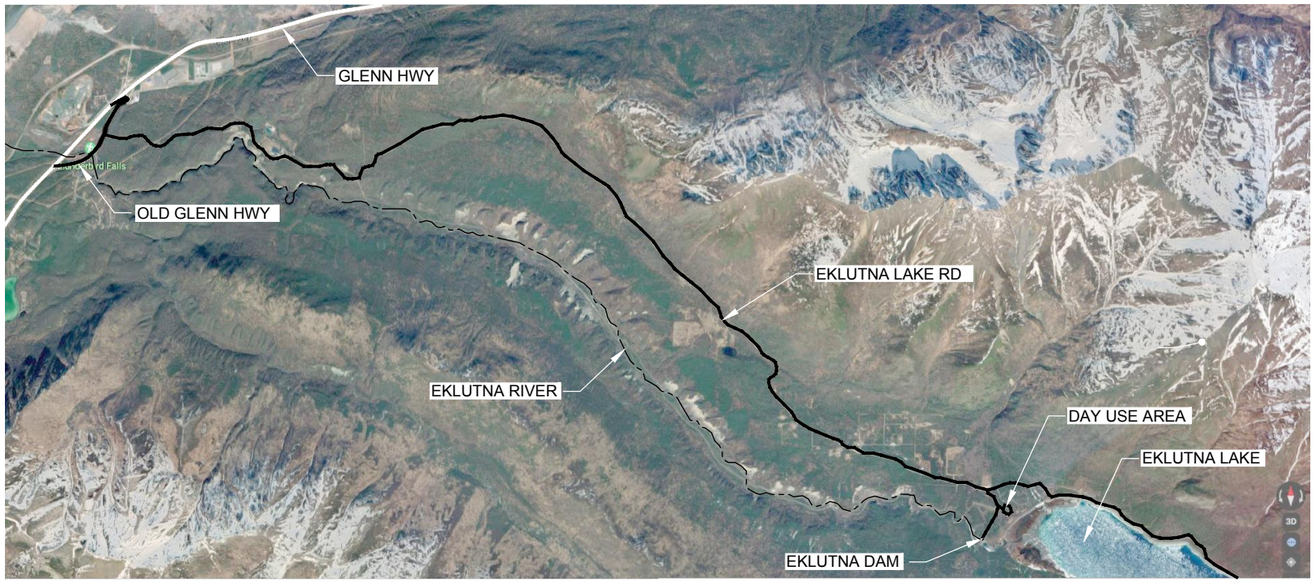
EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY
ANCHORAGE, ALASKA

CONCEPTUAL DESIGN
MAY 2023

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY
CONCEPTUAL DESIGN

LOCATION MAP
NTS



SITE LOCATION
NTS

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REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY
LOCATION MAP, SITE LOCATION AND DRAWING INDEX

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
G001

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\G001.dwg Plot date: May 08, 2023 05:51pm, CAD User: GuerreroRobert

JOB NO: 000000

GENERAL NOTES:

1. SURVEY BASED ON LIGHT DETECTION AND RANGING (LIDAR) AERIAL IMAGERY DATA CAPTURED IN MAY 2022.

   PROJECTION: UTM ZONE 6 NORTH
   HORIZONTAL DATUM: NAD83 (2011)
   VERTICAL DATUM: NAVD88 (GEOID 12B)

REFERENCE DOCUMENTS:

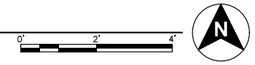
1. EKLUTNA PROJECT - ALASKA RECORD DRAWINGS, U.S. BUREAU OF RECLAMATION, 1954.

ABBREVIATIONS

AB	ANCHOR BOLT
ACP	ASPHALTIC CONCRETE PAVEMENT
CIP	CAST-IN-PLACE
CL	CENTERLINE, CLASS, CLOSE
CO	CLEAN OUT, CONCRETE OPENING COL COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CY	CUBIC YARD
DEMO	DEMOLITION
DIA	DIAMETER
DIM	DIMENSION
DIST	DISTANCE, DISTRIBUTION
EA	EACH
EF	EACH FACE
EG	EDGE OF GRAVEL
EL	ELEVATION
EXIST	EXISTING
FT	FEET, FOOT
FTG	FOOTING, FITTING
GALV	GALVANIZED
H	HORIZONTAL
HYD	HYDRAULIC
IE	INVERT ELEVATION
KO	KNOCK OUT
LF	LINEAR FOOT
MAX	MAXIMUM
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NTS	NOT TO SCALE
OC	ON CENTER
PL	PLATE, PROPERTY LINE
PRELIM	PRELIMINARY
PRES	PRESSURE
QTY	QUANTITY
R	RADIUS
REINF	REINFORCING
REQD	REQUIRED
S	SOUTH
SCH	SCHEDULE
SPEC	SPECIFICATION
STA	STATION
STD	STANDARD
STL	STEEL
TEMP	TEMPORARY, TEMPERATURE
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOPO	TOPOGRAPHY
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VAR	VARIABLE VERT VERTICAL
WSEL	WATER SURFACE ELEVATION

SHEET SYMBOLS

PLAN
SCALE: 1/2"= 1'-0"



SECTION IDENTIFICATION

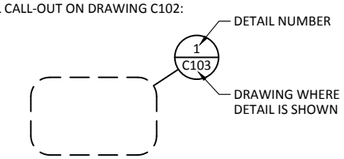
(1) SECTION CUT ON DRAWING C102:

(2) ON DRAWING C103 THIS SECTION IS IDENTIFIED AS:

SECTION VIEW
SCALE: 1/2"= 1'-0"

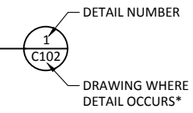
DETAIL IDENTIFICATION

(1) DETAIL CALL-OUT ON DRAWING C102:



(2) ON DRAWING C103 THIS SECTION IS IDENTIFIED AS:

DETAIL
SCALE: 1/2"= 1'-0"



*NOTE: IF PLAN AND SECTION (OR DETAIL CALL-OUT AND DETAIL) ARE SHOWN ON SAME DRAWING. DRAWING NUMBER IS REPLACED BY A LINE.

STANDARD DETAIL IDENTIFICATION

(1) DETAIL CALL-OUT ON PLAN OR SECTION:

(2) ON DETAIL DRAWINGS, IDENTIFIED AS:

DETAIL

ELEVATION/IMAGE IDENTIFICATION

HATCH SYMBOLS

	EXISTING GRADE (SECTION)	
	CONCRETE EXISTING (SECTION)	*COLOR 245,245,245
	CONCRETE 1ST STAGE (SECTION)	*COLOR 220,220,220
	CONCRETE 2ND STAGE (SECTION)	*COLOR 160,160,160
	SAND, GROUT (PLAN/SECTION)	
	STEEL (SECTION)	
	GRATING (PLAN)	

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WARNING
0 1/2 1
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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

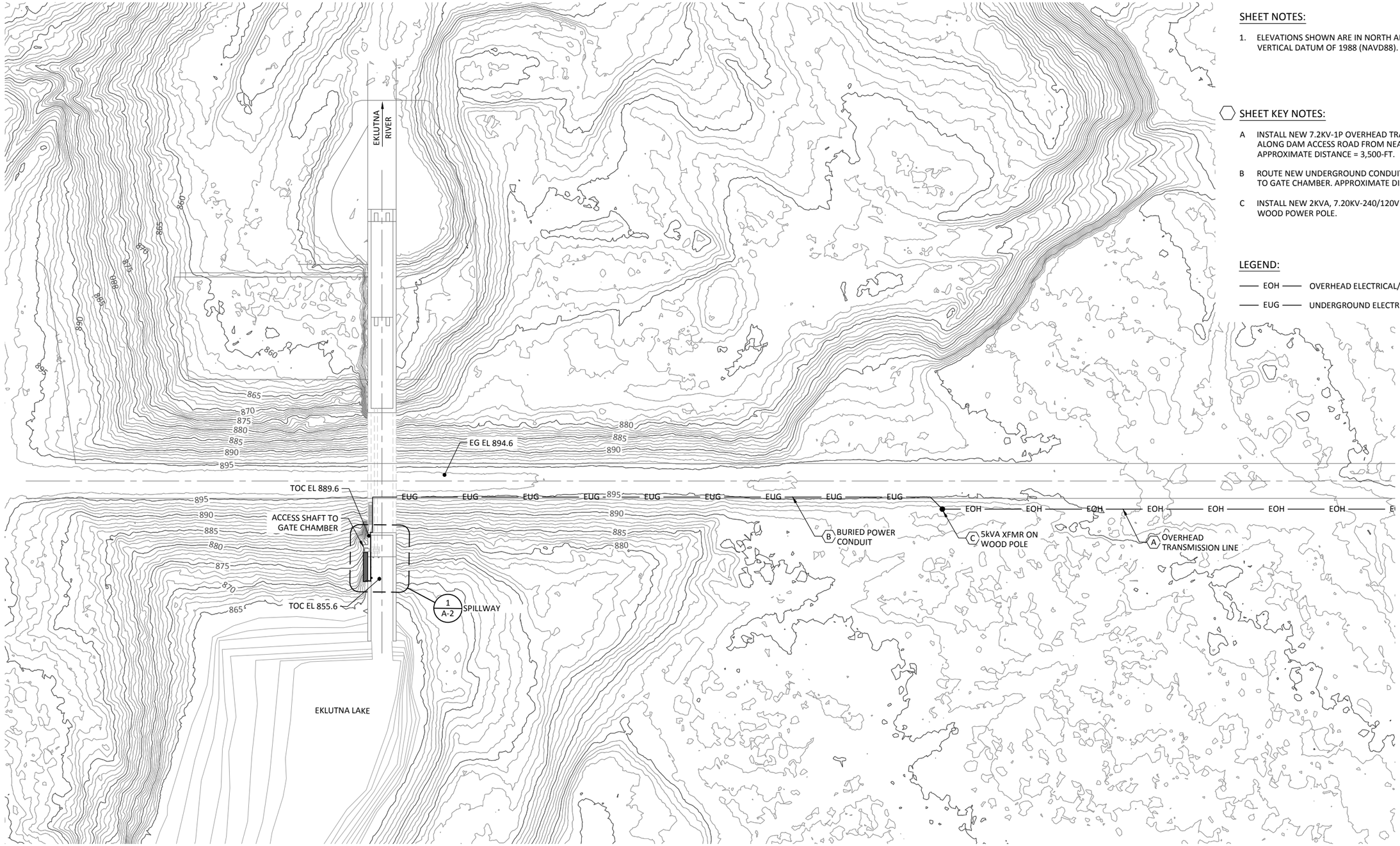
GENERAL NOTES, ABBREVIATIONS, LEGEND AND SYMBOLS

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
G002

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\G002.dwg Plot date: May 08, 2023 05:51pm, CAD User: GuerreroRobert



SITE PLAN

SCALE: 1"= 40'

0" 40' 80'

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A INSTALL NEW 7.2KV-1P OVERHEAD TRANSMISSION LINE ALONG DAM ACCESS ROAD FROM NEAREST POI. APPROXIMATE DISTANCE = 3,500-FT.

B ROUTE NEW UNDERGROUND CONDUIT FROM POWER POLE TO GATE CHAMBER. APPROXIMATE DISTANCE = 600-FT.

C INSTALL NEW 2KVA, 7.20KV-240/120V TRANSFORMER ON WOOD POWER POLE.

LEGEND:

—— EOH —— OVERHEAD ELECTRICAL/POWER

—— EUG —— UNDERGROUND ELECTRICAL

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PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
DAM RELEASE MODIFICATIONS
SITE PLAN

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

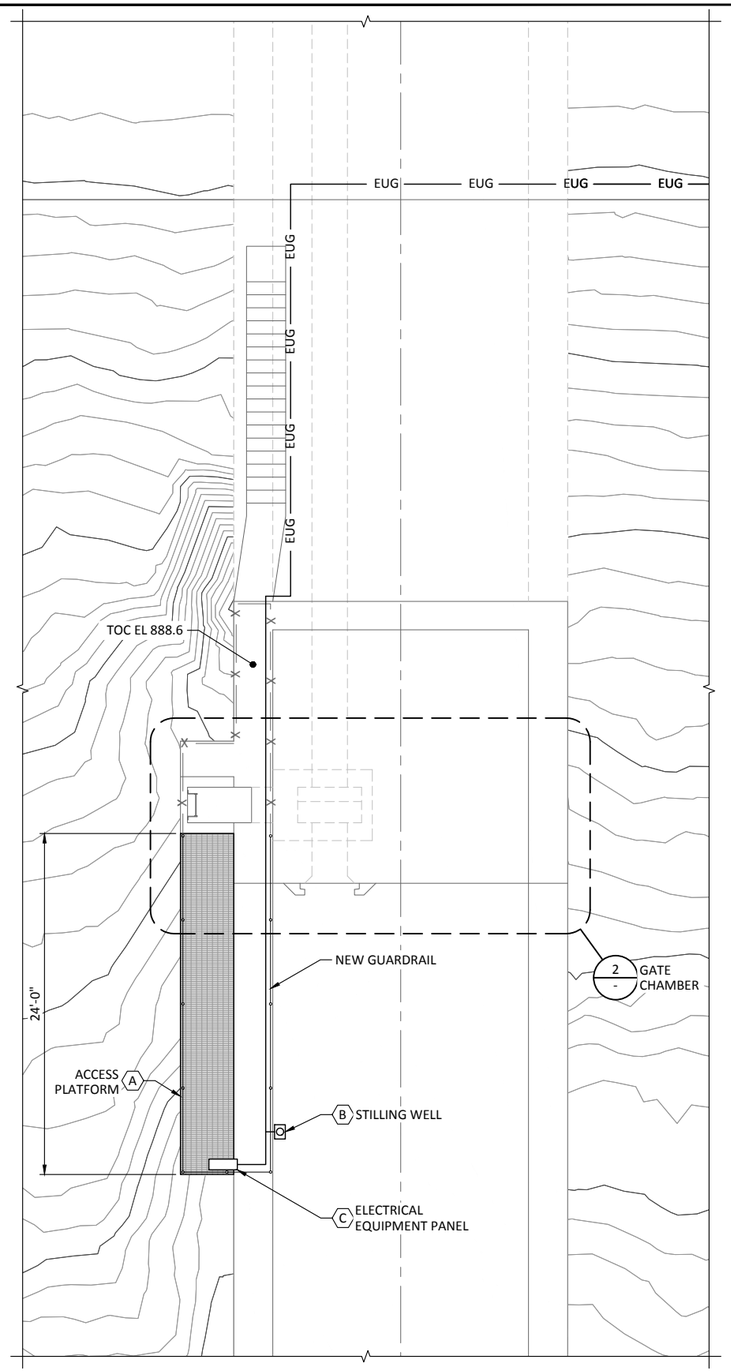
PROJECT DATE 05/12/23

DRAWING

A-1

JOB NO: 000000

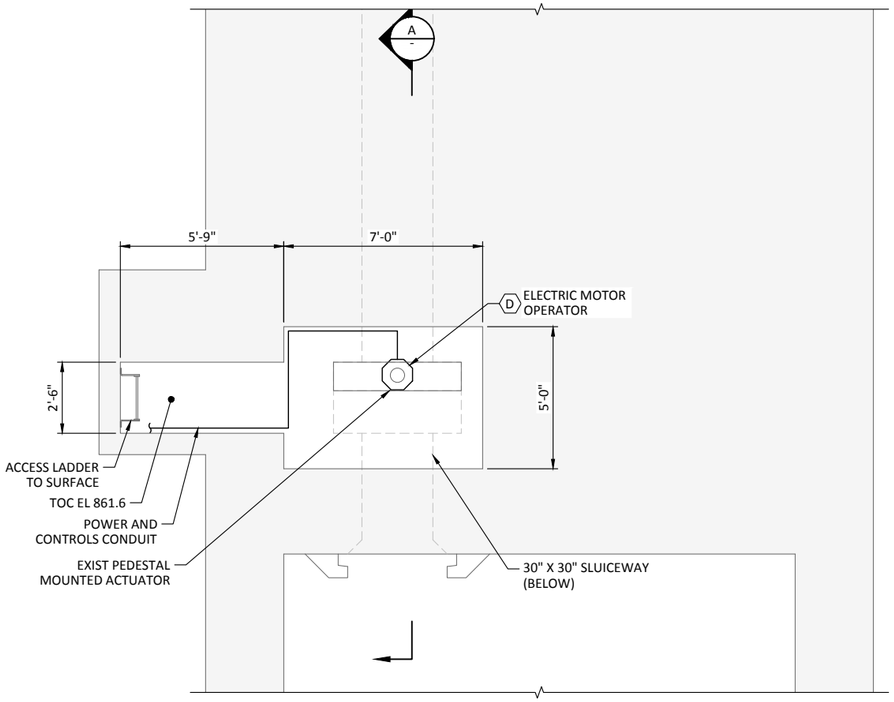
Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\A-1.dwg Plot date: May 08, 2023 05:51pm, CAD User: GuerreroRobert



SPILLWAY DETAIL

SCALE: 3/16"= 1'-0"

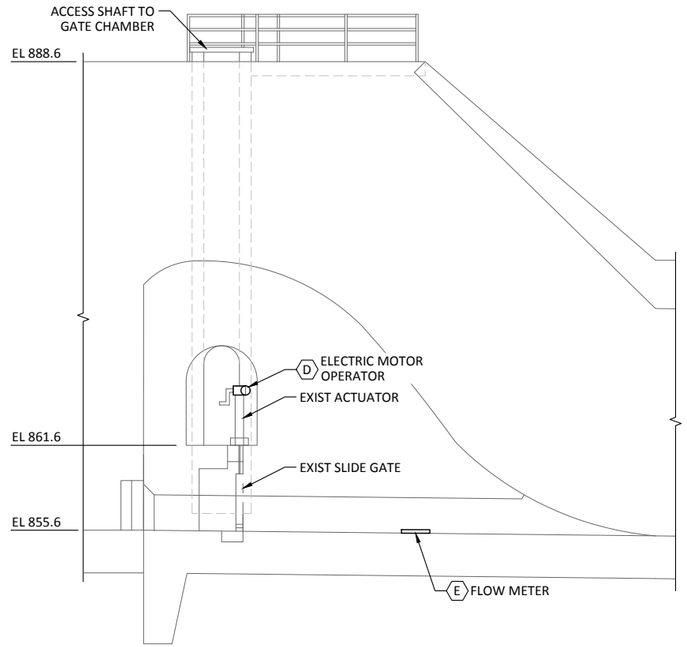
1 A-1



GATE CHAMBER PLAN

SCALE: 3/8"= 1'-0"

2 -



GATE CHAMBER SECTION

SCALE: 3/16"= 1'-0"

A -

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A INSTALL NEW O&M ACCESS PLATFORM ON SPILLWAY TRAINING WALL.

B INSTALL NEW STILLING WELL WITH SUBMERSIBLE PRESSURE TRANSDUCER.

C INSTALL NEW ELECTRICAL EQUIPMENT AND CONTROLS PANEL.

D INSTALL NEW 1,500 W 240V/1P ELECTRIC MOTOR OPERATOR ON EXISTING PEDESTAL ACTUATOR.

E INSTALL NEW ACOUSTIC DOPPLER VELOCITY METER IN EXISTING SLUICEWAY, SONTEK-IQ PIPE OR EQ.

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0 1/2 1

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McMillen

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EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
DAM RELEASE MODIFICATIONS
SECTIONS AND DETAILS

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

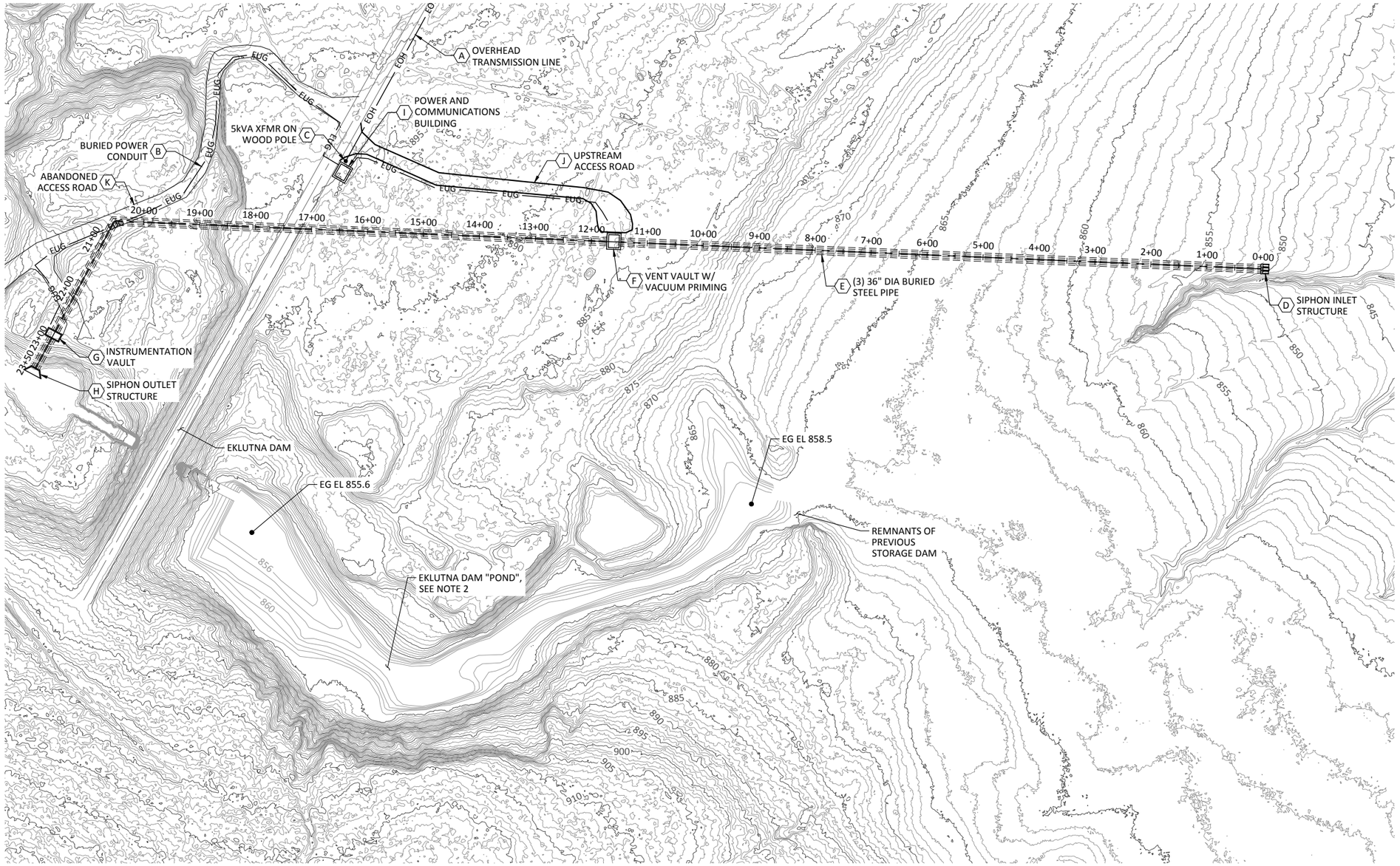
PROJECT DATE 05/12/23

DRAWING

A-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\A-2.dwg Plot date: May 08, 2023 05:52pm, CAD User: GuerreroRobert



SITE PLAN

SCALE: 1"= 100'

0" 100' 200'

N

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. POND BATHYMETRIC PROFILE IS UNKNOWN, TOPOGRAPHY ESTIMATED BASED ON AS BUILT DRAWINGS OF DAM AND FIELD DATA.

SHEET KEY NOTES:

A INSTALL NEW 7.2KV-3P OVERHEAD TRANSMISSION LINE ALONG DAM ACCESS ROAD FROM NEAREST POI. APPROXIMATE DISTANCE = 3,500-FT.

B ROUTE NEW UNDERGROUND CONDUIT FROM POWER POLE TO CONTROL BUILDING AND INSTRUMENTATION VAULT. APPROXIMATE DISTANCE = 1,200-FT.

C INSTALL NEW 5KVA, 7.20KV-240/120V TRANSFORMER ON WOOD POWER POLE.

D CONSTRUCT NEW SIPHON INTAKE STRUCTURE WITHIN EKLUTNA RESERVOIR AT ELEVATION 847.0 FT.

E EXCAVATE CHANNEL AROUND RIGHT ABUTMENT OF DAM TO A DEPTH OF 5- TO 25-FEET. INSTALL 3X - 36-INCH DIAMETER STEEL PIPES IN TRENCH AND BACKFILL.

F CONSTRUCT VALVE VAULT FOR SIPHON VENTS AND VACUUM PRIMING PUMP SYSTEM.

G CONSTRUCT INSTRUMENTATION VAULT FOR FLOW MONITORING AND CONTROLS.

H CONSTRUCT NEW SIPHON OUTLET STRUCTURE DOWNSTREAM OF DAM WITHIN PLUNGE POOL AT ELEVATION 843.0 FT.

I CONSTRUCT NEW POWER AND COMMUNICATIONS BUILDING.

J CONSTRUCT NEW ACCESS ROAD TO VENT VAULT.

K REGRADE, REPAIR, AND IMPROVE EXISTING ACCESS ROAD DOWNSTREAM OF DAM RIGHT ABUTMENT.

LEGEND:

—— EOH —— OVERHEAD ELECTRICAL/POWER

—— EUG —— UNDERGROUND ELECTRICAL

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0 1/2 1

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McMillen

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EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
SIPHON BYPASS
SITE PLAN

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

PROJECT DATE 05/12/23

DRAWING

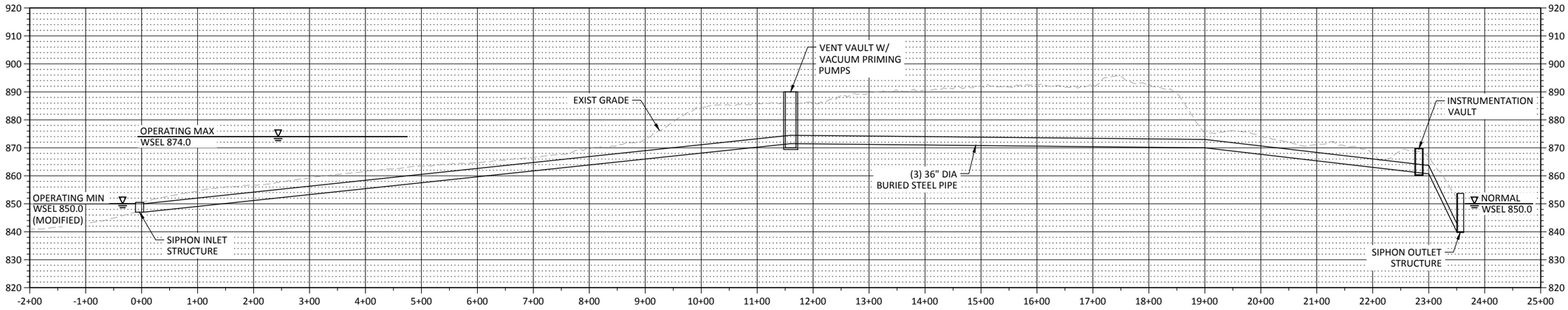
B-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\B-1.dwg Plot date: May 08, 2023 05:52pm, CAD User: GuerreroRobert

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).



PIPELINE PROFILE

SCALE: HORIZ 1" = 100'
VERT 1" = 20'

0" 100' 200'
0" 20' 40'

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SIPHON BYPASS
PROFILE

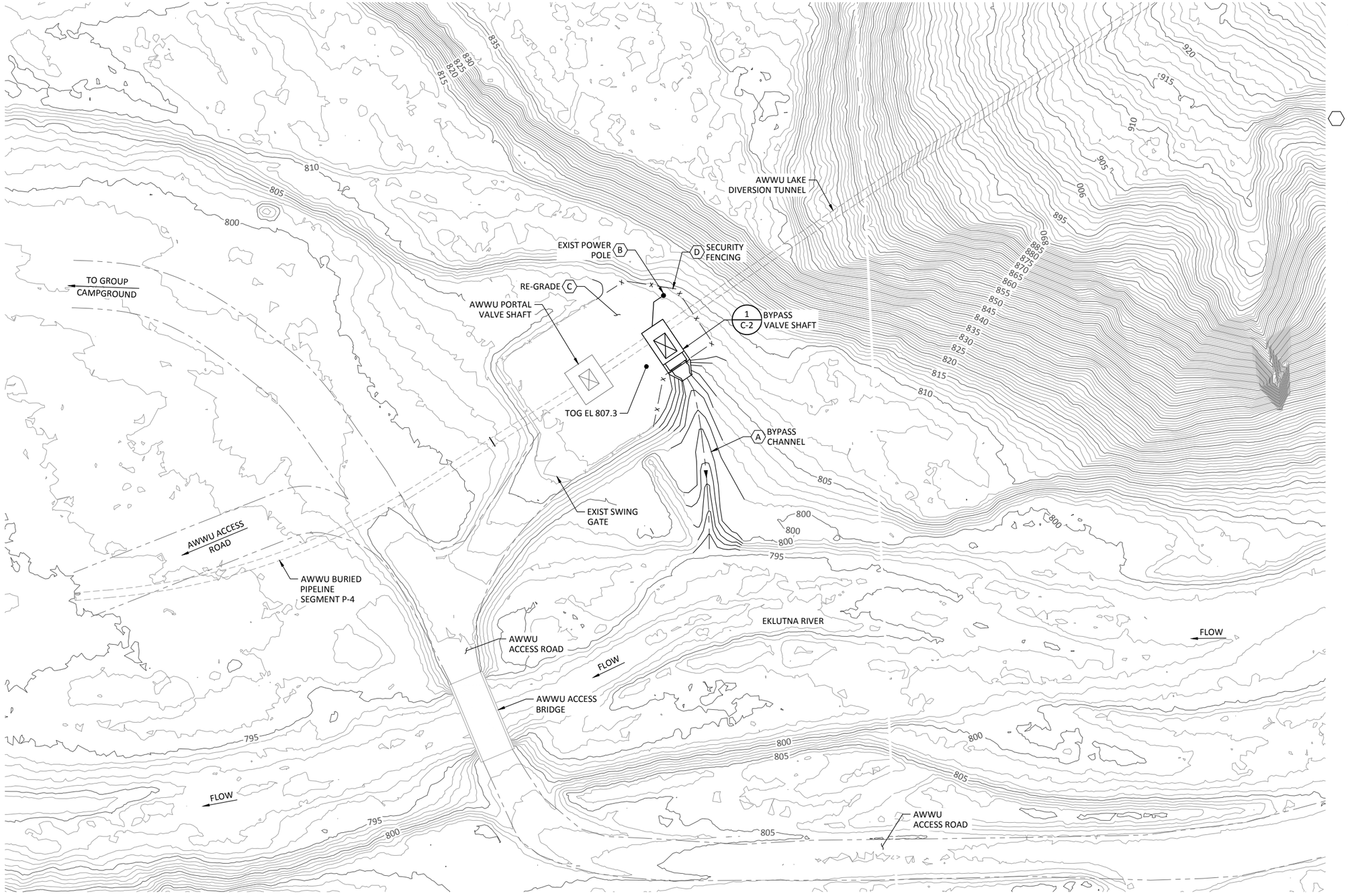
DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING

B-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\B-2.dwg Plot date: May 08, 2023 05:52pm, CAD User: GuerreroRobert



SITE PLAN
SCALE: 1"= 30'

0" 30' 60'

N

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A EXCAVATE NEW TRAPEZOIDAL BYPASS CHANNEL FROM BYPASS VALVE WET WELL TO EKLUTNA RIVER.

B TAP NEW 240V-3P FEEDER OFF EXISTING 7.2 KV TRANSMISSION LINE.

C FOLLOWING EXCAVATION FOR BYPASS VALVE SHAFT, RE-GRADE PAD TO ELEVATION 807.3 FT IN VICINITY OF BYPASS VALVE STRUCTURE.

D EXTEND SECURITY FENCING AROUND PERIMETER OF NEW STRUCTURE.

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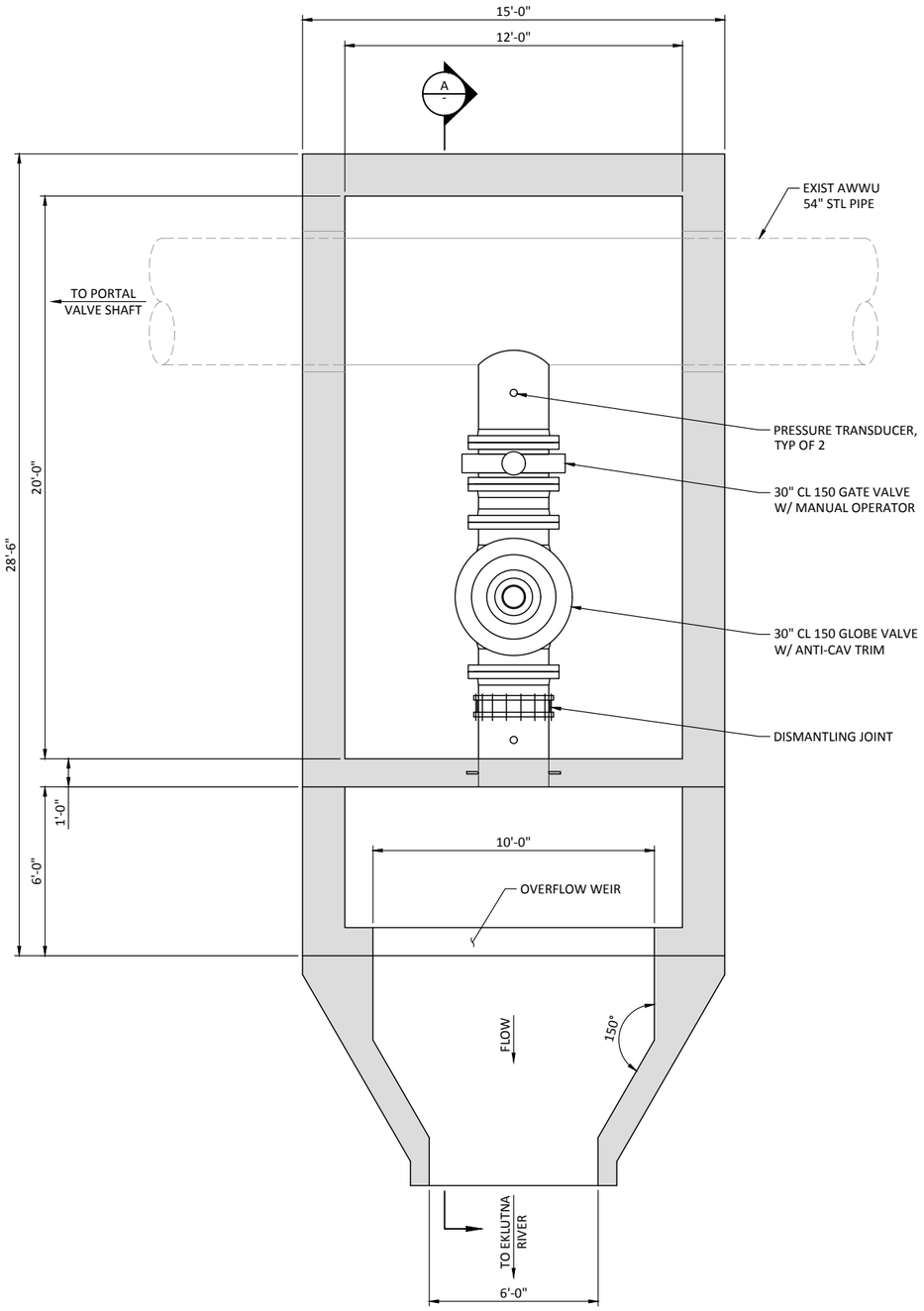
PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
AWWU PORTAL VALVE RELEASE
SITE PLAN

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
C-1

JOB NO: 000000

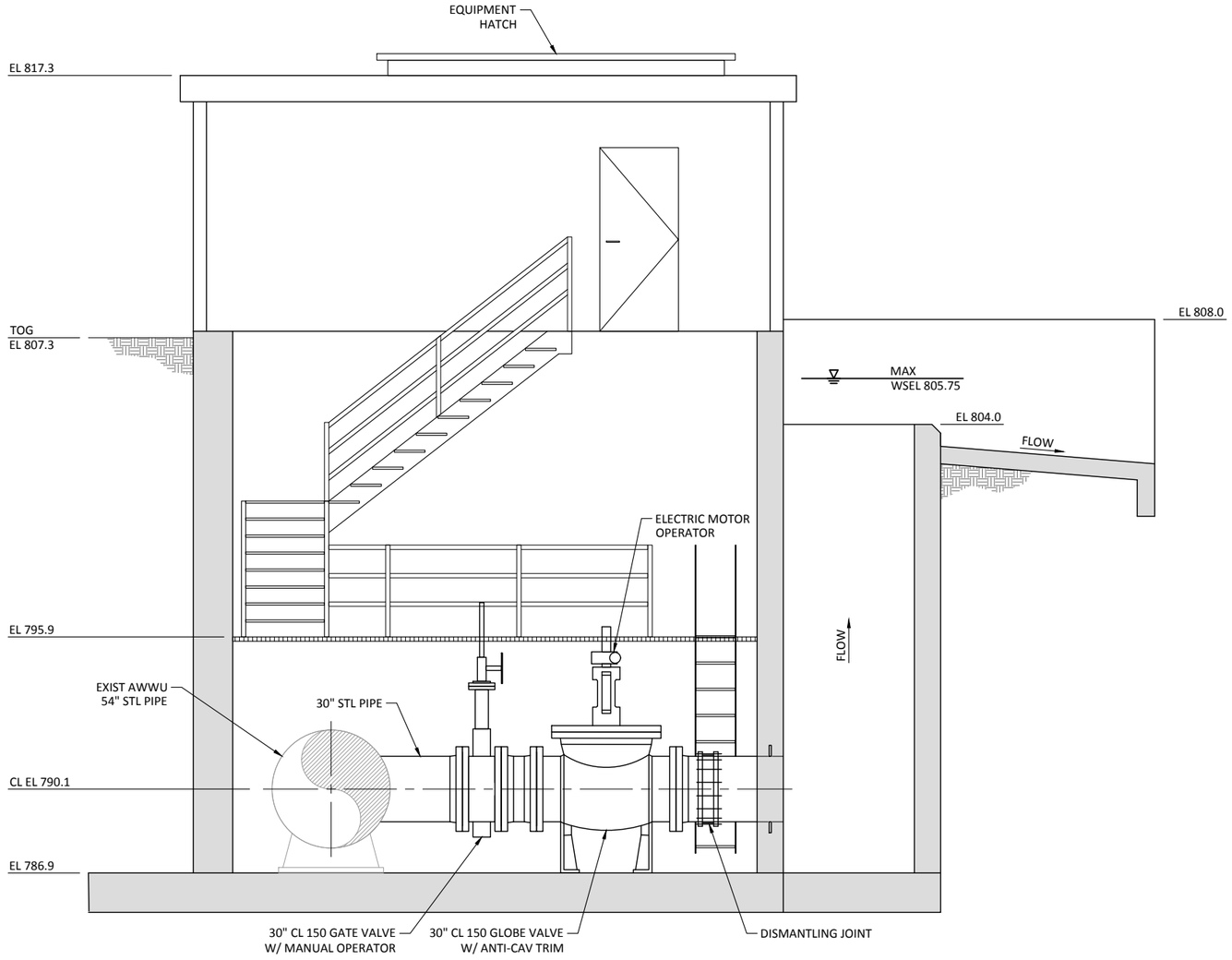
Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\C-1.dwg Plot date: May 08, 2023 05:52pm, CAD User: GuerreroRobert



BYPASS STRUCTURE

SCALE: 3/8"= 1'-0"

1 C-1



SECTION

SCALE: 3/8"= 1'-0"

A -

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

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SECTIONS AND DETAILS

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DRAWING

C-2

JOB NO: 000000

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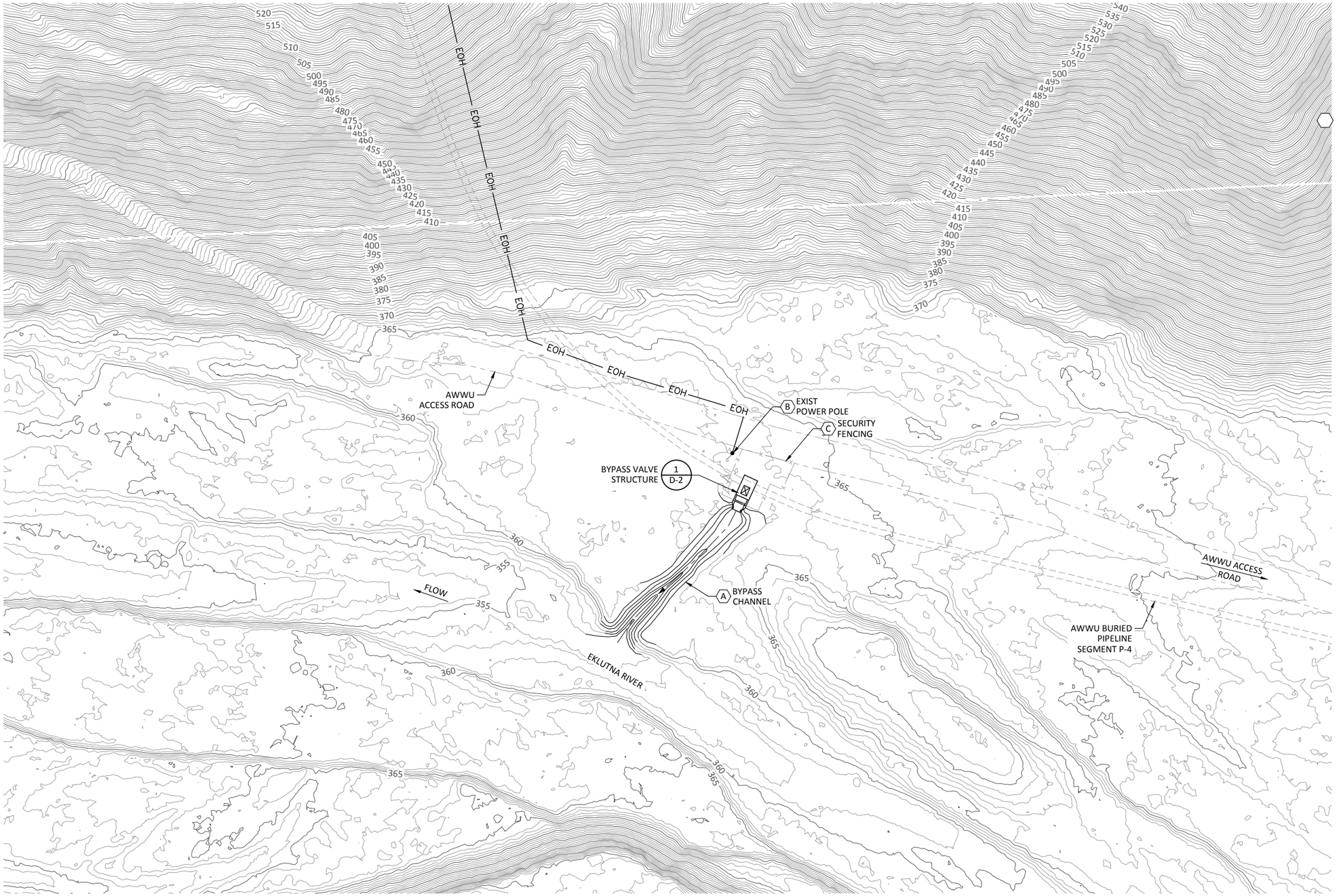

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A EXCAVATE NEW TRAPEZOIDAL BYPASS CHANNEL FROM BYPASS VALVE WET WELL TO EKLUTNA RIVER.

B INSTALL NEW 7.2KV-3P OVERHEAD TRANSMISSION LINE ALONG AWWU ACCESS ROAD FROM NEAREST POI. APPROXIMATE DISTANCE = 2,000-FT.

C CONSTRUCT SECURITY FENCING AROUND PERIMETER OF NEW STRUCTURE.

SITE PLAN
SCALE: 1"= 40'

0" 40' 80'

N

REV	DATE	BY	DESCRIPTION
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PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
AWWU PIPELINE RELEASE
SITE PLAN

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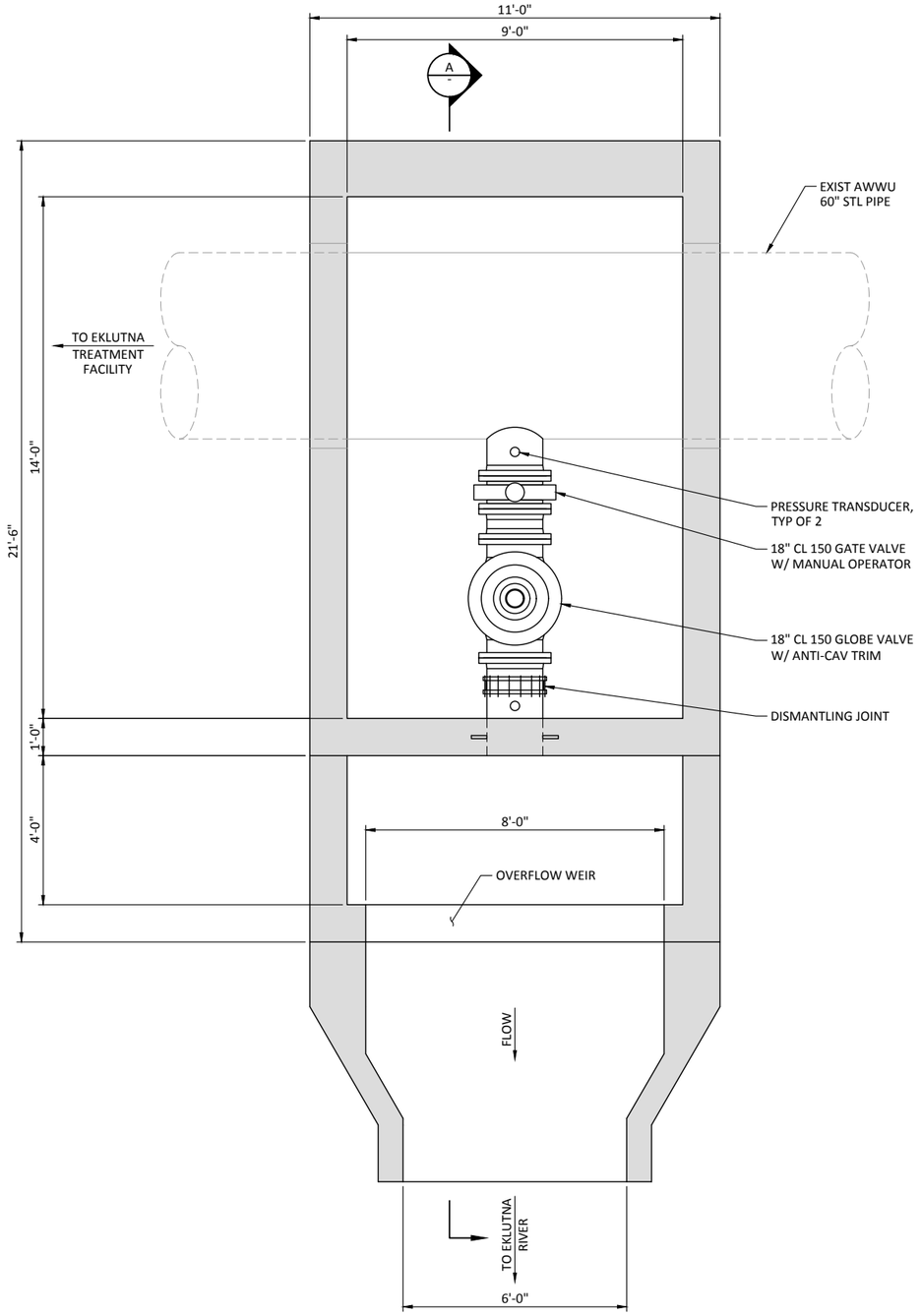
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
D-1

JOB NO: 000000

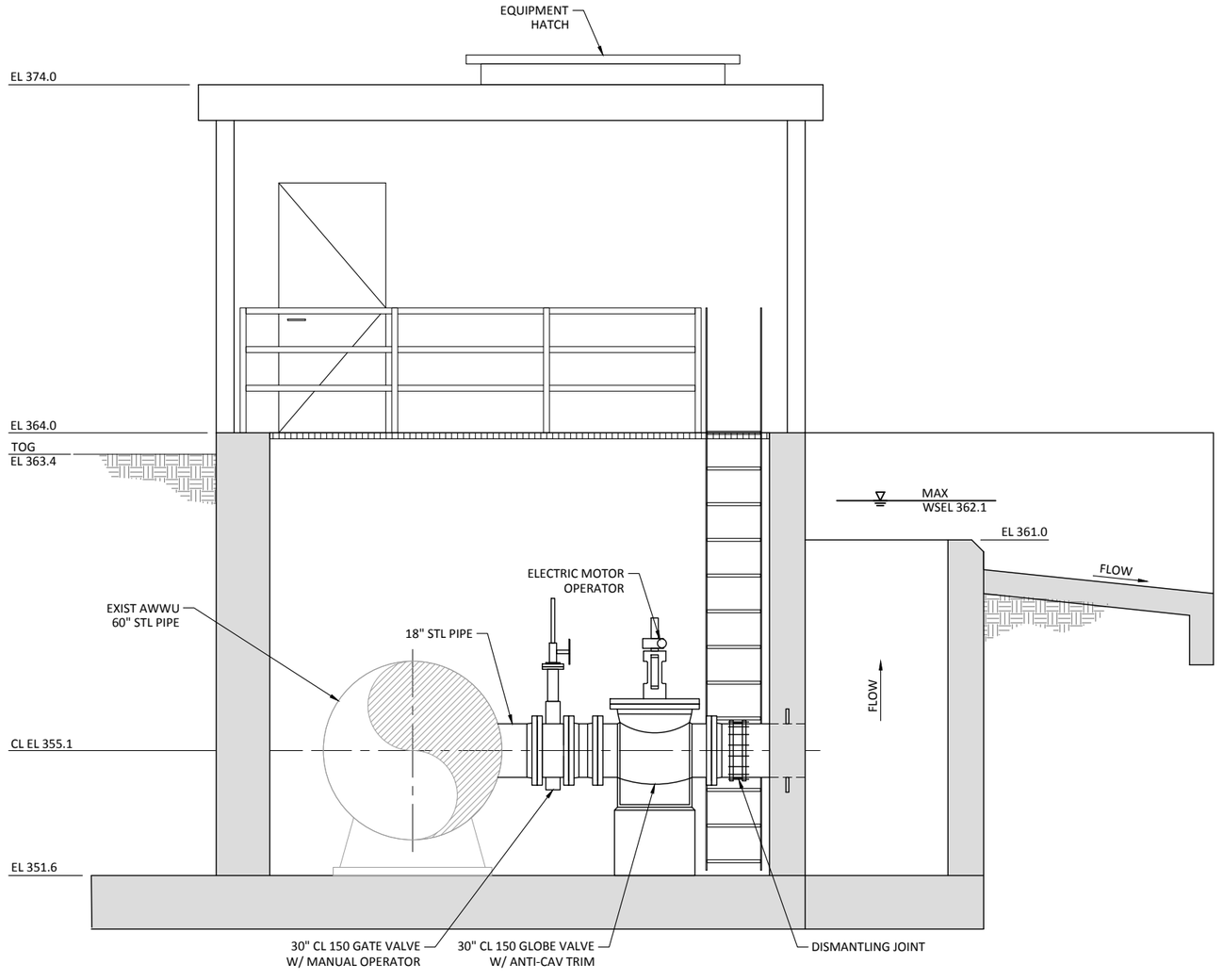
Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\D-1.dwg Plot date: May 08, 2023 05:52pm, CAD User: GuerreroRobert



BYPASS STRUCTURE

SCALE: 1/2"= 1'-0"

1
D-1



SECTION

SCALE: 1/2"= 1'-0"

A
-

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH
POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
AWWU PIPELINE RELEASE
SECTIONS AND DETAILS

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

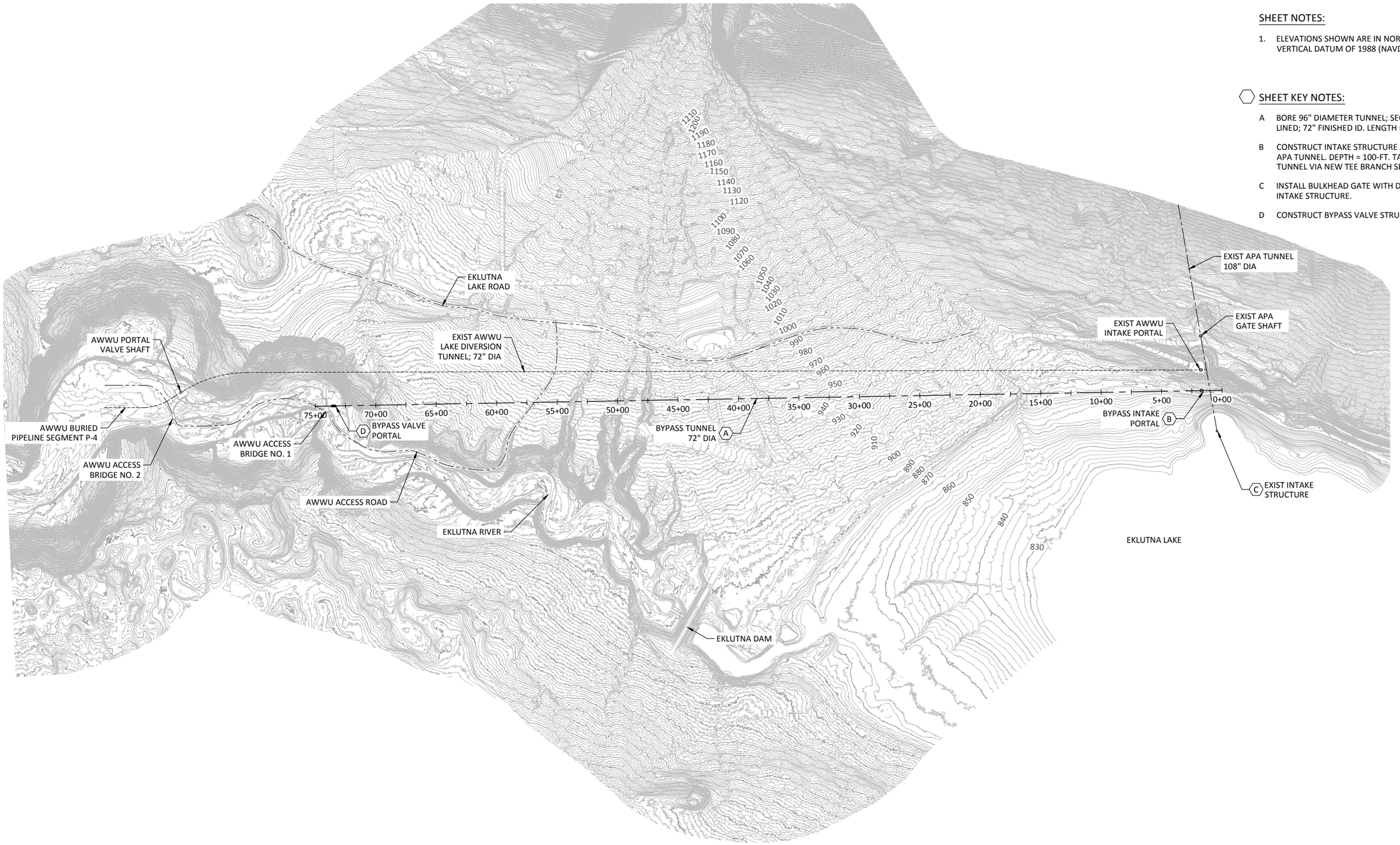
PROJECT DATE 05/12/23

DRAWING

D-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\D-2.dwg Plot date: May 08, 2023 05:52pm, CAD User: GuerreroRobert



SITE PLAN
SCALE: 1"= 400'

0" 400' 800'

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A BORE 96" DIAMETER TUNNEL; SEGMENTALLY CONCRETE LINED; 72" FINISHED ID. LENGTH = 7,200-FT.

B CONSTRUCT INTAKE STRUCTURE ADJACENT TO EXISTING APA TUNNEL. DEPTH = 100-FT. TAP INTO EXISTING TUNNEL VIA NEW TEE BRANCH SEGMENT.

C INSTALL BULKHEAD GATE WITH DIVERS IN EXISTING INTAKE STRUCTURE.

D CONSTRUCT BYPASS VALVE STRUCTURE. DEPTH = 30-FT.

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

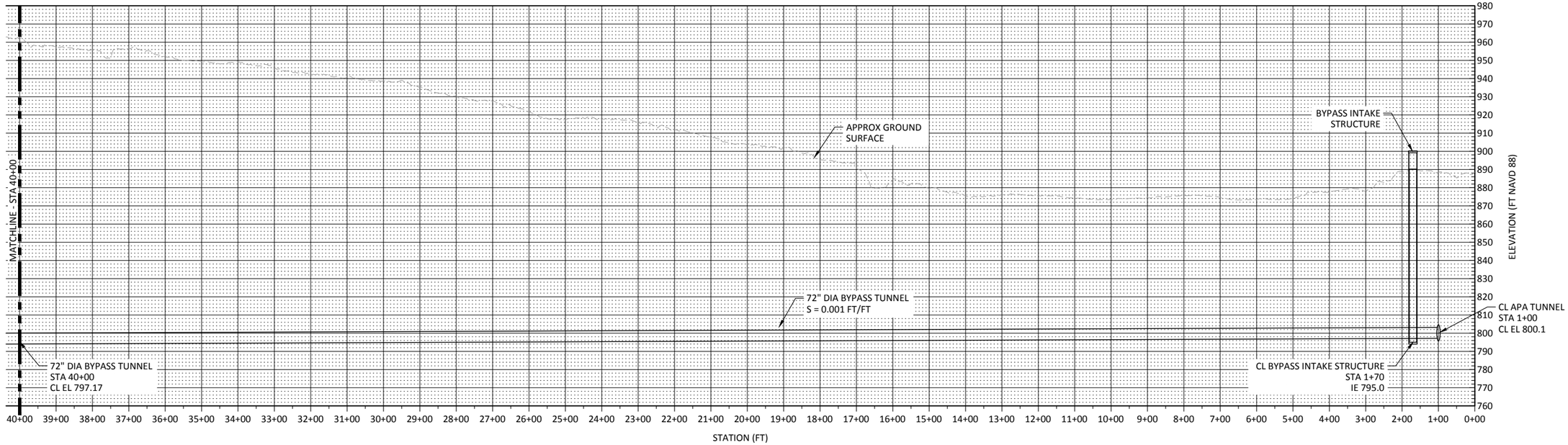
PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
BYPASS TUNNEL RELEASE
SITE PLAN

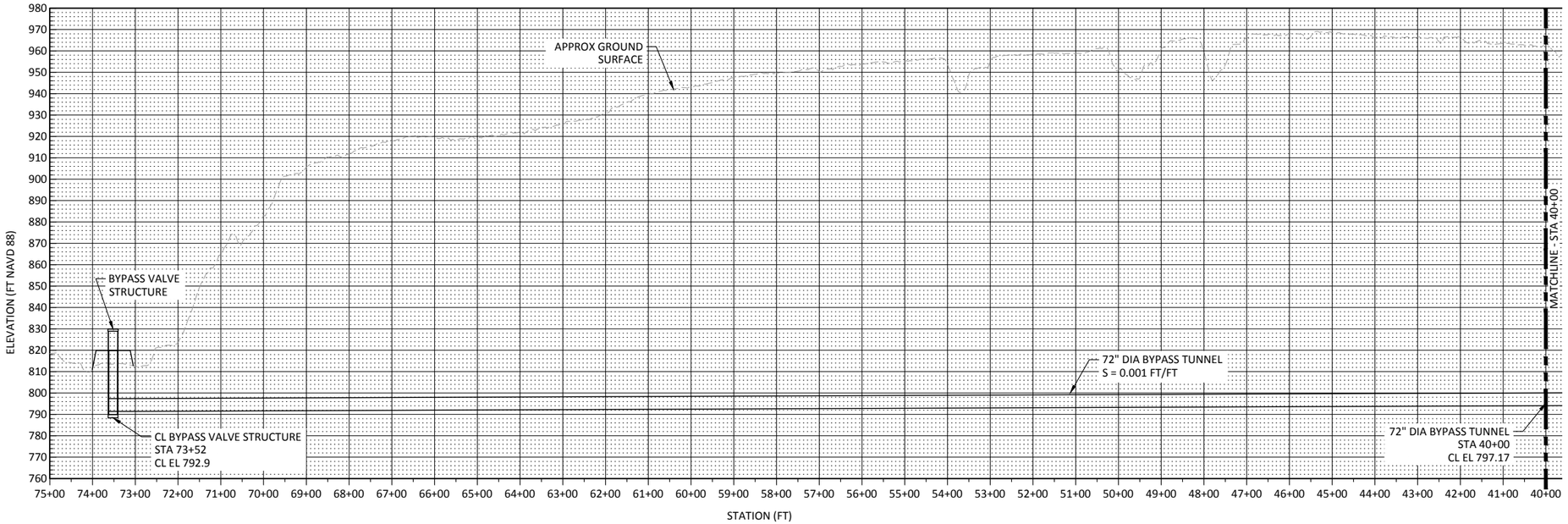
DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
E-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\E-1.dwg Plot date: May 08, 2023 05:53pm, CAD User: GuerreroRobert





TUNNEL PROFILE

SCALE: HORIZ 1" = 150'
VERT 1" = 30'

0" 150' 300'
0" 30' 60'

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
BYPASS TUNNEL RELEASE
TUNNEL PROFILE

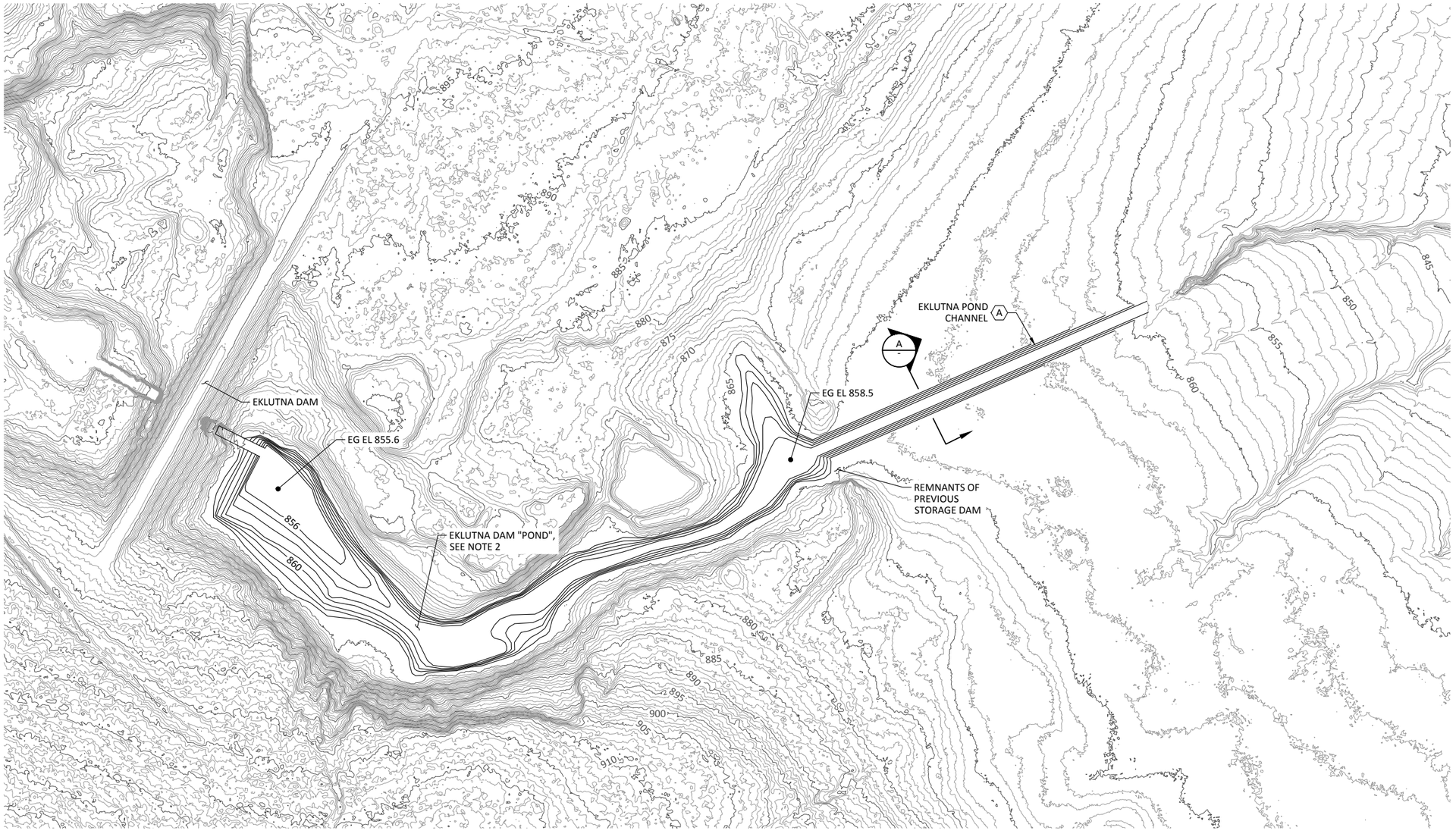
DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING

E-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\E-2.dwg Plot date: May 08, 2023 05:53pm, CAD User: GuerreroRobert



SITE PLAN
SCALE: 1"= 100'

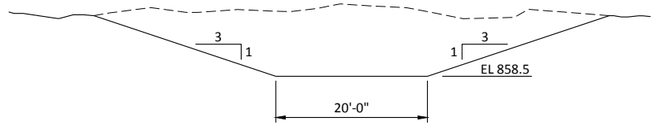
0" 100' 200'

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. POND BATHYMETRIC PROFILE IS UNKNOWN, TOPOGRAPHY ESTIMATED BASED ON AS BUILT DRAWINGS OF DAM AND FIELD DATA.

SHEET KEY NOTES:

A EXCAVATE NEW CHANNEL THROUGH REMAINS OF PREVIOUS STORAGE DAM. L = 625-FT.



TYPICAL CHANNEL SECTION
SCALE: 1"= 10'

0" 10' 20'

A
-

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH
POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
CHANNEL EXCAVATION
SITE PLAN

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
F-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\F-1.dwg Plot date: May 08, 2023 05:53pm, CAD User: GuerreroRobert

SITE PLAN

SCALE: 1"= 400'

0" 400' 800'

N

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A CONSTRUCT DIVERSIONARY EMBANKMENT BERM AT HEAD OF EXISTING LACH Q'ATNU CREEK TO NEW CHANNEL.

B CONSTRUCT NEW TRAPEZOIDAL STREAM CHANNEL ALONG PROPOSED ALIGNMENT. LENGTH = 5,500-FT. POOLS/STEPS SHALL BE DEVELOPED AT 100-FT INTERVALS ALONG LENGTH. PROVIDE VEGETATIVE BANK PROTECTION MEASURES USING NATIVE TREES/SHRUBS ALONG LENGTH.

C CONSTRUCT CULVERT FOR LACH Q'ATNU CREEK UNDER EKLUTNA LAKE ROAD.

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
LACH Q'ATNU CREEK RE-ROUTE
SITE PLAN

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

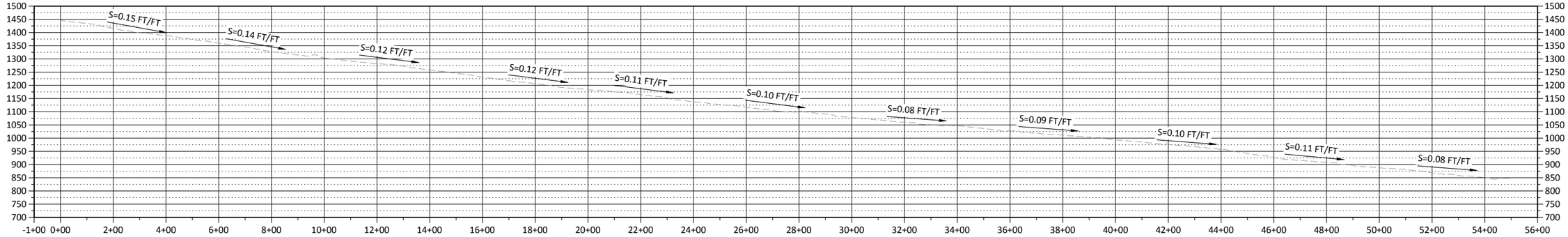
PROJECT DATE 05/12/23

DRAWING

G-1

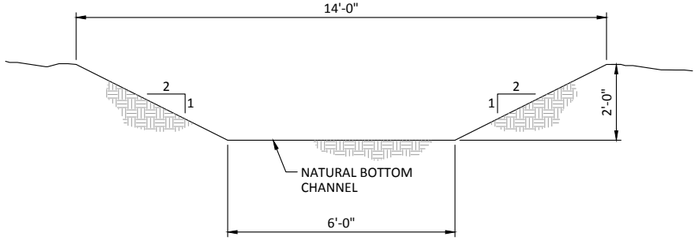
JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\G-1.dwg Plot date: May 08, 2023 05:54pm, CAD User: GuerreroRobert



PROFILE

SCALE: 1"= 200'



DETAIL

SCALE: 1"= 10'

1
G-1

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH
POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INSTREAM FLOW
LACH Q'ATNU CREEK RE-ROUTE
SECTIONS AND DETAILS

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

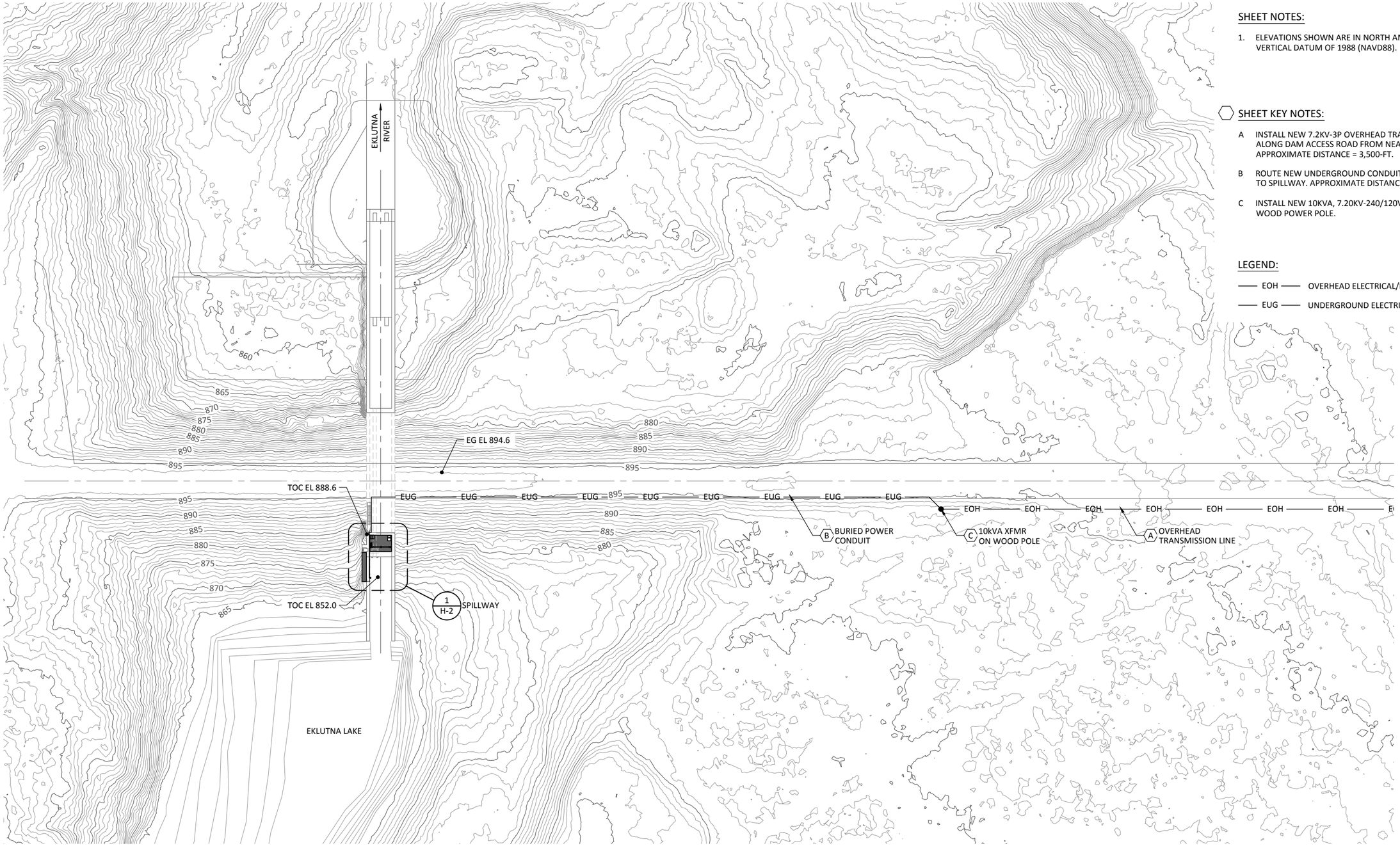
PROJECT DATE 05/12/23

DRAWING

G-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\G-2.dwg Plot date: May 08, 2023 05:54pm, CAD User: GuerreroRobert



SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A INSTALL NEW 7.2KV-3P OVERHEAD TRANSMISSION LINE ALONG DAM ACCESS ROAD FROM NEAREST POI. APPROXIMATE DISTANCE = 3,500-FT.

B ROUTE NEW UNDERGROUND CONDUIT FROM POWER POLE TO SPILLWAY. APPROXIMATE DISTANCE = 600-FT.

C INSTALL NEW 10KVA, 7.20KV-240/120V TRANSFORMER ON WOOD POWER POLE.

LEGEND:

—— EOH —— OVERHEAD ELECTRICAL/POWER

—— EUG —— UNDERGROUND ELECTRICAL

SITE PLAN

SCALE: 1"= 40'

0" 40' 80'

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - PEAK FLOW
SPILLWAY MODIFICATIONS - TAINTER GATE EL 874.6
SITE PLAN

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

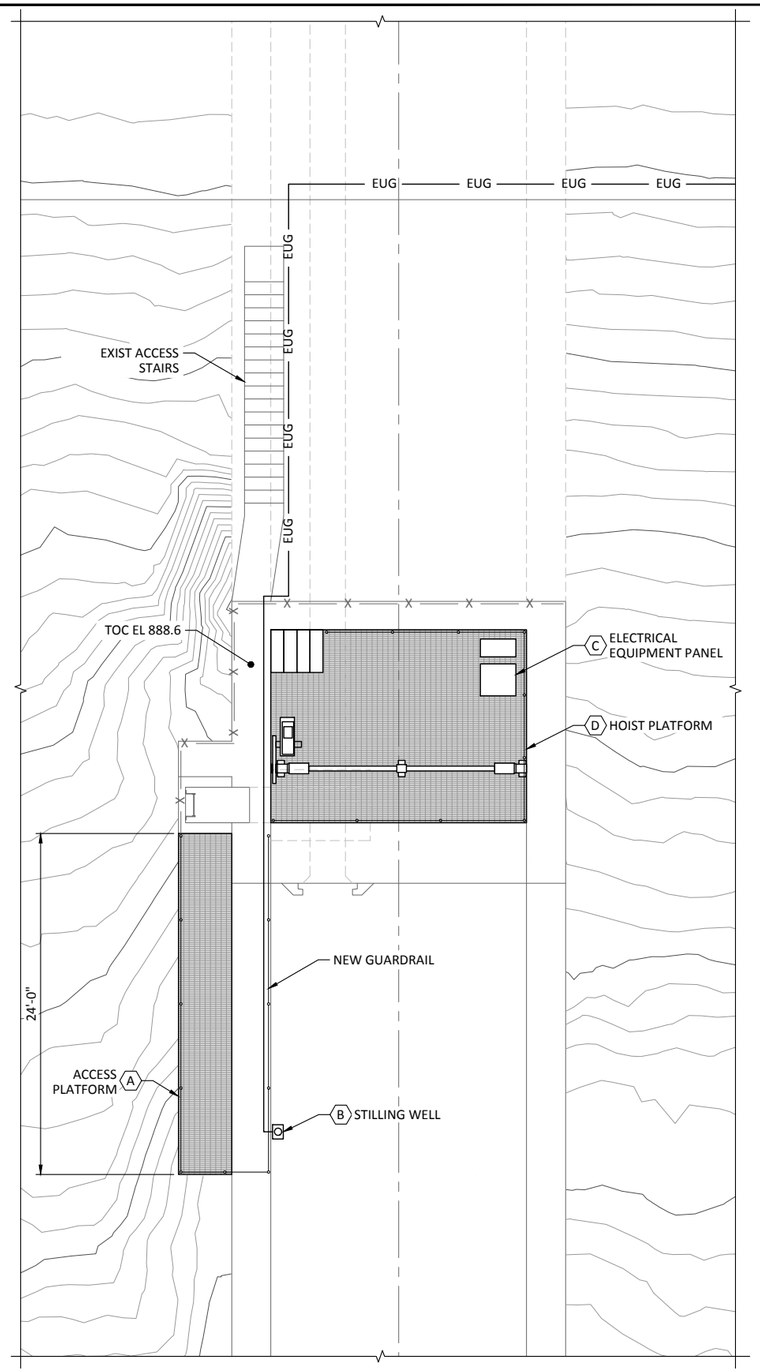
PROJECT DATE 05/12/23

DRAWING

H-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\H-1.dwg Plot date: May 08, 2023 05:54pm, CAD User: GuerreroRobert

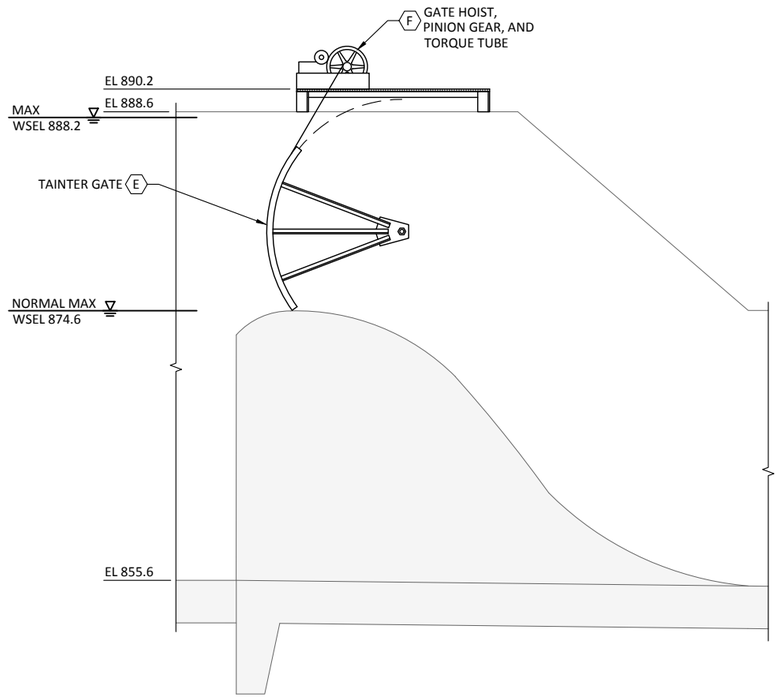


SPILLWAY DETAIL

SCALE: 3/16"= 1'-0"

0' 4' 8'

1 H-1



SECTION

SCALE: 3/16"= 1'-0"

0' 4' 8'

A -

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A INSTALL O&M ACCESS PLATFORM ON SPILLWAY TRAINING WALL.

B INSTALL STILLING WELL WITH SUBMERSIBLE PRESSURE TRANSDUCER.

C INSTALL ELECTRICAL EQUIPMENT AND CONTROLS PANEL.

D INSTALL O&M HOIST PLATFORM ABOVE SPILLWAY.

E INSTALL 18-FT WIDE X 12-FT TALL TAINTER GATE ON LIP OF EXISTING SPILLWAY. MOUNT TRUNNIONS ON EXISTING SPILLWAY TRAINING WALLS. INSTALL SEALING SURFACE ON LIP OF EXISTING SPILLWAY CREST.

F INSTALL HOIST, PINION GEAR, GEAR REDUCER, TORQUE TUBE, AND BEARINGS ON HOIST PLATFORM.

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - PEAK FLOW
SPILLWAY MODIFICATIONS - TAINTER GATE EL 874.6
SECTIONS AND DETAILS

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

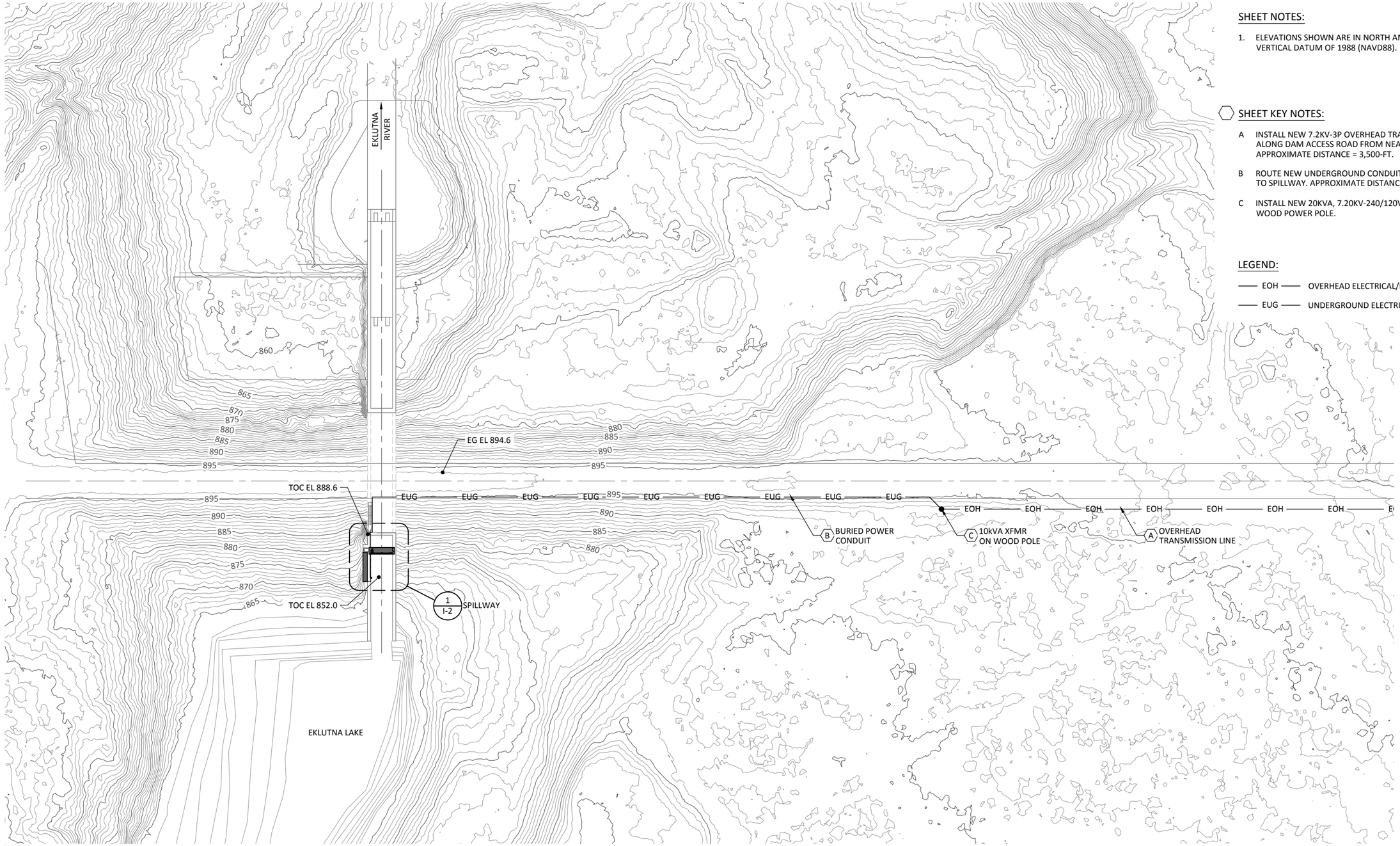
PROJECT DATE 05/12/23

DRAWING

H-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\H-2.dwg Plot date: May 08, 2023 05:54pm, CAD User: GuerreroRobert



SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A INSTALL NEW 7.2KV-3P OVERHEAD TRANSMISSION LINE ALONG DAM ACCESS ROAD FROM NEAREST POI. APPROXIMATE DISTANCE = 3,500-FT.

B ROUTE NEW UNDERGROUND CONDUIT FROM POWER POLE TO SPILLWAY. APPROXIMATE DISTANCE = 600-FT.

C INSTALL NEW 20KVA, 7.20KV-240/120V TRANSFORMER ON WOOD POWER POLE.

LEGEND:

—— EOH —— OVERHEAD ELECTRICAL/POWER

—— EUG —— UNDERGROUND ELECTRICAL

SITE PLAN

SCALE: 1"= 40'

0" 40' 80'

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - PEAK FLOW
SPILLWAY MODIFICATIONS - FIXED WHEEL GATE EL 855.6
SITE PLAN

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

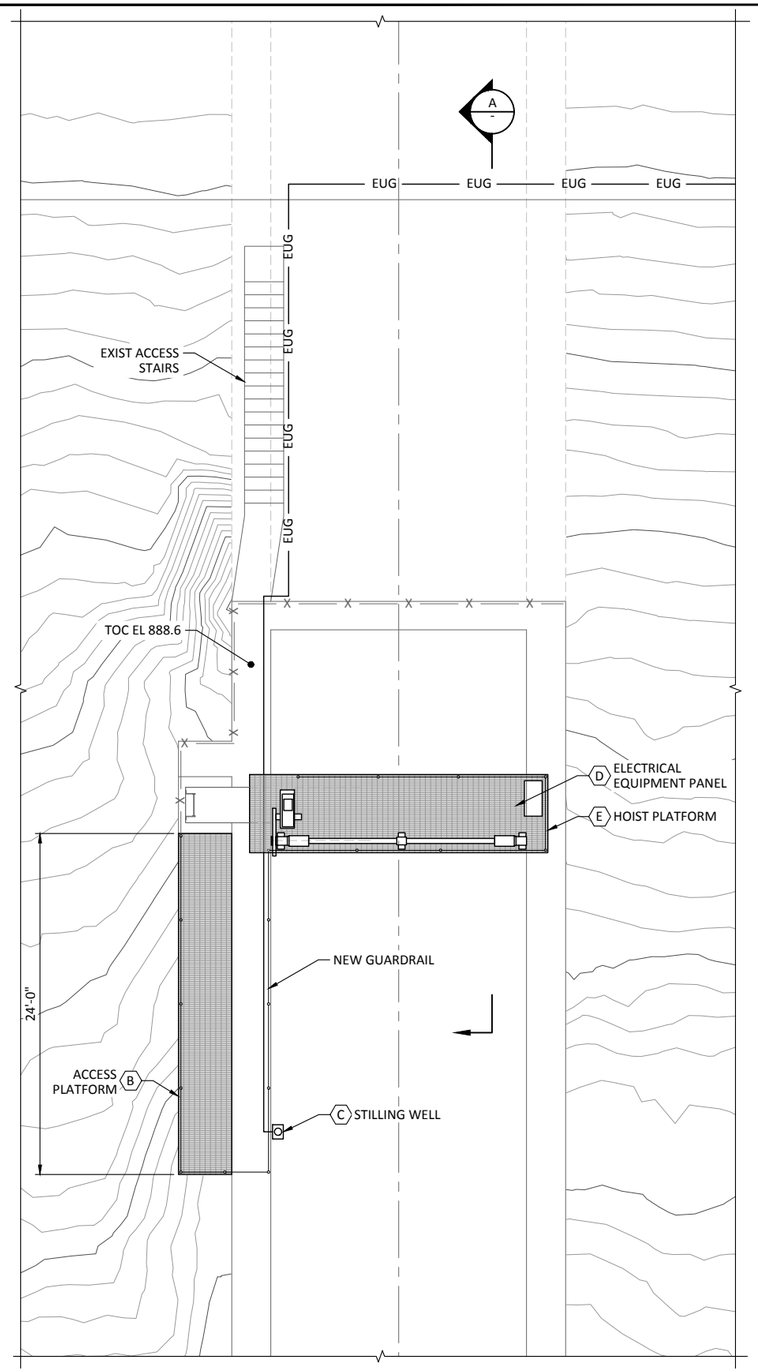
PROJECT DATE 05/12/23

DRAWING

I-1

JOB NO: 000000

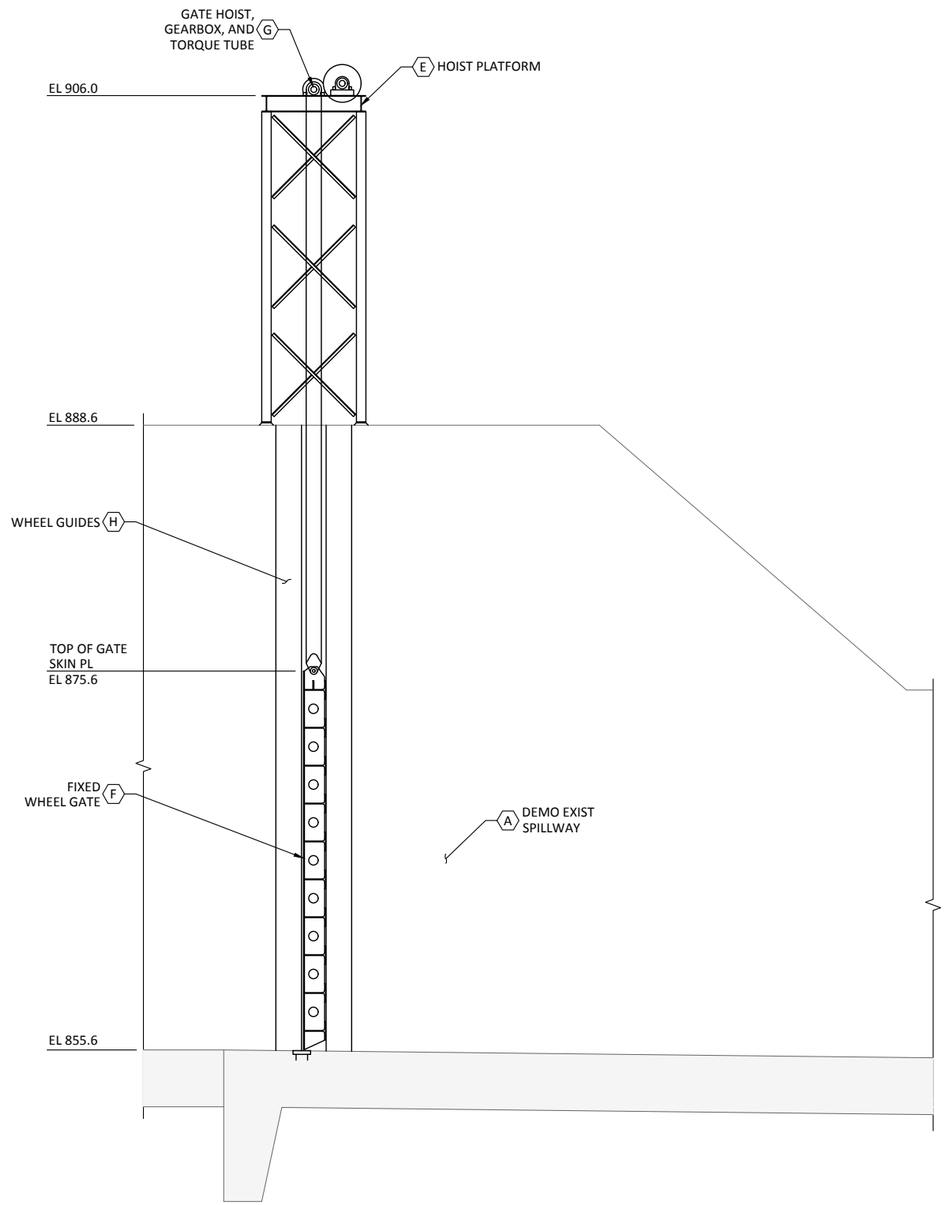
Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\I-1.dwg Plot date: May 08, 2023 05:55pm, CAD User: GuerreroRobert



SPILLWAY DETAIL

SCALE: 3/16"= 1'-0"

1 / I-1



SECTION

SCALE: 1/4"= 1'-0"

A / -

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

- A DEMOLISH EXISTING CONCRETE SPILLWAY, GATE CHAMBER, AND OUTLET GATE TO EXISTING SPILLWAY SLAB EL. 855.6.
- B INSTALL O&M ACCESS PLATFORM ON SPILLWAY TRAINING WALL.
- C INSTALL STILLING WELL WITH SUBMERSIBLE PRESSURE TRANSDUCER.
- D INSTALL ELECTRICAL EQUIPMENT AND CONTROLS PANEL.
- E INSTALL O&M HOIST PLATFORM ABOVE SPILLWAY.
- F INSTALL 16-FT WIDE X 20-FT TALL FIXED WHEEL GATE WITHIN THE EXISTING SPILLWAY STRUCTURE. INSTALL SEALING SURFACE ON LIP OF EXISTING SPILLWAY CREST.
- G INSTALL HOIST, GEAR REDUCER, TORQUE TUBE, AND BEARINGS ON HOIST PLATFORM.
- H MODIFY EXISTING SPILLWAY TRAINING WALLS. INCLUDE NEW WHEEL GUIDE BLOCKOUTS FOR FIXED WHEEL GATE.

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - PEAK FLOW
SPILLWAY MODIFICATIONS - FIXED WHEEL GATE EL 855.6
SECTIONS AND DETAILS

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

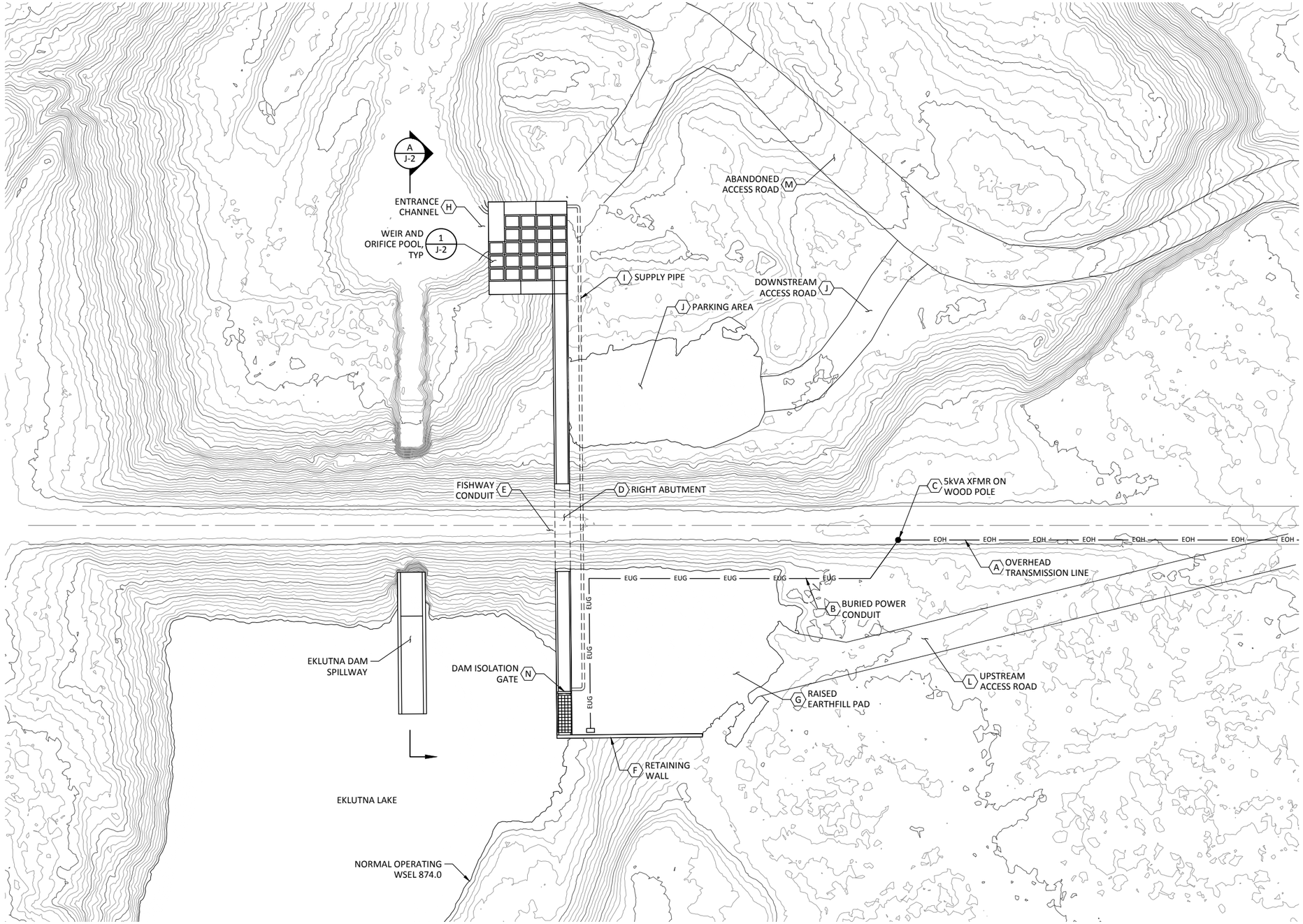
PROJECT DATE 05/12/23

DRAWING

I-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\I-2.dwg Plot date: May 08, 2023 05:55pm, CAD User: GuerreroRobert



SITE PLAN

SCALE: 1"= 40'

0" 40' 80'

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

- A INSTALL NEW 7.2KV-3P OVERHEAD TRANSMISSION LINE ALONG DAM ACCESS ROAD FROM NEAREST POI. APPROXIMATE DISTANCE = 3,500-FT.
- B ROUTE NEW UNDERGROUND CONDUIT FROM POWER POLE TO CONTROL ENCLOSURE. APPROXIMATE DISTANCE = 500-FT.
- C INSTALL NEW 5KVA, 7.20KV-240/120V TRANSFORMER ON WOOD POWER POLE.
- D EXCAVATE RIGHT ABUTMENT OF EXISTING DAM TO ELEVATION 868.0.
- E CONSTRUCT NEW CONCRETE FISHWAY THROUGH DAM SECTION.
- F CONSTRUCT RETAINING WALL TO ELEVATION 888.6.
- G CONSTRUCT NEW RAISED EARTHFILL PAD TO ELEVATION 888.6 ADJACENT TO NEW FISHWAY.
- H EXCAVATE NEW CHANNEL WITHIN EXISTING PLUNGE POOL TO FISHWAY ENTRANCE POOL.
- I INSTALL NEW 24" SUPPLY PIPE TO ENTRANCE POOL.
- J CONSTRUCT NEW ACCESS ROAD TO DOWNSTREAM TOE OF DAM.
- K CONSTRUCT NEW PARKING AND EQUIPMENT PAD AT DOWNSTREAM TOE OF DAM.
- L CONSTRUCT NEW ACCESS ROAD TO FISHWAY EXIT STRUCTURE.
- M REGRADE, REPAIR, AND IMPROVE EXISTING ABANDONED ACCESS ROAD DOWNSTREAM OF DAM RIGHT ABUTMENT.
- N INSTALL DAM ISOLATION BULKHEAD GATE AT DOWNSTREAM EXTENT OF EXIT CHANNEL.

LEGEND:

—— EOH —— OVERHEAD ELECTRICAL/POWER

—— EUG —— UNDERGROUND ELECTRICAL

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
GRAVITY FLOW FISH LADDER
SITE PLAN

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

PROJECT DATE 05/12/23

DRAWING

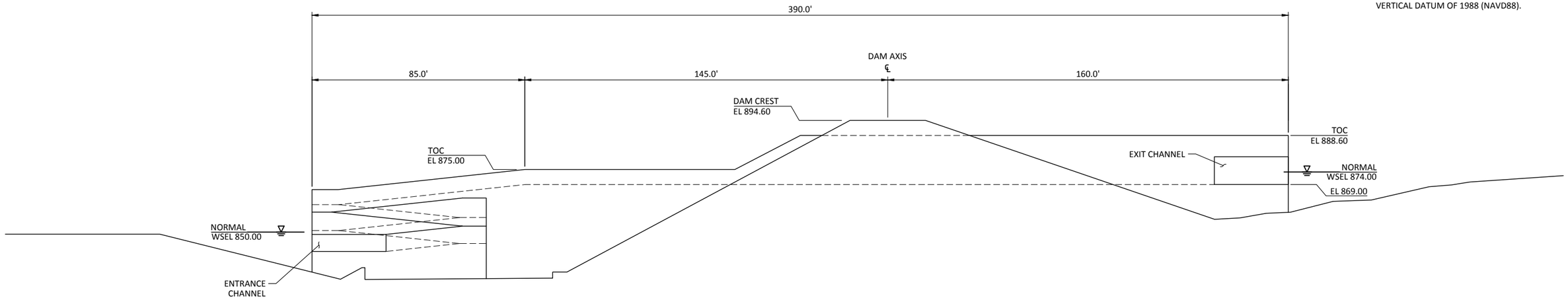
J-1

JOB NO: 000000

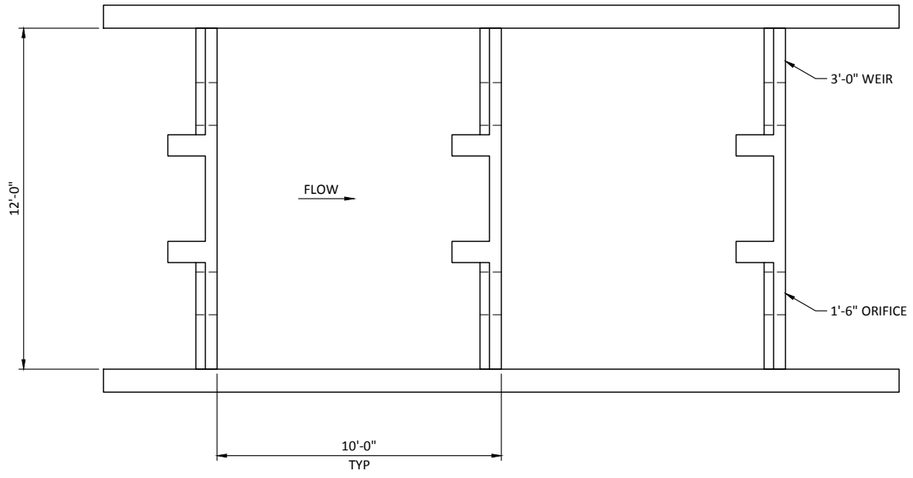
Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\J-1.dwg Plot date: May 08, 2023 05:55pm, CAD User: GuerreroRobert

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).



SECTION
SCALE: 1"= 20'
0' 20' 40'
A
J-1



WIER AND ORIFICE POOL DETAIL, TYP
SCALE: 3/8"= 1'-0"
0' 2' 4'
1
J-1

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
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McMillen

CHUGACH
POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
GRAVITY FLOW FISH LADDER
SECTIONS AND DETAILS

DESIGNED S. ELLENSON
DRAWN D. JOHNSTON
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
J-2

JOB NO: 000000

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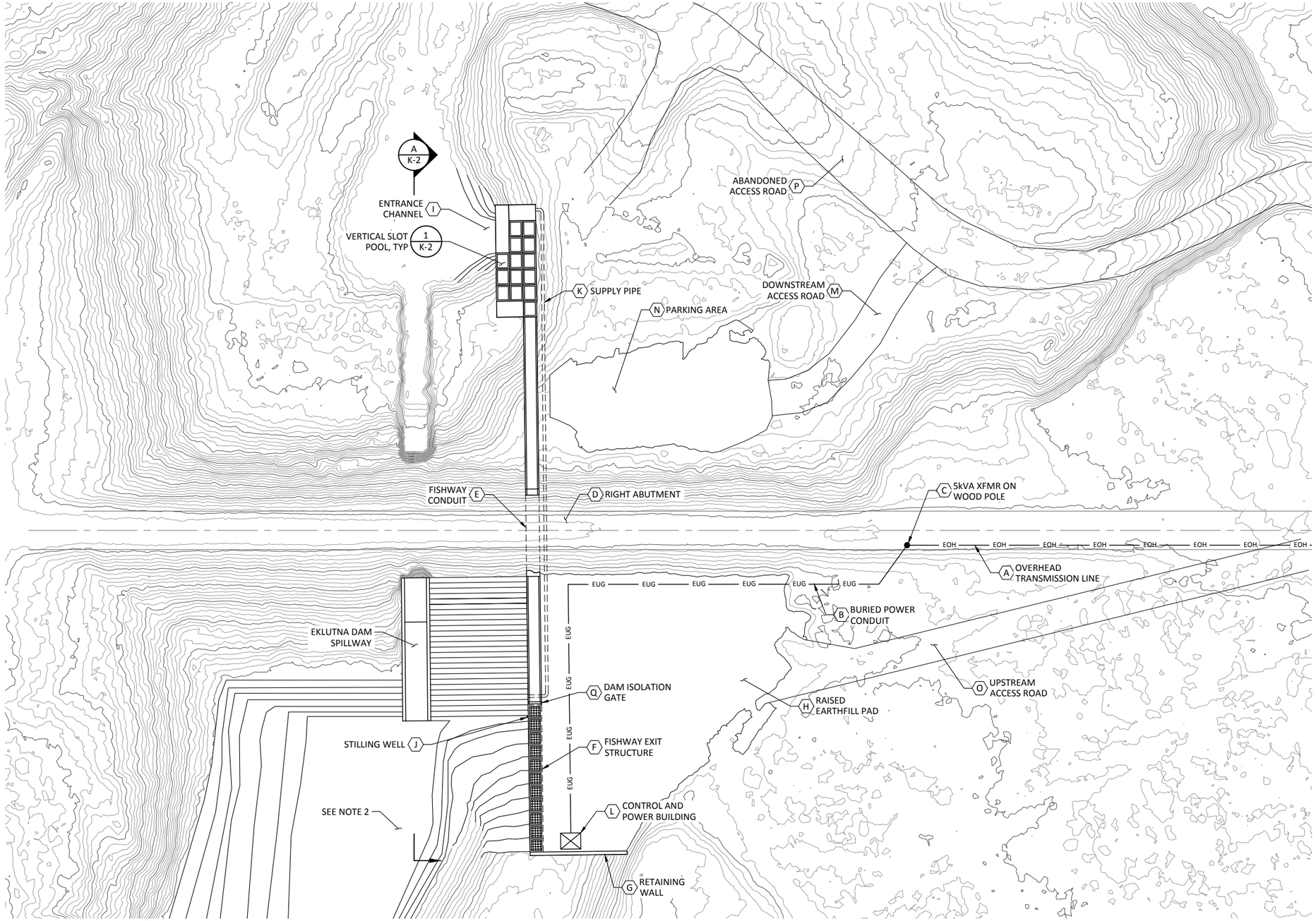


SITE PLAN

SCALE: 1"= 40'

0" 40' 80'

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. POND BATHYMETRIC PROFILE IS UNKNOWN, TOPOGRAPHY ESTIMATED BASED ON AS BUILT DRAWINGS OF DAM AND FIELD DATA.

SHEET KEY NOTES:

A INSTALL NEW 7.2KV-3P OVERHEAD TRANSMISSION LINE ALONG DAM ACCESS ROAD FROM NEAREST POI. APPROXIMATE DISTANCE = 3,500-FT.

B ROUTE NEW UNDERGROUND CONDUIT FROM POWER POLE TO CONTROL ENCLOSURE. APPROXIMATE DISTANCE = 500-FT.

C INSTALL NEW 5KVA, 7.20KV-240/120V TRANSFORMER ON WOOD POWER POLE.

D EXCAVATE RIGHT ABUTMENT OF EXISTING DAM TO ELEVATION 859.0.

E CONSTRUCT NEW CONCRETE FISHWAY THROUGH DAM SECTION.

F CONSTRUCT NEW GATED EXIT CHANNEL.

G CONSTRUCT RETAINING WALL TO ELEVATION 888.6.

H CONSTRUCT NEW RAISED EARTHFILL PAD TO EL. 888.6 ADJACENT TO NEW FISHWAY.

I EXCAVATE NEW CHANNEL WITHIN EXISTING PLUNGE POOL TO FISHWAY ENTRANCE POOL.

J INSTALL NEW STILLING WELL WITH REDUNDANT PRESSURE TRANSDUCERS UPSTREAM OF FISHWAY STRUCTURE..

K INSTALL NEW 24" SUPPLY PIPE TO ENTRANCE POOL.

L CONSTRUCT NEW CONTROL AND POWER BUILDING.

M CONSTRUCT NEW ACCESS ROAD TO DOWNSTREAM TOE OF DAM.

N CONSTRUCT NEW PARKING AND EQUIPMENT PAD AT DOWNSTREAM TOE OF DAM.

O CONSTRUCT NEW ACCESS ROAD TO FISHWAY EXIT STRUCTURE.

P REGRADE, REPAIR, AND IMPROVE EXISTING ABANDONED ACCESS ROAD DOWNSTREAM OF DAM RIGHT ABUTMENT.

Q INSTALL DAM ISOLATION BULKHEAD GATE AT DOWNSTREAM EXTENT OF EXIT STRUCTURE.

LEGEND:

EOH — OVERHEAD ELECTRICAL/POWER

EUG — UNDERGROUND ELECTRICAL

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
VARIABLE EXIT FISH LADDER
SITE PLAN

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

PROJECT DATE 05/12/23

DRAWING

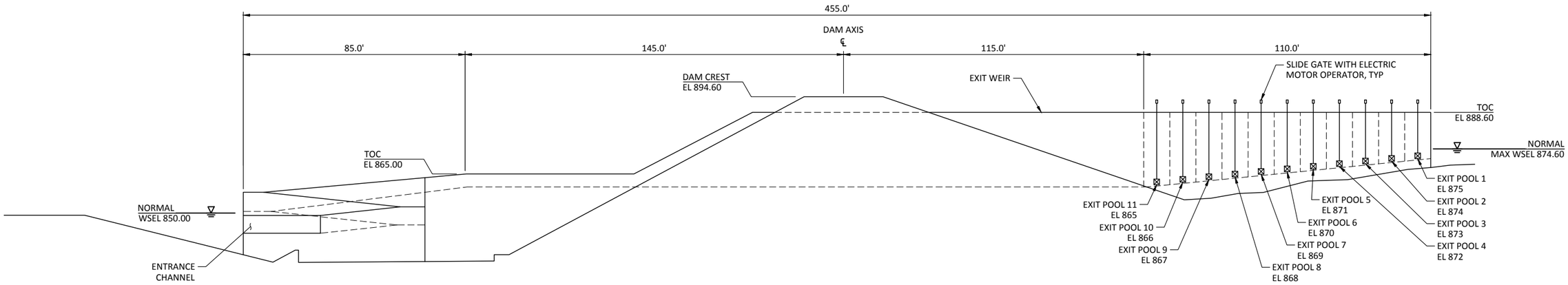
K-1

JOB NO: 000000

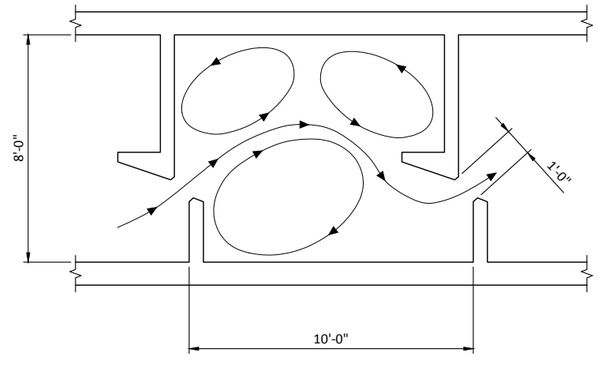
Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\K-1.dwg Plot date: May 08, 2023 05:55pm, CAD User: GuerreroRobert

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).



SECTION
SCALE: 1"= 20'
0' 20' 40'
A
K-1



VERTICAL SLOT POOL DETAIL, TYP
SCALE: 3/8"= 1'-0"
0' 2' 4'
1
K-1

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
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McMillen

CHUGACH
POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

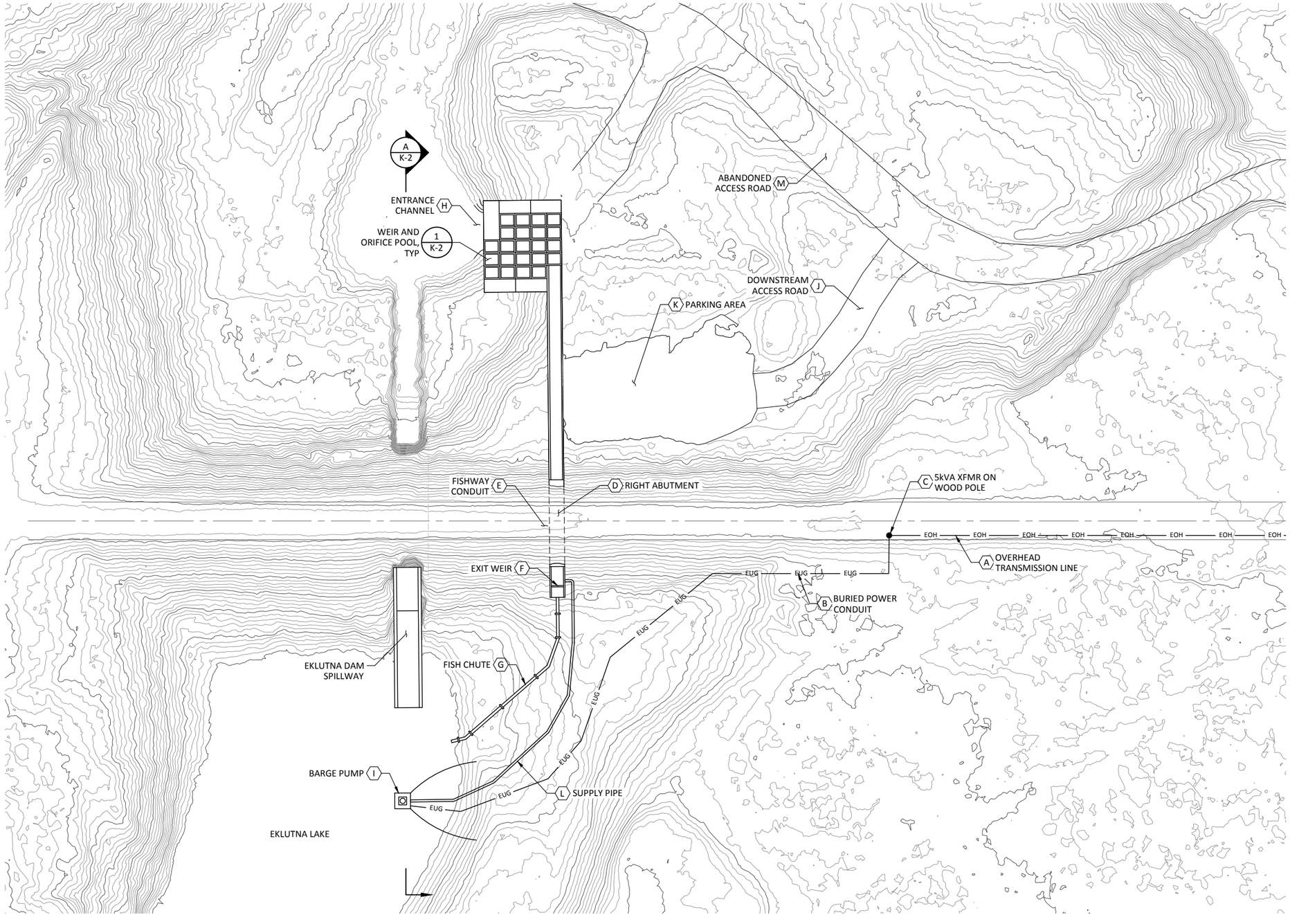
PME ALTERNATIVES ANALYSIS - FISH PASSAGE
VARIABLE EXIT FISH LADDER
SECTIONS AND DETAILS

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
K-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\K-2.dwg Plot date: May 08, 2023 05:55pm, CAD User: GuerreroRobert



SITE PLAN
SCALE: 1"= 40'
0" 40' 80'

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. POND BATHYMETRIC PROFILE IS UNKNOWN, TOPOGRAPHY ESTIMATED BASED ON AS BUILT DRAWINGS OF DAM AND FIELD DATA.

SHEET KEY NOTES:

A INSTALL NEW 7.2KV-3P OVERHEAD TRANSMISSION LINE ALONG DAM ACCESS ROAD FROM NEAREST POI. APPROXIMATE DISTANCE = 3,500-FT.

B ROUTE NEW UNDERGROUND CONDUIT FROM POWER POLE TO CONTROL ENCLOSURE. APPROXIMATE DISTANCE = 600-FT.

C INSTALL NEW 5KVA, 7.20KV-240/120V TRANSFORMER ON WOOD POWER POLE.

D EXCAVATE RIGHT ABUTMENT OF EXISTING DAM TO ELEVATION 859.0.

E CONSTRUCT NEW CONCRETE FISHWAY THROUGH DAM SECTION.

F CONSTRUCT NEW EXIT POOL WITH FISH WEIR.

G CONSTRUCT NEW 24" DIAMETER HDPE FISH CHUTE FOR PASSAGE INTO EKLUTNA LAKE POND.

H EXCAVATE NEW CHANNEL WITHIN EXISTING PLUNGE POOL TO FISHWAY ENTRANCE POOL.

I INSTALL NEW VERTICAL TURBINE PUMP FLOATING ON BARGE STRUCTURE WITHIN EKLUTNA LAKE POND.

J CONSTRUCT NEW ACCESS ROAD TO DOWNSTREAM TOE OF DAM.

K CONSTRUCT NEW PARKING AND EQUIPMENT PAD AT DOWNSTREAM TOE OF DAM.

L CONSTRUCT NEW 20" HDPE SUPPLY PIPE FROM BARGE PUMP TO FISH LADDER EXIT POOL.

M REGRADE, REPAIR, AND IMPROVE EXISTING ABANDONED ACCESS ROAD DOWNSTREAM OF DAM RIGHT ABUTMENT.

LEGEND:

—— EOH —— OVERHEAD ELECTRICAL/POWER

—— EUG —— UNDERGROUND ELECTRICAL

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY
PME ALTERNATIVES ANALYSIS - FISH PASSAGE
PUMPED SUPPLY AND SLIDE FISH LADDER
SITE PLAN

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

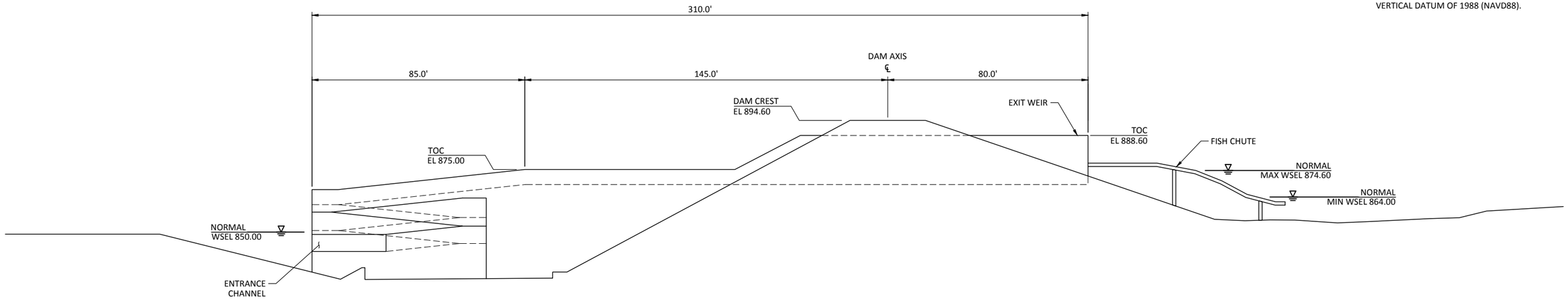
DRAWING
L-1

JOB NO: 000000

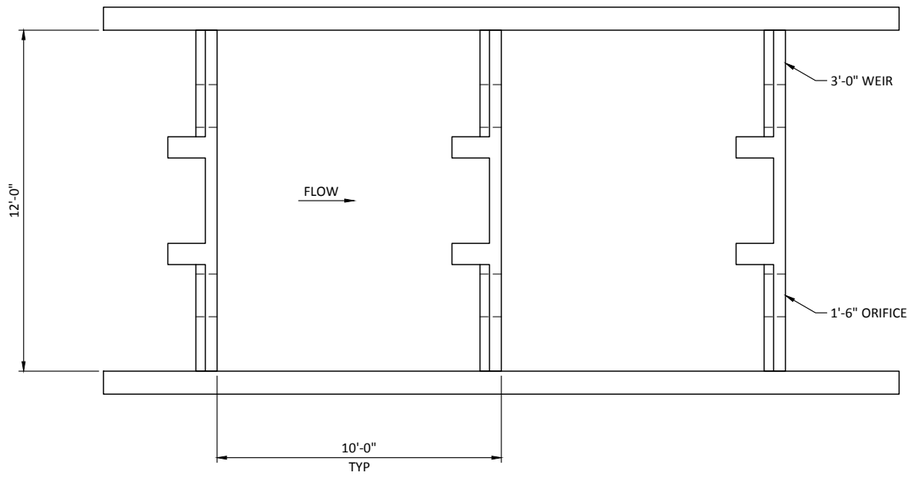
Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\L-1.dwg Plot date: May 08, 2023 05:55pm, CAD User: GuerreroRobert

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).



SECTION
SCALE: 1"= 20'
0' 20' 40'
A
L-1



WIER AND ORIFICE POOL DETAIL, TYP
SCALE: 3/8"= 1'-0"
0' 2' 4'
1
L-1

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH
POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

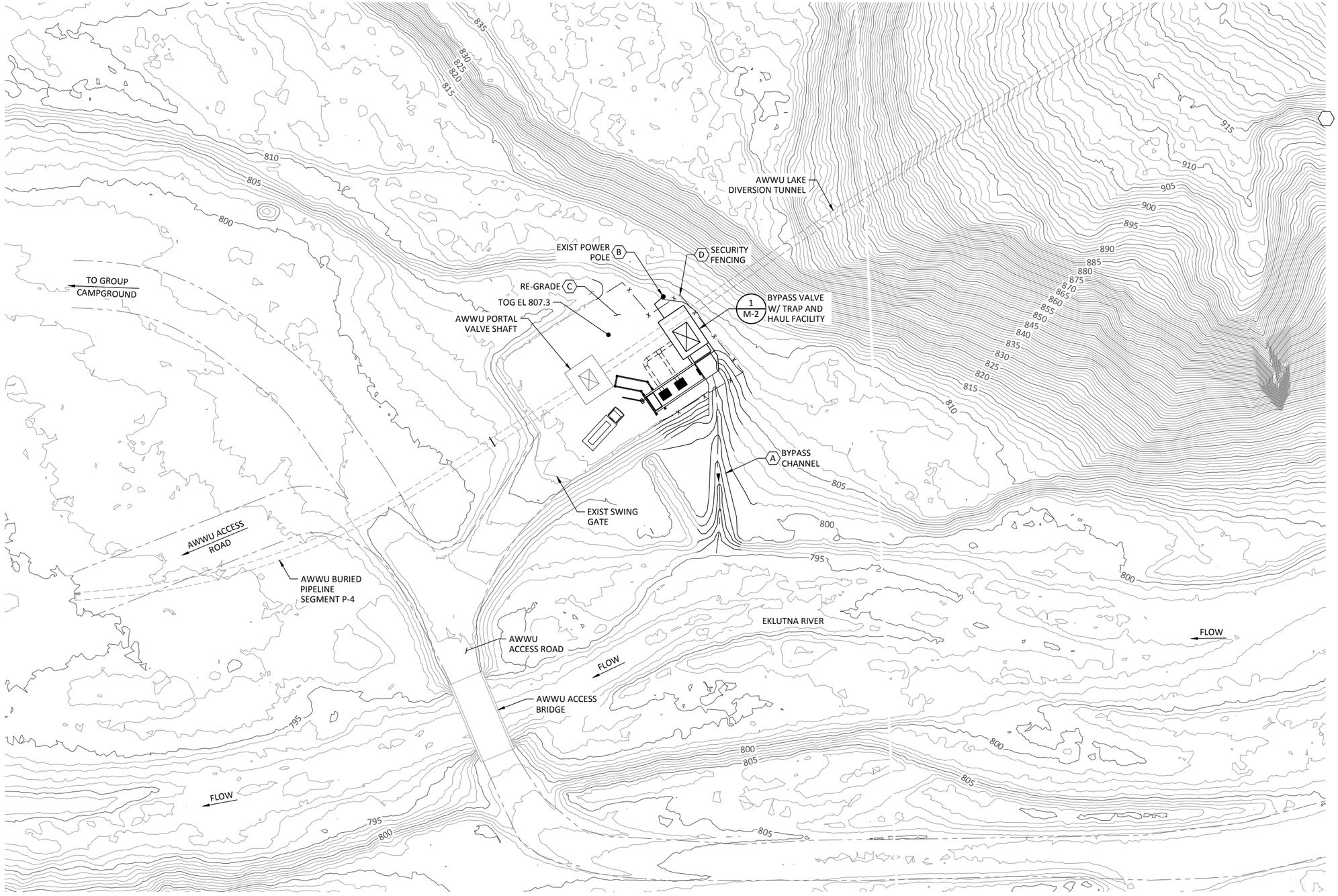
PME ALTERNATIVES ANALYSIS - FISH PASSAGE
PUMPED SUPPLY AND SLIDE FISH LADDER
SECTIONS AND DETAILS

DESIGNED S. ELLENSON
DRAWN D. JOHNSTON
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
L-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\L-2.dwg Plot date: May 08, 2023 05:55pm, CAD User: GuerreroRobert



SITE PLAN

SCALE: 1"= 30'

0" 30' 60'

N

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A EXCAVATE NEW TRAPEZOIDAL BYPASS CHANNEL FROM BYPASS VALVE WET WELL TO EKLUTNA RIVER.

B TAP NEW 240V-3P FEEDER OFF EXISTING 7.5-KV TRANSMISSION LINE.

C FOLLOWING EXCAVATION FOR BYPASS . VALVE SHAFT, RE-GRADE PAD TO ELEVATION 807.3 FT IN VICINITY OF BYPASS VALVE STRUCTURE.

D EXTEND SECURITY FENCING AROUND PERIMETER OF NEW STRUCTURE.

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
TRAP AND HAUL FACILITY
SITE PLAN

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

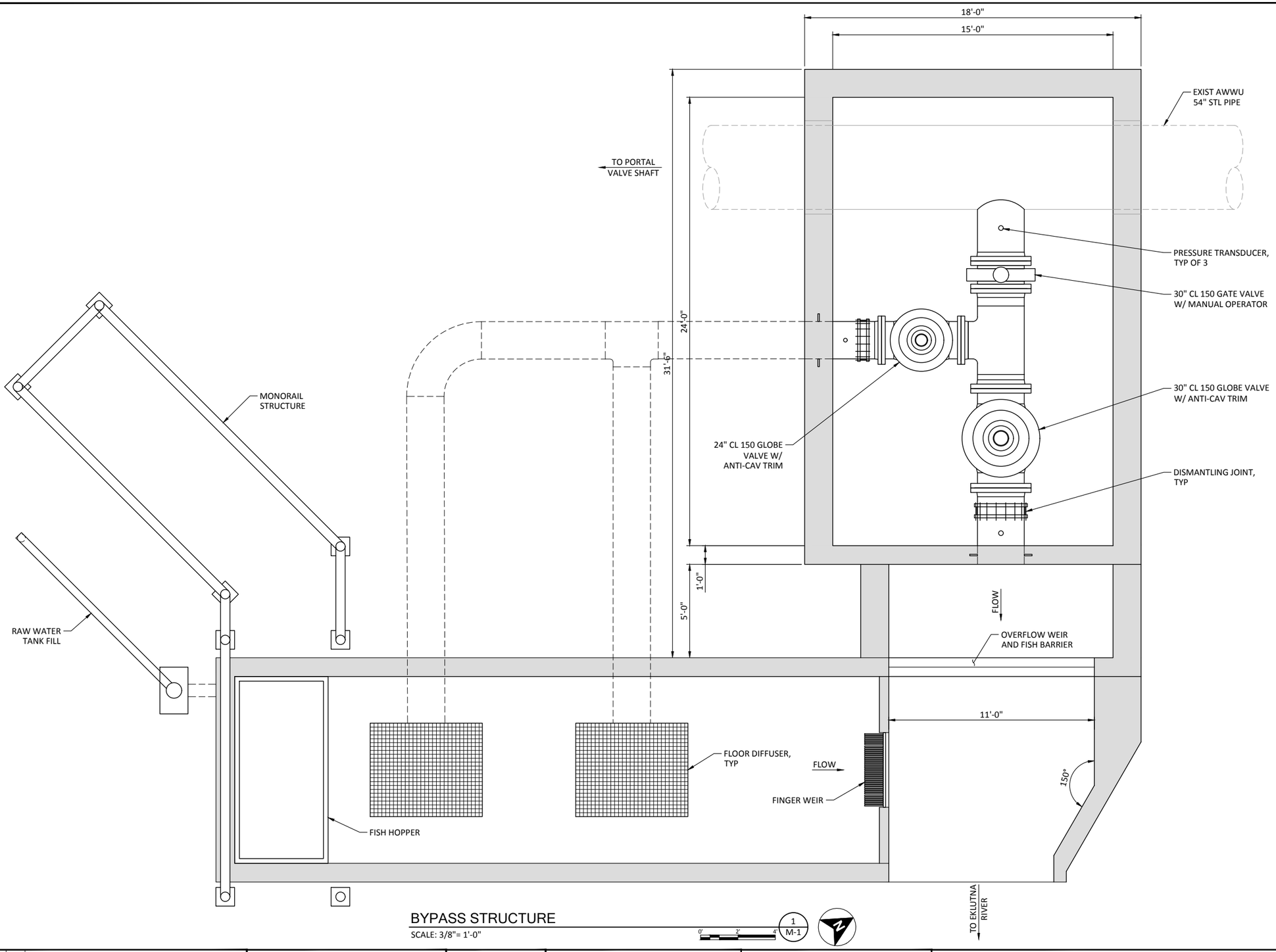
PROJECT DATE 05/12/23

DRAWING

M-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\M-1.dwg Plot date: May 08, 2023 05:55pm, CAD User: GuerreroRobert



BYPASS STRUCTURE

SCALE: 3/8"= 1'-0"

1
M-1

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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McMillen

CHUGACH
POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
TRAP AND HAUL FACILITY
SECTIONS AND DETAILS

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

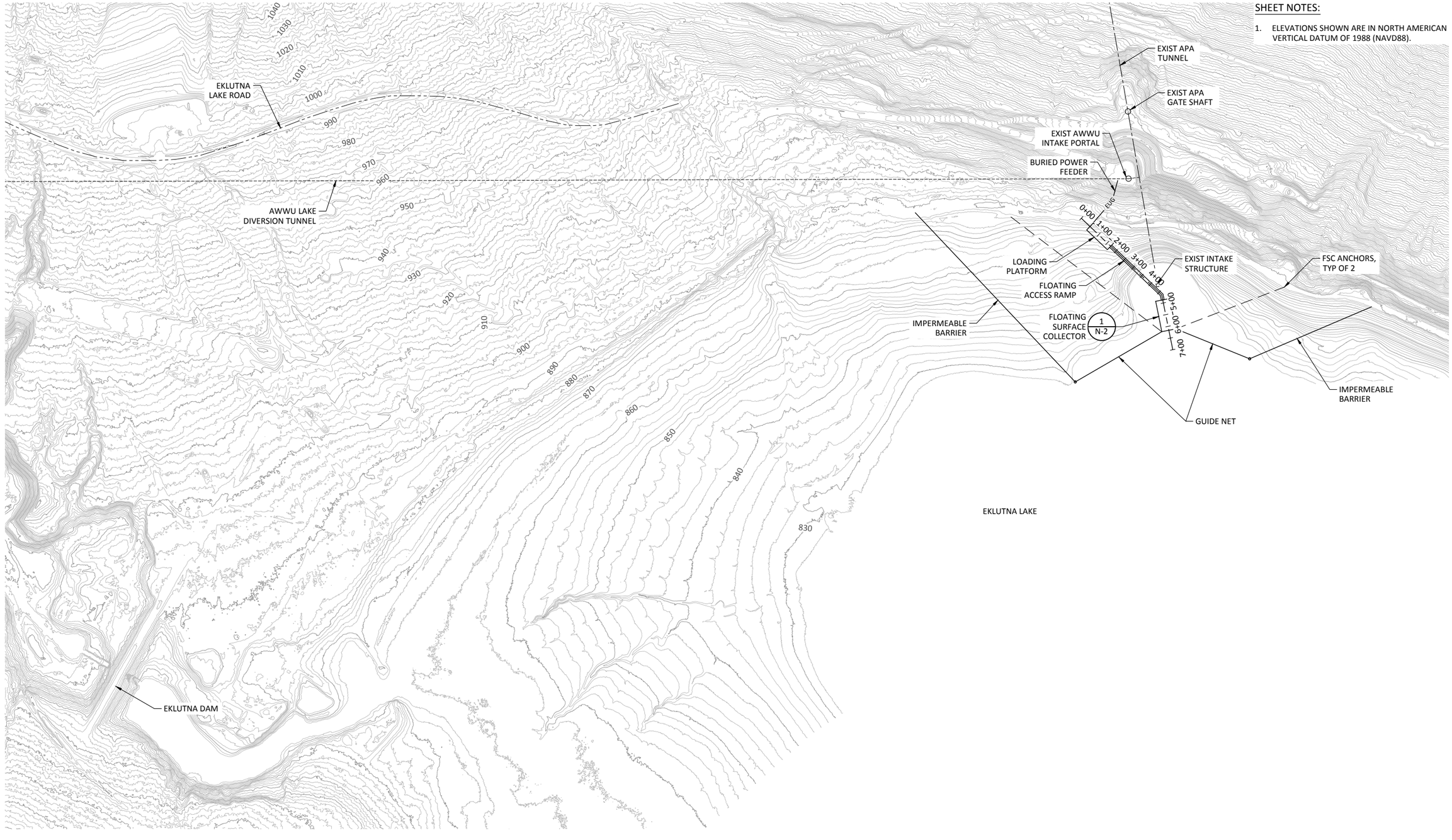
PROJECT DATE 05/12/23

DRAWING

M-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\M-2.dwg Plot date: May 08, 2023 05:55pm, CAD User: GuerreroRobert



SITE PLAN

SCALE: 1"= 200'

0" 200' 400'

N

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
FLOATING SURFACE COLLECTOR
SITE PLAN

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

PROJECT DATE 05/12/23

DRAWING

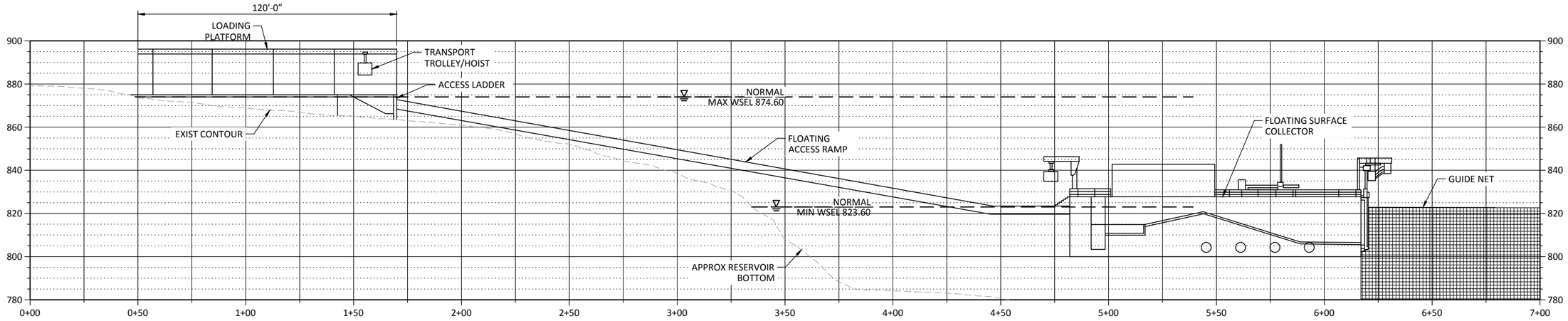
N-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\N-1.dwg Plot date: May 08, 2023 05:56pm, CAD User: GuerreroRobert

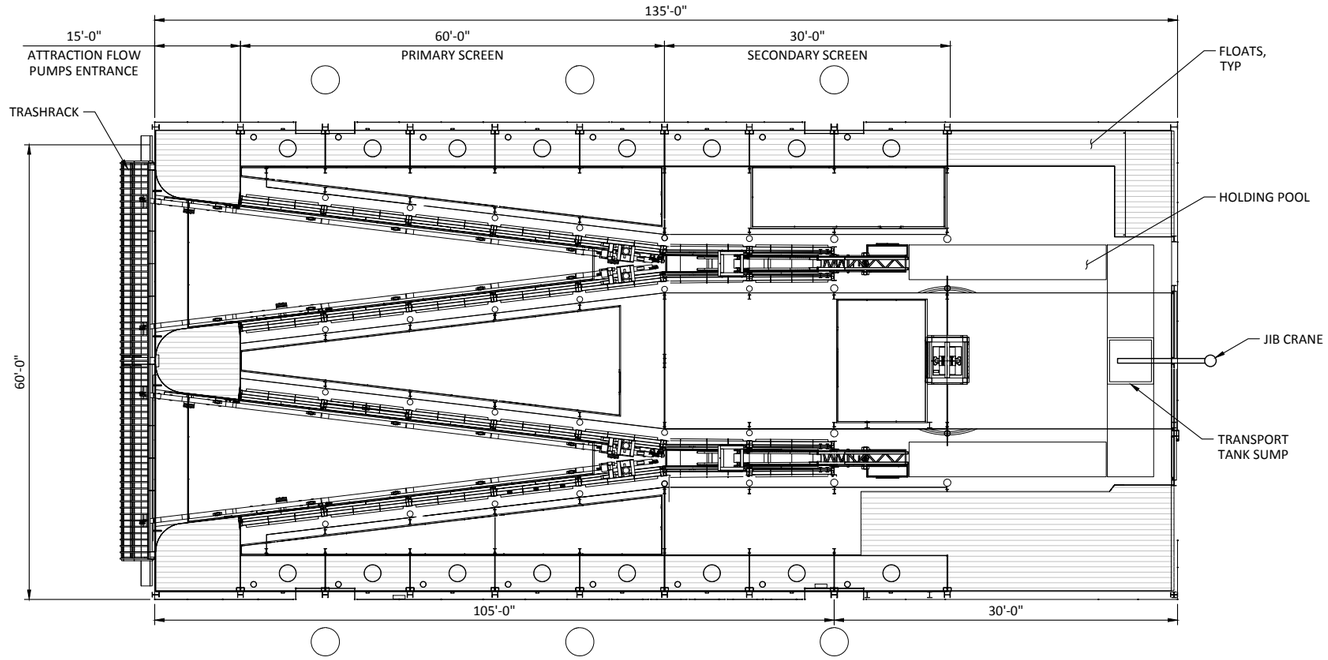
SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).



OVERALL PROFILE

SCALE: NTS



FLOATING SURFACE COLLECTOR DETAIL

SCALE: NTS

1
N-1

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
FLOATING SURFACE COLLECTOR
SECTIONS AND DETAILS

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

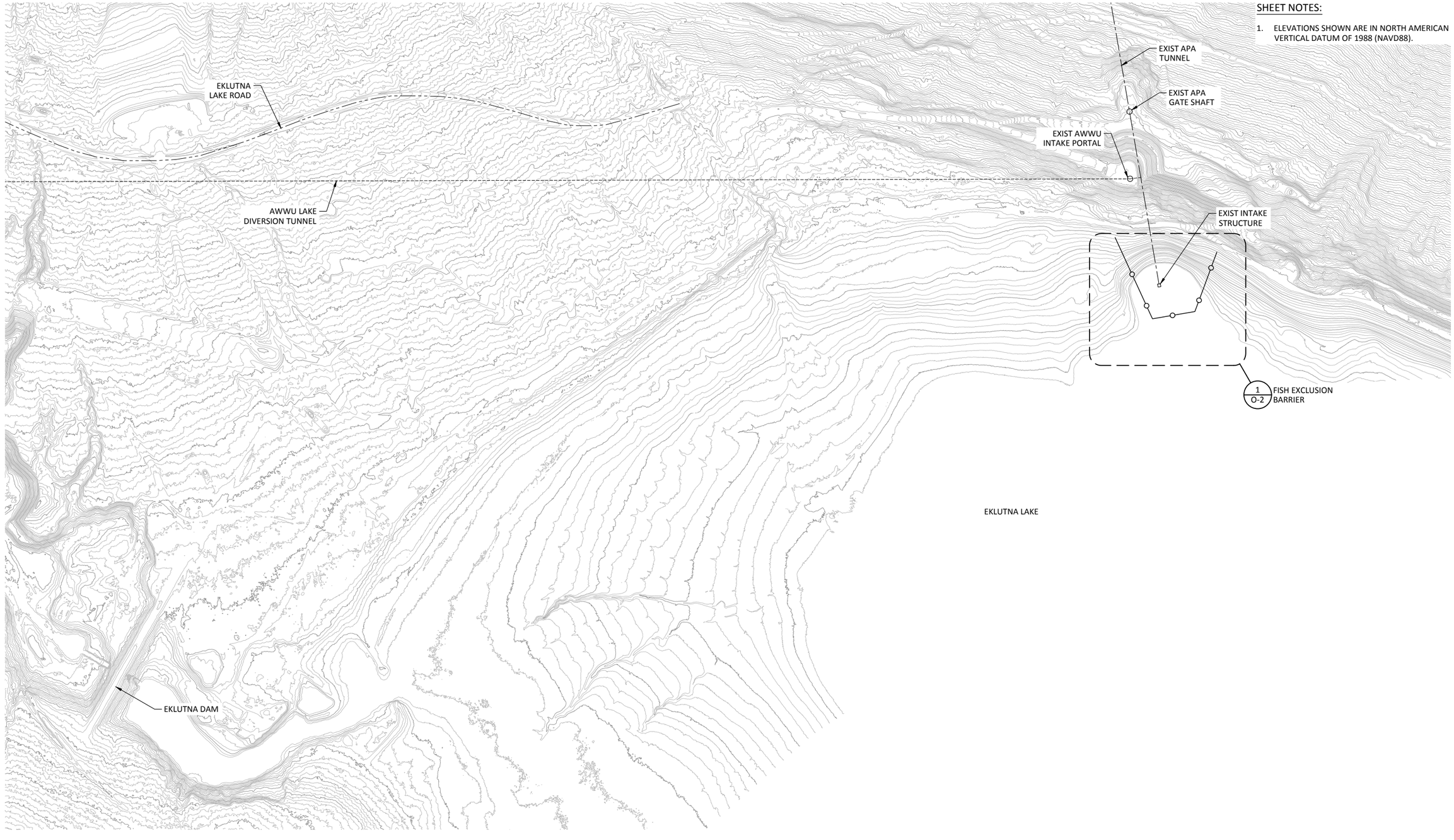
PROJECT DATE 05/12/23

DRAWING

N-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\N-2.dwg Plot date: May 08, 2023 05:56pm, CAD User: GuerreroRobert



SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SITE PLAN
SCALE: 1"= 200'

0" 200' 400'

N

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

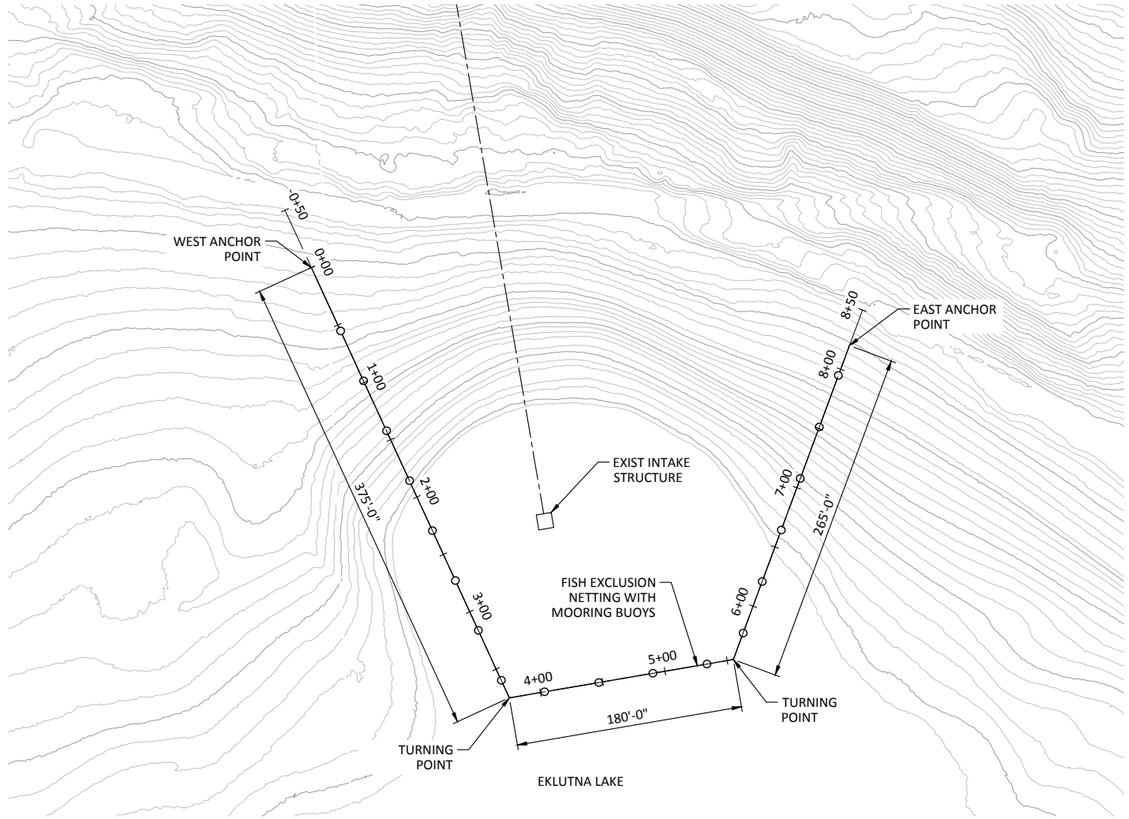
PME ALTERNATIVES ANALYSIS - FISH PASSAGE
FISH EXCLUSION BARRIER
SITE PLAN

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
O-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\O-1.dwg Plot date: May 08, 2023 05:56pm, CAD User: GuerreroRobert

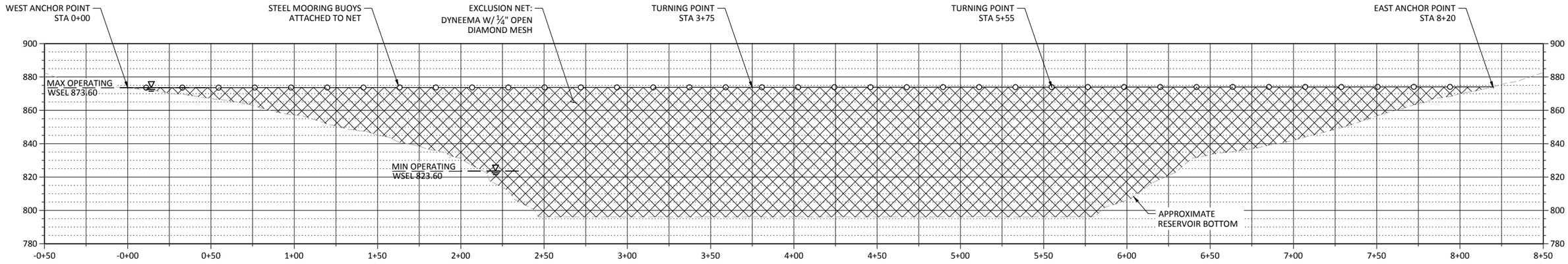


DETAIL

SCALE: 1"= 60'

0" 60' 120'

1 / O-1



FISH EXCLUSION BARRIER - PROFILE

SCALE: NTS

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
FISH EXCLUSION BARRIER
SECTIONS AND DETAILS

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

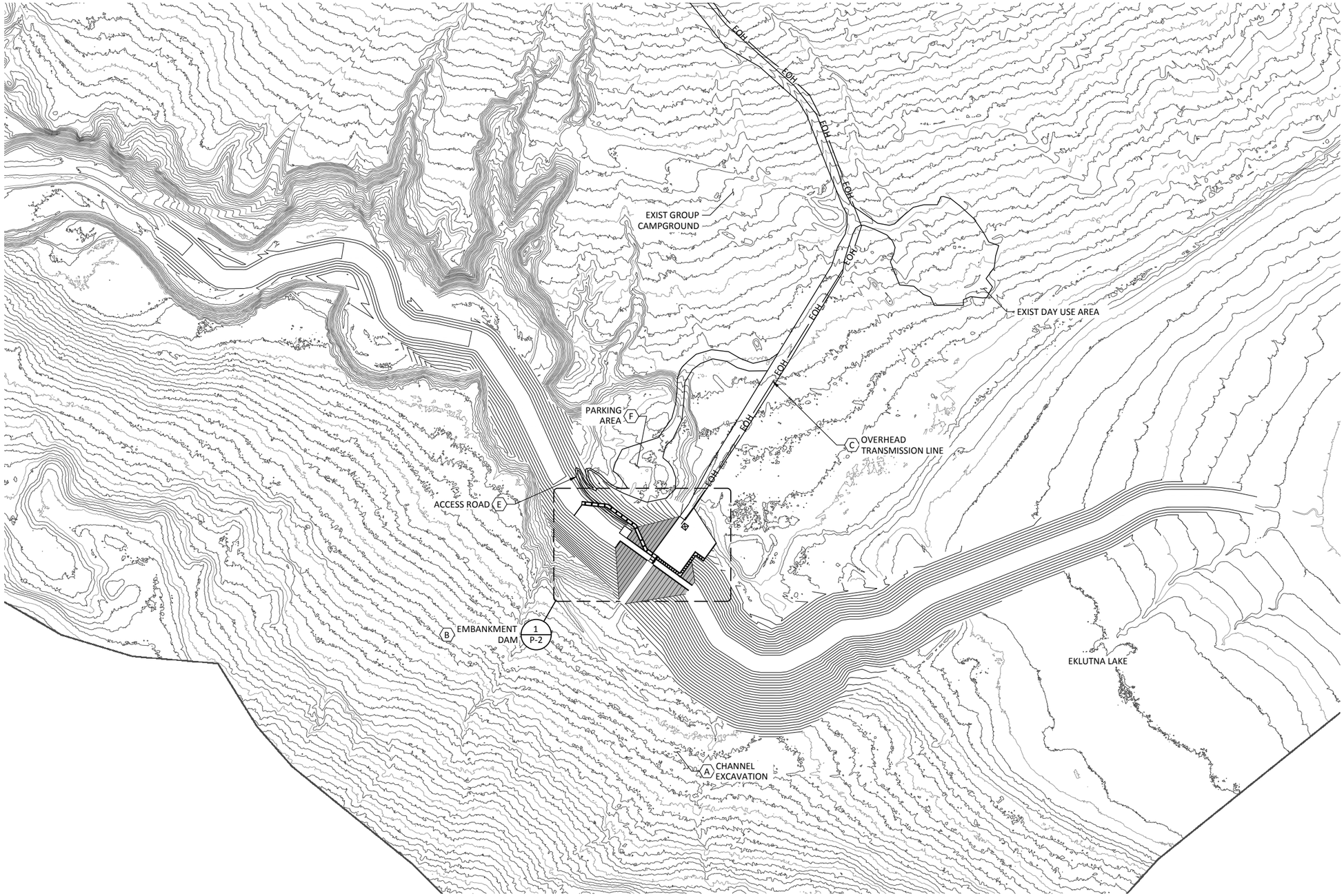
PROJECT DATE 05/12/23

DRAWING

O-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\O-2.dwg Plot date: May 08, 2023 05:56pm, CAD User: GuerreroRobert



SITE PLAN
SCALE: 1"= 200'

0" 200' 400'

N

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A EXCAVATE CHANNEL THROUGH RESERVOIR OUTLET AND EXISTING EKLUTNA DAM TO EL. 838.6 MSL.
APPROXIMATE LENGTH = 5,200-FT.
APPROXIMATE IN-SITU VOLUME = 550,000 CY.

B CONSTRUCT NEW EARTHFILL EMBANKMENT DAM.
HEIGHT = 56-FT
APPROXIMATE VOLUME = 82,000 CY

C INSTALL NEW 7.2 KV - 3P OVERHEAD TRANSMISSION LINE ALONG DAM ACCESS ROAD FROM NEAREST POI.
APPROXIMATE DISTANCE = 3,500-FT.

D REGRADE, REPAIR AND IMPROVE EXISTING ABANDONED ACCESS ROAD DOWNSTREAM OF DAM RIGHT ABUTMENT.

E CONSTRUCT NEW ACCESS ROAD TO DOWNSTREAM TOE OF DAM.

F CONSTRUCT NEW PARKING AREA DOWNSTREAM OF DAM RIGHT ABUTMENT.

LEGEND:

—— EOH —— OVERHEAD ELECTRICAL/POWER

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

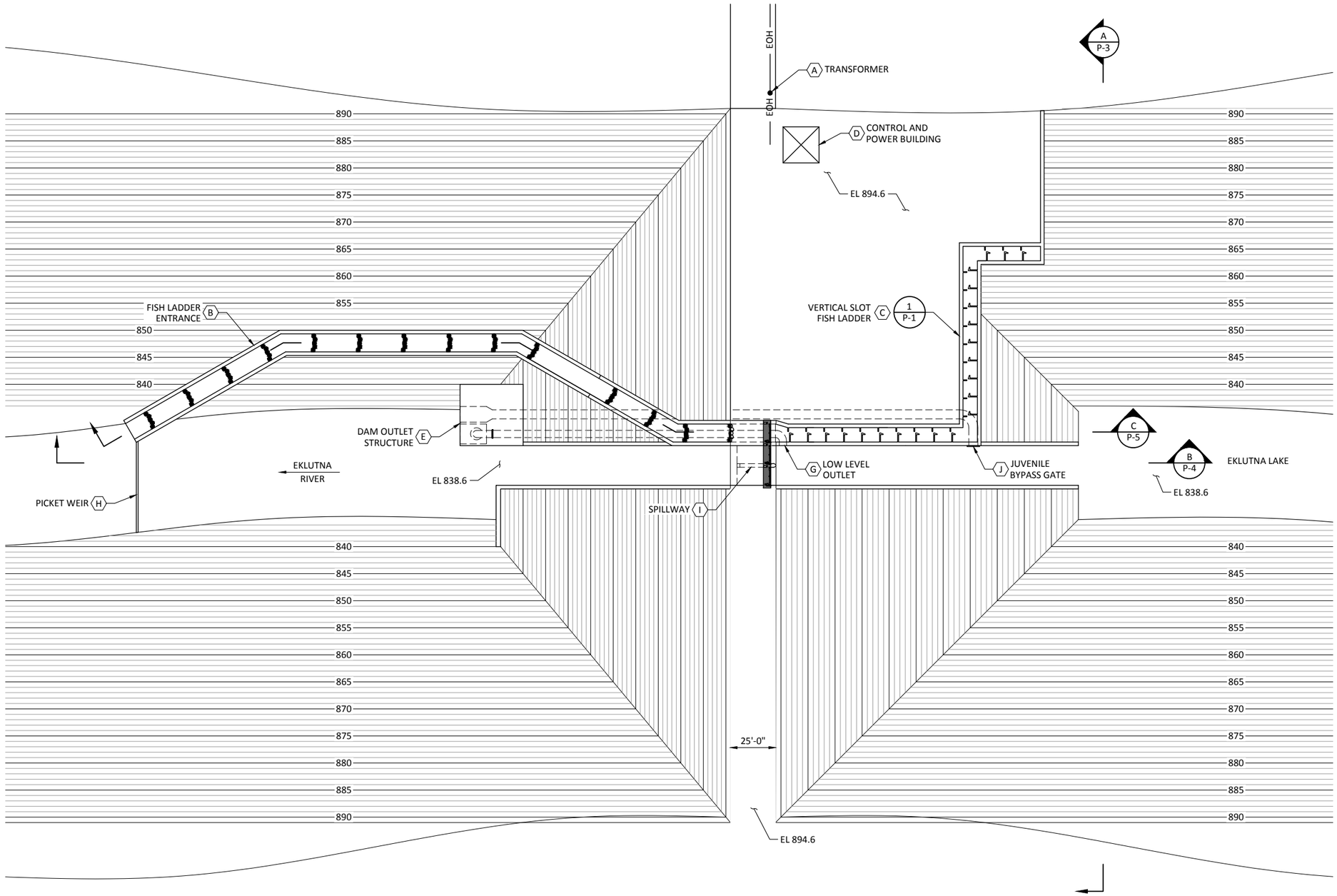
PME ALTERNATIVES ANALYSIS - FISH PASSAGE
REPLACEMENT DAM ALTERNATIVE
SITE PLAN

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
P-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\P-1.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert



EKLUTNA EMBANKMENT DAM

SCALE: 1"= 30'

0" 30' 60'

1 P-1

N

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SHEET KEY NOTES:

A INSTALL 7.2kV - 240/120V TRANSFORMER ON WOOD POWER POLE

B CONSTRUCT STEP-POOL ROCK RAMP FISHWAY FOR ENTRANCE TO RESERVOIR.

C CONSTRUCT VERTICAL SLOT FISH LADDER WITH VARIABLE POOL GATED EXITS ON UPSTREAM FACE OF DAM.

D CONSTRUCT CONTROL AND POWER BUILDING. 20-FT X 20-FT.

E CONSTRUCT CONTROL AND POWER BUILDING. 20-FT X 20-FT.

F INSTALL 5-FT SQUARE CONCRETE CONDUIT THROUGH BASE OF DAM WITH FLOW CONTROL GATE AT INTAKE

G INSTALL 48" DIA STEEL PIPE THROUGH BASE OF DAM WITH SCREENED INTAKE.

H CONSTRUCT AUTOMATED PICKET WEIR ACROSS RIVER CHANNEL ADJACENT TO FISH LADDER ENTRANCE.

I CONSTRUCT TWO BAY OVERFLOW SPILLWAY WITH (2X) 10-FT X 16-FT FIXED WHEEL GATES.

LEGEND:

EOH — OVERHEAD ELECTRICAL/POWER

EUG — UNDERGROUND ELECTRICAL

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
REPLACEMENT DAM ALTERNATIVE
SECTIONS AND DETAILS 1

DESIGNED S. ELLENSON

DRAWN R. GUERRERO

CHECKED J. BOAG

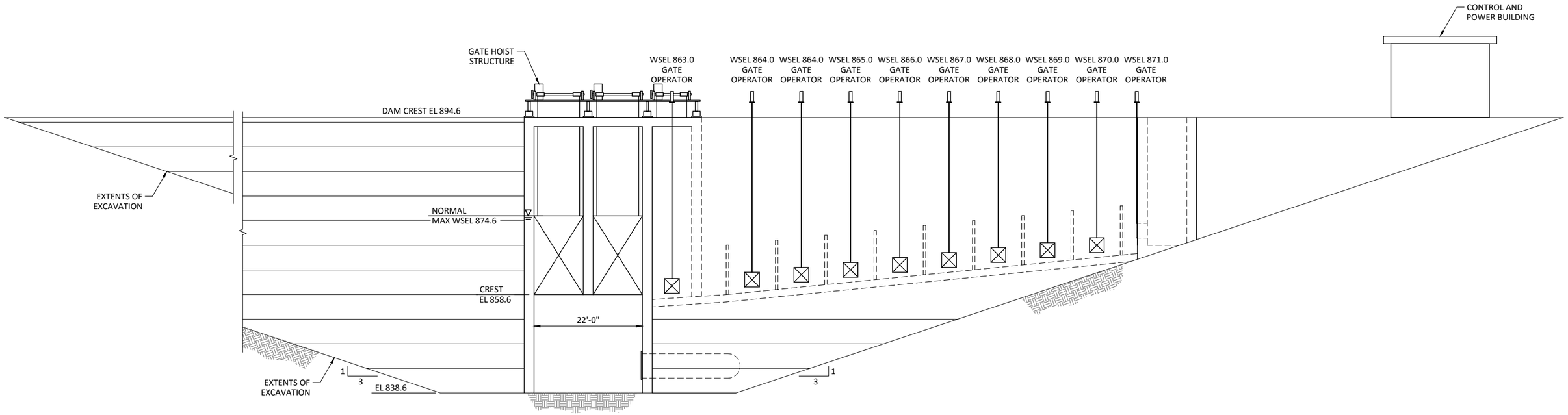
PROJECT DATE 05/12/23

DRAWING

P-2

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).



SECTION
SCALE: 1"= 10'

A
P-2

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - FISH PASSAGE
REPLACEMENT DAM ALTERNATIVE
SECTIONS AND DETAILS 2

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

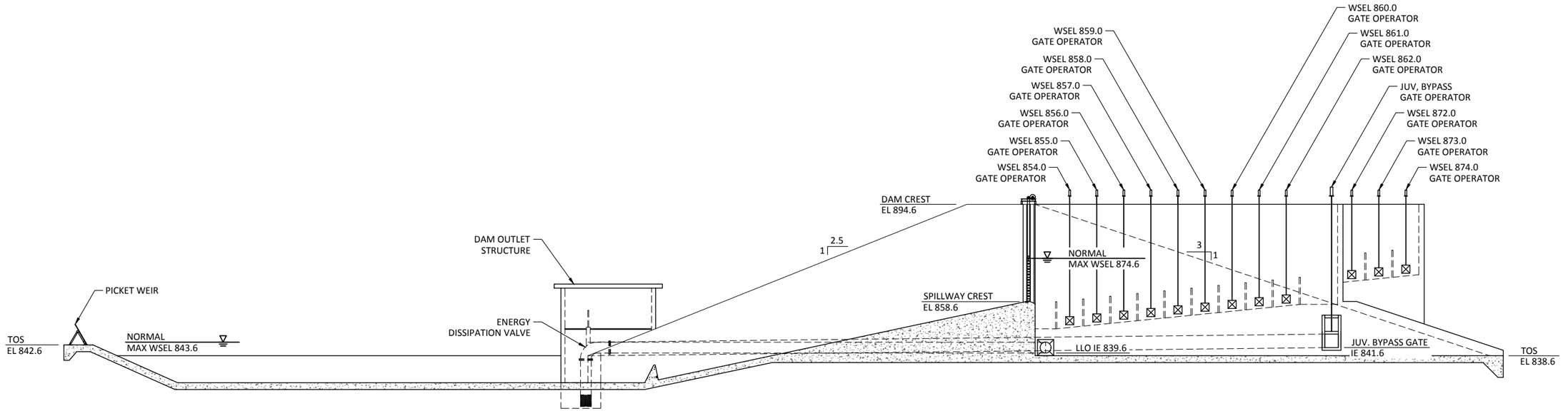
DRAWING
P-3

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\P-3.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert

SHEET NOTES:

1. ELEVATIONS SHOWN ARE IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).



SECTION
SCALE: 1"= 20'

0" 20' 40'

B
P-2

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

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REPLACEMENT DAM ALTERNATIVE
SECTIONS AND DETAILS 3

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING

P-4

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\P-4.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert

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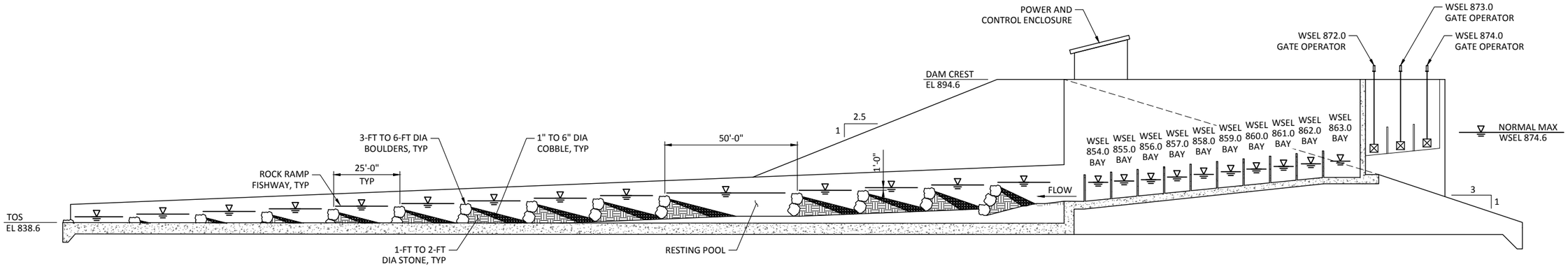
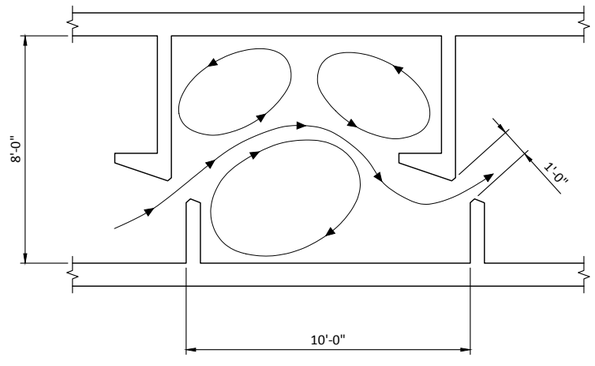


SECTION
SCALE: 1"= 20'
0" 20' 40'
C P-2



VERTICAL SLOT POOL DETAIL, TYP
SCALE: 3/8"= 1'-0"
0' 2' 4'
1 P-2

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

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ENGINEERING FEASIBILITY STUDY

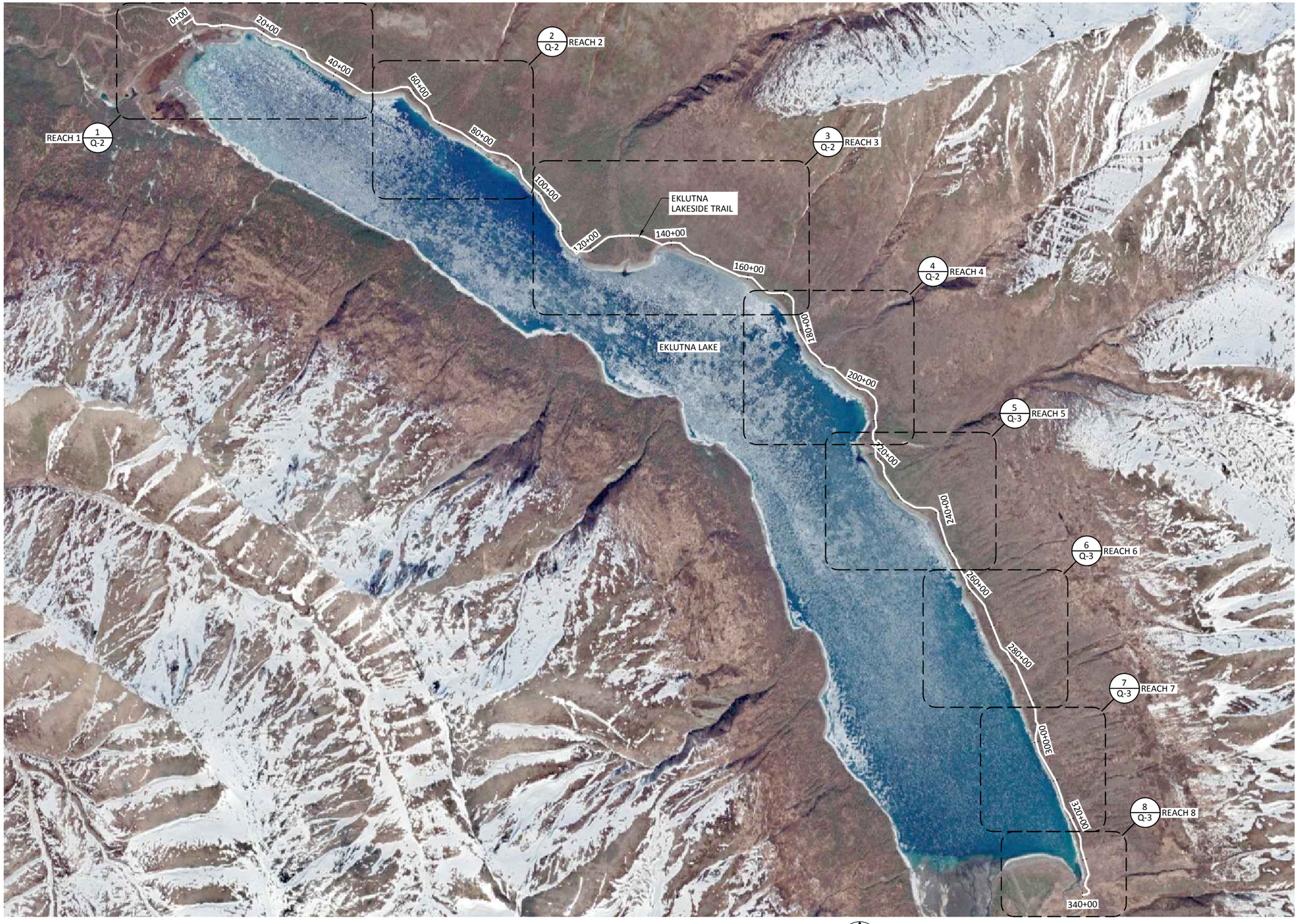
PME ALTERNATIVES ANALYSIS - FISH PASSAGE
REPLACEMENT DAM ALTERNATIVE
SECTIONS AND DETAILS 5

DESIGNED S. ELLENSON
DRAWN R. GUERRERO
CHECKED J. BOAG
PROJECT DATE 05/12/23

DRAWING
P-5

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\P-5.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert



SITE PLAN

SCALE: NTS

N

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

LAKESIDE TRAIL IMPROVEMENTS
SITE PLAN

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

PROJECT DATE 05/12/23

DRAWING

Q-1

JOB NO: 000000

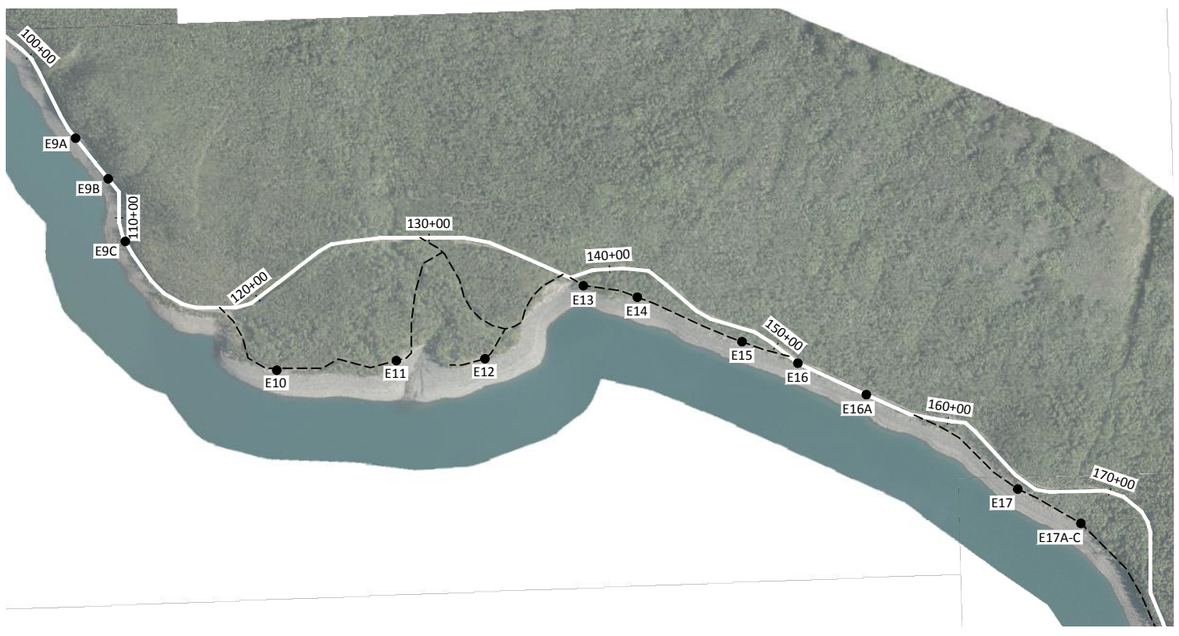
Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\Q-1.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert

REACH 1 PLAN
SCALE: NTS

1
Q-1

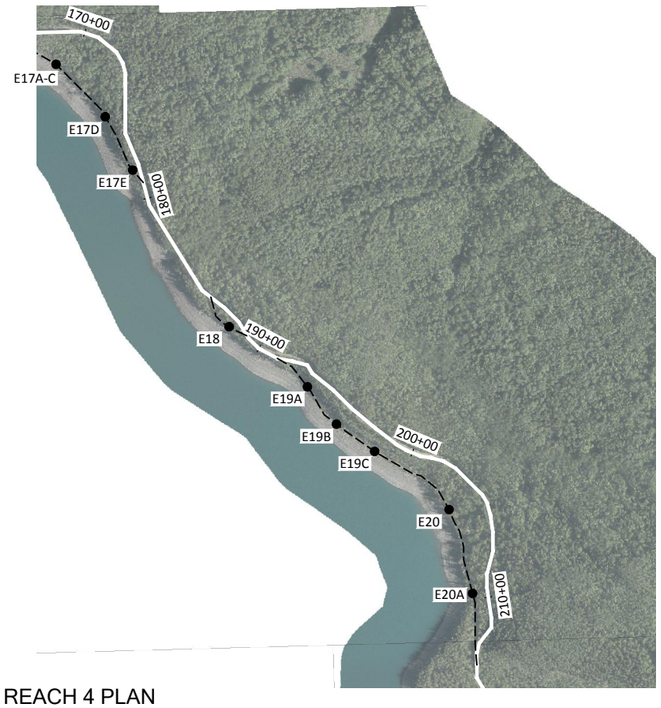
REACH 2 PLAN
SCALE: NTS

2
Q-1



REACH 3 PLAN
SCALE: NTS

3
Q-1



REACH 4 PLAN
SCALE: NTS

4
Q-1

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

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LAKESIDE TRAIL IMPROVEMENTS
REACH 1-4 PLANS

DESIGNED S. STANLEY
DRAWN R. GUERRERO
CHECKED S. ELLENSON
PROJECT DATE 05/12/23

DRAWING
Q-2

JOB NO: 000000

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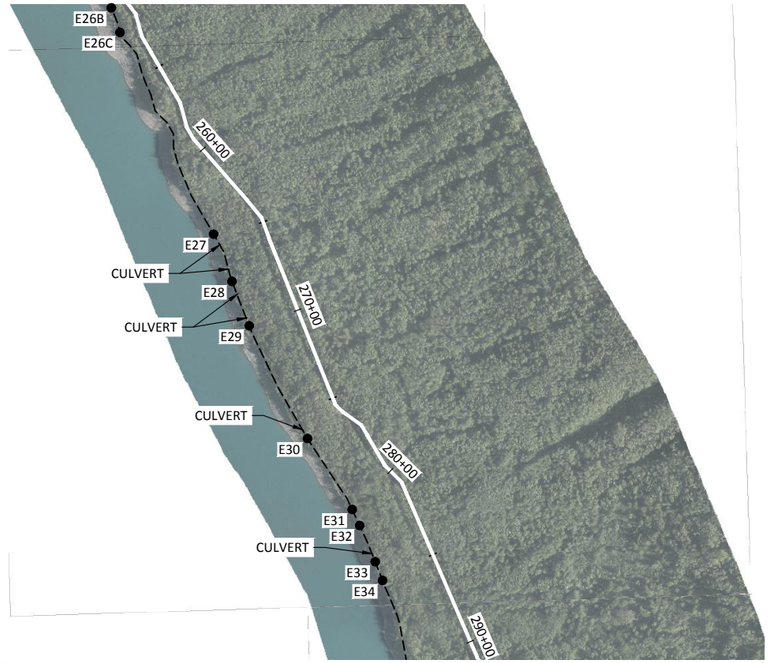
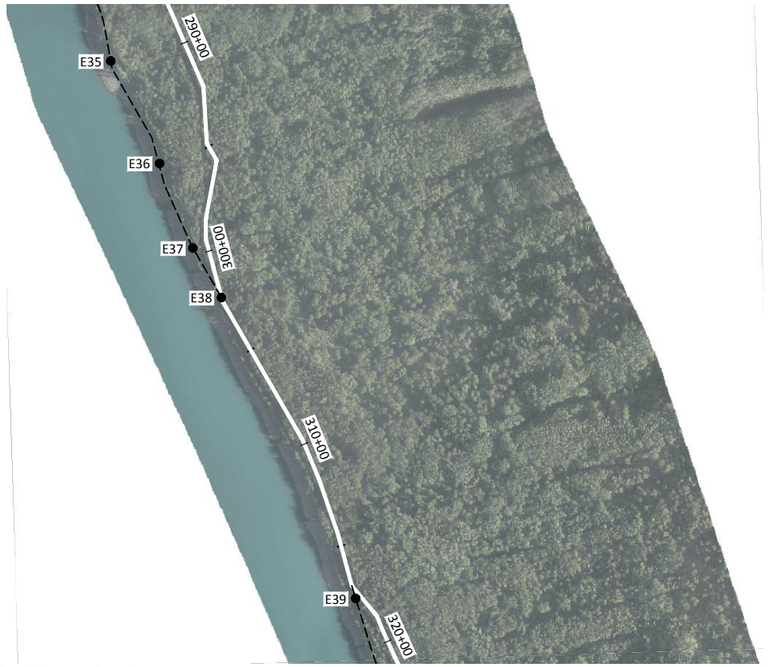
REACH 5 PLAN
SCALE: NTS
5
Q-1



REACH 6 PLAN
SCALE: NTS
6
Q-1



REACH 7 PLAN
SCALE: NTS
7
Q-1

REACH 8 PLAN
SCALE: NTS
8
Q-1

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EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

LAKESIDE TRAIL IMPROVEMENTS
REACH 5-8 PLANS

DESIGNED S. STANLEY
DRAWN R. GUERRERO
CHECKED S. ELLENSON
PROJECT DATE 05/12/23

DRAWING
Q-3

JOB NO: 000000

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TRAIL EROSION AND REPAIR INVENTORY

SITE ID	TRAIL TYPE	EROSION FACTOR	EROSION TYPE	LENGTH	Proposed Remedy	Expected Work and/or Structure
E1a	STREAMBANK	PEDESTRIAN USE	TRAMPLING	40	CONSTRUCT FENCE, PLACE LOGS, SIGNAGE TO RESTRICT ACCESS, CONSTRUCT ACCESS TRAIL TO CONCENTRATE FOOT TRAFFIC	CONSTRUCT 30 LIN FT SPLIT RAIL FENCE, DELINEATE/CONSTRUCT 40 LIN FT TRAIL
E1b	STREAMBANK	PEDESTRIAN USE	TRAMPLING	40	CONSTRUCT FENCE, PLACE LOGS, SIGNAGE TO RESTRICT ACCESS, CONSTRUCT ACCESS TRAIL TO CONCENTRATE FOOT TRAFFIC	CONSTRUCT 30 LIN FT SPLIT RAIL FENCE, DELINEATE/CONSTRUCT 40 LIN FT TRAIL
E2	MAIN TRAIL	WAVE ACTION	UNDERCUT BANK	70	CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS, CLEAN DITCH, DRIVE PILES TO RETAIN WOOD	CLEAN 70 LIN FT DITCH, INSTALL 18" X 24FT CPP, DRIVE 20 LOG PILES
E3	MAIN TRAIL	WAVE ACTION	RAVELING	145	POTENTIAL RELOCATE TRAIL UPHILL,	100 LIN FT DITCH, INSTALL 18" X 24FT CPP, DRIVE 20 LOG PILES AND ADD 12 LOGS
E4	MAIN TRAIL	WAVE ACTION	UNDERCUT BANK	634	CLEAN/ESTABLISH DITCH, CLEAN OUT CROSS DRAINS, INSTALL ADDITIONAL/UPSIZE CROSS DRAINS	600 LIN FT DITCH, INSTALL (3) 18" X 24FT CPP
E5	MAIN TRAIL	WAVE ACTION	UNDERCUT BANK	170	RELOCATE TRAIL INTO HILLSIDE (CAN'T GO UP DUE TO TOPO)	PULL DOWN FILL AND TREES, BUILD TRAIL UP OR MOVE TO LAKE SIDE OF TRAIL AS SACRIFICE (EST 170 LIN FT, 20 FT VERT, 5 FT HORIZ = 600 CY)
E6	SIDE TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	180	ABANDON LOWER TRAIL AND RELOCATE TRAIL UPHILL OR DRIVE TIMBER PILES FOR LOG REVETMENT	DRIVE 30 TIMBER PILES AND ADD 20 LOGS
E7	SIDE TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	201	ABANDON LOWER TRAIL AND RELOCATE TRAIL UPHILL OR RELOCATE TRAIL INTO HILLSIDE	PULL DOWN FILL AND TREES, MOVE TO LAKE SIDE OF TRAIL AS SACRIFICE (EST 200 LIN FT, 20 FT VERT, 5 FT HORIZ = 750 CY)
E7a	SIDE TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	1089	ABANDON LOWER TRAIL AND RELOCATE TRAIL UPHILL OR RELOCATE TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 1000 LIN FT, 10 FT VERT, 8 FT HORIZ = 3,000 CY)
E7b	SIDE TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	100	ABANDON LOWER TRAIL AND RELOCATE TRAIL UPHILL OR RELOCATE TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 100 LIN FT, 10 FT VERT, 8 FT HORIZ = 300 CY)
E8	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	10	CONSTRUCT FENCE, PLACE LOGS, SIGNAGE TO RESTRICT ACCESS, CONSTRUCT ACCESS TRAIL TO CONCENTRATE FOOT TRAFFIC, ADD/UPSIZE CROSS DRAINS, BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 50 LIN FT, 10 FT VERT, 8 FT HORIZ = 3,000 CY), INSTALL (2) 18" X 12FT CPP
E9	MAIN TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	555	CONSTRUCT FENCE, PLACE LOGS, SIGNAGE TO RESTRICT ACCESS, CONSTRUCT ACCESS TRAIL TO CONCENTRATE FOOT TRAFFIC, BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 500 LIN FT, 10 FT VERT, 8 FT HORIZ = 1,500 CY), INSTALL 18" X 12FT CPP
E9a	MAIN TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	568	CONSTRUCT FENCE, PLACE LOGS, SIGNAGE TO RESTRICT ACCESS, CONSTRUCT ACCESS TRAIL TO CONCENTRATE FOOT TRAFFIC, BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 500 LIN FT, 10 FT VERT, 8 FT HORIZ = 1,500 CY), INSTALL (2) 18" X 12FT CPP
E9b	MAIN TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	565	CONSTRUCT FENCE, PLACE LOGS, SIGNAGE TO RESTRICT ACCESS, CONSTRUCT ACCESS TRAIL TO CONCENTRATE FOOT TRAFFIC, BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 500 LIN FT, 10 FT VERT, 8 FT HORIZ = 1,500 CY), INSTALL (2) 18" X 12FT CPP
E9c	MAIN TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	317	CONSTRUCT FENCE, PLACE LOGS, SIGNAGE TO RESTRICT ACCESS, CONSTRUCT ACCESS TRAIL TO CONCENTRATE FOOT TRAFFIC, BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 300 LIN FT, 10 FT VERT, 8 FT HORIZ = 900 CY), INSTALL (2) 18" X 12FT CPP
E10	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	155	SIGNS TO INDICATE NARROW TRAIL CONDITIONS	BENCH TRAIL INTO HILLSIDE (EST 150 LIN FT, 10 FT VERT, 8 FT HORIZ = 900 CY)
E11	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	154	SIGNS TO INDICATE NARROW TRAIL CONDITIONS, CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS, ARMOR OUTFALL TO SLOW FLOWS	BENCH TRAIL INTO HILLSIDE (EST 150 LIN FT, 10 FT VERT, 8 FT HORIZ = 900 CY)
E12	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	292	LAY BACK SLOPE AND REVEGETATE, INSTALL WATTLES TO HOLD BANK IN PLACE, CONSTRUCT BREAKWATER, CONSTRUCT ACCESS TRAIL	BENCH TRAIL INTO HILLSIDE (EST 300 LIN FT, 10 FT VERT, 8 FT HORIZ = 900 CY)
E13	SIDE TRAIL	RESERVOIR FLUCTUATIONS	SLUMPING	61	LAY BACK SLOPE AND REVEGETATE, BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 100 LIN FT, 10 FT VERT, 8 FT HORIZ = 300 CY)
E14	SIDE TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	297	DRAINAGE STRUCTURES AND EROSION CONTROL AT BASE OF SLOPE	BENCH TRAIL INTO HILLSIDE (EST 300 LIN FT, 10 FT VERT, 8 FT HORIZ = 1900 CY), INSTALL (2) 18" X 12FT CPP
E15	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	890	ABANDON AND RELOCATE TRAIL UPHILL	BENCH TRAIL INTO HILLSIDE (EST 1000 LIN FT, 10 FT VERT, 8 FT HORIZ = 3,000 CY), INSTALL (2) 18" X 12FT CPP
E16	MAIN TRAIL	WAVE ACTION	UNDERCUT BANK	60	CLEAN/ESTABLISH DITCH, CLEAN OUT CROSS DRAIN, INSTALL ADDITIONAL/UPSIZE CROSS DRAINS	60 LIN FT DITCH
E16a	MAIN TRAIL	WAVE ACTION	UNDERCUT BANK	25	CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS	25 LIN FT DITCH
E17a	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	976	CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS	1,000 LIN FT DITCH, INSTALL (4) 18" X 12FT CPP
E17b	SIDE TRAIL	WAVE ACTION	SLUMPING	120	DRIVE TIMBER PILES TO RETAIN WOOD	DRIVE 30 TIMBER PILES AND ADD 20 LOGS
E17c	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	185	LAY BACK SLOPE AND REVEGETATE, BENCH TRAIL INTO HILLSIDE	LAY BACK SLOPE AND BENCH TRAIL INTO HILLSIDE (EST 500 LIN FT, 10 FT VERT, 8 FT HORIZ = 1,500 CY), INSTALL (2) 18" X 12FT CPP
E17d	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	371	BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 300 LIN FT, 10 FT VERT, 8 FT HORIZ = 900 CY)
E17e	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	212	CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS	BENCH TRAIL INTO HILLSIDE (EST 200 LIN FT, 10 FT VERT, 8 FT HORIZ = 1300 CY)
E18	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	134	ABANDON AND RELOCATE TRAIL UPHILL, BENCH TRAIL INTO HILLSIDE, ADD CROSS DRAINS, CONSTRUCT/CLEAN DITCHES	BENCH TRAIL INTO HILLSIDE (EST 150 LIN FT, 10 FT VERT, 8 FT HORIZ = 900 CY), INSTALL (3) 18" X 12FT CPP
E19a	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	389	ABANDON AND RELOCATE TRAIL UPHILL, BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 400 LIN FT, 10 FT VERT, 8 FT HORIZ = 1200 CY)
E19b	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	354	ABANDON AND RELOCATE TRAIL UPHILL, BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 400 LIN FT, 10 FT VERT, 8 FT HORIZ = 1200 CY)
E19c	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	335	ABANDON AND RELOCATE TRAIL UPHILL, BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 400 LIN FT, 10 FT VERT, 8 FT HORIZ = 1200 CY)
E20	SIDE TRAIL	WAVE ACTION	SLUMPING	412	CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS	BENCH TRAIL INTO HILLSIDE (EST 400 LIN FT, 10 FT VERT, 8 FT HORIZ = 1200 CY), INSTALL (2) 18" X 12FT CPP
E20a	SIDE TRAIL	WAVE ACTION	SLUMPING	60	BENCH TRAIL INTO HILLSIDE	BENCH TRAIL INTO HILLSIDE (EST 100 LIN FT, 10 FT VERT, 8 FT HORIZ = 300 CY)
E21	STREAMBANK	RESERVOIR FLUCTUATIONS	RAVELING	50	CLEAN/ESTABLISH DITCH, GRADE ROAD	ESTABLISH/CLEAN DITCH AND SITE GRADING 200 LIN FT, ADD ROCK ARMOR TO PROTECT BRIDGE 10 HRS EXCAVATOR TIME
E22	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	1295	SIGNS TO INDICATE NARROW TRAIL CONDITIONS, POTENTIAL RELOCATE TRAIL UPHILL	BENCH TRAIL INTO HILLSIDE (EST 1300 LIN FT, 10 FT VERT, 8 FT HORIZ = 4,000 CY), INSTALL (2) 18" X 12FT CPP
E23	SIDE TRAIL	WAVE ACTION	SLUMPING	70	CLEAN/ESTABLISH DITCH, UPSIZE CROSS DRAINS OR REPLACE WITH FOOT BRIDGE	ESTABLISH/CLEAN DITCH AND SITE GRADING 100 LIN FT, INSTALL (2) 18" X 12FT CPP
E24	SIDE TRAIL	WAVE ACTION	SLUMPING	153	CLEAN/ESTABLISH DITCH, INSTALL ADDITIONAL CROSS DRAINS, ARMOR CULVERT OUTFALL TO SLOW FLOWS AND REDUCE EROSION, BENCH TRAIL INTO HILLSIDE	ESTABLISH/CLEAN DITCH 150 LIN FT, BENCH TRAIL INTO HILLSIDE (EST 150 LIN FT, 10 FT VERT, 8 FT HORIZ = 900 CY)
E25a	SIDE TRAIL	WAVE ACTION	SLUMPING	295	CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS, POTENTIAL RELOCATE TRAIL UPHILL, BENCH TRAIL INTO HILLSIDE	ESTABLISH/CLEAN DITCH 300 LIN FT, BENCH TRAIL INTO HILLSIDE (EST 300 LIN FT, 10 FT VERT, 8 FT HORIZ = 900 CY)
E25b	SIDE TRAIL	WAVE ACTION	SLUMPING	140	CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS, POTENTIAL RELOCATE TRAIL UPHILL, BENCH TRAIL INTO HILLSIDE	ESTABLISH/CLEAN DITCH 150 LIN FT, BENCH TRAIL INTO HILLSIDE (EST 150 LIN FT, 10 FT VERT, 8 FT HORIZ = 900 CY)
E26	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	182	CLEAN/ESTABLISH DITCH, INSTALL ADDITIONAL CROSS DRAINS, ARMOR CULVERT OUTFALL TO SLOW FLOWS AND REDUCE EROSION, BENCH TRAIL INTO HILLSIDE	ESTABLISH/CLEAN DITCH 200 LIN FT, BENCH TRAIL INTO HILLSIDE (EST 200 LIN FT, 10 FT VERT, 8 FT HORIZ = 1300 CY), INSTALL 18" X 12FT CPP
E26a	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	20	CLEAN/ESTABLISH DITCH, INSTALL ADDITIONAL CROSS DRAINS, ARMOR CULVERT OUTFALL TO SLOW FLOWS AND REDUCE EROSION, BENCH TRAIL INTO HILLSIDE	ESTABLISH/CLEAN DITCH 50 LIN FT, BENCH TRAIL INTO HILLSIDE (EST 50 LIN FT, 10 FT VERT, 8 FT HORIZ = 150 CY), INSTALL 18" X 12FT CPP
E26b	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	102	CLEAN/ESTABLISH DITCH, INSTALL ADDITIONAL CROSS DRAINS, ARMOR CULVERT OUTFALL TO SLOW FLOWS AND REDUCE EROSION, BENCH TRAIL INTO HILLSIDE	ESTABLISH/CLEAN DITCH 100 LIN FT, BENCH TRAIL INTO HILLSIDE (EST 100 LIN FT, 10 FT VERT, 8 FT HORIZ = 300 CY), INSTALL 18" X 12FT CPP
E26c	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	120	CLEAN/ESTABLISH DITCH, INSTALL ADDITIONAL CROSS DRAINS, ARMOR CULVERT OUTFALL TO SLOW FLOWS AND REDUCE EROSION, BENCH TRAIL INTO HILLSIDE	ESTABLISH/CLEAN DITCH 100 LIN FT, BENCH TRAIL INTO HILLSIDE (EST 100 LIN FT, 10 FT VERT, 8 FT HORIZ = 300 CY), INSTALL 18" X 12FT CPP
E27	SIDE TRAIL	RESERVOIR FLUCTUATIONS	UNDERCUT BANK	524	SIGNS TO INDICATE NARROW TRAIL CONDITIONS, CLEAN OUT CROSS DRAINS, INSTALL OR UPSIZE ADDITIONAL CROSS DRAINS, AND EROSION CONTROL AT BASE OF SLOPE	BENCH TRAIL INTO HILLSIDE (EST 500 LIN FT, 10 FT VERT, 8 FT HORIZ = 1,500 CY), INSTALL (2) 18" X 12FT CPP
E28	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	390	CLEAN/ESTABLISH DITCH, INSTALL ADDITIONAL CROSS DRAINS, ARMOR CULVERT OUTFALL TO SLOW FLOWS AND REDUCE EROSION	ESTABLISH/CLEAN DITCH 400 LIN FT, INSTALL (2) 18" X 12FT CPP
E29	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	377	CLEAN/ESTABLISH DITCH, INSTALL ADDITIONAL CROSS DRAINS, ARMOR CULVERT OUTFALL TO SLOW FLOWS AND REDUCE EROSION	ESTABLISH/CLEAN DITCH 400 LIN FT, INSTALL (2) 18" X 12FT CPP
E30	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	383	CLEAN/ESTABLISH DITCH, CLEAN OUT CROSS DRAIN, INSTALL ADDITIONAL CROSS DRAINS, ARMOR OUTFALL TO SLOW FLOWS AND REDUCE EROSION	ESTABLISH/CLEAN DITCH 400 LIN FT, INSTALL (2) 18" X 12FT CPP
E31	SIDE TRAIL	WAVE ACTION	RILLS/GULLIES	40	CLEAN/ESTABLISH DITCH, CLEAN OUT CROSS DRAIN, INSTALL ADDITIONAL CROSS DRAINS, ARMOR OUTFALL TO SLOW FLOWS AND REDUCE EROSION	ESTABLISH/CLEAN DITCH 40 LIN FT
E32	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	114	CLEAN/ESTABLISH DITCH, CLEAN OUT CROSS DRAIN, INSTALL ADDITIONAL CROSS DRAINS, ARMOR OUTFALL TO SLOW FLOWS AND REDUCE EROSION	ESTABLISH/CLEAN DITCH 100 LIN FT, INSTALL 18" X 12FT CPP
E33	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	65	CLEAN/ESTABLISH DITCH, CLEAN OUT CROSS DRAIN, INSTALL ADDITIONAL CROSS DRAINS, ARMOR OUTFALL TO SLOW FLOWS AND REDUCE EROSION	ESTABLISH/CLEAN DITCH 100 LIN FT, INSTALL 18" X 12FT CPP
E34	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	105	CLEAN OUT CROSS DRAIN	CLEAN OUT CROSS DRAIN, ESTABLISH/CLEAN DITCH 100 LIN FT
E35	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	404	CLEAN/ESTABLISH DITCH, CLEAN OUT CROSS DRAIN, INSTALL ADDITIONAL CROSS DRAINS, ARMOR OUTFALL TO SLOW FLOWS AND REDUCE EROSION	ESTABLISH/CLEAN DITCH 400 LIN FT, CLEAN OUT CROSS DRAIN, INSTALL (2) 18" X 12FT CPP
E36	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	140	CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS	ESTABLISH/CLEAN DITCH 150 LIN FT, CLEAN OUT CROSS DRAIN, INSTALL 18" X 12FT CPP
E37	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	300	CLEAN/ESTABLISH DITCH, INSTALL CROSS DRAINS	ESTABLISH/CLEAN DITCH 300 LIN FT, CLEAN OUT CROSS DRAIN, INSTALL 18" X 12FT CPP
E38	MAIN TRAIL	WAVE ACTION	UNDERCUT BANK	366	CLEAN OUT CROSS DRAINS, CONTROL TRAIL RUNOFF, INSTALL ADDITIONAL/UPSIZE CROSS DRAINS	ESTABLISH/CLEAN DITCH 400 LIN FT, CLEAN OUT CROSS DRAIN, INSTALL (2) 18" X 24FT CPP
E39	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	190	CLEAN OUT CROSS DRAINS, CONTROL TRAIL RUNOFF, INSTALL ADDITIONAL/UPSIZE CROSS DRAINS	ESTABLISH/CLEAN DITCH 200 LIN FT, CLEAN OUT CROSS DRAIN, INSTALL 18" X 12FT CPP
E40	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	185	CLEAN OUT CROSS DRAINS, INSTALL ADDITIONAL CROSS DRAINS	CLEAN OUT CROSS DRAIN, ESTABLISH/CLEAN DITCH 200 LIN FT
E40a	SIDE TRAIL	WAVE ACTION	UNDERCUT BANK	110	CLEAN OUT CROSS DRAINS, INSTALL ADDITIONAL CROSS DRAINS	CLEAN OUT CROSS DRAIN, ESTABLISH/CLEAN DITCH 100 LIN FT

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

LAKESIDE TRAIL IMPROVEMENTS
TRAIL EROSION AND REPAIR INVENTORY

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

PROJECT DATE 05/12/23

DRAWING

Q-4

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\Q-4.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert

EKLUTNA RIVER AWWU INSPECTION CROSSINGS

SCALE: NTS

N

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INFRASTRUCTURE IMPROVEMENTS
AWWU MAINTENANCE ROAD CROSSING
SITE OVERVIEW

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

PROJECT DATE 05/12/23

DRAWING

R-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\R-1.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert

PROPOSED CROSSING RIVER MILE 10.3
SCALE: NTS
1 R-1

PROPOSED CROSSING RIVER MILE 10.1
SCALE: NTS
2 R-1

PROPOSED CROSSING RIVER MILE 9.8
SCALE: NTS
3 R-1

PROPOSED CROSSING RIVER MILE 8.7
SCALE: NTS
4 R-1

REV	DATE	BY	DESCRIPTION
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A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
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McMillen

CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INFRASTRUCTURE IMPROVEMENTS
AWWU MAINTENANCE ROAD CROSSINGS
SITE PLANS 1

DESIGNED S. STANLEY
DRAWN R. GUERRERO
CHECKED S. ELLENSON
PROJECT DATE 05/12/23

DRAWING
R-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\R-2.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert

PROPOSED CROSSING RIVER MILE 8.1
SCALE: NTS
5
R-1

PROPOSED CROSSING RIVER MILE 7.4
SCALE: NTS
6
R-1

PROPOSED CROSSING RIVER MILE 6.9
SCALE: NTS
7
R-1

PROPOSED CROSSING RIVER MILE 6.5
SCALE: NTS
8
R-1

REV	DATE	BY	DESCRIPTION
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A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING
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McMillen

CHUGACH
POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT
ENGINEERING FEASIBILITY STUDY

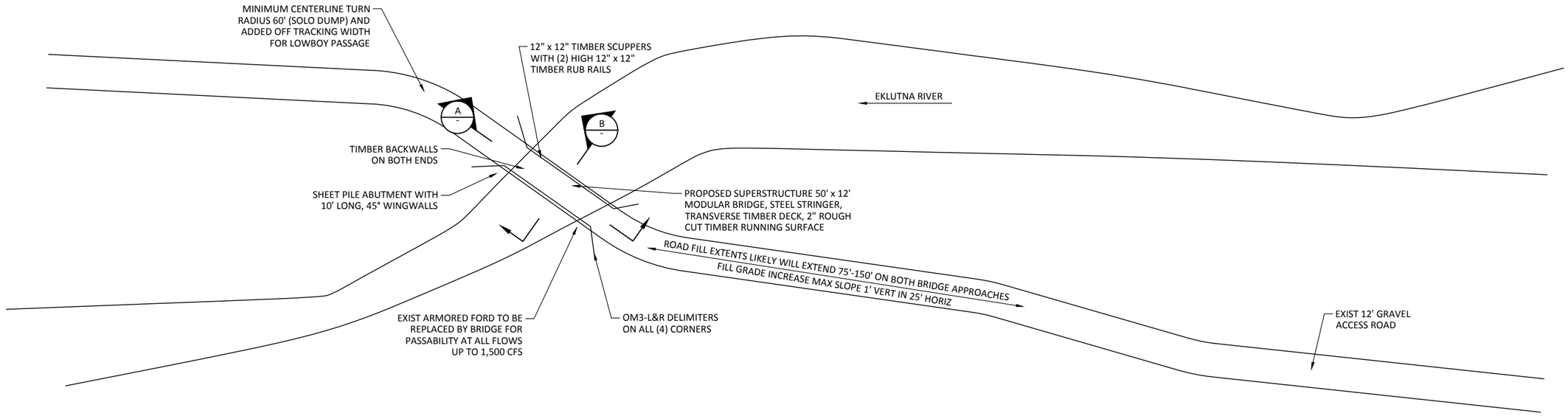
PME ALTERNATIVES ANALYSIS - INFRASTRUCTURE IMPROVEMENTS
AWWU MAINTENANCE ROAD CROSSINGS
SITE PLANS 2

DESIGNED S. STANLEY
DRAWN R. GUERRERO
CHECKED S. ELLENSON
PROJECT DATE 05/12/23

DRAWING
R-3

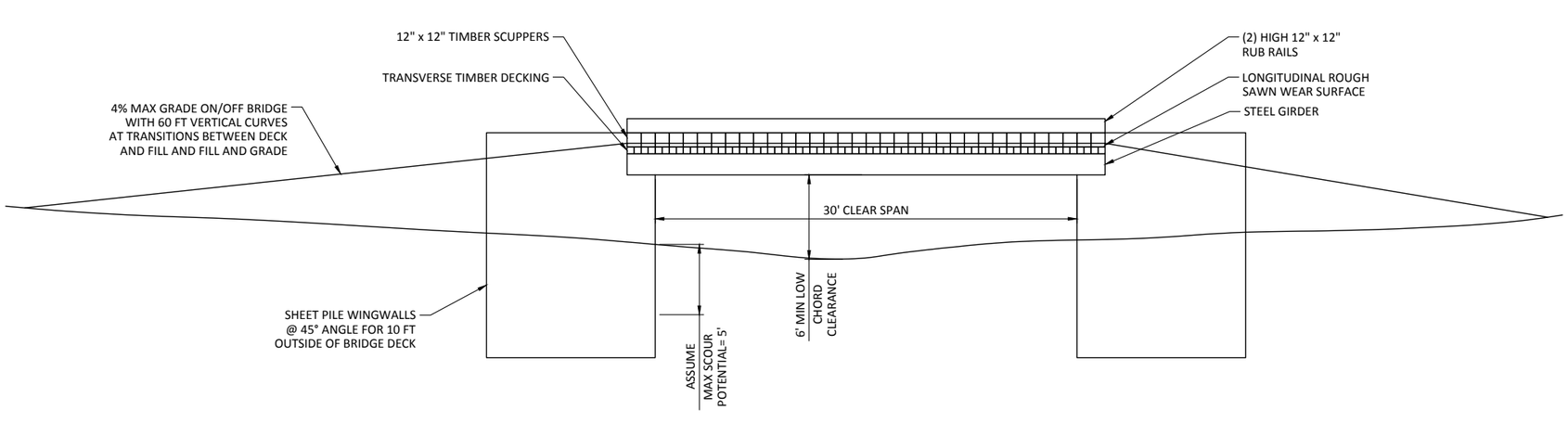
JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\R-3.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert



CONCEPT BRIDGE CROSSING - PLAN, TYP

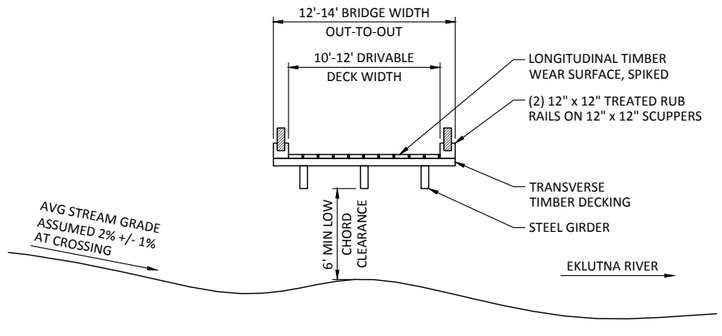
SCALE: NTS



CONCEPT BRIDGE CROSSING - ROAD SECTION, TYP

SCALE: NTS

A
-



CONCEPT BRIDGE CROSSING - STREAM SECTION, TYP

SCALE: NTS

B
-

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
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WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INFRASTRUCTURE IMPROVEMENTS
AWWU MAINTENANCE ROAD CROSSINGS
SECTIONS AND DETAILS

DESIGNED S. STANLEY
DRAWN R. GUERRERO
CHECKED S. ELLENSON
PROJECT DATE 05/12/23

DRAWING

R-4

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\R-4.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert

PROPOSED CROSSING BRIDGE EXAMPLE - SECTION VIEW FROM RIVER BED LOOKING DOWNSTREAM

SCALE: NTS

PROPOSED CROSSING BRIDGE EXAMPLE - LOOKING AT RIVER-LEFT ABUTMENT FROM RIVERBED

SCALE: NTS

PROPOSED CROSSING BRIDGE EXAMPLE - LOOKING AT UPSTREAM SECTION OF BRIDGE FROM ROAD GRADE

SCALE: NTS

PROPOSED CROSSING BRIDGE EXAMPLE - LOOKING DOWNRIVER FROM ROAD GRADE

SCALE: NTS

REV	DATE	BY	DESCRIPTION
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WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - INFRASTRUCTURE IMPROVEMENTS
AWWU MAINTENANCE ROAD CROSSINGS
EXAMPLE PHOTOS

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

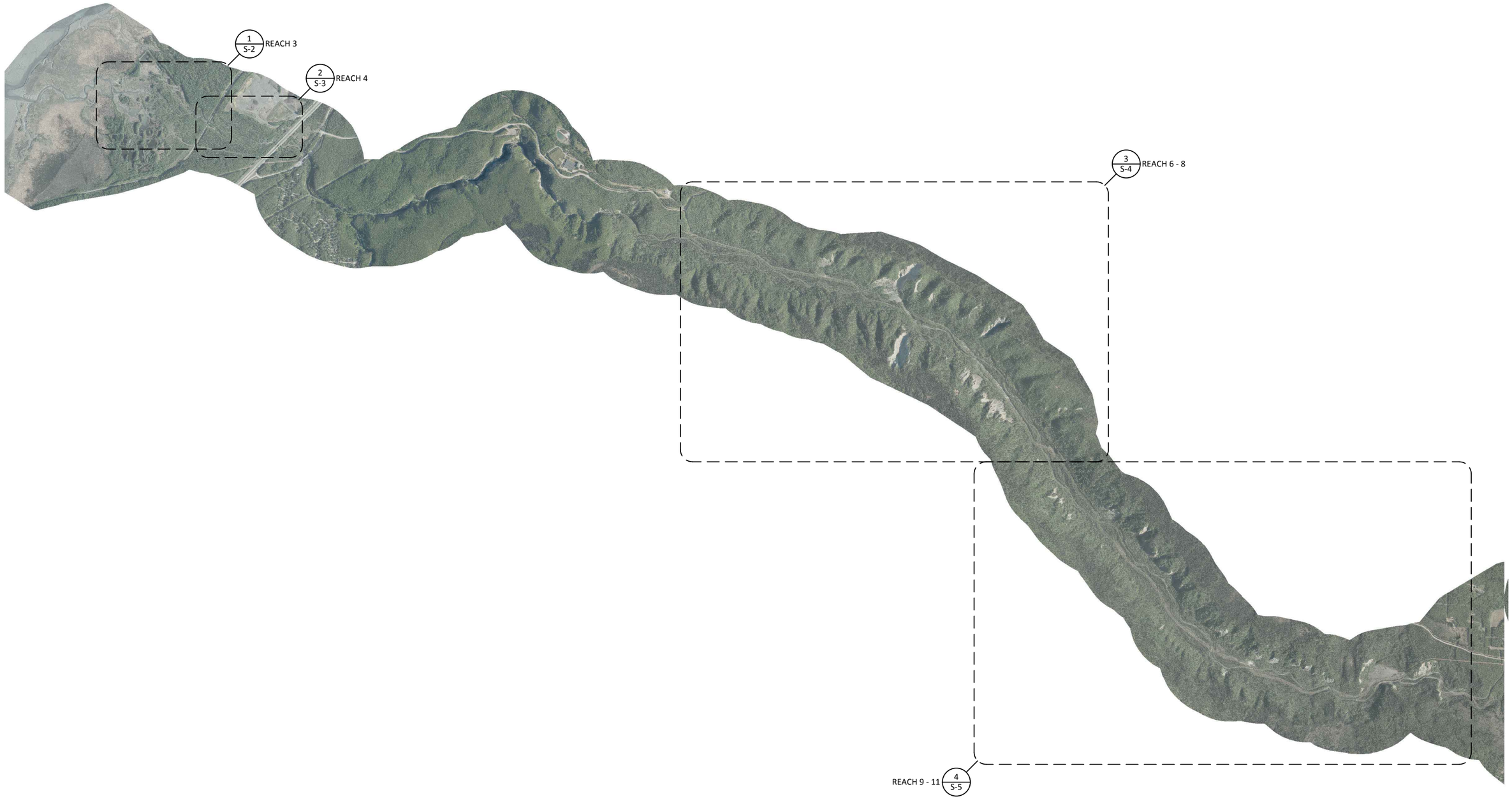
PROJECT DATE 05/12/23

DRAWING

R-5

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\R-5.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert



SITE PLAN

SCALE: NTS

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
A	05/12/23	SPE	CONCEPTUAL DESIGN

WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - HABITAT IMPROVEMENTS
SITE PLAN

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

PROJECT DATE 05/12/23

DRAWING

S-1

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\S-1.dwg Plot date: May 08, 2023 05:58pm, CAD User: GuerreroRobert

SHEET KEY NOTES:

A CONSTRUCT BEAVER DAM ANALOG (BDA) MID CHANNEL TO INCREASE REARING AND OVERWINTERING HABITAT IN MAIN CHANNEL OF EKLUTNA RIVER.

B CONSTRUCT ENGINEERED LOG JAMS TO IMPROVE HYDRAULIC DIVERSITY WITHIN CHANNEL AND INCREASE SCOUR DEPTH.

REACH 3 PLAN

SCALE: 1"= 150'

0" 150' 300'

1 S-1

N

REV	DATE	BY	DESCRIPTION
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WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - HABITAT IMPROVEMENTS
REACH 3 PLAN

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

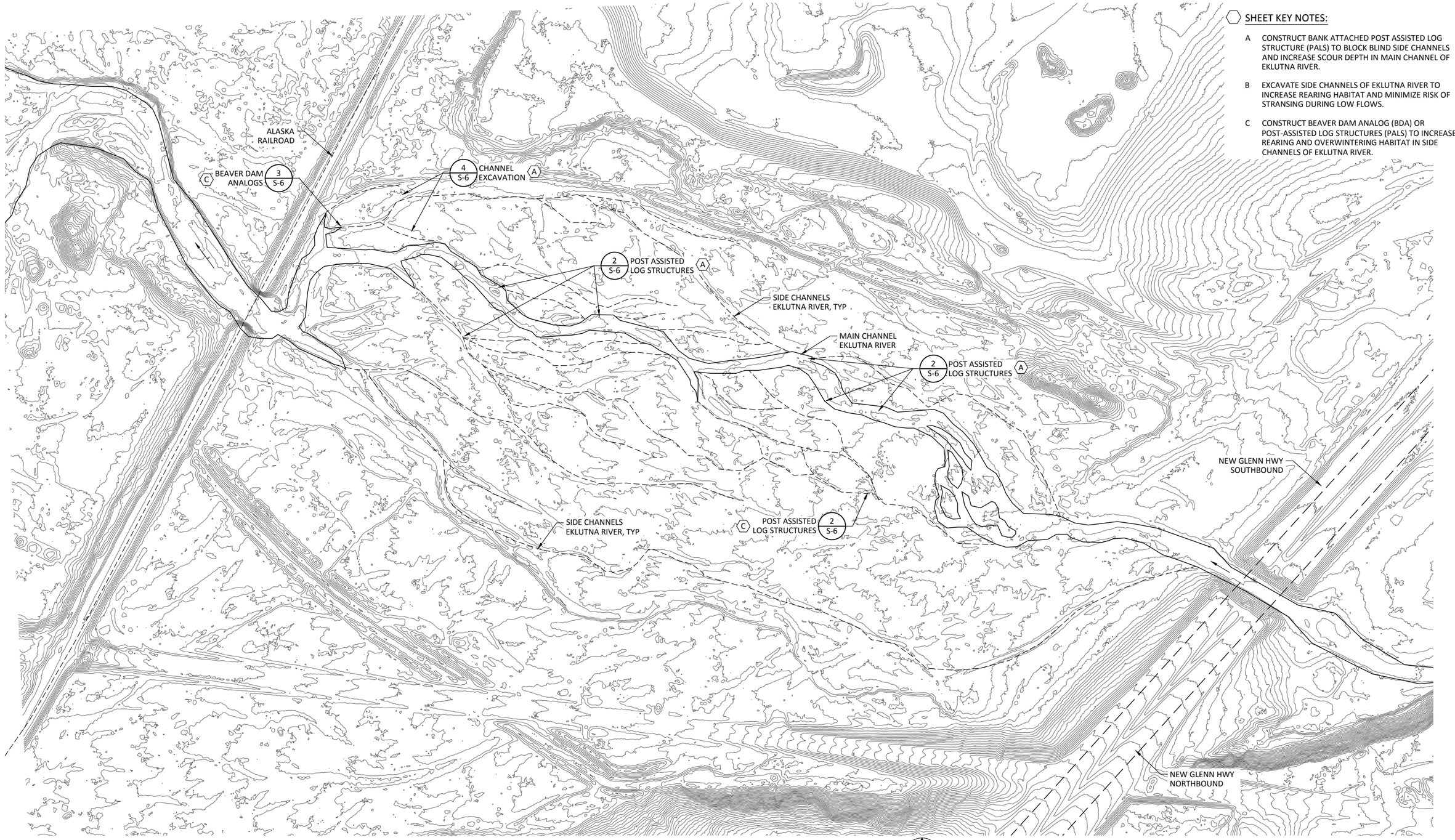
PROJECT DATE 05/12/23

DRAWING

S-2

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\S-2.dwg Plot date: May 08, 2023 05:59pm, CAD User: GuerreroRobert



SHEET KEY NOTES:

A CONSTRUCT BANK ATTACHED POST ASSISTED LOG STRUCTURE (PALS) TO BLOCK BLIND SIDE CHANNELS AND INCREASE SCOUR DEPTH IN MAIN CHANNEL OF EKLUTNA RIVER.

B EXCAVATE SIDE CHANNELS OF EKLUTNA RIVER TO INCREASE REARING HABITAT AND MINIMIZE RISK OF STRANSING DURING LOW FLOWS.

C CONSTRUCT BEAVER DAM ANALOG (BDA) OR POST-ASSISTED LOG STRUCTURES (PALS) TO INCREASE REARING AND OVERWINTERING HABITAT IN SIDE CHANNELS OF EKLUTNA RIVER.

REACH 4 PLAN

SCALE: 1"= 100'

0" 100' 200'

2 S-1

N

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WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - HABITAT IMPROVEMENTS
REACH 4 PLAN

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

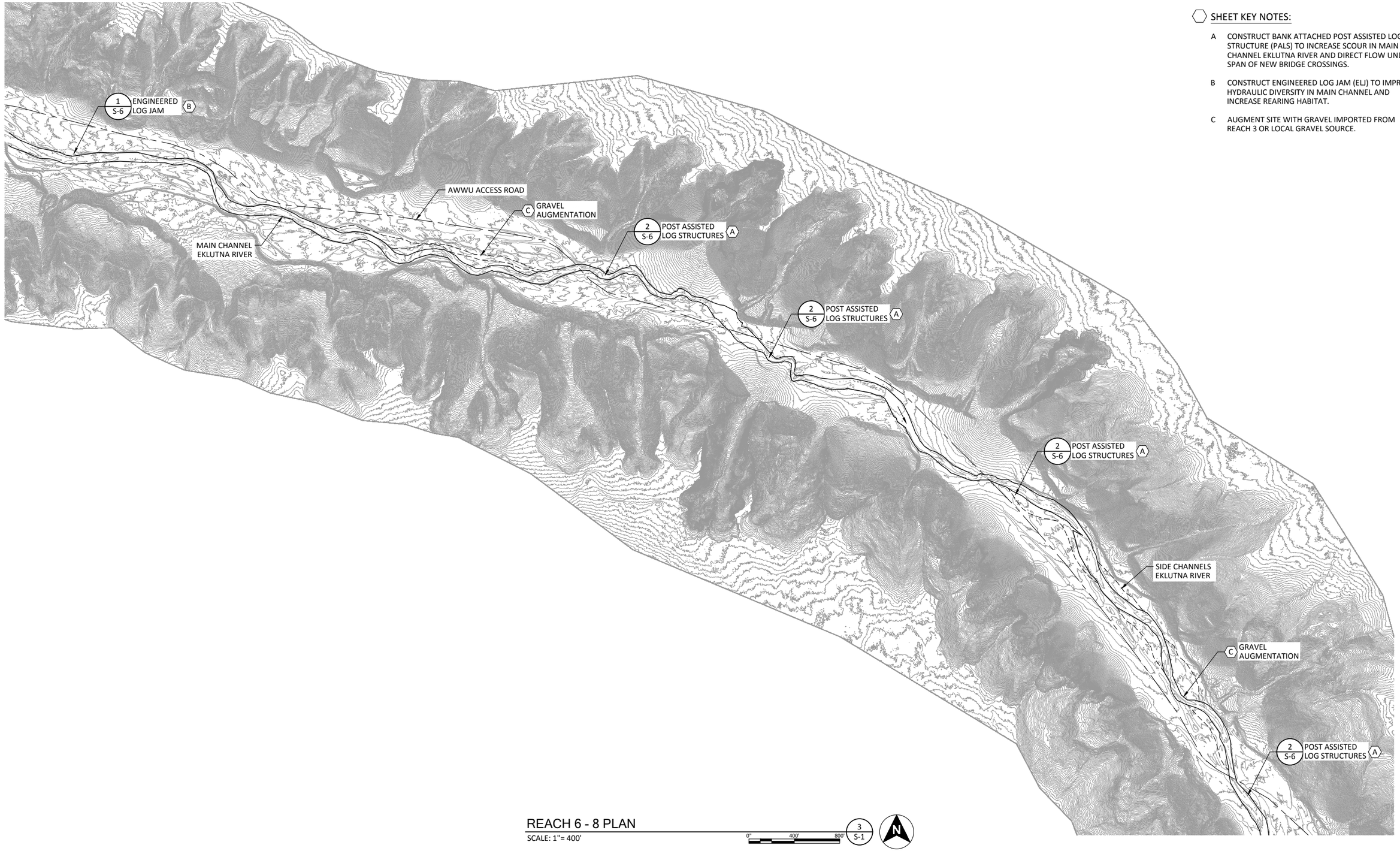
PROJECT DATE 05/12/23

DRAWING

S-3

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\S-3.dwg Plot date: May 08, 2023 05:59pm, CAD User: GuerreroRobert



SHEET KEY NOTES:

A CONSTRUCT BANK ATTACHED POST ASSISTED LOG STRUCTURE (PALS) TO INCREASE SCOUR IN MAIN CHANNEL EKLUTNA RIVER AND DIRECT FLOW UNDER SPAN OF NEW BRIDGE CROSSINGS.

B CONSTRUCT ENGINEERED LOG JAM (ELJ) TO IMPROVE HYDRAULIC DIVERSITY IN MAIN CHANNEL AND INCREASE REARING HABITAT.

C AUGMENT SITE WITH GRAVEL IMPORTED FROM REACH 3 OR LOCAL GRAVEL SOURCE.

REACH 6 - 8 PLAN

SCALE: 1"= 400'

0" 400' 800'

3 S-1

REV	DATE	BY	DESCRIPTION
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WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - HABITAT IMPROVEMENTS
REACH 6 - 8 PLAN

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

PROJECT DATE 05/12/23

DRAWING

S-4

JOB NO: 000000

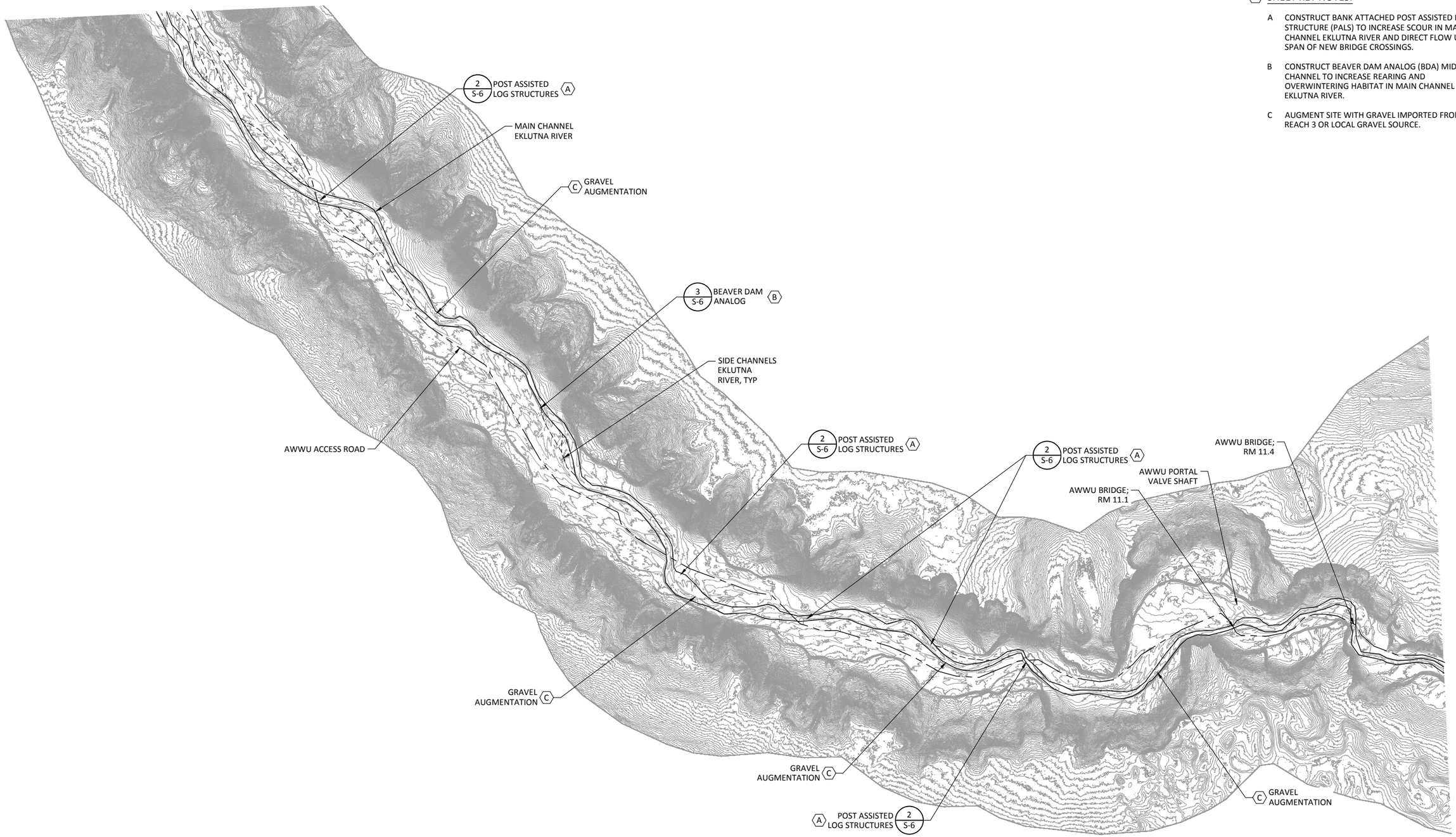
Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\S-4.dwg Plot date: May 08, 2023 05:59pm, CAD User: GuerreroRobert

SHEET KEY NOTES:

A CONSTRUCT BANK ATTACHED POST ASSISTED LOG STRUCTURE (PALS) TO INCREASE SCOUR IN MAIN CHANNEL EKLUTNA RIVER AND DIRECT FLOW UNDER SPAN OF NEW BRIDGE CROSSINGS.

B CONSTRUCT BEAVER DAM ANALOG (BDA) MID CHANNEL TO INCREASE REARING AND OVERWINTERING HABITAT IN MAIN CHANNEL OF EKLUTNA RIVER.

C AUGMENT SITE WITH GRAVEL IMPORTED FROM REACH 3 OR LOCAL GRAVEL SOURCE.



REACH 9 - 11 PLAN

SCALE: 1"= 500'

0" 500' 1000'

4 S-1

N

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
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WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - HABITAT IMPROVEMENTS
REACH 9 - 11 PLAN

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

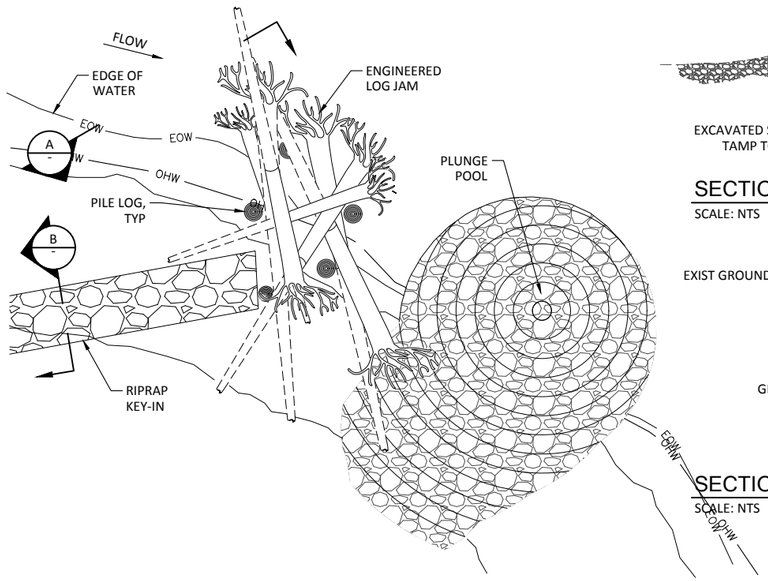
PROJECT DATE 05/12/23

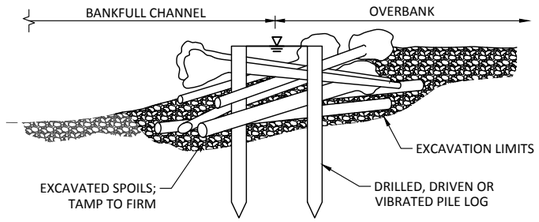
DRAWING

S-5

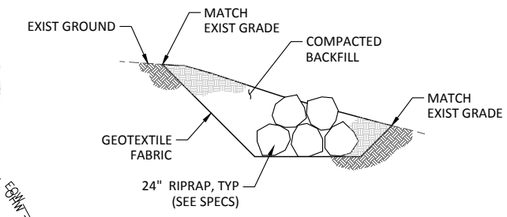
JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\S5.dwg Plot date: May 08, 2023 06:00pm, CAD User: GuerreroRobert





SECTION A
SCALE: NTS

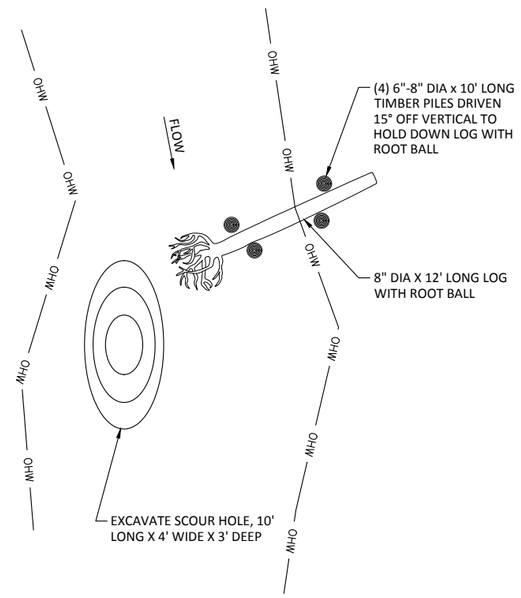


SECTION B
SCALE: NTS

ENGINEERED LOG JAM (ELJ) DETAIL

SCALE: NTS

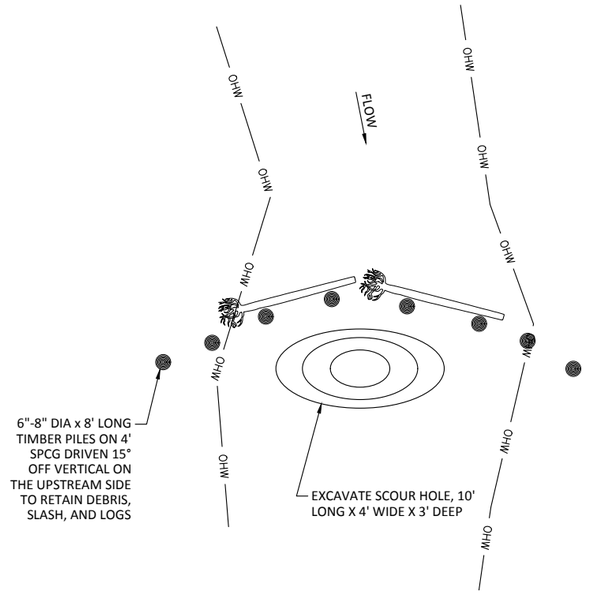
1



POST ASSISTED LOG STRUCTURE (PALS) DETAIL

SCALE: NTS

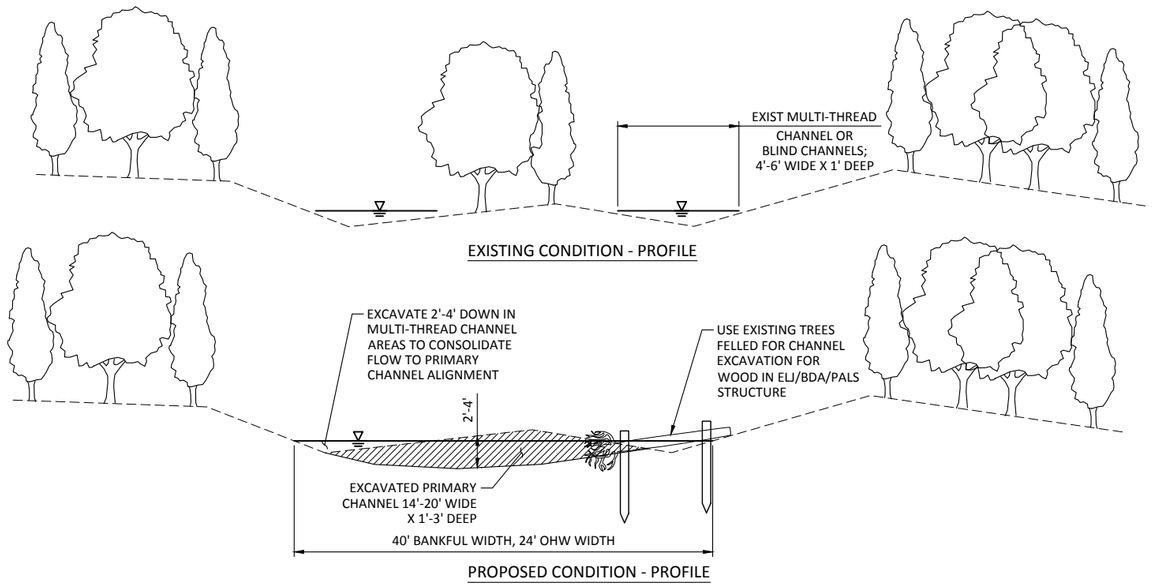
2



BEAVER DAM ANALOG (BDA) DETAIL

SCALE: NTS

3



CHANNEL EXCAVATION DETAIL

SCALE: NTS

4

REV	DATE	BY	DESCRIPTION
B	05/12/23	SPE	ADDED FISH PASSAGE ALTERNATIVE
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WARNING

0 1/2 1

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CHUGACH POWERING ALASKA'S FUTURE

EKLUTNA FISH & WILDLIFE PROJECT

ENGINEERING FEASIBILITY STUDY

PME ALTERNATIVES ANALYSIS - HABITAT IMPROVEMENTS STANDARD DETAILS

DESIGNED S. STANLEY

DRAWN R. GUERRERO

CHECKED S. ELLENSON

PROJECT DATE 05/12/23

DRAWING

S-6

JOB NO: 000000

Path: C:\Vault\Chugach Electric\Eklutna Feasibility Study\S-6.dwg Plot date: May 08, 2023 06:00pm, CAD User: Guerrerofobert