As an added measure, and to meet post-closure maintenance requirements for inactive nonhazardous waste landfills (SDRWQCB 1997 and 2000), long-term monitoring of groundwater quality will be instituted at this site. The long-term water quality monitoring plan for the site is presented in the Data Evaluation Report (Anchor 2004a).

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TABLES

Table 1
Bulk Sediment Chemistry - Sediment Cores SW04 and SW08

Analyte of Concern	Background Sediment Concentrations [1]	California TTLC Criteria [2]	SW04 8/7/2001 0-2 cm	SW04 9/10/2002 0-2 cm	SW04 8/27/2002 0-2 ft	SW04 8/27/2002 2-4.1 ft	SW04 Depth Averaged	SW08 8/6/2001 0-2 cm	SW08 8/28/2002 0-2 ft	SW08 8/28/2002 0-2 ft	SW08 8/28/2002 2-4 ft	SW08 8/28/2002 4-6 ft	SW08 8/28/2002 6-6.5 ft	SW08 Depth Averaged
Conventionals														
Fines content (%)			31.8	-	-	-	31.8	68.8	-	-	-	-		68.8
TOC (% dry)			1.59	-	0.91	1.8	1.37	3.35	1.5	-	1.1	0.12	-	0.93
Metals (mg/kg)														
Arsenic	9	500	**95.5**	-	**67.7**	**107**	**89.65**	**25.5**	**26.6**	-	**13.2**	4.9	-	**15.12**
Cadmium	0.29	100	**2.35**	-	**0.79**	**3.17**	**2.05**	**0.67**	**1.13**	-	**0.86**	0.07	-	**0.69**
Chromium	57	2500	**64.7**	-	**25.5**	**97.2**	**63.36**	**77.8**	**110**	-	**109**	7.4	-	**76.00**
Copper	120	2500	**1880**	-	**370**	**2170**	**1325.60**	**1030**	**1540**	-	**1480**	49	-	**1029.94**
Lead	48	1000	**482**	-	**154**	413	**295.73**	**248**	**343**	-	**341**	10.6	-	**233.26**
Mercury	0.56	20	**1.19**	-	**1.14**	**7.4**	**4.36**	**2.53**	**4.97**	-	**5.95**	0.3	-	**3.75**
Nickel	17	2000	**20.1**	-	8.3	**40**	**24.87**	**22.7**	16.8	-	9.1	2.6	-	9.71
Selenium	0.72	100	**1.2**	-	**1.2 U**	**3.1**	**2.19**	**1 U**	**1.6 U**	-	**1.4 U**	1.2 U	-	**1.6 U**
Silver	1	500	**1.72**	-	0.59	1.4	**1.04**	**1.38**	**1.04**	-	0.49	0.03	-	0.53
Zinc	210	5000	**4550**	-	**669**	**1450**	**1158.31**	**859**	**1410**	-	**786**	33.7	-	**749.46**
PCB (µg/kg)														
Aroclor 1016			190 U	-	150 U	1500 U	1500 U	330 U	1900 U	950 U	1400 U	130 U	12 U	1900 U
Aroclor 1221			370 U	-	290 U	2900 U	2900 U	650 U	3800 U	1900 U	2800 U	250 U	24 U	3800 U
Aroclor 1232			190 U	-	150 U	1500 U	1500 U	330 U	1900 U	950 U	1400 U	130 U	12 U	1900 U
Aroclor 1242			190 U	-	150 U	1500 U	1500 U	330 U	1900 U	950 U	1400 U	130 U	12 U	1900 U
Aroclor 1248			190 U	-	1300	16000	8664	990	9300	12000	15000	1100	12 U	8223
Aroclor 1254			2400	-	1200	13000	7153	2400	7000	8700	12000	600	12 U	6303
Aroclor 1260			600	-	610	6500	3570	640	4100	4400	6600	290	12 U	3427
Total PCBs	170	50000	**3000**		**3110**	**35500**	**19387**	**4030**	**20400**	**25100**	**33600**	**1990**	0	**17954**
PAHs (µg/kg)														
2-Methylnaphthalene			31	-	10	460	240	32	18	-	50	6.1 U	-	25
Acenaphthene			110	-	22	3100	1594	83	54	-	110	6.1 U	-	57
Acenaphthylene			120	-	47	190	122	280	100	-	84	6.1 U	-	66
Anthracene			710	-	150	2400	1312	1500	360	-	360	10	-	256
Benz(a)anthracene			1100	-	370	3400	1937	2300	770	-	950	17	-	601
Benzo(a)pyrene			1500	-	1100	5800	3527	2900	2600	-	3000	85	-	1918
Benzo(b)fluoranthene			1600	-	950	5800	3456	3500	2900	-	3000	88	-	2025
Benzo(ghi)perylene			640	-	630	2100	1393	1300	970	-	1000	26	-	677
Benzo(k)fluoranthene			1300	-	790	5200	3065	2400	2600	-	2900	85	-	1860
Chrysene			1800	-	580	4500	2615	4900	1200	-	1200	38	-	862
Dibenzo(a,h)anthracene			230	-	120	650	395	450	310	-	370	8.4	-	233
Fluoranthene			2100	-	700	10000	5485	3500	1000	-	1200	25	-	776
Fluorene			180	-	34	1500	785	220	77	-	120	6.1 U	-	70
Indeno[1,2,3-cd]pyrene			880	-	750	2600	1711	1800	1400	-	1300	34	-	927
Naphthalene			38	-	20	3800	1949	38	19	-	58	6.1 U	-	28
Phenanthrene			1100	-	260	5000	2699	1300	490	-	620	13	-	387
Pyrene			2000	-	1400	18000	9906	2600	6000	-	8400	51	-	4826
Total PAHs		-	15439	-	7933	74500	42191	29103	20868	-	24722	510.9	-	15617

Notes:
U = analyte not detected at the indicated detection limit
From E[x]ponent (2003)

[1] Background sediment concentrations defined as 95% UPL Final Reference Pool levels from E[x]ponent (2003)
[2] TTLC = Total Threshold Limit Concentration, per CCR Title 22, Division 4.5, Chapter 11, Article 3.

Table 2
Chemical Concentrations Measured In 1998 Confirmatory Sampling Event

Parameter	1998 Sediment Cleanup Criteria (per Order 98-38)	Background Sediment Concentrations [1]	A1 8/17/1998 10 ft	A2 8/13/1998 5 ft	A3 8/13/1998 8 ft	B1 8/19/1998 6 ft	B2 8/10/1998 3.5 ft	B3 8/17/1998 5.5 ft	C1 8/19/1998 6.5 ft	C2 8/24/1998 4 ft	C2 8/31/1998 9 ft	D1 8/21/1998 8 ft	D2 8/25/1998 6 ft	D3 8/27/1998 5 ft
Metals (mg/kg)														
Copper	810	120	8.0	6	85	3.1	59	3.7	1.4	22	49	0 U	1.5	**650**
Lead	231	48	0 U	12	9.7	0 U	7.9	0 U	0 U	6.8	39	0 U	0 U	0 U
Mercury (total)	4.2	0.56	0 U	0 U	0.27	0 U	0 U	0 U	0 U	0 U	**0.97**	0.07	0 U	0 U
Zinc	820	210	14	16	**520**	17	51	**340**	8.4	31	47	11	7.7	**450**
PCBs (µg/kg)														
Total PCBs	950	170	0 U	0 U	**914**	66	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U

Parameter	1998 Sediment Cleanup Criteria (per Order 98-38)	Background Sediment Concentrations [1]	E1 8/12/1998 12 ft	E2 8/18/1998 12 ft	E3 8/13/1998 6 ft	F1 8/20/1998 9.5 ft	F2 8/20/1998 10 ft	F3 8/13/1998 5.5 ft	G1 8/24/1998 6.5 ft	G2 8/24/1998 7.5 ft	G3 8/17/1998 9 ft	H1 8/26/1998 9.5 ft	H2 8/26/1998 6.5 ft	H3 8/14/1998 3.5 ft	I1 8/31/1998 5.5 ft	I2 8/31/1998 5 ft	I3 8/14/1998 5.5 ft
Metals (mg/kg)																	
Copper	810	120	47	67	**510**	24	12	7.9	6.5	**144**	61	0 U	29	59	625	56	10
Lead	231	48	6.2	20	**78**	8.1	0 U	9.1	0 U	42	26	0 U	10	11	8.2	0 U	0 U
Mercury (total)	4.2	0.56	0 U	0.38	0.44	0 U	0 U	0.4	0.41	**0.97**	0.1	0 U	**0.68**	**0.66**	**4.14**	**0.66**	0.28
Zinc	820	210	76	91	61	48	27	18	17	87	25	9.6	8.3	**620**	**270**	**290**	54
PCBs (µg/kg)																	
Total PCBs	950	170	125	**207**	**810**	0 U	0 U	**196**	0 U	**530**	0 U	0 U	0 U	0 U	0 U	0 U	0 U

Bold values exceed reference sediment concentrations
U = analyte not detected at the indicated detection limit

[1] Background sediment concentrations defined as 95% UPL Final Reference Pool levels from Exponent (2003)

Table 3
Chemical Concentrations Measured in Well Point Samples

Chemical	Well Point 1 ASW-WP1 µg/L (Dissolved)	Well Point 2 ASW-WP2 µg/L (Dissolved)	Ambient Concentrations Measured in Site Surface Water ASW-SW1 Ambient [1]	Ambient [2]	Water Quality Criteria in µg/L (Dissolved) [3] Acute	Chronic
Conventionals						
Total Suspended Solids (mg/L)	24	120	15			
Salinity (ppt)	33	30	33			
Fines content (%)				-		
TOC (% dry)				-		
Metals (mg/kg or µg/L)						
Arsenic	1.03	14.4	1.35	8.8 J	69	36
Cadmium	0.215	0.33	0.1	1.2 U	42	9.3
Chromium[4]	1.18	2.06	0.99	2.1 J	1,100	50
Copper	2.005	0.98	5.42	5	4.8	3.1
Lead	0.32	0.36	0.07	0.55 J	210	8.1
Mercury	0.1 U	.01 U	.01 U	0.1 U	0.4	0.04
Nickel	1.545	0.98	1.05	5 U	74	8.2
Selenium	0.035	0.01	0.02	11	290	71
Silver	0.36	0.33	0.27	1.2 U	1.9	-
Zinc	7.22	18.8	9.03	18	90	81
Butyltins (µg/kg)						
Tributyltin				15.43		
PCB (µg/kg or µg/L)						
Aroclor 1016	0.15 U [5]	0.15 U [5]	1 U	0.5 U		
Aroclor 1221	0.10 U	0.10 U	1 U	0.5 U		
Aroclor 1232	0.10 U	0.10 U	1 U	0.5 U		
Aroclor 1242	0.10 U	0.10 U	1 U	0.5 U		
Aroclor 1248	1.3	0.63	1 U	0.5 U		
Aroclor 1254	0.10 U	0.10 U	1 U	0.5 U		
Aroclor 1260	1.1	0.63	0.1 U	0.5 U		
Aroclor 1262	0.10 U	0.10 U				
Aroclor 1268	0.024 U	0.024 U				
Total PCBs [8]	2.7 [6]	1.6 [6]	1 U	-	10 [7]	0.03 [7]
PAHs (µg/kg or µg/L)						
2-Methylnaphthalene	1.0 U	1.0 U	1.0 U	-		
Acenaphthene	1.0 U	1.0 U	1.0 U	1 U		
Acenaphthylene	1.0 U	1.0 U	1.0 U	5 U		
Anthracene	1.0 U	1.0 U	1.0 U	5 U		
Benz(a)anthracene	1.0 U	1.0 U	1.0 U	5 U		

Table 4
Sediment Chemistry Results

Parameter	Background Sediment Concentrations [a]	Cal/modified TRC Criteria [b]	Core SW-1 Bay Point Formation 8' - 17'10"	Core SW-2 Bay Point Formation 15' - 20'	Core SW-3 Upland Fill 5' - 7'	Core SW-3 Upland Fill 12'4" - 12'5"	Core SW-4 Surface Sediment 0' - 2'1"	Core SW-4 Surface Sediment 2'1" - 3'10"	Core SW-4 Surface Sediment 0' - 5'9"	Core SW-4 Surface Sediment 5'9" - 8'10"	Core SW-4 Bay Point Formation 15' - 16'	Core SW-5 Surface Sediment 0' - 2'	Core SW-5 Surface Sediment 2' - 4'1"	Core SW-6 Surface Sediment 0' - 2'5"	Core SW-6 Surface Sediment 6'5" - 7'5"	Core SW-6 Bay Point Formation 10' - 12'6"
Total Organic Carbon (percent)			0.01	0.02	0.22	0.13	1.48	0.29	0.21	0.01	0.03	0.46	0.04	0.06	0.03	0.02
Metals (mg/kg)																
Arsenic	9	500	3.65	1.15	3.46	3.9	**154**	**35.4**	**65.9**	1.42	1.58	**177**	3.57	3.13	2.62	6.42
Cadmium	0.29	100	0.05 J	0.04 J	0.05 J	0.07	**3.13**	**0.73**	**1.13**	0.05 J	0.04 J	**2.83**	0.08	0.08	0.08	0.06
Chromium	57	2500	3.6	12.3	6.46	3.89	**173**	**138**	**75.2**	3.22	22.4	**192**	8.7	5.4	21.4	4.73
Copper	120	2500	1.75	5.57	4.76	11.3	**2540**	**981**	**1040**	2.4	12.6	**1695**	12.7	5.85	14.1	4.52
Lead	48	1000	0.81	2.1	5.39	4.04	**668**	**352**	**326**	0.73	3.75	**955**	21.4	5.25	3.98	1.04
Mercury (total)	0.56	20	0.03 J	0.01 U	0.05 J	0.03 J	**0.69 J**	**2.4 J**	**0.7 J**	0.01 J	0.03 J	**0.91 J**	0.24 J	0.1 J	0.01 U	0.01 U
Nickel	17	2000	2.06	6.22	2.29	1.74	**25.9**	**10.6**	12	2.02	10.1	**28.1**	3.7	2.1	8.17	3.58
Selenium	0.72	100	0.13	0.15	0.3	0.09	**2.91**	**0.95**	**1.24**	0.68	0.25	**3.52**	0.1	0.09	0.05 J	0.8
Silver	1	500	0.05 U	0.05 U	0.05 U	0.05 U	**1.77 J**	0.55 J	0.76 J	0.05 U	0.18 J	**2.1 J**	0.25 J	0.15 J	0.04 J	0.05 U
Zinc	210	5000	23.9 J	23.9 J	17.8 J	13.7 J	**3630 J**	**1560 J**	**2250 J**	6.18 J	42.1 J	**4470 J**	28.8 J	19.3 J	49.3 J	9.77 J
PAHs (µg/kg)																
1-Methylnaphthalene			5 U	5 U	5 U	2.30 J	29.90	22.30	20.40	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
1-Methylphenanthrene			5 U	5 U	5 U	2.60 J	102	15.50	34.10	5 U	5 U	5 U	1.20 J	5.00 U	5.00 U	5 U
2,3,5-Trimethylnaphthalene			5 U	5 U	5 U	2.40 J	44.50	13.30	12.90	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
2,6-Dimethylnaphthalene			5 U	5 U	5 U	1.0 J	34.60	22.70	19.0	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
2-Methylnaphthalene			5 U	5 U	5 U	1.70 J	38.40	32.60	28.40	5 U	1.0 J	5 U	1.10 J	5.00 U	5.00 U	5 U
Acenaphthene			5 U	5 U	5 U	22.90	5 U	62.90	66.50	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
Acenaphthylene			5 U	5 U	5 U	6.80	35.70	31.90	17.60	5 U	5 U	5 U	1.40 J	1.20 J	5.00 U	5 U
Anthracene			5 U	5 U	5 U	13.90	5 U	5 U	5 U	5 U	5 U	5 U	2.70 J	2.20 J	5.00 U	5 U
Benz(a)anthracene			5 U	2.30 J	1.10 J	46.30	5 U	5 U	5 U	5 U	5 U	5 U	4.40 J	7.20 J	5.00 U	5 U
Benzo(a)pyrene			5 U	5 U	1.50 J	103	5 U	5 U	5 U	5 U	5 U	5 U	6.70	16.80 J	5.00 U	5 U
Benzo(b)fluoranthene			5 U	5 U	1.40 J	81.80	5 U	5 U	5 U	5 U	5 U	5 U	5.10	16.40 J	5.00 U	5 U
Benzo(e)pyrene			5 U	5 U	1.30 J	67.90	5 U	5 U	5 U	5 U	5 U	5 U	4.0 J	9.70 J	5.00 U	5 U
Benzo(ghi)perylene			5 U	5 U	1.40 J	101.0	5 U	5 U	5 U	5 U	5 U	5 U	5.40	14.00 J	5.00 U	5 U
Benzo(k)fluoranthene			5 U	5 U	1.20 J	77.40	5 U	5 U	5 U	5 U	5 U	5 U	4.80 J	15.30 J	5.00 U	5 U
Biphenyl			5 U	5 U	5 U	1.90 J	15.60	13.10	10.60	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
Chrysene			5 U	1.40 J	1.30 J	62.30	5 U	5 U	5 U	5 U	5 U	5 U	6.10	8.00	5.00 U	5 U
Dibenzo(a,h)anthracene			5 U	5 U	5 U	11.50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.50 J	5.00 U	5 U
Fluoranthene			5 U	1.20 J	2.60 J	168	5 U	5 U	5 U	5 U	1.20 J	5 U	7.90	16.10	5.00 U	5 U
Fluorene			5 U	5 U	5 U	2.10 J	5 U	58.10	5 U	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
Indeno(1,2,3-cd)pyrene			5 U	5 U	5 U	89.60	5 U	5 U	5 U	5 U	5 U	5 U	4.30 J	11.90 J	5.00 U	5 U
Naphthalene			5 U	5 U	5 U	14.90	39.10	31.30	31.70	5 U	1.20 J	5 U	1.10 J	5.00 U	5.00 U	5 U
Perylene			5 U	5 U	5 U	28.30	5 U	5 U	5 U	5 U	5 U	5 U	3.25 J	4.40 J	5.00 U	5 U
Phenanthrene			1.10 J	1.30 J	1.60 J	14.70	5 U	5 U	5 U	5 U	1.40 J	5 U	4.70 J	5.00	5.00 U	5 U
Pyrene			1.30 J	10.90	8.20	178	5 U	5 U	5 U	6.50	1.30 J	5 U	130	29.60	5.00 U	5 U
Total PAHs			2.40 J	17.02	21.60	1102.50	339.80	303.90	242.20	6.50	6.10	0	194.10	159.40	0.00	0
PCBs (µg/kg)																
Aroclor 1016			20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1221			20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1232			20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1242			20 U	20 U	20 U	20 U	379	2410	499	20 U	20 U	452	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1248			20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1254			20 U	20 U	20 U	20 U	1270	2780	1100	20 U	20 U	851.0	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1260			20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Total PCBs (U=0)	170	50000	0	0	0	0	**1769**	**5198.10**	**1894.80**	0	0	**1310.80**	0	0	0.00	0.00

U = analyte not detected at the indicated detection limit
J = estimated value
Bold values exceed reference sediment concentrations
Shaded values exceed criteria [c] [d] [e]
UPL = upper prediction limit

Table 5
Groundwater Chemistry Results

Parameter	California Toxic Rule Water Quality Criteria	Station 1		Station 2		Station 3	
		MW-1.1 Bay Point Formation 18-23 feet	MW-1.2 Upland Fill 10-15 feet	MW-2.1 Bay Point Formation 22-27 feet	MW-2.2 Upland Fill 15-20 feet	MW-3.1 Bay Point Formation 18-23 feet	MW-3.2 Upland Fill 12-17 feet
Conventionals							
Salinity (PSU)		16.0	12.0	25.0	9.7	3.0	< 2.0
Total dissolved solids (mg/L)		599	803	12,570	6,010	274	60
Metals (µg/L)							
Arsenic	36	1.67	1.01	3.70	0.50	5.20	23.20
Cadmium	9.3	0.01 U	0.01 U	0.03	0.01	0.01 U	0.01 U
Chromium		0.71	0.47	0.95	0.46	7.77	2.22
Copper	3.1	0.38	0.18	0.91	0.009 E	**3.34**	0.97
Lead	8.1	0.03	0.02	0.05	0.01	0.50 U	0.38 E
Mercury (total)		0.006 E	0.01 U	0.01 U	0.006 E	0.10 U	0.10 U
Nickel	8.2	24.5	6.19	**11.2**	1.58	**8.25**	4.73
Selenium	71	0.13	0.22	0.01 U	0.01 U	3.85	1
Silver		0.04	0.05	0.07	0.06	0.20 U	0.20 U
Zinc	81	6.88	4.57	4.86	1.88	8.84	3.52
PAHs (µg/L)							
1-Methylnaphthalene		0.015	0.006	0.005 U	0.005 U	0.006	0.011
1-Methylphenanthrene		0.057	0.035	0.005 U	0.005 U	0.012	0.028
2,3,5-Trimethylnaphthalene		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
2,6-Dimethylnaphthalene		0.010	0.010	0.005 U	0.005 U	0.006	0.005
2-Methylnaphthalene		0.016	0.012	0.005 U	0.01	0.009	0.015
Acenaphthene		1.19	0.051	0.005 U	0.01	0.030	0.116
Acenaphthylene		0.005 U	0.005 U	0.005 U	0.005 U	0.005	0.049
Anthracene		0.057	0.018	0.060	0.12	0.038	0.111
Benz(a)anthracene		0.028	0.005 U	0.005 U	0.15	0.008	0.276
Benzo(a)pyrene		0.010	0.010	0.005 U	0.005 U	0.005 U	0.485
Benzo(b)fluoranthene		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.422
Benzo(e)pyrene		0.008	0.008	0.005 U	0.005 U	0.005 U	0.286
Benzo(ghi)perylene		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.432
Benzo(k)fluoranthene		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.344
Biphenyl		0.006	0.005 U	0.005 U	0.01	0.005 U	0.011
Chrysene		0.022	0.005 U	0.005 U	0.09	0.012	0.313
Dibenzo(a,h)anthracene		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.086
Fluoranthene		0.452	0.039	0.08	1.14	0.088	1.020
Fluorene		0.053	0.007	0.005 U	0.005 U	0.005 U	0.015
Indeno[1,2,3-cd]pyrene		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.504
Naphthalene		0.024	0.010	0.005 U	0.02	0.01	0.040
Perylene		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.192
Phenanthrene		0.113	0.032	0.005 U	0.03	0.024	0.056
Pyrene		0.382	0.039	2.76	2.97	0.185	1.640
PCBs (µg/L)							
Aroclor 1016		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Aroclor 1221		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Aroclor 1232		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Aroclor 1242		0.1	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Aroclor 1248		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Aroclor 1254		0.0233	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Aroclor 1260		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Total PCBs (U=0)	0.03	**0.1233**	0	0	0	0	0

Notes:
U = analyte not detected at the indicated detection limit
E = estimated value
Bold values exceed water quality criteria

Table 6
Summary of Measured Water Levels

	Water Level (MLLW)			
	Ebb Tide	Low Tide	Flood Tide	High Tide
Deep Piezometers				
Station 1	4.05	3.57	3.94	4.21
Station 2	3.99	3.46	3.88	4.53
Station 3	4.31	4.13	4.21	4.36
Shallow Piezometers				
Station 1	4.08	3.6	3.97	4.24
Station 2	4.16	3.65	4.03	4.36
Station 3	4.44	4.21	4.22	4.31

Table 7
Summary of Modeling Parametric Analyses

Parameter	Co (mg/kg)[1]	Kd (L/kg)	Co (mg/L)	Information Source
Copper	331	20,452	0.02	Calculated from E^{x}ponent sediment partitioning equations (2003).
	331	85	3.89	Calculated from sediment 95 percent UCL and Kd's from Aziz et al. 2001.
Lead	108	15402	0.01	Calculated from E^{x}ponent sediment partitioning equations (2003).
	108	1150	0.09	Calculated from sediment 95 percent UCL and Kd's from Aziz et al. 2001.
Zinc	373	20067	0.02	Calculated from E^{x}ponent sediment partitioning equations (2003).
	373	140	2.66	Calculated from sediment 95 percent UCL and Kd's from Aziz et al. 2001.
PCBs	1.35	60.2	0.022	(TOC = 0.001)[2] weighted average of Aroclors 1254 and 1242 Koc (RAIS 2004).
	1.35	602	0.002	(TOC = 0.01)[2] weighted average of Aroclors 1254 and 1242 Koc (RAIS 2004).
	1.35	820	0.002	(TOC = 0.001)[2] using total PCB Koc (RAIS 2004).
	1.35	8200	0.0002	(TOC = 0.01)[2] using total PCB Koc (RAIS 2004).

Notes:
[1] Calculated as 95% Upper Confidence Limit of all samples taken within project footprint
[2] TOC = Total Organic Carbon, pertaining to range measured in native site sediment

Table 8
Fate and Transport Modeling Input Parameters

Parameter	Units	Constituents Modeled					Information Source
		Copper	Lead	Zinc	Total PCBs	Total PCBs	
Controlling Cap Layer	NA	Sand	Sand	Sand	Sand / lower TOC	Sediment / higher TOC	Possible cap alternatives.
Cap Layer Thickness	cm	90	90	90	90	90	Assumed effective thickness was 100 cm less 10 cm at bioturbation.
Cap Material Porosity	unitless	0.4	0.4	0.4	0.4	0.4	Typical values for placed sand and clean sediment that may be used.
Specific Gravity of Cap	g/cm^3	2.5	2.5	2.5	2.5	2.5	Typical values for these materials.
In Situ Bulk Density Cap	g/cm^3	1.5	1.5	1.5	1.5	1.5	Calculated from porosity and specific gravity per page B24 of Reible (1998).
Cap TOC Content [1]	fraction	0.001	0.001	0.001	0.001	0.01	Typical values for these materials.
PCB K_{oc} [2]	L/kg_{OC}				60,200	60,200	Weighted average of Aroclors found in sediment (1242 and1254; RAIS 2004).
Cap K_d [3]	L/kg	100	1,200	200	60.2	602	PCB $K_d = K_{oc}$ * TOC; Copper, Lead, and Zinc Kds from Aziz et al. 2001.
Groundwater Seepage Velocity	cm/yr	17.79	17.79	17.79	17.79	17.79	Vx = Q/(n_e*A), where Q = discharge and A = cross-sectional area. Or: Vx = ($k dh$)/($n_e dl$) Assume K = 0.00003 cm/sec, ne = 0.25, dh/dl = 0.0047.
Diffusion Coefficient	cm^2/yr	225	267	222	190	190	Conservatively high value from range of diffusion coefficients for PCBs (RAIS 2004); For metals D = (RT/F2)(lambda/charge of the ion).
Porewater Concentration in Underlying Sediments [4]	mg/L	3.89E+00	9.39E-02	2.66E+00	2.244E-02	2.244E-03	95 percent UCL porewater concentration calculated from bulk chemistry cores.

Notes:

[1] TOC - Total Organic Carbon. Varies based on possible types of backfill (cap) materials used

[2] Koc - Organic Carbon Partitioning Coefficient

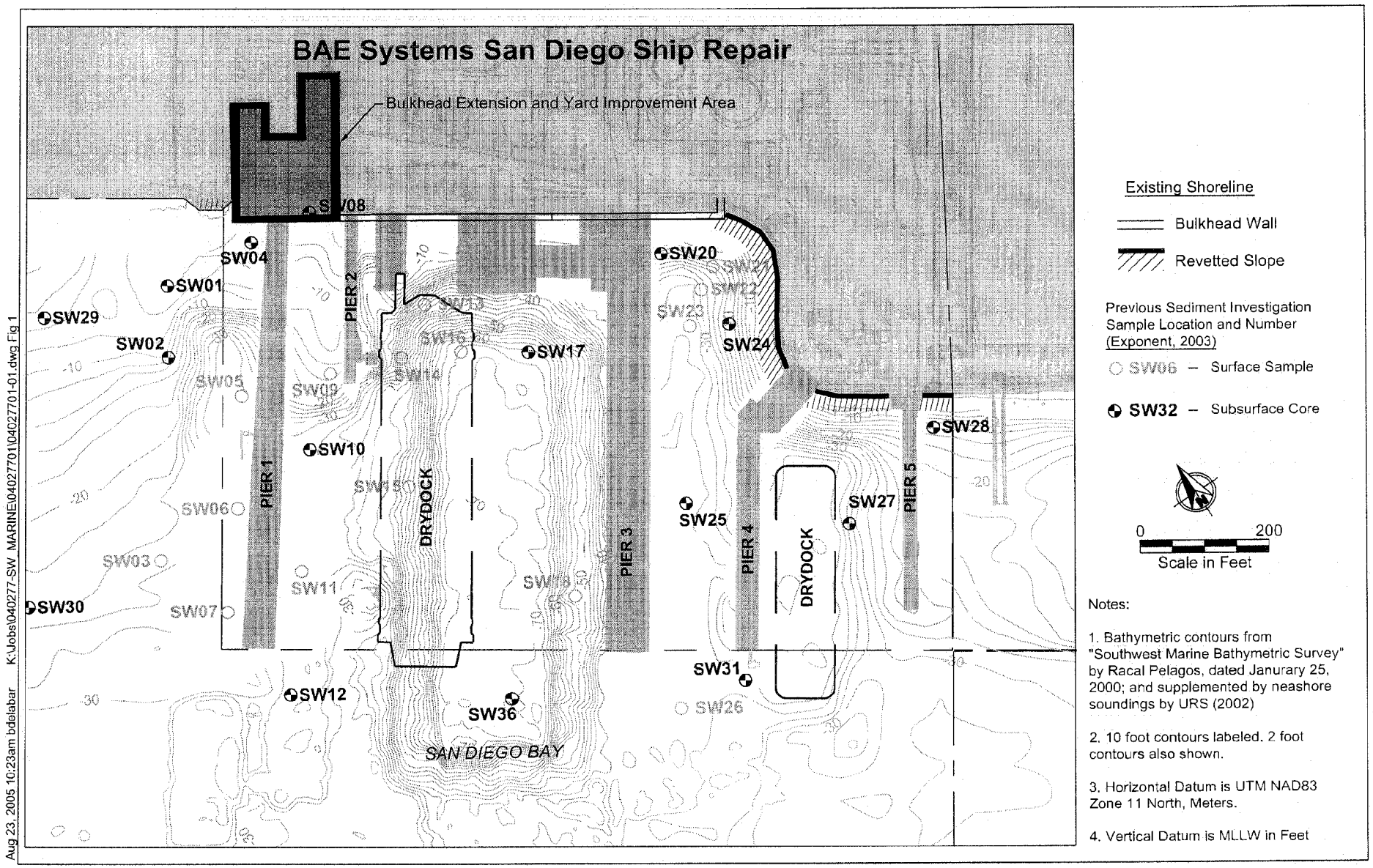
[3] Kd - Calculated partitioning equilibrium coefficient

[4] Calculated as shown in Table 7, using the most conservative (highest) value

Table 9
Fate and Transport Modeling Results

Chemical	Years after Construction (mg/L)			California Toxics Rule WQ Criteria (mg/L)	Years until predicted breakthrough
	25	50	100		
Copper	0	0	0	3.10E-03	690
Lead	0	0	0	8.10E-03	13,600
Zinc	0	0	0	8.10E-02	1,760
Total PCBs (clean sediment cap)	0	0	0	3.00E-05	2,280
Total PCBs (quarry sand cap)	0	0	3.84E-10	3.00E-05	185

FIGURES

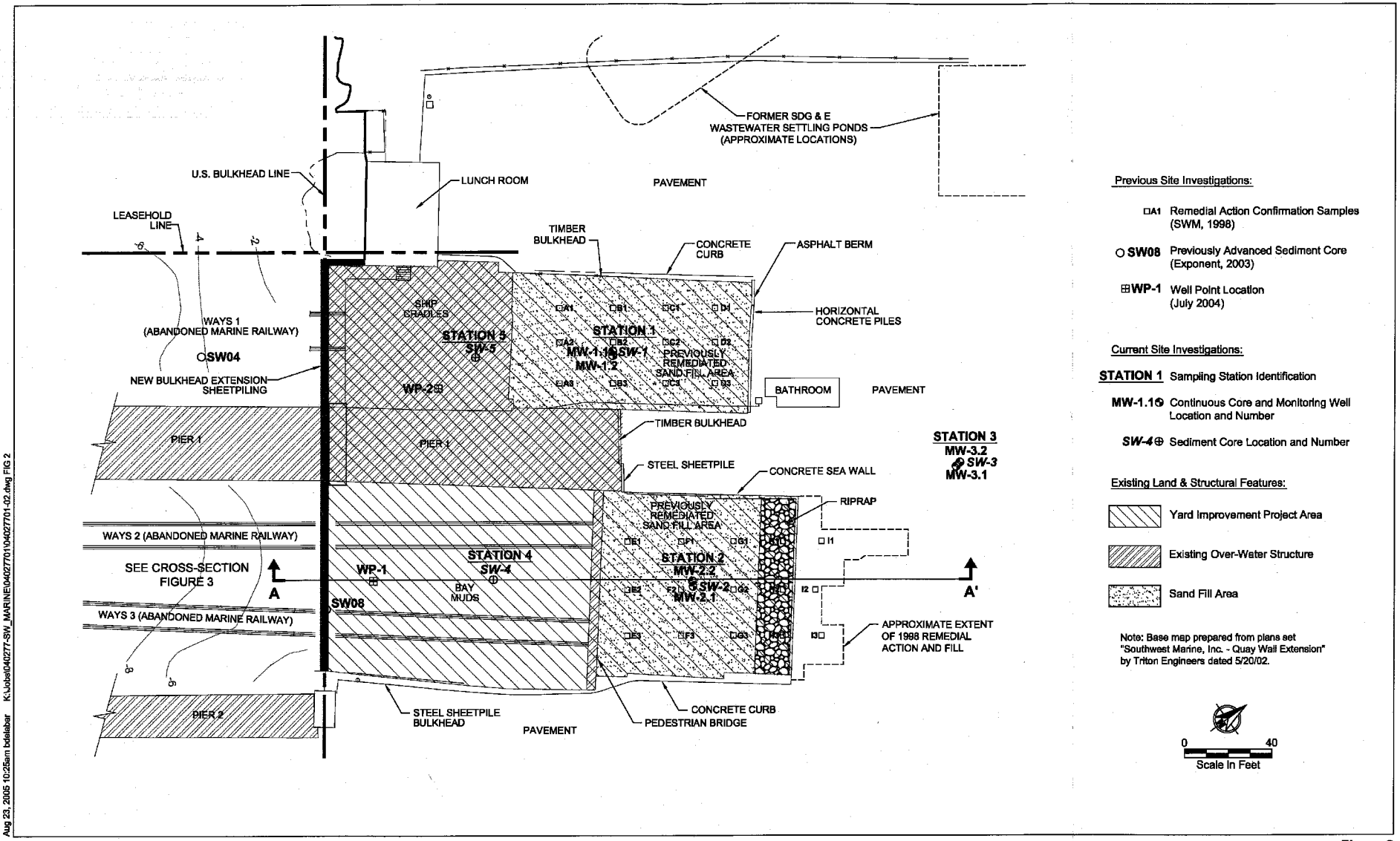


Aug 23, 2005 10:23am bdelabar K:\Jobs\040277-SW_MARINE\040277010402770 1-01.dwg Fig 1

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 1
Project Location Plan
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair

BAE00085473



Previous Site Investigations:

- □A1 Remedial Action Confirmation Samples (SWM, 1998)
- ○ SW08 Previously Advanced Sediment Core (Exponent, 2003)
- ⊞ WP-1 Well Point Location (July 2004)

Current Site Investigations:

- STATION 1 Sampling Station Identification
- MW-1.1⊙ Continuous Core and Monitoring Well Location and Number
- SW-4⊕ Sediment Core Location and Number

Existing Land & Structural Features:

- Yard Improvement Project Area
- Existing Over-Water Structure
- Sand Fill Area

Note: Base map prepared from plans set "Southwest Marine, Inc. - Quay Wall Extension" by Triton Engineers dated 5/20/02.

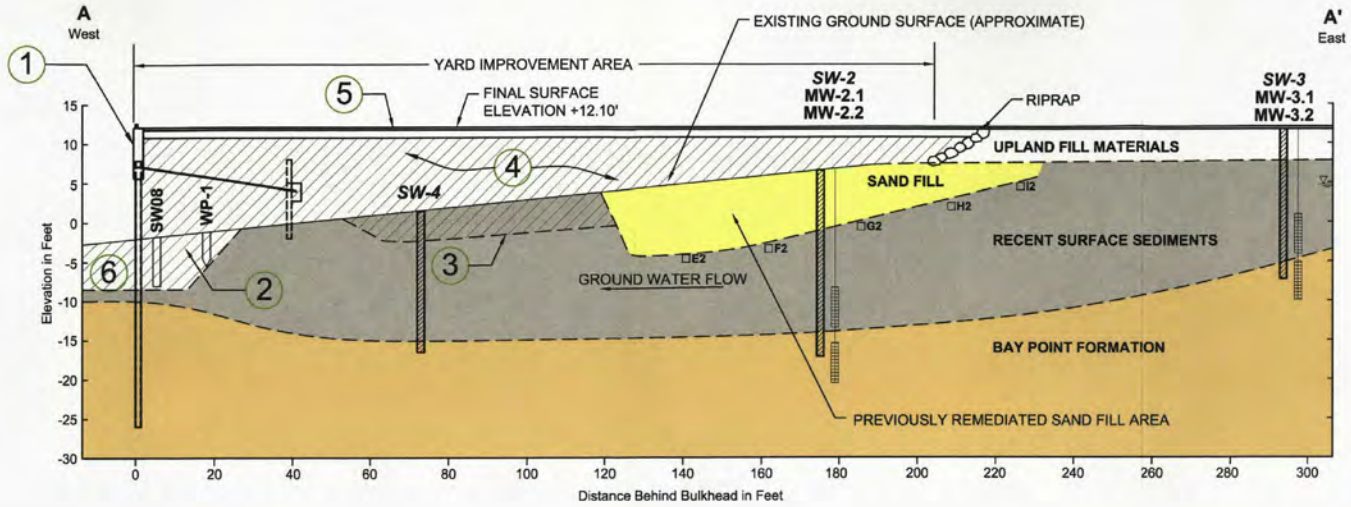
0 40
Scale in Feet

Aug 23, 2005 10:25am bdelabar K:\Jobs\040277-SW_MARINE\040277010\040277701-02.dwg FIG 2

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 2
Project Site Plan and Sampling and Well Locations
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair

BAE0085474



Project Construction Sequence
(refer to circled numbers on cross section above)

1. Sheetpile Bulkhead Installed.
2. 500 Cubic Yards of Chemically Impacted Sediment to be Excavated from Vicinity of Installed Bulkhead. Excavation Backfilled with Clean Imported Sand Buffer.
3. Excavate 1,000 Cubic Yards of Sediment Exceeding TTLC Criteria. Removal Extents to be Verified by Confirmational Sampling.
4. Yard Improvement Area Backfilled With Compacted Import Fill.
5. Aggregate Base and Asphalt Placed Over Entire Yard Improvement Area.
6. Sheetpile Wall Designed for Potential Future Removal of Sediments Outside Wall.

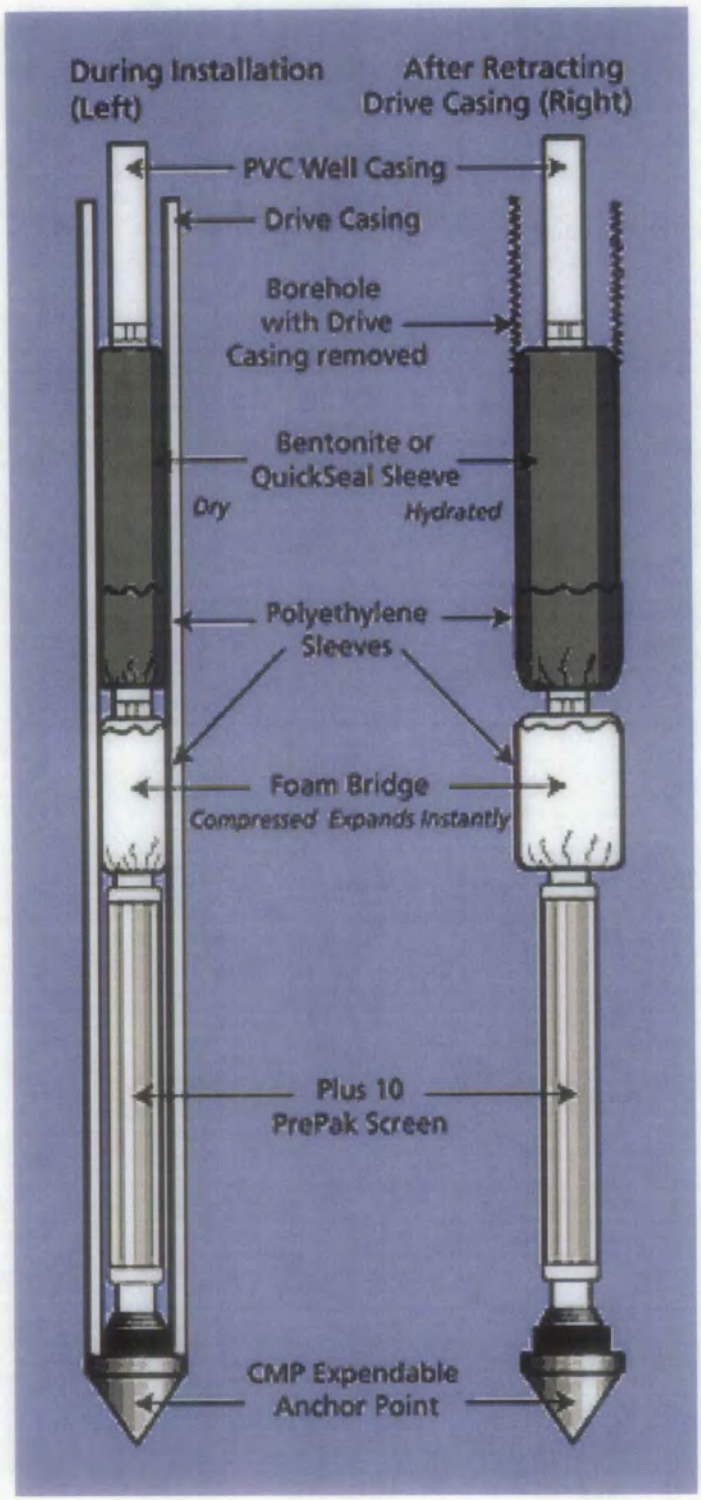
SW08 — Previously Advanced Sediment Core (Exponent, 2003)
SW-4 — Sediment Core
SW-2 MW-2.1 — Continuous Core and Monitoring Well
E2 — Remedial Action Confirmation Sample (SWM, 1998)
Clean Backfill

Note:
Structural features and existing ground surface based on plans set "Southwest Marine, Inc. - Quay Wall Extension" by Triton Engineers Dated 5/20/02.

Aug 25, 2005 12:55pm bdelabar K:\Jobs\040277-SW_MARINE\040277010\040277701-03.dwg FIG 3

ANCHOR ENVIRONMENTAL, L.L.C.

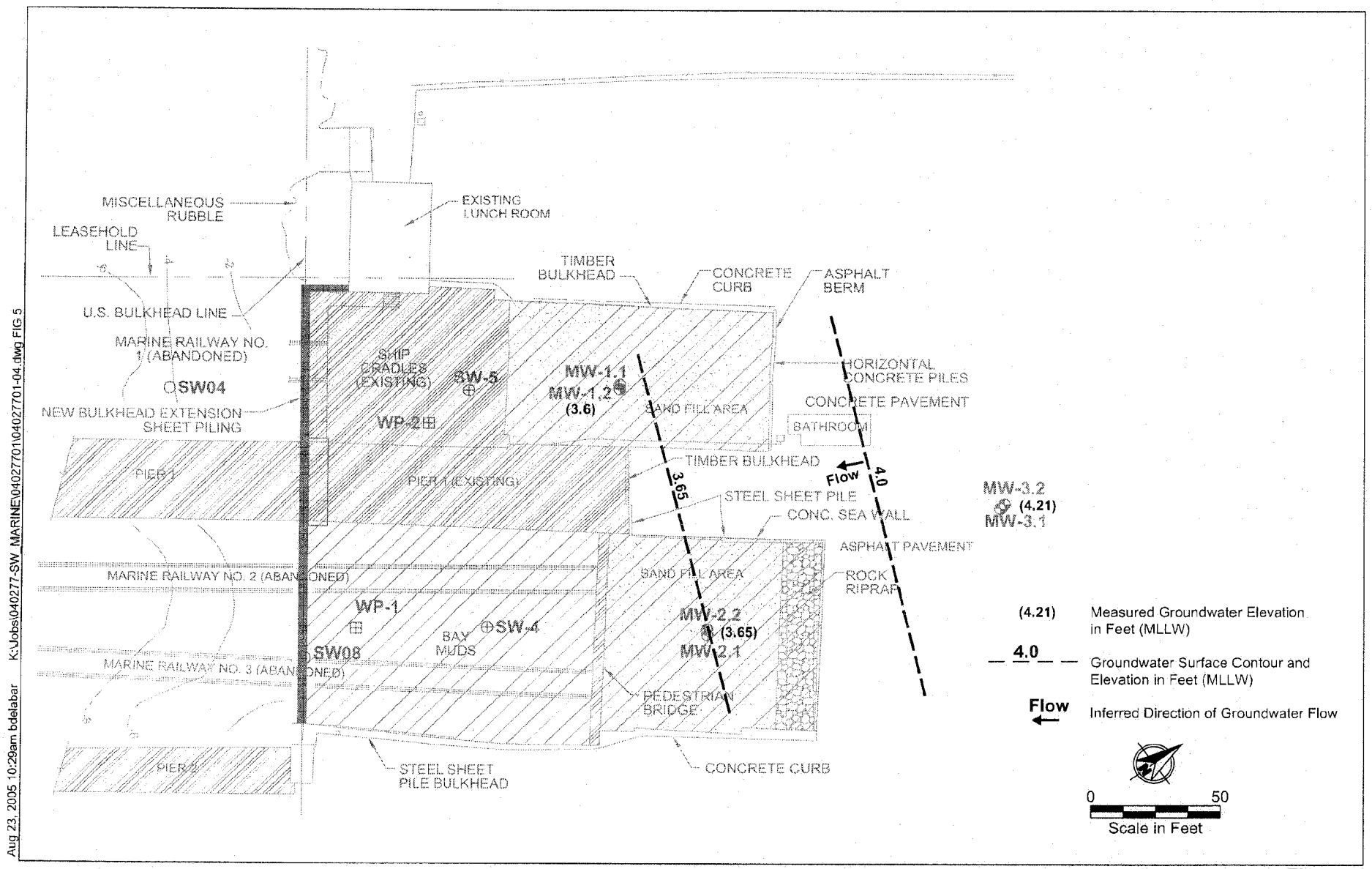
Figure 3
Cross-Section A-A' and Sequence of Planned Construction Events
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair



1/10/04 CVD K:\Jobs\040277-SW_Marine\04027701\FIG 4.cdr

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 4
Typical Detail - Prepacked Well Screen
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair

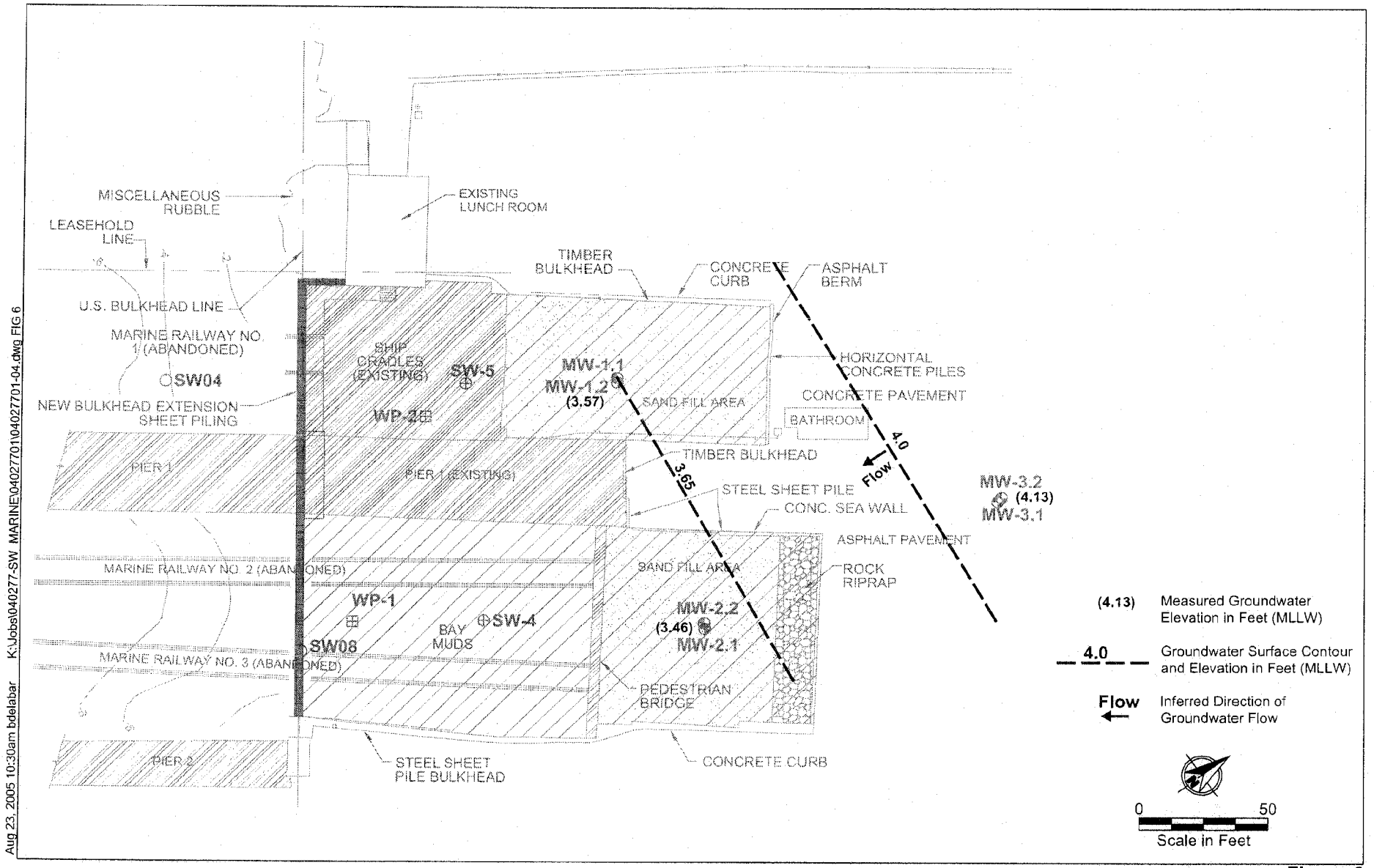


Aug 23, 2005 10:29am bdelabar K:\Jobs\040277-SW_MARINE\04027701\04027701-04.dwg FIG 5

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 5
Low Tide Piezometric Surface
Shallow Monitoring Wells (Recent Sediments)
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair

BAE00085477

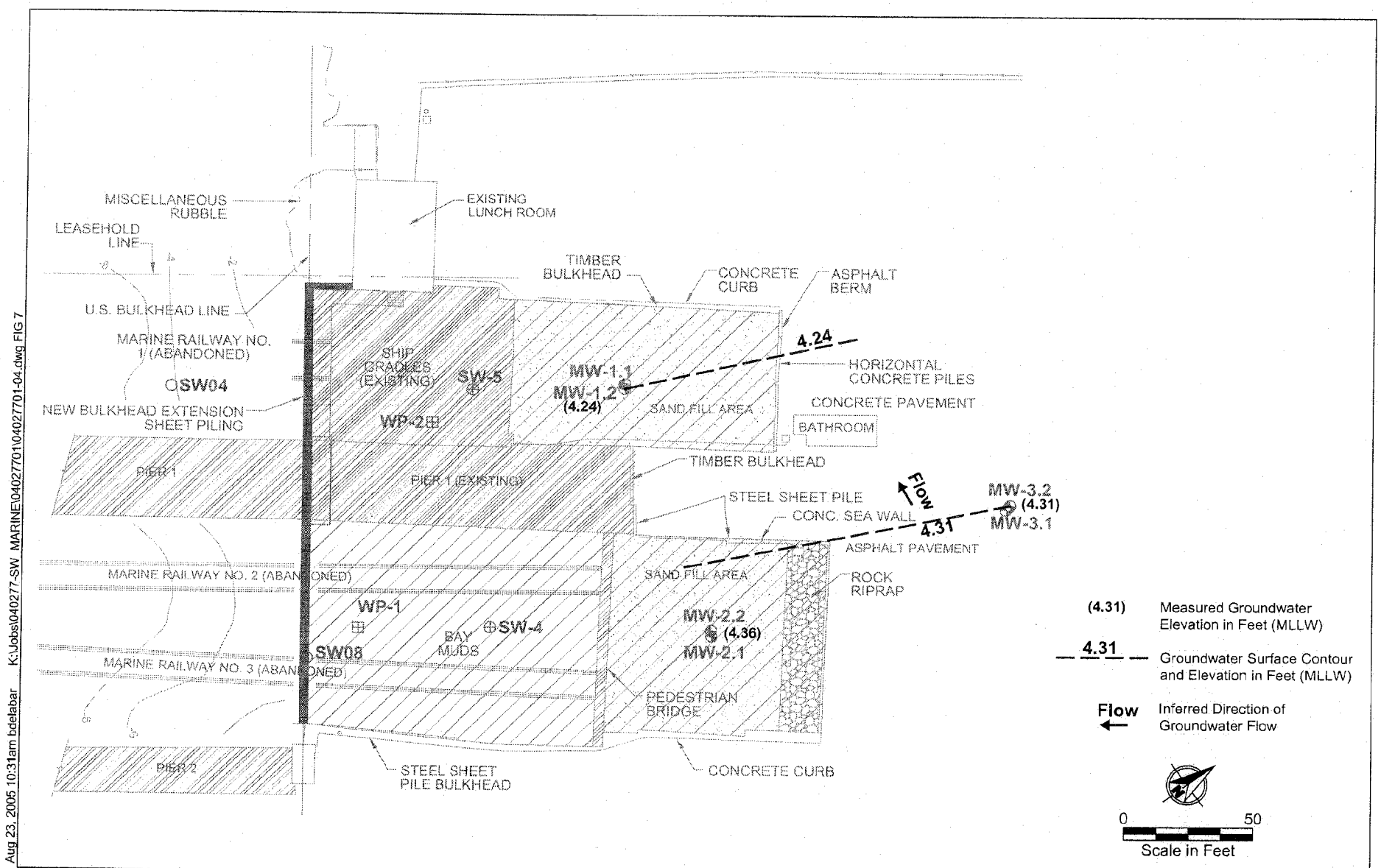


Aug 23, 2005 10:30am bdelabar K:\Jobs\040277-SW MARINE\040277\01\040277701-04.dwg FIG 6

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 6
Low Tide Piezometric Surface
Deep Monitoring Wells (Bay Point Formation)
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair

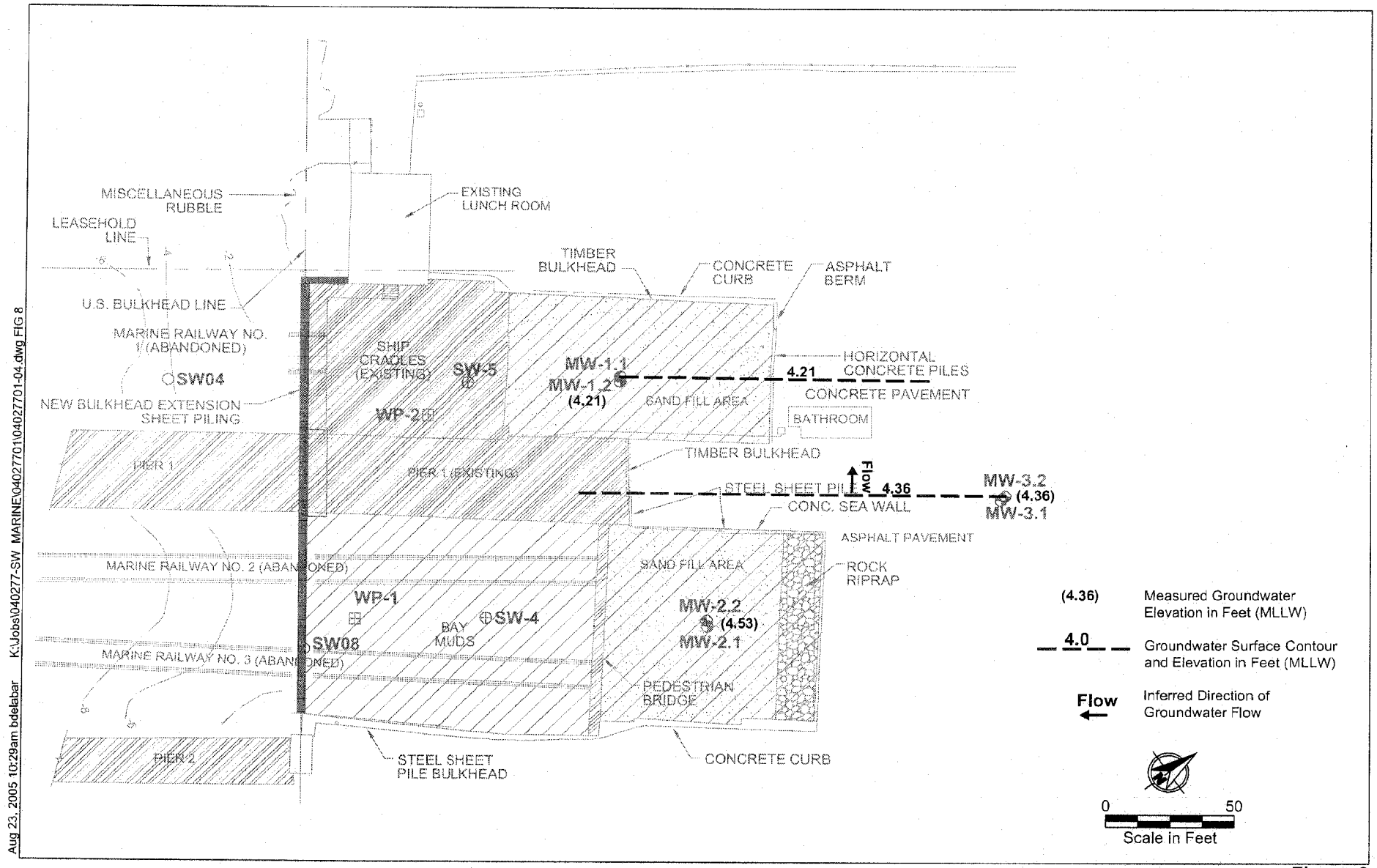
BAE00085478



Aug 23, 2005 10:31am bdelabar K:\Jobs\040277-SW_MARINE\040277\01\040277701-04.dwg FIG 7

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 7
High Tide Piezometric Surface
Shallow Monitoring Wells (Recent Sediments)
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair

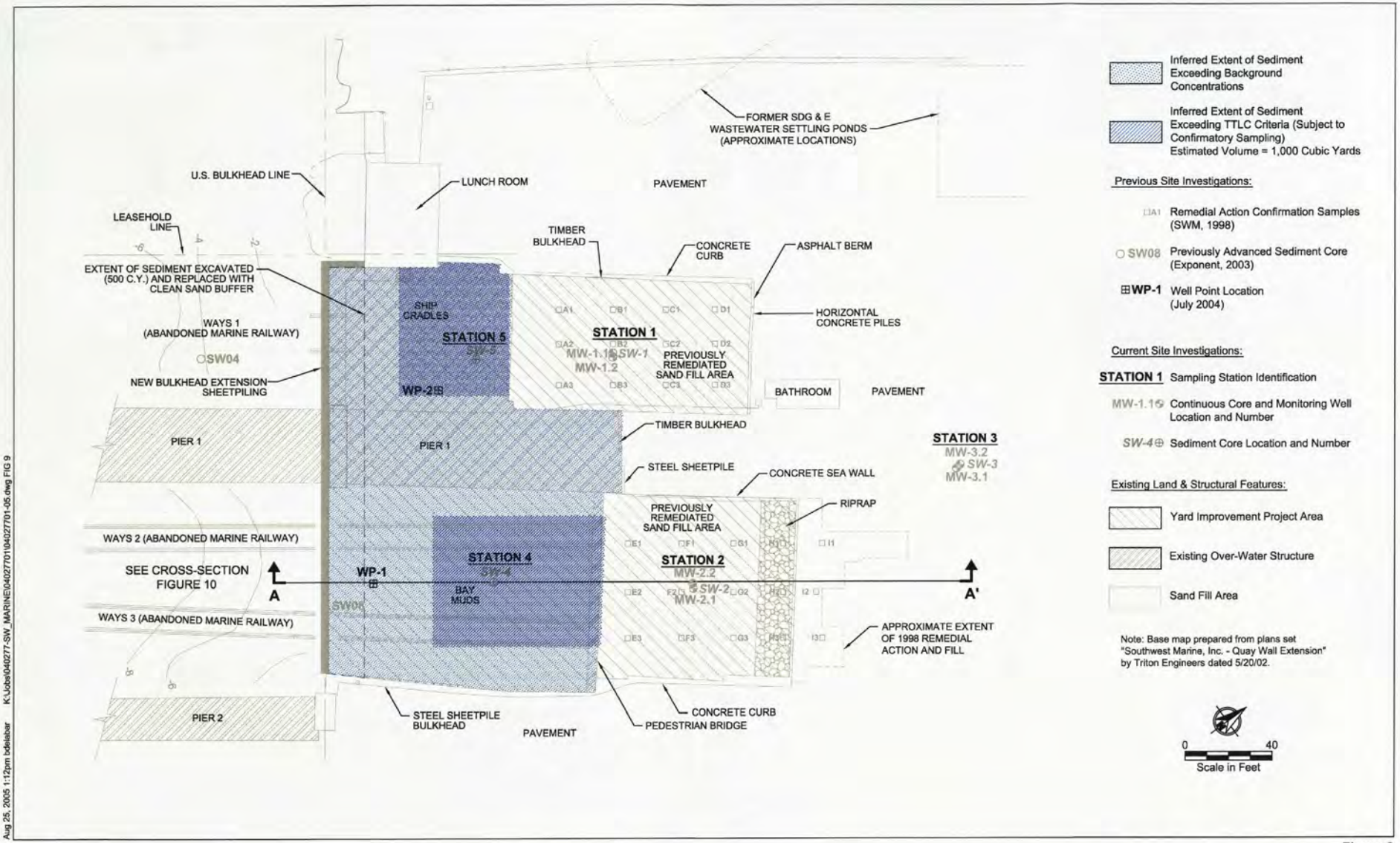


Aug 23, 2005 10:29am bdelabar K:\Jobs\040277-SW MARINE\04027701\04027701-04.dwg FIG 8

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 8
High Tide Piezometric Surface
Deep Monitoring Wells (Bay Point Formation)
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair

BAE00085480

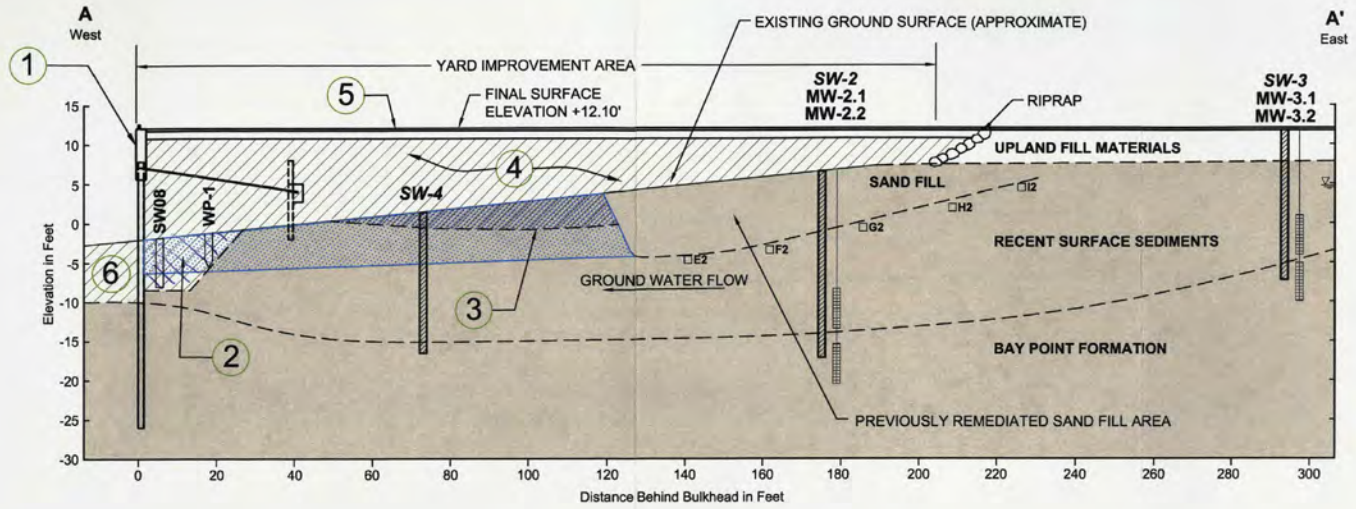


Aug 25, 2005 1:12pm bdelaber K:\Jobs\040277-SW_MARINE\040277011\040277701-05.dwg FIG 9

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 9
Distribution of Waste Constituents - Plan View
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair


10'



Horizontal Scale in Feet
0 30 60
0 15 30
Vertical Scale in Feet
Vertical Exaggeration x 2

Project Construction Sequence
(refer to circled numbers on cross section above)

1. Sheetpile Bulkhead Installed.
2. 500 Cubic Yards of Chemically Impacted Sediment to be Excavated from Vicinity of Installed Bulkhead. Excavation Backfilled with Clean Imported Sand Buffer.
3. Excavate 1,000 Cubic Yards of Sediment Exceeding TTLC Criteria. Removal Extents to be Verified by Confirmational Sampling.
4. Yard Improvement Area Backfilled With Compacted Import Fill.
5. Aggregate Base and Asphalt Placed Over Entire Yard Improvement Area.
6. Sheetpile Wall Designed for Potential Future Removal of Sediments Outside Wall.

Inferred Extent of Sediment Exceeding Background Concentrations

Inferred Extent of Sediment Exceeding TTLC Criteria (Subject to Confirmatory Sampling)

SW08 — Previously Advanced Sediment Core (Exponent, 2003)

SW-4 — Sediment Core

SW-2 MW-2.1 — Continuous Core and Monitoring Well

E2 — Remedial Action Confirmation Sample (SWM, 1998)

Clean Backfill

Note:
Structural features and existing ground surface based on plans set "Southwest Marine, Inc. - Quay Wall Extension" by Triton Engineers Dated 5/20/02.

Aug 25, 2005 12:51pm bdelabar K:\Jobs\040277-SW_MARINE\040277010\040277010-06.dwg FIG 10

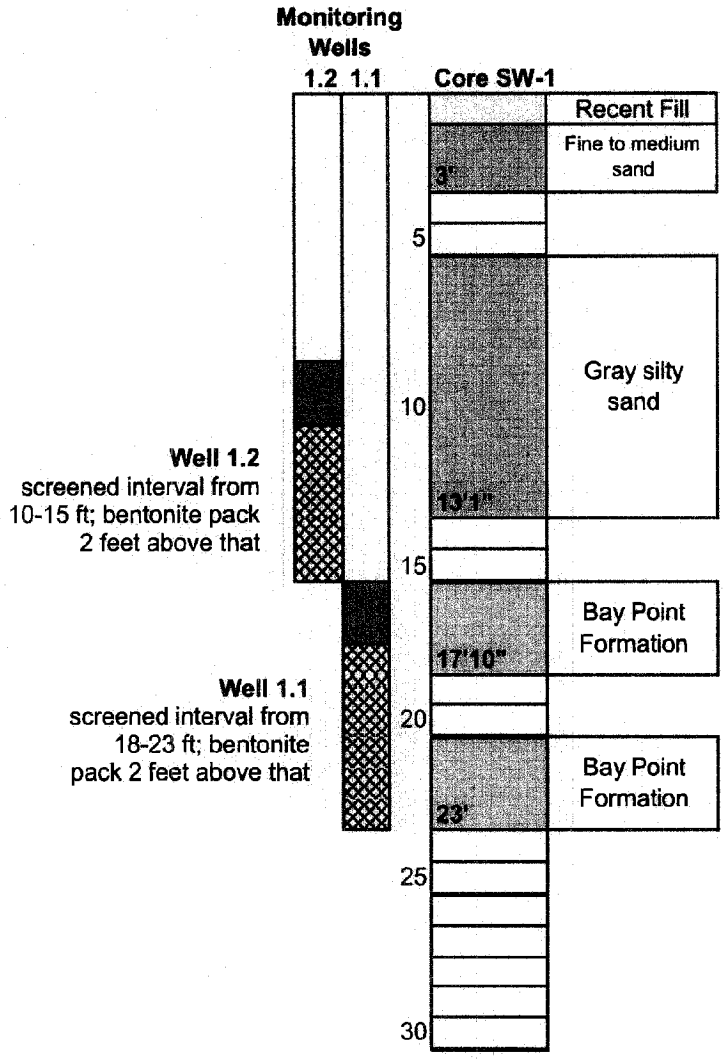
ANCHOR ENVIRONMENTAL, L.L.C.

Figure 10
Distribution of Waste Constituents - Cross-Section View
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair

APPENDIX A

CORING AND WELL INSTALLATION LOGS

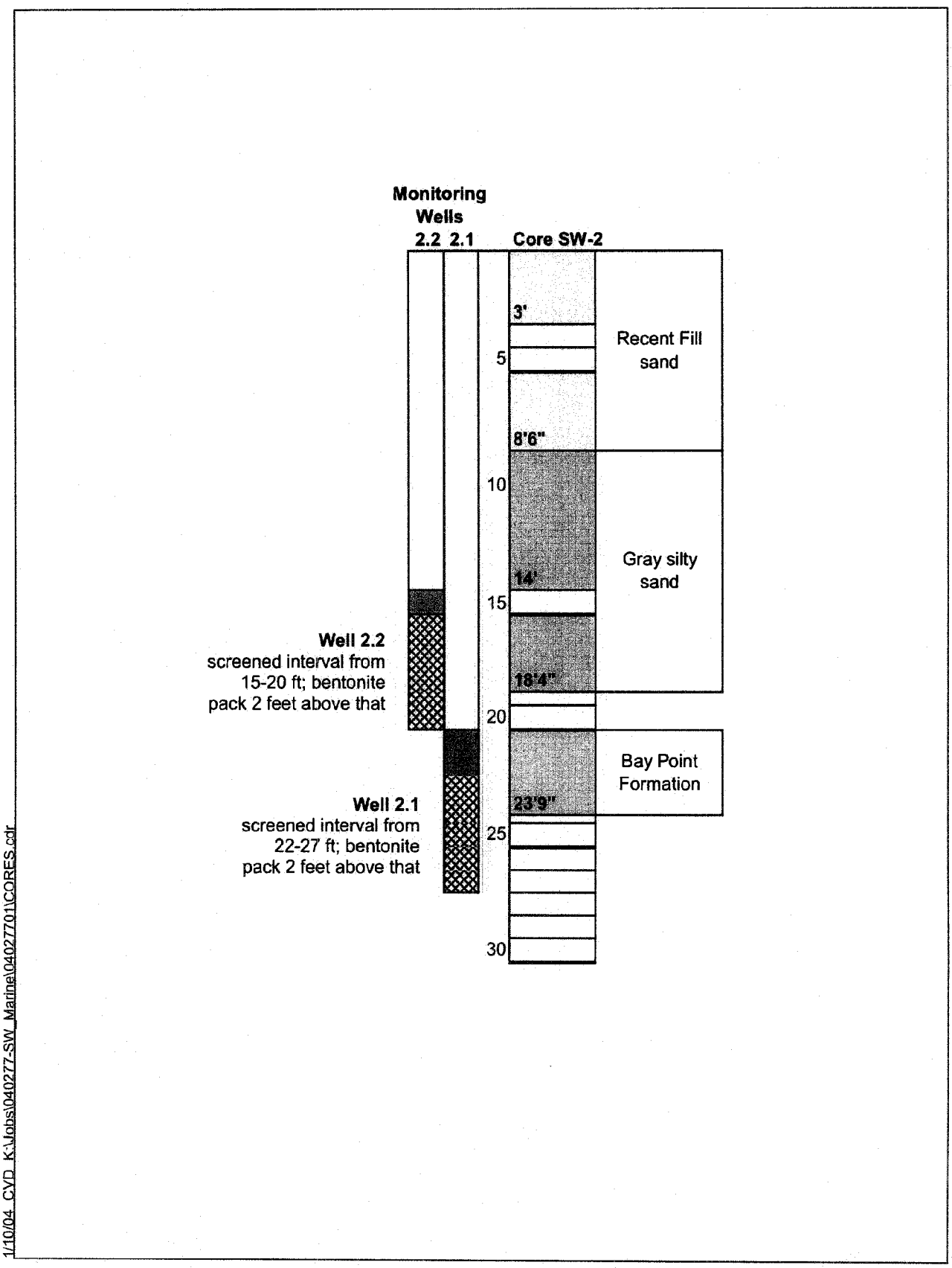
BULKHEAD EXTENSION AND YARD IMPROVEMENT PROJECT
PHASE 2 ACTIVITIES



1/10/04 CVD K:\Jobs\040277-SW_Marine\04027701\CORES.cdr

ANCHOR ENVIRONMENTAL, L.L.C.

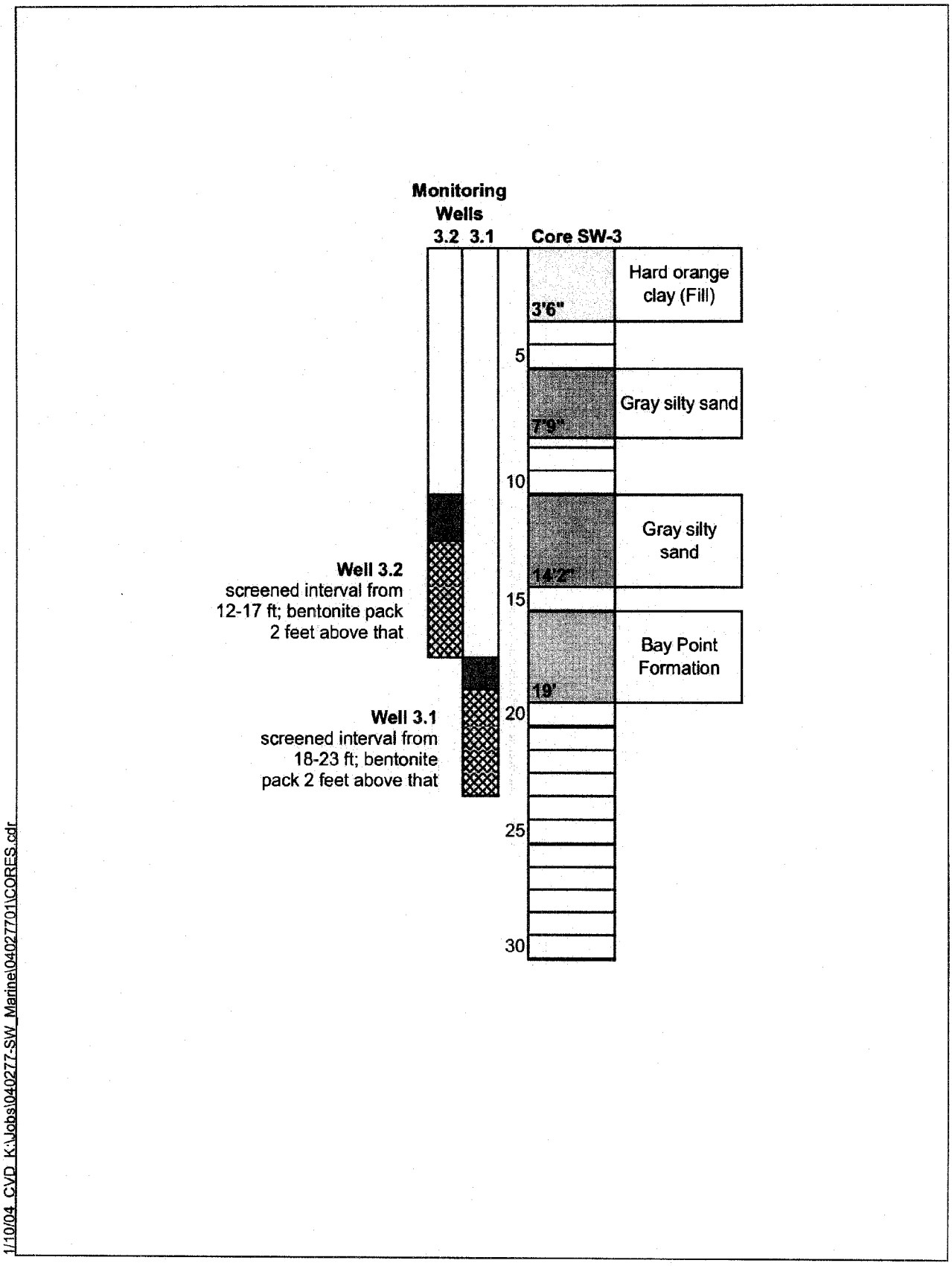
Figure A-1
Monitoring Wells MW-1.1 and MW-1.2
Southwest Marine Bulkhead Extension and Yard Improvement



1/10/04 CVD K:\Jobs\040277-SW_Marine\04027701\CORES.cdr

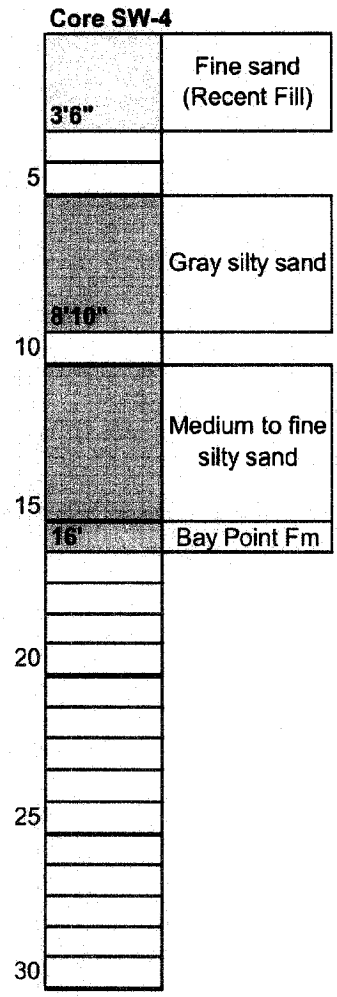
ANCHOR ENVIRONMENTAL, L.L.C.

Figure A-2
Monitoring Wells MW-2.1 and MW-2.2
Southwest Marine Bulkhead Extension and Yard Improvement



ANCHOR ENVIRONMENTAL, L.L.C.

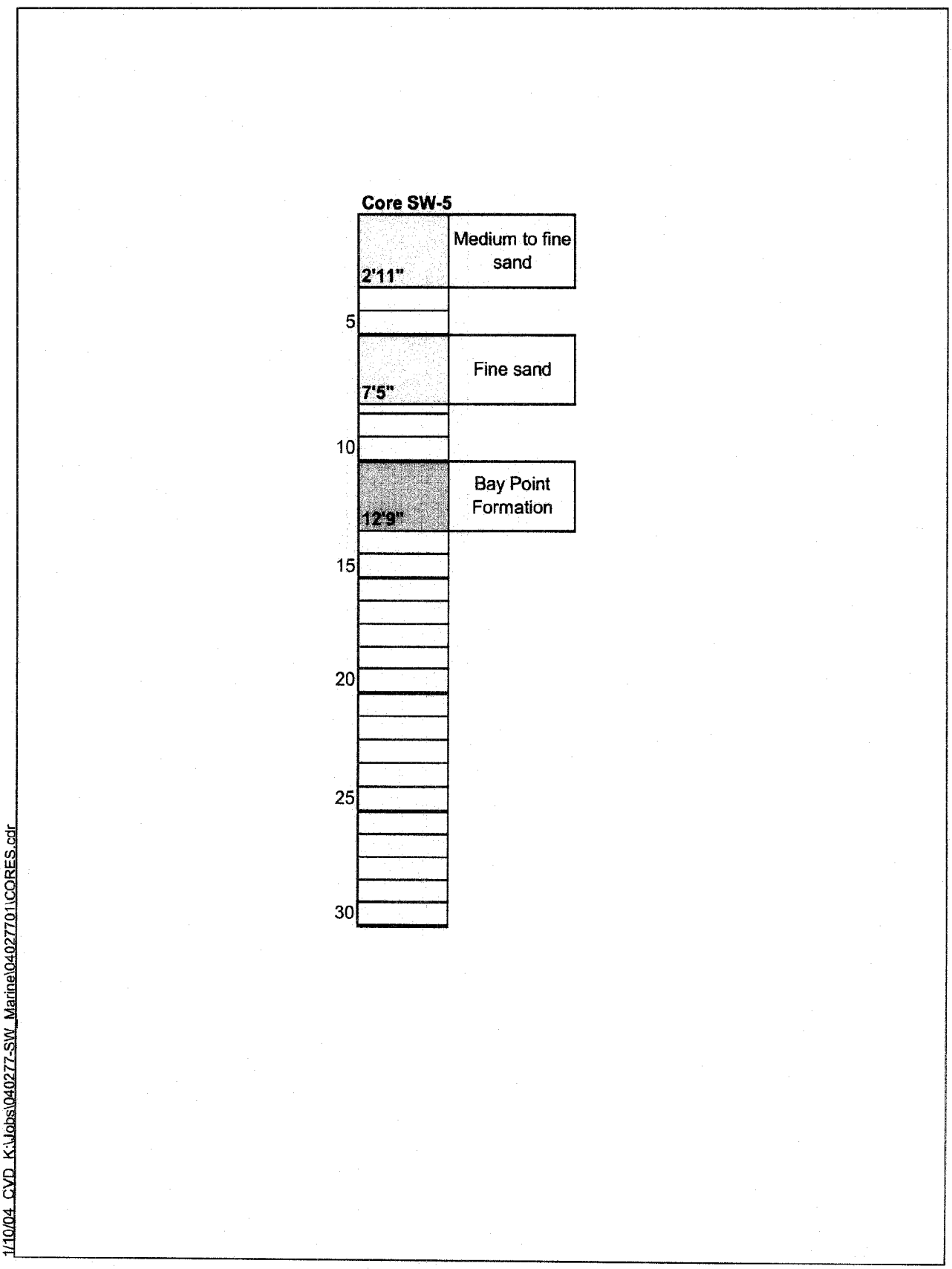
Figure A-3
Monitoring Wells MW-3.1 and MW-3.2
Southwest Marine Bulkhead Extension and Yard Improvement



1/10/04 CVD K:\Jobs\040277-SW_Marine\04027701\CORES.cdr

ANCHOR ENVIRONMENTAL, L.L.C.

Figure A-4
Sediment Core SW-4
Southwest Marine Bulkhead Extension and Yard Improvement



ANCHOR ENVIRONMENTAL, L.L.C.

Figure A-5
Sediment Core SW-5
Southwest Marine Bulkhead Extension and Yard Improvement

APPENDIX B

DATA VALIDATION REVIEW REPORTS

BULKHEAD EXTENSION AND YARD IMPROVEMENT PROJECT
PHASE 2 ACTIVITIES

DATA VALIDATION REVIEW REPORT FOR GROUNDWATER SAMPLES

SOUTHWEST MARINE BULKHEAD EXTENSION

Prepared for

SW Marine, Inc.

2205 E. Belt Street

San Diego, California 92113

Prepared by

Anchor Environmental, L.L.C.

1423 Third Avenue, Suite 300

Seattle, Washington 98101

January 2005

This report summarizes the review of analytical results for seven water samples collected on December 3, 2004 at the Southwest Marine site in San Diego, California. Samples were collected by Anchor Environmental, LLC and submitted to CRG Marine Laboratories, Inc. (CRG) in Torrance, California. Samples were analyzed for total dissolved solids (TDS) by SM 2450-C, Chromium (CR) +6 by SM3500-CR, salinity by SM 2510, metals by United States Environmental Protection Agency (USEPA) Method 1640 or 200.8, polychlorinated biphenyls (PCBs) and congeners by USEPA Method 625, and polycyclic aromatic hydrocarbons (PAHs) by USEPA Method 625. CRG project ID P24152 and P24153c were reviewed.

Sample ID	Location	Lab ID	Matrix	Analysis Requested
SWM-Well 2-27-22	Station 2, MW-2.1	21498	Water	TDS, CR+6, salinity, metals, PCB, congeners, and PAH
SWM-Well 2-15-20	Station 2, MW-2.2	21499	Water	TDS, CR+6, salinity, metals, PCB, congeners, and PAH
SWM-Well 2-15-20 DUP	"	21500	Water	TDS, CR+6, salinity, metals, PCB, congeners, and PAH
SWM-Well 3-18-23	Station 3, MW-3.1	21388	Water	TDS, CR+6, salinity, metals, PCB, congeners, and PAH
SWM-Well 3-12-17	Station 3, MW-3.2	21389	Water	TDS, CR+6, salinity, metals, PCB, congeners, and PAH
SWM-Well 1-18-23	Station 1, MW-1.1	21386	Water	TDS, CR+6, salinity, metals, PCB, congeners, and PAH
SWM-Well 1-10-5	Station 1, MW-1.2	21387	Water	TDS, CR+6, salinity, metals, PCB, congeners, and PAH

DATA VALIDATION AND QUALIFICATIONS

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the data quality objective section of the Quality Assurance Project Plan (QAPP; Anchor 2004). Laboratory results were reviewed following USEPA guidelines (USEPA 1999 and 2004). Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

Laboratory Data Package and Field Documentation

Field documentation was checked for completeness and accuracy. The following was noted by CRG at the time of sample receipt: the samples were received in good condition and were consistent with the accompanying Chain-of-Custody form as documented on the Sample Receipt Form.

Holding Times and Sample Preservation

Samples were appropriately preserved and analyses were conducted within holding times. No data were qualified.

LABORATORY METHOD BLANKS

Laboratory method blanks were analyzed at the required frequencies. No analytes were detected in the laboratory method blanks.

FIELD QUALITY CONTROL

Field Duplicates

One field duplicate pairs was collected: SWM Well 2-15-20/SWM Well 2-15-20-DUP. The field duplicate pairs were comparable. No data were qualified due to these results.

SURROGATE RECOVERIES

There were no surrogate recoveries reported for the PCB or congener analyses. The surrogate recoveries for the semivolatile organics (PAH) analyses were performed at the required frequencies. Surrogate recoveries were within the QAPP-specified control limits, except for the following:

- d8-Naphthalene in samples SWM-Well 1-18-23, SWM-Well 1-10-15, SWM-Well 3-18-23, SWM-Well 3-12-17, and the method blank. The recoveries for the surrogate were below the QAPP-specified control limit. As the method allows for up to one surrogate to be outside the control limit for each sample, no data were qualified based on the surrogate recoveries.

MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE

Matrix spike (MS) and matrix spike duplicate (MSD) samples, were analyzed at the required frequency for the inorganic analyses. The following exceptions were noted:

- The inorganic MS and MSD percent recoveries (%Rs) were within the QAPP-specified control limits, except for hexavalent chromium MS on sample SWM-Well 3-12-17. As the MSD was within the QAPP-specified control limits no data were qualified.
- There were no MS or MSD analyzed for the organic analyses: PCBs, congeners, or PAH.

LABORATORY CONTROL SAMPLE, LCS DUPLICATE, AND SAMPLE REPLICATES

Laboratory control samples (LCS) for the inorganics were analyzed at the required frequencies. All LCS and LCS Duplicate (LCSD) %Rs were within QAPP-specified control limits, with the following exceptions:

- Trace metals recoveries for Antimony, iron, and manganese were outside the QAPP-specified control limits low in Method USEPA 1640 LCS. Iron and manganese were also outside the QAPP-specified control limit for Relative Percent Difference (RPD) in the LCSD. All associated data were flagged with the "J" flag for estimated.
- Cadmium RPD was above the QAPP-specified control limit in both the sample replicate (SWM-Well 2-27-22) and the dissolved LCS control limit.
- Titanium was above the sample replicate RPD control limit in sample SWM-Well 2-27-22.
- Selenium and mercury were not reported in the dissolved LCS or in the sample replicate analysis.
- Antimony and beryllium were above the RPD limit in the sample replicates for sample SWM-Well 1-18-23. Data associated with these recoveries will be qualified with the "J" flag to indicate the values reported are estimates.
- Aluminum and cadmium in the LCS and LCSD were above the QAPP-specified control limit for RPDs in USEPA method 1640 analyzed on December 13, 2004. Associated sample data will be qualified with the "J" flag to indicate the values reported are estimates.
- There were no laboratory control samples analyzed for the PCB, congener, or PAH analyses.

METHOD REPORTING LIMITS

Sample results were reported using the QAPP method reporting limits. Reporting limits were acceptable unless noted below:

- Samples SWM-Well 3-18-23 and SWM-Well 3-12-17 were analyzed using USEPA Method 200.8 rather than USEPA Method 1640. This resulted in a reporting limit of ten times the QAPP requirement.

OVERALL ASSESSMENT

The inorganic data are judged to be acceptable for their intended use. Due to the lack of surrogates for the PCB and congener analyses, it was difficult to access whether this data met minimal acceptance criteria. This compounded with the lack of any precision or accuracy data for the PCB, congener, or PAH data qualifies the data as estimated.

PRECISION, ACCURACY, AND COMPLETENESS

Precision:	All precision goals were not met.
Accuracy:	All accuracy goals were not met.
Completeness:	Completeness was 100 percent for all inorganic data, these data are useable as qualified. For the organic data, completeness cannot be determined.

REFERENCES

Anchor, 2004. Site Investigation Workplan, for 401 Water Quality Certification, Southwest Marine Bulkhead Extension and Yard Improvement Phase 2 Activities. Includes Quality Assurance Project Plan (QAPP). November 2004.

USEPA. 2004. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-94/013. February.

USEPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-99/008. October.

DATA VALIDATION REVIEW REPORT FOR SEDIMENT SAMPLES

SOUTHWEST MARINE BULKHEAD EXTENSION

Prepared for

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January 2005

This report summarizes the review of analytical results for 14 sediment samples collected on November 29 and December 2, 2004, at the Southwest Marine site in San Diego, California. Samples were collected by Anchor Environmental, LLC and submitted to CRG Marine Laboratories, Inc. (CRG) in Torrance, California. Samples were analyzed for total organic carbon (TOC), trace metals by United States Environmental Protection Agency (USEPA) Method 6020, polychlorinated biphenyls (PCBs) and congeners by USEPA Method 8270C, and polycyclic aromatic hydrocarbons (PAHs) by USEPA Method 8270C. CRG project ID P24152b was reviewed.

Sample ID	Location	Lab ID	Matrix	Analysis Requested
SWM-Core 2-18-20	Station 2, core SW-2	21439	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 1-17.2-20	Station 1, core SW-1	21440	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 3-13-15	Station 3, core SW-3	21441	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 3-5-10	"	21442	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 4-6.11-10	Station 4, core SW-4	21443	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 4-0-2	"	21444	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 4-19-20	"	21445	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 4-6.2-6.11	"	21446	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 4-2-3.4	"	21447	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 5-2.1-2.3	Station 5, core SW-5	21448	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 5-2.3-4.1	"	21449	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 5-4.1-5.0	"	21450	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 5-7.7-9	"	21451	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 5-9-10	"	21452	Sediment	TOC, Metals, PCB, congeners, and PAH
SWM-Core 5-12.3-15	"	21470	Sediment	TOC, Metals, PCB, congeners, and PAH

DATA VALIDATION AND QUALIFICATIONS

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the data quality objective section of

the Quality Assurance Project Plan (QAPP; Anchor 2004). Laboratory results were reviewed following USEPA guidelines (USEPA 1999 and 2004). Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

Laboratory Data Package and Field Documentation

Field documentation was checked for completeness and accuracy. The following were noted by CRG at the time of sample receipt: the samples were received in good condition and were consistent with the accompanying Chain-of-Custody forms as documented on the Sample Receipt Form.

Holding Times and Sample Preservation

Samples were appropriately preserved and analyses were conducted within holding times. No data were qualified.

LABORATORY METHOD BLANKS

Laboratory method blanks were analyzed at the required frequencies. No analytes were detected in the laboratory method blanks.

FIELD QUALITY CONTROL

Field Duplicates

No field duplicates were taken with this data set.

SURROGATE RECOVERIES

There were no surrogate recoveries reported for the PCB or congener analyses. The surrogate recoveries for the semivolatile organics (PAH) analyses were performed at the required frequencies. Surrogate recoveries were within the QAPP-specified control limits, except for the following:

- d8-Naphthalene in the method blank, samples SWM-Core 5-7.7-9, SWM-Core 5-12.3-15, and SWM-Core 1-17.2-20 (matrix spike [MS]). The recovery for the surrogates were below the QAPP-specified control limit. As the method allows for up to one surrogate to be outside the control limit for each sample, no data were qualified based on the surrogate recoveries.

- Surrogates d8-Naphthalene and d12-perylene in sample SWM-Core 5-9-10. The recovery for the surrogates were below the QAPP-specified control limit. As the sample was non-detect for all analytes of interest, no data qualifications were made.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE

MS and matrix spike duplicate (MSD) samples, were analyzed at the required frequency for the inorganic analyses. The following exceptions were noted:

- The MS and MSD for sample SWM-Core 5-12.3-15 has numerous analytes outside the QAPP-specified control limits of 75 to 125 percent recovery (%R) in the PAH analysis. All relative percent difference (RPDs) were within the QAPP-specified control limits. Since the second MS and MSD set were within QAPP-specified control limits, the low recoveries were attributed to matrix effects rather than poor laboratory performance. No data were qualified based on these recoveries.
- The MS RPD for strontium and titanium were outside the QAPP-specified control limit. Results associated with these MSs were qualified with a "J" to indicate the values associated with this data are estimates.
- The MSD recovery for sample SWM-Core 5-12.3-15 has PCB congener PCB189 below the QAPP-specified control limit. Since this was the only congener that fell below the QC criteria, no data qualifications were made based on this recovery. All associated RPDs were within the control limits.

SAMPLE REPLICATES

- A sample replicate was performed on sample SWM-Core 5-2.3-4.1. The resulting RPDs for manganese, silver, and vanadium were above the QAPP-specified control limits.
- The sample replicate for SWM-Core 5-12.3-15 was missing data for mercury analysis.
- The sample replicate for SWM-Core 5-12.3-15 for PCB analysis does not match that of the original analysis. The replicate appears to have been done on sample SWM-Core 4-0-2 based on the congener results. The replicate data for this sample should not be used in any evaluation until further clarification can be ascertained.

LABORATORY CONTROL SAMPLE AND LCS DUPLICATE

Laboratory control samples (LCS) for the inorganics were analyzed at the required frequencies. All LCS and LCS Duplicate (LCSD) %Rs were within QAPP-specified control limits, with the following exceptions:

- Trace metals recoveries for Antimony, iron, strontium, and zinc were outside the QAPP-specified control limits low in the LCS and LCSD. Titanium recovery was also outside the QAPP-specified control limit in the LCSD. All associated data were qualified with the "J" flag for estimated.
- There were no laboratory control samples analyzed for the PCB, congener or PAH analyses.

METHOD REPORTING LIMITS

Sample results were reported using the QAPP method reporting limits. Reporting limits were acceptable.

OVERALL ASSESSMENT

The data are judged to be acceptable for their intended use. Due to the lack of surrogates for the PCB and congener analyses, it was difficult to access whether this data met all acceptance criteria. Since the resulting precision and accuracy data met the criteria, assessment was based on these recoveries.

PRECISION, ACCURACY, AND COMPLETENESS

For the organic analyses precision and accuracy were judged from the matrix spike data.

Precision:	All precision goals were met.
Accuracy:	All accuracy goals were met.
Completeness:	As the TOC data had not been submitted at the time of publication, completeness was not evaluated for it at this time.

REFERENCES

Anchor, 2004. Site Investigation Workplan, for 401 Water Quality Certification, Southwest Marine Bulkhead Extension and Yard Improvement Phase 2 Activities. Includes Quality Assurance Project Plan (QAPP). November 2004.

USEPA. 2004. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-94/013. February.

USEPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/R-99/008. October.

APPENDIX C

FATE AND TRANSPORT MODELING RESULTS

Modeling Results for Copper

Inputs Copper

Symbol	Value	Units	Comments
O	0.4	unitless	Porosity of cap sediments
SG	2.5	g/cm3	Specific gravity of cap sediments
Pb	1.50	g/cm3	Bulk sediment density of cap sediments (per page B24)
Koc		L/kgOC	Organic carbon partitioning coefficient
TOC	0.001	fraction	Cap Total Organic Carbon Content
Kd	100	L/kg	Cap adsorption distribution coefficient
Rf	376	unitless	Retardation factor calculated per Eq. B3
L	90	cm	Effective cap depth (total cap minus bioturbation depth)
U	17.786304	cm/yr	Seepage velocity (not Darcy velocity)
Do	225	cm2/yr	Molecular diffusion for chemical of interest in water
Deff	66	cm2/yr	Effective diffusion through cap
D	84	cm2/yr	Diffusion/Dispersion combined coefficient
Co	3.891	mg/L	Porewater conc. of underlying sediments
TS	5	years	Desired time step for results
Criteria	mg/L	3.10E-03	

Drever, 1988. Well sorted sand or gravel range 25 - 50%

Bulk density = Specific gravity X porosity

Retardation factor = 1+ (dry bulk mass density of soil/volumetric moisture content of the soil)*Kd -- Reible equation is not consistent with Drever or Fetter.

Assumes a 100cm thick cap and 10 cm for bioturbation

Vx = Q/(n_e*A), where Q = discharge and A = cross-sectional area. Or: Vx = (kdh)/($n_e dl$) Assume K = 0.00003 cm/sec, ne = 0.25, dh/dl = 0.0047

For metals D = (RT/F^2)(lambda/charge of the ion) RT/F^2 = 2.66E-07

Per Millington and Quirk, 1961. (Reible assumption)

- 95% UCL for copper in sediments = 746.9 mg/Kg / 20452 L/Kg

Model Calculation and Results

Years Time (t)	Fac1	EF	Fac2	Comb	mg/L Conc. (Cpw)	mg/kg Conc. Seds
5	-	1.84E+08	-	-	-	-
10	-	1.84E+08	-	-	-	-
15	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
25	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
45	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
50	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
55	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
65	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
70	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
85	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
90	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100	0.00E+00	1.84E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Modeling Reults for Lead

Inputs **lead**

Symbol	Value	Units	Comments
O	0.4	unitless	Porosity of cap sediments
SG	2.5	g/cm3	Specific gravity of cap sediments
Pb	1.50	g/cm3	Bulk sediment density of cap sediments (per page B24)
Koc		L/kgOC	Organic carbon partitioning coefficient
TOC	0.001	fraction	Cap Total Organic Carbon Content
Kd	1200	L/kg	Cap adsorption distribution coefficient
Rf	4501	unitless	Retardation factor calculated per Eq. B3
L	90	cm	Effective cap depth (total cap minus bioturbation depth)
U	17.786304	cm/yr	Seepage velocity (not Darcy velocity)
Do	267	cm2/yr	Molecular diffusion for chemical of interest in water
Deff	79	cm2/yr	Effective diffusion through cap
D	96	cm2/yr	Diffusion/Dispersion combined coefficient
Co	9.39E-02	mg/L	Porewater conc. of underlying sediments
TS	100	years	Desired time step for results
Criteria	mg/L	8.10E-03	

Drever, 1988. Well sorted sand or gravel range 25 - 50%

Bulk density = Specific gravity X porosity

Retardation factor = 1+ (dry bulk mass density of soil/volumetric moisture content of the soil)*Kd -- Reible equation is not consistent with Drever or Fetter.

Assumes a 100cm thick cap and 10 cm for bioturbation

Vx = Q/(n_e*A), where Q = discharge and A = cross-sectional area. Or: Vx = (kdh)/($n_e dl$) Assume K = 0.0003 cm/sec, ne = 0.25, dh/dl = 0.0047

For metals D = (RT/F^2)(lambda/charge of the ion) RT/F^2 = 2.66E-07

Per Millington and Quirk, 1961. (Reible assumption)

Model Calculation and Results

Years Time (t)	Fac1	EF	Fac2	Comb	mg/L Conc. (Cpw)	mg/kg Conc. Seds
100	-	1.60E+07	-	-	-	-
200	-	1.60E+07	-	-	-	-
300	-	1.60E+07	-	-	-	-
400	-	1.60E+07	-	-	-	-
500	-	1.60E+07	-	-	-	-
600	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
700	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
800	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
900	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1000	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1100	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1200	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1300	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1400	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1500	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1600	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1700	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1800	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1900	0.00E+00	1.60E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Modeling Results for Zinc

Inputs **Zinc**

Symbol	Value	Units	Comments	
O	0.4	unitless	Porosity of cap sediments	Drever, 1988. Well sorted sand or gravel range 25 - 50%
SG	2.5	g/cm3	Specific gravity of cap sediments	
Pb	1.50	g/cm3	Bulk sediment density of cap sediments (per page B24)	Bulk density = Specific gravity X porosity
Koc		L/kgOC	Organic carbon partitioning coefficient	
TOC	0.001	fraction	Cap Total Organic Carbon Content	
Kd	200	L/kg	Cap adsorption distribution coefficient	
Rf	751	unitless	Retardation factor calculated per Eq. B3	Retardation factor = 1+ (dry bulk mass density of soil/volumetric moisture content of the soil)*Kd -- Reible equation is not consistent with Drever or Fetter.
L	81.4	cm	Effective cap depth (total cap minus bioturbation depth)	Assumes a 100cm thick cap and 10 cm for bioturbation
U	17.786304	cm/yr	Seepage velocity (not Darcy velocity)	Vx = Q/(n_e*A), where Q = discharge and A = cross-sectional area. Or: Vx = (kdh)/($n_e dl$) Assume K = 0.0003 cm/sec, ne = 0.25, dh/dl = 0.0047
Do	222	cm2/yr	Molecular diffusion for chemical of interest in water	For metals D = (RT/F^2)(lambda/charge of the ion) RT/F^2 = 2.66E-07
Deff	65	cm2/yr	Effective diffusion through cap	Per Millington and Quirk, 1961. (Reible assumption)
D	83	cm2/yr	Diffusion/Dispersion combined coefficient	
Co	2.66E+00	mg/L	Porewater conc. of underlying sediments	
TS	10	years	Desired time step for results	
Criteria	mg/L	8.10E-02		

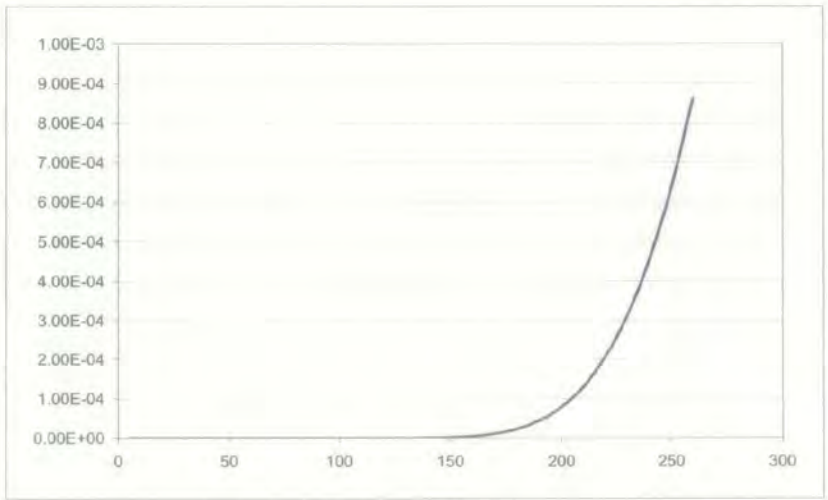
Model Calculation and Results

Years Time (t)	Fac1	EF	Fac2	Comb	mg/L Conc. (Cpw)	mg/kg Conc. Seds
10	-	3.67E+07	-	-	-	-
20	-	3.67E+07	-	-	-	-
30	-	3.67E+07	-	-	-	-
40	0.00E+00	3.67E+07	-	-	-	-
50	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
70	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
90	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
110	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
120	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
130	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
140	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
150	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
160	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
170	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
180	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
190	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
200	0.00E+00	3.67E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Modeling Results for PCBs (quarry sand)

Inputs — **PCBs (quarry sand cap)**

Symbol	Value	Units	Comments
O	0.4	unitless	Porosity of cap sediments
SG	2.5	g/cm3	Specific gravity of cap sand
Pb	1.50	g/cm3	Bulk sediment density of cap sediments (per page B24)
Koc	60,200	L/kgOC	Organic carbon partitioning coefficient
TOC	0.001	fraction	Cap Total Organic Carbon Content
Kd	60.2	L/kg	Cap adsorption distribution coefficient
Rf	91	unitless	Retardation factor calculated per Eq. B3
L	90	cm	Effective cap depth (total cap minus bioturbation depth)
U	17.786304	cm/yr	Seepage velocity (not Darcy velocity)
Do	190	cm2/yr	Molecular diffusion for chemical of interest in water
Deff	56	cm2/yr	Effective diffusion through cap
D	74	cm2/yr	Diffusion/Dispersion combined coefficient
Co	2.24E-02	mg/L	PW conc. of underlying sediments
TS	5	years	Desired time step for results
Criteria	3.00E-05	mg/L	Porewater criteria at top of isolation cap



Model Calculation and Results

Years Time (t)	Fac1	EF	Fac2	Comb	mg/L Conc. (Cpw)	mg/kg Conc. Seds
5	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
15	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
25	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
45	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
50	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
55	1.11E-16	2.64E+09	0.00E+00	1.11E-16	1.25E-18	7.50E-17
60	2.44E-15	2.64E+09	0.00E+00	2.44E-15	2.74E-17	1.65E-15
65	5.81E-14	2.64E+09	0.00E+00	5.81E-14	6.52E-16	3.92E-14
70	8.86E-13	2.64E+09	0.00E+00	8.86E-13	9.95E-15	5.99E-13
75	9.36E-12	2.64E+09	0.00E+00	9.36E-12	1.05E-13	6.32E-12
80	7.34E-11	2.64E+09	0.00E+00	7.34E-11	8.23E-13	4.96E-11
85	4.50E-10	2.64E+09	0.00E+00	4.50E-10	5.05E-12	3.04E-10
90	2.24E-09	2.64E+09	0.00E+00	2.24E-09	2.5187E-11	1.52E-09
95	9.43E-09	2.64E+09	0.00E+00	9.43E-09	1.06E-10	6.37E-09
100	3.42E-08	2.64E+09	0.00E+00	3.42E-08	3.84E-10	2.31E-08

Modeling Results for PCBs (clean sediment)

Inputs — **PCBs (clean sediment cap)**

Symbol	Value	Units	Comments
O	0.4	unitless	Porosity of cap sediments
SG	2.5	g/cm3	Specific gravity of cap sand
Pb	1.50	g/cm3	Bulk sediment density of cap sediments (per page B24)
Koc	60,200	L/kgOC	Organic carbon partitioning coefficient
TOC	0.010	fraction	Cap Total Organic Carbon Content
Kd	602	L/kg	Cap adsorption distribution coefficient
Rf	903	unitless	Retardation factor calculated per Eq. B3
L	90	cm	Effective cap depth (total cap minus bioturbation depth)
U	17.786304	cm/yr	Seepage velocity (not Darcy velocity)
Do	190	cm2/yr	Molecular diffusion for chemical of interest in water
Deff	56	cm2/yr	Effective diffusion through cap
D	74	cm2/yr	Diffusion/Dispersion combined coefficient
Co	2.24E-03	mg/L	PW conc. of underlying sediments
TS	25	years	Desired time step for results
Criteria	3.00E-05	mg/L	Porewater criteria at top of isolation cap

Model Calculation and Results

Years Time (t)	Fac1	EF	Fac2	Comb	mg/L Conc. (Cpw)	mg/kg Conc. Seds
25	-	2.64E+09	-	-	-	-
50	-	2.64E+09	-	-	-	-
75	-	2.64E+09	-	-	-	-
100	-	2.64E+09	-	-	-	-
125	-	2.64E+09	-	-	-	-
150	-	2.64E+09	-	-	-	-
175	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
200	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
225	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
250	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
275	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
300	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
325	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
350	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
375	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
400	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
425	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
450	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
475	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
500	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00


BEFORE
03/25/2006


AFTER
12/04/2006

CONSTRUCTION COMPLETION REPORT
BULKHEAD EXTENSION AND YARD IMPROVEMENT PROJECT

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.

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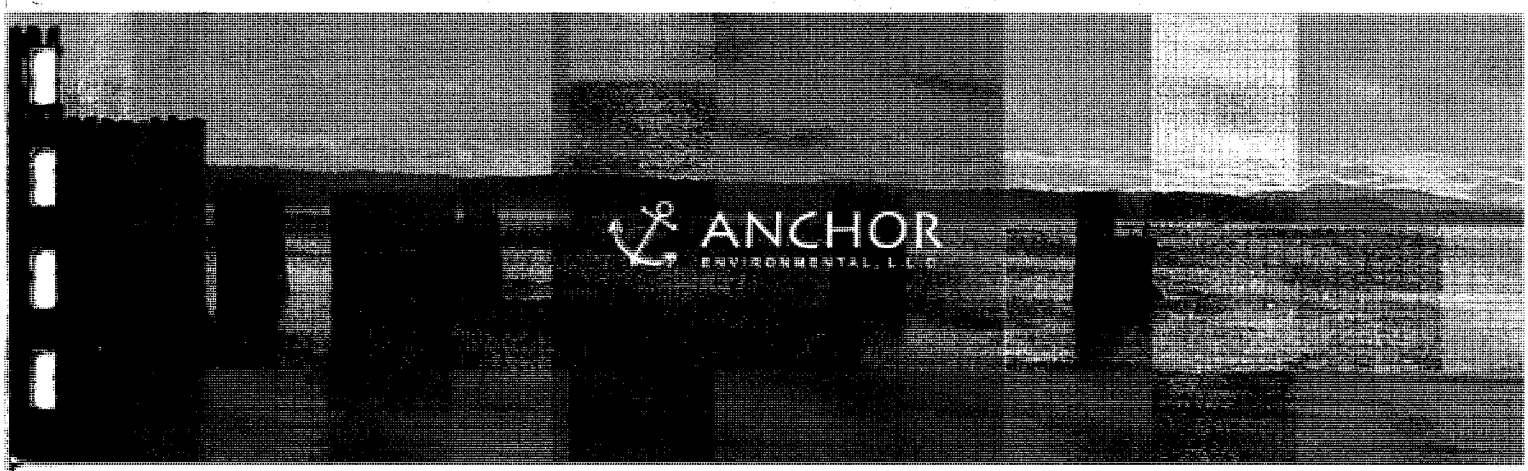
December 2006



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Anchor	Anchor Environmental CA, L.P.
SDSR	BAE Systems San Diego Ship Repair Inc.
BMPs	Best Management Practices
CHHSLs	California Human Health Screening Levels
COCs	constituents of concern
CCR	California Code of Regulations
CTR	California Toxics Rule
DO	dissolved oxygen
MLLW	mean lower low water
NTUs	nephelometric turbidity units
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
the Project	Bulkhead Extension and Yard Improvement Project
SDRWQCB	California Regional Water Quality Control Board, San Diego Region
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leaching Procedure
TTLC	Total Threshold Limit Concentrations
VOCs	Volatile Organic Compounds
WQC	Water Quality Certification

1 INTRODUCTION

In 2006, BAE Systems San Diego Ship Repair Inc. (SDSR; formerly known as Southwest Marine, Inc.) completed reconfiguration of a portion of its ship repair yard. The construction, termed the Bulkhead Extension and Yard Improvement Project (henceforth, "the Project"), involved the installation of a steel sheetpile bulkhead across the mouth of a slip formerly occupied by three abandoned marine railways, removal of selected sediments from the slip, and backfilling with clean imported backfill to create additional upland yard space for the facility. This report documents the completion of the environmental aspects of the Project, including a brief narrative summary of the work and its accompanying environmental monitoring and sampling, and updated modeling of predicted long-term water quality impacts from the Project.

Figure 1 identifies the general location of the Bulkhead Extension and Yard Improvement Project relative to the entire BAE Systems San Diego Ship Repair yard and facilities. The construction was performed under U.S. Army Corps of Engineers Individual Permit No. 200301115-KW, Coastal Development Permit No. CDP-2003-10, Port of San Diego Construction Approval (Project No. 021-015-1965) and mitigated negative Declaration (UPD #83356-ND-597), and two separate 401 Water Quality Certifications ([WQCs] Files No. 03C-065 and 04C-097 for two phases of construction activity described below) from the California Regional Water Quality Control Board, San Diego Region (SDRWQCB). Among other requirements, these permits mandated certain environmental controls for the Project, including:

- Removal of in-place sediments containing chemicals in excess of California hazardous waste levels (Total Threshold Limit Concentrations, or TTLCs, per California Code of Regulations Title 22), and their disposal at permitted upland landfill facilities.
- Protection of water quality in the adjacent waters of San Diego Bay, through Best Management Practices (BMPs), and as verified by daily observations and monitoring, per the Project's Water Quality Monitoring Plan (Anchor, 2004).

Previous investigations and analyses conducted by Anchor Environmental CA, L.P. (Anchor) demonstrated the Project's overall short- and long-term protectiveness to water quality in adjoining San Diego Bay waters, and to human health and the environment (Anchor, 2005).

Mitigation for construction-related impacts to intertidal bay bottom (0.77 acres total) was achieved through the creation of additional 0.77 acres of intertidal habitat at the Sweetwater Channel/D Street Fill mitigation area, as part of a Port of San Diego mitigation project, defined in the third amendment to the BAE Systems lease with the Port of San Diego. Eelgrass mitigation was accomplished through the creation of additional eelgrass habitat (at a 1:1.2 ratio) in the vicinity of Pier 3 on the SDSR property and at the Sweetwater Channel/D Street Fill mitigation area. Documentation of these mitigation measures can be found in Appendices J and K, respectively.

1.1 Overview of Construction

Figures 2 and 3 present detailed plan and cross-sectional views of the bulkhead improvement area and proposed construction activities. The Project was performed in two phases; the general sequence of construction is illustrated as a typical cross-section on Figure 2.

Phase 1 of the Project began on March 13, 2006 and involved removing marine structures from the area and installing a new section of sheetpile bulkhead across the face of the abandoned railways (Figure 2). After completion of Phase 1, Phase 2 construction activities commenced in June 2006. Phase 2 included removal of selected sediments from the Project footprint and a "wedge" of material situated immediately behind the new bulkhead (Figure 3), then after testing to confirm chemical contaminant removal, backfilling the Project site with imported, clean, granular fill to the elevation of the surrounding grade (approximately +12 feet mean lower low water [MLLW]). Construction was completed on October 13, 2006 and the surface of the clean backfill area was paved in November 2006 to support shipyard operations.

1.2 Contents of this Report

This report provides brief narrative descriptions and documentation of the following elements of the construction activity:

- Section 2 describes the characterization of sediments in the Project area. The initial delineation of sediments requiring removal because they qualified as hazardous waste under California environmental regulations.

- Section 3 describes the excavation of sediments identified to exceed TTLC criteria, as well as confirmational sampling that was conducted to verify that sediments were sufficiently removed.
- Section 4 describes the disposal of excavated sediments at local and regional landfills, as well as characterization of the excavated sediment for approval by these landfills.
- Section 5 describes the backfilling of the Project area with clean, imported fill materials.
- Section 6 describes monitoring of water quality during the construction process.
- Section 7 presents updated modeling of chemical transport and long-term water quality impacts from the completed Project.
- Section 8 summarizes the conclusions of this report.

Supporting data is presented in tables following the text, and in a series of appendices, attached to this report in CD format.

2 SEDIMENT CHARACTERIZATION AND DELINEATION OF EXCAVATION REQUIREMENTS

Sediments in place within the Project area were characterized over the course of three different sampling and analysis efforts. The locations of samples and sediment cores are summarized on Figure 2. The three investigations are as follows:

2.1 Detailed Sediment Investigation of BAE Systems and NASSCO Shipyards (2002/2003)

A detailed site sediment investigation was conducted for both the SDSR (then known as Southwest Marine) and adjoining NASSCO shipyards in 2002 and 2003. This investigation, documented in Exponent (2003), was conducted in response to SDRWQCB Resolution Nos. 2001-02 and 2001-03 and subsequent Water Code Section 13267 letters issued to the shipyards. The investigation involved a series of surface and core samples taken from site sediments throughout both shipyards' leasehold areas and beyond.

Sediments along and in the vicinity of the planned bulkhead were represented by cores SW04 and SW08, taken in close proximity to the alignment of the bulkhead (refer to Figure 2). Sediment chemistry from various depth intervals in these two cores are summarized in Table 1. Impacted sediments were identified in both cores to a depth of about 4 feet (although core SW04 could not be penetrated beyond this depth because refusal was reached, so deeper materials could not be sampled at this location). The primary constituents of concern (COCs) in the impacted sediments include elevated concentrations of metals, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs).

2.2 Vertical and Lateral Characterization of Sediment and Groundwater (2004)

In 2004, following meetings and communications with the SDRWQCB, SDSR commissioned an additional, site-specific study of sediments within the Project footprint in order to demonstrate to the SDRWQCB that the proposed Project would be protective of water quality in San Diego Bay, if the existing sediments were left in-place and encapsulated below clean backfill and behind the new bulkhead wall. Anchor conducted a site investigation within the Project boundaries to provide additional vertical and lateral characterization of COCs in the soil, sediment, and groundwater in and surrounding the Project area.

Continuous core samples were collected at five locations, as depicted on Figure 2. Representative composite samples were obtained from the various geologic layers that are present, including the recent near-surface sediment, upland fill from the surrounding paved area, and the underlying Bay Point Formation. Samples were analyzed for metals, PCBs, and PAHs.

The results of chemical analysis of the samples are summarized in Table 2. At core locations SW-4 in the south half of the Project area, and SW-5 in the north half of the Project area, the upper two feet of sediment was found to contain copper and/or zinc at concentrations that exceeded California hazardous waste criteria as defined by TTLC values, per California Code of Regulations (CCR) Title 22 (section 66261.24, Division 4.5, Chapter 11, Article 3). Elevated concentrations of lead and PCBs were also noted in these locations, although not above TTLC criteria. No TTLC exceedances were found below depths of 2 feet.

Groundwater was also sampled and the site hydraulic gradient measured in response to tidal fluctuation. This information was used to predict the efflux of dissolved constituents in groundwater after Project completion. Modeling demonstrated that long-term water quality in adjacent waters of San Diego Bay would not be adversely affected by the Project.

Results of this investigation and the groundwater modeling are documented in a site investigation and characterization report (Anchor, 2005).

2.3 Additional Sediment Evaluation and Delineation (2006)

In response to the investigation documented in Anchor (2005), the SDRWQCB approved issuance of a WQC for the Project, contingent on SDSR removing all sediments that exceeded TTLC criteria from the Project area (henceforth termed "TTLC sediments," as identified in cores SW-4 and SW-5). In order to better delineate the limits of TTLC sediments, Anchor obtained hand-pushed piston core samples of sediments at seven additional locations in the Project area in March 2006 (refer to Figure 2 for sampling locations). At each location, the upper 2 to 4 feet of sediment was sampled in 1-foot intervals and analyzed for key metals (Cu, Pb, and Zn) and PCBs.

The results of this sampling effort are presented in Table 3. Laboratory reports are in Appendix A, and a Data Validation Review Report on this data is included as Appendix B. Samples from locations BAE-01, BAE-02, BAE-04, and BAE-05 indicated metal concentrations in excess of TTLC criteria, to depths of 4 feet and possibly below (deeper samples were not successfully obtained); while locations BAE-03, BAE-06, and BAE-07 had no indicated exceedances of TTLC criteria.

Based on these results, the horizontal extent of TTLC sediments was projected as depicted on Figure 2. These estimated limits were used to guide the initial excavation depths for TTLC sediments, subject to confirmatory sampling during construction.

3 EXCAVATION OF TTLC SEDIMENTS

Excavation of TTLC sediments from the Project site started in June 2006, beginning with the portion of the Project area that is north of Pier 1. The entire Project area was subdivided into individual excavation segments, each assigned its own representative confirmatory post-excavation sample, as shown on Figure 4. The excavation of TTLC sediments was completed in this segment-by-segment basis.

An initial excavation depth of 4 feet was chosen for each excavated segment, since this was the depth of the 2006 cores (as described in Section 2), in an attempt to control excavation volumes while using confirmatory sampling to ensure that the full extents of TTLC sediments were removed. Upon reaching the 4-foot depth within each segment, confirmatory sediment samples were obtained from the post-excavation subgrade. The confirmatory samples were submitted to a local laboratory (CalSciences in Garden Grove, California) and tested for Cu, Pb, Zn, and PCBs. While the analytical testing was being done, the excavation contractor was instructed to hold off on further excavation from other segments of the Project area, so as to avoid any resuspension of sediments while the excavated subgrade was exposed.

When test results were received, they were compared to the TTLC criteria to see if exceedances still existed at the excavated depth. If so – or even if the measured concentrations were within about one-fifth of the TTLC criteria – then the contractor was instructed to excavate an additional 2 feet to remove additional sediment from the sampled segment. Following this re-excavation, another confirmatory sample was obtained and analyzed. Excavation was considered complete at a given location only when the latest confirmatory sample indicated that concentrations of Cu, Pb, Zn, and PCBs were well below TTLC criteria.

When excavation was considered complete at a location (i.e., remaining concentrations well below TTLC criteria), the excavated segment was backfilled up to previous grade with clean, imported sand fill, and the excavation contractor was then directed to move on to excavating the next adjacent segment. In this manner the excavation progressed in a segmental fashion.

After the final segment of TTLC sediment was removed and backfilled with clean material, the contractor excavated the sediment "wedge" from immediately behind (inside of) the bulkhead

wall (see Figure 3). Material excavated from the wedge was stockpiled separately from the expected TTLC sediments, to prevent mixing or cross-contamination of the materials. Two more confirmatory samples ("Wedge-1" and "Wedge-2" were taken from the bottom of this excavation to verify that no TTLC sediment was left at the base of the excavation).

Altogether, approximately 1,100 cubic yards of sediment – or 1,400 tons – was excavated during this process.

Table 4 presents the results of confirmatory samples obtained during excavation of TTLC sediments, and Appendix C includes the laboratory reports from all chemical analyses. In several instances (for example, BH-4, BH-8, etc.) the first confirmatory sample exceeded or nearly exceeded TTLC criteria for copper, lead, and/or zinc, so additional excavation was done and another sample obtained at the new, deeper depth (labeled BH-4.1, BH-8.1, etc.). In one case (at location BH-4), a third round of excavation and confirmatory sampling was done, to a depth of 8 feet; the final sample at this location was labeled BH-4.2.

Sediment removal was preceded by and concurrent with demolition and removal of previously existing marine cradles in the northwestern portion of the Project area, and the part of Pier 1 landward of the new bulkhead wall.

4 DISPOSAL OF CONSTRUCTION WASTE AND EXCAVATED SEDIMENTS

4.1 Characterization and Disposal of Excavated Sediment

Excavated sediment was stockpiled on-site in the paved north area of the Yard Improvement Project, in a controlled stockpiling area with concrete blocks and runoff protection around its perimeter to prevent loss of sediment and water to the surrounding environment.

As excavation proceeded, composite samples were collected from material stockpiles and analyzed for landfill acceptance. A total of 23 samples were obtained altogether, which, for 1,100 cubic yards of sediment, amounts to approximately one representative sample per every 50 cubic yards of stockpiled sediment, consistent with testing requirements for local landfills operated by Allied Waste (such as the Otay and Sycamore landfills in San Diego County). Analysis of these samples was done in two phases: first, analysis of the bulk concentrations of metals, PCBs, PAHs, and Volatile Organic Compounds (VOCs), to determine which (if any) constituents contained elevated concentrations. Next, in cases where bulk concentrations were within one-tenth of the TTLC criteria, leachability testing (by the Soluble Threshold Limit Concentration, or STLC) was conducted to evaluate the potential for leaching of those chemicals, as a requirement for potential acceptance at local landfills. Additionally, Toxicity Characterization Leaching Procedure (TCLP) was conducted on a subset of samples. No TCLP exceedances were observed.

Analytical results from sediment stockpiles are presented in Appendix D. Ultimately, the majority of the excavated sediment did not meet TTLC requirements for local landfill disposal at a San Diego County landfill, and 728.21 tons of sediment were instead hauled to the Copper Mountain Landfill, a solid waste facility operated by Allied Waste in Arizona. In addition, 673.97 tons of sediment was hauled to the Azusa Land Reclamation Landfill in Azusa, California, which accepted stockpiled sediments containing lesser (non-hazardous) concentrations of metals and PCBs. Waste Disposal Manifests for sediment hauling and disposal are presented in Appendix E.

4.2 Disposal of Demolition Debris

Wood, steel, and concrete debris was also generated during project work, from the demolition of existing site structures (marine railways, and the portion of Pier One within the Project footprint). All demolition materials were cleaned of sediment and disposed at the Otay Landfill in San Diego County and at the Simi Valley landfill in Ventura County, CA.

5 BACKFILLING OF EXCAVATION AND PROJECT AREA

After sediment excavation was completed, the Project area was completely backfilled with clean imported soil. The area was filled to a final grade of approximately elevation +11.5 feet MLLW, so that after later installation of base course and asphalt concrete pavement, the final grade would be roughly equivalent to the elevation of the surrounding land area (elevation +12.1 feet MLLW).

Backfill material was obtained from several local sources in the San Diego area. Representative samples of the imported backfills were obtained on a regular basis, and 20 of the samples (roughly one out of every five collected) were tested for key chemical constituents (Cu, Pb, Zn, and PCBs) to ensure that there were no significant concentrations of these chemicals in the fill. The number of samples analyzed from each import fill source was proportionate to the amount of fill used from that source.

The analytical results for the imported soil fill are summarized in Table 5. Metals concentrations (Cu, Pb, and Zn) were well below California TTLC Criteria, as well as Human Health Screening Levels (CHHSLs) for residential and commercial/industrial use. No PCBs were detected in any of the imported sand samples.

6 WATER QUALITY MONITORING

6.1 Water Quality Program

Water quality monitoring was performed during the excavation activities (Phase 2A) and clean fill materials placement (Phase 2B). Water quality monitoring was conducted as a condition of the 401 WQC Permit issued by the SDRWQCB. Daily visual turbidity monitoring and weekly water quality monitoring of turbidity, dissolved oxygen (DO), and pH were conducted during Phase 2 activities.

The purpose of the water quality monitoring program was to provide ongoing assessment of water quality during construction and filling activities. Compliance criteria, shown in Table 6, were established to determine if there were any water quality exceedances during construction. The objectives of the monitoring program are as follows:

- To ensure that water quality conditions were maintained within the prescribed limits of relevant regulatory requirements.
- To allow for appropriate adjustment of construction activities in a manner that would ensure protection of the environment.
- To document the results of water quality performance monitoring.

Water quality monitoring for Phase 2A was conducted at three locations during construction, as shown on Figure 6 (from Anchor 2004):

- Station A, located 500 feet bayward from the construction limits (defined as the bulkhead wall). This is the background monitoring station.
- Station B, located 250 feet bayward from the construction limits. This defines the site compliance zone boundary.
- Station C, located 125 feet bayward from the construction limits. This station is an additional "early warning" boundary.

At each location, DO, turbidity, and pH were monitored at three depths: shallow (within 3 feet of the surface); mid-depth; and deep (within 6 feet of the bottom).

6.2 Water Quality Monitoring Results and Summary

The following data are presented in Appendices to this report:

- Table of Water Quality Monitoring Results (Appendix G)
- Daily Construction Site and Waterside Photographs (Appendix H)
- Daily Monitoring Logs and Checklists (Appendix I)

BAE personnel were trained in the calibration and use of the monitoring equipment. Originally, the Hydrolab® Hydras 3 LT sonde/laptop system was calibrated and tested in the field. However, due to difficulties in operating the laptop in the field, after two monitoring events, the Hydrolab was replaced with a portable system (the Hydrolab® DS4a).

In summary, the water quality monitoring results showed the following:

- **Turbidity.** No turbidity, floatables, or oil sheens[1] were visually observed during daily monitoring. Weekly turbidity readings were consistent with historical data for the subject area of San Diego Bay (typically less than 5 nephelometric turbidity units [NTUs], per San Diego Bay Watersheds [2006] and Unified Port District of San Diego [2006] websites). The only exception to this was one sampling occasion, on June 27, 2006, when turbidity was recorded between 88.8 and 116.4 NTU. There was no construction-related event to account for this spike, and no turbidity was observed. Additionally, the lowest reading was recorded closest to the construction activity, and the highest reading was recorded at the background condition station. Altogether, therefore, this anomalous reading was not considered to reflect a construction-related impact on water quality.
- **Dissolved Oxygen.** Historically, DO levels have ranged from 5.0 to 8.1 (per San Diego Bay Watersheds [2006] and Unified Port District of San Diego [2006]). DO levels measured for this Project were consistent with the historical data, and were often greater (and therefore improved) closer to the construction activities (Station C) than at the background monitoring station (June 22, June 27, July 11, and August 17, 2006).
- **pH.** pH levels were consistently within standards set by the SDRWQCB.

[1] On March 29, 2006, a "slight" oil sheen was noted. The sheen was traced to diver air tools, and those operations were immediately terminated.

6.3 Water Quality Monitoring Conclusions

No deleterious effects to water quality were observed or measured during excavation or placement activities. There were no visual observations of turbidity, floatables, or oil sheens, and there were no observations of distressed wildlife.

There were no impacts to water quality associated with exceedences of pH, and measured DO levels were within historical ranges. Furthermore, DO levels at the monitoring station closest to construction activities were often greater than background conditions. Visual observations during construction activity indicated no evident turbidity. Monitoring showed that turbidity levels were within historical ranges on all but one monitoring event, the same day that DO was recorded at its highest level.

As a result of these measurements and observations, BAE Systems SDSR concludes that this Project did not result in adverse impacts to water quality from increased DO or turbidity levels.

7 UPDATED MODELING OF LONG-TERM WATER QUALITY

In 2005, prior to Project construction, BAE Systems completed an evaluation of the Project's protectiveness of long-term water quality. This was done to support the SDRWQCB's review of BAE Systems' application for a 401 WQC for the Project. Specifically, modeling was performed to predict the tendency of dissolved waste constituents (copper, lead, zinc, and PCBs) to be transported in groundwater from the interstices of sediment left in place within the Project footprint, through the newly placed clean fill materials and new sheetpile bulkhead, and into immediately adjacent waters of San Diego Bay. The results of this modeling were presented in Anchor (2005).

This pre-construction modeling effort utilized available site data, including analysis of samples obtained in 2004 as well as past records of site sediment concentrations. Predicted chemical concentrations within the Project footprint were based on the expectation that all sediments containing exceedances of TTLC criteria would be removed. One-dimensional chemical transport modeling was performed using the approach developed by Reible (1998) and documented in the U.S. Army Corps of Engineers' national guidance for cap design (Palermo et al., 1998). More detail on the modeling methods and inputs are presented in Anchor (2005). The modeling demonstrated that all four of the modeled chemicals remained well below California Toxics Rule (CTR) criteria for surface waters, for well beyond 100 years following Project completion.

Following the completion of the construction project in 2006, this modeling has now been updated to reflect known remaining conditions, as reflected by the actual excavation extents and confirmatory sampling documented in this report. It also reflects the fact that imported backfill was used to fill the Project site (whereas the previous modeling also considered the possibility that dredged sediment would be used as backfill). Tables 7 and 8 summarize the updated modeling inputs. For the purposes of comparison, Table 8 includes the estimated porewater concentrations in contained sediments both for the known post-construction conditions, and from the pre-construction modeling described in Anchor (2005). It can be seen that the construction project resulted in overall chemical concentrations within the Project footprint that are lower than those originally predicted.

Table 9 summarizes the results of the updated modeling as compared to the pre-construction modeling results presented in Anchor (2005). The key information in this table is the years until predicted breakthrough – the time when dissolved chemical concentrations expressed through the sheetpile are predicted to meet CTR water quality criteria. The updated modeling confirms that breakthrough will not occur for well beyond 100 years. Furthermore, three of the four predicted the times to breakthrough have increased compared to the previous modeling. This is a result of the fact that chemical concentrations within the Project footprint ended up being lower than they were originally predicted to be.

In summary, the updated modeling confirms that the completed Project is predicted to cause no significant impacts on surface water quality, verifying that the Project is fully protective of water quality.

8 CONCLUSIONS

The Bulkhead Extension and Yard Improvement Project was completed on October 13, 2006, consistent with the terms of the Project permits. Specifically,

- All sediments exceeding California hazardous waste (TTLC) criteria were removed from the Project site, as confirmed by a series of post-excavation samples.
- All excavated sediment was disposed off-site at permitted landfills.
- Clean import fill material was used to backfill the Project area.
- Daily water quality monitoring confirmed that adjacent surface waters of San Diego Bay were not adversely impacted pH, DO, or turbidity.
- Storm water protection measures were maintained in place throughout the construction process.
- The Project is projected to cause no adverse long-term impacts on water quality in adjoining waters of San Diego Bay.

This report satisfies the requirements of paragraph B.3 in the 401 WQC, stating that a report shall be submitted at the end of construction which documents the results of all water quality monitoring.

REFERENCES

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TABLES

Table 1
Results of Detailed Sediment Investigation of BAE Systems and NASSCO Shipyards (Exponent, 2003)

Analyte of Concern	Background Sediment Concentrations [1]	California TTLC Criteria [2]	SW04 8/7/2001 0-2 cm	SW04 9/10/2002 0-2 cm	SW04 8/27/2002 0-2 ft	SW04 8/27/2002 2-4.1 ft	SW04 Depth Averaged	SW08 8/8/2001 0-2 cm	SW08 8/28/2002 0-2 ft	SW08 8/28/2002 0-2 ft	SW08 8/28/2002 2-4 ft	SW08 8/28/2002 4-6 ft	SW08 8/28/2002 6-6.5 ft	SW08 Depth Averaged
Conventionals														
Fines content (%)			31.8	-	-	-	31.8	68.8	-	-	-	-		68.8
TOC (% dry)			1.59	-	0.91	1.8	1.37	3.35	1.5	-	1.1	0.12	-	0.93
Metals (mg/kg)														
Arsenic	9	500	**95.5**	-	**67.7**	**107**	**89.65**	**25.5**	**26.6**	-	**13.2**	4.9	-	**15.12**
Cadmium	0.29	100	**2.35**	-	**0.79**	**3.17**	**2.05**	**0.67**	**1.13**	-	**0.86**	0.07	-	**0.69**
Chromium	57	2500	**64.7**	-	**25.5**	**97.2**	**63.36**	**77.8**	**110**	-	**109**	7.4	-	**76.00**
Copper	120	2500	**1880**	-	**370**	**2170**	**1325.60**	**1030**	1540	-	**1480**	49	-	**1029.94**
Lead	48	1000	**482**	-	**154**	**413**	**295.73**	**248**	**343**	-	**341**	10.6	-	**233.26**
Mercury	0.56	20	**1.19**	-	**1.14**	**7.4**	**4.36**	**2.53**	**4.97**	-	**5.95**	0.3	-	**3.75**
Nickel	17	2000	**20.1**	-	8.3	**40**	**24.87**	**22.7**	16.8	-	9.1	2.6	-	9.71
Selenium	0.72	100	**1.2**	-	**1.2 U**	**3.1**	**2.19**	**1 U**	**1.6 U**	-	**1.4 U**	1.2 U	-	**1.6 U**
Silver	1	500	**1.72**	-	0.59	**1.4**	**1.04**	**1.38**	**1.04**	-	0.49	0.03	-	0.53
Zinc	210	5000	**4550**	-	**669**	**1450**	**1158.31**	**859**	**1410**	-	**786**	33.7	-	**749.46**
PCB (µg/kg)														
Aroclor 1016			190 U	-	150 U	1500 U	1500 U	330 U	1900 U	950 U	1400 U	130 U	12 U	1900 U
Aroclor 1221			370 U	-	290 U	2900 U	2900 U	650 U	3800 U	1900 U	2800 U	250 U	24 U	3800 U
Aroclor 1232			190 U	-	150 U	1500 U	1500 U	330 U	1900 U	950 U	1400 U	130 U	12 U	1900 U
Aroclor 1242			190 U	-	150 U	1500 U	1500 U	330 U	1900 U	950 U	1400 U	130 U	12 U	1900 U
Aroclor 1248			190 U	-	1300	16000	8664	990	9300	12000	15000	1100	12 U	8223
Aroclor 1254			2400	-	1200	13000	7153	2400	7000	8700	12000	600	12 U	6303
Aroclor 1260			600	-	610	6500	3570	640	4100	4400	6600	290	12 U	3427
Total PCBs	170	50000	**3000**		**3110**	**35500**	**19387**	**4030**	**20400**	**25100**	**33600**	**1990**	0	**17954**
PAHs (µg/kg)														
2-Methylnaphthalene			31	-	10	460	240	32	18	-	50	6.1 U	-	25
Acenaphthene			110	-	22	3100	1594	83	54	-	110	6.1 U	-	57
Acenaphthylene			120	-	47	190	122	280	100	-	84	6.1 U	-	66
Anthracene			710	-	150	2400	1312	1500	360	-	360	10	-	258
Benz(a)anthracene			1100	-	370	3400	1937	2300	770	-	950	17	-	601
Benzo(a)pyrene			1500	-	1100	5800	3527	2900	2600	-	3000	85	-	1918
Benzo(b)fluoranthene			1600	-	950	5800	3456	3500	2900	-	3000	88	-	2025
Benzo(ghi)perylene			640	-	630	2100	1393	1300	970	-	1000	26	-	677
Benzo(k)fluoranthene			1300	-	790	5200	3065	2400	2600	-	2900	85	-	1880
Chrysene			1800	-	580	4500	2615	4900	1200	-	1200	38	-	862
Dibenzo(a,h)anthracene			230	-	120	650	395	450	310	-	370	8.4	-	233
Fluoranthene			2100	-	700	10000	5485	3500	1000	-	1200	25	-	776
Fluorene			180	-	34	1500	785	220	77	-	120	6.1 U	-	70
Indeno[1,2,3-cd]pyrene			880	-	750	2600	1711	1800	1400	-	1300	34	-	927
Naphthalene			38	-	20	3800	1949	38	19	-	58	6.1 U	-	28
Phenanthrene			1100	-	260	5000	2699	1300	490	-	620	13	-	387
Pyrene			2000	-	1400	18000	9906	2600	6000	-	8400	51	-	4826
Total PAHs			15439	-	7933	74500	42191	29103	20868	-	24722	510.9	-	15617

Notes:
U = analyte not detected at the indicated detection limit.
From E[x]ponent (2003).

Table 2
Results of Vertical and Lateral Characterization of Site Sediment (Anchor, 2005)

Parameter	California TTLC Criteria [2]	Core SW-1	Core SW-2	Core SW-3		Core SW-4					Core SW-5				
		Bay Point Formation 15' - 17'10"	Bay Point Formation 18' - 20'	Upland Fill 5' - 7'9"	Upland Fill 12'2" - 14'2"	Surface Sediment 0' - 2'1"	Surface Sediment 2'1" - 3'5"	Surface Sediment 5' - 5'9"	Surface Sediment 5'9" - 8'10"	Bay Point Formation 15' - 16'	Surface Sediment 2" - 2'	Surface Sediment 2' - 2'1"	Surface Sediment 5' - 6'5"	Surface Sediment 6'5" - 7'5"	Bay Point Formation 10' - 12'9"
Total Organic Carbon (percent)		0.01	0.02	0.22	0.13	1.48	0.29	0.21	0.01	0.03	0.46	0.04	0.06	0.03	0.02
Metals (mg/kg)															
Arsenic	500	3.65	1.15	3.48	3.8	154	35.4	65.9	1.42	1.56	177	3.57	3.13	2.62	6.42
Cadmium	100	0.05 J	0.04 J	0.05 J	0.07	3.13	0.73	1.13	0.05 J	0.04 J	2.83	0.08	0.08	0.08	0.06
Chromium	2500	3.6	12.3	6.46	3.89	173	138	75.2	3.22	22.4	192	8.7	5.4	21.4	4.73
Copper	2500	1.75	5.67	4.76	11.3	2540	981	1040	2.4	12.6	6950	12.7	5.85	14.1	4.62
Lead	1000	0.81	2.1	5.39	4.04	568	352	326	0.73	3.75	955	21.4	5.25	3.98	1.04
Mercury (total)	20	0.03 J	0.01 U	0.05 J	0.03 J	0.69 J	2.4 J	0.7 J	0.01 J	0.03 J	0.91 J	0.24 J	0.1 J	0.01 U	0.01 U
Nickel	2000	2.06	6.22	2.29	1.74	25.9	10.6	12	2.02	10.1	26.1	3.7	2.1	8.17	3.58
Selenium	100	0.13	0.15	0.3	0.09	2.91	0.95	1.24	0.66	0.25	3.52	0.1	0.09	0.05 J	0.8
Silver	500	0.05 U	0.05 U	0.05 U	0.05 U	1.77 J	0.55 J	0.76 J	0.05 U	0.18 J	2.1 J	0.28 J	0.15 J	0.04 J	0.05 U
Zinc	5000	23.8 J	23.9 J	17.8 J	13.7 J	6630 J	1560 J	2250 J	6.18 J	42.1 J	4470 J	28.8 J	19.3 J	49.3 J	9.77 J
PAHs (µg/kg)															
1-Methylnaphthalene		5 U	5 U	5 U	2.30 J	29.90	22.30	20.40	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
1-Methylphenanthrene		5 U	5 U	5 U	2.80 J	102	15.50	34.10	5 U	5 U	5 U	1.20 J	5.00 U	5.00 U	5 U
2,3,5-Trimethylnaphthalene		5 U	5 U	5 U	2.40 J	44.50	13.30	12.90	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
2,6-Dimethylnaphthalene		5 U	5 U	5 U	1.0 J	34.80	22.70	19.0	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
2-Methylnaphthalene		5 U	5 U	5 U	1.70 J	38.40	32.80	29.40	5 U	1.0 J	5 U	1.10 J	5.00 U	5.00 U	5 U
Acenaphthene		5 U	5 U	5 U	22.80	5 U	82.90	66.50	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
Acenaphthylene		5 U	5 U	5 U	6.80	35.70	31.90	17.60	5 U	5 U	5 U	1.40 J	1.20 J	5.00 U	5 U
Anthracene		5 U	5 U	5 U	13.80	5 U	5 U	5 U	5 U	5 U	5 U	2.70 J	2.20 J	5.00 U	5 U
Benz[a]anthracene		5 U	2.30 J	1.10 J	46.30	5 U	5 U	5 U	5 U	5 U	5 U	4.40 J	7.20 J	5.00 U	5 U
Benzo(a)pyrene		5 U	5 U	1.50 J	103	5 U	5 U	5 U	5 U	5 U	5 U	6.70	16.90 J	5.00 U	5 U
Benzo(b)fluoranthene		5 U	5 U	1.40 J	81.80	5 U	5 U	5 U	5 U	5 U	5 U	5.10	16.40 J	5.00 U	5 U
Benzo(e)pyrene		5 U	5 U	1.30 J	67.90	5 U	5 U	5 U	5 U	5 U	5 U	4.0 J	9.70 J	5.00 U	5 U
Benzo(ghi)perylene		5 U	5 U	1.40 J	101.0	5 U	5 U	5 U	5 U	5 U	5 U	5.40	14.00 J	5.00 U	5 U
Benzo(k)fluoranthene		5 U	5 U	1.20 J	77.40	5 U	5 U	5 U	5 U	5 U	5 U	4.80 J	15.30 J	5.00 U	5 U
Biphenyl		5 U	5 U	5 U	1.90 J	15.60	13.10	10.60	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
Chrysene		5 U	1.40 J	1.30 J	62.30	5 U	5 U	5 U	5 U	5 U	5 U	6.10	8.00	5.00 U	5 U
Dibenzo(a,h)anthracene		5 U	5 U	5 U	11.50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.50 J	5.00 U	5 U
Fluoranthene		5 U	1.20 J	2.60 J	168	5 U	5 U	5 U	5 U	1.20 J	5 U	7.90	16.10	5.00 U	5 U
Fluorene		5 U	5 U	5 U	2.10 J	5 U	58.10	5 U	5 U	5 U	5 U	5 U	5.00 U	5.00 U	5 U
Indeno[1,2,3-cd]pyrene		5 U	5 U	5 U	89.60	5 U	5 U	5 U	5 U	5 U	5 U	4.30 J	11.90 J	5.00 U	5 U
Naphthalene		5 U	5 U	5 U	14.90	39.10	31.30	31.70	5 U	1.20 J	5 U	1.10 J	5.00 U	5.00 U	5 U
Perylene		5 U	5 U	5 U	28.30	5 U	5 U	5 U	5 U	5 U	5 U	3.20 J	4.40 J	5.00 U	5 U
Phenanthrene		1.10 J	1.30 J	1.60 J	14.70	5 U	5 U	5 U	5 U	1.40 J	5 U	4.70 J	5.00	5.00 U	5 U
Pyrene		1.30 J	10.90	8.20	178	5 U	5 U	5 U	0.50	1.30 J	5 U	130	29.60	5.00 U	5 U
Total PAHs		2.40 J	17.02	21.60	1102.50	339.80	303.90	242.20	6.50	6.10	0	194.10	159.40	0.00	0
PCBs (µg/kg)															
Aroclor 1016		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1221		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1232		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1242		20 U	20 U	20 U	20 U	378	2410	459	20 U	20 U	452	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1248		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1254		20 U	20 U	20 U	20 U	1270	2260	1100	20 U	20 U	861.0	20 U	20.00 U	20.00 U	20.00 U
Aroclor 1260		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20.00 U	20.00 U	20.00 U
Total PCBs (U=0)	50000	0	0	0	0	1789	5188.10	1894.80	0	0	1310.80	0	0	0.00	0.00

Notes:
U = analyte not detected at the indicated detection limit.
J = estimated value.
Shaded values exceed California TTLC criteria.
[1] Background sediment concentrations defined as 95% UPL Final Reference Pool levels from Exponent (2003).
[2] TTLC = Total Threshold Limit Concentration, per CCR Title 22, Division 4.5, Chapter 11, Article 3.

Table 3
Results of Additional Sediment Evaluation and Delineation (2006)

Analyte of Concern	California Haz Waste Criteria (TTLC)[1]	BAE-01-A 0-2 ft	BAE-01-B 2-4 ft	BAE-02-A 0-2 ft	BAE-02-B 2-4 ft	BAE-03-A 0-2 ft	BAE-04-A 0-2 ft	BAE-04-B 2-4 ft	BAE-54-B (dup) 2-4 ft	BAE-05-A 0-2 ft	BAE-05-B 2-4 ft	BAE-55-B (dup) 2-4 ft	BAE-06-A 0-2 ft	BAE-06-B 2-4 ft	BAE-07-A 0-2 ft	BAE-07-B 2-4 ft
Metals (mg/kg)																
Copper	2500	615	**8040**	**6810**	**4290**	497	**3400**	**3380**	**3460**	2160	3240	**2650**	1720	1340	723	715
Lead	1000	290	644	**1560**	906	249	841	**1390**	**1420**	591	660	694	311	315	243	199
Zinc	5000	1400	**6930**	3750	2120	529	**6280**	**8570**	**9490**	**6160**	**6640**	**6640**	1350	1410	572	485
PCB (µg/kg)																
Total PCBs	50000	640	3100	21700	38000	970	960	420	730	1340	1410	1320	3600	4700	4300	3300

Notes:
[1] TTLC = Total Threshold Limit Concentration, per CCR Title 22, Division 4.5, Chapter 11, Article 3.
Yellow shading indicates exceedances of TTLC criteria.

Table 4
Results of Post-Excavation Confirmation Sampling

Sample ID	Sample Date	Depth (ft)	Cu	Pb	Zn	PCBs
			2500	1000	5000	50000
			250	100	500	5000
BH 1	06/13/06	4.00	230	32.8	109	700
BH 2	06/13/06	4.00	0.968	1.05	7.35	ND
BH 3	06/12/06	4.00	55.7	8.99	56.2	1160
BH 4	06/19/06	4.00	395	326	2120	2800
BH 4.1	06/21/06	6.00	**4900**	699	2310	16500
BH 4.2	06/23/06	8.00	102	140	93.8	ND
BH 5	06/16/06	4.00	33.6	10.5	544	780
BH 6	06/12/06	4.00	8.13	2.48	17.2	ND
BH 7	06/16/06	4.00	3.45	5.79	23.9	1000
BH 8	06/12/06	4.00	**3360**	598	3590	17100
BH 8.1	06/16/06	6.00	233	44.6	277	ND
BH 9	06/30/06	4.00	2090	275	2320	950
BH 9.1	09/30/06	6.00	ND	1.13	41	NA
BH 10	06/23/06	4.00	2450	791	4750	3700
BH 10.1	06/27/06	6.00	94.7	24.8	131	920
BH 11	06/23/06	4.00	**3220**	647	**5980**	1000
BH 11.1	06/27/06	6.00	293	209	333	750
BH 12	06/30/06	4.00	1480	163	186	3100
BH 12.1	09/30/06	6.00	ND	ND	10.1	NA
BH 13	06/23/06	4.00	**5100**	560	**7200**	1070
BH 13.1	06/27/06	6.00	4.6	0.984	12.2	ND
BH 14	06/23/06	4.00	**2950**	578	**5860**	1060
BH 14.1	06/27/06	6.00	12.6	3.33	18.8	ND
BH 15	06/30/06	4.00	693	251	451	4000
BH 15.1	09/30/06	6.00	ND	0.313	5.36	NA
BH 16	06/23/06	4.00	1760	452	2990	1650
BH 16.1	06/27/06	6.00	217	68.5	300	540
BH 17	06/23/06	4.00	1280	306	3110	3800
BH 17.1	06/27/06	6.00	381	125	750	202
BH 18	08/17/06	4.00	1.13	1.2	12.3	ND
BH 19	08/17/06	4.00	1.37	2.02	16.1	ND
BH 20	08/17/06	4.00	2.24	2.31	11.9	ND
Wedge 1	09/07/06	8.00	16.6	6.65	26.7	ND
Wedge 2	09/07/06	8.00	13.7	16.3	51.9	ND

Notes:
ND = Not detected.
Yellow shading indicates exceedances of TTLC criteria.

Table 5
Concentrations of Key Chemicals in Representative Samples of Imported Sand Fill

		Residential CHHSL [1]	3000	150	23000	0.089
		Commercial/Industrial CHHSL [1]	38000	3500	100000	0.3
Sample ID	**Import Location**	**Delivery/ Sample Date**	**Cu**	**Pb**	**Zn**	**PCBs**
F1	Coronado High School	6/14/06	7.94	56.3	69.1	ND
F2	Coronado High School	6/14/06				
F3	Coronado High School	6/14/06				
F4	Coronado High School	6/14/06				
F5	Coronado High School	6/14/06				
F6	Coronado High School	6/14/06	15.8	11.8	47.7	ND
F7	Coronado High School	6/14/06				
F8	Coronado High School	6/14/06				
F9	Coronado High School	6/14/06				
F10	Coronado High School	6/14/06				
F11	Coronado High School	6/14/06	7.73	2.88	22.9	ND
F12	Coronado High School	6/14/06				
F13	Coronado High School	6/14/06				
F14	Coronado High School	6/14/06				
F15	Coronado High School	6/14/06				
F16	Coronado High School	6/16/06	12.6	6.33	30.4	ND
F17	Coronado High School	6/16/06				
F18	Coronado High School	6/16/06				
F19	Coronado High School	6/16/06				
F20	Coronado High School	6/16/06				
F21	Coronado High School	6/16/06	20.2	9.67	48.2	ND
F22	Coronado High School	6/16/06				
F23	Coronado High School	7/17/06				
F24	Coronado High School	7/17/06				
F25	Coronado High School	7/17/06				
F26	Coronado High School	7/17/06	34.1	11.1	49.3	ND
F27	La Jolla	7/18/06				
F28	La Jolla	7/18/06	7.21	3.38	49.6	ND
F29	La Jolla	7/18/06				
F30	La Jolla	7/18/06				
F31	La Jolla	7/18/06				
F32	La Jolla	7/18/06				
F33	La Jolla	7/19/06				
F34	La Jolla	7/19/06				
F35	La Jolla	7/19/06	9.75	3.07	60.8	ND
F36	La Jolla	7/19/06				
F37	La Jolla	7/19/06				
F38	La Jolla	7/19/06				
F39	La Jolla	7/19/06				
F40	La Jolla	7/19/06				
F41	La Jolla	7/19/06				
F42	La Jolla	7/19/06	4.14	4.99	24.3	ND
F43	La Jolla	7/19/06				
F44	La Jolla	7/19/06				
F45	No Sample					
F46	52nd & Polk, San Diego	7/20/06	4.73	13.5	39.5	ND
F47	52nd & Polk, San Diego	7/20/06				
F48	52nd & Polk, San Diego	7/20/06				
F49	52nd & Polk, San Diego	7/20/06				
F50	52nd & Polk, San Diego	7/20/06				
F51	52nd & Polk, San Diego	7/20/06	5.67	17.4	50.1	ND

Table 5
Concentrations of Key Chemicals in Representative Samples of Imported Sand Fill

		Residential CHHSL [1]	3000	150	23000	0.089
		Commercial/Industrial CHHSL [1]	38000	3500	100000	0.3
Sample ID	**Import Location**	**Delivery/ Sample Date**	**Cu**	**Pb**	**Zn**	**PCBs**
F52	52nd & Polk, San Diego	7/20/06				
F53	52nd & Polk, San Diego	7/20/06				
F54	52nd & Polk, San Diego	7/20/06				
F55	Hotel Del Coronado	7/21/06	1.02	2.04	7.29	ND
F56	Hotel Del Coronado	7/21/06				
F57	Coronado High School	8/3/06				
F58	Coronado High School	8/3/06	4.83	26.9	51	ND
F59	Coronado High School	8/3/06				
F60	Coronado High School	8/3/06				
F61	Children's Hospital	8/16/06				
F62	Children's Hospital	8/16/06	3.28	2.96	14.4	ND
F63	Children's Hospital	8/16/06				
F64	Children's Hospital	8/16/06				
F65	Children's Hospital	8/17/06				
F66	Children's Hospital	8/17/06				
F67	Children's Hospital	8/17/06	3.04	2.21	12.8	ND
F68	Children's Hospital	8/17/06				
F69	10th & K, San Diego	8/17/06	5.21	3.32	19.7	ND
F70	10th & K, San Diego	8/17/06				
F71	Coronado High School	8/19/06				
F72	Coronado High School	8/19/06				
F73	Coronado High School	8/19/06				
F74	Coronado High School	8/19/06				
F75	Aero Drive	8/24/06				
F76	Aero Drive	8/24/06				
F77	Aero Drive	8/24/06	4.89	2.64	24.3	ND
F78	Aero Drive	8/24/06				
F79	Aero Drive	8/24/06				
F80	La Jolla	8/24/06	24.1	8.7	104	ND
F81	La Jolla	8/24/06				
F82	La Jolla	8/24/06				
F83	La Jolla	8/24/06				
F84	La Jolla	8/24/06				
F85	La Jolla	8/24/06	23.5	8.64	102	ND
F86	La Jolla	8/24/06				
F87	8th & D, National City	10/3/06				
F88	8th & D, National City	10/3/06	5.77	24.1	45.6	ND
F89	8th & D, National City	10/4/06				
F90	8th & D, National City	10/4/06				
		AVERAGE	**10.3**	**11.1**	**43.6**	**ND**

Notes:
ND = Not Detected.
[1] CHHSL values = California Human Health Screening Levels.
From http://www.calepa.ca.gov/Brownfields/documents/2005/NumberReport.pdf

Table 6
Water Quality Compliance Criteria

Parameter	Compliance Boundary Standard
Turbidity	No more than 20% above background turbidity levels
	Shall not exceed a maximum of 225 NTU at any time
Dissolved oxygen	Not depressed more than 10% below the background DO levels
pH	No more that 0.2 above or below background levels
	Within limits of 6.0 and 9.0 at all times
Visual	Floating particulates, suspended materials, grease, or oil shall not be visible
	No aesthetically undesirable discoloration of the water surface
Fish and Wildlife	No toxic, radioactive, or deleterious materials are allowed to affect the most sensitive biota
	If any distressed or dying fish are observed, the contractor will be required to cease the offending construction activity

Table 7
Updated (Post-Construction) Summary of Modeling Parametric Analyses

Parameter	Co (mg/kg)[1]	Kd (L/kg)	Co (mg/L)	Information Source
Copper	323	20,452	**0.016**	Kd values calculated from E^{x}ponent sediment partitioning equations (2003)
	323	85	**3.80**	Kd values calculated per Aziz et al. 2001
Lead	92	15402	**0.006**	Kd values calculated from E^{x}ponent sediment partitioning equations (2003)
	92	1150	**0.08**	Kd values calculated per Aziz et al. 2001
Zinc	324	20067	**0.016**	Kd values calculated from E^{x}ponent sediment partitioning equations (2003)
	324	140	**2.31**	Kd values calculated per Aziz et al. 2001
PCBs	0.71	602	**0.0012**	(TOC = 0.01)[2] weighted average of Aroclors 1254 and 1242 Koc (RAIS 2004)
	0.71	8200	**0.000087**	(TOC = 0.01)[2] using total PCB Koc (RAIS 2004)

Notes:
[1] Calculated as 95% Upper Confidence Limit of all samples taken within the project footprint.
[2] TOC = Total Organic Carbon of sediments in which concentrations were measured.

Table 8
Updated (Post-Construction) Fate and Transport Modeling Input Parameters

Parameter	Units	Constituents Modeled				Information Source
		Copper	Lead	Zinc	Total PCBs	
Controlling Cap Layer	NA	Sand	Sand	Sand	Sand	Possible cap alternatives.
Cap Layer Thickness	cm	90	90	90	90	Assumed effective thickness was 100 cm minus 10 cm at bioturbation.
Cap Material Porosity	unitless	0.4	0.4	0.4	0.4	Typical values for placed sand
Specific Gravity of Cap	g/cm^3	2.5	2.5	2.5	2.5	Typical values for placed sand
In Situ Bulk Density Cap	g/cm^3	1.5	1.5	1.5	1.5	Calculated from porosity and specific gravity per page B24 of Reible (1998).
Cap TOC Content [1]	fraction	0.001	0.001	0.001	0.001	Typical values for sand imported from local sources
PCB K_{oc} [2]	L/kgOC	n/a	n/a	n/a	60,200	Weighted average of Aroclors found in sediment (1242 and1254; RAIS 2004).
Cap K_d [3]	L/kg	100	1,200	200	60.2	PCB $K_d = K_{oc}$ * TOC. Kd values for Copper, Lead, and Zinc are from Aziz et al., 2001.
Groundwater Seepage Velocity	cm/yr	17.79	17.79	17.79	17.79	Vx = Q/(n_e*A), where Q = discharge and A = cross-sectional area. Or: Vx = ($k dh$)/($n_e dl$) Assume K = 0.00003 cm/sec, ne = 0.25, dh/dl = 0.0047.
Diffusion Coefficient	cm^2/yr	225	267	222	190	Conservatively high value from range of diffusion coefficients for PCBs (RAIS 2004); For metals D = (RT/F2)(lambda/charge of the ion).
Porewater Concentration in Underlying Sediments	mg/L	**3.80**	**0.080**	**2.31**	**0.0012**	95 percent UCL porewater concentration calculated from post-construction sampling.
Porewater Concentration in Underlying Sediments (pre-construction estimate) [5]	*mg/L*	***3.89***	***0.094***	***2.66***	***0.0023***	*95 percent UCL porewater concentration calculated from bulk chemistry cores obtained prior to construction.*

Notes:

[1] TOC = Total Organic Carbon.

[2] Koc = Organic carbon partitioning coefficient.

[3] Kd = Partitioning coefficient.

[4] Calculated as shown in Table 7, using the most conservative (highest) value.

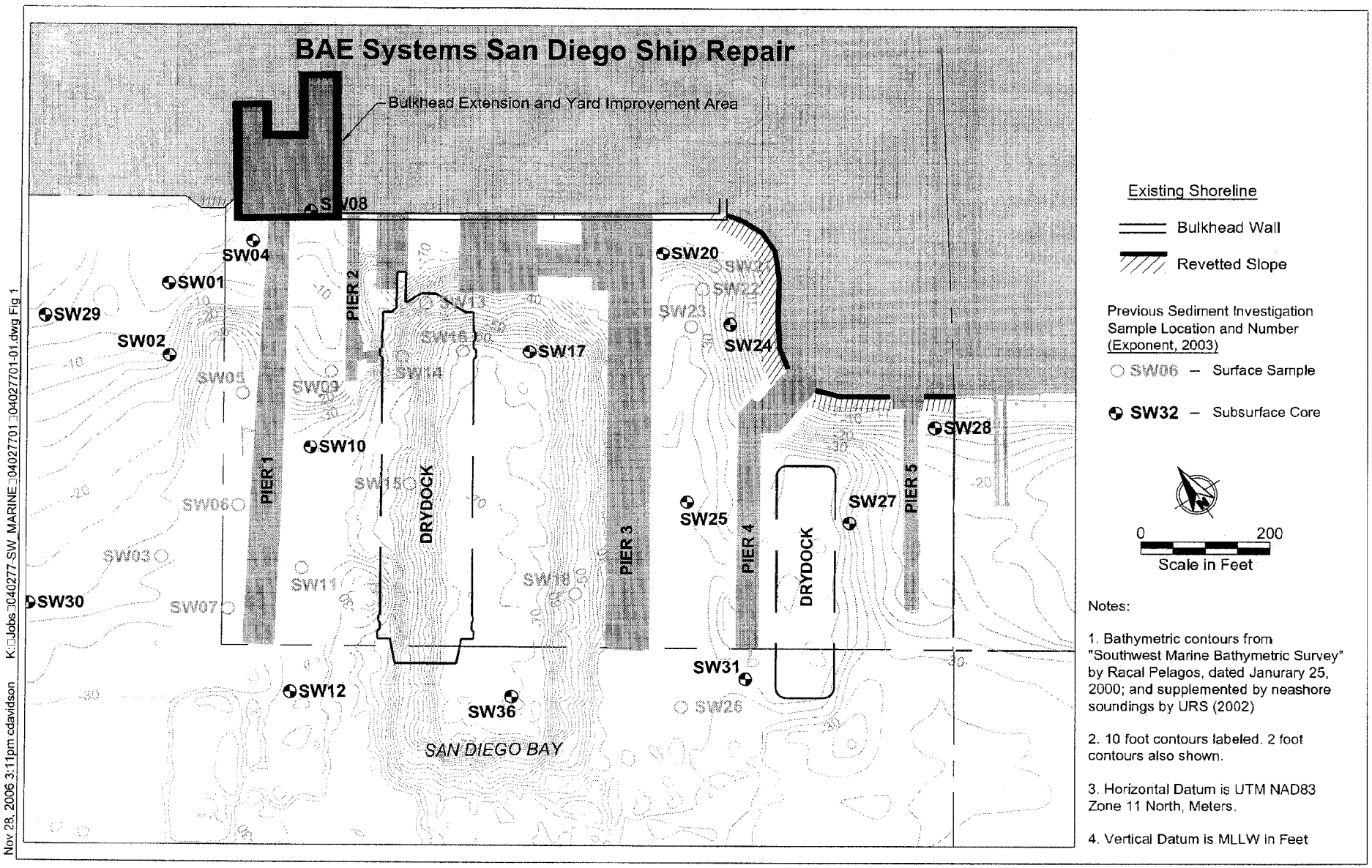
[5] Based on pre-construction data and projections, as presented in Anchor (2005).

Table 9
Updated (Post-Construction) Fate and Transport Modeling Results

Chemical	Predicted concentrations in water (mg/L)			California Toxics Rule WQ Criteria (mg/L)	Years until predicted breakthrough	*Years until predicted breakthrough (pre-construction estimate)*[1]
	25 yrs after construction	50 yrs after construction	100 yrs after construction			
Copper	0	0	0	3.1E-03	690	***690***
Lead	0	0	0	8.1E-03	14,000	***13,600***
Zinc	0	0	0	0.081	2,060	***1,760***
Total PCBs	0	0	0	3.25E-10	250	***185***

Notes:
[1] Based on pre-construction data and projections, as presented in Anchor (2005).

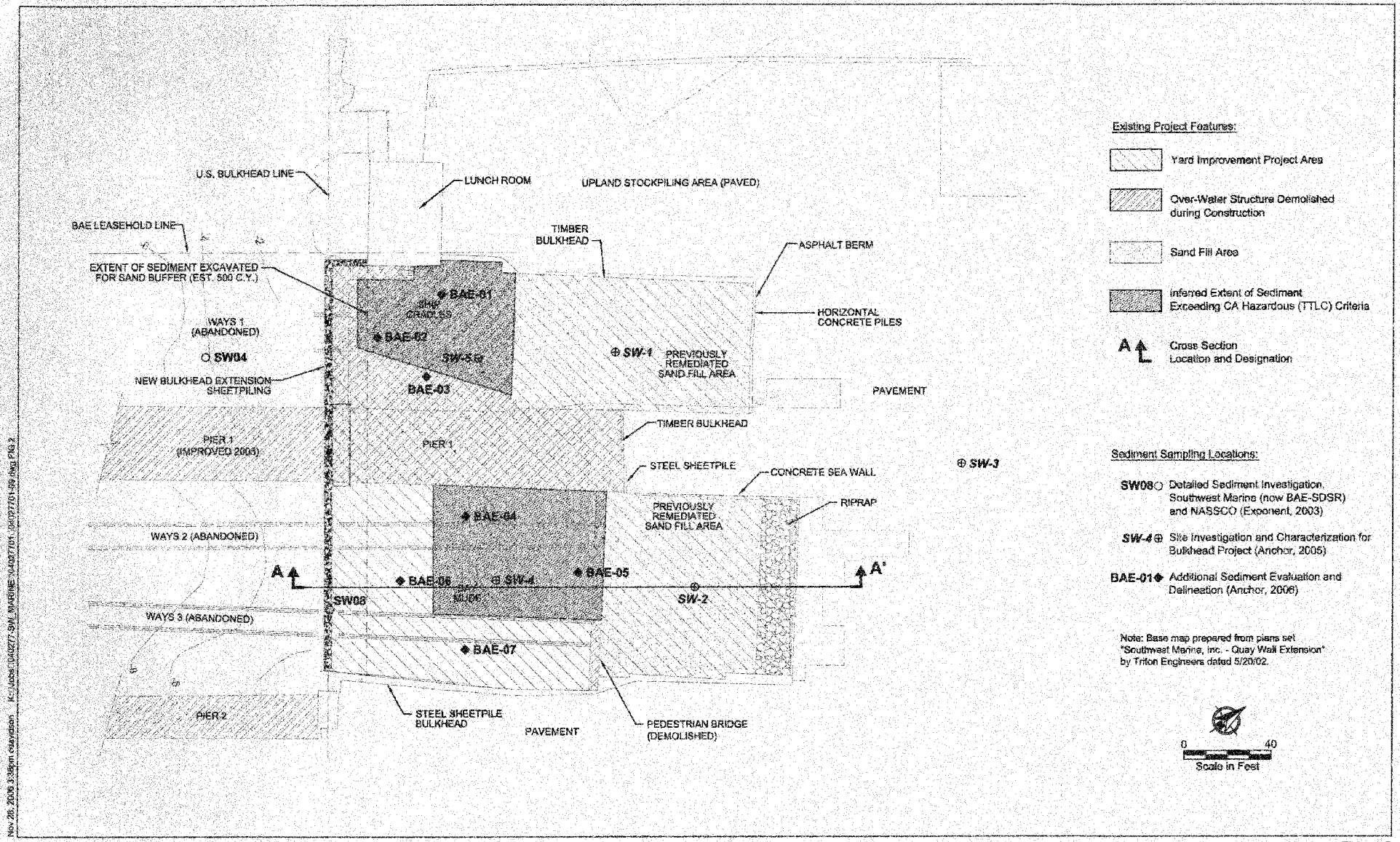
FIGURES



ANCHOR ENVIRONMENTAL, L.L.C.

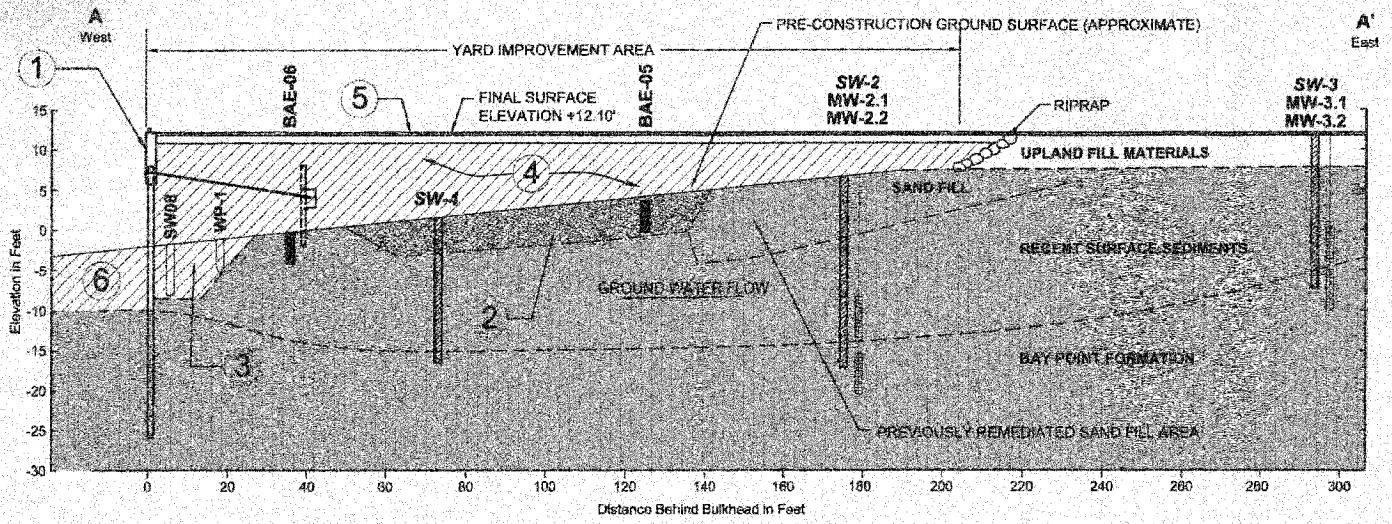
Figure 1
Project Location Plan
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair

BAE00085675



ANCHOR ENVIRONMENTAL, L.L.C.

Figure 2
Project Site Plan and Initial Delineation of Sediment Chemistry
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair



Project Construction Sequence
(refer to circled numbers on cross section above)

1. Sheetpile Bulkhead Installed.
2. Hazardous Waste Sediments Excavated from Project Area, where present.
3. Chemically Impacted Sediment Excavated from "Wedge" immediately behind Installed Bulkhead.
4. Excavation and Yard Improvement Area Backfilled with Compacted Import Fill.
5. Aggregate Base and Asphalt to be Placed Over Entire Yard Improvement Area.
6. Sheetpile Wall Designed for Potential Future Removal of Sediments Outside Wall.

Clean Backfill

Inferred Extent of Sediment Exceeding CA Hazardous Waste (TTLC) Criteria

SW08 — Previously Advanced Sediment Core (Exponent, 2003)

SW-2 / MW-2.1 — Sediment Core and Monitoring Well (Anchor, 2005)

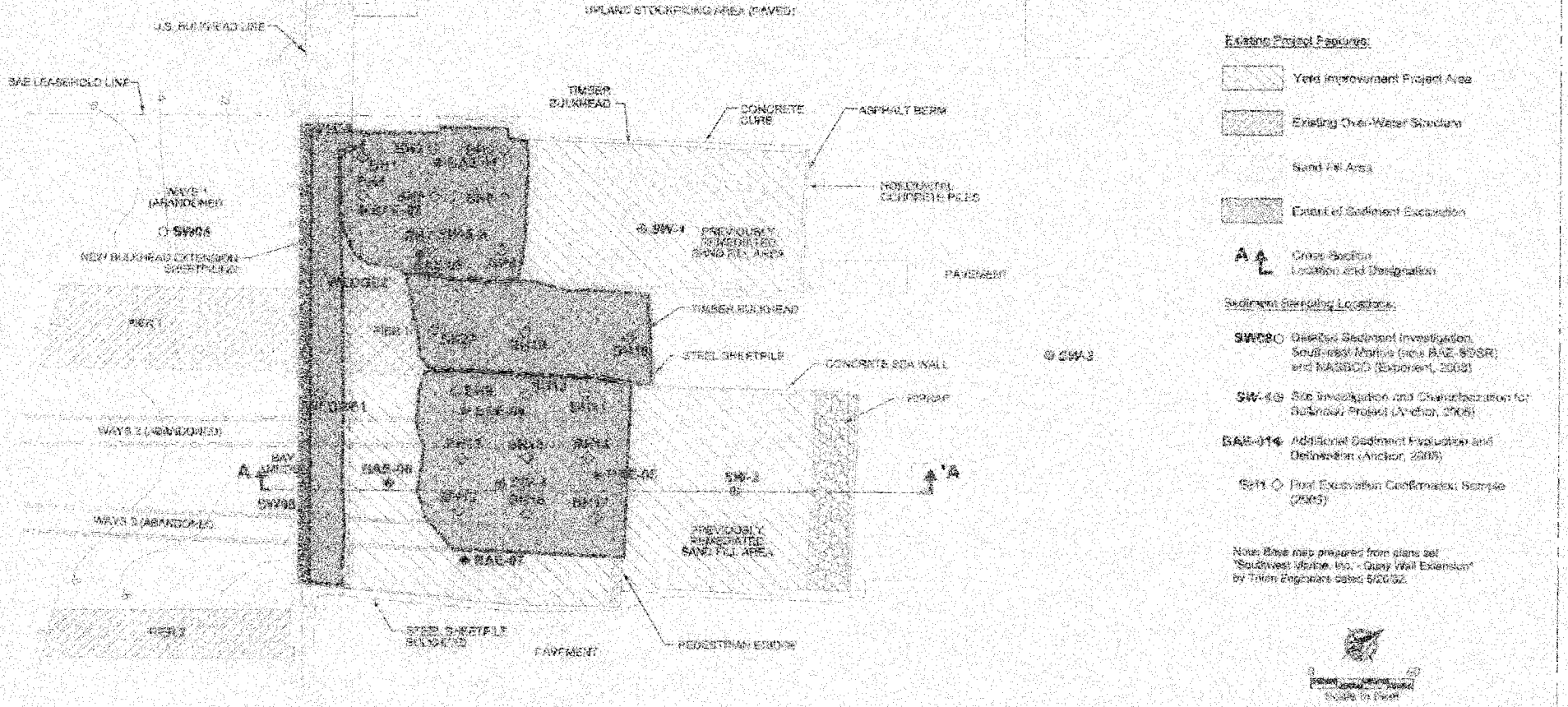
BAE-05 — Sediment Core, 2006

Note:
Structural features and existing ground surface based on plans set "Southwest Marine, Inc. - Quay Wall Extension" by Triton Engineers Dated 5/20/02.

Nov 26, 2008 4:00pm sdavidson K:\Jobs\040277-SW_MARINE\040277101-040277104-10.dwg FIG 3

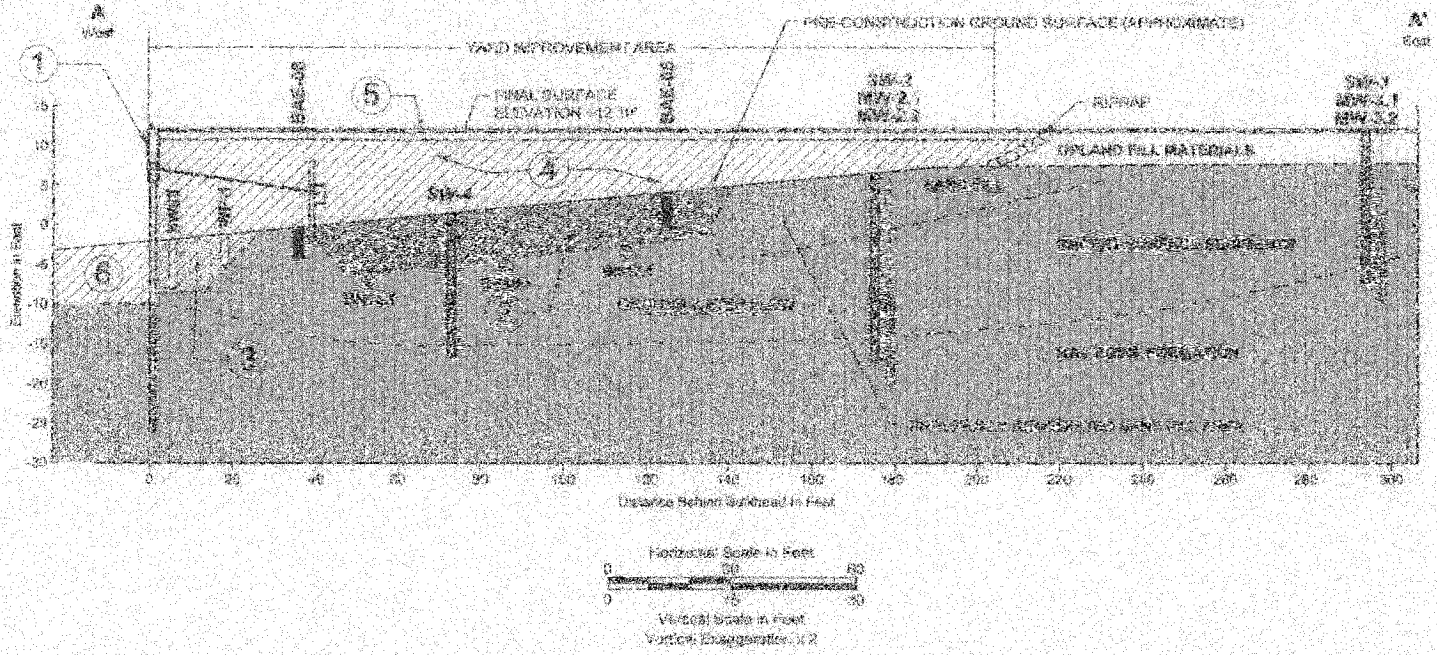
ANCHOR ENVIRONMENTAL, L.L.C.

Figure 3
Project Site Cross-Section and Initial Delineation of Sediment Chemistry
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair



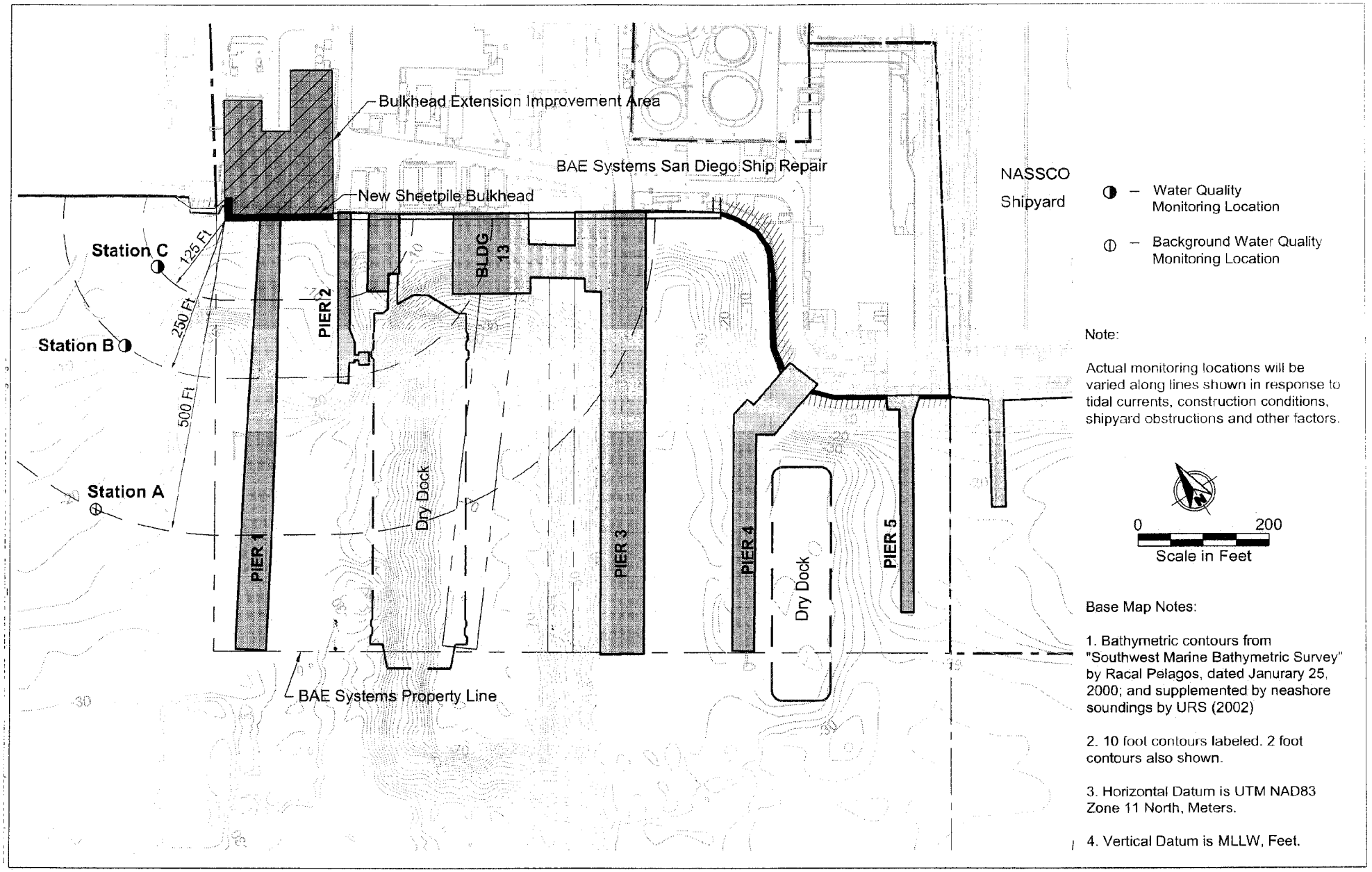
ANCHOR

Figure 4
Extents of Sediment Excavation
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair



ANCHOR

Figure 5
Cross-Section of Sediment Excavation and Backfilling
Bulkhead Extension and Yard Improvement
BAE Systems San Diego Ship Repair



ANCHOR ENVIRONMENTAL, L.L.C.

Figure 6
Water Quality Monitoring Locations
Bulkhead Extension Project
BAE Systems San Diego Ship Repair, Inc

APPENDICES

(ENCLOSED ON CD)

Appendix A	Results of 2006 Sediment Characterization Sampling for CA Hazardous Waste
Appendix B	Data Validation Review Review Report for 2006 Sediment Characterization Sampling
Appendix C	Results of Confirmational Sampling during TTLC Sediment Excavation
Appendix D	Results of Testing for Landfill Acceptance
Appendix E	Waste Disposal Manifests
Appendix F	Testing Results on Selected Samples of Imported Backfilling Materials
Appendix G	Results of Water Quality Monitoring
Appendix H	Daily Construction and Water Quality Photographs
Appendix I	Daily Site and Water Condition Logs

Attorney-Client Communication
Privileged and Confidential *5/8/97*

TO: Lloyd A. Schwartz, Esq.
FROM: Sandor Halvax
SUBJECT: Environmental Projects Update
NEXT MTG.: May 22, 1997 @ 3 PM

cc: Ed Ewing
David Engel
Greg Bennett
Jackie Kriesler

#	Project/Issue	Resp	Complete	Comments / Status	Admin. Practice
1	Sediment Remediation	SH	Investigation 12/31/97 Cleanup 12/31/98	At the last Regional Board hearing RB staff indicated that they intended to begin work on the Southwest Marine site. RB staff expects to have the parameters of the SWM investigation complete by late May/Early June. EHC pressing hard to influence accelerated time line and clean-up standards.	A
2	NPDES Permit Renewal	SH	June 1997?	New draft permit received. Includes vessel discharges. Tentative adoption date is June Board hearing. Major issues are vessel discharges, monitoring and storm water management. Joint meeting of all parties on May 8th.	A
3	Industrial User Discharge Permit (IUD)	SH	07/01/97	Draft permit expected shortly. Delay due to MIWP modifications in local discharge limitations. Modifications expected to be good for SWM (higher discharge limits).	A
6	Old Diesel Tank Closure	SH	6/30/97	Getting quotes on work necessary to complete investigation and closure. An area at the foot of pier 3 will most likely require excavation.	P

PWC Audit Items Not Yet Complete

#	Project/Issue	Resp	Complete	Comments / Status	Admin. Practice
	TSDF Evaluations	HV	6/30/97 $	Have received permits and financial responsibility from some of the TSDF's. Compiling data.	A
28	PCB Mgmt.	SH	6/30/97	One transformer identified as containing PCB's. Obtaining quotes on retro-fill. Pier 1 area	A
32	Employee Awareness	SH	6/28/97	Discussed with Safety and craft managers the inclusion of environmental responsibility in the existing safety program.	A
33	Waste Stream Management	SH	6/28/97	WWC recommends implementing waste management review for life-cycle cost analysis of waste streams. Currently conducting life-cycle cost analysis of spent abrasive management.	A
34	Materials Substitution	SH	6/28/97	WWC recommends a more aggressive analysis of non-hazardous materials substitution alternatives.	A

Spec
SB14

PLAINTIFF'S EXHIBIT
CASE NO. 96-1412-[illegible]
EXHIBIT NO. 145

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

NATURAL RESOURCES,	)	Case No. 96CV1492-B
Plaintiff,	)	San Diego, California
vs.	)	Tuesday, November 24, 1999
SOUTHWEST MARINE,	)	9:00 a.m.
Defendant.	)	VOLUME VII

TRANSCRIPT OF BENCH TRIAL
BEFORE THE HONORABLE RUDI M. BREWSTER
UNITED STATES DISTRICT JUDGE

APPEARANCES:

For the Plaintiff:
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San Marcos, California 92069

CHARLES STEVEN CRANDALL, ESQ.
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SCOTT PETERS, ESQ.

For the Defendant:
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EDWARD P. SWAN, ESQ.
Luce, Forward, Hamilton & Scripps
600 W. Broadway, Suite 2600
San Diego, California 92101

Transcript Ordered by: STEVEN P. McDONALD, ESQ.

Proceedings recorded by electronic sound recording; transcript produced by transcription service.

Court Recorder:	Noemy Martinez United States District Court 940 Front Street San Diego, California 92101
Transcriber:	Echo Reporting, Inc. 225 Broadway, Suite 350 San Diego, California 92101 (619) 238-5173

I N D E X

planned to call rebuttal witnesses, but I guess -- let me retract that since he won't be calling them tomorrow, he is not obligated to tell me yet who they are.

THE COURT: He won't be calling them until next week.

MR. SWAN: Your right. Thank you.

THE COURT: Because this system will mean that he won't be asked to proceed before you finish.

MR. SWAN: I retract that, your Honor.

THE COURT: Because we will bring in Dr. -- Mr. Ewing at nine o'clock Tuesday morning.

MR. SWAN: Thank you.

THE COURT: Okay. Are we ready to proceed. Mr. Halvax, you may resume the stand.

(Pause.)

SHAUN HALVAX, DEFENDANT'S WITNESS, PREVIOUSLY SWORN

THE CLERK: Mr. Halvax, I want to remind you are still under oath.

MR. HALVAX: Okay, yes.

MR. McDONALD: Mr. Halvax, I would like to place before you these photographs that were taken of the pile beginning -- well we have 2.5 and I would like to cover just a few more of those -- I guess that is where we left off last night and I would --

THE COURT: Which exhibit now?

MR. McDONALD: I would like you to refer specifically to 6.16, six point one six, of Plaintiff's exhibits.

MR. HALVAX: Okay, I have it.

DIRECT EXAMINATION

BY MR. McDONALD:

Q Okay, Mr. Halvax, could you describe for me what this -- well wait a minute. You were out there on March 25, when these photographs were taken last year?

A Yes, that is correct.

Q And, what does this detect.

A This is an abrasive skip box used for when abrasive generated throughout the shipyard. The abrasive would be collected into these boxes. I think they have also been called totes. We call them skip boxes. And then brought back to certain locations for management.

Q And where is this specifically located? Is this an area of the yard that you would expect to find this dense.

A This is one of two areas. This is an area located near our solid waste and metals recycling area.

Q And did you observe this bin?

A Yes, I did.

Q Okay, did you observe any leaking at the bottom or over the top?

A No, I did not.

Q Okay, and ultimately where would this bin go?
A This bin would be assembled with more of the same sorts of bins and would be put on a truck and then ultimately hauled to the desert to a cement kiln where the recycling material and cement products.
Q As so the grit that's in this bin was swept up or gathered from some operation that happened before it was brought here, is that correct?
A Yes. That is correct. That is the process.
Q And, following this photograph the bin is then taken and the materials then taken off for recycling or some other appropriate disposition, is that correct?
A Yes, that is the process.
Q So, this photo is basically sort of a snapshot in time, if you will, of an ongoing process?
A Yes.
Q And, is this fully consistent with your effective implementation of the F.P.'s.
A Yes, I believe it is.
Q Okay, how much sandblast grit does Southwest Marine use in a year?
A We use around a average of about 2,000 tons a year.
Q 2,000 tons? That's -- how many pounds is that?
A 4 million.
Q And, the sandblast grit, is that principally copper

slag grit that comprises that sandblast grit.

A That's the majority of the material, copper slag, yes.

Q Okay, based upon the calculations that have been introduced here as to the total amount of copper coming from San Diego -- Southwest Marine storm drain system, how much is that. What is the total number of pounds of copper coming from all operations in storm water that has been calculated in this proceeding?

MR. CRANDALL: Foundation, please. Objection, lack of foundation.

THE COURT: Well, are these numbers that you are going to tell us, are these reported in daily or weekly reports based on samples? How do you know this information?

THE WITNESS: I know the information on the abrasive volumes because I looked at it recently, but we also compile reports to the agencies--

THE COURT: I know, but is it in reports?

THE WITNESS: Yes. It is in Form R Reports and it is in also other reports that we supply to, like the regional water quality control boards, the chemical utilization audit and it would be in that information as well.

THE COURT: Where does it come from, the sampling of water -- waste water or where does it come from? Where do you get these reports?

THE WITNESS: Well, on the abrasive usage we --

THE COURT: No, I don't mean the four million pounds that you buy. Clearly you would have invoices for that. But, he is asking how much escapes. Isn't that what you are asking?

MR. McDONALD: That is correct. How much is calculated to be in the storm water from the entire facility?

THE WITNESS: And I didn't answer that question.

THE COURT: That's because he objected, how would you know the answer to that question.

THE WITNESS: I can only recite that by looking at the data that was gathered and manipulated through this proceeding. I did not do an independent study of the volume of copper in our storm water annually.

THE COURT: Well, I mean, what have we elicited in this proceeding that gives us the answer to that. I mean, the sampling of the storm discharge, or what have you got?

BY MR. McDONALD:

Q Mr. Halvax, have you reviewed the calculations of Dr. Bell that took the storm water discharge concentrations and the total volume flows, as calculated by Southwest Marine for its storm water diversion system, and then did a computation of how many pounds of copper could be expected to be discharged into the bay, based upon Southwest Marine's

actually storm water data and the calculation of the flows that are expected from storm water from the entire facility?

A I looked at Dr. Bell's numbers and I believe also Dr. Rosener created the numbers and I think they were generally in agreement about that volume of 16 pounds.

Q So, that is 16 pounds from all operations of the entire facility?

A That was -- yes, that was projecting an average value of copper in storm water and then looking at that storm water as a solid going out in volume of the storm water leaving the facility in all locations.

Q Mr. Halvax, earlier, there was a discussion about how you could control sandblast grit and shrouding on the floating dry dock or shrouding on ships as sandblasting operations are undertaken. Do you recall those questions?

A Yes.

Q Have you gone back and reviewed your files and found any photographs that would depict how the shrouding is used for control of sandblast grid operation at the facility?

A Yes, I did.

MR. CRANDALL: Your Honor, at this time I am going to pose an objection. Mr. McDonald placed about seven exhibits on my table this morning, none of which have been produced ahead of time and I have the same objection to all of them, including these pictures is that you shouldn't be

producing exhibits a day before you are going to rest your case and I object to them. There are plenty of other exhibits in this case that he can refer to, but I object to these.

THE COURT: When were the pictures taken?

MR. McDONALD: Mr. Halvax, when were these pictures taken?

THE WITNESS: I would have to -- a couple of the pictures were taken from cranes about two months ago. One of the pictures was taken during a period when your Honor actually viewed the facility, it was since some barges that were in the dry dock I believe when your Honor viewed the facility. I went back later and took a picture of the encapsulation that was used for those barges and I am recalling that -- it was in 98 that those were all taken.

THE COURT: They are approximately two months and younger?

THE WITNESS: Some of them may go back a little farther than two months.

THE COURT: More than two months.

THE COURT: Okay, now. All I want to know is did you, in discovery, ask in interrogatories whether there were any photographs taken and if so, produce them and was there a continuing interrogatory to produce this material and discovery. I had this experience once before and an that

case, the Plaintiff didn't have the proper questions and so, they came in.

MR. CRANDALL: The answer -- right, and the answer is yes to both questions.

THE COURT: What you really is -- you need is some thing, some agreement, some stipulation some agreement or an interrogatory which puts the burden on a party to produce in discovery any material relevant to the lawsuit and if there isn't any continuing obligation, there is no law I am aware of that requires either party to stop thinking, photographing, discovering whatever.

MR. CRANDALL: Right. Your Honor, I believe we did. I think counsel will recognize that we did make this request. They have produced other photographs, voluminous other photographs, and that we requested an update as well. The Court -- in fact --

THE COURT: Well, what you are representing to me is that he has violated the discovery orders.

MR. CRANDALL: Well, that's true. I think that --

MR. McDONALD: No, your Honor, I guess I would have to check to see if the actual questions were asked. The voluminous pictures and photographs of these very same types of operations were made available to them earlier in the case. You know, before the cut off of discovery. I can't represent, I will have to ask the witness whether or

not these particular photographs were among those -- some of these were among those some of these were produced or made available for their review during the discovery.

THE COURT: Well, if they were produced and made available, there is no problem, that is number one. If this is additional to what was produced, then the only question is, did the Plaintiff either ask for discovery of all continuing photographs or materials and if he did, you would have been obligated to turn that stuff over and it is months old and they would have been turnoverable. And, it if wasn't turned over, then I have no alternative but to deny use of them now.

BY MR. McDONALD:

Q Mr. Halvax, were the photographs here that were taken prior to the cut off of discovery were -- the end of let's say March of this year. Do you know if those photographs were made available in production to Plaintiffs for their review?

A I believe those photograph are post that cut off or right around there. Certainly there was one from the crane that shows the whole dry dock that is relatively recent -- that's only, you know, a month old or so, but the remainder are older than that.

THE COURT: Let me ask this, let's assume that for a moment, that you are suggesting that they may be both

prior to -- let's assume for a moment that they are subsequent. Do you agree that the Plaintiff made a proper discovery request for production of any subsequent documents that they should be taken or any evidence obtained by the Defense subsequent to the last interrogatory about any discovery or deposition of the witness or other discovery tool seeking follow on obligations of the Defendant. Do you know what I am referring to?

MR. McDONALD: Yes. I do, your Honor, I will have to --

THE COURT: I have to know the answer to that because I can't rule on this objection. He is objecting to these photographs.

MR. McDONALD: I understand and I understand his representation that he thinks he asked for them. I will have to look to see whether or not there was an actual interrogatory requesting that this type of information. There was a very broad interrogatories requesting lots of information --

THE COURT: You don't have that burden, he does -- he has that burden.

MR. McDONALD: Well, I am just saying that I just don't recall whether there was a document requested so --

THE COURT: I understand your answer. I am telling you, Mr. Crandall would have the burden since he is

objecting, he has a burden to show that the reason for the objection is that they are barred by the discovery violation. He has the burden of showing that. If -- but, if he shows it, I am going to deny use of these exhibits. But, the Plaintiff has to show me the discovery and the interrogatory, or the deposition or whatever he is relying on. If he can show me that you violated a discovery order they won't be used.

MR. McDONALD: Your Honor, can we use them now subject to subject to a motion to strike so we can move on and let Mr. Crandall show us --

MR. CRANDALL: No.

THE COURT: No. I mean, if he loses this issue, he is going to pay for it. If you lose it, you are going to pay for it. If you don't want to run that risk, stipulate to withdrawing your exhibit. You always have the option to stop the clock if you don't want to fight about this issue. Whoever wins this issue, the other side is going to pay for the time. If he is right, you will pay for this time. If he is wrong, he'll pay for the time. So, you won't be hurt.

MR. McDONALD: Okay. Thank you, your Honor.

THE COURT: Mr. Crandall, you have the burden of showing me that this violates discovery of the case. You know what I am going to do your Honor, I will have to -- the way I am going to do this is I'll move to strike and then I

will have my counsel, co-counsel go over and get the document requests and I will show the Court what I asked for and I will move to strike this testimony.

THE COURT: So you want to go forward with the evidence.

MR. CRANDALL: Yes, I do.

THE COURT: Okay, you may proceed.

MR. McDONALD: May I --

THE COURT: And the ruling will be the same. If there is a motion to strike the burden once again is on the plaintiff to show that the evidence which was just received was in violation of the discovery order and if he is right about that then I will strike it.

BY MR. McDONALD:

Q Mr. Halvax, I would like you to refer the Exhibit marked 940, and this is a set of four photographs taken at Southwest Marine.

A I don't recall the photograph from memory.

Q Oh, I am sorry, I thought I -- I thought I gave you one.

THE COURT: Which one are we looking at now? Which one are we on now?

MR. McDONALD: This is Exhibit 940, your Honor.

BY MR. McDONALD:

Q Mr. Halvax, does this depict typical operations of

Southwest Marine to control abrasive blast grit operations on the floating dry dock?

A There are variations depending on the size of the vessel, but generally, this is how it is done, yes.

Q Could you describe to the Court where this operation is taking place and the nature of the controls that are in place related to abrasive blasting grit operations.

A This is a photograph from a crane on our Pride of San Diego, our large floating dry dock and the vessel that is in there is encapsulated I think there is previous testimony from the main deck or one of those decks to the wing walls of the dry dock as well as at the bow and at the stern of the dry dock ship configuration and then you can see, in the photograph there is activity that is above that area and those are individually encapsulated for work in that area.

Q Is there also shrouding on any of the superstructure?

A Yes, that is the area that I was referring to with the individual encapsulation above the dock.

Q I would like to refer to the next photograph and could you describe --

THE COURT: I take it you are offering 940?

MR. McDONALD: Well, yes, subject to the motion to strike.

THE COURT: Well, everything is subject to that. But you are offer that?

MR. McDONALD: Right, Right. Yes, I am.

MR. CRANDALL: I have a foundation question date and time this was taken and by whom.

THE WITNESS: This photograph was taken by me. I don't recall when. I was in support of a training program I was putting together.

THE COURT: Do you know the month and year?

THE WITNESS: It would be 1998 and it would likely be, my recollection is that it was in September - October time frame.

THE COURT: I will receive 940.

MR. CRANDALL: Subject to our objection, your Honor.

THE COURT: Well, everything is subject. But right now, he has laid the foundation. If you've got a discovery violation everything is subject to that.

BY MR. McDONALD:

Q Mr. Halvax, would you refer to the second photo please and could you describe where this operation is taking place and the nature of the controls related to blasting operations.

THE COURT: What exhibit is this?

MR. McDONALD: This is the second page of Exhibit 940, your Honor.

THE COURT: All right. We just submitted 940,

page 1. This is 940, page two.

MR. McDONALD: Yes. There are four photographs in this 940, your Honor.

BY MR. McDONALD:

A This is a photograph looking from the west to the east, of the same vessel in dry dock.

Q What is the purpose of the shrouding across the front of that dry dock.

A To contain the particular emissions as would be generated.

THE COURT: Is this the bow or the stern?

THE WITNESS: This is the bow of the vessel.

BY MR. McDONALD:

Q Mr. Halvax, you previously testified that there was an opening that sometimes had some alternate type of covering on it that you could walk through to keep air and dust -- you know, within the facility. Could you describe to the Court where that is?

A In the lower right-hand side of 940, page two, you can see the opening into the dry dock that comes from a vehicle ramp and that opening can be raised and lowered depending on the activity that needs -- the vehicular traffic or personnel traffic in and out of the dock area.

Q And in normal operations, would that be closed if there was blasting or could produce grit that could come out of

that opening if the end of the dry dock toward the bow of the ship.

A Yes. That would be closed if there was blasting being conducted.

Q What kind of material is this?

A It is a plastic material that shrinks when heated.

Q And does blast grit or dust permeate through that material?

THE COURT: Excuse me, are you referring to page two, showing plastic material.

MR. McDONALD: Yes, you Honor.

THE WITNESS: It is that white, is a plastic material and they put string lines up and then they put this plastic material, it comes in large rolls, then they roll it out and they will heat the seams. The seams will bond together. It is air tight.

BY MR. McDONALD:

Q Mr. Halvax, could you refer to page three, Mr. Halvax, where is this operation being conducted?

A This is also in the Pride of San Diego dry dock. There were three barges in the dry dock and only the underwater hulls were being abrasive blasted and so we shrink wrapped just in those particular area.

Q And, again, the shrink wrap is impermeable to the dust, grit that might be generated during blasting operations?

A Yes, that is correct.

Q Mr. Halvax, I would like for you to refer to page four. And where is this operation taking place.

A This is a photograph of a vessel, I believe it was the Kiska (phonetic), tied up to our Pier 3.

Q And what is the nature of the controls that have been applied here.

A Similar activity. The -- they have installed scaffolding around the superstructure and then they install shrink wrap on the outside of that, heat it and make an enclosure for abrasive blasting and painting.

THE COURT: Now, you can't see from this photograph, but you see those two on the side of the vessel? They seem to be -- they could be open at the bottom. Do you see that?

THE WITNESS: Yes, sir. The overhangs?

THE COURT: The overhangs, are they open at the bottom?

THE WITNESS: No sir, those would have -- they saw planking on the scaffolding because men will stand on them as well but the shrink wrap is installed underneath as well.

THE COURT: So it comes back to the deck of the ship?

THE WITNESS: Yes, sir.

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BY MR. McDONALD:

Q Is it Southwest Marine's policy to enclose abrasive lacquers, abrasive blasting, and paint spray operations in a manner that was shown here in conducting those operations on vessels.

A Yes, sir.

Q And has that been done continuously since you have been at Southwest Marine.

A As long as I have been there, yes.

Q And, based upon your review of the records and policies and best management practices of Southwest Marine, has that been a policy of Southwest Marine through the period of at least back to 1997 - 96?

A Yes. The records reflect that that insulation is what was being done and also similar things were being done in other ship yards in San Diego.

THE COURT: Would you take a look at page three, and there is something that looks like a trapezoid or something on the rear. Is that an opening in the shroud?

THE WITNESS: I believe it -- oh, you are looking at the very corner, I think that is a shadow. I think if in the very back --

THE COURT: Okay, but the first one -- it could be a rectangle, except that two of the sides are not parallel.

THE WITNESS: Yes. I looks like a trapezoid.

THE COURT: Is that a whole?

THE WITNESS: I don't recall specifically, but it looks like it is.

BY MR. McDONALD:

Q And would the shrouding be inspected prior to operations to ensure no holes or significant areas from which blast grid or paint could escape?

A Yes. You can't see it in this photograph, but when enclosures are made of this size, there is generally ventilation equipment installed so that there is negative air in any enclosure so that the folks doing the abrasive blasting can see what they are doing.

Q Do the people that are inside doing this blasting, do they wear hoods over their ears, face and eyes and nose. A They wear full suits, yes sir.

THE COURT: What?

THE WITNESS: They wear full suits, and are supplied air respirators, forced air respirators -- forced air into their outfit.

BY MR. McDONALD:

Q Mr. Halvax, based on your review of the records and experience with respect to Southwest Marine, has this been a pattern and practice of control of grit operations and paint spray operations since 1992 -- since implementation of their 1992 best management practices?

MR. CRANDALL: Objection. Foundation. This witness didn't even start until November 1996.

THE COURT: Well, I will permit him to answer from when he was there to see it.

BY MR. McDONALD:

Q Mr. Halvax, prior to 1996, were you familiar with the operations conducted at Southwest Marine.

A Only in a certain overview or general understanding.

Q Is your understanding though, okay -- so since the period of time that you were there this was a consistent pattern and practice in terms of controlling paint spray and blast operations of Southwest Marines, is that correct?

A Yes, that is correct.

Q And this is not something that you instituted, it was something that was ongoing at the time you arrived, it that correct?

A Yes, that is correct.

Q Thank you. Mr. Halvax, I would like to refer now to Plaintiff's Exhibit, this is a photograph, 6.6.

THE COURT: Is that in evidence?

MR. McDONALD: Yes, it is your Honor.

THE COURT: 6.6?

BY MR. McDONALD:

Q Were you present when this photograph was taken Mr. Halvax?

A Yes, I was.
Q And this was March 25, 1997?
A I believe that was the date, yes.
Q Mr. Halvax, did you observe this flow of water down the middle of the marine railways?
A Yes, I did.
Q What was the source of that water?
A This is storm water.
Q From where did it come from?
A There was an outfall labelled SW8, historically, it had also been labelled as SW1 and this outfall came from some underground piping and the underground pipe had broken and the water was flowing instead of through the pipe and to the storm water diversion system completely, there was storm water that had permeated outside of the pipe and subsequently through the concrete retaining wall and the water was flowing through that concrete retaining wall as well.
Q Is that an unusual event. Have you ever seen a break in the pipe causing a situation like this at Southwest Marines anytime you have been there.
A No I have not.
Q Are you aware of anything in the records that would suggest that there have been breaks in the pipes previously to this event.

MR. CRANDALL: Again, objection. Foundation. We are talking as long as you limit it to --

THE COURT: I think the question would be are you aware of any similar breaks at any other time and since you have been there? That is about the most he could say.

THE WITNESS: I am not aware of any other breaks since I have been there and also having gone over the records have not seen any reports or inspections that reflect any breaks.

BY MR. McDONALD:

Q Has this ever happened since March 25?

A No sir, it has not.

Q Was this fixed?

A Yes, sir, it was.

Q Was there anything unusual about the March 25, storm even in terms of the incident involving the break.

A It was a very heavy rain.

Q Was it the heaviest rain of the year, in your opinion?

A I recall it at least being the heaviest downpour in the shortest period of time.

Q So it was the most intense rain you recall having seen in terms of rain.

MR. CRANDALL: Object. Leading.

THE COURT: Well, it's leading.

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BY MR. McDONALD:

Q Mr. Halvax, I would like you to refer to Exhibit 6.1 and 6.2 which are photographs and if you could also take a look at 6.9 and 6.11. Were you present when these photographs were taken Mr. Halvax.

A Yes, I was.

Q Is this the area that we were taking about earlier in your testimony where the storm drain was plugged.

A Two out of three are, yes. 6.9 and 6.1 and 6.2.

Q In connection with this area, could you very briefly describe to the Court what happened to cause this storm drain to be plugged.

A The storm drain crates had been fitted with oil absorbent "pigs" as they are called. They are socks with absorbent material inside about 18 inches long or so and these pigs in this case, the pig had been installed on too long of a tether and partially blocked the pipe that would have collected all of the water from this area.

Q And how long did it take you to fix that situation?

A Once we found the deficiency, it did not take long -- about 15 minutes or half an hour, maybe.

Q Did this happen at any other location in this single storm drain?

A There was well -- did what happen?

Q Did you have flooding in any other storm drain

resulting from an oil sock or a pig like this?
A No sir. No.
Q So this didn't happen at any other location?
A That condition did not exist at any other location at any other time.
Q Okay. Did it ever happen again, either with this location or any other location?
A No, it did not.
Q So this was a single time?
A Yes, it was.
Q I would like to refer you to Exhibit 117.1
THE COURT: What was the number again?
MR. McDONALD: 117.1 -- one seventeen point one.
BY MR. McDONALD:
Q Mr. Halvax, were you present when this photograph was taken?
MR. SWAN: Does the Court have that photograph?
THE COURT: Not yet. Yes, I have it.
THE WITNESS? Yes, I have it as well.
BY MR. McDONALD:
Q And what does this photograph depict?
A This is a photograph of the same general area as three of the previous photographs and it depicts a concrete berm that we installed to replace the berm that overflowed.
Q When was that done?

A Shortly after March 25, I don't recall the date.
Q And why was that done?
A That was done to forestall any activity that might cause that berm to overflow again. That is a large area of the yard and we wanted to make sure that that berm overflow never occurred again.
Q Have you ever seen an overflow at any subsequent event of the berm in that area.
A No, I did not.
Q I would like you to now refer to Exhibit 9.1 and 9.2. And where is this area, Mr. Halvax?
A This is on the north side railways number one.
Q Were you there -- were you present when this photograph was taken?
A No, I was not.
Q Do you recognize this area though from your experience of observing the areas around marine railways one?
A Yes, I do.
Q Is this area subject to contact by any significant amount of storm water or storm water flow.
A I don't believe so.
Q Are you aware of any information so suggest that the paint in this areas that is on that wall is carried away in any manner to any location by storm water?
MR. CRANDALL: Objection. Foundation, expertise

to testify.

THE COURT: Well, let me see. When was the rain railway abandoned? Before you came?

THE WITNESS: Yes, sir. That is correct?

THE COURT: And, these pictures were taken what year? 98? I show on my copy they were taken in March 98.

MR. McDONALD: I believe the testimony was March 26.

THE COURT: March 25 and 26 of 98. So the question -- is this in the intertidal area?

THE WITNESS: This is in an intertidal area, sir.

MR. McDONALD: My question had to do with storm water. Does storm water contact this are and does he, by his own observation or by review of any documents aware that any of the paint in this area is subject to being carried off by storm water.

THE COURT: Are we referring to the areas just underneath this ledge or are we referring to the whole area.

MR. McDONALD: I am referring the area related to the paint, 9.1 and 9.2.

THE COURT: Well, there is paint all over the tidal area. There are chips of paint all over this picture. Are you referring to paint that is clinging to the wooden planks or are you referring to the paint all over the ground?

MR. McDONALD: Either one.

MR. CRANDALL: Well, that is my objection, your Honor. Lack of Foundation without expertise to testify about whether this in a rain event makes it into the water. That is a question that we have had testimony on with expert witnesses.

THE COURT: Well, I don't know if he can answer that. Are you asking -- he's asking if it is exposed to rain water. That is a different question.

MR. McDONALD: I just want an observation and I don't know that any expert has ever testified that it has gone anywhere. I just want to know what he saw.

THE COURT: Is it exposed -- but I, tell me what you are asking is exposed because if you are asking about this area down here which is open, that is one thing. That, it seems to me, is exposed to rainwater. Or, are you asking about paint that is clinging to these wooden poles which seems to be under this overhang, only. Your question is very general.

BY MR. McDONALD:

Q Mr. Halvax, let's refer to in 9.1 and 9.2 to the paint that is on the wall and right at the base of that wall where the individual appears to be taking a sample or at least observing in 9.1, and my question is, is that an area that you have observed has come in contact with any significant

storm water flow.
A No, sir, there is an overhang there as well as some protection above on the wall there we store dry dock blocks, that also protect the rain from hitting most of that area.
Q Now, is this an area that we are referring to in 9.1 and 9.2, is that in the intertidal zone where it is subject to the tidal action from the bay?
A The surface areas identified in these photographs are within the tidal range, yes.
Q Is this area then remediated as part of the remediation of marine railways one?
A These areas have been remediated.
Q Okay, what is now there in this location?
A Arizona desert sand.
Q Okay, I would for you to refer to 9.5 and what is this a photograph Mr. Halvax?
A This is a photograph of former railway number two.
Q And does this depict the railway when it was normally there and the railways were in place. No sir, there has been demolition. The carriage itself is gone as well as the longitudinal rails.

THE COURT: What number are we referring to now?

MR. McDONALD: Exhibit 9.5.

BY MR. McDONALD:
A The longitudinal rails are also gone. On the left side

of the photograph you can see the longitudinal timber structure that is not there if you compare it to the right side, you can see the concrete blocks that it sat on. The chain used to run right down the middle of the read railway, you can see sort of a trough there, that is where the chain ran. The palsy carriage in and out of the water way and the machinery and equipment used to conduct that activity has also been removed.

Q Mr. Halvax did you make a determination based upon the records and files at Southwest Marine the utilization of marine railways 1, 2, and 3?

A Yes, I did.

Q In respect to abrasive blasting, did you make a determination when the last time any of those railways or all of those railways might have been used for blast operations?

A Yes, I did.

Q When was the last time -- do you recall when the last time abrasive blasting was conducted in marine railway number one?

MR. CRANDALL: Objection. Lack of foundation to make this statement, your Honor.

THE COURT: If it is after he was there, he might know from his own knowledge, otherwise he probably was told it, which would be hearsay.

MR. CRANDALL: Yes.

MR. McDONALD: Excuse me, I asked the witness, your Honor, if he had reviewed the records and I need to go into further the records he reviewed, the contracts, the nature of the operations. I will certainly do that if I need more foundation. He is testifying --

THE COURT: Well, so far, all you said was when was it last used to blast. He would answer that question, but he -- it could be based on hearsay. That is the objection.

MR. CRANDALL: Yes.

BY MR. McDONALD:

Q Mr. Halvax, did you review the contract files of Southwest Marine to determine operations that were conducted on marine railways over the past let's say five or six years?

A Let's say I personally reviewed all of the contract files for all of the work conducted on marine railways 1,2, and 3 and also consulted with our Dock Master who was responsible for hauling out of vessels and he gave me a spreadsheet showing when each and every vessel was taken out of the water. Actually, even some even went into carriage was just for other purposes --

THE COURT: He showed you company documents?

THE WITNESS: Yes, sir, he keeps those files in

his files along with all of the dockings of the dry docks itself.

BY MR. McDONALD:

Q And from that, did you make a determination of which operations involved the use of abrasive blast grit?

A Yes, the contract documents identify what work is to be done on each vessel when it is hauled out and it specified whether there was painting, or abrasive blasting or hydroblasting or those sorts of things and I went through those files and identified on the spreadsheet which vessels had been docked and when, on which railways and whether or not abrasive blasting had been conducted for that particular contract.

THE COURT: And hydroblasting?

THE WITNESSES: Hydroblasting. I don't know that I recorded all of the hydroblasting evolutions. I was specifically looking at abrasive blasting.

THE COURT: Well, if hydroblasting was done, it would remove paint, right?

THE WITNESS: Yes, sir, it would, or just a marine growth a light film of marine growth as well. It could have been low pressure water just to get the slime off the hull, if you will. There was not a lot of that.

THE COURT: But, you didn't review any hydroblasting, so you don't know what it was done for and

how low or high pressure was used.

THE WITNESS: No. I don't believe the records -- the records didn't reflect hydroblasting was done and so I didn't go into it further.

BY MR. McDONALD:

Q Based upon your review of the records, those are records of Southwest Marine, do you recall when the last time marine railway one was used for any operation. I believe marine railway number one was taken out of service, the record reflect that it was taken out of service, I believe it was June 1992. As to marine railway two and three, do you recall how many times and when was the last time that abrasive blast operations were conducted on either of those since 1992.

A I think in all three railways, there was only a dozen times when abrasive blasting was conducted. The last time abrasive blasting was conducted on railway number two was in 1995. In 1993 -- railway number three hadn't been used for several years. I think it went back to 1993, although it had not been officially taken out of service yet.

Q Mr. Halvax, based upon that information, did you actually put together that information in a form of a chart?

A Yes, I did.

Q Mr. Halvax, I would like to show you what has been marked for identification as Exhibit 863. Mr. Halvax, does

this chart summarize the records that your reviewed with respect to abrasive blast usage at the marine railways at Southwest Marine?

A Yes, it does.

MR. McDONALD: I would like to move 863 into evidence, your Honor.

MR. CRANDALL: No objection.

THE COURT: 863 is received.

BY MR. McDONALD:

Q So, it is correct that the last time there was any abrasive blast grit operations on any the marine railways is 1995?

A Yes.

Q And that was one time on rail two?

A Yes. That is what the information read.

Q And the last time on rail three was when?

A 1993.

Q And that was how many operations?

A I don't recall specifically how many times it was used in 1993 for abrasive blasts.

Q All three of these marine railways have now been completely taken out of service and are now completely remediated, it that correct?

A That is correct.

Q Mr. Halvax, I would like to take you back to the time

when you first came to Southwest Marine in 1996. When did you start employment with Southwest Marine?

A The end of November in 1996.

Q And did they have a best management practice program in place at the time you arrived.

A Yes, they did.

Q And, did you review the best management practices at the time you arrived?

A Yes, I did.

Q Why did you make that review?

A Because the BMP's are one of the most valuable parts of the environmental management programs for waterfront-type of facilities and shipyards.

Q And you had previous experience with best management practices programs, it is that correct?

A Yes, it is.

Q And that was -- with what capacity did you have that prior experience.

A I was a facility manager and environmental manager for another shipyard Continental Maritime located a couple miles -- a mile away.

Q Following your review of the best management practices program did you have any reason to believe that that program was deficient in any manner as written?

A No, I didn't.

Q Did you review the storm water pollution prevention plan of Southwest Marine when you came onto your job?
A Yes, I did.
Q And, in your review of that storm water pollution prevention plan, was that the one dated August 23 of 1996, that has been labeled here as Exhibit 651? And let me place before the witness the Joint Exhibit List. The -- exhibit marked 651. May I ask if that is the storm water plan you reviewed Mr. Halvax?
A Yes, it is.
Q When you reviewed that storm water plan, did you see any deficiencies or things that you questioned?
A There were things that I questioned, yes.
Q Did you review the calculation of pollutants that was in the plan?
A I did not.
Q Did you review -- subsequently review that calculation of pollutants when you prepared the next storm water plan?
A I looked at, that but I don't believe that the follow on plan required the annual volume of pollutants to be identified in the plan.
Q When was the next plan done?
A I did a narrative review -- plan based on this document in March of 97, but then I did a full plan rewrite that we implemented July 1, 1997.

Q In connection with your review of the plan, did it include requirements for good housekeeping?

A Yes.

Q Would you describe for the Court the good housekeeping practices that Southwest marine exploits on a regular basis apart from practices that address a specific spill or incident?

A In addition to emergency response activities, and I will exclude, I guess, interior building janitorial, we conduct sweeps of the yard on a two or three times a week with the street sweeper. We have the end of shift broom clean that is a standard for all of the production areas and if three are any areas that appear that have been missed, they likely would be noted on a BMP inspection and then one of my staff will follow up and have those areas looked at -- looked a second time.

Q So the practice at Southwest Marine to have broom sweeps at the end of each shift at the end of whenever that shift occurs.

A Yes, that is the practice.

Q And, is it the policy of Southwest Marine and the environment department to follow up to do inspections to see whether or not those operations are occurring?

A Housekeeping is -- one of the highest priorities on our BMP inspections, yes.

Q What authority does environmental department have if they see a situation that they believe needs to be addressed?

A The staff has the authority to go directly to the source of a concern or an issue that they think they would like to see some action taken on and direct that individual, foreman, leadman or his supervisor to take corrective action.

THE COURT: As a matter of practice, do you address a person directly or do you go to his boss? Do you work through a chain of direct for the guy?

THE WITNESS: If when conducting an inspection, there is activity and somebody is conducting that activity on the deck plates, as we call it, during an inspection, they will take some corrective measures right there. If they find a situation that they would like some action taken on they would likely to go the foreman for that area and say whatever it takes to take care of it, go do it and that would be --

THE COURT: In other words, if it is a longer range or more formative, you would go to the boss, but if it is just to correct something that you see just wrong and it can be corrected you grab the nearest man to do it.

THE WITNESS: You grab the nearest man who is cognizant of the situation.

THE COURT: Right. Okay.

BY MR. McDONALD:

Q Mr. Halvax, in connection with the storm drains throughout the facility, what is the best management practice as implemented by Southwest Marine in connection with ensuring that those storm drains are clean and operating effectively.

A We inspect the storm drains weekly and the person inspecting has a bucket and a broom and that sort of thing and then if it needs to be cleaned and generally half of them have some trash or something around them, you know, they will clean up what is there and once a week for that process.

Q Did you institute a program to actually document the cleaning of storm drain throughout the facility?

A Yes.

Q Mr. Halvax, I would like to show you an Exhibit marked 668. Mr. Halvax, do you recognize this exhibit?

A Yes, I do.

Q Is this an exhibit prepared at your direction by the environmental department?

A Yes, it is.

Q And what does this depict?

A This reflects the date and time of storm drain inspections and cleaning.

Q And is this -- I would like to offer this into evidence, your Honor.

MR. CRANDALL: No objection.

THE COURT: Exhibit 668 received.

BY MR. McDONALD:

Q And have you continue this practice to follow up and document weekly storm drain cleaning?

A Yes.

Q Mr. Halvax, under Southwest Marine's MPDES permit and under its storm water permit, is it a requirement that the BMP Program and the plans eliminate all of the discharges of storm water from the facility?

A No, it is not.

Q Are there any water quality based effluent limitations in terms of the storm water discharge, either concentrations or total mass that are allowed from the facility.

A No, there are not.

Q In implementing a BMP plan then, what is the goal, what it the criteria to determine whether or not that plan is complying with the permit?

A The BMP plan generally requires a reduction of pollution and sources of pollution to storm water to the maximum extent practicable.

Q And have you reviewed Southwest Marine's best management practices program to determine whether or not

that BMP is being effective in reducing and eliminating pollution?

A Yes, I have.

Q Did you actually revise that BMP yourself or at your direction in 1998?

A Yes.

Q And, in that --

THE COURT: BMP Program. I'm lost on that. What is a BMP program.

BY MR. McDONALD:

Q Okay, the best of management practices program. Mr. Halvax, would you describe for the Court the best management practices program manual that you implemented in 1998, and why did you do that in 1998.

A I guess to recite a little history, before October 15 of '97, the facility had a separate storm water permits and a separate best management practices program. The BMP's behind that best management practices program were also used to provide policy and guidance for the storm water pollution prevention plan and monitoring plan. In October 1997, October 15, the marine water quality control board issued a general MPDES permits to all of the shipyards that combined those programs, the storm water and the point source discharges. And, in that permit it required the development and implementation of it's called a best management and

practices program manual, a more formal document that is much more prescriptive than the previous permits that had been issued.

Q And you have applying that plan since January 15, 1998, is that correct?

A We had been applying the BMP's that are a part of that plan during the period that the permit was stayed we really looked at both plans. The former and the latter to maintain compliance.

Q Mr. Halvax, in connection with the implementation of the best management practices at Southwest Marine, who at Southwest Marine actually implements the best management practice by performing the practices to reduce and eliminate pollution?

A That would be each of the individuals who were involved in the production process. Each of the people in the production process are trained in BMP's and so they would incorporate things like sweeping at the end of the day or encapsulation or secondary containment as a part of their production activities.

Q How are the production people trained in connection with best management practices and other practices of Southwest Marine to reduce and eliminate pollution other than storm water discharges?

A There are a number of venues. I guess predominately,

for the trade folks there is a weekly bang box meeting in which one of the BMP's is spoken to the troops by each foreman in each individual area and I think there was some testimony in that process. We are also doing that in Spanish. There is also the BMP committee or the pollution prevention team that is sort of synonymous and at that pollution prevention team which meets once a month, we will discuss various BMP issues, who has seen what, incident reports to determine cause and effect and any pollution that might avail themselves to preclude any future occurrences.

THE COURT: Would that committee maybe recommend changes in the BMP to prevent reoccurrence of certain things?

THE WITNESS: Yes, yes they would. Or specific ways to get things done that may not be articulated in BMP, but maybe in a policy or some other way of getting something done.

THE COURT: How often do you formally change BMP's?

THE WITNESS: We have only formally done it once since I have been with the company and that was in response to this new permit that was issued. We are looking at BMP's again at, you know -- in looking at the minutes of our meetings to determine whether or not --

THE COURT: Well, now haven't you got a chart of

different years and different BMP's on these years.

THE WITNESS: Yes, your honor.

THE COURT: What does that mean. Given the year you have a BMP, is it a totally new BMP the next year or what is it? What does it mean?

MR. McDONALD: The chart had the changes that were made to the storm water pollution prevention plans and changes to the monitoring plan and let me -- let me, Mr. Swan is getting it right now on describing what that chart had. With respect specifically, to the BMP plan, there was --

THE COURT: Well, that is all of the 1998 BMP's is that it?

MR. McDONALD: This is a summary of all of the 1998 BMP's. We are going to get the chart showing --

THE COURT: So you have a BMP dated 1998.

MR. McDONALD: When would be the last year that you have a BMP dated.

BY MR. McDONALD:

Q When was the last plan Mr. Halvax --

MR. McDONALD: Can we mark this for identification?

THE COURT: Has that been admitted as an exhibit?

MR. McDONALD: No, it has not, your Honor. This was just used in opening. Let's mark this for

identification, your Honor, 941.
BY MR. McDONALD:
Q Mr. Halvax, referring to the BMP program, January 1998, that is the BMP's in that plan are summarized here on a previously entered exhibit 925, is that not correct?
A Yes. Those are the titles of the BMP's that are included within the BMP program manual.
THE COURT: Okay and what is the Exhibit you referred to is the summary of the BMP's which is 925. Okay.
BY MR. McDONALD:
Q And it is correct, is it not, that the program manual contains a lot more than just the best management practices, isn't that correct?
A Yes, it does.
Q And, as a matter of fact, this program manual now addresses all of the requirement from the storm water plan as well as the MPDES prevention manual?
MR. CRANDALL: Leading. Objection. Leading.
THE COURT: I guess it is background. The BMP program manual, what the regional water quality control board did was basically for storm water they took what the State of California was requiring in their state-wide general storm water program pretty much wholesale adopted it into the program manual and then added all of the monitoring parameters that are far and above what the State requires.

BY MR. McDONALD:

Q So, in generally, this program manual folded in what was formerly in pollution prevention plans for storm water and monitoring plans for storm water and best management practices for storm water and for the MPDES.

A Yes, that is correct?

THE COURT: You just combined everything.

THE WITNESS: Yes, sir.

THE COURT: In 1998?

THE WITNESS: October 15, 1997. Yes was the permit with the order.

THE COURT: Is that what produced your BMP program manual?

THE WITNESS: Yes. That is the January 12 document of 88 -- '98.

THE COURT: I see, okay.

BY MR. McDONALD:

Q Now, the previous plan you had in place was adopted in January 1992, is that correct?

A Yes. That is my understanding, yes.

MR. CRANDALL: I am going to move to strike, your Honor. Again, this witness is November '96 coming on the scene and object to going back over history which he was not --

THE COURT: Well, I suppose he can look at dates

on corporate documents that he is shown. I would overrule that. However, the plan that you pointed to counsel, is January '92. How do I read September '93, four down? What's the difference between BMP plan in September '93 and BMP plan submitted to RWQCB in January 1992.

BY MR. McDONALD:

Q Mr. Halvax, are you familiar with the -- what is denominated here as a BMP plan of September 1993?

A The '93 plan is the plan that was in effect when I came to the facility.

THE COURT: Well, is that different from the January '92 plan?

THE WITNESS: I recall looking at the two and I believe they were very similar if not identical.

THE COURT: I expect that they would be similar, in other words, ever year or every -- whenever they redo them, they don't just throw away all of the years, they just add to that improvements.

THE WITNESS: Generally, yes sir.

THE COURT: So, are you saying that the January '92 is a prior version of the BMP plan and September '93 is the 1993 version of that plan, it would be the same plan with the improvements?

THE WITNESS: Yes, sir.

THE COURT: And then, we go all the way down to

January 1998 which is a combination plan. That is probably the same as '93 with maybe some improvements too?

THE WITNESS: The BMP's in 1998 were a complete rewrite. They were all new.

THE COURT: So, if they have prior stuff it is coincidental, but it is a re-write.

THE WITNESS: Certainly, the end points for environmental protection are the same, the words are different, they are different -- there is much more specificity in the '98 program.

THE COURT: Okay, but, in other words, you may have changed the wording and you may have changed the numbering and you may have changed the number of pages, but you didn't throw away all of the learning that you acquired in the last twenty years in those plan.

THE WITNESS: No sir.

THE COURT: If there is good in those plans, that would be found in the new plan.

THE WITNESS: Yes, sir.

THE COURT: Okay.

BY MR. McDONALD:

Q Mr. Halvax, in respect to these plans, are these plans specific operations manuals to specifically tell somebody how to put up a shroud or do they reflect policy and guidelines within which people are to operate.

A These are more policy written then specific how to do it, because we could be doing the same general thing ten different ways and one may work for, for instance a structural guy might be welding something, but it doesn't fit when you are welding pipe, but yet the end point, the goal of the program is the same --

THE COURT: So, in other words, just a quick example you would say don't sandblast a ship unless it is adequately shrouded, something like that.

THE WITNESS: Yes.

THE COURT: But, how you adequately shroud is what you mean by a "how to do it."

THE WITNESS: Yes, sir.

THE COURT: You don't tell them how to do it in the BMP.

THE WITNESS: No.

THE COURT: Do you tell them how to do anything in writing or do you just use journeymen people who know what they do.

THE WITNESS: It depends on the activity and the potential for release of the pollutant facing that activity. In the case of encapsulating sandblasting or abrasive blasting, generally, an environmental inspector will go inspect the enclosure before it is -- before they actually start the industrial activity.

THE COURT: But they rely on the know how of the people that do it?

THE WITNESS: Well, the are pretty versed in what materials they are using these days and how to inspect an enclosure to determine whether or not there is going to be any fugitive emissions. But, yet on a lesser degree there may be some other activity, whether it is a secondary containment for one paint can versus a secondary containment for 4, 55-gallon drums that some of that is left up to the trades and it doesn't undergo such a rigorous review by the inspectors.

THE COURT: So, a lot of what goes on down there, you actually rely on the labor force to just do it and then you inspect it to see if they have done it right. If they haven't, you say this is not ready for painting or sandblasting, because this is not properly done and then you make them redo it.

THE WITNESS: Yes, sir.

THE COURT: Not things in writing, but you just have inspectors, quality control inspectors kind of like, and you have journeyman sandblasters who are supposed to know how to do that kind of thing.

THE WITNESS: Yes, sir, that is correct.

THE COURT: Okay. Well, these inspectors, are they part of the working crew. I mean do you have constant

foremen or leadman supervision over what is going on that is on that's on the site and working or do you just some out once a day, or once a week to inspect?

THE WITNESS: Well, I have several folks in the environmental staff, if you will, two of them are dedicated solely to regulatory reporting. But also, for site surveillance, if you will, and are always in, out an about the yard.

THE COURT: Do they do that constantly more or less all day long?

THE WITNESS: Full-time jobs, yes sir. And I have other individuals who in addition to doing work like waste consolidation, will check some satellite accumulation areas on the ships. They walk up and down the piers, including off-site jobs, if we are doing work at 32nd Street, or other locations, we also made regular visits to those other sites, just as we do on-site to ensure that all of the containment, the labeling and all of the other practices are being met.

THE COURT: Now, when you shroud a bid ship, superstructure, right on down, and do a lot of sandblasting, after you sweep down, after ever shift as you say you do, do you have a procedure where somebody or somebodies hose down the area. Because if you do that, it is been just my own personal experience if you hose down after you sweep down, you get a lot of stuff that you don't get sweeping down.

THE WITNESS: Yes, sir, the dry dock is a separate sort of activity. When it's -- when it's -- when it's encapsulated and they are conducting abrasive blasting operations, it's generally not broom swept every day. There is just too much material, but it is in the encapsulated area, so they will start blasting at the top of the vessel, work their way down and that may take several shifts, it may go through 24 hours before they work their way down. And so, when they are done, with that they will clean up the area and the process -- when they go through that process throughout the abrasive blasting activity in the vessel and they are done blasting and they are done painting, the dry dock is broom swept. First it is shovelled, then it is broom swept, and then it is pressure washed. So we do use pressure washers and start from one end of the dock, the sides of the dock, the vessel, everything is pressure washed all the way to one end where the collection system on the stern at the dry dock and all of that effluent is pumped off the vessel.

THE COURT: You only do it when the job is done, huh?

THE WITNESS: We pressure wash when the job is done.

THE COURT: I know, pressure wash, but I mean you don't sweep down -- suppose your sandblasting operation on a

vessel takes a week. You just defer the sweeping until the whole job is done?

THE WITNESS: No sir, we will use Bob Cats, really small front loaders and push the sand around. The sand will be pushed into piles, but those piles may stay there until there is an opportunity bring truck, because we drive a truck down inside the enclosure and we will load the abrasive with this Bob Cat right into the truck inside the enclosure so we don't create any fugitive emissions moving the material outside of the enclosure and then that truck will leave the facility and go to the recycling plant.

THE COURT: Of course, the shrouding is still up?

THE WITNESS: Yes, sir.

BY MR. McDONALD:

Q Mr. Halvax I would like to return just for a moment on the training of the people when they came in. You mentioned when they first come in they are trained. Are they given an orientation manual when they undergo that initial training.

A Yes, they are.

Q I would like to show you what has been marked as Exhibit 857. Is this the new employee orientation manual that all employees are given?

A This is the current manual, yes.

Q And, as a part of this there are practices in here on environmental controls both for storm water hazardous waste

and water pollution?

A There is an environmental section in here, yes, that describes those activities.

Q Is there also a slid presentation that is given to the employees upon their orientation?

A Yes.

Q I would like to move that in evidence, 857, your Honor.

MR. CRANDALL: No objections.

THE COURT: Received. Is 941 offered?

MR. McDONALD: Yes, your Honor.

THE COURT: Is it received? No objection?

MR. CRANDALL: No objection, your Honor.

THE COURT: Received. And what is the nature of that slide presentation Mr. Halvax.

THE WITNESS: The slide presentation is a new hire employee orientation and it generally takes a new employee or returning employee through the environmental issues that Southwest Marine feels are representative of the issues that they need to be concerned with in their daily activity and it goes through a little bit of the policy and law, but primarily with a lot of photographs that show activities relating to water quality, air quality hazardous waste and hazardous materials management.

Q Mr. Halvax, are they also given anything to remind them on a daily basis of their responsibilities and what to do if

there happens to be a spill or some other incident.
A They are also given when they are given an identification badge for the company, they are also given a little I.D. card. There is some policy information on one side and on the other side there is a few icons with the major points that we are trying to emphasize along with the emergency response telephone number and the telephone number to the environmental department.
Q Mr. Halvax, I want to show you what has been marked as Exhibit 806. Mr. Halvax, is this given to each employee?
A Yes, it is.
Q And, what are they instructed to do with it?
A Wear it with their badges.
Q So they wear this with their badges?
A Yes.
Q Was this something that you implemented?
A Yes, it is. We also have -- on the back, like I said there is icons and we have larger prints of this in, about and around the shipyard to enforce the message we are trying to give them.
Q Mr. Halvax, you mentioned periodic gang box training. I would like to show you an exhibit previously entered 928.
THE COURT: 928?
MR. McDONALD: 9 - 2 - 8. And, your Honor, I would like to move admission of 806. The --

MR. CRANDALL: Can we have a date on when this was -- I object just on a foundational bases in terms of when it was actually instituted.

THE COURT: Can you tell us -- give us a date on this?

THE WITNESS: I think I did this it was summer of '97, best I can say would be May or June of '97, I believe.

MR. CRANDALL: No objection.

THE COURT: 806 is received.

BY MR. McDONALD:

Q I would like to refer to 928 which has already been admitted into evidence and ask Mr. Halvax, do you recognize the documents that are within that binder?

A Yes.

Q And, is that example of the gang box training that were given to employees--

THE COURT: Gang box what?

MR. McDONALD: Gang box training.

BY MR. McDONALD:

Q -- given to employees on a weekly basis that relate to environmental issues?

A Yes. They are a generally representative.

Q Did you institute any type of a program to track the training of employees with respect to a gang box topics?

A There was already a system in place. Our safety

department keeps copies of all of the sign-in sheet and the topics themselves. But, what I had directed the environmental staff to do was to start recording on spreadsheets which topic was given each week just so that we could have an easier time to look at which topics would need to be recurring.

Q Mr. Halvax, I would like to show you an exhibit marked 911. Mr. Halvax, is this spreadsheet, the documents, the employee gang box training at the facility as it relates to environmental issues.

A Yes, it is.

Q And what is it that is attached to that spreadsheet?

A Various best management practices. BMP's.

Q Were these -- were these documents actually used at the gang box meeting for instructing and training employees.

A Yes. These would be the documents that were actually handed out to the foreman and they were supposed to read verbatim and then query the occupants -- the persons receiving the training.

Q And where these gang box training sessions, is that a continuation of the gang box training sessions such as are represented in Exhibit 928?

A Yes. Those are the same.

Q And so that has been going on for a number of years at Southwest Marines, is that correct?

A The record shows that there -- that this process is yes -- was continued, was done for several years.
Q You also ever send your employees to seminars or training in pollution control?
A Yes, we do.
Q I would like to show you an exhibit previously entered, Exhibit 920 and ask you if you recognize this program.
A Yes, I do.
Q And, what was the nature of that program.
A This was a pollution prevention training program that was developed through the National Shipbuilding Research Programs, which is a national shipyard shipbuilding consortium supported by Society of Naval Architects and Marine Engineers and some others and that -- that -- that group basically funds various types of training and facility improvements and things like that as a investigatory thing, but also as a -- a -- a training section, as well.
Q Okay. Mr. Halvax, who all attended this seminar?
A I think we had thirty or forty folks at that particular training session.
Q And did anyone else attend the seminar besides Southwest Marine?
A Besides the thirty or forty other people?
Q Is this only for Southwest Marine or is this for other people?

A This was attended by the Navy, from the various navy bases attended, all of the ship yards had representatives there. DTSC also came down. There was -- a you know, one of the environmental groups came down and it was an eight-hour training session.

Q And who put on this training seminar?

A Dana Austin was the instructor.

Q And Mr. Austin is the -- formerly worked for Southwest Marine, is that correct, as an employee?

A Yes, I believe he authored the -- the document as well, with some help from the -- I believe it was the University of New Orleans.

(Pause.)

THE COURT: Are you offering any of these -- you've got four exhibits floating -- three -- 928, 911 and 920.

MR. McDONALD: 928 was already entered, your Honor. I'd offer 911.

MR. CRANDALL: No objection, your Honor.

MR. McDONALD: And 920 was also previously offered and admitted, your Honor.

THE COURT: All right, those all are received.

MR. McDONALD: So we just had one floating?

THE COURT: Can we take our morning recess?

MR. McDONALD: Yes.

THE COURT: Twenty minutes.

(Proceedings recessed briefly.)

THE COURT: All right, Mr. McDonald.

BY MR. McDONALD:

Q Mr. Halvax, turning now to inspections, the quality control of the BMPs, is it the practice of Southwest Marine, since you've been there, to conduct daily inspections of the facility for environmental issues?

A Yes, that's been the practice.

Q And do these inspections just concern themselves with the Clean Water Act and the permits or do they go beyond that?

A Well, the -- the name of the inspection is the best management practices inspection, but we've sort of expanded that definition to include observations and to record observations as appropriate for areas not specifically within the Clean Water Act; for instance, air quality regulations and hazardous materials management and other things.

THE COURT: Or any safe operation. If it's being done unsafely, you'd see that too, wouldn't you?

THE WITNESS: Yes, sir, we would.

THE COURT: Safety, in other words.

THE WITNESS: We may or may not record that. We'll certainly take action in one way or another.

THE COURT: Sure.

BY MR. McDONALD:

Q Mr. Halvax, I'd like to show you what's previously been marked as Exhibit 41 -- reported BMP inspection following -- have you seen this exhibit before, Mr. Halvax?

A Yes, I have.

Q I'd like you to assume that the characterization of the issues is correct in terms of -- have you made any determination -- see whether or not these are all correctly characterized in terms of blast media or paint or petroleum?

A I have not.

Q And would you concur in the characterization of these as being problems or improper observation?

A There certainly your observations if that accurately reflects the -- the -- the items identified in an inspection report. Then, you know, you have to take that at face value.

Q And my question with respect to these is, assuming they're correctly characterized in terms of the substance -- the subject matter that they're talking -- and if these numbers are correct, does this -- is this evidence that your BMP inspection program is inadequate in any way?

A No, I don't think you could tell either way from the -- from the exhibit, but certainly it does tell you that we're conducting inspections and we're -- we're using some

degree of management practice to identify and record events.

Q Does --

THE COURT: What's the number of that --

MR. McDONALD: This is 41, your Honor.

THE COURT: What?

MR. McDONALD: 41.

THE COURT: Exhibit 41?

MR. McDONALD: Yes.

THE COURT: Thank you.

BY MR. McDONALD:

Q And can you also tell by looking at this or looking at these numbers -- or does this indicate to you that there is a problem with the implementation of BMPs at Southwest Marine during the period of time which you've been --

A No, there's -- there's a lot of industrial activity occurring at various locations. So, at any moment, you could identify that industrial activity, maybe commenting on something as a reminder or just as a double-check or something that you'd like to see improved.

Q And very briefly, what is the policy of the Environmental Department when they make observations that might be a problem or a concern with respect to an environmental issue?

A Certainly to take corrective action, and that could include deck plate correction or discussion with department

foreman -- leadman, foreman or department manager.

(Pause.)

Q Does Southwest Marine also keep a log of incidents that occur at the facility?

A Yes, we do.

Q And what is the nature of incidents that are -- what the log has kept -- I'd like to show you Plaintiff's Exhibit 40. Let me first ask you, are these examples of --

THE COURT: Is that received already?

MR. McDONALD: This is already in, your Honor, Exhibit 40.

BY MR. McDONALD:

Q Is this a compilation of incident reports at Southwest Marine?

A It appears to be, yes.

Q Okay, and what kinds of incidents are reported in the incident reports?

A Certainly spills, many close calls as well. The spills may or may not be to a -- a -- to the receding water to San Diego Bay. It could be a spill on the ground. It could be a spill on the graving dock floor. It could be a secondary -- improper secondary containment. If a person thought that something should be done and it needed more than just a recordation, they would write an incident report.

Q So is an incident report related to a spill regardless of who did it or why they did it?
A Yes, it is.
Q Does it include spills whether or not it actually ever went into the bay?
A Yes, they do.
Q Did you perform any analysis of those incident reports in binder 40?
A Yes. Well, I did two things. I reviewed -- Dr. Bell had apparently gone through these with some degree -- and I reviewed his spreadsheet. Then I also went through most of all -- most all the incident reports themselves to identify the responsible party within a particular incident.
Q You reviewed spreadsheets that Dr. Bell created on incidents from in or about 1992 to some period of time in 1998; is that correct?
A Yes.
Q Did you go through that report to make any determination as to how many of those spills might be related to Southwest Marine's own practices as opposed to other entities?
A Yes, I did.
Q Okay, and do you know about how many spills occurred over that period of time -- excuse me, let me -- how many incident reports concerning Southwest Marine and other

operations and incidents occurred over that period of time?
A I think, using information in the spreadsheet, it was 200 or so that were Southwest Marine-related.
Q And of those 200 or so spills, how many were actually related to operations that were conducted by Southwest Marine?
A I don't recall.
Q Did you ever perform any analysis or spreadsheets in the past that might assist in your recollection of your analysis?
A Yeah, I -- I took Dr. Bell's spreadsheet and filtered it to reduce the spreadsheet to various categories. For instance, Southwest Marine discharges only, discharges to bay from any source and certain types of -- types of discharge, whether it was petroleum or paint, that sort of thing.
Q Mr. Halvax, I'd like to show you an exhibit that's been marked Exhibit 939.
THE COURT: 939?
MR. McDONALD: 939.
MR. CRANDALL: Yes, your Honor, I'm going to have the same objection as to those other exhibits. This was produced this morning, as I recall, to me. I further would state that it's calling for an expert opinion here, which he may be allowed to give, but -- because of what he's

testified to, but it hasn't been produced. I mean, he can't just walk in on the day he's going to testify and give me a spreadsheet that should have been produced as a matter of expert discovery.

THE COURT: Well, once again, it will be the same ruling by me. As I told you before, you -- if you protected yourself with a continuing type of discovery, interrogatory or deposition or whatever and this violates that, I'll protect you on it.

MR. CRANDALL: Very well.

THE COURT: It's the same ruling. What else can I do?

MR. CRANDALL: Very well.

THE COURT: Are you offering Exhibit 939?

MR. McDONALD: Yes, your Honor.

THE COURT: All right, and you understand that he's hovering to make that motion if he can prove that you violated discovery.

MR. McDONALD: I understand.

THE COURT: Understood. All right, let's go.

BY MR. McDONALD:

Q Mr. Halvax, in referring to Exhibit 939, does this refresh your recollection as to how many of those 200 or so incidents actually related to Southwest Marine as opposed to others?

(Witness proffered exhibit.)
A I -- honestly I still don't recall, on the front page, how many were --
Q Excuse me, the exhibit is all four pages. Could you look at that and see if that refreshes your recollection, please?
A I think that the total number of incidents at the Southwest Marine lease hold based on that Dr. Bell investigation was 217. I'm using the information that was in the -- in that spreadsheet.
Q Let's return to that spreadsheet for the -- the top -- for a minute. In terms of this spreadsheet, what was the basis for this spreadsheet? Where did this come from?
A This information came from Dr. Bell's work.
Q Did you change anything on this spreadsheet from what Dr. Bell did?
A I added the -- the column -- "responsible party" was in the spreadsheet, but it was blank. I went through each incident report and added a responsible party, as -- as identified in the incident report.
Q So you went through every incident report that was included in Dr. Bell's analysis and made a determination as to whether or not that was related to a Southwest Marine activity or Navy activity or someone else; is that correct?
A That's correct.

Q And in some cases it was completely unknown?

THE COURT: Is this just Southwest Marine's incidents to the bay? This would not be total number of incidents; this would just be the Southwest Marine's incidents, right?

MR. McDONALD: That is my next question.

BY MR. McDONALD:

Q Having done that and out of all of those 217 instances, did you make a determination of how many of the 217 actually were discharges into the bay by someone?

A Yes, I did. I think they're on the chart.

Q And about how many of the 217 went into the bay?

A Of the 217 discharges, 105 were discharges to San Diego Bay.

Q And of those 105, how many related to operations being conducted by Southwest Marine?

A Twenty-two.

MR. CRANDALL: Your Honor, I'm ready right now to make this proffer on the discoverability of this information.

THE COURT: Well, why don't we -- do you want to do it now?

MR. CRANDALL: Well, I want to cut it off at the knees, if I may.

THE COURT: Fine. Just a second.

(Pause.)

THE COURT: All right.

MR. CRANDALL: Okay. I have a document request to Southwest Marine that is dated -- it's Plaintiff's request for production of documents to Southwest Marine. It's going to be showing request number 16. It's dated February 12th, 1998. Request number 16 says,

"Produce all documents..."

and then it has a long parenthesis of what it's supposed to do,

"...relating to or reflecting any known or suspected release from Southwest Marine to the environment of a hazardous toxic or contaminated material or substance, including petroleum, blast grit, paint residues and wastes."

That directly calls for any documents that they are going to use at this trial of that nature.

THE COURT: Read -- read the request again.

MR. CRANDALL: "...all documents relating to or reflecting any known or suspected release from Southwest Marine to the environment of a hazardous toxic or contaminated material or substance, including petroleum, blast grit and

paint residues and wastes."

THE COURT: Okay, now, I would interpret that to mean produce all documents then in existence --

MR. CRANDALL: That's right.

THE COURT: -- or known to them, if -- if it's in existence but he doesn't have it but it's known to him -- in existence at that time, it would be producible.

What about documents which are either discovered by him or made -- generated later?

MR. CRANDALL: All right, we have an order from Magistrate Judge Battaglia, issued on or about August 17, 1998, that says,

"On or about 30 days prior to trial, all parties shall supplement their responses to previous discovery pursuant to Rule Fed.R.Sup.26(c)."

THE COURT: Supplement what?

MR. CRANDALL: "...all their responses to previous discovery requests pursuant to Fed.R.Sup.26(c)."

THE COURT: In other words, bring it up to date 30 days prior to trial?

MR. CRANDALL: Yes, your Honor.

THE COURT: Does this exhibit, number 939 -- does that precede 30 days before trial?

BY MR. McDONALD:

Q When, Mr. Halvax, was this document generated?

A The spreadsheet was documented yesterday. The charts were documented a few months ago.

MR. McDONALD: And I'd like to respond, your Honor, that in respect to this request for production of documents, produced to Plaintiff were all of the incident reports that are now in that binder, both prior to and up to 30 days before trial.

The document we're referring to here is a spreadsheet generated by his expert who just testified here in trial. The only thing --

THE COURT: Reducing -- reducing documents which had previously been produced to a more legible or understandable format just before trial.

MR. CRANDALL: No, no, no, no, Dr. Bell turned that stuff over in accordance with the rules. He didn't -- he didn't produce it the night before his testimony. Mr. McDonald had it for his deposition in this case.

THE COURT: I'm not talking about the spreadsheet. I'm talking about these -- these things.

MR. CRANDALL: Right.

THE COURT: As I understand it, the spreadsheet did exist and should have been produced, because it's months

old, as I understand it.

MR. McDONALD: Well, the spreadsheet -- your Honor, excuse me, the spreadsheet was generated by their expert. The only thing --

THE COURT: By whose expert?

MR. McDONALD: By their expert.

THE COURT: This spreadsheet?

MR. McDONALD: They produced it -- they produced all of the information in this spreadsheet except for one column, which is the column "responsible party" which this witness has testified he's actually gone through one at a time to make a determination --

THE COURT: I understand that the information may be elsewhere in other ways. That isn't the issue right now. The issue right now is this exhibit, this document. If this document -- I'm looking at 939. It's four pages long. So just look at the first page, which is a spreadsheet -- I understand from what you're telling me that this spreadsheet doesn't add anything new except one column.

MR. McDONALD: That's correct.

THE COURT: Southwest Marine. But the question is when was this document prepared? If this document existed more than 30 days before the trial, it should have been turned over pursuant to Judge Battaglia's order, even though -- even though it's just a recap -- a simplification,

if you will, of Plaintiff's documents. It doesn't matter.

MR. CRANDALL: But, your Honor, in addition to that --

MR. McDONALD: Okay. Your Honor, in order to move along, I'll withdraw the exhibit.

THE COURT: But that -- but your last three pages appear to be recently prepared and they are also, I assume, an effort to make more legible prior discovery material which was already in the case.

MR. McDONALD: Yeah, these are just charts reflecting the data that's in this database. So the 22 here --

THE COURT: They were just presenting the information which appears in perhaps a more absorbable manner.

MR. McDONALD: That's correct.

THE COURT: Yeah. But the problem is this document is a document. What it's purpose is is actually irrelevant. It is a document. If the document violates the order of the magistrate judge, it can't come into evidence. I -- that's just pure and simple.

Now, the order says any documents -- you update all discovery to all documents which -- in existence prior to 30 days before trial. If this is -- if these things, any part of them, existed more than 30 days -- 30 days or more

before the trial, they would be within the reach of Judge Battaglia's order. Was the first page in existence more than 30 days before trial?

MR. McDONALD: The -- some of the data in here was in existence more than 30 days before trial.

THE COURT: So that would be within reach. Certainly Southwest Marine was prepared within 30 days. So the whole thing is strikeable.

MR. McDONALD: Okay.

THE COURT: Now, what about these charts? They were prepared recently, within the 30 days?

MR. McDONALD: No, these charts were prepared based on the same data -- and the data on which the charts were based, some of which was generated before 30 days also. So the --

THE COURT: Now, I'm not sure --

MR. McDONALD: -- the underlying information --

THE COURT: I'm not sure that we're communicating. Were these charts, these drafts, prepared less than 30 days before the trial?

MR. McDONALD: Mr. Halvax?

THE WITNESS: Those charts were prepared more than 30 days before the trial.

THE COURT: Were they turned over to Plaintiff's counsel?

THE WITNESS: I don't believe so. I don't know --

THE COURT: Well, let's -- then I think I'll grant the motion to strike the whole exhibit.

BY MR. McDONALD:

Q Mr. Halvax, in doing your analysis of the incident reports, you made a determination that 22 of all of those incidents during the period time looked at by Dr. Bell went to the bay, is that correct?

MR. CRANDALL: Well, foundation. He can't recall, as I recall his testimony.

THE COURT: Well, no.

MR. CRANDALL: Without --

THE COURT: Did you review Dr. Bell's material?

THE WITNESS: Yes, and I recall that particular question.

BY MR. McDONALD:

Q And then did you look at those -- what's the period of time we're talking about on those 22 incidents? How many years?

A It's early '92, I believe, to around May '98, I'm thinking.

Q And Mr. Halvax, in looking at those 22 incidents, did you try to make a determination as to whether there was any pattern that would indicate the best management practices

weren't being followed in any regard?
A No, I saw no such pattern.
Q What was the predominant type of discharge that you observed?
A I think there was a large number of petroleum related products.
THE COURT: Okay, now, let me just say, the way I understand you're saying these happened, they obviously were not called for in a BMP. You didn't -- in your BMP, you didn't ask them to spill 22 times, did you?
THE WITNESS: No, sir.
THE COURT: Okay, so, each incident would be a violation of some sort of the BMP?
THE WITNESS: No, sir, that's not the way I'd characterize it.
THE COURT: Well, either it would be man-made or God-made. Were they acts of God, 22?
THE WITNESS: Well, an incident in this case doesn't necessarily mean it's violative of BMP. Included in that spreadsheet, I think, was a guy got caught with drugs. There was another one where an incident was written on -- there was a man fell off the pier. There was an incident report. Those -- some of that, very little of that, you know, that drastic off-the-wall stuff. But, some of that is in this database as well. So --

THE COURT: Well, then, what you're saying is they weren't deliberate attempts to violate a BMP. But, they were violated. The BMPs were violated. If a guy goes through a stop sign inadvertently and gets a ticket for it, it's no defense that he didn't intend to. He violated the law. He didn't intend to. But, now, if you had 22 spills to the water, your BMP doesn't -- no BMP calls for anything, petroleum or anything else, to be discharged to the bay, right?

THE WITNESS: That's --

THE COURT: So, it happened. So, what you're saying is, although it was a breach of the BMP, it wasn't because of a deliberate disregard for the BMP. Isn't that what you're saying?

THE WITNESS: It certainly was not a deliberate disregard of the BMP, but I still don't know that I could characterize it as a BMP violation. One instance that comes into mind is we have a dock arm on the dry dock that has hydraulic hose on it. Well, a hydraulic hose ruptured. Some of that material the bay. I don't know that the BMP says, you know, hydraulic hoses shall not rupture. It says that adequate maintenance shall be conducted on equipment when it's approximate to a potential pathway to the receiving water, inspections shall be made, and so those kinds of things the BMP requires are done, but because there

was an incident where a discharge, either through mechanical error, or in some cases, human error, does not necessarily mean it's a BMP violation.

THE COURT: It may not make your BMP -- you don't understand. It may not make your BMP deficient, but unless it's an act of God, it's a violation of the BMP. You didn't ask the people to rupture the hose. Maybe the hose ruptured -- if you checked it out, you probably -- you may have found that the hose was -- should have been replaced. Maybe it was a lousy maintenance program. I don't know. Maybe it was a defective hose, which you would hardly be responsible for, if you bought a brand new one and it failed. But, some reason -- there is some reason why it failed. Either it was defective when new and it was new, or it was proper when new and it was misinstalled, which is on you probably, or it was proper and properly installed, but superannuated and it just wore out, and you didn't replace it before it wore out. I mean, there's a reason why a hose fails. Right?

THE WITNESS: Yes, sir.

THE COURT: It's not designed to fail. There's got to be a reason and just because you violate a BMP doesn't mean the BMP is deficient. It just means that it was a violation of the BMP. Right or wrong, it was a violation of the BMP. All you're saying is it wasn't our

fault.

THE WITNESS: Well, I understand your Honor's line of thinking. I would also add another circumstance. If an inspector sees industrial activity occurring, regardless of what it is, and sees some material in the ground, okay, and says, "You need to clean that up when you're done or you need to clean that up now," if the inspector really doesn't like what they see.

THE COURT: You could argue he's following the BMP.

THE WITNESS: You could argue he's following the BMP.

THE COURT: Yeah, but, it's a mixed bag. The guy that dropped it didn't follow the BMP in allowing the condition to happen. But, somebody else came along and, following the BMP, corrected the problem. It's a mixed bag, isn't it. The guy that put it there violated the BMP, because you don't tell him to drop it there, do you?

THE WITNESS: No, sir.

THE COURT: But, on the other hand, the inspector did his job and he corrected the defect, and the BMP does call for him to be an inspector, doesn't it?

THE WITNESS: Yeah, but, I don't think the BMP calls for zero deposition of industrial materials on the surface of a shipyard, and if an inspector comes by and

there's some deposition of an industrial material -- and abrasive blast grit, for instance, is an industrial material -- the BMP doesn't say that material shall never touch the surface of the shipyard. The BMP says, housekeeping, adequate management practices, protection from pathways so that the material does not reach the receiving water, those sorts of things embody the BMP, and those sorts of things are how the inspectors employ their inspection techniques and retrain, et cetera.

THE COURT: Well, you're actually arguing that maybe the BMP is deficient in some respects, because grit allowed to sit on the ground for some period of time, like for example beyond the shift that created the problem or beyond the scheduled clean-up, suppose you swept down and the grit was found after the sweep-down. Is that in compliance with your BMP?

THE WITNESS: That could be evidence that there's some need for improvement, yes, sir.

THE COURT: Well, the BMP tells them to sweep it clean.

THE WITNESS: Yes.

THE COURT: So, that wasn't in accordance with the BMP. You didn't tell him to leave the grit there, did you?

THE WITNESS: No, sir.

THE COURT: But, your inspector found the grit.

THE WITNESS: But, there also may be circumstances where, even within a containment area -- if you've got a piece of equipment that it takes a crane to set up, you crane this large piece of equipment into a containment area, there's some abrasive blast accessible on the containment area, but you'd have to move it with a crane every day to get the material out from underneath. So -- and there's lots of those sorts of things that the inspectors review when they look at what they're inspecting. But, I understand the Court's line of thinking.

BY MR. McDONALD:

Q Mr. Halvax, may I focus you. There was some discussion of sandblast grit. Over this seven-year period, how many incidents to the bay do you recall related to sandblast grit?

A I recall that it was less than half a dozen.

Q So, over a seven-year period, less than half a dozen incidents went to the bay. Okay, and in looking at those incidents, did you see any failure to generally implement in a very substantial way the BMP requirements of Southwest Marine to control discharges of grit?

A No, sir, I did not.

Q In respect to -- we talked about the petroleum from a hose rupture. Does Southwest Marine have as part of its management practices programs to maintain its equipment?

A Yes, we have a maintenance program for that equipment.
Q In respect to where these discharges occur, was there ever any evidence that there was a failure to properly maintain the equipment?
A No, sir.
Q Okay. In respect to all of these incidents, whether from Southwest Marine or not, did you review whether or not there was any response to any of those incidents?
A There's a column in the spreadsheet that I did not develop, but there's a column in the spreadsheet that has some --

MR. CRANDALL: I'm going to object -- oh, never mind. I'll withdraw it. Sorry. Go ahead.

THE WITNESS: There's a column in the spreadsheet that identifies the corrective action that was taken, either the emergency response, the agency that was notified and other corrective measures.

BY MR. McDONALD:
Q Okay, without regard to the spreadsheet, did you go through those incident reports and determine whether or not there were responses taken in respect to each of those instances?
A I looked at the incident reports to see -- yes, to see what kind of response was taken.
Q Okay. And were -- and is it the policy of Southwest

Marine to respond to all these incidents?
A Yes, it is.
Q Are you aware of any of these incidents that resulted in a discharge that created a sheen, a pollution, that went beyond the immediate area of where that incident occurred?
A No, sir.
(Pause.)
Q And finally, in reviewing all of these incidents, is it your opinion that these incidents reflect that Southwest Marine's best management practices program as a program is not being implemented adequately?
A No, I believe the program is being implemented adequately.
Q Since the filing --
THE COURT: Excuse me, did I instruct -- did I talk with counsel about when we're going to be dark for lunch today? Did we discuss that?
MR. McDONALD: No.
THE COURT: What is your expectation?
MR. McDONALD: We thought we were going to noon and then back at 2:00.
MR. SWAN: No, back at 1:30.
THE COURT: Back at 1:30? Because Jamie, who is my clerk today, is available until 4:30. Would that help counsel if we went till 4:30 today?

MR. McDONALD: Yes, it most certainly would, both counsels, if we have some people --

THE COURT: Both of you want to go till 4:30?

MR. CRANDALL: That's fine with us, your Honor.

THE COURT: Let's go till 4:30. We'll resume at 1:30. Okay?

MR. McDONALD: We're going to break now?

THE COURT: No.

MR. McDONALD: Break at 12:00?

THE COURT: Break at 12:00.

(Pause.)

THE COURT: I'm sorry for the interruption.

BY MR. McDONALD:

Q Mr. Halvax, since the notice letter was received by the Plaintiffs in this action by Southwest Marine, has the facility been inspected by the regional Water Quality Control Board?

A Since I've been there, yes, it's been inspected three times.

Q And as a result of any of those three inspections, has there ever been any violations or notices of violations issued to Southwest Marine?

A No, sir.

Q I'd like to turn you now to your storm water diversion system. It's correct that that system was basically

complete in 1997, March?
A Yes.
Q Okay. Was there any diversion at Southwest Marine before then?
MR. CRANDALL: Objection; lack of foundation.
THE COURT: Well, unless you lay a foundation of his knowledge --
BY MR. McDONALD:
Q Mr. Halvax, when did you come to work at Southwest Marine?
A November of 1996.
Q And did you make an observation of the facilities upon being employed by Southwest Marine?
A Yes, I did.
Q Did you observe any areas where there was storm water diversion in place during the first few days in which you came on board at Southwest Marine?
A I don't know if I did within the first few days, but, yes, within that immediate time frame I did identify diversion systems in the facility.
Q And what areas of the facility already had diversion when you first went around the yard inspecting it?
A Most notably, certainly, the dry dock, the large -- the large dry dock had a diversion system and it already had pumps and hoses installed and storage capacity adjacent to

the dry dock to collect storm water and other upflowing. The hazardous -- hazardous waste reclamation area had storm capacity containment for collection of all storm water and other materials that might fall on the ground. The small dry dock had provisions for containment around the dry dock and collection areas. There was already some berms in place to help guide that water where it wanted to go.

THE COURT: Were more berms added?

THE WITNESS: I added some berms since I started, yes, sir.

THE COURT: The berms -- some of them seem to be a blacktop material which I suppose is a lot cheaper than cement. A lot of these photographs showed that some of them are breaking down. Have you changed the material? Have you used cement instead of blacktop?

THE WITNESS: We've changed to concrete curbing in -- in some locations, yes, in the higher traffic areas of in areas where there's a potential for physical impact.

THE COURT: Do you presently have any berm breaks -- do you have any breaks in your berms at the present time?

THE WITNESS: I know of one area that we're replacing an asphalt berm to concrete, but I don't know of any breaks, no, sir.

THE COURT: Other than that one, you don't know of any breaks in the continuity of your collections system?

THE WITNESS: Not as I sit here today, no, sir.

(Pause.)

BY MR. McDONALD:

Q Mr. Halvax, could you characterize the areas from which storm water diversion was already in place at Southwest Marine?

A Characterize --

Q Can you characterize them in terms of their risk for storm water pollution or other pollution to the bay?

A I believe that the -- the high-risk areas within the shipyard were already contained, those certainly being the dry docks, hazardous -- hazardous waste areas, and there's also a lot of secondary containment, portable skids, if you will, that have grates on them where hazardous -- when hazardous material is used in, about and around the shipyard and on piers, this material drums -- in 55-gallon drums so it would be staged on these portable collection devices.

Q After you came to Southwest Marine, did you undertake to install a storm water diversion system to cover these other areas of the yard?

A Yes, sir, we did.

Q Did you hire an engineering firm to assist you in making a determination as to how to engineer that, how to

design that facility?
A Yes, we did.
Q And who was that?
A Hirsch and Company was the engineering firm.
Q Okay. Did you -- did you prepare a -- a chart of the facility showing the areas which were drained by various portions of the storm water diversion system?
A Hirsch and Company developed a topographical survey, and on that survey they identified the areas based on topography, primarily, that would -- the water would generate flow into certain basin areas. Those are identified on that map, yes.
Q I'd like to show you an exhibit marked 938 and ask you does that depict the areas on the facility --
MR. CRANDALL: Your Honor, I'm going to object to 938 on the same basis as the prior objection.
THE COURT: What's this -- what's the story?
MR. CRANDALL: Well, back in 1996 we asked for -- and 1997 -- we asked for all maps, diagrams, everything related to the storm water diversion system or the storm water system in general. Again, that was subject -- this, from the witness' testimony, as I understand it, was a diagram prepared then.
MR. McDONALD: I'll object to that. He has not testified as to when this was prepared.

THE COURT: Well, why don't you make an offer of proof? When was it prepared?

MR. McDONALD: Your Honor, this was prepared within 30 days before trial.

(Pause.)

THE COURT: Well, that seems -- unless I'm missing something -- I mean, how -- how can I admit that? Oh, within 30 days?

MR. McDONALD: Within 30 days before trial.

THE COURT: Oh, within 30 days, okay. Well, what date was it prepared?

MR. McDONALD: Mr. Halvax, do you know about the date it was prepared?

THE WITNESS: This was prepared in late October. I don't recall the date, but it was -- it was before Halloween, and it includes, as you can see, the railways already being remediated. There are some drains on here that -- one drain that we added through that remediation process as well as a drain we found.

THE COURT: How do I read Judge Battaglia's order? He said 30 days before the --

MR. CRANDALL: I don't think you read --

THE COURT: Is that the trial date that we aborted? We started the trial. On the first morning of trial, we reset the trial date.

MR. SWAN: It's before November 3rd. So it would have been October 4th.

MR. CRANDALL: Right. I have a different objection, then, if that's --

THE COURT: Did this -- oh, November 3rd was the trial?

MR. CRANDALL: Right. I have a different objection.

THE COURT: That's within 30 days of the date --

MR. CRANDALL: It is. My objection is not well-founded on that basis, but I have a different one.

THE COURT: What's the different one?

MR. CRANDALL: Okay, we have an exhibit list -- we had a pretrial conference order. This should have been produced as part -- it clearly was ready and in existence and should have been marked on their exhibit list before trial. Instead they've sort of walk it in. There has been a proffer that this was available before the trial started. Now, why, today --

THE COURT: That -- that won't -- that -- I don't think I can sustain that objection. It's true that we do have an exhibit list system, and everybody that's planning to introduce exhibits lists exhibits, but there's nothing that says on that list that you will introduce no exhibits which are not listed on that list. However, the discovery

order would be the one that would say it has to be prepared at -- within 30 days of the trial date.

MR. CRANDALL: Actually, I do believe there is something on the exhibit list to that effect.

THE COURT: Is there?

MR. CRANDALL: I believe so.

THE COURT: Well, it's been signed by both parties. What does it say?

(Pause.)

MR. CRANDALL: You know what I'll do to move this along, your Honor? I'll -- he can go into it. I'll move to strike. I believe it's -- I just don't want to stop the -- I am not retreating. There is not a retreat out here. I just want --

THE COURT: I understand you're not retreating, but you have burned up some time.

MR. CRANDALL: Well --

THE COURT: To get to the point of not retreating you've burned up some time.

MR. CRANDALL: Maybe so. If I win the objection, I won't have.

BY MR. McDONALD:

Q Mr. Halvax, what does this chart -- exhibit -- depict?

A This is a map of the Southwest Marine facility depicting the boundaries of the areas where diversion

exists.
Q And -- and (indiscernible) documentation produced in this litigation which depicts the boundaries of the areas that are covered by Southwest Marine's storm water diversion system?
A Yes. The only change in the boundary areas that -- where the marine railways 2 and 3 -- 1, 2 and 3 formerly existed.
Q Could you please describe to the Court, in reference to your chart (indiscernible) where the areas are diverted from the facility and where the material is collected from storm water diversion?
A Well, in the case of DS-1, which is the top left-hand area, if you will, the -- if storm water were to be discharged from that area, it would be discharged through SW-1, which is at the lower corner of that -- it may help if I show the Court.
Q Yeah, why don't you just show the Court where these areas are and where they're collected to, referring to 938.
(Pause.)
A DS-1 -- DS-1 which is -- each of the diversion areas are classified as DS -- called DS. So DS-1 is everything within this boundary. If there was a discharge from DS-1, if it was not collected in this tank, it would be discharged through this outfall called SW-1. That's where it would go

to the receding water. Likewise, DS-2, which is a much larger area and has a collection of drains and piping, there are two outfall locations where DS-2 could discharge. They would be SW-3 and SW-8.

THE COURT: SW-3 -- I don't see SW-3.

MR. McDONALD: Your Honor, the witness is pointing to it.

THE WITNESS: SW-3 is right here.

THE COURT: Oh, I see it. Okay, SW-1, 2, 3 and 8. Okay. You say, if it doesn't go into the first DS-1 -- you said if it doesn't go into DS-1, which is a drain --

THE WITNESS: DS-1 here is an above-ground storage tank, 15,500-gallon above-ground storage tank.

THE COURT: And that's just for the first quarter inch?

THE WITNESS: It will actually talk, I think, almost a half an inch of rain.

THE COURT: And then does it have a diversion valve that would send it to the discharge area once it fills?

THE WITNESS: Yes. If -- if this tank fills up, we would discharge through SW-1 or -- I misspoke earlier -- we could also discharge from SW-2, which is just a little smaller area --

THE COURT: It would go initially to the

diversion, DS-1, but it would be closed; so it would be diverted to the outfall pipes, right?

THE WITNESS: It would be diverted to DS-1 --

THE COURT: Initially.

THE WITNESS: -- initially and then could subsequently be -- the system shut down and then these discharge valves open and allow it to reach the receding water.

THE COURT: You would shut off DS-1 because you're full?

THE WITNESS: Yes, sir.

THE COURT: And you'd open up the discharge valve and it would go out to the bay?

THE WITNESS: Yes, sir.

BY MR. McDONALD:

Q Did that -- did that happen during 1998 at all, in the storm season?

A I don't believe SW-1 or SW-2 were discharged. I believe the capacity was -- was adequate to handle all of the storm water. So -- so -- and the same thing holds with DS-2, which is this area. It could be discharged through SW-3 or SW-8. DS-3 would be discharged to -- in this case we don't have a specific outfall, but there's -- there are three storm drains -- two storm drains in this DS-3 area. Those are connected to the municipal -- municipal system.

There's a municipal storm drain system that's very large and comes through the facility and ends up out here.

THE COURT: And you go into that?

THE WITNESS: We go into that from two drains, yes, sir.

THE COURT: That's the one that's below -- that's the one that's below water.

THE WITNESS: Yes, sir, this is below.

BY MR. McDONALD:

Q And what's the size -- what's the size of --

THE COURT: Earlier testimony -- earlier testimony, as I recall, said that that's not a problem because the only thing that's in there is from someplace else.

THE WITNESS: Well, the -- the fact that it's below the -- the fact that it's below the tide is not a problem because the waters seek the level of the bay. So any water that comes into this drain, should this drain be open, would go into the train and seek the level of this storm system.

BY MR. McDONALD:

Q And how --

A It'll be a plane -- plane -- that water level throughout the piping system.

Q How big is that drain?

THE COURT: Is that because the tide goes out and it would drain when it goes out?

THE WITNESS: Well, no, sir, even when the tide is in, the water, of course, never comes above the elevation of the facility. Since the water that's on the elevation of the facility would be -- would go into the piping system and, grabbing, would push it until it seeked the level of the receding water, no matter what the tide was.

THE COURT: Right, but there'd be a level of depth in the pipe. Would that -- would it be out of the water at low tide?

THE WITNESS: These are generally shallow pipes for the -- for the Southwest Marine systems. This is a much deeper pipe.

THE COURT: Well, my question is does the deep city pipe -- does it expose at low tide?

THE WITNESS: Yes.

THE COURT: So it --

THE WITNESS: I'm not sure if it all exposes, but certainly part of it exposes, yes, sir.

THE COURT: Well, if it all exposes, at least it dries out -- I mean, it's emptied twice a day.

THE WITNESS: Yeah, I don't -- I personally can't recall ever seeing below -- I think -- I've never intentionally looked at extreme low tide to see if it was or

not.

(Pause.)

BY MR. McDONALD:

Q What is the size of that city outfall?

A This is a -- I think it's a 54-inch -- so it's a real --

THE COURT: Yeah, now, these -- this one that you're in now, what's that one called, DS-3?

THE WITNESS: Yes, sir.

THE COURT: That one doesn't have a diversion system, does it?

THE WITNESS: Yes, it does, sir. These two tanks here at DS-3, those are each 10,000 gallons. There are pumps at this tank system. There are two drains in this area. The water will be collected and it just -- all this -- gravity takes this water this way --

THE COURT: Yeah.

THE WITNESS: -- and then they collect in these two drains, which are drawn into this tank system.

THE COURT: Okay. It's from that tank system that it goes into this municipal deal.

THE WITNESS: No, sir, these pipes -- there's a connection from each of these drains to the municipal system. Down inside the grate -- if you were to pull the grate up, there would be a valve down inside that grate.

It's closed. So the water would back up in that grate and go the other way to the diversion system.

BY MR. McDONALD:

Q So there's no discharge normally to the municipal system --

A No.

Q -- it all goes to the diversion system; is that correct?

THE COURT: How are those valves actuated? Are they manually actuated?

THE WITNESS: Yes, they're manually actuated.

THE COURT: Okay. Thank you.

BY MR. McDONALD:

Q So, Mr. Halvax, is it correct that every area that's identified within this dark line goes to a diversion system?

A Yes.

Q Can each area -- is segregated off such that it's diverted to a different set of tanks; is that correct?

A Yes.

(Pause.)

THE COURT: Now, that one that's isolated, is that a pier?

THE WITNESS: Would that be here, sir?

THE COURT: Right below that.

THE WITNESS: This?

THE COURT: Is that a pier?

THE WITNESS: This is our dry dock.

THE COURT: That's a dry dock?

THE WITNESS: It's a dry dock. There's a 90,000-gallon tank right here. So all the water on -- if we're conducting hydroglass activity or heavy storm water and we can't collect it in this tank, any time there's industrial activity, this water will be collected and put into this 90,000-gallon tank.

THE COURT: How do you drain the tank?

THE WITNESS: What's that?

THE COURT: How do you drain the tank?

THE WITNESS: The tank is an integral part of the dry dock itself. There is internal piping that goes to the sewer system, the sanitary system on the -- on the dry dock. There's a portable (indiscernible) right here that goes to shore and to the municipal sewer system from -- from the dry dock.

THE COURT: It goes to the sewer system?

THE WITNESS: Yes, sir.

THE COURT: So everything on the dry dock goes to the sewer system?

THE WITNESS: Yes, sir.

THE COURT: The same is true of the other one?

THE WITNESS: The other dry dock? When there's no

industrial activity -- this -- this dock is used all the time. When this dock is not used and it's clean, the storm water would be allowed to go to San Diego Bay.

THE COURT: How do you clean it?

THE WITNESS: We use sort of a broom clean, a pressure washing.

THE COURT: And when you pressure-wash, how do you catch the water from the pressure wash?

THE WITNESS: There's a -- there's a contiguous (indiscernible) on one end, a steel plate, six or eight inches on this end --

THE COURT: And you push it all in that direction?

THE WITNESS: The dock -- no, the dock is actually always tilted this way.

THE COURT: Oh, you push it that way.

THE WITNESS: It's always these way. There's a container here and there's a couple of catch basins in there. Then we'll put a hose in here and draw from there.

THE COURT: And where does it go?

THE WITNESS: It'll go into a tank and then either discharge on site or taken to a -- there's a pump station on Harbor Drive.

BY MR. McDONALD:

Q By "discharge on site" you mean to the sewer --

A Yeah, to the sewer system. There's a tank here, a

storm --

THE COURT: So eventually the -- both of the dry docks go to the sewer system.

THE WITNESS: Yes, sir.

(Pause.)

THE COURT: And that was designed by Hershing (phonetic) or something?

THE WITNESS: Hirsch and Company, H-I-R-S-C-H, I believe --

THE COURT: Hirsch.

THE WITNESS: -- and Company did the topographical survey, and then they -- they're the ones that established these water basins, if you will, and they also established the -- they did a little table on this drawing and on the original drawing that says that -- how much -- how many volume -- how much water needs to be collected and stored in each area for a quarter of an inch -- it says on here -- for a quarter of inch how much water can fall in an area. It also shows the tank capacity within that area.

THE COURT: So that -- that's the correlation that shows that they have enough tank capacity to carry a quarter of an inch?

THE WITNESS: Yes, sir.

THE COURT: How -- and out of that tank -- the outlet to the sewer isn't at the bottom of the tank. So

there must be settling in the tank below the outlet to the sewer.

THE WITNESS: Yes, sir.

THE COURT: How do you remove that solid that has collected?

THE WITNESS: There are 36-inch -- call them manholes -- 36-inch covers on the bottom of the tank, two-foot up to three-foot up. We remove those, send people inside -- we'll of course empty --

THE COURT: You remove that material?

THE WITNESS: Yes.

THE COURT: Where does it go?

THE WITNESS: The -- the solid will go into a 55-gallon drum and the liquids would go to the sewer system.

THE COURT: And where would the drum go, to Hazmat?

THE WITNESS: It would go to Hazmat. It would probably be characterized as metal-contaminated. There's so little -- by the time you got through the whole facility, it has so little material, it's less expensive to dispose of it as a hazardous material than it is to test it, one drum of material.

THE COURT: But other than that diversion system, if the rain really comes down, it just goes straight into the discharge valves, into the bay?

THE WITNESS: If a rain came down and it exceeded the capacity of the system, we would open the valves and it would go to the bay.

THE COURT: So the bay is going to be clean or contaminated depending upon your housekeeping on the areas --

THE WITNESS: Yes.

THE COURT: -- sweeping down, hosing down and keeping clean?

THE WITNESS: Yes. Theoretically I don't think --

BY MR. McDONALD:

Q In every case, the first flush from the site, the system is designed to contain; is that correct?

A Yes.

THE COURT: And the ability of the first flush to scavenge the area would depend on rate of flow of the rain. If it's real, real slow, the first quarter inch won't do much of anything.

THE WITNESS: And also how long it's been since a previous rain had been.

BY MR. McDONALD:

Q But if there is a slow rain and a slow rate, how would you then manage your storm water to avoid having to discharge to the bay?

A Well, in many of these cases, we've had -- we'll have two tanks. So we could fill up one tank. When it gets full, we could shut down that one tank, cut over to the other tank and then discharge the first ones to sanitary.

THE COURT: Discharge the first one to what?

THE WITNESS: The first -- discharge the first one to sanitary --

THE COURT: Okay.

THE WITNESS: -- and then, while we're collecting in the second tank --

THE COURT: Yeah.

THE WITNESS: -- and so we could, in many of these, exceed -- well exceed a quarter of an inch.

THE COURT: I see. If it's slow enough, you can rotate your tanks.

THE WITNESS: Yes, sir.

THE COURT: That is a judgment call of your supervisor how much he thinks the rain is going to carry off, he or she.

THE WITNESS: There are observations made and expectations --

THE COURT: Are there any kind of objective criteria that you follow? For example, if your rain gauge shows that the rate is one inch per hour, that's enough to do it, and you don't want to use a quarter inch, but less

than an inch an hour on your rain gauge is too little, or do you have any objective standard?

THE WITNESS: Other than keeping an eye on the volume of the tank and the amount of storm water through a graduated gauge that we have on the facility, and with our ear to the weather channel --

THE COURT: Well, if you can relate level to time, whatever you use -- whether it's level of tank, whatever you use, if it's related to time, that shows you the rate of flow.

THE WITNESS: Yes, sir. We can only discharge at such a rate through the sanitary system, yes.

THE COURT: Do you have an objective level of the tank over time as to what that is?

THE WITNESS: In some cases, we do. We just did one for this tank, for instance, to determine how fast we could discharge the sanitary, since there's only one tank there. They were looking at that rate and making some decisions as to whether or not we want to be able to collect 100 percent of the rain, for instance, from everywhere, how many tanks did we have to have, redundant, so we can do this balancing and switching over from one to the other.

THE COURT: Well, if you only have one tank, how would you play that alternate game? Either that tank is receiving or it's not receiving. If it's not receiving,

it's going to the bay, isn't it?

THE WITNESS: If the tank is full, it would be shut down. It would go to the bay, unless the tank was half full, it stopped raining, we emptied it real quick before the --

THE COURT: But, you wouldn't open up your discharges to the bay in that case.

THE WITNESS: No, sir, we wouldn't.

THE COURT: Yeah.

THE WITNESS: So, if it continues to rain steady, you know, for an inch, some of these places would exceed the capacity.

THE COURT: And the only way you could solve that problem would be to have two tanks.

THE WITNESS: Yes, sir.

THE COURT: How many of those areas have just one tank? You show two on DS2. You only show one on DS1.

THE WITNESS: Three of the areas. DS1 has a single tank, DS5 has a single tank and DS6 has a single tank. Excuse me. DS7 has a single tank, but there's a lot of capacity there. The dry dock has a single tank that's 90,000 gallons. So, it also depends on the size of the tank.

BY MR. McDONALD:

Q Does the capacity of the tanks, whether it's one or

two, in each of the areas exceed the requirements of the currently applicable permit that will require you to have a storm water diversion system in the future?

A Yes, all if the areas exceed the --

THE COURT: Well, I guess I'm questioning that rule as apparently a quarter of an inch -- the first quarter inch of rain, and I'm suggesting, if you get a rainfall that is a warm front, if it's slowly raining for two or three days, slowly raining, you may never get enough flow of water to carry anything off. The water goes off, but it leaves the sediment. In a situation like that, you're not going to take -- you're not going to accomplish anything by pulling the first quarter of an inch off, because you get as much pollution in the last quarter inch as you would in the first quarter inch, or as little. Do you follow what I'm saying? You've got to have --

MR. McDONALD: I understand the hypothetical, your Honor. I'm not sure --

THE COURT: You have to have --

MR. McDONALD: I'm not sure I agree that that's how the regulatory agency's requirements came about.

THE COURT: The experts have told us that the carry-off ability of water depends upon volume and speed. Fast-moving water will carry more stuff in suspension out than slow-moving water. They've all said that, yours and

Plaintiff's.

MR. McDONALD: That's correct, your Honor.

THE COURT: So, all I'm saying is, if you have a rain which is a drizzle, this quarter inch thing is really not realistic.

BY MR. McDONALD:

Q But, if you have a rain that's a slow drizzle, nothing ever goes to the bay, right?

A That's correct.

THE COURT: Nothing goes to the bay? Everything goes to the bay.

BY MR. McDONALD:

Q Excuse me. Is your storm water diversion system, if you have a slow rain, will it be collected by your storm water diversion system and then go to the sewer?

A Yes, even an inconsequential rain where it's slow for a long period of time, we would not open these valves. We would collect it in the tanks.

THE COURT: Well, what if the tank fills up?

THE WITNESS: In that case, a slow, steady rain, when it did reach its capacity and we could not -- we didn't have two tanks, or we didn't have some other mechanism to find some more storage capacity, we would allow it to be discharged to San Diego Bay.

THE COURT: Well, do you know -- do you have a

rate of flow that you know over time how much time you can accommodate a slow rain with a one-tank system?

THE WITNESS: I'd have to evaluate what slow is, and there is a chart that the engineer identified that showed some capacities of the system to move water.

THE COURT: It's time to have lunch. 1:30.

(Proceedings recessed for lunch at 12:05 p.m.)

AFTERNOON SESSION

--oOo--

THE COURT: All right, Mr. McDonald.

MR. McDONALD: Your Honor, because of the press of time, we have another witness here, Mr. Austin, who is in from Florida, who, because of Thanksgiving, has to get back. I have no further questions at this time for Mr. Halvax. I'll reserve my right to bring him back on direct.

THE COURT: Have you -- I take it you've -- you talked about this?

MR. CRANDALL: No.

THE COURT: You haven't talked about this?

MR. CRANDALL: No.

THE COURT: He wants to call a witness out of order --

MR. SWAN: No, we're not calling anybody out of order.

MR. McDONALD: I just have no further questions at this time of Mr. Halvax.

MR. CRANDALL: Well, if he's finished --

MR. SWAN: We're finished with Mr. Halvax at this time.

MR. CRANDALL: Well, what does "at this time" mean?

MR. SWAN: We can -- you said we can call him back

at any time during our case in chief.

THE COURT: Oh, sure, you can call him back as your next witness if you want to.

MR. SWAN: Thank you.

MR. McDONALD: Thank you.

THE COURT: So you're going to cross examine Mr. Halvax now?

MR. CRANDALL: I guess --

THE COURT: Or do you want to interrupt by calling this witness from Texas (sic)?

MR. McDONALD: No, no, no, your Honor, we're just through now with direct and --

THE COURT: Okay. Then we're ready for cross examination.

MR. SWAN: Your -- your Honor, if -- I'm just concerned -- maybe Mr. Crandall has an idea how long he's going to be with Mr. Halvax -- that we get Mr. Austin on and off this afternoon because he has a flight back to Florida at 7:00 tomorrow morning.

THE COURT: Well, the -- what you ought to do -- it's up to you -- you should interrupt his cross and put him on so we know he gets his plane back. Mr. Halvax could be available for cross tomorrow.

MR. McDONALD: He's here every day.

THE COURT: Every day from now on. On the other

hand, I'm not the lawyer for the Plaintiff either.

MR. McDONALD: We would prefer that just to assure that we would get adequate time not only for us -- I'm confident --

THE COURT: I haven't any idea -- I don't know what you want to ask Mr. Austin. I don't know how long it's going to take.

MR. McDONALD: I'm confident we'll complete Austin. The concern is whether we're going to have an adequate opportunity to cross.

MR. CRANDALL: It's a minor thing.

MR. McDONALD: I would have Mr. Austin on here so he's got an opportunity --

THE COURT: I've handled most of his cross for him now. He probably only has 10 or 15 minutes. You should probably talk it over -- before you mention it to me, you should talk it over with him and you should make a request of him, "Can I call this other witness? Do you mind deferring your cross?" That's what you should do.

MR. McDONALD: Could we do that?

MR. CRANDALL: Well, I'd like to just think about it for about 30 seconds on his clock, if I may.

THE COURT: You guys -- you know, this is Steve Crandall. This is Steve McDonald. You guys ought to get acquainted. Talk to each other now and then.

MR. McDONALD: We have, your Honor. This was something -- right at the end we realized the man out here -- we're trying to get him on a plane.

THE COURT: I always talked to the other side if I had a special request to make. I would have made it of the other lawyer first. You never know, they might agree. It's possible.

(Pause.)

THE COURT: Modern lawyers don't handle each other like they used to. They used to be buddies in the old days.

(Pause.)

THE COURT: Have you attorneys ever realized how unprofitable it would be to be a lawyer if you didn't have an opponent? There was a lawyer who lived up in a small town in Northern California. He almost starved to death. Then another lawyer moved into town. In three years he was a millionaire.

(Pause.)

MR. CRANDALL: Your Honor, I -- my problem is this. If we want to get Mr. Austin out of here today -- Mr. McDonald tells me he has a half hour to maybe more and then I have a cross examination of that. I -- my preference would be to examine this witness and then have them bring and examine Austin, but I'm not promising I'll get Austin. He may have to come back on Tuesday.

THE COURT: It's up to you. I think you ought to walk with each other's problems because it's a short road that doesn't turn around.

MR. CRANDALL: Sure, I understand that. Well, then I think they ought to put on -- if we need to get Austin done, we ought to put him on and get him done.

THE COURT: Let's get him back on and get him off and get him on his plane.

MR. SWAN: I'll get him from the hallway.

(Pause.)

THE COURT: Mr. Crandall, do you think that your cross examining is going to be impacted on this witness by the directing and the cross of the other witness?

MR. CRANDALL: It may.

THE COURT: Do you want him excluded?

MR. CRANDALL: Yes, I would, your Honor. I'd ask that he be excluded for this.

MR. McDONALD: Your Honor, Mr. Halvax is our client representative. He's been here throughout the entire trial.

THE COURT: What's that other gentleman's --

MR. McDONALD: He is counsel of record. Mr. Schwartz?

THE COURT: Oh.

MR. McDONALD: So --

MR. CRANDALL: Can't stand -- I mean, you know accommodation -- accommodation. Let's move him back out --

THE COURT: How many lawyers have you got at your table?

MR. CRANDALL: I have one, two, three.

THE COURT: Well, he's only got three. So let's proceed.

MR. CRANDALL: Well, it's a question of accommodation. I would prefer -- I'm asking Mr. Swan to accommodate me by excluding Mr. Halvax so we can accommodate Mr. Austin. If he won't do that, I want Halvax back up on the stand right now.

THE COURT: Exclude Mr. Halvax.

MR. SWAN: Yes, your Honor.

DANA AUSTIN, DEFENDANT'S WITNESS, SWORN

THE CLERK: Please state your name.

THE WITNESS: Dana Austin.

THE CLERK: Spell your last name for the record.

THE WITNESS: A-U-S-T-I-N.

(Pause.)

DIRECT EXAMINATION

BY MR. McDONALD:

Q Mr. Austin, when we were inquiring before about the storm water pollution prevention plan in 1996, I'd asked you some question about collecting the samples from different

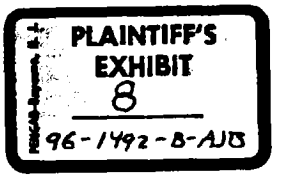
3.25.98

Southwest Marine Wet Inspection

A significant rain event began to occur shortly after 1400 on March 25, 1998. At 1420 I phoned Shawn Halvax at Southwest Marine to give notice that the San Diego BayKeeper would like to conduct a wet inspection. Shawn Halvax returned my call shortly thereafter and John Barth and I went to SWM. We arrived at 1450. We immediately began our inspection, using the same route we have used in each inspection: starting at the North end of the facility and working our way to the Southern end.

When we arrived at the Northwest corner of the facility, which is an asphalt paved area used for storage of small equipment, such as forklifts, and assorted materials, we found the area immediately contiguous with the shoreline was flooded. On closer inspection we found that the storm drain in that area was somehow clogged so that the rain had collected in a deep pond and was rapidly running over the top of the recently installed asphalt berm.
After breaching the berm, the stormwater was running down the bank and into San Diego Bay. The stormwater running over the berm and into the Bay had a distinct oily sheen. I took a water sample and identified it as NWSD 23. The sampling analysis results of all samples taken on March 25, 1997, are found in exhibit A attached here to. I also noticed that the berm was broken or split in a number of places and an attempt had been made to patch the break. However, water was running through a number of the cracks and was also leaching under the berm and making its way to the Bay. Shawn Halvax called a workman and instructed him to pull up the large metal grate covering the storm drain marked 23. The workman, whose uniform said Ken Estrada, had difficulty getting the grate up. Shawn Halvax asked if he needed help, if the grate was too heavy. To which Ken Estrada replied, "No, it's just too greasy to get a hold on." Shawn Halvax decided that he wanted to take a sample as well and called in for someone to bring sampling bottles. After waiting quite some time, John Barth and I told Shawn we wanted to move on in our inspection while the rain continued. Shawn agreed, and we made our way to the marine railways just to the South.

Arriving at the Northeast (inland) corner of railway 2/3 I observed another flooded area on the asphalt at the inland corner of the railway. The rain water from the flooded area was running down into the bed of the railway. There were several smaller pools of water, one of which had a thick green oil sheen. I took a sample of this water. The water from these pools was running in rivulets down the length of the railway and into the Bay. I also noticed that stormwater was actually running out from underneath the paved area through cracks and running down the railway into the Bay. It appeared that the cracks were either allowing stormwater collecting in a flooded area above, or water from a broken stormwater diversion pipe, to discharge into the railway, where rivulets formed.



We followed the rivulets as they ran down the incline of the railway bed. The railway bed was made up predominantly of course black spent sandblasting grit which was flecked with reddish brown paint chips and large flakes of metal. There were some areas where the soil was a black, brown or gray color, laden with larger pieces of rusting metal. The stormwater could be seen to gather the finer grit as it eroded away many coursing rivulets. At a point near the tideline I took two water sample, which I identified as RW 1 and RW 2.

As we left the railways we found the entire paved area on the South side of the railway was deeply flooded. A tanker truck was sitting in the middle of the deep pool of stormwater, which we found to be mid-calf deep as we had to walk through it, there being no way to get around the flooded area. This flooded area had a storm drain in it and was close to one of the newly installed Stormwater Diversion storage tanks, which was clearly not working if areas on both sides of the railway were so flooded. Despite the oil sheens, no personnel were doing anything to prevent the oily water from being washed into the Bay.

We briefly viewed the large floating drydock, Pride of San Diego, where there was no activity. We walked the pier and found buckets with oily rags from which the rain was carrying oil onto the pier. Another bucket was filled with oily water, with large black blobs of oil floating on the surface. These buckets were open to the precipitation and had no secondary containment.

We then continued our inspection heading South. Again we found a large, deeply flooded area. Again, the flooded area had storm drains and a stormwater diversion tank which was not working. As we walked through the flooded area, a worker joked, "Just get use to it, there ain't no way around them." Two other workers made similar comments in the course of our inspection. I inferred from the comments that the yard flooded frequently and the large puddles were unavoidable. This was the third wet inspection we had done. As on each prior wet inspection, we found flooding and that some part of the stormwater diversion system was failing to work properly.

We made our way through the flooded area to one of the hazardous waste storage areas. Along the way we found large steel totes used for moving sandblasting grit around the yard. All of them had grit in them which was exposed to the rain. One in particular was nearly full of girt and was quickly filling up with rain. There was no secondary containment.

In the structure adjacent to the hazardous waste storage area a stream of water was running in and going down a storm drain. When I noticed this and began taking pictures, Shawn Halvax became alarmed and called someone on his cellular phone. A workman Shawn Halvax referred to as Pedro came and together they closed a large valve. When I asked Shawn about what happened, he replied that there were 26 valves to close. I inferred from Halvax's comment that with so many valves to close manually one or another might not get closed. Clearly, no one was detailed to inspect each and every valve before an impending storm event.

The hazardous material storage area was also rapidly flooding. Many of the bermed areas were filling with rain which was mixing with the hazardous materials which had leaked from the spigots on the fifty-five gallon drums, which were stored on their side. One area was a milky color, another was green.

At a stormwater diversion tank located next to the Bay's bank, I encountered a man trying to disconnect a large (4" dia.) hose. Water was spurting out. Shawn Halvax demanded to know what he was doing. The man pointed to a large tanker truck that was parked nearby, and said he needed the hose to empty his truck. I noticed that one of the hoses was draped over the berm and ran down the side of the bank.

Across the way, the hazardous waste transfer area was close to flooding and was being drained by a small portable sump pump. Large garbage bags full of hazardous waste were piled up and open to the rain. There were two holding tanks, one half full of a dark brown liquid, the other three quarters full of a liquid the color of radiator fluid. The hazardous waste transfer area does not have a roof and is exposed to precipitation.

The small parts painting area was not covered, and there were pools of milky water beneath the paint tables, just as we had documented in our an earlier wet inspection. The small parts blasting area was also not covered by a roof and had not been swept clean of fine spent blasting grit before the storm event.

On the AFDL (small floating drydock) the sumps were left open and were draining stormwater that had an oil sheen on it into the Bay. There was no ship in the drydock and no work in progress. I took a sample, which I identified as AFDL.

Concluding the inspection, it could not escape note that one a year ago we conducted the first inspection where the improvements SWM had just been implemented in response to our citizen suit were in evidence. Many of the same poor management practices were still in evidence a year later: Hazardous waste left exposed to wind and rain, many places where oil was left on the ground with no attempt to remove it. Work sites that were not being cleaned. Work areas such as the small parts blasting area and the small parts paint area where work was being conducted without adequate shelter, with no roof, among other poor practices.

On April 2, 1997 I conducted a wet inspection in the company of attorneys Steve Crandall and Michael Harris. At that time the new stormwater diversion system was not working, the facility was flooding and breaching the berms just as we found it on every wet inspection, including this one on March 25, 1998. One thing which has changed is that the asphalt berms, which were glistening new a year ago, are now riddled with cracks all along the perimeter of the facility. In some areas equipment has crushed or deformed the soft asphalt berm. This allows stormwater to run out to the Bay.

I was struck again by the amount of spent blasting grit, paint chips, metal flakes and oil and grease left in the railways. That had been my reason for climbing under the railway structure on an earlier inspection and taking samples. I was compelled to once again take samples, which I identified as RW 1 and RDW 2.

In addition to sampling, I took a number of photographs on this day. Attached as Exhibit B is a log of these photographs along with copies of the photographs.

Signed Kenneth J. Moser
Executive Director
San Diego Baykeeper

IN THE UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

NATURAL RESOURCES DEFENSE COUNCIL,
SAN DIEGO BAYKEEPER,
KENNETH J. MOSER,

PLAINTIFFS,

VS.

SOUTHWEST MARINE, INC.,

DEFENDANT.

NO. 96-1492-B-AJB

DEPOSITION OF SUSAN PEASE

SAN DIEGO, CALIFORNIA

APRIL 17, 1997

REBECCA VIGIL, CSR NO. 5878

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San Diego, California 92101

ORIGINAL

I N D E X

INDEX OF EXHIBITS

INDEX OF EXHIBITS (Continued)

Appearances:

For the Plaintiffs:

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San Diego, California 92101

For Defendant:

Luce, Forward, Hamilton & Scripps
By Steven P. McDonald, Esq.
Suite 2600
600 West Broadway
San Diego, California 92101

Also present: Ken Moser

DEPOSITION OF SUSAN PEASE

Taken on behalf of the Defendants pursuant to Subpoena and the applicable sections of the Code of Civil Procedure, commencing at 9:37 a.m. on Thursday, April 17, 1997, at Suite 2600, 600 West Broadway, San Diego, California, before Rebecca Vigil, Certified Shorthand Reporter, in and for the State of California.

SUSAN PEASE,

Having been first duly sworn, testified as follows:

EXAMINATION

BY MR. MC DONALD:

Q. Could you please state your full name for the record and spell it.

A. Susan Pease, P-e-a-s-e.

Q. And then could you provide your address for the record.

A. Do you want home address?

Q. Home address.

A. Okay. 8979 Taurus, T-a-u-r-u-s, Place, San Diego.

Q. And then your business address?

A. 9771 Clairemont Mesa Boulevard, Suite A, San Diego.

Q. And then if something is to be sent to you at the business address is there a mail stop or any further designation that would be necessary --

A. None.

Q. -- to get a message to you?

A. No.

Q. Have you ever had your deposition taken before?

A. Yes.

Q. You have. Let me go through -- then you're familiar with the general format, questions and answers, how it proceeds?

A. Yes.

Q. Let's go over just a few of the basic ground rules so we are all operating at the same level here. First off, that's probably the most important. If you can wait until I finish asking a question before answering, then I'll try to let you finish answering before I come in with another question. It is very difficult for her to take down two people talking at the same time. Additionally, we'll also need to have oral responses that she can put down on the record, so, you know, nods and "uh-huhs" and "huh-uhs," you know, do your best to try -- we all do it, but, you know, do your best to say yes and no. Try to articulate a response so it goes on the record.

Do you understand?

A. I do.

Q. If you don't understand, you know, any question that I ask you or later on questions that are asked by Counsel, please feel free to let us know that you don't understand the question.

Is that understandable?