Table 1

Drainage number	Pipeline Station No.	Type of Access Crossing	Existing Culvert	Activity Within Drainage							
				R&R Existing	Clean Existing	New 24" RCP	New 36" RCP	New Ford	Bank Stabilization	Saddle Repair	New Bridge
OW-1	NA	GR	X	X			X				
OW-3	21+60	VP	X								
OW-4	27+75	VP	X								
OW-5	42+00	VP	X								
OW-6	48+50	VP	X								
OW-7	53+60	GR					X				
OW-8a	61+20	GR						X			
OW-8b*	69+30	GR	X		X			X			
OW-8c*	71+00	VR	X		X						
OW-9	74+52	GR	X					X			
OW-10a	76+60	GR	X		X						
OW-10b	80+00	VR						X			
OW-11	82+75	GR	X	X		X					
OW-12	89+50	GR	X	X		X			X		
OW-13	94+92	GR	X	X			X		X		
OW-14*	101+00	GR				X					
OW-15a	104+40	GR	X	X			X		X		
OW-15b	110+56	VP							X	X	
OW-16	115+70	VP									
OW-17	125+00	VP	X								
OW-18	129+40	GR	X	X			X				
OW-19	134+30	GR				X					
OW-20	139+65	VP									
OW-21	155+50	GR		X							X
OW-22	161+00	VP									
OW-23	164+45	VR	X		X						
OW-24	168+40	VP							X		
OW-25	175+20	VP							X		
OW-26	176+00	VP							X		
OW-27	183+00	GR						X			
OW-28	186+62	GR					X		X		
OW-29*	192+50	GR						X			
OW-30	199+50	GR	X	X			X			X	
OW-31*	202+00	GR						X			
OW-32*	210+50	GR						X			
OW-33	231+83	GR	X							X	

* Not federally jurisdictional

VP = vegetated path (clear only), GR = gravel road, VR = vegetated road (clear &/or grade)

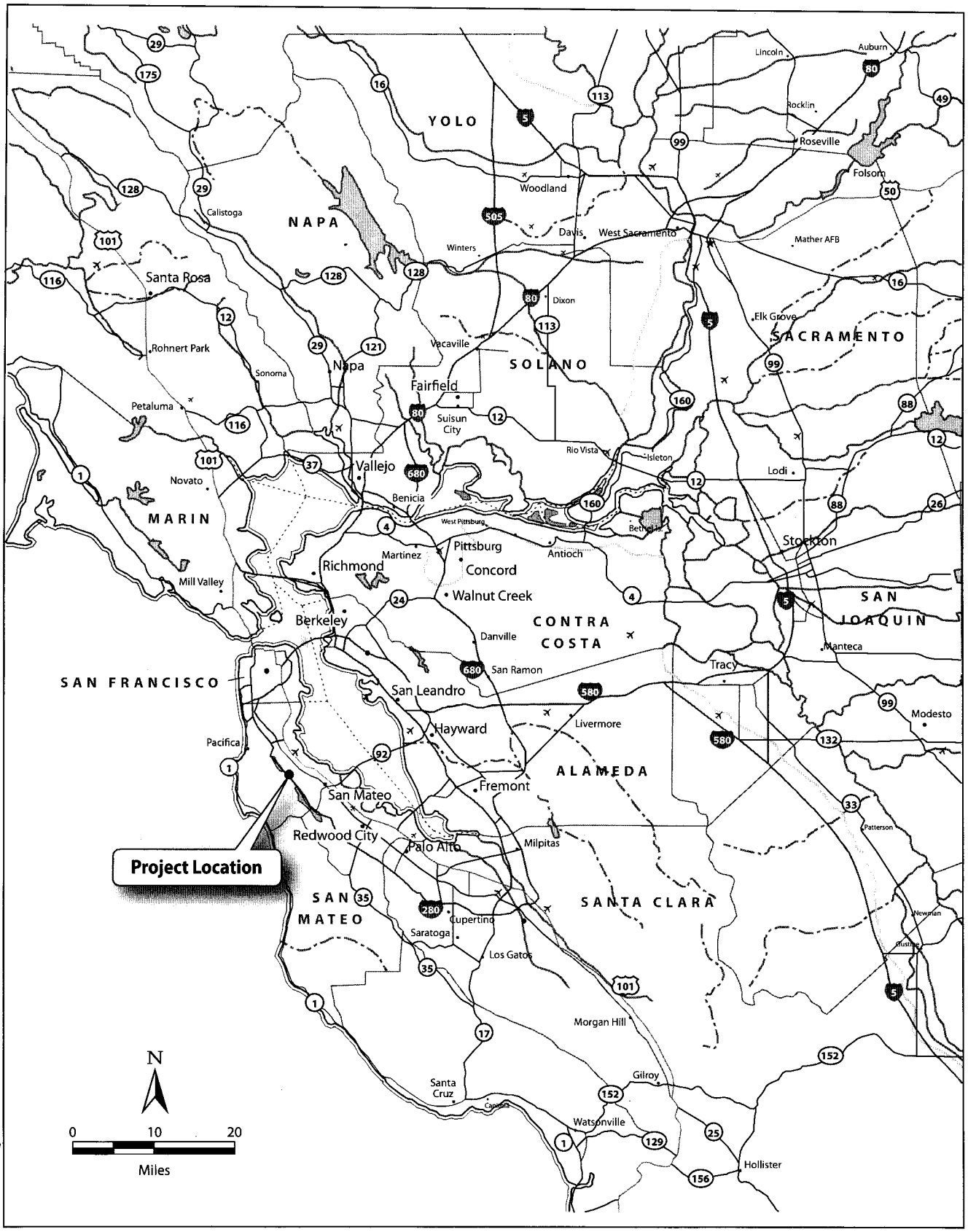
Table 2. Summary of Estimated Surface Areas of Waters of the United States Filled

			Permanent Impacts			Temporary Impacts		
			Other Waters		Wetlands	Other Waters		Wetlands
Water Body	Project Component	Description	lf	ft²	ft²	lf	ft²	ft²
UCSR	UCSD	Hydraulic Pipe Supports (~50)		50				
		Steel Foot Bridge Support		20				
Subtotal UCSR				*70*				
LCSR	UCSD	Channel Excavation				200	19,166	
LCSR	UCSD	Redeposit of Reservoir Soil		125,000				
LCSR	CSOS	Redeposit of Reservoir Soil		5,750				
LCSR	CSOS	Brick , mortar, and concrete from the outlet towers		1,380				
LCSR	CSOS	Hydraulic Pipe Supports (~100)		100				
LCSR	CSOS	Redeposit of Reservoir Soil		5,750				
LCSR	CSOS	Remove and Redeposit of Riprap for Hydraulic Lines					220	
Subtotal LCSR				*137,980*		*200*	*19,386*	
SAR	SAIS	Dewatered Area (SAR)					30,000	
SAR	SAIS	Inlet Structure and riprap channel		3,400				
SAR	CS/SA PL	Pipeline Trench					1,125	
SAR	SAOS 2	Channel Excavation					19,166	
SAR	SAOS 2	Channel slope protection		1,200				
SAR	SAOS 2	Secant Pile Wall	125	375				
SAR	SAOS 2	Fish Screens Steel						
SAR	SAOS 2	Boat Ramp		2,592				
SAR	SAOS 3	Channel Excavation					27,443	
SAR	SAOS 3	Channel Slope Protection		1,200				
SAR	SAOS 3	Secant Pile Wall	125	375				
SAR	SAOS 3	Fish Screens (Steel)						
SAR	SAOS 2 & 3	Redeposit of Reservoir Soil		125,000				
Subtotal SAR			*250*	*134,142*			*77,734*	
Total Reservoirs			***250***	***272,122 (6.25 ac)***	***0***	***200***	***97,120 (2.23 ac)***	***0***
OW-1, x=2	UCSD	R&R 36-inch Culvert	30	60		48	96	
OW-7, x=3	CS/SA PL	New 36-inch Culvert	65	195		20	60	
OW-8a, x=1	CS/SA PL	Gravel Ford	30	30		20	20	
OW-8b*, x=2	CS/SA PL	Gravel Ford	30	60		20	40	
OW-8c*, x=3	CS/SA PL	Clean Out Only				20	60	
OW-9, x=2	CS/SA PL	Gravel Ford	20	40		20	40	
OW-10a, x=2	CS/SA PL	Clean Out Only				20	40	
OW-10b, x=4	CS/SA PL	Gravel Ford	30	120		20	80	
OW-11, x=2	CS/SA PL	R&R 24-inch Culvert	16	32		74	148	
OW-12, x=3	CS/SA PL	R&R 24-inch Culvert and Bank Stabilization,	16	48		124	372	
OW-13, x=1	CS/SA PL	R&R 36-inch Culvert and Bank Stabilization	20	20		60	60	
OW-14*, x=1	CS/SA PL	New 24-inch Culvert	70	70		20	20	

Water Body	Project Component	Description	Permanent Impacts			Temporary Impacts		
			Other Waters		Wetlands	Other Waters		Wetlands
			lf	ft²	ft²	lf	ft²	ft²
OW-15a, x=3	CS/SA PL	R&R 36-inch Culvert and Bank Stabilization	20	60		65	195	
OW-15b, x=6	CS/SA PL	Bank Stabilization and Saddle Repair				60	360	
OW-18, x=3	CS/SA PL	R&R 36-inch Culvert	20	60		74	222	
OW-19, x=4	CS/SA PL	New 24-inch Culvert	51	204		20	80	
OW-21, x=2	CS/SA PL	R&R Foot Bridge				20	40	
OW-23, x=1	CS/SA PL	Clean Out Only				20	20	
OW-24, x=2	CS/SA PL	Bank Stabilization				10	20	
OW-25, x=1	CS/SA PL	Bank Stabilization				48	48	
OW-26, x=3	CS/SA PL	Bank Stabilization				25	75	
OW-27, x=1	CS/SA PL	Gravel Ford	30	30		20	20	
OW-28, x=3	CS/SA PL	New 36-inch Culvert and Bank Stabilization	51	153		20	60	
OW-29*, x=2	CS/SA PL	Gravel Ford	30	60		20	40	
OW-30, x=2	CS/SA PL	R&R 36-inch Culvert and Saddle Repair	20	40		90	180	
OW-31*, x=2	CS/SA PL	Gravel Ford	30	60		20	40	
OW-32*, x=1	CS/SA PL	Gravel Ford	30	30		20	20	
OW-33, x=3	CS/SA PL	Saddle Repair				20	60	
OW-35	CSPS	Air Gap Outfall	15	48		20	100	
OW-35	CSPS	Storm Water Outfall	15	48		20	100	
OW-35	CSPS	Outfall Dissipation	55	1,307				
OW-35	CSPS	Cofferdam				20	420	
OW-35	CSPS	Dewatered Area (San Mateo Creek)					2,200	
Total Drainages			***694***	***2,775 (0.06 ac)***	***0***	***1,078***	***5,336 (0.12 ac)***	***0***
W-4	UCSD	Staging/Laydown Area						3,050
W-9	UCSD	Excavation Area			4,356			
W-10	UCSD	Temporary Construction Impacts						305
W-1	CS/SA PL	Temporary Construction Impacts						175
W-15	SAOS 3	Retaining Wall			697			
W-15	SAOS 3	Staging Area						12,589
Total Wetlands			***0***	***0***	***5,053 (0.12 ac)***	***0***	***0***	***16,119 (0.37 ac)***
Impacts on waters of the U.S. (ft² or linear feet)			754	274,617	5,053	1,158	102,236	16,119
Acres			NA	6.30	0.12	NA	2.35	0.37
Impacts on nonfederal waters of the state (ft² or linear feet)			190	280	0	120	220	0
Acres			NA	0.01		NA	0.01	0
GRAND TOTAL WATERS of the U.S. and STATE (acres)			**944**	**6.31**	**0.12**	**1,278**	**2.36**	**0.37**

* = not federally regulated

Deposition areas within the reservoirs for sediments and soils removed during outlet channel excavation and adit rehabilitation were considered permanent impacts although due to the fact these discharges would occur on unvegetated reservoir bottom, no loss of function or value is anticipated.



00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
Location: San Mateo County, CA
Applicant: San Francisco Public Utilities Commission, 1155 Market Street, 6th Floor, San Francisco, CA 94103
Contact: Anastasio Mavroudis

Figure 1
CS/SA Transmission System Upgrade Project – USACE File #400143S, Regional Location

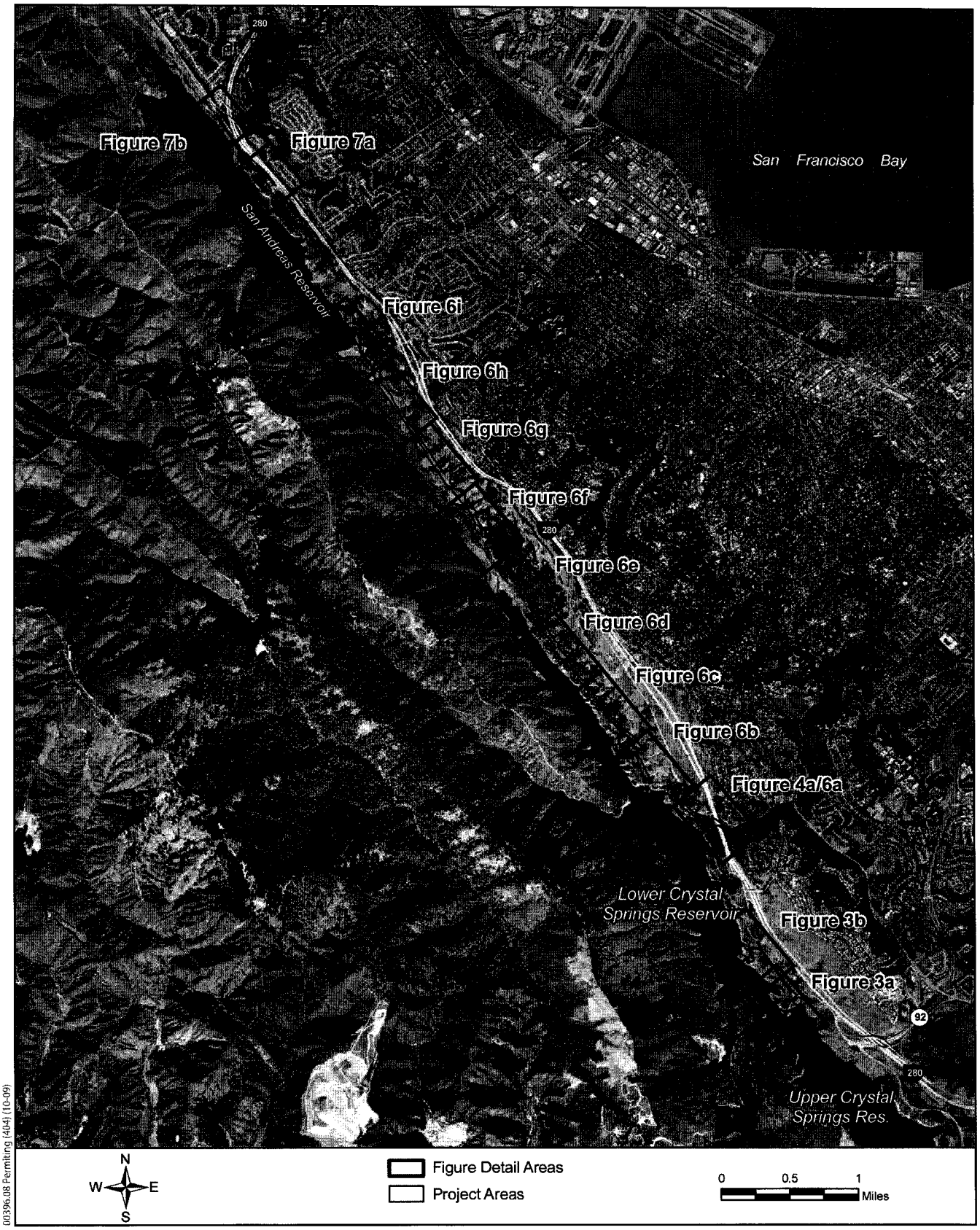


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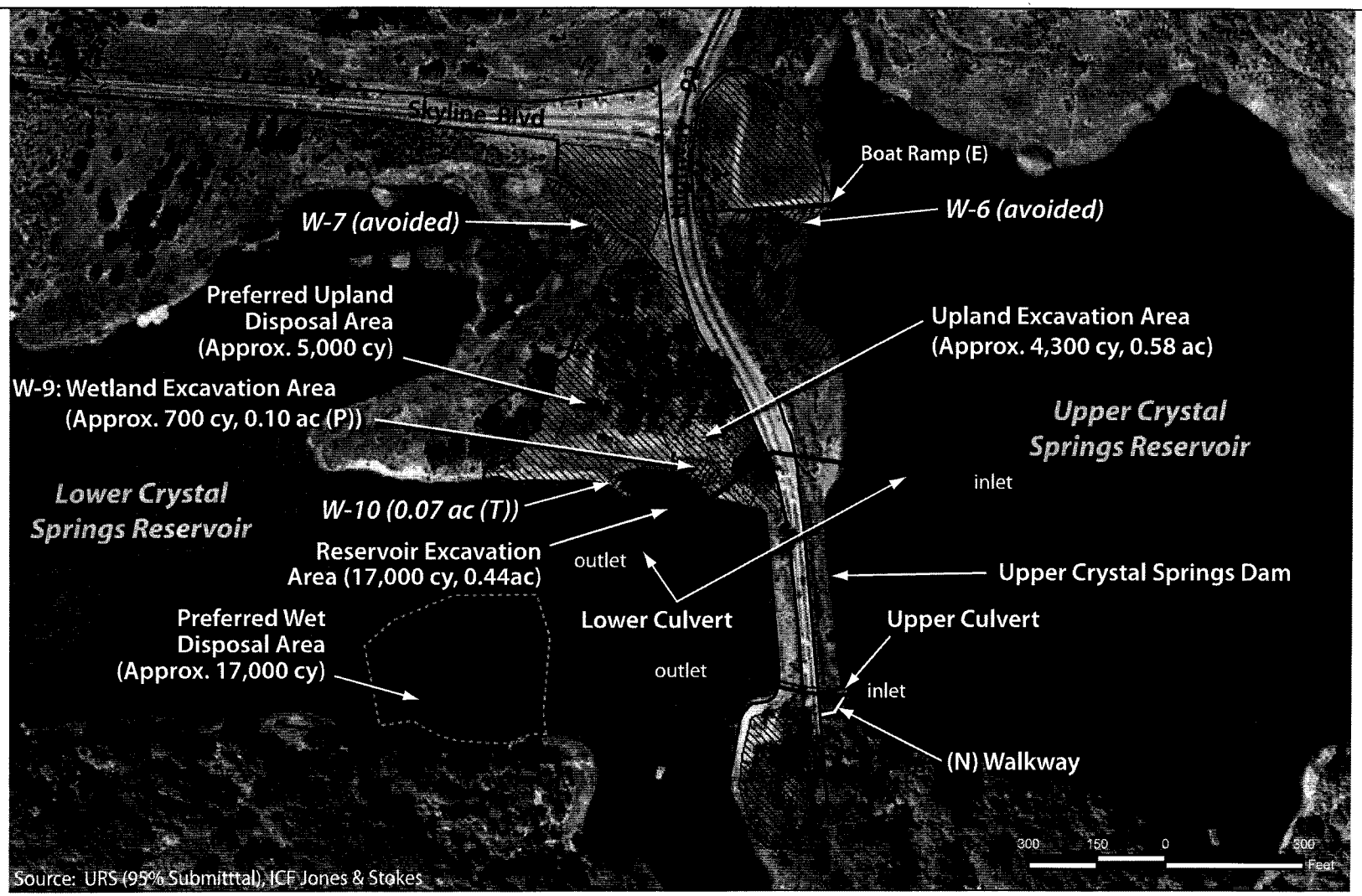
Figure 2
CS/SA Transmission System Upgrade Project – USACE File #400143S, Project Vicinity



Project Boundary	Permanent Gravel Road	Wetlands [W]	Remove & Replace (R+R)
Clearing Boundary	Grading Areas (22,000 cy)	Drainage (Other Waters) [OW]	Reinforced Concrete Pipe (RCP)
Pipeline Alignment	Excavation Area	Existing (E)	Temporary (T)
Laydown / Staging Area		New (N)	Permanent (P)

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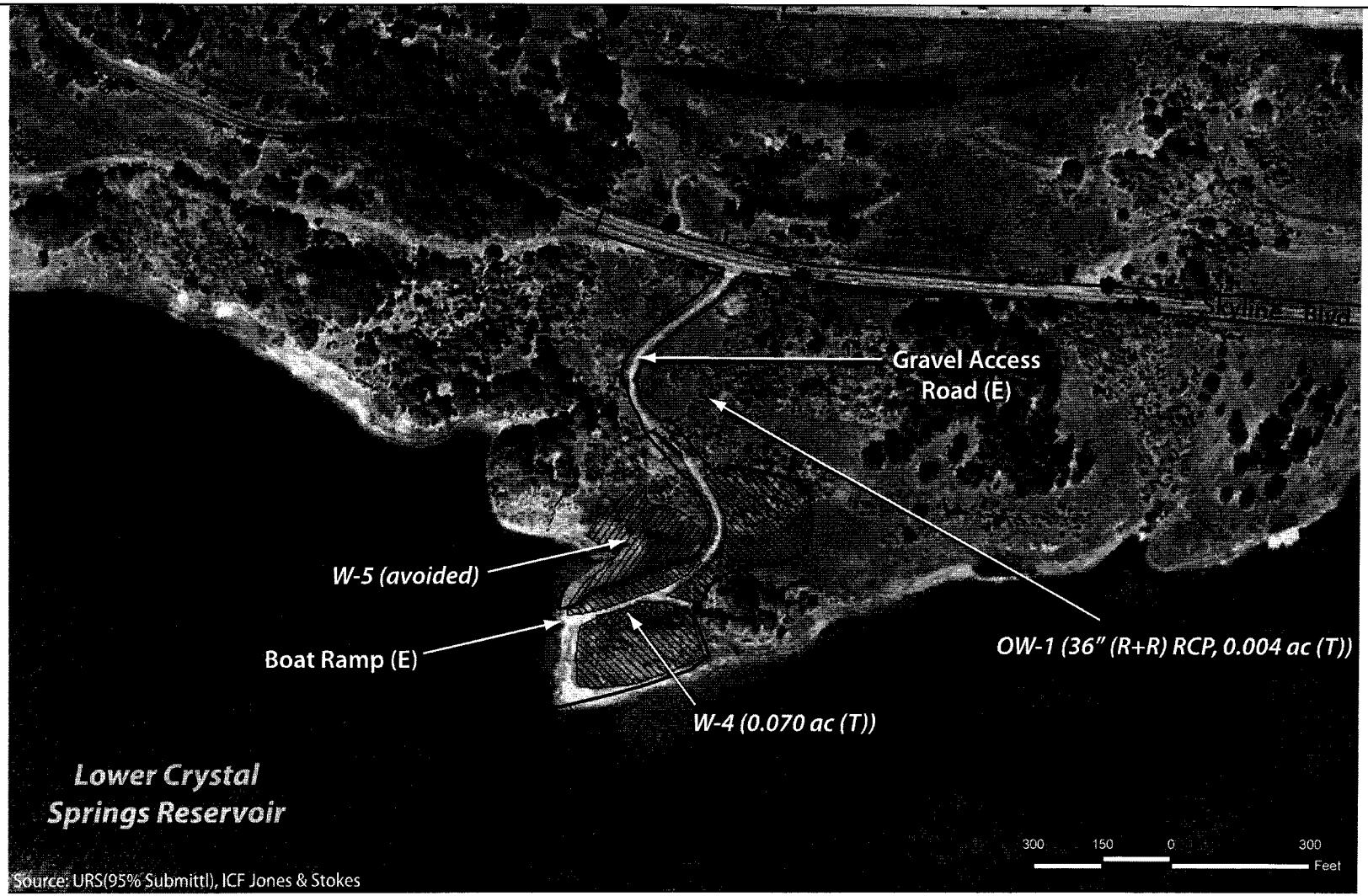
Figure 3a
CS/SA Transmission System Upgrade Project – USACE File #400143S, Upper Crystal Springs Dam Culverts



Project Boundary	Permanent Gravel Road	Wetlands [W]	Remove & Replace (R+R)
Clearing Boundary	Grading Areas	Drainage (Other Waters) [OW]	Reinforced Concrete Pipe (RCP)
Pipeline Alignment	Excavation Area	Existing (E)	Temporary (T)
Laydown / Staging Area		New (N)	Permanent (P)

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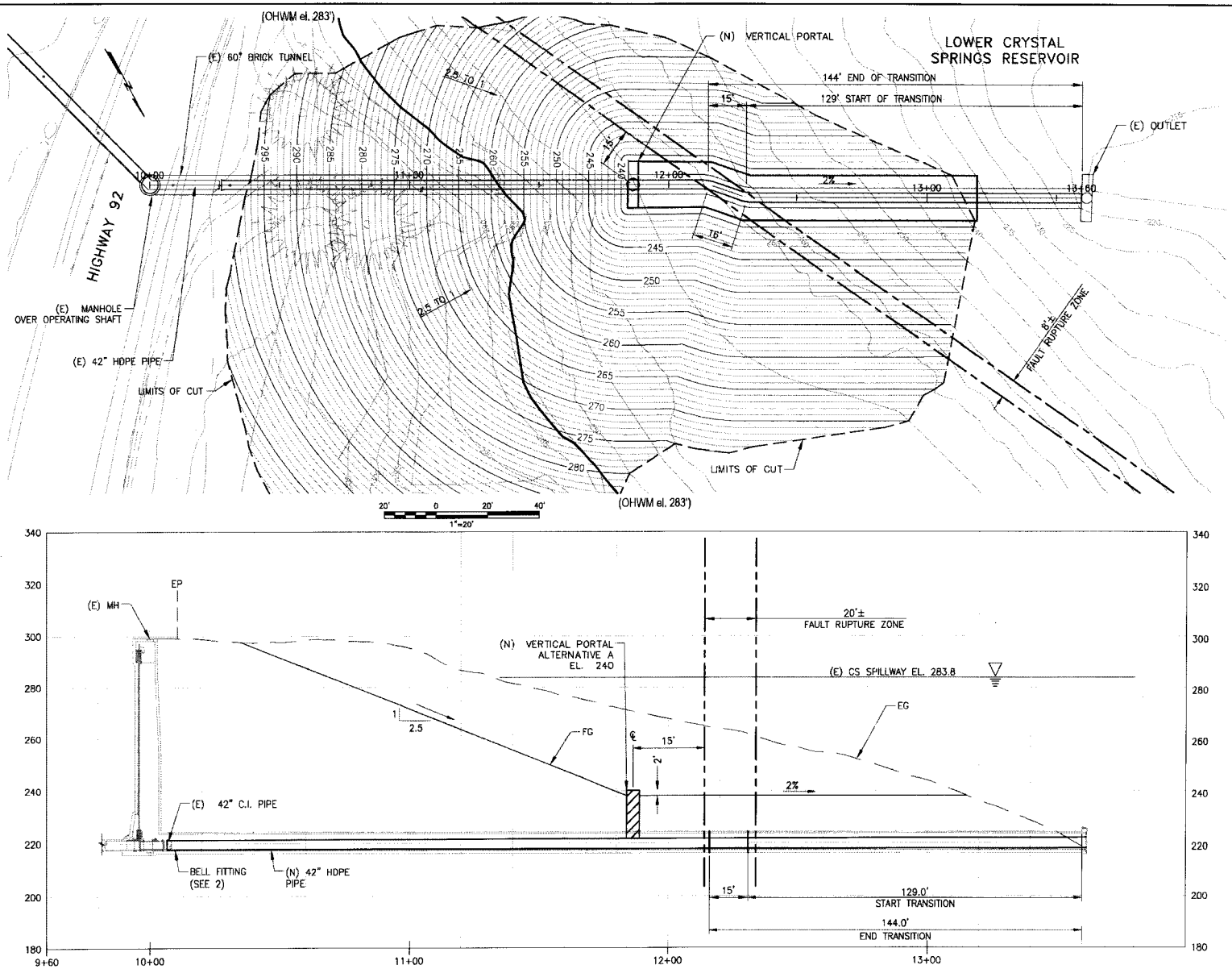
Figure 3b
CS/SA Transmission System Upgrade Project – USACE File #400143S, UCSD Lower Reservoir Boat Ramp



Source: URS (65% Submittal), ICF Jones & Stokes

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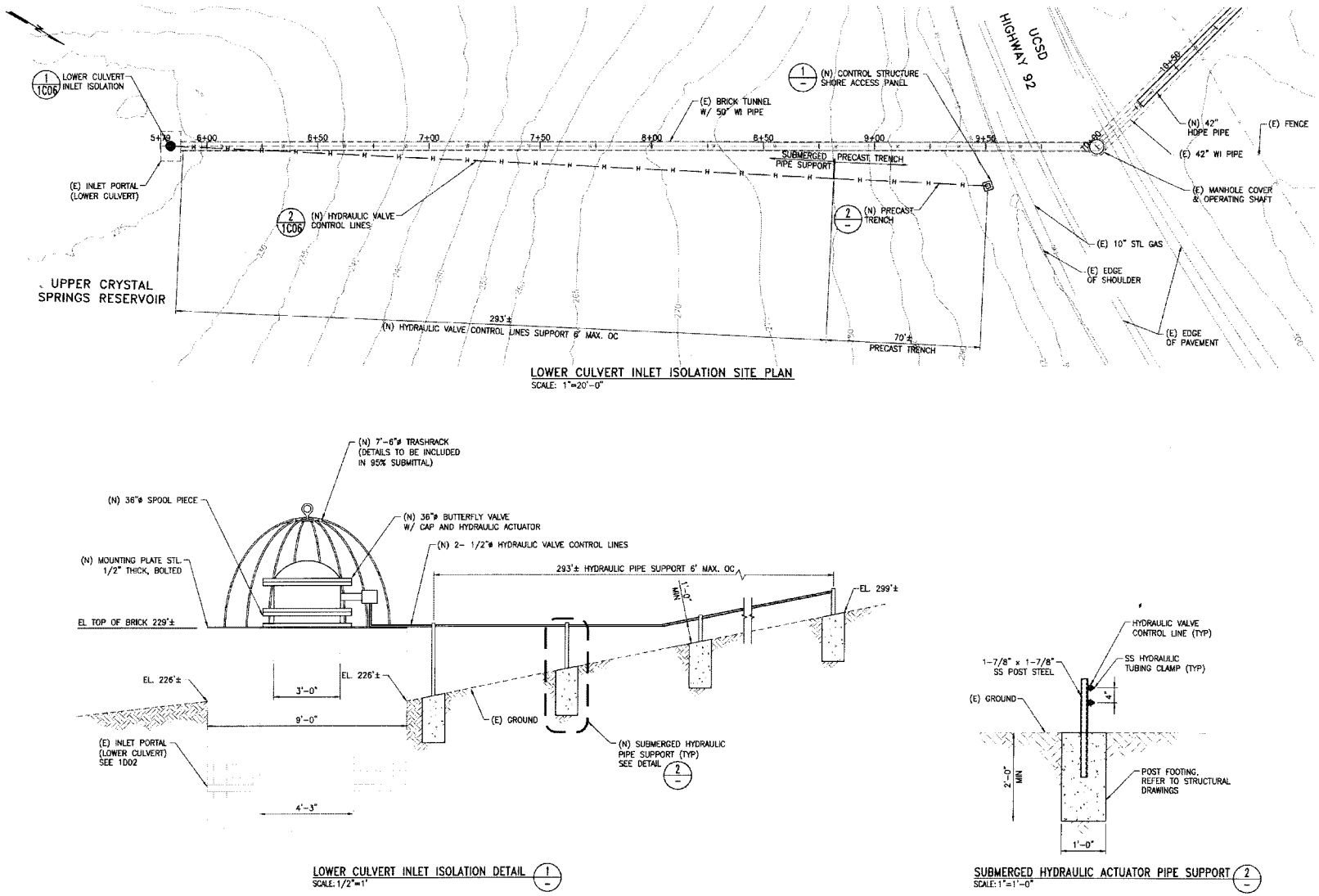
Contact: Anastasio Mavroudis

Figure 3c
CS/SA Transmission System Upgrade Project – USACE File #400143S, Upper Crystal Springs Dam, Lower Culvert Outlet Plan and Profile



Source: URS (65% Submittal), ICF Jones & Stokes

00396.08 Permitting (4/04) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
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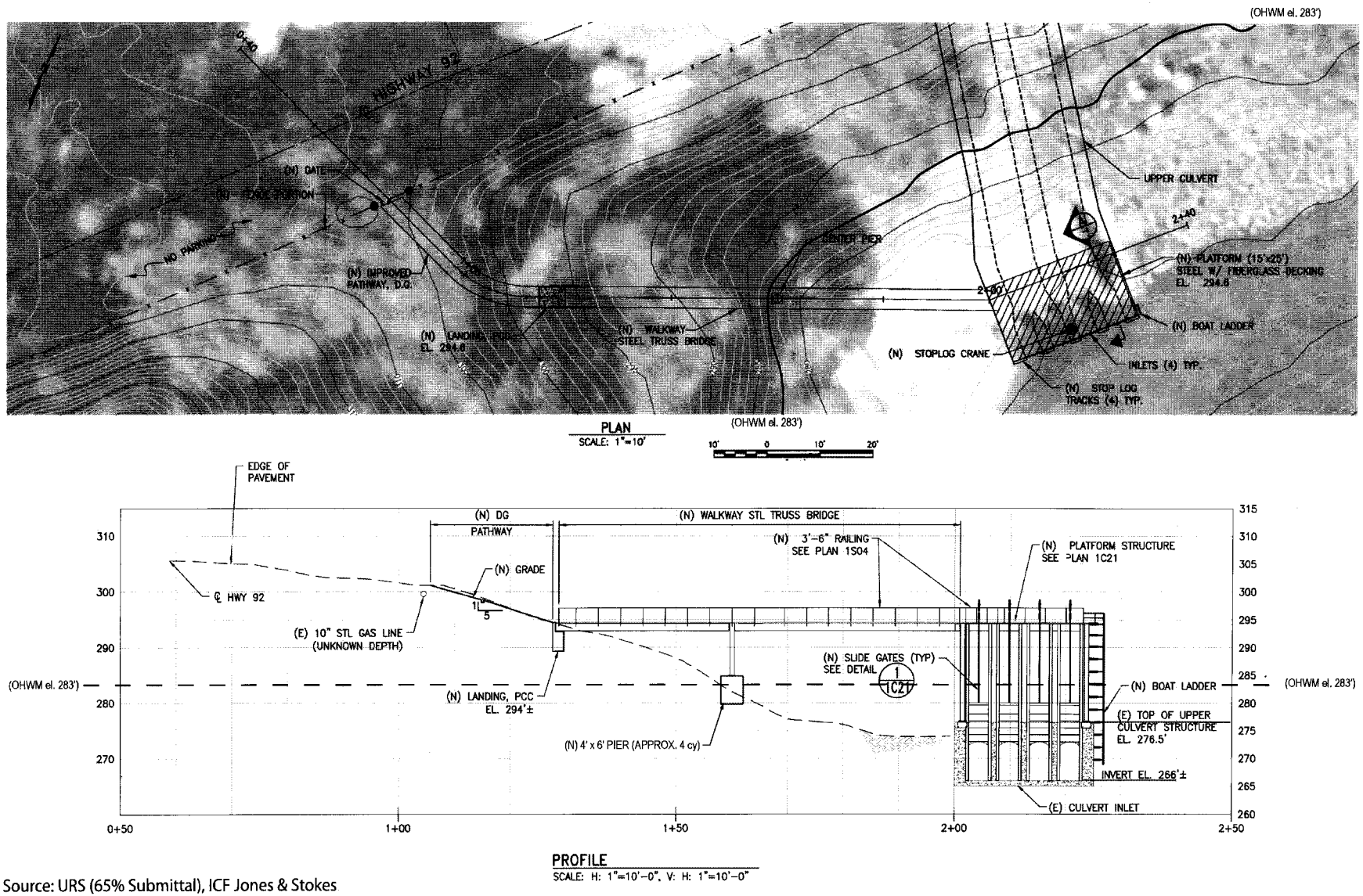
Contact: Anastasio Mavroudis

Figure 3d
CS/SA Transmission System Upgrade Project – USACE File #400143S, Upper Crystal Springs Dam, Lower Culvert Inlet Plan and Profile



Source: URS (65% Submittal), ICF Jones & Stokes

00396.08 Permitting (404) (10-09)

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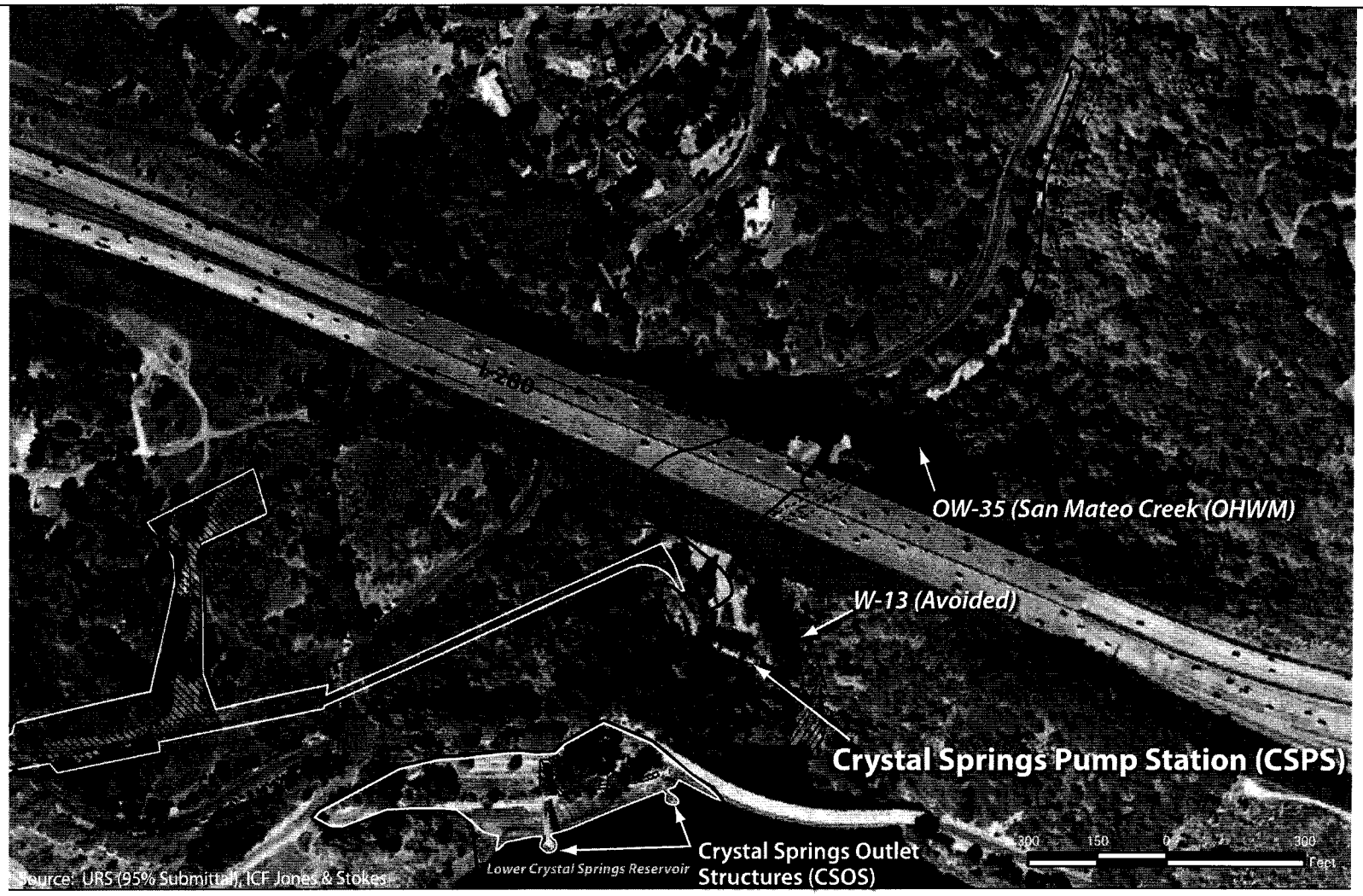
Figure 3e
CS/SA Transmission System Upgrade Project – USACE File #400143S, Upper Crystal Springs Dam, Upper Culvert Inlet Plan and Profile



00396.08 Permitting (404) (10-09)

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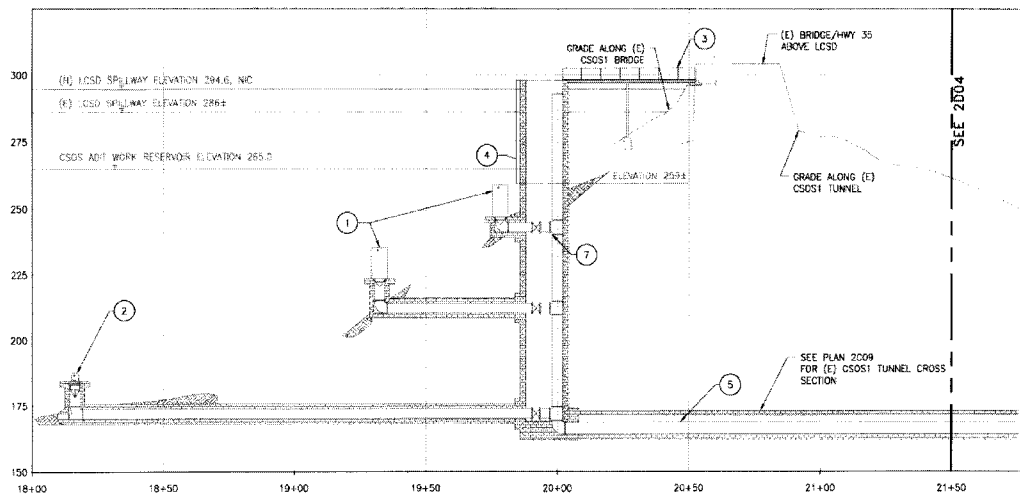
Contact: Anastasio Mavroudis

Figure 4a
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs Outlet Structure/Crystal Springs Pump Station Plan View



CSOS1 DEMOLITION PROFILE 1

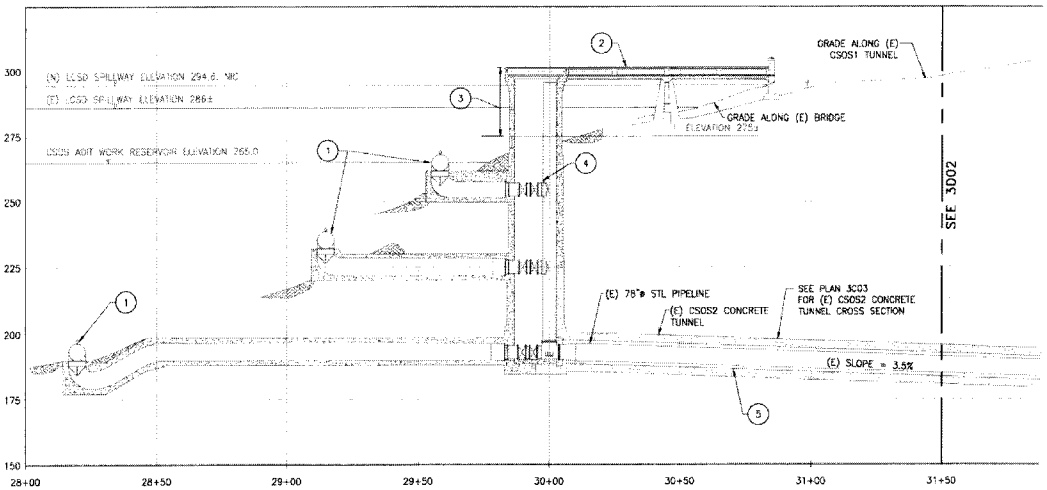
0 10 20 40 80
SCALE IN FEET

NOTES:

1. INSTALL TURBIDITY SCREEN PRIOR TO COMMENCEMENT OF WORK. TURBIDITY SCREEN SHALL BE MAINTAINED IN PLACE THROUGHOUT DURATION OF WORK. SEE PLAN 2C01 FOR GENERAL LOCATION OF TURBIDITY SCREEN AND EXTENT OF LIMITS OF SITE WORK.
2. PROTECT ALL (E) MONUMENTS, (E) SURVEY MARKERS, AND (E) UTILITIES.
3. COORDINATE SHUTDOWN OF PUMPS & PIPELINE W/SFPUC PRIOR TO COMMENCING WORK.
4. FOR CLARITY, ONLY (E) GRADELINES SHOWN ON PROFILE. FOR PROPOSED GRADES AT ADIT INTAKES, SEE 2D07.
5. ALL ADIT WORK TO BE PERFORMED IN THE WET. ALL TOWER & TUNNEL WORK TO BE PERFORMED IN THE DRY.

LEGEND:

1. REMOVE (E) UNDERWATER UPPER & MIDDLE 6'X12' CYLINDRICAL IRON FISHSCREENS.
2. REMOVE (E) UNDERWATER LOWER 3'X30' CYLINDRICAL STEEL FISHSCREEN.
3. REMOVE (E) BRIDGE & PIERS. PIER FOOTINGS TO REMAIN IN PLACE.
4. REMOVE (E) UPPER SECTION OF CSOS1 TOWER TO EL. 259±. ABANDON IN RESERVOIR, SEE 2G00 FOR LOCATION.
5. REMOVE (E) 54"ø PIPE & APPURTENANCES FROM STA 20+00 TO 24+05±. REMOVE ALL (E) ELECTRICAL.
6. REMOVE & RELOCATE (E) WATER GAUGE BOARD TO (E) LCSD. EXACT LOCATION TO BE DETERMINED BY CITY REPRESENTATIVE.
7. REMOVE ALL (E) EQUIPMENT, ELECTRICAL, & STANDPIPE FROM INTERIOR OF CSOS1 TOWER. SEE PLAN 2D05 FOR DETAILS.
8. LIMITS OF LOWER ADIT DREDGING. SILT & OVERBURDEN SOIL, SLOPE TO 1.5H:1V (MAX).
9. LIMITS OF UPPER ADIT & MIDDLE ADIT. LIMITED SILT & OVERBURDEN SOIL W/MORE WEAK ROCK. SLOPE TO 0.5H:1V (MAX).



CSOS2 DEMOLITION PROFILE 1

0 10 20 40 80
SCALE IN FEET

NOTES:

1. INSTALL TURBIDITY SCREEN PRIOR TO COMMENCEMENT OF WORK. TURBIDITY SCREEN SHALL BE MAINTAINED IN PLACE THROUGHOUT DURATION OF WORK. SEE PLAN 2C01 FOR GENERAL LOCATION OF TURBIDITY SCREEN & LIMITS OF SITE WORK.
2. PROTECT ALL (E) MONUMENTS, (E) SURVEY MARKERS, AND (E) UTILITIES.
3. COORDINATE SHUTDOWN OF PUMPS & PIPELINE W/SFPUC PRIOR TO COMMENCING WORK.
4. ALL ADIT WORK TO BE PERFORMED IN THE WET. ALL TOWER & TUNNEL WORK TO BE PERFORMED IN THE DRY.

LEGEND:

1. REMOVE (E) UNDERWATER 6.5'X44' CYLINDRICAL STEEL FISHSCREENS (3 TOTAL).
2. REMOVE (E) BRIDGE & PIERS. PIER FOOTINGS TO REMAIN IN PLACE.
3. REMOVE (E) UPPER SECTION OF CSOS2 TOWER TO EL 275±. ABANDON IN RESERVOIR, SEE 2G00 FOR LOCATION.
4. REMOVE ALL (E) INTERIOR EQUIPMENT, ELECTRICAL & STAND PIPE FROM CSOS2 TOWER. SEE PLAN 3D03 FOR DETAILS.
5. REMOVE ALL (E) ELECTRICAL FROM CSOS2 TUNNEL.

Source: URS (65% Submittal), ICF Jones & Stokes

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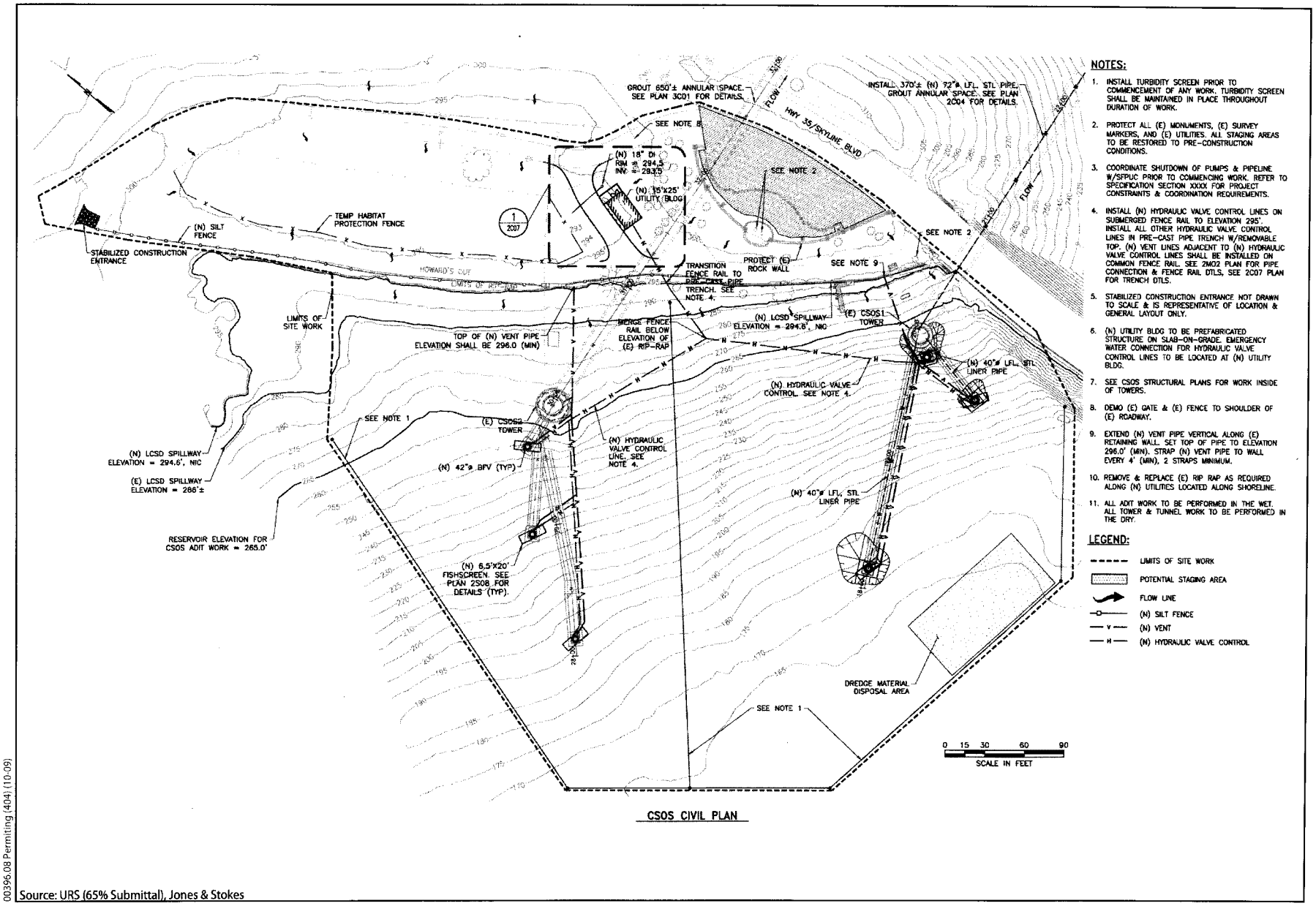
Contact: Anastasio Mavroudis

Figure ~~3a~~ 4b

CS/SA Transmission System Upgrade Project – USACE File #400143S, CSOS 1 and 2, Existing (Showing Proposed Improvements), Profile View



Source: URS (65% Submittal), Jones & Stokes

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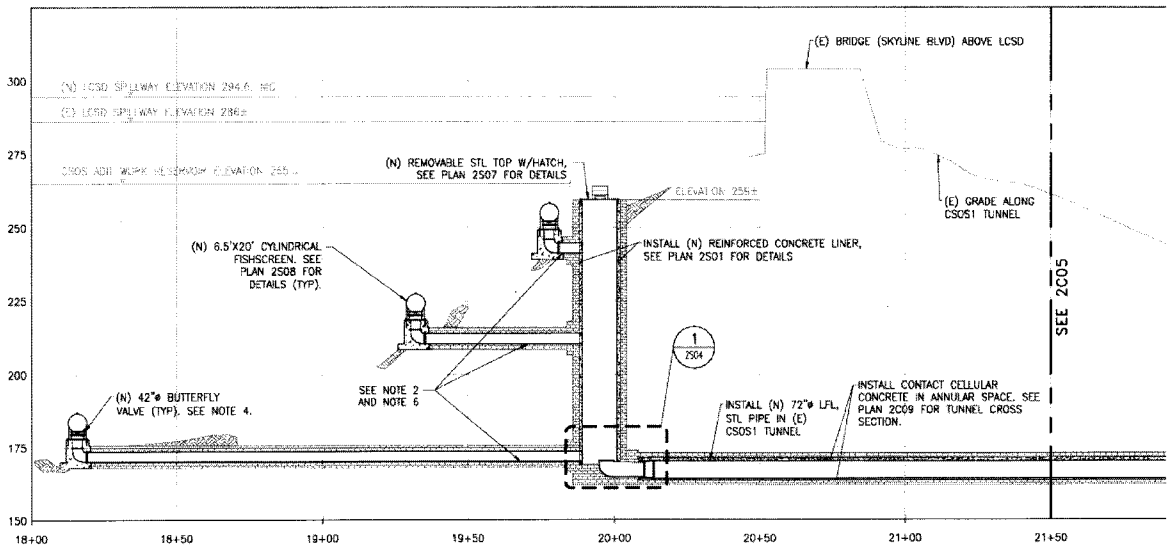
Figure 4c
CS/SA Transmission System Upgrade Project – USACE File #400143S, CSOS 1 and 2 with Proposed Improvements, Plan View

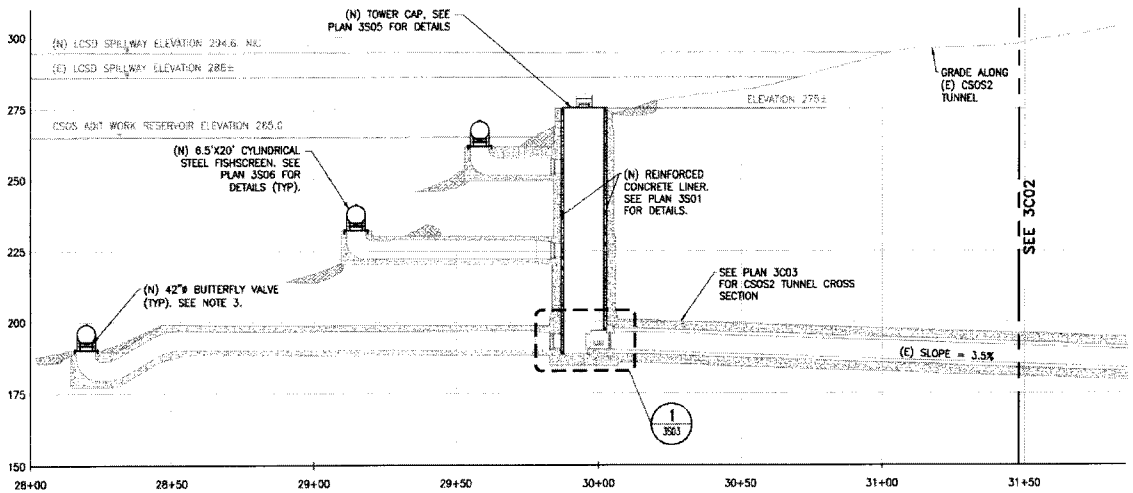


CSOS1 PROFILE 1

0 10 20 40 60
SCALE IN FEET

NOTES:

1. SEE NOTES ON SHEET 2C01.
2. INSTALL (N) 40"ø LFL STL PIPE IN ADITS. GROUT ANNULAR SPACE. (N) LINER PIPE SHALL BE TEMPORARILY SEALED AT TOWER END W/WELDED ½" STL PLATE. SEAL SHALL BE WATER TIGHT.
3. (N) VENT LINE & (N) HYDRAULIC LINES NOT SHOWN IN PROFILE FOR CLARITY.
4. SEE CSOS1 MECHANICAL PLANS FOR (N) VALVE, (N) HYDRAULIC VALVE CONTROL LINE & (N) VENT DETAILS.
5. EXTEND (N) VENT PIPE VERTICAL ALONG (E) RETAINING WALL. SET TOP OF PIPE TO ELEVATION 296.0' (MIN). STRAP (N) VENT PIPE TO WALL EVERY 4' (MIN), 2 STRAPS MINIMUM.
6. SURVEY INTERIOR (E) 44"ø LOWER, MIDDLE, & UPPER ADITS FOR HORIZONTAL & VERTICAL ALIGNMENT, & ROUNDNESS, PRIOR TO INSTALLING NEW LINER PIPE.



CSOS2 PROFILE 1

0 10 20 40 80
SCALE IN FEET

NOTES:

1. SEE NOTES ON PLAN 2C01.
2. (N) VENT LINE & (N) HYDRAULIC LINES NOT SHOWN IN PROFILE FOR CLARITY.
3. SEE CSOS2 MECHANICAL PLANS FOR (N) VALVES, (N) HYDRAULIC VALVE CONTROL LINES, & (N) VENT DETAILS.
4. INSTALL TURBIDITY SCREEN PRIOR TO COMMENCEMENT OF WORK. TURBIDITY SCREEN SHALL BE MAINTAINED IN PLACE THROUGHOUT DURATION OF WORK. SEE PLAN 2C01 FOR GENERAL LOCATION OF TURBIDITY SCREEN & LIMITS OF WORK.

Source: URS (65% Submittal), Jones & Stokes

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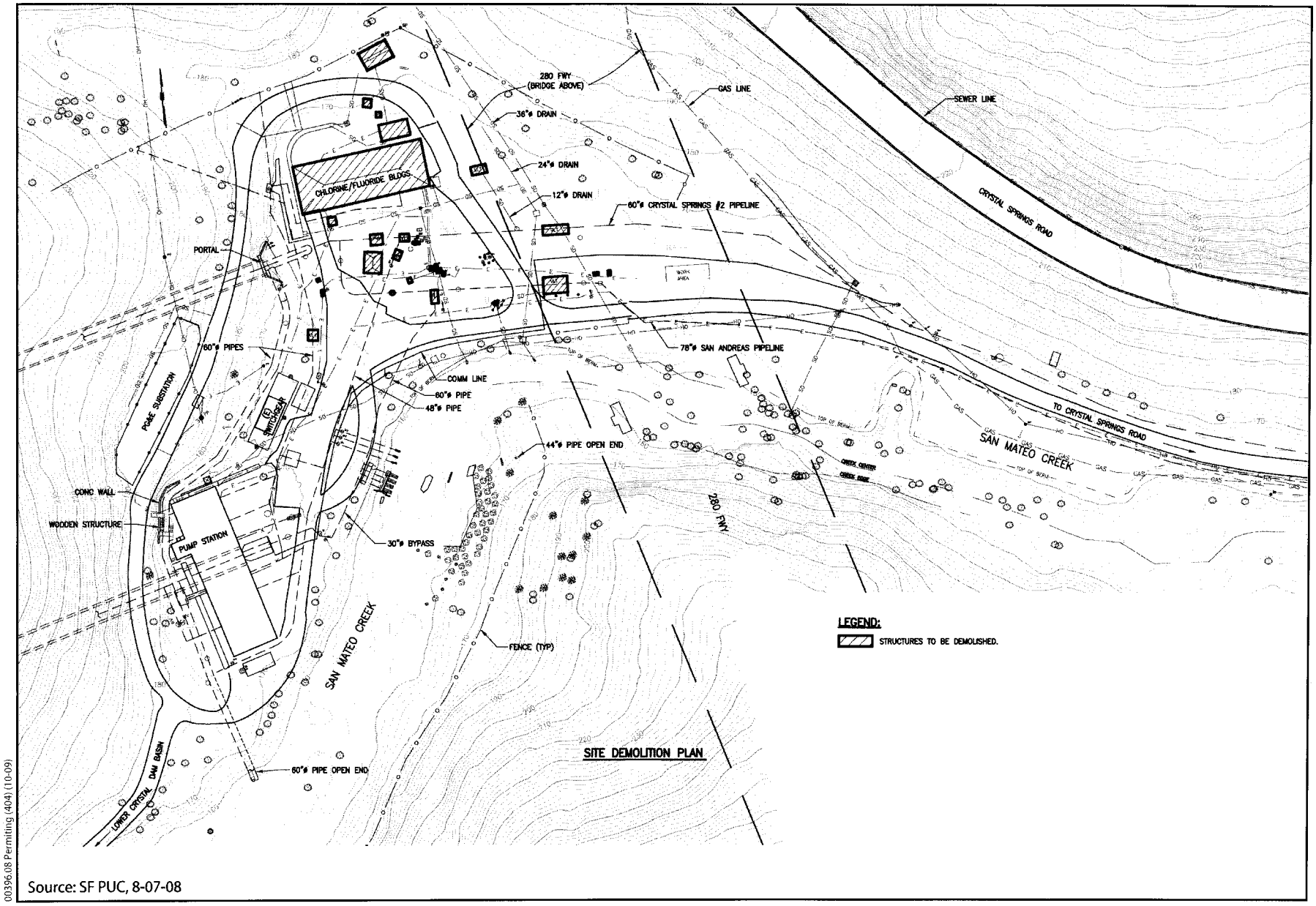
Figure 4d
CS/SA Transmission System Upgrade Project – USACE File #400143S, CSOS 1 and 2 with Proposed Improvements, Profile View



Source: SF PUC, 8-07-08

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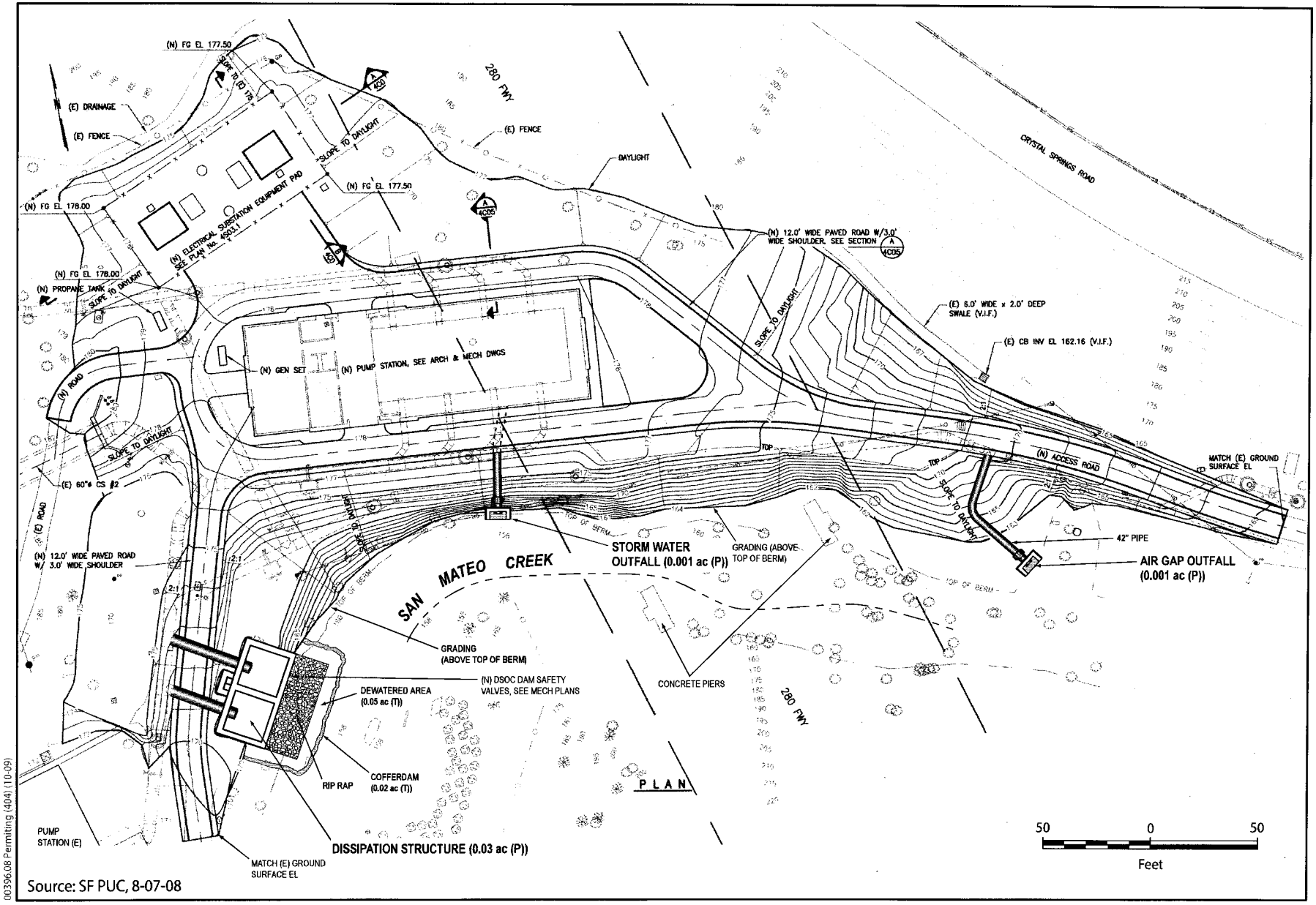
Figure 5a
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs Pump Station, Existing and Demolition Plan View



Source: SF PUC, 8-07-08

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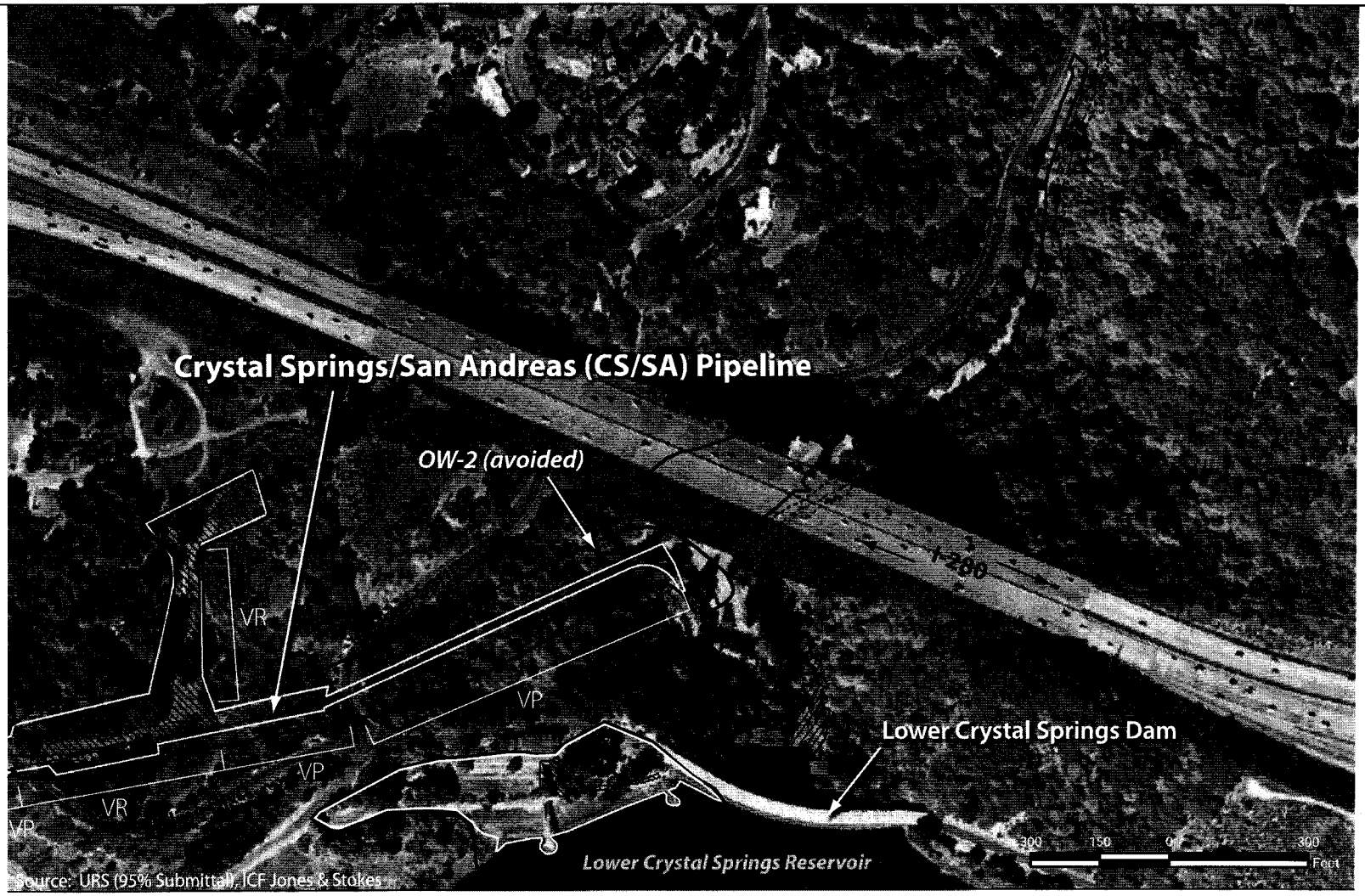
Contact: Anastasio Mavroudis

Figure 5b
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs Pump Station, Proposed Grading Plan with Outfalls



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area

Permanent Gravel Road
Grading Areas
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)

Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)

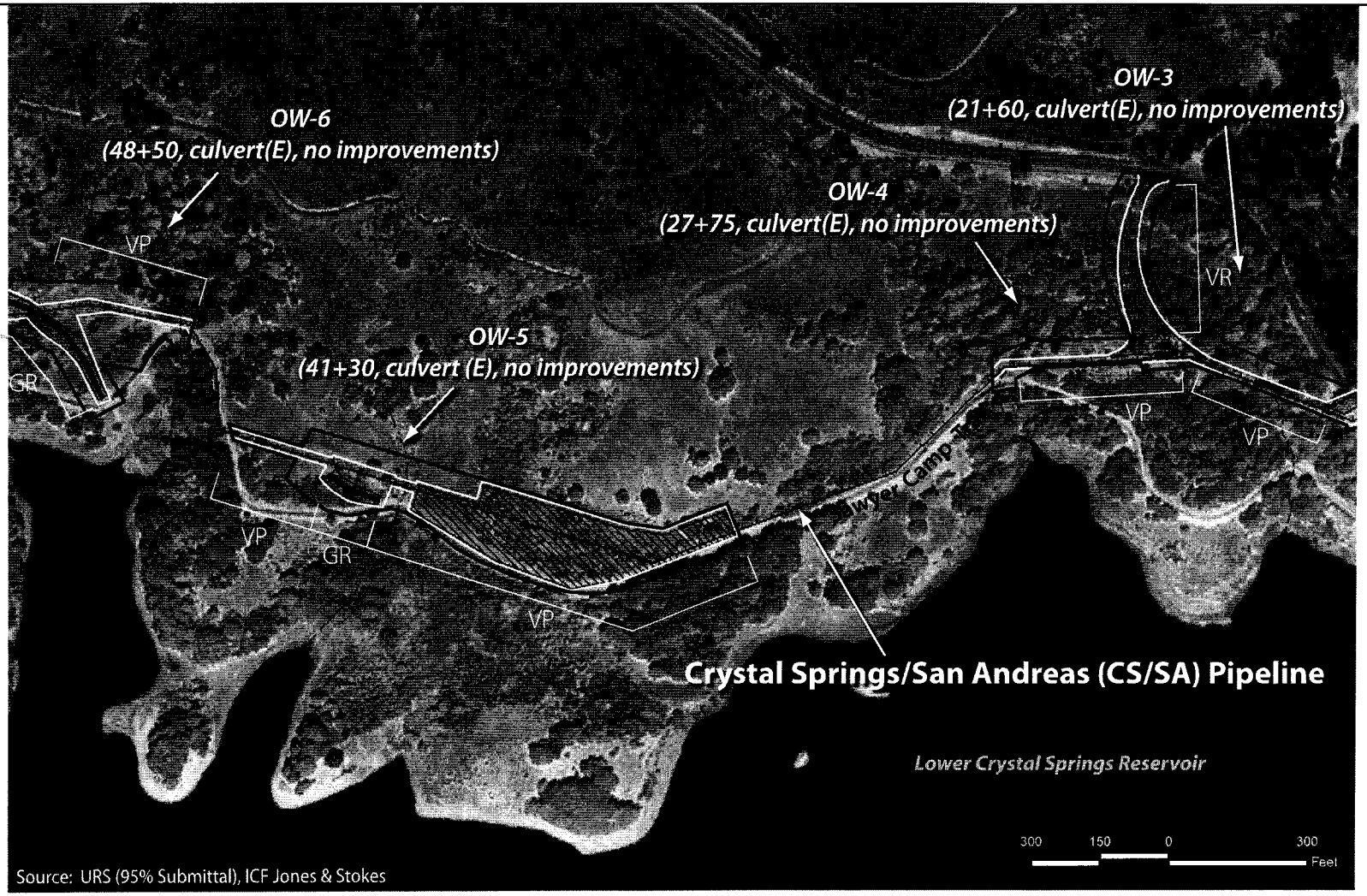
Access Road Types

GR	Gravel Road
VR	Vegetated Road (Clear and/or grade)
VP	Vegetated Path (Clear only)

00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
Location: San Mateo County, CA
Applicant: San Francisco Public Utilities Commission, 1155 Market Street, 6th Floor, San Francisco, CA 94103
Contact: Anastasio Mavroudis

Figure 6a
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs /San Andreas Pipeline, Plan View



Source: URS (95% Submittal), ICF Jones & Stokes

Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area
Permanent Gravel Road
Grading Areas
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)
Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)

Access Road Types

GR	Gravel Road
VR	Vegetated Road (Clear and/or grade)
VP	Vegetated Path (Clear only)

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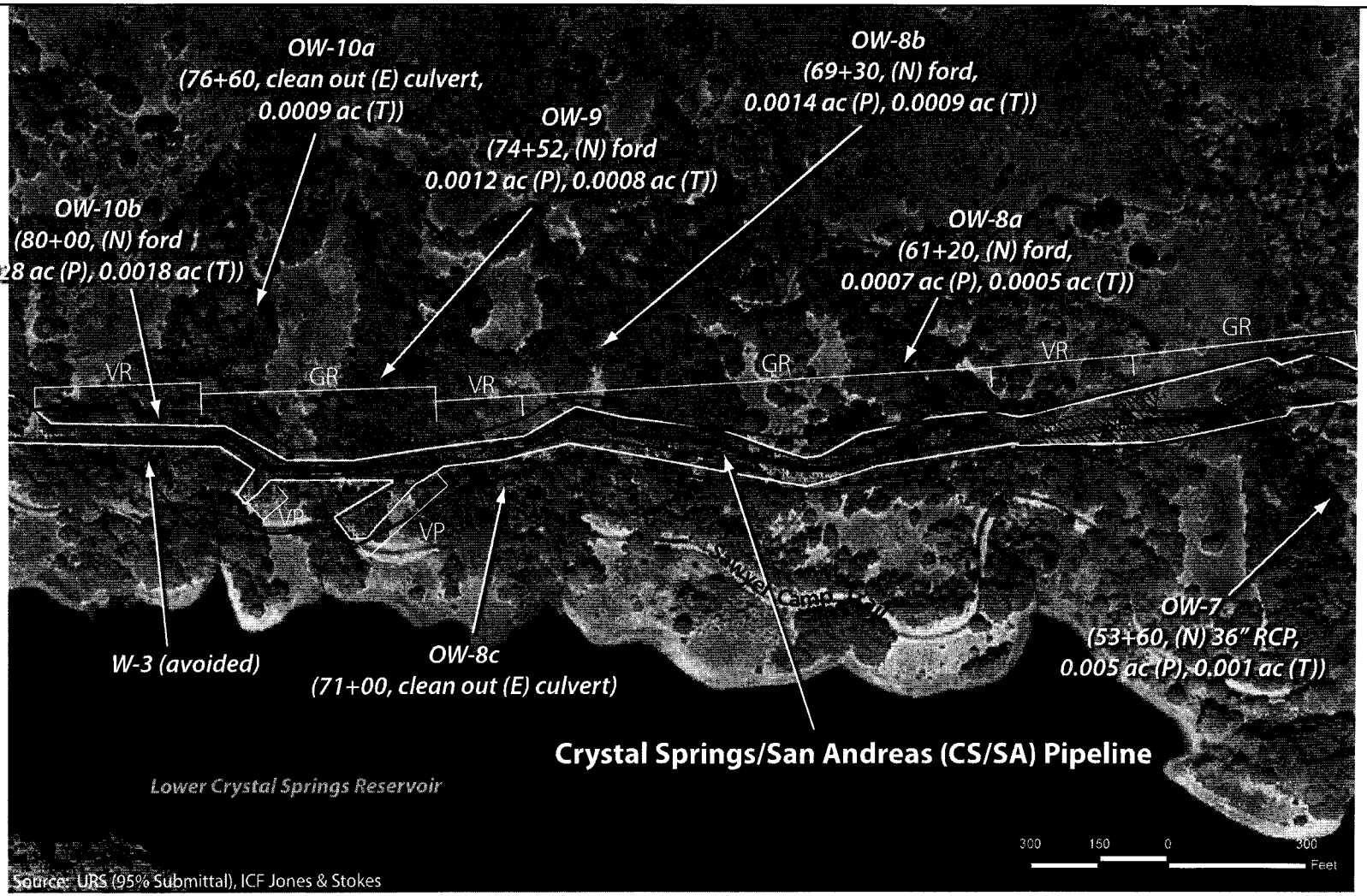
Contact: Anastasio Mavroudis

Figure 6b
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs /San Andreas Pipeline, Plan View



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area
Permanent Gravel Road
Grading Areas
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)
Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)

Access Road Types

GR	Gravel Road
VR	Vegetated Road (Clear and/or grade)
VP	Vegetated Path (Clear only)

00396.08 Permitting (404) (10-09)

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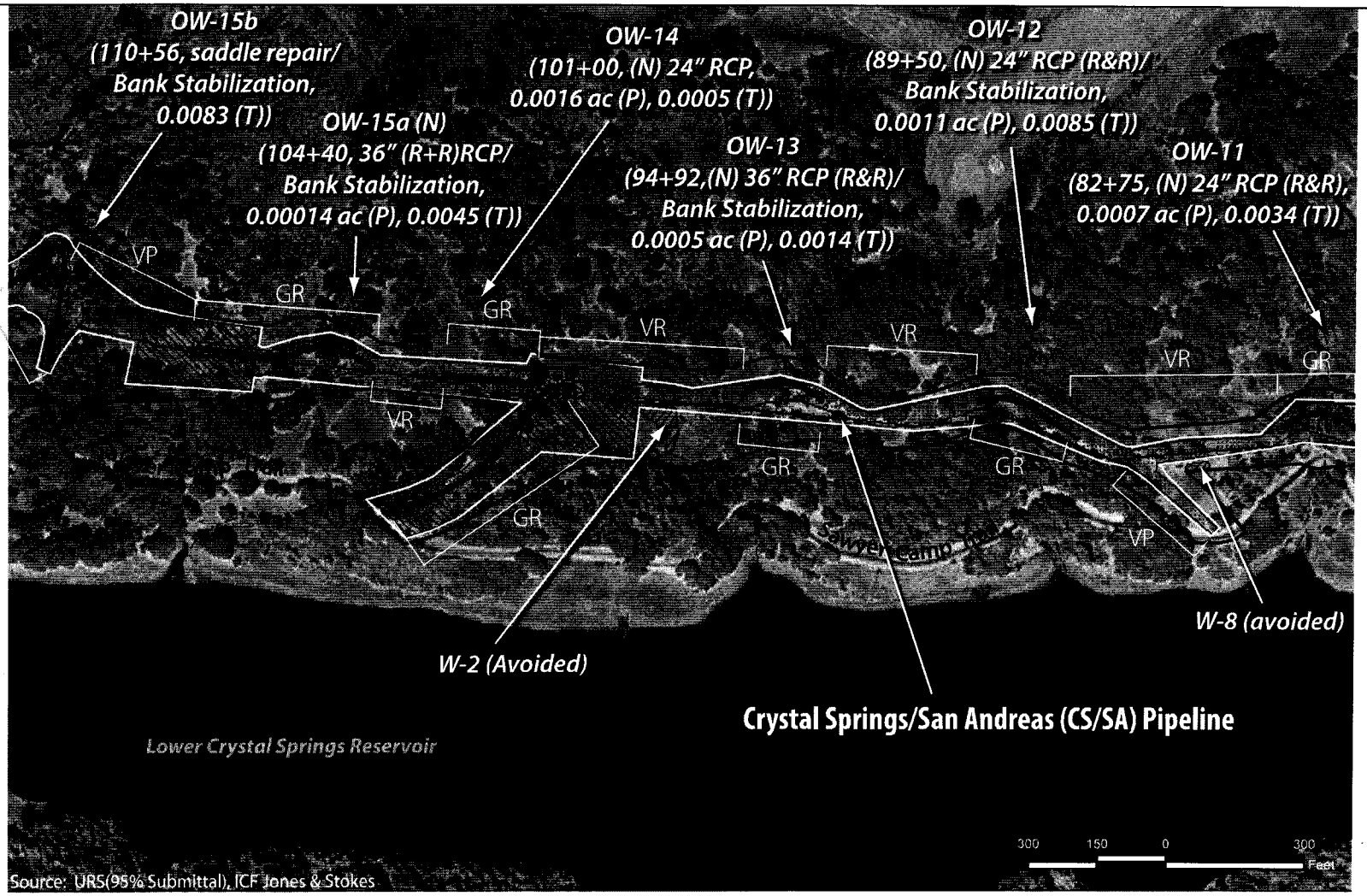
Contact: Anastasio Mavroudis

Figure 6c
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs /San Andreas Pipeline, Plan View



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area
Permanent Gravel Road
Grading Areas
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)
Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)

Access Road Types

GR	Gravel Road
VR	Vegetated Road (Clear and/or grade)
VP	Vegetated Path (Clear only)

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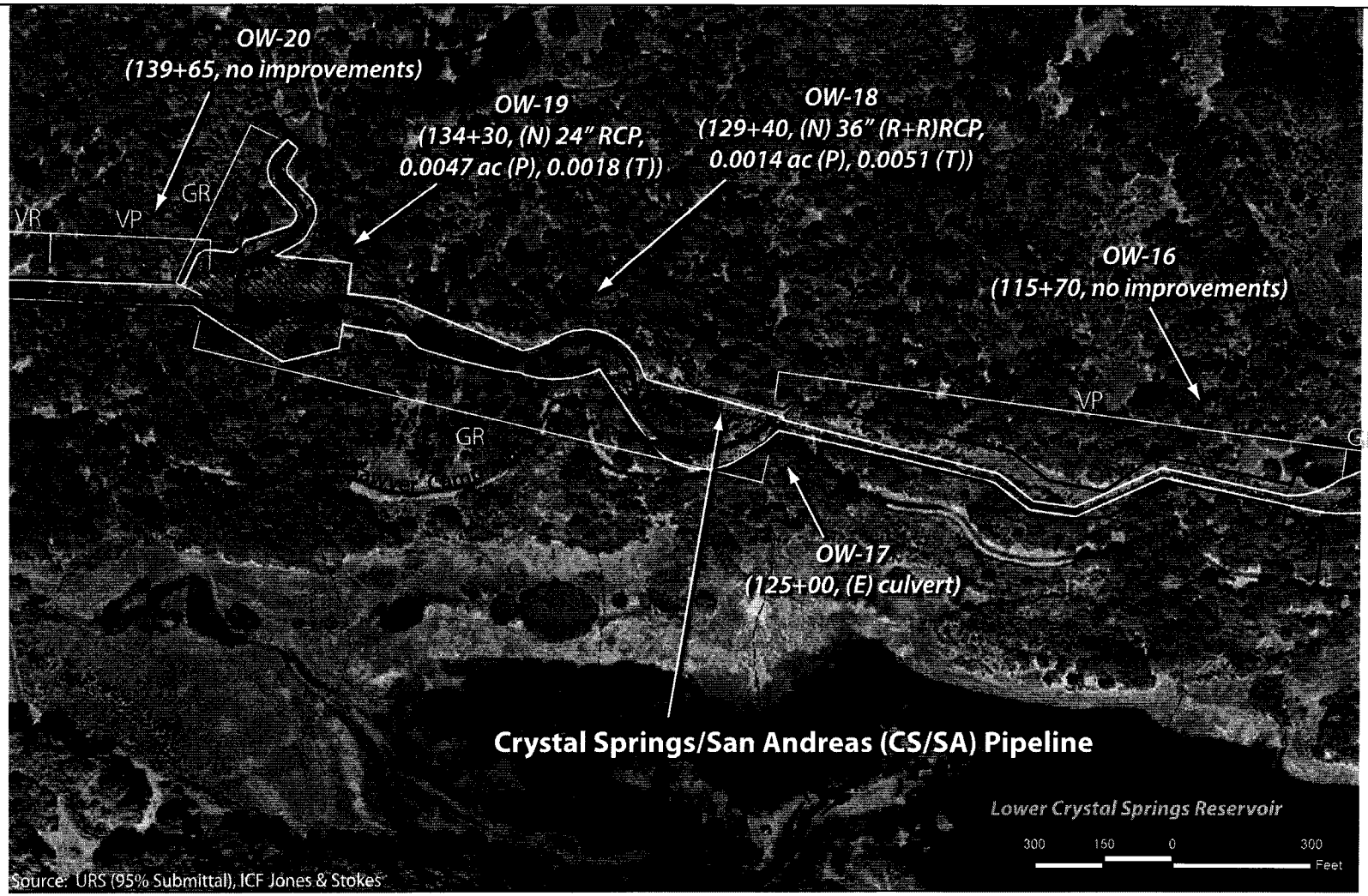
Contact: Anastasio Mavroudis

Figure 6d
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs /San Andreas Pipeline, Plan View



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area
Permanent Gravel Road
Grading Areas
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)
Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)

Access Road Types

GR	Gravel Road
VR	Vegetated Road (Clear and/or grade)
VP	Vegetated Path (Clear only)

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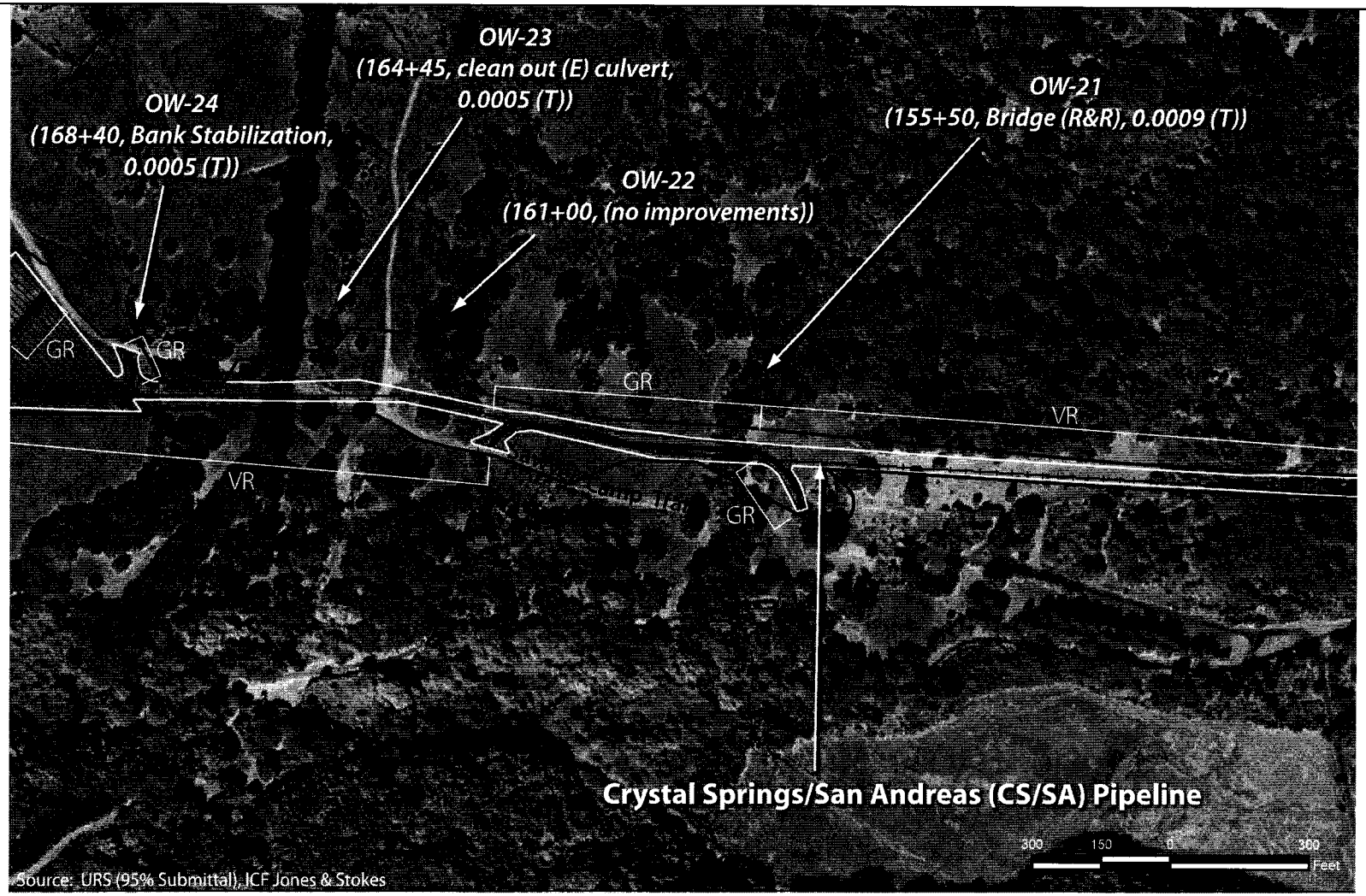
Contact: Anastasio Mavroudis

Figure 6e
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs /San Andreas Pipeline, Plan View



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area

Permanent Gravel Road
Grading Areas
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)

Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)

Access Road Types

GR	Gravel Road
VR	Vegetated Road (Clear and/or grade)
VP	Vegetated Path (Clear only)

00396.08 Permitting (404) (10-09)

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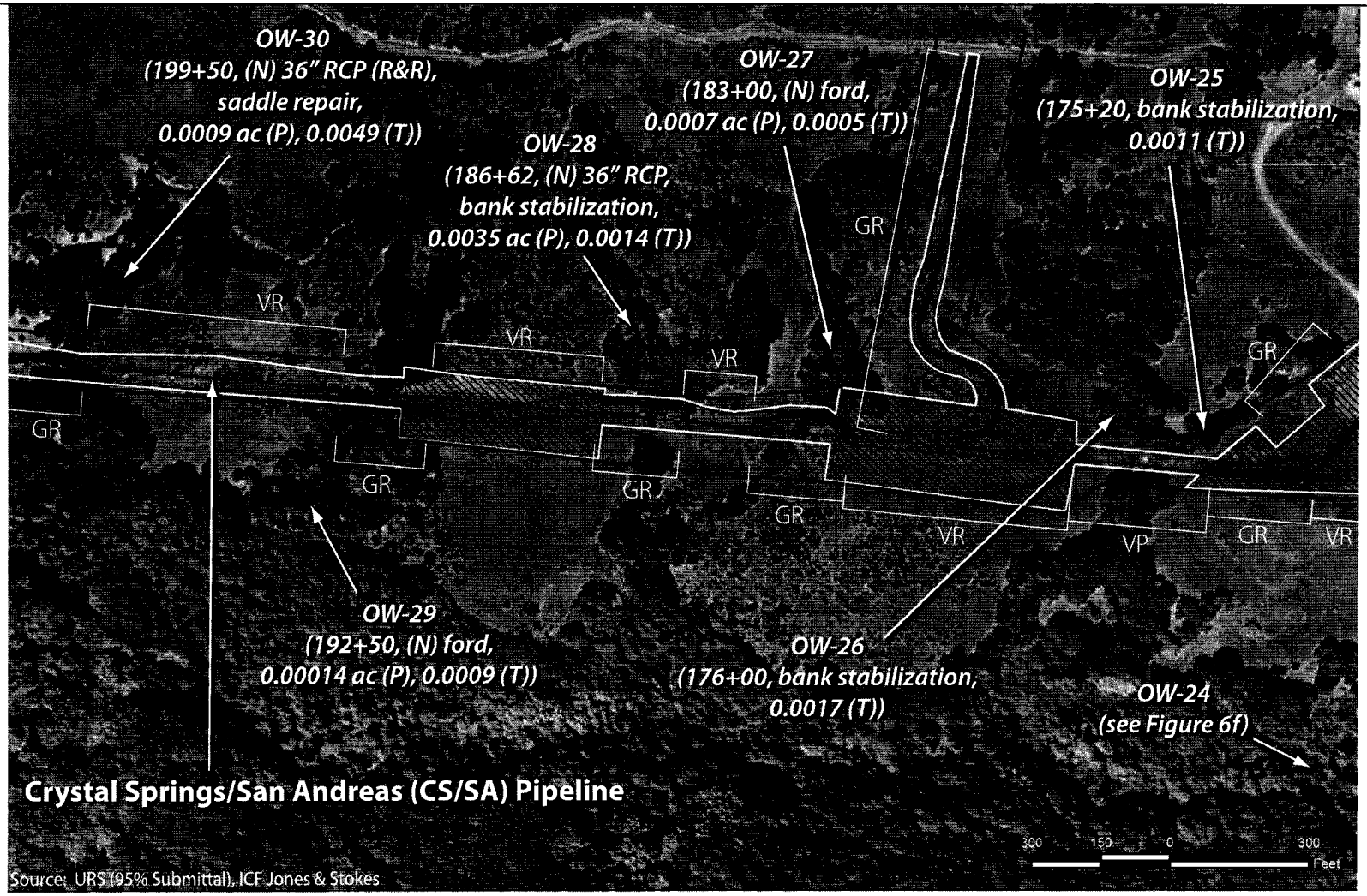
Contact: Anastasio Mavroudis

Figure 6f
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs /San Andreas Pipeline, Plan View



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area
Permanent Gravel Road
Grading Areas
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)
Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)

Access Road Types

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VR	Vegetated Road (Clear and/or grade)
VP	Vegetated Path (Clear only)

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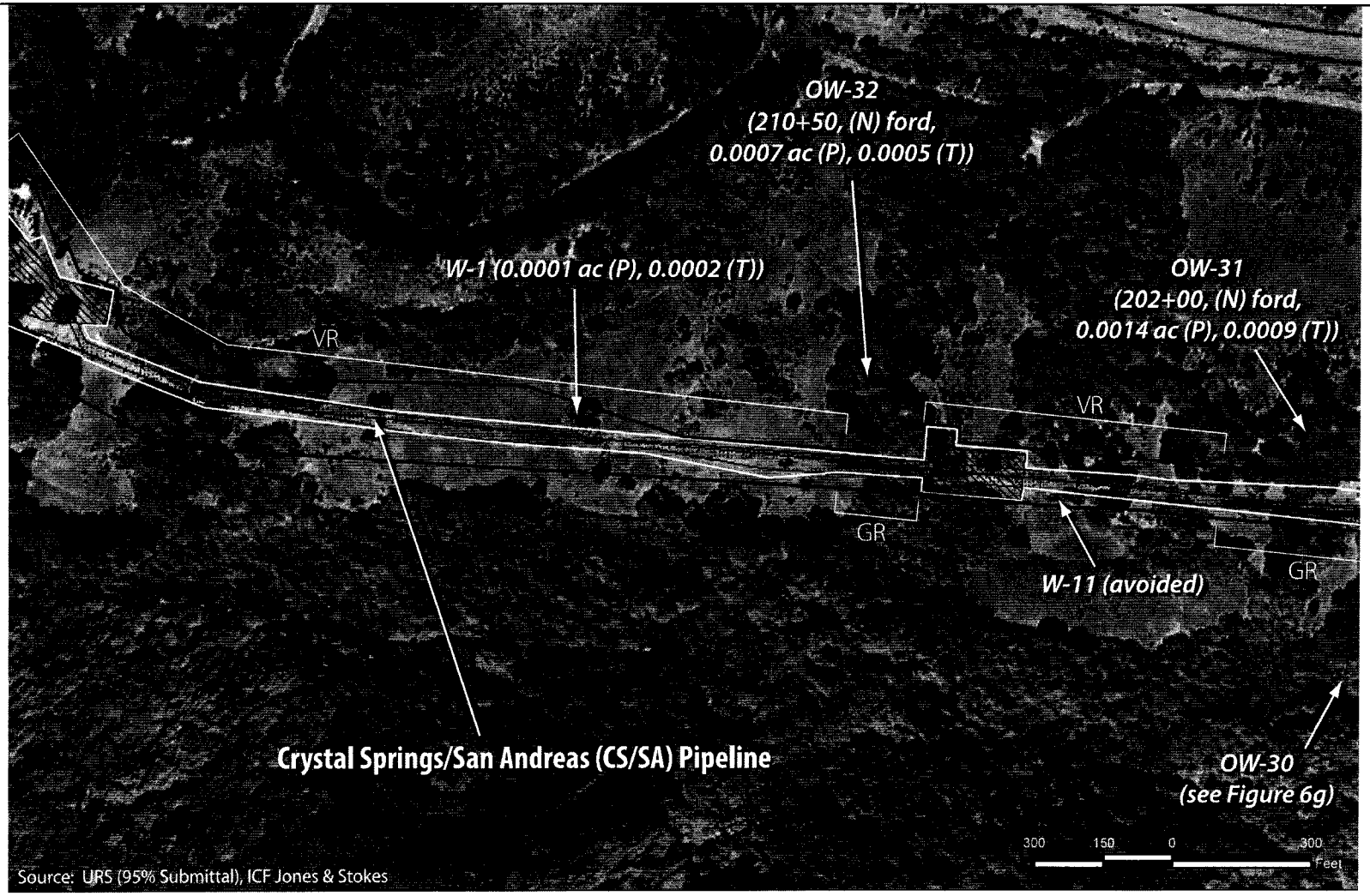
Contact: Anastasio Mavroudis

Figure 6g
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs /San Andreas Pipeline, Plan View



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area
Permanent Gravel Road
Grading Areas
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)
Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)

Access Road Types

GR	Gravel Road
VR	Vegetated Road (Clear and/or grade)
VP	Vegetated Path (Clear only)

00396.08 Permitting (404) (10-09)

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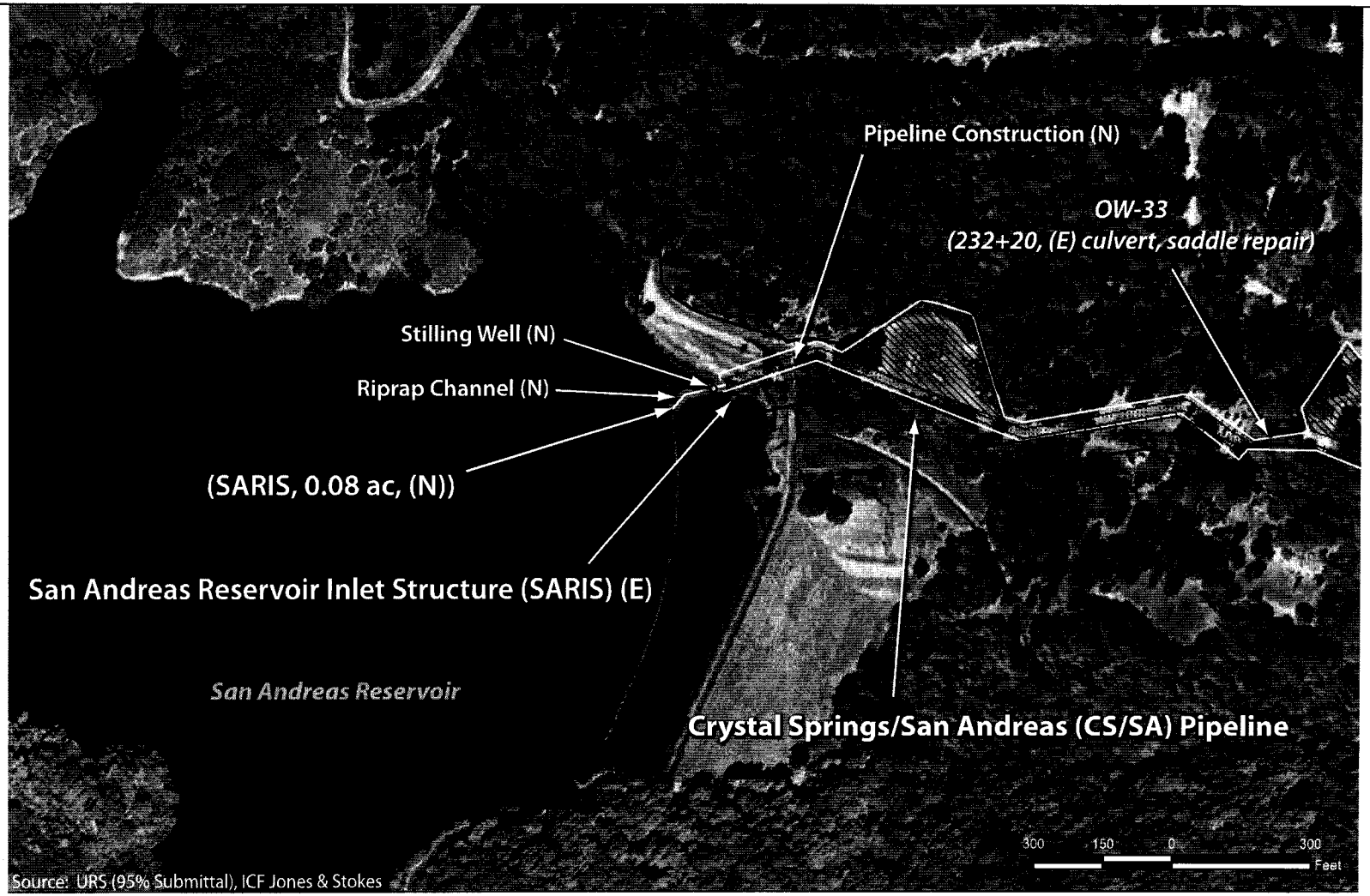
Contact: Anastasio Mavroudis

Figure 6h
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs /San Andreas Pipeline, Plan View



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area
Permanent Gravel Road
Grading Areas
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)
Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)

Access Road Types

GR	Gravel Road
VR	Vegetated Road (Clear and/or grade)
VP	Vegetated Path (Clear only)

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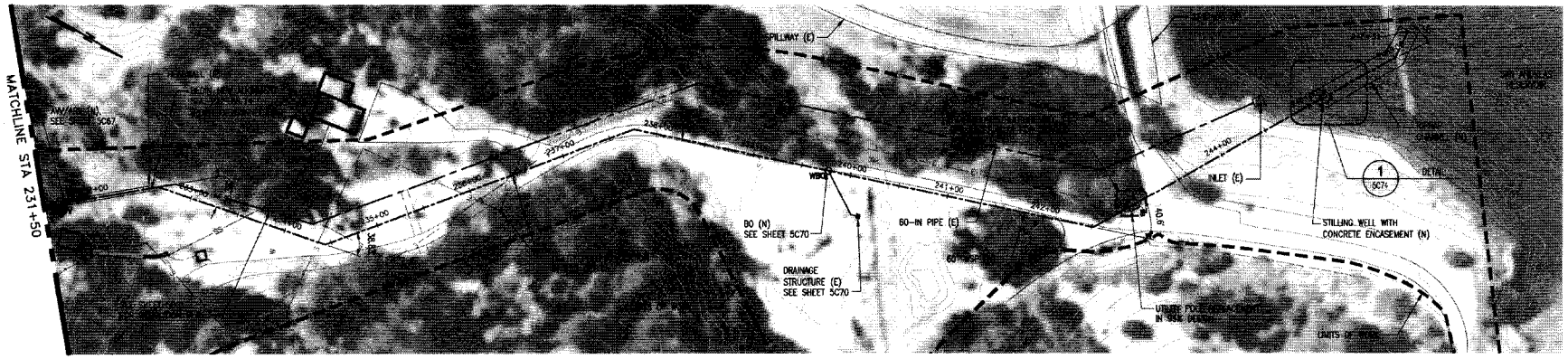
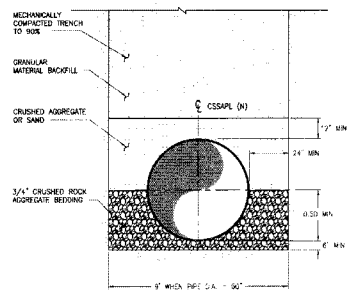
Contact: Anastasio Mavroudis

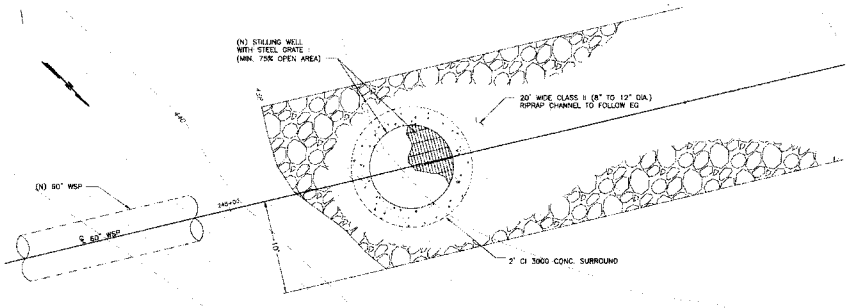
Figure 6i
CS/SA Transmission System Upgrade Project – USACE File #400143S, Crystal Springs /San Andreas Pipeline, San Andreas Reservoir Inlet Structure, Plan View



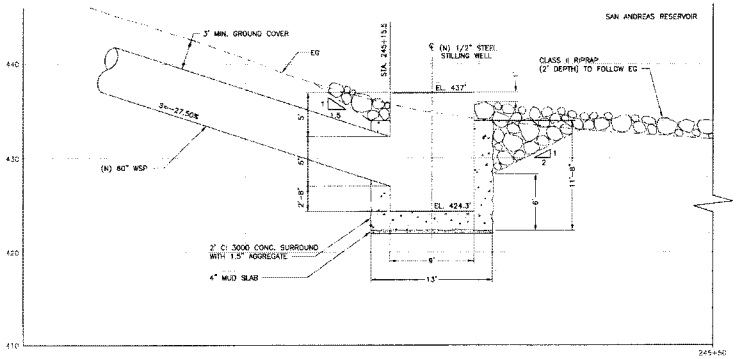
PLAN



TRENCH BACKFILL DETAILS



PLAN DETAILS



PROFILE DETAILS

Source: URS (65% Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
Location: San Mateo County, CA
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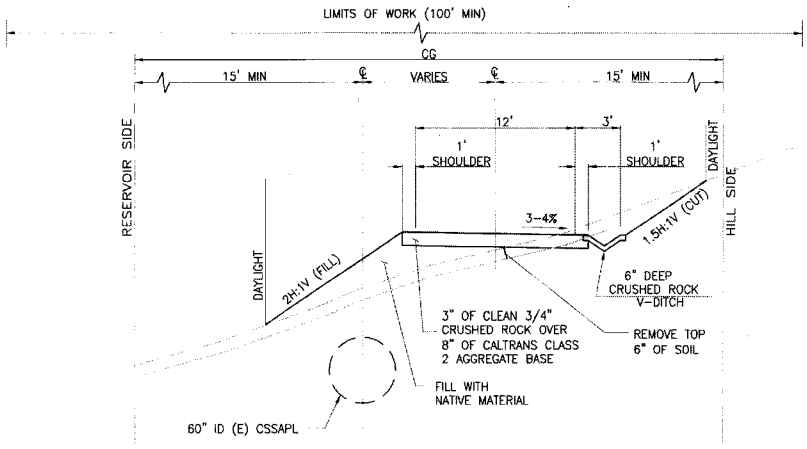
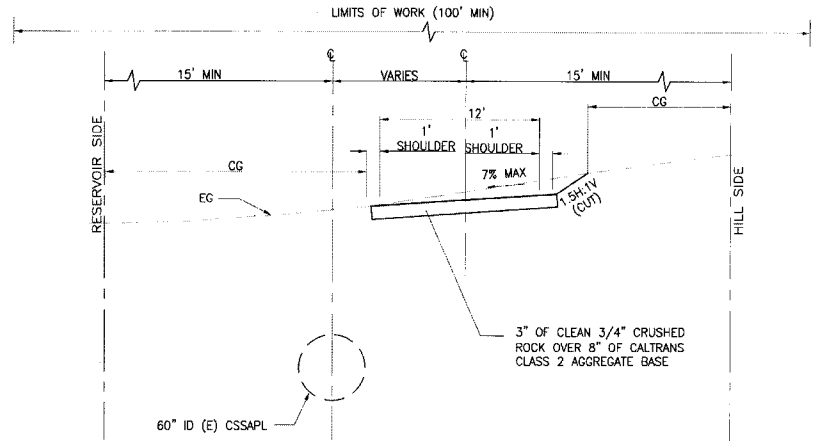
Contact: Anastasio Mavroudis

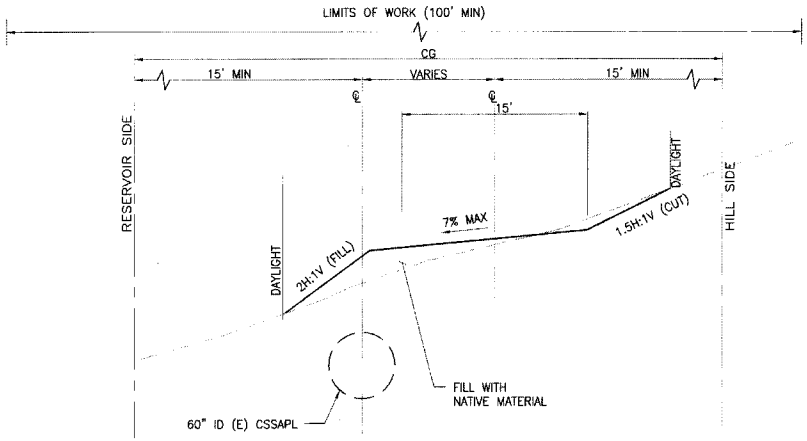
Figure 6j
CS/SA Transmission System Upgrade Project – USACE File #400143S, (San Andreas Inlet Structure Details)



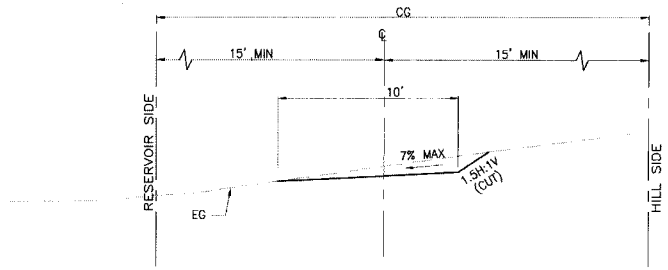
GRAVEL ACCESS WITH V-DITCH TYPICAL SECTION (1)
SCALE: NTS



GRAVEL ACCESS WITHOUT V-DITCH TYPICAL SECTION (2)
SCALE: NTS



CLEAR AND GRUBB ACCESS ROAD TYPICAL SECTION (3)
SCALE: NTS



FOOTPATH AND SMALL UTILITY VEHICLE ACCESS TYPICAL SECTION (4)
SCALE: NTS

Source: URS (65% Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

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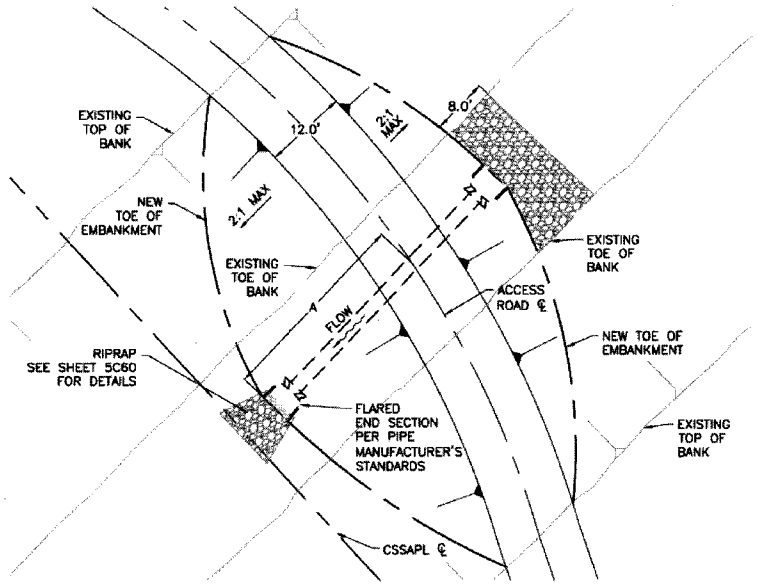
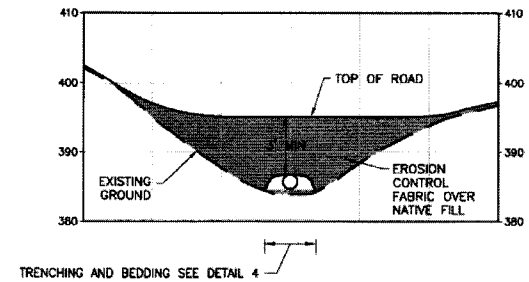
Contact: Anastasio Mavroudis

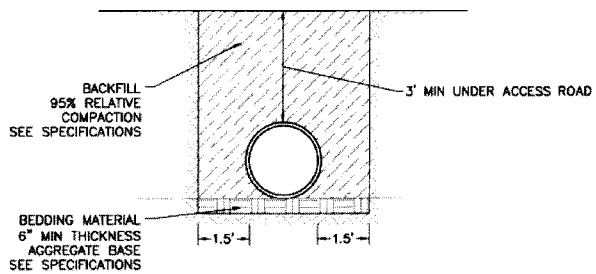
Figure 6k
CS/SA Transmission System Upgrade Project – USACE File #400143S, (Typical Access Road Sections)



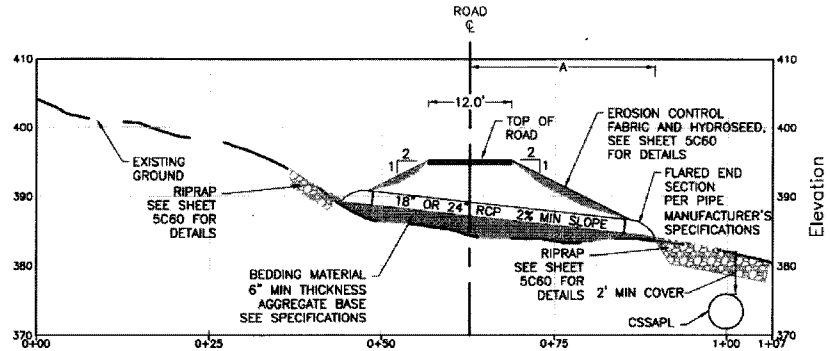
MINOR PIPE CROSSING PLAN VIEW (1)



MINOR PIPE CROSSING AT UPSTREAM AND DOWNSTREAM END (2)



TRENCHING AND BEDDING (4)



MINOR PIPE CROSSING PROFILE (3)

Source: URS (65% Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

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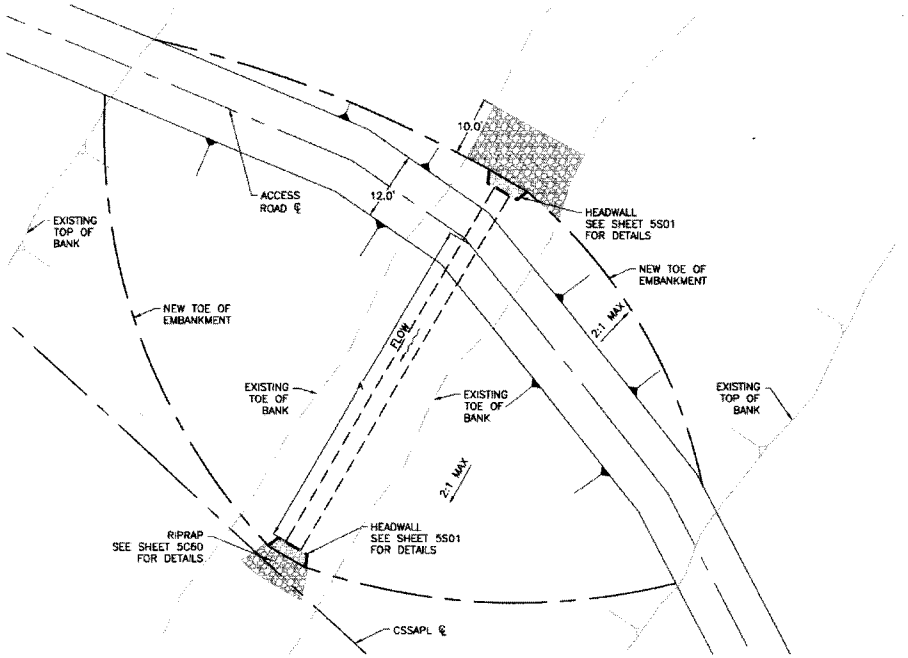
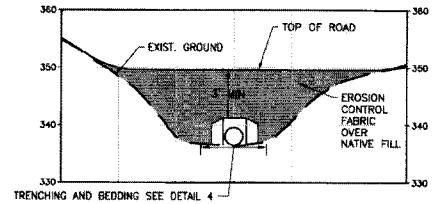
Contact: Anastasio Mavroudis

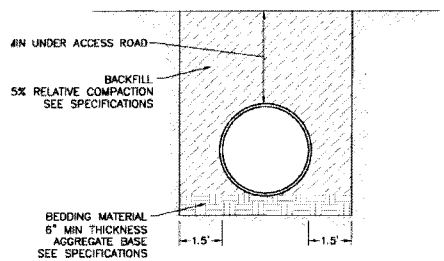
Figure 6l
CS/SA Transmission System Upgrade Project – USACE File #400143S, (Minor Crossings Details)



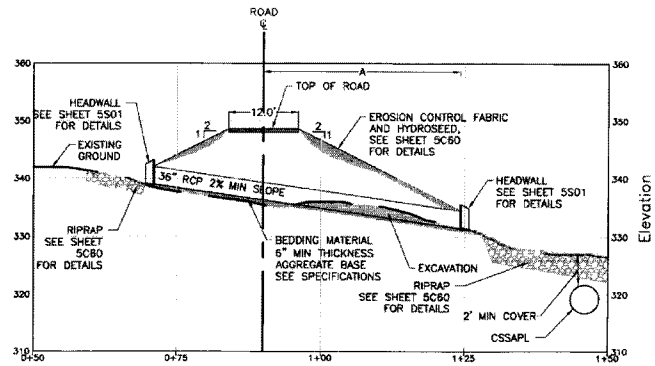
MAJOR PIPE CROSSING PLAN VIEW (1)



MAJOR PIPE CROSSING AT UPSTREAM AND DOWNSTREAM HEADWALL (2)



TRENCHING AND BEDDING (4)



MAJOR PIPE CROSSING PROFILE (3)

5' 0 5' 10'

Source: URS (65% Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

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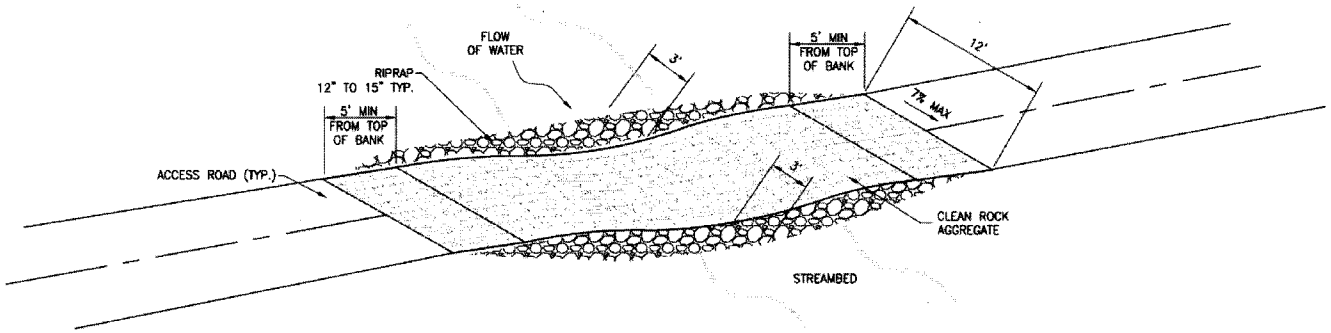
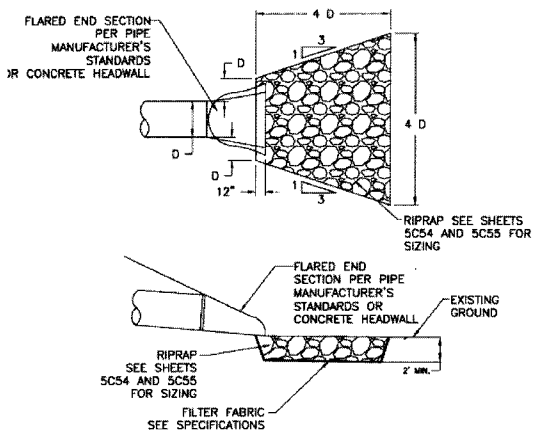
Contact: Anastasio Mavroudis

Figure 6m
CS/SA Transmission System Upgrade Project – USACE File #400143S, (Major Crossing Details)



ISOMETRIC VIEW: TYPICAL GRAVEL FORD (1 / 5C59)



NOTE:
1. D = PIPE DIAMETER = 18", 24" OR 36"

PIPE OUTLET PROTECTION (4 / –)

Source: URS (65% Submittal), ICF Jones & Stokes.

00396.08 Permiting (404) (10-09)

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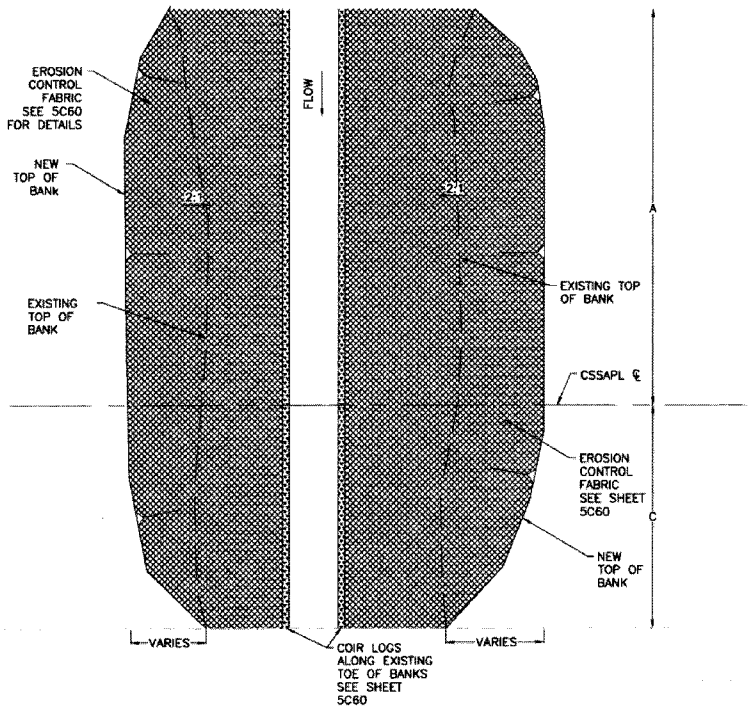
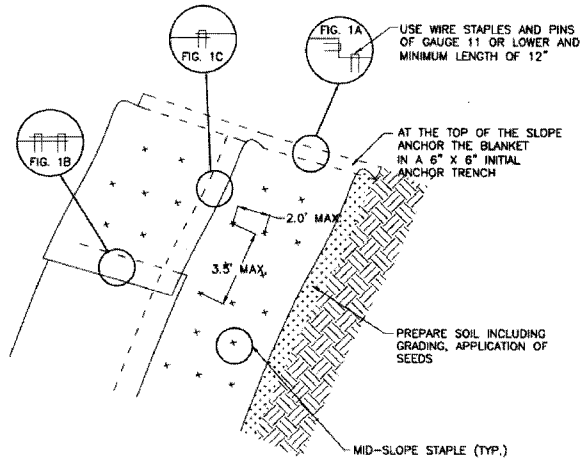
Contact: Anastasio Mavroudis

Figure 6n
CS/SA Transmission System Upgrade Project – USACE File #400143S, (Typical Ford and Pipe Outlet Details)

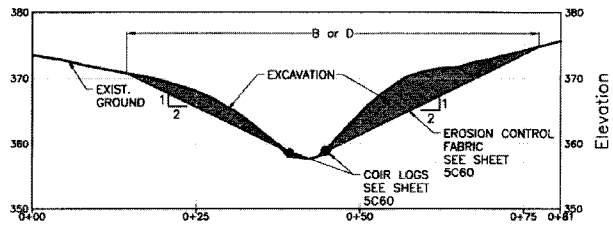


TYPICAL STREAM BANK IMPROVEMENT PLAN VIEW (1)

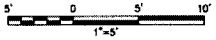


NOTES:
1. USE ROLANKA BIOD-OCF 30, NORTH AMERICAN GREEN BIONET SC 150BN OR EQUIVALENT
2. COMPLETE INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

EROSION CONTROL FABRIC (2)



TYPICAL STREAM BANK IMPROVEMENT CROSS-SECTION (2)



Source: URS (65% Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

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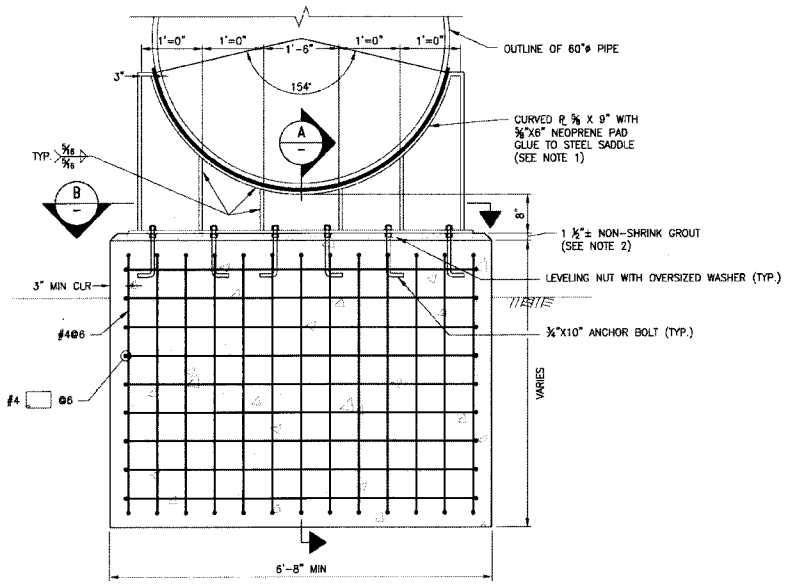
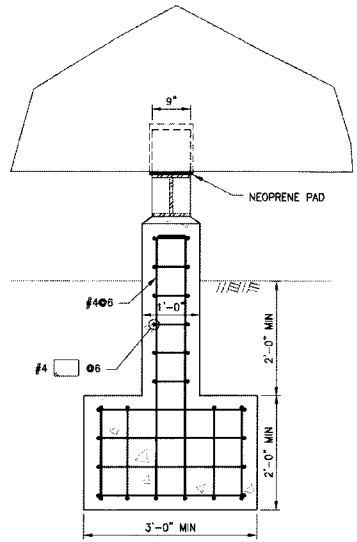
Contact: Anastasio Mavroudis

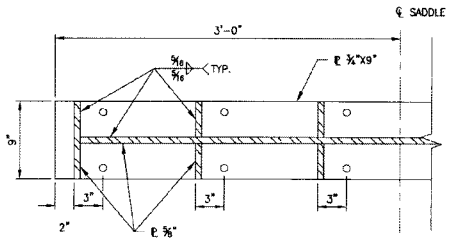
Figure 6o
CS/SA Transmission System Upgrade Project – USACE File #400143S, (Typical Bank Stabilization Details)



SADDLE – ELEVATION
SCALE: 1"=1'-0"



SADDLE – SECTION (A)
SCALE: 1"=1'-0"



SADDLE – SECTION (B)
SCALE: 2"=1'-0"

PIPE SADDLE REPAIR/REPLACEMENT LOCATIONS
(PIPELINE STA)
110+10
200+00
231+87
232+26

NOTES:

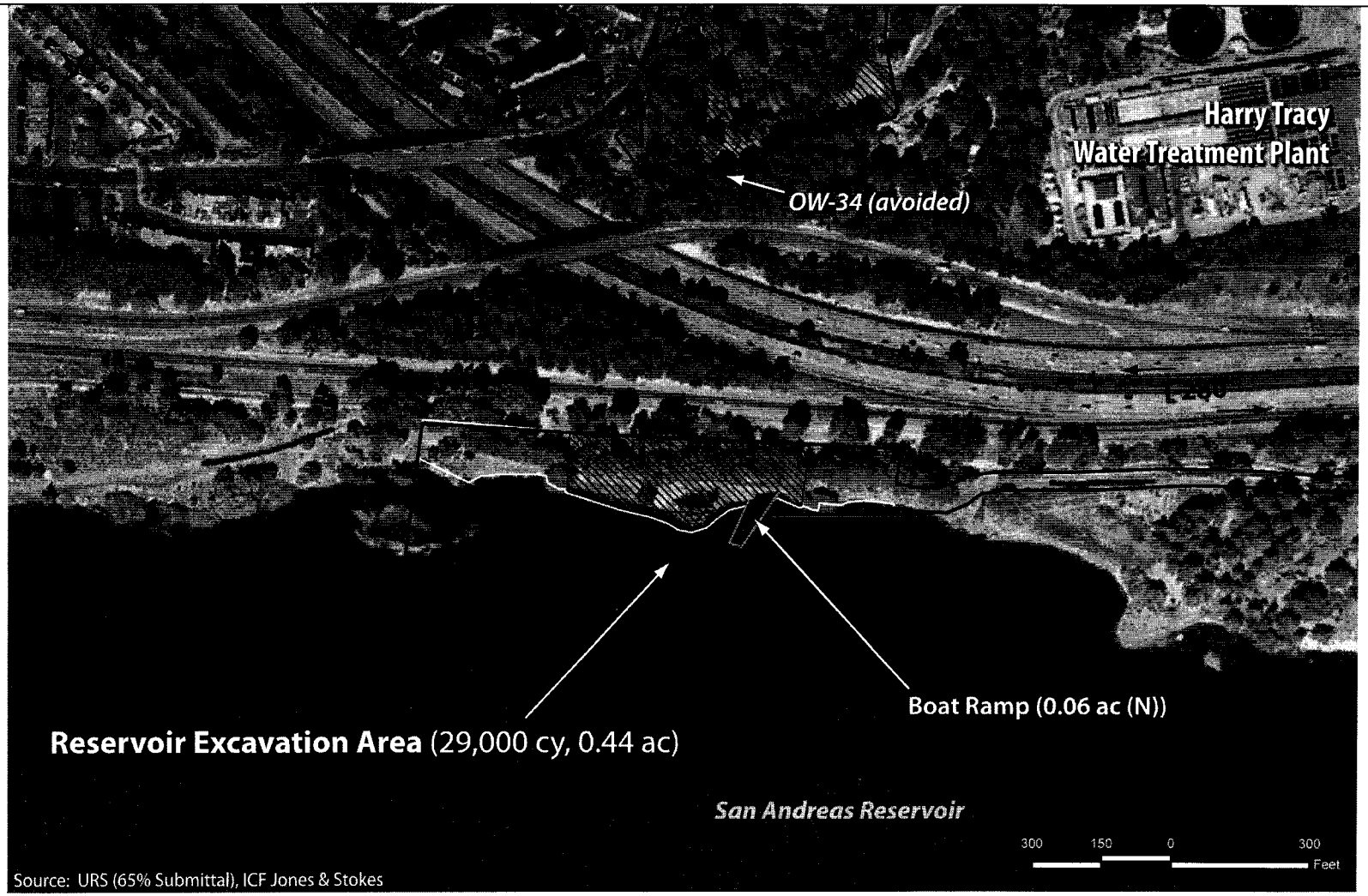
1. PRIOR TO FABRICATION OF METAL SADDLES, CONTRACTOR SHALL TEMPLATE THE CURVATURE OF THE PIPE AT THE POINTS OF SUPPORTS TO OBTAIN THE PROPER SADDLE FITS
2. TEMPORARILY SUPPORT PIPE. ADJUST LEVELING PLATES. GROUT SADDLE AFTER PIPE IS PRESSURIZED AND STRAIGHTENED.

Source: URS (65% Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
Location: San Mateo County, CA
Applicant: San Francisco Public Utilities Commission, 1155 Market Street, 6th Floor, San Francisco, CA 94103
Contact: Anastasio Mavroudis

Figure 6a
CS/SA Transmission System Upgrade Project – USACE File #400143S, (Saddle Repair Details)



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area
Permanent Gravel Road
Grading Areas
Excavation Area
Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
Temporary (T)
Permanent (P)

00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
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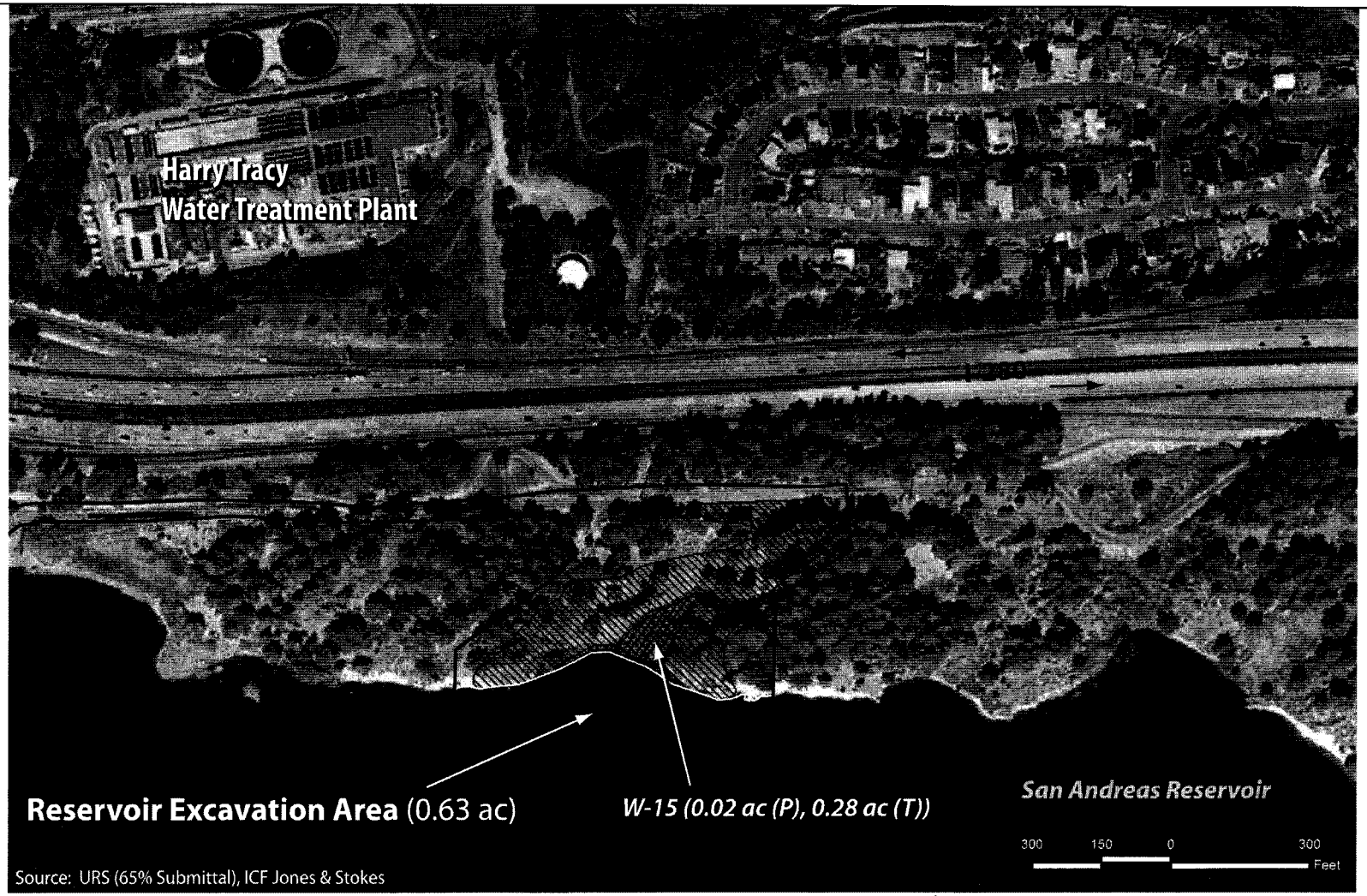
Contact: Anastasio Mavroudis

Figure 7a
CS/SA Transmission System Upgrade Project – USACE File #400143S, San Andreas Outlet Structure 2, Plan View



Project Boundary
Clearing Boundary
Pipeline Alignment
Laydown / Staging Area
Permanent Gravel Road
Grading Areas
Excavation Area
Wetlands [W]
Drainage (Other Waters) [OW]
Existing (E)
New (N)
Remove & Replace (R+R)
Reinforced Concrete Pipe (RCP)
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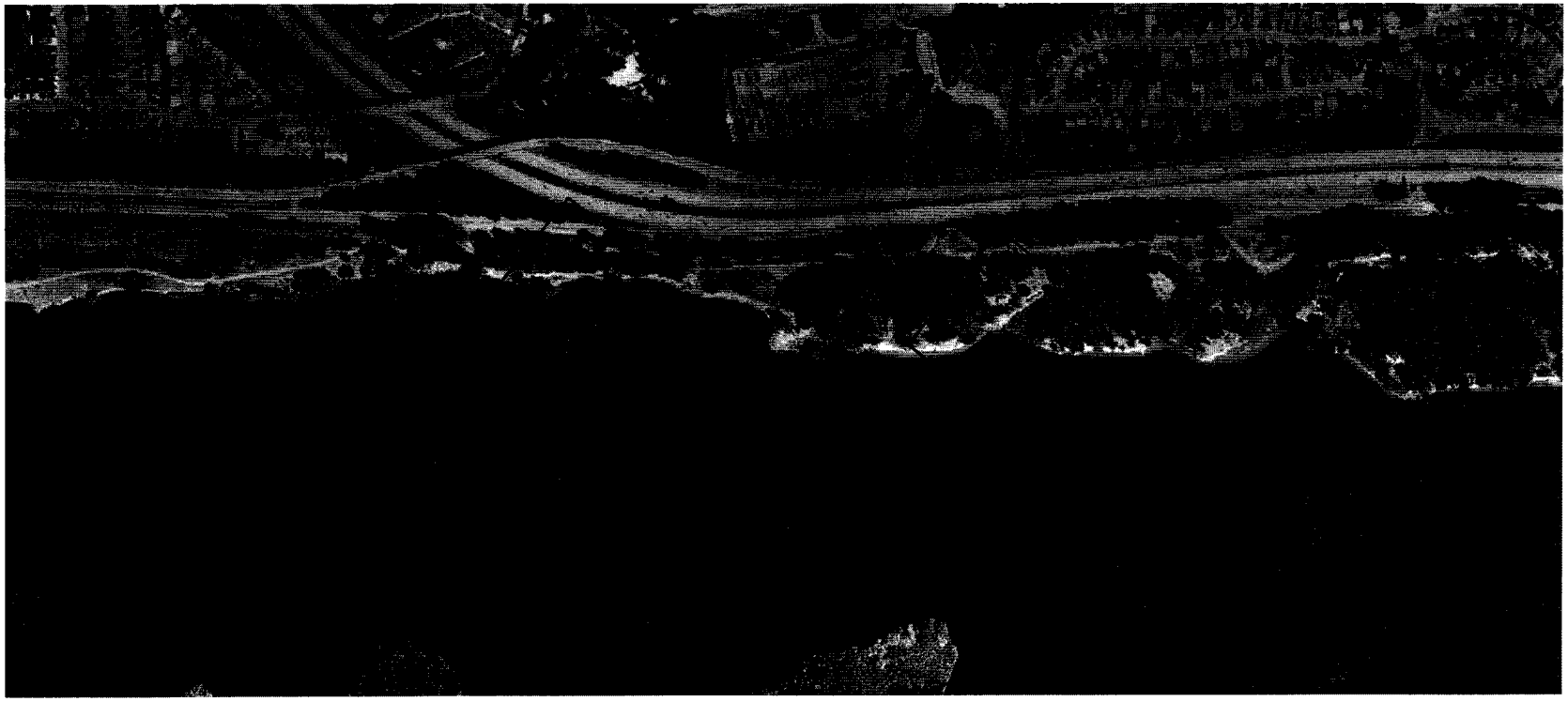
Contact: Anastasio Mavroudis

Figure 7b
CS/SA Transmission System Upgrade Project – USACE File #400143S, San Andreas Outlet Structure 3, Plan View



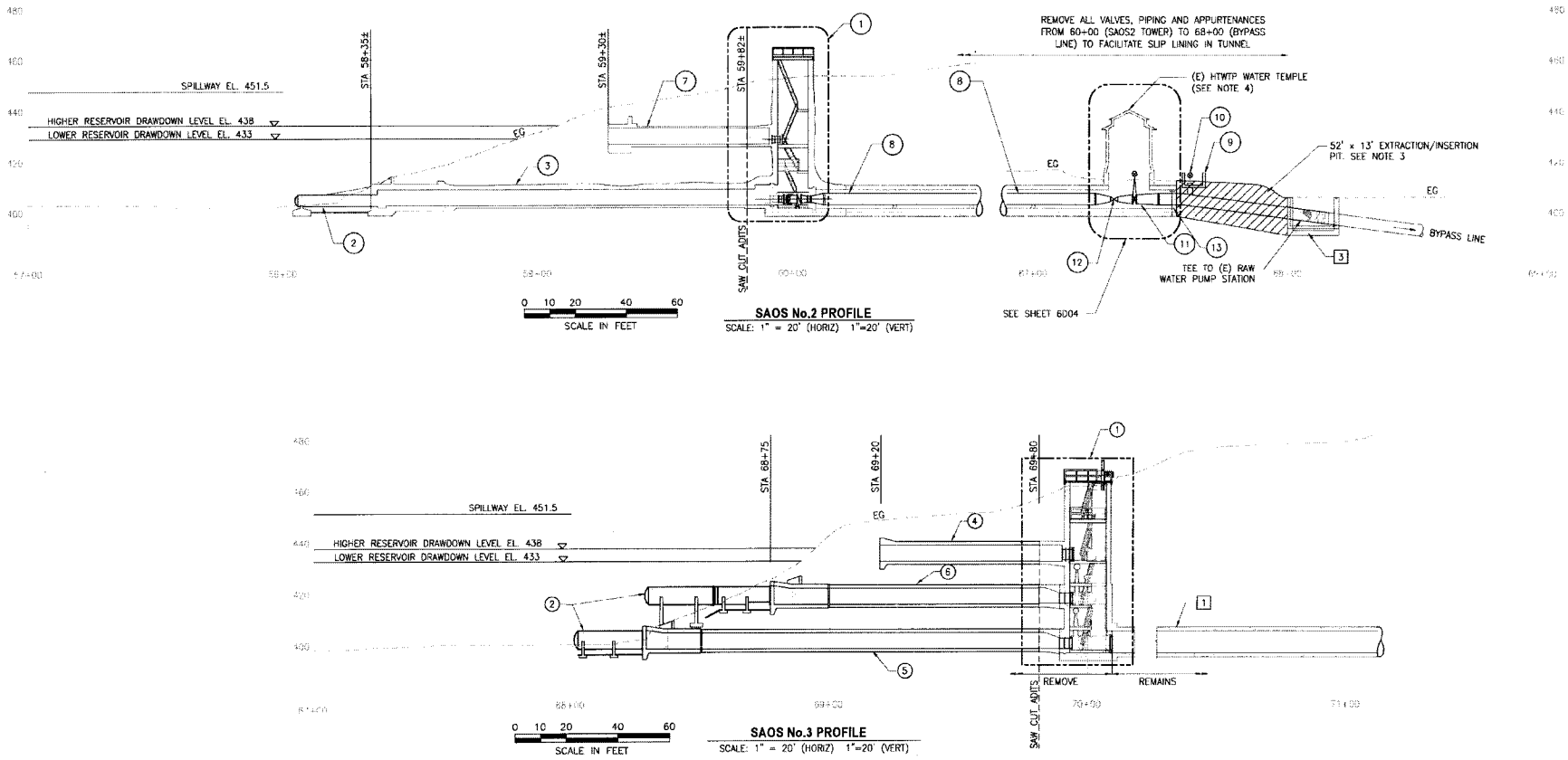
0 300 600 1200
SCALE IN FEET

Source: URS (65%, Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
Location: San Mateo County, CA
Applicant: San Francisco Public Utilities Commission, 1155 Market Street, 6th Floor, San Francisco, CA 94103
Contact: Anastasio Mavroudis

Figure 7c
CS/SA Transmission System Upgrade Project – USACE File #400143S, SAOS 2 and 3, Preferred Disposal Area



Source: URS (65%, Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
Location: San Mateo County, CA
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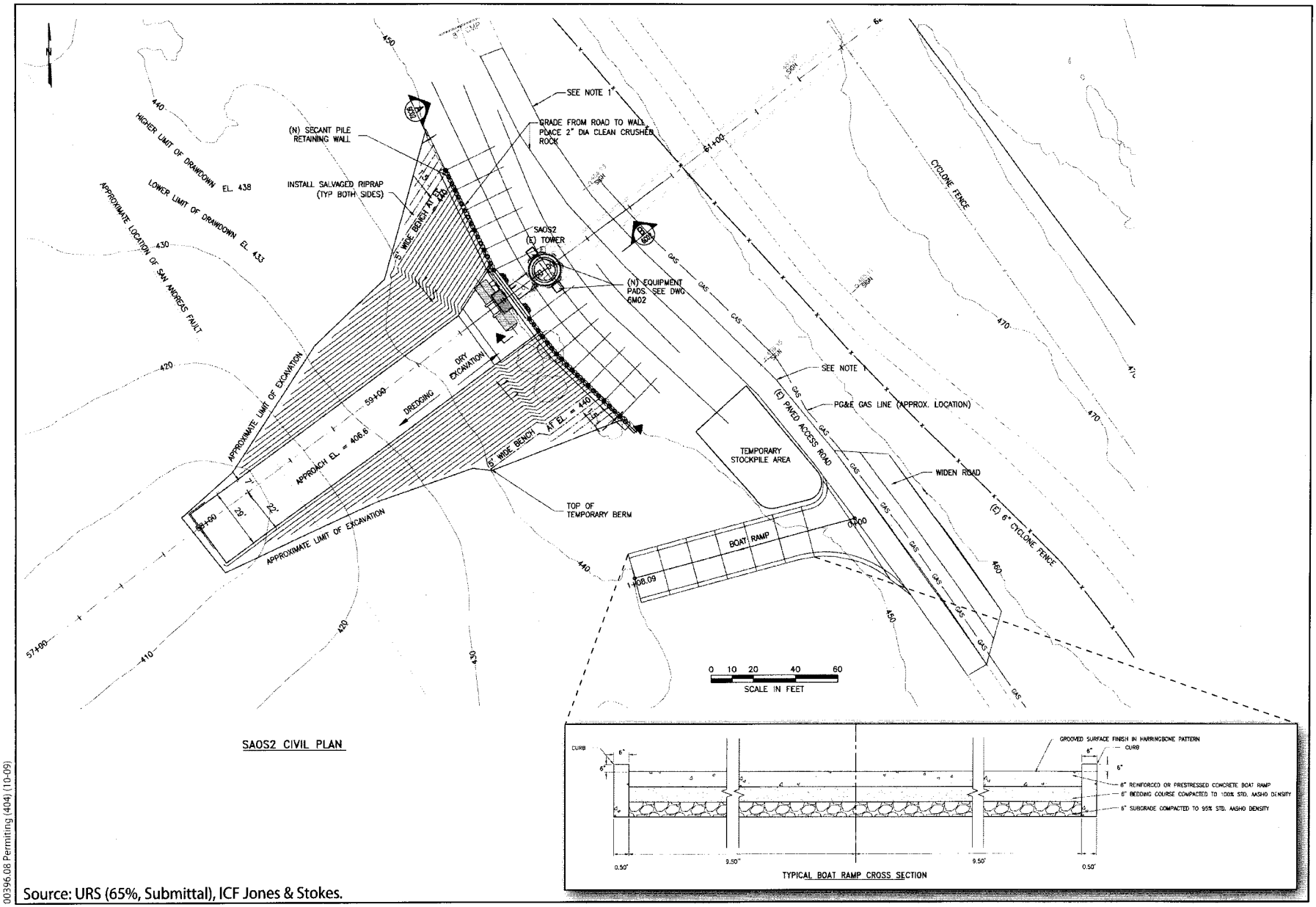
Contact: Anastasio Mavroudis

Figure 7d
CS/SA Transmission System Upgrade Project – USACE File #400143S, SAOS 2 and 3, Existing Profile Views



Source: URS (65%, Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

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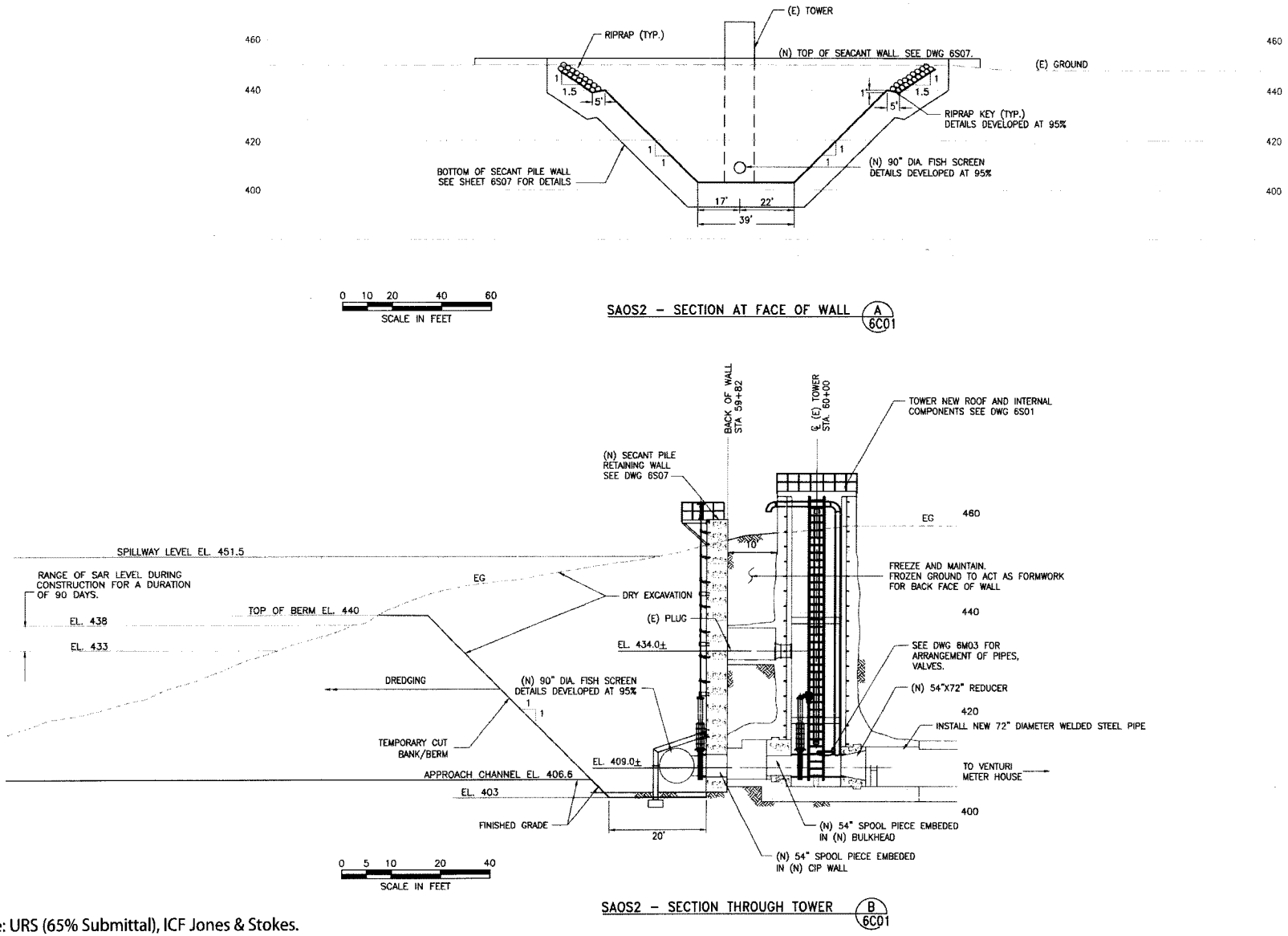
Contact: Anastasio Mavroudis

Figure 7e
CS/SA Transmission System Upgrade Project – USACE File #400143S, SAOS 2, Proposed Plan View



Source: URS (65% Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
Location: San Mateo County, CA
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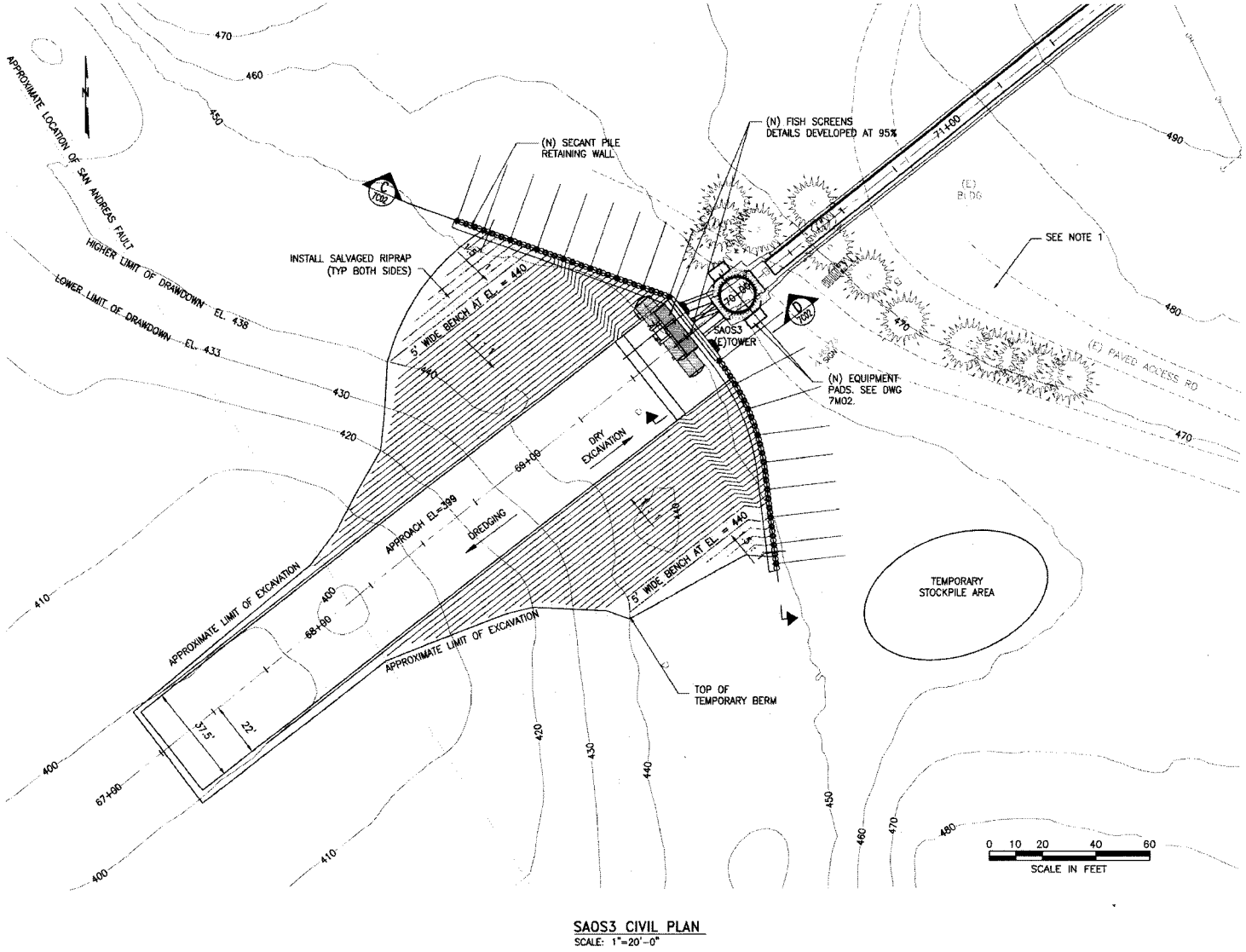
Contact: Anastasio Mavroudis

Figure 7f
CS/SA Transmission System Upgrade Project – USACE File #400143S, SAOS 2, Profile and Section



SAOS3 CIVIL PLAN
SCALE: 1"=20'-0"

Source: URS (65%, Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
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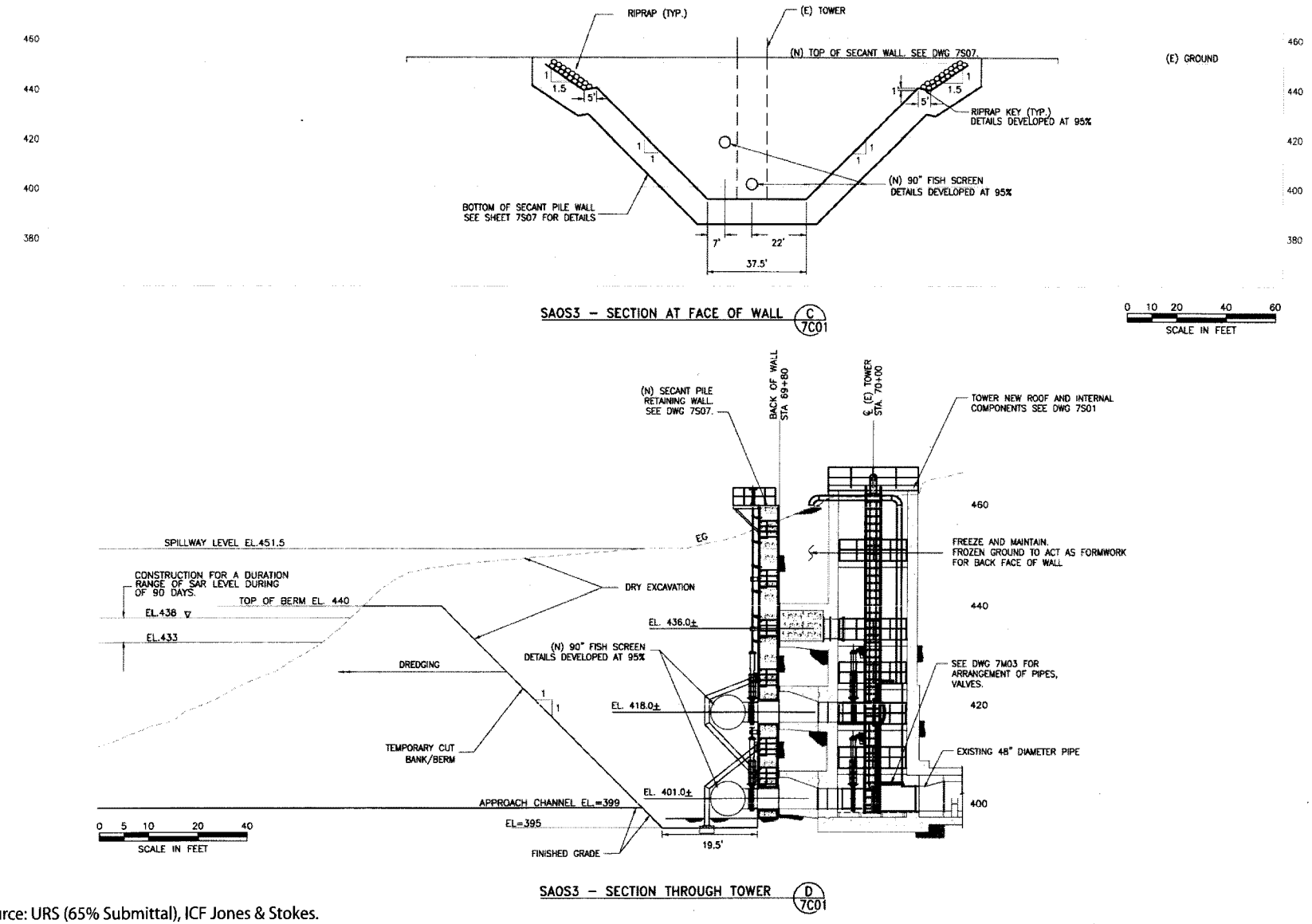
Applicant: San Francisco Public Utilities Commission, 1155 Market Street, 6th Floor, San Francisco, CA 94103
Contact: Anastasio Mavroudis

Figure 7g
CS/SA Transmission System Upgrade Project – USACE File #400143S, SAOS 3, Proposed Plan View



Source: URS (65% Submittal), ICF Jones & Stokes.

00396.08 Permitting (404) (10-09)

Purpose: Facility upgrades – reduce seismic vulnerability, improve facility reliability and meet DSOD requirements
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Contact: Anastasio Mavroudis

Figure 7h
CS/SA Transmission System Upgrade Project – USACE File #400143S, SAOS 3, Profile and Section