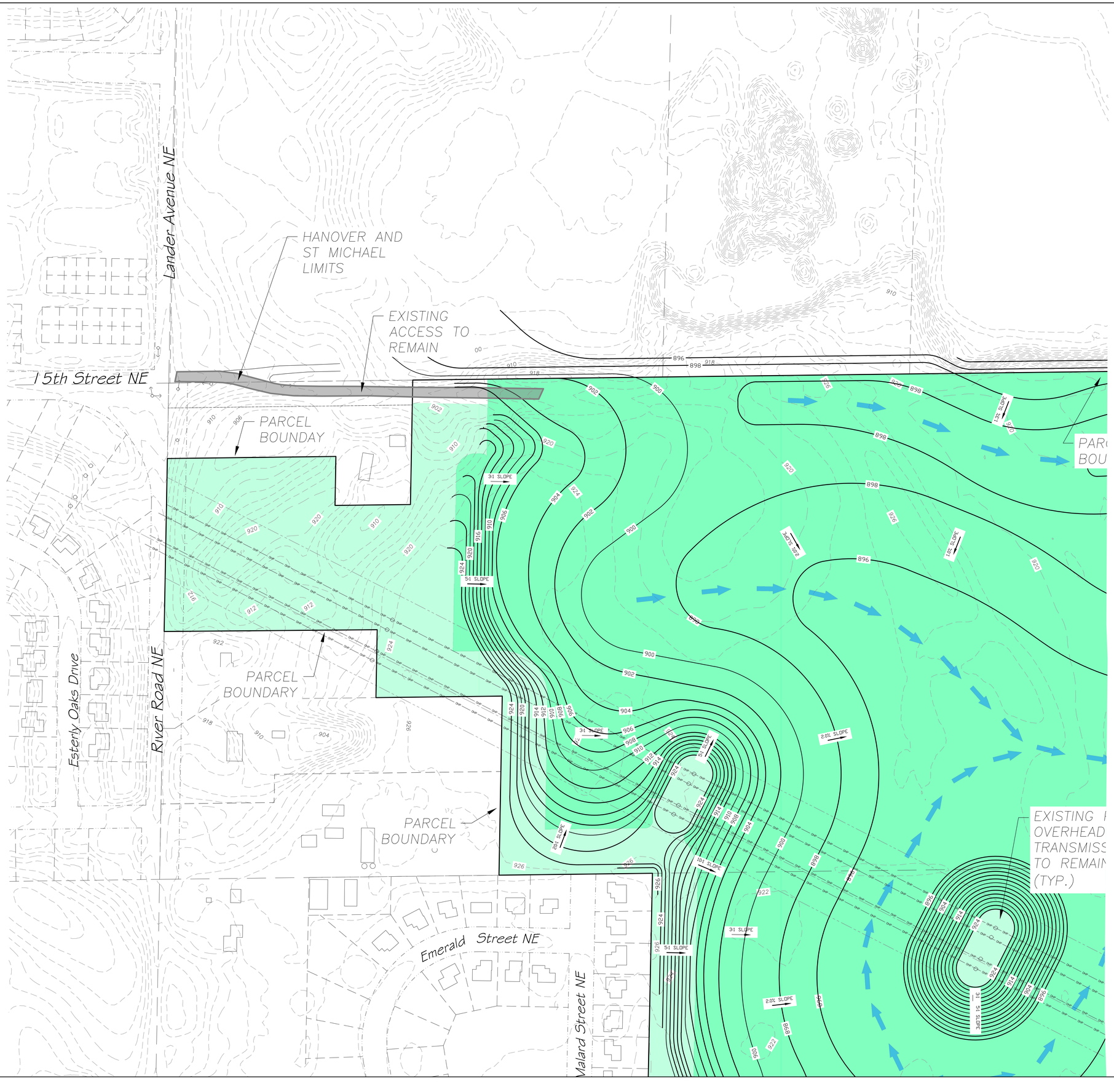
REVISIONS

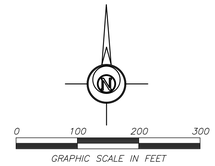
DATE	DRAWN BY	DESIGNED BY	CHECKED BY
09/25/19	SD	SD	SD

FILE NO. 00722

C3.0

End Use Plan
Overall Layout





PAGE LAYOUT:

C3.1	C3.2
C3.3	C3.4

EXISTING P.I.D. #S

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APPROXIMATE GROSS AREA

184.9 ACRES

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4. Fertilizer for turf shall be MnDOT Type 3 22-5-10 and applied at 350 lb/ac. Disc fertilizer into top 3" of soil. Specification reference is MnDOT 2574.
5. Dormant seed mix shall be used after November 1 or when temperatures do not exceed 40° F, using same rates specified above. No seed shall be placed on snow or ice greater than 2" in depth.
6. Any seeded areas that do not become established with vegetation shall be re-seeded at Contractor's expense.
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END USE PLAN

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Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
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P.O. Box 1193
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Phone: (763) 271-0929
www.civilesd.com

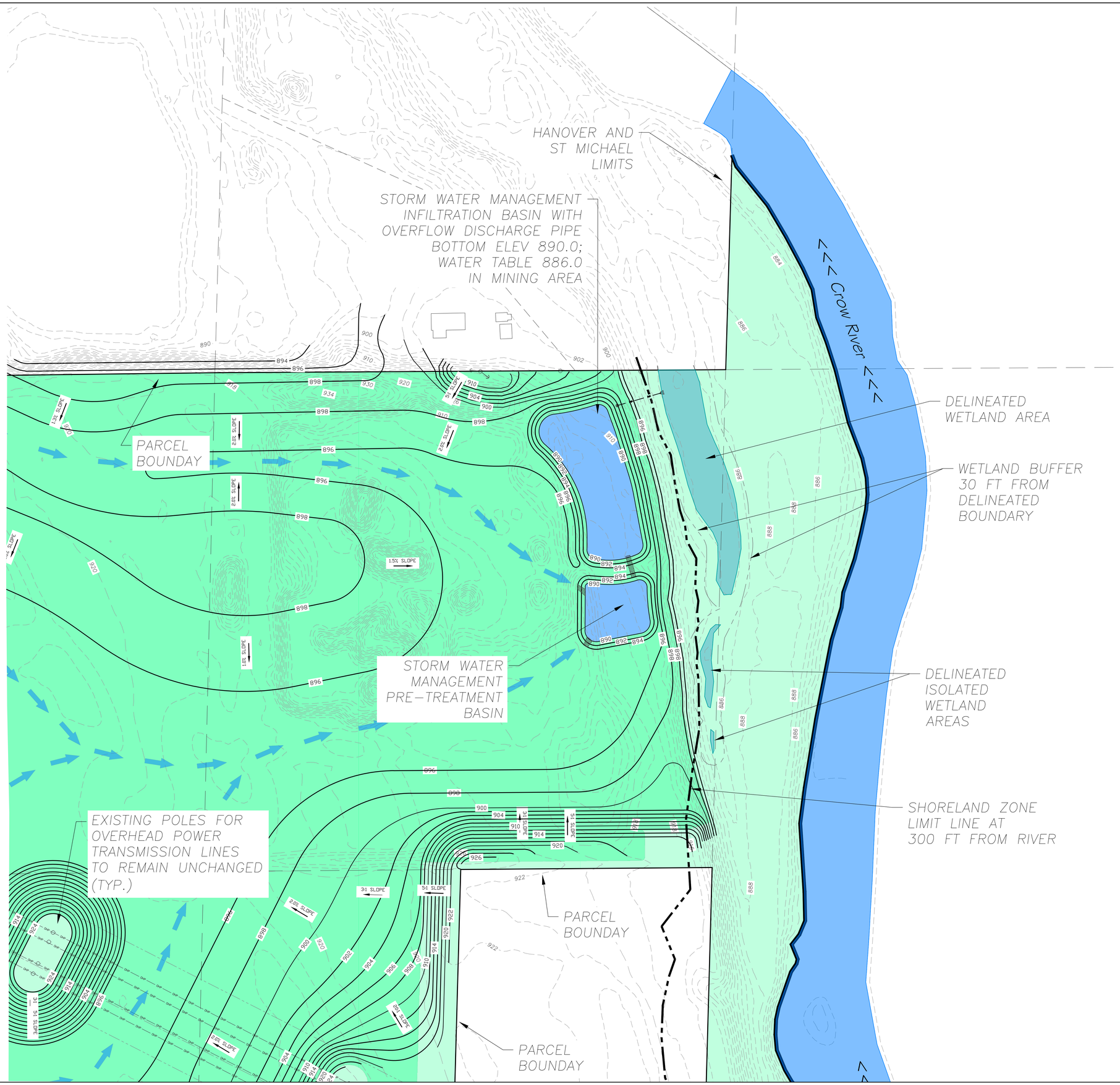
REVISIONS

DATE	DRAWN BY	DESIGNED BY	CHECKED BY
09/25/19	SD	SD	SD

FILE NO. 00722

C3.1

End Use Plan



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GRAPHIC SCALE IN FEET

PAGE LAYOUT:

C3.1	C3.2
C3.3	C3.4

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114-800-302-400 ST MICHAEL

APPROXIMATE GROSS AREA

184.9 ACRES

APPROXIMATE EXCAVATION AREA

138.2 ACRES

EXCAVATION ELEVATION DATA

MINE EXCAVATION BOTTOM ELEV 896.0

STORM WATER MANAGEMENT BASIN BOTTOM ELEV 890.0

WATER ELEVATION DATA

MINE AREA WATER TABLE ELEV 886.0

CROW RIVER TYPICAL WATER ELEV 876.0

CROW RIVER FEMA 100YR FLOOD ELEV 889.0

LEGEND:

- PROJECT PROPERTY BOUNDARY
- EXISTING CONTOUR INDEX
- EXISTING CONTOUR INTERMEDIATE
- PROPOSED CONTOUR INDEX
- PROPOSED CONTOUR INTERMEDIATE
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C5.1	STORM SEWER PLAN

FEHN COMPANIES

Fehn Companies, Inc.
5050 Barthel Industrial Dr.
Albertville, MN 55301

Gary Fehn
612-282-6542
gfehn@fehncompanies.com

MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road
Hanover, MN 55341

END USE PLAN

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

Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
118 East Broadway St.
P.O. Box 1313
Monticello, Mn 55362
Phone: (763) 271-0929
www.civilesd.com

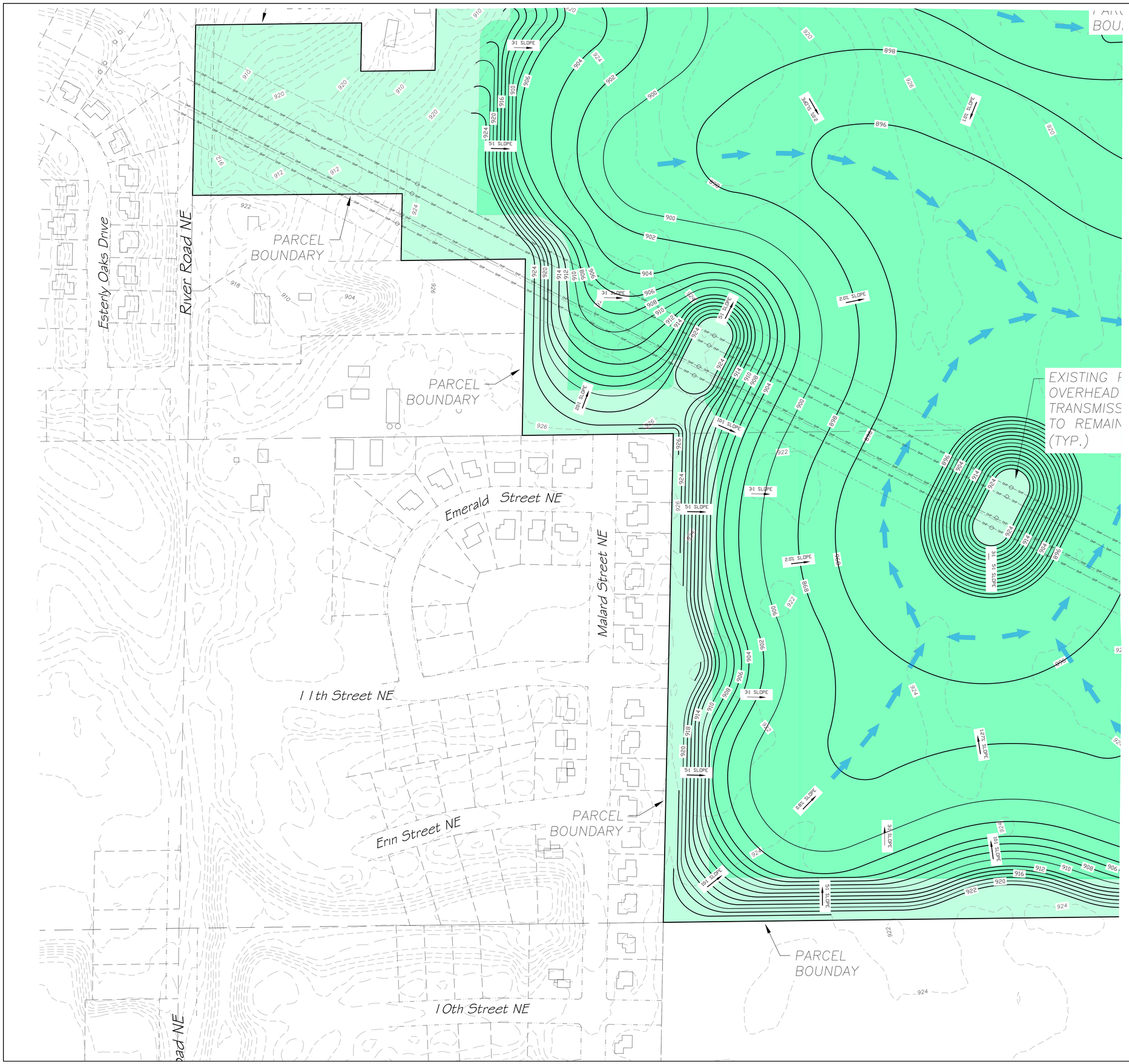
REVISIONS

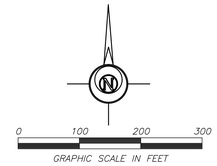
DATE	DRAWN BY	DESIGNED BY	CHECKED BY
09/25/19	SD	SD	SD

FILE NO. 00722

C3.2

End Use Plan





PAGE LAYOUT:

C3.1	C3.2
C3.3	C3.4

EXISTING P.I.D. #S

108-500-303-200 HANOVER
108-500-254-200 HANOVER
108-500-254-400 HANOVER
108-500-303-300 HANOVER
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REVISIONS

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09/25/19	SD	SD	SD

FILE NO. 00722

C3.3

End Use Plan

0 100 200 300
GRAPHIC SCALE IN FEET

PAGE LAYOUT:

C3.1	C3.2
C3.3	C3.4

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09/25/19	SD	SD	SD

FILE NO. 00722

C3.4

End Use Plan

SWPP NARRATIVE

This gravel mining project expansion will consist of site clearing and grading. Excavation is planned to begin 2019.

First, perimeter silt fence is to be installed. Then site work shall commence. The contractor shall dispose all debris off–site within 24 hours. Then the site can be graded, final grade tolerance, and landscape final stabilization. Once final grade is established and certified, the site shall be stabilized with seed and mulch or sod. Once vegetation is established, temporary erosion control measures shall be removed.

POLLUTION PREVENTION NOTES

Solid waste: collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction debris and other wastes must be disposed of properly off–site and must comply with MPCA requirements.

Hazardous materials: oils, gasoline, paint, and any hazardous substance must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal must be in compliance with MPCA regulations.

External washing of trucks or other construction vehicles is not allowed on site. No engine degreasing is allowed on site. No concrete washouts are allowed on site.

Concrete truck washout is not to be allowed on site unless washout waste is contained with no discharge to ground surface or site drainage facilities. Containment systems are to be located a minimum 50 feet away from drainage facilities and watercourses. Containment systems shall have an impermeable liner. Containment system shall be clearly marked with signage.

All sanitary waste must be collected from portable toilet units on site by a licensed waste management contractor. The units must be secured and shall be maintained on a regular basis as needed to prevent overfilling.

DESIGN CALCULATIONS

Design calculations, including soil types are on file with: Civil Engineering Site Design

SWPPP Designer: Scott Dahlke (Expires 2022)

RESPONSIBLE PARTY

Contact information for the responsible party for erosion control is:

Owner: Fehn Companies, Inc.
5050 Barthel Industrial Drive
Albertville, MN 55301

Contractor: Fehn Companies, Inc.
5050 Barthel Industrial Drive
Albertville, MN 55301

Manager: Gary Fehn
763–497–2428

EROSION CONTROL NOTES

1. All devices necessary to control erosion and sediment (I.E. perimeter silt fence, rock construction entrances, swales, ponds, berms, ETC.) shall be installed prior to any other construction operations.
2. After completion of final grading, exposed soils must be permanently stabilized within 7 days. Stabilization shall consist of disc–anchored seed & mulch, HECP with fiber reinforced matrix, erosion blanket with seed, or sod.
3. The site must be kept in a well drained condition at all times. The contractor shall be responsible for temporary ditches, or other means necessary to ensure proper drainage. The building pad must be provided with a positive outflow. This work shall be incidental to the grading contract.
4. Entering/exiting of the site shall occur only at rock construction entrance to reduce tracking of dirt onto paved streets. Sediment tracked onto streets during working hours must be reclaimed via street scraping and sweeping at the end of each working day.
5. Stormwater discharge pipe outlet energy dissipation shall be provided by rip–rap with size, quantity, and placement in accordance with City standards. Rip–rap installation shall be within 24 hours of pipe installation.
6. Install silt fence around all temporary inactive stockpiles which are not place within existing silt fence area or other perimeter erosion controls.
7. Stabilization of temporary or permanent drainage ditches that drain water from the construction site must be initiated within 24 hours of connecting the drainage ditch to any storm water conveyance system and must be completed using erosion blanket.
8. Sufficient personnel, equipment, and materials shall be mobilized within 24 hours of written order (ie. email) by the owner or owners representative to conduct corrective work and install temporary erosion control work in the case of an emergency.

EROSION CONTROL INSTALLATION SCHEDULE

1. Silt fence shall be installed or restored prior to any construction. Silt fence shall be located as shown to intercept runoff. The area located beyond the perimeter silt fence shall not be disturbed during construction.
2. Rock Construction Entrance shall be installed prior to grading operations.
3. All storm sewer inlets shall have inlet protection inserts installed. Inserts shall be "Road rain–Top Slab" or "Road Drain–Curb & Gutter" inlet protection devices as manufactured by WIMCO (or approved equal) and installed per manufacture's recommendations.
4. All erosion control installations shall remain in place and be maintained in good condition by the contractor until the site has been re–vegetated, at which time it shall be removed by the contractor. For proposed paved surface areas, the contractor may remove necessary silt fencing to construct roadway, while maintaining adequate erosion control in adjacent areas.
5. Sufficient topsoil shall be stockpiled to allow for the replacement of 6" topsoil for disturbed areas to be re–vegetated.
6. The contractor shall schedule site grading, utility installation and roadway construction so that the general site can be mulched and re–seeded soon after disturbance. Areas that will not be subject to construction traffic for 14 days shall be seeded and mulched or sodded within 7 days of final grading.

EROSION CONTROL MAINTENANCE SCHEDULE

1. Erosion control measures shall be inspected by the contractor's representative and maintained by the contractor every Friday and within 24 hours after any rainfall event larger than 1/2" until the project is completed. Maintenance requirements are as follows: silt fence – 1/3 height of fence or damaged, remove sediment and/or repair fence within 24 hours; rock entrance – refresh as necessary to conform to detail; inlet protection inserts – remove sediment after each rain event, clean or replace filter when clogged; surface water – drain and stabilize, within 7 days of discovery; and street sweeping – remove all sediment tracked onto paved surfaces within 24 hours or as directed by City Engineer.
2. Replacement – Fabric shall be replaced promptly when it decomposes or becomes ineffective before the barrier is no longer necessary.
3. Any sediment remaining in place after silt fence is no longer required shall be dressed to conform with the existing grade, prepared, and seeded with appropriate seed mix, as directed by the engineer.
4. Removal of the silt fence– Silt fences shall be removed when they have served their useful purpose, but not before the upward sloping area has been permanently stabilized.

VEGETATION GROUND COVER SCHEDULE

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INFILTRATION BASIN NOTES

1. Iniltration area shall be staked off during construction to restrict heavy equipment traffic from compacting native soils.
2. Install appropriate temporary erosion control devices to prevent sediment from entering the practice during construction.
3. Grading of the infiltration basin shall be accomplished using low impact earth–moving equipment to prevent compaction of the underlying soils. Small tracked dozers and skid–steers with runner tracks are recommended.
4. In the event that sediment is introduced into the BMP during or immediately following excavation, this material will need to be removed from the basin prior to initiating the next step in the construction process.
5. Install sediment control around basin after completion of basin grading.
6. Seeding and installation of erosion control shall be completed within 48 hours of final grading of basin.

0 100 200 300
GRAPHIC SCALE IN FEET

APPROXIMATE GROSS AREA

184.9 ACRES

APPROXIMATE EXCAVATION AREA

133.9 ACRES

PAGE LAYOUT:

C4.1	C4.2

LEGEND

- Existing Contours
- Existing Storm Sewer
- Proposed Contours
- Proposed Storm Sewer
- Proposed Silt Fence
- Proposed Fiber Logs
- Proposed Inlet Protection
- Proposed Riprap

PROJECT LOCATION

PART OF W½ OF SECTION 30, TOWNSHIP 120, RANGE 23,
AND PART OF SE¼ OF SECTION 25, TOWNSHIP 120, RANGE 24,
WRIGHT COUNTY, MINNESOTA.

EROSION CONTROL QUANTITIES:

ITEM:	QUANTITY	UNIT
SILT FENCE	11,550	LF
WOOD FIBER LOG	1,100	LF
INLET PROTECTION	1	EA

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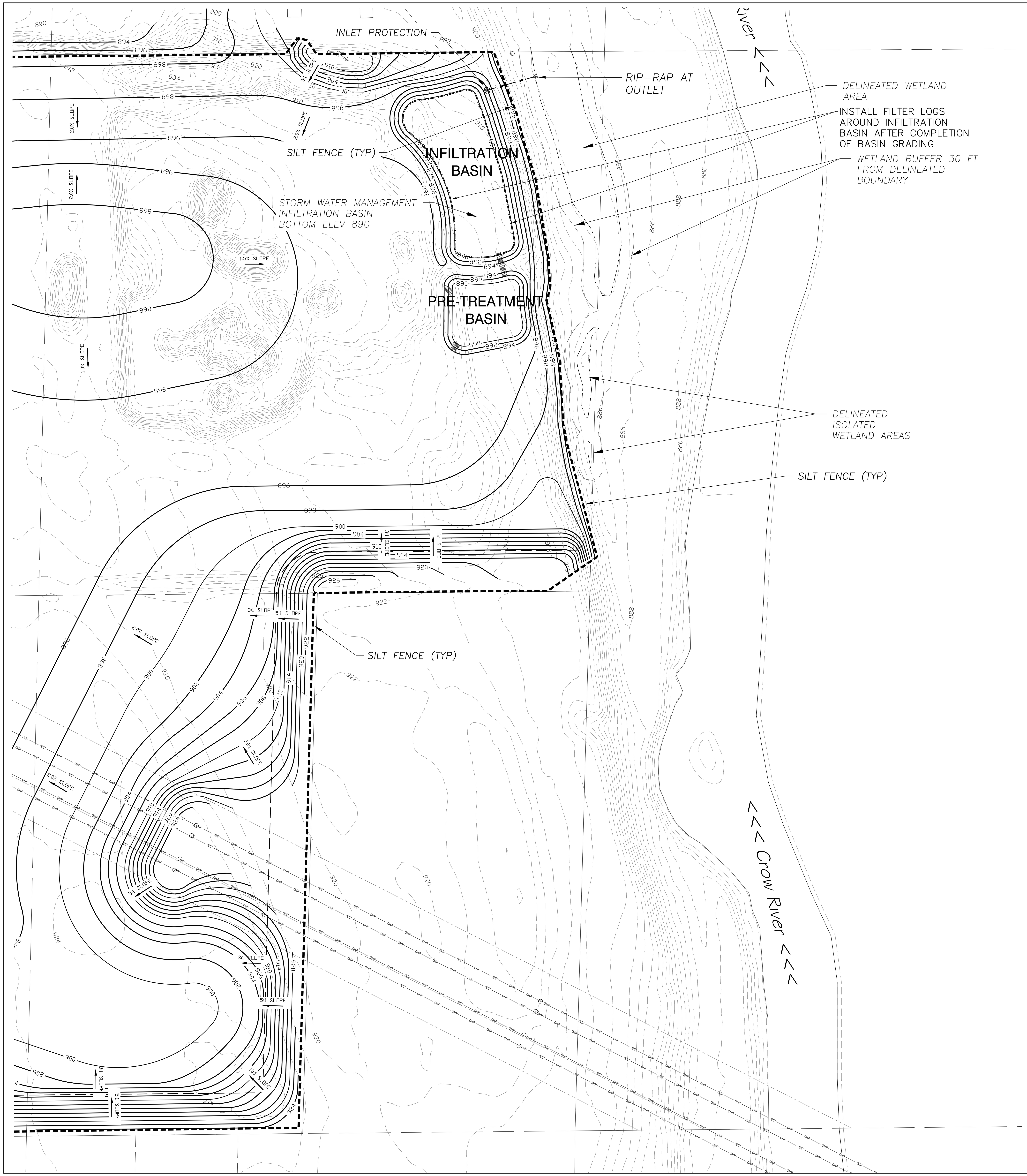
REVISIONS

DATE 09/25/19
DRAWN BY SD
DESIGNED BY SD
CHECKED BY SD

FILE NO. 00722

C4.1

Storm Water Pollution Prevention Plan



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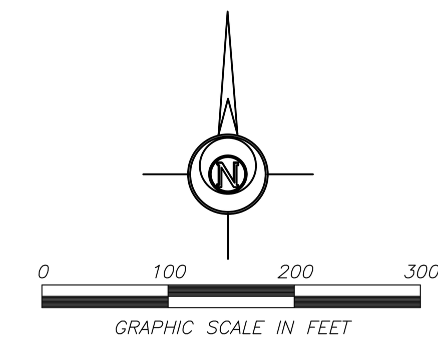
2. Replacement – Fabric shall be replaced promptly when it decomposes or becomes ineffective before the barrier is no longer necessary.
3. Any sediment remaining in place after silt fence is no longer required shall be dressed to conform with the existing grade, prepared, and seeded with appropriate seed mix, as directed by the engineer.
4. Removal of the silt fence– Silt fences shall be removed when they have served their useful purpose, but not before the upward sloping area has been permanently stabilized.

VEGETATION GROUND COVER SCHEDULE

1. Stabilization of all exposed soil areas must be initiated immediately but in no case completed later than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased. Seeding and mulching shall conform to the latest NPDES requirements for installation schedule with regards to grading.
2. Permanent turf ground cover shall include all disturbed areas be covered with a minimum 6" topsoil and seeded as allowed by City, or as proposed on City approved landscape plan for the project. If not otherwise specified, turf seed to be MnDOT mix 25–121 applied at 61 lbs/ac. Infiltration basin seed to be 33–261 applied at 35 lbs/ac with bottom of basin mulched with clean grain straw (Mn/DOT Type 3) applied at 2 tons/ac. MnDOT Type 1 mulch shall be applied at 2 tons/ac and disc anchored in areas not covered by erosion blanket. Seeding and mulching shall conform to the latest NPDES requirements for installation schedule with regards to grading.
3. Temporary ground cover to be MnDOT seed mix 22–111 shall be applied at 31 lbs/ac, or equivalent as approved by City. MnDOT Type 1 mulch shall be applied at 2 tons/ac and disc anchored in areas not covered by sod or erosion blanket.
4. Fertilizer for turf shall be MnDOT Type 3 22–5–10 and applied at 350 lb/ac. Disc fertilizer into top 3" of soil. Specification reference is MnDOT 2574.
5. Dormant seed mix shall be used after November 1 or when temperatures do not exceed 40° F, using same rates specified above. No seed shall be placed on snow or ice greater than 2" in depth.
6. Any seeded areas that do not become established with vegetation shall be re–seeded at Contractor's expense.
7. Erosion blanket shall be installed in seed areas with ground surface slopes of 4H:1V or steeper.

INFILTRATION BASIN NOTES

1. Iniltration area shall be staked off during construction to restrict heavy equipment traffic from compacting native soils.
2. Install appropriate temporary erosion control devices to prevent sediment from entering the practice during construction.
3. Grading of the infiltration basin shall be accomplished using low impact earth–moving equipment to prevent compaction of the underlying soils. Small tracked dozers and skid–steers with runner tracks are recommended.
4. In the event that sediment is introduced into the BMP during or immediately following excavation, this material will need to be removed from the basin prior to initiating the next step in the construction process.
5. Install sediment control around basin after completion of basin grading.
6. Seeding and installation of erosion control shall be completed within 48 hours of final grading of basin.



APPROXIMATE GROSS AREA

184.9 ACRES

APPROXIMATE EXCAVATION AREA

133.9 ACRES

PAGE LAYOUT:

C4.1	C4.2

LEGEND

- Existing Contours
- Existing Storm Sewer
- Proposed Contours
- Proposed Storm Sewer
- Proposed Silt Fence
- Proposed Fiber Logs
- Proposed Inlet Protection
- Proposed Riprap

PROJECT LOCATION

PART OF W½ OF SECTION 30, TOWNSHIP 120, RANGE 23,
AND PART OF SE¼ OF SECTION 25, TOWNSHIP 120, RANGE 24,
WRIGHT COUNTY, MINNESOTA.

EROSION CONTROL QUANTITIES:

ITEM:	QUANTITY	UNIT
SILT FENCE	11,550	LF
WOOD FIBER LOG	1,100	LF
INLET PROTECTION	1	EA

INDEX OF CIVIL SITE DRAWINGS:

C0	PROJECT LOCATION PLAN
C1.0–C1.8	EXISTING CONDITIONS & CROSS SECTION
C2.0–C2.4	PROPOSED OPERATIONS
C3.0–C3.4	END USE PLAN
C4.1–C4.2	STORM WATER POLLUTION PREVENTION PLAN
C5.1	STORM SEWER PLAN

FEHN COMPANIES

Fehn Companies, Inc.
5050 Barthel Industrial Dr.
Albertville, MN 55301

Gary Fehn
612-282-6542
gfehn@fehncompanies.com

MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road Hanover, MN 55341

STORM WATER POLLUTION PREVENTION PLAN

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

[signature]

Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
118 East Broadway St.
PO Box 566
Monticello, Mn 55362
Phone: 763–314–0929
www.civilsd.com

REVISIONS

DATE 09/25/19

DRAWN BY SD

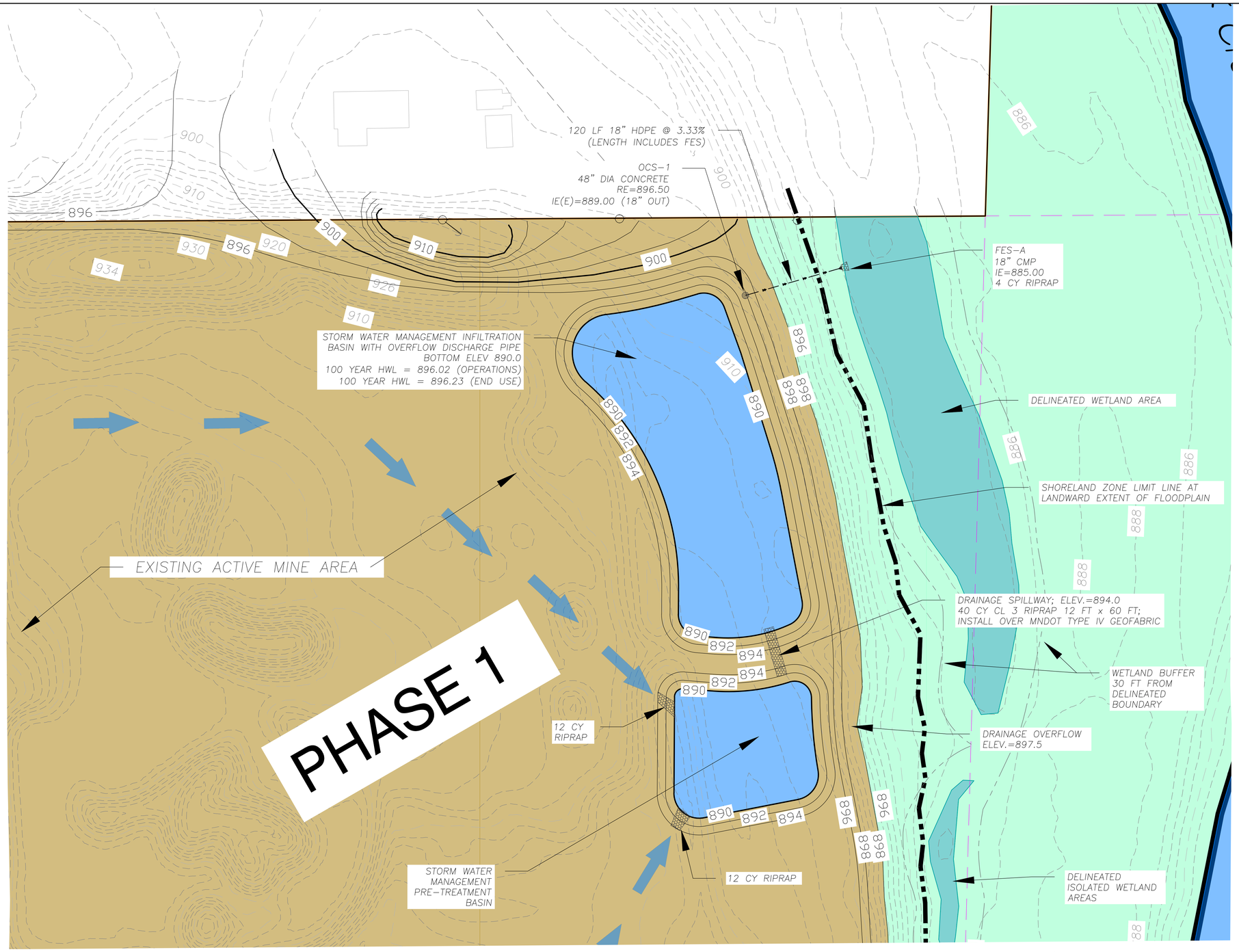
DESIGNED BY SD

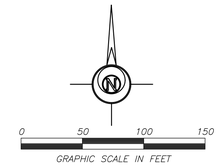
CHECKED BY SD

FILE NO. 00722

C4.2

Storm Water Pollution Prevention Plan





WATER ELEVATION DATA

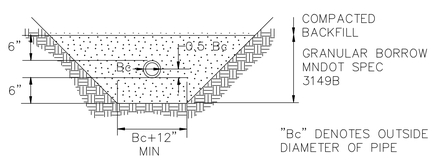
MINE AREA WATER TABLE ELEV 886.0

CROW RIVER TYPICAL WATER ELEV 876.0

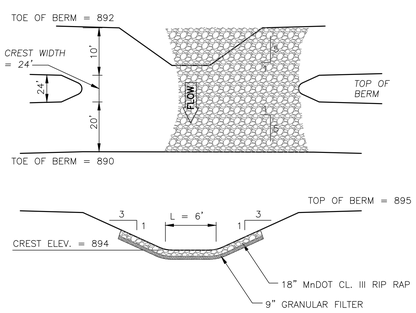
CROW RIVER FEMA 100YR FLOOD ELEV 889.0

LEGEND:

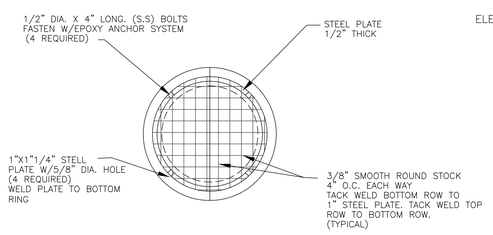
- PROJECT PROPERTY BOUNDARY
- EXISTING CONTOUR INDEX
- EXISTING CONTOUR INTERMEDIATE
- PROPOSED CONTOUR INDEX
- PROPOSED CONTOUR INTERMEDIATE
- PROPOSED DRAINAGE DIRECTION
- STORM WATER MANAGEMENT BASIN
- CROW RIVER
- EXISTING WETLAND AREA
- BERM 10 FT HIGH
- MINE EXCAVATION AREA
- NON-MINED AREA

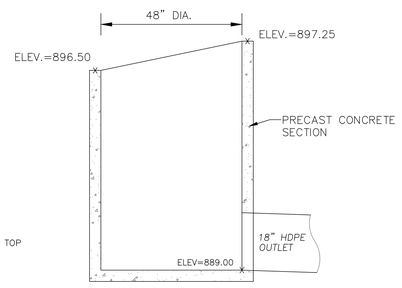


PIPE FOUNDATION & BEDDING IN GOOD SOILS

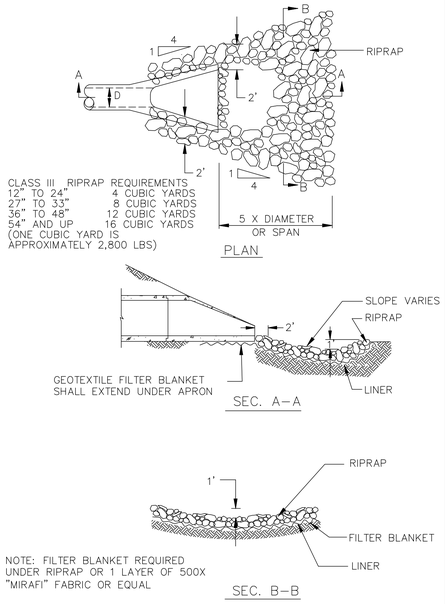


RIPRAP OVERFLOW





POND OUTLET CONTROL STRUCTURE (OCS-1)



CLASS III RIPRAP AT OUTLETS

INDEX OF CIVIL SITE DRAWINGS:

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MAHLER AGGREGATE MINE EXPANSION

SE Quad 15th Street and River Road
Hanover, MN 55341

STORM SEWER PLAN

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

Date: 09/25/19 Reg. No. 24348

PREPARED BY: CIVIL ENGINEERING SITE DESIGN
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www.civilsd.com

REVISIONS

DATE	DRAWN BY	DESIGNED BY	CHECKED BY
09/25/19	SD	SD	SD

FILE NO. 00722

C5.1

Storm Sewer Plan