

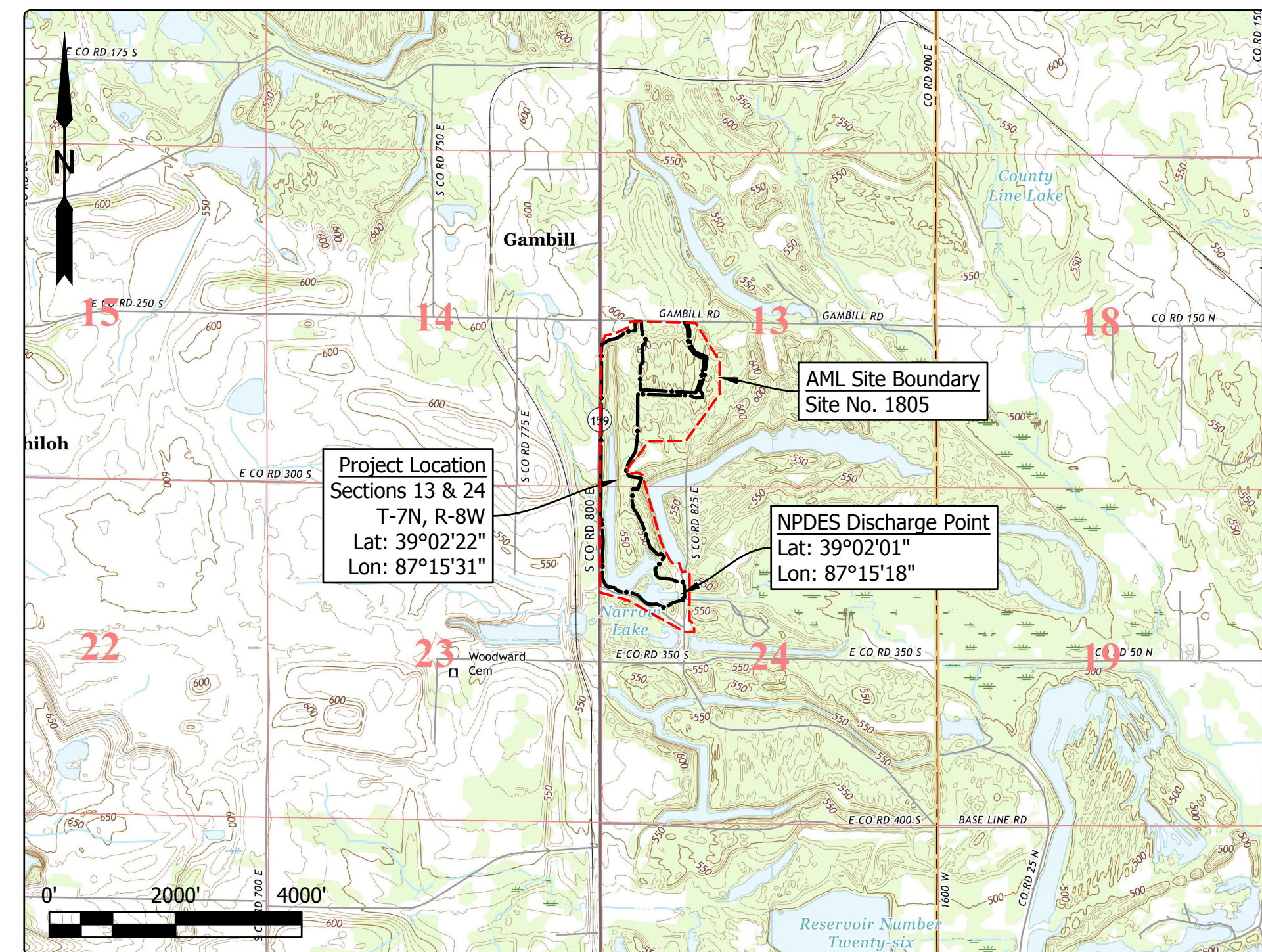
STATE OF INDIANA
INDIANA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION



ABANDONED COAL MINE
RESTORATION

NARROW LAKE
SITE 1805
CONTRACT E008-297
SULLIVAN COUNTY

Clear and grub, backfill highwall, relocate and reconfigure water impoundments, improve drainage, and revegetate all disturbed areas.



Project Location Map
Dugger & Linton US TOPOs (USGS, 2016)
Scale: 1" = 2000'

GENERAL NOTES

- 2010 AML Standard Specifications to be used with these plans.
- Plans developed from aerial topographic mapping survey from 2013 Statewide LiDAR collection in NAD 83, Indiana State Plane West, Feet.
- An NPDES discharge permit is required for this project.
- 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.

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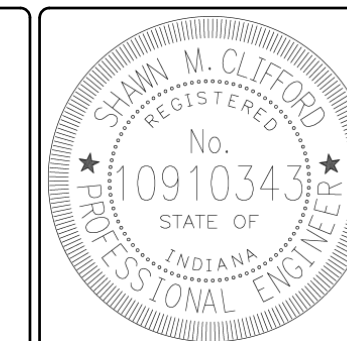
SHEET NO.	SHEET TITLE
1	TITLE, INDEX, & LOCATION MAP
2	SITE MAP
3-6	SITE PLAN
7	SECTIONS
8	REVEGETATION PLAN & DETAILS

UTILITIES

The facilities of the following utilities exist near the project site but are not expected to be affected by the proposed construction. If questions arise, the utility may be contacted using the information below.

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>ELECTRIC:
Duke Energy
390 N. Main Street
Martinsville, IN 46151
(765) 349-4012</p> <p>WIN Energy REMC
3981 South US Hwy 41
Vincennes, IN 47591
(812) 882-5140</p> <p>NATURAL GAS:
Ohio Valley Gas Corp.-Sullivan
PO Box 469
Winchester, IN 47394
(812) 268-6368</p> <p>PIPELINE:
Texas Gas Transmission -
Oaktown
9 Greenway Plaza, Suite 2800
Houston, TX 77046
(713) 479-8224</p> <p>TELECOM:
Smithville Telephone Co., Inc.
1600 W. Temperance Street
Ellettsville, IN 47429
(812) 935-2423</p> | <p>WATER/SANITARY:
Pleasantville Water Co. Inc.
6416 East CR 750 S.
Carlisle, IN 47838
(812) 659-2060</p> <p>IN Dept. of Natural Resources
Division of Engineering
402 W. Washington Street
Room 299
Indianapolis, IN 46204
(317) 232-4150</p> <p>IN Dept. of Natural Resources
Division of Forestry
402 W. Washington Street
Room W296
Indianapolis, IN 46204
(317) 232-4105</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Call Before You Dig. Indiana Underground Plant Protection Service (IUPPS) 1-800-382-5544 or 811 from your mobile phone.



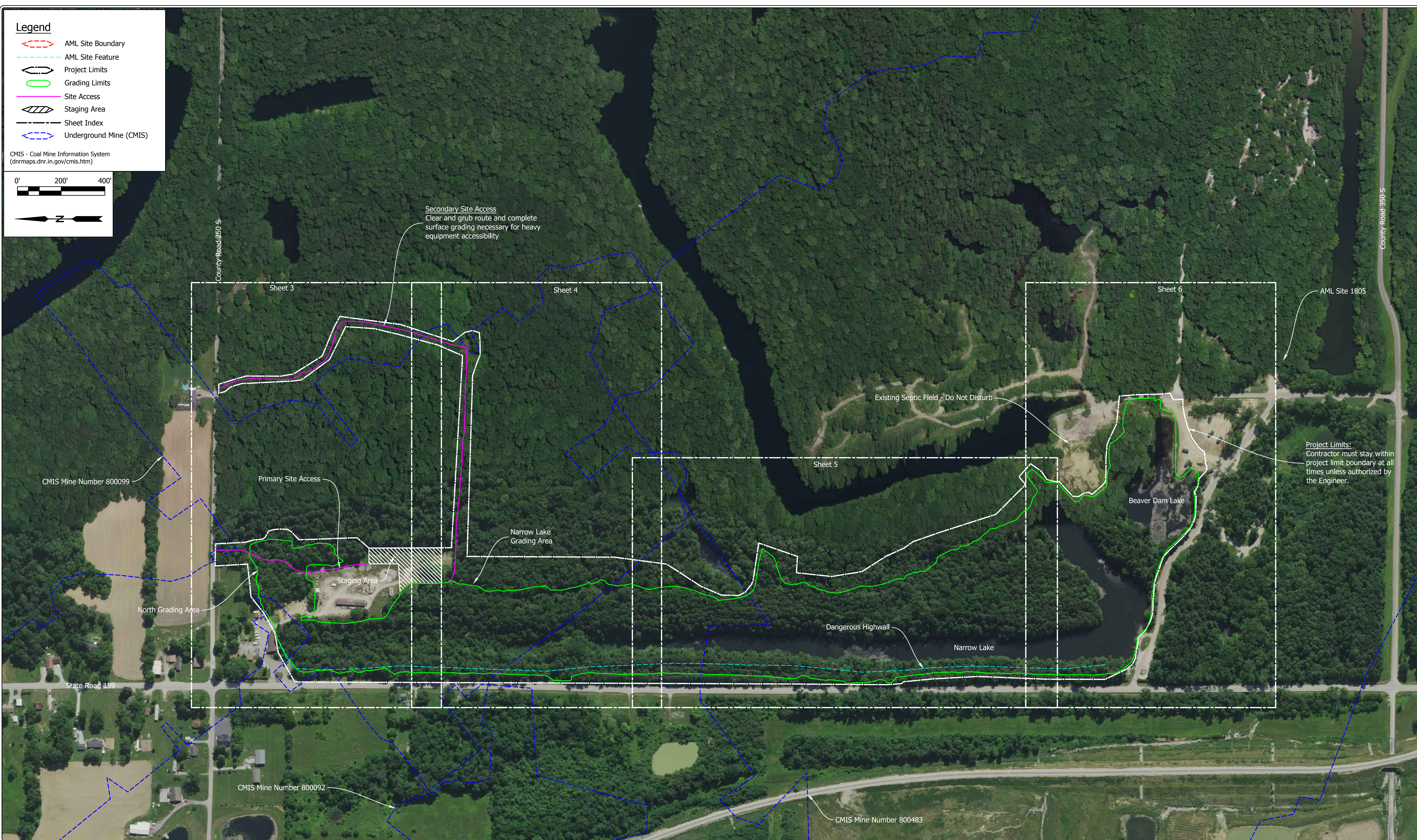
PLANS PREPARED BY: INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION (812) 665-2207 PHONE NUMBER

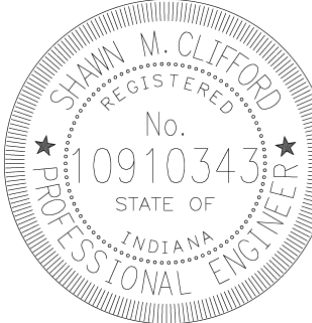
CERTIFIED BY: *Shanny M. Clifford* 02/19/2018 DATE

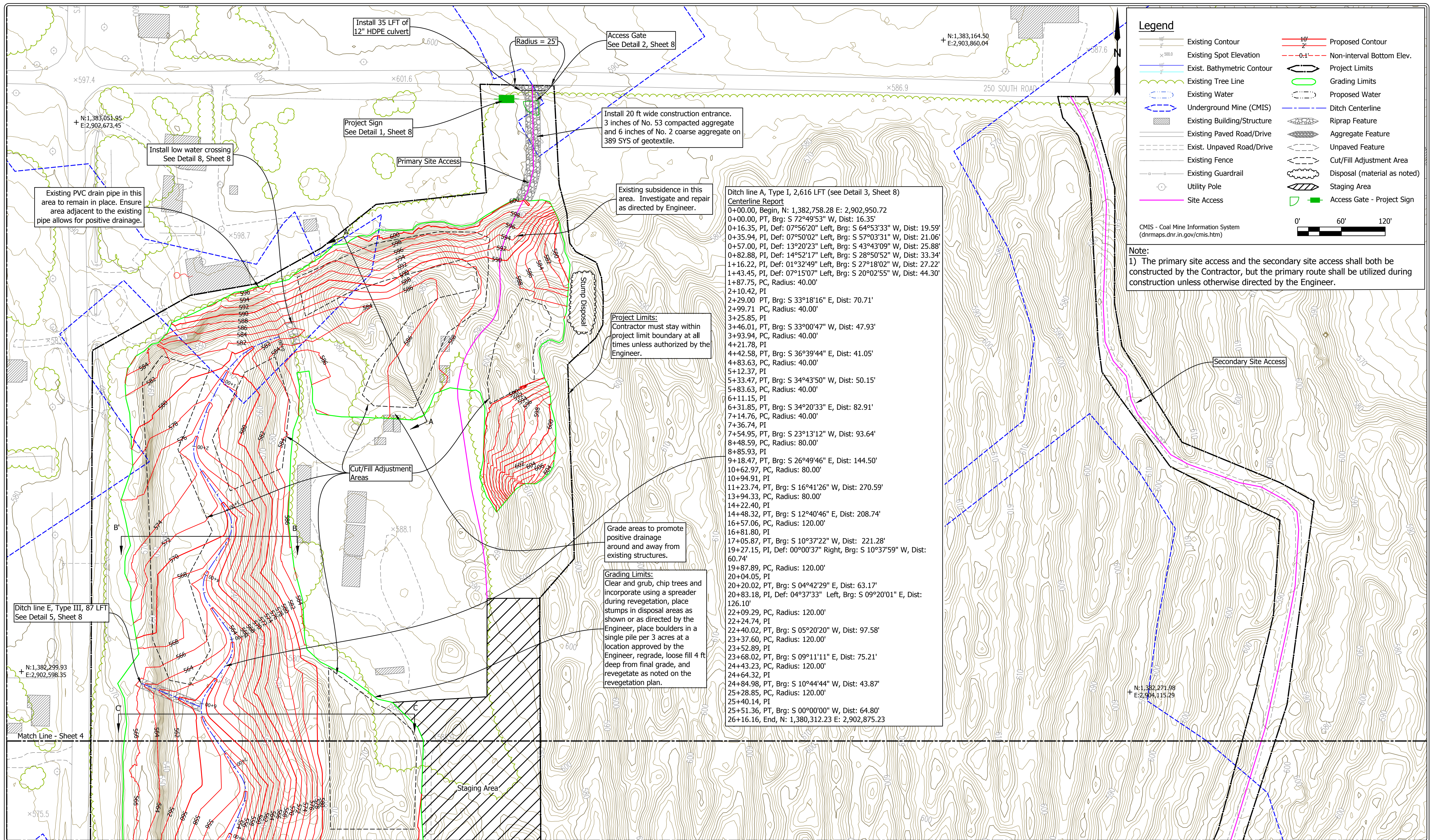
APPROVED FOR LETTING: *M. D. Egan* 02/19/2018 DATE

DIVISION OF RECLAMATION

SCALE AS NOTED	SHEET 1 OF 8
PROJECT E008-297	SITE 1805



	RECOMMENDED FOR APPROVAL: <i>Shawn Clifford</i> 02/19/2018 <small>DATE</small>	DATE MADE 07/13/2017	SITE MAP		SCALE 1" = 200'	SHEET 2 OF 8
	DESIGNED BY S.M.C.	DRAWN BY S.M.C.	DATE REVISED 2/16/2018 7:28:22 PM	STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES <small>DIVISION OF RECLAMATION</small>		PROJECT E008-297



RECOMMENDED FOR APPROVAL: *Shawn Clifford* 02/19/2018 DATE

DESIGNED BY: S.M.C.

DRAWN BY: S.M.C.

DATE MADE: 07/13/2017

DATE REVISED: 2/16/2018 7:28:22 PM

SITE PLAN - NARROW LAKE NORTH

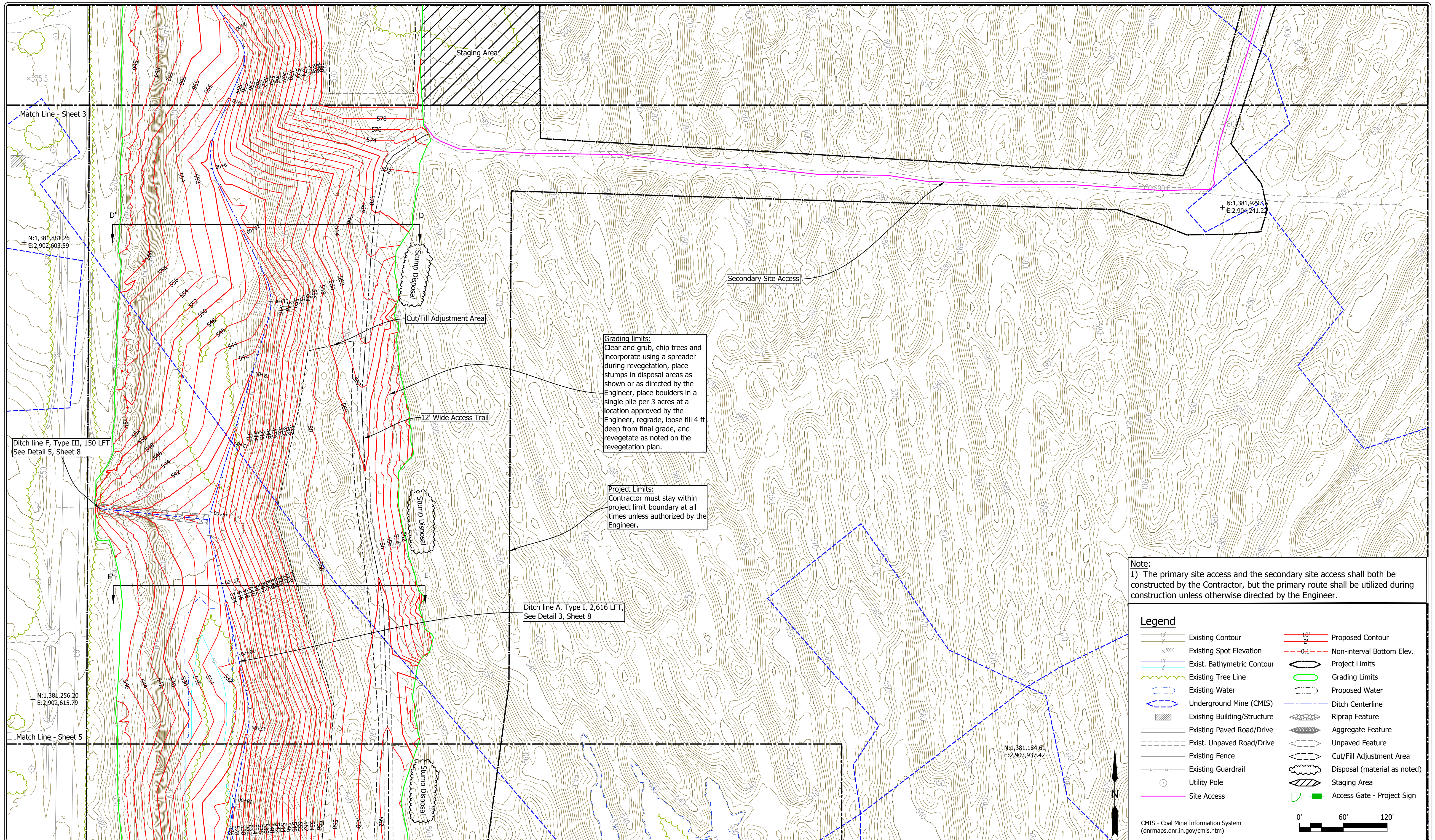
STATE OF INDIANA
 DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF RECLAMATION

SCALE: 1" = 60'

PROJECT: E008-297

SHEET: 3 OF 8

SITE: 1805



Grading limits:
 Clear and grub, chip trees and incorporate using a spreader during revegetation, place stumps in disposal areas as shown or as directed by the Engineer, place boulders in a single pile per 3 acres at a location approved by the Engineer, regrade, loose fill 4 ft deep from final grade, and revegetate as noted on the revegetation plan.

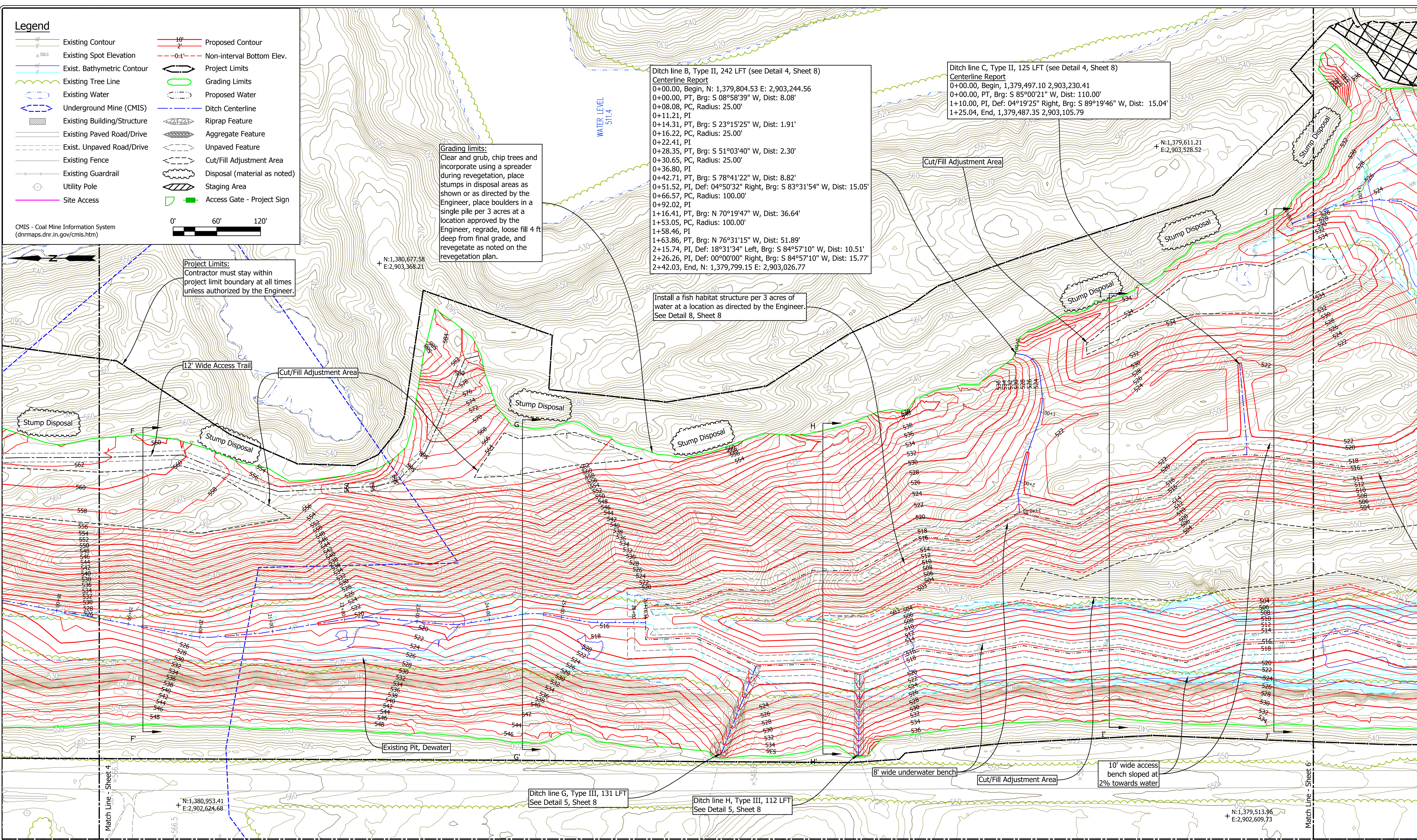
Project Limits:
 Contractor must stay within project limit boundary at all times unless authorized by the Engineer.

Note:
 1) The primary site access and the secondary site access shall both be constructed by the Contractor, but the primary route shall be utilized during construction unless otherwise directed by the Engineer.

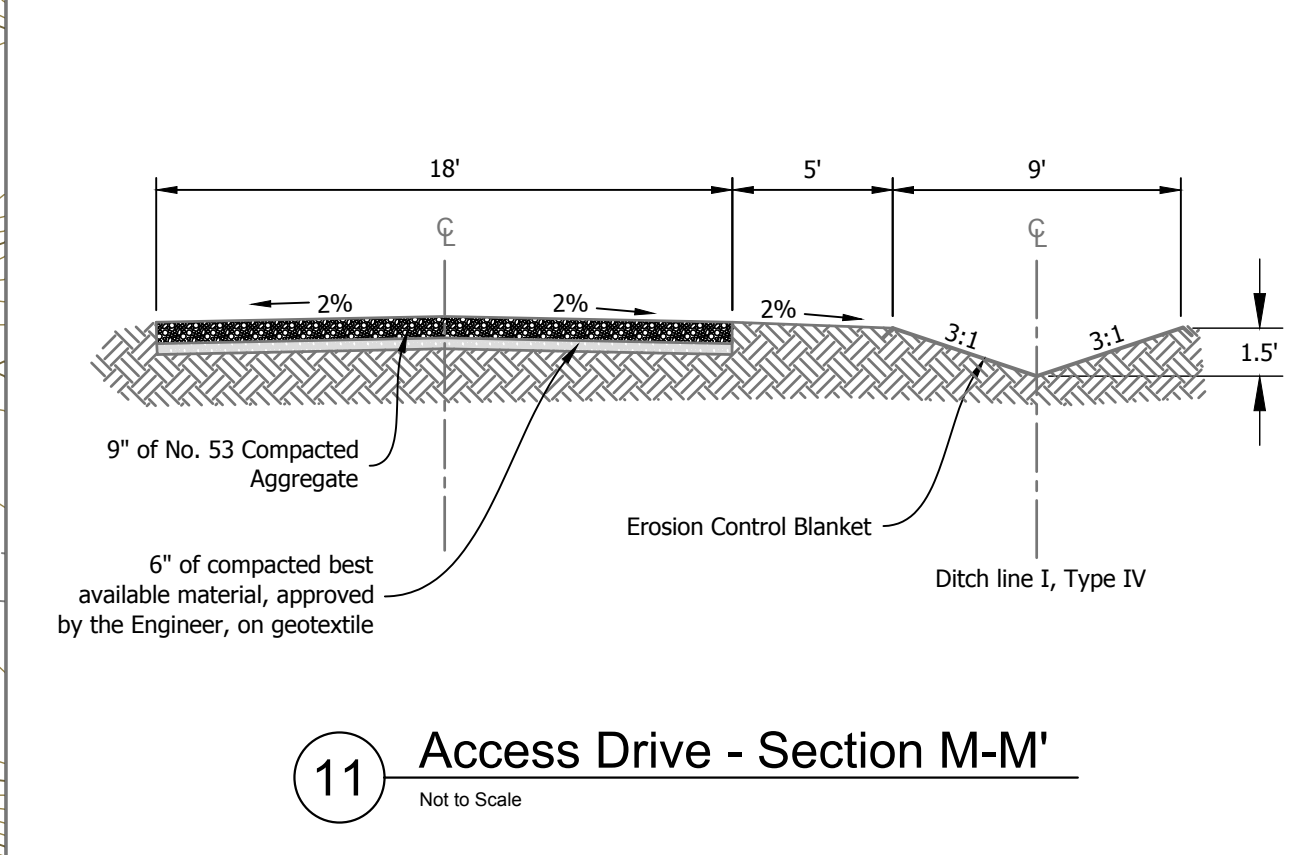
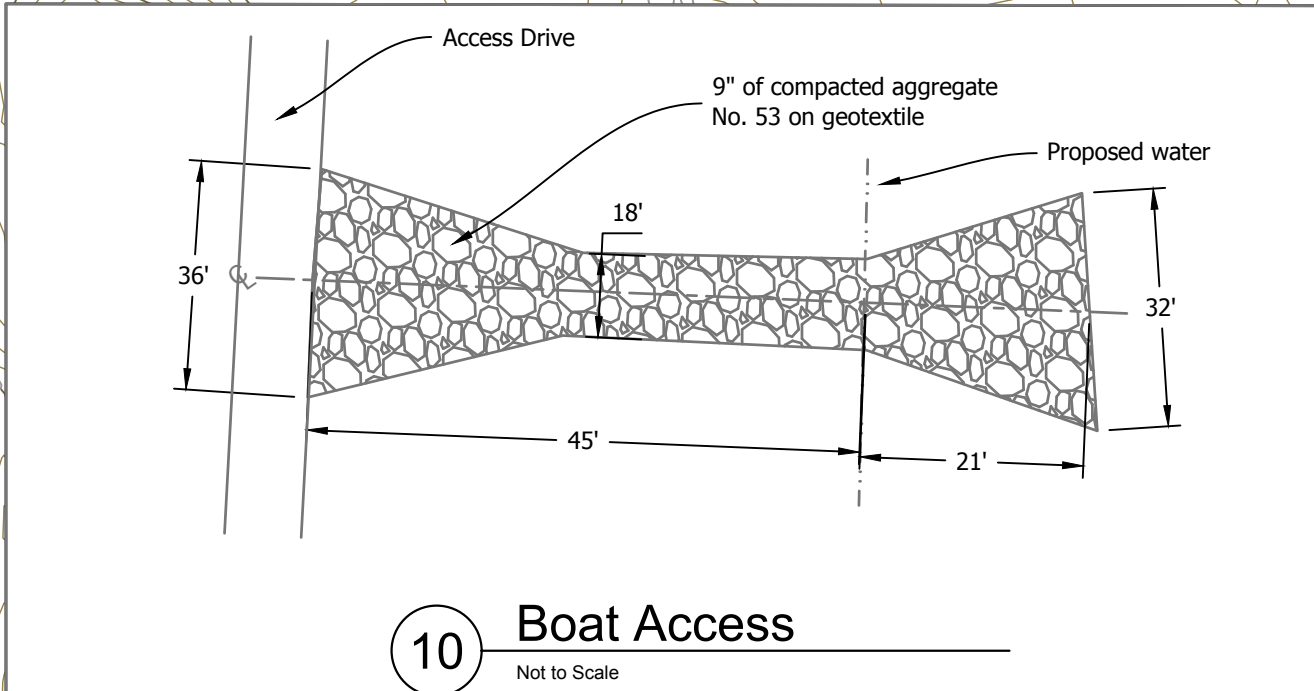
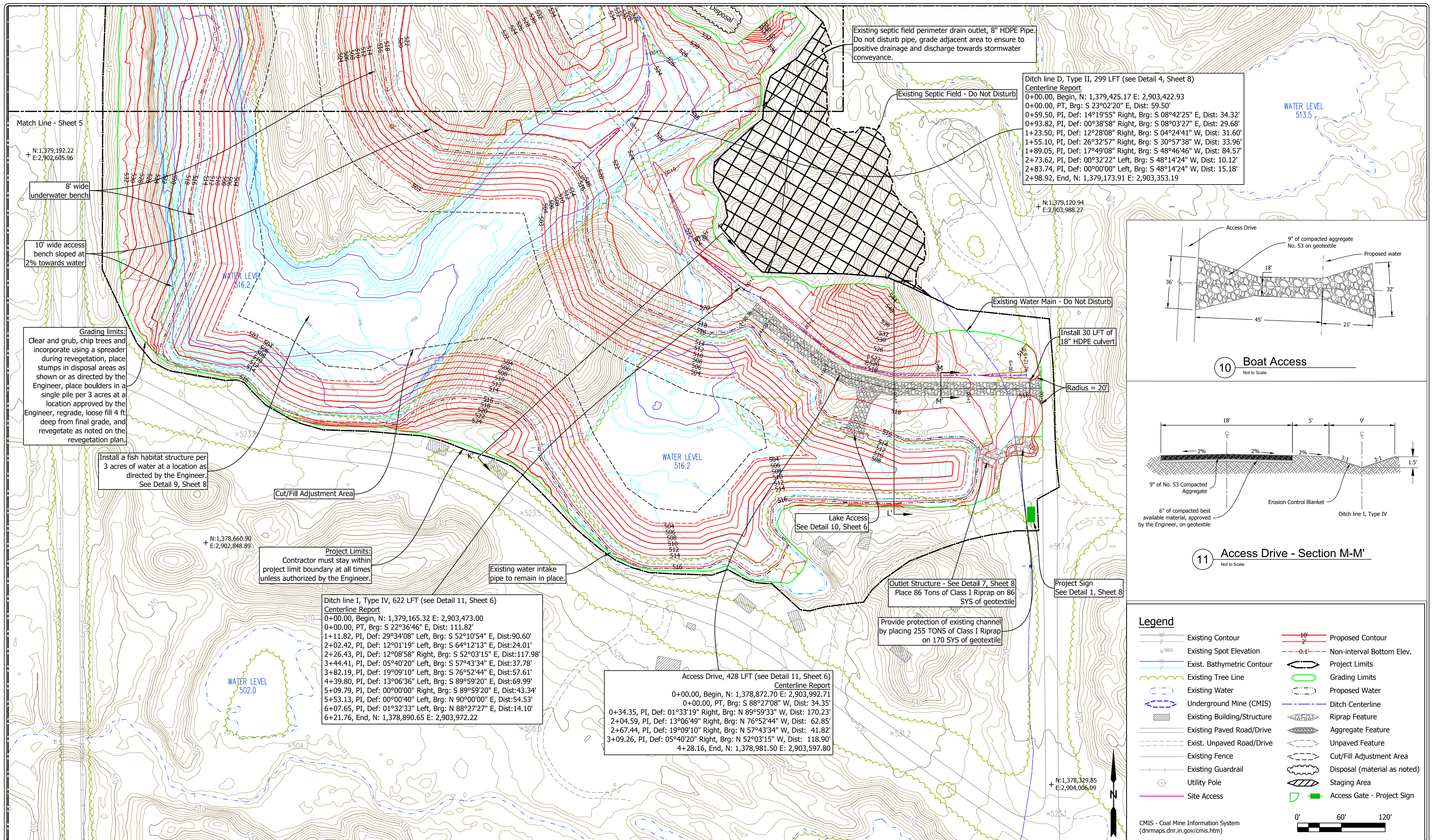
Legend			
	Existing Contour		Proposed Contour
	Existing Spot Elevation		Non-interval Bottom Elev.
	Exist. Bathymetric Contour		Project Limits
	Existing Tree Line		Grading Limits
	Existing Water		Proposed Water
	Underground Mine (CMIS)		Ditch Centerline
	Existing Building/Structure		Riprap Feature
	Existing Paved Road/Drive		Aggregate Feature
	Exist. Unpaved Road/Drive		Unpaved Feature
	Existing Fence		Cut/Fill Adjustment Area
	Existing Guardrail		Disposal (material as noted)
	Utility Pole		Staging Area
	Site Access		Access Gate - Project Sign

CMIS - Coal Mine Information System
 (dnrmaps.dnr.in.gov/cmisis.htm)

	RECOMMENDED FOR APPROVAL: <i>Shawn Clifford</i> 02/19/2018 DATE	DATE MADE 07/13/2017	SITE PLAN - NARROW LAKE STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION	SCALE 1" = 60'	SHEET 4 OF 8
	DESIGNED BY S.M.C.	DRAWN BY S.M.C.		DATE REVISED 2/16/2018 7:28:22 PM	PROJECT E008-297



	RECOMMENDED FOR APPROVAL: <i>Shawn Clifford</i> 02/19/2018 DATE	DATE MADE 07/13/2017	SITE PLAN - NARROW LAKE STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION	SCALE 1" = 60'	SHEET 5 OF 8
	DESIGNED BY S.M.C.	DRAWN BY S.M.C.		DATE REVISED 2/16/2018 7:28:22 PM	PROJECT E008-297



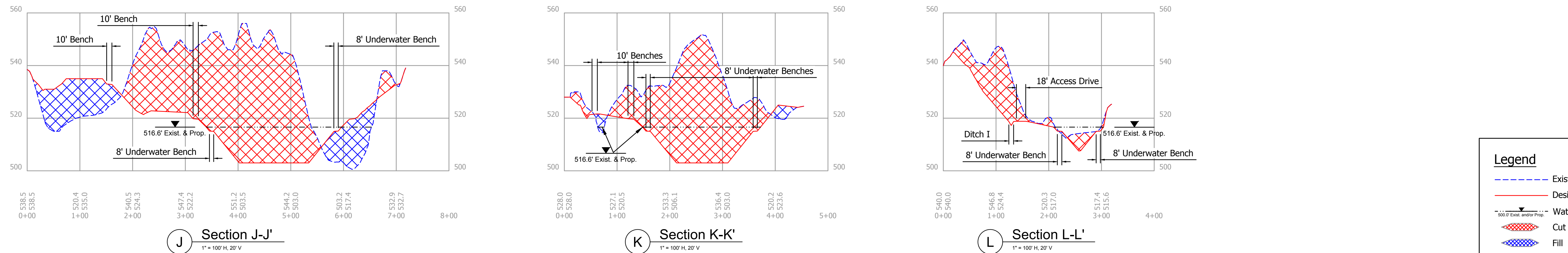
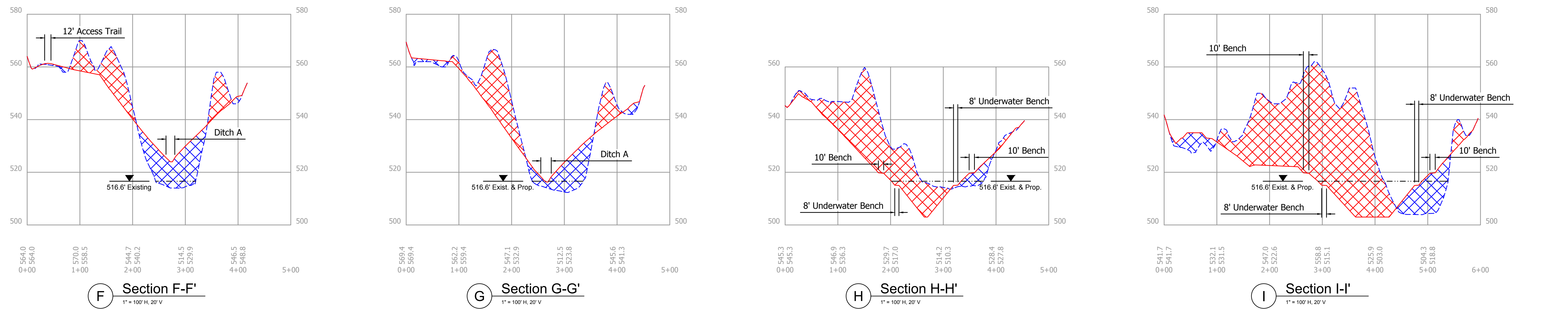
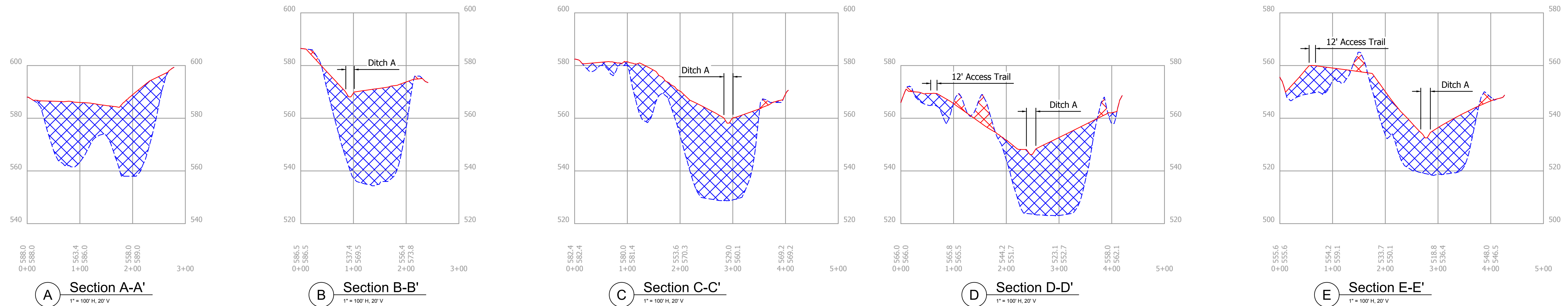
Legend

	Existing Contour		Proposed Contour
	Existing Spot Elevation		Non-interval Bottom Elev.
	Exist. Bathymetric Contour		Project Limits
	Existing Tree Line		Grading Limits
	Existing Water		Proposed Water
	Underground Mine (CMIS)		Ditch Centerline
	Existing Building/Structure		Riprap Feature
	Existing Paved Road/Drive		Aggregate Feature
	Exist. Unpaved Road/Drive		Unpaved Feature
	Existing Fence		Cut/Fill Adjustment Area
	Existing Guardrail		Disposal (material as noted)
	Utility Pole		Staging Area
	Site Access		Access Gate - Project Sign

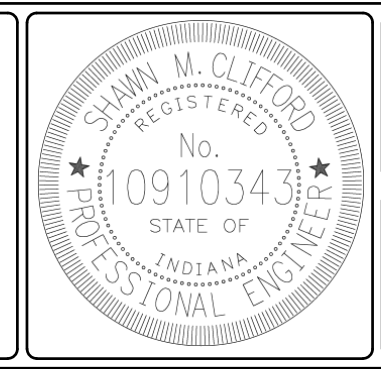
CMIS - Coal Mine Information System
(dnrmaps.dnr.in.gov/cmisis.htm)

0' 60' 120'

	RECOMMENDED FOR APPROVAL: <i>Shawn Clifford</i> 02/19/2018 DATE	DATE MADE 07/13/2017	SITE PLAN - NARROW LAKE SOUTH STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION	SCALE 1" = 60'	SHEET 6 OF 8
	DESIGNED BY S.M.C.	DRAWN BY S.M.C.		DATE REVISED 2/16/2018 7:28:22 PM	PROJECT E008-297



Legend	
	Existing Grade
	Design Grade
	Water Elevation
	Cut
	Fill



RECOMMENDED FOR APPROVAL: *Shawn M. Clifford* 02/19/2018 DATE

DATE MADE 08/17/2017

DESIGNED BY S.M.C.

DRAWN BY S.M.C.

DATE REVISED 2/16/2018 7:28:22 PM

SECTIONS
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE AS NOTED
PROJECT E008-297

SHEET 7 OF 8
SITE 1805

Legend

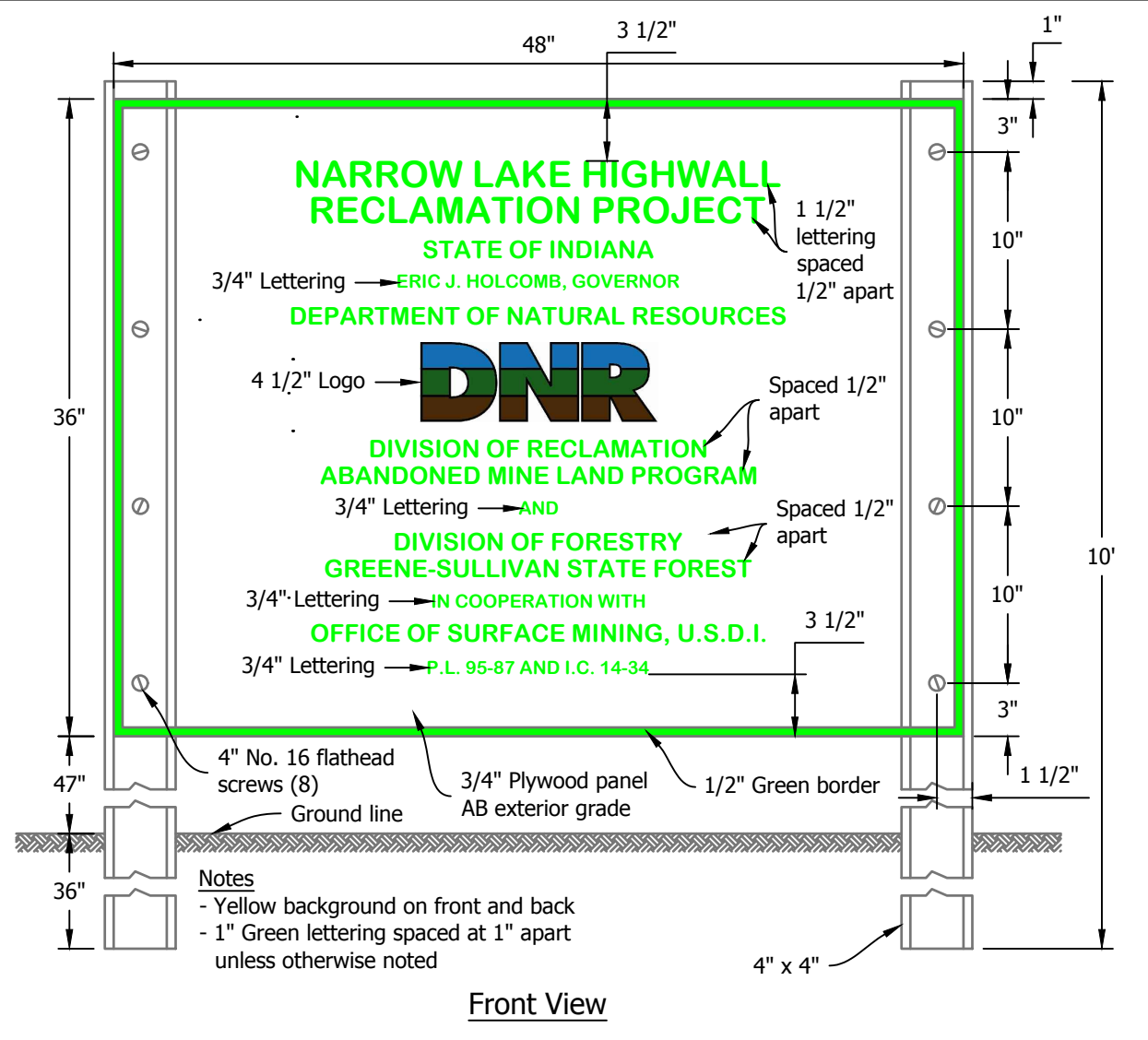
	Building/Structure		Staging Area
	Paved Road/Drive		Riprap Feature
	Unpaved Road/Drive		Aggregate Feature
	Project Limits		Unpaved Feature
	Grading Limits		Field Mix
	Proposed Water		Wetland Mix
	Site Access		Tree Planting Mix

WETLAND SEED MIX

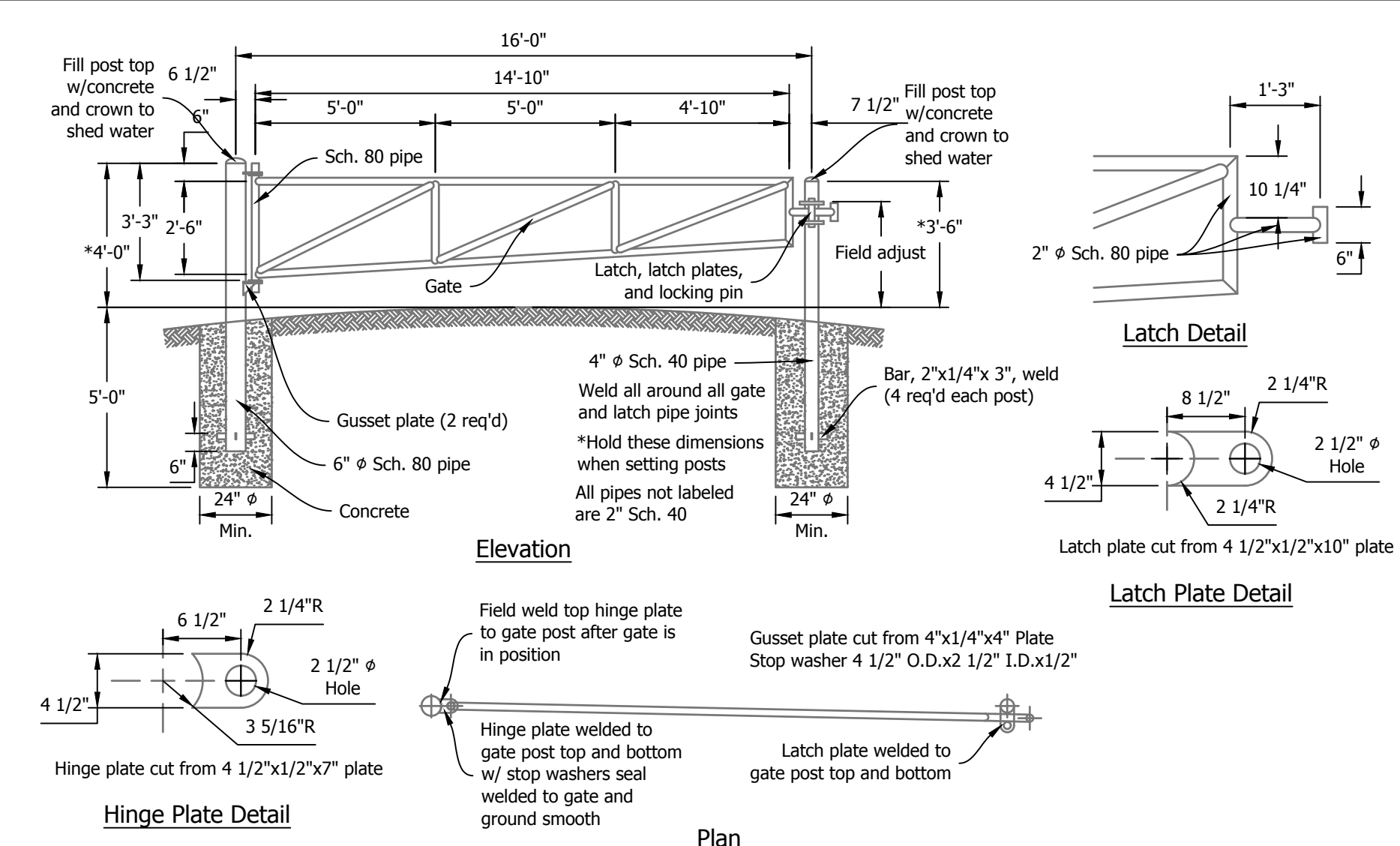
SEED	PLS OZ./AC
PERMANENT GRASS/SEDGE:	
Fox Sedge (<i>Carex vulpinoidea</i>)	6
Blunt Spikerush (<i>Eleocharis obtusa</i>)	1
Virginia Wildrye (<i>Elymus virginicus</i>)	48
Common Rush (<i>Juncus effusus</i>)	5
Green Bulrush (<i>Scirpus atrovirens</i>)	5
Woolgrass (<i>Scirpus cyperinus</i>)	4
Softstem Bulrush (<i>Scirpus validus</i>)	5
FORBS:	
American Water Plantain (<i>Alisma subcordatum</i>)	4
Swamp Milkweed (<i>Asclepias incarnata</i>)	2
Nodding Beggartick (<i>Bidens cernua</i>)	4
Allegheny Monkeyflower (<i>Mimulus ringens</i>)	1
Broadleaf Arrowhead (<i>Sagittaria latifolia</i>)	6
Swamp Verbena (<i>Verbena hastata</i>)	2
TEMPORARY COVER:	
Common Oat (<i>Avena sativa</i>)	24 LBS/AC
Italian Ryegrass (<i>Lolium perenne</i>)	9 LBS/AC

TREE PLANTING SEED MIX

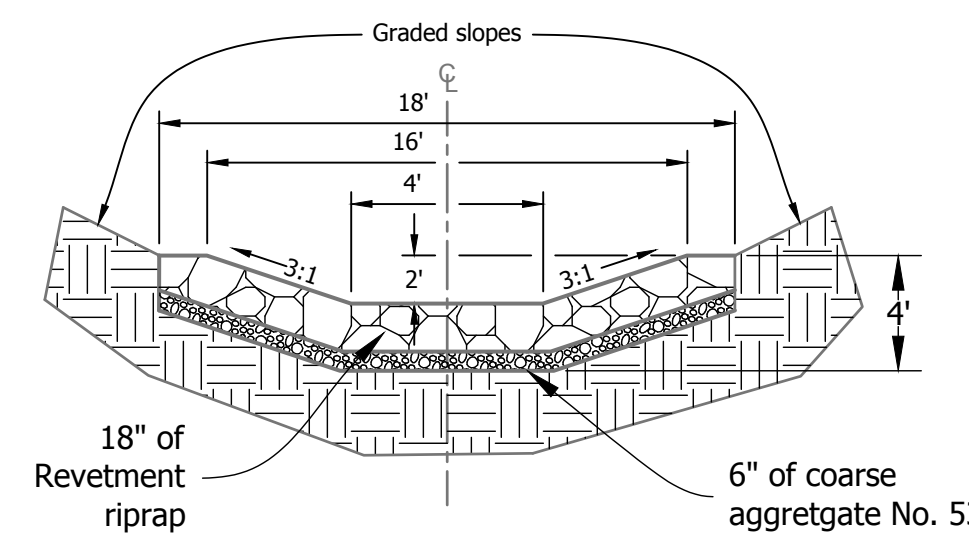
SEED	LBS/AC
Alfalfa (<i>Medicago sativa</i>)	5
Switchgrass (<i>Panicum virgatum</i>)	5
Common Oat (<i>Avena sativa</i>)	50



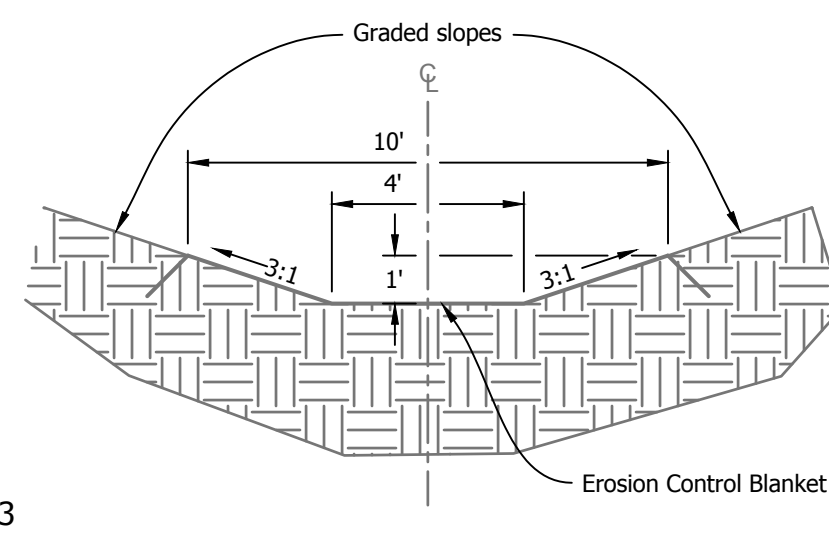
1 Project Sign
Not to Scale



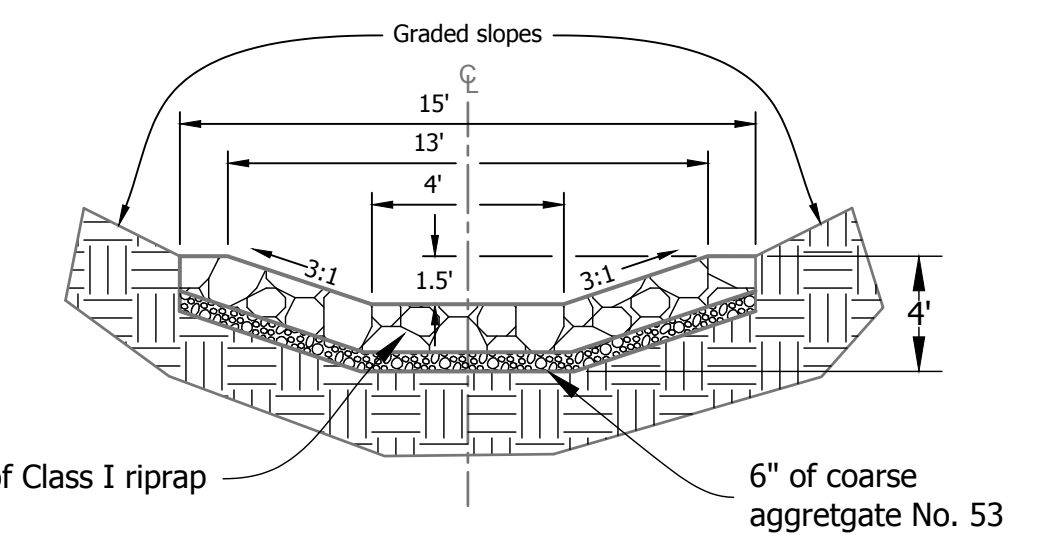
2 Access Gate
No Scale



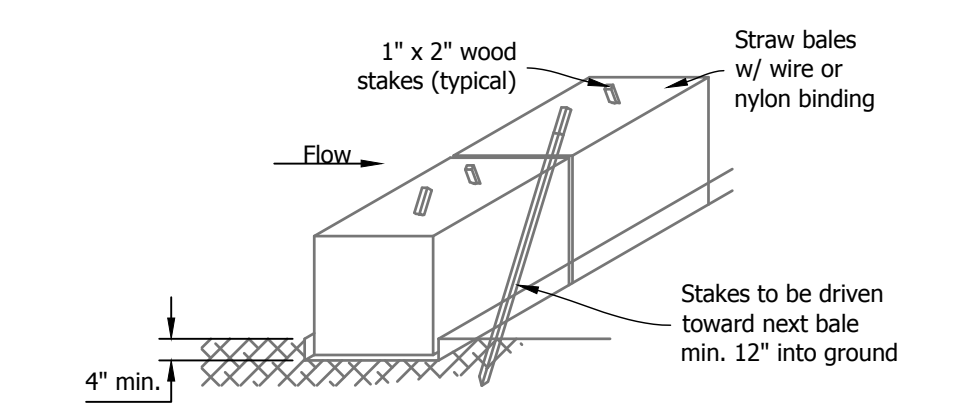
3 Ditch Line A, Type I
Not to Scale



4 Ditch Line B-D, Type II
Not to Scale



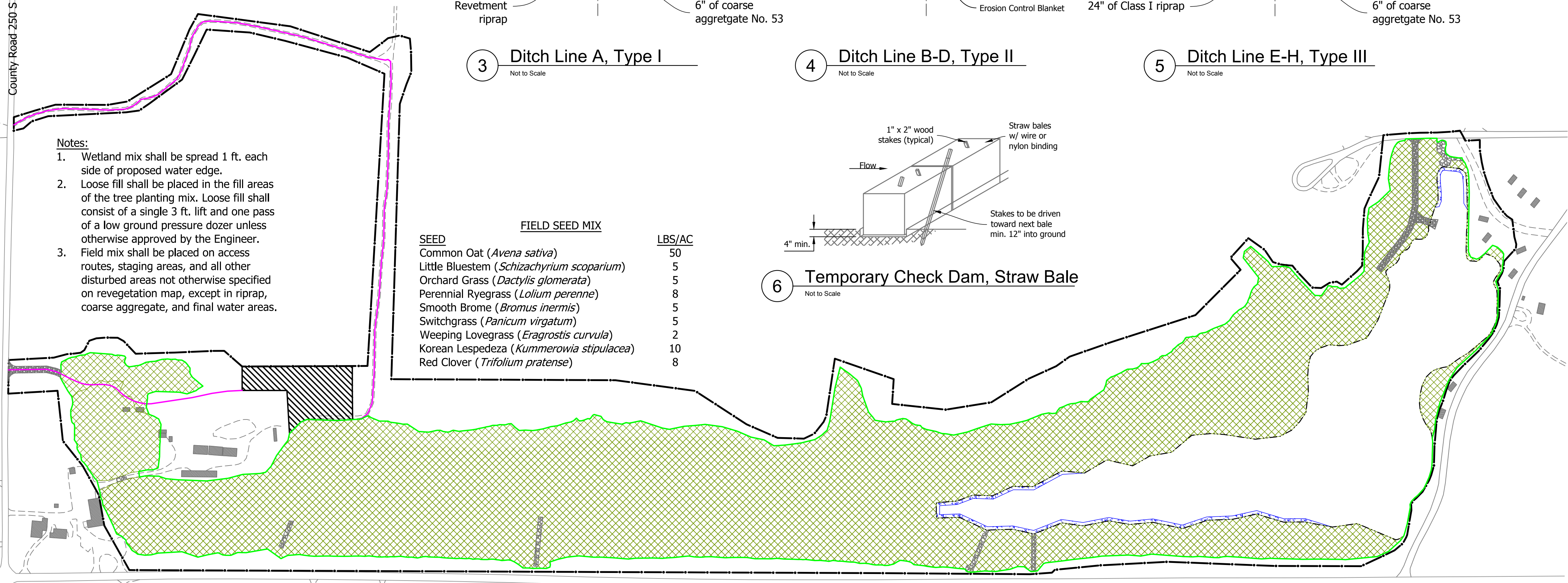
5 Ditch Line E-H, Type III
Not to Scale



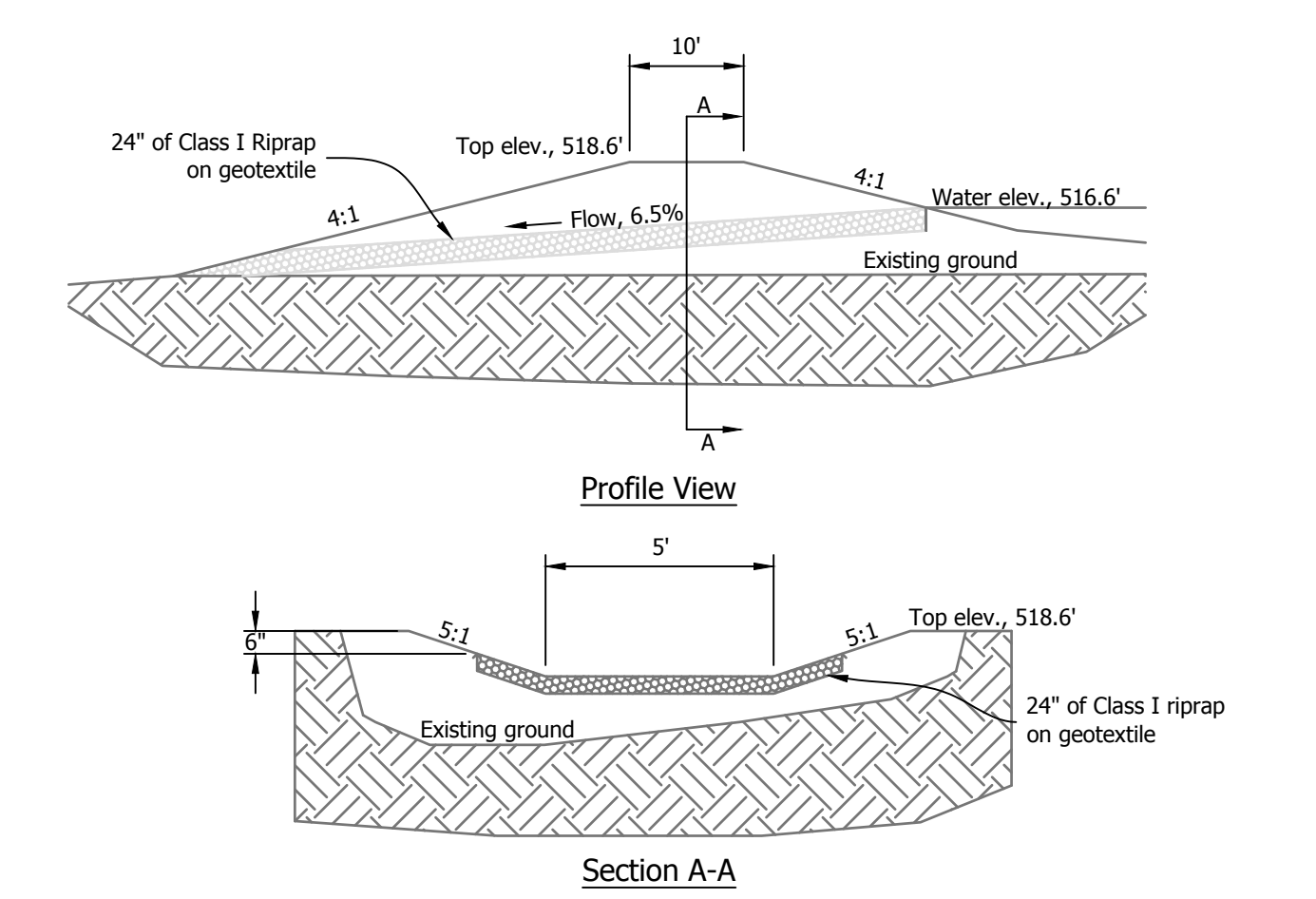
6 Temporary Check Dam, Straw Bale
Not to Scale

FIELD SEED MIX

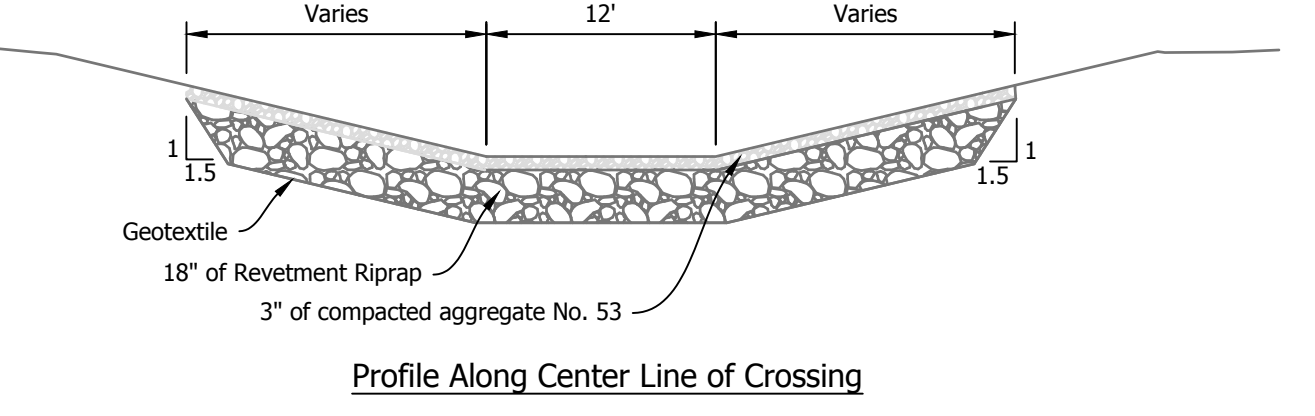
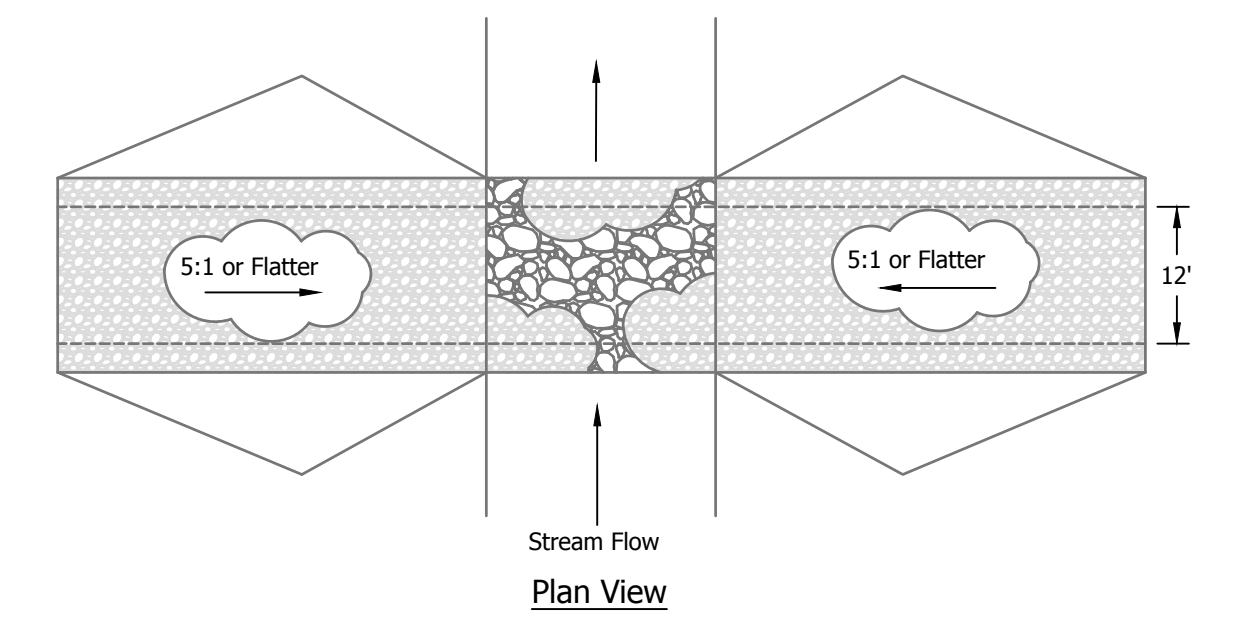
SEED	LBS/AC
Common Oat (<i>Avena sativa</i>)	50
Little Bluestem (<i>Schizachyrium scoparium</i>)	5
Orchard Grass (<i>Dactylis glomerata</i>)	5
Perennial Ryegrass (<i>Lolium perenne</i>)	8
Smooth Brome (<i>Bromus inermis</i>)	5
Switchgrass (<i>Panicum virgatum</i>)	5
Weeping Lovegrass (<i>Eragrostis curvula</i>)	2
Korean Lespedeza (<i>Kummerowia stipulacea</i>)	10
Red Clover (<i>Trifolium pratense</i>)	8



- Notes:**
- Wetland mix shall be spread 1 ft. each side of proposed water edge.
 - Loose fill shall be placed in the fill areas of the tree planting mix. Loose fill shall consist of a single 3 ft. lift and one pass of a low ground pressure dozer unless otherwise approved by the Engineer.
 - Field mix shall be placed on access routes, staging areas, and all other disturbed areas not otherwise specified on revegetation map, except in riprap, coarse aggregate, and final water areas.

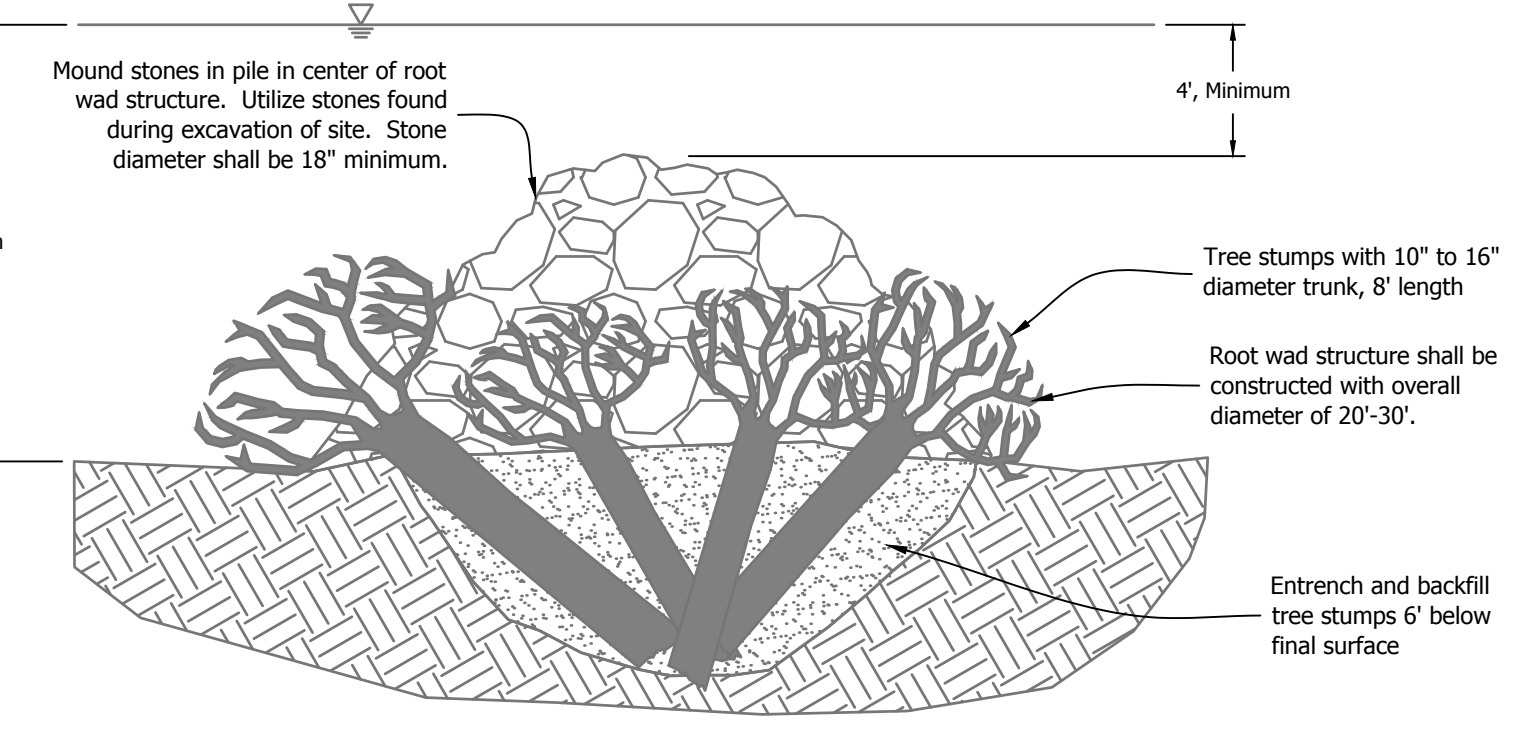


7 Outlet Structure
Not to Scale



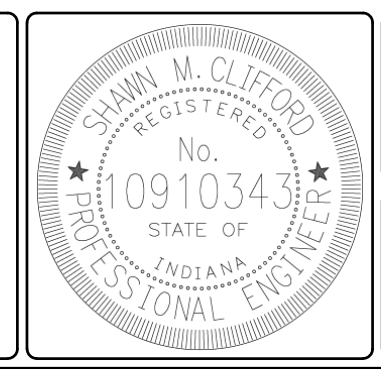
- NOTES**
- Compact surfacing material by equipment travel. The finished top surface of the rock in the bottom of the channel shall be no higher than the ditch bottom at the upstream edge of the crossing. It is expected that surfacing material will have to be replaced following high flow events.
 - Blend approaches.
 - Runoff shall be diverted from the approach.

8 Low Water Crossing
Not to Scale



9 Fish Habitat Structure - Root Wad Hump
Not to Scale

RP Revegetation Plan
1" = 200'



RECOMMENDED FOR APPROVAL: *Sh M Clifford* 02/19/2018 DATE

DATE MADE
08/17/2017

DESIGNED BY
S.M.C.

DRAWN BY
S.M.C.

DATE REVISED
2/16/2018 7:28:22 PM

REVEGETATION PLAN & DETAILS
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE
AS NOTED
PROJECT
E008-297

SHEET
8 OF 8
SITE
1805