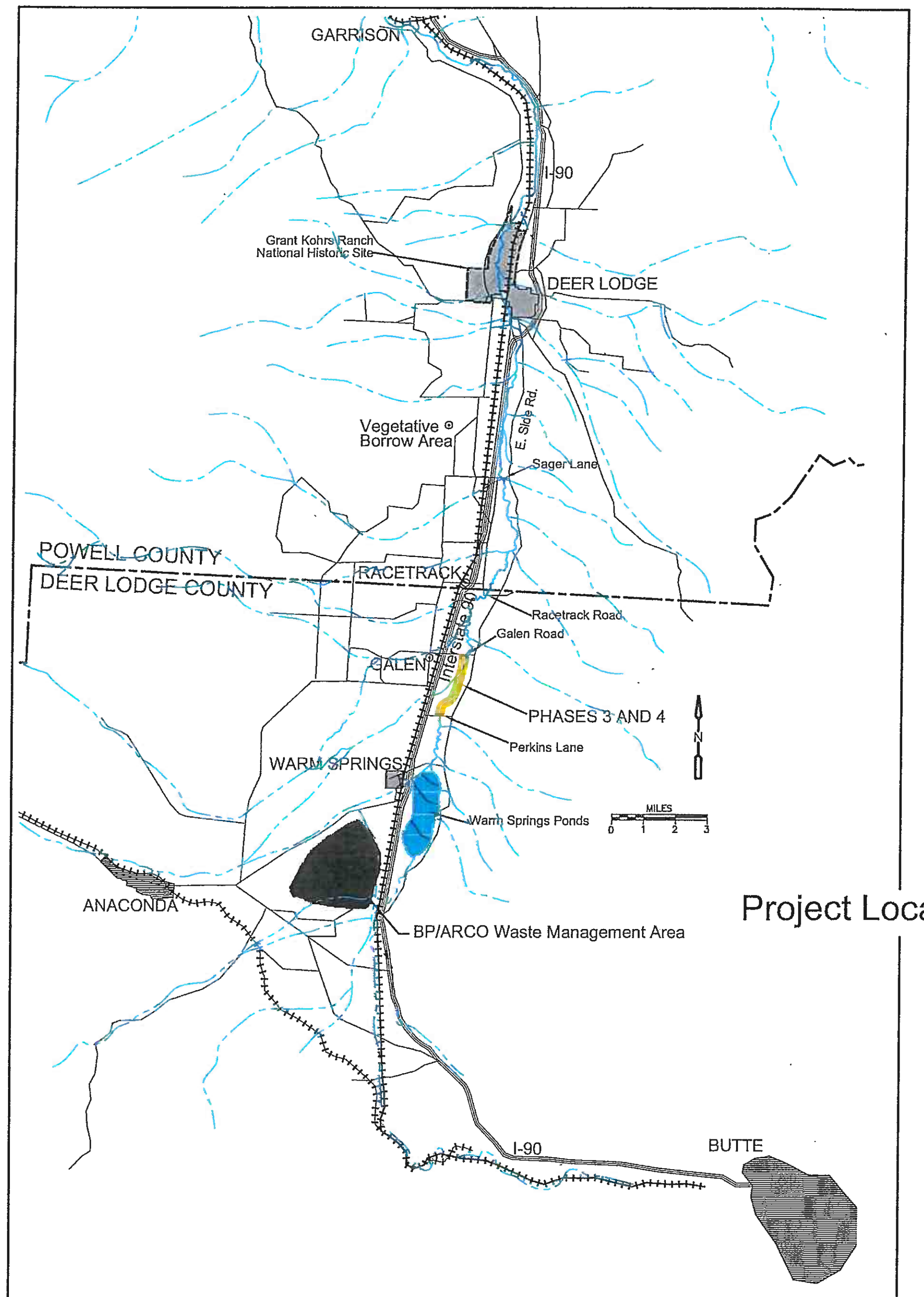
Clark Fork River
Reach A Phases 3 And 4 Remedial Action Project
Milltown Reservoir/Clark Fork River NPL Site
Deer Lodge County, Montana

APRIL 2016

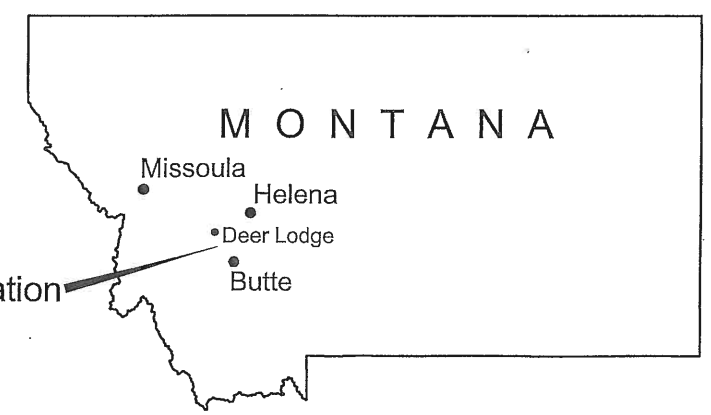


Prepared for:

The Montana Department of Environmental Quality
Mine Waste Cleanup Bureau

The Montana Department of Justice
Natural Resource Damage Program

Project Location



Prepared by: CDM Smith Geum

CDM Smith, Inc. - Helena, Montana
Geum Environmental Consulting, Inc. - Hamilton, Montana

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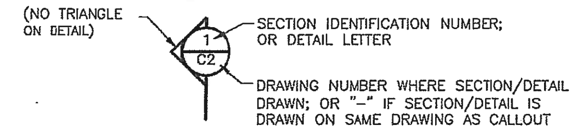
PRELIMINARY: NOT FOR CONSTRUCTION

LEGEND

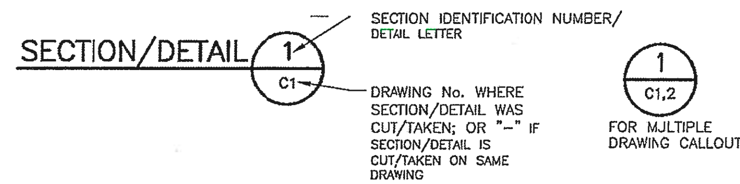
- PHASES 3 AND 4 REMOVAL BOUNDARY
- PHASE 2 REMOVAL BOUNDARY
- DISTURBANCE BOUNDARY
- PROPERTY BOUNDARY
- EXISTING ROAD
- ACCESS AND OFFSITE HAUL ROADS
- PROPOSED SECONDARY HAUL ROADS
- RAILROAD
- FO — FIBER OPTIC LINE
- GAS — GAS LINE
- PH — TELEPHONE LINE
- E — BURIED ELECTRIC LINE
- OE — OVERHEAD ELECTRIC LINE
- X — X — X — X — EXISTING FENCE
- PROPOSED 8FT WILDLIFE FENCE
- FARM FENCE
- WATER GAP
- CULVERT
- 5450 — EXISTING INDEX CONTOUR LINE AND ELEVATION DESIGNATION
- EXISTING INTERMEDIATE CONTOUR LINE
- 5450 — PROPOSED INDEX CONTOUR LINE AND ELEVATION DESIGNATION
- PROPOSED INTERMEDIATE CONTOUR LINE
- PROPOSED DEWATERING TRENCH
- PROPOSED DISCHARGE PIPE
- EXISTING CONTOUR MAJOR, 5 FT INTERVAL
- EXISTING CONTOUR MINOR, 1 FT INTERVAL
- SUBGRADE INDEX CONTOUR, 1FT INTERVAL
- SUBGRADE INTERMEDIATE CONTOUR, 0.5 FT INTERVAL
- FINAL GRADE INDEX CONTOUR, 1FT INTERVAL
- FINAL GRADE INTERMEDIATE CONTOUR, 0.5 FT INTERVAL
- EXCAVATION SURFACE MAJOR, 1 FT INTERVAL
- EXCAVATION SURFACE MINOR, 0.5 FT INTERVAL
- WORK AREA BOUNDARY
- GAP TREATMENT
- BIFURCATION TREATMENT (BIF)
- BRUSH TRENCH (BT)
- BRUSH MATRIX (BM)
- DOUBLE VEGETATED SOIL LIFT (DVSL)
- NO TREATMENT AREA (NT)
- PRESERVE VEGETATION (PV)
- POINT BAR REGRADING AREA (PB)
- LATERAL BARS (LB)
- NO VEGETATIVE BACKFILL
- 6 INCHES OF VEGETATIVE BACKFILL
- 12 INCHES OF VEGETATIVE BACKFILL
- 18 INCHES OF VEGETATIVE BACKFILL
- IRRIGATION RETURN CHANNEL
- EXISTING DITCH

- BUILDING OR STRUCTURE FOOTPRINT
- SHRUBBERY OR TREE
- FLOODPLAIN ALLUVIUM
- POINT BAR ALLUVIUM
- EXISTING GROUND
- VEGETATIVE BACKFILL
- SURVEY CONTROL POINT
- X 4775.23 24 — ELEVATION OF BASE OF EXCAVATION (FT) DEPTH OF EXCAVATION (IN)
- * — ARSENIC CONCENTRATION GREATER THAN 620 PPM
- ML-1 — MONITORING WELL
- PROPOSED SUMP
- PROPOSED SEDIMENT POND
- GENERAL FILL BACKFILL AREAS
- CHANNEL MIGRATION ZONE (CMZ)
- WETLANDS
- xTP — TEST PIT LOCATIONS
- TEST PIT IN TARGET RANGE
- TEST PIT FINER THAN TARGET RANGE
- TEST PIT COARSER THAN TARGET RANGE
- RED AREAS INDICATE NON-IMPACTED MATERIAL DEEPER THAN 1 FOOT TO BE EXCAVATED AND REPLACED IN EXCAVATED FLOODPLAIN AT LOCATIONS INDICATED BY ENGINEER.
- OLIVE AREAS TO BE EXCAVATED FROM 0 TO 1 FOOT
- TYPE A MATERIAL
- NORMAL DENSITY WOODY DEBRIS WITH MICROTOPOGRAPHY
- HIGH DENSITY WOODY DEBRIS WITH MICROTOPOGRAPHY
- MICROTOPOGRAPHY
- PRESERVE VEGETATION AREA
- NON-IMPACTED AREAS

SECTION AND DETAIL DESIGNATION



SECTION CUT/DETAIL CALLOUT SYMBOL



TITLE FOR SECTION/DETAIL

MAPPING SOURCES:

SURVEY CONTROL: BROWN AND ASSOCIATES, BUTTE, MT
MAPPING BY FUGRO EARTH DATA AND DJA, AUGUST 2011 LIDAR DATA

SURVEY CONTROL POINTS

NO./NAME	NORTH	EAST	ELEVATION (Z)	TYPE
GALEN	741664.92	1145270.37	4721.602	RR SPIKE
PHASE 3-4 CP1	741789.54	1142770.52	4731.7	3 1/2" PCI AL CAP
PHASE 3-4 CP2	741566.71	1147971.79	4743.827	1" RM AL CAP
PHASE 3-4 CP3	736264.51	1146531.59	4800.848	5/8" YPC
PHASE 3-4 CP4	731260.27	1144112.42	4794.887	5/8" REBAR
PHASE 3-4 CP5	736785.37	1141250.46	4749.083	5/8" REBAR
CP4	731374.97	1141030.50	4760.339	5/8" REBAR
CP5	731307.75	1142949.21	4767.86	IPS 1/2 REBAR

HORIZONTAL SURVEY CONTROL IS STATE PLANE COORDINATES NAD83 CONVERTED TO INTERNATIONAL FEET. VERTICAL CONTROL IS NAVD88 IN US SURVEY FEET.

EXISTING CONDITIONS GENERAL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF CURRENT CONDITIONS AND LOCATIONS OF ALL THE EXISTING ITEMS WITHIN OR ADJACENT TO THE WORK, OR THAT MAY BE DISTURBED BY THE WORK.
2. THE LOCATIONS OF ALL SUBSURFACE CONDITIONS ARE BASED ON THE BEST AVAILABLE INFORMATION AS OF INVESTIGATION COMPLETED IN 2009.
3. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING SURFACE FEATURES. AND OTHER EXISTING ITEMS.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL SURFACE AND SUBSURFACE UTILITIES. UTILITY LOCATIONS SHOWN ON DRAWING ARE APPROXIMATE AND FOR INFORMATIONAL PURPOSE ONLY.
5. CONTRACTOR SHALL PROTECT AND REPAIR AT CONTRACTOR'S EXPENSE ANY DAMAGE TO UTILITIES CAUSED BY CONTRACTOR.
6. DRAWINGS PLOTTED IN COLOR FOR REALIZATION OF ALL DESIGNED FEATURES.

SYMBOLS AND ABBREVIATIONS

#	NUMBER
&	AND
@	AT
%	PERCENT
Δ	DEFLECTION ANGLE IN DEGREES
>	GREATER THAN
<	LESS THAN
*	ARSENIC GREATER THAN 620 PPM
'	INTERNATIONAL FOOT
"	U.S. INCHES
▼	WATER SURFACE MARKER
AR	ATLANTIC RICHFIELD COMPANY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BNSF	BURLINGTON NORTHERN SANTA FE
BT	BRUSH TRENCH
CF	CUBIC FEET
CFR	CLARK FORK RIVER
CHK'D	CHECKED
CMP	CORRUGATED METAL PIPE
CMPA	CORRUGATED METAL PIPE ARCH
CY	CUBIC YARDS
DEQ	MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIA	DIAMETER
DWG	DRAWINGS
DRWN	DRAWN
DVSL	DOUBLE VEGETATED SOILS LIFT
E	EAST
E	BURIED ELECTRICAL LINE
EG	EXISTING GRADE
EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY
FG	FINAL GRADE
FO	FIBER OPTIC
FT	U.S. FOOT
G	GAS LINE
GA	GAGE
GAL	U.S. GALLON
H	HORIZONTAL
HOR	HORIZONTAL
I-90	INTERSTATE 90
IN	U.S. INCHES
MAX	MAXIMUM
MIN	MINIMUM
MIN	MINUTE
LB	LATERAL BAR
LF	LINEAR FEET
LLC	LIMITED LIABILITY COMPANY
MDEQ	MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
MI	U.S. MILE
MISC	MISCELLANEOUS
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
N	NORTH
NO	NUMBER
NT	NO TREATMENT
NTS	NOT TO SCALE
OC	ON CENTER
PB	POINT BAR
PH	TELEPHONE LINE
PP	OVERHEAD ELECTRIC
PPM	PARTS PER MILLION
PV	PRESERVE VEGETATION
QTY	QUANTITY
RD	ROAD
REV	REVISION
RR	RAILROAD
ROW	RIGHT OF WAY
SF	SQUARE FEET
S	SOUTH
STA	STATION
STD	STANDARD
SY	SQUARE YARDS
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UP	UTILITY POLE
UG	UNDERGROUND
USGS	UNITED STATED GEOLOGICAL SURVEY
V	VERTICAL
VER	VERTICAL
W	WEST
XS	CROSS SECTION

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

CDM Smith
50 West 14th Street Suite 200
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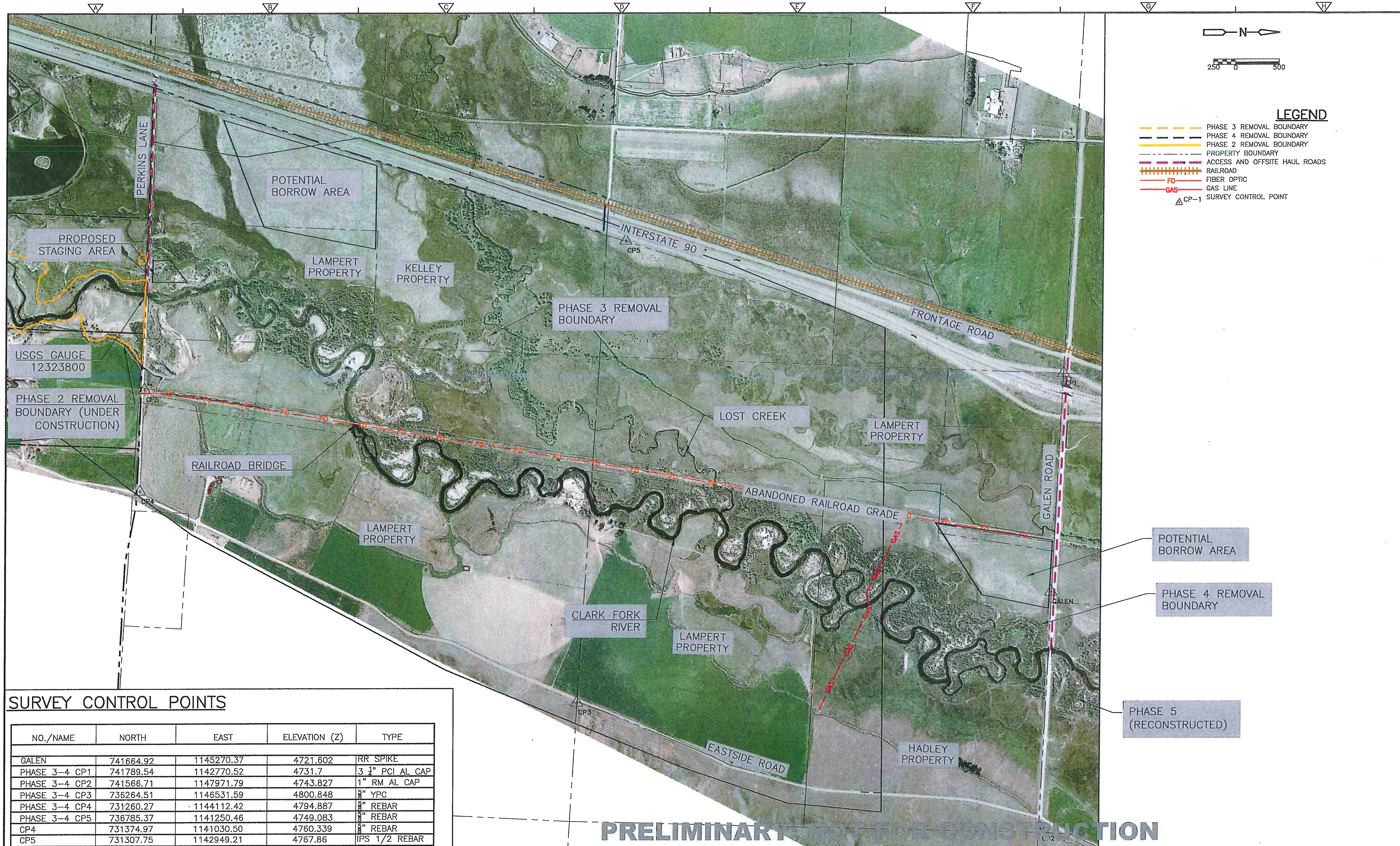
consulting • engineering • construction • operations

DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER - PHASE 3 & 4 REMEDIAL ACTION

GENERAL LEGEND AND NOTES

PROJECT NO. 103068
FILE NAME: GSTPL001.DWG
SHEET NO. G1



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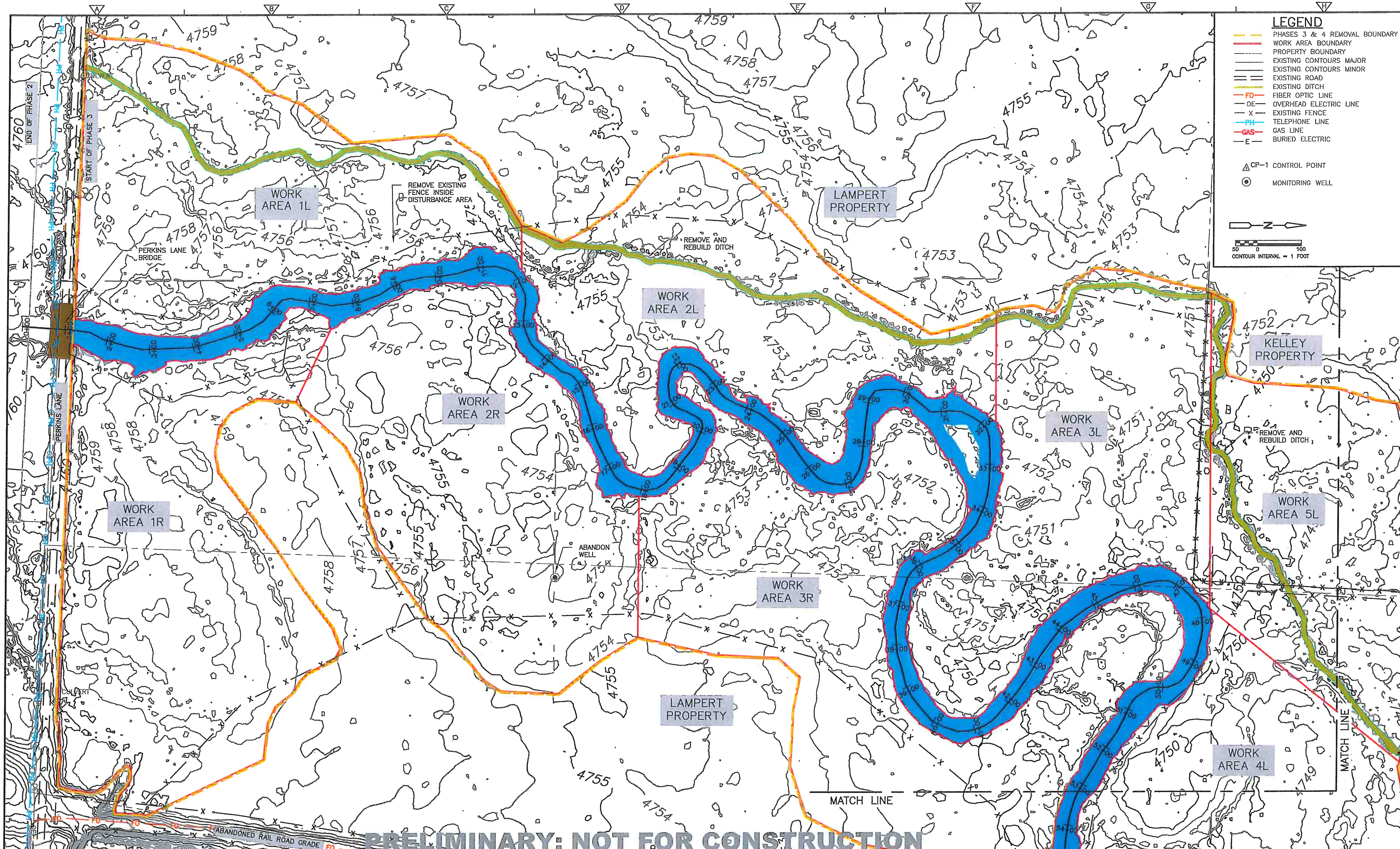
DEPARTMENT OF ENVIRONMENTAL QUALITY

CLARK FORK RIVER
PHASE 3 REMEDIAL ACTION

GENERAL SITE PLAN

PROJECT NO. 103068
FILE NAME: CSTPL–C1.DWG
SHEET NO.
C1

K:\CFR– PHASES 3 AND 4\dwgs design\CSTPL–C1 General Site Plan.dwg SAVED: 3/30/16 PRINTED: 4/11/16 BY: MAINZHAUSENK



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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

WORK THIS CONTRACT

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C2

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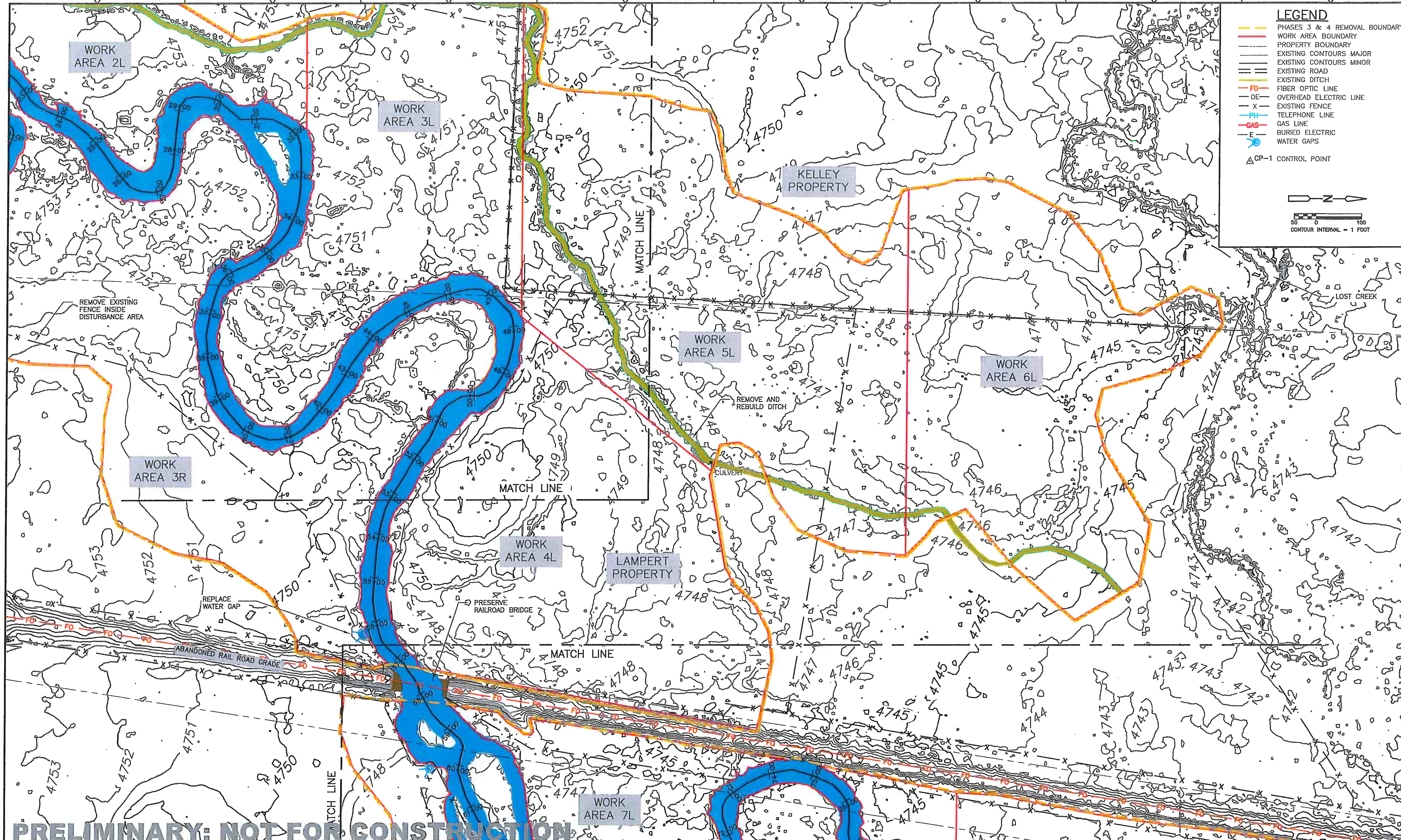

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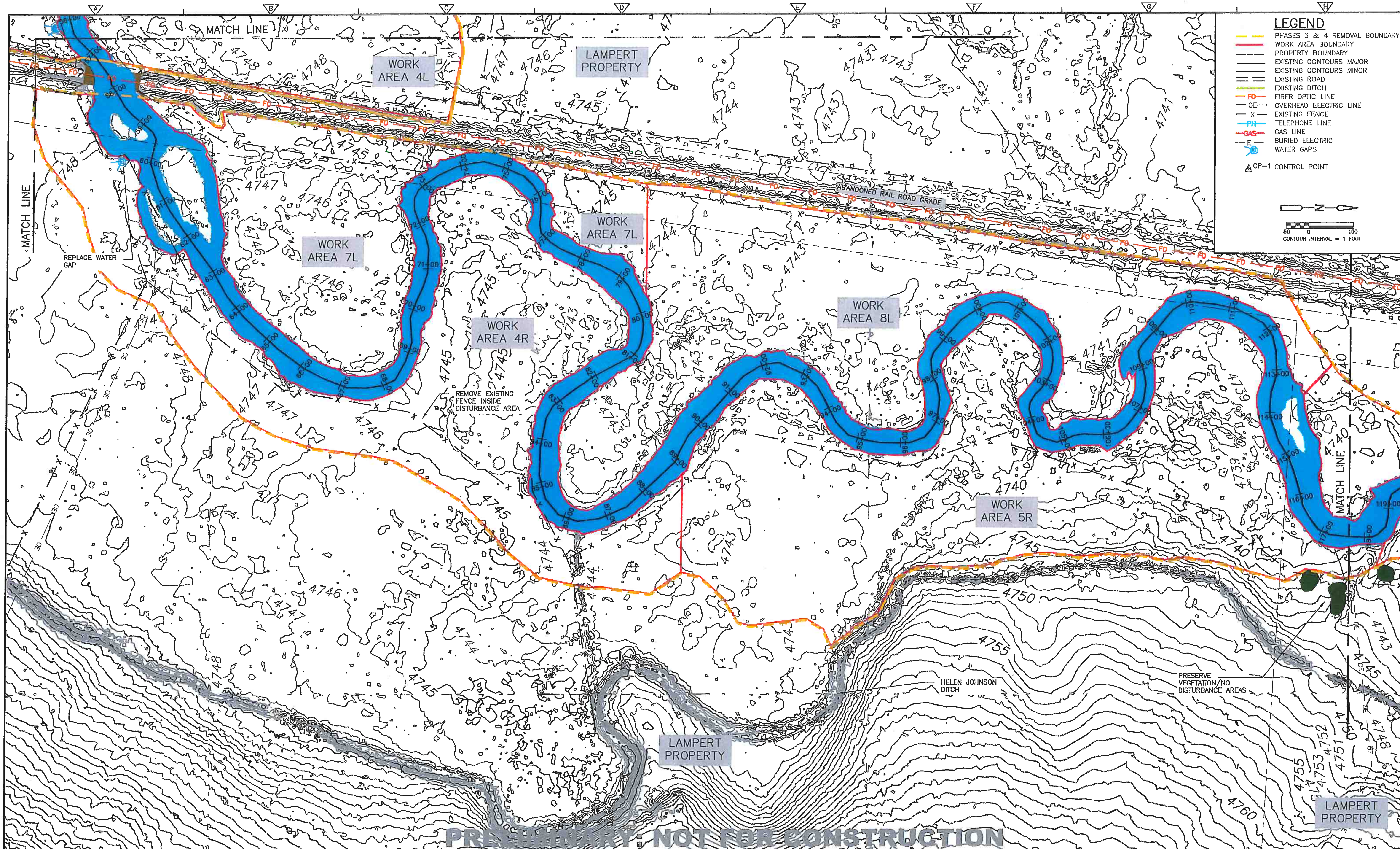
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

WORK THIS CONTRACT

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C3



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CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

WORK THIS CONTRACT

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C4

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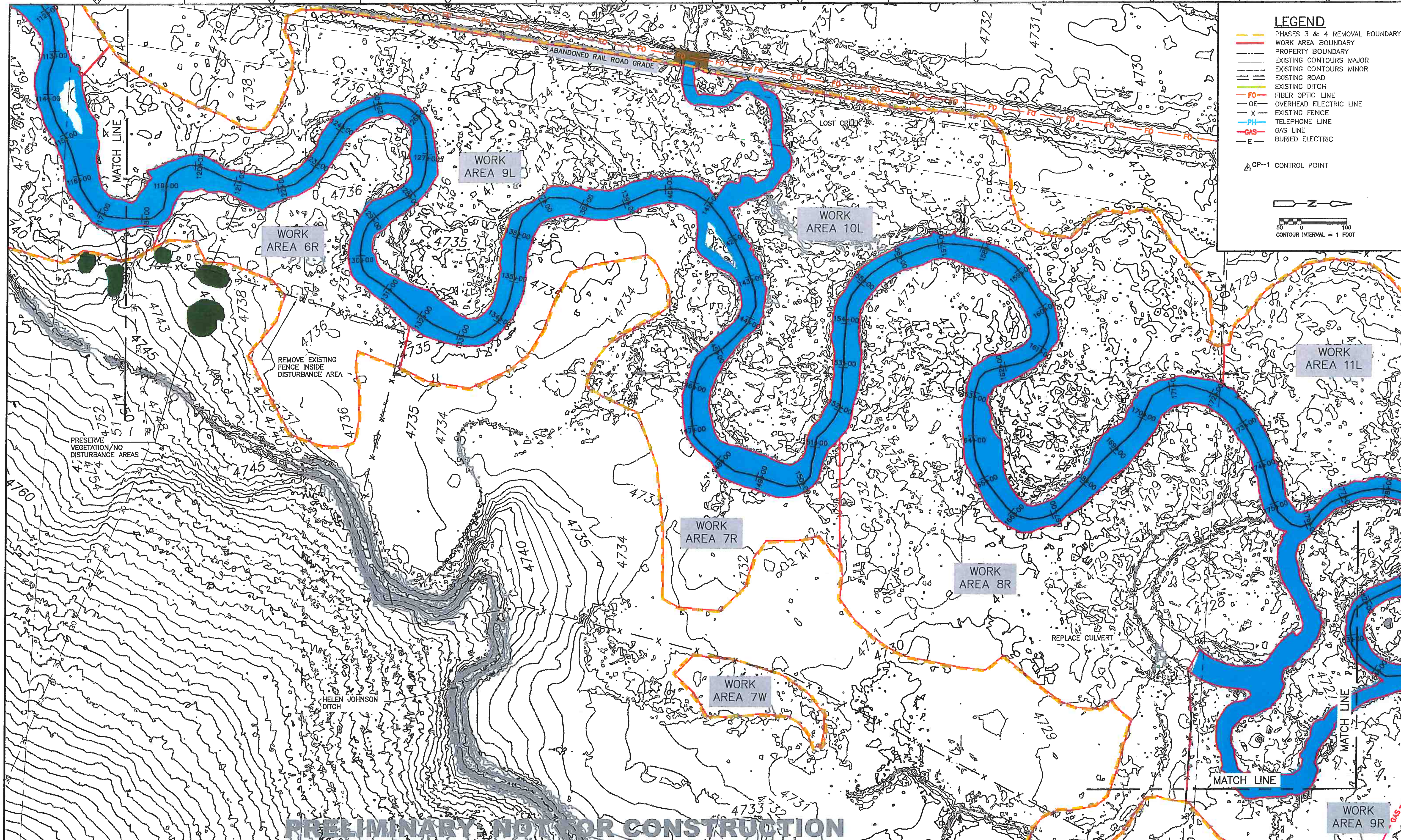

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CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

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PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C5

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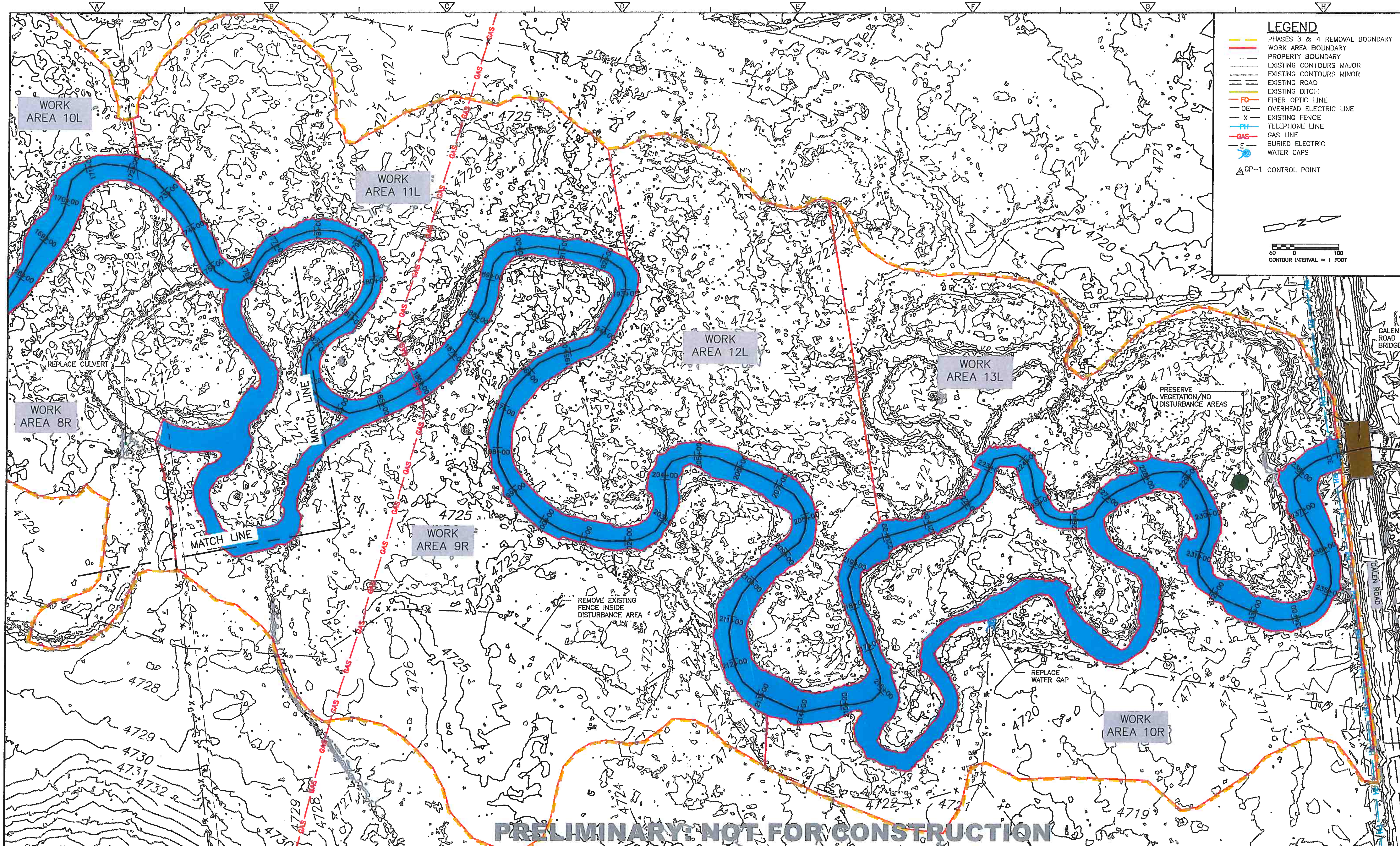

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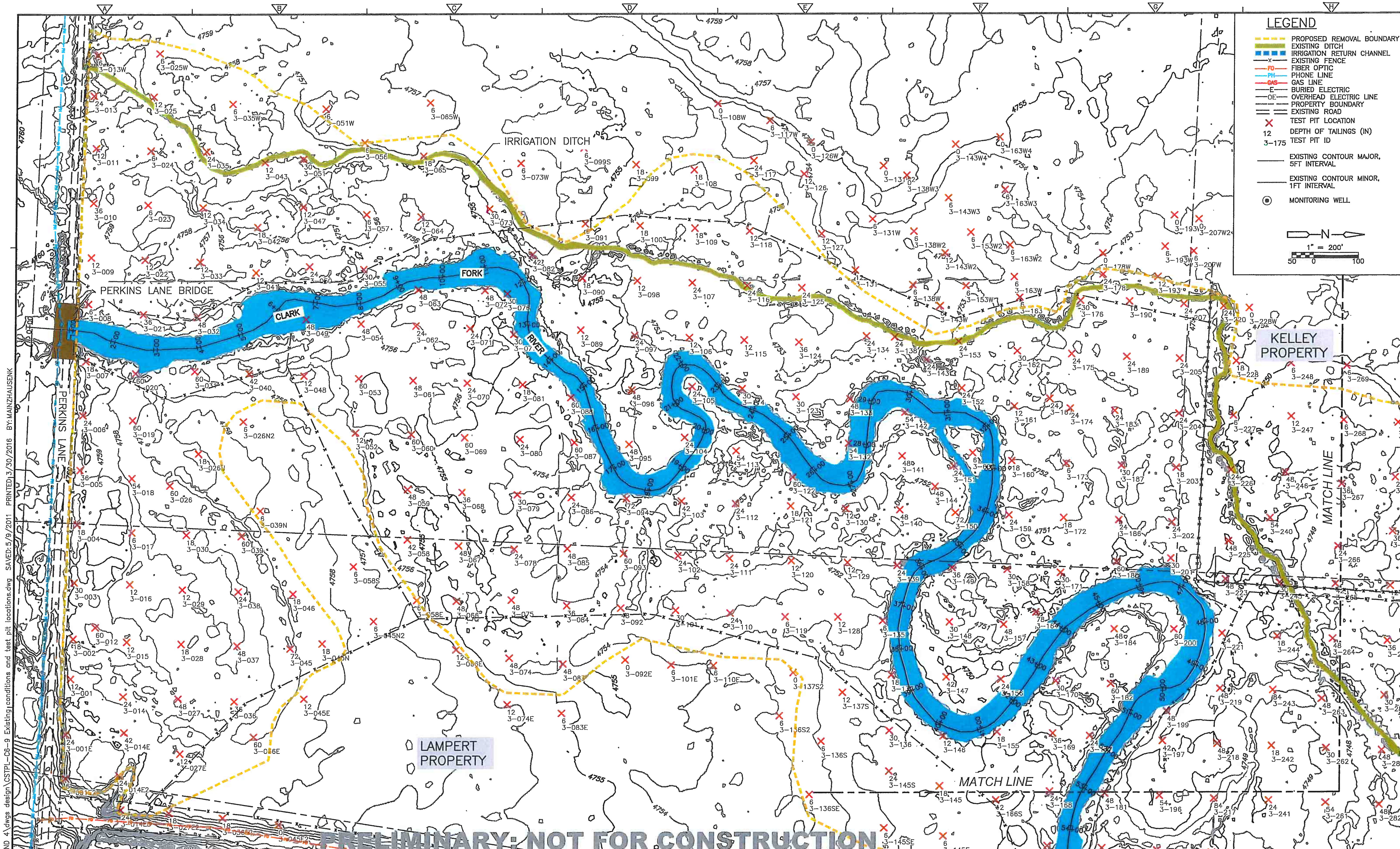
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

WORK THIS CONTRACT

PROJECT NO. 103068
FILE NAME: CSTPL–C2
SHEET NO. C6



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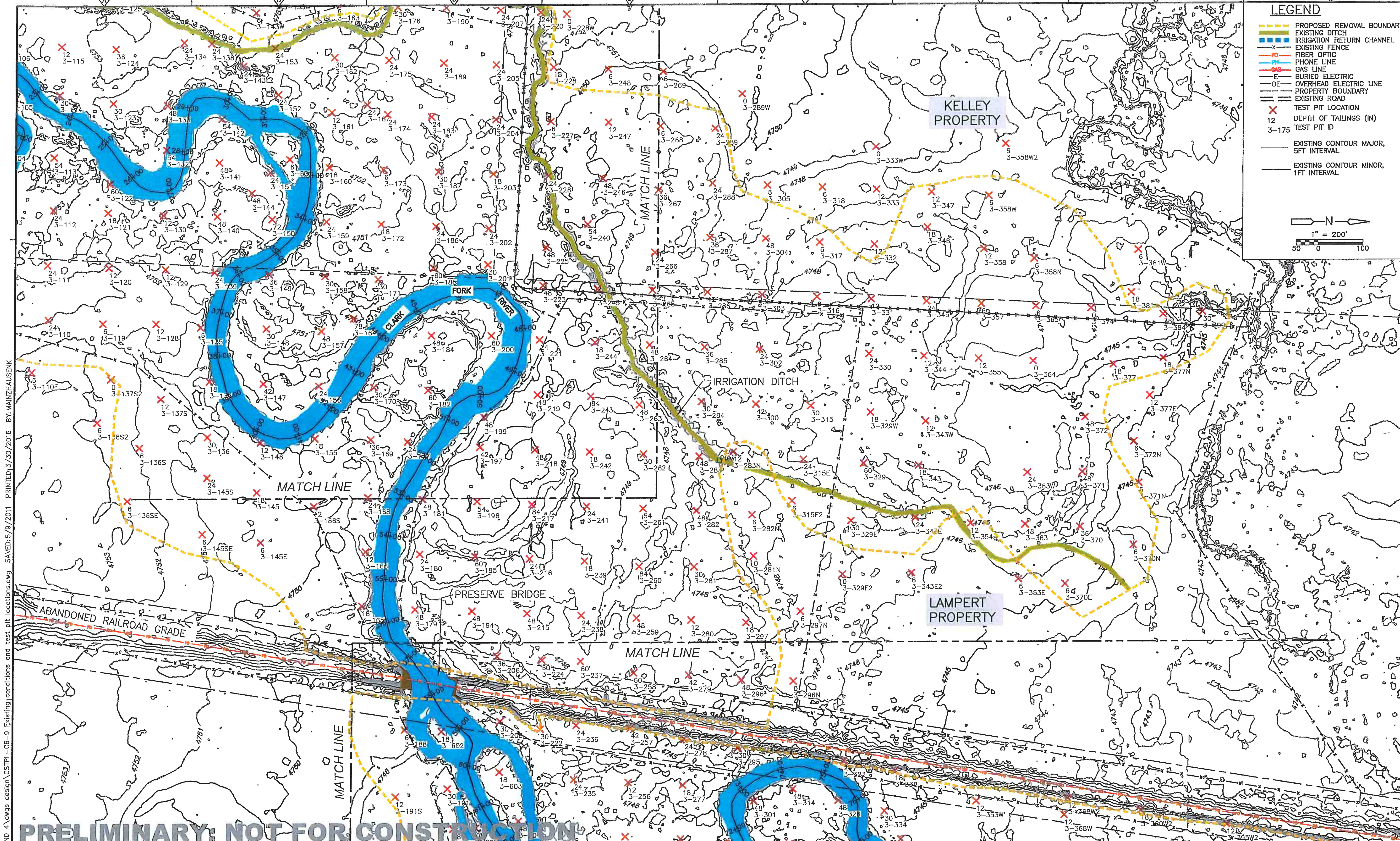
CLARK FORK RIVER
PHASES 3&4 REMEDIAL ACTION

EXISTING CONDITIONS
AND TEST PIT LOCATIONS

PROJECT NO. 109312
FILE NAME: CSTPL0102
SHEET NO.
C7



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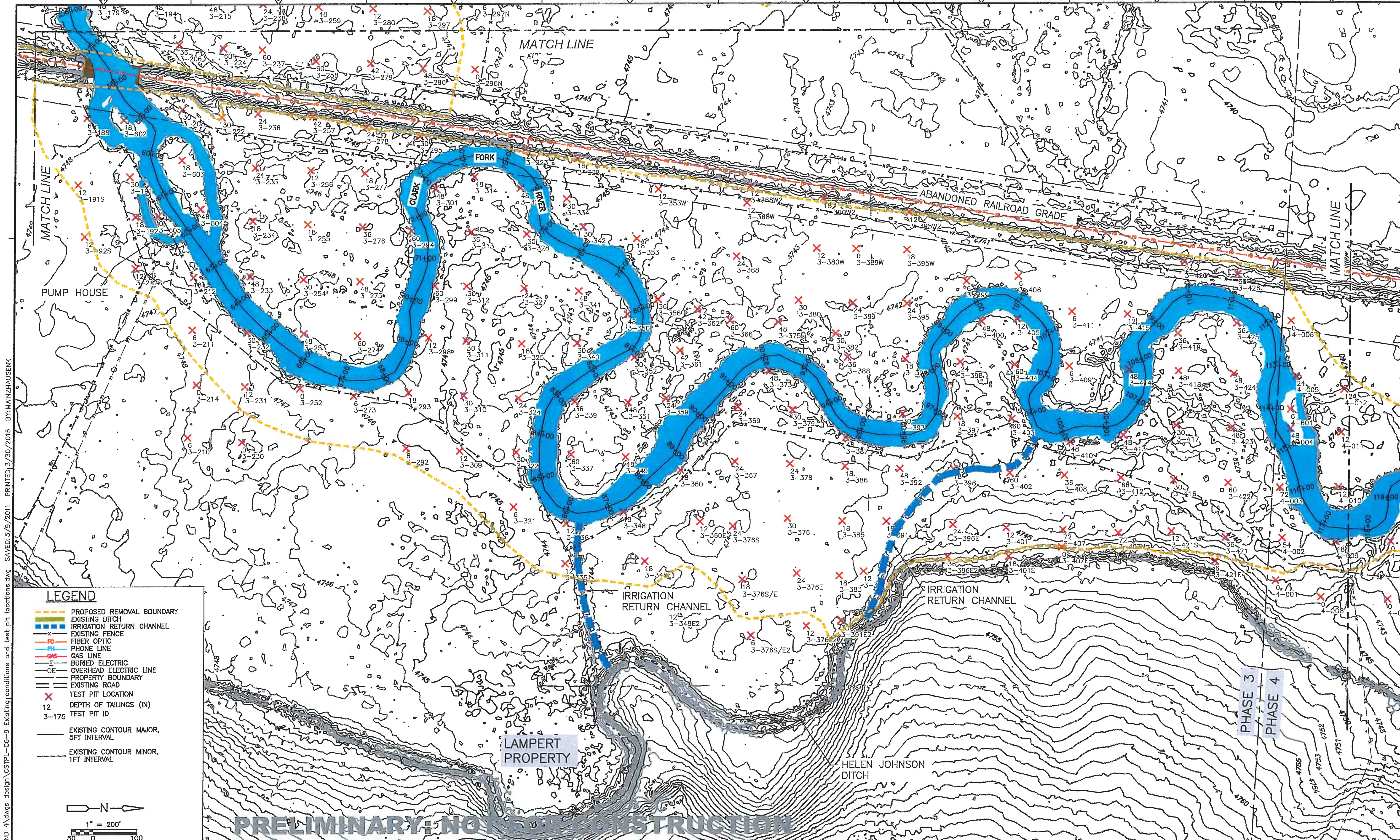
CLARK FORK RIVER
PHASES 3&4 REMEDIAL ACTION

EXISTING CONDITIONS
AND TEST PIT LOCATIONS

PROJECT NO. 76419
FILE NAME: CSTPL0102
SHEET NO.
C8



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PHASES 3&4 REMEDIAL ACTION

EXISTING CONDITIONS AND TEST PIT LOCATIONS

PROJECT NO. 109312
FILE NAME: CSTPL0102
SHEET NO. C9

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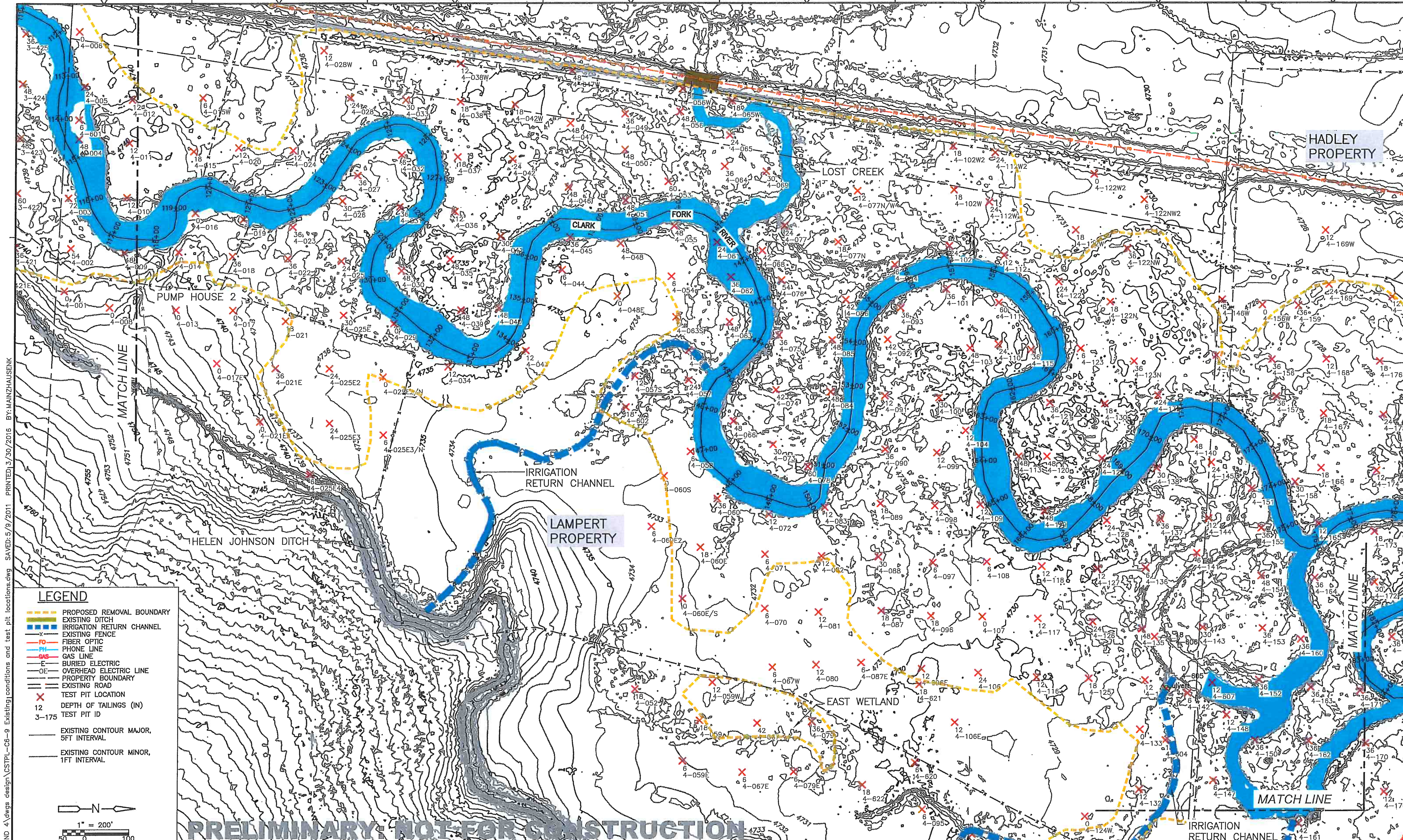

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PHASES 3&4 REMEDIAL ACTION

EXISTING CONDITIONS
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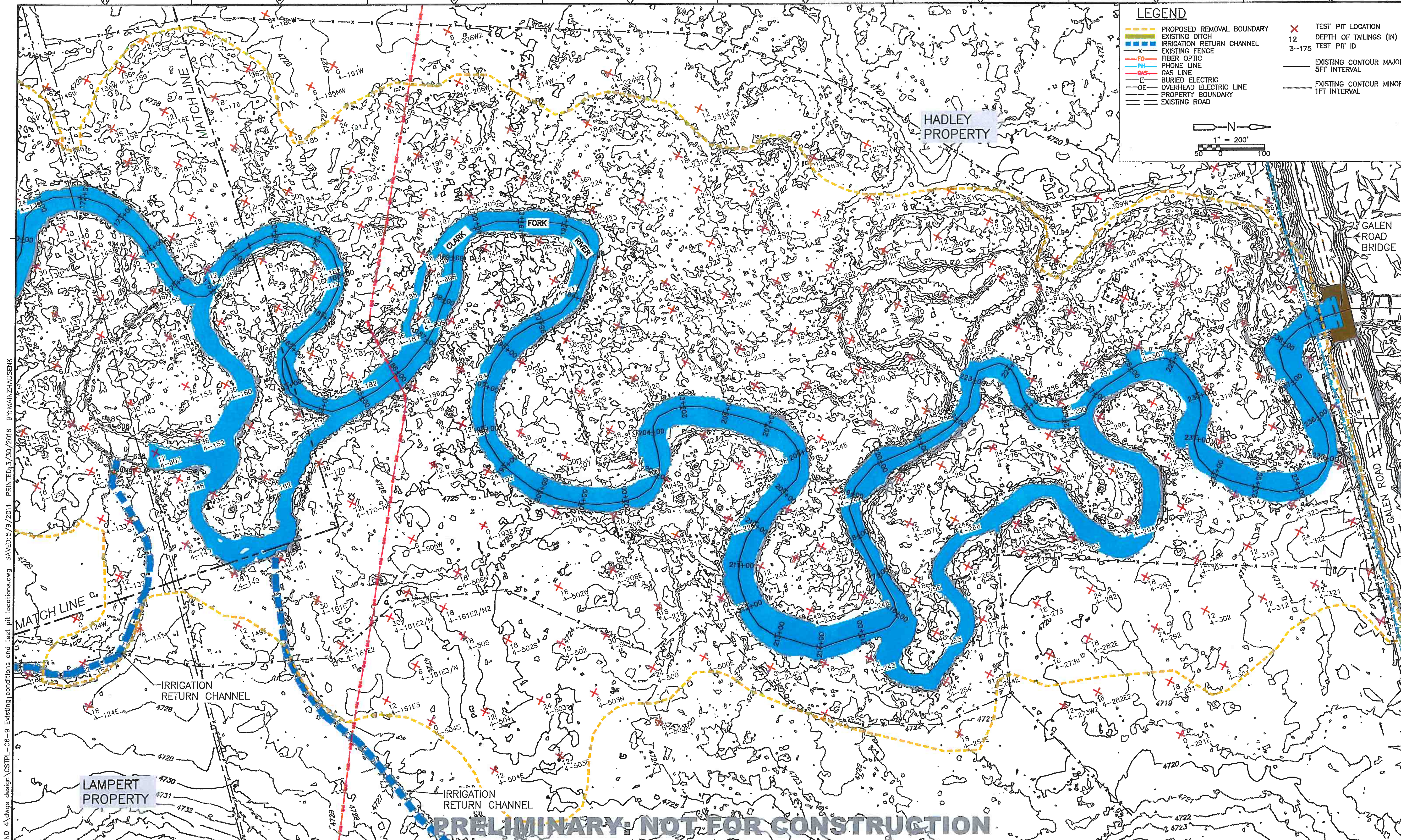
FILE NAME: CSTPL0102
SHEET NO.
C10



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PHASES 3&4 REMEDIAL ACTION

EXISTING CONDITIONS
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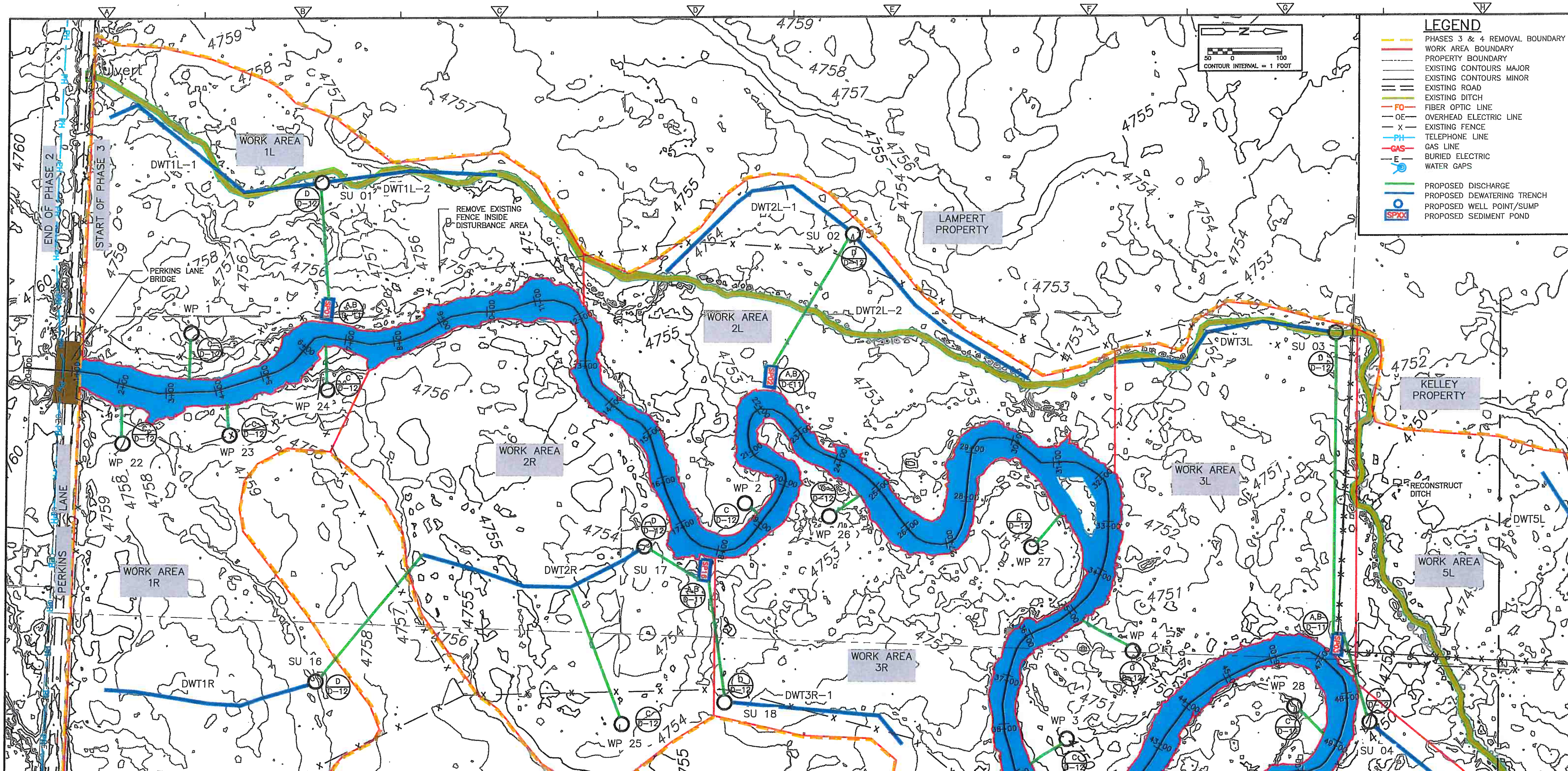

Dewatering System Schedule

Name	Length	DEWATERING TRENCH Upgradient Invert Elevation	DEWATERING TRENCH Downgradient Invert Elevation	DEWATERING TRENCH Trench Slope	SUMP Name	SUMP Elevation	Well Points Name	Well Points Elevation
DWT1L-1	489	4748.1	4746.5	0.32%	SU01	4744.5	WP-1	4742
DWT1L-2	345	4748.1	4746.5	0.46%	SU01	4744.5	WP-2	4740
DWT2L-1	466	4744.5	4742.0	0.54%	SU02	4740	WP-3	4738
DWT2L-2	458	4743.5	4742.0	0.33%	SU02	4740	WP-4	4736
DWT3L	468	4741.5	4740.2	0.28%	SU03	4738.2	WP-22	4744
DWT4L-1	488	4736.8	4735.8	0.20%	SU04	4734.8	WP-23	4743
DWT5L	575	4739.5	4737.5	0.35%	SU06	4736.5	WP-24	4742
DWT1R	448	4749.2	4748.2	0.22%	SU16	4746.2	WP-25	4739
DWT2R	485	4746.9	4745.9	0.21%	SU17	4743.9	WP-26	4738
DWT3R-1	376	4745.0	4743.5	0.40%	SU18	4741.5	WP-27	4737
							WP-28	4735
							WP-29	4736

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KJA
DRAWN BY: KJA
SHEET CHK'D BY: KM
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

DEWATERING PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C12

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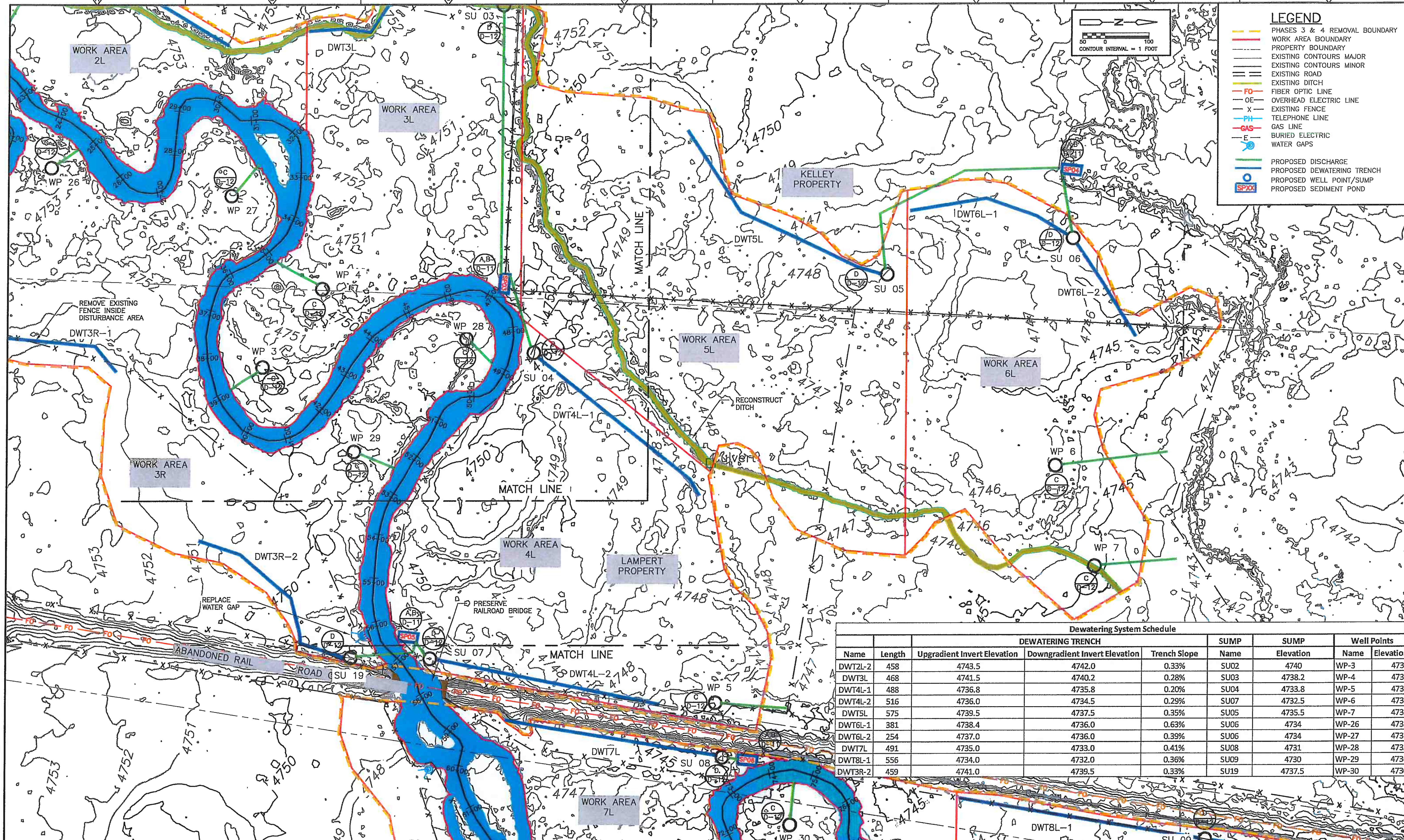

Dewatering System Schedule

		DEWATERING TRENCH			SUMP	SUMP	Well Points	
Name	Length	Upgradient Invert Elevation	Downgradient Invert Elevation	Trench Slope	Name	Elevation	Name	Elevation
DWT2L-2	458	4743.5	4742.0	0.33%	SU02	4740	WP-3	4738
DWT3L	468	4741.5	4740.2	0.28%	SU03	4738.2	WP-4	4736
DWT4L-1	488	4736.8	4735.8	0.20%	SU04	4733.8	WP-5	4733
DWT4L-2	516	4736.0	4734.5	0.29%	SU07	4732.5	WP-6	4732
DWT5L	575	4739.5	4737.5	0.35%	SU05	4735.5	WP-7	4732
DWT6L-1	381	4738.4	4736.0	0.63%	SU06	4734	WP-26	4738
DWT6L-2	254	4737.0	4736.0	0.39%	SU06	4734	WP-27	4737
DWT7L	491	4735.0	4733.0	0.41%	SU08	4731	WP-28	4735
DWT8L-1	556	4734.0	4732.0	0.36%	SU09	4730	WP-29	4736
DWT3R-2	459	4741.0	4739.5	0.33%	SU19	4737.5	WP-30	4730

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KJA
DRAWN BY: KJA
SHEET CHK'D BY: KM
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

DEWATERING PLANS

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C13

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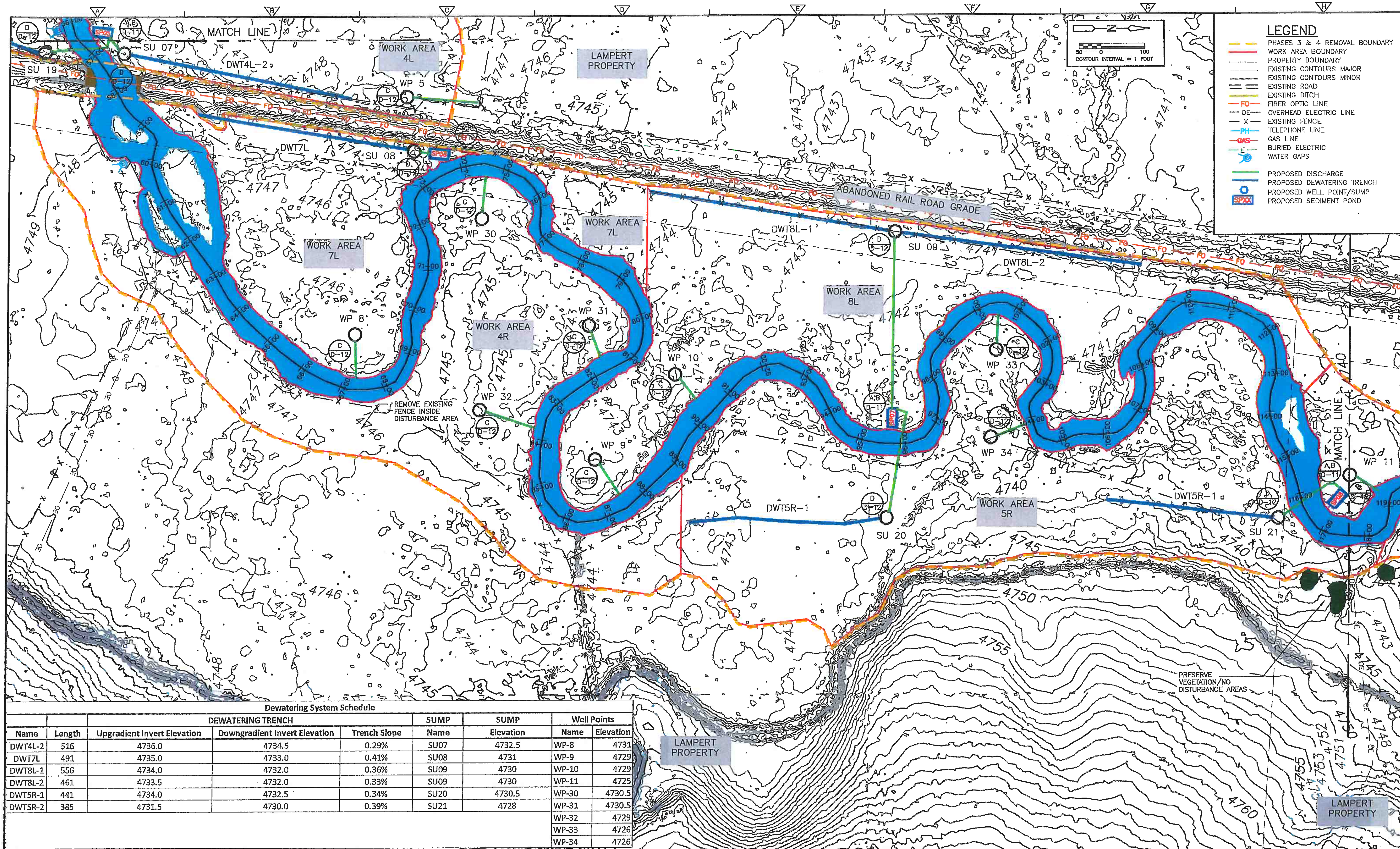

Dewatering System Schedule

		DEWATERING TRENCH			SUMP	SUMP	Well Points	
Name	Length	Upgradient Invert Elevation	Downgradient Invert Elevation	Trench Slope	Name	Elevation	Name	Elevation
DWT4L-2	516	4736.0	4734.5	0.29%	SU07	4732.5	WP-8	4731
DWT7L	491	4735.0	4733.0	0.41%	SU08	4731	WP-9	4729
DWT8L-1	556	4734.0	4732.0	0.36%	SU09	4730	WP-10	4729
DWT8L-2	461	4733.5	4732.0	0.33%	SU09	4730	WP-11	4725
DWT5R-1	441	4734.0	4732.5	0.34%	SU20	4730.5	WP-30	4730.5
DWT5R-2	385	4731.5	4730.0	0.39%	SU21	4728	WP-31	4730.5
							WP-32	4729
							WP-33	4726
							WP-34	4726

REV. NO.	DATE	DRWN	CHKD	REMARKS

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DATE: APRIL 2016

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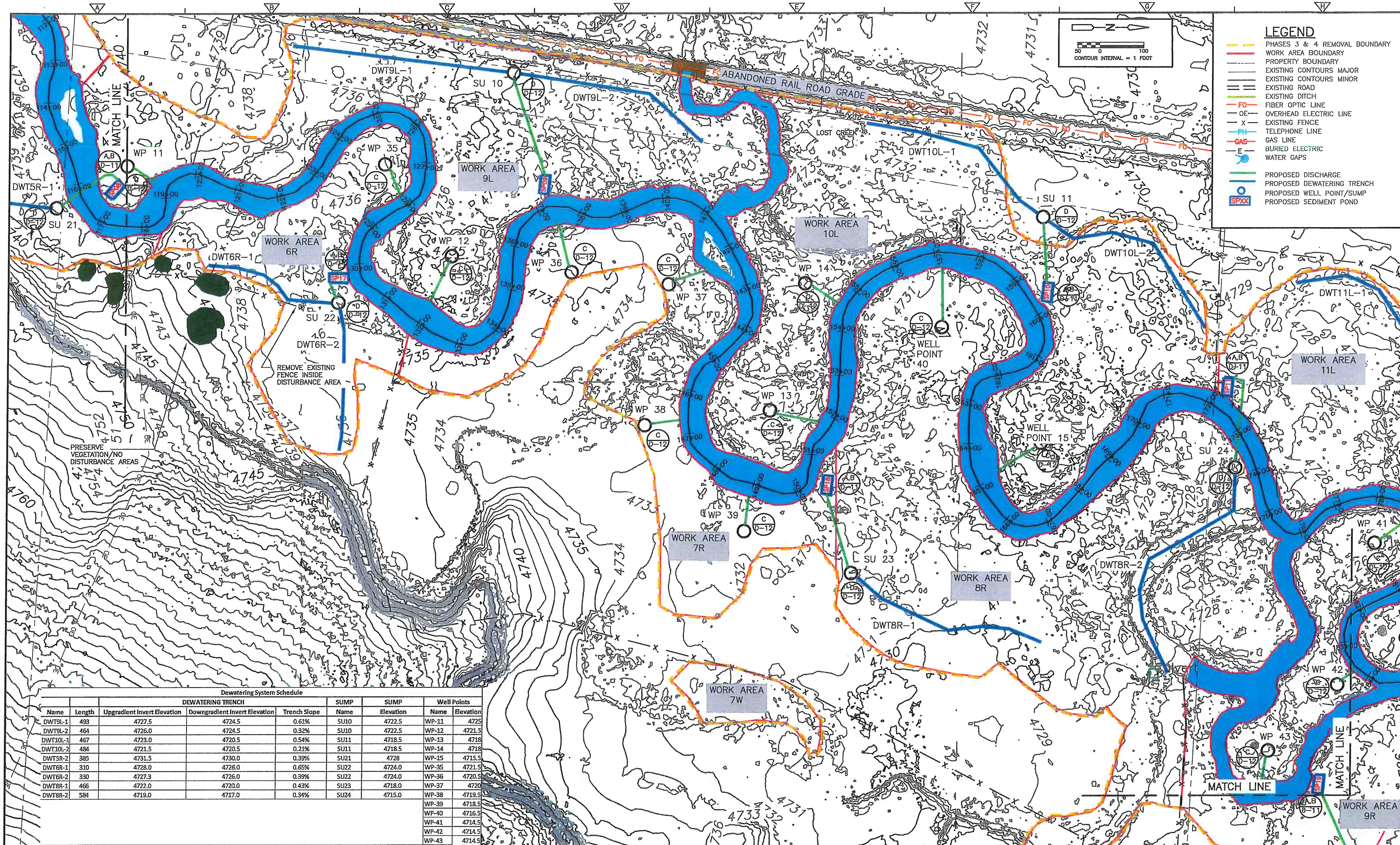
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

DEWATERING PLANS

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C14



Dewatering System Schedule

		DEWATERING TRENCH			SUMP	SUMP	Well Points	
Name	Length	Upgradient Invert Elevation	Downgradient Invert Elevation	Trench Slope	Name	Elevation	Name	Elevation
DWT9L-1	493	4727.5	4724.5	0.61%	SU10	4722.5	WP-11	4725
DWT9L-2	464	4726.0	4724.5	0.32%	SU10	4722.5	WP-12	4721.5
DWT10L-1	467	4723.0	4720.5	0.54%	SU11	4718.5	WP-13	4718
DWT10L-2	484	4721.5	4720.5	0.21%	SU11	4718.5	WP-14	4718
DWT5R-2	385	4731.5	4730.0	0.39%	SU21	4728	WP-15	4715.5
DWT6R-1	310	4728.0	4726.0	0.65%	SU22	4724.0	WP-35	4721.5
DWT6R-2	330	4727.3	4726.0	0.39%	SU22	4724.0	WP-36	4720.5
DWT8R-1	466	4722.0	4720.0	0.43%	SU23	4718.0	WP-37	4720
DWT8R-2	584	4719.0	4717.0	0.34%	SU24	4715.0	WP-38	4719.5
							WP-39	4718.5
							WP-40	4716.5
							WP-41	4714.5
							WP-42	4714.5
							WP-43	4714.5

REV. NO.	DATE	DRWN	CHKD	REMARKS

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SHEET CHK'D BY: KM
CROSS CHK'D BY: WHB
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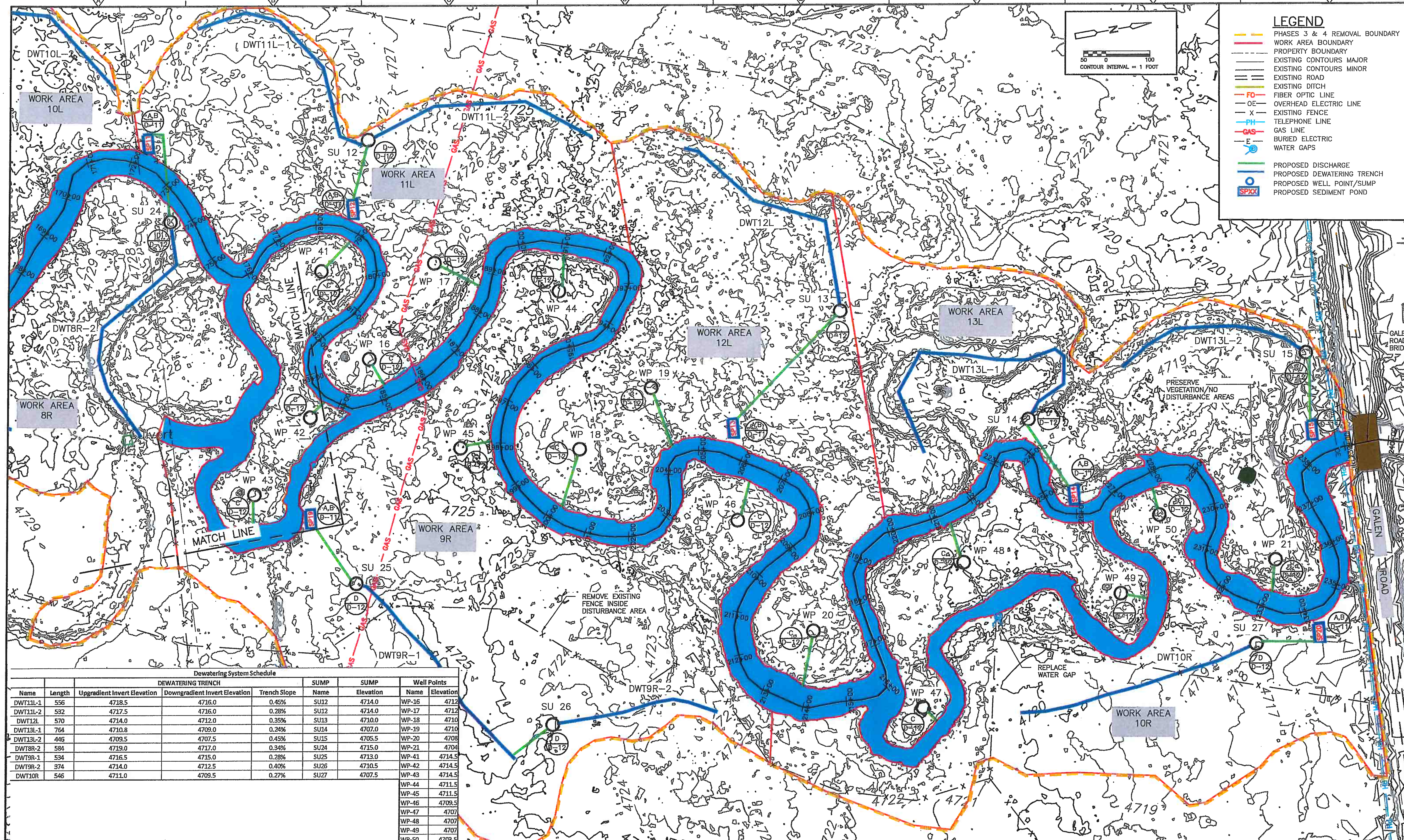
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

DEWATERING PLANS

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C15



Dewatering System Schedule

		DEWATERING TRENCH			SUMP	SUMP	Well Points	
Name	Length	Upgradient Invert Elevation	Downgradient Invert Elevation	Trench Slope	Name	Elevation	Name	Elevation
DWT11L-1	556	4718.5	4716.0	0.45%	SU12	4714.0	WP-16	4712
DWT11L-2	532	4717.5	4716.0	0.28%	SU12	4714.0	WP-17	4712
DWT12L	570	4714.0	4712.0	0.35%	SU13	4710.0	WP-18	4710
DWT13L-1	764	4710.8	4709.0	0.24%	SU14	4707.0	WP-19	4710
DWT13L-2	446	4709.5	4707.5	0.45%	SU15	4705.5	WP-20	4708
DWT8R-2	584	4719.0	4717.0	0.34%	SU24	4715.0	WP-21	4704
DWT9R-1	534	4716.5	4715.0	0.28%	SU25	4713.0	WP-41	4714.5
DWT9R-2	374	4714.0	4712.5	0.40%	SU26	4710.5	WP-42	4714.5
DWT10R	546	4711.0	4709.5	0.27%	SU27	4707.5	WP-43	4714.5
							WP-44	4711.5
							WP-45	4711.5
							WP-46	4709.5
							WP-47	4707
							WP-48	4707
							WP-49	4707
							WP-50	4703.5

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KJA
DRAWN BY: KJA
SHEET CHK'D BY: KM
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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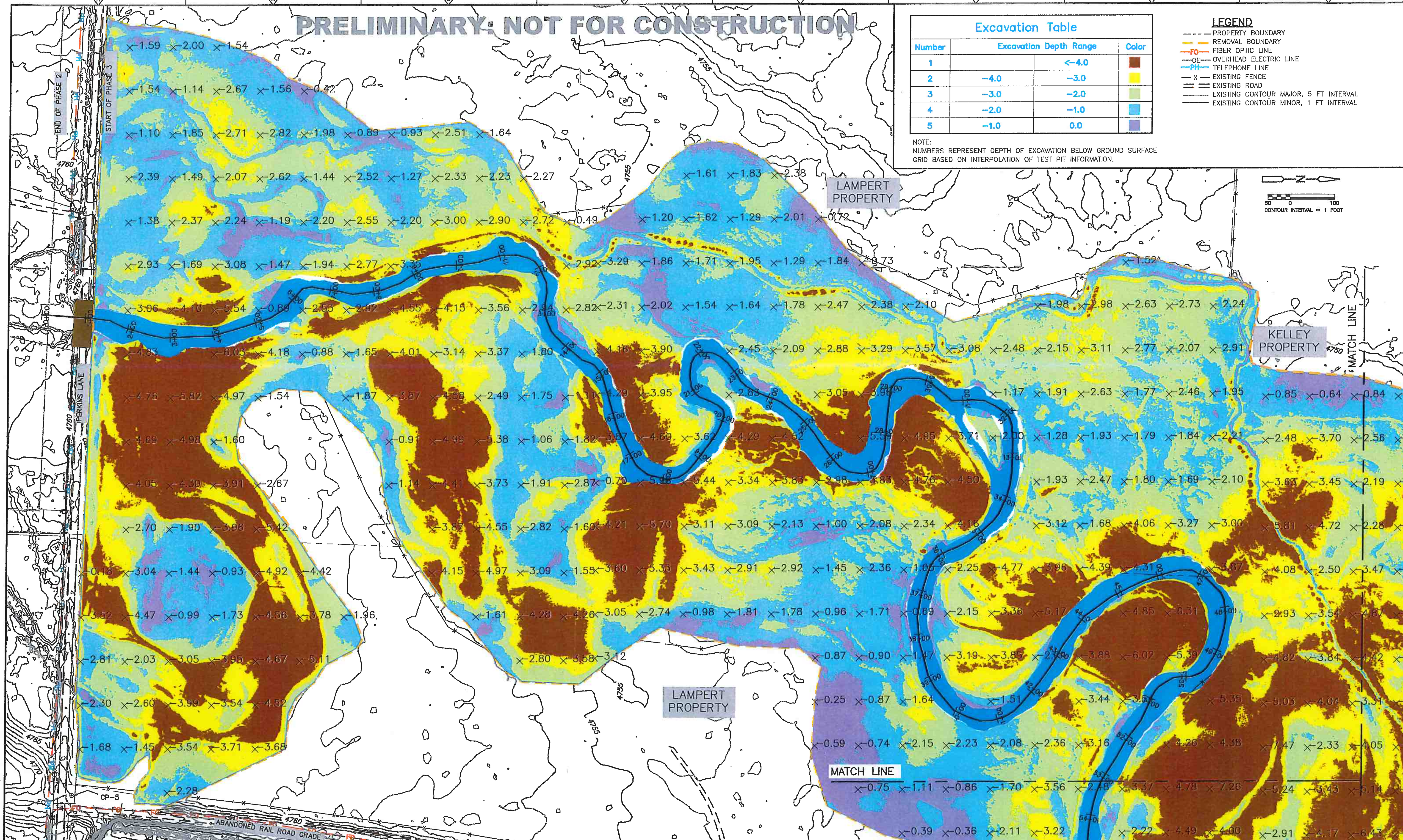
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

DEWATERING PLANS

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C16



Excavation Table

Number	Excavation Depth Range		Color
1		<-4.0	
2	-4.0	-3.0	
3	-3.0	-2.0	
4	-2.0	-1.0	
5	-1.0	0.0	

NOTE:
NUMBERS REPRESENT DEPTH OF EXCAVATION BELOW GROUND SURFACE
GRID BASED ON INTERPOLATION OF TEST PIT INFORMATION.

LEGEND

- PROPERTY BOUNDARY
- REMOVAL BOUNDARY
- FO — FIBER OPTIC LINE
- OE — OVERHEAD ELECTRIC LINE
- PH — TELEPHONE LINE
- X — EXISTING FENCE
- EXISTING ROAD
- EXISTING CONTOUR MAJOR, 5 FT INTERVAL
- EXISTING CONTOUR MINOR, 1 FT INTERVAL

N

50 0 100

CONTOUR INTERVAL = 1 FOOT

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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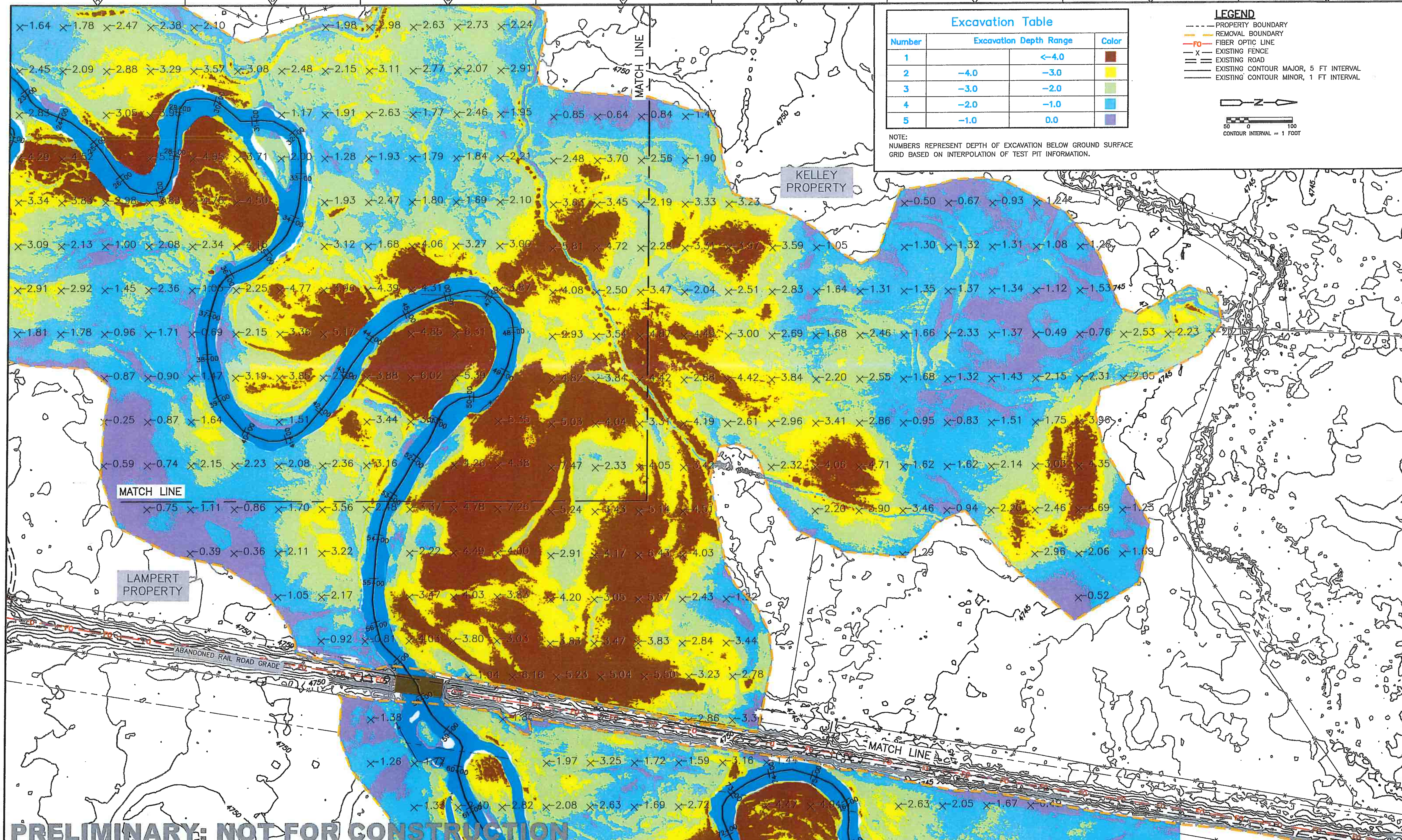
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

EXCAVATION PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C17



Excavation Table

Number	Excavation Depth Range		Color
1		<-4.0	brown
2	-4.0	-3.0	yellow
3	-3.0	-2.0	light green
4	-2.0	-1.0	blue
5	-1.0	0.0	purple

NOTE:
NUMBERS REPRESENT DEPTH OF EXCAVATION BELOW GROUND SURFACE
GRID BASED ON INTERPOLATION OF TEST PIT INFORMATION.

LEGEND

- PROPERTY BOUNDARY
- REMOVAL BOUNDARY
- FO FIBER OPTIC LINE
- X EXISTING FENCE
- EXISTING ROAD
- EXISTING CONTOUR MAJOR, 5 FT INTERVAL
- EXISTING CONTOUR MINOR, 1 FT INTERVAL

50 0 100
CONTOUR INTERVAL = 1 FOOT

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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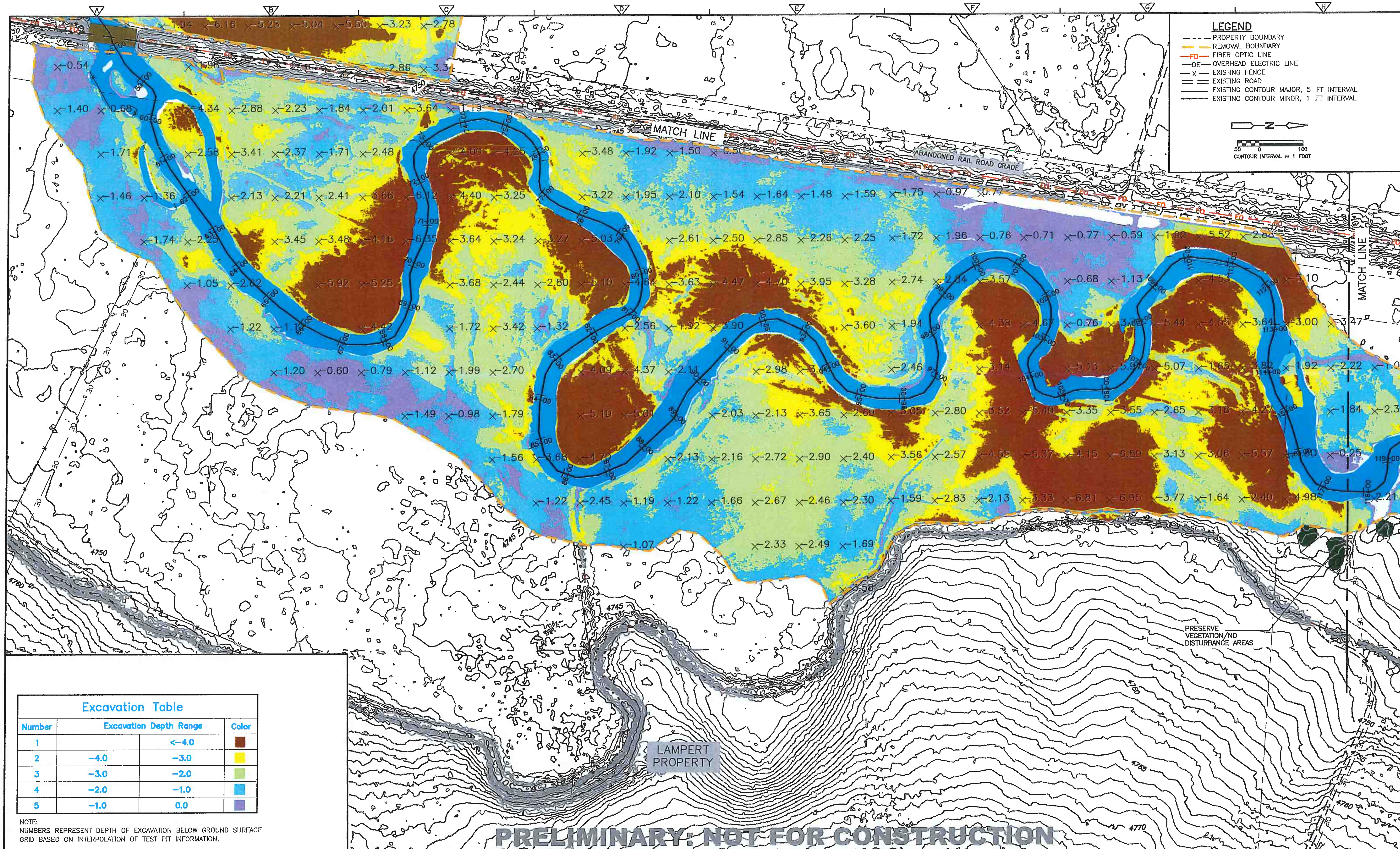
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

EXCAVATION PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C18



Excavation Table

Number	Excavation Depth Range		Color
1		<-4.0	
2	-4.0	-3.0	
3	-3.0	-2.0	
4	-2.0	-1.0	
5	-1.0	0.0	

NOTE:
NUMBERS REPRESENT DEPTH OF EXCAVATION BELOW GROUND SURFACE
GRID BASED ON INTERPOLATION OF TEST PIT INFORMATION.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

EXCAVATION PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C19

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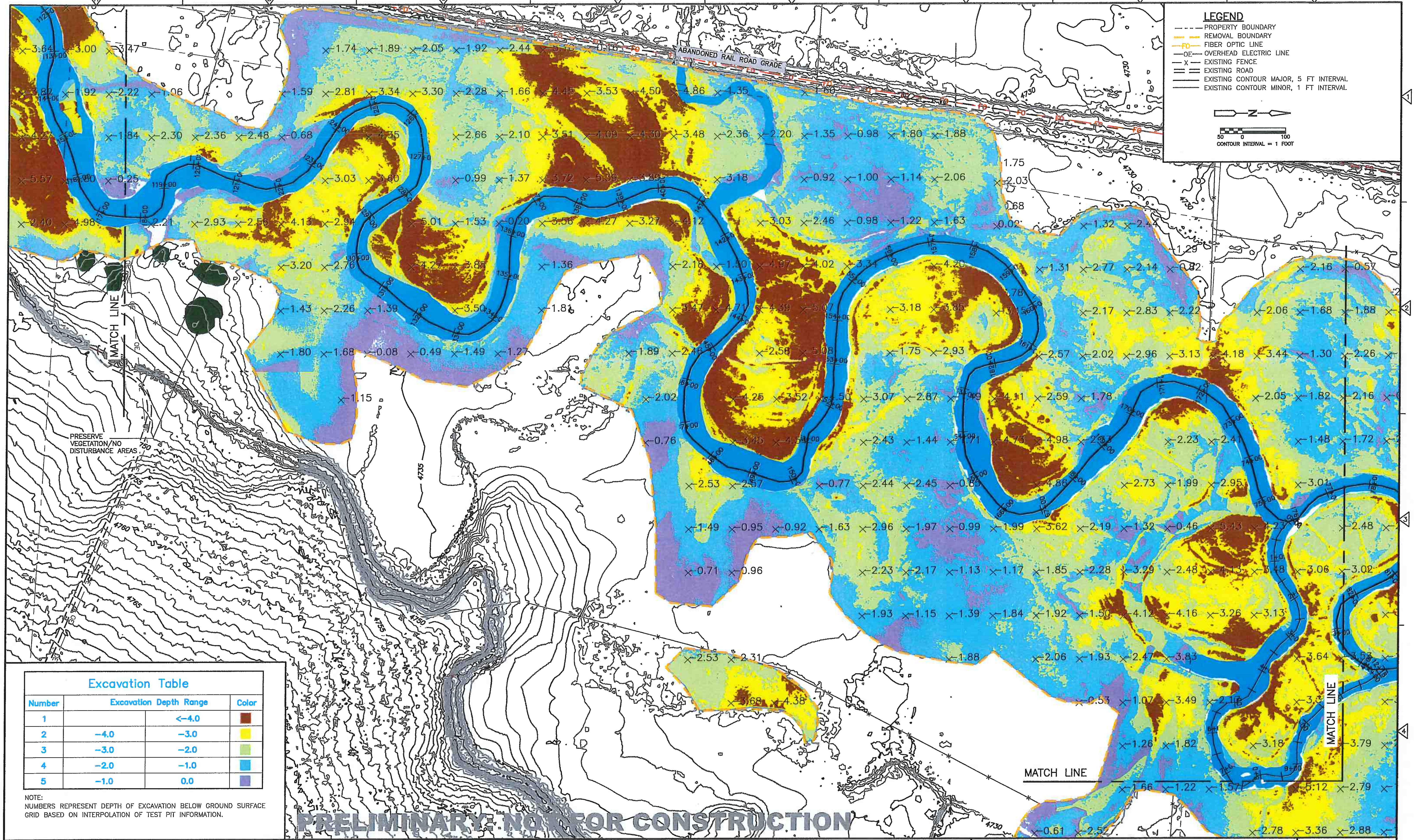

Excavation Table

Number	Excavation Depth Range		Color
1		<-4.0	brown
2	-4.0	-3.0	yellow
3	-3.0	-2.0	light green
4	-2.0	-1.0	blue
5	-1.0	0.0	purple

NOTE:
NUMBERS REPRESENT DEPTH OF EXCAVATION BELOW GROUND SURFACE GRID BASED ON INTERPOLATION OF TEST PIT INFORMATION.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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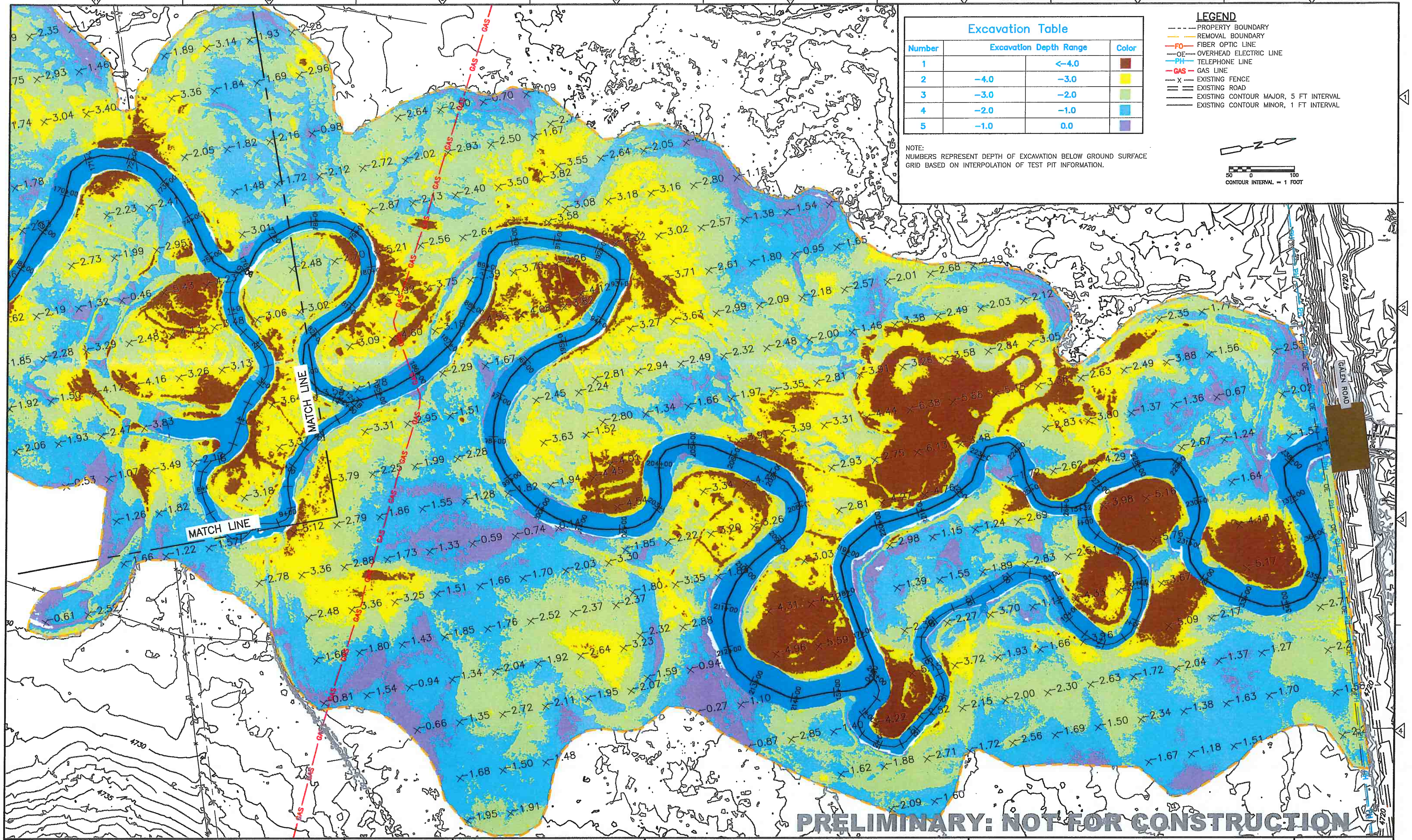
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

EXCAVATION PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C20



Excavation Table

Number	Excavation Depth Range		Color
1		<-4.0	
2	-4.0	-3.0	
3	-3.0	-2.0	
4	-2.0	-1.0	
5	-1.0	0.0	

NOTE:
NUMBERS REPRESENT DEPTH OF EXCAVATION BELOW GROUND SURFACE
GRID BASED ON INTERPOLATION OF TEST PIT INFORMATION.

LEGEND

- PROPERTY BOUNDARY
- REMOVAL BOUNDARY
- FO — FIBER OPTIC LINE
- OE — OVERHEAD ELECTRIC LINE
- PH — TELEPHONE LINE
- GAS — GAS LINE
- X — EXISTING FENCE
- EXISTING ROAD
- EXISTING CONTOUR MAJOR, 5 FT INTERVAL
- EXISTING CONTOUR MINOR, 1 FT INTERVAL

N

50 0 100
CONTOUR INTERVAL = 1 FOOT

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

EXCAVATION PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C21

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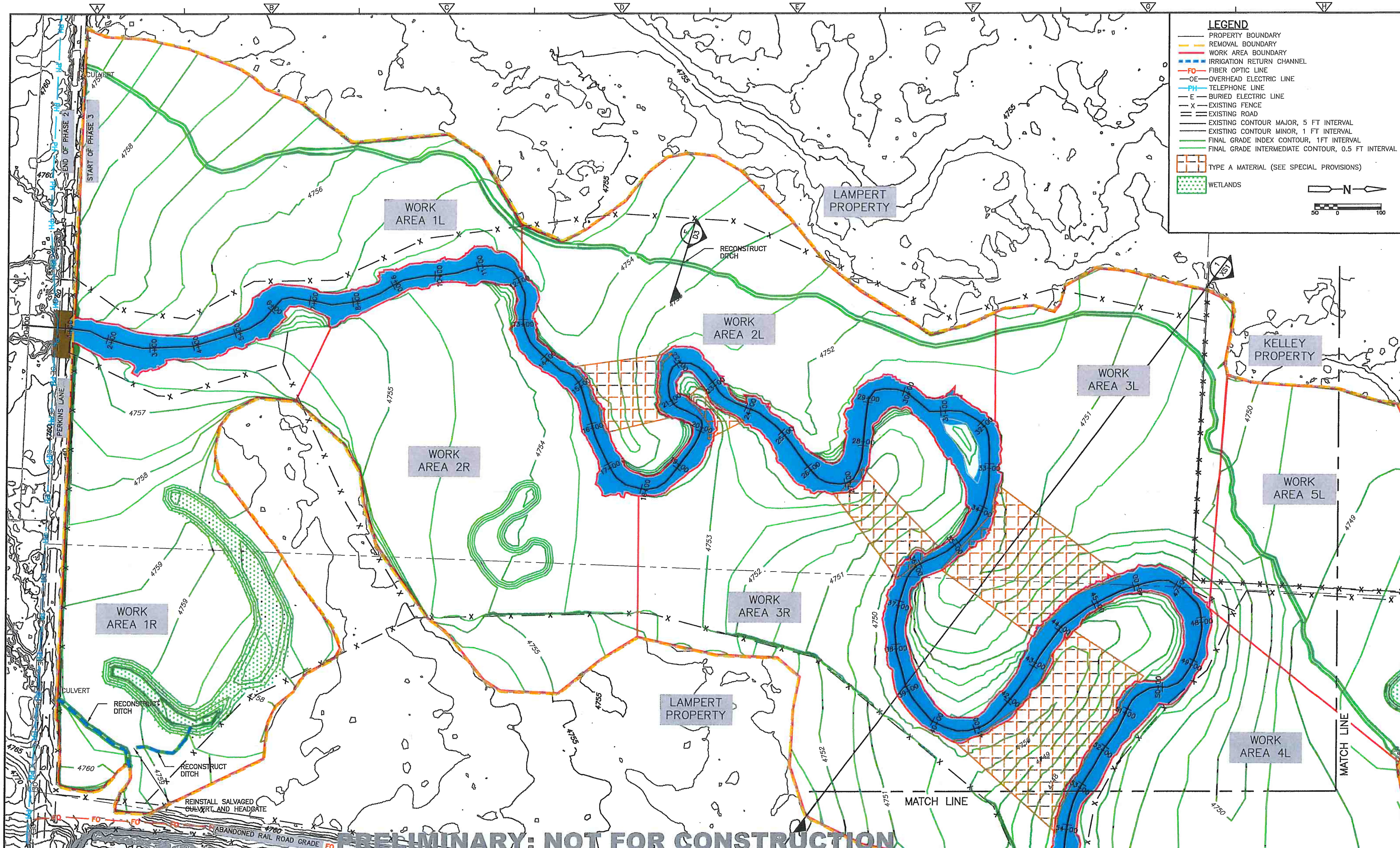

DESIGNED BY:	KM
DRAWN BY:	KM
SHEET CHK'D BY:	TJ
CROSS CHK'D BY:	WHB
APPROVED BY:	WHB
DATE:	APRIL 2016

REV. NO.	DATE	DRWN	CHKD	REMARKS

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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

FINAL GRADING PLAN

PROJECT NO.	103068
FILE NAME:	CSTPL-C2
SHEET NO.	C32

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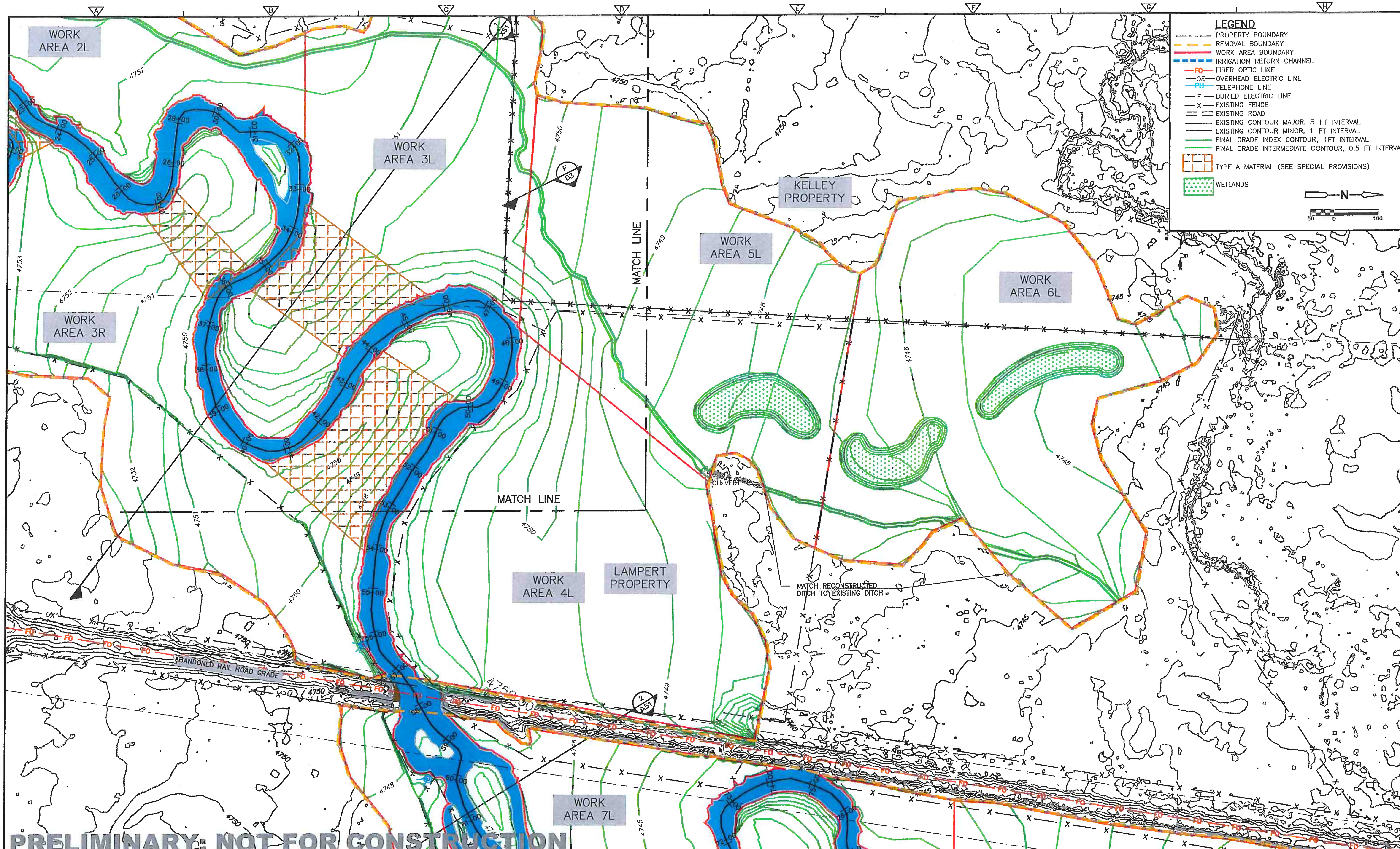

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
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CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

FINAL GRADING PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C33

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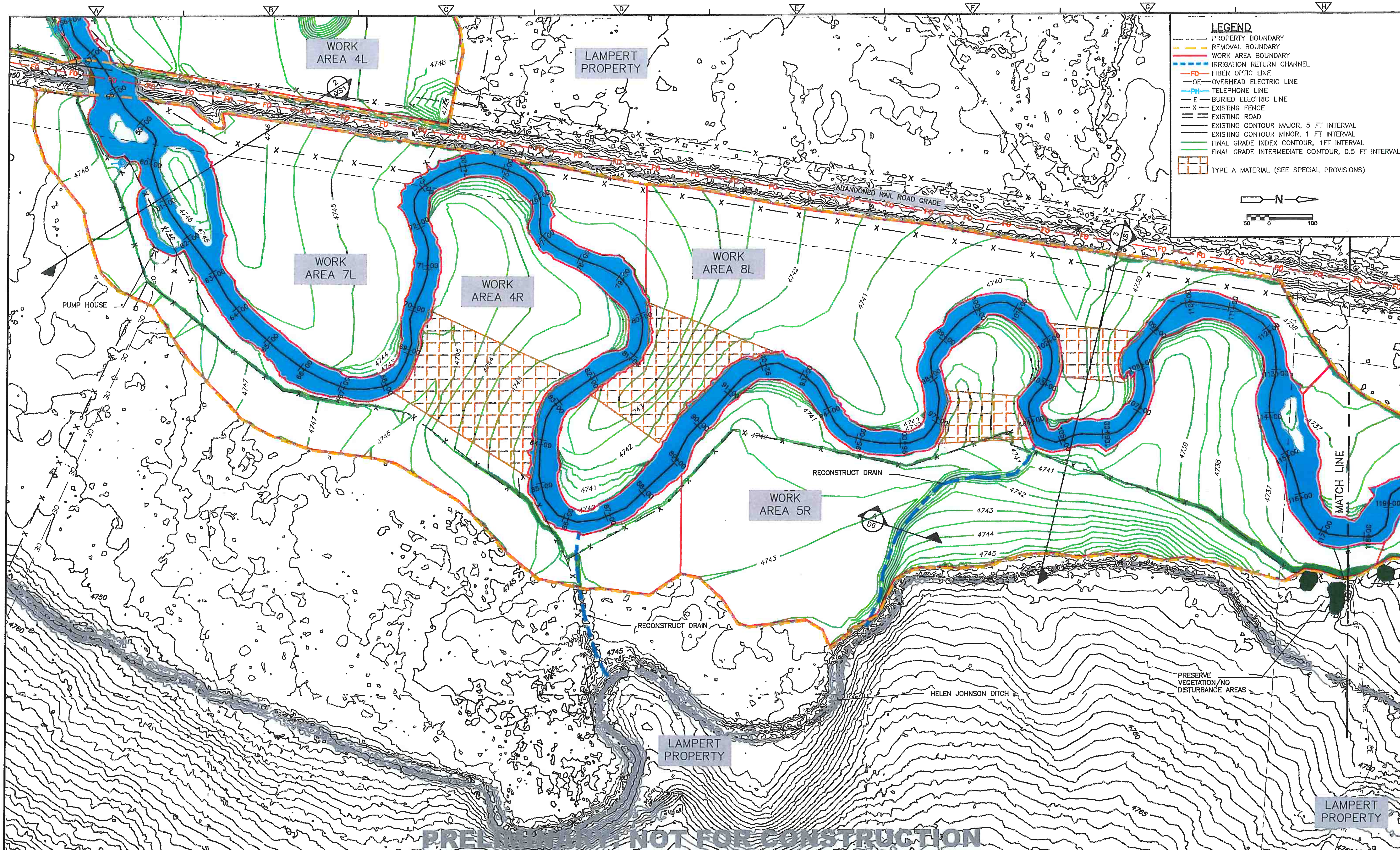

REV. NO.	DATE	DRWN	CHKD	REMARKS

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DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

FINAL GRADING PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C34

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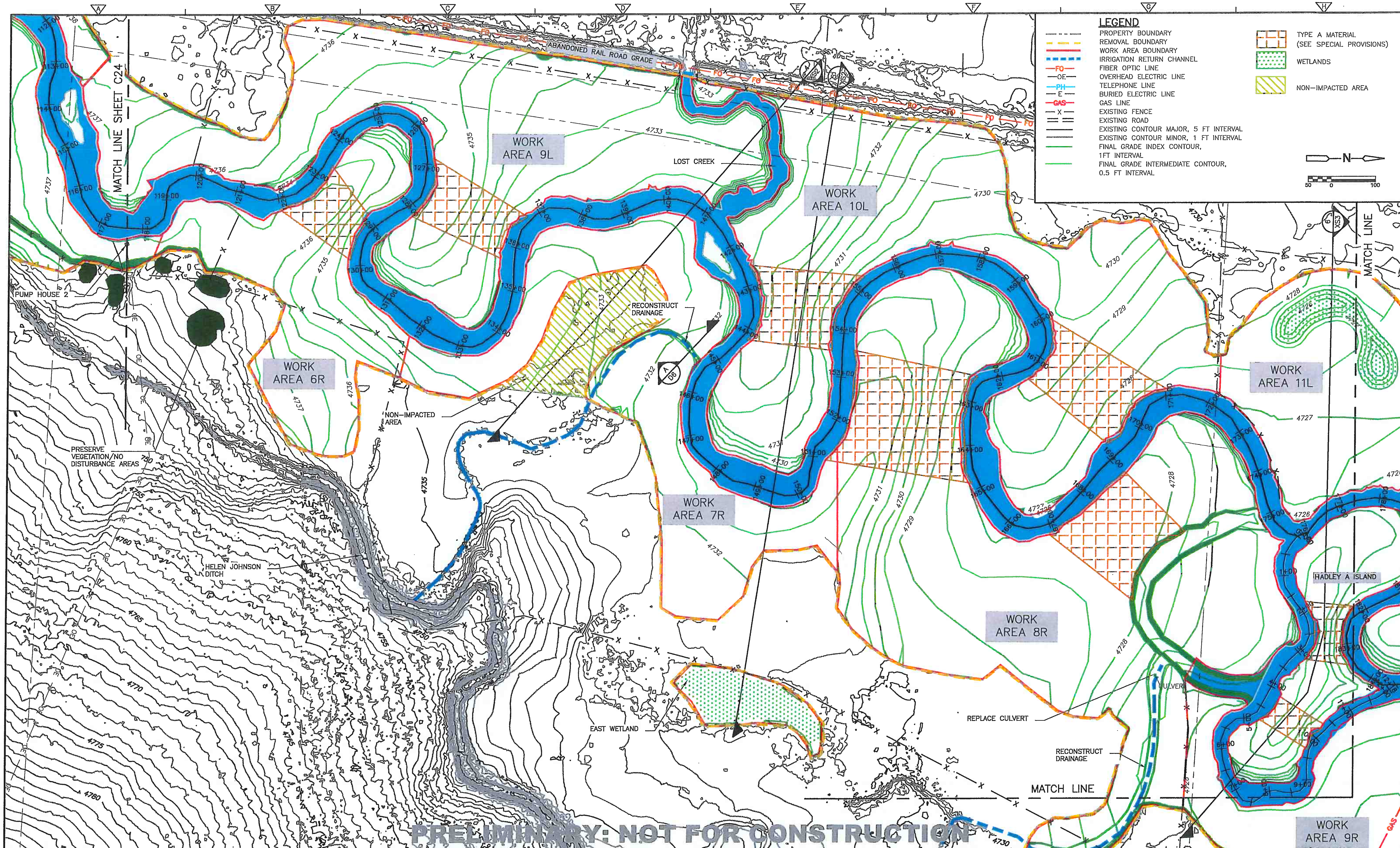

REV. NO.	DATE	DRWN	CHKD	REMARKS

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CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

FINAL GRADING PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C35

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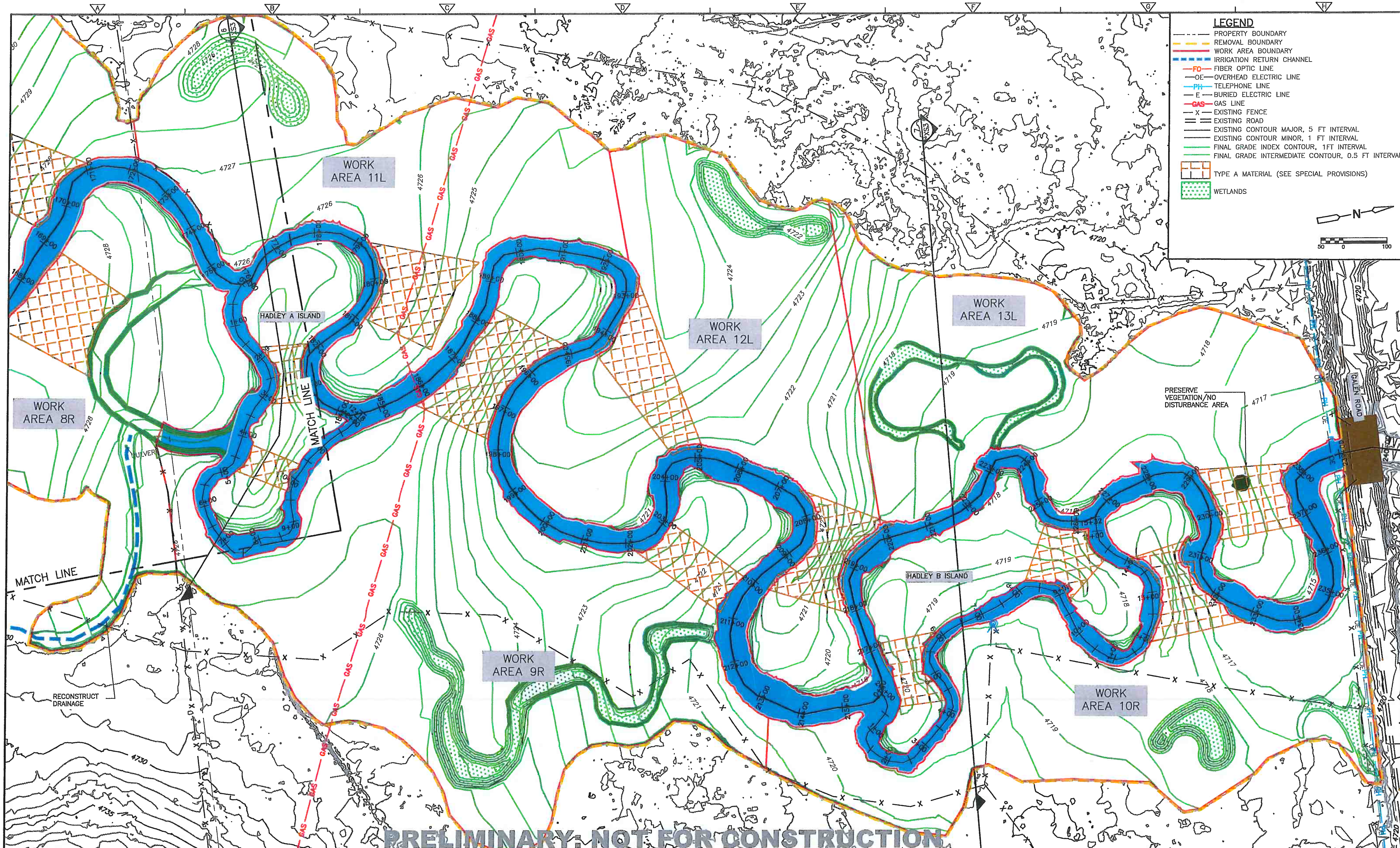

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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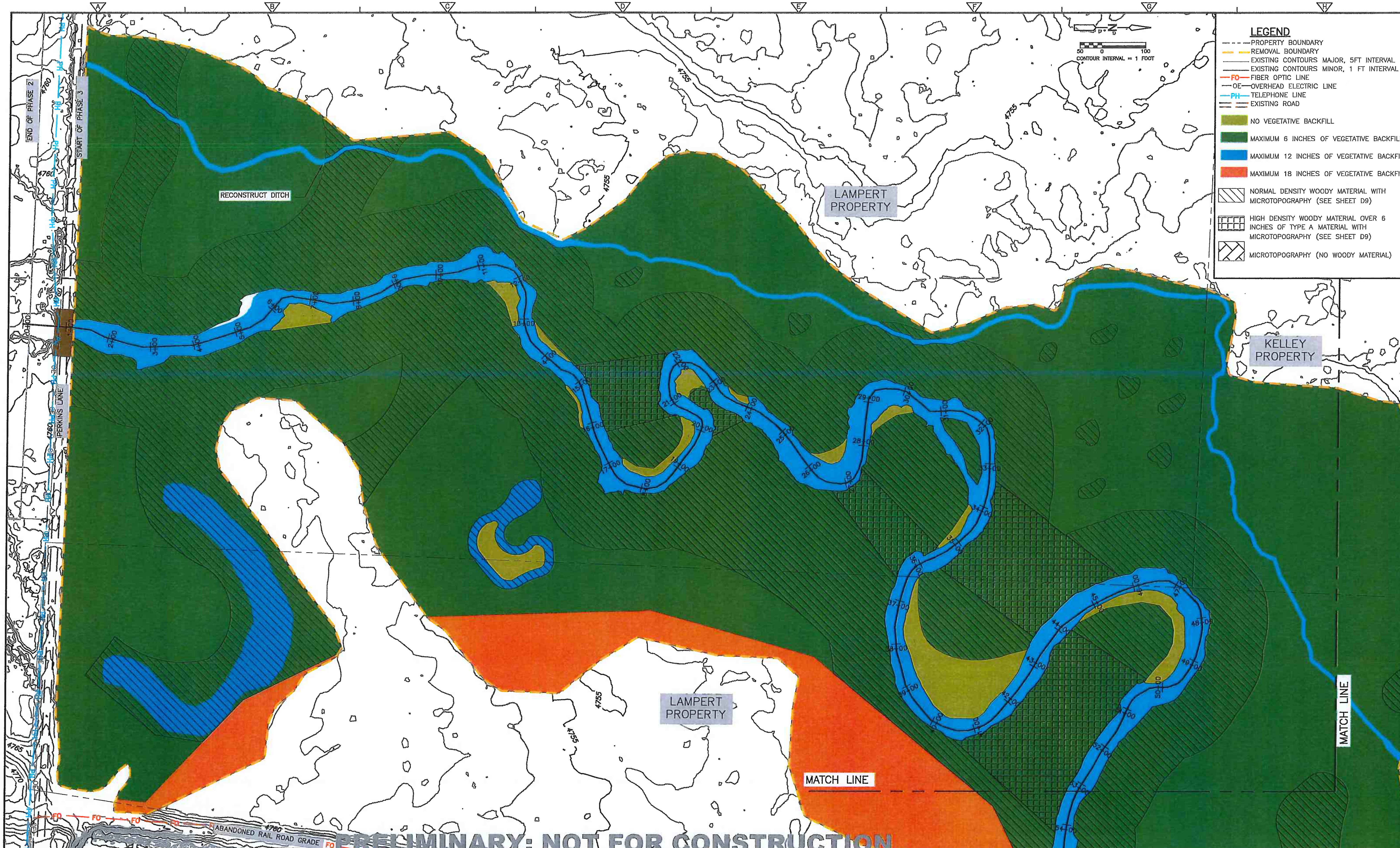
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

FINAL GRADING PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C36



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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
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DATE: APRIL 2016

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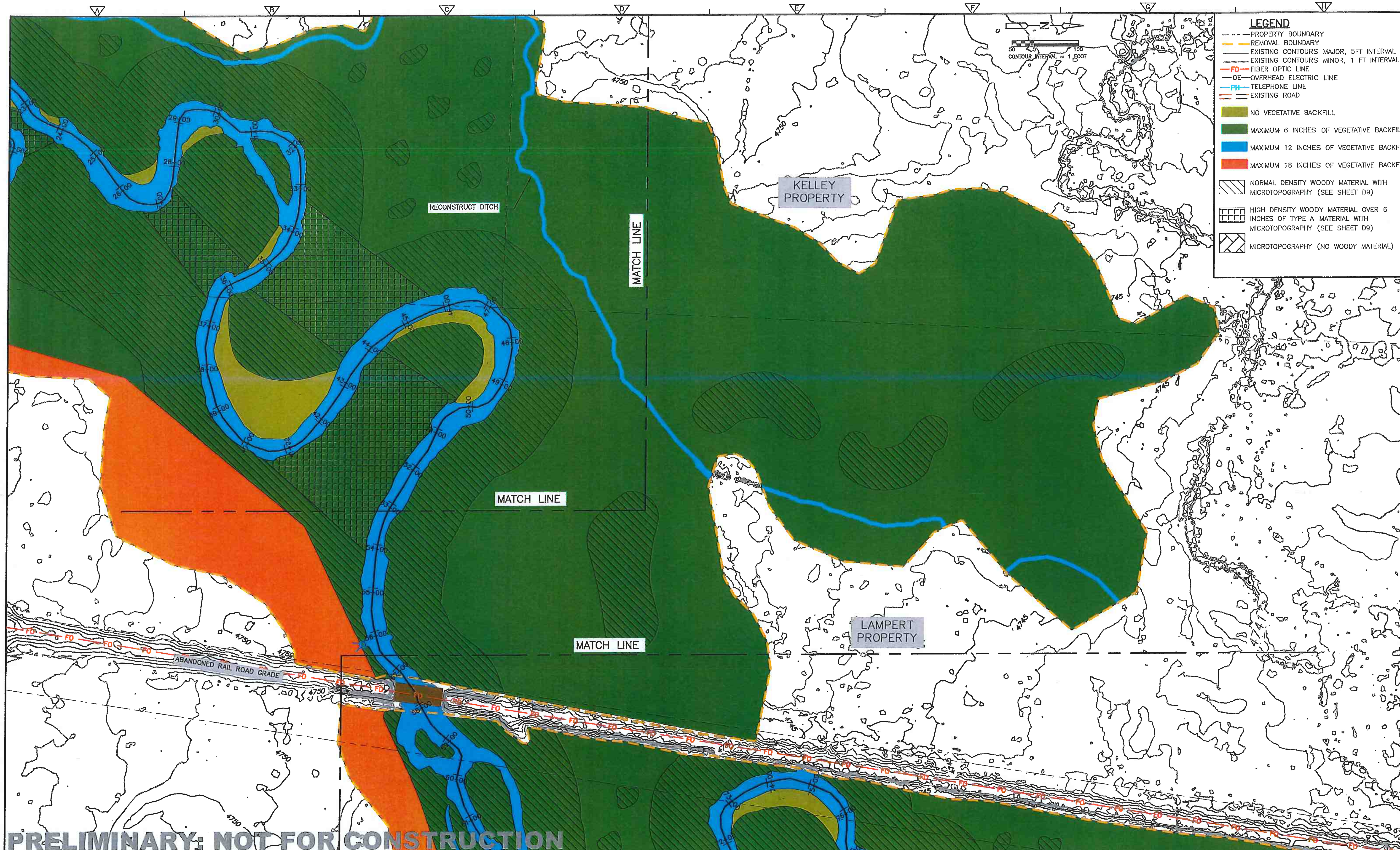
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

VEGETATIVE BACKFILL DEPTHS, MICROTOPOGRAPHY, WOOD AND BRUSH PLACEMENT

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C37



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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	KM
DRAWN BY:	KM
SHEET CHK'D BY:	TJ
CROSS CHK'D BY:	WHB
APPROVED BY:	WHB
DATE:	APRIL 2016

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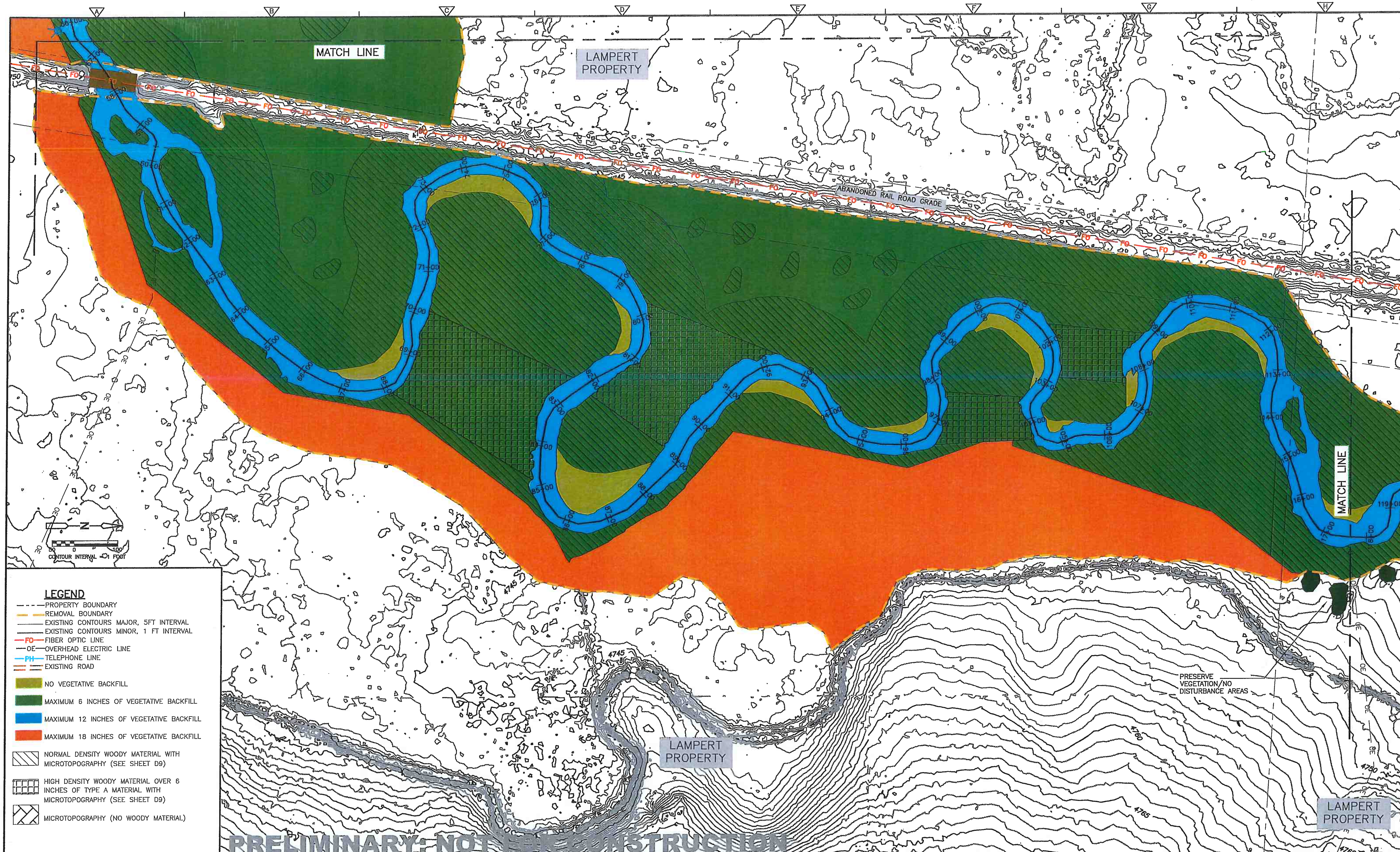
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

VEGETATIVE BACKFILL DEPTHS, MICROTOPOGRAPHY, WOOD AND BRUSH PLACEMENT

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C38

K:\CFR- PHASES 3 AND 4\dwgs design\CSTPL-C37 Vegetative Backfill Depths.dwg SAVED:2/12/16 PRINTED:3/30/16 BY:MAINZHAUSENK



LEGEND

- PROPERTY BOUNDARY
- REMOVAL BOUNDARY
- EXISTING CONTOURS MAJOR, 5FT INTERVAL
- EXISTING CONTOURS MINOR, 1 FT INTERVAL
- FO — FIBER OPTIC LINE
- OE — OVERHEAD ELECTRIC LINE
- PH — TELEPHONE LINE
- EXISTING ROAD
- NO VEGETATIVE BACKFILL
- MAXIMUM 6 INCHES OF VEGETATIVE BACKFILL
- MAXIMUM 12 INCHES OF VEGETATIVE BACKFILL
- MAXIMUM 18 INCHES OF VEGETATIVE BACKFILL
- NORMAL DENSITY WOODY MATERIAL WITH MICROTOPOGRAPHY (SEE SHEET D9)
- HIGH DENSITY WOODY MATERIAL OVER 6 INCHES OF TYPE A MATERIAL WITH MICROTOPOGRAPHY (SEE SHEET D9)
- MICROTOPOGRAPHY (NO WOODY MATERIAL)

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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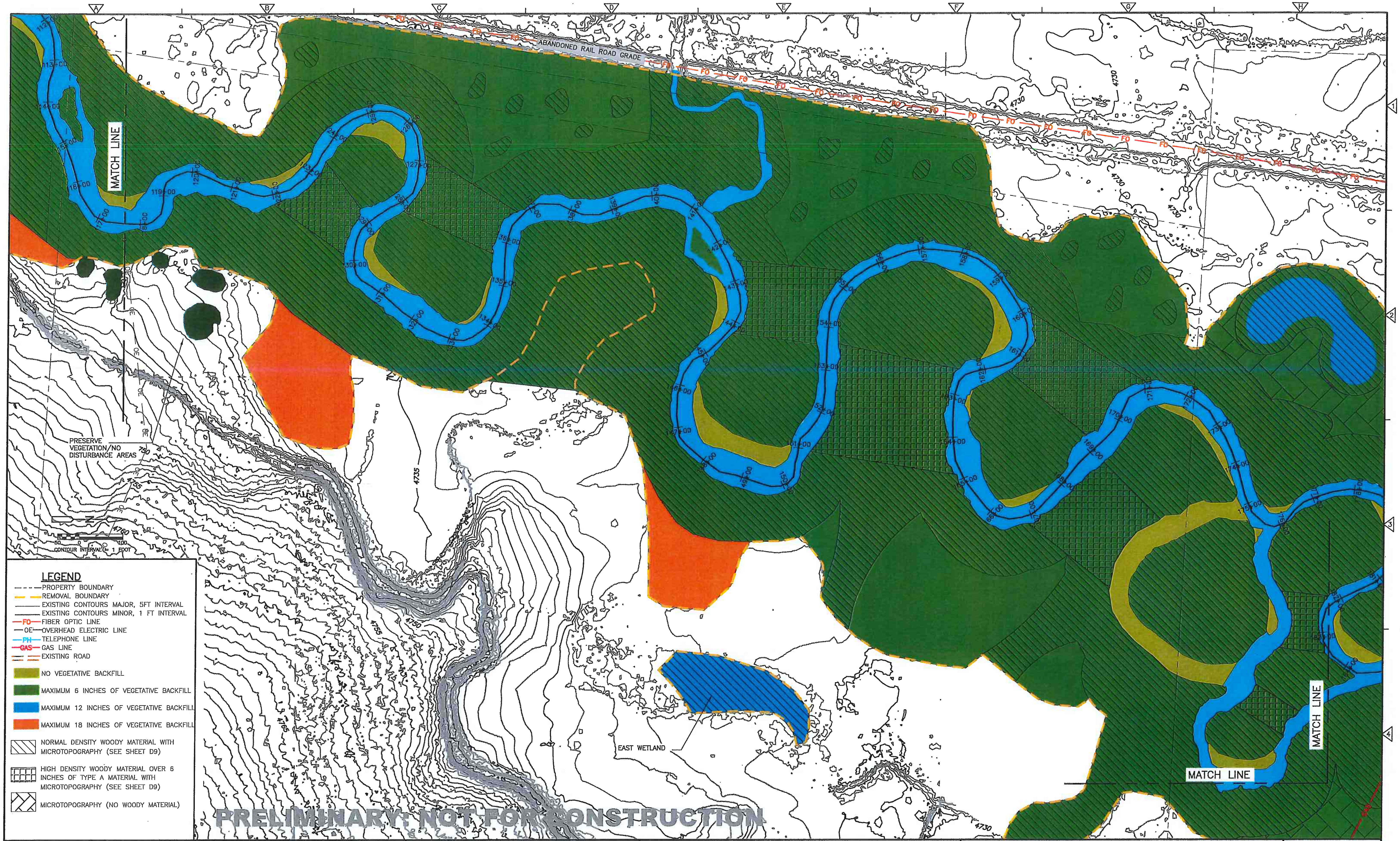
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

VEGETATIVE BACKFILL DEPTHS, MICROTOPOGRAPHY, WOOD AND BRUSH PLACEMENT

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C39



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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
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CROSS CHK'D BY: WHB
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DATE: APRIL 2016

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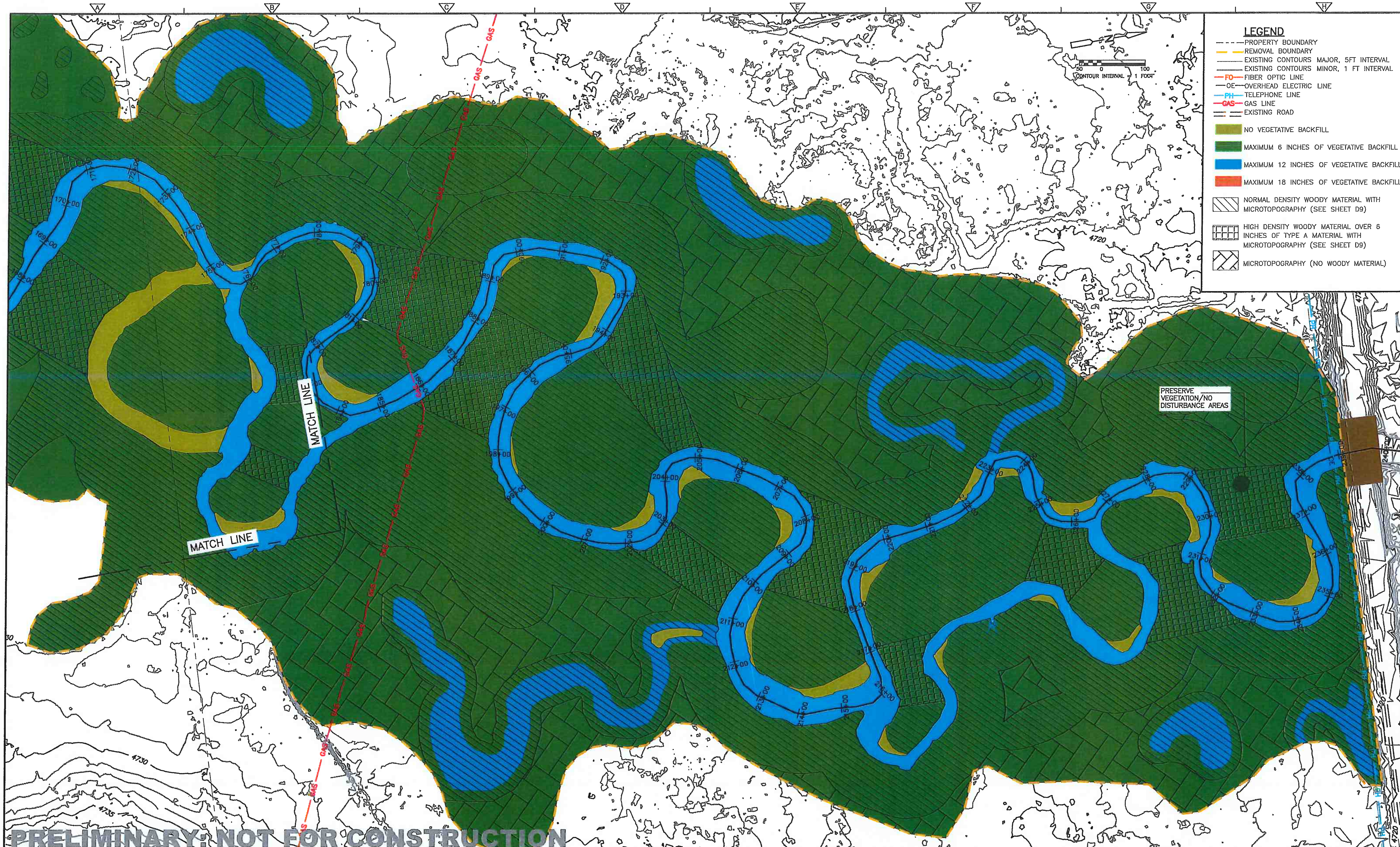
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

VEGETATIVE BACKFILL DEPTHS, MICROTOPOGRAPHY, WOOD AND BRUSH PLACEMENT

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C40



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REV. NO.	DATE	DRWN	CHKD	REMARKS

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CROSS CHK'D BY: WHB
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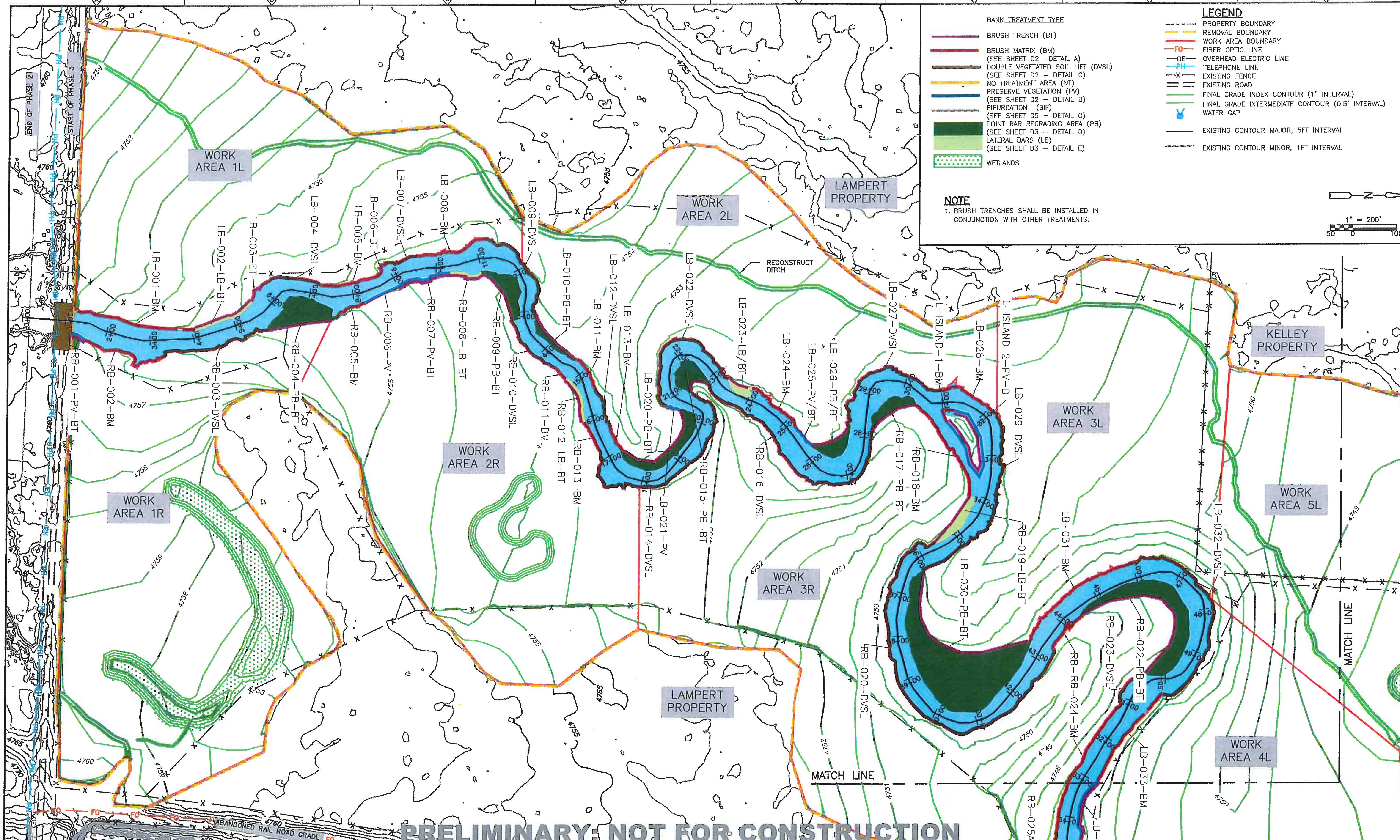
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

VEGETATIVE BACKFILL DEPTHS, MICROTOPOGRAPHY, WOOD AND BRUSH PLACEMENT

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO.
C41



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DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
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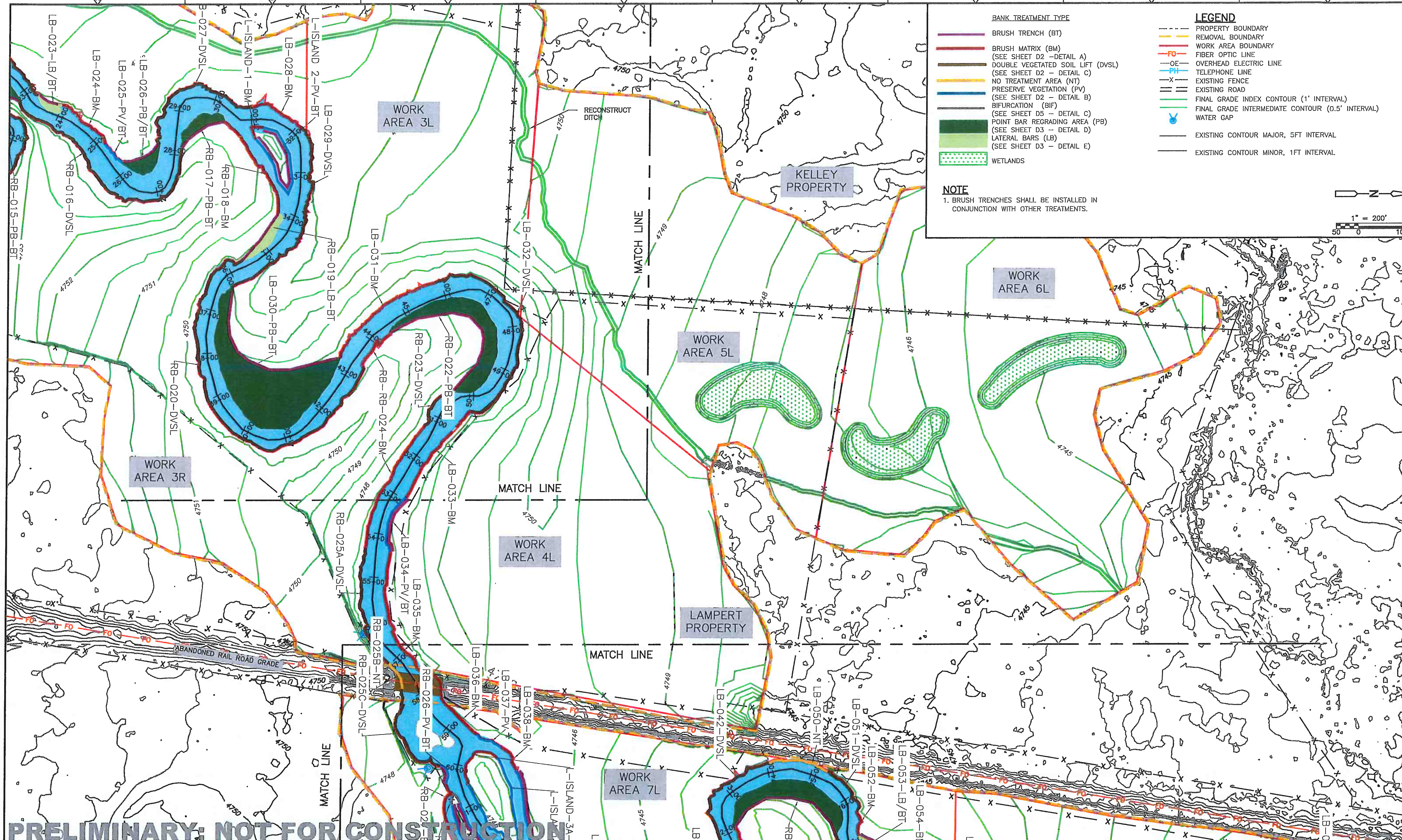
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

STREAMBANK TREATMENT PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C42



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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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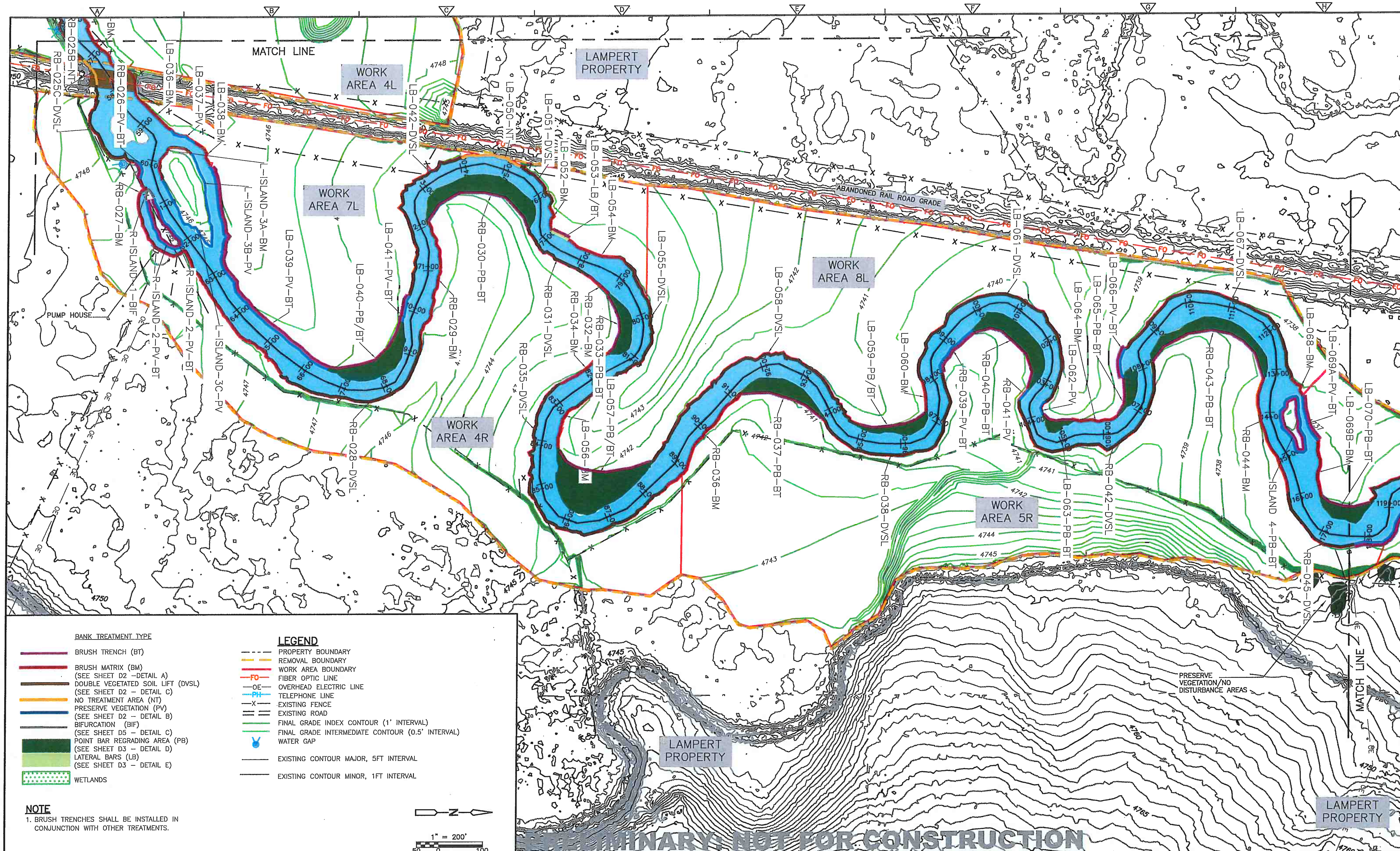
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

STREAMBANK TREATMENT PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C43



BANK TREATMENT TYPE

- BRUSH TRENCH (BT)
- BRUSH MATRIX (BM) (SEE SHEET D2 – DETAIL A)
- DOUBLE VEGETATED SOIL LIFT (DVSL) (SEE SHEET D2 – DETAIL C)
- NO TREATMENT AREA (NT)
- PRESERVE VEGETATION (PV) (SEE SHEET D2 – DETAIL B)
- BIFURCATION (BIF) (SEE SHEET D5 – DETAIL C)
- POINT BAR REGRADING AREA (PB) (SEE SHEET D3 – DETAIL D)
- LATERAL BARS (LB) (SEE SHEET D3 – DETAIL E)
- WETLANDS

LEGEND

- PROPERTY BOUNDARY
- REMOVAL BOUNDARY
- WORK AREA BOUNDARY
- FO — FIBER OPTIC LINE
- OE — OVERHEAD ELECTRIC LINE
- PH — TELEPHONE LINE
- X — EXISTING FENCE
- EXISTING ROAD
- FINAL GRADE INDEX CONTOUR (1' INTERVAL)
- FINAL GRADE INTERMEDIATE CONTOUR (0.5' INTERVAL)
- WATER GAP
- EXISTING CONTOUR MAJOR, 5FT INTERVAL
- EXISTING CONTOUR MINOR, 1FT INTERVAL

NOTE

1. BRUSH TRENCHES SHALL BE INSTALLED IN CONJUNCTION WITH OTHER TREATMENTS.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	KM
DRAWN BY:	KM
SHEET CHK'D BY:	TJ
CROSS CHK'D BY:	WHB
APPROVED BY:	WHB
DATE:	APRIL 2016

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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

STREAMBANK TREATMENT PLAN

PROJECT NO.	103068
FILE NAME:	CSTPL-C2
SHEET NO.	C44

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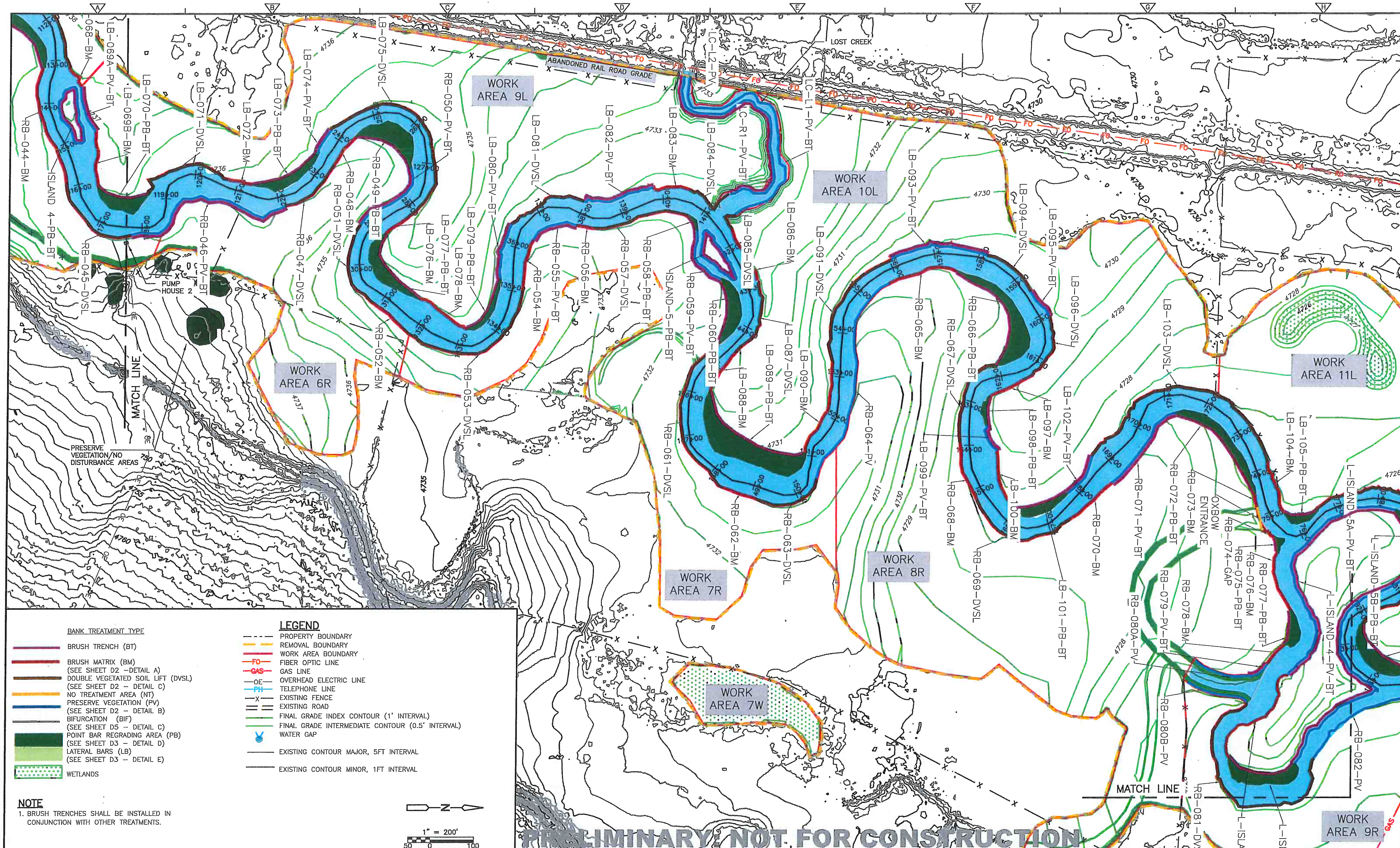

BANK TREATMENT TYPE

- BRUSH TRENCH (BT)
- BRUSH MATRIX (BM) (SEE SHEET D2 –DETAIL A)
- DOUBLE VEGETATED SOIL LIFT (DVSL) (SEE SHEET D2 – DETAIL C)
- NO TREATMENT AREA (NT)
- PRESERVE VEGETATION (PV) (SEE SHEET D2 – DETAIL B)
- BIFURCATION (BIF) (SEE SHEET D5 – DETAIL C)
- POINT BAR REGRADING AREA (PB) (SEE SHEET D3 – DETAIL D)
- LATERAL BARS (LB) (SEE SHEET D3 – DETAIL E)
- WETLANDS

LEGEND

- PROPERTY BOUNDARY
- REMOVAL BOUNDARY
- WORK AREA BOUNDARY
- FO — FIBER OPTIC LINE
- GAS — GAS LINE
- OE — OVERHEAD ELECTRIC LINE
- PH — TELEPHONE LINE
- X — EXISTING FENCE
- EXISTING ROAD
- FINAL GRADE INDEX CONTOUR (1' INTERVAL)
- FINAL GRADE INTERMEDIATE CONTOUR (0.5' INTERVAL)
- WATER GAP
- EXISTING CONTOUR MAJOR, 5FT INTERVAL
- EXISTING CONTOUR MINOR, 1FT INTERVAL

NOTE

1. BRUSH TRENCHES SHALL BE INSTALLED IN CONJUNCTION WITH OTHER TREATMENTS.

N

1" = 200'

50 0 100

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DESIGNED BY: KM
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CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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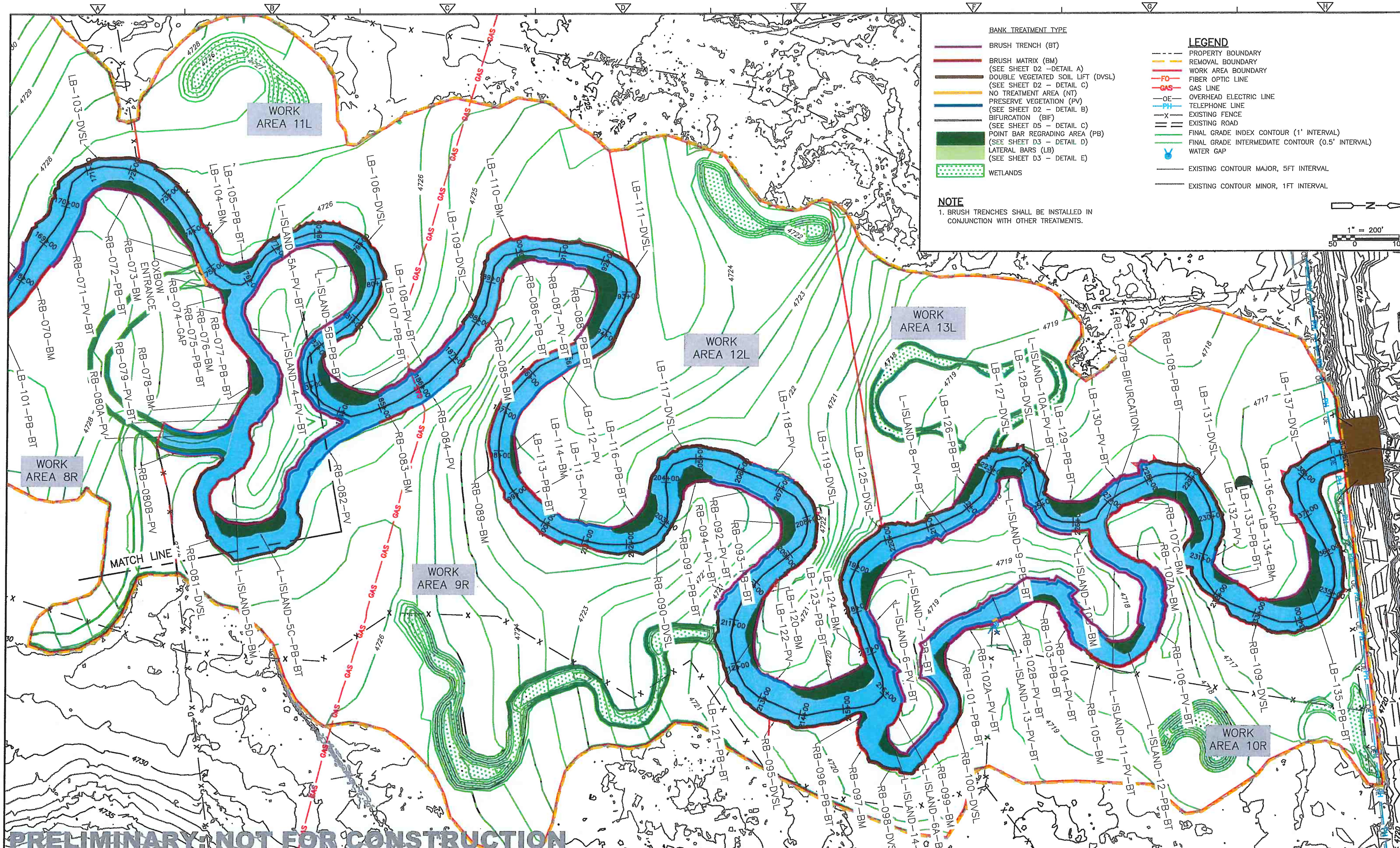
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

STREAMBANK TREATMENT PLAN

PROJECT NO. 103068
FILE NAME: CSTPL–C2
SHEET NO.
C45



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

STREAMBANK TREATMENT PLAN

PROJECT NO. 103068
FILE NAME: CSTPL-C2
SHEET NO. C46

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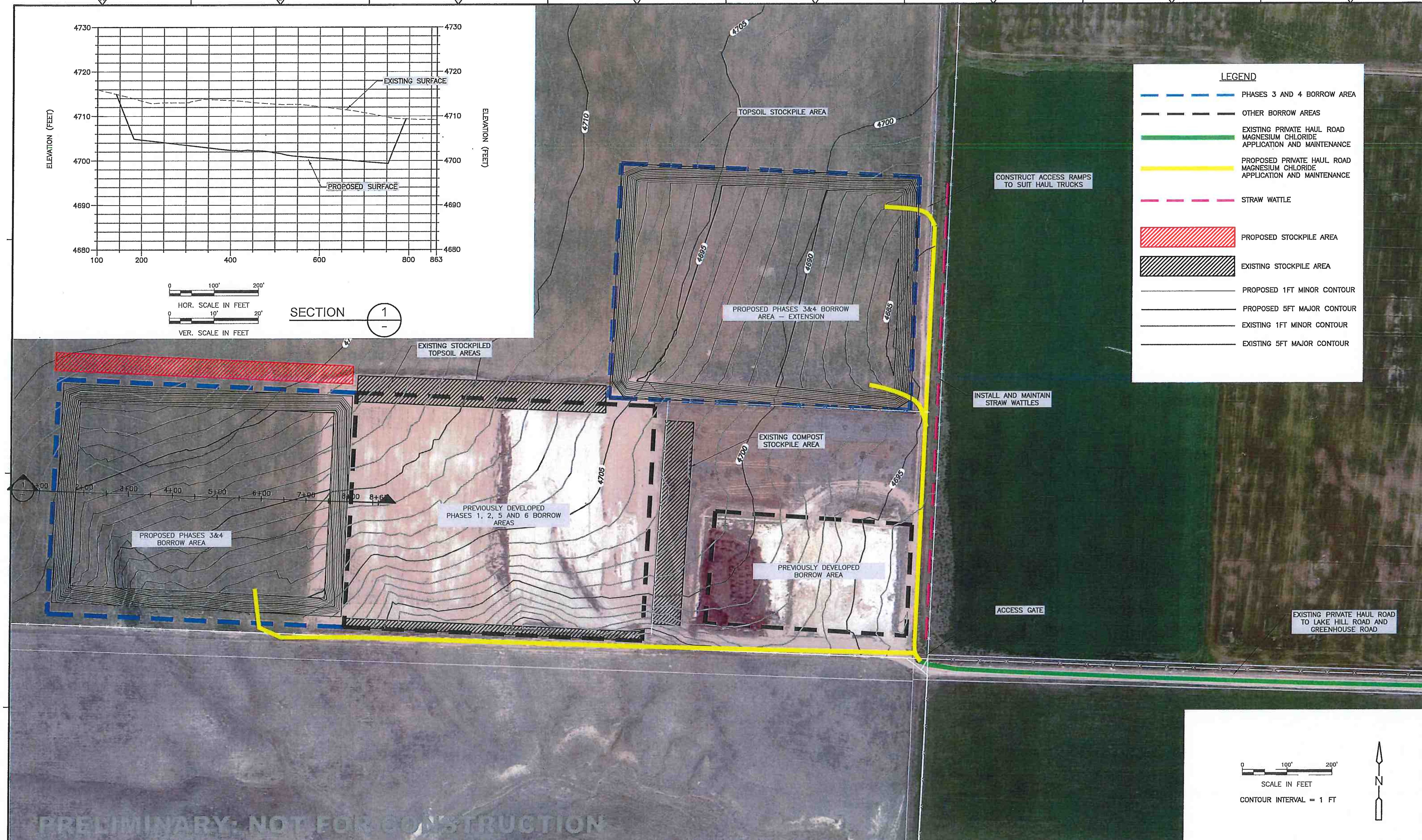

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	KM
DRAWN BY:	KM
SHEET CHK'D BY:	TJ
CROSS CHK'D BY:	WHB
APPROVED BY:	WHB
DATE:	APRIL 2016

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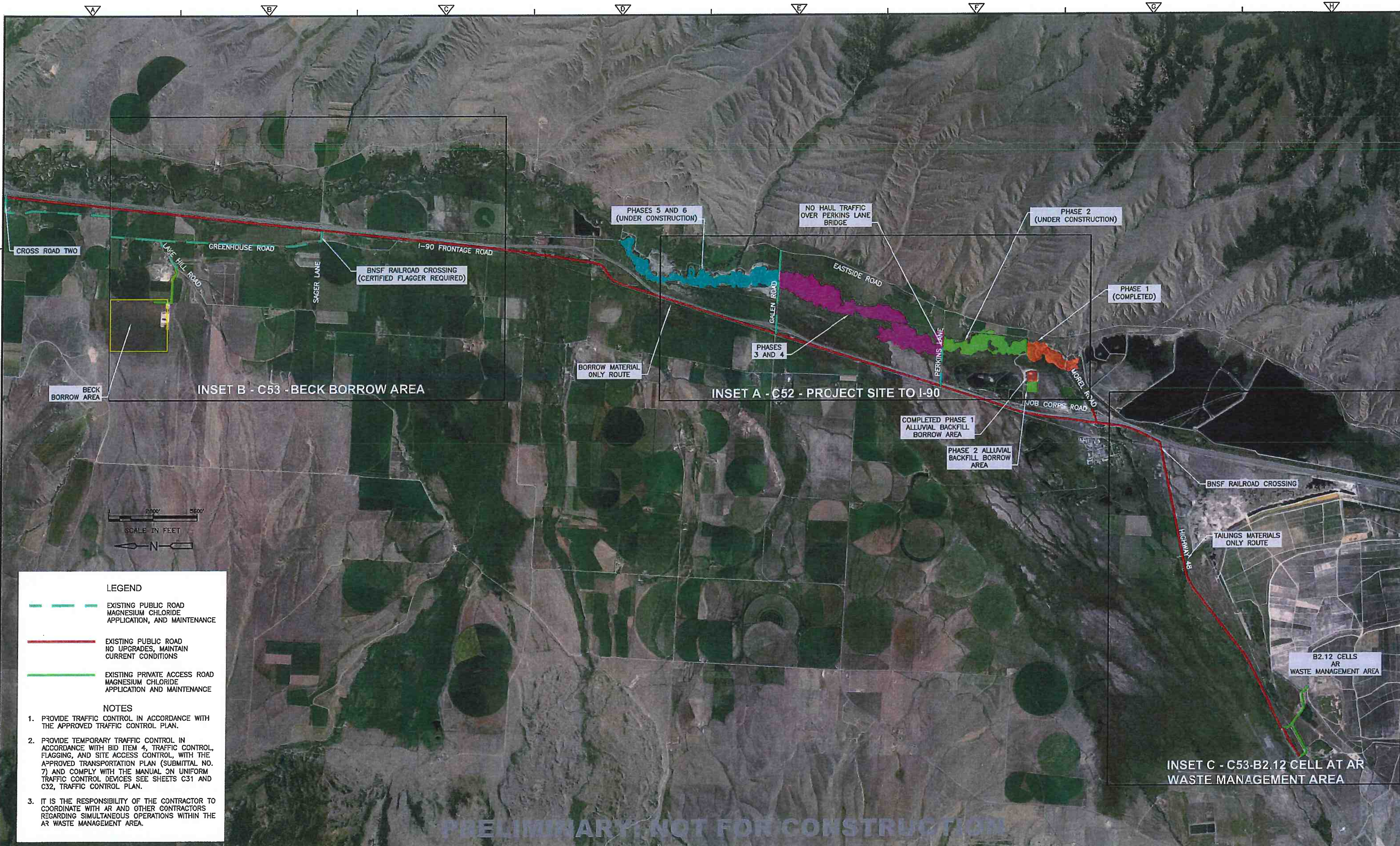
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

BECK BORROW AREA DEVELOPMENT AND RECLAMATION PLAN

PROJECT NO. 103068
FILE NAME: CSTPL24.DWG
SHEET NO. C47



LEGEND

- EXISTING PUBLIC ROAD MAGNESIUM CHLORIDE APPLICATION, AND MAINTENANCE
- EXISTING PUBLIC ROAD NO UPGRADES, MAINTAIN CURRENT CONDITIONS
- EXISTING PRIVATE ACCESS ROAD MAGNESIUM CHLORIDE APPLICATION AND MAINTENANCE

NOTES

1. PROVIDE TRAFFIC CONTROL IN ACCORDANCE WITH THE APPROVED TRAFFIC CONTROL PLAN.
2. PROVIDE TEMPORARY TRAFFIC CONTROL IN ACCORDANCE WITH BID ITEM 4, TRAFFIC CONTROL, FLAGGING, AND SITE ACCESS CONTROL, WITH THE APPROVED TRANSPORTATION PLAN (SUBMITTAL NO. 7) AND COMPLY WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SEE SHEETS C31 AND C32, TRAFFIC CONTROL PLAN.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH AR AND OTHER CONTRACTORS REGARDING SIMULTANEOUS OPERATIONS WITHIN THE AR WASTE MANAGEMENT AREA.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: BS
DRAWN BY: BS
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

TRANSPORTATION PLAN

PROJECT NO. 103068
FILE NAME: CSTPL51.DWG
SHEET NO. C51

K:\CFR- PHASES 3 AND 4\dwgs design\CSTPL51-Transportation Plan.dwg SAVED:3/31/16 PRINTED:3/31/16 BY:MAINZHAUSENK

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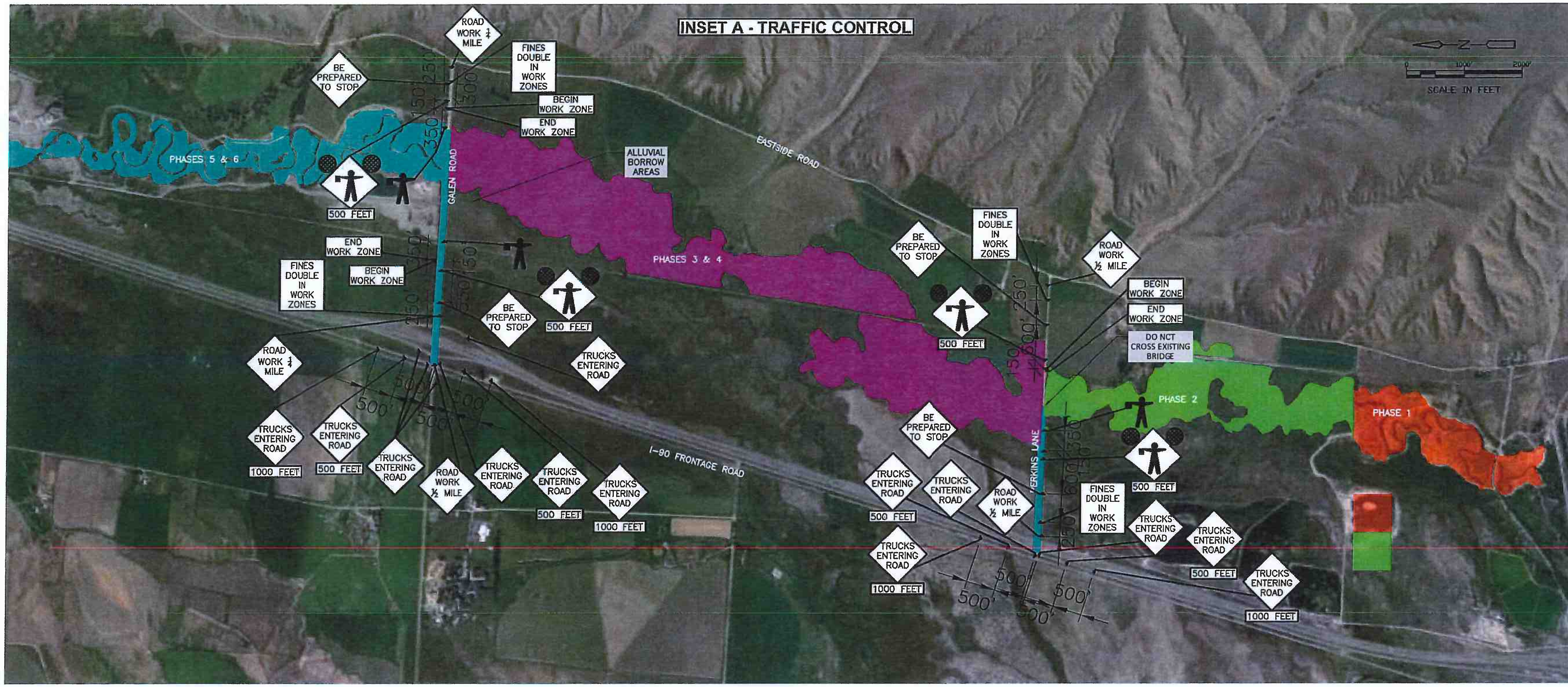

PROJECT SITE TO I-90

LEGEND

TRUCKS ENTERING ROAD 500 FEET — 12-INCH AMBER FLASHING LIGHT (LED ACCEPTABLE) (TYP.)) ATTACHED TO SIGN

FLAGGER

EXISTING PRIVATE ACCESS ROAD MAGNESIUM CHLORIDE APPLICATION AND MAINTENANCE

EXISTING PUBLIC ROAD MAGNESIUM CHLORIDE APPLICATION, AND MAINTENANCE

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: BS
DRAWN BY: BS
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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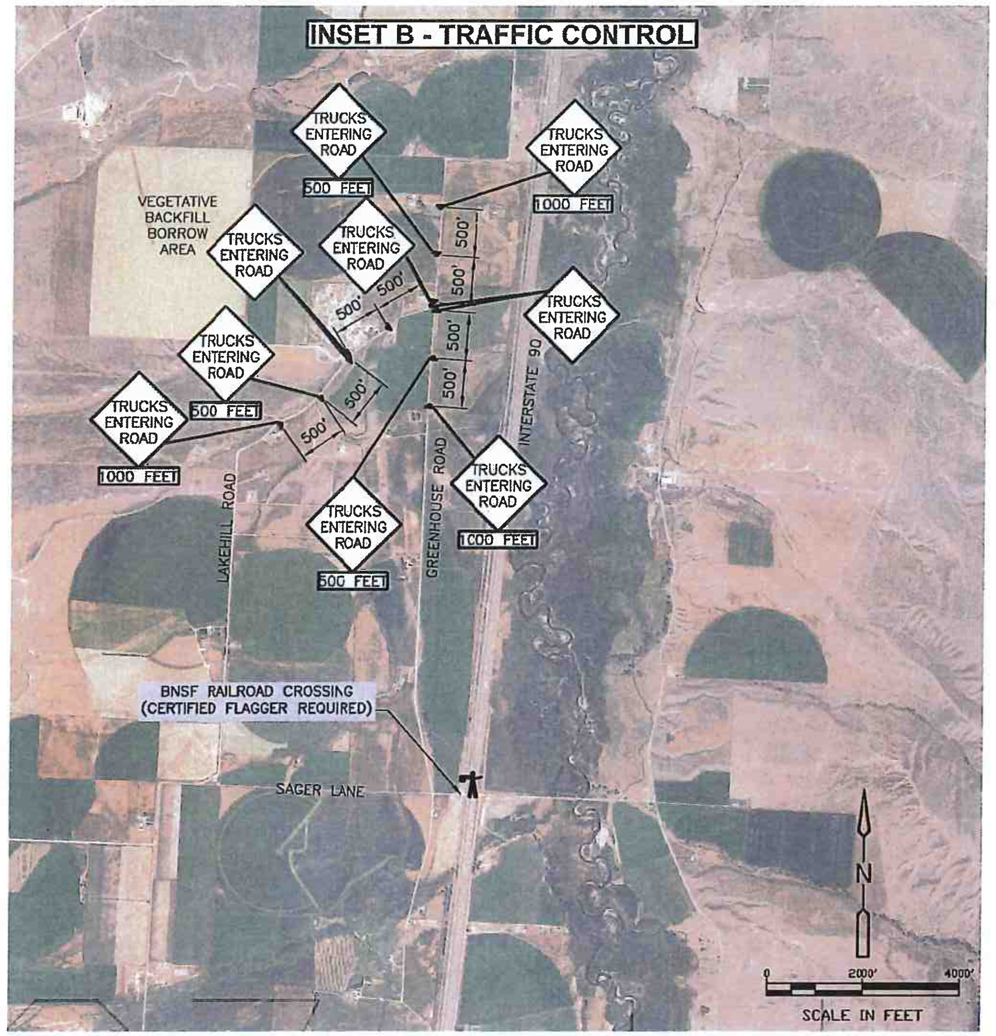
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

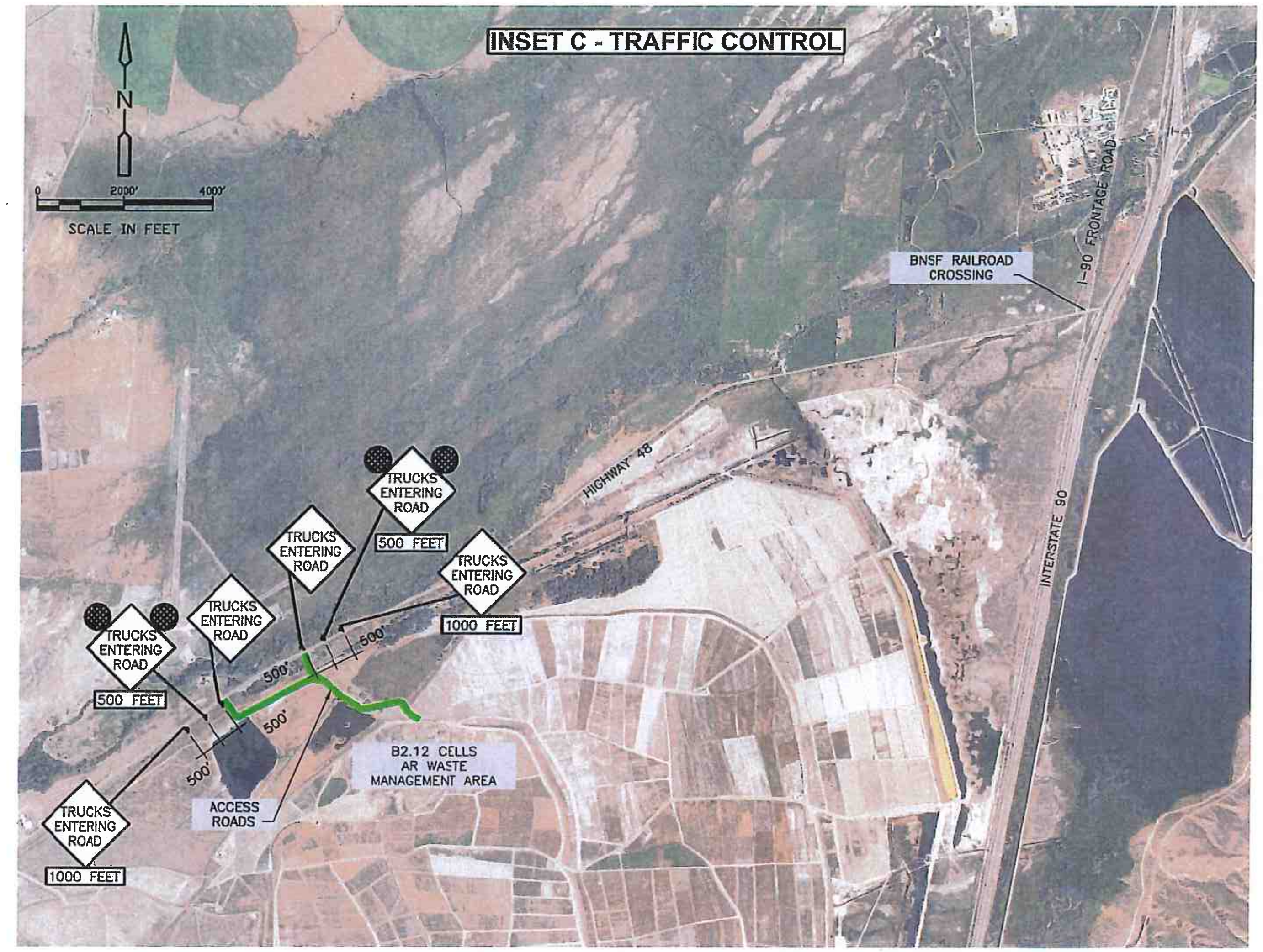
TRAFFIC CONTROL PLAN

PROJECT NO. 103068
FILE NAME: CSTPL52.DWG
SHEET NO.
C52

K:\CFR- PHASES 3 AND 4\dwgs design\CSTPL52 Traffic control plan.dwg SAVED: 2/15/16 PRINTED: 3/31/16 BY: MAINZHAUSENK



BECK BORROW AREA



B2.12 CELL AT THE AR WASTE MANAGEMENT AREA

LEGEND

TRUCKS ENTERING ROAD 500 FEET — 12-INCH AMBER FLASHING LIGHT (LED ACCEPTABLE) (TYP.)) ATTACHED TO SIGN

FLAGGER

EXISTING PRIVATE ACCESS ROAD MAGNESIUM CHLORIDE APPLICATION AND MAINTENANCE

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: BS
DRAWN BY: BS
SHEET CHK'D BY: TJ
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APPROVED BY: WHB
DATE: APRIL 2016

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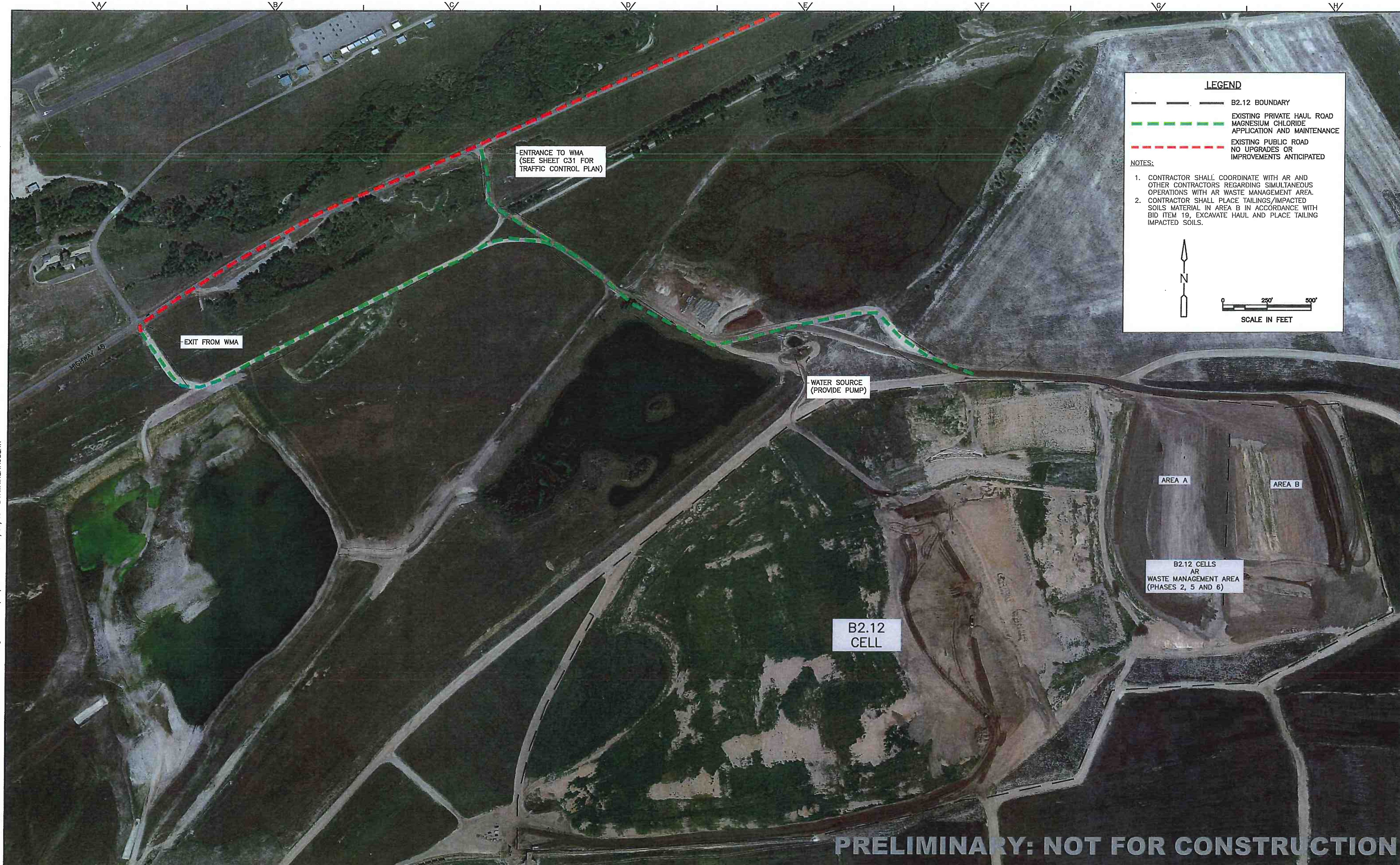
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

TRAFFIC CONTROL PLAN

PROJECT NO. 103068
FILE NAME: CSTPL53.DWG
SHEET NO.
C53

K:\CFR- PHASES 3 AND 4\dwgs design\CSTPL53 Traffic control plan.dwg SAVED: 2/17/16 PRINTED: 3/31/16 BY: MAINZHAUSENK



K:\CFR- PHASES 3 AND 4\dwgs design\CSTPL57 Waste Management Area Plan.dwg SAVED: 2/17/16 PRINTED: 3/31/16 BY: MAINZHAUSENK

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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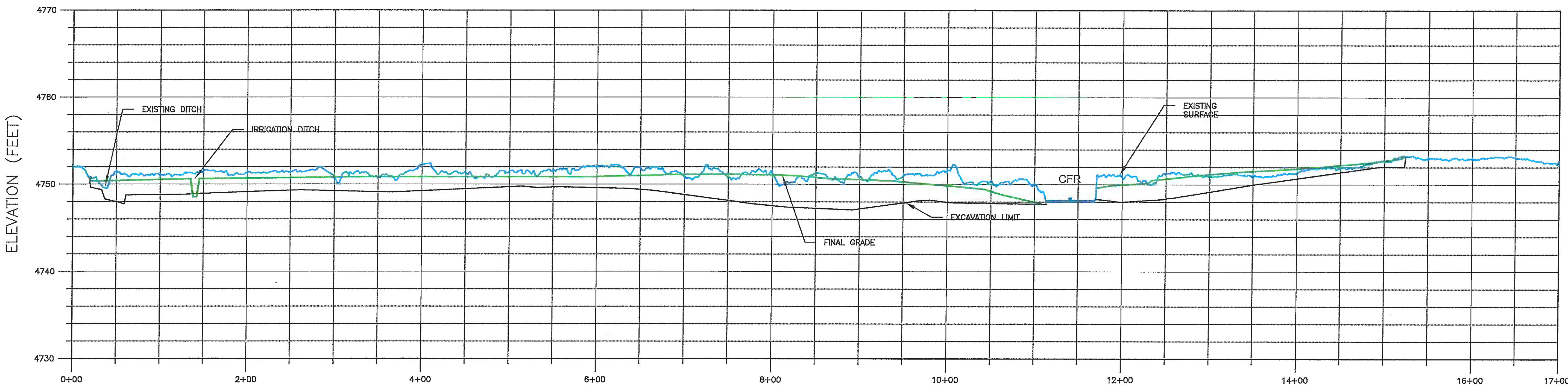
DEPARTMENT OF ENVIRONMENTAL QUALITY

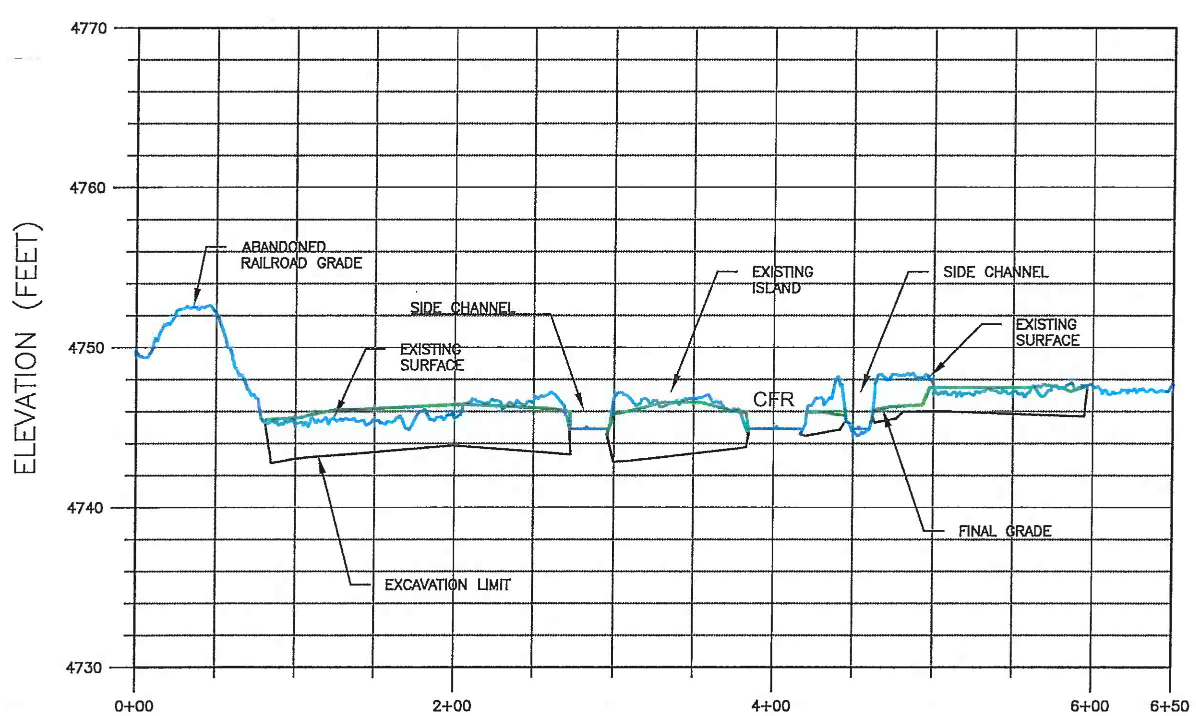
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

WASTE MANAGEMENT AREA PLAN

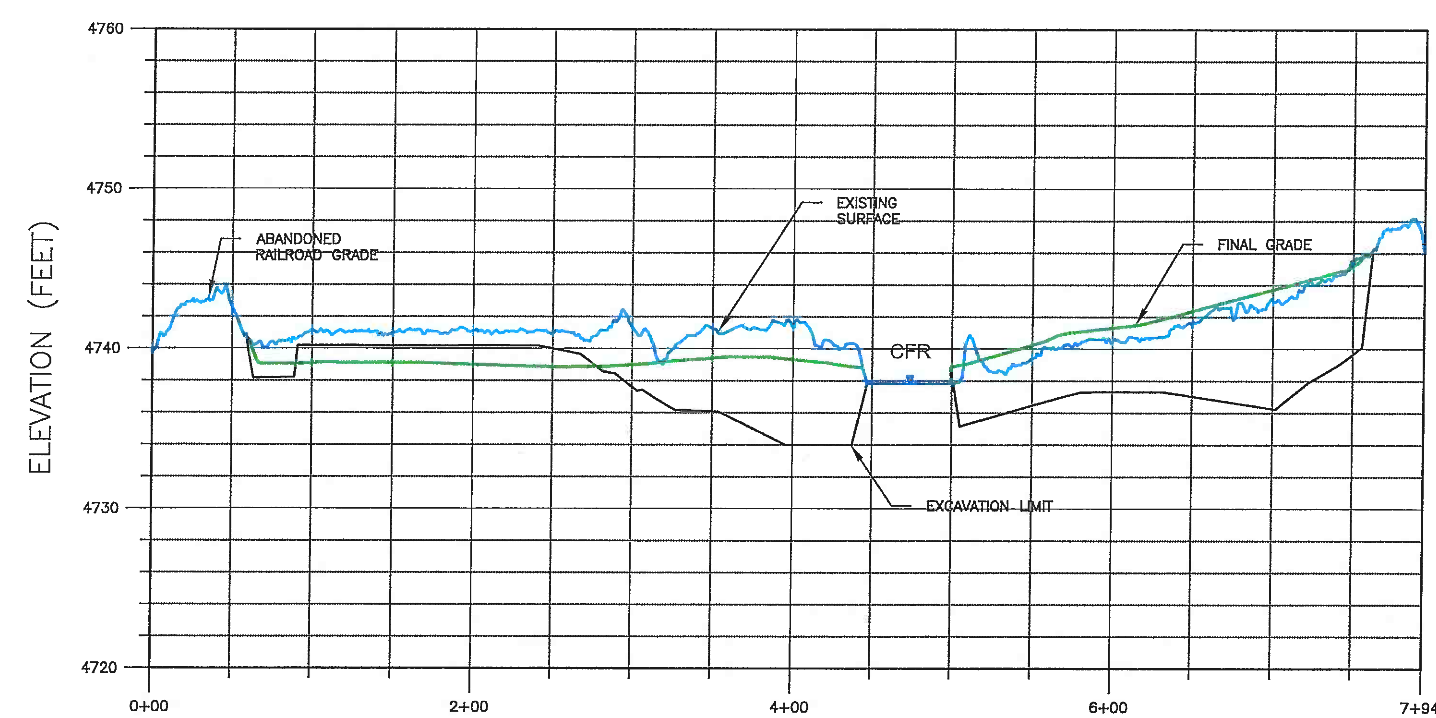
PROJECT NO. 103088
FILE NAME: CSTPL37.DWG
SHEET NO. C57



SECTION 1
1"– 120' H
1"– 12' V
C32



SECTION 2
1"– 120' H
1"– 12' V
C32,33



SECTION 3
1"– 120' H
1"– 12' V
C34

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REV. NO.	DATE	DRWN	CHKD	REMARKS

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CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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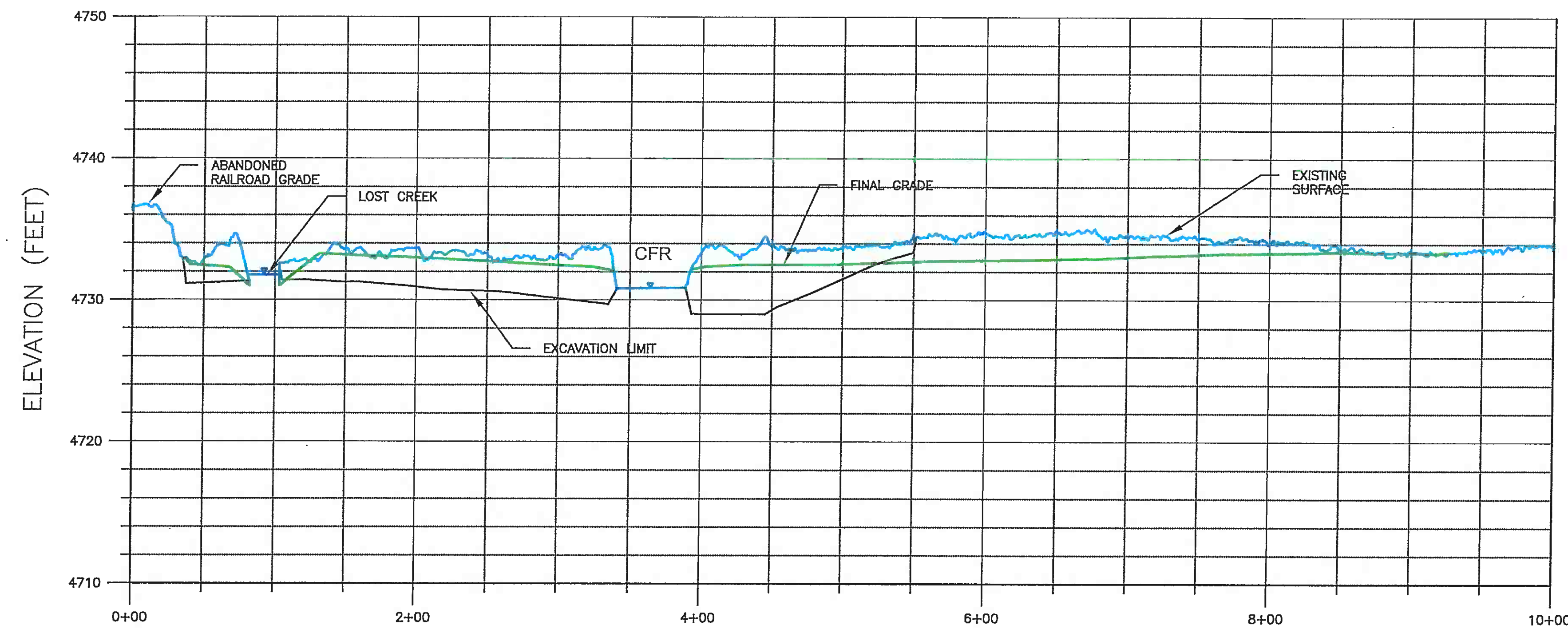
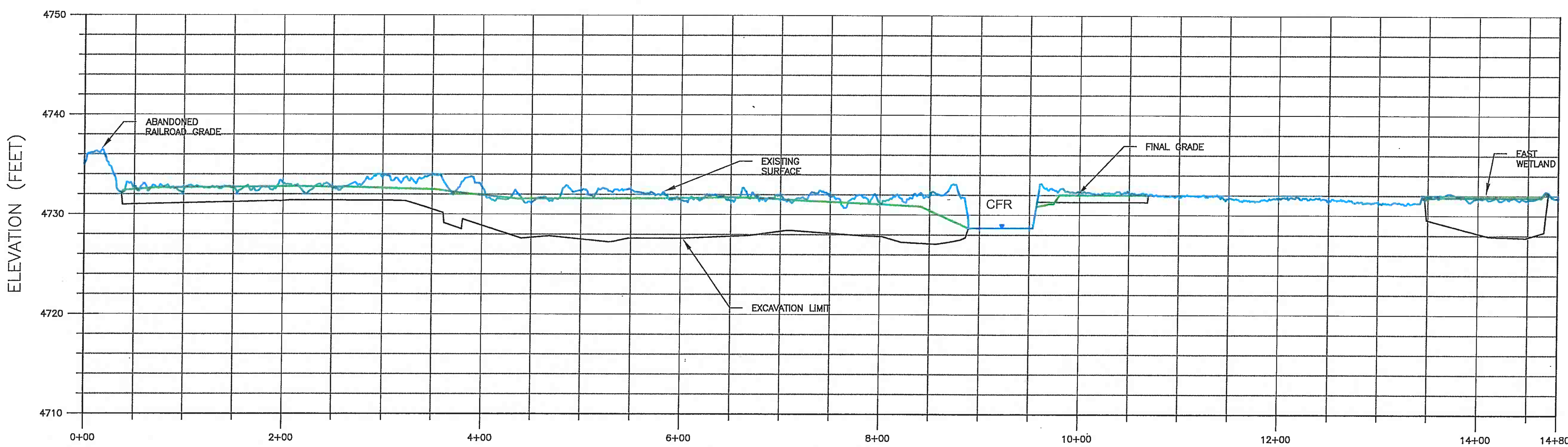
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

FLOODPLAIN
CROSS SECTIONS

PROJECT NO. 103068
FILE NAME: CSTPL-XS1-2
SHEET NO.
XS1



SECTION 4 C35
1"– 120' H
1"– 12' V



SECTION 5 C35
1"– 120' H
1"– 12' V

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

FLOODPLAIN
CROSS SECTIONS

PROJECT NO. 103068
FILE NAME: CSTPL-XS1-2
SHEET NO.
XS2

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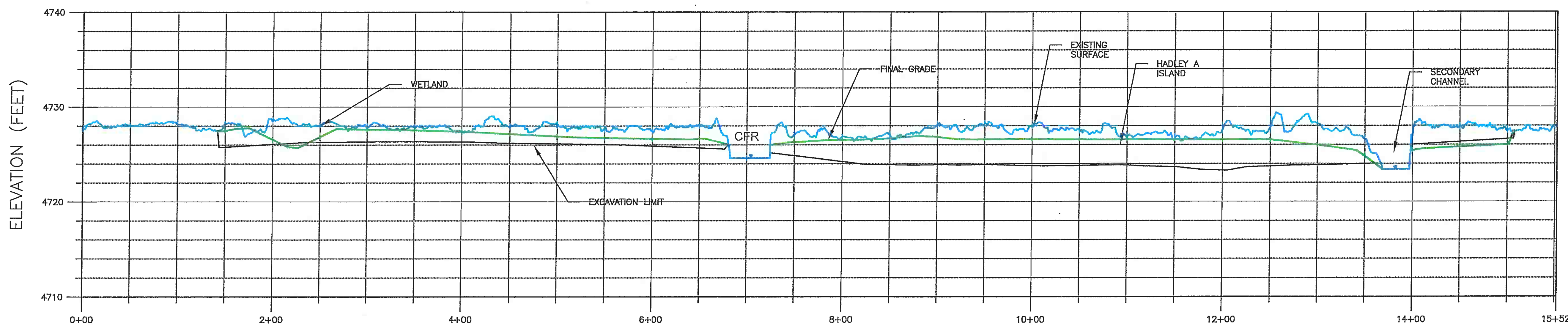
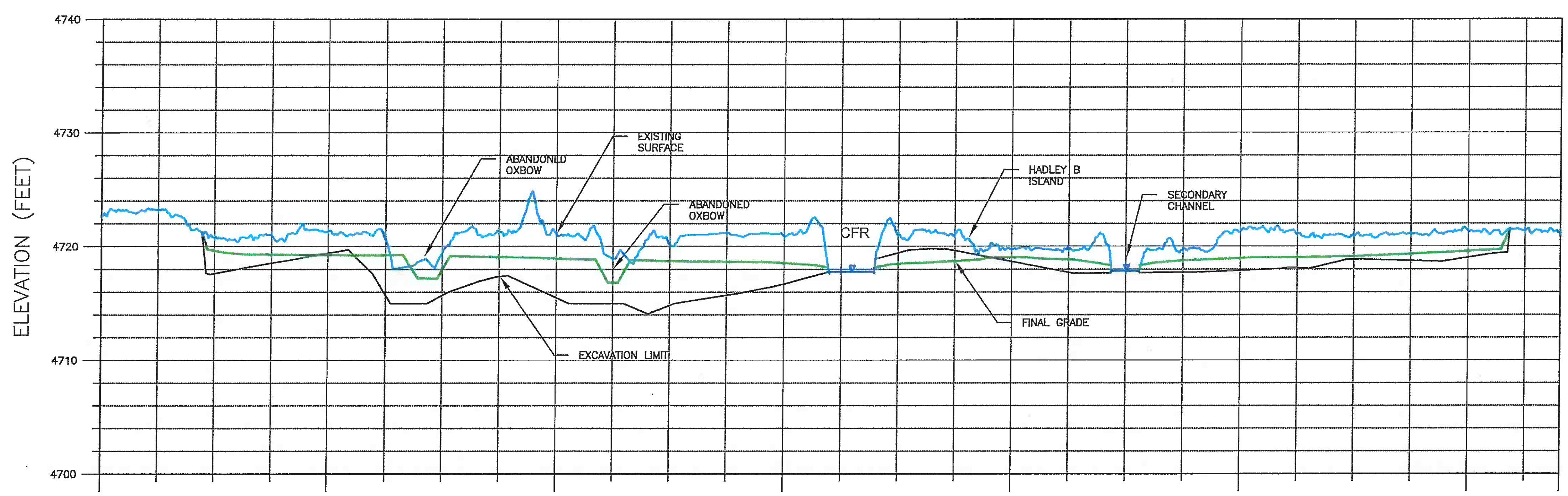


SECTION 6
C35,36

1"– 120' H
1"– 12' V



SECTION 7
C36

1"– 120' H
1"– 12' V

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
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CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

FLOODPLAIN
CROSS SECTIONS

PROJECT NO. 103068
FILE NAME: CSTPL-XS1-2
SHEET NO.
XS3

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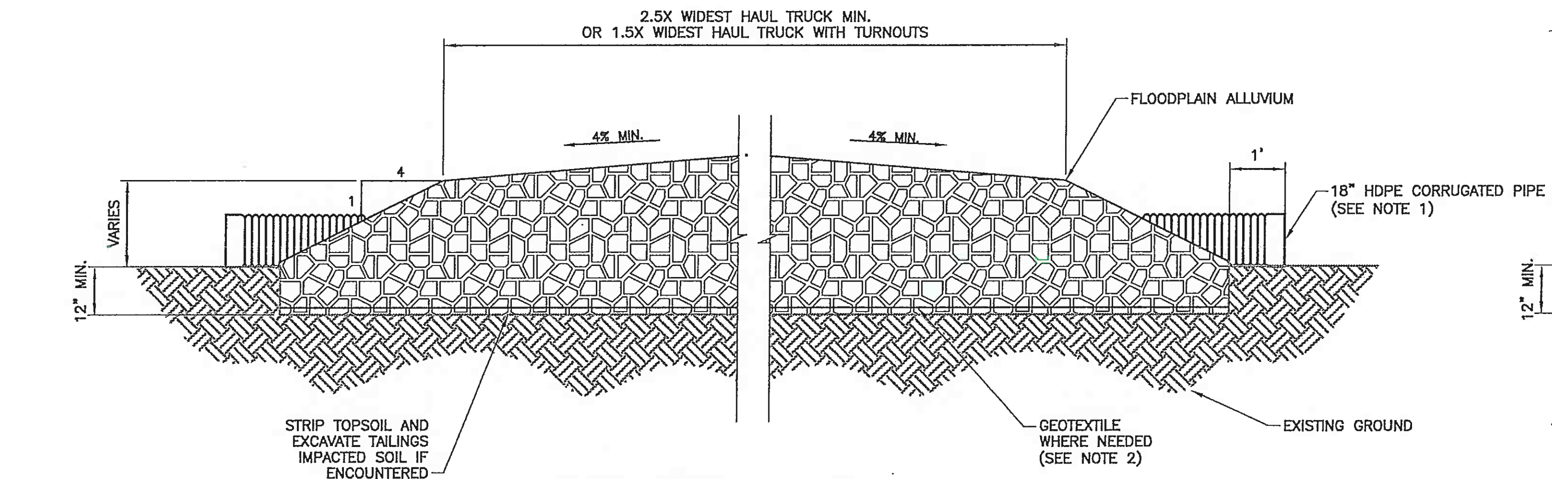
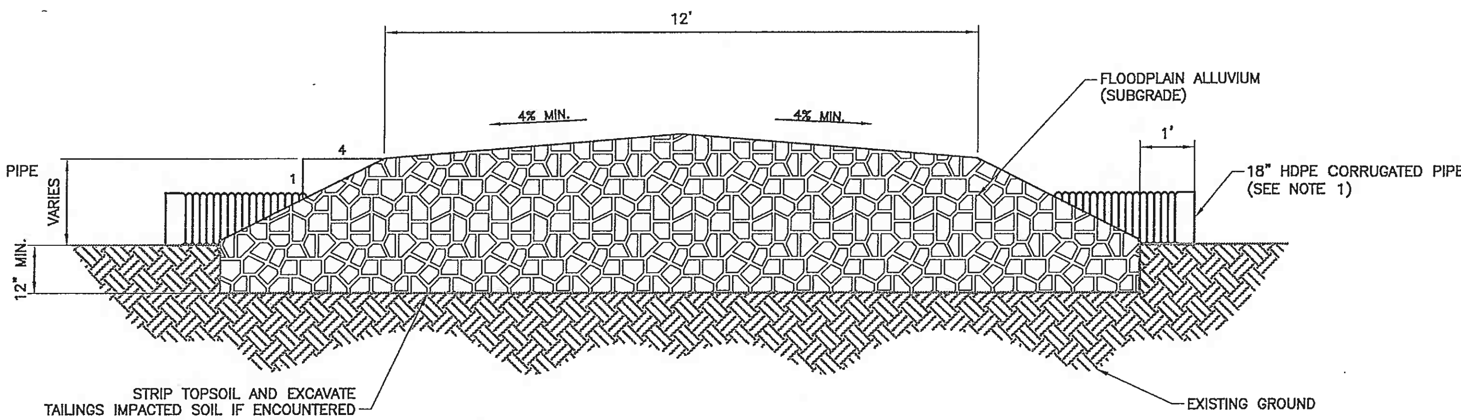


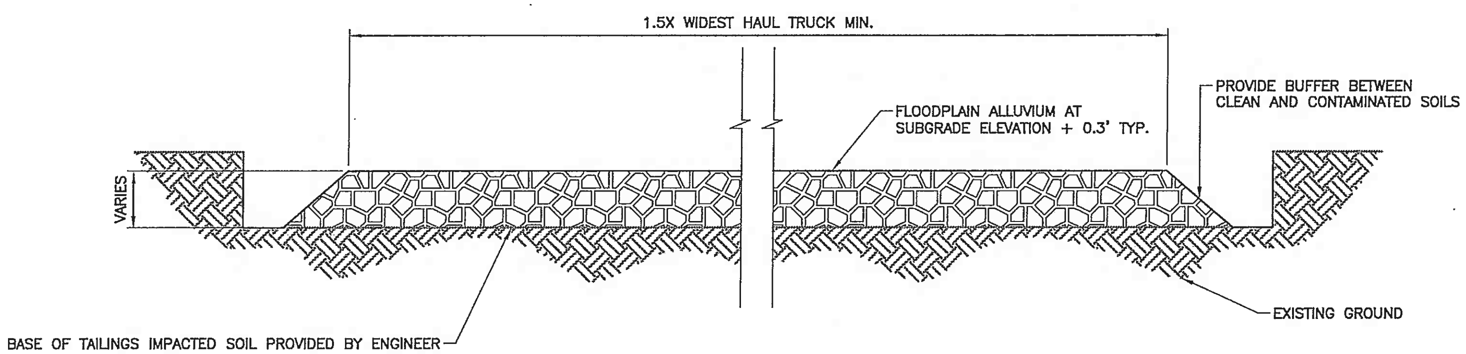
PRIMARY INTERNAL HAUL ROAD (TYP)

DETAIL A
NTS C33,34



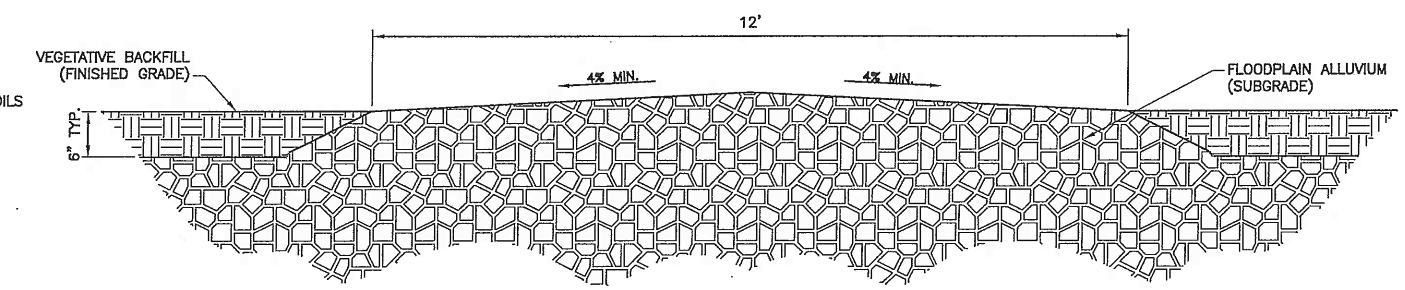
RECLAIMED PRIMARY ACCESS ROAD – (TYP)

DETAIL D
NTS C35



SECONDARY INTERNAL HAUL ROAD (TYP)

DETAIL B
NTS C33,34



RECLAIMED ROAD (TYP)

DETAIL E
NTS C14, 35

NOTES:

1. CONTRACTOR SHALL INSTALL DRAINAGE CULVERTS AS REQUIRED. NO MORE THAN 5 DRAINAGE CULVERTS ARE ANTICIPATED AS PART OF THE PRIMARY HAUL ROAD CONSTRUCTION. CULVERTS SHALL BE LOAD RATED FOR THE HEAVIEST EQUIPMENT AND SHALL HAVE SUFFICIENT FILL ATOP THE CULVERT, PER THE MANUFACTURER'S RECOMMENDATION. CULVERT INLET SHALL BE A MINIMUM OF 0.1' HIGHER THAN THE CULVERT OUTLET. CULVERTS SHALL BE INSTALLED AT A UNIFORM GRADE. BEDDING MATERIAL AND BACKFILL SHALL CONSISTS OF NATIVE MATERIALS.

2. PLACE GEOTEXTILE IN ACCORDANCE WITH BID ITEM NO. X CONSTRUCT, MAINTAIN, AND RECLAIM SITE HAUL ROADS AND COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.

3. IF 4:1 SIDE SLOPES (DETAILS A AND B) CANNOT BE ACHIEVED, CONTRACTOR SHALL INSTALL BERMING WITH ALLUVIUM MATERIAL ALONG THE CREST OF THE ROAD TO THE MID AXLE HEIGHT OF THE LARGEST SELF PROPELLED MOBILE EQUIPMENT WHICH TRAVELS THE ROADWAY. BERMING SHALL NOT NARROW ROADWAYS.

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: WHB
DRAWN BY: WHB
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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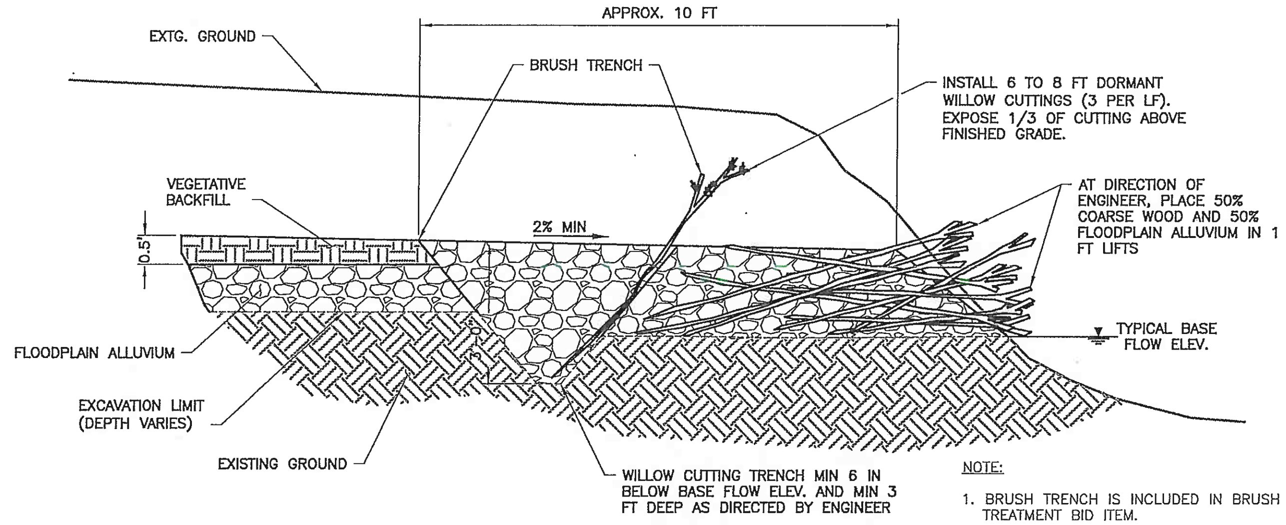
CLARK FORK RIVER - PHASES 3 & 4
REMEDIAL ACTION

HAUL ROAD DETAILS

PROJECT NO. 103068
FILE NAME: DSTPL01.DWG
REVISED SHEET NO.
D1

K:\CFR- PHASES 3 AND 4\dwgs design\CSDT001 ROAD DETAILS.dwg SAVED:3/3/16 PRINTED:3/31/16 BY:MAINZHAUSENK

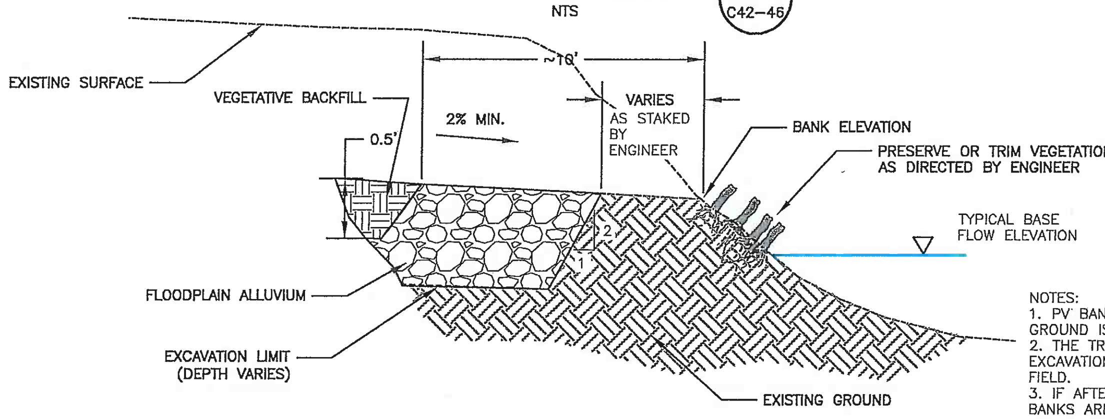


NOTE:

1. BRUSH TRENCH IS INCLUDED IN BRUSH MATRIX BANK TREATMENT BID ITEM.

BRUSH MATRIX (BM)

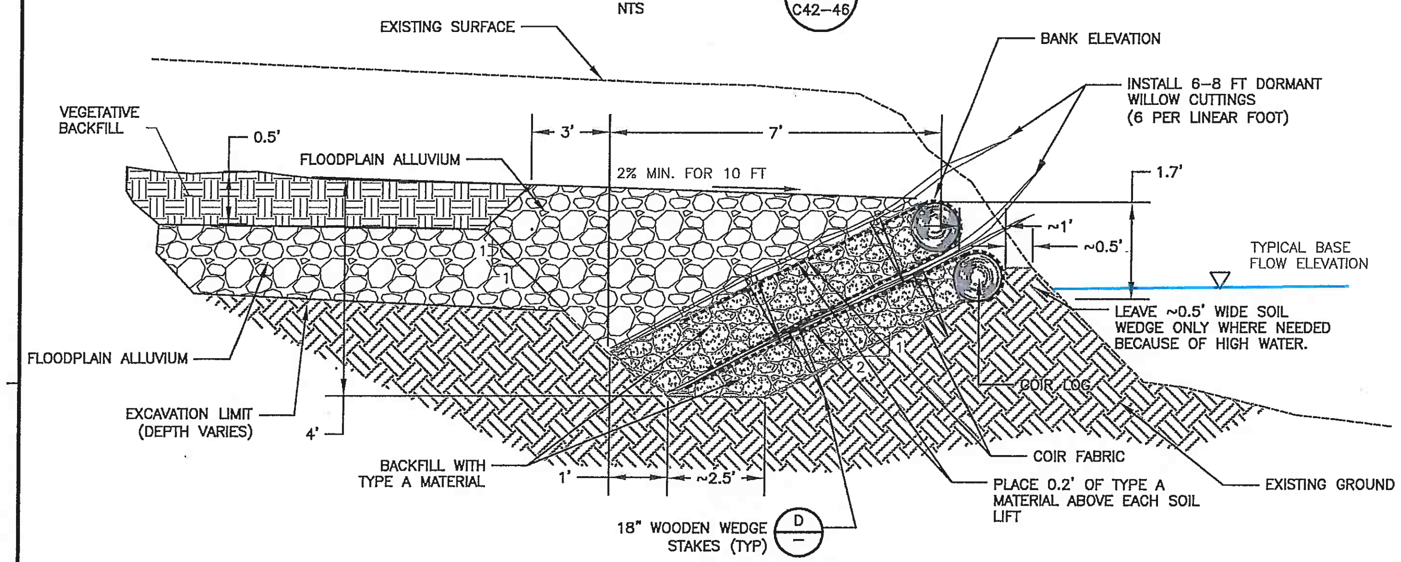
DETAIL A (C42-46)
NTS



NOTES:
1. PV BANK TREATMENT SHALL NOT BE CONSTRUCTED IF GROUND IS FROZEN.
2. THE TRANSITION BETWEEN PV BANK AND FLOODPLAIN EXCAVATION SHALL BE DETERMINED BY ENGINEER IN THE FIELD.
3. IF AFTER REMOVING UNSUITABLE VEGETATION, THE PV BANKS ARE LOWER THAN DESIGN BANK ELEVATION, PLACE ALLUVIUM TO BRING BANK TO DESIGN BANK ELEVATION.

PRESERVE VEGETATION (PV)

DETAIL B (C42-46)
NTS



DOUBLE VEGETATED SOIL LIFT (DVSL)

DETAIL C (C42-46)
NTS

GENERAL NOTES:

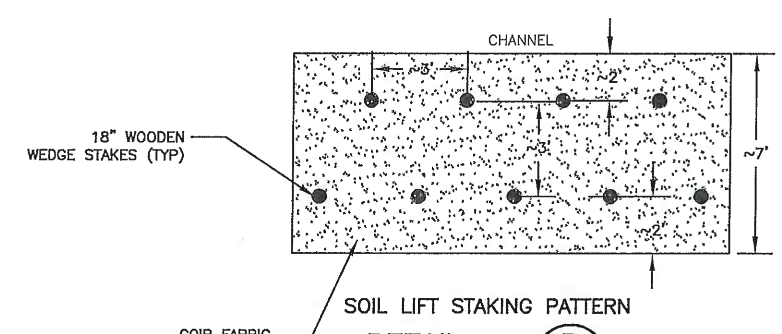
1. IF STREAMBANK CONSTRUCTION WILL OCCUR AFTER FLOODPLAIN EXCAVATION IS COMPLETE IN THE VICINITY OF THE STREAMBANKS, LEAVE ABOUT 4 FEET OF MATERIAL BETWEEN EXCAVATION AND EXISTING STREAMBANKS TO MAINTAIN STABILITY UNTIL STREAMBANK CONSTRUCTION OCCURS.
2. THE FLOODPLAIN SHALL BE BACKFILLED AND SLOPED 2 PERCENT TOWARDS THE BANKS AS SHOWN IN DRAWINGS.
3. MICROTOPOGRAPHY AND WOODY MATERIAL EXTENDS TO STREAMBANK SEE SHEET D10 FOR DETAILS.

NOTES ON COIR FABRIC INSTALLATION

1. UNROLL COIR FABRIC PARALLEL TO THE CHANNEL.
2. OVERLAPS SHALL BE MADE SO THAT THE UPSTREAM FABRIC LIES OVER DOWNSTREAM FABRIC. ALL OVERLAPS IN COIR FABRIC SHALL BE STAKED WITH A MINIMUM OF 2 STAKES. OVERLAPS SHALL BE A MINIMUM OF 3 FT.
3. WHERE VEGETATED SOILS LIFTS END, CONTRACTOR SHALL SECURE THE COIR FABRIC ENDS TIGHTLY BY FOLDING THE COIR FABRIC WITH THE TOP EDGE OF FOLDS GOING WITH THE DIRECTION OF STREAM FLOW.

DOUBLE VEGETATED SOIL LIFT INSTALLATION (DVSL) NOTES:

1. EXCAVATE TO LIMITS OF BANK CONSTRUCTION. THIS EXCAVATED MATERIAL IS CONSIDERED CONTAMINATED AND SHALL BE HAULED TO THE REPOSITORY AS DESCRIBED IN BID ITEM NO. 19 – EXCAVATE, HAUL AND PLACE TAILINGS/IMPACTED SOILS.
2. AFTER EXCAVATION TO LIMITS OF BANK CONSTRUCTION IS COMPLETED, THE ENGINEER SHALL DETERMINE IF ADEQUATE TOE MATERIAL IS PRESENT. IF NO ADEQUATE BANK TOE IS LOCATED AT BASE OF EXCAVATION, EXCAVATION SHALL CONTINUE UNTIL GRAVEL AND COBBLES ARE ENCOUNTERED. IF NO GRAVELS AND COBBLES ARE ENCOUNTERED BEFORE THE SCOUR DEPTH IS REACHED, EXCAVATION SHALL CEASE AT THE SCOUR DEPTH. SCOUR DEPTH SHALL BE DETERMINED BY ENGINEER. SEE BID ITEM NO. 36, CONSTRUCT BANK TOE FOR DISCUSSION OF BANK TOE REQUIREMENTS.
3. CONSTRUCT BANK TOE BY PLACING BANK TOE ALLUVIUM AS SHOWN ON SHEET D3 DETAIL G. BUCKET COMPACT TO THE EXTENT POSSIBLE.
4. IF EXCAVATION IS LOWER THAN BOTTOM OF SOIL LIFT, PLACE AND BUCKET COMPACT FLOODPLAIN ALLUVIUM BEHIND THE EXISTNG BANK TO CREATE THE BASE FOR THE FIRST LIFT OF THE DVSL.
5. LAY COIR OUTER FABRIC ON BASE FOR THE LOWER LIFT OF THE DSVL WITH APPROXIMATELY TWO-THIRDS EXTENDING BEYOND THE FRONT EDGE OF THE BASE. PLACE INNER FABRIC ON TOP OF OUTER COIR FABRIC.
6. PLACE LOWER COIR LOGS AT POSITION SHOWN ON DRAWINGS AND BACKFILL BEHIND COIR LOGS WITH TYPE A MATERIAL APPROXIMATELY 1 FOOT THICK. COMPACT BACKFILL WITH BUCKET. VERIFY THAT COIR LOG IS PLACED WITH ITS TOP AT THE CORRECT ELEVATION AS DETERMINED FROM FINAL GRADING SURFACE.
7. WRAP INNER FABRIC AND OUTER COIR FABRIC OVER TOP OF COIR LOGS. PULL FABRICS TIGHT WITH MINIMUM WRINKLES AND STAKE IN PLACE USING STAKING PATTERN SHOWN ON DETAIL D.
8. PLACE 6 TO 8 FOOT LONG DORMANT WILLOW CUTTINGS ON LOWER SOIL LIFT AS SHOWN ON DETAIL C. PLACE WILLOW CUTTINGS AT A DENSITY OF 3 STEMS PER LINEAR FOOT. WILLOW CUTTINGS STEMS MAY OVERLAP. THE CUT ENDS SHALL BE PLACED AT THE BASE OF THE SLOPE WITH THE UN-CUT ENDS EXTENDING BEYOND THE EDGE OF COIR LOG SO THAT APPROXIMATELY ONE-THIRD OF THE TOTAL CUTTING LENGTH IS EXPOSED. PLACE 0.2' OF TYPE A MATERIAL OVER WILLOWS.
9. LAY COIR OUTER FABRIC ON COMPLETED FIRST LIFT OF THE DVSL WITH APPROXIMATELY TWO-THIRDS EXTENDING BEYOND THE FRONT EDGE OF THE FIRST LIFT. PLACE INNER FABRIC ON TOP OF OUTER COIR FABRIC.
10. PLACE UPPER COIR LOGS AT POSITION SHOWN ON THE DRAWINGS AND BACKFILL BEHIND COIR LOGS WITH TYPE A MATERIAL. COMPACT BACKFILL WITH BUCKET.
11. WRAP INNER AND OUTER COIR FABRIC OVER TOP OF COIR LOGS AND FILL. PULL FABRIC TIGHT WITH MINIMUM WRINKLES AND STAKE IN PLACE AS SHOWN USING STAKING PATTERN SHOWN ON DETAIL D.
12. PLACE 6 TO 8 FOOT LONG DORMANT WILLOW CUTTING ON UPPER SOIL LIFT AND ON BACK SLOPE OF EXCAVATION AS SHOWN ON DETAIL C. PLACE WILLOW CUTTINGS AT A DENSITY OF 3 STEMS PER LINEAR FOOT ON TOP OF UPPER SOIL LIFT AND AT A DENSITY OF 3 STEMS PER LINEAR FOOT ON THE LOWER LIFT. WILLOW CUTTINGS STEMS MAY OVERLAP. THE CUT ENDS SHALL BE PLACED AT THE BASE OF THE SLOPE WITH THE UN-CUT ENDS EXTENDING BEYOND THE EDGE OF COIR LOG OR TRENCH SO THAT APPROXIMATELY ONE-QUARTER OF THE TOTAL CUTTING LENGTH IS EXPOSED. PLACE 0.2' OF TYPE A MATERIAL OVER WILLOWS.
13. USE EXCAVATOR BUCKET TO ADJUST BANK ELEVATION TO GRADE SHOWN IN THE PLANS.
14. PLACE AND BUCKET COMPACT FLOODPLAIN ALLUVIUM OVER DVSL AS SHOWN ON DETAIL C. FINAL GRADE SHALL SLOPE TOWARDS THE TOP OF THE DVSL WITH APPROXIMATELY 2 PERCENT SLOPE. NO LOW AREAS SHALL BE LEFT BEHIND THE CONSTRUCTED BANK.



SOIL LIFT STAKING PATTERN

DETAIL D
NTS

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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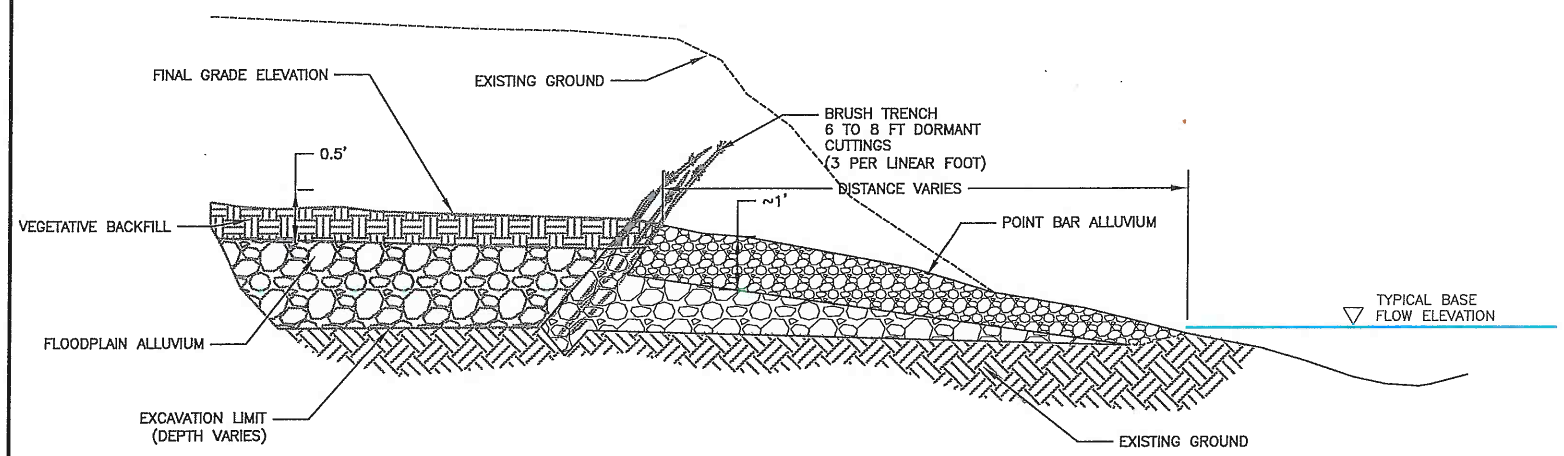
DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

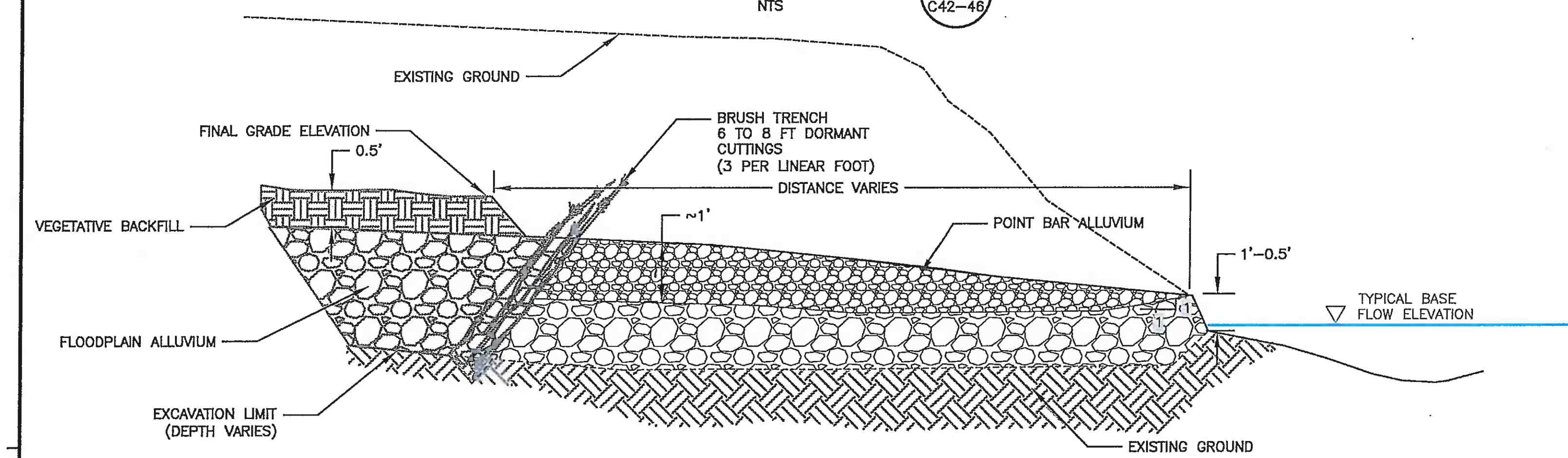
STREAMBANK TREATMENT DETAILS

PROJECT NO. 103068
FILE NAME: CSDT002-3
SHEET NO.
D2



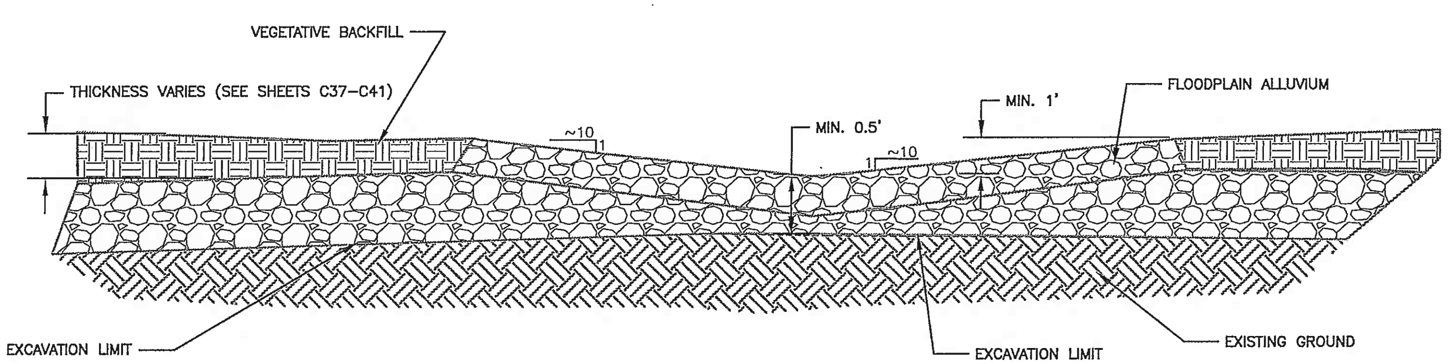
POINT BAR REGRADING WITH BRUSH TRENCH

DETAIL D
NTS C42-46



LATERAL BAR WITH BRUSH TRENCH

DETAIL E
NTS C42-46

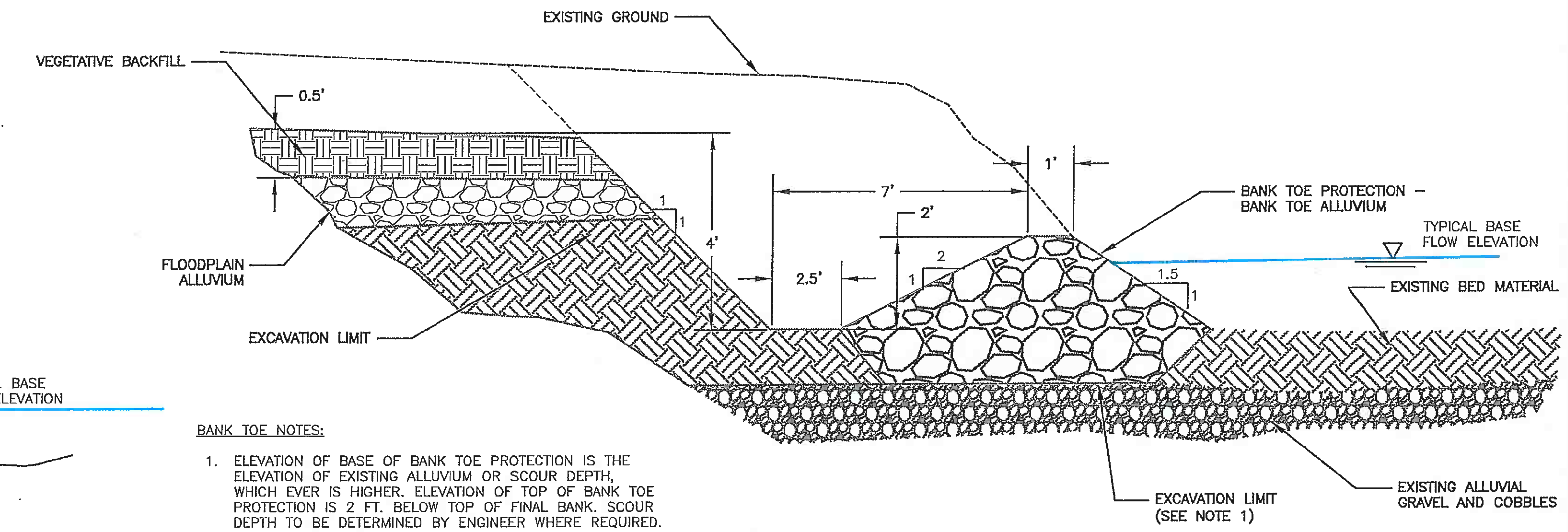


IRRIGATION DRAIN DETAIL

DETAIL F
NTS C34

BRUSH TRENCH

1. BRUSH TRENCHES ARE INSTALLED BEHIND POINT BARS, LATERAL BARS, PRESERVE VEGETATION BANKS, BRUSH MATRIX BANKS OR DOUBLE VEGETATED SOIL LIFTS AS SHOWN ON DRAWINGS. NOT ALL LOCATIONS REQUIRE BRUSH TRENCHES.
2. EXCAVATE FOR BRUSH TRENCH AT THE SAME TIME GROUND BETWEEN BRUSH TRENCH AND STREAM IS EXCAVATED AND BACKFILLED.
3. COMPLETE BACKFILL IF THIS AREA WILL BECOME INACCESSIBLE AFTER CONSTRUCTION OF BRUSH TRENCH.
4. PLACE 6 TO 8 FEET LONG DORMANT WILLOW CUTTINGS ON THE STREAM SIDE SLOPE OF BRUSH TRENCH EXCAVATION AS SHOWN ON DETAIL H. PLACE WILLOW CUTTINGS AT A DENSITY OF 3 STEMS PER LINEAR FOOT. WILLOW CUTTING STEMS MAY OVERLAP. THE CUT ENDS SHALL BE PLACED AT THE BASE OF THE SLOPES WITH THE UN-CUT ENDS EXTENDING BEYOND THE EDGE OF THE TRENCH SO THAT APPROXIMATELY ONE-THIRD OF THE TOTAL CUTTINGS LENGTH IS EXPOSED.

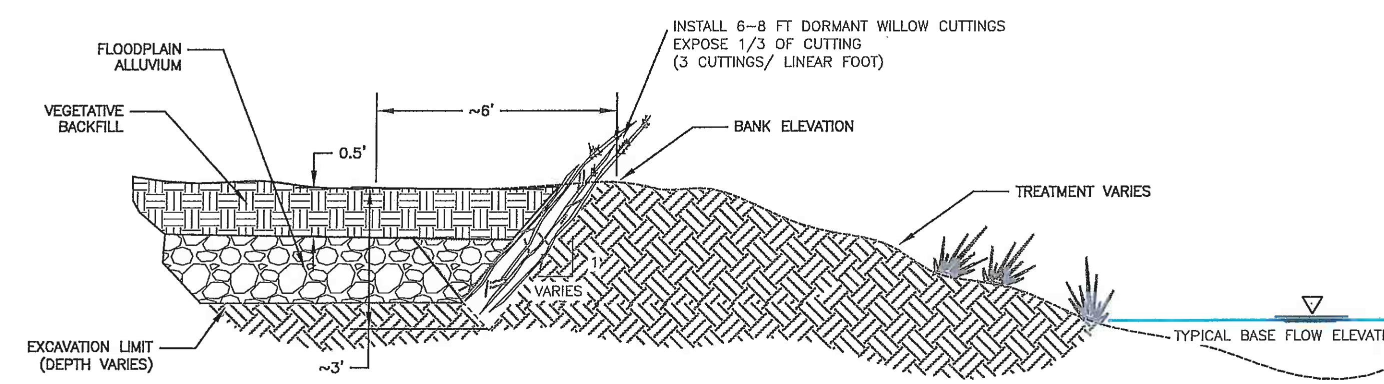


BANK TOE NOTES:

1. ELEVATION OF BASE OF BANK TOE PROTECTION IS THE ELEVATION OF EXISTING ALLUVIUM OR SCOUR DEPTH, WHICH EVER IS HIGHER. ELEVATION OF TOP OF BANK TOE PROTECTION IS 2 FT. BELOW TOP OF FINAL BANK. SCOUR DEPTH TO BE DETERMINED BY ENGINEER WHERE REQUIRED.
2. TYPICAL SCOUR DEPTH ON BENDS IS 7 FT BELOW FINISH BANK ELEVATION.
3. UPPER BANKS ARE DVSL BANK TREATMENT.
4. INSTALL COFFER DAMS AS NECESSARY.

BANK TOE PROTECTION

DETAIL G
NTS C42-46



BRUSH TRENCH BANK TREATMENT (BT)

DETAIL H
NTS C42-46

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

STREAMBANK TREATMENTS, BANK TOE AND IRRIGATION DRAIN DETAILS

PROJECT NO. 103068
FILE NAME: CSDT002-3
SHEET NO. D3

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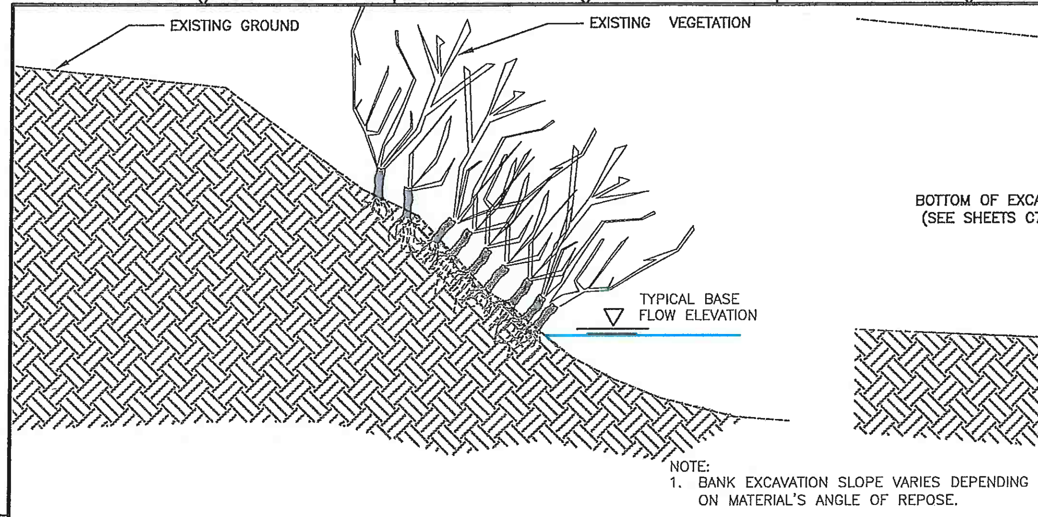
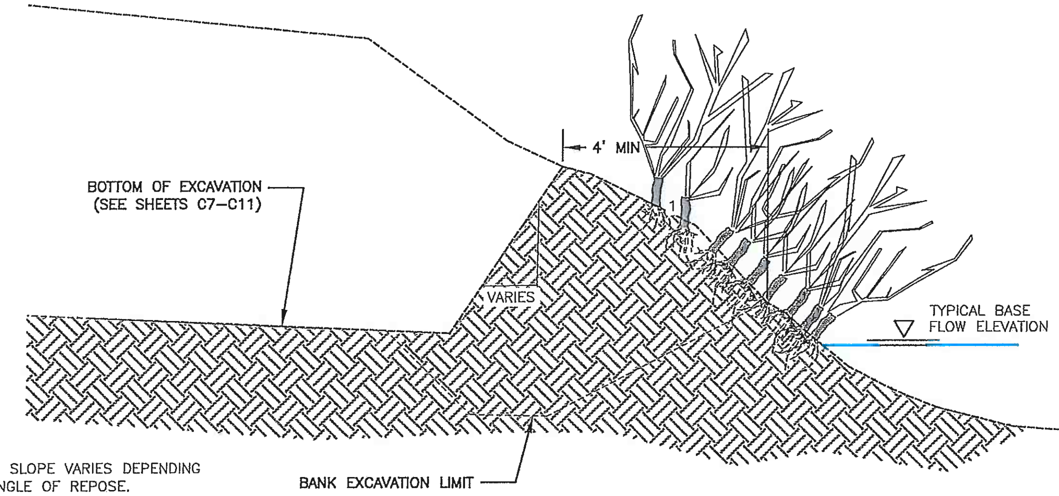
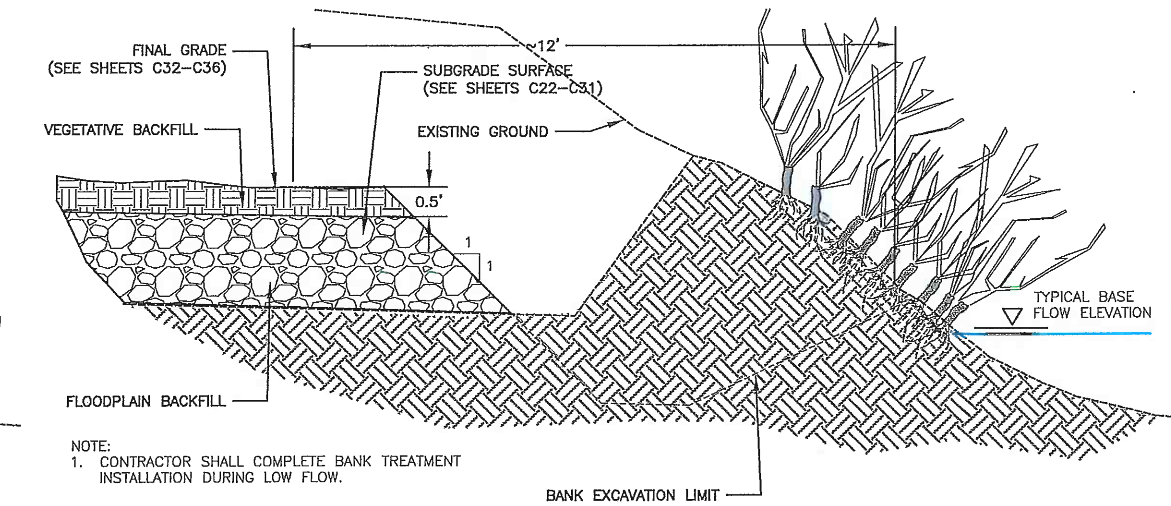


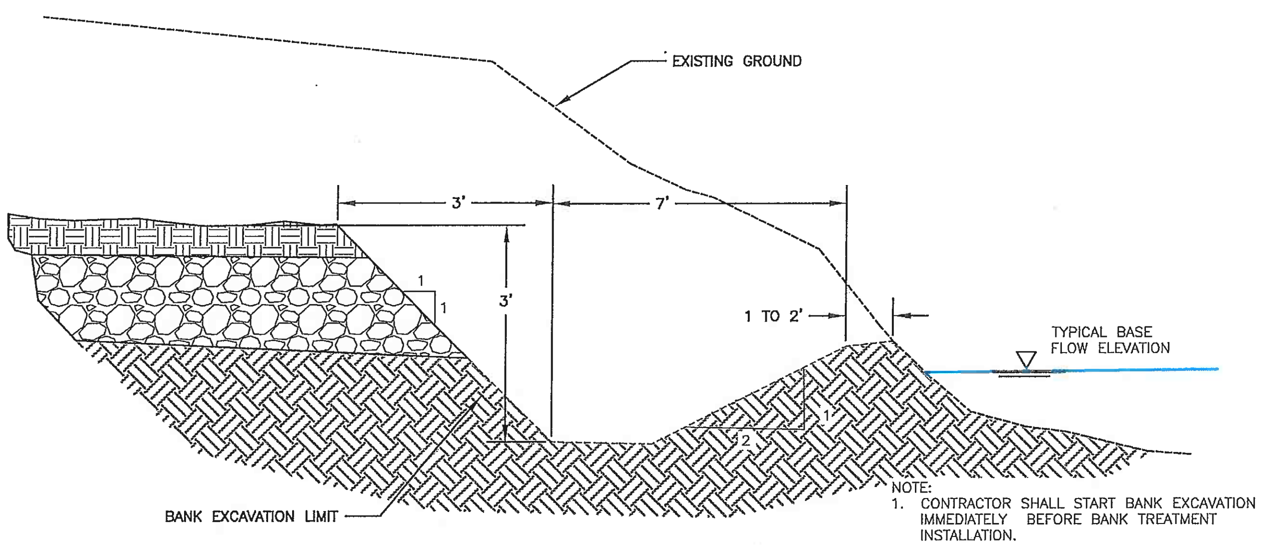
STEP 1: DVSL BANK TREATMENT – EXISTING CONDITIONS



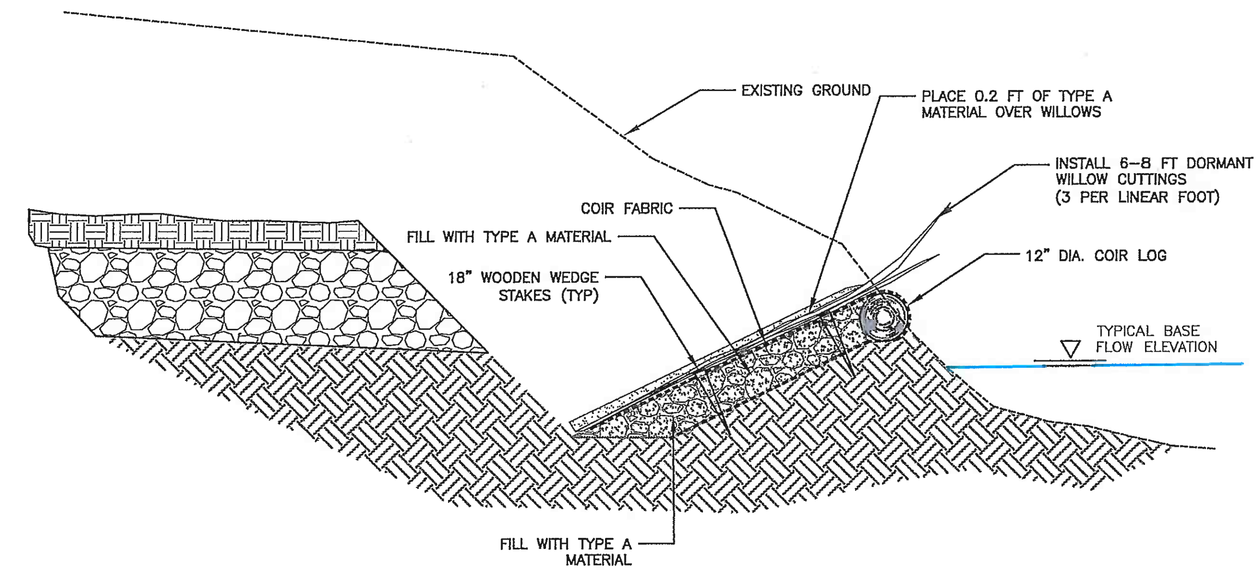
STEP 2 : DVSL BANK TREATMENT – FLOODPLAIN EXCAVATION



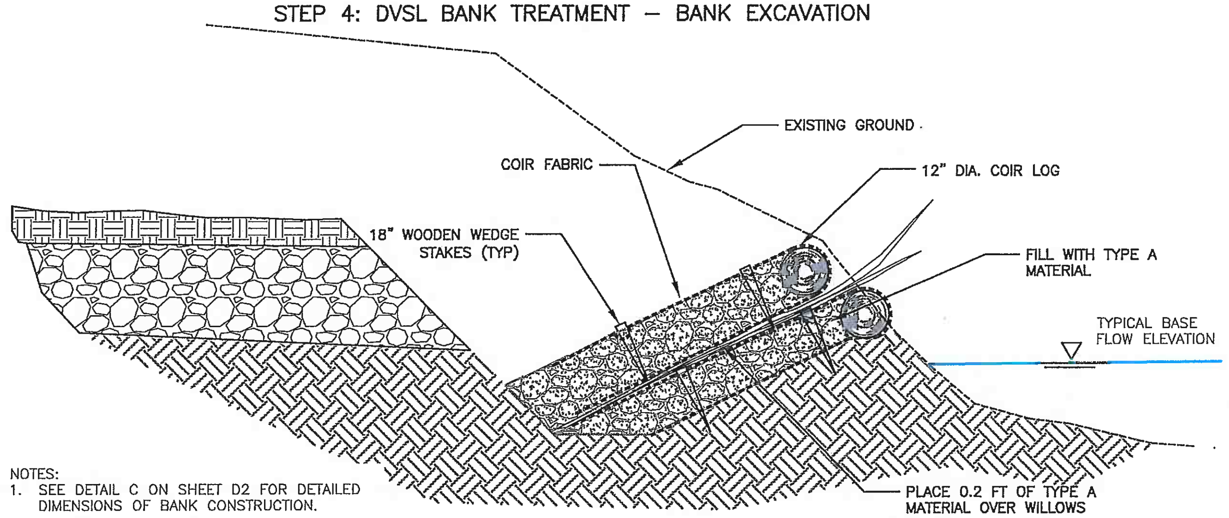
STEP 3: DVSL BANK TREATMENT – FLOODPLAIN BACKFILL



STEP 4: DVSL BANK TREATMENT – BANK EXCAVATION

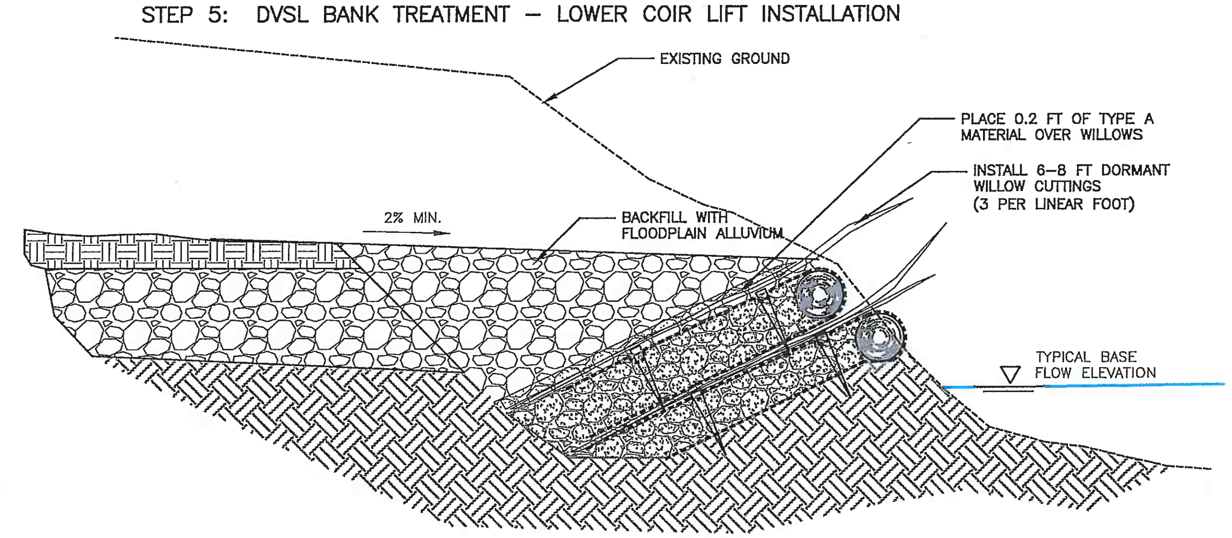


STEP 5: DVSL BANK TREATMENT – LOWER COIR LIFT INSTALLATION



NOTES:
1. SEE DETAIL C ON SHEET D2 FOR DETAILED DIMENSIONS OF BANK CONSTRUCTION.
2. SEE DETAIL D ON SHEET D2 FOR STAKING PATTERN.

STEP 6: DVSL BANK TREATMENT – UPPER COIR LIFT INSTALLATION



STEP 7: DVSL BANK TREATMENT – CUTTING INSTALLATION AND BANK BACKFILL

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

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SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

TYPICAL DOUBLE VEGETATED SOIL LIFT
BANK TREATMENT
CONSTRUCTION SEQUENCE

PROJECT NO. 103068
FILE NAME: CSDT004
SHEET NO.
D4

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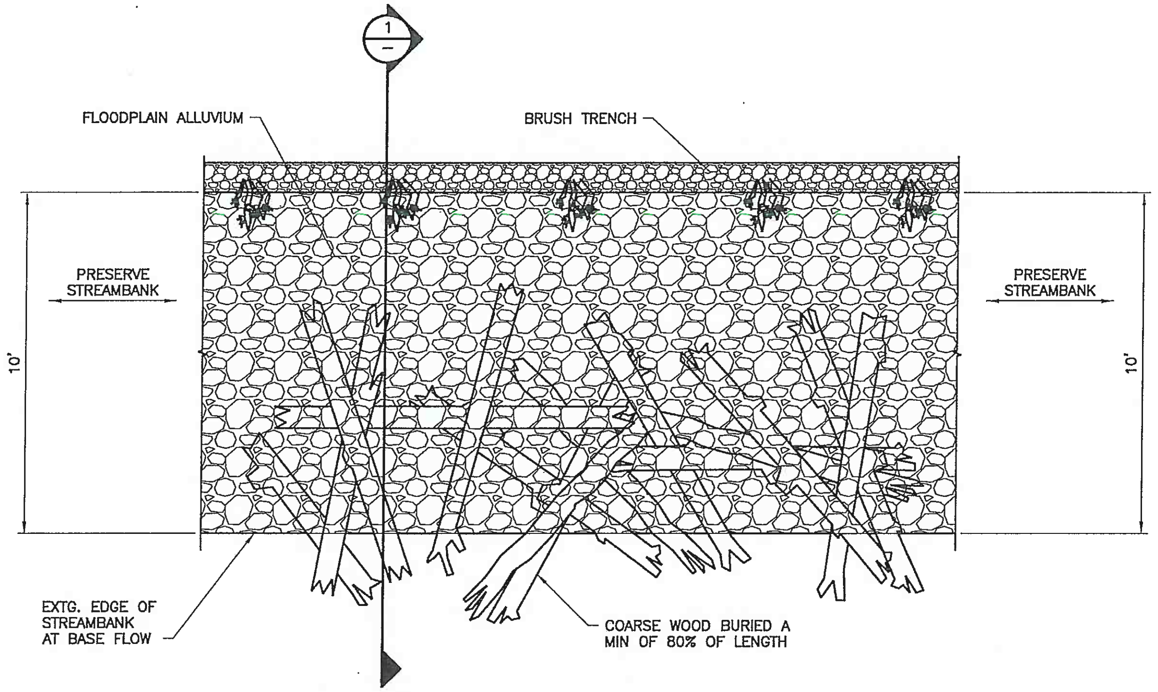
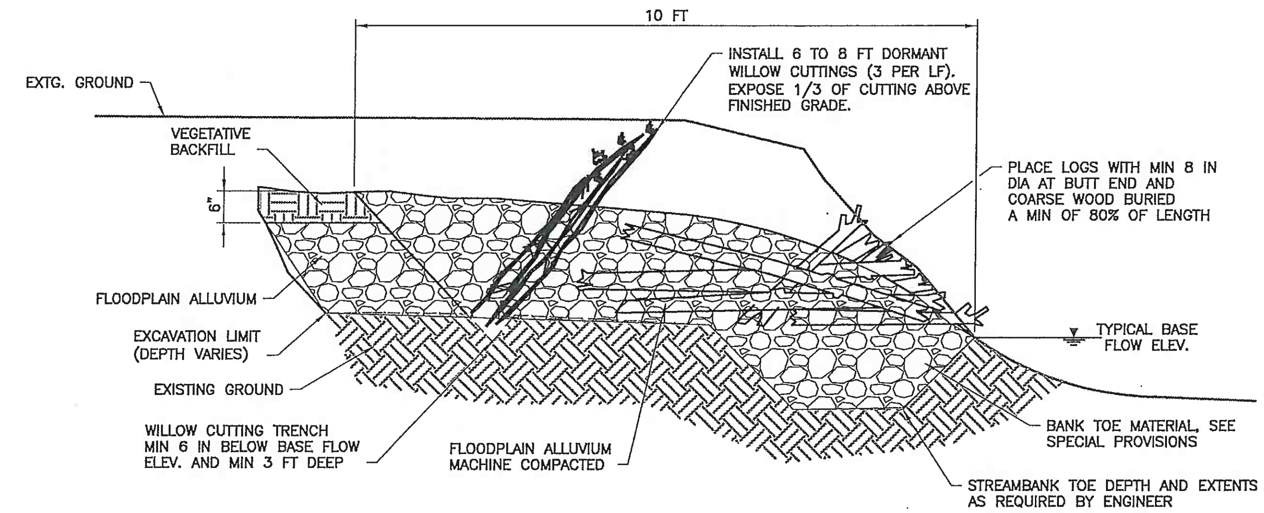


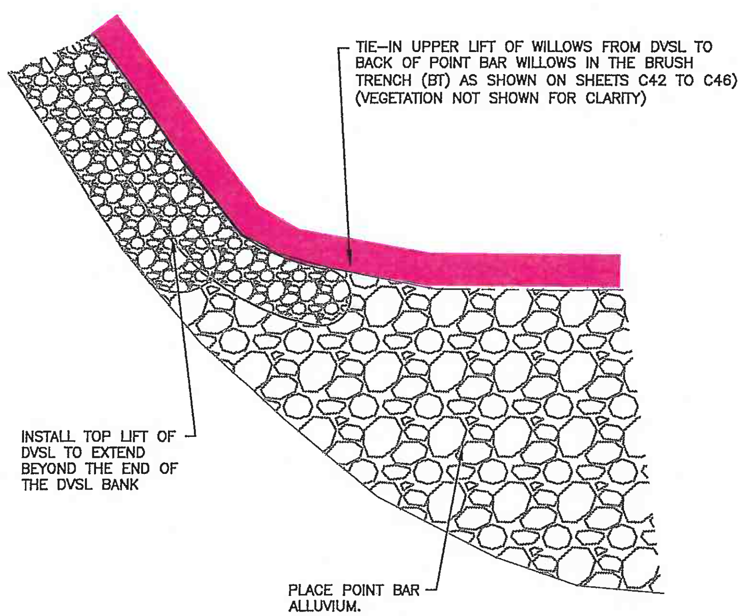
BIFURCATION STREAMBANK TREATMENT PLAN VIEW (BIF)

DETAIL C
NTS C42-46



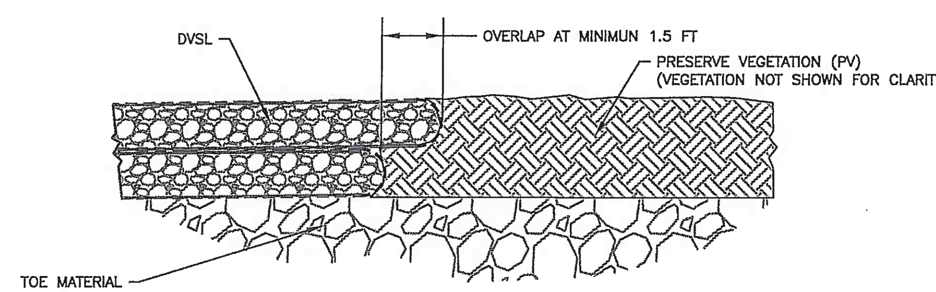
BIFURCATION STREAMBANK TREATMENT CROSS SECTION (BIF)

SECTION 1
NTS C42-46



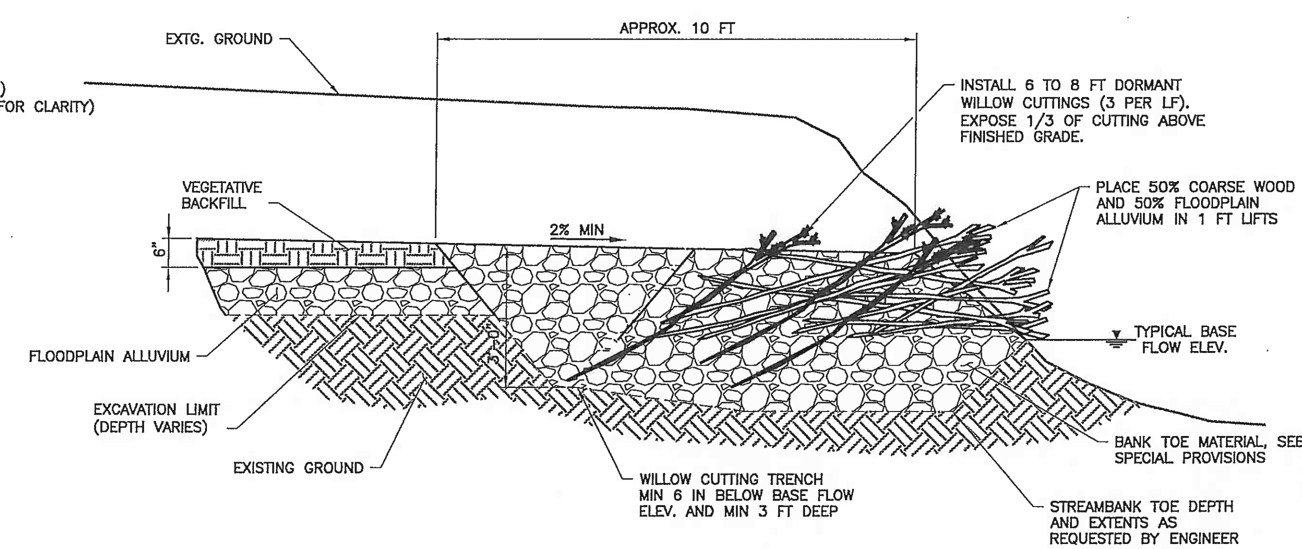
DVSL TO POINT BAR TRANSITION – PLAN VIEW

DETAIL A
NTS C42-46



DVSL TO PV TRANSITION – SECTION LOOKING INTO BANK

DETAIL B
NTS C42-46



GAP STREAMBANK TREATMENT CROSS SECTION

DETAIL D
NTS C42-46

PRELIMINARY: NOT FOR CONSTRUCTION

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
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SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

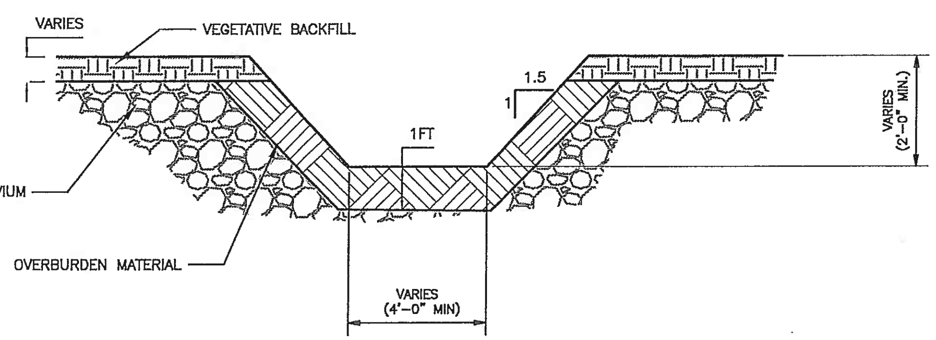
CDM Smith
50 West 14th Street Suite 200
Helena, Montana
Tel: (406) 441-1400
consulting • engineering • construction • operations

DEPARTMENT OF ENVIRONMENTAL QUALITY

CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

BIFURCATION AND GAP STREAMBANK TREATMENTS AND TREATMENT TRANSITION DETAILS

PROJECT NO. 103068
FILE NAME: CSDT005
SHEET NO.
D5

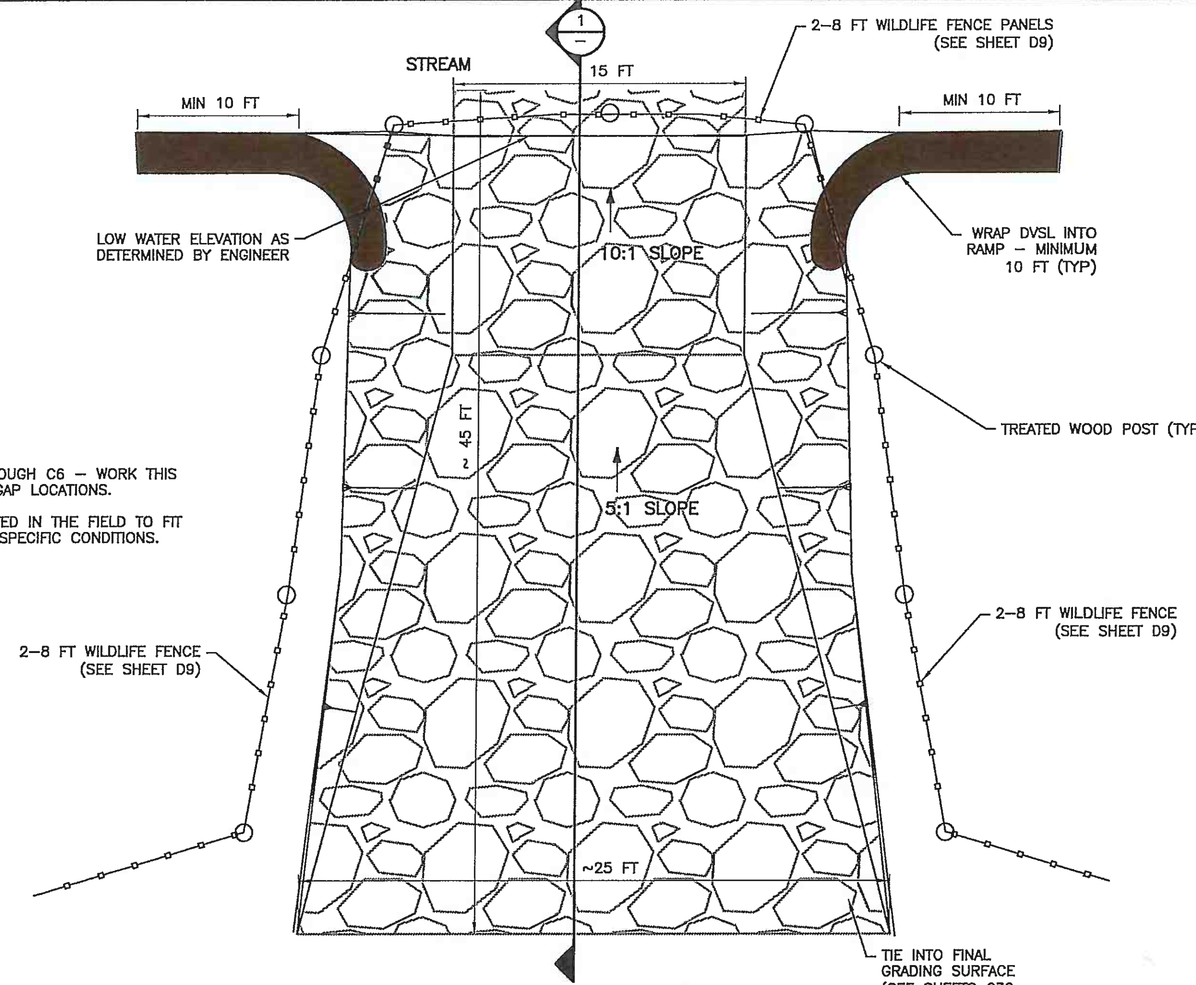


NOTE:

1. OVERBURDEN MATERIAL REFERS TO CLAY MATERIAL FROM THE BORROW AREA.

IRRIGATION DITCH

DETAIL A
NTS C34



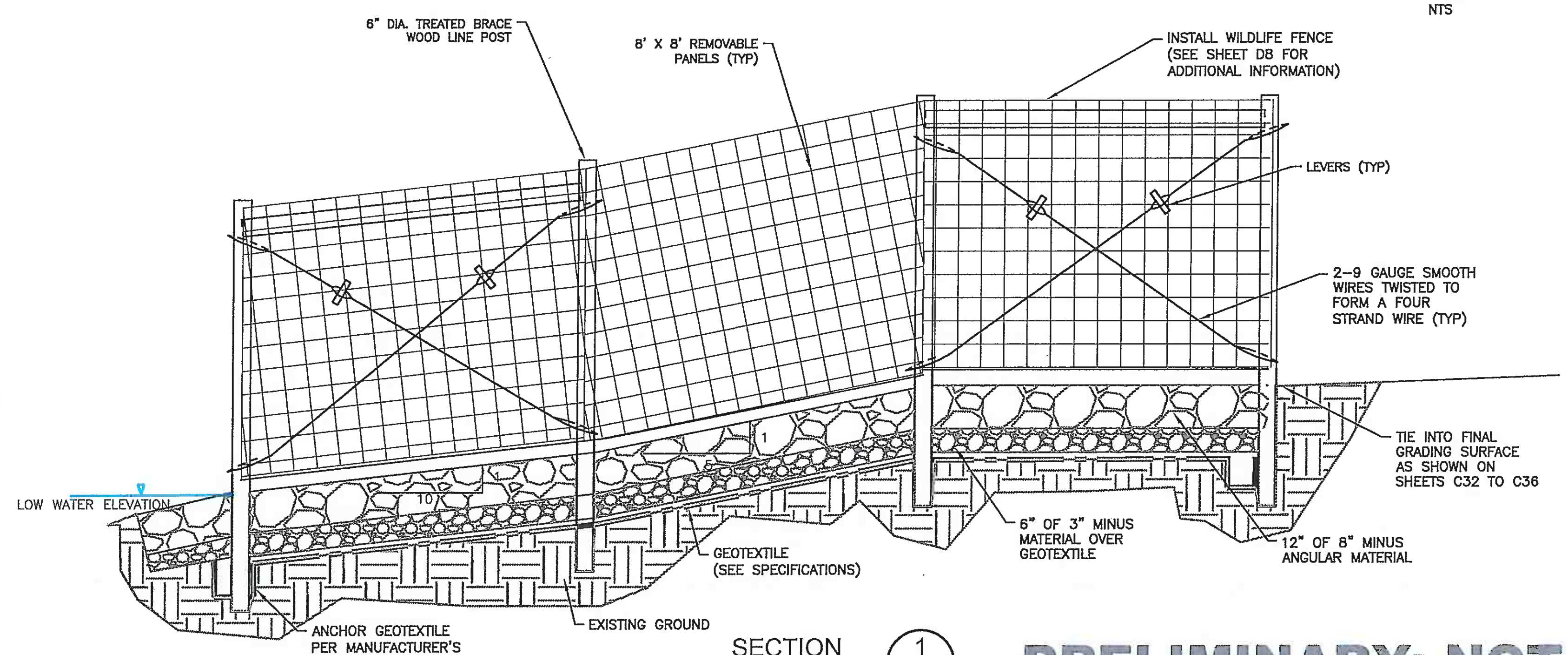
NOTES:

1. SEE SHEETS C2 THROUGH C6 – WORK THIS CONTRACT FOR WATER GAP LOCATIONS.

2. DETAIL TO BE ADJUSTED IN THE FIELD TO FIT TOPOGRAPHY AND SITE SPECIFIC CONDITIONS.

WATER GAP – PLAN VIEW

DETAIL B
NTS C2-5



SECTION 1
NTS –

PRELIMINARY: NOT FOR CONSTRUCTION

K:\CFR- PHASES 3 AND 4\dwgs design\CSDT006-8 Fencing Details.dwg SAVED:3/31/16 PRINTED:4/11/16 BY:MAINZHAUSENK

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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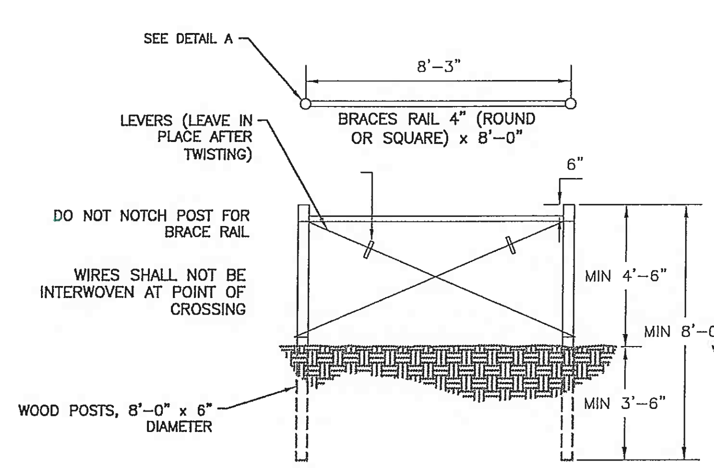
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

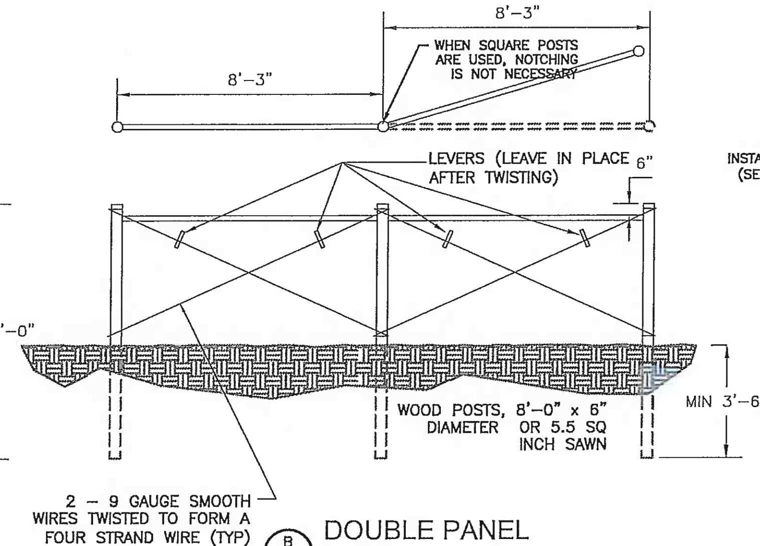
WATER GAP AND IRRIGATION DITCH DETAILS

PROJECT NO. 103068
FILE NAME: CSDT006-8
SHEET NO.
D6



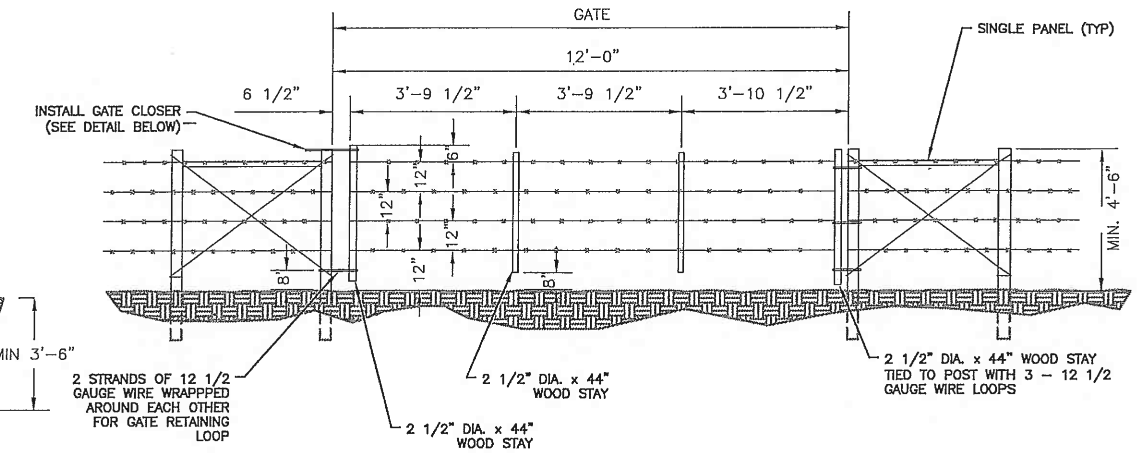
A C2-5 SINGLE PANEL
NTS

USE FOR PULLING, STRETCHING, CHANGES IN VERTICAL ALLIGNMENT OR PANELS ON A RUN LESS THAN 660'.

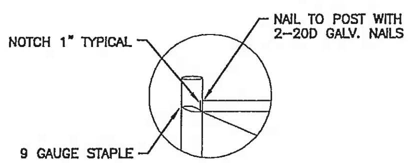


B C2-5 DOUBLE PANEL
NTS

USE FOR CORNERS WHERE RUNS ARE LESS THAN 660', CHANGES IN HORIZONTAL ALIGNMENT GREATER THAN 15 DEGREES OR PANELS ON A RUN 660'-990'

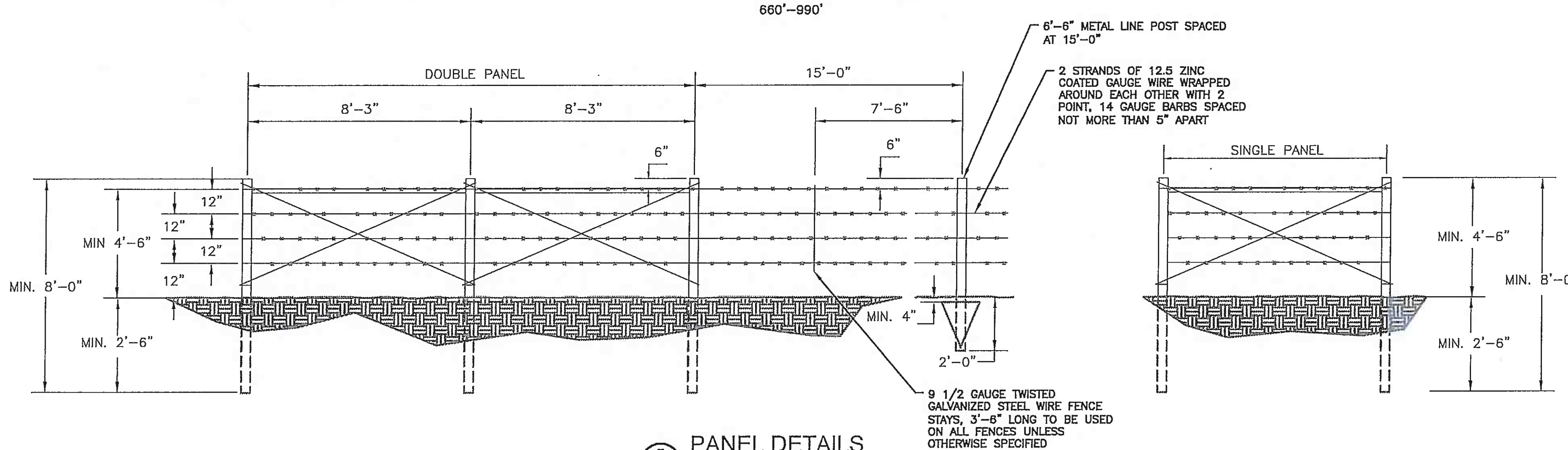


C C2-5 4 STRAND WIRE - GATE DETAIL
NTS

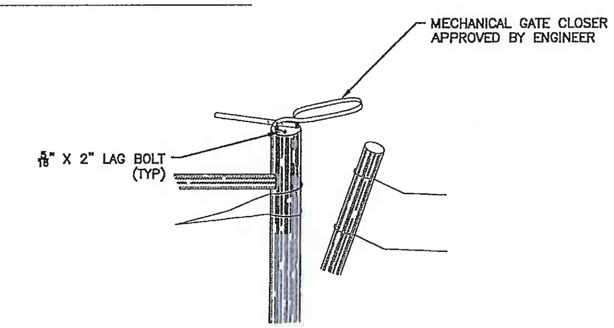


FENCE POST DETAIL

DETAIL D C2-5
NTS



E C2-5 PANEL DETAILS
NTS



F C2-5 GATE CLOSER DETAIL
NTS

NOTES:
1. ALL FENCE WIRE TO BE PLACED ON SIDE OF POST AS DIRECTED BY ENGINEER. THE WIRE SHALL BE PLACED ON THE OUTSIDE OF THE CURVE. IN AREAS SUBJECT TO HIGH VELOCITY WINDS AND MOVING DEBRIS, WIRES MAY ALL BE PLACED ON WINDWARD SIDE OF POSTS, EXCEPT ON CURVES.

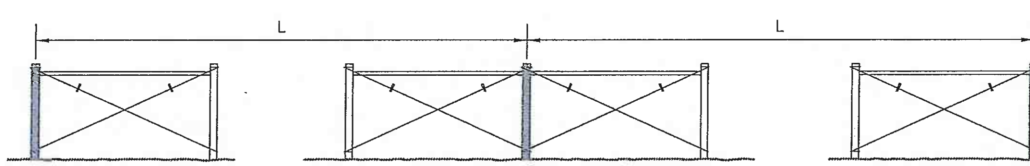
2. POST SPACING MEASURED GENERALLY PARALLEL TO GROUND.

3. LINE POST SHALL NORMALLY BE SPACED 15'-0" APART. ALSO 15'-0" FROM BRACE OR PANEL POSTS.

4. IF NECESSARY, A DEADMAN MAY BE A CONCRETE BLOCK, A CAST-IN-PLACE CONCRETE BLOCK, A ROCK OR OTHER APPROVED OBJECT, WEIGHING AT LEAST 150 POUNDS AND COVERED AT LEAST 2 FEET.

5. FOR AREAS BORDERING STATE LAND, TOP WIRE SHALL BE SMOOTH 12.5 ZE GAUGE OR LARGER WIRE.

STRAIGHT RUN REQUIREMENTS		
FENCE TYPE	PANELS L=RUN	REQ'D.
BARBED	66' - 660'	SINGLE
	660' - 990'	DOUBLE

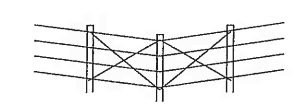


G C2-5 SINGLE PANEL
NTS

H C2-5 DOUBLE PANEL
NTS

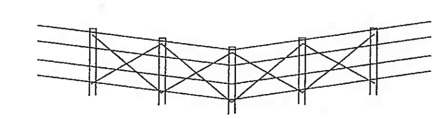
NOTE: TIE OFF WIRE ON SHADED POST.

I C2-5 SINGLE PANEL
NTS



J C2-5 DOUBLE PANEL
NTS

USE WHERE RUNS ARE LESS THAN 660 FEET OR WHERE CHANGES IN HORIZONTAL ALIGNMENT ARE GREATER THAN 14 DEGREES.



K C2-5 CORNER PANEL
NTS

USE WHERE RUNS ARE 660' TO 990'.

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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DEPARTMENT OF ENVIRONMENTAL QUALITY
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

FARM FENCE DETAILS

PROJECT NO. 103068
FILE NAME: CSDT006-8
SHEET NO.
D7

K:\CFR- PHASES 3 AND 4\dwgs design\CSDT006-8 Fencing Details.dwg SAVED: 3/3/16 PRINTED: 3/31/16 BY: MAINZHAUSENK

FENCING NOTES:
1. SEE TECHNICAL SPECIFICATIONS FOR POST AND GATE REQUIREMENTS.

2. PLACE ALL FENCE WIRE ON PASTURE SIDE OF POST, EXCEPT CURVES, THEN WIRE SHALL BE PLACED ON THE OUTSIDE OF THE CURVE. IN AREAS SUBJECT TO HIGH VELOCITY WINDS AND MOVING DEBRIS, WIRES MAY BE PLACED ON WINDWARD SIDE OF POSTS, EXCEPT ON CURVES.

3. POST SPACING MEASURED GENERALLY PARALLEL TO GROUND.

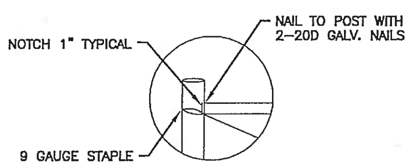
4. LINE POST SHALL NORMALLY BE SPACED 12.5 FT CENTER TO CENTER APART. ALSO 12.5 FT. FROM BRACE OR PANEL POSTS.

5. TO ATTACH WOVEN WIRE TO AN END POST, REMOVE TWO OR THREE VERTICAL STAY WIRES FROM THE END OF THE FENCE. PLACE THE FIRST COMPLETE VERTICAL STAY WIRE AGAINST THE POST. START AT THE MIDDLE OF THE HORIZONTAL LINE WIRES, WRAPPING AROUND THE END POST AT LEAST TWO TIMES AND THEN WRAPPING AROUND ITSELF FIVE TIMES.

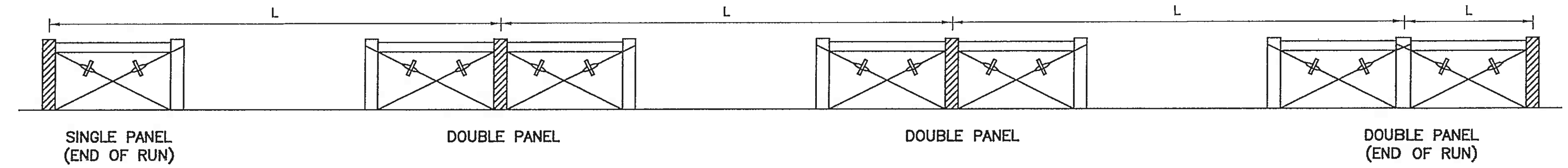
6. A DEADMAN MAY BE A PRECAST CONCRETE BLOCK, A CAST-IN-PLACE CONCRETE BLOCK, A ROCK OR OTHER APPROVED OBJECT, WEIGHING AT LEAST 265 POUNDS AND COVERED AT LEAST 2 FEET. ATTACH THE DEADMAN TO THE FENCE WITH 3 STRANDS OF 9 GAUGE WIRE OR 6 STRANDS FOR 12.5 GAUGE WIRE.

7. STAPLE THE BOTTOM, TOP, CENTER AND ALTERNATE WIRES OF WOVEN FENCE TO WOOD LINE POSTS.

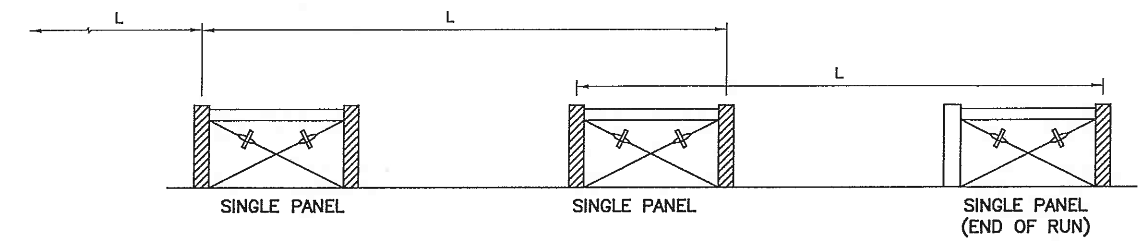
8. STAPLE ALL WIRES OF WOVEN WIRE TO WOOD CORNER POSTS OR POST USED TO TIE-OFF WIRE.



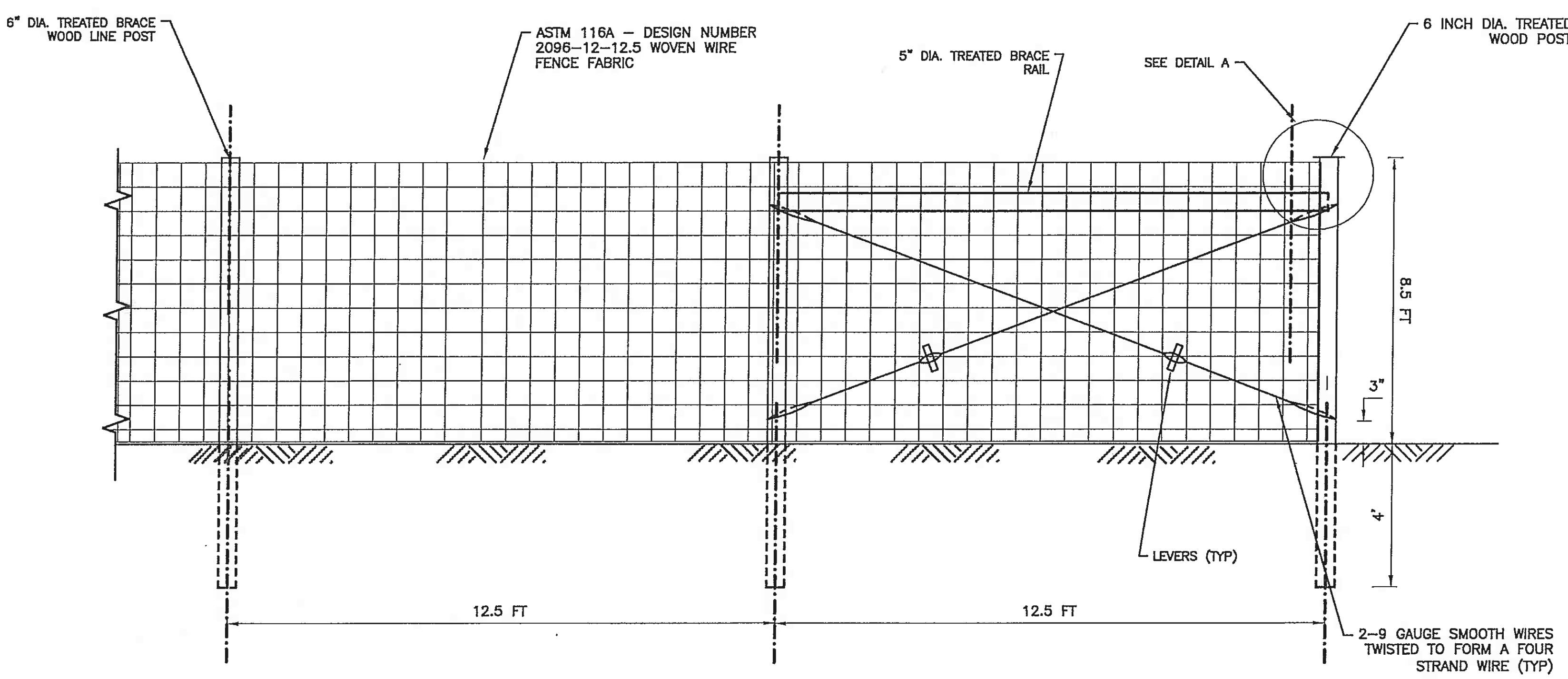
FENCE POST DETAIL
DETAIL A
NTS
C2-5



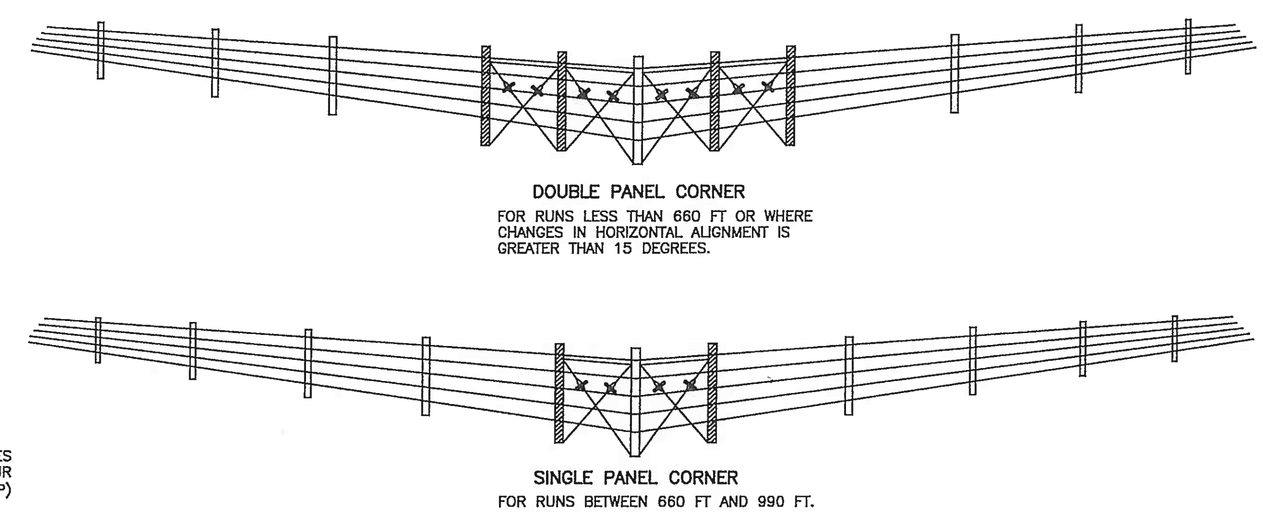
STRAIGHT RUN REQUIREMENTS		
FENCE TYPE	PANELS L=RUN	PANELS REQUIRED
WILDLIFE	66' OR LESS	TERMINAL POST
	66' – 660'	SINGLE
	660' – 990'	DOUBLE



C
C2-5
PANEL DETAILS
NTS



WILDLIFE FENCE
DETAIL B
NTS
C2-5



CORNER PANELS
DETAIL D
NTS
C2-5

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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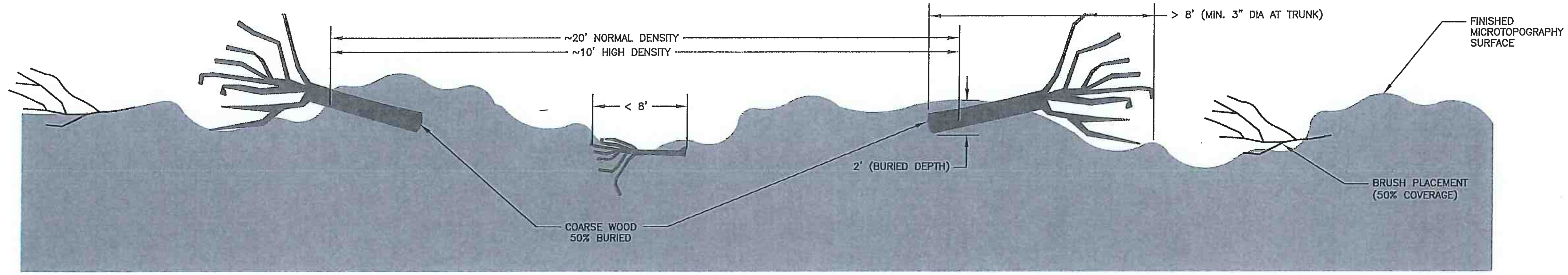
CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

WILDLIFE FENCING DETAILS

PROJECT NO. 103068
FILE NAME: CSDT006-8
SHEET NO.
D8

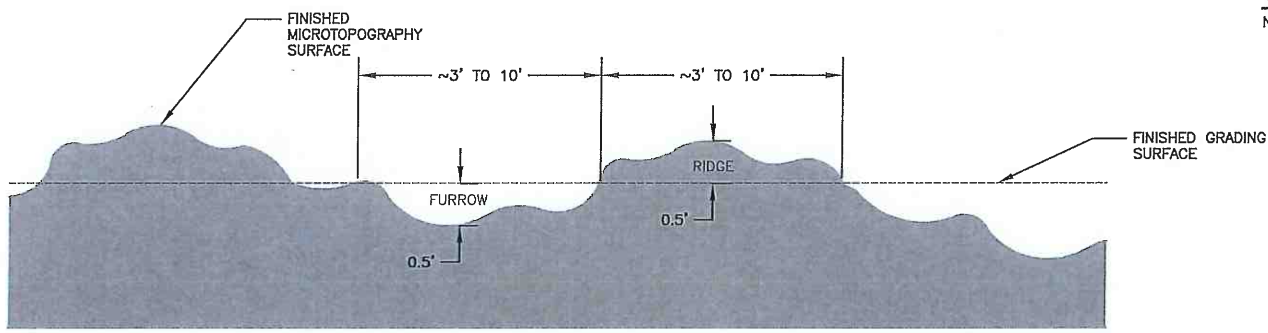
K:\CFR- PHASES 3 AND 4\dwgs design\CSDT006-8 Fencing Details.dwg SAVED: 3/3/16 PRINTED: 3/31/16 BY: MAINZHAUSENK



TYPICAL WOOD AND BRUSH PLACEMENT

SECTION 1 / –

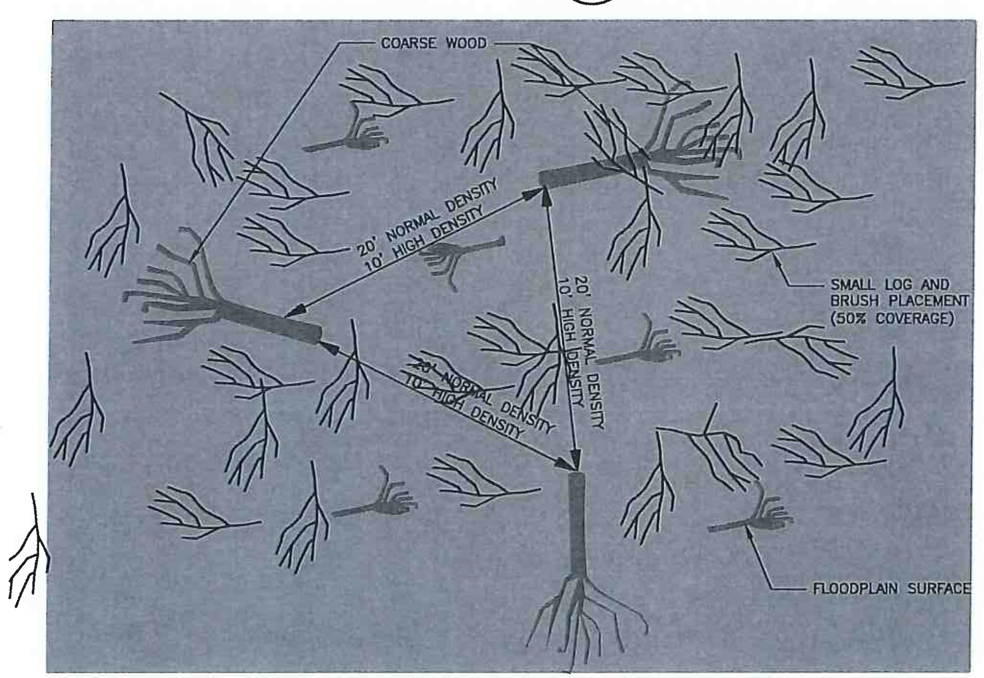
NTS



TYPICAL MICROTOPOGRAPHY GRADING

SECTION 2 / –

NTS



WOOD AND BRUSH PLACEMENT – PLAN VIEW

DETAIL C / C16,17

NTS

NOTES

1. PLACE COARSE WOOD IN ACCORDANCE WTIH BID ITEM NO XX. PLACE NORMAL DENSITY WOODY MATERIAL IN ACCORDANCE WITH BID ITEM NO XX, PLACE HIGH DENSITY WOODY MATERIAL, IN THE LOCATIONS SHOWN ON SHEETS C37 – C41, VEGETATIVE BACKFILL DEPTHS.
2. BURY COARSE WOOD WITHIN THE FLOODPLAIN SURFACE WITH ONE HALF OF THE LENGTH BURIED TO A DEPTH OF 2 FEET AND ONE HALF EXPOSED AS SHOWN ON DETAILS.
3. CONSTRUCT LOW AND HIGH FEATURES (RIDGES AND FURROWS) AS SHOWN ON DETAILS. MAXIMUM HEIGHT OF RIDGES AND DEPTH OF FURROWS SHALL BE NO GREATER THAN 0.5 FOOT RELATIVE TO FINAL GRADE, IN ACCORDANCE WITH BID ITEM NO XX, DEVELOP MICROTOPOGRAPHY.

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KM
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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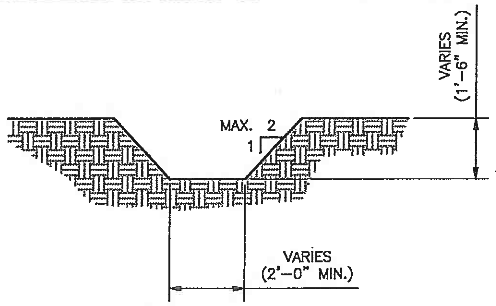
DEPARTMENT OF ENVIRONMENTAL QUALITY

CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

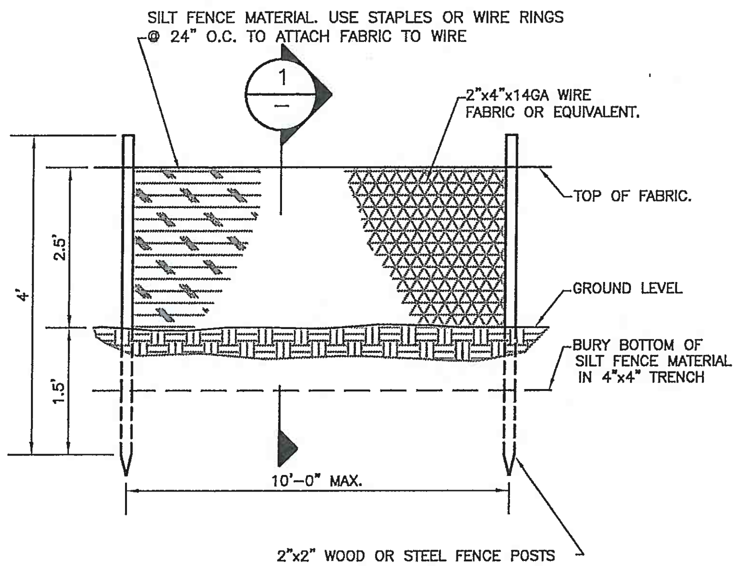
MICROTOPOGRAPHY, WOOD AND BRUSH PLACEMENT DETAILS

PROJECT NO. 103068
FILE NAME: CSDT010
SHEET NO. D9



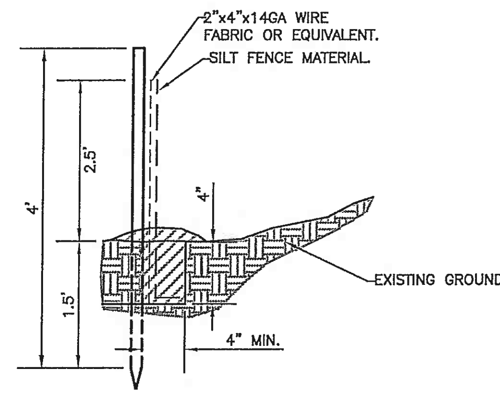
DIVERSION DITCH

DETAIL A
NTS



SILT FENCE

DETAIL B
NTS

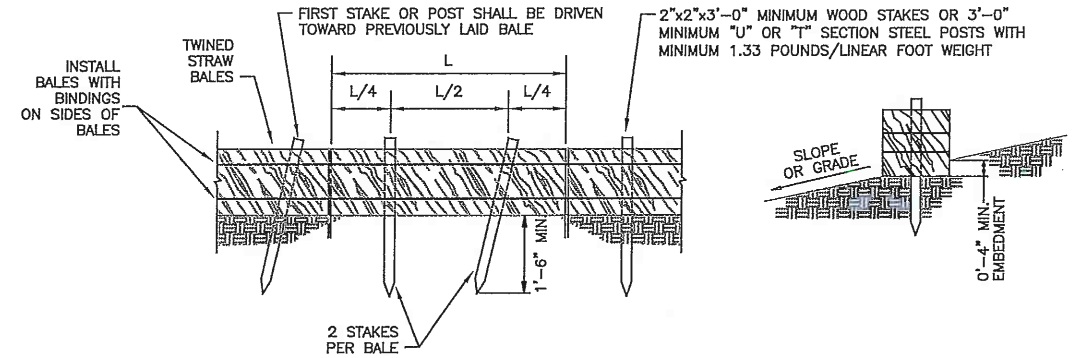


SILT FENCE

SECTION 1
NTS

NOTE:

1. SILT FENCE SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.

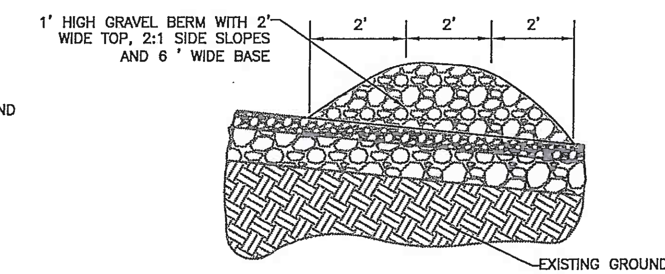


STRAW BALE

DETAIL D
NTS

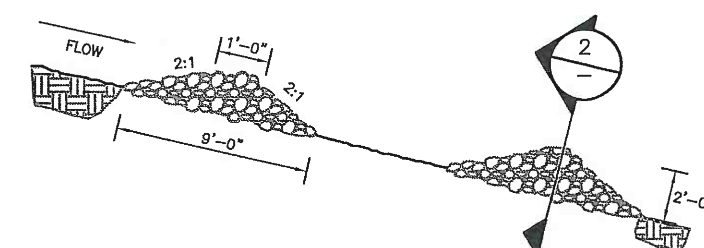
NOTE:

1. SEE SUBSECTION 9F OF THE SPECIAL PROVISIONS FOR INSTALLATION, MAINTENANCE AND REMOVAL OF EROSION CONTROL.



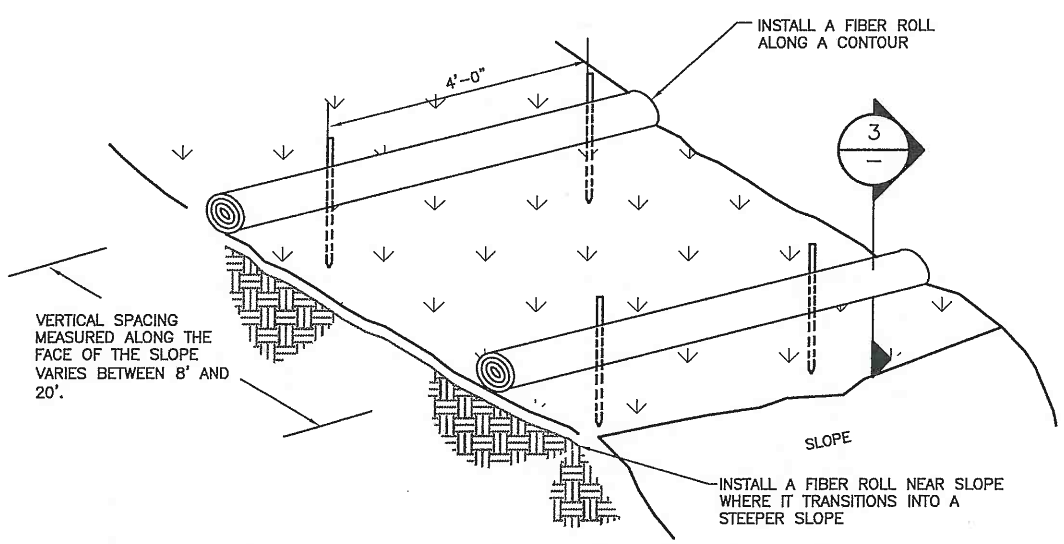
ROCK BERM

DETAIL E
NTS



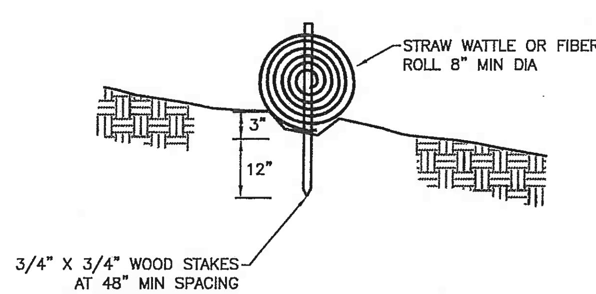
CHECK DAM

DETAIL F
NTS



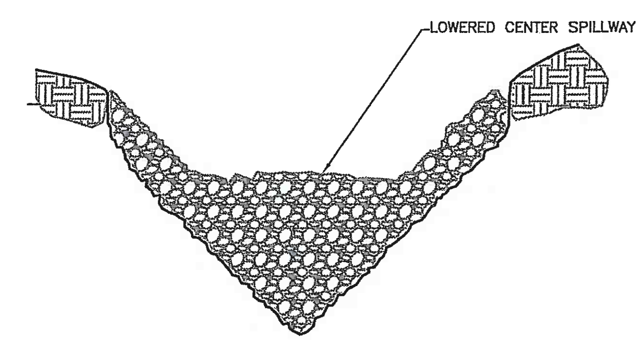
STRAW WATTLES OR FIBER ROLLS

DETAIL C
NTS



STRAW WATTLE OR FIBER ROLLS

SECTION 3
NTS



CHECK DAM

SECTION 2
NTS

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS
01	1.03.13	KM	WHB	MODIFIED SILT FENCE MESH SIZE TO 2"X4"X14GA WIRE FABRIC

DESIGNED BY: WHB
DRAWN BY: KM
SHEET CHK'D BY: TJ
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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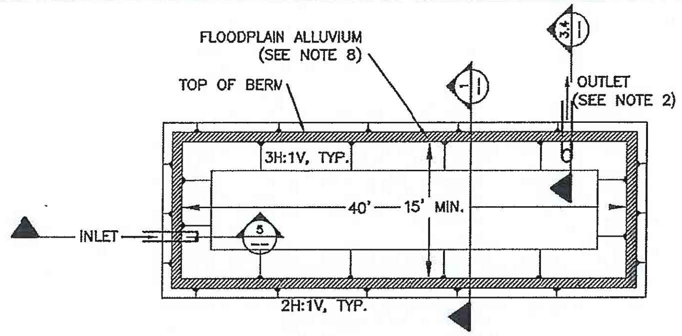
DEPARTMENT OF ENVIRONMENTAL QUALITY

CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

EROSION CONTROL DETAILS

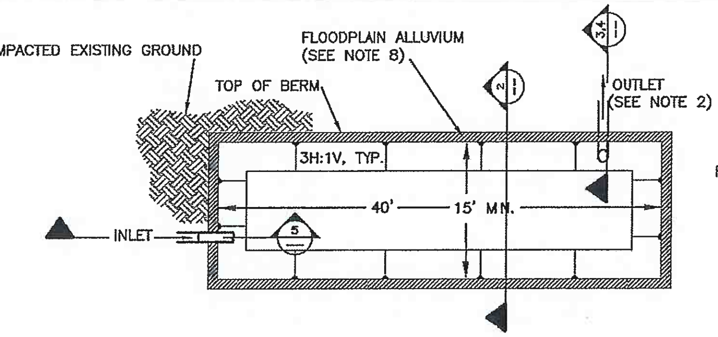
PROJECT NO. 10306B
FILE NAME: DSTPL07.DWG
REVISED SHEET NO.
D10

K:\CFR- PHASES 3 AND 4\dwgs design\CSDT010-Erosion Control.dwg SAVED: 2/17/16 PRINTED: 3/31/16 BY: MAINZHAUSENK



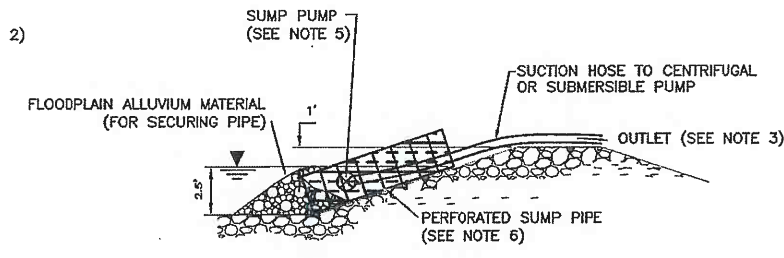
RAISED SEDIMENT DETENTION POND

DETAIL A
NTS C6,C7



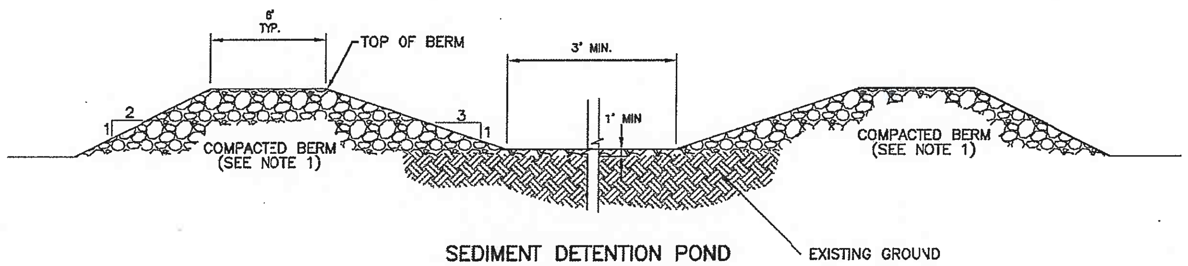
RECESSED SEDIMENT DETENTION POND

DETAIL B
NTS C6,C7



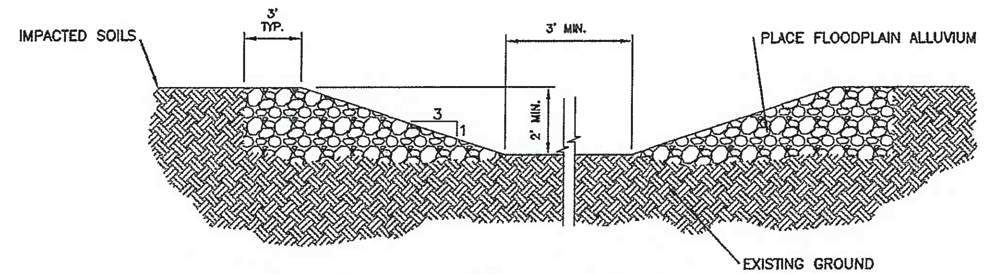
PUMP OUTLET (TYP) SEE NOTE 11

SECTION 4
NTS –



SEDIMENT DETENTION POND

SECTION 1
NTS –



SEDIMENT DETENTION POND

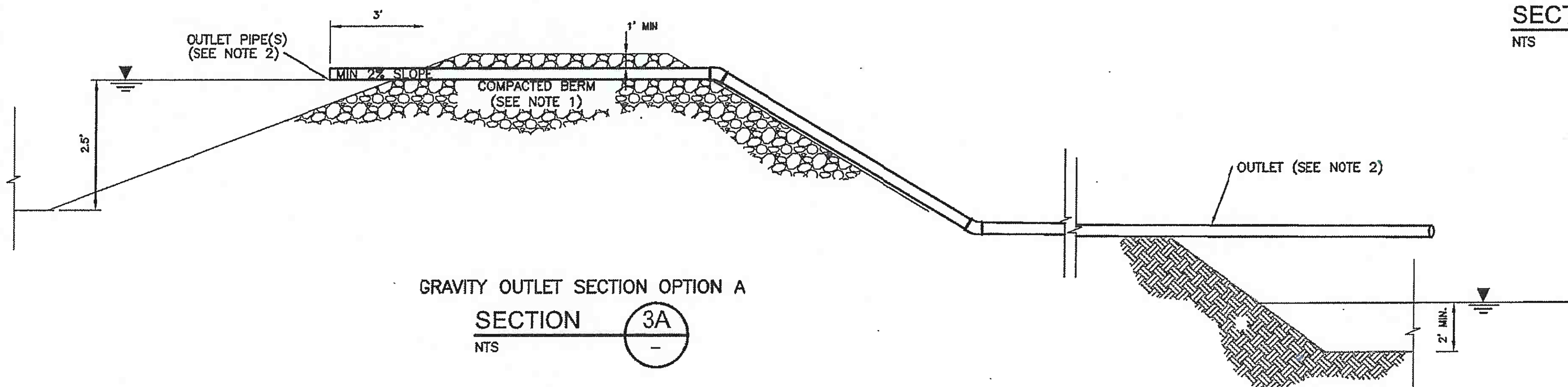
SECTION 2
NTS –

GENERAL NOTES:

1. FILL FOR CONSTRUCTING SEDIMENT DETENTION PONDS SHALL BE CLEAN LOCAL FLOODPLAIN ALLUVIUM. FILL SHALL BE PLACED BY 1' LIFTS AND MECHANICALLY COMPACTED. FILL SHALL HAVE NO ROCKS LARGER THAN 6" DIAMETER. EACH COMPACTED LIFT SHALL BE SCARIFIED TO A DEPTH OF AT LEAST 2" PRIOR TO THE PLACEMENT OF THE NEXT LIFT.
2. OUTLET PIPE CAPACITY SHALL MEET OR EXCEED POND INFLUENT RATES. IF PIPE PROJECTS BEYOND BANK IT MUST DISCHARGE TO RIVER WATER AT LEAST 2 FEET DEEP.
3. STREAM CHANNEL BANKS SHALL BE PROTECTED FROM EROSION AT THE SEDIMENT POND PUMP OUTLET DISCHARGES IN A SIMILAR MANNER AS THE GRAVITY OUTLET DISCHARGES (SECTION 3).
4. SEDIMENT DETENTION POND PUMP OUTLET SHALL HAVE A MINIMUM CAPACITY EQUAL TO SEDIMENT POND INFLUENT FLOW RATE.
5. THE PUMP SHALL HAVE A MINIMUM CAPACITY OF 1GAL/MIN/100FT OF TRENCH, OR 100GAL/MIN PER WELL POINT SUMP.
6. SUMP PIPE SHALL BE HAVE MINIMUM DIAMETER OF 24". OPEN SPACE OF PERFORATIONS IN SUMP PIPE SHALL EXCEED 80 SQUARE INCHES PER 100 FEET OF TRENCH.
7. PROVIDE SUITABLE RIGID SUPPORT FOR PIPING AND ELECTRICAL CROSSINGS OF DEWATERING TRENCHES, AND ACTIVE STREAM CHANNEL.
8. SEDIMENT ACCUMULATED IN PONDS AND FLOODPLAIN ALLUVIUM USED AS FILL IN THE DEWATERING SYSTEM SHALL BE CONSIDERED CONTAMINATED UPON ABANDONMENT. FILL SHALL BE DISPOSED OF IN ACCORDANCE WITH BID ITEM NO. 19. EXCAVATE, HAUL AND PLACE TAILINGS/IMPACTED SOIL.
9. ALL PETROLEUM POWERED PUMPS AND FUEL CONTAINERS SHALL BE PLACED IN SECONDARY CONTAINMENT WITH A MINIMUM CAPACITY OF 200% OF THE FUEL VOLUME.
10. IF GRAVITY OUTLET TO THE SEDIMENT DETENTION POND CANNOT BE INSTALLED, A PUMP OUTLET WILL BE USED.
11. SEDIMENT PONDS ARE DESIGNED TO TREAT UP TO 500 GPM. OTHER TREATMENT CAPACITIES AND DIMENSIONS CAN BE CONSTRUCTED WITH APPROVAL OF ENGINEER

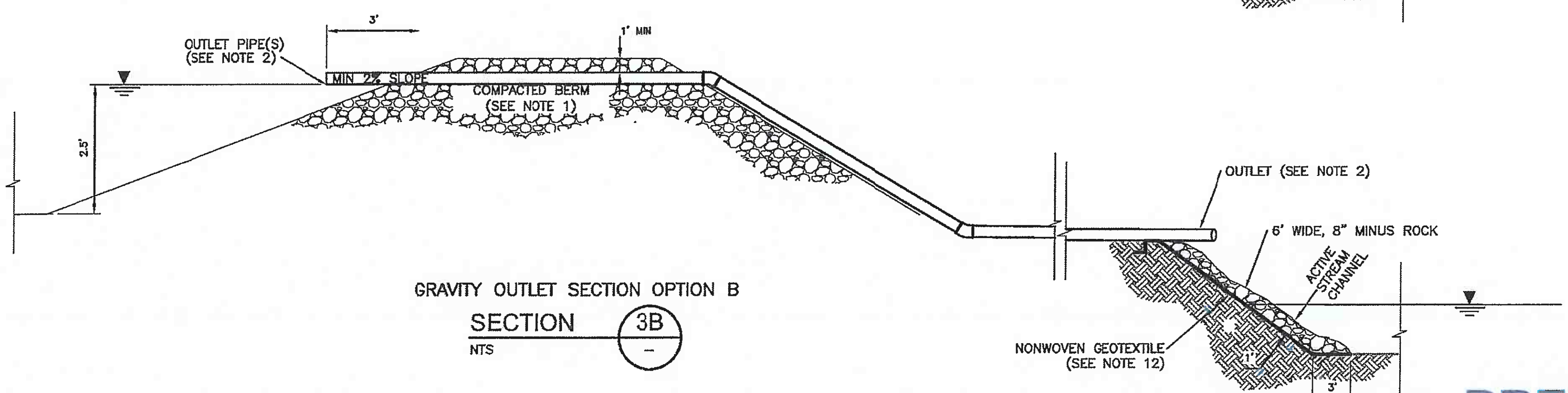
NOTES FOR SECTIONS 3 & 5:

12. THE DISCHARGE AREAS FROM THE PONDS INTO THE EXISTING OR RECONSTRUCTED STREAM CHANNEL SHALL ALSO BE PROTECTED WITH NONWOVEN GEOTEXTILE AND 8-INCH MINUS ROCK. CONTRACTOR SHALL FURNISH AND PLACE PERMEATEX 4040 NONWOVEN GEOTEXTILE MATERIAL SPECIFICATIONS TO ENGINEER IN ACCORDANCE WITH SPECIAL PROVISIONS, PARAGRAPH 23, SUBMITTALS.
13. PLACE AND ANCHOR GEOTEXTILE ON THE APPROVED SMOOTH-GRADED SURFACE. FOR SLOPE PROTECTION, PLACE THE LONG DIMENSION OF THE GEOTEXTILE DOWN THE SLOPE. FOR STREAM BANK PROTECTION, PLACE THE LONG DIMENSION OF THE GEOTEXTILE PARALLEL TO THE CENTERLINE OF THE CHANNEL.
14. OVERLAP THE GEOTEXTILE A MINIMUM OF 12 INCHES AT THE ENDS AND SIDES OF ADJOINING SHEETS OR SEW THE GEOTEXTILE JOINTS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. OVERLAP THE UPHILL OR UPSTREAM SHEET OVER THE DOWNHILL OR DOWNSTREAM SHEET. OFFSET END JOINTS OR ADJACENT SHEETS A MINIMUM OF 5 FEET. PINS MAY BE USED TO HOLD THE GEOTEXTILE IN PLACE. SPACE PINS ALONG THE OVERLAPS AT APPROXIMATELY 3 FOOT CENTERS.
15. PLACE AGGREGATE, SLOPE PROTECTION OR RIPRAP ON THE GEOTEXTILE STARTING AT THE TOE OF THE SLOPE AND PROCEED UPWARD. PLACE 8-INCH MINUS ROCK ONTO THE GEOTEXTILE FROM A HEIGHT OF LESS THAN 12 INCHES. PLACE SLOPE PROTECTION ROCK OR AGGREGATE BACKFILL ONTO THE GOETEXTILE FROM A HEIGHT OF LESS THAN 3 FEET. N UNDER WATER APPLICATIONS, PLACE THE GEOTEXTILE AND COVER MATERIAL WITHIN THE SANE DAY.



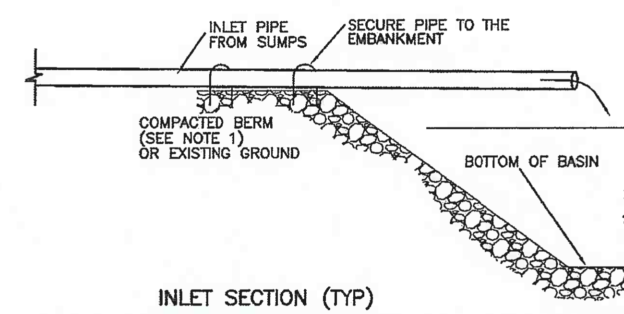
GRAVITY OUTLET SECTION OPTION A

SECTION 3A
NTS –



GRAVITY OUTLET SECTION OPTION B

SECTION 3B
NTS –



INLET SECTION (TYP)

SECTION 5
NTS –

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KJA
DRAWN BY: BTS
SHEET CHK'D BY: KM
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

CDM Smith
50 West 14th Street Suite 200
Helena, Montana
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consulting • engineering • construction • operations

DEPARTMENT OF ENVIRONMENTAL QUALITY

CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

DEWATERING PLAN DETAILS

PROJECT NO. 103068
FILE NAME: DSTPL12.DWG
SHEET NO.
D11

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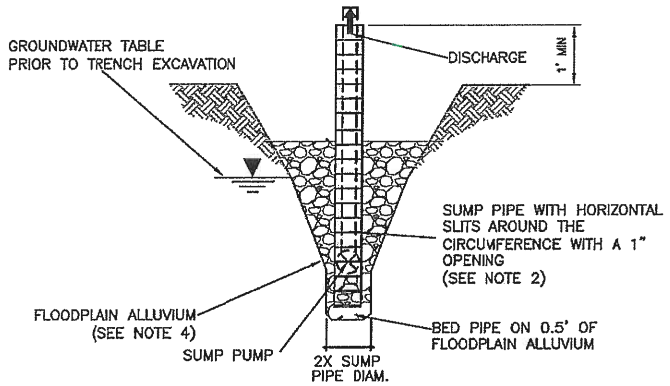
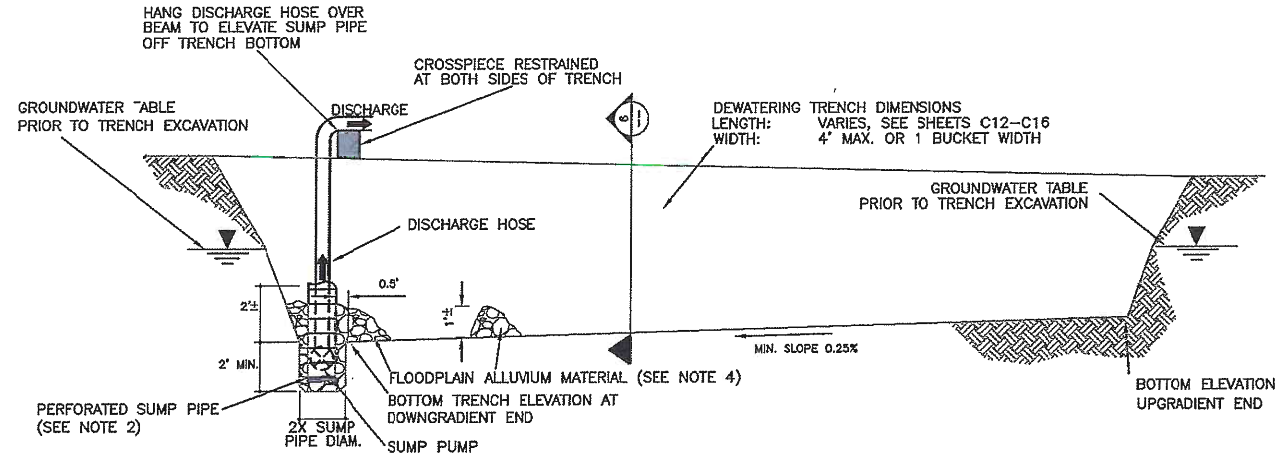


WELL POINT SUMP PROFILE (TYP)

DETAIL C
NTS
C12–16

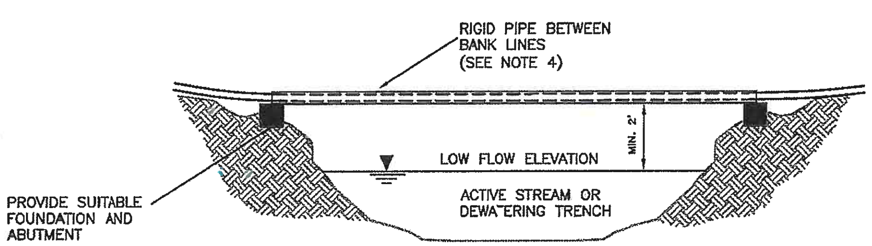


GROUNDWATER DEWATERING TRENCH AND SUMP PROFILE (TYP)

DETAIL D
NTS
C12–16

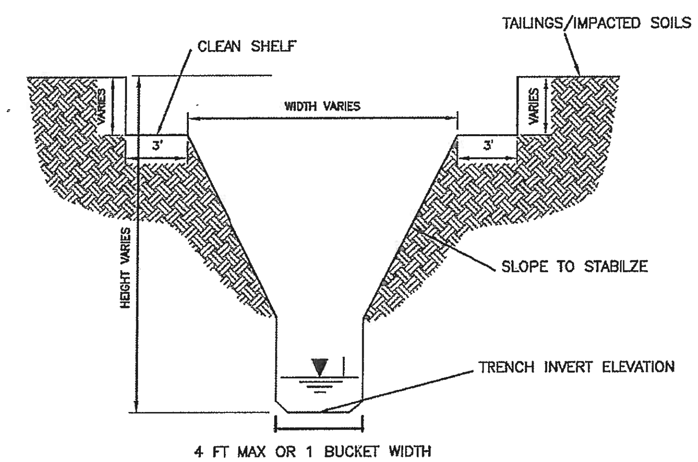
GENERAL NOTES:

1. THE PUMP SHALL HAVE A MINIMUM CAPACITY OF 1GAL/MIN/100FT OF TRENCH, OR 100GAL/MIN PER WELL POINT SUMP.
2. SUMP PIPE SHALL HAVE MINIMUM DIAMETER OF 24" OPEN SPACE OF PERFORATIONS IN SUMP PIPE SHALL EXCEED 80 SQUARE INCHES PER 100 FEET OF TRENCH.
3. PROVIDE RIGID SUPPORT FOR PIPING AND ELECTRICAL CROSSINGS OF DEWATERING TRENCHES, AND ACTIVE STREAM CHANNEL.
4. FLOODPLAIN ALLUVIUM USED AS FILL IN THE DEWATERING SYSTEM SHALL BE CONSIDERED CONTAMINATED UPON ABANDONMENT. FILL SHALL BE DISPOSED OF IN ACCORDANCE WITH BID ITEM NO. 19, EXCAVATE, HAUL AND PLACE TAILINGS/IMPACTED SOIL.
5. ALL GEVERATORS AND FUEL CONTAINERS SHALL BE PLACED IN SECONDARY CONTAINMENT WITH A MINIMUM CAPACITY OF 200% OF THE FUEL VOLUME.



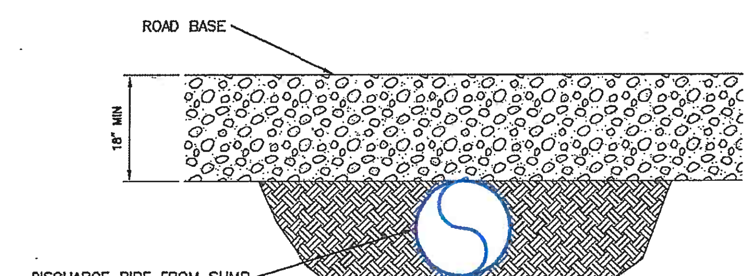
STREAM CHANNEL CROSSING (TYP)

DETAIL E
NTS
C12–16



DEWATERING TRENCH SECTION (TYP)

SECTION 6
NTS
–



SUMP DISCHARGE PIPE ROAD CROSSING (TYP)

DETAIL F
NTS
C12–16

PRELIMINARY: NOT FOR CONSTRUCTION

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: KJA
DRAWN BY: BTS
SHEET CHK'D BY: KM
CROSS CHK'D BY: WHB
APPROVED BY: WHB
DATE: APRIL 2016

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CLARK FORK RIVER
PHASES 3 AND 4 REMEDIAL ACTION

DEWATERING PLAN DETAILS

PROJECT NO. 103068
FILE NAME: DSTPL13.DWG
SHEET NO.
D12

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