



DELTA  
CONVEYANCE  
DESIGN &  
CONSTRUCTION  
AUTHORITY

VOLUME 2 OF 3  
ENGINEERING CONCEPT DRAWINGS

# FINAL DRAFT **Concept Engineering Report**

BETHANY RESERVOIR ALIGNMENT

*September 2024*

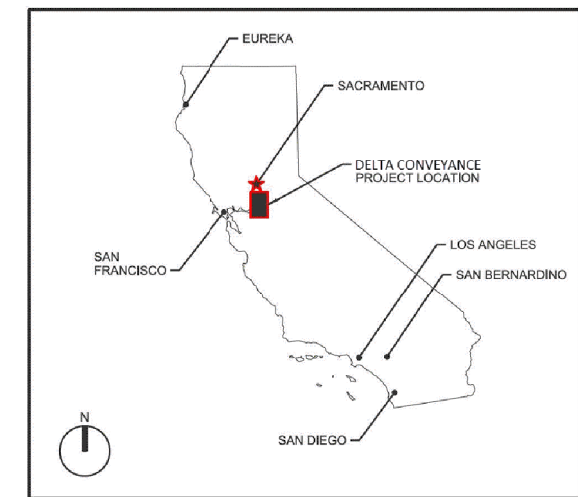
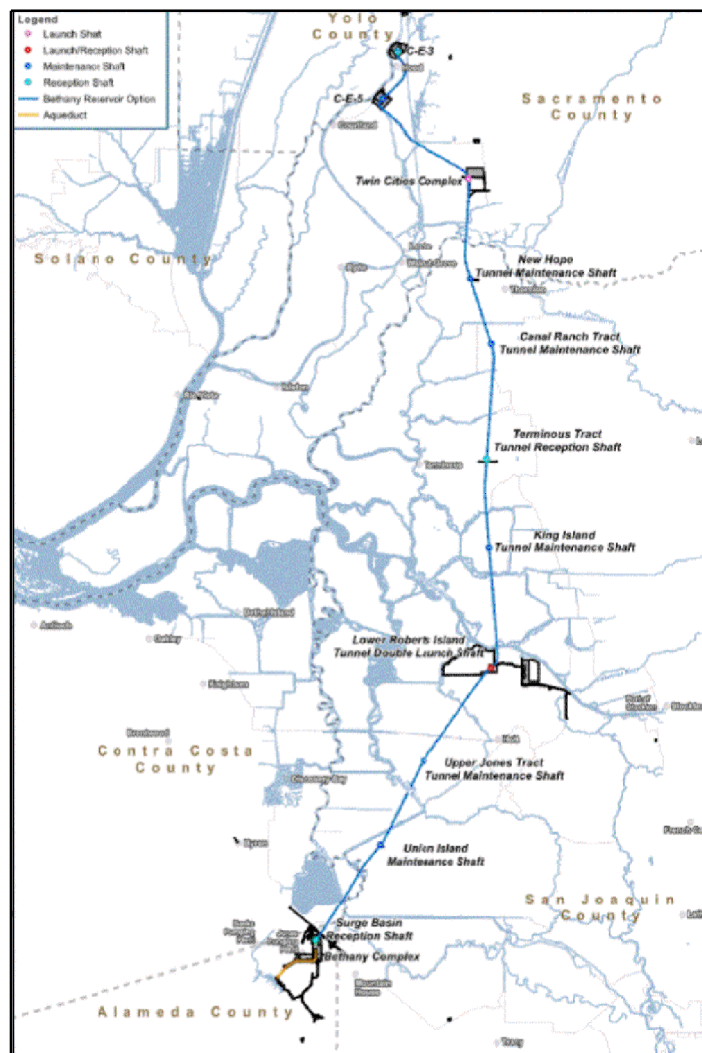




# STATE OF CALIFORNIA CALIFORNIA NATURAL RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES



## FINAL DRAFT DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT VOLUME 2 OF 3 ENGINEERING CONCEPT DRAWINGS SEPTEMBER 2024



**LOCATION MAP**

**NOTES:**

1. ENGINEERING DRAWINGS DO NOT REPRESENT A DETAILED ENGINEERING DESIGN EFFORT. INFORMATION SHOWN HAS BEEN LAID OUT USING AVAILABLE RESOURCES TO CONVEY DESIGN INTENT. FACILITY LOCATIONS AND INDICATED DIMENSIONS, STATIONS, AND ELEVATIONS ARE APPROXIMATE AND SUBJECT TO CHANGE DURING SUBSEQUENT ENGINEERING EFFORTS.
2. TOPOGRAPHIC AND BATHYMETRIC INFORMATION USED IN THE DEVELOPMENT OF THESE DRAWINGS HAVE NOT BEEN GROUND PROOFED AND ARE APPROXIMATE.
3. HORIZONTAL DATUM IS CALIFORNIA STATE PLANE E, ZONE 3, NORTH AMERICAN DATUM OF 1983 (NAD 83), SURVEY FEET.
4. ALL ELEVATIONS ARE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) UNLESS OTHERWISE SHOWN.
5. TOPOGRAPHY DATA IS BASED ON DIGITAL ELEVATION MODEL (DEM) OF THE SACRAMENTO-SAN JOAQUIN DELTA DERIVED FROM LIDAR (2017) DATA IS FOR CONCEPTUAL REPORT USE ONLY.

CER-G-0001GN\_W8X97000.dgn

	DESIGNED	APPROVAL RECOMMENDED			
	P. RYAN				
	DRAWN	APPROVAL BY			
	J. OYE	A. MURDOCK			
	CHECKED				
	A. NAMEY				
SEP 2024	DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT DRAWINGS				
REV	DATE	DESCRIPTION	SUB.	APPD	

CONCEPT  
PLANNING  
DOCUMENT  
  
NOT FOR  
CONSTRUCTION



DELTA CONVEYANCE PROJECT  
CONCEPT ENGINEERING REPORT

**COVER SHEET**

VERIFY SCALE  
BAR IS ONE INCH ON  
ORIGINAL DRAWING.  
0 1"

PROJECT NO. W8X97000	
SHEET NO. CER-G-0001GN	
REV	SEQUENCE NO.
	2

SHEET	DRAWING	TITLE
<b>VOLUME 1 OF 1</b>		
<b>GENERAL</b>		
1		COVER - VOLUME 2 OF 2
2	CER-G-0001GN	COVER SHEET
3	CER-G-0010GN	INDEX TO DRAWINGS 1
4	CER-G-0011GN	INDEX TO DRAWINGS 2
5	CER-G-0020GN	ABBREVIATIONS AND SHEET NUMBER KEY
6	CER-G-0040GN	PROJECT SCHEMATIC
7	CER-G-0050GN	CONVEYANCE OVERVIEW
8	CER-G-0075GN	OVERALL PROCESS FLOW DIAGRAM CYLINDRICAL TEE SCREENS
9	CER-G-0080GN	OVERALL HYDRAULIC PLAN AND PROFILE
10	CER-G-0081GN	OVERALL HYDRAULIC PLAN AND PROFILE - AQUEDUCT
11	CER-G-0090GN	BETHANY COMPLEX IMPACT AREA LIMITS
12	CER-G-0100GN	BETHANY COMPLEX POST-CONSTRUCTION SITE PLAN
13	CER-E-0030GN	COMMUNICATION DIAGRAM
<b>INTAKES</b>		
14	CER-C-0005IT	INTAKES PROJECT OVERVIEW AND KEY MAP
15	CER-C-0007IT	TYPICAL TEE SCREEN OPTION GROUND IMPROVEMENT PLAN
16	CER-C-0010IT	TYPICAL TEE SCREEN OPTION INTAKE FACILITY CONSTRUCTION SWPPP
17	CER-C-0011IT	TYPICAL TEE SCREEN OPTION INTAKE FACILITY POST CONSTRUCTION SWPPP
18	CER-C-1010IT	INTAKE 3 EXISTING PLAN
19	CER-C-1015IT	INTAKE 3 - CONSTRUCTION PHASE OVERVIEW
20	CER-C-1015AIT	INTAKE 3 - FINAL OVERVIEW
21	CER-C-1016IT	INTAKE 3 - PHASE 1 SITE PLAN
22	CER-C-1017IT	INTAKE 3 - PHASE 2 SITE PLAN
23	CER-C-1018IT	INTAKE 3 - PHASE 3 SITE PLAN
24	CER-C-1019IT	INTAKE 5 EXISTING PLAN
25	CER-C-1024IT	INTAKE 5 - CONSTRUCTION PHASE OVERVIEW
26	CER-C-1024AIT	INTAKE 5 - FINAL OVERVIEW
27	CER-C-1025IT	INTAKE 5 - PHASE 1 SITE PLAN
28	CER-C-1027IT	INTAKE 5 - PHASE 3 SITE PLAN
29	CER-C-1030IT	SEDIMENTATION DRYING LAGOON TYPICAL PLAN
30	CER-C-2002IT	INTAKE 3 - EXISTING LEVEE PROFILE AND CROSS SECTIONS W/ FINISH GRADE
31	CER-C-2003IT	INTAKE 5 - EXISTING LEVEE PROFILE AND CROSS SECTIONS W/ FINISH GRADE
32	CER-C-3001IT	HIGHWAY 160 TYPICAL SECTIONS AT INTAKE REALIGNMENTS
33	CER-C-3002IT	SITE SECTIONS
34	CER-C-3003IT	TYPICAL MINIMUM JURISDICTIONAL LEVEE SECTION
35	CER-C-3030IT	SEDIMENTATION DRYING LAGOON TYPICAL SECTIONS
36	CER-C-4001IT	SEDIMENTATION DRYING LAGOON OUTLET STRUCTURE TYPICAL PLAN AND SECTION
37	CER-S-1002IT	TYPICAL TEE SCREEN INTAKE FACILITY GENERAL ARRANGEMENT & KEY PLAN
38	CER-S-1003IT	TYPICAL TEE SCREEN INTAKE STRUCTURE - PLAN
39	CER-S-1004IT	TYPICAL RADIAL GATE STRUCTURE - PLAN
40	CER-S-1005IT	INTAKE 3 OUTLET STRUCTURE TUNNEL CONNECTION - PLAN AND SECTION
41	CER-S-1006IT	INTAKE 5 OUTLET STRUCTURE TUNNEL CONNECTION - PLAN AND SECTION
42	CER-S-3002IT	TYPICAL TEE SCREENS INTAKE SECTION
43	CER-S-3004IT	TYPICAL TEE SCREEN INTAKE ELEVATION
44	CER-S-3005IT	INTAKES TYPICAL RADIAL GATE STRUCTURE SECTIONS AND DETAIL
45	CER-S-9002IT	INTAKES TEE SCREEN ISOMETRIC
46	CER-S-9003IT	INTAKES TYPICAL CANAL AND GATE STRUCTURE ISOMETRIC
47	CER-M-3003IT	INTAKE TEE SCREENS ELEVATION, SECTION AND PLAN
48	CER-I-0002IT	INTAKES TYPICAL TEE SCREEN PROCESS FLOW DIAGRAM
<b>TUNNELS</b>		
49	CER-G-0010TN	OVERALL SITE MAP
50	CER-C-1060TN	NORTH TUNNEL PLAN AND PROFILE - SHEET 1 OF 2
51	CER-C-1070TN	NORTH TUNNEL PLAN AND PROFILE - SHEET 2 OF 2
52	CER-C-1090TN	MAIN TUNNEL PLAN AND PROFILE SHEET 1 OF 5
53	CER-C-1100TN	MAIN TUNNEL PLAN AND PROFILE SHEET 2 OF 5
54	CER-C-1110TN	MAIN TUNNEL PLAN AND PROFILE SHEET 3 OF 5
55	CER-C-1120TN	MAIN TUNNEL PLAN AND PROFILE SHEET 4 OF 5
56	CER-C-1130TN	MAIN TUNNEL PLAN AND PROFILE SHEET 5 OF 5
57	CER-C-1170TN	TWIN CITIES DBL LAUNCH SHAFT SITE PLAN DISTURBANCE LIMITS
58	CER-C-1180TN	NEW HOPE TRACT MAINT SHAFT SITE PLAN DISTURBANCE LIMITS
59	CER-C-1190TN	CANAL RANCH TRACT MAINT SHAFT SITE PLAN DISTURBANCE LIMITS
60	CER-C-1200TN	TERMINOUS TRACT RECEPTION SHAFT SITE PLAN DISTURBANCE LIMITS
61	CER-C-1210TN	KING ISLAND MAINTENANCE SHAFT SITE PLAN DISTURBANCE LIMITS
62	CER-C-1220TN	LOWER ROBERTS IS. DOUBLE LAUNCH SITE PLAN DISTURBANCE LIMITS
63	CER-C-1230TN	UPPER JONES TRACT MAINT SHAFT SITE PLAN DISTURBANCE LIMITS
64	CER-C-1240TN	UNION ISLAND MAINTENANCE SHAFT SITE PLAN DISTURBANCE LIMITS
65	CER-S-5160TN	SHAFT PAD SECTION WET EXCAVATION WITH D-WALL
66	CER-S-5170TN	RECEPTION AND MAINTENANCE SHAFTS - PLAN AND SECTION
67	CER-S-5180TN	TWIN CITIES/LOWER ROBERTS DBL LAUNCH SHAFT PLAN AND SECTION
68	CER-S-5190TN	MAIN TUNNELS SEGMENT LINING

SHEET	DRAWING	TITLE
<b>VOLUME 1 OF 1 - CONTINUED</b>		
<b>PUMPING PLANT</b>		
69	CER-R-9001PP	SITE PLAN RENDERING 1
70	CER-R-9002PP	SITE PLAN RENDERING 2
71	CER-C-1004PP	SITE PLAN
72	CER-C-1005PP	CONSTRUCTION SITE PLAN
73	CER-C-1101PP	FINISHED SITE PLAN SURGE BASIN
74	CER-C-3101PP	SURGE BASIN CROSS SECTIONS
75	CER-C-3102PP	SURGE BASIN CROSS SECTIONS
76	CER-C-3103PP	AQUEDUCT CONNECTION PLAN AND PROFILE
77	CER-E-1001PP	ELECTRICAL BUILDING PLAN
78	CER-E-3001PP	ELECTRICAL BUILDING SECTION
79	CER-E-6001PP	ELECTRICAL ONE-LINE DIAGRAM
80	CER-E-6002PP	ELECTRICAL ONE-LINE DIAGRAM
81	CER-E-6003PP	ELECTRICAL ONE-LINE DIAGRAM
82	CER-E-6004PP	ELECTRICAL ONE-LINE DIAGRAM
83	CER-SM-1001PP	FOUNDATION PLAN AT FL EL -100.50
84	CER-SM-1002PP	INTERMEDIATE PLAN AT FL EL -86.25
85	CER-SM-1003APP	MOTOR LEVEL PLAN AT FL EL -72.00
86	CER-SM-1004PP	LOWER LEVEL PLAN AT FL EL 3.00
87	CER-SM-1005PP	GROUND LEVEL PLAN AT FL EL 47.00
88	CER-SM-1006PP	SURGE TANK & VAULT PLAN AT FL EL 46.00
89	CER-SM-3001PP	SECTION
90	CER-SM-3002PP	SECTION
91	CER-SM-3003PP	SECTION
92	CER-SM-3004PP	SECTION
93	CER-SM-3005PP	SURGE TANK VALVE VAULT SECTIONS
94	CER-SM-3006PP	SURGE TANK SECTION
<b>AQUEDUCT</b>		
95	CER-C-1101AQ	BETHANY RESERVOIR AQUEDUCT SITE PLAN A
96	CER-C-1111AQ	JONES PENSTOCK CROSSING TUNNEL PORTAL PLAN AND PROFILE
97	CER-C-1112AQ	CONSERVATION EASEMENT CROSSING TUNNEL PORTAL PLAN AND PROFILE
98	CER-C-1121AQ	SITE PLAN A BETHANY RESERVOIR DISCHARGE STRUCTURE
99	CER-C-1122AQ	SITE PLAN B BETHANY RESERVOIR DISCHARGE STRUCTURE
100	CER-C-2101AQ	BETHANY RESERVOIR AQUEDUCT PROFILE AND SECTIONS
101	CER-C-5001AQ	AQUEDUCT TUNNEL DETAILS
102	CER-S-1101AQ	STRUCTURAL PLAN BETHANY RESERVOIR DISCHARGE STRUCTURE
103	CER-S-3101AQ	STRUCTURAL SECTIONS BETHANY RESERVOIR DISCHARGE STRUCTURE
104	CER-S-5002AQ	CARV VAULT DETAILS
105	CER-S-5003AQ	CARV VAULT DETAILS
<b>LEVEE</b>		
106	CER-C-1001LV	TWIN CITIES COMPLEX RING LEVEE SITE PLAN
107	CER-C-1002LV	LOWER ROBERTS LEVEE IMPROVEMENT SITE PLAN
108	CER-C-4001LV	TWIN CITIES COMPLEX LEVEE TYPICAL CROSS SECTIONS
109	CER-C-4002LV	LOWER ROBERTS LEVEE IMPROVEMENTS TYPICAL CROSS SECTION
<b>ROADWAY IMPROVEMENTS</b>		
110	CER-G-0010HW	ACCESS ROAD OVERALL PROJECT KEY MAP
111	CER-C-1010HW	ACCESS ROAD PLAN LAMBERT ROAD WIDENING - 1 OF 2
112	CER-C-1011HW	ACCESS ROAD PLAN LAMBERT ROAD WIDENING - 2 OF 2
113	CER-C-1020HW	ACCESS ROAD PLAN DIERSSEN ROAD WIDENING
114	CER-C-1021HW	ACCESS ROAD PLAN FRANKLIN BLVD WIDENING AT DIERSSEN ROAD
115	CER-C-1030HW	ACCESS ROAD PLAN TWIN CITIES ROAD WIDENING
116	CER-C-1040HW	ACCESS ROAD PLAN INTAKE ROAD - 1 OF 2
117	CER-C-1041HW	ACCESS ROAD PLAN INTAKE ROAD - 2 OF 2
118	CER-C-1050HW	ACCESS ROAD PLAN INTAKE #3 ROAD
119	CER-C-1060HW	ACCESS ROAD PLAN INTAKE #5 ROAD
120	CER-C-1070HW	ACCESS ROAD PLAN NEW HOPE TRACT MAINTENANCE SHAFT
121	CER-C-1080HW	ACCESS ROAD PLAN CANAL RANCH TRACT MAINTENANCE SHAFT
122	CER-C-1090HW	ACCESS ROAD PLAN TERMINOUS TRACT RECEPTION SHAFT
123	CER-C-1100HW	ACCESS ROAD PLAN KING ISLAND TRACT MAINTENANCE SHAFT
124	CER-C-1101HW	ACCESS ROAD PLAN LOWER ROBERTS ISLAND SHAFT - 1 OF 4
125	CER-C-1111HW	ACCESS ROAD PLAN LOWER ROBERTS ISLAND SHAFT - 2 OF 4
126	CER-C-1121HW	ACCESS ROAD PLAN LOWER ROBERTS ISLAND SHAFT - 3 OF 4
127	CER-C-1131HW	ACCESS ROAD PLAN LOWER ROBERTS ISLAND SHAFT - 4 OF 4
128	CER-C-1120HW	ACCESS ROAD PLAN UPPER JONES TRACT MAINTENANCE SHAFT
129	CER-C-1130HW	ACCESS ROAD PLAN UNION ISLAND MAINTENANCE SHAFT
130	CER-C-1140HW	ACCESS ROAD PLAN BYRON HWY FRONTAGE ROAD - 1 OF 2
131	CER-C-1141HW	ACCESS ROAD PLAN BYRON HWY /LINDEMANN RD I/C - 2 OF 2
132	CER-C-1150HW	ACCESS ROAD PLAN MOUNTAIN HOUSE SHAFT
133	CER-C-1160HW	ACCESS ROAD PLAN KELSO ROAD WIDENING
134	CER-C-1165HW	ACCESS ROAD PLAN CONNECTOR ROAD
135	CER-C-1170HW	ACCESS ROAD PLAN MOUNTAIN HOUSE ROAD WIDENING - 1 OF 2
136	CER-C-1171HW	ACCESS ROAD PLAN MOUNTAIN HOUSE ROAD WIDENING - 2 OF 2
137	CER-C-1180HW	ACCESS ROAD PLAN BETHANY

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**GENERAL**

VERIFY SCALE  
BAR IS ONE INCH ON  
ORIGINAL DRAWING.  
0" = 1"

DESIGNED P RYAN	APPROVAL RECOMMENDED
DRAWN J OYE	APPROVAL BY A MURDOCK
CHECKED A NAMEY	

CONCEPT  
PLANNING  
DOCUMENT  
  
NOT FOR  
CONSTRUCTION



DELTA CONVEYANCE PROJECT  
CONCEPT ENGINEERING REPORT

**INDEX TO DRAWINGS 1**

PROJECT NO. W8X97000
SHEET NO. CER-G-0010GN
REV SEQUENCE NO. 3

SHEET	DRAWING	TITLE
<b>VOLUME 1 OF 1 - CONTINUED</b>		
<b>ROADWAY IMPROVEMENTS - CONTINUED</b>		
138	CER-C-1190HW	ACCESS ROAD PLAN - MOUNTAIN HOUSE RD BYPASS & W. GRANT LINE RD IMPROVEMENTS
139	CER-C-4001HW	ACCESS ROAD TYPICAL CROSS SECTIONS - 1 OF 8
140	CER-C-4002HW	ACCESS ROAD TYPICAL CROSS SECTIONS - 2 OF 8
141	CER-C-4003HW	ACCESS ROAD TYPICAL CROSS SECTIONS - 3 OF 8
142	CER-C-4004HW	ACCESS ROAD TYPICAL CROSS SECTIONS - 4 OF 8
143	CER-C-4005HW	ACCESS ROAD TYPICAL CROSS SECTIONS - 5 OF 8
144	CER-C-4006HW	ACCESS ROAD TYPICAL CROSS SECTIONS - 6 OF 8
145	CER-C-4007HW	ACCESS ROAD TYPICAL CROSS SECTIONS - 7 OF 8
146	CER-C-4008HW	ACCESS ROAD TYPICAL CROSS SECTIONS - 8 OF 8
147	CER-C-5001HW	ACCESS ROAD CONSTRUCTION DETAILS
148	CER-C-5002HW	HOOD FRANKLIN ROAD PARK AND RIDE SITE PLAN
149	CER-C-5004HW	CHARTER WAY PARK AND RIDE SITE PLAN
<b>RAIL</b>		
150	CER-C-1005RR	RAIL SERVED MATERIALS DEPOT CONCEPT LAYOUT - LOWER ROBERTS
151	CER-C-4001RR	RAIL SERVED MATERIALS DEPOT RAIL TYPICAL SECTION
152	CER-C-4002RR	RAIL SERVED MATERIALS DEPOT TYPICAL SECTION-RTM LOADING
153	CER-C-4003RR	RAIL SERVED MATERIALS DEPOT TYPICAL SECTION-TUNNEL SEGMENT UNLOADING
154	CER-C-4004RR	RAIL SERVED MATERIALS DEPOT TYPICAL SECTION-AGGREGATE UNLOADING
155	CER-C-4005RR	RAIL SERVED MATERIALS DEPOT TYPICAL SECTION-FUEL UNLOADING
156	CER-C-4006RR	RAIL SERVED MATERIALS DEPOT TYPICAL SECTION-DUMP TRUCK UNLOADING
157	CER-C-4007RR	RAIL SERVED MATERIALS DEPOT RAIL OPERATING PLAN
158	CER-C-4008RR	RAIL SERVED MATERIALS DEPOT RAIL OPERATING PLAN
159	CER-C-4009RR	RAIL SERVED MATERIALS DEPOT RAIL OPERATING PLAN

**GENERAL**

VERIFY SCALE  
BAR IS ONE INCH ON  
ORIGINAL DRAWING.  
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
SEP 2024		DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT DRAWINGS		

DESIGNED P RYAN	APPROVAL RECOMMENDED
DRAWN J OYE	APPROVAL BY A MURDOCK
CHECKED A NAMEY	

CONCEPT  
PLANNING  
DOCUMENT  
  
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DELTA CONVEYANCE PROJECT  
CONCEPT ENGINEERING REPORT

INDEX TO DRAWINGS 2

PROJECT NO. W8X97000	
SHEET NO. CER-G-0011GN	
REV	SEQUENCE NO. 4

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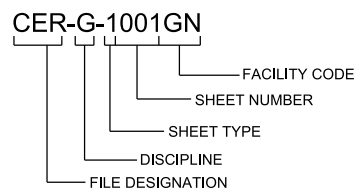
### ABBREVIATIONS

@	AT	I	INTERSTATE, INSTRUMENTATION	S	SLOPE, SOUTH, STRUCTURAL
#	NUMBER	ICF	ISOLATED CONVEYANCE FACILITY	SB	SOUTHBOUND
AC	ACRES	ID	INSIDE DIAMETER	SD	SOUTH DELTA
A	AMPERES	IF	INTERMEDIATE FOREBAY	SED	SEDIMENTATION
AF	AMPERE FRAME	IG	IRRIGATION PUMP	SEG	STANDBY ENGINE GENERATOR
APVD	APPROVED	IGH	IRRIGATION PUMP HOUSE	SF	SQUARE FEET
APPROX	APPROXIMATE	INV	INVERT	SHLD	SHOULDER
APR	AREA APPROVED RATIO	IPP	INTERMEDIATE PUMPING PLANT	SL	SPRING LINE
AT	AMP TRIP	IT	INTAKE	SLR	SEA LEVEL RISE
AUTO	AUTOMATIC			SMUD	SACRAMENTO MUNICIPAL UTILITY DISTRICT
AUX	AUXILIARY	KSI	KIPS PER SQUARE INCH	SQ	SQUARE FEET
AVG	AVERAGE	KV	KILOVOLTS	SS,SST	STAINLESS STEEL
		KVA	KILOVOLT-AMPERE	ST	STREET
B	BARN	KW	KILOWATTS	STA	STATION
BFV	BUTTERFLY VALVE			STC	SINGLE TUNNEL CENTRAL
BLVD	BOULEVARD	LOR	LOCAL-OFF-REMOTE	STE	SINGLE TUNNEL EAST
BOT	BOTTOM	LV	LEVEE	STX	SINGLE TUNNEL CENTRAL AND EASTERN
BTF	BYRON TRACT FOREBAY	LWL	LOW WATERLINE	SUB	SUBMITTED
BUS	BINARY UNIT SYSTEM			SWGR	SWITCHGEAR
				SWP	STATE WATER PROJECT
C	CIVIL, IRRIGATION CHANNEL	M	MOTOR, MECHANICAL	TBD	TO BE DETERMINED
CA	CALIFORNIA	MAX	MAXIMUM	THK	THICK
C/C	CENTER TO CENTER	MCC	MOTOR CONTROL CENTER	TOS	TOE OF SLOPE
CCF	CLIFTON COURT FOREBAY	MECH	MECHANICAL	TSB	TEMPORARY SITE BOUNDARY
CDFG	CALIFORNIA DEPARTMENT OF FISH AND GAME	MHHW	MEAN HIGHER HIGH WATER	TYP	TYPICAL
CDSM	CEMENT DEEP SOIL MIXING	MIN	MINIMUM		
C-E	CENTRAL EAST	MM	MILLIMETER	UD	UNDERDRAIN
CE	CIVIL ENGINEER	MLLW	MEAN LOWER LOW WATER	UHMW	ULTRA HIGH MOLECULAR WEIGHT
CFS	CUBIC FEET PER SECOND	MVA	MEGAVOLT AMPERE	UPRR	UNION PACIFIC RAILROAD
CL	CENTERLINE			V	VELOCITY, VOLTS
CLR	CLEAR	(N)	NEW	VERT	VERTICAL
CLSM	CONTROLLED LOW STRENGTH MATERIAL	N	NORTH	VFD	VARIABLE FREQUENCY DRIVE
CONC	CONCRETE	NAD	NORTH AMERICAN DATUM OF 1983		
CS	CONSTANT SPEED	NAV	NORTH AMERICAN VERTICAL DATUM OF 1988		
CVP	CENTRAL VALLEY PROJECT	NB	NORTHBOUND	W	WEST, WIDTH
		NO	NUMBER	W/	WITH
DRF	DECANT RETURN FLOW	NOAA	NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION	WB	WESTBOUND
DIA	DIAMETER	NORM	NORMAL	WC	WATER COIL
DIMS	DIMENSIONS	NTS	NOT TO SCALE	WL	WATERLINE
DN	DOWN			WSE	WATER SURFACE ELEVATION
DRF	DIRT ROAD	OC	ON CENTER	WSP	WELDED STEEL PIPE
DS	DOWNSTREAM, DREDGED SEDIMENT	OD	OUTSIDE DIAMETER	WY	WAY
DW	DRIVEWAY	OG	ORIGINAL GROUND	XFMR	TRANSFORMER
DWG	DRAWING	OSC	OPEN / STOP CLOSE	YR	YEAR
				ZIT	POSITION INDICATING TRANSMITTER
E	EAST	PF	POWER FACTOR	ZSC	POSITION SWITCH CLOSED
EB	EASTBOUND, EAST BARREL	PH	PHASE	ZSO	POSITION SWITCH OPEN
EG	EXISTING GRADE	PLC	PROGRAMMABLE LOGIC CONTROLLERS		
EL	ELEVATION	PNL	PANEL		
EP	EDGE OF PAVEMENT	PP	PUMPING PLANT		
ES	EASEMENT	P&ID	PIPING AND INSTRUMENTATION DIAGRAM		
ESA	ENVIRONMENTALLY SENSITIVE AREA	PROP	PROPOSED		
ETW	EDGE OF TRAVEL WAY	PS	PUMP STATION		
(E), EXST	EXISTING	PSB	PERMANENT SITE BOUNDARY		
EXIST	EXISTING	PSI	POUNDS PER SQUARE INCH		
		PVDS	PRE-FABRICATED VERTICAL DRAINS		
FB	FOREBAY	Q	FLOW RATE		
FF	FINISH FLOOR				
FG	FINISH GRADE	R	RADIUS		
FLA	FULL LOAD AMPERE	RCC	REINFORCED		
FM	FLOW METER	RCP	REINFORCED CEMENT PIPE		
FPS	FEET PER SECOND	RD	ROAD		
FT	FEET	REG	REGISTERED		
		REV	REVISION		
G	GATE	RR	RAILROAD		
GN	GENERAL	RTM	REUSEABLE TUNNEL MATERIAL		
GW	GROUNDWATER				
H	HEIGHT				
HGL	HYDRAULIC GRADE LINE				
HP	HORSE POWER				
HPU	HYDRAULIC POWER UNIT				
HS	HAND SWITCH				
HWY	HIGHWAY				
HZ	HERTZ				

### NOMENCLATURE NOTES

THE CALIFORNIA DEPARTMENT OF WATER RESOURCES (DWR) REQUESTED THE DELTA CONVEYANCE DESIGN AND CONSTRUCTION AUTHORITY (DCA) DEVELOP CONCEPTUAL ENGINEERING INFORMATION FOR KEY FEATURES OF THE BETHANY RESERVOIR ALIGNMENT TO INFORM THE 2023 FINAL ENVIRONMENTAL IMPACT REPORT (EIR) PREPARED BY DWR. DWR SELECTED THE BETHANY RESERVOIR ALIGNMENT AS THE DELTA CONVEYANCE PROJECT TO BE CONSIDERED DURING DESIGN AND PERMITTING PHASES OF THE PROJECT. THE BETHANY RESERVOIR ALIGNMENT IS BASED UPON A PROJECT DESIGN CAPACITY OF 6,000 CUBIC FEET PER SECOND (cfs), AS DESCRIBED FOR ALTERNATIVE 5 IN THE FEIR. PLEASE NOTE THAT "INTAKE C-E-3" AND "INTAKE C-E-5" REPRESENT THE SAME FEATURES DESCRIBED IN THE FEIR AS "INTAKE B" AND "INTAKE C," RESPECTIVELY.

### SHEET NO. LEGEND



### DISCIPLINE:

A	ARCHITECTURAL
C	CIVIL
E	ELECTRICAL
G	GENERAL
H	HVAC
I	INSTRUMENTS AND CONTROLS
L	LANDSCAPING
M	PROCESS MECHANICAL
S	STRUCTURAL
R	RENDERING
C	SITE CIVIL

### SHEET TYPES:

0	GENERAL
1	PLANS
2	ELEVATIONS / PROFILES
3	ELEVATIONS AND SECTIONS
4	ENLARGED PLANS & SECTIONS
5	DETAILS
6	SCHEDULES
7	OPTIONAL USER DEFINED
8	OPTIONAL USER DEFINED
9	3D REPRESENTATIONS

### FACILITY CODES:

AQ	AQUEDUCTS
GN	GENERAL
HW	HIGHWAYS/ROADS
IT	INTAKES
LV	LEVEES
MA	MARINE
PP	PUMPING PLANT
RR	RAIL
TN	TUNNELS AND SHAFTS

CER-G-0020GN\_W8X97000.dgn

GENERAL

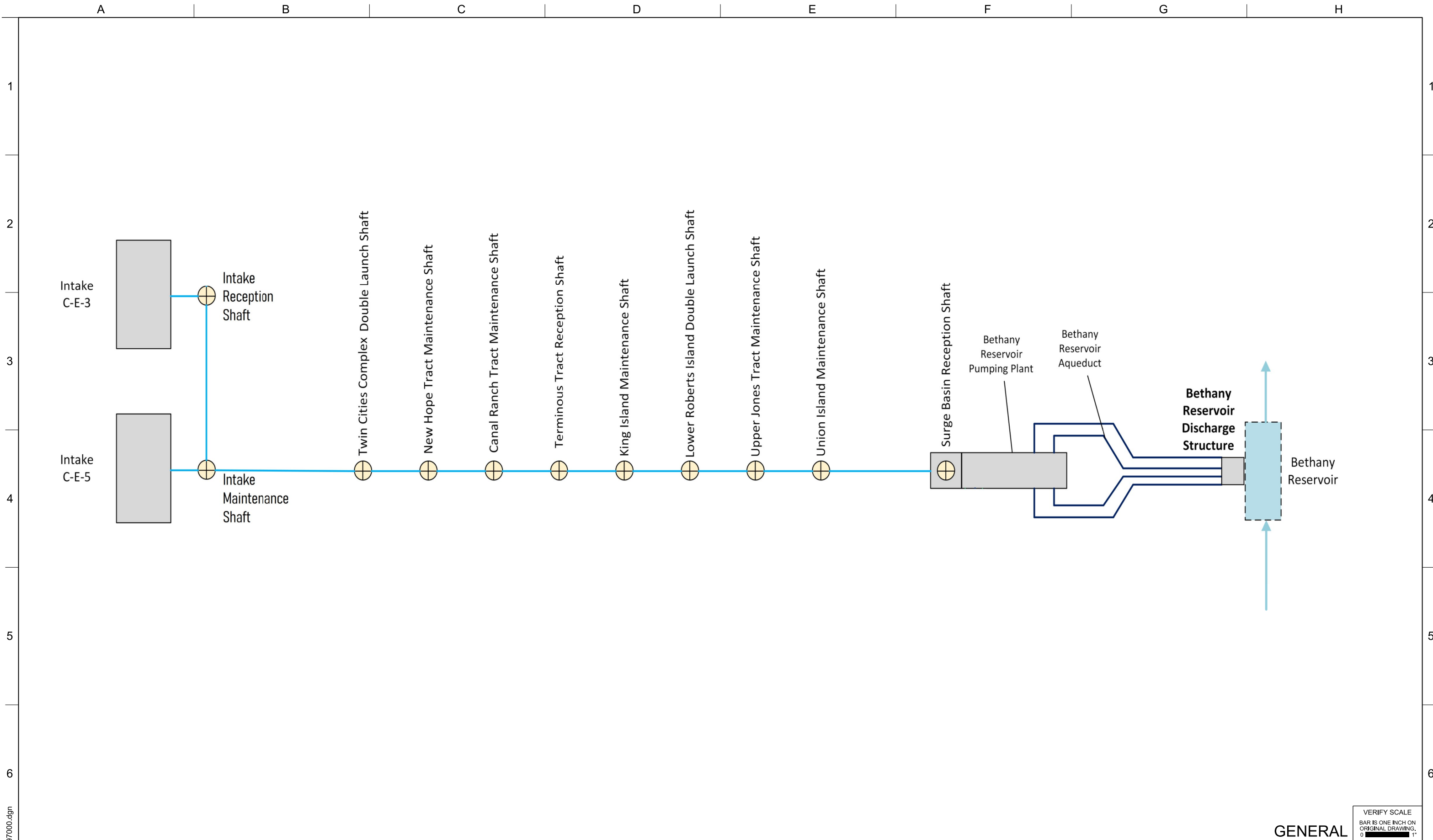
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0" 1"	
PROJECT NO. W8X97000	
SHEET NO. CER-G-0020GN	
REV	SEQUENCE NO. 5

DESIGNED	P RYAN	APPROVAL RECOMMENDED
DRAWN	J OYE	APPROVAL BY
CHECKED	A NAMEY	A MURDOCK

CONCEPT PLANNING DOCUMENT  
NOT FOR CONSTRUCTION



DELTA CONVEYANCE PROJECT  
CONCEPT ENGINEERING REPORT  
ABBREVIATIONS AND SHEET NUMBER KEY



CER-G-0040GN\_W8X97000.dgn

REV	DATE	DESCRIPTION	SUB.	APPD.
SEP 2024		DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT DRAWINGS		

DESIGNED	A NAIMHEY
DRAWN	J OYE
CHECKED	A MURDOCK

APPROVAL RECOMMENDED	
APPROVAL BY	A MURDOCK

CONCEPT PLANNING DOCUMENT  
NOT FOR CONSTRUCTION



DELTA CONVEYANCE PROJECT  
CONCEPT ENGINEERING REPORT

**PROJECT SCHEMATIC**

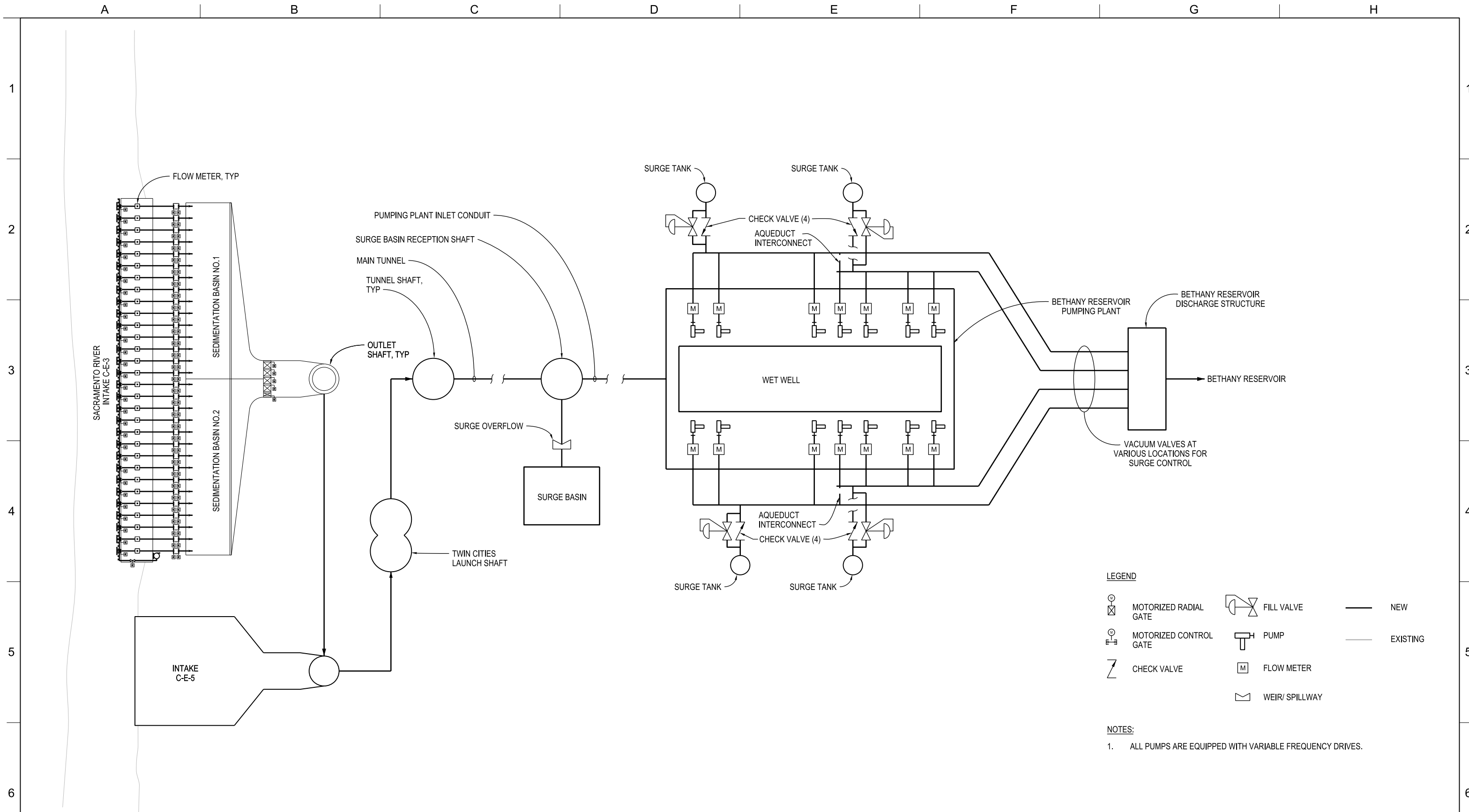
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0' 1"	
PROJECT NO.	W8X97000
SHEET NO.	CER-G-0040GN
REV	SEQUENCE NO.
	6

**GENERAL**


















**LEGEND**

-  MOTORIZED RADIAL GATE
-  MOTORIZED CONTROL GATE
-  CHECK VALVE
-  FILL VALVE
-  PUMP
-  FLOW METER
-  WEIR/ SPILLWAY
-  NEW
-  EXISTING

**NOTES:**

1. ALL PUMPS ARE EQUIPPED WITH VARIABLE FREQUENCY DRIVES.

CER-G-0075GN\_W8X97000.dgn

REV	DATE	DESCRIPTION	SUB.	APPD.

DESIGNED A NAIMEY	APPROVAL RECOMMENDED
DRAWN J OYE	APPROVAL BY A MURDOCK
CHECKED A MURDOCK	

CONCEPT  
PLANNING  
DOCUMENT

NOT FOR  
CONSTRUCTION



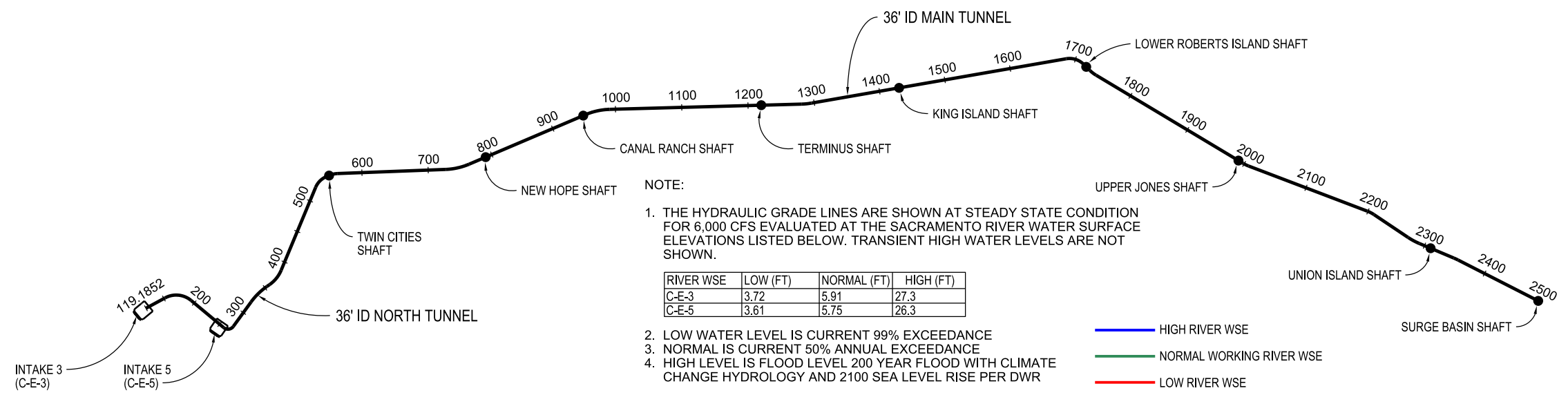
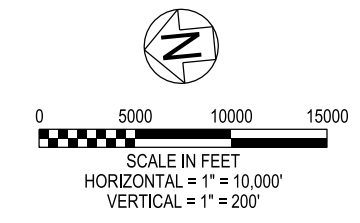
**GENERAL**

DELTA CONVEYANCE PROJECT  
CONCEPT ENGINEERING REPORT

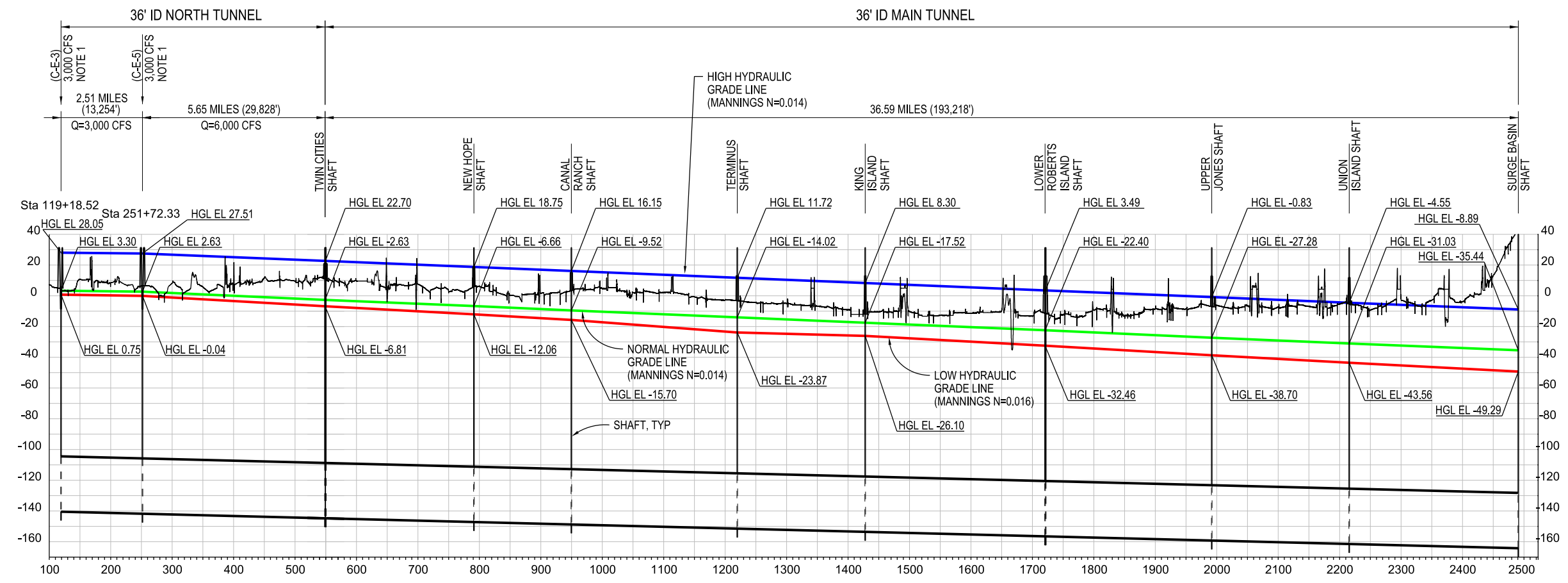
**OVERALL PROCESS FLOW DIAGRAM  
CYLINDRICAL TEE SCREENS**

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 1" = 1'	
PROJECT NO. W8X97000	
SHEET NO. CER-G-0075GN	
REV	SEQUENCE NO. 8





- NOTE:
1. THE HYDRAULIC GRADE LINES ARE SHOWN AT STEADY STATE CONDITION FOR 6,000 CFS EVALUATED AT THE SACRAMENTO RIVER WATER SURFACE ELEVATIONS LISTED BELOW. TRANSIENT HIGH WATER LEVELS ARE NOT SHOWN.
  2. LOW WATER LEVEL IS CURRENT 99% EXCEEDANCE
  3. NORMAL IS CURRENT 50% ANNUAL EXCEEDANCE
  4. HIGH LEVEL IS FLOOD LEVEL 200 YEAR FLOOD WITH CLIMATE CHANGE HYDROLOGY AND 2100 SEA LEVEL RISE PER DWR
- | RIVER WSE | LOW (FT) | NORMAL (FT) | HIGH (FT) |
|-----------|----------|-------------|-----------|
| C-E-3     | 3.72     | 5.91        | 27.3      |
| C-E-5     | 3.61     | 5.75        | 26.3      |
- HIGH RIVER WSE  
— NORMAL WORKING RIVER WSE  
— LOW RIVER WSE



**PROFILE**

CER-G-0080GN\_W8X97000.dgn

REV	DATE	DESCRIPTION	SUB.	APPD
SEP 2024		DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT DRAWINGS		

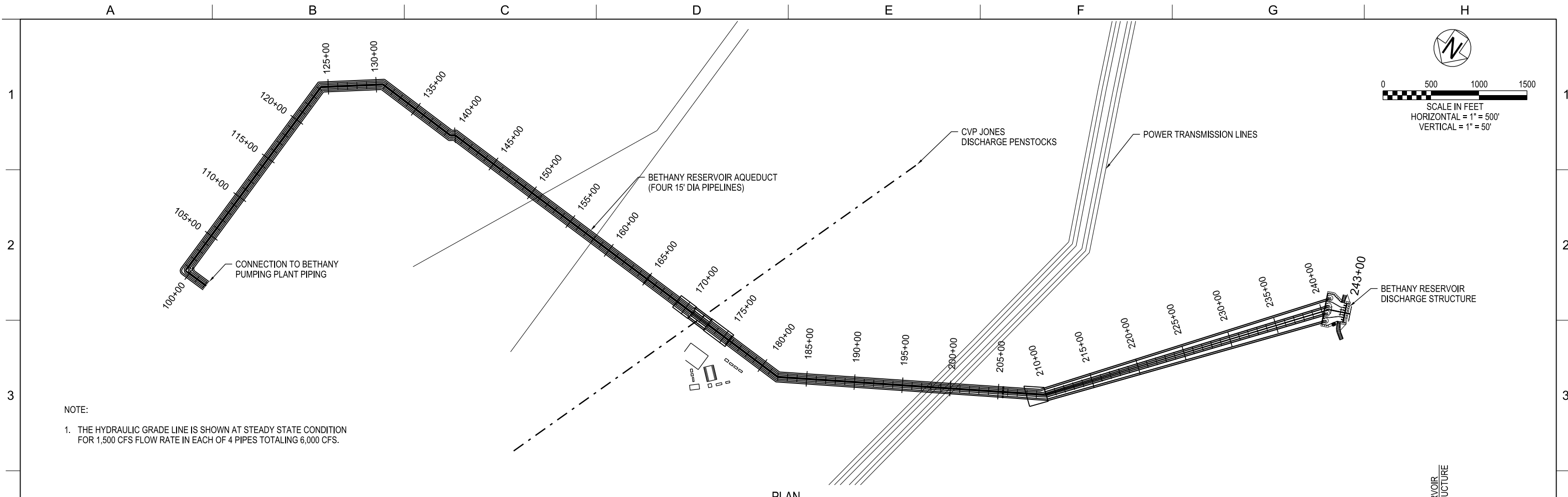
DESIGNED K VAN DYK	APPROVAL RECOMMENDED
DRAWN J OYE	APPROVAL BY A MURDOCK
CHECKED A NAMEY	

CONCEPT PLANNING DOCUMENT  
NOT FOR CONSTRUCTION

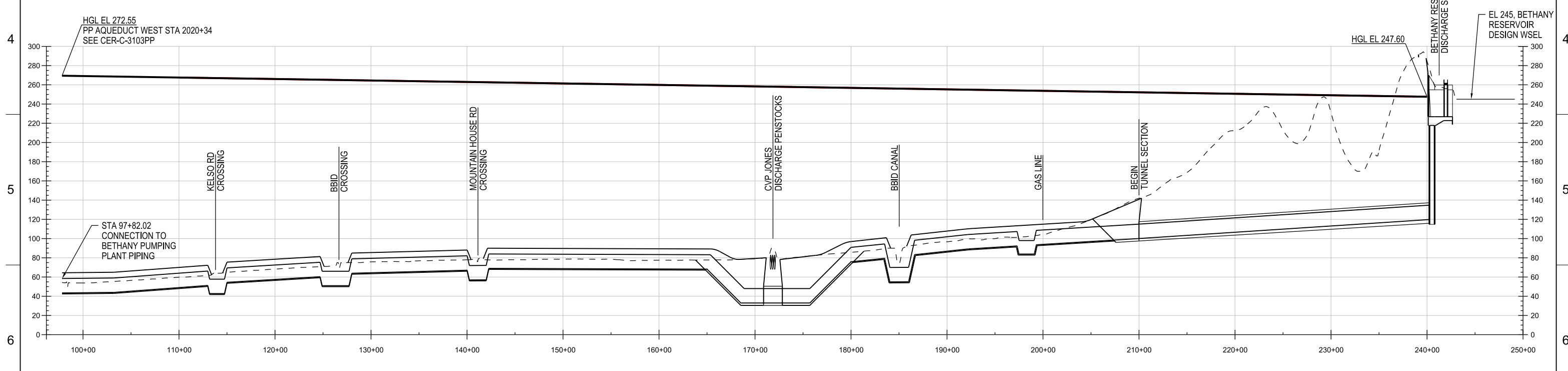



DELTA CONVEYANCE PROJECT  
CONCEPT ENGINEERING REPORT  
**OVERALL HYDRAULIC  
PLAN AND PROFILE**

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
PROJECT NO. W8X97000	
SHEET NO. CER-G-0080GN	
REV	SEQUENCE NO. 9



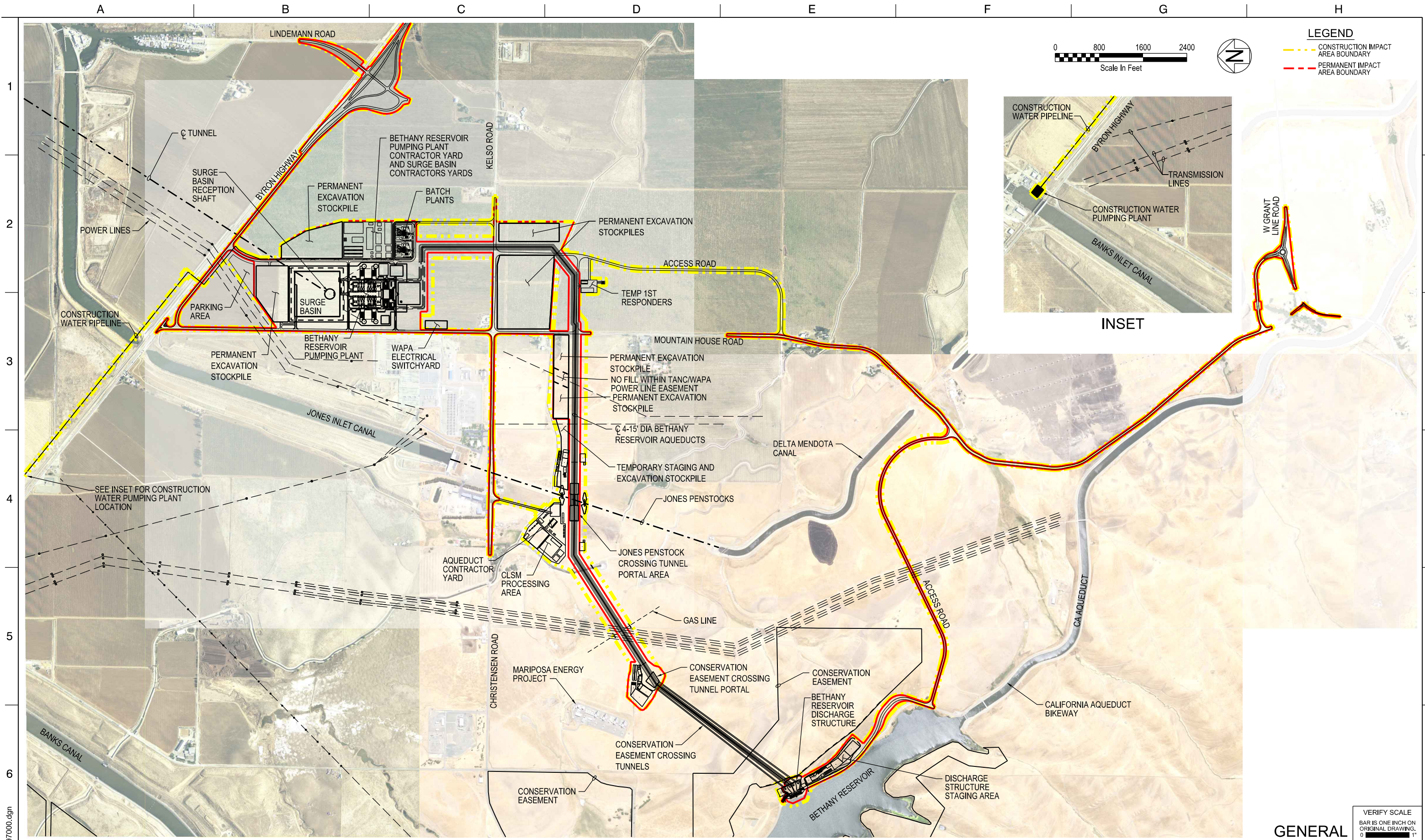
NOTE:  
1. THE HYDRAULIC GRADE LINE IS SHOWN AT STEADY STATE CONDITION FOR 1,500 CFS FLOW RATE IN EACH OF 4 PIPES TOTALING 6,000 CFS.



DESIGNED K VAN DYK		APPROVAL RECOMMENDED		CONCEPT PLANNING DOCUMENT	 DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY	DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT  <b>OVERALL HYDRAULIC PLAN AND PROFILE - AQUEDUCT</b>		VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" 1"	
DRAWN J OYE		APPROVAL BY A MURDOCK						PROJECT NO. W8X97000	
CHECKED A NAMEY								SHEET NO. CER-G-0081GN	
REV	DATE	DESCRIPTION	SUB.	APPD	NOT FOR CONSTRUCTION		REV		SEQUENCE NO. 10

SEP 2024 DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT DRAWINGS





GENERAL

REV	DATE	DESCRIPTION	SUB.	APPD
SEP 2024		DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT DRAWINGS		

DESIGNED P. ROBINSON	APPROVAL RECOMMENDED
DRAWN J. OYE	APPROVAL BY A. MURDOCK
CHECKED A. NAIMEY	

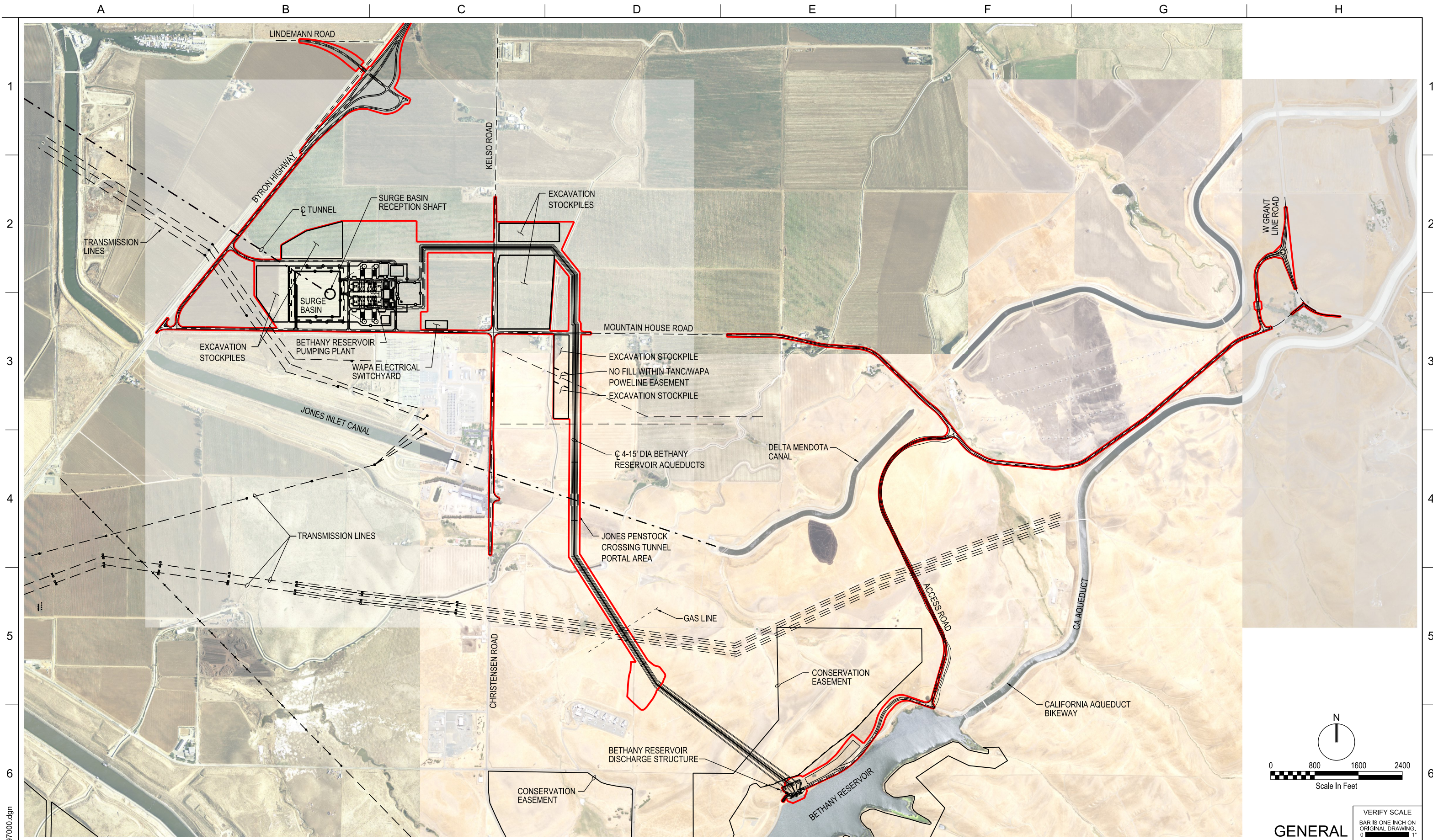
CONCEPT PLANNING DOCUMENT  
NOT FOR CONSTRUCTION



DELTA CONVEYANCE PROJECT  
CONCEPT ENGINEERING REPORT  
**BETHANY COMPLEX  
IMPACT AREA LIMITS**

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0	
PROJECT NO. W8X97000	
SHEET NO. CER-G-0090GN	
REV	SEQUENCE NO. 11





CER-G-0100GN\_W8X97000.dgn

REV	DATE	DESCRIPTION	SUB.	APPD
	SEP 2024	DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT DRAWINGS		

DESIGNED P. ROBINSON	APPROVAL RECOMMENDED
DRAWN J. OYE	APPROVAL BY A. MURDOCK
CHECKED A. NAMEY	

CONCEPT  
PLANNING  
DOCUMENT  
  
NOT FOR  
CONSTRUCTION



DELTA CONVEYANCE PROJECT  
CONCEPT ENGINEERING REPORT  
  
**BETHANY COMPLEX**  
**POST-CONSTRUCTION SITE PLAN**

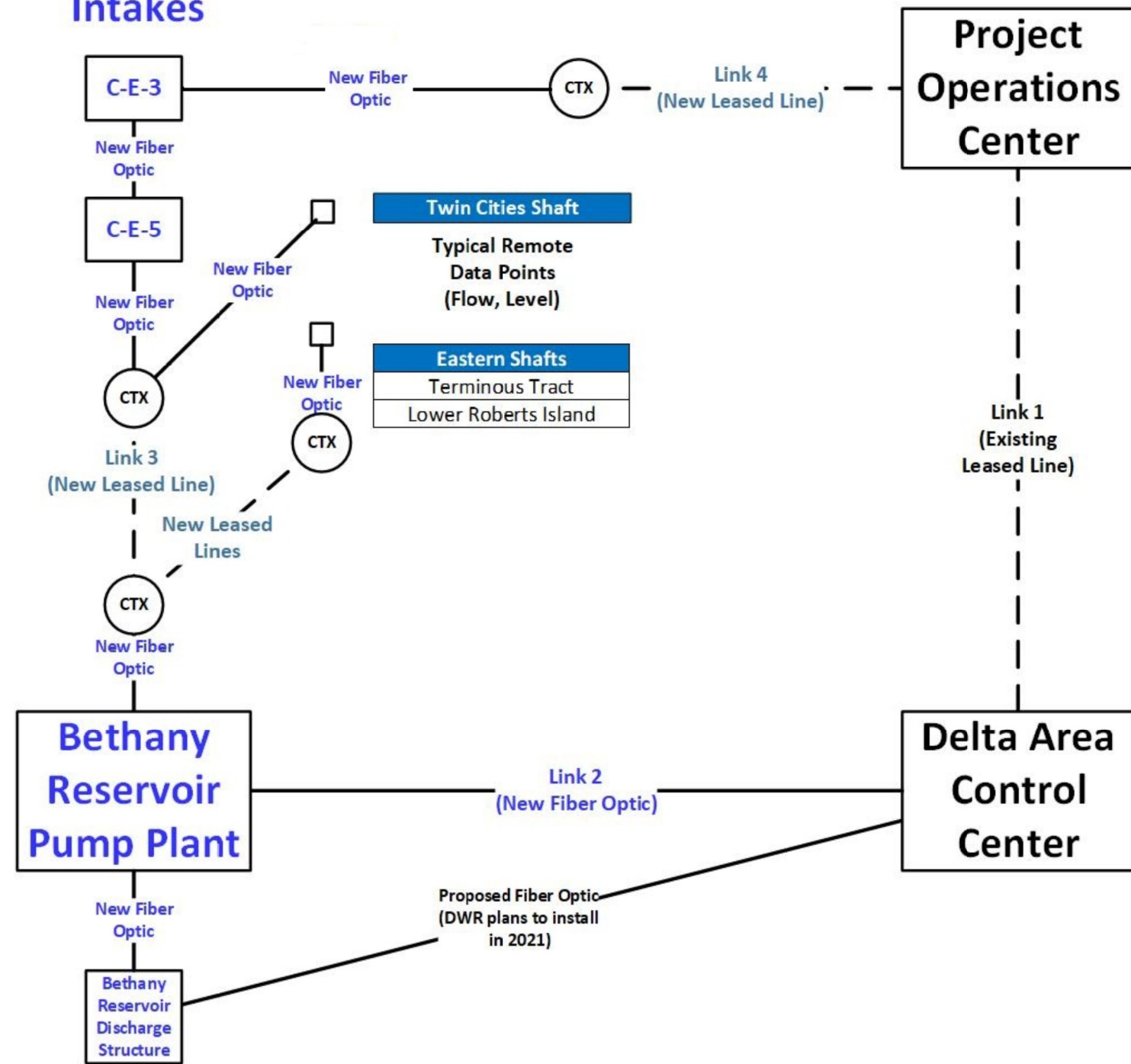
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PROJECT NO. W8X97000	
SHEET NO. CER-G-0100GN	
REV	SEQUENCE NO. 12



# Delta Conveyance Communications Diagram

Legend		
Symbol	Description	Count
	Remote Data Point	2
	Local Control Point	4
	Leased Line Point (Router)	4

## Intakes



CER-E-0030GN\_W8X97000.dgn

REV	DATE	DESCRIPTION	SUB.	APPD
SEP 2024		DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT DRAWINGS		

DESIGNED M JOHNSON	APPROVAL RECOMMENDED
DRAWN J OYE	APPROVAL BY A MURDOCK
CHECKED A MURDOCK	

CONCEPT  
PLANNING  
DOCUMENT

NOT FOR  
CONSTRUCTION



DELTA CONVEYANCE PROJECT CONCEPT ENGINEERING REPORT	
COMMUNICATION DIAGRAM	

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
PROJECT NO.	W8X97000
SHEET NO.	CER-E-0030GN
REV	SEQUENCE NO.
	13

GENERAL