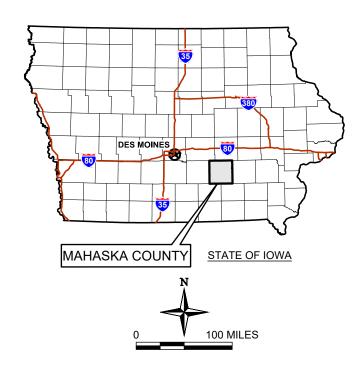
NORTH KING (IA-048) AML RECLAMATION PROJECT

SECTION 22, TOWNSHIP 74 NORTH, RANGE 17 WEST, MAHASKA COUNTY, IOWA

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY

FUNDED BY: U.S. DEPARTMENT OF THE INTERIOR OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT **GRANT NO: S24AF00083**



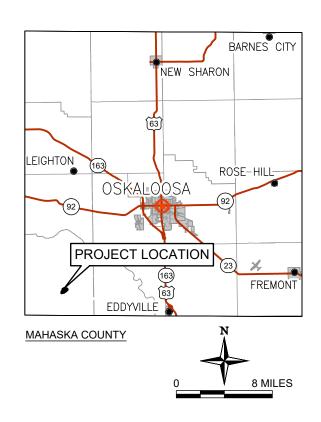


2 Working Days BEFORE YOU DIG IowaOneCall.com

PREPARED FOR:

IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY HOOVER STATE BUILDING 1305 E WALNUT ST DES MOINES, IOWA 50319 (515) 281-4246

TRIHYDRO CORPORATION 1252 COMMERCE DRIVE LARAMIE, WYOMING 82070 www.trihydro.com (P) 307/745.7474 (F) 307/745.7729



SHEET TITLE

COVER SHEET

PROJECT NOTES LEGEND AND QUANTITIES

SITE OVERVIEW AND CONTROL

SITE SITUATION PLAN AND FEATURES

GRADING PLAN OVERVIEW

DRAINAGE AND GRADING PLAN

GRADING - CUT-FILL ISOMAP

PROJECT SIGNAGE DETAILS

RIPRAP LETDOWN AND WETLAND INLET & OUTLET DETAILS

TYPICAL TERRACE DETAILS

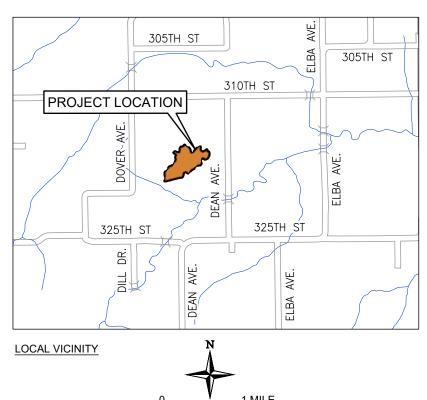
LOW WATER CROSSING DETAILS

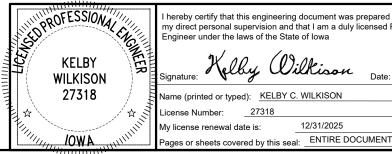
CROSS SECTIONS 1 OF 2 CROSS SECTIONS 2 OF 2

MAIN CHANNEL PROFILES

SWPPP NOTES

SWPPP BMP PLAN





hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professiona

lame (printed or typed): KELBY C. WILKISON

SHEET

GENERAL NOTES:

- ALL IMPROVEMENTS SHOWN ON THESE PLANS SHALL COMPLY WITH THE GENERAL CONDITIONS, STANDARDS, AND SPECIFICATIONS SET FORTH IN PROJECT DOCUMENTS. THESE INCLUDE STANDARD CONSTRUCTION SPECIFICATIONS SET FORTH BY THE DIVISION OF SOIL CONSERVATION AND WATER QUALITY (DIVISION) AS WELL AS THE SUPPLEMENTAL SPECIFICATIONS ESTABLISHED BY THE ENGINEER. SPECIFICATIONS OR STANDARDS INCORPORATED BY REFERENCE SHALL ALSO BE FOLLOWED.
- OWNERSHIP: THIS DOCUMENT AND THE IDEAS AND DESIGN CONTAINED IN THIS DOCUMENT, ARE AN INSTRUMENT OF PROFESSIONAL SERVICE, AND MAY NOT BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE DIVISION.
- REFERENCES TO PARTICULAR PRODUCTS, TRADENAMES, OR MANUFACTURERS IS INTENDED FOR CLARITY ONLY AND NOT TO REPRESENT EXCLUSION OR ENDORSEMENT BY THE STATE OF IOWA. EQUIVALENT PRODUCTS OR MATERIALS MAY BE SUITABLE. SUBJECT TO THE APPROVAL OF THE ENGINEER.
- THE CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE THE CONSTRUCTION LIMITS. THE CONTRACTOR SHALL RECLAIM OR REPAIR ALL DISTURBANCES CREATED OUTSIDE THE CONSTRUCTION LIMITS BY THE CONTRACTOR'S EMPLOYEES OR SUBCONTRACTORS AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL ACCESS THE SITE FROM DOVER AVE. VIA THE LOCATION INDICATED ON THE PLANS FOR ALL EQUIPMENT. PERSONNEL, AND MATERIALS TRANSPORTATION. IF ANY NEW ACCESS OR HAUL ROADS ARE REQUIRED TO COMPLETE THE WORK, THEY SHALL FIRST BE APPROVED IN WRITING BY THE ENGINEER OR DIVISION. AND SHALL BE RECLAIMED ACCORDING TO THE SPECIFICATIONS AT THE COMPLETION OF THE PROJECT
- ALL TRASH AND DEBRIS GENERATED BY THE CONTRACTOR SHALL BE DISPOSED OF IN A LICENSED AND PERMITTED OFF-SITE LANDFILL. TRASH SHALL NOT BE BURIED ON-SITE.
- EXISTING SITE TOPOGRAPHY WAS DEVELOPED USING ELEVATION DATA FROM THE STATE OF IOWA'S LIGHT DETECTION AND RANGING (LiDAR) PROGRAM, AND SUPPLEMENTED BY AN ADDITIONAL SURVEY COMPLETED BY SHIVE-HATTERY IN MARCH AND APRIL 2024. THE DRAWINGS DO NOT PURPORT TO SHOW ALL OBJECTS EXISTING ON. ABOVE, OR AROUND THE SITE.

SAFETY NOTE:

THIS PROJECT REQUIRES CONSTRUCTION WORK IN THE VICINITY OF HISTORIC MINE SITES, HIGHWALLS, AND WATER BODIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INVESTIGATING THE SITE CONDITIONS AND SCHEDULING THEIR EQUIPMENT, OPERATIONS, PERSONNEL, AND SAFETY PROCEDURES TO PREVENT ACCIDENTS AND INJURIES. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE OSHA REGULATIONS.

SPECIAL NOTES:

- QUANTITIES OF FERTILIZER AND LIME ARE ESTIMATED FOR BIDDING PURPOSES.
- ACTUAL QUANTITIES APPLIED WILL BE DETERMINED BY SOIL TESTS PERFORMED AT THE COMPLETION OF SITE GRADING WORK.

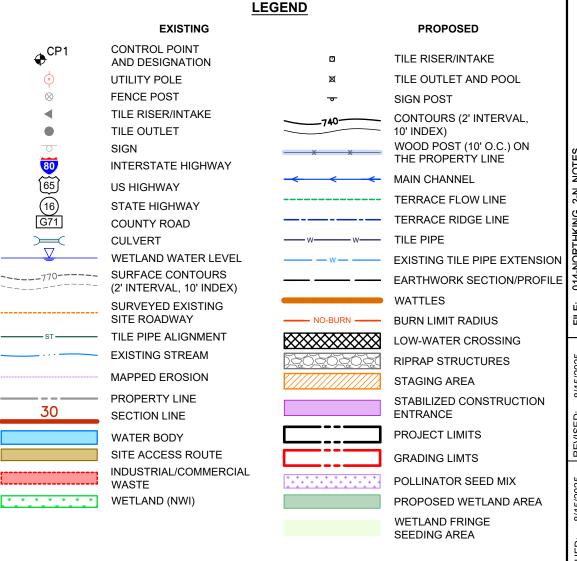
UTILITY NOTES:

- THE CONTRACTOR SHALL CALL 800-292-8989 OR 811 PRIOR TO INTRUSIVE ACTIVITIES TO LOCATE ON-SITE UTILITIES. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. THE ENGINEER DOES NOT MAKE ANY REPRESENTATIONS AS TO EXISTENCE OR NON-EXISTENCE OF UTILITIES WITHIN THE PROJECT AREA
- CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES AND PUBLIC ROADWAYS, INCLUDING ANY NOT SHOWN ON THESE DRAWINGS. ANY DAMAGE TO EXISTING UTILITIES AND STREETS CAUSED BY TRENCHING AND GRADING OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

	ESTIMATED QUANTITIES		1
ITEM NO.	ITEM	QUANTITY	UNIT
	0: MOBILIZATION, SITE CLEARING & PREPERA		ı
11	MOBILIZATION	1	LS
2	SITE CLEARING & PREPARATION	53	ACRE
3	OFF-SITE WASTE DISPOSAL	1	TON
	0: IMPOUNDMENT		1
4	IMPOUNDMENT DISCHARGE	11	LS
5	CAUSTIC SODA, LIQUID, 20-25%	35	GALLONS
SECTION 0212	0: SEDIMENT & EROSION CONTROL		ı
6	WATTLES/SEDIMENT CONTROLS	1,880	LF
7	TIED CONCRETE BLOCK MAT	8,800	SF
8	TEMPORARY EARTH DIVERSION	745	LF
9	STABILIZED CONSTRUCTION ENTRANCE	30	TON
SECTION 0220	0: EARTHWORK, ROUGH GRADING		1
10	EXCAVATION	429,000	CY
11	FINISH GRADING	55.5	ACRE
SECTION 0230	0: DRAINAGE SYSTEMS, GENERAL		
12	RIPRAP (CLASS E)	1,583	TON
13	GRANULAR BEDDING	669	TON
14	TERRACE	9,315	LF
15	RISER-TERRACE (6-INCH)	9	EACH
16	RISER-TERRACE (8-INCH)	12	EACH
17	RISER-TERRACE (10-INCH)	1	EACH
18	PIPE, 8-INCH DUAL WALL, HDPE (DWPE)	5,830	LF
19	PIPE, 10-INCH DUAL WALL, HDPE (DWPE)	1,258	LF
20	PIPE, 12-INCH DUAL WALL, HDPE (DWPE)	677	LF
21	PIPE, 15-INCH DUAL WALL, HDPE (DWPE)	86	LF
22	PIPE OUTLET (8-INCH)	1	EACH
23	PIPE OUTLET (10-INCH)	1	EACH
24	PIPE OUTLET (12-INCH)	2	EACH
25	PIPE OUTLET (15-INCH)	1	EACH
SECTION 0240	0: SUBGRADE PREPERATION (WITHOUT COVE	R MATERIAL)	•
26	AG LIME, SUBGRADE, 40 TONS ECCE/ACRE	2,268	TON (ECCE
27	MULCH, SUBGRADE, 5 TONS/AC	56.7	ACRE
28	WETLAND FERTILIZER, 30 POUNDS/ACRE	99	POUND
29	WETLAND UNDERCUT & REPLACEMENT	3.3	ACRE
SECTION 0250	0: FENCHING		•
30	WOOD POSTS, FIELD FENCE - NO FENCE	200	EACH
SECTION 0270	0: SEEDING		
31	AG LIME, SEEDING, 10 TONS ECCE/AC	567	TON (ECCE
32	NITROGEN (N)	2,268	POUND
33	PHOSPHOROUS (P)	5,670	POUND
34	POTASSIUM (K)	9,072	POUND
35	UPLAND SEEDING	50.4	ACRE
36	POLLINATOR MIX SEEDING	0.6	ACRE
37	MULCH, SEEDING, 2 TONS/AC	56.7	ACRE
38	WETLAND FRINGE SEEDING	5.7	ACRE

CONSTRUCTION NOTES:

- THE CONTRACTOR SHALL NOT REMOVE OR DESTROY ANY SURVEY MONUMENTS WITHOUT PRIOR WRITTEN PERMISSION FROM THE ENGINEER.
- THE CONTRACTOR IS REQUIRED TO CONSTRUCT THE RECLAMATION SURFACE AS DEPICTED ON THE PLANS. SITE GRADING SHALL BE COMPLETED TO ± 0.3 FEET OF DESIGN ELEVATIONS. THE CONTRACTOR SHALL PROVIDE A GRADE CHECK FOR SLOPE STAKING AND OFFSETS. THE USE OF GPS MACHINE MOUNTED GRADE CONTROL EQUIPMENT FOR FINISH GRADING IS RECOMMENDED.
- PROPOSED CONTOURS AND GRADES DEPICT THE TOP OF THE FINISH GRADE.
- IN AREAS WHERE PROPOSED GRADING DAYLIGHTS TO EXISTING GROUND, THE CONTRACTOR SHALL CONSTRUCT A SMOOTH TRANSITION BOTH VERTICALLY AND HORIZONTALLY.



ABBREVIATIONS

	Ø	DIAMETER	NAD	NORTH AMERICAN DATUM
	AC.	ACRES	NAVD	NORTH AMERICAN VERTICAL DATUM
	AMSL	ABOVE MEAN SEA LEVEL	NO.	NUMBER
	<u>@</u>	CENTER LINE	NWI	NATIONAL WETLAND INVENTORY
	CF	CUBIC FEET	RCP	REINFORCED CONCRETE PIPE
	CP	CONTROL POINT	SY	SQUARE YARDS
	CMP	CORRUGATED METAL PIPE	TYP.	TYPICAL
	CY	CUBIC YARDS	CFS	CUBIC FEET PER SECOND
_	IVISION	DIVISION OF SOIL CONSERVATION	WB	WATER BODY
DIVISION	& WATER QUALITY	IS	INTERMITTENT STREAM	
	ECCE	EFFECTIVE CALCIUM CARBONATE EQUIVALENT		

EL

FT.

H:V

LF

LiDAR

LS

MAX.

MIN.

ELEVATION

LINEAR FEET

LUMP SUM

MAXIMUM

MINIMUM

HORIZONTAL TO VERTICAL

LIGHT DETECTION AND RANGING

FFFT



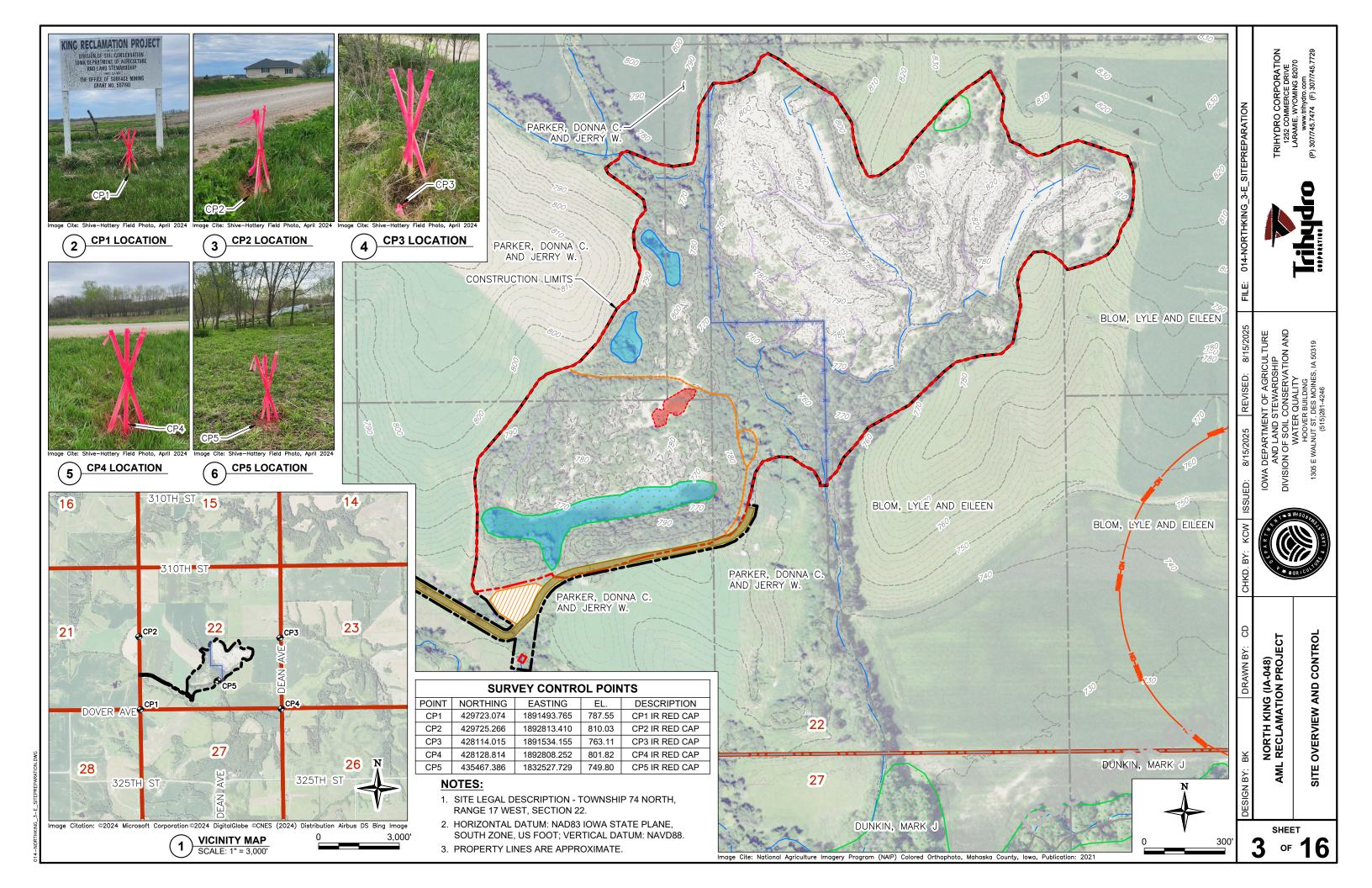
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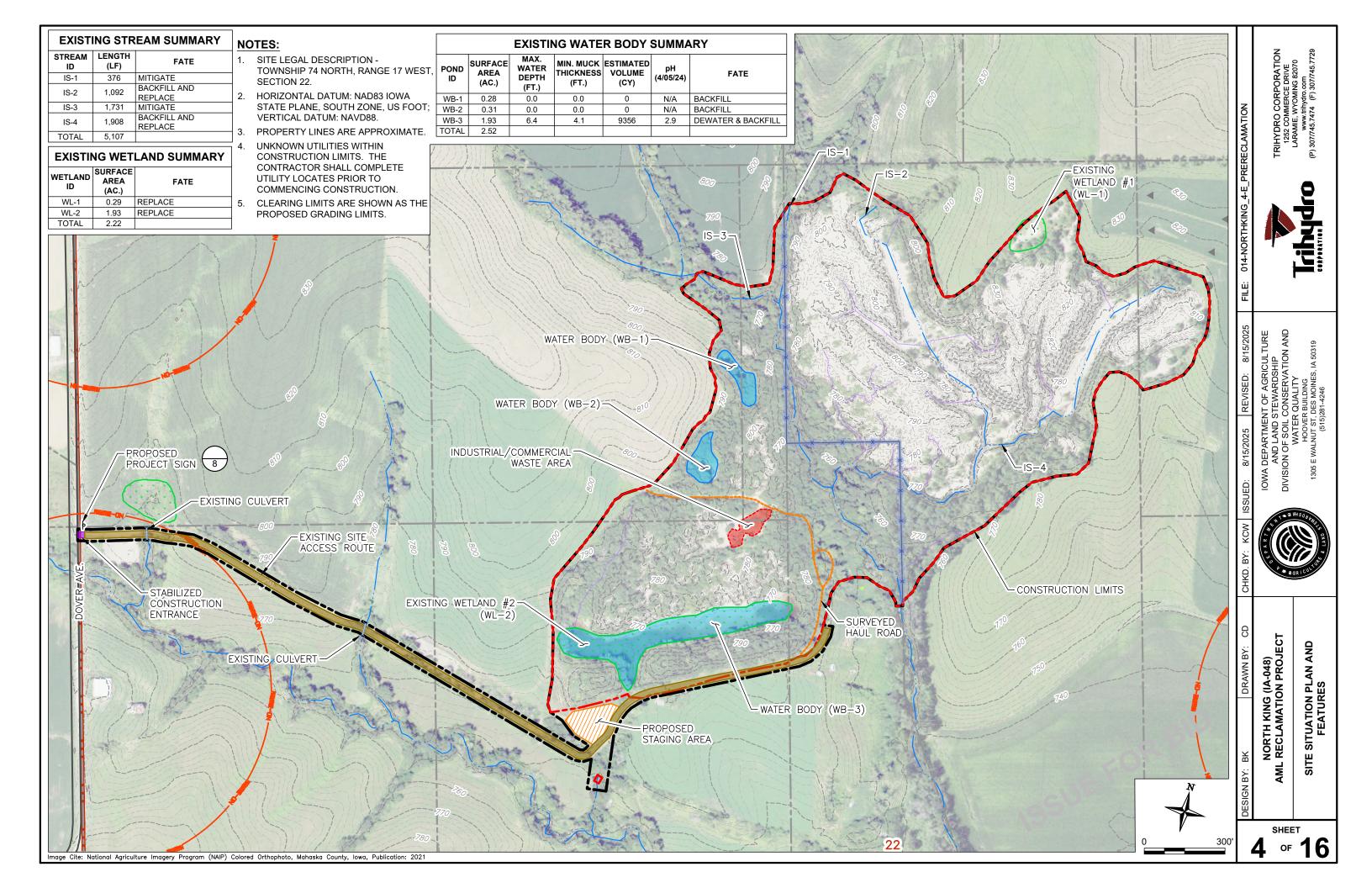
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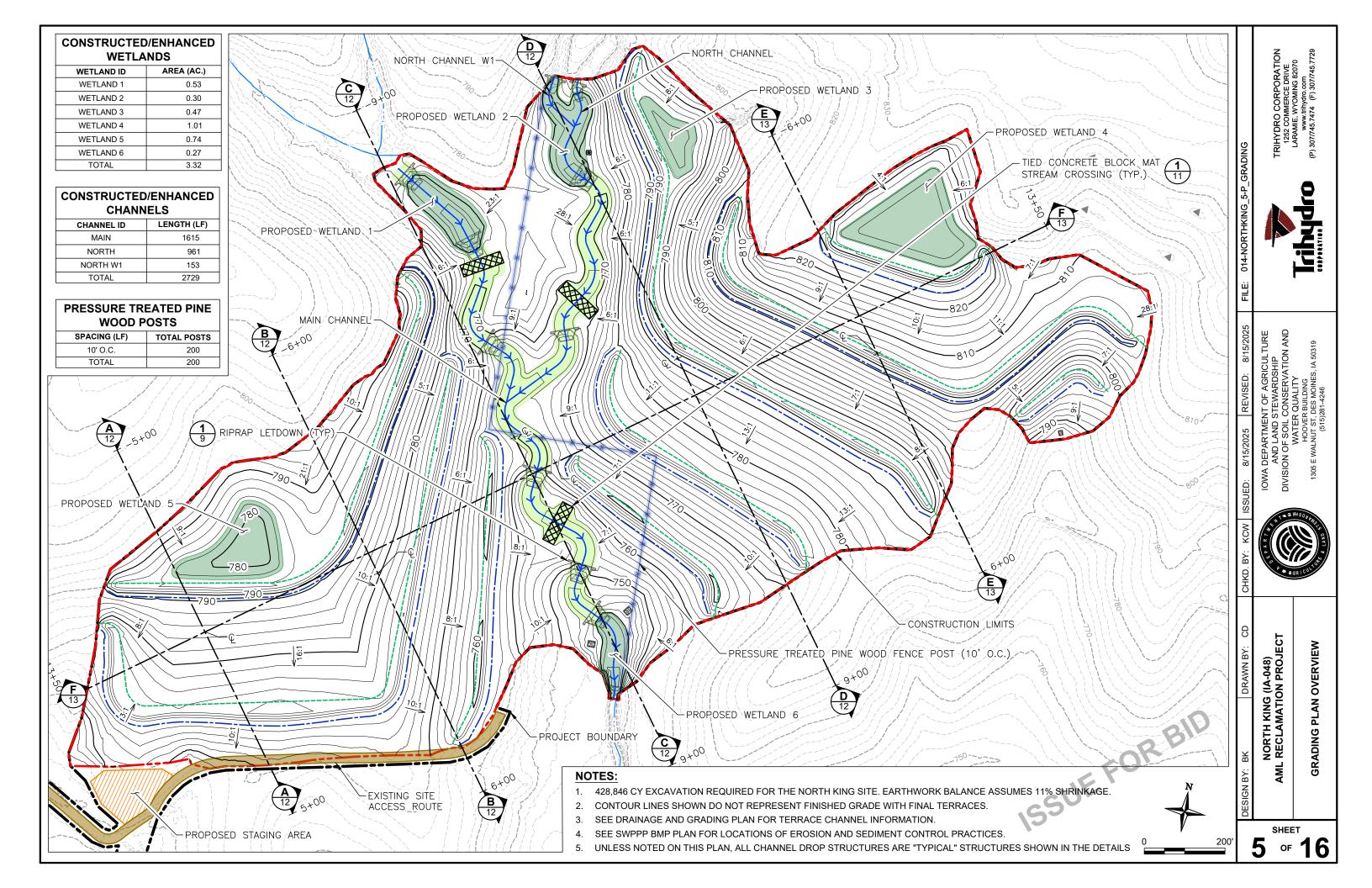
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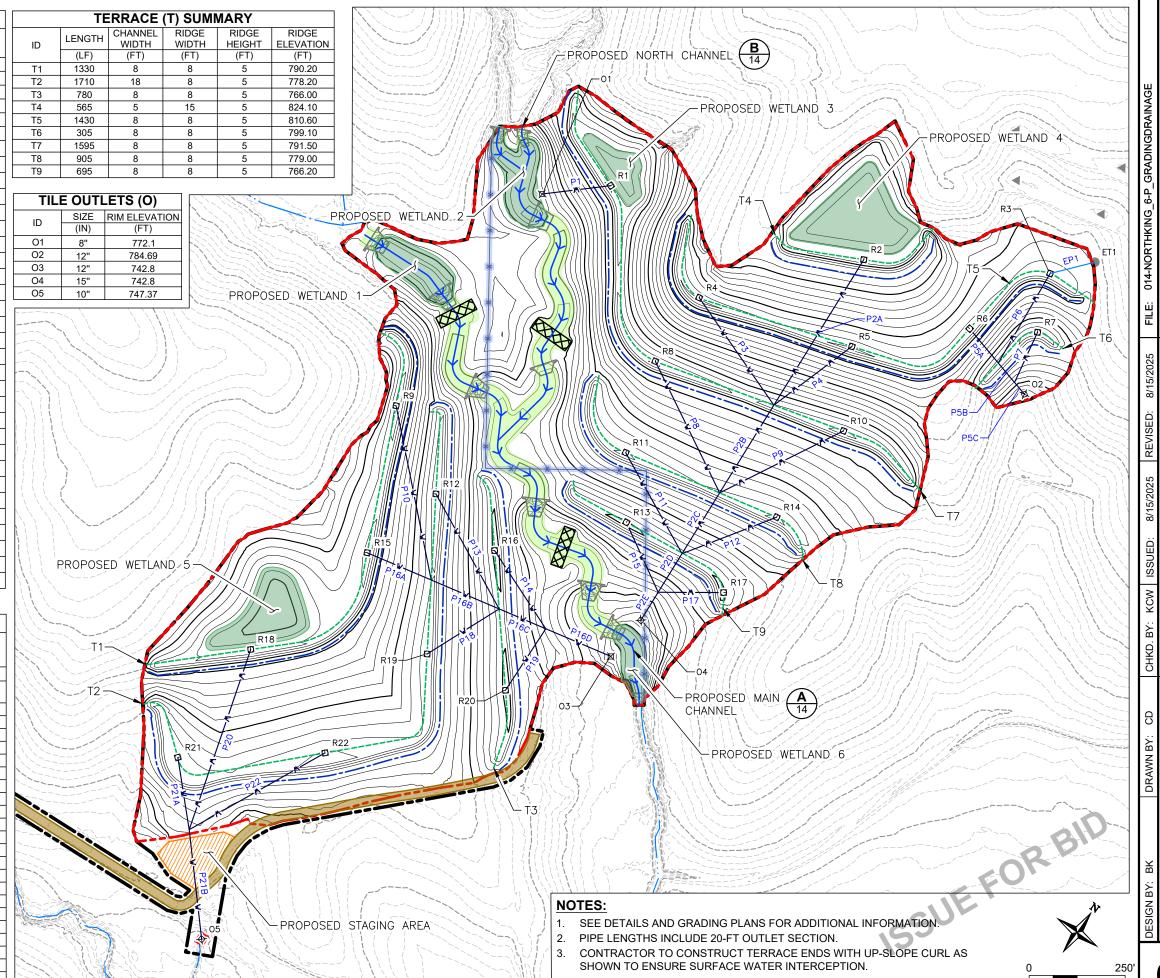






	LENGTH	DIA.	SUMMARY	SLOPE
ID	(LF)	(IN)	MATERIAL	(%)
EP1	121'	8"	DWPE	6.19%
P1	180'	8"	DWPE	4.67%
P2A	447'	8"	DWPE	6.92%
P2B	269'	10"	DWPE	4.56%
P2C	187'	10"	DWPE	7.59%
P2D	118'	12"	DWPE	7.62%
P2E	86'	15"	DWPE	7.62%
P3	341'	8"	DWPE	5.22%
P4	255'	8"	DWPE	7.00%
P5A	117'	8"	DWPE	7.41%
P5B	66'	12"	DWPE	4.92%
P5C	40'	12"	DWPE	14.84%
P6	269'	12"	DWPE	3.51%
P7	144'	8"	DWPE	1.32%
P8	382'	8"	DWPE	2.76%
P9	361'	8"	DWPE	2.86%
P10	463'	8"	DWPE	1.99%
P11	302'	8"	DWPE	4.16%
P12	264'	8"	DWPE	4.74%
P13	342'	8"	DWPE	3.37%
P14	243'	8"	DWPE	1.43%
P15	200'	8"	DWPE	4.62%
P16A	181'	8"	DWPE	5.08%
P16B	193'	10"	DWPE	6.99%
P16C	132'	10"	DWPE	3.80%
P16D	184'	12"	DWPE	6.41%
P17	171'	8"	DWPE	5.42%
P18	222'	8"	DWPE	5.20%
P19	192'	8"	DWPE	1.82%
P20	496'	8"	DWPE	3.01%
P21A	190'	10"	DWPE	2.51%
P21B	287'	10"	DWPE	5.90%
P22	406'	8"	DWPE	1.17%
Total	7851'			

S							
FILES		RISER (R) SUMMARY					
AML\PROJECT	ID	SIZE	TYPE	TERRACE FLOWLINE/RIM ELEV.	INVERT ELEV.		
		(IN)		(FT)	(FT)		
	Column 1	Column 2	Column3	Column4	Column5		
CORPORALION\IOWA	R1	8"	PLASTIC	784.00	780.50		
7	R2	8"	PLASTIC	816.53	813.03		
Š	R3	10"	PLASTIC	804.32	800.82		
₹	R4	6"	PLASTIC	803.51	800.01		
임	R5	6"	PLASTIC	803.51	800.01		
Š	R6	8"	PLASTIC	804.15	800.65		
	R7	8"	PLASTIC	793.52	790.02		
	R8	6"	PLASTIC	784.00	780.50		
\pm	R9	8"	PLASTIC	783.25	779.75		
☲.	R10	6"	PLASTIC	783.78	780.28		
Ś	R11	6"	PLASTIC	771.86	768.36		
ğ	R12	8"	PLASTIC	772.11	768.61		
짓	R13	6"	PLASTIC	759.59	756.09		
₹	R14	8"	PLASTIC	771.86	768.36		
2	R15	8"	PLASTIC	783.25	779.75		
źΙ	R16	8"	PLASTIC	759.08	755.58		
<u>S</u>	R17	6"	PLASTIC	759.59	756.09		
Ě	R18	8"	PLASTIC	782.70	779.20		
₹	R19	8"	PLASTIC	772.11	768.61		
(2)	R20	8"	PLASTIC	759.08	755.58		
\USERS\KWILKISON\DC\ACCDOCS\IRIHYDRO	R21	6"	PLASTIC	771.70	768.20		
\geq	R22	6"	PLASTIC	772.57	769.07		



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GRADING PLAN

NORTH KING (IA-048) AML RECLAMATION PROJECT

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of **16**