

SUNSET HIGHWALL

SITE NO.

1835

CONTRACT NO.

DEL2415208208/E008-334

STATE OF INDIANA

INDIANA DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RECLAMATION

ABANDONED COAL MINE

RESTORATION

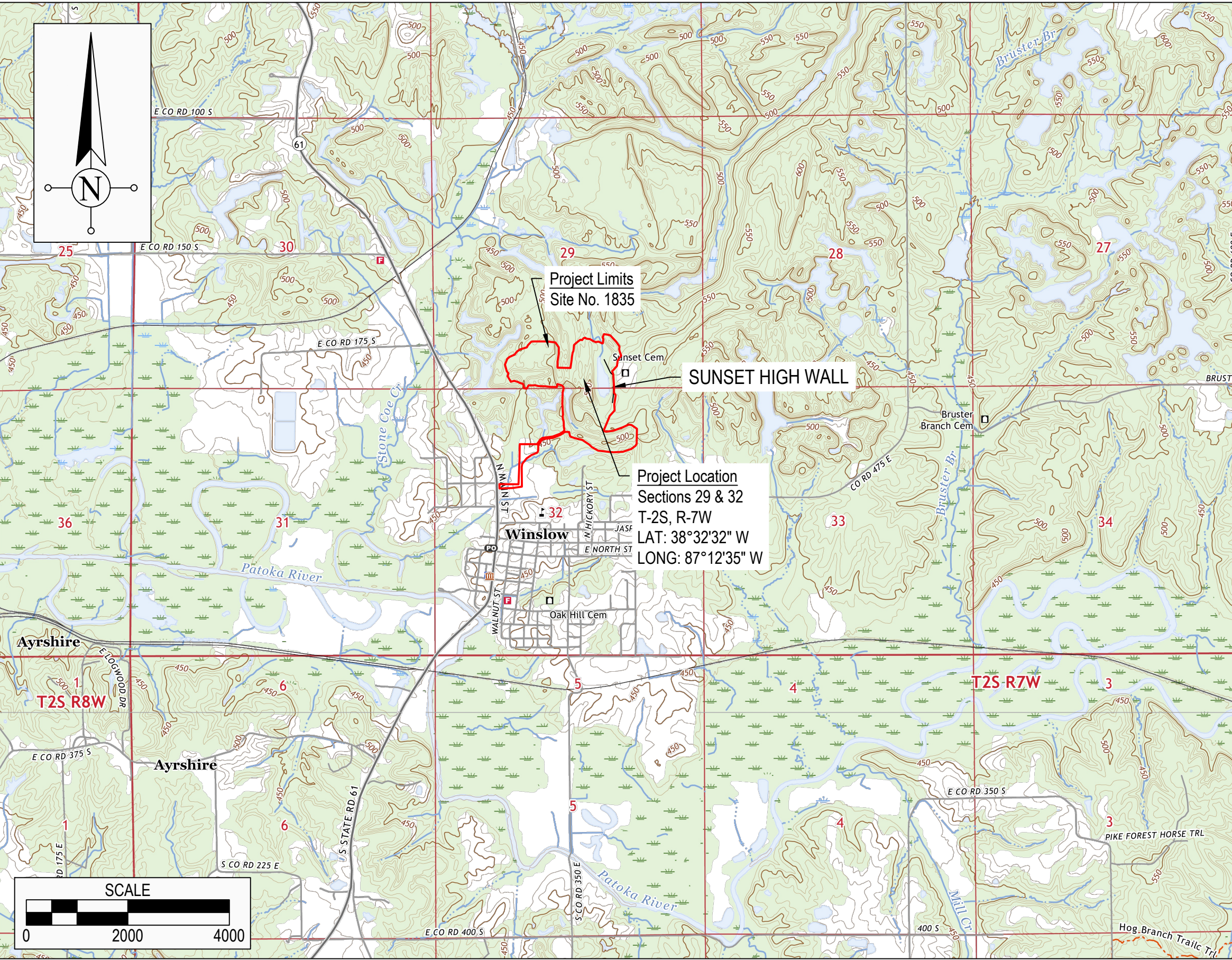
SUNSET HIGHWALL

SITE 1835

CONTRACT DEL2415208208/E008-334

PIKE COUNTY

Clear and grub, backfill highwall, construct ponds, improve drainage, and revegetate site to enhance wildlife habitat and recreation opportunities.



PROJECT LOCATION MAP
AUGUSTA & WINSLOW USGS TOPOGRAPHIC QUADRANGLES (2022)

GENERAL NOTES	
2023 AML STANDARD SPECIFICATIONS TO BE USED WITH THESE PLANS	
AN NPDES DISCHARGE PERMIT IS REQUIRED FOR THIS PROJECT	
PLANS DEVELOPED FROM INDIANA 2019 LIDAR TOPO IN NAD 83 INDIANA STATE PLANE WEST, FEET, AND GROUND SURVEY PERFORMED BY TRIMARK SURVEYING.	
INDEX	
SHEET NO.	SHEET TITLE
1	TITLE, INDEX & LOCATION MAP
2	SITE MAP
3-6	GRADING PLAN
7	GRADING PLAN - CUT/FILL ADJUSTMENT AREA
8-9	SECTIONS
10	REVEGETATION PLAN
11	DETAILS
12	REVISED PROJECT & GRADING LIMITS
UTILITIES	
NO UTILITES ARE KNOWN TO EXIST NEAR THE PROJECT SITE AND NONE ARE EXPECTED TO BE AFFECTED BY THE PROPOSED CONSTRUCTION. HOWEVER, CONTRACTOR SHALL CALL IUPPS BEFORE ANY DIGGING.	
CALL BEFORE YOU DIG. INDIANA UNDERGROUND PLANT PROTECTION SERVICE (IUPPS) 1-800-382-5544 OR 811 FROM YOUR MOBILE PHONE.	

REVISIONS	
DATE	DESCRIPTION
5/03/2024	REVISED SHEETS 2, 3, 4 AND 10. SHIFTED ACCESS DRIVE NORTH, OMITTED CROSS PIPE UNDER ACCESS DRIVE AND ADDED WETLAND SEED MIX.
6/04/2024	ADDED RIFFLES TO DITCHES ON SHEETS 3, 4, 5 AND 6 AND RIFFLE DETAIL TO SHEET 11
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

Patriot Engineering &
Environmental, Inc.

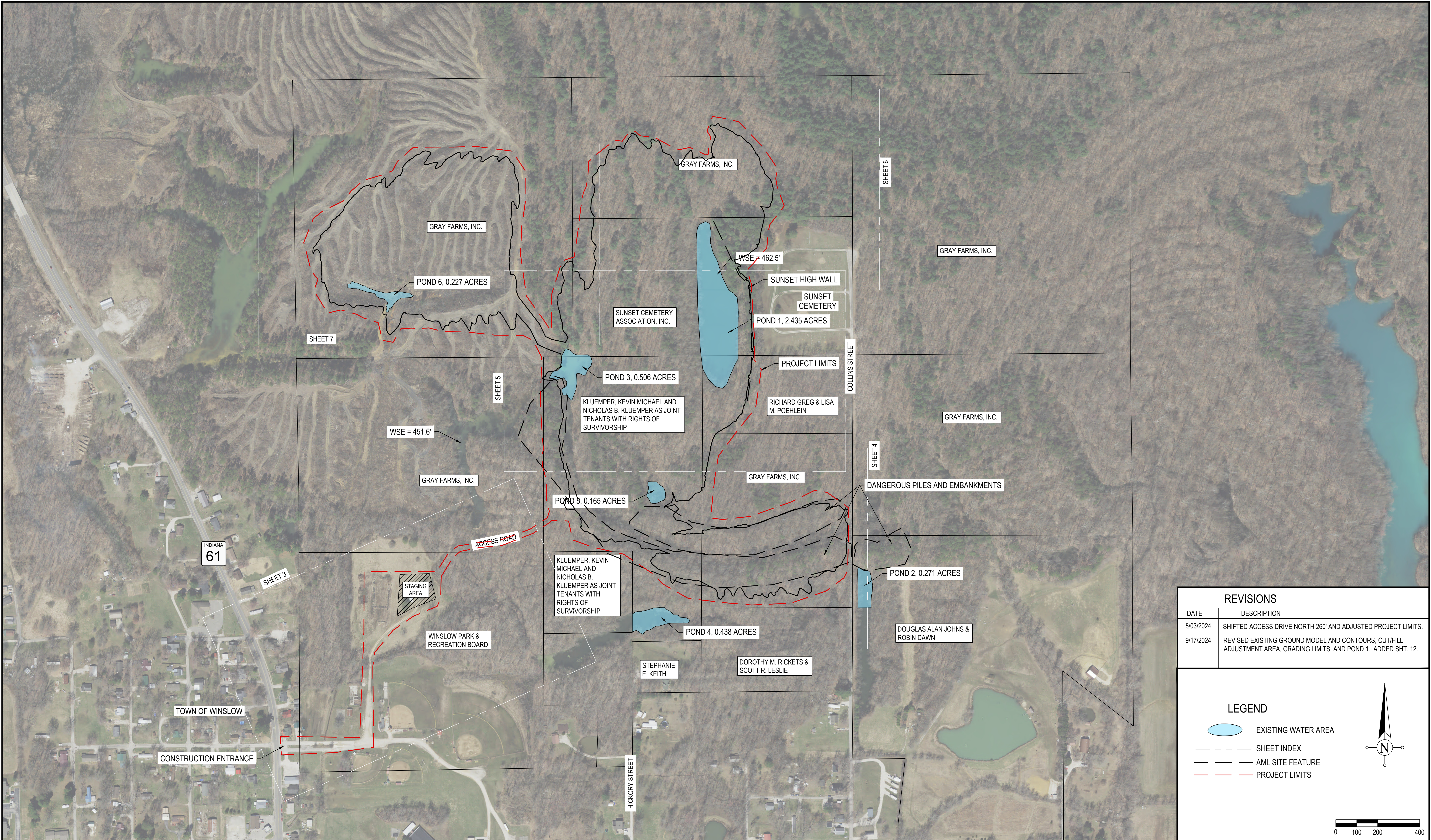


PLANS
PREPARED BY: PATRIOT ENGINEERING317-576-8058
PHONE NUMBER

CERTIFIED BY: 9/18/2024
DATE

APPROVED
FOR LETTING: DIVISION OF RECLAMATIONDATE

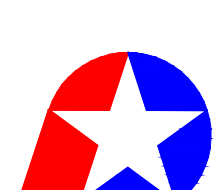


SCALE	SHEET
AS NOTED	1 of 12
PROJECT	SITE
E008-334	1835

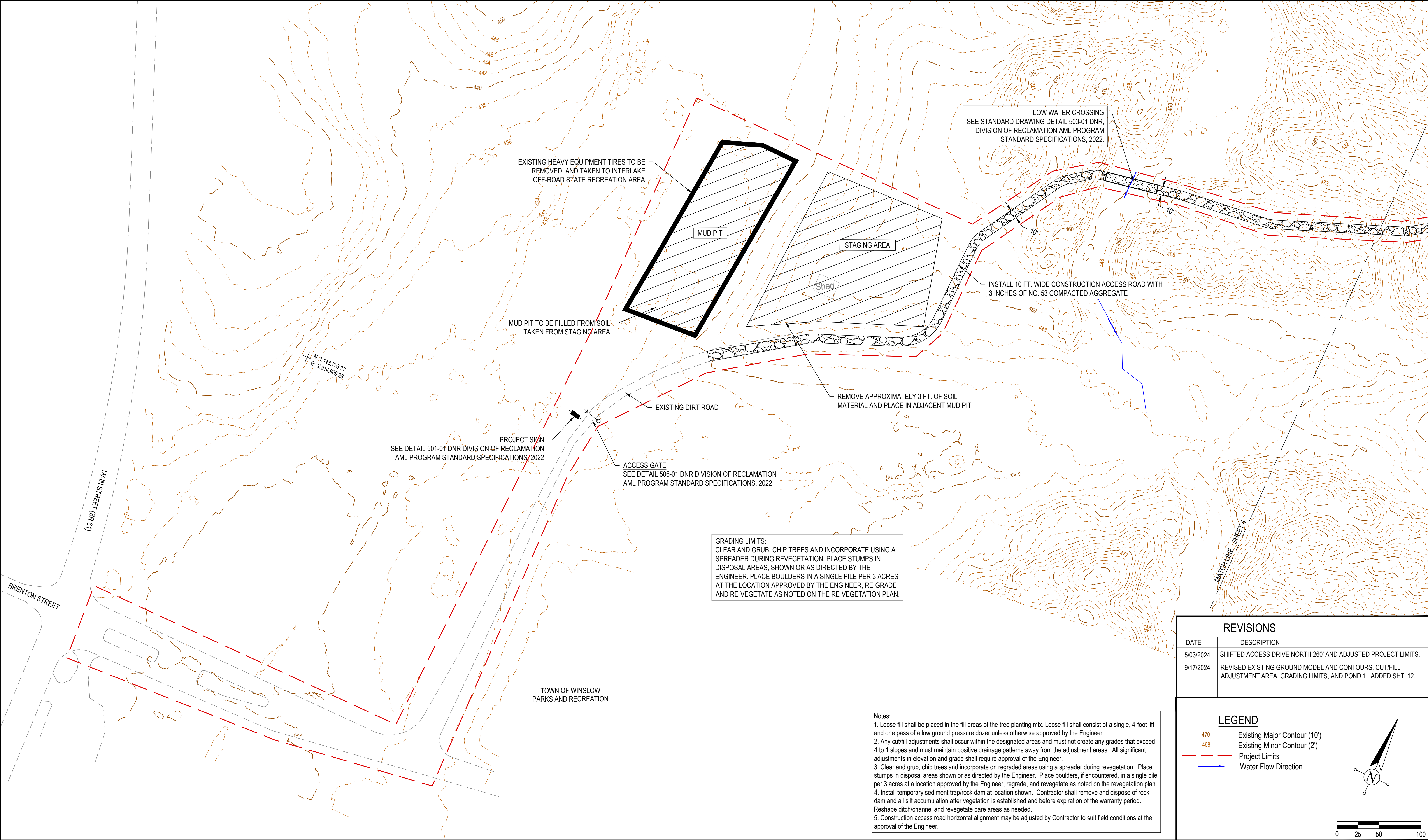


REVISIONS	
DATE	DESCRIPTION
5/03/2024	SHIFTED ACCESS DRIVE NORTH 260' AND ADJUSTED PROJECT LIMITS.
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

LEGEND

- EXISTING WATER AREA
- SHEET INDEX
- AML SITE FEATURE
- PROJECT LIMITS

 <div>Patriot Engineering & Environmental, Inc.</div>		RECOMMENDED FOR APPROVAL:  9/18/2024 DATE		DATE MADE 9/22/2023	Site Map	SCALE 1" = 200'	SHEET 2 of 12
		DESIGNED BY K.S.B.	DRAWN BY J.D.D.	DATE REVISED 9/17/2024		PROJECT E008-334	SITE 1835
		STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION					



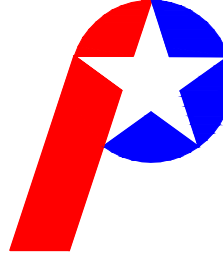


REVISIONS	
DATE	DESCRIPTION
5/03/2024	SHIFTED ACCESS DRIVE NORTH 260' AND ADJUSTED PROJECT LIMITS.
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

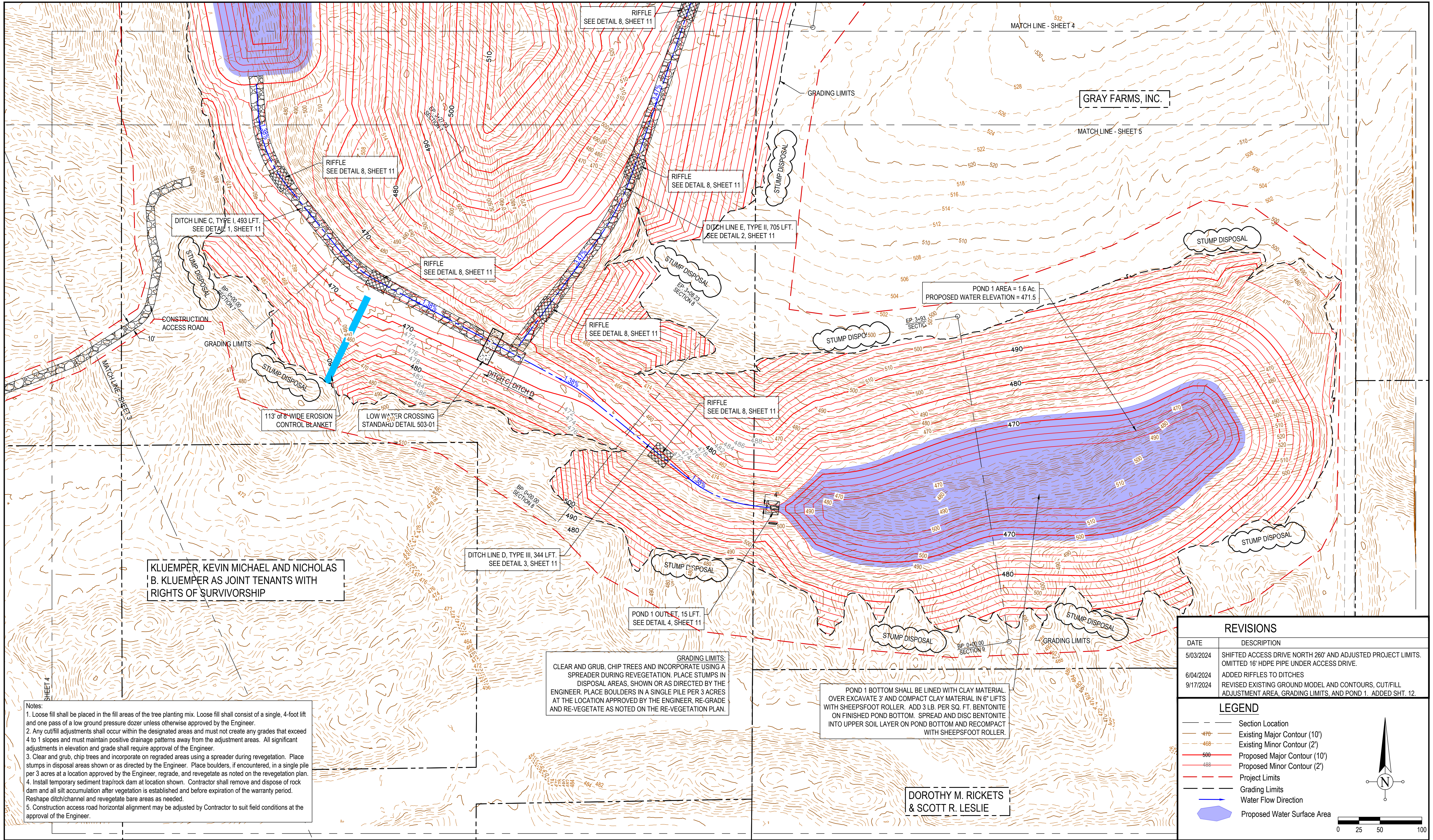
LEGEND

- Existing Major Contour (10')
- Existing Minor Contour (2')
- Project Limits
- Water Flow Direction

Notes:

- Loose fill shall be placed in the fill areas of the tree planting mix. Loose fill shall consist of a single, 4-foot lift and one pass of a low ground pressure dozer unless otherwise approved by the Engineer.
- Any cut/fill adjustments shall occur within the designated areas and must not create any grades that exceed 4 to 1 slopes and must maintain positive drainage patterns away from the adjustment areas. All significant adjustments in elevation and grade shall require approval of the Engineer.
- Clear and grub, chip trees and incorporate on regraded areas using a spreader during revegetation. Place stumps in disposal areas shown or as directed by the Engineer. Place boulders, if encountered, in a single pile per 3 acres at a location approved by the Engineer, regrade, and revegetate as noted on the revegetation plan.
- Install temporary sediment trap/rock dam at location shown. Contractor shall remove and dispose of rock dam and all silt accumulation after vegetation is established and before expiration of the warranty period. Reshape ditch/channel and revegetate bare areas as needed.
- Construction access road horizontal alignment may be adjusted by Contractor to suit field conditions at the approval of the Engineer.

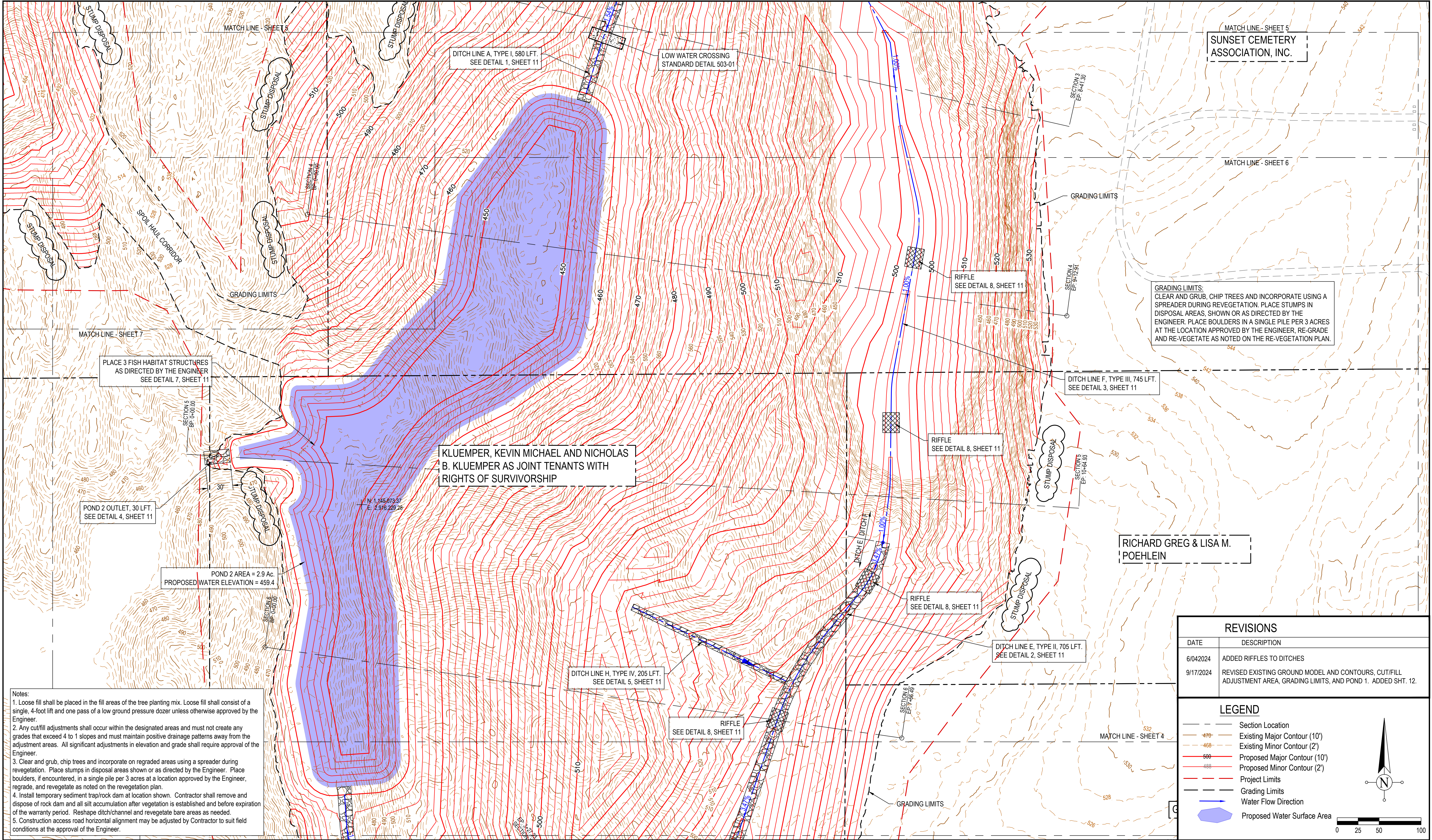
 Patriot Engineering & Environmental, Inc.		RECOMMENDED FOR APPROVAL:  9/18/2024 DATE	DATE MADE 9/22/2023	Grading Plan STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION	SCALE 1" = 50'	SHEET 3 of 12
		DESIGNED BY K.S.B.	DRAWN BY J.D.D.	DATE REVISED 9/17/2024	PROJECT E008-334	SITE 1835



REVISIONS	
DATE	DESCRIPTION
5/03/2024	SHIFTED ACCESS DRIVE NORTH 260° AND ADJUSTED PROJECT LIMITS. OMITTED 16" HDPE PIPE UNDER ACCESS DRIVE.
6/04/2024	ADDED RIFFLES TO DITCHES
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

LEGEND	
	Section Location
	Existing Major Contour (10')
	Existing Minor Contour (2')
	Proposed Major Contour (10')
	Proposed Minor Contour (2')
	Project Limits
	Grading Limits
	Water Flow Direction
	Proposed Water Surface Area

		RECOMMENDED FOR APPROVAL: 9/18/2024 DATE	DATE MADE 9/22/2023	Grading Plan STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION	SCALE 1" = 50'	SHEET 4 of 12
		DESIGNED BY K.S.B.	DRAWN BY J.D.D.	DATE REVISED 9/17/2024	PROJECT E008-334	SITE 1835



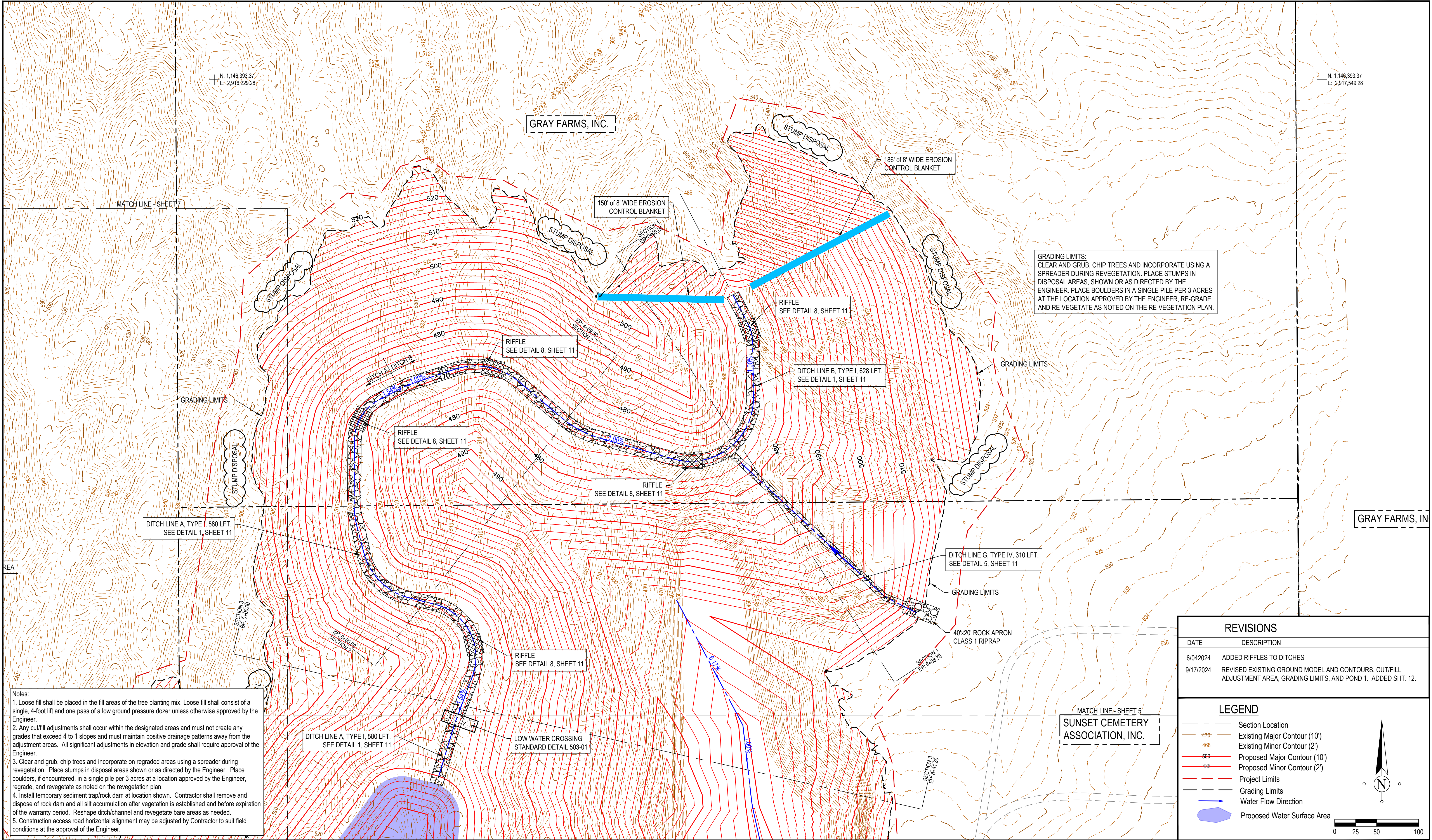
Notes:

1. Loose fill shall be placed in the fill areas of the tree planting mix. Loose fill shall consist of a single, 4-foot lift and one pass of a low ground pressure dozer unless otherwise approved by the Engineer.
2. Any cut/fill adjustments shall occur within the designated areas and must not create any grades that exceed 4 to 1 slopes and must maintain positive drainage patterns away from the adjustment areas. All significant adjustments in elevation and grade shall require approval of the Engineer.
3. Clear and grub, chip trees and incorporate on regraded areas using a spreader during revegetation. Place stumps in disposal areas shown or as directed by the Engineer. Place boulders, if encountered, in a single pile per 3 acres at a location approved by the Engineer, regrade, and revegetate as noted on the revegetation plan.
4. Install temporary sediment trap/rock dam at location shown. Contractor shall remove and dispose of rock dam and all silt accumulation after vegetation is established and before expiration of the warranty period. Reshape ditch/channel and revegetate bare areas as needed.
5. Construction access road horizontal alignment may be adjusted by Contractor to suit field conditions at the approval of the Engineer.

REVISIONS	
DATE	DESCRIPTION
6/04/2024	ADDED RIFFLES TO DITCHES
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

LEGEND	
	Section Location
	Existing Major Contour (10')
	Existing Minor Contour (2')
	Proposed Major Contour (10')
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	Project Limits
	Grading Limits
	Water Flow Direction
	Proposed Water Surface Area

		RECOMMENDED FOR APPROVAL: 9/18/2024 DATE		DATE MADE 9/22/2023	Grading Plan STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION	SCALE 1" = 50'	SHEET 5 of 12
		DESIGNED BY K.S.B.	DRAWN BY J.D.D.	DATE REVISED 9/17/2024		PROJECT E008-334	SITE 1835



Notes:
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5. Construction access road horizontal alignment may be adjusted by Contractor to suit field conditions at the approval of the Engineer.

GRADING LIMITS:
CLEAR AND GRUB, CHIP TREES AND INCORPORATE USING A SPREADER DURING REVEGETATION. PLACE STUMPS IN DISPOSAL AREAS, SHOWN OR AS DIRECTED BY THE ENGINEER. PLACE BOULDERS IN A SINGLE PILE PER 3 ACRES AT THE LOCATION APPROVED BY THE ENGINEER, RE-GRADE AND RE-VEGETATE AS NOTED ON THE RE-VEGETATION PLAN.

REVISIONS	
DATE	DESCRIPTION
6/04/2024	ADDED RIFFLES TO DITCHES
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

LEGEND	
	Section Location
	Existing Major Contour (10')
	Existing Minor Contour (2')
	Proposed Major Contour (10')
	Proposed Minor Contour (2')
	Project Limits
	Grading Limits
	Water Flow Direction
	Proposed Water Surface Area

0 25 50 100

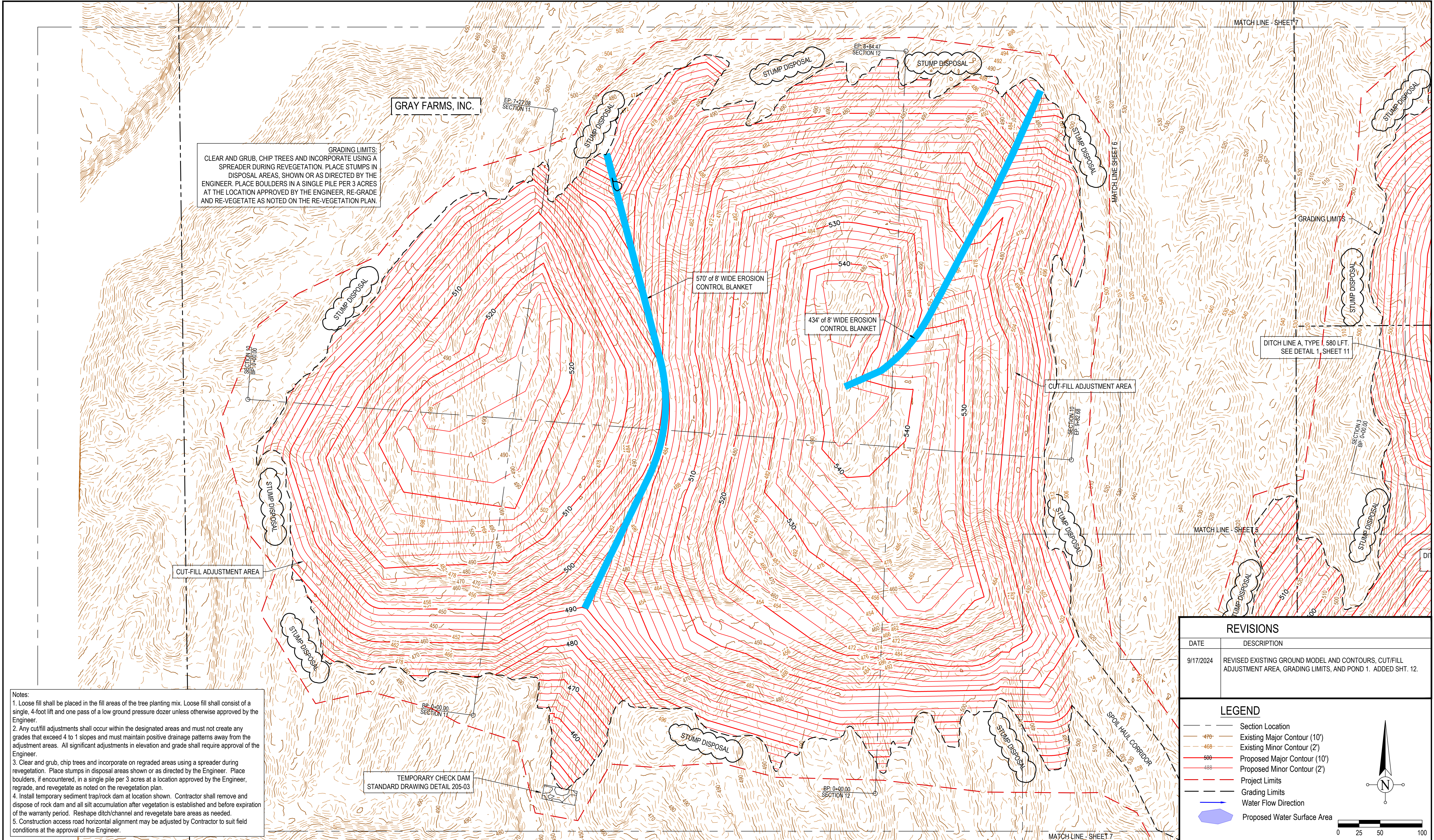


RECOMMENDED FOR APPROVAL: 9/18/2024 DATE	
DESIGNED BY K.S.B.	DRAWN BY J.D.D.

DATE MADE 9/22/2023	DATE REVISED 9/17/2024
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Grading Plan
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

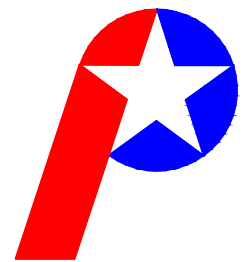
SCALE 1" = 50'	SHEET 6 of 12
PROJECT E008-334	SITE 1835



Notes:

1. Loose fill shall be placed in the fill areas of the tree planting mix. Loose fill shall consist of a single, 4-foot lift and one pass of a low ground pressure dozer unless otherwise approved by the Engineer.
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5. Construction access road horizontal alignment may be adjusted by Contractor to suit field conditions at the approval of the Engineer.

TEMPORARY CHECK DAM
STANDARD DRAWING DETAIL 205-03



Patriot Engineering &
Environmental, Inc.



RECOMMENDED
FOR APPROVAL: *Kenn Bosar* 9/18/2024
DATE

DESIGNED BY
K.S.B.

DRAWN BY
J.D.D.

DATE MADE
9/22/2023

DATE REVISED
9/17/2024

Grading Plan - Cut/Fill Adjustment Area

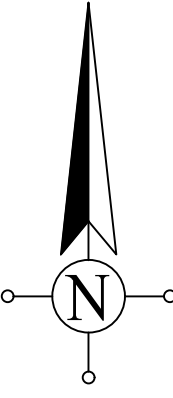
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

REVISIONS

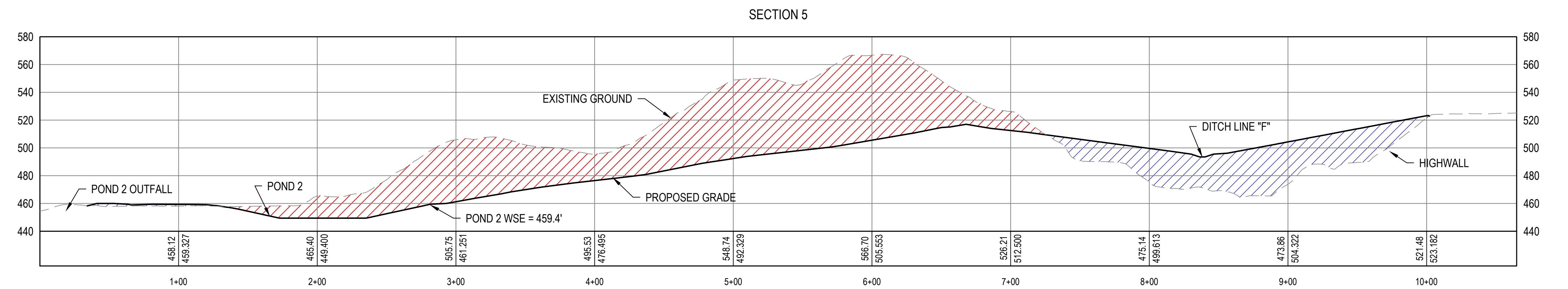
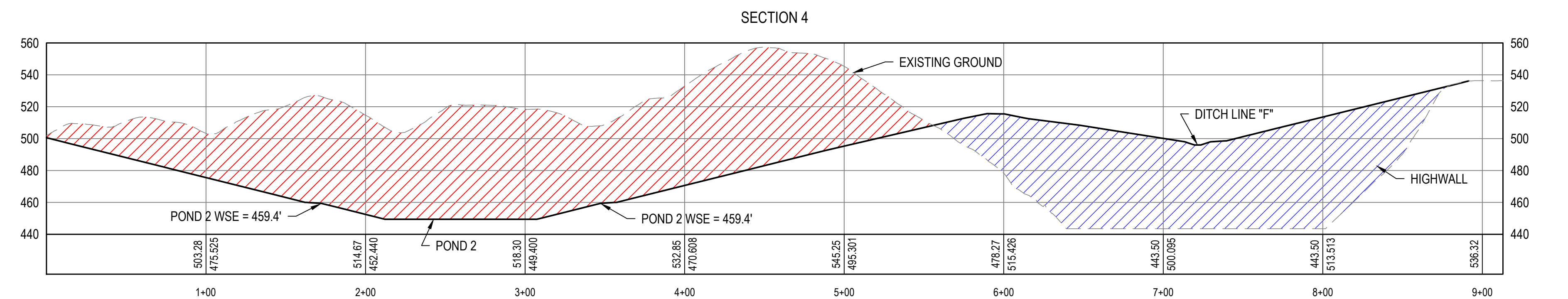
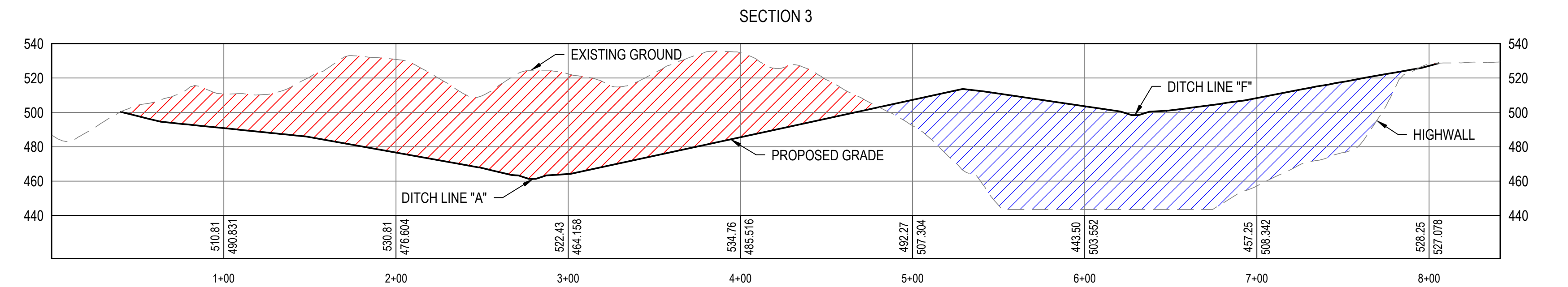
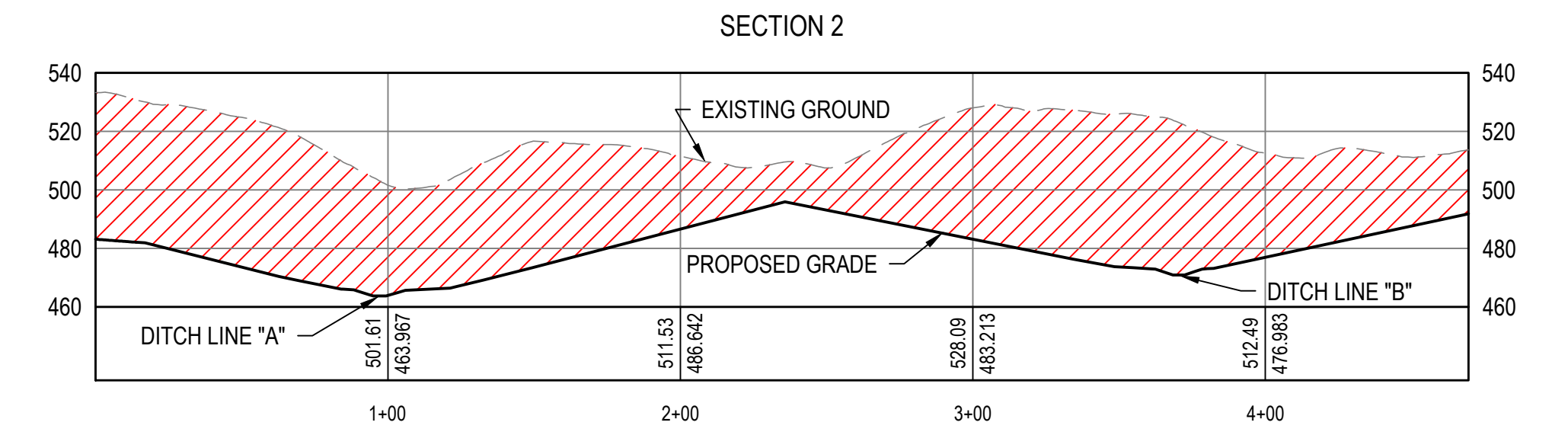
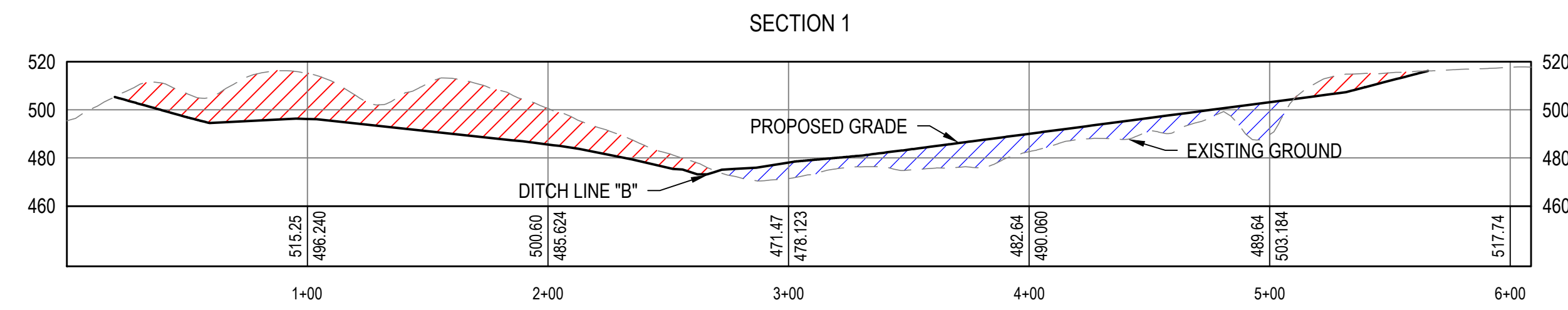
DATE	DESCRIPTION
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

LEGEND

	Section Location
	Existing Major Contour (10')
	Existing Minor Contour (2')
	Proposed Major Contour (10')
	Proposed Minor Contour (2')
	Project Limits
	Grading Limits
	Water Flow Direction
	Proposed Water Surface Area



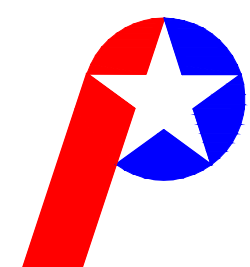
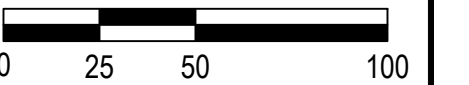
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REVISIONS	
DATE	DESCRIPTION
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

CUT AREA

FILL AREA



Patriot Engineering &
Environmental, Inc.



RECOMMENDED FOR APPROVAL: Kenn Baker 9/18/2024
DATE

DESIGNED BY
K.S.B.

DRAWN BY
J.D.D.

DATE MADE
9/22/2023

DATE REVISED
9/17/2024

Sections

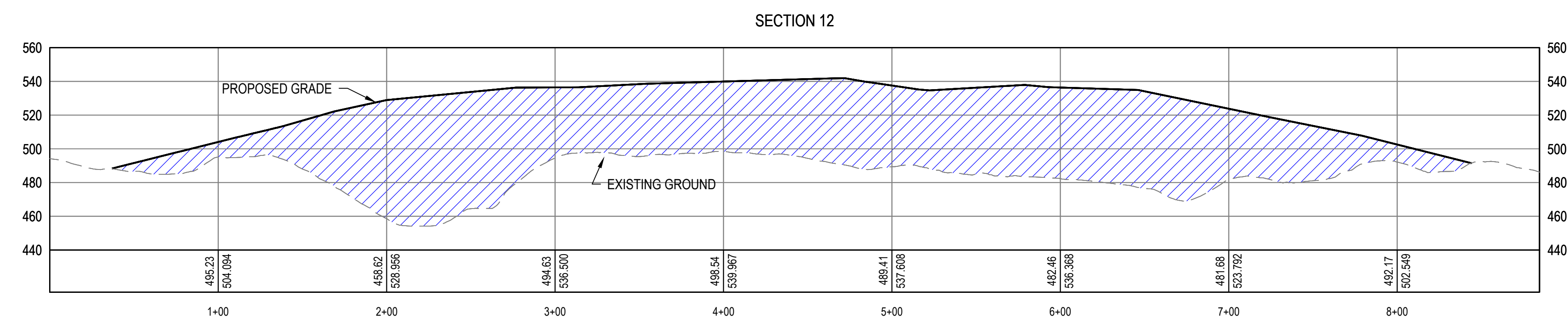
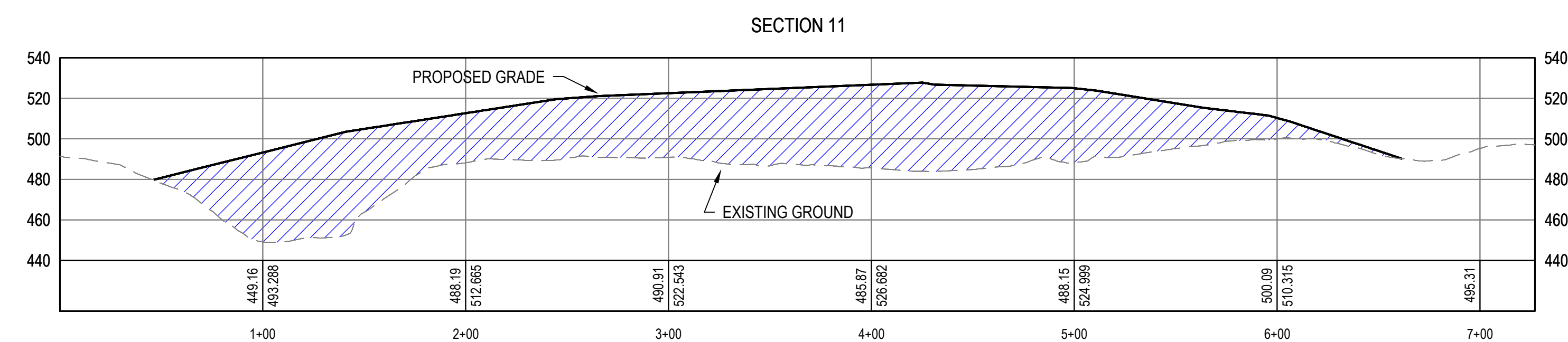
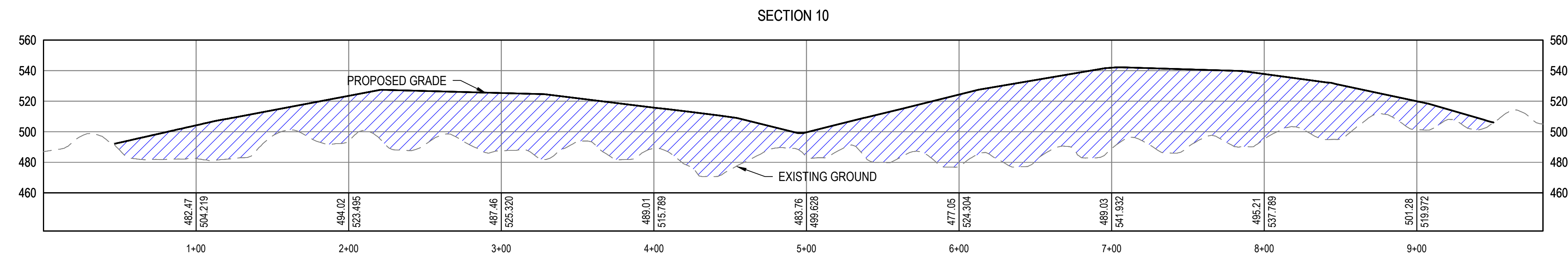
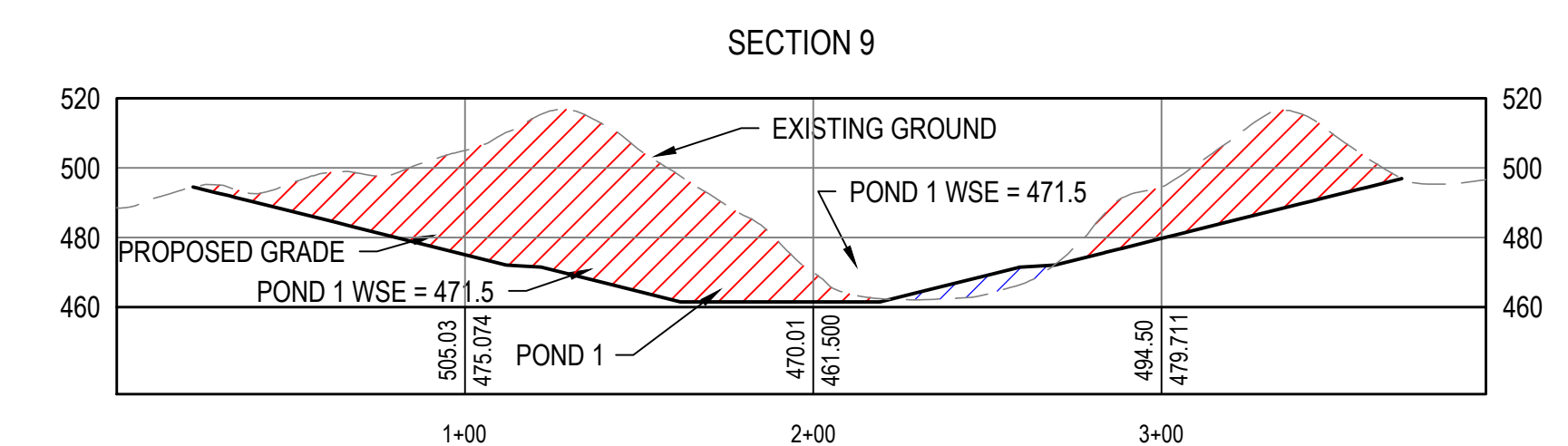
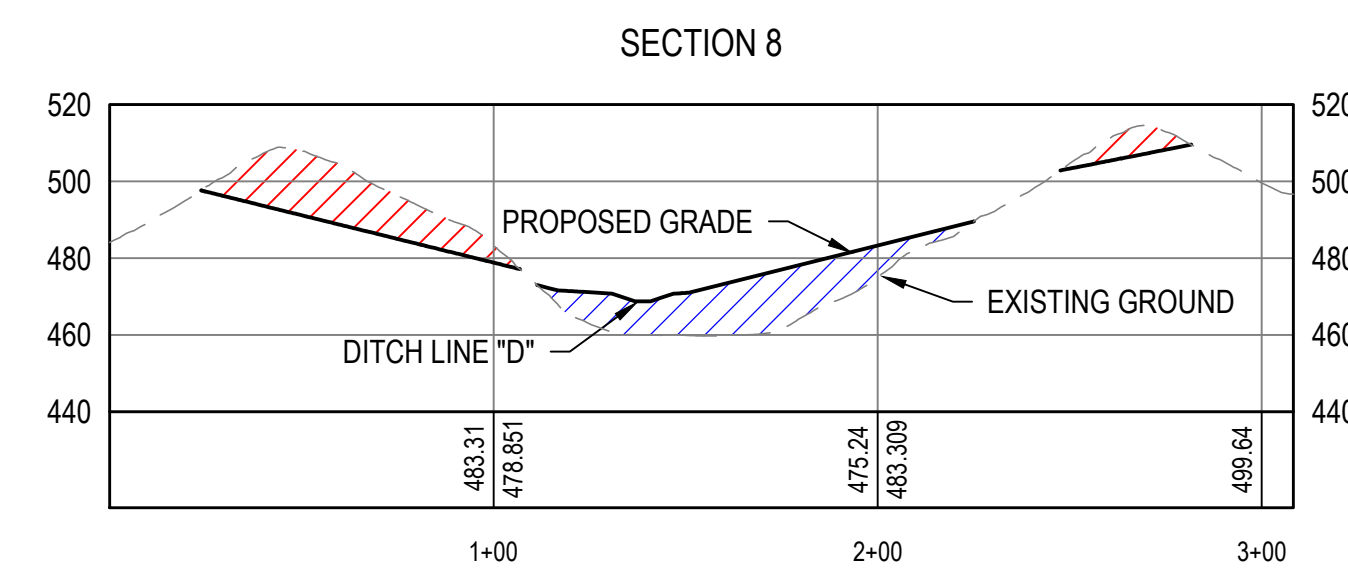
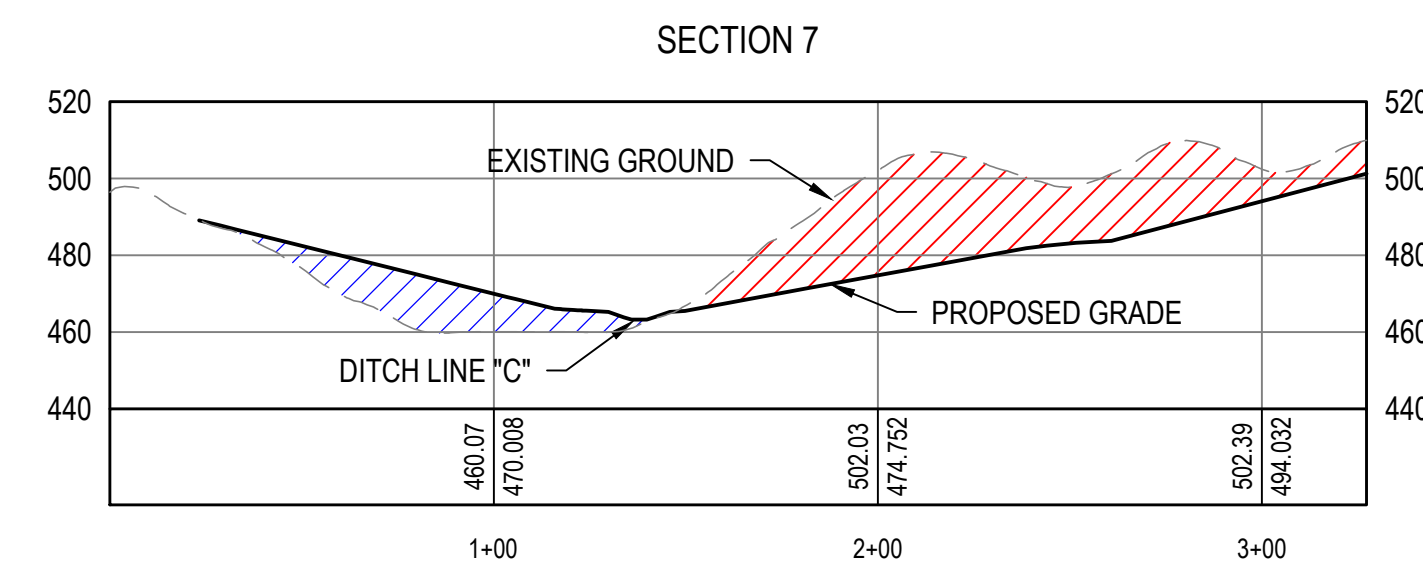
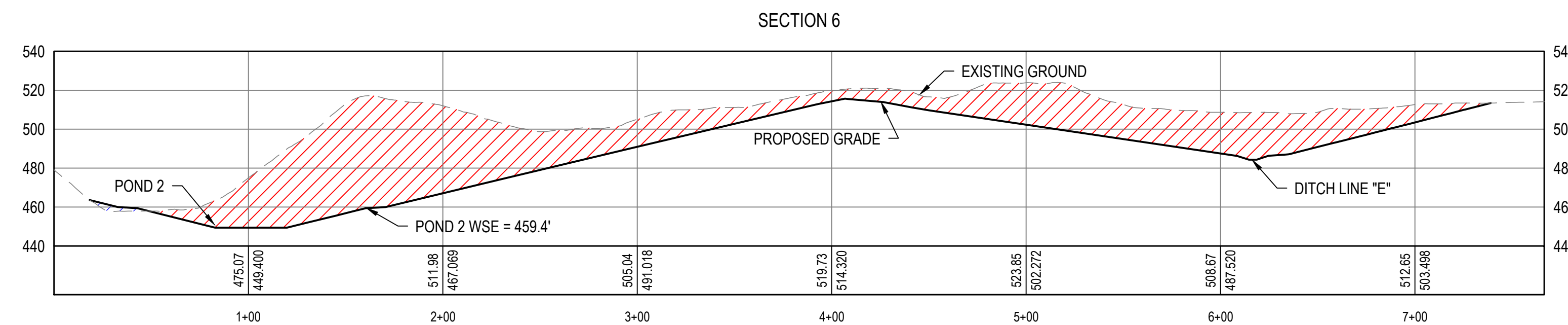
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE
1" = 50'

PROJECT
E008-334


SHEET
8 of 12


SITE
1835

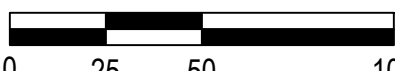


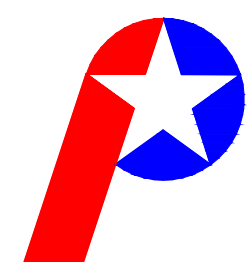
REVISONS	
DATE	DESCRIPTION
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

LEGEND

 CUT AREA

 FILL AREA





Patriot Engineering & Environmental, Inc.



RECOMMENDED
FOR APPROVAL:  9/18/2024
DATE

DESIGNED BY
K.S.B.

DRAWN BY
J.D.D.

DATE MADE
9/22/2023

DATE REVISED
9/17/2024

Sections

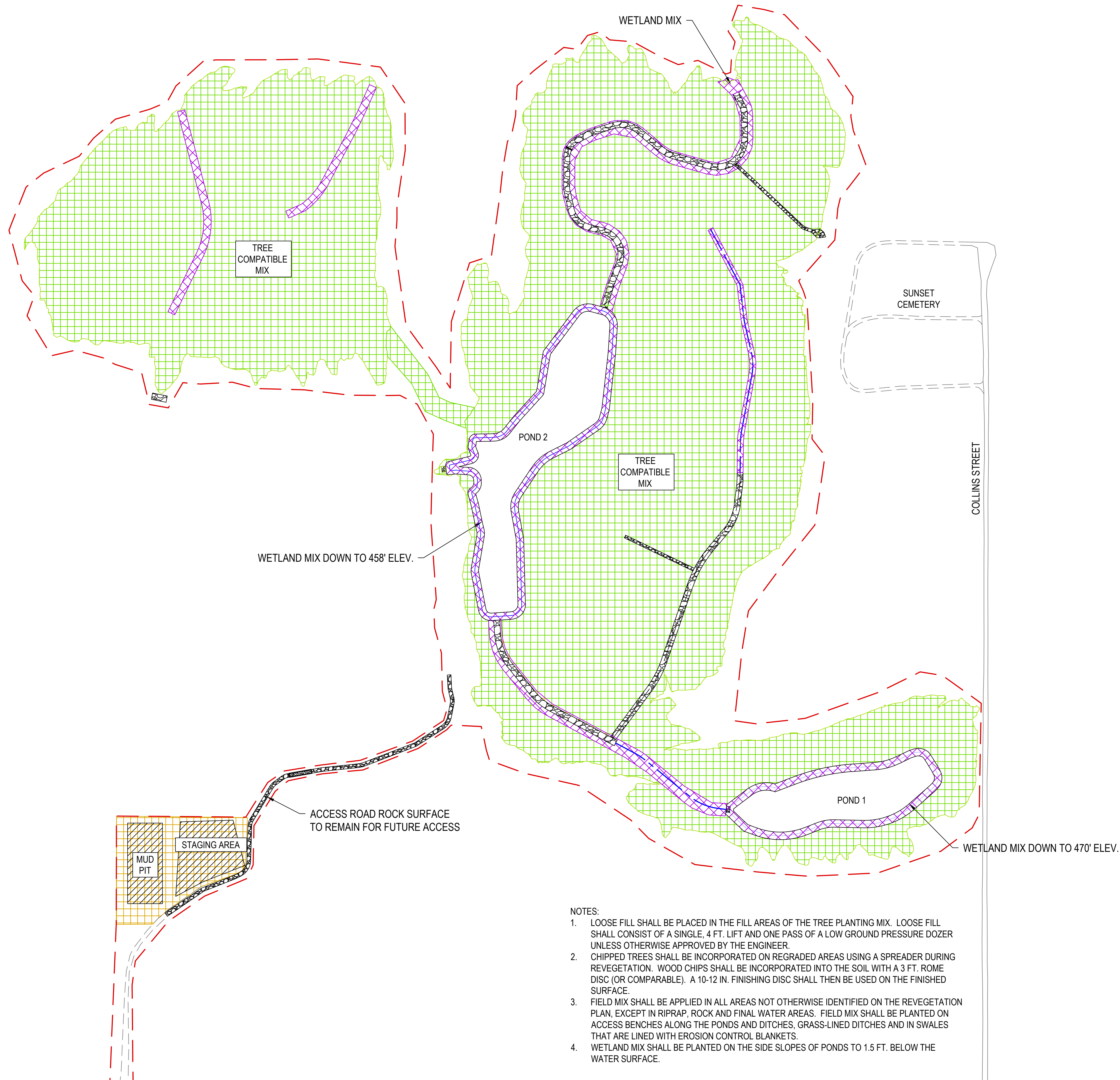
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE
1" = 50'

PROJECT
E008-334

SHEET
9 of 12

SITE
1835



- NOTES:
1. LOOSE FILL SHALL BE PLACED IN THE FILL AREAS OF THE TREE PLANTING MIX. LOOSE FILL SHALL CONSIST OF A SINGLE, 4 FT. LIFT AND ONE PASS OF A LOW GROUND PRESSURE DOZER UNLESS OTHERWISE APPROVED BY THE ENGINEER.
 2. CHIPPED TREES SHALL BE INCORPORATED ON REGRADED AREAS USING A SPREADER DURING REVEGETATION. WOOD CHIPS SHALL BE INCORPORATED INTO THE SOIL WITH A 3 FT. ROME DISC (OR COMPARABLE). A 10-12 IN. FINISHING DISC SHALL THEN BE USED ON THE FINISHED SURFACE.
 3. FIELD MIX SHALL BE APPLIED IN ALL AREAS NOT OTHERWISE IDENTIFIED ON THE REVEGETATION PLAN, EXCEPT IN RIPRAP, ROCK AND FINAL WATER AREAS. FIELD MIX SHALL BE PLANTED ON ACCESS BENCHES ALONG THE PONDS AND DITCHES, GRASS-LINED DITCHES AND IN SWALES THAT ARE LINED WITH EROSION CONTROL BLANKETS.
 4. WETLAND MIX SHALL BE PLANTED ON THE SIDE SLOPES OF PONDS TO 1.5 FT. BELOW THE WATER SURFACE.

SEED MIXES	
FIELD MIX	
SEED	lbs/ac
Common Oat (Avena Sativa)	50
Little Bluestem (Schizachyrium scoparium)	5
Orchard Grass (Dactylis glomerata)	5
Perennial Ryegrass (Lolium perenne)	8
Smooth Brome (Bromus inermis)	5
Switchgrass (Panicum virgatum)	5
Weeping Lovegrass (Eragrostis curvula)	2
Red Clover (Trifolium pratense)	8

TREE COMPATIBLE MIX	
SEED	lbs/ac
Common Oat (Avena Sativa)	50
Alfalfa (Medicago Sativa)	3
Switchgrass, cave-in-rock (Panicum virgatum)	2
Partridge pea (Chamaecrista fasciculata)	1

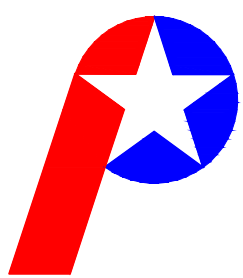
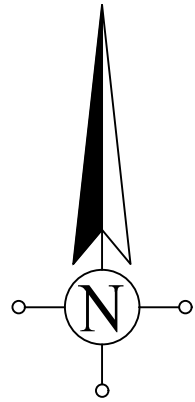
WETLAND MIX	
Permanent Grass/Sedge	
SEED	PLS oz/ac
Fox Sedge (Carex vulpinoidea)	6
Blunt Spikerush (Eleocharis obtusa)	1
Virginia Wildrye (Elymus virginicus)	48
Common Rush (Juncus effuses)	5
Green Bulrush (Scirpus atrovirens)	5
Woolgrass (Scirpus cyperinus)	4
Softstem Bulrush (Scirpus validus)	5
Forbs	
SEED	PLS oz/ac
American Water Plantain (Alisma subcordatum)	4
Swamp Milkweed (Asclepias incarnata)	2
Nodding Beggartick (Bidens cernua)	4
Allegheny Monkeyflower (Mimulus ringens)	1
Broadleaf Arrowhead (Sagittaria latifolia)	6
Swamp Verbena (Verbena hastate)	2

REVISIONS

DATE	DESCRIPTION
5/03/2024	CHANGED THE SEED AREAS IN THE CHANNELS AND PONDS FROM 'FIELD MIX' TO 'WETLAND MIX'. ADDED WETLAND MIX SEED DESCRIPTION. ADDED WETLAND MIX AT CUT/FILL ADJUSTMENT AREA CHANGED NOTE 4. ADJUSTED PROJECT LIMITS AND ACCESS DRIVE LOCATION
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

LEGEND

- GRADING LIMITS
- PROJECT LIMITS
- GRASS DITCH LINE
- PAVED ROAD/DRIVE
- UN-PAVED ROAD/DRIVE
- PROPOSED WATER
- SITE ACCESS
- STAGING AREA
- RIPRAP FEATURE
- FIELD MIX
- TREE MIX
- WETLAND MIX



Patriot Engineering &
Environmental, Inc.



RECOMMENDED
FOR APPROVAL:  9/18/2024
DATE

DESIGNED BY
K.S.B.

DRAWN BY
J.D.D.

DATE MADE
9/22/2023

DATE REVISED
9/17/2024

Revegetation Plan

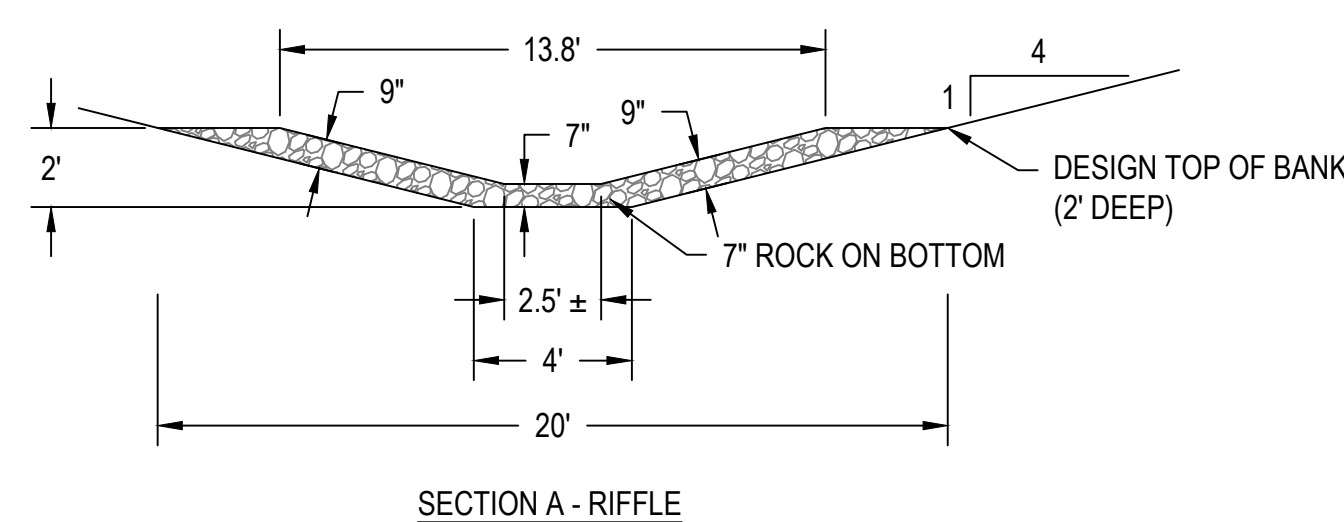
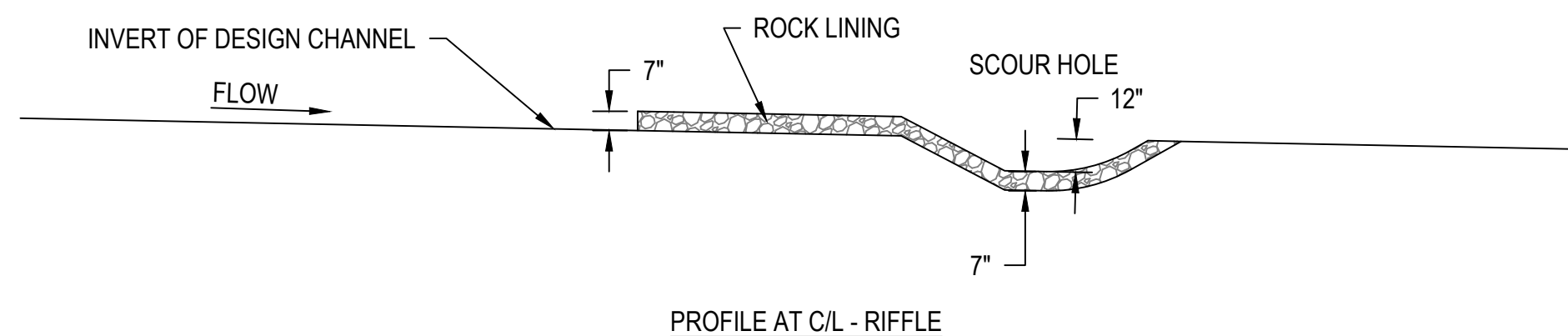
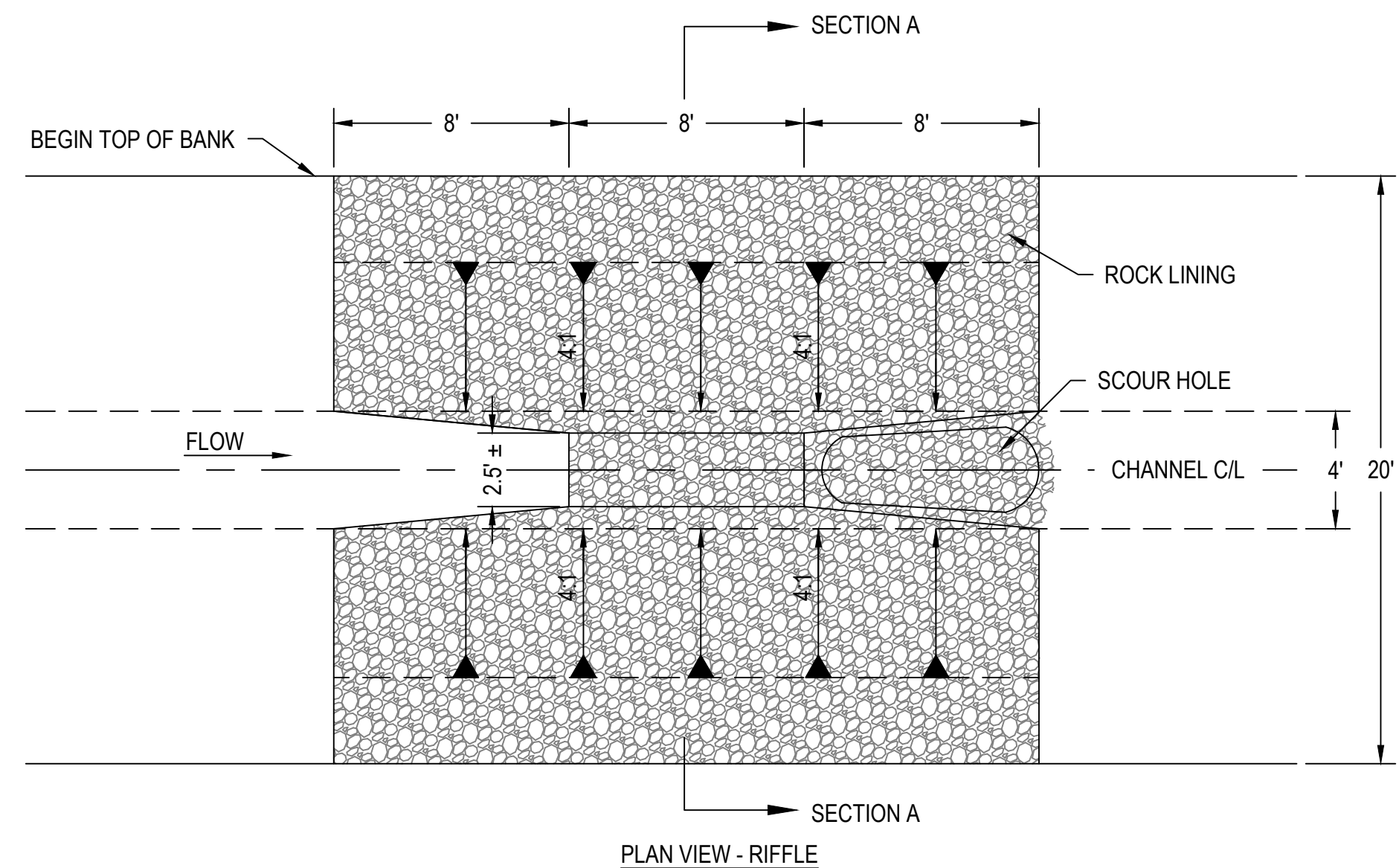
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE
1" = 150'

PROJECT
E008-334

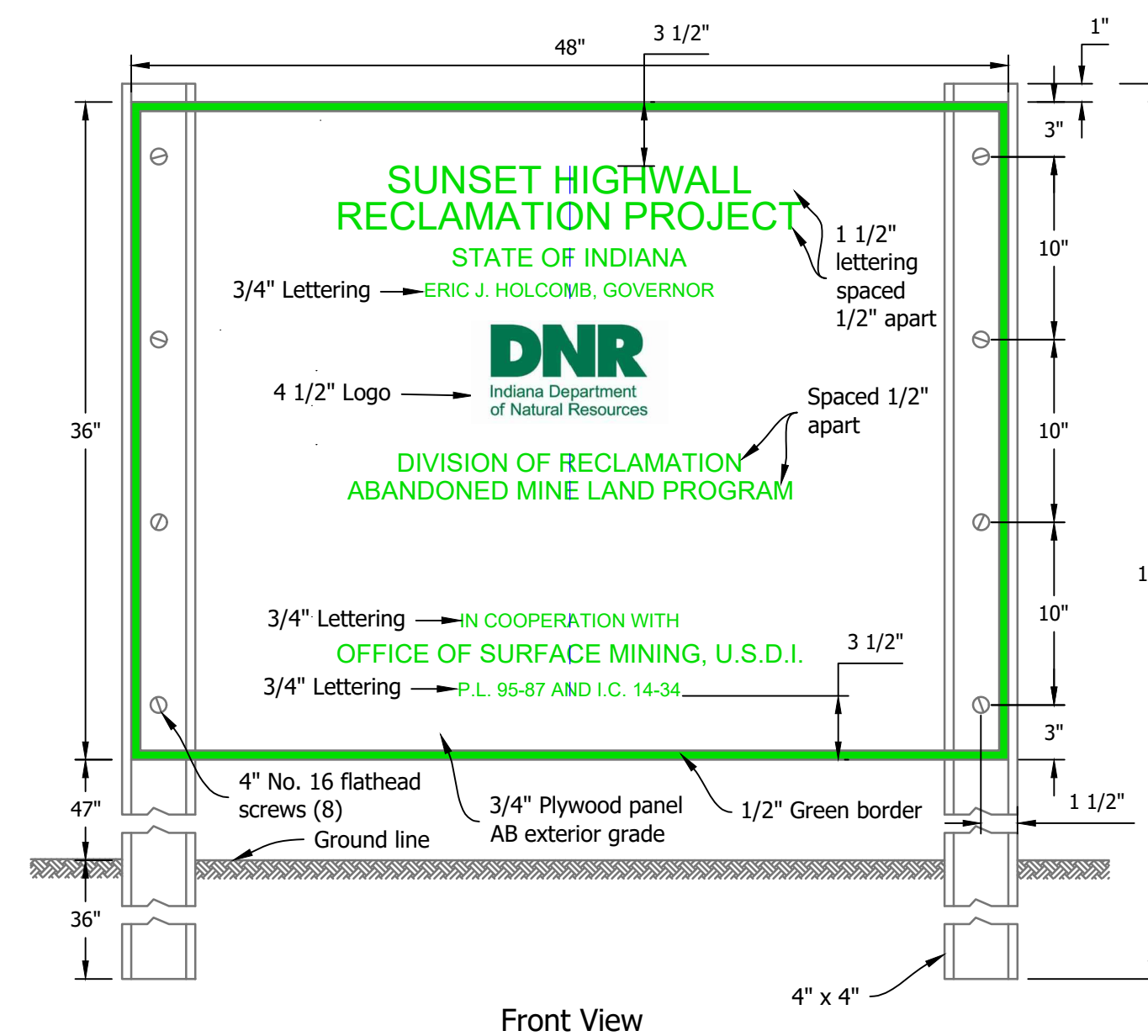
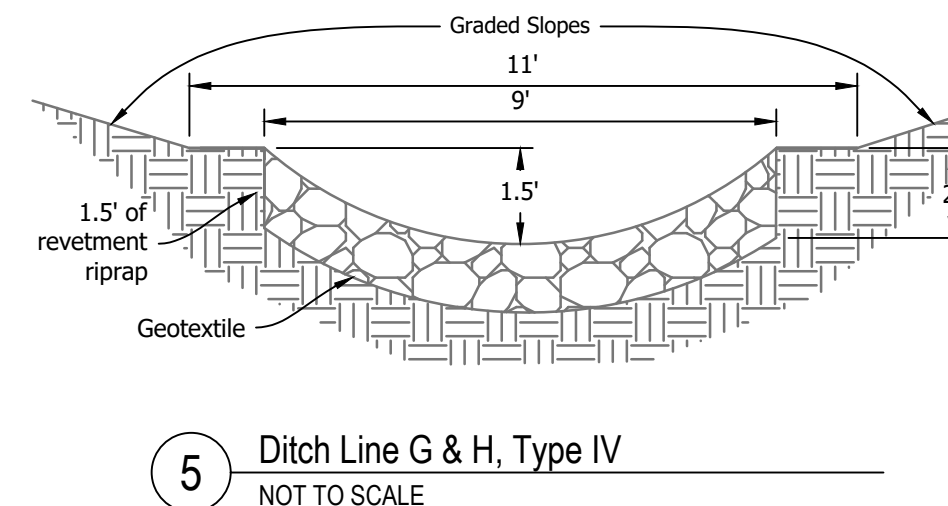
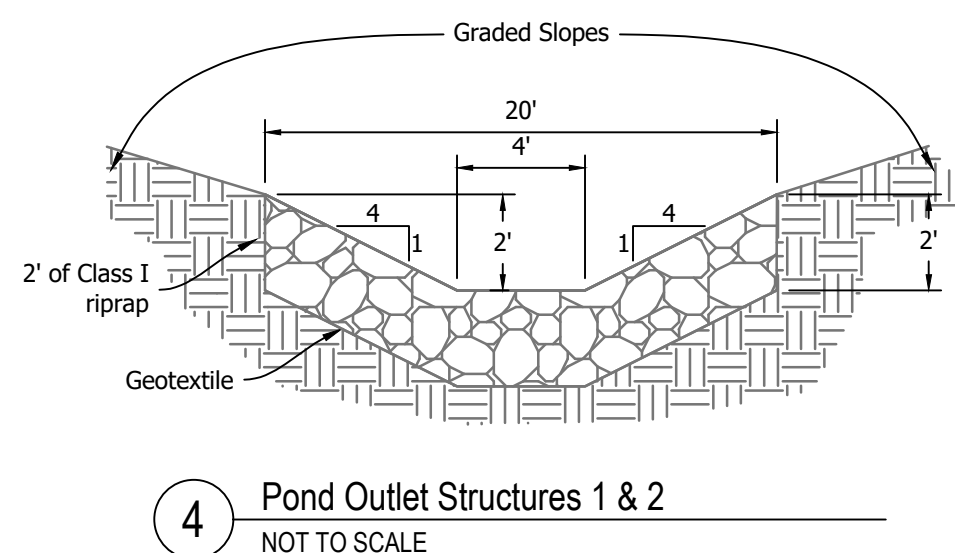
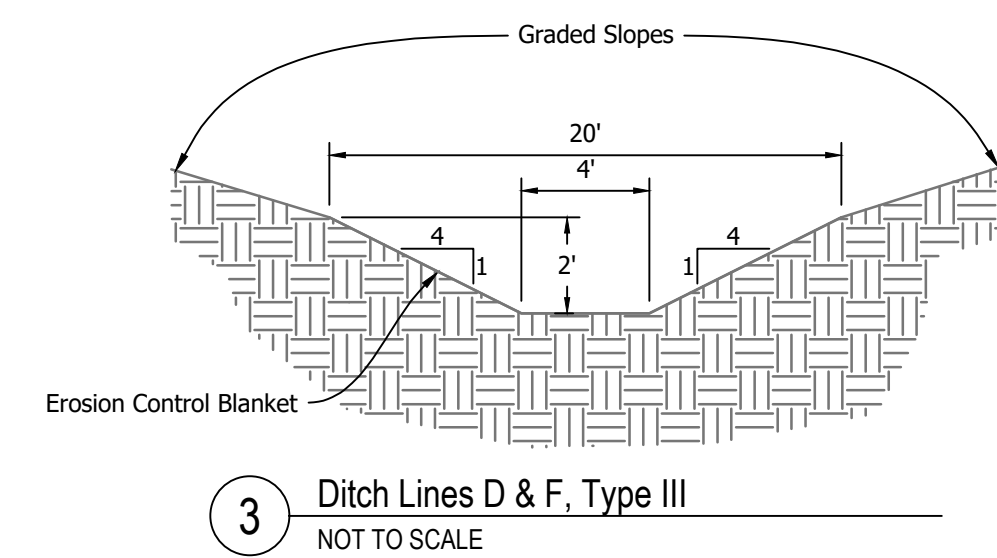
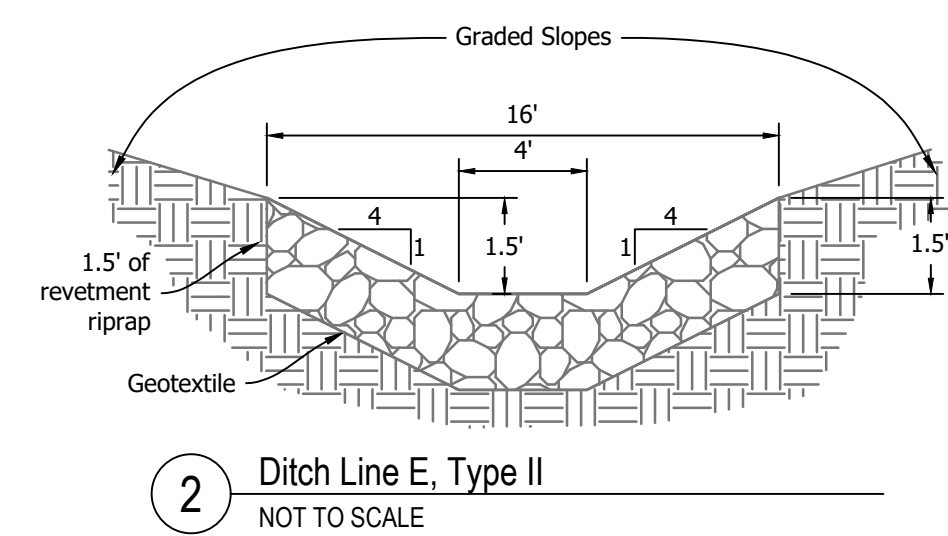
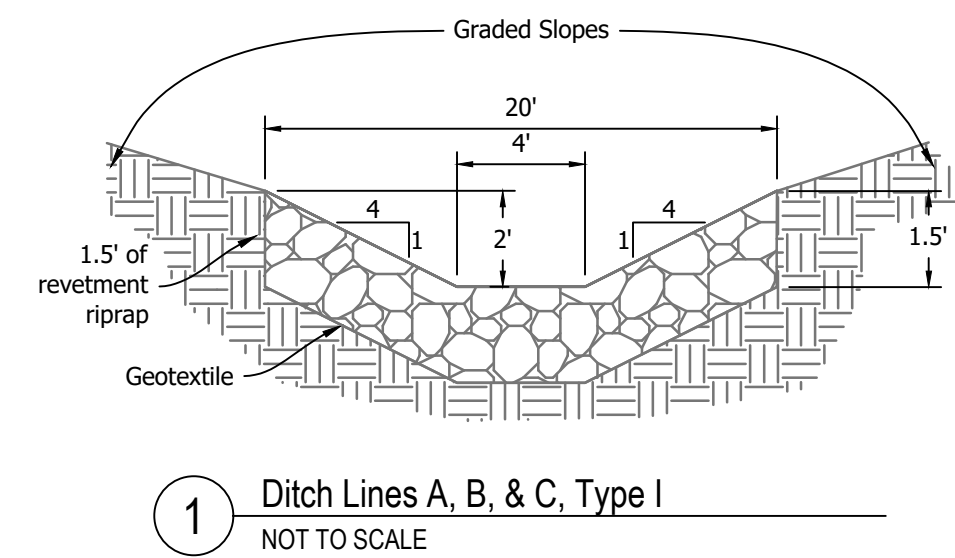
SHEET
10 of 12

SITE
1835



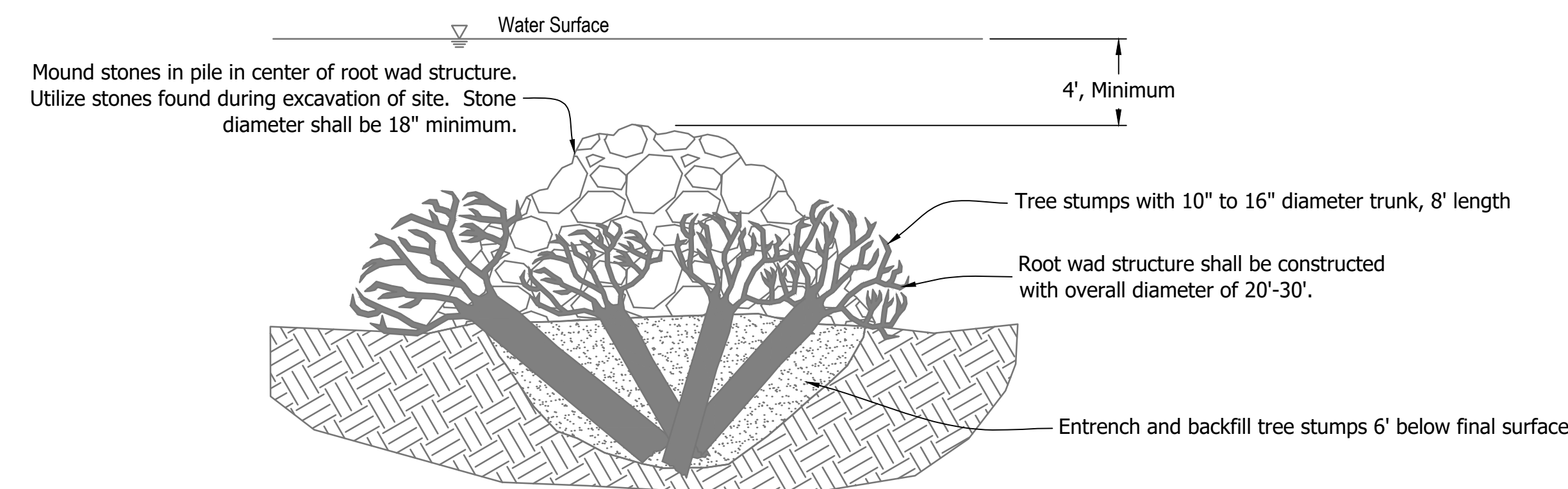
NOTE:
ROCK LINING SHALL BE UNIFORM A RIPRAP IN ACCORDANCE
WITH AML PROGRAM - STANDARD SPECIFICATION 601.03

8 RIFFLE
1" = 5'

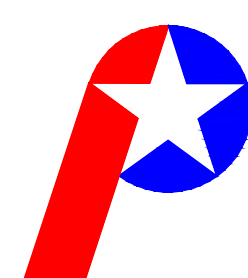


Notes:
1. Yellow background on front and back
2. 1" Green lettering, spaced at 1" apart unless otherwise noted

6 Project Sign
NOT TO SCALE



REVISIONS	
DATE	DESCRIPTION
6/04/2024	ADDED RIFFLE DETAIL 8



Patriot Engineering &
Environmental, Inc.



RECOMMENDED FOR APPROVAL: *Kenn Bosar* 9/18/2024
DATE

DESIGNED BY
K.S.B.

DRAWN BY
J.D.D

DATE MADE
9/22/2023

DATE REVISED
6/04/2024

Details

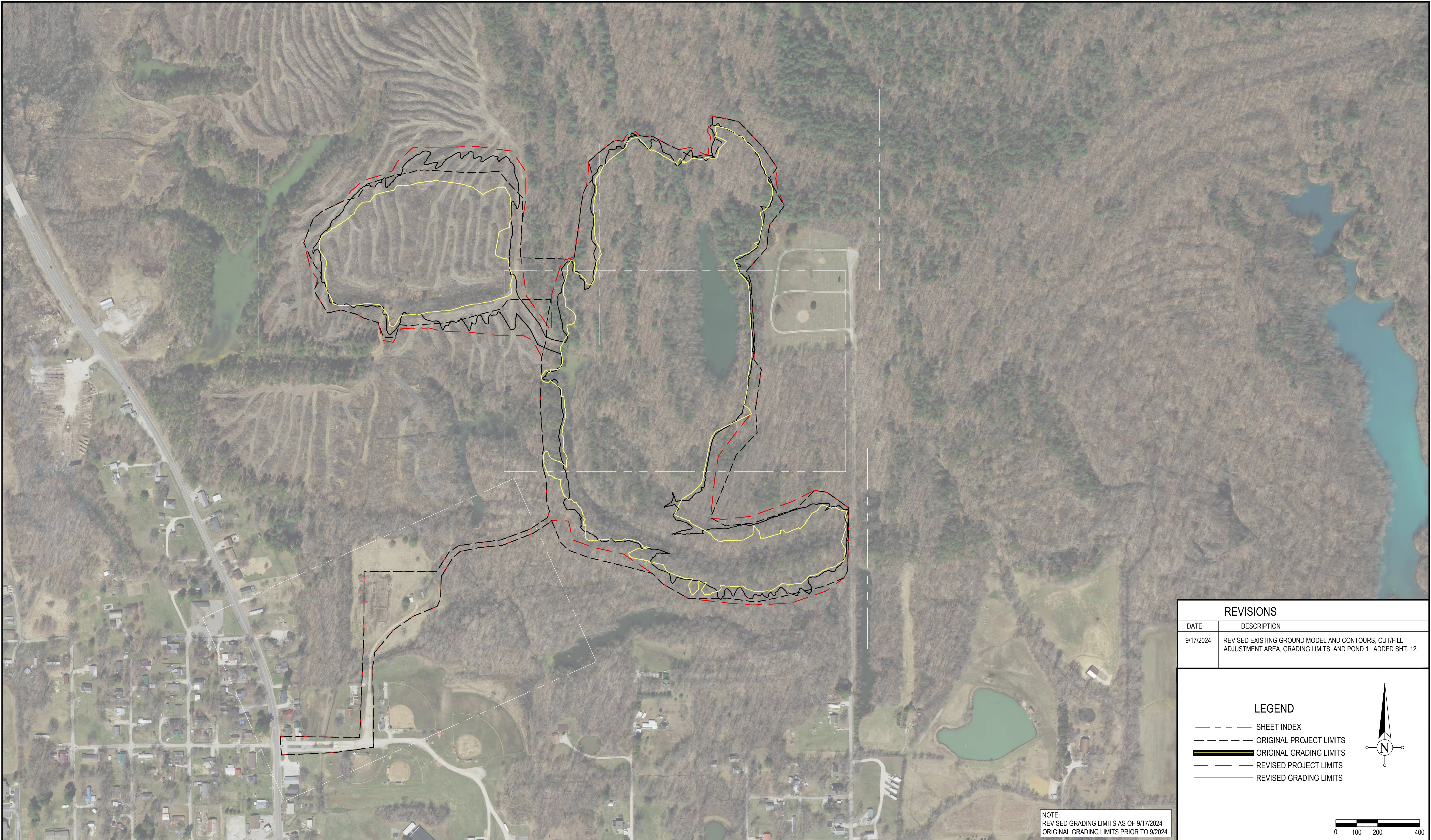
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE
AS NOTED

PROJECT
E008-334

SHEET
11 of 12

SITE
1835

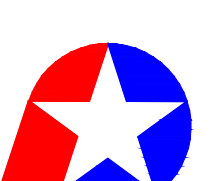




REVISIONS	
DATE	DESCRIPTION
9/17/2024	REVISED EXISTING GROUND MODEL AND CONTOURS, CUT/FILL ADJUSTMENT AREA, GRADING LIMITS, AND POND 1. ADDED SHT. 12.

LEGEND

- SHEET INDEX
- ORIGINAL PROJECT LIMITS
- ORIGINAL GRADING LIMITS
- REVISED PROJECT LIMITS
- REVISED GRADING LIMITS

NOTE:
REVISED GRADING LIMITS AS OF 9/17/2024
ORIGINAL GRADING LIMITS PRIOR TO 9/2024

 Patriot Engineering & Environmental, Inc.		RECOMMENDED FOR APPROVAL:  9/18/2024 DATE		DATE MADE 9/22/2023	Revised Project & Grading Limits	SCALE 1" = 200'	SHEET 12 of 12
		DESIGNED BY K.S.B.	DRAWN BY J.D.D.	DATE REVISED 9/17/2023		PROJECT E008-334	SITE 1835
		STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION					