Volume 2:

APPENDICES FOR THE RECORD OF DECISION

EPA Superfund

CASMALIA RESOURCES SUPERFUND SITE
SANTA BARBARA COUNTY, CALIFORNIA

U.S. Environmental Protection Agency
Region IX
San Francisco, California

EPA ID: CAD 020748125 June 2018

Appendix A
Groundwater Monitoring Network

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
A1-B ‡	WL	759.78	759.78	507635.18	1236521.78	6	357	149	608.9	125	634.78	149	610.78	U	5.9	751.9	93.65	Casing reduced
A1M ‡	WL	726.51	723.50	507370.95	1237009.91	6	180	176	547.502	19	704.50	176	547.50	W/U	46	677.502	46.71	Casing reduced
A2B	CQ	453.25	452.63	504420.00	1238808.08	6	61	61	391.632	37	415.63	57	395.63	U	34	418.632	20.41	—
A2M	WL	419.40	416.14	504114.92	1239242.09	6	18	18	398.143	10	406.14	15.5	400.64	W	15	401.143	6.42	—
B3B	WL	384.88	384.22	503475.16	1236759.34	6	70	64	319.216	40	344.22	60	324.22	U	25	359.216	46.82	—
B3M	CQ	386.56	384.14	503433.11	1236813.70	4	25	25	359.137	12.5	371.64	25	359.14	A	NE	NA	13.9	—
B4M	WL	370.70	367.92	502949.16	1236786.40	4	25	26	341.918	10	357.92	22.5	345.42	A	NE	NA	5.85	Well ID changed from B4M2 to match log
B-5	WL	407.72	405.00	503796.32	1236889.65	8	NA	45	359.996	27	378.00	NA	NA	GCW	NA	NA	31.52	Gallery collection well
B6B ‡	WL	401.27	398.93	503701.44	1236851.69	6	62	50	336.933	49.5	349.43	59.5	339.43	U	37	361.933	38.16	Casing added
C1B	O	439.52	435.98	504917.33	1234707.34	6	87	87	348.983	74.5	361.48	84.5	351.48	U	62	373.983	25.23	—
C2B	O	452.31	449.02	504196.26	1235404.66	6	95	95	354.021	82.5	366.52	92.5	356.52	U	70	379.021	39.89	—
C2M	O	448.92	445.54	504170.18	1235421.67	6	58	58	387.542	10	435.54	55.5	390.04	F/W	55	390.542	31.64	—
C3M	O	418.10	415.85	504133.65	1235206.73	4	40	40	375.853	18	397.85	39	376.85	W	37	378.853	9.11	—
C4M	O	456.57	453.23	504674.68	1234971.08	6	90	89	364.231	10	443.23	86.5	366.73	F/W	86.5	366.731	49.11	—
C-5	CQ	452.38	451.06	504698.31	1235125.14	8	NA	91.2	NA	NA	NA	NA	NA	GCW	NE	NA	53.2	—
C5E	WL	452.49	451.59	504300.40	1235706.43	6	NA	NA	NA	NA	NA	NA	NA	GCW	NE	NA	46.2	—
C6B	WL	454.30	451.29	504681.18	1235127.98	6	106	106	345.289	94	357.29	103.5	347.79	U	90.5	360.789	46.95	—
CB-4[b]	O	672.00	666.04	506669.34	1236235.34	5	225.7	174.7	491.34	173.2	492.84	174.7	491.34	U	59	607.036	NA	Abandoned in 2017
CB-5I[b]	O	563.48	562.81	506021.78	1235297.11	5	197	142	420.81	140	422.81	142	420.81	U	48.5	514.305	NA	Abandoned in 2017
CB-6I[b]	O	565.32	564.68	506062.86	1235307.47	5	198	166.4	398.28	164.4	400.28	166.4	398.28	U	45.5	519.181	NA	Abandoned in 2017
CB-7I	O	451.20	450.57	504390.41	1238791.22	5	205	202	248.57	199.8	250.77	201.8	248.77	U	27	423.57	NA	—
CB-8I	O	450.59	449.05	504367.24	1238798.49	5	205	135	314.05	133	316.05	135	314.05	U	27.5	421.549	NA	—
CD-1	WL	452.76	450.23	504936.77	1234856.09	2	NA	NA	NA	NA	NA	NA	NA	NA	NE	NA	16	—
CD-2	WL	449.23	448.20	504840.65	1234963.29	4	NA	NA	NA	NA	NA	NA	NA	NA	NE	NA	25.31	—
CpH	O	436.66	436.09	504765.69	1234721.68	2	100	121	315.085	90	346.09	100	336.09	U	100	336.09	26.35	—
CT-1A	O	406.00	404.23	503785.82	1236844.99	4	25.5	22.5	381.73	20.9	383.33	22.5	381.73	W	NE	NA	NA	—
CT-1B	O	406.26	404.54	503789.49	1236857.91	4	37	33.7	370.84	32.2	372.34	33.7	370.84	W	NE	NA	NA	—
CT-1C	O	406.25	404.04	503784.20	1236867.08	4	49.5	45.9	358.14	44.4	359.64	45.9	358.14	U	47	357.044	NA	—
CT-2A	O	403.95	402.98	503756.47	1236845.69	4	18.5	16.6	386.38	15.1	387.88	16.6	386.38	W	NE	NA	NA	—
CT-2B	O	404.39	402.50	503754.42	1236863.68	4	30.5	29.7	372.80	28.1	374.40	29.7	372.80	W	NE	NA	NA	—
CT-2C	O	404.01	402.80	503752.34	1236875.24	4	42.3	41.5	361.30	40	362.80	41.5	361.30	U	35	367.801	NA	—
CT-3A	O	454.25	452.37	504604.61	1235158.07	4	58	56	396.37	54	398.37	56	396.37	F	NE	NA	NA	—
CT-3B	O	454.20	452.33	504597.91	1235165.86	4	82	81	371.33	79	373.33	81	371.33	U	74	378.326	NA	—

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
T-3C	O	454.28	452.35	504291.37	1235173.73	4	98	96	356.35	94	358.35	96	356.35	U	74	378.353	NA	—
CT-4A	O	454.47	452.28	504590.73	1235146.28	4	58	56	396.28	54	398.28	56	396.28	F	NE	NA	NA	—
CT-4B	O	454.53	452.28	504584.52	1235153.96	4	81	79	373.28	77	375.28	79	373.28	F	NE	NA	NA	—
CT-4C	O	454.65	452.34	504578.43	1235161.57	4	112	110	342.34	108	344.34	110	342.34	U	80	372.339	NA	—
CT-5A-2	O	451.12	448.37	505039.44	1234758.09	4	34.5	31.2	417.17	29.8	418.57	31.2	417.17	F	NE	NA	NA	—
CT-5C	O	450.43	447.75	505020.92	1234753.24	4	115	109	338.75	107	340.75	109	338.75	U	51	396.747	NA	—
D1B	WL	479.55	478.86	506089.08	1234741.35	6	130	102	375.856	78	400.86	98	380.86	U	47	431.856	14.81	—
D1M	WL	479.05	475.48	506012.78	1234766.77	6	47	47	428.478	10	465.48	41.5	433.98	W	44	431.478	12.19	—
DB-1	WL	482.24	481.75	505566.58	1235659.13	4	53.5	52	428.751	41.5	440.25	51.5	430.25	U	9	472.751	17.38	—
DB-8	WL	680.20	677.83	506382.63	1238801.01	4	80.5	80.5	598.33	70	607.83	80	597.83	U	40	637.83	52.15	—
DB-9	O	679.89	679.07	506039.17	1238774.32	4	60	59.5	619.57	49	630.07	59	620.07	W	NE	NA	dry approx47'	—
DW-2	WL	680.37	677.64	507176.66	1235701.85	4	130	125.5	552.141	105	572.64	115	562.64	U	44	633.641	97.61	—
DW-5	O	NA	NA	505298.00	1235397.00	2	95.5	NA	NA	NA	NA	NA	NA	U	60.5	412.42	NA	—
EPA-1[b]	O	694.23	688.82	506737.25	1236617.62	4	32	32	656.82	11	677.82	32	656.82	U	20	668.82	dry approx.45'	Abandoned in 2017
EPA-2[b]	O	644.41	640.84	506446.31	1236387.09	4	30	30	610.84	9	631.84	30	610.84	U	23.3	617.54	dry approx.41.8'	Abandoned in 2017
FW-2	O	NA	NA	505289.00	1235407.00	4	53.5	NA	NA	NA	NA	NA	NA	W	50	422.02	NA	—
FW-9[b]	O	483.23	478.73	505791.62	1235587.97	4	25.5	25	453.73	9.5	469.23	19.5	459.23	F	NE	NA	16.89	Unsafe to access. Abandoned in 2017.
Gallery Well[‡]	WL	561.20	559.23	505928.54	1237284.76	10	NA	77.94	481.293	35	524.23	75	484.23	W/U	78	481.233	66.5	Unresolved depth discrepancy does not affect data quality. Casing added
GW-PZ-E1	WL	558.35	556.42	505935.37	1237308.99	1	54.3	54.3	502.115	49	507.42	54	502.42	NA	NE	NA	39.9	—
GW-PZ-E2	WL	557.19	556.27	505946.77	1237333.04	1	45	45	511.69	35	521.27	45	511.27	NA	NE	NA	40.37	—
GW-PZ-E3	WL	555.94	553.34	505947.75	1237354.62	1	45	45	508.66	35	518.34	45	508.34	NA	NE	NA	40.05	—
GW-PZ-W	WL	560.98	559.83	505929.89	1237260.29	1	55.5	55.5	504.326	50.5	509.33	55.5	504.33	NA	NE	NA	42.53	—
L-2[b]	O	692.59	687.21	506739.08	1236580.20	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Nested, 2 black poly flow tubes. Abandoned in 2017.
LCW-1 [‡]	O	579.33	577.3*	506328.46	1237848.19	2	NA	48.9	528.4	37.8	539.50	47.8	529.50	W	47.9	529.4	dry approx. 47.98'	Casing added
LCW-2 [‡]	O	594.92	592.9*	506083.71	1238153.08	2	NA	72.9	520.3	60.6	532.30	70.6	522.30	W	70.6	522.3	dry approx. 64.2'	Casing added
LCW-3 [‡]	WL	548.45	546.42*	505602.33	1238058.99	2	NA	62.5	484	61.5	494.00	62.5	484.00	W	NA	NA	58.95	Casing added
MW-1BL	WL	917.91	915.40	509283.94	1235626.49	4	320	280	635.402	260	655.40	280	635.40	U	100	815.402	221.71	—
MW-1BU-2	O	554.86	553.01	509333.51	1234221.01	4	65	61	492.01	41	512.01	51	502.01	U	NA	NA	43.35	—

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Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
MW-2BL	WL	475.71	470.06	506556.13	1233881.78	4	105	93.7	376.357	83.2	386.86	93.2	376.86	U	57	413.057	NA	—
MW-2BU	WL	579.89	577.97	508029.20	1238246.36	4	44.5	43.5	534.467	33.5	544.47	43.5	534.47	W	NA	NA	28.98	—
MW-3BL	WL	549.35	547.66	508129.37	1237717.39	4	220	216	331.661	196	351.66	216	331.66	U	34	513.661	15.74	—
MW-3BU	WL	510.25	508.24	507584.43	1233406.67	4	55	49	459.237	38	470.24	48	460.24	W	51	457.237	10.43	—
MW-4BL	WL	505.80	503.98	507397.08	1234193.23	4	139	115	388.984	105	398.98	115	388.98	U	40	463.984	26.45	—
MW-4BU	WL	510.51	507.53	507441.42	1234205.34	4	44	44	463.531	34	473.53	44	463.53	U	30	477.531	25.72	—
MW-5BL	WL	510.74	508.63	507629.64	1233406.12	4	130	120	388.63	110	398.63	120	388.63	U	56	452.63	7.15	—
MW-5BU	WL	472.12	469.87	506508.46	1233871.39	4	53	53	416.873	43	426.87	53	416.87	U	39	430.873	0.05	—
MW-6BU-1	O	599.37	597.33	508941.31	1237478.34	4	52	49	548.33	39	558.33	49	548.33	W	43	554.33	42.6	—
MW-6BU-2	WL	524.37	522.63	507925.34	1234093.68	4	55	53	469.63	43	479.63	53	469.63	W	NA	NA	39.07	—
MW-6-BL	O	592.32	590.35	508851.14	1237153.02	4	320	317	273.35	297	293.35	317	273.35	U	49	541.35	35.16	—
MW-6D	WL	457.21	455.60	505220.99	1234831.19	4	171	169	286.6	149	306.60	169	286.60	U	29	426.6	29.4	—
MW-7BU	WL	615.26	614.41	509147.28	1236955.55	4	52.8	50	557.413	40	574.41	50	564.41	W	52	562.413	30.47	—
MW-7BL	WL	904.02	901.45	509498.77	1235711.44	4	325	320	581.445	300	601.45	320	581.45	U	90	811.445	219.47	—
MW-7C	O	454.00	452.18	504634.85	1235082.68	4	100	85.5	366.684	75	377.18	85	367.18	U	76	376.184	46.09	—
MW-7D	O	454.20	451.92	504617.13	1235103.16	4	173.5	172.5	279.421	152.5	299.42	172.5	279.42	U	86	365.921	46.28	—
MW-8BU-2	WL	553.46	552.62	508438.04	1234357.43	4	42	38.5	514.12	28.5	524.12	38.5	514.12	W	34	NA	15.21	—
MW-8D-2	WL	456.04	454.05	504264.32	1235883.20	4	205	201	204.048	181	273.05	201	253.05	U	35	419.048	46.01	—
MW-11D	WL	434.51	432.54	504185.91	1236688.71	4	273.5	272.5	160.036	252.5	180.04	272.5	160.04	U	50.5	382.036	37.2	—
MW-13D	WL	410.55	407.96	503814.44	1236943.97	4	200	200	207.957	180	227.96	200	207.96	U	54	353.957	13.06	—
MW-14D-2	WL	422.92	421.39	504156.99	1237496.86	4	166	164	257.393	154	267.39	164	257.39	U	38	383.393	20.51	—
MW-15C	WL	451.16	449.52	504140.15	1238008.80	4	44.5	41	408.524	31	418.52	41	408.52	W/U	38	411.524	38.32	—
MW-18C	WL	452.99	450.97	504302.56	1238755.05	4	60	32.5	418.468	22.5	428.47	32.5	418.47	W	29	421.968	26.39	—
MW-18D	WL	452.18	451.45	504273.53	1238748.03	4	280	260	189.451	245	206.45	260	191.45	U	29	422.451	35.36	—
MW-21D	WL	606.62	604.71	505456.02	1238713.64	4	331	325	279.707	305	299.71	325	279.71	U	48	556.707	110.8	—
MW-23D	WL	684.85	682.82	506449.72	1238817.51	4	204.5	180	502.818	160	522.82	180	502.82	U	40	642.818	62.76	—
MW-25D ‡	WL	682.01	680.06	507008.74	1237673.10	4	428	418.2	260.055	388.2	291.86	418.2	261.86	U	36	644.055	108.5	Casing added
MW-27D ‡	WL	709.51	707.94	507261.30	1237208.27	4	451.5	372.3	334.936	342.3	365.64	372.3	335.64	U	29	678.936	136.97	Casing added
NP-6	O	652.33	650.87	506628.16	1238491.00	4	40	40	NA	0	650.87	40	610.87	N/A	34.3	NA	Dry approx 42'	—
NP-8	O	694.13	695.11	507062.55	1237305.22	4	24	24	671.107	0	695.11	24	671.11	N/A	20	675.107	24.1	—
NP-9	O	697.26	696.16	507077.34	1237314.59	4	24	24	672.16	0	696.16	24	672.16	N/A	22	674.16	dry approx 26'	—
NP-10	O	713.67	711.97	507352.10	1237215.97	4	58.5	58.5	653.47	0	711.97	58.5	653.47	N/A	52	659.97	dry approx 56.5'	—

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Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
NP-11	O	666.12	663.78	507554.90	1237262.57	4	35	35	628.779	0	663.78	35	628.78	N/A	NE	NA	_	—
PSCT-1	CQ	454.51	450.99	505300.99	1237560.34	8	NA	53.18	397.81	43.7	407.29	52.2	398.79	W	NE	NA	31.6	—
PSCT-2	CQ	503.51	502.49	505478.74	1237242.32	8	NA	61.89	440.60	52.5	449.99	61	441.49	W	NE	NA	48.91	—
PSCT-3	CQ	561.34	560.03	505749.97	1236864.12	8	NA	65.94	494.09	56.5	503.53	65	495.03	W	NE	NA	55.41	—
PSCT-4	CQ	593.18	591.17	506224.04	1236438.82	8	NA	66.15	525.02	48.3	542.87	65.5	525.67	W	NE	NA	47.49	—
PZ-LA-01 ‡	O	595.65	595.43	506075.70	1237176.30	0.75	97	97	498.65	87	508.43	97	498.43	W/U	94	501.65	_	Casing collapsed @71' bgs
PZ-P18-1	WL	458.76	456.80	504622.05	1235991.34	2	45	45	411.801	30	426.80	45	411.80	F/A	NE	NA	15.71	—
PZ-P18-2A	WL	476.85	474.56	504723.18	1235947.02	2	35	20	454.56	15	459.56	20	454.56	F/A	NE	NA	dry 26.84'	—
PZ-P18-2B	WL	476.85	474.56	504723.48	1235947.13	2	35	32	442.56	27	447.56	32	442.56	F/A	NE	NA	dry 26.84'	—
PZ-P18-3A	O	477.84	475.22	504679.14	1236024.42	2	45	20	455.215	15	460.22	20	455.22	F/A	NE	NA	dry 30.38'	—
PZ-P18-3B	WL	477.83	475.22	504679.07	1236024.65	2	45	35	440.215	30	445.22	35	440.22	W	NE	NA	dry 30.38'	—
PZ-P18-4A	O	478.03	475.77	504650.91	1236130.94	2	45	20	455.772	15	460.77	20	455.77	F/A	NE	NA	dry 32.03'	—
PZ-P18-4B	WL	478.00	475.77	504650.59	1236130.95	2	45	45	430.772	35	440.77	45	430.77	F/A	NE	NA	dry 32.03'	—
PZ-P18-5	CQ	470.96	468.60	504702.09	1236254.36	2	45	40	428.596	35	433.60	40	428.60	W	40.5	428.096	26.25	—
PZ-PA5-1A	WL	475.89	473.37	505246.17	1235397.11	2	25	25	448.366	20	453.37	25	448.37	F/A	NE	NA	17.11	—
PZ-PA5-1A1	O	475.89	473.37	505246.06	1235396.96	2	25	15	458.366	5	468.37	15	458.37	F/A	NE	NA	dry at 18.2'	—
PZ-PA5-2A	WL	475.72	473.25	505222.61	1235390.56	2	50	25	448.245	15	458.25	25	448.25	F/A	NE	NA	16.51	—
PZ-PA5-2B	WL	475.71	473.25	505222.39	1235390.82	2	50	35	438.245	30	443.25	35	438.25	F/A	NE	NA	18.86	—
PZ-PA5-2C	WL	475.72	473.25	505222.13	1235390.42	2	50	45	428.245	40	433.25	45	428.25	F/A	NE	NA	23.22	—
PZ-PA5-3A	WL	473.98	471.42	505169.54	1235460.10	2	45	23	448.421	13	458.42	23	448.42	F/A	NE	NA	16.91	—
PZ-PA5-3A1	O	473.93	471.42	505169.75	1235460.16	2	45	9	462.421	4	467.42	9	462.42	F/A	NE	NA	11.21	—
PZ-PA5-3B	WL	474.04	471.42	505169.99	1235460.41	2	45	33	438.421	28	443.42	33	438.42	F/A	NE	NA	19.56	—
PZ-PA5-3C	WL	474.08	471.42	505169.77	1235460.36	2	45	43	428.421	38	433.42	43	428.42	F/A	NE	NA	18.05	—
RAP-1A	CQ	449.40	448.13	504279.77	1238781.70	8	NA	37.5	410.628	20	428.13	37	411.13	W/U	22.8	425.328	35.65	—
RAP-2A	WL	447.10	445.32	504195.21	1238053.36	8	NA	52.8	392.521	34.5	410.82	52	393.32	W/U	36.5	408.821	50.72	—
RAP-3A	CQ	423.05	421.15	504175.83	1237492.02	8	NA	51.6	369.554	32	389.15	51	370.15	W/U	37.5	383.654	50.85	—
RAP-1B	CQ	416.07	413.70	503723.22	1236957.66	8	NA	69.7	344.002	50.5	363.20	69	344.70	W/U	56.9	356.802	58.16	—
RAP-1C	CQ	450.67	447.09	505009.64	1234822.65	8	NA	64.5	382.59	45	402.09	64	383.09	W/U	50	397.09	60.71	—
RG-1B	CQ	453.73	451.43	505273.22	1237546.88	4	39	38.4	413.025	23.4	428.03	38.4	413.03	W/U	32	419.425	24.41	—
RG-1C	WL	452.36	450.52	505270.83	1237553.36	4	97	92.5	358.018	82	368.52	92	358.52	U	29	421.518	58.35	—
RG-2B	CQ	593.99	590.40	506190.29	1236435.91	2	69.5	34	556.404	24	566.40	34	556.40	W/U	31.6	558.804	35.4	—
RG-3B	WL	468.35	466.81	505490.30	1237487.58	4	40	36.5	430.313	21	445.81	36	430.81	W/U	32.6	434.213	6.65	—
RG-4B	CQ	590.59	588.61	506141.20	1236420.67	4	42	37	555.612	21.5	567.11	36.5	552.11	W/U	30.5	558.112	38.47	—
RG-5B	CQ	513.17	510.75	505539.33	1236226.70	4	50	31	477.748	15	495.75	30	480.75	W/U	23	487.748	11.55	—

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
RG-6B	CQ	477.50	475.44	505218.49	1236917.48	4	30	26	446.743	11	464.44	26	449.44	W/U	16	459.443	12.22	—
RG-7B	CQ	455.36	452.87	505086.67	1237531.22	4	45	42.5	408.272	32	420.87	42	410.87	W/U	41	411.872	25.3	—
RG-8B ‡	WL	539.13	537.1*	505408.15	1238155.20	4	55	59.7	474.718	39.2	497.90	59.2	477.90	W	59.7	477.418	48.95	Casing added
RG-9B ‡	WL	585.96	584*	506084.92	1238088.95	4	66	91.4	490.964	70.9	513.10	90.9	493.10	W	91.9	492.064	79.32	Casing added
RG-10B	WL	608.67	606.80	507132.94	1235965.76	4	40	23	581.395	8	598.80	23	583.80	W/U	11	595.795	7.45	—
RG-11B	CQ	726.72	724.63	507357.67	1237011.29	4	55	50	671.532	35	689.63	50	674.63	W/U	40	684.632	51.84	—
RG-11B-2	WL	725.60	723.68	507351.78	1237020.31	4	81.5	80.5	643.18	60	663.68	80	643.68	U	43.3	680.38	80.38	—
RGPZ-2B ‡	WL	751.68	749.7*	507865.24	1236582.91	2	92	55.8	690.446	35.8	713.90	55.8	693.90	U	17.3	732.446	37.85	Casing reduced
RGPZ-2C ‡	WL	752.08	750*	507877.93	1236573.53	2	200	134.1	615.518	123.8	626.20	133.8	616.20	U	17.3	732.718	85.05	Casing reduced
RGPZ-2D ‡	WL	752.47	750.4*	507879.01	1236557.15	2	250	213	534.721	192.7	557.70	212.6	537.80	U	16.2	734.221	148.2	Casing reduced
RGPZ-3C[2]	WL	593.37	591.17	506215.95	1236523.85	2	135	132.3	455.671	122	469.17	132	459.17	U	17	574.171	111.25	Abandoned in 2017
RGPZ-3D	WL	593.54	591.37	506216.61	1236538.79	2	200	166	421.971	156	435.37	166	425.37	U	17	574.371	39.6	—
RGPZ-4C	WL	591.08	588.42	506132.08	1236460.83	2	125	103.3	481.92	93	495.42	103	485.42	U	30	558.42	36.95	—
RGPZ-5B	WL	514.08	512.33	505821.95	1237367.74	2	50	40	467.531	29.5	482.83	39.5	472.83	W	39.5	472.831	21.9	—
RGPZ-6B	WL	472.90	470.35	505550.14	1237448.76	2	35	29	439.951	19	451.35	29	441.35	W/U	25	445.351	13.13	—
RGPZ-6C	WL	472.95	470.68	505564.95	1237455.20	2	100	98	369.677	88	382.68	98	372.68	U	25	445.677	12.26	—
RGPZ-6D	WL	471.32	469.23	505544.95	1237461.24	2	165	164.3	301.928	154	315.23	164	305.23	U	25	444.228	32.2	—
RGPZ-7C	WL	466.83	464.91	505471.67	1237479.09	2	100	100	362.809	90	374.91	100	364.91	U	24.5	440.409	9.6	—
RGPZ-7D	WL	467.78	465.55	505484.31	1237473.70	2	152	148.3	314.847	138	327.55	148	317.55	U	27	438.547	8	—
RGPZ-8D	WL	450.69	448.51	505273.52	1237567.42	2	150	140.3	305.711	130	318.51	140	308.51	U	35	413.511	136.37	—
RGPZ-9B	WL	713.48	711.21	507307.08	1237279.79	2	75	70	638.012	59.5	651.71	69.5	641.71	U	58	653.212	54.78	—
RGPZ-10B	WL	704.47	701.84	507176.48	1237302.39	2	55	55	644.343	44.5	657.34	54.5	647.34	U	39.5	662.343	56.65	—
RGPZ-10B-2	WL	704.93	702.66	507186.94	1237303.38	2	76	75.5	627.16	55	647.66	75	627.66	U	30.8	671.86	76.96	—
RGPZ-11B ‡	WL	692.45	690.4*	506978.41	1237318.96	2	80	90.1	597.624	74.8	615.60	84.8	605.60	U	33.3	663.624	73.15	Casing added
RGPZ-11C ‡	WL	691.35	689.3*	506968.59	1237333.61	2	155	162.6	522.823	150.6	538.70	160.6	528.70	U	33.1	662.223	76.9	Casing added
RGPZ-11D ‡	WL	692.37	690.4*	506954.92	1237331.94	2	218	228	459.231	217.7	472.70	227.7	462.70	U	33.2	657.231	73.3	Casing added
RGPZ-12C	WL	654.68	652.45	506738.58	1238530.10	2	155	150.3	502.146	140	512.45	150	502.45	U	61	589.446	69.55	—
RGPZ-12D	WL	653.66	651.00	506750.92	1238531.74	2	251	245.3	403	225	426.00	245	406.00	U	61	590	122.1	—
RGPZ-13C ‡	WL	640.75	638.8*	506627.99	1238255.81	2	140	140.4	495.626	125.1	513.70	140.1	498.70	U	52.1	586.726	51.6	Casing added
RGPZ-13D ‡	WL	639.27	637.3*	506618.49	1238248.72	2	200	203.1	431.965	183.1	654.20	203.1	634.20	U	52.1	585.165	76.45	Casing added
RGPZ-14D	WL	562.17	559.94	505764.10	1236882.28	2	200	197.3	359.639	187	372.94	197	362.94	U	35	517.939	55	—
RGPZ-15B	WL	561.36	559.09	505691.72	1236854.08	2	67	65.3	490.994	55	504.09	65	494.09	U	51	508.094	54.45	—
RGPZ-16D	WL	560.73	558.54	505672.11	1236852.12	2	253	235.3	318.743	225	333.54	235	323.54	U	29.5	529.543	61.45	—
RIMW-1	WL	496.75	494.69	505168.91	1238117.08	4	40	30.5	464.19	10	484.69	30	464.69	U	8	486.69	9.45	—

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
RIMW-2	CQ	457.60	455.65	505132.46	1237402.21	4	45	40.5	415.15	20	435.65	40	415.65	W/U	25.5	430.15	5.16	—
RIMW-3	WL	482.50	480.29	505618.75	1237384.43	4	35	31.5	448.79	6	474.29	31	449.29	A/W	NE	NA	5.24	—
RIMW-5	CQ	592.64	590.56	506189.00	1236296.75	4	65	60.5	530.06	40	550.56	60	530.56	U	31	559.56	57.04	—
RIMW-6	CQ	618.10	616.09	506325.49	1236329.32	4	70.5	70.5	545.59	45	571.09	70	546.09	U	38	578.09	72.08	—
RIMW-7	WL	641.36	639.38	506364.49	1236668.99	4	80	75.5	563.88	50	589.38	75	564.38	F/A	64	575.38	58.6	—
RIMW-8	WL	658.93	656.92	506524.38	1236356.09	4	70	65.5	591.42	45	611.92	65	591.92	W/U	60	596.92	39.18	—
RIMW-9	O	453.96	452.11	504625.76	1235076.53	4	67	63.5	388.61	43	409.11	63	389.11	F/A	NE	NA	46.4	—
RIMW-10	CQ	665.88	663.91	506597.81	1236143.13	4	71	60	603.91	40	623.91	60	603.91	W	60	603.91	47.81	—
RIMW-11	CQ	580.87	578.48	506353.09	1236028.46	4	56	55	523.48	35	543.48	55	523.48	U	18	560.48	48.95	—
RIPZ-2	WL	399.49	397.40	503678.06	1236852.61	2	50.5	50.5	346.90	35	362.40	50	347.40	W/U	42.3	355.10	19.9	—
RIPZ-3	WL	444.12	441.65	504278.73	1238830.90	0.75	34.5	27	414.65	17	424.65	27	414.65	A/W	34.5	407.15	13.32	—
RIPZ-4	WL	448.34	445.69	504278.64	1238808.34	0.75	34	32.5	413.19	22.5	423.19	32.5	413.19	W	NE	NA	20.56	—
RIPZ-5	WL	451.09	451.74	504663.20	1235103.35	2	65	64.5	387.24	44	407.74	64	387.74	F/A	NE	NA	42.08	—
RIPZ-6	WL	465.87	463.82	505264.53	1237307.73	2	51	50.5	413.32	30	433.82	50	413.82	U	20.5	443.32	46.23	—
RIPZ-7	WL	480.44	477.71	505313.45	1237342.37	0.75	38	33.2	444.51	23.2	454.51	33.2	444.51	F/A	NE	NA	19.23	—
RIPZ-8	WL	531.35	529.00	505816.88	1237121.19	2	62	32.5	496.50	12	517.00	32	497.00	W/U	30	499.00	13.58	—
RIPZ-9	WL	594.92	592.94	506273.03	1236277.06	2	65.5	65.5	527.44	50	542.94	65	527.94	U	26	566.94	44.78	—
RIPZ-10B	WL	747.01	744.92	507555.49	1236761.19	2	86	85.5	659.42	55	689.92	85	659.92	U	31	713.92	75.03	—
RIPZ-10C	WL	746.44	744.46	507570.34	1236769.80	2	136	135.5	608.96	115	629.46	135	609.46	U	30	714.46	118.69	—
RIPZ-10D	WL	746.48	744.68	507565.74	1236761.91	2	240	220.5	524.18	200	544.68	220	524.68	U	30	714.68	162.11	—
RIPZ-11	WL	487.24	485.23	505370.34	1237292.42	2	65	50.5	434.73	30	455.23	50	435.23	U	31.8	453.43	27.21	—
RIPZ-12	WL	573.18	573.22	506279.56	1237849.26	0.75	89	89	484.22	79	494.22	89	484.22	F/A	NE	NA	68.02	—
RIPZ-13	WL	595.48	595.75	506070.08	1237172.81	0.75	99.4	99.4	496.35	79.4	516.35	99.4	496.35	A	99.4	496.35	519.84	—
RIPZ-14	WL	708.66	708.01	506559.66	1237036.39	0.75	156	155	553.01	135	573.01	155	553.01	A	153	555.01	122.6	—
RIPZ-15	WL	655.27	653.41	506496.63	1236491.26	2	200	160.5	492.91	140	513.41	160	493.41	U	60	593.41	84.41	—
RIPZ-16	WL	625.13	622.79	506312.90	1236459.51	2	200	150.5	472.29	135	487.79	150	472.79	U	52.8	569.99	70.63	—
RIPZ-17	WL	759.40	757.59	507602.28	1236538.02	2	160	160.5	597.09	150	607.59	160	597.59	U	30	727.59	98.49	—
RIPZ-18	WL	449.22	447.41	505242.60	1237538.01	2	40.5	40.5	406.91	25	422.41	40	407.41	W/U	30	417.41	16.88	—
RIPZ-19	WL	496.15	493.51	505414.99	1237248.14	2	61	60.5	433.01	40	453.51	60	433.51	U	35	458.51	33.46	—
RIPZ-20	WL	558.91	559.31	505720.87	1236860.21	2	68	65.5	493.81	55	504.31	65	494.31	U	40	519.31	47.56	—
RIPZ-22	WL	606.46	606.86	506110.88	1238223.26	0.75	105	105	501.86	95	511.86	105	501.86	F/A	NE	NA	87.62	—
RIPZ-23	WL	560.38	560.57	505937.38	1237260.60	0.75	52	52	508.57	32	528.57	52	508.57	F/A	NE	NA	49.74	—
RIPZ-24	WL	557.24	557.41	505943.46	1237308.42	0.75	50	50	507.41	30	527.41	50	507.41	F/A	NE	NA	38.85	—
RIPZ-25	WL	485.34	483.27	505704.56	1237426.93	0.75	23	23	460.27	3	480.27	23	460.27	F/A	NE	NA	6.55	—

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
RIPZ-26	WL	468.33	465.71	505479.37	1237485.95	0.75	18	15	450.71	5	460.71	15	450.71	F/A	NE	NA	5.91	—
RIPZ-27	WL	559.13	559.51	505937.40	1237283.00	0.75	77.65	77.65	481.86	57.65	501.86	77.65	481.86	A	77.65	481.86	517.88	—
RIPZ-29[2]	WL	655.33	653.29	506508.11	1236462.86	0.75	62	62	591.29	25	628.29	45	608.29	W	NE	NA	40.41	—
RIPZ-30[2]	WL	624.23	622.45	506304.65	1236528.26	0.75	58	56	566.45	31	591.45	56	566.45	WU	46	576.45	53.75	Abandoned in 2017
RIPZ-31[2]	WL	484.55	482.10	505689.28	1237400.89	0.75	18	18	464.10	8	474.10	18	464.10	A	NE	NA	7.82	Abandoned in 2017
RIPZ-31-B[2]	WL	484.74	482.70	505698.13	1237413.39	2	25	25	457.70	5	477.70	25	457.70	A/W	NE	NA	11.5	Abandoned in 2017
RIPZ-32	WL	458.89	456.23	505399.49	1237550.52	0.75	24.5	24.5	431.73	4.5	451.73	24.5	431.73	A	NE	NA	4.61	—
RIPZ-33	WL	473.75	470.92	505566.68	1237494.33	0.75	25	25	445.92	10	460.92	25	445.92	A	NE	NA	14.51	—
RIPZ-33-B[2]	WL	473.95	471.62	505578.96	1237490.87	2	24.5	24	447.62	4	467.62	24	447.62	A	NE	NA	14.45	Abandoned in 2017
RIPZ-34[2]	WL	514.73	511.74	505812.54	1237345.85	0.75	28	25	486.74	10	501.74	25	486.74	A	NE	NA	Dry	Abandoned in 2017
RIPZ-34-B	WL	515.71	512.28	505807.90	1237324.20	0.75	40	40	472.28	20	492.28	40	472.28	A	NE	NA	30.96	—
RIPZ-35	WL	513.97	511.68	505820.44	1237374.76	0.75	22	22	489.68	7	504.68	22	489.68	A	NE	NA	19.68	—
RIPZ-37	CQ	452.97	448.96	504316.06	1236620.06	0.75	50	50	398.96	30	418.96	50	398.96	A	NE	NA	35.06	Temporary
RIPZ-38	WL	562.64	562.94	505937.63	1237233.76	0.75	80	80	482.94	65	497.94	80	482.94	A	80	482.94	518.36	—
RIPZ-39	WL	634.94	635.11	506208.56	1237085.58	0.75	80	80	555.11	65	570.11	80	555.11	A	123.7	511.41	525.16	—
RP-1D	WL	839.48	838.32	508213.22	1236085.50	4	232.5	232	606.32	212	626.32	232	606.32	U	58	780.32	154.55	—
RP-2B ‡	WL	673.61	669.27	506664.23	1236325.46	4	63	55	614.265	45	624.27	55	614.27	W/U	52.5	616.765	55.88	Casing added
RP-2C ‡	WL	673.64	669.29	506660.02	1236356.09	4	216	196	473.288	186	483.29	196	473.29	U	53	616.288	78.61	Casing added
RP-2D[2] ‡	O	674.21	669.83	506666.71	1236302.40	4	276	261	408.831	251	418.83	261	408.83	U	56	613.831	132.2	Casing added. Abandoned in 2017
RP-3B ‡	WL	590.73	587.23	505986.23	1236664.68	4	82	61	526.232	51	536.23	61	526.23	W/U	57.3	529.932	55.67	Casing reduced
RP-3C ‡	O	588.20	585.58	505993.55	1236584.22	4	105.5	82.8	502.778	72.3	513.28	82.3	503.28	U	44.3	541.278	dry approx. 49.7'	Casing collapsed, not representative. Casing reduced.
RP-3D ‡	O	589.60	586.37	505988.89	1236623.64	4	162	137.1	449.272	126.6	459.77	136.6	449.77	U	49.6	536.772	54.02	Casing collapsed, not representative. Casing reduced.
RP-4D ‡	WL	443.41	438.92	504651.71	1236615.79	4	150	131	307.919	116	322.92	126	312.92	U	24	414.919	6.76	Casing reduced
RP-5B	WL	421.76	420.81	503917.76	1236765.86	4	46	43	376.809	33	387.81	43	377.81	W/U	37	383.809	20.78	—
RP-5C	O	420.68	419.10	503896.06	1236769.73	4	89	82	337.104	72	347.10	82	337.10	U	35	384.104	19.89	—
RP-5D	WL	419.22	417.02	503876.89	1236774.12	4	144	135	282.018	125	292.02	135	282.02	U	34	383.018	12.3	—
RP-6A	WL	384.80	383.72	503414.35	1236818.37	4	15.5	15	368.72	10	373.72	15	368.72	A	NE	NA	12.48	—
RP-6B	WL	384.87	383.90	503395.03	1236821.56	4	32	32	351.904	22	361.90	32	351.90	A	32	351.904	12.91	—
RP-6C	O	382.91	382.16	503482.18	1236810.75	4	100	90	292.162	80	302.16	90	292.16	U	32	350.162	74.19	—
RP-6D	WL	388.35	381.92	503430.00	1236830.00	4	150	148.5	233.422	138.5	243.42	148.5	233.42	U	35	346.922	0	Artesian
RP-7B	WL	486.88	486.26	503564.20	1237195.29	4	65	64.5	420.263	54.5	431.76	64.5	421.76	W	66.5	419.763	65.5	—

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
RP-7C	WL	485.86	485.38	503547.39	1237187.63	4	120	116	368.383	106	379.38	116	369.38	U	66	419.383	107.72	—
RP-8C	WL	580.06	577.58	503414.39	1237466.79	4	221	195	382.58	185	392.58	195	382.58	U	52	525.58	185.73	—
RP-9B	WL	585.96	465.99	506275.85	1234441.02	4	38	32	433.988	22	443.99	32	433.99	W	34	431.988	13.73	—
RP-10A	WL	455.64	453.57	505925.17	1234304.00	4	66	45	408.569	35	418.57	45	408.57	A	63	390.569	16.66	—
RP-11A	WL	444.18	442.84	505470.34	1234396.61	4	54	45	397.842	35	407.84	45	397.84	A	52	390.842	16.38	—
RP-12A	O	438.85	437.02	505099.38	1234607.85	4	63	43	394.018	33	404.02	43	394.02	A	55	382.018	25.58	—
RP-13B	WL	458.22	456.24	505240.32	1234778.54	4	50	47	409.242	37	419.24	47	409.24	W	46	410.242	32.82	—
RP-14B	WL	574.55	573.51	506161.95	1235323.88	4	65	52	521.509	42	531.51	52	521.51	W	49	524.509	47.85	—
RP-14D	WL	570.63	569.66	506160.05	1235340.13	4	210	195	374.66	185	384.66	195	374.66	U	43	526.66	60.95	—
RP-15C[2]	O	515.34	515.25	506545.26	1235771.32	4	37	35	478.253	25	490.25	35	480.25	U	2	513.253	3.28	2-logs, 1 V.W.P. 1 MW. Abandoned in 2017
RP-16C	O	701.15	699.89	507139.92	1237240.50	4	160	158.5	541.393	148	551.89	158	541.89	U	26.2	673.693	9	—
RP-16D	O	701.02	701.29	507155.27	1237221.41	4	249	231	470.292	221	480.29	231	470.29	U	29	672.292	71.65	—
RP-17B	CQ	532.75	531.63	507626.60	1237878.92	4	68	62	469.634	52	479.63	62	469.63	W	66	465.634	38.05	—
RP-18C	O	451.02	450.47	504647.80	1235218.13	4	120	119	329.974	109	341.47	119	331.47	U	76	374.474	44.82	—
RP-18D ‡	WL	450.76	446.42	504666.59	1235225.53	4	180	167	279.415	157	289.42	167	279.42	U	70	376.415	36.91	Casing reduced
RP-20B ‡	WL	599.30	597.00	506045.19	1236893.83	4	81	76	521.002	66	531.00	76	521.00	W	71	526.002	64.16	Casing added
RP-23C ‡	O	655.28	652*	506688.52	1238401.41	4	161	164.3	487.741	154.3	497.70	164.3	487.70	U	43.3	608.741	571.71	Casing added
RP-24D	WL	450.78	449.35	504375.48	1238798.60	4	150	145	303.352	134.5	314.85	144.5	304.85	U	25	424.352	21.98	—
RP-25C	O	659.38	658.57	505905.66	1238768.09	4	189	184	473.571	174	484.57	184	474.57	U	56	602.571	89.48	—
RP-25D	WL	661.03	659.57	505917.70	1238782.92	4	249	209	449.57	199	460.57	209	450.57	U	52	607.57	106.96	—
RP-26C ‡	WL	545.49	543.5*	505347.20	1238216.13	4	33	61	480.934	51	492.50	61	482.50	U	37.1	506.434	56.7	Casing added
RP-26D ‡	WL	539.66	537.7*	505350.61	1238190.73	4	205	201	368.724	181	356.70	201	336.70	U	23.5	514.224	90.75	Casing added
RP-27C	WL	574.64	573.51	505219.31	1238574.43	4	81	79	493.51	69	504.51	79	494.51	U	51	522.51	44.63	—
RP-28B	CQ	447.89	446.23	505026.57	1234749.34	4	70	59	386.228	49	397.23	59	387.23	W	66	380.228	35.24	—
RP-29D ‡	WL	599.58	595.93	507047.94	1235937.79	4	125	99	496.933	89	506.93	99	496.93	U	13	582.933	16.74	Casing reduced
RP-30B	WL	569.59	567.59	506185.20	1235215.73	4	48	45	522.591	35.591	532.00	45.591	522.00	W/U	40	527.591	38.31	—
RP-31B	O	496.43	495.58	503998.22	1238467.75	4	53	51	444.58	39	456.58	49	446.58	W	47	448.58	dry approx 50.2	—
RP-31D	O	498.65	496.45	503978.18	1238511.70	4	208	205	291.45	195	301.45	205	291.45	U	49	447.45	85.74	—
RP-32B	WL	469.61	467.37	504066.58	1238009.28	4	44	41.5	425.87	31.5	435.87	41.5	425.87	W/U	40	427.37	dry approx. 44'	—
RP-32D	O	466.58	467.34	504056.18	1238007.24	4	220	219	248.335	216.4	250.94	217.4	249.94	U	41	426.335	59.86	—
RP-33C	O	485.90	483.81	504140.65	1236177.86	4	81	76	407.807	66	417.81	76	407.81	U	39	444.807	56.45	—
RP-33D	WL	485.07	483.52	504145.90	1236204.95	4	130.5	127	355.521	117	366.52	127	356.52	U	41	442.521	50.5	—

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
RP-34C-1	O	713.92	711.49	507328.65	1237242.55		180	178	533.494	177	534.49	178	533.49	U	51	660.494	98.7	—
RP-35	O	533.06	531.29	507591.30	1237891.57	4	268	263.4	267.89	261.9	269.39	263.4	267.89	U	53	478.29	-	—
RP-36	O	532.21	530.17	508950.00	1234060.00	4	261.6	250	280.17	239.7	290.47	249.7	280.47	U	61	469.17	16.11	—
RP-38	O	613.69	611.77	503244.84	1238475.56		160	157.6	454.265	157.1	454.67	157.6	454.17	U	72	539.765	_	—
RP-40	O	648.85	650.31	506648.34	1238493.04	4	61.8	60.2	589.311	59.2	591.11	60.2	590.11	U	34	616.311	_	—
RP-41A	WL	500.23	498.57	507386.50	1238616.47	4	29	28	470.573	23	475.57	28	470.57	W	NE	NA	27.85	—
RP-41B	WL	501.04	500.77	507413.43	1238538.30	4	64	60	440.771	50	450.77	60	440.77	U	44	456.771	27.28	—
RP-41D	WL	504.07	501.92	507425.29	1238493.64	4	345	272	229.922	252	249.92	272	229.92	U	43	458.922	23.78	—
RP-42C	O	617.71	614.78	507367.00	1237566.49	4	120	116.5	497.784	116	498.78	116.5	498.28	U	38	576.784	57.53	—
RP-42D	WL	616.93	615.57	507386.27	1237541.89	4	240	238.5	377.066	218.5	397.07	238.5	377.07	U	45	570.566	53.46	—
RP-43B	WL	593.34	592.70	506944.78	1238619.90	4	50	49	543.7	36	556.70	46	546.70	W	45	547.7	39.51	—
RP-43C	O	595.10	592.99	NA	NA	4	100	98	494.99	96.5	496.49	98	494.99	U	42	550.99	NA	—
RP-44C	WL	644.54	642.61	505672.31	1239168.14	4	190	188	453.608	178	464.61	188	454.61	U	52	590.608	106.11	—
RP-45B-2	WL	457.22	455.39	504369.12	1239565.66	4	90	60.5	394.887	50.5	404.89	60.5	394.89	U	34	421.387	34.81	—
RP-47C	WL	560.54	558.60	503674.32	1237747.94	4	234	218.2	340.602	198.2	360.40	218.2	340.40	U	45	513.602	165.47	—
RP-48C	WL	509.03	508.12	503664.97	1237306.41	4	150	150	356.117	130	378.12	140	368.12	U	60	448.117	118.61	—
RP-50C	O	582.58	580.97	503549.65	1236072.42	4	200	170	408.973	160	420.97	170	410.97	U	75	505.973	136.55	—
RP-52B	WL	462.62	461.09	504268.66	1236217.79	4	43.5	43	418.089	33	428.09	43	418.09	W/U	41	420.089	23.3	—
RP-53C	WL	494.16	492.86	504982.05	1236200.24	4	81	80	410.859	70	422.86	80	412.86	U	39	453.859	31.04	—
RP-54C	WL	590.45	588.26	506111.37	1236516.37	4	140	136	452.255	115	473.26	135	453.26	U	34	554.255	32.5	—
RP-55C-1[2]	O	561.82	560.88	505772.46	1236856.19	4	111	107.5	451.384	107	453.88	107.5	453.38	U	44	516.884	54.24	Abandoned in 2017
RP-55C-2[2]	WL	562.97	560.26	505772.02	1236899.17	4	140	135	425.264	114	446.26	134	426.26	U	49	511.264	54.1	Abandoned in 2017
RP-57C ‡	WL	503.11	498.64	505681.07	1237804.33	4	105	85	413.641	75	423.64	85	413.64	U	51	447.641	32.8	Casing reduced
RP-59B	CQ	378.13	376.32	503016.47	1236767.91	4	34	33	342.316	23	353.32	33	343.32	W/U	28	348.316	12.38	—
RP-61B ‡	WL	656.97	655.25	506945.58	1238087.42	4	106	102	553.252	92	563.25	102	553.25	U	51	604.252	59.74	Casing reduced
RP-62B-1	CQ	685.88	684.09	506524.93	1238930.81	4	90	79	605.094	69	615.09	79	605.09	U	45	639.094	60.55	—
RP-62B-2	O	680.20	678.04	506566.02	1238939.64	4	60	52	617.04	52	626.04	53	625.04	U	48	630.04	56.37	—
RP-62D-2	WL	676.65	674.84	506562.09	1238871.39	4	305	300	374.841	280	394.84	300	374.84	U	50	624.841	163.65	—
RP-63B	O	691.20	689.43	506134.61	1239076.03	4	105	95	591.426	95	594.43	96	593.43	U	50	639.426	71.25	—
RP-63C	WL	693.68	692.13	506085.01	1239029.92	4	124	90	601.132	80	612.13	90	602.13	U	55	637.132	64.9	—
RP-63D	WL	693.24	691.26	506108.47	1239052.13	4	186	185	505.264	165	526.26	185	506.26	U	53	638.264	88.68	—
RP-64B	WL	465.43	462.99	504434.54	1238629.87	4	40	37	424.99	27	435.99	37	425.99	W	35.5	427.49	27.37	—
RP-65B	CQ	411.50	409.94	503963.71	1239435.87	4	28	28	380.939	18	391.94	28	381.94	W/U	24	385.939	7.31	
RP-65C-2	WL	415.74	413.84	504049.49	1239282.93	4	188.5	186.5	227.339	175	238.84	185.5	228.34	U	27	386.839	21.06	Well ID changed from RP-65C

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
																		to match log
RP-66C	WL	518.01	515.90	506557.31	1235753.35	4	99	96	418.401	86	429.90	96	419.90	U	6.5	509.401	0	Artesian
RP-67C	WL	741.35	739.05	507153.95	1236394.72	4	200	198	541.052	177.5	561.55	197.5	541.55	U	60	679.052	102.07	—
RP-68C-1	WL	699.21	696.61	506813.40	1236772.32	4	380	378	318.61	348	348.61	378	318.61	U	55	641.61	187.01	—
RP-68C-2	WL	697.27	694.42	506782.10	1236762.36	4	174	173	521.417	153	541.42	173	521.42	U	52	642.417	84.39	—
RP-69C-1	WL	599.41	595.61	505873.22	1238323.74	4	332	290.1	284.607	270.1	325.51	290.1	305.51	U	65	530.607	74.07	—
RP-69C-2 ‡	O	603.99	602*	505874.24	1238358.20	4	160	92.7	486.414	82.7	519.30	92.7	509.30	U	67.9	534.114	_	Casing reduced (7/98), added during EE/CA
RP-70D-1	O	579.27	576.98	508008.31	1238205.96	NA	400	324.5	252.476	324	252.98	324.5	252.48	U	45	531.976	180.47	—
RP-70D-2	O	579.27	576.98	1238205.96	1238205.96	NA	400	394	182.976	393.5	183.48	394	182.98	U	45	531.976	61.02	RP-70D-2 nested well paired with RP-70D-1.
RP-71C	WL	606.23	604.56	506578.74	1235357.33	4	84	75	529.56	65	539.56	75	529.56	U	23	581.56	70.62	—
RP-72A	O	379.75	377.14	503099.06	1234975.80	4	35	34	343.143	24	353.14	34	343.14	A	NE	NA	22.09	—
RP-72B	O	385.26	382.72	503133.38	1235029.73	4	58	58	324.717	48	334.72	58	324.72	W/U	54	328.717	21.69	—
RP-72D	O	382.51	380.49	503090.46	1235038.04	4	148	144	236.489	134	246.49	144	236.49	U	51	329.489	22.56	—
RP-73A-1	WL	379.17	377.28	503377.49	1240043.89	4	15	14.5	362.78	9.5	367.78	14.5	362.78	A	NE	NA	9.62	—
RP-73A-2	WL	383.59	381.57	503451.90	1239955.77	4	46	43	338.566	33	348.57	43	338.57	A	NA	NA	13.08	—
RP-73B	WL	378.12	377.01	503364.46	1240081.95	4	38	38	339.006	28	349.01	38	339.01	W/U	34.5	342.506	9.03	—
RP-73D	WL	380.14	377.97	503409.09	1240042.31	4	150	146	231.971	136	241.97	146	231.97	U	30	347.971	13.86	—
RP-74C	WL	562.80	560.90	505168.83	1239365.34	4	143	141	419.895	131	429.90	141	419.90	U	45	515.895	84.78	—
RP-75A	O	345.69	344.04	501503.58	1236651.23	4	24.5	23.5	320.544	13.5	330.54	23.5	320.54	A	24.5	319.544	10.11	—
RP-75B	O	346.48	344.49	501493.00	1236687.79	4	55	54	290.49	43	301.49	53	291.49	W	45	299.49	16.65	—
RP-75C	O	346.44	344.30	501534.62	1236625.22	4	118	100	243.301	90	254.30	100	244.30	U	44.5	299.801	5.6	—
RP-76A	O	413.43	411.85	504348.05	1234791.78	4	37.5	36	375.845	26	385.85	36	375.85	A	37.5	374.345	14.22	—
RP-78B	O	449.76	448.36	504201.13	1235383.41	4	48.5	46.5	400.855	36.5	411.86	46.5	401.86	W	48.5	399.855	36.73	—
RP-79C-2	WL	385.65	384.00	503541.09	1236787.28	4	69.6	68	315.498	57.5	326.50	67.5	316.50	U	27.5	356.498	10.73	Well ID changed from RP-79C to match log
RP-80C	O	426.69	424.64	504934.18	1234595.87	4	103	102	321.64	92	332.64	102	322.64	U	53	371.64	16	—
RP-81C ‡	WL	761.50	759.5*	507597.07	1236526.72	4	203	103	656.611	93	666.50	103	656.50	U	20	739.611	67.5	Casing reduced
RP-82C	WL	688.32	685.94	506432.78	1238867.89	4	94.2	87	598.94	85.5	600.44	87	598.94	U	33	652.94	-	—
RP-83D	O	687.29	684.80	506425.62	1238835.62	4	135	129.6	555.2	129.1	555.70	129.6	555.20	U	34.5	650.3	50.97	—
RP-84A-2	O	420.89	419.08	504698.96	1234611.93	4	37	36	383.082	26	393.08	36	383.08	A	NE	NA	15.22	—
RP-84B	O	418.96	417.59	504627.93	1234608.23	4	55	54	363.593	43	374.59	53	364.59	W/U	47	370.593	13.91	—
RP-85C	WL	507.65	506.23	503976.30	1235864.23	4	148	131	374.231	121	385.23	131	375.23	U	60	446.231	83.52	—
RP-86C	WL	493.04	490.81	504026.28	1238224.30	4	180.35	179	311.808	169	321.81	179	311.81	U	35	455.808	75.22	—

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
RP-87C-1	O	389.83	386.93	503100.63	1234787.27	4	120	119	268.433	109	277.93	119	267.93	U	96	290.933	209.57	—
RP-87C-2	O	388.41	385.79	503069.74	1234792.51	4	59	55	330.788	45	340.79	55	330.79	A	NE	NA	25.81	—
RP-88C	O	489.55	490.40	503925.30	1238807.42	4	201	195.4	294.4	194.9	295.50	195.4	295.00	U	56	434.4	170	—
RP-89A	WL	582.05	579.92	508976.80	1237245.11	4	60	49	530.922	39	540.92	49	530.92	W/U	42	537.922	28.35	—
RP-90A	WL	528.11	526.16	508852.84	1234121.73	4	55	45	481.159	35	491.16	45	481.16	A	NE	NA	33.85	—
RP-91A	WL	537.44	535.37	508310.00	1234190.00	4	60	55	480.366	45	490.37	55	480.37	A	NE	NA	2.18	—
RP-92C	WL	436.78	434.71	504203.05	1236639.98	4	375	350	84.711	330	104.71	350	84.71	U	42	392.711	37.51	—
RP-94D ‡	WL	531.20	527.77	505907.62	1237456.91	4	221	228.8	299.769	208.8	318.97	228.8	298.97	U	42	485.769	36.02	Casing added
RP-95D ‡	WL	583.28	581.3*	506078.23	1238062.81	4	305	349.6	231.739	329	252.30	349	232.30	U	92.8	488.539	64.5	Casing added
RP-96C-2 ‡	WL	541.61	539.6*	505592.33	1238013.91	4	65	91.7	466.375	81.7	457.90	91.7	447.90	U	35.2	504.375	dry at 75.8	Casing added
RP-97D	WL	476.48	474.91	504563.81	1238669.54	4	220	200.5	273.912	180	294.91	200	274.91	U	40	434.912	49.51	—
RP-98C ‡	WL	533.43	531.4*	505398.03	1238121.35	4	100.3	59.5	486.672	49.5	481.90	59.5	471.90	U	37.7	493.672	53.25	Casing added
RP-99A	WL	553.90	551.79	508392.42	1237484.76	4	41	40.5	511.794	30	521.79	40	511.79	A/U	39.5	512.294	25	—
RP-100A	CQ	441.86	441.00	504325.41	1238831.51	4	60	24.5	415.996	14	427.00	24	417.00	A	38	402.996	13.25	—
RP-101C	WL	448.04	446.27	504271.80	1238802.24	4	64	54.5	390.768	44.5	401.77	54.5	391.77	U	29	417.268	29.41	—
RP-103B	WL	371.73	369.79	503177.78	1240221.71	4	32	29	340.788	24	345.79	29	340.79	W	NE	NA	7.02	—
RP-106D	WL	545.26	543.15	507755.56	1238118.65	4	325	310	233.152	290	253.15	310	233.15	U	41	502.152	35.49	—
RP-107D	WL	477.36	476.24	504845.59	1237897.70	4	205	190	286.236	170	306.24	190	286.24	U	23	453.236	49.42	—
RP-108A	WL	356.61	350.47	502718.66	1240680.82	4	15	15	338.47	10	340.47	15	335.47	W	NE	NA	9.7	—
RP-108B	WL	356.20	354.45	502719.11	1240696.82	4	60	30	323.445	20	334.45	30	324.45	W/U	26	328.445	7.89	—
RP-109B	CQ	475.85	474.35	507227.12	1239463.89	4	62	55	419.349	45	429.35	55	419.35	W/U	53	421.349	20.93	—
RP-109D	WL	475.55	473.55	507211.75	1239503.57	4	175	175	298.55	155	318.55	175	298.55	U	53	420.55	20.91	—
RP-110B	WL	477.65	475.62	506711.60	1240035.28	4	60	60	415.615	50	425.62	60	415.62	W/U	55	420.615	36.8	—
RP-110D	WL	476.71	474.68	506673.68	1240052.53	4	160	150	324.677	140	334.68	150	324.68	U	55	419.677	35.77	—
RP-111B	WL	565.53	562.84	505841.97	1239949.21	4	140	128	434.838	118	444.84	128	434.84	U	64	498.838	90.08	—
RP-111D	WL	565.37	562.08	505821.21	1239941.97	4	200	180	382.075	170	392.08	180	382.08	U	58	504.075	100.92	—
RS-1	O	460.29	457.36	505383.88	1237524.50	8	NA	5.8	451.559		457.36		457.36	W	NA	NA	6.85	Road Sump.
SB-3	O	580.53	580.43	503510.00	1237500.00	1	51	51	529.433	30	550.43	51	529.43	W	NE	NA	dry approx. 50.7'	—
SB-4	O	375.87	375.17	503210.36	1236755.80	1	47.5	47.5	327.669	7	368.17	19	356.17	U	19	356.169	_	Nested well: deep casing.
SB-4	O	375.87	375.17	503210.36	1236755.80	1	47.5	47.5	327.669	25.5	349.67	47	328.17	W/U	19	356.169	17.21	Nested well, shallow casing.
SB-10	O	418.49	416.73	502446.02	1237755.11	2	22	22	394.732	11	405.73	22	394.73	U	11	405.732	3.88	—
Sump 9B	WL	487.29	484.41	502446.02	1237755.44	8	NA	28.4	457.409	8.4	476.01	28.4	456.01	W	31	453.409	11.02	—
SUMP 9B-CW	WL	486.26	484.00	505716.67	1237435.31	4	31	31	453.00	21	463.00	31	453.00	NA	NA	NA	21.7	—

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
SUMP 9B-PA	WL	483.79	483.45	505710.64	1237460.69	3/4	15	15	468.448	10	473.45	15	468.45	NA	NE	NA	3.09	—
SUMP 9B-PB	WL	484.42	484.19	505686.38	1237378.10	3/4	15	15	469.188	10	474.19	15	469.19	NA	NE	NA	6.85	—
SUMP 9B-PC	WL	488.80	487.54	505730.83	1237410.54	3/4	17	17	470.544	12	475.54	17	470.54	NA	NE	NA	7.48	—
SW-1[2] ‡	O	473.97	470.97	505794.95	1235580.70	4	38.5	22.7	448.269	7.2	463.77	17.2	453.77	W	17	453.969	9.27	Casing reduced. Unsafe to access. Abandoned in 2017
SW-15 ‡	O	587.84	584.74	505999.72	1236535.78	4	82.5	57.2	527.54	41.7	543.04	51.7	533.04	W	52.7	532.04	dry approx. 42'	Casing collapsed, not representative. Casing reduced.
SW-17	WL	630.12	628.90	506322.83	1236514.20	4	60	60	566.601	44.5	584.40	54.5	574.40	W	56.4	572.501	50.65	—
SW-18	WL	558.95	557.91	505781.94	1237031.60	4	50	50	505.914	34.5	523.41	44.5	513.41	W	46	511.914	47.02	—
SW-28	WL	498.95	496.08	504889.81	1238487.04	4	21.5	20.5	475.58	5	491.08	15	481.08	W/U	9	487.08	13.81	—
SW-29 ‡	CQ	499.40	497.15	505040.88	1238181.93	4	34.5	24.4	472.75	8.9	488.25	18.9	478.25	W/U	16.4	480.75	18.15	Casing reduced
SW-31 ‡	WL	497.07	494*	505721.67	1237667.43	4	78	60.6	433.40	50	444.00	60	434.00	F/U	50.1	434.623	11.54	Casing reduced 7/98, increased 2002
SW-44	WL	671.93	671.17	506650.83	1236510.28	4	75.5	74.5	596.565	59	612.17	69	602.17	W/U	68	603.165	57.01	—
SW-46	WL	493.86	490.63	506107.26	1235632.19	4	43	41.5	448.133	26	464.63	36	454.63	F/U	35	455.633	5.26	—
SW-47	CQ	698.10	696.90	507093.00	1237295.77	4	34	33.5	661.502	18	678.90	28	668.90	W/U	26.4	670.502	27.654	—
SW-48 ‡	WL	630.35	628.3*	506572.14	1238213.43	4	55	63.3	564.979	42.6	585.70	52.6	575.70	W/U	47.8	580.479	54.29	Casing added
SW-49	O	678.12	678.22	506387.20	238796.19	4	46.5	45.5	631.715	30	648.22	40	638.22	W/U	39	639.215	dry approx. 34.2'	—
SW-50	WL	680.52	678.73	506046.41	1238773.31	4	71.5	70.5	607.932	55	623.73	65	613.73	W	68.4	610.332	62.95	—
T-2	WL	579.37	579.09	503440.76	1237471.78	2	280	244	335.093	233	346.09	243	336.09	U	56	523.093	187.32	—
T-3A	O	610.99	610.87	503219.05	1238500.60	2	40	40	570.87	29.5	581.37	39.5	571.37	W	NA	NA	dry approx 39.6'	—
T-3B	O	613.11	613.08	503279.33	1238453.96	2	60	60	553.08	49.5	563.58	59.5	553.58	W	NA	NA	dry approx 59.5'	—
T-3C	O	612.01	611.63	503254.14	1238500.67	2	160	137	474.63	127	484.63	137	474.63	U	NA	NA	135.4	—
T-3D	WL	614.26	613.72	503311.76	1238451.86	2	400	220	393.72	200	413.72	220	393.72	U	NA	NA	213.46	Unresolved depth discrepancy does not affect data quality
T-6	O	509.55	508.85	501978.88	1238551.92	2	140	140	368.85	NA	NA	NA	NA	U	NA	NA	53.97	—
T-9	WL	814.31	813.36	508161.62	1235382.73	2	172	172	641.355	162	651.36	172	641.36	U	116	697.355	130.12	—
T-11	O	648.71	647.61	507071.89	1234871.40	2	110	108.5	539.108	98.5	549.11	108.5	539.11	U	82	565.608	dry approx. 78.4'	—
TP-1	WL	451.70	450.70	NA	NA	4	67	64.5	386.20	54	396.70	64	386.70	W	51	399.70	-	—
TP-2A	WL	453.54	452.93	504358.53	1235531.65	4	96	66	386.927	54	398.93	66	386.93	W	67	385.927	22.95	Changed to TP-2 on 3/26/87 instead of TP-2A.
TP-3	WL	442.84	441.39	504202.94	1236581.80	4	52	48	392.392	38	403.39	48	393.39	W	50	391.392	15.3	—

Table A-1. Well Construction Details

Well Name	Well Type	TOC Elevation (feet amsl)	Ground Surface Elevation (feet amsl)	Northing	Easting	Well Casing Diameter (inches)	Depth of Boring (feet bgs)	Total Well Depth (feet bgs)	Bottom of Casing Elevation (feet amsl)	Top of Screen Depth (feet bgs)	Top of Screen Elevation (feet amsl)	Bottom of Screen Depth (feet bgs)	Bottom of Screen Elevation (feet amsl)	Lithology of Screened Interval	Depth to Weathered / Unweathered Contact (feet bgs)	Elevation of Weathered / Unweathered Contact (feet amsl)	Depth to Water[a] (feet BTOC)	Comments
TP-4	WL	563.00	561*	506247.69	1237685.14	4	47	81.2	479.773	54	507.00	64	497.00	W	66.5	494.523	50.8	Casing added
TP-5	WL	421.13	419.62	504143.80	1237438.45	4	68	63	355.618	53	366.62	63	356.62	W	64	355.618	16.64	—
TP-7	WL	538.61	537.30	505721.51	1235280.29	4	45	38.5	497.595	28.5	508.80	38.5	498.80	U	31.5	505.795	33.2	—
TP-8 ‡	WL	475.65	475.54	505259.30	1235628.84	4	21	18	457.544	8	467.54	18	457.54	W	16.5	459.044	13.35	Casing added
TP-9	O	509.23	503.92	505106.63	1236096.93	4	49	43	464.124	33	470.92	43	460.92	W	40.8	463.124	44.68	Unsafe to access
TP-12	O	584.09	582.00	506098.59	1238095.37	4	45	67.8	489.959	57	525.00	67	515.00	W	72.8	484.959	-	Casing added
TP-13	WL	487.69	486.48	504632.89	1238636.58	4	55	49	436.478	38.5	447.98	48.5	437.98	W/U	43.5	442.978	36.88	—
TP-15	WL	591.28	588.44	506054.06	1236333.38	4	71	46.7	541.74	36.7	551.74	46.7	541.74	W	47.7	540.74	45.89	Casing reduced
WB-2	O	648.05	647.15	507053.87	1234882.86	1	50	50	597.146	30	617.15	50	597.15	W	NA	NA	dry approx. 51.4'	—
WB-4	WL	494.26	492.02	506227.68	1234927.11	1	67	67	425.022	9.5	482.52	42.5	449.52	W	52	440.022	4.89	—
WB-4	WL	494.30	492.02	506227.76	1234926.93		67	67	425.022	47	445.02	67	425.02	W/U	52	440.022	4.89	—
WB-6	WL	550.72	548.14	506708.05	1235233.26	2	26.5	27.2	523.544	17.2	530.94	27.2	520.94	W	24.6	523.544	24.82	Casing added
WP-3D	WL	558.59	558.08	505660.89	1236828.93	2	151	148	409.482	128	430.08	138	420.08	U	55.6	502.482	63.69	—
WP-3S	CQ	558.70	556.91	505655.28	1236830.69	4	58	57.5	499.414	42	514.91	52	504.91	W	55	501.914	54.42	—
WP-4D	WL	446.80	443.95	504311.05	1237049.78	4	129.5	128.5	315.452	113	330.95	123	320.95	U	48	395.952	40.01	—
WP-4S	WL	446.12	443.78	504310.81	1237044.56	4	49	48.5	395.283	38	405.78	48	395.78	W	48	395.783	25.27	—
WP-7D ‡	WL	655.29	653.3*	506642.68	1238512.78	2	151	153.3	499.987	138.3	515.00	153.3	500.00	U	42.3	610.987	54.17	Casing added
WP-7S ‡	CQ	654.83	652.8*	506645.62	1238507.27	4	43	46.1	606.719	35.5	617.30	45.5	607.30	W/U	42.6	610.219	43.8	Casing added
WP-8D ‡	WL	574.63	572.5*	506255.99	1237887.77	2	113	145.7	426.777	124.8	447.70	134.8	437.70	U	80.7	491.777	62.45	Casing added
WP-8S ‡	WL	574.61	572.5*	506255.66	1237892.49	4	52.5	87.3	485.185	76.9	495.60	86.9	485.60	W/U	80.2	492.285	71.95	Casing added
WS-1	O	NA	NA	505370.10	1234294.95	8	63	35	NA	20	NA	30	NA	A	NA	NA	9.55	Former water well
WS-2	O	NA	NA	507689.78	1233906.01	8	45	45	NA	20	NA	40	NA	A	NA	NA	14.77	Site water source
WS-3	O	NA	NA	506425.29	1234098.52	8	48	45	NA	20	NA	40	NA	A	NA	NA	14.98	Former water well
WS-4	O	NA	NA	504541.21	1234513.42	8	59	55	NA	40	NA	50	NA	A	NA	NA	9.75	Former water well

Notes:

Source: *RGMEW Events 33 and 34 and Five-Year Evaluation Report, Casmalia Resources Superfund Site, Casmalia, California* (AMEC Foster Wheeler Environment & Infrastructure, May 2015).

[a] Water levels measured in December 2014.

[b] These wells were among a total of 18 wells and piezometers abandoned in 2017. Reference *Technical Memorandum – Well Destruction Report, Zone 1, Feasibility Study Areas 1 & 2, Casmalia Resources Superfund Site, Casmalia, California* (Geosyntec Consultants, July 27, 2017).

Most well casings constructed from PVC. Some with stainless steel.

* Ground surface elevation not re-surveyed after casing elevation change. Measurement approximate.

‡ = Well has been modified since original construction

A = alluvium

amsl = above mean sea level

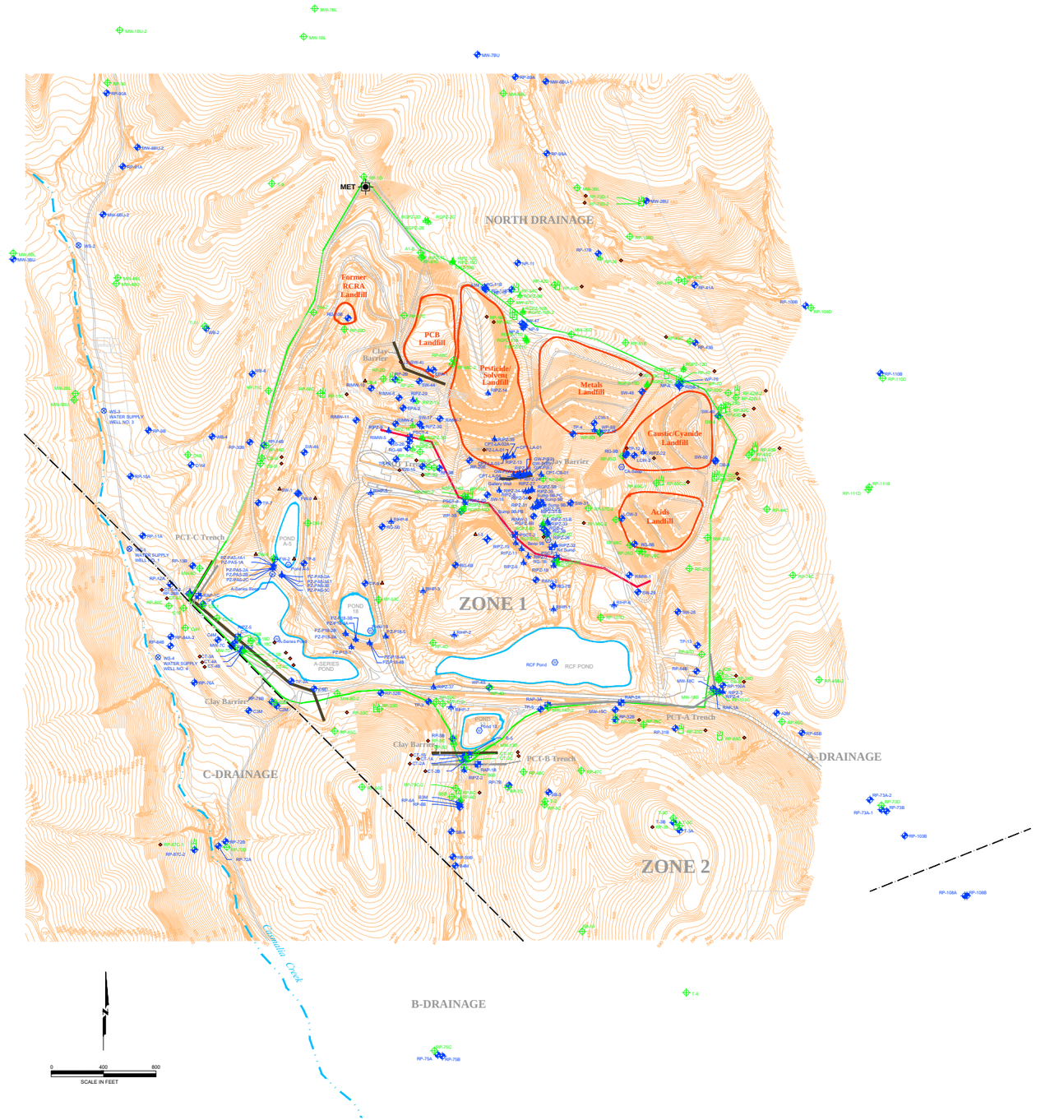
bgs = below ground surface

BTOC = below top of casing

CQ = chemical quality

F = fill

GCW = gallery collection well
NA and “—" = not available
NE = not encountered
O = omitted from monitoring program
RGWEW = Routine Groundwater Monitoring Element of Work
TOC = top of casing
U = unweathered claystone
W = weathered claystone Well Type:
WL = water level



LEGEND

- Burial Trench
- Landfill Boundaries
- Facility and Zone 1 Boundary
- Perimeter Source Control Trench (PSCT)
- Plume Capture Collection Trench (PCT)
- Clay Barrier
- Creek
- Pond Outline
- Approximate Bognuda Ranch Property Boundary (no well access)
- MW-15C — Upper HSU Monitoring Well
- GW-P(E) — Upper HSU Piezometer
- RAP-2A — Upper HSU Extraction Point
- POND18 — Upper HSU Surface Water Sample
- SW-17 — Upper HSU Other Sampling Point
- RHP-1 — Upper HSU Hydropunch
- Lower HSU Vibrating Wire Transducer
- RGPZ-6D — Lower HSU Piezometer
- RP-63C — Lower HSU Monitoring Well
- MET — Meteorological Station
- CB-A — Indicates well is unsafe to access
- RP-63B — Indicates well is damaged/inoperable

NOTES:

Topo map revised 1998, 2000, 2004. Topo with P/S landfill and borrow area revised 2000. (Foster-Wheeler).

Zone 1 boundary (green) is approximate and includes the area within the facility boundary.

Map does not include historical wells.

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SUPERFUND SITE

FIGURE A-1
Well Location Map
Record of Decision

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Appendix B
Nature and Extent of Contamination Figures

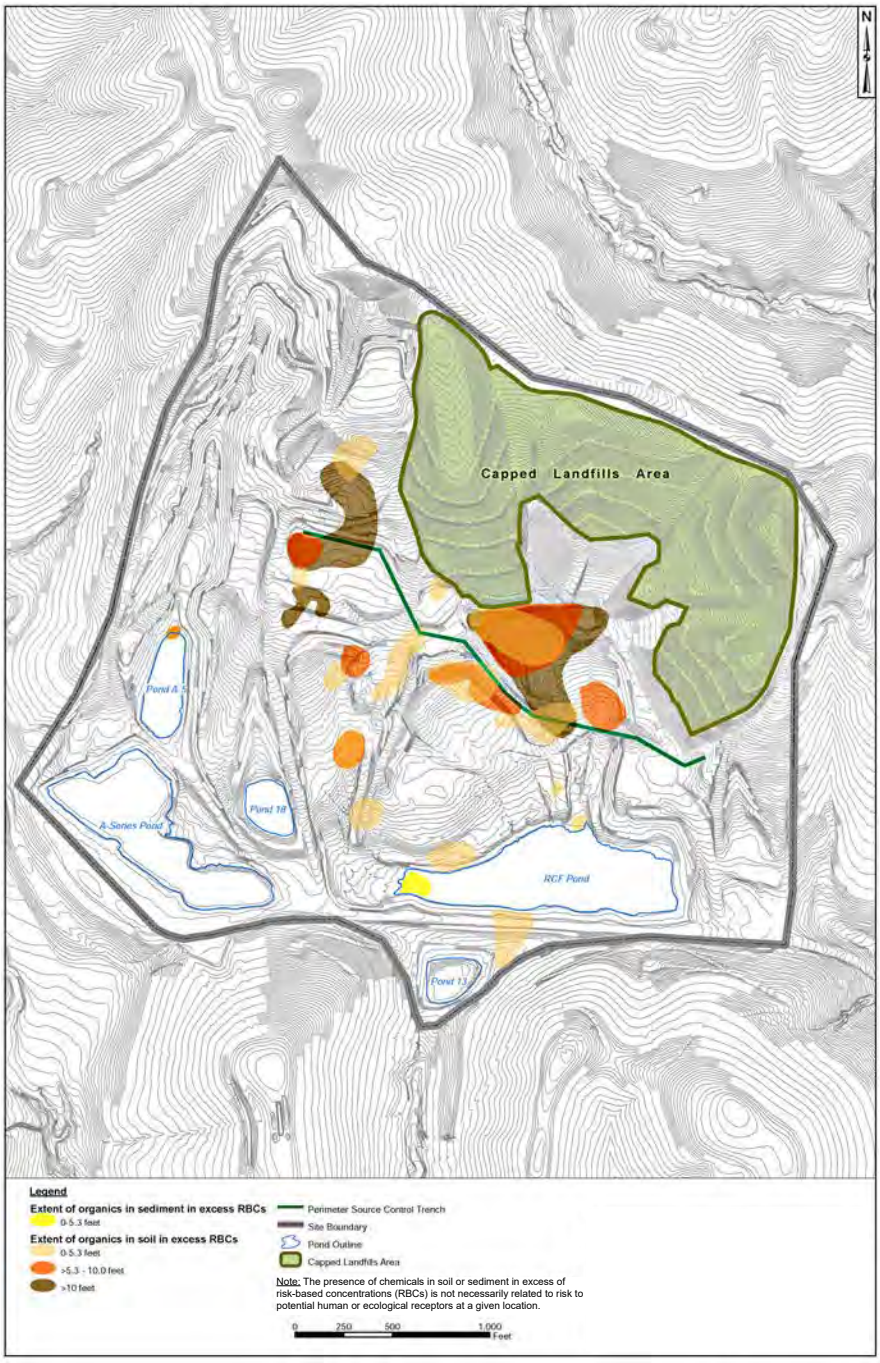

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FIGURE B-1
Organics in Soil and Sediment in Excess of Risk-Based Concentrations (RBCs)
Record of Decision

Source: Modified from Figure 5-3, Final Feasibility Study Report, Casmalia Resources Superfund Site, Casmalia Steering Committee, February 15, 2016 (CSC, 2016).

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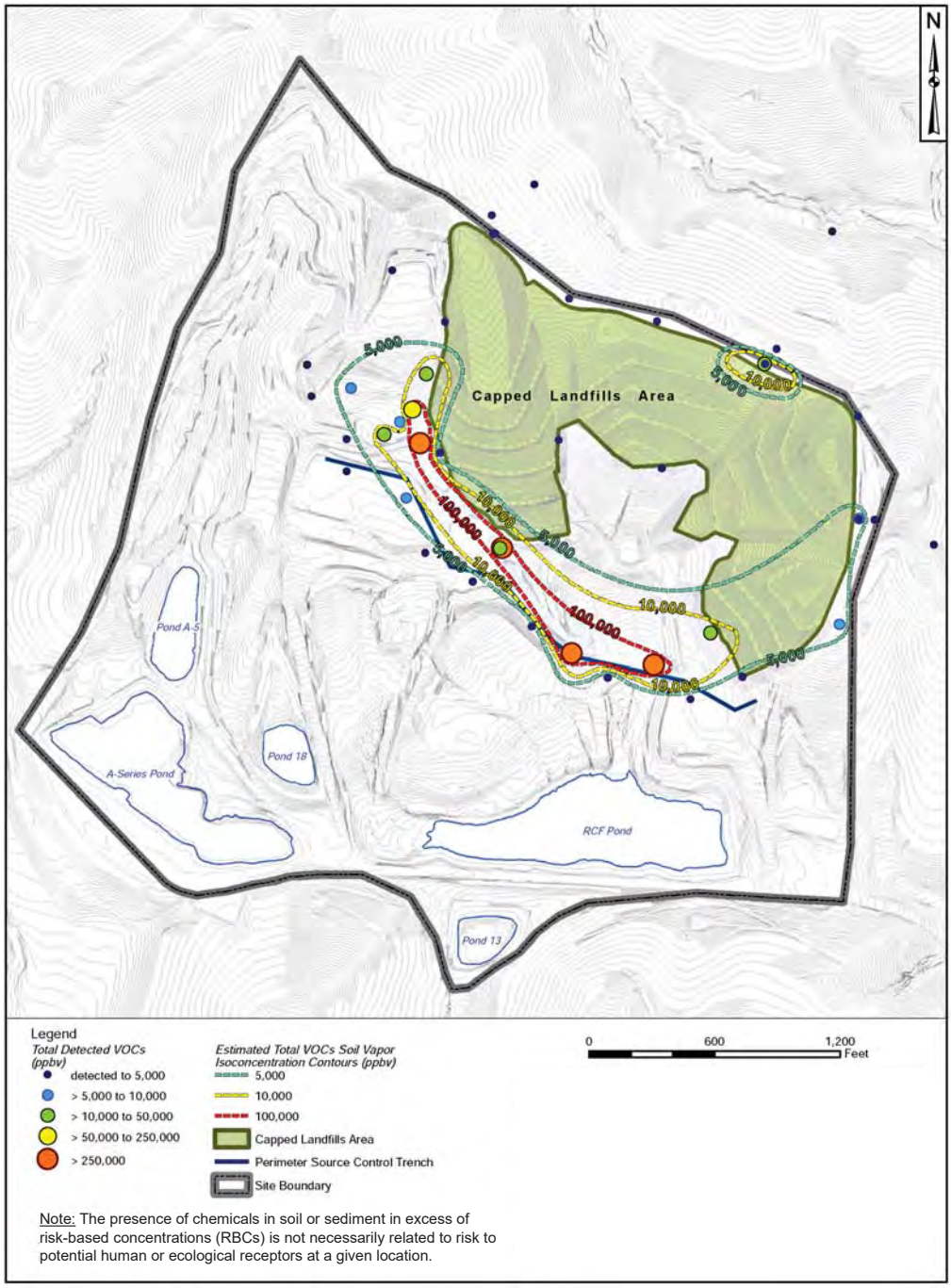
SUPERFUND SITE

FIGURE B-2
Metals in Soil and Sediment in Excess of Risk-Based Concentrations (RBCs)
Record of Decision

Source: Modified from Figure 5-2, Final Feasibility Study Report, Casmalia Resources Superfund Site, Casmalia Steering Committee, February 15, 2016 (CSC, 2016).



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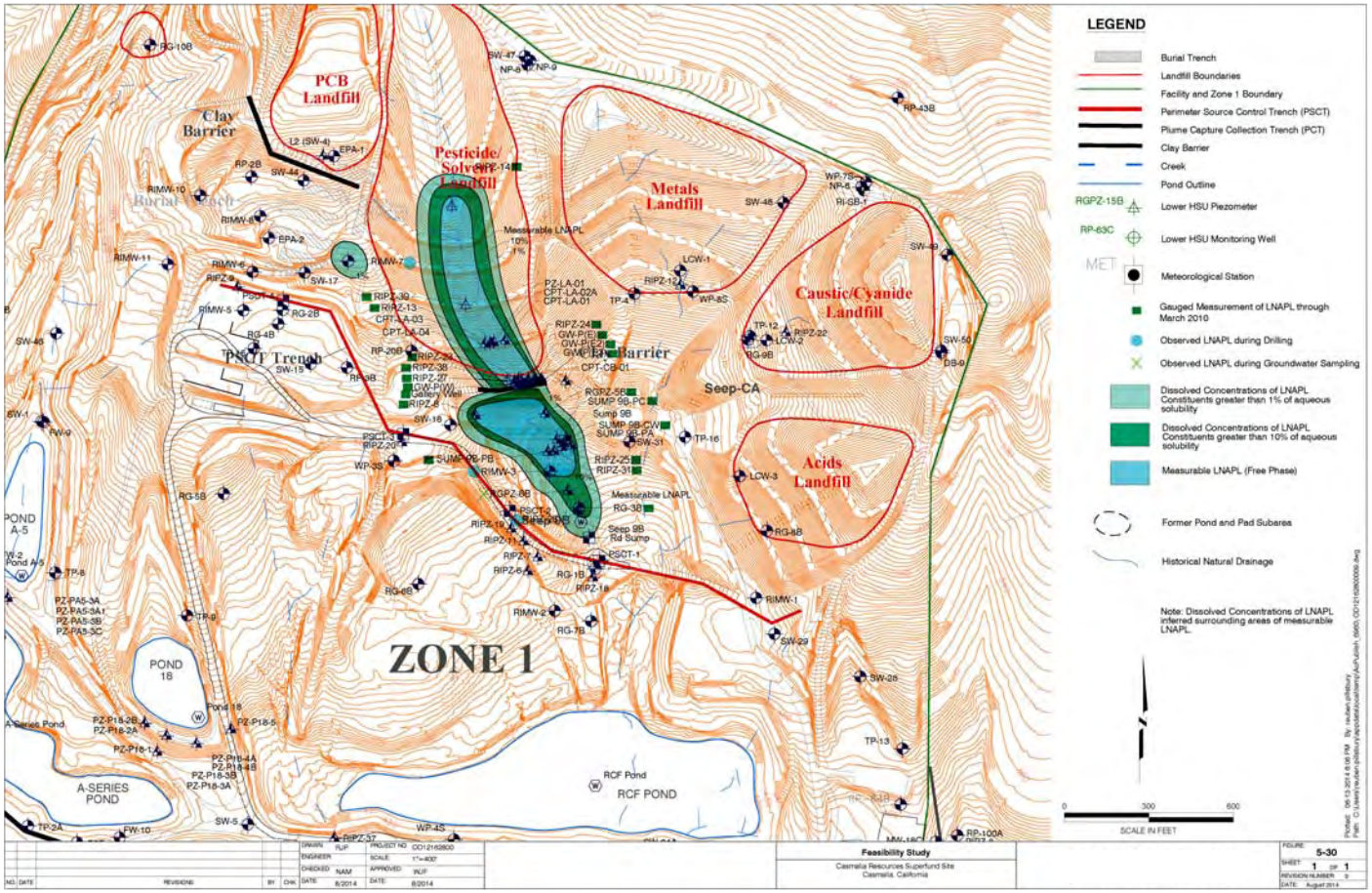
SUPERFUND SITE

FIGURE B-3
Estimated Extent of Total Detected VOCs in Soil Vapor
Record of Decision

Source: Modified from Figure 5-25, Final Feasibility Study Report, Casmalia Resources Superfund Site, Casmalia Steering Committee, February 15, 2016 (CSC, 2016).



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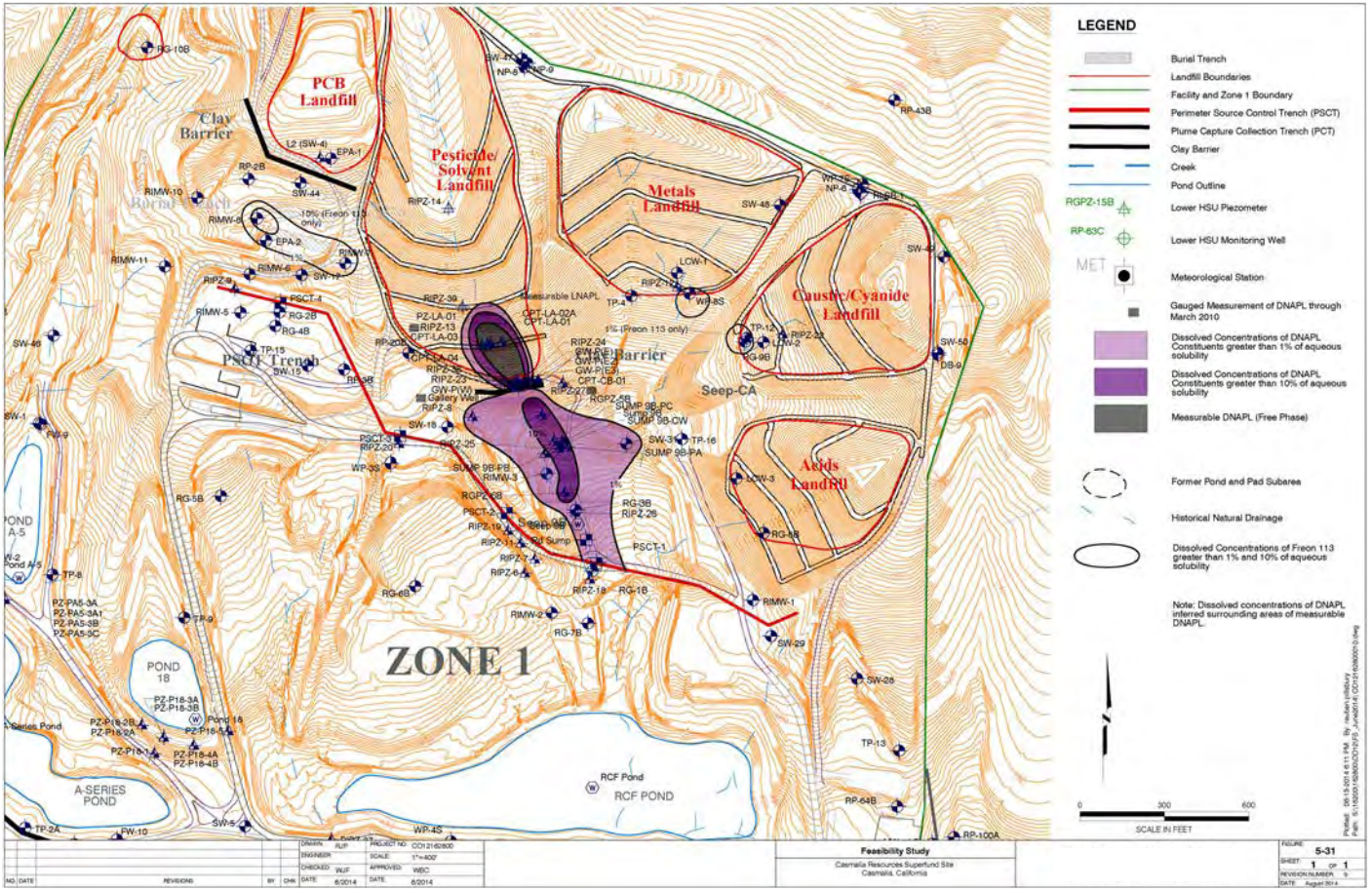
SUPERFUND SITE

FIGURE B-4
LNAPL in Upper HSU Observed or Inferred from Groundwater Concentrations
Record of Decision

Source: Modified from Figure 5-30, Final Feasibility Study Report, Casmalia Resources Superfund Site, Casmalia Steering Committee, February 15, 2016 (CSC, 2016).



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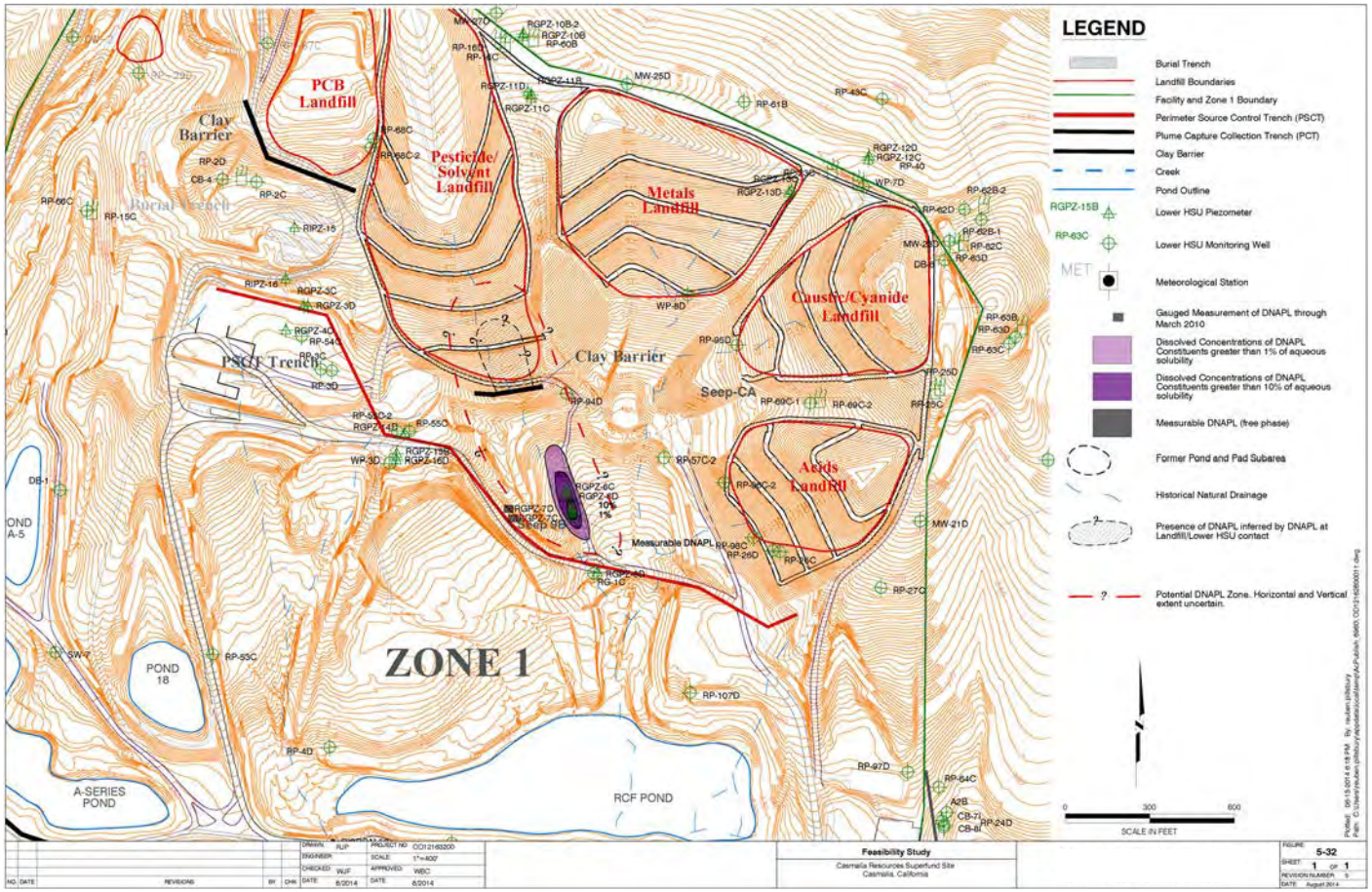
CASMALIA RESOURCES
SUPERFUND SITE

FIGURE B-5
DNAPL in Upper HSU Observed or Inferred from Groundwater Concentrations
Record of Decision

Source: Modified from Figure 5-31, Final Feasibility Study Report, Casmalia Resources Superfund Site, Casmalia Steering Committee, February 15, 2016 (CSC, 2016).



U.S EPA REGION IX
CASMALIA RESOURCES
SUPERFUND SITE

FIGURE B-6
DNAPL in Lower HSU Observed or Inferred from Groundwater Concentrations
Record of Decision

Source: Modified from Figure 5-32, Final Feasibility Study Report, Casmalia Resources Superfund Site, Casmalia Steering Committee, February 15, 2016 (CSC, 2016)

Appendix C
Risk Assessment Supporting Details

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
CYANIDE										
CYANIDE-Amenable Cyanide	A57-12-5	mg/kg	--	No Data	--	No Data	--	No Data	0.2400	Max
CYANIDE-Total Cyanide	57-12-5	mg/kg	--	ND	--	ND	--	ND	0.4200	Max
DIOXIN										
DIOXIN-Total Avian Dioxin TEQ	URS-TEQ-04	pg/g	0.6110	Max	0.6110	Max	4.71	Max	7.98	Max
DIOXIN-Total Fish Dioxin TEQ	URS-TEQ-06	pg/g	--	No Data	--	No Data	--	No Data	--	No Data
DIOXIN-Total TEQ	URS-TEQ-02	pg/g	0.6610	Max	0.6610	Max	6.19	Max	11.4	Max
HERBICIDES										
HERB-2,4,5-TP (Silvex)	93-72-1	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	0.0220	Max	0.0220	Max
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	94-82-6	mg/kg	0.0210	Max	0.0340	Max	0.0840	Max	0.0318	UCL
HERB-2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
HERB-Dalapon	75-99-0	mg/kg	0.2800	Max	0.2800	Max	0.0840	Max	0.0333	UCL
HERB-MCPA	94-74-6	mg/kg	3.00	Max	3.00	Max	--	ND	0.7100	Max
HERB-MCPP	93-65-2	mg/kg	--	ND	--	ND	--	ND	1.10	Max
METALS										
Metals-Barium	7440-39-3	mg/kg	130	Max	185	UCL	170	UCL	156	UCL
Metals-Beryllium	7440-41-7	mg/kg	0.5500	Max	0.5630	UCL	0.5890	UCL	0.5960	UCL
Metals-Cadmium	7440-43-9	mg/kg	1.10	Max	0.9300	UCL	1.51	UCL	1.40	UCL
Metals-Chromium	7440-47-3	mg/kg	27.0	Max	27.4	UCL	36.8	UCL	87.1	UCL
Metals-Cobalt	7440-48-4	mg/kg	6.00	Max	5.20	UCL	6.24	UCL	5.78	UCL
Metals-Copper	7440-50-8	mg/kg	14.0	Max	13.0	UCL	17.9	UCL	34.7	UCL
Metals-Lead	7439-92-1	mg/kg	--	ND	--	ND	11.2	UCL	9.84	UCL
Metals-Manganese	7439-96-5	mg/kg	810	Max	470	UCL	311	UCL	271	UCL
Metals-Mercury	7439-97-6	mg/kg	0.0380	Max	0.0690	Max	0.0271	UCL	0.0250	UCL
Metals-Molybdenum	7439-98-7	mg/kg	2.40	Max	3.90	UCL	4.12	UCL	4.25	UCL
Metals-Nickel	7440-02-0	mg/kg	31.0	Max	31.6	UCL	37.7	UCL	41.3	UCL
Metals-Selenium	7782-49-2	mg/kg	1.40	Max	1.40	Max	3.51	UCL	2.58	UCL
Metals-Thallium	7440-28-0	mg/kg	0.2300	Max	0.2900	Max	0.3480	UCL	0.3260	UCL
Metals-Tin	7440-31-5	mg/kg	38.0	Max	51.4	UCL	43.5	UCL	42.0	UCL

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
Metals-Vanadium	7440-62-2	mg/kg	30.0	Max	31.3	UCL	34.8	UCL	31.7	UCL
Metals-Zinc	7440-66-6	mg/kg	51.0	Max	50.1	UCL	68.7	UCL	65.0	UCL
PAHs										
PAH-Acenaphthene	83-32-9	mg/kg	0.0051	Max	0.0051	Max	--	ND	0.0550	Max
PAH-Acenaphthylene	208-96-8	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
PAH-Anthracene	120-12-7	mg/kg	0.0120	Max	0.0120	Max	--	ND	0.0690	Max
PAH-Benzo(a)anthracene	56-55-3	mg/kg	0.0160	Max	0.0160	Max	--	ND	--	ND
PAH-Benzo(a)pyrene	50-32-8	mg/kg	0.0150	Max	0.0150	Max	--	ND	--	ND
PAH-Benzo(b)fluoranthene	205-99-2	mg/kg	0.0150	Max	0.0150	Max	--	ND	0.3200	Max
PAH-Benzo(g,h,i)perylene	191-24-2	mg/kg	0.0160	Max	0.0160	Max	0.0045	Max	0.0045	Max
PAH-Benzo(k)fluoranthene	207-08-9	mg/kg	0.0140	Max	0.0140	Max	--	ND	--	ND
PAH-Chrysene	218-01-9	mg/kg	0.0170	Max	0.0170	Max	0.0050	Max	0.4620	UCL
PAH-Fluoranthene	206-44-0	mg/kg	0.0130	Max	0.0130	Max	0.0048	Max	0.3600	Max
PAH-Fluorene	86-73-7	mg/kg	0.0070	Max	0.0070	Max	--	ND	0.1500	Max
PAH-Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	0.0140	Max	0.0140	Max	--	ND	--	ND
PAH-Naphthalene	91-20-3	mg/kg	0.0042	Max	0.0066	Max	--	ND	0.1600	Max
PAH-Pyrene	129-00-0	mg/kg	0.0160	Max	0.0160	Max	0.0048	Max	0.3360	UCL
PCBs										
PCB-Aroclor 1260	11096-82-5	mg/kg	--	ND	--	ND	0.0160	Max	0.0160	Max
PCB CONGENERS										
PCBConger-Sum of PCB Congeners	SUM-PCBC	pg/g	116	Max	116	Max	28439	Max	28439	Max
PCBConger-PCBC TEQ	SUM-PCBC	pg/g	0.0010	Max	0.0010	Max	3.5550	Max	3.56	Max
PCBConger-Total Avian PCBC TEQ	SUM-PCBC	pg/g	0.0558	Max	0.0558	Max	12	Max	12.3	Max
PESTICIDES										
PEST-4,4'-DDD	72-54-8	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
PEST-4,4'-DDE	72-55-9	mg/kg	--	ND	--	ND	--	ND	0.0140	Max
PEST-4,4'-DDT	50-29-3	mg/kg	0.0029	Max	0.0029	Max	0.0080	Max	0.0630	Max
PEST-Aldrin	309-00-2	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
PEST-alpha-BHC	319-84-6	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
PEST-Chlordane, gamma	12789-03-6	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PEST-delta-BHC	319-86-8	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
PEST-Dieldrin	60-57-1	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
PEST-Endosulfan I	959-98-8	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
PEST-Endrin	72-20-8	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
PEST-Heptachlor epoxide	1024-57-3	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
PEST-Hexachlorobenzene	118-74-1	mg/kg	0.0069	Max	0.0069	Max	0.0023	Max	0.0023	Max
PEST-Methoxychlor	72-43-5	mg/kg	--	ND	--	ND	0.0039	Max	0.0039	Max
PEST-Mirex	2385-85-5	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
SVOCs										
SVOC-Benzoic acid	65-85-0	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	0.3400	Max	0.3400	Max
SVOC-Bis(2-ethylhexyl)phthalate	117-81-7	mg/kg	--	ND	--	ND	--	ND	--	ND
SVOC-Diethylphthalate	84-66-2	mg/kg	--	ND	--	ND	--	ND	--	ND
SVOC-Di-n-butylphthalate	84-74-2	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
SVOC-N-Nitrosodimethylamine	62-75-9	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
SVOC-N-Nitrosodipropylamine	621-64-7	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
SVOC-N-Nitrosomethylethylamine	10595-95-6	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	0.0051	Max	0.0067	Max
SVOC-N-Nitrosopyrrolidine	930-55-2	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
VOCs										
VOC-1,1,1-Trichloroethane	71-55-6	mg/kg	--	ND	--	ND	0.0640	Max	0.0640	Max
VOC-1,1-Dichloroethane	75-34-3	mg/kg	--	ND	--	ND	0.3500	Max	4.30	Max
VOC-1,1-Dichloroethylene	75-35-4	mg/kg	--	ND	--	ND	0.0170	Max	0.0340	Max
VOC-1,2-Dichloroethene	540-59-0	mg/kg	--	ND	0.0013	Max	--	ND	0.0150	Max
VOC-Acetone	67-64-1	mg/kg	0.0400	Max	0.0524	UCL	0.6490	UCL	0.3840	UCL
PPO-Acetonitrile	75-05-8	mg/kg	--	ND	--	ND	0.1700	Max	0.1700	UCL
PPO-Acrolein	107-02-8	mg/kg	--	ND	--	ND	0.0170	Max	0.0170	Max
VOC-Benzene	71-43-2	mg/kg	0.0035	Max	0.0031	UCL	0.0020	Max	0.0055	Max
VOC-Carbon disulfide	75-15-0	mg/kg	--	ND	0.0085	Max	0.0210	Max	0.0210	Max
VOC-Chloroform	67-66-3	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
VOC-Freon 113 (1,1,2-trichloro-1,2,2-trifluo	76-13-1	mg/kg	--	ND	--	ND	0.2330	UCL	2.74	UCL
VOC-Isopropanol	67-63-0	mg/kg	--	ND	--	ND	0.0670	Max	0.0670	Max

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
VOC-Methyl ethyl ketone	78-93-3	mg/kg	--	ND	0.0140	Max	0.2160	UCL	0.0560	UCL
VOC-Methylene chloride	75-09-2	mg/kg	--	ND	--	ND	--	ND	0.0320	Max
VOC-Propanal	123-38-6	mg/kg	--	ND	--	ND	0.1800	Max	0.0380	UCL
PPO-Tert-Butyl alcohol (TBA)	75-65-0	mg/kg	0.0170	Max	0.0220	Max	0.0200	Max	0.0200	Max
VOC-Tetrachloroethylene	127-18-4	mg/kg	0.0019	Max	0.0020	Max	0.3300	Max	0.3300	Max
VOC-Tetrahydrofuran	109-99-9	mg/kg	--	ND	0.0026	Max	--	ND	0.0460	Max
VOC-Toluene	108-88-3	mg/kg	--	ND	0.0017	Max	0.0032	Max	0.0034	Max
VOC-Trichloroethylene	79-01-6	mg/kg	--	ND	--	ND	24.0	Max	24.0	Max
VOC-Vinyl chloride	75-01-4	mg/kg	--	Not an Admin COPC	--	Not an Admin COPC	--	Not a Burial COPC	--	Not a Burial COPC
CYANIDE										
CYANIDE-Amenable Cyanide	A57-12-5	mg/kg	--	No Data	--	ND	--	No Data	--	No Data
CYANIDE-Total Cyanide	57-12-5	mg/kg	--	ND	0.2990	Max	--	ND	--	ND
DIOXIN										
DIOXIN-Total Avian Dioxin TEQ	URS-TEQ-04	pg/g	78.2	Max	78.2	Max	3.72	UCL	0.5700	UCL
DIOXIN-Total Fish Dioxin TEQ	URS-TEQ-06	pg/g	--	No Data	--	No Data	--	No Data	--	No Data
DIOXIN-Total TEQ	URS-TEQ-02	pg/g	57.5	Max	57.5	Max	3.50	UCL	1.01	UCL
HERBICIDES										
HERB-2,4,5-TP (Silvex)	93-72-1	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	94-82-6	mg/kg	0.0290	Max	0.0148	UCL	--	ND	0.0890	Max
HERB-2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
HERB-Dalapon	75-99-0	mg/kg	0.0160	Max	0.0177	UCL	0.0290	Max	0.0570	Max
HERB-MCPA	94-74-6	mg/kg	1.80	Max	1.80	Max	7.00	Max	1.46	UCL
HERB-MCPP	93-65-2	mg/kg	120	Max	120	Max	0.8050	UCL	0.8710	UCL
METALS										
Metals-Barium	7440-39-3	mg/kg	458	UCL	433	UCL	749	UCL	483	UCL
Metals-Beryllium	7440-41-7	mg/kg	0.5180	UCL	0.5240	UCL	0.4600	UCL	0.4470	UCL
Metals-Cadmium	7440-43-9	mg/kg	1.56	UCL	4.90	UCL	1.76	UCL	1.80	UCL
Metals-Chromium	7440-47-3	mg/kg	33.5	UCL	28.9	UCL	33.2	UCL	30.5	UCL
Metals-Cobalt	7440-48-4	mg/kg	5.82	UCL	5.70	UCL	9.35	UCL	8.52	UCL

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
Metals-Copper	7440-50-8	mg/kg	38.4	UCL	28.1	UCL	18.2	UCL	16.4	UCL
Metals-Lead	7439-92-1	mg/kg	13.4	UCL	12.2	UCL	14.7	UCL	11.9	UCL
Metals-Manganese	7439-96-5	mg/kg	214	UCL	348	UCL	315	UCL	288	UCL
Metals-Mercury	7439-97-6	mg/kg	0.1130	UCL	0.0840	UCL	0.0284	UCL	0.0247	UCL
Metals-Molybdenum	7439-98-7	mg/kg	4.28	UCL	4.23	UCL	3.85	UCL	3.82	UCL
Metals-Nickel	7440-02-0	mg/kg	35.6	UCL	37.0	UCL	40.5	UCL	38.7	UCL
Metals-Selenium	7782-49-2	mg/kg	1.80	Max	1.23	UCL	1.13	UCL	1.21	UCL
Metals-Thallium	7440-28-0	mg/kg	0.3750	UCL	0.3930	UCL	0.3580	UCL	0.3600	UCL
Metals-Tin	7440-31-5	mg/kg	46.2	UCL	45.1	UCL	43.7	UCL	44.5	UCL
Metals-Vanadium	7440-62-2	mg/kg	32.7	UCL	31.4	UCL	27.6	UCL	26.4	UCL
Metals-Zinc	7440-66-6	mg/kg	79.8	UCL	81.3	UCL	61.8	UCL	58.6	UCL
PAHs										
PAH-Acenaphthene	83-32-9	mg/kg	0.0630	Max	0.0630	Max	0.0250	Max	0.0104	UCL
PAH-Acenaphthylene	208-96-8	mg/kg	0.0078	Max	0.0078	Max	--	Not an FPP COPC	--	Not an FPP COPC
PAH-Anthracene	120-12-7	mg/kg	0.0300	Max	0.0300	Max	0.0300	Max	0.0071	UCL
PAH-Benzo(a)anthracene	56-55-3	mg/kg	0.0360	Max	0.0092	UCL	0.0048	UCL	0.0066	UCL
PAH-Benzo(a)pyrene	50-32-8	mg/kg	0.0231	UCL	0.0166	UCL	0.0086	UCL	0.0080	UCL
PAH-Benzo(b)fluoranthene	205-99-2	mg/kg	0.0156	UCL	0.0109	UCL	0.0061	UCL	0.0062	UCL
PAH-Benzo(g,h,i)perylene	191-24-2	mg/kg	0.0260	Max	0.0073	UCL	0.0117	UCL	0.0087	UCL
PAH-Benzo(k)fluoranthene	207-08-9	mg/kg	0.0768	UCL	0.0454	UCL	0.0390	UCL	0.0050	UCL
PAH-Chrysene	218-01-9	mg/kg	0.0246	UCL	0.0191	UCL	0.0045	UCL	0.0085	UCL
PAH-Fluoranthene	206-44-0	mg/kg	0.0529	UCL	0.0320	UCL	0.0032	UCL	0.0043	UCL
PAH-Fluorene	86-73-7	mg/kg	0.0970	Max	0.0970	Max	0.0320	Max	0.0046	UCL
PAH-Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	0.0150	Max	0.0150	Max	0.0450	Max	0.0033	UCL
PAH-Naphthalene	91-20-3	mg/kg	0.0600	Max	0.0700	Max	0.0037	UCL	0.0035	UCL
PAH-Pyrene	129-00-0	mg/kg	0.0752	UCL	0.0472	UCL	0.0104	UCL	0.0116	UCL
PCBs										
PCB-Aroclor 1260	11096-82-5	mg/kg	0.5820	UCL	0.8290	UCL	0.1570	UCL	0.0997	UCL
PCB CONGENERS										
PCBConger-Sum of PCB Congeners	SUM-PCBC	pg/g	234128	Max	234128	Max	1255239	UCL	1165291	UCL

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PCBConger-PCBC TEQ	SUM-PCBC	pg/g	32.4	Max	32.4	Max	77.5	UCL	65.4	UCL
PCBConger-Total Avian PCBC TEQ	SUM-PCBC	pg/g	295	Max	295	Max	1914	UCL	1700	UCL
PESTICIDES										
PEST-4,4'-DDD	72-54-8	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not a FPP COPC
PEST-4,4'-DDE	72-55-9	mg/kg	--	ND	--	ND	0.0006	Max	0.0130	Max
PEST-4,4'-DDT	50-29-3	mg/kg	0.0201	UCL	0.0693	UCL	0.0136	UCL	0.0093	UCL
PEST-Aldrin	309-00-2	mg/kg	0.0190	Max	0.0190	Max	--	Not an FPP COPC	--	Not an FPP COPC
PEST-alpha-BHC	319-84-6	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
PEST-Chlordane, gamma	12789-03-6	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
PEST-delta-BHC	319-86-8	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
PEST-Dieldrin	60-57-1	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
PEST-Endosulfan I	959-98-8	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
PEST-Endrin	72-20-8	mg/kg	0.1200	Max	0.1200	Max	--	Not an FPP COPC	--	Not an FPP COPC
PEST-Heptachlor epoxide	1024-57-3	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
PEST-Hexachlorobenzene	118-74-1	mg/kg	0.0780	Max	0.0377	UCL	0.0007	Max	0.0005	UCL
PEST-Methoxychlor	72-43-5	mg/kg	0.0056	Max	0.0056	Max	0.0250	Max	0.0250	Max
PEST-Mirex	2385-85-5	mg/kg	0.0800	Max	0.0120	UCL	--	Not an FPP COPC	--	Not an FPP COPC
SVOCs										
SVOC-Benzoic acid	65-85-0	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
SVOC-Bis(2-ethylhexyl)phthalate	117-81-7	mg/kg	29.0	Max	29.0	Max	0.1140	UCL	0.1090	UCL
SVOC-Diethylphthalate	84-66-2	mg/kg	0.2200	Max	0.2200	Max	1.59	UCL	0.6930	UCL
SVOC-Di-n-butylphthalate	84-74-2	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
SVOC-N-Nitrosodimethylamine	62-75-9	mg/kg	--	Not a Central COPC	--	Not a Central COPC	0.0088	UCL	0.0076	UCL
SVOC-N-Nitrosodipropylamine	621-64-7	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
SVOC-N-Nitrosomethylethylamine	10595-95-6	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
SVOC-N-Nitrosopyrrolidine	930-55-2	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	Not an FPP COPC	--	Not an FPP COPC
VOCs										
VOC-1,1,1-Trichloroethane	71-55-6	mg/kg	0.2630	UCL	0.2260	UCL	0.0040	Max	0.0040	Max
VOC-1,1-Dichloroethane	75-34-3	mg/kg	0.0868	UCL	1.64	UCL	0.0024	Max	0.1890	UCL
VOC-1,1-Dichloroethylene	75-35-4	mg/kg	0.0190	Max	0.0422	UCL	0.0030	Max	0.0040	UCL

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
VOC-1,2-Dichloroethene	540-59-0	mg/kg	0.0840	Max	0.8100	UCL	0.1100	Max	1.71	UCL
VOC-Acetone	67-64-1	mg/kg	0.0280	UCL	0.0262	UCL	0.1040	UCL	0.0712	UCL
PPO-Acetonitrile	75-05-8	mg/kg	0.1800	Max	0.1800	Max	--	ND	--	ND
PPO-Acrolein	107-02-8	mg/kg	0.0089	Max	0.0089	Max	0.0140	Max	0.0140	Max
VOC-Benzene	71-43-2	mg/kg	0.0018	UCL	0.2350	UCL	0.0023	Max	0.0050	UCL
VOC-Carbon disulfide	75-15-0	mg/kg	0.0180	Max	0.0079	UCL	0.0185	UCL	0.0152	UCL
VOC-Chloroform	67-66-3	mg/kg	0.0931	UCL	0.1150	UCL	--	Not an FPP COPC	--	Not an FPP COPC
VOC-Freon 113 (1,1,2-trichloro-1,2,2-trifluo	76-13-1	mg/kg	0.1260	UCL	0.4760	UCL	0.0097	Max	0.0090	UCL
VOC-Isopropanol	67-63-0	mg/kg	0.0530	Max	0.0740	Max	0.068	Max	0.0680	Max
VOC-Methyl ethyl ketone	78-93-3	mg/kg	0.0094	UCL	0.0079	UCL	0.0091	UCL	0.0073	UCL
VOC-Methylene chloride	75-09-2	mg/kg	0.2600	Max	0.1940	UCL	0.0024	Max	0.0024	Max
VOC-Propanal	123-38-6	mg/kg	0.0230	Max	0.0230	Max	0.0770	Max	0.0181	UCL
PPO-Tert-Butyl alcohol (TBA)	75-65-0	mg/kg	0.0210	Max	0.0166	UCL	0.0240	Max	0.0172	UCL
VOC-Tetrachloroethylene	127-18-4	mg/kg	0.6690	UCL	1.17	UCL	0.0620	Max	46.4600	UCL
VOC-Tetrahydrofuran	109-99-9	mg/kg	0.0026	Max	0.0268	UCL	0.0025	Max	0.0016	UCL
VOC-Toluene	108-88-3	mg/kg	0.0012	Max	0.1250	UCL	--	ND	0.0130	Max
VOC-Trichloroethylene	79-01-6	mg/kg	0.1640	UCL	0.6270	UCL	0.0740	Max	3.98	UCL
VOC-Vinyl chloride	75-01-4	mg/kg	--	Not a Central COPC	--	Not a Central COPC	--	ND	0.0267	UCL
CYANIDE										
CYANIDE-Amenable Cyanide	A57-12-5	mg/kg	1.4	Max	1.40	Max	--	No Data	--	No Data
CYANIDE-Total Cyanide	57-12-5	mg/kg	9.8	Max	9.80	Max	--	ND	--	ND
DIOXIN										
DIOXIN-Total Avian Dioxin TEQ	URS-TEQ-04	pg/g	0.6370	Max	0.6370	Max	33.8700	Max	33.9	Max
DIOXIN-Total Fish Dioxin TEQ	URS-TEQ-06	pg/g	--	No Data	--	No Data	--	No Data	--	No Data
DIOXIN-Total TEQ	URS-TEQ-02	pg/g	1.1380	Max	1.14	Max	19.0500	Max	19.1	Max
HERBICIDES										
HERB-2,4,5-TP (Silvex)	93-72-1	mg/kg	--	Not a LQT COPC	--	Not a LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	94-82-6	mg/kg	0.0540	Max	0.0182	UCL	--	ND	--	ND
HERB-2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	mg/kg	0.021	Max	0.0570	Max	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
HERB-Dalapon	75-99-0	mg/kg	0.0540	Max	0.0680	Max	--	ND	--	ND
HERB-MCPA	94-74-6	mg/kg	0.82	Max	19.0	Max	--	ND	--	ND
HERB-MCPP	93-65-2	mg/kg	1400	Max	1400	Max	--	ND	--	ND
METALS										
Metals-Barium	7440-39-3	mg/kg	129	UCL	117	UCL	588	UCL	812	UCL
Metals-Beryllium	7440-41-7	mg/kg	0.4570	UCL	0.4580	UCL	0.4560	UCL	0.4310	UCL
Metals-Cadmium	7440-43-9	mg/kg	11.32	UCL	7.38	UCL	7.80	UCL	4.13	UCL
Metals-Chromium	7440-47-3	mg/kg	32.6	UCL	31.3	UCL	145.8	UCL	94.3	UCL
Metals-Cobalt	7440-48-4	mg/kg	6.53	UCL	6.52	UCL	5.21	UCL	4.58	UCL
Metals-Copper	7440-50-8	mg/kg	49.9	UCL	40.7	UCL	82.1	UCL	52.9	UCL
Metals-Lead	7439-92-1	mg/kg	14.4	UCL	12.4	UCL	498.1	UCL	295	UCL
Metals-Manganese	7439-96-5	mg/kg	244	UCL	293	UCL	166	UCL	166	UCL
Metals-Mercury	7439-97-6	mg/kg	0.0407	UCL	0.0388	UCL	0.0862	UCL	0.0647	UCL
Metals-Molybdenum	7439-98-7	mg/kg	4.40	UCL	4.82	UCL	2.68	UCL	2.56	UCL
Metals-Nickel	7440-02-0	mg/kg	35.4	UCL	36.6	UCL	44.2	UCL	37.1	UCL
Metals-Selenium	7782-49-2	mg/kg	1.70	Max	2.60	Max	--	ND	--	ND
Metals-Thallium	7440-28-0	mg/kg	0.3370	UCL	0.3830	UCL	0.6650	UCL	0.5100	UCL
Metals-Tin	7440-31-5	mg/kg	45.7	UCL	45.2	UCL	45.6	UCL	43.2	UCL
Metals-Vanadium	7440-62-2	mg/kg	28.2	UCL	37.7	UCL	26.9	UCL	24.1	UCL
Metals-Zinc	7440-66-6	mg/kg	88.4	UCL	75.1	UCL	122.6	UCL	121	UCL
PAHs										
PAH-Acenaphthene	83-32-9	mg/kg	0.0510	Max	0.0510	Max	--	ND	0.0049	Max
PAH-Acenaphthylene	208-96-8	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	0.0022	Max	0.0022	Max
PAH-Anthracene	120-12-7	mg/kg	0.0089	Max	0.0089	Max	0.0048	Max	0.0048	Max
CYANIDE										
CYANIDE-Amenable Cyanide	A57-12-5	mg/kg	1.4	Max	1.40	Max	--	No Data	--	No Data
CYANIDE-Total Cyanide	57-12-5	mg/kg	9.8	Max	9.80	Max	--	ND	--	ND

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
DIOXIN										
DIOXIN-Total Avian Dioxin TEQ	URS-TEQ-04	pg/g	0.6370	Max	0.6370	Max	33.8700	Max	33.9	Max
DIOXIN-Total Fish Dioxin TEQ	URS-TEQ-06	pg/g	--	No Data	--	No Data	--	No Data	--	No Data
DIOXIN-Total TEQ	URS-TEQ-02	pg/g	1.1380	Max	1.14	Max	19.0500	Max	19.1	Max
HERBICIDES										
HERB-2,4,5-TP (Silvex)	93-72-1	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	94-82-6	mg/kg	0.0540	Max	0.0182	UCL	--	ND	--	ND
HERB-2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	mg/kg	0.021	Max	0.0570	Max	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
HERB-Dalapon	75-99-0	mg/kg	0.0540	Max	0.0680	Max	--	ND	--	ND
HERB-MCPA	94-74-6	mg/kg	0.82	Max	19.0	Max	--	ND	--	ND
HERB-MCPP	93-65-2	mg/kg	1400	Max	1400	Max	--	ND	--	ND
METALS										
Metals-Barium	7440-39-3	mg/kg	129	UCL	117	UCL	588	UCL	812	UCL
Metals-Beryllium	7440-41-7	mg/kg	0.4570	UCL	0.4580	UCL	0.4560	UCL	0.4310	UCL
Metals-Cadmium	7440-43-9	mg/kg	11.32	UCL	7.38	UCL	7.80	UCL	4.13	UCL
Metals-Chromium	7440-47-3	mg/kg	32.6	UCL	31.3	UCL	145.8	UCL	94.3	UCL
Metals-Cobalt	7440-48-4	mg/kg	6.53	UCL	6.52	UCL	5.21	UCL	4.58	UCL
Metals-Copper	7440-50-8	mg/kg	49.9	UCL	40.7	UCL	82.1	UCL	52.9	UCL
Metals-Lead	7439-92-1	mg/kg	14.4	UCL	12.4	UCL	498.1	UCL	295	UCL
Metals-Manganese	7439-96-5	mg/kg	244	UCL	293	UCL	166	UCL	166	UCL
Metals-Mercury	7439-97-6	mg/kg	0.0407	UCL	0.0388	UCL	0.0862	UCL	0.0647	UCL
Metals-Molybdenum	7439-98-7	mg/kg	4.40	UCL	4.82	UCL	2.68	UCL	2.56	UCL
Metals-Nickel	7440-02-0	mg/kg	35.4	UCL	36.6	UCL	44.2	UCL	37.1	UCL
Metals-Selenium	7782-49-2	mg/kg	1.70	Max	2.60	Max	--	ND	--	ND
Metals-Thallium	7440-28-0	mg/kg	0.3370	UCL	0.3830	UCL	0.6650	UCL	0.5100	UCL
Metals-Tin	7440-31-5	mg/kg	45.7	UCL	45.2	UCL	45.6	UCL	43.2	UCL
Metals-Vanadium	7440-62-2	mg/kg	28.2	UCL	37.7	UCL	26.9	UCL	24.1	UCL
Metals-Zinc	7440-66-6	mg/kg	88.4	UCL	75.1	UCL	122.6	UCL	121	UCL

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PAHs										
PAH-Acenaphthene	83-32-9	mg/kg	0.0510	Max	0.0510	Max	--	ND	0.0049	Max
PAH-Acenaphthylene	208-96-8	mg/kg	--	Not a LQT COPC	--	Not an LQT COPC	0.0022	Max	0.0022	Max
PAH-Anthracene	120-12-7	mg/kg	0.0089	Max	0.0089	Max	0.0048	Max	0.0048	Max
PAH-Benzo(a)anthracene	56-55-3	mg/kg	0.0067	Max	0.0067	Max	0.0077	Max	0.0077	Max
PAH-Benzo(a)pyrene	50-32-8	mg/kg	0.0077	Max	0.0078	Max	0.0190	Max	0.0190	Max
PAH-Benzo(b)fluoranthene	205-99-2	mg/kg	0.0093	Max	0.0051	UCL	0.0060	Max	0.0076	Max
PAH-Benzo(g,h,i)perylene	191-24-2	mg/kg	0.0034	Max	0.0034	Max	--	ND	--	ND
PAH-Benzo(k)fluoranthene	207-08-9	mg/kg	0.0045	Max	0.0045	Max	0.0180	Max	0.0180	Max
PAH-Chrysene	218-01-9	mg/kg	0.0087	UCL	0.0064	UCL	0.0069	UCL	0.0052	UCL
PAH-Fluoranthene	206-44-0	mg/kg	0.0110	Max	0.0038	UCL	0.0051	UCL	0.0048	UCL
PAH-Fluorene	86-73-7	mg/kg	--	ND	--	ND	0.0039	Max	0.0088	Max
PAH-Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	0.0027	Max	0.0027	Max	--	ND	--	ND
PAH-Naphthalene	91-20-3	mg/kg	0.0078	Max	0.0045	UCL	0.0170	Max	0.0410	Max
PAH-Pyrene	129-00-0	mg/kg	0.0093	UCL	0.0070	UCL	0.0069	UCL	0.0059	UCL
PCBs										
PCB-Aroclor 1260	11096-82-5	mg/kg	--	ND	--	ND	0.5500	Max	0.5500	Max
PCB CONGENERS										
PCBConger-Sum of PCB Congeners	SUM-PCBC	pg/g	6858	Max	6858	Max	63575	Max	63575	Max
PCBConger-PCBC TEQ	SUM-PCBC	pg/g	1.14	Max	1.14	Max	7.42	Max	7.42	Max
PCBConger-Total Avian PCBC TEQ	SUM-PCBC	pg/g	13.2	Max	13.2	Max	25.9	Max	25.9	Max
PESTICIDES										
PEST-4,4'-DDD	72-54-8	mg/kg	--	Not a LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
PEST-4,4'-DDE	72-55-9	mg/kg	0.0022	Max	0.0022	Max	0.0100	Max	0.0100	Max
PEST-4,4'-DDT	50-29-3	mg/kg	2.04	UCL	1.24	UCL	0.0810	Max	0.0810	Max
PEST-Aldrin	309-00-2	mg/kg	--	Not a LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
PEST-alpha-BHC	319-84-6	mg/kg	--	Not a LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
PEST-Chlordane, gamma	12789-03-6	mg/kg	--	Not a LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PEST-delta-BHC	319-86-8	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
PEST-Dieldrin	60-57-1	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
PEST-Endosulfan I	959-98-8	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
PEST-Endrin	72-20-8	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
PEST-Heptachlor epoxide	1024-57-3	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
PEST-Hexachlorobenzene	118-74-1	mg/kg	2.035	UCL	1.23	UCL	0.0063	Max	0.0063	Max
PEST-Methoxychlor	72-43-5	mg/kg	--	ND	--	ND	0.0170	Max	0.0170	Max
PEST-Mirex	2385-85-5	mg/kg	0.5800	Max	0.5800	Max	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
SVOCs										
SVOC-Benzoic acid	65-85-0	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	0.4100	Max	0.4100	Max
SVOC-Bis(2-ethylhexyl)phthalate	117-81-7	mg/kg	1.70	Max	1.70	Max	0.4700	Max	0.1630	UCL
SVOC-Diethylphthalate	84-66-2	mg/kg	--	ND	0.3700	Max	0.2400	Max	0.2400	Max
SVOC-Di-n-butylphthalate	84-74-2	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
SVOC-N-Nitrosodimethylamine	62-75-9	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
SVOC-N-Nitrosodipropylamine	621-64-7	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
SVOC-N-Nitrosomethylethylamine	10595-95-6	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
SVOC-N-Nitrosopyrrolidine	930-55-2	mg/kg	--	Not an LQT COPC	--	Not na LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
VOCs										
VOC-1,1,1-Trichloroethane	71-55-6	mg/kg	--	ND	0.0017	Max	--	ND	--	ND
VOC-1,1-Dichloroethane	75-34-3	mg/kg	0.0025	Max	0.0025	Max	--	ND	--	ND
VOC-1,1-Dichloroethylene	75-35-4	mg/kg	--	ND	0.0370	Max	--	ND	--	ND
VOC-1,2-Dichloroethene	540-59-0	mg/kg	0.016	Max	0.0160	Max	--	ND	--	ND
VOC-Acetone	67-64-1	mg/kg	0.0568	UCL	0.0391	UCL	0.0610	Max	0.0610	Max

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PPO-Acetonitrile	75-05-8	mg/kg	0.19	Max	0.1900	Max	--	ND	--	ND
PPO-Acrolein	107-02-8	mg/kg	0.0042	Max	0.0042	Max	--	ND	--	ND
VOC-Benzene	71-43-2	mg/kg	0.0024	Max	0.0019	UCL	0.0019	Max	0.0019	Max
VOC-Carbon disulfide	75-15-0	mg/kg	--	ND	0.0110	Max	0.0185	UCL	0.0131	UCL
VOC-Chloroform	67-66-3	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
VOC-Freon 113 (1,1,2-trichloro-1,2,2-trifluo	76-13-1	mg/kg	0.0036	Max	0.1390	UCL	0.0037	Max	0.0023	UCL
VOC-Isopropanol	67-63-0	mg/kg	--	ND	--	ND	--	ND	--	ND
VOC-Methyl ethyl ketone	78-93-3	mg/kg	0.0082	Max	0.0052	UCL	--	ND	--	ND
VOC-Methylene chloride	75-09-2	mg/kg	--	ND	--	ND	--	ND	--	ND
VOC-Propanal	123-38-6	mg/kg	--	ND	--	ND	1.30	Max	1.30	Max
PPO-Tert-Butyl alcohol (TBA)	75-65-0	mg/kg	0.0400	Max	0.0600	Max	--	ND	--	ND
VOC-Tetrachloroethylene	127-18-4	mg/kg	0.0300	Max	0.0110	UCL	0.0025	Max	0.0060	Max
VOC-Tetrahydrofuran	109-99-9	mg/kg	--	ND	0.1500	Max	--	ND	--	ND
VOC-Toluene	108-88-3	mg/kg	0.0032	Max	0.0032	Max	0.005	Max	0.0050	Max
VOC-Trichloroethylene	79-01-6	mg/kg	0.0031	Max	0.0038	Max	--	ND	--	ND
VOC-Vinyl chloride	75-01-4	mg/kg	--	Not an LQT COPC	--	Not an LQT COPC	--	Not a Maintenance Shed COPC	--	Not a Maintenance Shed COPC
CYANIDE										
CYANIDE-Amenable Cyanide	A57-12-5	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
CYANIDE-Total Cyanide	57-12-5	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
DIOXIN										
DIOXIN-Total Avian Dioxin TEQ	URS-TEQ-04	pg/g	7.39	UCL	3.89	UCL	0.1840	Max	0.1840	Max
DIOXIN-Total Fish Dioxin TEQ	URS-TEQ-06	pg/g	--	No Data	--	No Data	--	No Data	--	No Data
DIOXIN-Total TEQ	URS-TEQ-02	pg/g	2.79	UCL	1.75	UCL	1.11	Max	1.1060	Max
HERBICIDES										
HERB-2,4,5-TP (Silvex)	93-72-1	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	94-82-6	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
HERB-2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
HERB-Dalapon	75-99-0	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
HERB-MCPA	94-74-6	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
HERB-MCPP	93-65-2	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
METALS										
Metals-Barium	7440-39-3	mg/kg	10841	UCL	7203	UCL	138	UCL	162	UCL
Metals-Beryllium	7440-41-7	mg/kg	0.5350	UCL	0.5250	UCL	0.5000	UCL	0.5070	UCL
Metals-Cadmium	7440-43-9	mg/kg	13.1	UCL	4.71	UCL	1.83	UCL	1.54	UCL
Metals-Chromium	7440-47-3	mg/kg	151	UCL	91.3	UCL	107	UCL	67.3	UCL
Metals-Cobalt	7440-48-4	mg/kg	13.0	UCL	14.1	UCL	4.66	UCL	5.39	UCL
Metals-Copper	7440-50-8	mg/kg	89.0	UCL	51.4	UCL	72.2	UCL	28.1	UCL
Metals-Lead	7439-92-1	mg/kg	41.6	UCL	25.5	UCL	61.0	Max	61.0	Max
Metals-Manganese	7439-96-5	mg/kg	437	UCL	525	UCL	198	UCL	271	UCL
Metals-Mercury	7439-97-6	mg/kg	0.0769	UCL	0.0543	UCL	0.0538	UCL	0.0486	UCL
Metals-Molybdenum	7439-98-7	mg/kg	2.69	UCL	3.19	UCL	3.43	UCL	3.36	UCL
Metals-Nickel	7440-02-0	mg/kg	78.4	UCL	47.9	UCL	43.0	UCL	39.6	UCL
Metals-Selenium	7782-49-2	mg/kg	1.70	UCL	1.41	UCL	1.39	UCL	1.37	UCL
Metals-Thallium	7440-28-0	mg/kg	0.3650	UCL	0.3630	UCL	0.3670	UCL	0.3740	UCL
Metals-Tin	7440-31-5	mg/kg	51.7	UCL	50.1	UCL	50.2	UCL	50.4	UCL
Metals-Vanadium	7440-62-2	mg/kg	29.8	UCL	29.0	UCL	31.8	UCL	29.9	UCL
Metals-Zinc	7440-66-6	mg/kg	293	UCL	176	UCL	73.8	UCL	59.6	UCL
PAHs										
PAH-Acenaphthene	83-32-9	mg/kg	--	ND	0.0790	Max	0.7100	Max	0.7100	Max
PAH-Acenaphthylene	208-96-8	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	0.0061	UCL	0.0040	UCL
PAH-Anthracene	120-12-7	mg/kg	0.0033	UCL	0.0027	UCL	0.3300	Max	0.3300	Max
PAH-Benzo(a)anthracene	56-55-3	mg/kg	--	ND	0.0100	Max	0.1900	Max	0.0137	UCL
PAH-Benzo(a)pyrene	50-32-8	mg/kg	0.0096	UCL	0.0066	UCL	0.0411	UCL	0.0261	UCL
PAH-Benzo(b)fluoranthene	205-99-2	mg/kg	0.0044	Max	0.0120	Max	0.0040	Max	0.0150	Max
PAH-Benzo(g,h,i)perylene	191-24-2	mg/kg	0.0075	UCL	0.0059	UCL	0.0114	UCL	0.0080	UCL
PAH-Benzo(k)fluoranthene	207-08-9	mg/kg	0.0094	Max	0.0094	Max	0.0410	Max	0.0068	UCL

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PAH-Chrysene	218-01-9	mg/kg	0.0039	UCL	0.0042	UCL	0.3900	UCL	0.1080	UCL
PAH-Fluoranthene	206-44-0	mg/kg	0.0024	Max	0.0026	UCL	0.0610	UCL	0.0357	UCL
PAH-Fluorene	86-73-7	mg/kg	--	ND	0.1000	Max	2.20	Max	0.2850	UCL
PAH-Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	0.0054	Max	0.0100	Max	0.0130	Max	0.0037	UCL
PAH-Naphthalene	91-20-3	mg/kg	0.0055	UCL	0.0046	UCL	1.20	Max	1.20	Max
PAH-Pyrene	129-00-0	mg/kg	0.0114	UCL	0.0069	UCL	0.1090	UCL	0.1010	UCL
PCBs										
PCB-Aroclor 1260	11096-82-5	mg/kg	0.0320	UCL	0.0288	UCL	1.50	Max	1.50	Max
PCB CONGENERS										
PCBConger-Sum of PCB Congeners	SUM-PCBC	pg/g	5882	UCL	4963	UCL	351480	Max since UCL>Max	351480	Max since UCL>Max
PCBConger-PCBC TEQ	SUM-PCBC	pg/g	1.46	UCL	1.11	UCL	27.1	Max since UCL>Max	27.1	Max since UCL>Max
PCBConger-Total Avian PCBC TEQ	SUM-PCBC	pg/g	4.57	UCL	3.65	UCL	396	Max since UCL>Max	396	Max since UCL>Max
PESTICIDES										
PEST-4,4'-DDD	72-54-8	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
PEST-4,4'-DDE	72-55-9	mg/kg	0.0021	UCL	0.0017	UCL	0.0011	Max	0.0011	Max
PEST-4,4'-DDT	50-29-3	mg/kg	0.0028	UCL	0.0025	UCL	0.0431	UCL	0.0224	UCL
PEST-Aldrin	309-00-2	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
PEST-alpha-BHC	319-84-6	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
PEST-Chlordane, gamma	12789-03-6	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
PEST-delta-BHC	319-86-8	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
PEST-Dieldrin	60-57-1	mg/kg	0.0037	Max	0.0037	Max	0.0150	Max	0.0150	Max
PEST-Endosulfan I	959-98-8	mg/kg	0.0019	UCL	0.0019	UCL	--	Not a Roadway COPC	--	Not a Roadway COPC
PEST-Endrin	72-20-8	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
PEST-Heptachlor epoxide	1024-57-3	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
PEST-Hexachlorobenzene	118-74-1	mg/kg	0.0025	Max	0.0025	Max	0.0065	Max	0.0065	Max

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PEST-Methoxychlor	72-43-5	mg/kg	0.0071	Max	0.0012	UCL	0.0590	Max	0.0036	UCL
PEST-Mirex	2385-85-5	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
SVOCs										
SVOC-Benzoic acid	65-85-0	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
SVOC-Bis(2-ethylhexyl)phthalate	117-81-7	mg/kg	0.3400	Max	0.0952	UCL	2.00	Max	2.00	Max
SVOC-Diethylphthalate	84-66-2	mg/kg	0.2100	Max	0.9100	Max	0.1900	Max	3.10	Max
SVOC-Di-n-butylphthalate	84-74-2	mg/kg	0.4300	Max	0.2180	UCL	--	Not a Roadway COPC	--	Not a Roadway COPC
SVOC-N-Nitrosodimethylamine	62-75-9	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
SVOC-N-Nitrosodipropylamine	621-64-7	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
SVOC-N-Nitrosomethylethylamine	10595-95-6	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
SVOC-N-Nitrosopyrrolidine	930-55-2	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
VOCs										
VOC-1,1,1-Trichloroethane	71-55-6	mg/kg	--	ND	--	ND	--	ND	--	ND
VOC-1,1-Dichloroethane	75-34-3	mg/kg	--	ND	0.0019	Max	--	ND	--	ND
VOC-1,1-Dichloroethylene	75-35-4	mg/kg	--	ND	--	ND	--	ND	--	ND
VOC-1,2-Dichloroethene	540-59-0	mg/kg	--	ND	0.0020	Max	--	ND	--	ND
VOC-Acetone	67-64-1	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
PPO-Acetonitrile	75-05-8	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
PPO-Acrolein	107-02-8	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
VOC-Benzene	71-43-2	mg/kg	0.0018	Max	0.0018	Max	--	ND	--	ND
VOC-Carbon disulfide	75-15-0	mg/kg	0.0116	UCL	0.0112	UCL	--	ND	--	ND
VOC-Chloroform	67-66-3	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
VOC-Freon 113 (1,1,2-trichloro-1,2,2-trifluo)	76-13-1	mg/kg	--	ND	--	ND	--	ND	--	ND
VOC-Isopropanol	67-63-0	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
VOC-Methyl ethyl ketone	78-93-3	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
VOC-Methylene chloride	75-09-2	mg/kg	0.0012	UCL	0.0012	UCL	--	ND	--	ND
VOC-Propanal	123-38-6	mg/kg	0.0710	Max	0.0710	Max	--	ND	--	ND
PPO-Tert-Butyl alcohol (TBA)	75-65-0	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data
VOC-Tetrachloroethylene	127-18-4	mg/kg	--	ND	--	ND	--	ND	--	ND
VOC-Tetrahydrofuran	109-99-9	mg/kg	0.0018	UCL	0.0016	UCL	--	ND	--	ND
VOC-Toluene	108-88-3	mg/kg	--	ND	0.0026	Max	--	ND	--	ND
VOC-Trichloroethylene	79-01-6	mg/kg	--	ND	0.0130	Max	--	ND	--	ND
VOC-Vinyl chloride	75-01-4	mg/kg	--	Not a RCRA COPC	--	Not a RCRA COPC	--	Not a Roadway COPC	--	Not a Roadway COPC
CYANIDE										
CYANIDE-Amenable Cyanide	A57-12-5	mg/kg	--	No Data	--	ND	--	No Data	--	No Data
CYANIDE-Total Cyanide	57-12-5	mg/kg	--	ND	0.6210	Max	--	No Data	--	No Data
DIOXIN										
DIOXIN-Total Avian Dioxin TEQ	URS-TEQ-04	pg/g	3.07	Max	2.48	UCL	5.31	Max	5.31	Max
DIOXIN-Total Fish Dioxin TEQ	URS-TEQ-06	pg/g	--	No Data	--	No Data	--	No Data	--	No Data
DIOXIN-Total TEQ	URS-TEQ-02	pg/g	2.58	Max	2.45	UCL	6.06	Max	6.06	Max
HERBICIDES										
HERB-2,4,5-TP (Silvex)	93-72-1	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	94-82-6	mg/kg	--	ND	--	ND	--	No Data	--	No Data
HERB-2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
HERB-Dalapon	75-99-0	mg/kg	0.0140	Max	0.0180	Max	--	No Data	--	No Data
HERB-MCPA	94-74-6	mg/kg	3.90	Max	4.90	Max	--	No Data	--	No Data
HERB-MCPP	93-65-2	mg/kg	--	ND	0.9200	Max	--	No Data	--	No Data
METALS										
Metals-Barium	7440-39-3	mg/kg	93.0	UCL	213	UCL	187	UCL	153	UCL
Metals-Beryllium	7440-41-7	mg/kg	0.5270	UCL	0.4960	UCL	0.5600	UCL	0.5270	UCL
Metals-Cadmium	7440-43-9	mg/kg	1.49	UCL	1.26	UCL	9.87	UCL	6.53	UCL
Metals-Chromium	7440-47-3	mg/kg	27.0	UCL	31.5	UCL	591	UCL	206	UCL

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
Metals-Cobalt	7440-48-4	mg/kg	6.55	UCL	5.82	UCL	54.7	UCL	32.0	UCL
Metals-Copper	7440-50-8	mg/kg	14.0	UCL	21.2	UCL	461	UCL	271	UCL
Metals-Lead	7439-92-1	mg/kg	11.4	UCL	10.4	UCL	24.6	UCL	18.1	UCL
Metals-Manganese	7439-96-5	mg/kg	239	UCL	217	UCL	353	UCL	255	UCL
Metals-Mercury	7439-97-6	mg/kg	0.0228	UCL	0.0247	UCL	0.0449	UCL	0.0343	UCL
Metals-Molybdenum	7439-98-7	mg/kg	4.01	UCL	3.20	UCL	3.31	UCL	3.77	UCL
Metals-Nickel	7440-02-0	mg/kg	35.8	UCL	32.5	UCL	131.2	UCL	92.2	UCL
Metals-Selenium	7782-49-2	mg/kg	1.32	UCL	1.42	UCL	1.41	UCL	1.36	UCL
Metals-Thallium	7440-28-0	mg/kg	0.7590	UCL	0.7940	UCL	0.3960	UCL	0.4870	UCL
Metals-Tin	7440-31-5	mg/kg	46.7	UCL	45.6	UCL	52.0	UCL	50.4	UCL
Metals-Vanadium	7440-62-2	mg/kg	29.9	UCL	27.8	UCL	32.2	UCL	30.6	UCL
Metals-Zinc	7440-66-6	mg/kg	51.9	UCL	49.6	UCL	240	UCL	158	UCL
PAHs										
PAH-Acenaphthene	83-32-9	mg/kg	0.0260	UCL	0.0113	UCL	--	ND	--	ND
PAH-Acenaphthylene	208-96-8	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
PAH-Anthracene	120-12-7	mg/kg	--	ND	0.0023	Max	--	ND	--	ND
PAH-Benzo(a)anthracene	56-55-3	mg/kg	0.1200	Max	0.1200	Max	--	ND	--	ND
PAH-Benzo(a)pyrene	50-32-8	mg/kg	0.1750	UCL	0.0738	UCL	--	ND	0.0044	Max
PAH-Benzo(b)fluoranthene	205-99-2	mg/kg	0.0170	Max	0.0059	UCL	0.0043	Max	0.0043	Max
PAH-Benzo(g,h,i)perylene	191-24-2	mg/kg	0.0076	Max	0.0076	Max	0.0079	Max	0.0140	Max
PAH-Benzo(k)fluoranthene	207-08-9	mg/kg	0.5500	Max	0.0690	UCL	--	ND	0.0059	Max
PAH-Chrysene	218-01-9	mg/kg	0.0163	UCL	0.0094	UCL	0.0054	Max	0.0054	Max
PAH-Fluoranthene	206-44-0	mg/kg	0.0170	Max	0.0040	UCL	--	ND	--	ND
PAH-Fluorene	86-73-7	mg/kg	0.0340	Max	0.0045	UCL	--	ND	--	ND
PAH-Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	0.0061	Max	0.0061	Max	0.0038	Max	0.0120	Max
PAH-Naphthalene	91-20-3	mg/kg	0.0110	Max	0.0056	UCL	0.0100	Max	0.0100	Max
PAH-Pyrene	129-00-0	mg/kg	0.0613	UCL	0.0597	UCL	0.0033	Max	0.0033	Max
PCBs										
PCB-Aroclor 1260	11096-82-5	mg/kg	0.6320	UCL	0.6310	UCL	0.0260	Max	0.0260	Max

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PCB CONGENERS										
PCBConger-Sum of PCB Congeners	SUM-PCBC	pg/g	11895	Max	82105	Max	5238	Max	4382	UCL
PCBConger-PCBC TEQ	SUM-PCBC	pg/g	1.26	Max	16.4	Max	0.5150	Max	0.5150	Max since UCL>Max
PCBConger-Total Avian PCBC TEQ	SUM-PCBC	pg/g	4.97	Max	161	Max	3.17	Max	2.11	UCL
PESTICIDES										
PEST-4,4'-DDD	72-54-8	mg/kg	0.0120	Max	0.0067	UCL	--	Not a WCS COPC	--	Not a WCS COPC
PEST-4,4'-DDE	72-55-9	mg/kg	0.0310	Max	0.0310	Max	0.0020	Max	0.0020	Max
PEST-4,4'-DDT	50-29-3	mg/kg	0.0407	UCL	0.0471	UCL	0.0057	Max	0.0057	Max
PEST-Aldrin	309-00-2	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
PEST-alpha-BHC	319-84-6	mg/kg	0.0057	UCL	0.0035	UCL	--	Not a WCS COPC	--	Not a WCS COPC
PEST-Chlordane, gamma	12789-03-6	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	0.0045	Max	0.0045	Max
PEST-delta-BHC	319-86-8	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	0.0035	Max	0.0035	Max
PEST-Dieldrin	60-57-1	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
PEST-Endosulfan I	959-98-8	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
PEST-Endrin	72-20-8	mg/kg	0.0600	Max	0.0057	UCL	--	Not a WCS COPC	--	Not a WCS COPC
PEST-Heptachlor epoxide	1024-57-3	mg/kg	0.0690	Max	0.1100	Max	--	Not a WCS COPC	--	Not a WCS COPC
PEST-Hexachlorobenzene	118-74-1	mg/kg	0.0016	Max	0.0016	Max	--	ND	--	ND
PEST-Methoxychlor	72-43-5	mg/kg	0.0110	Max	0.0075	UCL	0.0024	Max	0.0024	Max
PEST-Mirex	2385-85-5	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
SVOCs										
SVOC-Benzoic acid	65-85-0	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
SVOC-Bis(2-ethylhexyl)phthalate	117-81-7	mg/kg	0.2600	Max	0.2600	Max	--	ND	--	ND
SVOC-Diethylphthalate	84-66-2	mg/kg	0.2700	Max	0.2700	Max	2.00	Max	0.4710	UCL
SVOC-Di-n-butylphthalate	84-74-2	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
SVOC-N-Nitrosodimethylamine	62-75-9	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
SVOC-N-Nitrosodipropylamine	621-64-7	mg/kg	0.0540	Max	0.0620	Max	--	Not a WCS COPC	--	Not a WCS COPC
SVOC-N-Nitrosomethylethylamine	10595-95-6	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
SVOC-N-Nitrosopyrrolidine	930-55-2	mg/kg	1.30	Max	0.0864	UCL	--	Not a WCS COPC	--	Not a WCS COPC
VOCs										
VOC-1,1,1-Trichloroethane	71-55-6	mg/kg	--	ND	--	ND	--	ND	--	ND

Table C-1. Summary of EPCs for Onsite Soil

Soil COPC	CAS_RN	Units	Administration Surface Soil_SS		Administration Shallow Soil_SB		Burial Surface Soil_SS		Burial Shallow Soil_SB	
			EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
VOC-1,1-Dichloroethane	75-34-3	mg/kg	--	ND	0.0014	Max	--	ND	--	ND
VOC-1,1-Dichloroethylene	75-35-4	mg/kg	--	ND	--	ND	--	ND	--	ND
VOC-1,2-Dichloroethene	540-59-0	mg/kg	--	ND	0.17	Max	--	ND	--	ND
VOC-Acetone	67-64-1	mg/kg	0.0420	Max	0.0558	UCL	--	No Data	--	No Data
PPO-Acetonitrile	75-05-8	mg/kg	--	ND	--	ND	--	No Data	--	No Data
PPO-Acrolein	107-02-8	mg/kg	--	ND	--	ND	--	No Data	--	No Data
VOC-Benzene	71-43-2	mg/kg	0.0021	UCL	0.0017	UCL	0.0018	Max	0.0018	Max
VOC-Carbon disulfide	75-15-0	mg/kg	0.0100	Max	0.0053	UCL	0.0440	Max	0.0162	UCL
VOC-Chloroform	67-66-3	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC
VOC-Freon 113 (1,1,2-trichloro-1,2,2-trifluo	76-13-1	mg/kg	--	ND	0.0025	Max	0.0072	Max	0.0024	UCL
VOC-Isopropanol	67-63-0	mg/kg	0.0870	Max	0.0870	Max	--	No Data	--	No Data
VOC-Methyl ethyl ketone	78-93-3	mg/kg	0.0058	Max	0.0084	UCL	--	No Data	--	No Data
VOC-Methylene chloride	75-09-2	mg/kg	0.0065	Max	0.0065	Max	0.0012	Max	0.0015	Max
VOC-Propanal	123-38-6	mg/kg	0.0360	Max	0.3600	Max	0.2500	Max	0.2500	Max
PPO-Tert-Butyl alcohol (TBA)	75-65-0	mg/kg	--	ND	0.0360	Max	--	No Data	--	No Data
VOC-Tetrachloroethylene	127-18-4	mg/kg	--	ND	0.0740	Max	0.0029	Max	0.1000	Max
VOC-Tetrahydrofuran	109-99-9	mg/kg	--	ND	0.0031	Max	0.0039	UCL	0.0042	UCL
VOC-Toluene	108-88-3	mg/kg	0.0005	Max	0.0006	UCL	--	ND	--	ND
VOC-Trichloroethylene	79-01-6	mg/kg	--	ND	0.2500	Max	--	ND	--	ND
VOC-Vinyl chloride	75-01-4	mg/kg	--	Not a ROS COPC	--	Not a ROS COPC	--	Not a WCS COPC	--	Not a WCS COPC

Notes:
Source: Table 7-2a from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
1: 95UCL calculated on COPCs with at least eight samples and five detections
2: Max detects used in place of 95UCL for COPCs not meeting criterion (1)
3: Parameters with 100% nondetects have “ND" reported
4: Maximum of duplicate samples selected
5: SS and SB = soil depths 0 to 6 inches and 0 to to 5 feet bgs, respectively
-- = not applicable/not available
> = greater than
bgs = below ground surface
CAS_RN = Chemical Abstracts Service Registry Number
COPC = chemical of potential poncern
EPC = exposure point concentration

FPP = Former Ponds and Pads (Area)
LQT = Liquids Treatment (Area)
Max = maximum
MCPA = 2-methyl-4-chlorophenoxyacetic acid
MCPP = 2-(2-chloro-4-methylphenoxyl) propionic acid
mg/kg = milligram per kilogram
ND = nondetect
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
pg/g = picogram per gram
RCRA = Resource Conservation and Recovery Act
ROS = Remaining Onsite Soils (Area)
SVOC = semivolatile organic compound
TEQ = toxicity equivalent
UCL = upper confidence limit
VOC = volatile organic compound
WCS = West Canyon Spray (Area)

Table C-2. Summary of EPCs for Onsite Soil and Sediment Sitewide Including Ponds 18 and A-5

Soil COPC	CAS_RN	Units	Sitewide with Ponds 18 and A-5 Surface Soil / Sediment_SS		Sitewide with Ponds 18 and A-5 Shallow Soil / Sediment_SB	
			EPC	Basis	EPC	Basis
CYANIDE						
CYANIDE-Amenable Cyanide	A57-12-5	mg/kg	1.40	Max	1.40	Max
CYANIDE-Total Cyanide	57-12-5	mg/kg	9.80	Max	0.4300	UCL
DIOXIN						
DIOXIN-Total Avian Dioxin TEQ	URS-TEQ-04	pg/g	26.0	UCL	10.6	UCL
DIOXIN-Total Fish Dioxin TEQ	URS-TEQ-06	pg/g	1.00	Max	1.00	Max
DIOXIN-Total TEQ	URS-TEQ-02	pg/g	9.85	UCL	6.03	UCL
HERBICIDES						
HERB-2,4,5-TP (Silvex)	93-72-1	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	94-82-6	mg/kg	0.0129	UCL	0.0143	UCL
HERB-2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7		--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
HERB-Dalapon	75-99-0	mg/kg	0.0237	UCL	0.0212	UCL
HERB-MCPA	94-74-6	mg/kg	0.8860	UCL	1.08	UCL
HERB-MCPP	93-65-2	mg/kg	114.6	UCL	48.2	UCL
METALS						
Metals-Barium	7440-39-3	mg/kg	1674	UCL	1030	UCL
Metals-Beryllium	7440-41-7	mg/kg	0.4770	UCL	0.4730	UCL
Metals-Cadmium	7440-43-9	mg/kg	2.80	UCL	2.16	UCL
Metals-Chromium	7440-47-3	mg/kg	65.6	UCL	49.3	UCL
Metals-Cobalt	7440-48-4	mg/kg	8.43	UCL	7.41	UCL
Metals-Copper	7440-50-8	mg/kg	42.2	UCL	25.0	UCL
Metals-Lead	7439-92-1	mg/kg	24.0	UCL	17.1	UCL
Metals-Manganese	7439-96-5	mg/kg	264	UCL	270	UCL
Metals-Mercury	7439-97-6	mg/kg	0.0395	UCL	0.0316	UCL
Metals-Molybdenum	7439-98-7	mg/kg	3.41	UCL	3.44	UCL
Metals-Nickel	7440-02-0	mg/kg	43.7	UCL	39.7	UCL
Metals-Selenium	7782-49-2	mg/kg	1.26	UCL	1.14	UCL
Metals-Thallium	7440-28-0	mg/kg	0.3610	UCL	0.3690	UCL
Metals-Tin	7440-31-5	mg/kg	44.2	UCL	44.1	UCL
Metals-Vanadium	7440-62-2	mg/kg	28.2	UCL	27.6	UCL
Metals-Zinc	7440-66-6	mg/kg	102	UCL	71.5	UCL

Table C-2. Summary of EPCs for Onsite Soil and Sediment Sitewide Including Ponds 18 and A-5

Soil COPC	CAS_RN	Units	Sitewide with Ponds 18 and A-5 Surface Soil / Sediment_SS		Sitewide with Ponds 18 and A-5 Shallow Soil / Sediment_SB	
			EPC	Basis	EPC	Basis
PAHs						
PAH-Acenaphthene	83-32-9	mg/kg	0.0102	UCL	0.0125	UCL
PAH-Acenaphthylene	208-96-8	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PAH-Anthracene	120-12-7	mg/kg	0.0065	UCL	0.0069	UCL
PAH-Benzo(a)anthracene	56-55-3	mg/kg	0.0076	UCL	0.0063	UCL
PAH-Benzo(a)pyrene	50-32-8	mg/kg	0.0148	UCL	0.0106	UCL
PAH-Benzo(b)fluoranthene	205-99-2	mg/kg	0.0047	UCL	0.0058	UCL
PAH-Benzo(g,h,i)perylene	191-24-2	mg/kg	0.0072	UCL	0.0053	UCL
PAH-Benzo(k)fluoranthene	207-08-9	mg/kg	0.0129	UCL	0.0089	UCL
PAH-Chrysene	218-01-9	mg/kg	0.0188	UCL	0.0155	UCL
PAH-Fluoranthene	206-44-0	mg/kg	0.0109	UCL	0.0083	UCL
PAH-Fluorene	86-73-7	mg/kg	0.0633	UCL	0.0266	UCL
PAH-Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	0.0028	UCL	0.0026	UCL
PAH-Naphthalene	91-20-3	mg/kg	0.0174	UCL	0.0116	UCL
PAH-Pyrene	129-00-0	mg/kg	0.0222	UCL	0.0164	UCL
PCBs						
PCB-Aroclor 1260	11096-82-5	mg/kg	0.2170	UCL	0.1820	UCL
PCB CONGENERS						
PCBConger-Sum of PCB Congeners	SUM-PCBC	pg/g	509388	UCL	532925	UCL
PCBConger-PCBC TEQ	SUM-PCBC	pg/g	47.1	UCL	42.0	UCL
PCBConger-Total Avian PCBC TEQ	SUM-PCBC	pg/g	1985	UCL	444	UCL
PESTICIDES						
PEST-4,4'-DDD	72-54-8	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PEST-4,4'-DDE	72-55-9	mg/kg	0.0010	UCL	0.0009	UCL
PEST-4,4'-DDT	50-29-3	mg/kg	0.0722	UCL	0.0432	UCL
PEST-Aldrin	309-00-2	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PEST-alpha-BHC	319-84-6	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PEST-Chlordane, gamma	12789-03-6	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PEST-delta-BHC	319-86-8	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC

Table C-2. Summary of EPCs for Onsite Soil and Sediment Sitewide Including Ponds 18 and A-5

Soil COPC	CAS_RN	Units	Sitewide with Ponds 18 and A-5 Surface Soil / Sediment_SS		Sitewide with Ponds 18 and A-5 Shallow Soil / Sediment_SB	
			EPC	Basis	EPC	Basis
PEST-Dieldrin	60-57-1	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PEST-Endosulfan I	959-98-8	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PEST-Endrin	72-20-8	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PEST-Heptachlor epoxide	1024-57-3	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PEST-Hexachlorobenzene	118-74-1	mg/kg	0.0871	UCL	0.0481	UCL
PEST-Methoxychlor	72-43-5	mg/kg	0.0017	UCL	0.0020	UCL
PEST-Mirex	2385-85-5	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
SVOCs						
SVOC-Benzoic acid	65-85-0	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
SVOC-Bis(2-ethylhexyl)phthalate	117-81-7	mg/kg	0.4360	UCL	0.3210	UCL
SVOC-Diethylphthalate	84-66-2	mg/kg	0.4770	UCL	0.3890	UCL
SVOC-Di-n-butylphthalate	84-74-2	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
SVOC-N-Nitrosodimethylamine	62-75-9	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
SVOC-N-Nitrosodipropylamine	621-64-7	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
SVOC-N-Nitrosomethylethylamine	10595-95-6	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
SVOC-N-Nitrosopyrrolidine	930-55-2	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
VOCs						
VOC-1,1,1-Trichloroethane	71-55-6	mg/kg	0.0660	UCL	0.0430	UCL
VOC-1,1-Dichloroethane	75-34-3	mg/kg	0.0128	UCL	0.1450	UCL
VOC-1,1-Dichloroethylene	75-35-4	mg/kg	0.0026	UCL	0.0051	UCL
VOC-1,2-Dichloroethene	540-59-0	mg/kg	0.0041	UCL	0.4210	UCL
VOC-Acetone	67-64-1	mg/kg	0.0681	UCL	0.0503	UCL
PPO-Acetonitrile	75-05-8	mg/kg	0.1370	UCL	0.0252	UCL
PPO-Acrolein	107-02-8	mg/kg	0.0041	UCL	0.0029	UCL
VOC-Benzene	71-43-2	mg/kg	0.0015	UCL	0.0090	UCL
VOC-Carbon disulfide	75-15-0	mg/kg	0.0094	UCL	0.0087	UCL
VOC-Chloroform	67-66-3	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC

Table C-2. Summary of EPCs for Onsite Soil and Sediment Sitewide Including Ponds 18 and A-5

Soil COPC	CAS_RN	Units	Sitewide with Ponds 18 and A-5 Surface Soil / Sediment_SS		Sitewide with Ponds 18 and A-5 Shallow Soil / Sediment_SB	
			EPC	Basis	EPC	Basis
VOC-Freon 113 (1,1,2-trichloro-1,2,2-trifluo	76-13-1	mg/kg	0.0250	UCL	0.1520	UCL
VOC-Isopropanol	67-63-0	mg/kg	0.0416	UCL	0.0409	UCL
VOC-Methyl ethyl ketone	78-93-3	mg/kg	0.0170	UCL	0.0124	UCL
VOC-Methylene chloride	75-09-2	mg/kg	0.0057	UCL	0.0058	UCL
VOC-Propanal	123-38-6	mg/kg	0.0407	UCL	0.0269	UCL
PPO-Tert-Butyl alcohol (TBA)	75-65-0	mg/kg	0.0145	UCL	0.0154	UCL
VOC-Tetrachloroethylene	127-18-4	mg/kg	0.1530	UCL	10.8	UCL
VOC-Tetrahydrofuran	109-99-9	mg/kg	0.0016	UCL	0.0037	UCL
VOC-Toluene	108-88-3	mg/kg	0.0005	UCL	0.0039	UCL
VOC-Trichloroethylene	79-01-6	mg/kg	0.9940	UCL	1.17	UCL
VOC-Vinyl chloride	75-01-4	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC

Notes:
Source: Table 7-2b from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
1: “Not a Sitewide soil COPC" indicates that this chemical was selected as a Study Area-specific COPC, NOT sitewide
2: 95UCL calculated on COPCs with at least 8 samples and 5 detections
3: Max detects used in place of 95UCL for COPCs not meeting criterion (1)
4: Maximum of duplicate samples selected
5: SS and SB = soil depths 0 to 6 inches and 0 to to 5 feet bgs, respectively

Table C-3. Summary of EPCs for Onsite Soil Sitewide Without Ponds

Soil COPC	CAS_RN	Units	Sitewide Surface Soil_SS		Sitewide Shallow Soil_SB	
			EPC	Basis	EPC	Basis
CYANIDE						
CYANIDE-Amenable Cyanide	A57-12-5	mg/kg	1.40	Max	1.40	Max
CYANIDE-Total Cyanide	57-12-5	mg/kg	9.80	Max	0.4340	UCL
DIOXIN						
DIOXIN-Total Avian Dioxin TEQ	URS-TEQ-04	pg/g	28.3	UCL	11.5	UCL
DIOXIN-Total Fish Dioxin TEQ	URS-TEQ-06	pg/g	--	No Data	--	No Data
DIOXIN-Total TEQ	URS-TEQ-02	pg/g	10.5	UCL	6.45	UCL
HERBICIDES						
HERB-2,4,5-TP (Silvex)	93-72-1	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	94-82-6	mg/kg	0.0125	UCL	0.0138	UCL
HERB-2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
HERB-Dalapon	75-99-0	mg/kg	0.0239	UCL	0.0213	UCL
HERB-MCPA	94-74-6	mg/kg	0.8930	UCL	1.09	UCL
HERB-MCPP	93-65-2	mg/kg	118	UCL	49.2	UCL
METALS						
Metals-Barium	7440-39-3	mg/kg	1676	UCL	1046	UCL
Metals-Beryllium	7440-41-7	mg/kg	0.4790	UCL	0.4750	UCL
Metals-Cadmium	7440-43-9	mg/kg	2.62	UCL	2.07	UCL
Metals-Chromium	7440-47-3	mg/kg	66.0	UCL	49.9	UCL
Metals-Cobalt	7440-48-4	mg/kg	8.32	UCL	7.48	UCL
Metals-Copper	7440-50-8	mg/kg	42.3	UCL	25.1	UCL
Metals-Lead	7439-92-1	mg/kg	24.6	UCL	17.3	UCL
Metals-Manganese	7439-96-5	mg/kg	265	UCL	269	UCL
Metals-Mercury	7439-97-6	mg/kg	0.0394	UCL	0.0320	UCL
Metals-Molybdenum	7439-98-7	mg/kg	3.29	UCL	3.34	UCL
Metals-Nickel	7440-02-0	mg/kg	42.2	UCL	38.5	UCL
Metals-Selenium	7782-49-2	mg/kg	1.11	UCL	1.04	UCL
Metals-Thallium	7440-28-0	mg/kg	0.3620	UCL	0.3690	UCL
Metals-Tin	7440-31-5	mg/kg	44.3	UCL	44.1	UCL
Metals-Vanadium	7440-62-2	mg/kg	28.3	UCL	27.8	UCL

Table C-3. Summary of EPCs for Onsite Soil Sitewide Without Ponds

Soil COPC	CAS_RN	Units	Sitewide Surface Soil_SS		Sitewide Shallow Soil_SB	
			EPC	Basis	EPC	Basis
Metals-Zinc	7440-66-6	mg/kg	103	UCL	71.4	UCL
PAHs						
PAH-Acenaphthene	83-32-9	mg/kg	0.0104	UCL	0.0128	UCL
PAH-Acenaphthylene	208-96-8	mg/kg	--	Not a Sitewide Soil COPC	--	Not a Sitewide Soil COPC
PAH-Anthracene	120-12-7	mg/kg	0.0060	UCL	0.0070	UCL
PAH-Benzo(a)anthracene	56-55-3	mg/kg	0.0075	UCL	0.0068	UCL
PAH-Benzo(a)pyrene	50-32-8	mg/kg	0.0157	UCL	0.0108	UCL
PAH-Benzo(b)fluoranthene	205-99-2	mg/kg	0.0047	UCL	0.0059	UCL
PAH-Benzo(g,h,i)perylene	191-24-2	mg/kg	0.0073	UCL	0.0054	UCL
PAH-Benzo(k)fluoranthene	207-08-9	mg/kg	0.0134	UCL	0.0089	UCL
PAH-Chrysene	218-01-9	mg/kg	0.0181	UCL	0.0151	UCL
PAH-Fluoranthene	206-44-0	mg/kg	0.0115	UCL	0.0085	UCL
PAH-Fluorene	86-73-7	mg/kg	0.0647	UCL	0.0275	UCL
PAH-Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	0.0029	UCL	0.0027	UCL
PAH-Naphthalene	91-20-3	mg/kg	0.0178	UCL	0.0116	UCL
PAH-Pyrene	129-00-0	mg/kg	0.0218	UCL	0.0170	UCL
PCBs						
PCB-Aroclor 1260	11096-82-5	mg/kg	0.2210	UCL	0.1880	UCL
PCB CONGENERS						
PCBConger-Sum of PCB Congeners	SUM-PCBC	pg/g	632606	UCL	652193	UCL
PCBConger-PCBC TEQ	SUM-PCBC	pg/g	49.7	UCL	44.0	UCL
PCBConger-Total Avian PCBC TEQ	SUM-PCBC	pg/g	2563	UCL	467	UCL

Notes:
Source: Table 7-2c from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
1: “Not a Sitewide soil COPC" indicates that this chemical was selected as a Study Area-specific COPC, NOT Sitewide
2: 95UCL calculated on COPCs with at least 8 samples and 5 detections
3: Max detects used in place of 95UCL for COPCs not meeting criterion (1)
4: Maximum of duplicate samples selected
5: SS and SB = soil depths 0 to 6 inches and 0 to to 5 feet bgs, respectively

Table C-4. Summary of EPCs for Offsite Soil

Soil COPC	Units	B-Drainage Offsite Soil_SB and SS	
		EPC	Basis
CYANIDE			
CYANIDE-Amenable Cyanide	mg/kg	--	No Data
CYANIDE-Total Cyanide	mg/kg	--	ND
DIOXIN			
DIOXIN-Total Avian Dioxin TEQ	pg/g	13.1	Max
DIOXIN-Total Fish Dioxin TEQ	pg/g	--	No Data
DIOXIN-Total TEQ	pg/g	2.16	Max
HERBICIDES			
HERB-2,4,5-TP (Silvex)	mg/kg	--	No Data
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	mg/kg	--	ND
HERB-2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	mg/kg	--	No Data
HERB-Dalapon	mg/kg	--	ND
HERB-MCPA	mg/kg	--	ND
HERB-MCPP	mg/kg	--	ND
METALS			
Metals-Barium	mg/kg	93.0	Max
Metals-Beryllium	mg/kg	0.67	Max
Metals-Cadmium	mg/kg	1.80	Max
Metals-Chromium	mg/kg	33.0	Max
Metals-Cobalt	mg/kg	8.60	Max
Metals-Copper	mg/kg	12.0	Max
Metals-Lead	mg/kg	8.5	Max
Metals-Manganese	mg/kg	300	Max
Metals-Mercury	mg/kg	--	ND
Metals-Molybdenum	mg/kg	2.70	Max
Metals-Nickel	mg/kg	33.0	Max
Metals-Selenium	mg/kg	--	ND
Metals-Thallium	mg/kg	0.36	Max
Metals-Tin	mg/kg	40.0	Max
Metals-Vanadium	mg/kg	39.0	Max
Metals-Zinc	mg/kg	46.0	Max

Table C-4. Summary of EPCs for Offsite Soil

Soil COPC	Units	B-Drainage Offsite Soil_SB and SS	
		EPC	Basis
PAHs			
PAH-Acenaphthene	mg/kg	--	ND
PAH-Acenaphthylene	mg/kg	--	No Data
PAH-Anthracene	mg/kg	--	ND
PAH-Benzo(a)anthracene	mg/kg	--	ND
PAH-Benzo(a)pyrene	mg/kg	--	ND
PAH-Benzo(b)fluoranthene	mg/kg	--	ND
PAH-Benzo(g,h,i)perylene	mg/kg	--	ND
PAH-Benzo(k)fluoranthene	mg/kg	--	ND
PAH-Chrysene	mg/kg	--	ND
PAH-Fluoranthene	mg/kg	--	ND
PAH-Fluorene	mg/kg	--	ND
PAH-Indeno(1,2,3-c,d)pyrene	mg/kg	--	ND
PAH-Naphthalene	mg/kg	--	ND
PAH-Pyrene	mg/kg	--	ND
PCBs			
PCB-Aroclor 1260	mg/kg	--	ND
PCB CONGENERS			
PCBConger-Sum of PCB Congeners	pg/g	--	No Data
PCBConger-PCBC TEQ	pg/g	--	No Data
PCBConger-Total Avian PCBC TEQ	pg/g	--	No Data

Notes:
Source: Table 7-3 from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
1: 95UCL calculated on COPCs with at least 8 samples and 5 detections
2: Max detects used in place of 95UCL for COPCs not meeting criterion (1)
3: Parameters with 100% nondetects have "ND" reported
4: Maximum of duplicate samples selected
5: SS and SB = soil depths 0 to 6 inches and 0 to to 5 feet bgs, respectively
-- = not applicable/not available

Table C-5. Summary of EPCs for Onsite Sediment

Onsite Ponds Sediment COPC	Units	A Series_SB		A Series_SS		Pond 13_SB		Pond13_SS		Pond18_SB		Pond18_SS		Pond A5_SB	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
DIOXIN															
DIOXIN-Total Avian Dioxin TEQ	pg/g	0.3480	Max	0.3480	Max	0.0405	Max	0.0088	Max	1.07	Max	1.07	Max	0.0434	Max
DIOXIN-Total Fish Dioxin TEQ	pg/g	0.2900	Max	0.2900	Max	0.0144	Max	0.0033	Max	1.00	Max	1.00	Max	0.0351	Max
DIOXIN-Total TEQ	pg/g	0.2970	Max	0.2970	Max	0.1110	Max	0.0238	Max	1.50	Max	1.50	Max	0.0957	Max
HERBICIDES															
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	mg/kg	0.0410	Max	0.0410	Max	--	ND	--	ND	0.0450	Max	0.0450	Max	--	ND
HERB-Dichlorprop	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
HERB-MCPP	mg/kg	--	ND	--	ND	--	ND	--	ND	3.10	Max	3.10	Max	2.00	Max
METALS															
Metals-Barium	mg/kg	84.4	UCL	160	Max	86.4	UCL	85.0	Max	122	UCL	200	Max	4126	UCL
Metals-Cadmium	mg/kg	19.3	UCL	12.7	UCL	2.39	UCL	4.80	Max	7.48	UCL	8.10	Max	14.1	UCL
Metals-Chromium	mg/kg	23.2	UCL	28.0	Max	33.6	UCL	27.0	Max	34.9	UCL	55.0	Max	54.7	UCL
Metals-Copper	mg/kg	24.7	UCL	33.4	UCL	16.2	UCL	19.9	Max	32.0	UCL	55.0	Max	38.3	UCL
Metals-Lead	mg/kg	9.77	Max	9.77	Max	8.62	Max	8.62	Max	12.0	Max	12.0	Max	--	ND
Metals-Manganese	mg/kg	312	UCL	280	Max	139	UCL	180	Max	143.5	UCL	130	Max	793	UCL
Metals-Mercury	mg/kg	0.0400	Max	0.0400	Max	0.0500	Max	0.0500	Max	0.0480	Max	0.0480	Max	--	ND
Metals-Molybdenum	mg/kg	8.50	UCL	21.0	Max	2.40	Max	--	ND	6.44	UCL	11.0	Max	10.7	UCL
Metals-Nickel	mg/kg	87.7	UCL	118	UCL	48.2	UCL	85.8	Max	110	UCL	120	Max	116	UCL
Metals-Selenium	mg/kg	9.40	Max	9.40	Max	6.55	UCL	3.10	Max	7.62	UCL	15.0	Max	7.00	Max
Metals-Thallium	mg/kg	0.3760	UCL	0.5100	Max	0.3400	Max	--	ND	0.5390	UCL	0.6700	Max	0.7900	Max
Metals-Tin	mg/kg	47.1	UCL	47.0	Max	60.6	UCL	69.0	Max	54.0	UCL	62.0	Max	43.9	UCL
Metals-Zinc	mg/kg	76.9	UCL	90.2	UCL	53.9	UCL	72.3	Max	73.9	UCL	90.0	Max	93.8	UCL

Table C-5. Summary of EPCs for Onsite Sediment

Onsite Ponds Sediment COPC	Units	A Series_SB		A Series_SS		Pond 13_SB		Pond13_SS		Pond18_SB		Pond18_SS		Pond A5_SB	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PAHs															
PAH-2-Methylnaphthalene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Benzo(a)anthracene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Benzo(a)pyrene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Benzo(b)fluoranthene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Benzo(g,h,i)perylene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Chrysene	mg/kg	--	ND	--	ND	--	ND	--	ND	0.0024	Max	0.0024	Max	--	ND
PAH-Fluoranthene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Fluorene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Indeno(1,2,3-c,d)pyrene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Naphthalene	mg/kg	0.0039	Max	0.0039	Max	0.0170	Max	0.0170	Max	0.0069	Max	0.0069	Max	0.0090	Max
PAH-Phenanthrene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Pyrene	mg/kg	0.0067	Max	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PCBs															
PCB-Aroclor 1260	mg/kg	0.0240	Max	--	ND	0.0250	Max	--	ND	--	ND	--	ND	--	ND
PCB CONGENERS															
PCBConger-Sum of PCB Congeners	pg/g	192	Max	192	Max	3492	Max	3492	Max	3060	Max	3060	Max	4463	Max
PCB-PCBC TEQ	pg/g	0.0024	Max	0.0019	Max	0.5120	Max	0.5120	Max	0.7530	Max	0.7530	Max	0.8990	Max
PCB-Avian PCBC TEQ	pg/g	0.2660	Max	0.1800	Max	3.48	Max	3.48	Max	4.93	Max	4.93	Max	6.49	Max
PESTICIDES															
PEST-4,4'-DDD	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-4,4'-DDE	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-4,4'-DDT	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND

Table C-5. Summary of EPCs for Onsite Sediment

Onsite Ponds Sediment COPC	Units	A Series_SB		A Series_SS		Pond 13_SB		Pond13_SS		Pond18_SB		Pond18_SS		Pond A5_SB	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PEST-Chlordane, alpha	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-Endosulfan I	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-Endosulfan II	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-Endosulfan sulfate	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-Endrin	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-Heptachlor	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-Hexachlorobenzene	mg/kg	--	ND	--	ND	--	ND	--	ND	0.0013	Max	--	ND	--	ND
PEST-Kepone	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
VOCs															
VOC-1,1-Dichloroethane	mg/kg	--	ND	--	ND	--	ND	--	ND	0.0020	Max	--	ND	0.0312	UCL
VOC-1,2-Dichloroethene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	0.0058	Max
VOC-Acetone	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data
VOC-Benzene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	0.0180	UCL
VOC-Carbon disulfide	mg/kg	--	ND	--	ND	0.1500	Max	0.1500	Max	0.0310	Max	0.0310	Max	0.0540	Max
VOC-Diisopropyl ether	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	0.0026	UCL
VOC-Ethylbenzene	mg/kg	0.0033	Max	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
VOC-Freon 113 (1,1,2-trichloro-1,2,2-trifluo	mg/kg	--	ND	--	ND	--	ND	--	ND	0.0070	Max	--	ND	0.0140	Max
VOC-Methyl ethyl ketone	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data
VOC-Methyl isobutyl ketone (MIBK)	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data
VOC-Methylcyclopentane	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	0.2800	Max
VOC-Methylene chloride	mg/kg	0.0300	Max	0.0026	Max	--	ND	--	ND	0.0060	Max	0.0060	Max	0.0140	Max
VOC-Propanal	mg/kg	--	ND	--	ND	--	ND	--	ND	0.1200	Max	--	ND	0.0180	Max
VOC-Tetrahydrofuran	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	0.0042	Max

Table C-5. Summary of EPCs for Onsite Sediment

Onsite Ponds Sediment COPC	Units	A Series_SB		A Series_SS		Pond 13_SB		Pond13_SS		Pond18_SB		Pond18_SS		Pond A5_SB	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
VOC-Trichloroethylene	mg/kg	--	ND	--	ND	--	ND	--	ND	0.0036	Max	--	ND	--	ND
DIOXIN															
DIOXIN-Total Avian Dioxin TEQ	pg/g	0.0434	Max	0.3830	Max	0.3830	Max	0.3830	Max	0.3830	Max	0.9830	UCL	1.07	Max
DIOXIN-Total Fish Dioxin TEQ	pg/g	0.0351	Max	0.1360	Max	0.1360	Max	0.2900	Max	0.2900	Max	0.8320	UCL	1.00	Max
DIOXIN-Total TEQ	pg/g	0.0957	Max	0.2150	Max	0.2150	Max	0.2970	Max	0.2970	Max	0.7780	UCL	1.50	Max
HERBICIDES															
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	mg/kg	--	ND	0.1000	Max	0.1000	Max	0.1000	Max	0.1000	Max	0.0616	UCL	0.1000	Max
HERB-Dichlorprop	mg/kg	--	ND	0.0200	Max	0.0200	Max	0.0200	Max	0.0200	Max	0.0200	Max	0.0200	Max
HERB-MCPP	mg/kg	2.00	Max	1.00	Max	1.00	Max	1.00	Max	1.00	Max	3.10	Max	3.10	Max
METALS															
Metals-Barium	mg/kg	4400	Max	627	UCL	750	Max	673	UCL	447	UCL	868	UCL	3036	UCL
Metals-Cadmium	mg/kg	26	Max	1.83	UCL	2.38	UCL	4.92	UCL	8.67	UCL	5.53	UCL	10.1	UCL
Metals-Chromium	mg/kg	76	Max	31.1	UCL	42.0	Max	27.2	UCL	30.6	UCL	29.2	UCL	40.8	UCL
Metals-Copper	mg/kg	56	Max	20.4	UCL	22.74	UCL	19.8	UCL	24.5	UCL	21.3	UCL	28.7	UCL
Metals-Lead	mg/kg	--	ND	9.55	UCL	9.08	UCL	8.45	UCL	8.67	UCL	8.36	UCL	9.05	UCL
Metals-Manganese	mg/kg	430	Max	218	UCL	340	Max	210	UCL	231	UCL	228	UCL	231	UCL
Metals-Mercury	mg/kg	--	ND	0.0306	UCL	0.0384	UCL	0.0284	UCL	0.0358	UCL	0.0274	UCL	0.0358	UCL
Metals-Molybdenum	mg/kg	15	Max	3.56	UCL	6.30	Max	4.43	UCL	8.70	UCL	5.11	UCL	8.77	UCL
Metals-Nickel	mg/kg	180	Max	39.5	UCL	46.5	UCL	53.3	UCL	72.2	UCL	70.1	UCL	101	UCL
Metals-Selenium	mg/kg	7.00	Max	2.7	Max	2.70	Max	2.85	UCL	9.40	Max	3.18	UCL	5.25	UCL
Metals-Thallium	mg/kg	--	ND	0.3380	UCL	0.2900	Max	0.3370	UCL	0.5100	Max	0.3550	UCL	0.4440	UCL
Metals-Tin	mg/kg	--	ND	49.5	UCL	40.0	Max	49.3	UCL	69.0	Max	47.9	UCL	54.4	UCL
Metals-Zinc	mg/kg	110	Max	62.8	UCL	69.1	UCL	63.4	UCL	71.7	UCL	65.9	UCL	75.7	UCL

Table C-5. Summary of EPCs for Onsite Sediment

Onsite Ponds Sediment COPC	Units	A Series_SB		A Series_SS		Pond 13_SB		Pond13_SS		Pond18_SB		Pond18_SS		Pond A5_SB	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PAHs															
PAH-2-Methylnaphthalene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Benzo(a)anthracene	mg/kg	--	ND	0.0088	Max	--	ND	0.0088	Max	--	ND	0.0088	Max	--	ND
PAH-Benzo(a)pyrene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Benzo(b)fluoranthene	mg/kg	--	ND	0.0086	Max	--	ND	0.0086	Max	--	ND	0.0086	Max	--	ND
PAH-Benzo(g,h,i)perylene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Chrysene	mg/kg	--	ND	0.0260	Max	0.0110	Max	0.0260	Max	0.0110	Max	0.0043	UCL	0.0110	Max
PAH-Fluoranthene	mg/kg	--	ND	0.0120	Max	--	ND	0.0120	Max	--	ND	0.0120	Max	--	ND
PAH-Fluorene	mg/kg	--	ND	0.0027	Max	0.0027	Max	0.0027	Max	0.0027	Max	0.0027	Max	0.0027	Max
PAH-Indeno(1,2,3-c,d)pyrene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Naphthalene	mg/kg	0.0090	Max	0.0080	Max	--	ND	0.0170	Max	0.0170	Max	0.0050	UCL	0.0069	UCL
PAH-Phenanthrene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Pyrene	mg/kg	--	ND	0.0109	UCL	0.017	Max	0.0067	UCL	0.0170	Max	0.0056	UCL	0.0170	Max
PCBs															
PCB-Aroclor 1260	mg/kg	--	ND	0.0715	UCL	0.099	Max	0.0454	UCL	0.0658	UCL	0.0391	UCL	0.0573	UCL
PCB CONGENERS															
PCBConger-Sum of PCB Congeners	pg/g	4463	Max	163621	Max	163621	Max	161106	Max since UCL>Max	163621	Max	93590	UCL	127242	UCL
PCB-PCBC TEQ	pg/g	0.8990	Max	11.6	Max	11.64	Max	6.15	UCL	11.6	Max	9.52	UCL	11.6	Max since UCL>Max
PCB-Avian PCBC TEQ	pg/g	6.49	Max	109	Max	109	Max	88.3	Max	109	Max	70.3	UCL	94.4	UCL
PESTICIDES															
PEST-4,4'-DDD	mg/kg	--	ND	0.0120	Max	0.0120	Max	0.0120	Max	0.0120	Max	0.0120	Max	0.0120	Max
PEST-4,4'-DDE	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND

Table C-5. Summary of EPCs for Onsite Sediment

Onsite Ponds Sediment COPC	Units	A Series_SB		A Series_SS		Pond 13_SB		Pond13_SS		Pond18_SB		Pond18_SS		Pond A5_SB	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PEST-4,4'-DDT	mg/kg	--	ND	0.0054	UCL	0.0081	Max	0.0047	UCL	0.0081	Max	0.0045	UCL	0.0081	Max
PEST-Chlordane, alpha	mg/kg	--	ND	0.0032	Max	--	ND	0.0032	Max	--	ND	0.0032	Max	--	ND
PEST-Endosulfan I	mg/kg	--	ND	0.0013	Max	--	ND	0.0013	Max	--	ND	0.0013	Max	--	ND
PEST-Endosulfan II	mg/kg	--	ND	0.0068	Max	--	ND	0.0068	Max	--	ND	0.0068	Max	--	ND
PEST-Endosulfan sulfate	mg/kg	--	ND	0.0028	UCL	0.0089	Max	0.0020	UCL	0.0089	Max	0.0018	UCL	0.0089	Max
PEST-Endrin	mg/kg	--	ND	0.0031	Max	--	ND	0.0031	Max	--	ND	0.0031	Max	--	ND
PEST-Heptachlor	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-Hexachlorobenzene	mg/kg	--	ND	0.0017	Max	0.0010	Max	0.0017	Max	0.0010	Max	0.0017	Max	0.0010	Max
PEST-Kepone	mg/kg	--	ND	0.0032	Max	--	ND	0.0032	Max	--	ND	0.0032	Max	--	ND
VOCs															
VOC-1,1-Dichloroethane	mg/kg	0.0520	Max	0.0081	UCL	0.0120	Max	0.0050	UCL	0.0120	Max	0.0076	UCL	0.0520	Max
VOC-1,2-Dichloroethene	mg/kg	0.0058	Max	0.0057	Max	--	ND	0.0057	Max	--	ND	0.0058	Max	0.0058	Max
VOC-Acetone	mg/kg	--	No Data	0.0650	Max	0.0650	Max	0.0650	Max	0.0650	Max	0.0650	Max	0.0650	Max
VOC-Benzene	mg/kg	0.0270	Max	0.0052	Max	--	ND	0.0052	Max	--	ND	0.0042	UCL	0.0270	Max
VOC-Carbon disulfide	mg/kg	0.0540	Max	0.0186	UCL	0.0520	Max	0.0207	UCL	0.0489	UCL	0.0186	UCL	0.0420	UCL
VOC-Diisopropyl ether	mg/kg	0.0040	Max	--	ND	--	ND	--	ND	--	ND	0.0012	UCL	0.0040	Max
VOC-Ethylbenzene	mg/kg	--	ND	0.0032	Max	--	ND	0.0033	Max	--	ND	0.0033	Max	--	ND
VOC-Freon 113 (1,1,2-trichloro-1,2,2-trifluo	mg/kg	--	ND	0.0120	Max	--	ND	0.0120	Max	--	ND	0.0032	UCL	--	ND
VOC-Methyl ethyl ketone	mg/kg	--	No Data	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
VOC-Methyl isobutyl ketone (MIBK)	mg/kg	--	No Data	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
VOC-Methylcyclopentane	mg/kg	0.2800	Max	--	ND	--	ND	--	ND	--	ND	0.2800	Max	0.2800	Max
VOC-Methylene chloride	mg/kg	0.0140	Max	0.0038	UCL	0.0029	Max	0.0047	UCL	0.0029	Max	0.0042	UCL	0.0045	UCL
VOC-Propanal	mg/kg	--	ND	0.0350	Max	--	ND	0.0350	Max	--	ND	0.0211	UCL	--	ND

Table C-5. Summary of EPCs for Onsite Sediment

Onsite Ponds Sediment COPC	Units	A Series_SB		A Series_SS		Pond 13_SB		Pond13_SS		Pond18_SB		Pond18_SS		Pond A5_SB	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
VOC-Tetrahydrofuran	mg/kg	0.0042	Max	0.0300	Max	--	ND	0.0300	Max	--	ND	0.0036	UCL	0.0042	Max
VOC-Trichloroethylene	mg/kg	--	ND	0.0087	Max	--	ND	0.0087	Max	--	ND	0.0087	Max	--	ND

Notes:

Source: Table 7-4 from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
1: 95UCL calculated on COPCs with at least 8 samples and 5 detections
2: Max detects used in place of 95UCL for COPCs not meeting criterion (1)
3: Parameters with 100% nondetects have "ND" reported
4: Maximum of duplicate samples selected
5: SS and SB = soil depths 0 to 6 inches and 0 to to 5 feet bgs, respectively

Table C-6. Summary of EPCs for Offsite Sediment

Offsite Drainages Sediment COPC	Units	A-Drainage Sediment		North Drainage Sediment		Lower C Drainage Sediment		Upper C Drainage Sediment		Offsite Drainages Sediment	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
DIOXIN											
DIOXIN-Total Avian Dioxin TEQ	pg/g	1.11	Max	0.2800	Max	0.0897	Max	--	No Data	1.11	Max
DIOXIN-Total Fish Dioxin TEQ	pg/g	0.9950	Max	0.1690	Max	0.0186	Max	--	No Data	0.9950	Max
DIOXIN-Total TEQ	pg/g	1.60	Max	0.3250	Max	0.2270	Max	--	No Data	1.60	Max
HERBICIDES											
HERB-2,4-Dichlorophenoxybutyric acid (2,4-DB)	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
HERB-Dichlorprop	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
HERB-MCPP	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
METALS											
Metals-Barium	mg/kg	120	Max	98	Max	110	Max	96	Max	98.01	UCL
Metals-Cadmium	mg/kg	0.8600	Max	1.80	Max	1.70	Max	4.90	Max	2.22	UCL
Metals-Chromium	mg/kg	26	Max	29	Max	30	Max	41	Max	29.2	UCL
Metals-Copper	mg/kg	9.50	Max	10	Max	15	Max	24	Max	14.0	UCL
Metals-Lead	mg/kg	9.80	Max	8.8	Max	--	ND	--	ND	9.80	Max
Metals-Manganese	mg/kg	840	Max	640	Max	410	Max	110	Max	416	UCL
Metals-Mercury	mg/kg	--	ND	0.0330	Max	--	ND	--	ND	0.0330	Max
Metals-Molybdenum	mg/kg	3.00	Max	6.30	Max	4.40	Max	6.40	Max	4.238	UCL
Metals-Nickel	mg/kg	25.0	Max	34	Max	35	Max	43	Max	33.26	UCL
Metals-Selenium	mg/kg	1.10	Max	3.50	Max	2.80	Max	--	ND	3.50	Max
Metals-Thallium	mg/kg	0.2600	Max	0.2600	Max	--	ND	--	ND	0.2600	Max
Metals-Tin	mg/kg	52.0	Max	51.0	Max	53.0	Max	48.0	Max	50.5	UCL
Metals-Zinc	mg/kg	37.0	Max	43.0	Max	53.0	Max	88.0	Max	51.0	UCL
PAHs											
PAH-2-Methylnaphthalene	mg/kg	0.0012	Max	0.0010	Max	0.0013	Max	0.0010	Max	0.0011	UCL
PAH-Benzo(a)anthracene	mg/kg	0.0038	Max	0.0005	Max	0.0016	Max	0.0010	Max	0.0014	UCL
PAH-Benzo(a)pyrene	mg/kg	0.0035	Max	0.0003	Max	0.0013	Max	0.0009	Max	0.0012	UCL
PAH-Benzo(b)fluoranthene	mg/kg	0.0026	Max	0.0007	Max	--	ND	--	ND	0.0026	Max
PAH-Benzo(g,h,i)perylene	mg/kg	0.0029	Max	0.0005	Max	0.0012	Max	0.0008	Max	0.0011	UCL
PAH-Chrysene	mg/kg	0.0050	Max	0.0008	Max	0.0020	Max	0.0017	Max	0.0021	UCL

Table C-6. Summary of EPCs for Offsite Sediment

Offsite Drainages Sediment COPC	Units	A-Drainage Sediment		North Drainage Sediment		Lower C Drainage Sediment		Upper C Drainage Sediment		Offsite Drainages Sediment	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
PAH-Fluoranthene	mg/kg	0.0089	Max	0.0012	Max	0.0021	Max	0.0011	Max	0.0030	UCL
PAH-Fluorene	mg/kg	0.0006	Max	--	ND	0.0005	Max	--	ND	0.0006	Max
PAH-Indeno(1,2,3-c,d)pyrene	mg/kg	0.0030	Max	0.0004	Max	0.0007	Max	0.0005	Max	0.0010	UCL
PAH-Naphthalene	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Phenanthrene	mg/kg	0.0099	Max	0.0008	Max	0.0028	Max	0.0009	Max	0.0031	UCL
PAH-Pyrene	mg/kg	0.0110	Max	0.0009	Max	0.0043	Max	0.0016	Max	0.0035	UCL
PCBs											
PCB-Aroclor 1260	mg/kg	0.0057	Max	--	ND	--	ND	--	ND	0.0057	Max
PCB CONGENERS											
PCBConger-Sum of PCB Congeners	pg/g	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data
PCB-PCBC TEQ	pg/g	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data
PCB-Avian PCBC TEQ	pg/g	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data
PESTICIDES											
PEST-4,4'-DDD	mg/kg	0.0009	Max	0.0009	Max	0.0008	Max	0.0025	Max	0.0012	UCL
PEST-4,4'-DDE	mg/kg	0.0018	Max	0.0003	Max	0.0007	Max	0.0022	Max	0.0010	UCL
PEST-4,4'-DDT	mg/kg	0.0003	Max	0.0005	Max	--	ND	0.0011	Max	0.0011	Max
PEST-Chlordane, alpha	mg/kg	0.0004	Max	--	ND	--	ND	0.0004	Max	0.0004	Max
PEST-Endosulfan I	mg/kg	0.0012	Max	0.0003	Max	0.0012	Max	--	ND	0.0012	Max
PEST-Endosulfan II	mg/kg	--	ND	0.0011	Max	--	ND	--	ND	0.0011	Max
PEST-Endosulfan sulfate	mg/kg	0.0012	Max	--	ND	--	ND	--	ND	0.0012	Max
PEST-Endrin	mg/kg	--	ND	--	ND	--	ND	--	ND	--	ND
PEST-Heptachlor	mg/kg	--	ND	0.0004	Max	0.0006	Max	0.0003	Max	0.0006	Max
PEST-Hexachlorobenzene	mg/kg	0.0003	Max	0.0006	Max	0.0013	Max	0.0005	Max	0.0013	Max
PEST-Kepone	mg/kg	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data
VOCs											
VOC-1,1-Dichloroethane	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
VOC-1,2-Dichloroethene	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
VOC-Acetone	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
VOC-Benzene	mg/kg	0.0033	Max	--	ND	--	ND	--	No Data	0.0033	Max

Table C-6. Summary of EPCs for Offsite Sediment

Offsite Drainages Sediment COPC	Units	A-Drainage Sediment		North Drainage Sediment		Lower C Drainage Sediment		Upper C Drainage Sediment		Offsite Drainages Sediment	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
VOC-Carbon disulfide	mg/kg	0.0100	Max	--	ND	--	ND	--	No Data	0.0100	Max
VOC-Diisopropyl ether	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
VOC-Ethylbenzene	mg/kg	--	ND	0.0069	Max	--	ND	--	No Data	0.0069	Max
VOC-Freon 113 (1,1,2-trichloro-1,2,2-trifluo	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
VOC-Methyl ethyl ketone	mg/kg	0.0100	Max	--	ND	0.0240	Max	--	No Data	0.0240	Max
VOC-Methyl isobutyl ketone (MIBK)	mg/kg	--	ND	--	ND	0.0059	Max	--	No Data	0.0059	Max
VOC-Methylcyclopentane	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
VOC-Methylene chloride	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
VOC-Propanal	mg/kg	--	ND	--	ND	0.9400	Max	--	No Data	0.9400	Max
VOC-Tetrahydrofuran	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND
VOC-Trichloroethylene	mg/kg	--	ND	--	ND	--	ND	--	No Data	--	ND

Notes:
Source: Table 7-5 from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
1: 95UCL calculated on COPCs with at least 8 samples and 5 detections
2: Max detects used in place of 95UCL for COPCs not meeting criterion (1)
3: Parameters with 100% nondetects have "ND" reported
4: Maximum of duplicate samples selected
5: SS and SB = soil depths 0 to 6 inches and 0 to to 5 feet bgs, respectively

Table C-7. Summary of EPCs for Onsite Surface Water

Onsite Pond Surface Water COPC	Units	A-Series Pond Surface Water		Pond A-5 Surface Water		Pond 13 Surface Water		Pond 18 Surface Water		RCF Surface Water		RCF, A-Series, Pond 13 Surface Water		Pondwide Surface Water	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
DIOXIN															
DIOXIN-Total Avian Dioxin TEQ	pg/L	--	ND	0.0072	Max	0.0029	Max	0.0022	Max	0.0025	Max	0.0029	Max	0.0072	Max
DIOXIN-Total Fish Dioxin TEQ	pg/L	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
DIOXIN-Total TEQ	pg/L	--	ND	0.0217	Max	0.0087	Max	0.0065	Max	0.0075	Max	0.0087	Max	0.0217	Max
METALS															
Metals-Antimony	µg/L	0.4800	Max	0.4500	Max	--	ND	4.8	Max	--	ND	0.4800	Max	4.80	Max
Metals-Antimony (Dissolved)	µg/L	1.00	Max	1.10	Max	--	ND	0.6400	Max	--	ND	1.00	Max	1.10	Max
Metals-Arsenic	µg/L	210	Max	330	Max	310	Max	99	Max	190	Max	310	Max	220	UCL
Metals-Arsenic (Dissolved)	µg/L	290	Max	250	Max	710	Max	90	Max	400	Max	710	Max	390	UCL
Metals-Barium	µg/L	41	Max	48	Max	56	Max	39	Max	41	Max	56	Max	40.1	UCL
Metals-Barium (Dissolved)	µg/L	140	Max	150	Max	150	Max	200	Max	190	Max	190	Max	149	UCL
Metals-Beryllium	µg/L	0.5100	Max	1.40	Max	0.2300	Max	0.7100	Max	--	ND	0.5100	Max	1.40	Max
Metals-Beryllium (Dissolved)	µg/L	0.0190	Max	0.3500	Max	0.4400	Max	0.1600	Max	0.0950	Max	0.4400	Max	0.2120	UCL
Metals-Cadmium	µg/L	--	ND	3.50	Max	--	ND	1.1	Max	--	ND	--	ND	3.50	Max
Metals-Cadmium (Dissolved)	µg/L	0.2000	Max	--	ND	--	ND	0.5700	Max	--	ND	0.2	Max	0.5700	Max
Metals-Chromium	µg/L	32	Max	89	Max	16	Max	41	Max	--	ND	32	Max	44.3	UCL
Metals-Chromium (Dissolved)	µg/L	30	Max	97	Max	92	Max	41	Max	60	Max	92	Max	70.1	UCL
Metals-Cobalt	µg/L	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
Metals-Cobalt (Dissolved)	µg/L	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
Metals-Copper	µg/L	30	Max	29	Max	24	Max	31	Max	19	Max	30	Max	26.0	UCL
Metals-Copper (Dissolved)	µg/L	6.10	Max	21	Max	--	ND	10	Max	--	ND	6.10	Max	21.0	Max
Metals-Lead	µg/L	0.1900	Max	0.2100	Max	--	ND	0.3400	Max	--	ND	0.1900	Max	0.3400	Max
Metals-Lead (Dissolved)	µg/L	--	ND	--	ND	--	ND	0.1200	Max	9.6	Max	9.6	Max	9.6	Max
Metals-Manganese	µg/L	320	Max	2700	Max	530	Max	330	Max	160	Max	530	Max	2114	UCL
Metals-Manganese (Dissolved)	µg/L	530	Max	2000	Max	490	Max	290	Max	170	Max	530	Max	779	UCL
Metals-Mercury	µg/L	0.12	Max	0.1600	Max	0.1200	Max	0.1400	Max	0.1100	Max	0.1200	Max	0.1350	UCL

Table C-7. Summary of EPCs for Onsite Surface Water

Onsite Pond Surface Water COPC	Units	A-Series Pond Surface Water		Pond A-5 Surface Water		Pond 13 Surface Water		Pond 18 Surface Water		RCF Surface Water		RCF, A-Series, Pond 13 Surface Water		Pondwide Surface Water	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
Metals-Mercury (Dissolved)	µg/L	0.21	Max	0.092	Max	0.1300	Max	0.1700	Max	0.0580	Max	0.2100	Max	0.1410	UCL
Metals-Molybdenum	µg/L	44	Max	48	Max	38	Max	56	Max	38	Max	44	Max	46.0	UCL
Metals-Molybdenum (Dissolved)	µg/L	42	Max	63	Max	43	Max	61	Max	47	Max	47	Max	51.5	UCL
Metals-Nickel	µg/L	440	Max	550	Max	430	Max	340	Max	120	Max	440	Max	372	UCL
Metals-Nickel (Dissolved)	µg/L	440	Max	540	Max	2000	Max	330	Max	460	Max	2000	Max	850	UCL
Metals-Selenium	µg/L	900	Max	1400	Max	1600	Max	430	Max	970	Max	1600	Max	1008	UCL
Metals-Selenium (Dissolved)	µg/L	820	Max	940	Max	2900	Max	360	Max	1600	Max	2900	Max	1479	UCL
Metals-Silver	µg/L	--	ND	0.5700	Max	0.2700	Max	0.2400	Max	--	ND	0.2700	Max	0.5700	Max
Metals-Silver (Dissolved)	µg/L	--	ND	--	ND	--	ND	0.4600	Max	--	ND	--	ND	0.4600	Max
Metals-Thallium	µg/L	--	ND	--	ND	--	ND	2.00	Max	--	ND	--	ND	2.00	Max
Metals-Thallium (Dissolved)	µg/L	--	ND	--	ND	--	ND	1.00	Max	--	ND	--	ND	1.00	Max
Metals-Tin	µg/L	--	ND	--	ND	--	ND	1.30	Max	--	ND	--	ND	1.30	Max
Metals-Vanadium	µg/L	110	Max	75	Max	120	Max	40	Max	97	Max	120	Max	85.7	UCL
Metals-Vanadium (Dissolved)	µg/L	63	Max	54	Max	--	ND	34	Max	--	ND	63	Max	63.0	Max
Metals-Zinc	µg/L	20	Max	27	Max	38	Max	25	Max	69	Max	69	Max	37.6	UCL
Metals-Zinc (Dissolved)	µg/L	98	Max	79	Max	30	Max	76	Max	45	Max	98	Max	59.8	UCL
PAHs															
PAH-Benzo(a)anthracene	µg/L	--	ND	--	ND	--	ND	0.0100	Max	--	ND	--	ND	0.0100	Max
PAH-Benzo(a)pyrene	µg/L	--	ND	--	ND	0.0130	Max	--	ND	0.013	Max	0.0130	Max	0.0130	Max
PAH-Benzo(b)fluoranthene	µg/L	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Benzo(g,h,i)perylene	µg/L	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND
PAH-Dibenzo(a,h)anthracene	µg/L	--	ND	--	ND	--	ND	0.0130	Max	--	ND	--	ND	0.0130	Max
PAH-Naphthalene	µg/L	0.0130	Max	--	ND	0.0130	Max	--	ND	0.0160	Max	0.0160	Max	0.0160	Max
SVOCs															
SVOC-Bis(2-chloroethyl)ether	µg/L	0.0200	Max	--	ND	--	ND	--	ND	0.0180	Max	0.0200	Max	0.0200	Max

Table C-7. Summary of EPCs for Onsite Surface Water

Onsite Pond Surface Water COPC	Units	A-Series Pond Surface Water		Pond A-5 Surface Water		Pond 13 Surface Water		Pond 18 Surface Water		RCF Surface Water		RCF, A-Series, Pond 13 Surface Water		Pondwide Surface Water	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
SVOC-Bis(2-ethylhexyl)phthalate	µg/L	--	ND	51	Max	--	ND	--	ND	--	ND	--	ND	51.0	Max
SVOC-N-Nitrosodiethylamine	µg/L	--	ND	--	ND	--	ND	0.1900	Max	--	ND	--	ND	0.1900	Max
SVOC-N-Nitrosodipropylamine	µg/L	--	ND	0.4900	Max	--	ND	--	ND	--	ND	--	ND	0.4900	Max
SVOC-N-Nitrosopyrrolidine	µg/L	0.3600	Max	1.50	Max	0.5500	Max	--	ND	0.0350	Max	0.5500	Max	0.6140	UCL
VOCs															
VOC-1,1-Dichloroethane	µg/L	--	ND	1.30	Max	--	ND	0.4400	Max	--	ND	--	ND	1.3	Max
VOC-1,2-Dibromoethane (EDB)	µg/L	0.0120	Max	0.0028	Max	0.0068	Max	--	ND	0.0054	Max	0.0120	Max	0.0120	Max
VOC-Acetone	µg/L	--	No Data	18	Max	--	No Data	--	No Data	--	No Data	--	No Data	18	Max
VOC-Acetonitrile	µg/L	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data
VOC-Carbon disulfide	µg/L	--	ND	--	ND	--	ND	0.4300	Max	--	ND	--	ND	0.4300	Max
VOC-Methyl isobutyl ketone (MIBK)	µg/L	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data	--	No Data
VOC-Methylene chloride	µg/L	--	ND	--	ND	1.50	Max	0.5000	Max	7.00	Max	7.00	Max	7.00	Max
VOC-Propanal	µg/L	--	ND	12	Max	--	ND	14	Max	--	ND	--	ND	14	Max
VOC-Trichloroethylene	µg/L	--	ND	1.30	Max	--	ND	1.20	Max	--	ND	--	ND	1.30	Max

Notes:
Source: Table 7-6 from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
1: 95UCL calculated on COPCs with at least 8 samples and 5 detections
2: Max detects used in place of 95UCL for COPCs not meeting criterion (1)
3: Parameters with 100% nondetects have "ND" reported
4: Maximum of duplicate samples selected
µg/L = microgram per liter
-- = not applicable/not available
pg/L = picogram per liter
RCF = Runoff Control Facility (Pond)

Table C-8. Summary of EPCs for Offsite Surface Water

Offsite Drainages Surface Water COPC	Units	A Drain Surface Water		North Drain Surface Water		Upper C Surface Water		Lower C Surface Water		Sitewide Surface Water	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
DIOXIN											
DIOXIN-Total Avian Dioxin TEQ	pg/L	0.0037	Max	6.53	Max	12.0	Max	10.4	Max	10.2	UCL
DIOXIN-Total Fish Dioxin TEQ	pg/L	--	ND	4.22	Max	5.70	Max	4.65	Max	5.20	UCL
DIOXIN-Total TEQ	pg/L	0.0055	Max	9.07	Max	13.3	Max	10.5	Max	10.6	UCL
METALS											
Metals-Antimony	µg/L	--	ND	150	Max	44.0	Max	40.0	Max	89.5	UCL
Metals-Antimony (Dissolved)	µg/L	--	ND	0.6300	Max	--	ND	0.4200	Max	0.6300	Max
Metals-Arsenic	µg/L	2.30	Max	47.0	Max	19.0	Max	18.0	Max	18.5	UCL
Metals-Arsenic (Dissolved)	µg/L	1.80	Max	23.0	Max	6.40	Max	9.00	Max	12.2	UCL
Metals-Barium	µg/L	35.0	Max	1100	Max	640	Max	540	Max	631	UCL
Metals-Barium (Dissolved)	µg/L	23.0	Max	100	Max	55.0	Max	48.0	Max	57.4	UCL
Metals-Beryllium	µg/L	0.1000	Max	9.00	Max	4.70	Max	4.30	Max	4.64	UCL
Metals-Beryllium (Dissolved)	µg/L	0.0300	Max	1.60	Max	0.0500	Max	0.0200	Max	0.3510	UCL
Metals-Cadmium	µg/L	0.2300	Max	13.0	Max	6.10	Max	4.90	Max	6.48	UCL
Metals-Cadmium (Dissolved)	µg/L	0.1000	Max	4.20	Max	0.1500	Max	0.1800	Max	1.14	UCL
Metals-Chromium	µg/L	--	ND	380	Max	240	Max	240	Max	223	UCL
Metals-Chromium (Dissolved)	µg/L	--	ND	10.0	Max	2.10	Max	1.80	Max	5.82	UCL
Metals-Cobalt	µg/L	--	ND	63.0	Max	--	ND	13.0	Max	18.4	UCL
Metals-Cobalt (Dissolved)	µg/L	--	ND	11.0	Max	0.9000	Max	1.30	Max	11.0	Max
Metals-Copper	µg/L	32.0	Max	160	Max	110	Max	110	Max	68.8	UCL
Metals-Copper (Dissolved)	µg/L	--	ND	7.00	Max	--	ND	1.00	Max	7.00	Max
Metals-Lead	µg/L	0.8600	Max	63.0	Max	34.0	Max	33.0	Max	33.3	UCL
Metals-Lead (Dissolved)	µg/L	0.1500	Max	20.0	Max	0.3200	Max	0.5800	Max	15.1	UCL
Metals-Manganese	µg/L	31.0	Max	2000	Max	650	Max	710	Max	1042	UCL
Metals-Manganese (Dissolved)	µg/L	--	ND	1400	Max	23	Max	140	Max	842.2	UCL
Metals-Mercury	µg/L	--	ND	0.2300	Max	0.1200	Max	0.1100	Max	0.0880	UCL
Metals-Mercury (Dissolved)	µg/L	--	ND	0.0500	Max	--	ND	--	ND	0.0500	Max
Metals-Molybdenum	µg/L	--	ND	77.0	Max	22.0	Max	27.0	Max	43.7	UCL

Table C-8. Summary of EPCs for Offsite Surface Water

Offsite Drainages Surface Water COPC	Units	A Drain Surface Water		North Drain Surface Water		Upper C Surface Water		Lower C Surface Water		Sitewide Surface Water	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
Metals-Molybdenum (Dissolved)	µg/L	14.0	Max	68.0	Max	22.0	Max	30.0	Max	49.4	UCL
Metals-Nickel	µg/L	13.0	Max	440	Max	230	Max	230	Max	201	UCL
Metals-Nickel (Dissolved)	µg/L	6.30	Max	35.0	Max	18.0	Max	22.0	Max	17.8	UCL
Metals-Selenium	µg/L	1.70	Max	96.0	Max	4.30	Max	5.70	Max	44.9	UCL
Metals-Selenium (Dissolved)	µg/L	1.00	Max	120	Max	5.80	Max	6.20	Max	47.1	UCL
Metals-Silver	µg/L	--	ND	0.5300	Max	0.5300	Max	0.4800	Max	0.2680	UCL
Metals-Silver (Dissolved)	µg/L	--	ND	1.00	Max	--	ND	0.0200	Max	1.00	Max
Metals-Thallium	µg/L	--	ND	2.80	Max	1.60	Max	1.50	Max	0.9960	UCL
Metals-Thallium (Dissolved)	µg/L	--	ND	1.00	Max	0.2300	Max	0.3100	Max	0.4580	UCL
Metals-Tin	µg/L	--	ND	4.40	Max	3.20	Max	2.90	Max	1.99	UCL
Metals-Vanadium	µg/L	--	ND	310	Max	230	Max	200	Max	159	UCL
Metals-Vanadium (Dissolved)	µg/L	--	ND	160	Max	40.0	Max	40.0	Max	63.7	UCL
Metals-Zinc	µg/L	10.0	Max	470	Max	280	Max	250	Max	219	UCL
Metals-Zinc (Dissolved)	µg/L	3.80	Max	170	Max	8.20	Max	7.60	Max	69.9	UCL
PAHs											
PAH-Benzo(a)anthracene	µg/L	--	ND	0.0110	Max	0.0100	Max	0.0110	Max	0.0104	UCL
PAH-Benzo(a)pyrene	µg/L	--	ND	0.0160	Max	--	ND	--	ND	0.0160	Max
PAH-Benzo(b)fluoranthene	µg/L	--	ND	0.0570	Max	--	ND	--	ND	0.0570	Max
PAH-Benzo(g,h,i)perylene	µg/L	--	ND	0.0160	Max	--	ND	--	ND	0.0160	Max
PAH-Dibenzo(a,h)anthracene	µg/L	--	ND	0.0220	Max	--	ND	--	ND	0.0220	Max
PAH-Naphthalene	µg/L	0.0300	Max	--	ND	--	ND	--	ND	0.0300	Max
SVOCs											
SVOC-Bis(2-chloroethyl)ether	µg/L	--	ND	0.0920	Max	--	ND	0.0160	Max	0.0920	Max
SVOC-Bis(2-ethylhexyl)phthalate	µg/L	--	ND	1.60	Max	--	ND	1.30	Max	1.60	Max
SVOC-N-Nitrosodiethylamine	µg/L	--	ND	0.0670	Max	--	ND	--	ND	0.0670	Max
SVOC-N-Nitrosodipropylamine	µg/L	0.0500	Max	0.0860	Max	0.0680	Max	0.1000	Max	0.0629	UCL
SVOC-N-Nitrosopyrrolidine	µg/L	--	ND	0.0940	Max	--	ND	--	ND	0.0940	Max
VOCs											
VOC-1,1-Dichloroethane	µg/L	--	ND	--	ND	--	ND	--	ND	--	ND

Table C-8. Summary of EPCs for Offsite Surface Water

Offsite Drainages Surface Water COPC	Units	A Drain Surface Water		North Drain Surface Water		Upper C Surface Water		Lower C Surface Water		Sitewide Surface Water	
		EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis	EPC	Basis
VOC-1,2-Dibromoethane (EDB)	µg/L	--	ND	--	ND	--	ND	--	ND	--	ND
VOC-Acetone	µg/L	--	ND	320	Max	--	ND	1100	Max	1100	Max
PPO-Acetonitrile	µg/L	--	ND	--	ND	--	ND	3700	Max	3700	Max
VOC-Carbon disulfide	µg/L	--	ND	--	ND	--	ND	0.5900	Max	0.5900	Max
VOC-Methyl isobutyl ketone (MIBK)	µg/L	--	ND	490	Max	--	ND	--	ND	490	Max
VOC-Methylene chloride	µg/L	--	ND	--	ND	--	ND	--	ND	--	ND
VOC-Propanal	µg/L	--	ND	--	ND	--	ND	--	ND	--	ND
VOC-Trichloroethylene	µg/L	--	ND	--	ND	--	ND	--	ND	--	ND

Notes:
Source: Table 7-7 from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
1: 95UCL calculated on COPCs with at least eight samples and five detections
2: Max detects used in place of 95UCL for COPCs not meeting criterion (1)
3: Parameters with 100% nondetects have "ND" reported
4: Maximum of duplicate samples selected

Table C-9. Summary of EPCs for Soil Vapor

CAS_RN	Onsite Soil Vapor COPC	EPC Used for HHRA			EPC Used for ERA		
		Onsite Soil Vapor EPC (ppbv)	Onsite Soil Vapor EPC (mg/m^3)	Basis	Onsite Soil Vapor EPC (ppbv)	Onsite Soil Vapor EPC (mg/m^3)	Basis
71-55-6	1,1,1-Trichloroethane	170,000	928	Max	12,514	68	UCL
79-00-5	1,1,2-Trichloroethane	13	0.071	Max	13	0.071	Max
75-34-3	1,1-Dichloroethane	120,000	486	Max	9,535	39	UCL
75-35-4	1,1-Dichloroethylene	98,000	389	Max	10,459	41	UCL
95-63-6	1,2,4-Trimethylbenzene	28	0.138	Max	8.5	0.042	UCL
78-87-5	1,2-Dichloropropane	280	1.3	Max	280	1.3	Max
108-67-8	1,3,5-Trimethylbenzene	5.9	0.029	Max	4.8	0.024	UCL
106-99-0	1,3-Butadiene	54	0.119	Max	15	0.033	UCL
106-46-7	1,4-Dichlorobenzene	6.4	0.038	Max	6.4	0.038	Max
591-78-6	2-Hexanone	270	1.1	Max	120	0.492	UCL
622-96-8	4-Ethyltoluene	9.4	0.046	Max	6.4	0.031	UCL
67-64-1	Acetone	3,000	7.1	Max	1,325	3.1	UCL
71-43-2	Benzene	31	0.099	Max	7.6	0.024	UCL
74-83-9	Bromomethane	2.6	0.010	Max	2.6	0.010	Max
75-15-0	Carbon disulfide	10	0.031	Max	5.3	0.017	UCL
56-23-5	Carbon tetrachloride	35,000	220	Max	2,587	16	UCL
75-00-3	Chloroethane	2.0	0.005	Max	2.0	0.005	Max
67-66-3	Chloroform	11,000	54	Max	1,048	5.1	UCL
74-87-3	Chloromethane	26	0.054	Max	4.3	0.009	UCL
156-59-2	cis-1,2-Dichloroethene	34,000	135	Max	2,635	10	UCL
110-82-7	Cyclohexane	100	0.344	Max	20	0.069	UCL
64-17-5	Ethanol	400	0.754	Max	143	0.269	UCL
100-41-4	Ethylbenzene	31	0.135	Max	4.1	0.018	UCL
75-69-4	Freon 11 (Trichlorofluoromethane)	66,000	371	Max	19,530	110	UCL
76-13-1	Freon 113 (1,1,2-trichloro-1,2,2-trifluo	1,000,000	7664	Max	315,755	2420	UCL
142-82-5	Heptane	33	0.135	Max	11	0.045	UCL
110-54-3	Hexane	570	2.0	Max	65	0.229	UCL
67-63-0	Isopropanol	340	0.836	Max	66	0.162	UCL
108-38-3	m,p-Xylene	120	0.521	Max	19	0.083	UCL
78-93-3	Methyl ethyl ketone	4,200	12.39	Max	1,473	4.3	UCL
108-10-1	Methyl isobutyl ketone (MIBK)	18	0.074	Max	18	0.074	Max
75-09-2	Methylene chloride	2,900	10	Max	2,900	10	Max
95-47-6	o-Xylene	32	0.139	Max	6.7	0.029	UCL
100-42-5	Styrene	0.45	0.002	Max	0.45	0.002	Max
127-18-4	Tetrachloroethylene	55,000	373	Max	16,478	112	UCL
109-99-9	Tetrahydrofuran	740	2.2	Max	740	2.2	Max

Table C-9. Summary of EPCs for Soil Vapor

CAS_RN	Onsite Soil Vapor COPC	EPC Used for HHRA			EPC Used for ERA		
		Onsite Soil Vapor EPC (ppbv)	Onsite Soil Vapor EPC (mg/m^3)	Basis	Onsite Soil Vapor EPC (ppbv)	Onsite Soil Vapor EPC (mg/m^3)	Basis
108-88-3	Toluene	45	0.170	Max	10	0.038	UCL
79-01-6	Trichloroethylene	150,000	806	Max	48,434	260	UCL
75-01-4	Vinyl chloride	5,200	13	Max	486	1.2	UCL

Notes:
Source: Table 7-8 from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
CAS_RN = Chemical Abstracts Service Registry Number
COPC = chemical of potential concern
EPC = exposure point concentration
ERA = Ecological Risk Assessment
HHRA = Human Health Risk Assessment
mg/m^3 = milligrams per cubic meters
ppbv = parts per billion by volume

Table C-10. Summary of EPCs for Offsite Soil Vapor

CAS_RN	Offsite Soil Vapor COPC	EPC Used for HHRA and ERA		
		Offsite Soil Vapor EPC (ppbv)	Offsite Soil Vapor EPC (mg/m^3)	Basis
95-63-6	1,2,4-Trimethylbenzene	2.8	0.014	Max
108-67-8	1,3,5-Trimethylbenzene	0.89	0.004	Max
106-99-0	1,3-Butadiene	8.3	0.018	Max
123-91-1	1,4-Dioxane	1.6	0.006	Max
591-78-6	2-Hexanone	17	0.070	Max
67-64-1	Acetone	2,200	5.2	Max
71-43-2	Benzene	15	0.048	Max
75-15-0	Carbon disulfide	2.8	0.009	Max
67-66-3	Chloroform	0.78	0.004	Max
74-87-3	Chloromethane	3.2	0.007	Max
64-17-5	Ethanol	72	0.136	Max
100-41-4	Ethylbenzene	2.4	0.010	Max
142-82-5	Heptane	18	0.074	Max
110-54-3	Hexane	5.2	0.018	Max
67-63-0	Isopropanol	15	0.037	Max
108-38-3	m,p-Xylene	9.5	0.041	Max
78-93-3	Methyl ethyl ketone	170	0.501	Max
75-09-2	Methylene chloride	0.74	0.003	Max
95-47-6	o-Xylene	4	0.017	Max
100-42-5	Styrene	0.66	0.003	Max
127-18-4	Tetrachloroethylene	1.1	0.007	Max
108-88-3	Toluene	13	0.049	Max
79-01-6	Trichloroethylene	0.69	0.004	Max

Notes:
Source: Table 7-9 from the *Remedial Investigation Report, Casmalia Resources Superfund Site* (CSC, 2011).
Offsite locations: RISVCL-03D, RISVCL-05D, and RISVCL-08D

Table C-11. Ecological Chemicals of Concern and Risk-Based Concentrations in Soil

Chemicals of Concern[1]	Terrestrial Invertivorous Mammal				Terrestrial Herbivorous Mammal				Terrestrial Carnivorous Mammal				Terrestrial Invertivorous Bird			
	Ornate Shrew				California Vole				Striped Skunk				Western Meadowlark			
	Highest LOAEL/High TRV-based HQ	Study Area	Surface and shallow soil EPC (0-5.5 feet bgs; mg/kg)	RBC	Highest LOAEL/high TRV-based HQ	Study Area	Surface and shallow soil EPC (0-5.5 feet bgs; mg/kg)	RBC	Highest LOAEL/high TRV-based HQ	Study Area	Surface and shallow soil EPC (0-5.5 feet bgs; mg/kg)	RBC	Highest LOAEL/high TRV-based HQ	Study Area	Surface soil EPC (0-0.5 feet bgs; mg/kg)	RBC
Chromium	1.0	West Canyon Spray Area	206	204	0.1	West Canyon Spray Area	206	1442	0.1	West Canyon Spray Area	206	1825.4	8.0	West Canyon Spray Area	590.6	74
Copper	20.0	West Canyon Spray Area	271	14	2.5	West Canyon Spray Area	271	107	1.9	West Canyon Spray Area	271	143.1	18.1	West Canyon Spray Area	461.0	25
Zinc	0.5	RCRA Canyon	176	353	0.1	RCRA Canyon	176	3067	0.1	RCRA Canyon	176	2944.8	1.5	RCRA Canyon	292.9	191

Chemicals of Concern[1]	Terrestrial Herbivorous Bird				Terrestrial Carnivorous Bird				Terrestrial Plants				Soil Invertebrates			
	Western Meadowlark				American Kestrel											
	Highest LOAEL/High TRV-based HQ	Study Area	Surface soil EPC (0-0.5 foot bgs; mg/kg)	RBC	Highest LOAEL/high TRV-based HQ	Study Area	Surface soil EPC (0-0.5 foot bgs; mg/kg)	RBC	Highest HQ	Study Area	Surface and shallow soil EPC (0-5.5 feet bgs; mg/kg)	RBC	Highest HQ	Study Area	Surface soil EPC (0-0.5 foot bgs; mg/kg)	RBC
Chromium	7.6	West Canyon Spray Area	591	78	0.8	West Canyon Spray Area	591	724	206.3	West Canyon Spray Area	206	1.0	1477	West Canyon Spray Area	591	0.4
Copper	6.6	West Canyon Spray Area	461	70	8.1	West Canyon Spray Area	461	57	3.9	West Canyon Spray Area	271	70	6	West Canyon Spray Area	461	80
Zinc	0.4	RCRA Canyon	293	667	0.8	RCRA Canyon	293	358	3.5	RCRA Canyon	176	50	2.9	RCRA Canyon	293	100

Notes:
Source: Table 8-6a from the *Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).
Casmalia Steering Committee (CSC). 2011. *Final Remedial Investigation Report, Casmalia Resources Superfund Site*. January.
Ecological RBCs identified based on the results of the Tier 2 ERA (CSC, 2011) and were not derived for the American badger as the risk-driving chemicals were not detected in deep soils (5.5-10 feet bgs).

Selected surface and shallow soil ecological risk-based concentration for 0-5.5 feet bgs interval.
Selected surface soil ecological risk-based concentration for 0-0.5 feet bgs interval.

EPC = exposure point concentration; based on the 95% UCL of the mean or maximum detected concentration (presented in Attachments 5 and 5A of Appendix U of the ERA [CSC, 2011]).
HQ = hazard quotient (unitless)
LOAEL = lowest observed adverse effect level
mg/kg = milligram per kilogram
RBC = risk-based concentration
TRV = toxicity reference value

Table C-12. Human Health Chemicals of Concern and Risk-Based Concentrations in Soil Commercial/Industrial Worker

Chemicals of Concern	HH RBC (mg/kg) Target Risk = 1 x 10^{-5}	HH RBC (mg/kg) Target HQ = 1
Organics		
MCPP	N/A	770
TCE	50	76
PCE	11	120

Notes:
Source: Table 8-6B from the *Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).
Selected surface and shallow soil (0 to 5.5 feet bgs) RBC

HH RBC = human health risk-based concentration
mg/kg = milligram per kilogram
PCE = tetrachloroethene
TCE = trichloroethene

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Appendix D
Applicable or Relevant and Appropriate Requirements (ARARs)

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
CHEMICAL-SPECIFIC ARARs					
Air Quality					
Santa Barbara APCD Rules:					
Visible Emissions	Rule 302	Air / Onsite Construction	Establishes limits on visible emissions of air contaminants into the atmosphere.	Applicable	
Nuisance	Rule 303	Air / Onsite Construction	Prohibits discharges of air contaminants or other material in violation of Health and Safety Code § 41700 in quantities that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health or safety of such persons or the public; or that cause or have a natural tendency to cause injury or damage to business or property.	Applicable	
Particulate Matter	Rule 304	Air / Onsite Construction	Prohibits discharges into the atmosphere of particulate matter in excess of 0.3 grain per cubic foot.	Applicable	
New Source Review	Regulation VIII, Rule 803	Air / Onsite Construction	This regulation includes requirements that new sources of air emissions must meet.	Relevant and Appropriate	Substantive standards only.
Water Quality					
Federal Clean Water Act / California Water Code / SWRCB Regulations / RWQCB					
Maximum Contaminant Levels (MCLs)	42 U.S.C. § 300f et seq.; 40 CFR §§ 141.50-141.52; EPA Region 9 Drinking Water Standards and Health Advisory Table, February 2000	Groundwater	National primary drinking water standards.	Relevant and Appropriate	Relevant and appropriate for in situ groundwater, except for the combined Technical Impracticability (TI) Zone/Waste Management Area

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
					(WMA), as described below. TI Zone: These standards are waived for designated chemicals in groundwater (see Table 3 in the Proposed Plan) within Area 5 North, based on a TI waiver. WMA: In addition, these standards do not apply for groundwater under the WMA, which circumscribes the five landfills located in Area 5 North. The standards apply beyond the POC, outside the combined TI Zone/WMA area in Area 5 North. See Section 8.10 and Figure 23 of the Proposed Plan.
Soils, Waste Delineation and Management					
Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2601-2692; 40 CFR §§ 761.50-761.79	Establishes means for storage and disposal of material contaminated with polychlorinated biphenyls (PCBs) of concentrations of 50 ppm or greater.	Disposal of PCBs/ onsite reconsolidation (e.g., PCB landfill)	Applicable to storage and disposal of waste materials containing >50 ppm.	Applicable	Substantive requirements only.

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
Other Federal Criteria, Advisories, and Guidance TBC					
EPA Groundwater Classification System; Office of Groundwater Protection			Three classifications for groundwater based on ecological importance, replaceability, and vulnerability. Considered a statement of EPA policy for setting remediation goals.	TBC	
EPA Secondary MCLs and Proposed MCLs		Groundwater	Secondary drinking water standards; proposed MCLs. Proposed MCLs considered for groundwater in the absence of a federal or state MCL.	TBC	
Applied Action Levels		Groundwater	Air and water guidelines used to evaluate the risk a site poses to certain biologic receptors. Considered for groundwater.	TBC	
ACTION-SPECIFIC ARARs					
Waste Management/Landfill Closure					
California Hazardous Waste Control Act / DTSC Regulations					Final selection of ARAR will depend on determination of whether the federal or state standard is more stringent. The state standard is an ARAR only if it is more stringent than the federal requirement.
Hazardous Waste Identification	40 CFR §§ 261.10, 22 CCR 261.10	Multimedia	Criteria for identifying hazardous waste. Applicable if hazardous waste is encountered during implementation of response actions at the Site.	Applicable	
Hazardous Waste Generation	40 CFR 262.10, 22 CCR §§ 66262.10 - 11	Multimedia	Provides standards applicable to generators of hazardous waste. 262.10 determines which standards apply to generators. May be applicable if hazardous waste is generated during implementation of response actions at the Site. Particular provisions are described below.	Applicable	Substantive standards only.

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
Hazardous Waste Determination	40 CFR 262.11, 22 CCR § 66262.11	Multimedia	Provides method of determining whether a waste is a hazardous waste.	Applicable	
Waste Manifesting	40 CFR 262.23, 22 CCR § 66262.23	Multimedia	Provides requirements for use of a hazardous waste manifest. Applicable if hazardous waste will be transported off-Site.	Applicable	
Pre-Transport Requirements	40 CFR 262.30-34; 22 CCR § 66262.30 - 66262.34	Multimedia	Provides requirements for packaging, labeling, marking, placarding, and permissible accumulation time before transporting hazardous waste off-Site.	Applicable	
Applicability of General Facility Standards	40 CFR 265.10; 22 CCR § 66265.10	Multimedia	Provides that the regulations in Subpart B (40 CFR 265.10-19; Article 2 (General Facility Standards, §§ 66265.10 - 66265.25) apply to owners and operators of hazardous waste facilities.	Applicable	
General Waste Analysis	40 CFR 262.13; 22 CCR § 66265.13	Multimedia	Provides standards for obtaining analyses of hazardous waste before transferring, treating, storing or disposing of such waste.	Applicable	
Security	40 CFR 262.14; 22 CCR § 66265.14	Multimedia	Provides standards for prevention of unknowing entry or unauthorized entry of persons or livestock.	Applicable	
Ignitable, Reactive and Incompatible Wastes	40 CFR 265.17; 22 CCR § 66265.17	Multimedia	Provides standards to prevent accidental ignition or reaction of ignitable, reactive or incompatible wastes. Applicable if such wastes are encountered during implementation of response actions at the Site.	Applicable	
Construction Quality Assurance	40 CFR 265.19; 22 CCR § 66265.19	Multimedia	Provides standards for Construction Quality Assurance Programs.	Applicable	Substantive requirements only.
Seismic and Precipitation Design Standards	22 CCR § 66265.25	Multimedia	Provides that all cover systems required by Chapter 15 (i.e., § 66265.1 et seq.) and all containment and control features that will remain after closure must be designed, constructed and maintained to withstand the maximum credible earthquake without any decrease in the level of public health and	Applicable	

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
			environmental protection afforded by the original design.		
General Closure Standard	40 CFR 265.110; 22 CCR § 66265.110	Multimedia	Provides that Sections 66265.111-.115 (closure) and Sections 66265.116-.120 (post-closure) apply to owners and operators of all hazardous waste facilities. (Sections identified as potential ARARs below.)	Relevant and Appropriate	Substantive requirements only.
Landfill Closure Construction	40 CFR 265.111; 22 CCR § 66265.111	Multimedia	Provides that the owner or operator must close the facility in a manner that: • Minimizes the need for further maintenance • Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated rainfall or run-off, or waste decomposition products to the ground or surface water or to the atmosphere	Relevant and Appropriate	Substantive requirements only.
Disposal/ Decontamination	40 CFR 265.114; 22 CCR § 66265.114	Multimedia	Provides that during the partial and final closure periods, all contaminated equipment, structures and soil must be properly disposed of or decontaminated by removing all hazardous waste and residues, except as otherwise specified. Applicable if implementation of response actions at the Site involves hazardous waste-contaminated equipment, structures or soil.	Relevant and Appropriate	
Landfill Closure Construction	40 CFR 265. 310 (a), (b); 22 CCR §§ 66265.310(a), (c) and (d)	Multimedia	Provides performance standards for design and construction of landfill final covers.	Relevant and Appropriate	Applies to owner/operators.
Landfill Post-Closure Care	22 CCR §§ 66265.310(b) and (e)	Multimedia	Provides requirements for post-closure care of landfills.	Relevant and Appropriate	Applies to owner/operators.

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
California Hazardous Waste Control Act / DTSC Regulations					
Surface Impoundment Closure and Post-Closure Care Standard	40 CFR 265.228; 22 CCR § 66265.228	Soils, contaminated soils, waste materials	(a) At closure, the owner or operator shall: (1) remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless Section 66261.3(d) applies, or (2) close the impoundment and provide post-closure care as specified. (b) Sets forth requirements for maintaining and protecting the final cover and maintaining and monitoring groundwater monitoring systems and leak detection systems when wastes, waste materials or contaminated material will remain after closure.	Relevant and Appropriate	
Waste Pile Closure and Post-Closure Care Standard	40 CFR 265.258; 22 CCR § 66265.258	Soils, contaminated soils, waste materials	(a) At closure, the owner or operator shall remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless Section 66261.3(d) applies, or (b) if after reasonable efforts to remove and decontaminate not all subsoils can be practicably removed or decontaminated, close facility and perform post-closure care as specified.	Relevant and Appropriate	
Tank System Closure and Post-Closure Care Standard	40 CFR 265.197; 22 CCR § 66265.197		(a) At closure of a tank system, the owner or operator shall remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless Section 66261.3(d) applies, or (b) if not all contaminated soils can be practicably removed or	Relevant and Appropriate	Substantive requirements only.

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
			decontaminated, close the tank system and perform post-closure care as specified.		
Corrective Action Waste Management Units (CAMU)	40 CFR 264.552, 553; 22 CCR, 66264.552, 66264.553	Soils, contaminated soils, waste materials	Establishes that consolidation and placement into a corrective action management unit of remediation wastes generated as part of a corrective action do not constitute placement or land disposal of hazardous waste. Prohibits creation of an unacceptable risk to humans and the environment resulting from exposure. Establishes closure and other requirements for temporary tank and container storage.	Relevant and Appropriate	Substantive requirements only.
Standards for Tanks Not Regulated under Hazardous Waste Facility Permit or Interim Status	40 CFR 265.190-201; 22 CCR § 67383.1 -.5	Tank Systems	Provides minimum standards for the management of all underground and aboveground tank systems that held hazardous waste or hazardous materials, and are to be disposed, reclaimed or closed in place, except as provided in 22 CCR Section 67383.1 (b), (c) and (d). These standards do not apply to tank systems regulated under a hazardous waste facility permit, other than a permit by rule, or to tank systems regulated under a grant of interim status.	Relevant and Appropriate	Substantive requirements only.
Underground Storage of Hazardous Substances	40 CFR 265.190-201; H&S Code §§ 25280-25299.6 and regulations specified below				See below.
Permanent Closure Requirements for Underground Storage Tanks (USTs)	40 CFR 265.190-201; 23 CCR § 2672(b), (c)		Owners or operators of USTs for storage of hazardous waste shall comply with applicable provisions of Hazardous Waste Control Act (H&S Code § 25100 et seq.) and requirements listed in § 2672(b). Where tanks are approved to be closed in place, must also comply with applicable provisions of UST law (H&S Code § 25280 et seq.) and requirements listed in § 2672(c).	Relevant and Appropriate	Substantive requirements only.

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
Santa Barbara County Standards for Destruction or Inactivation of Wells	Santa Barbara County Code Chap. 34A, Section 34A-1, 2, 11, 12, 13, and Cal. Dept. of Water Resources (DWR) Bulletin Nos. 74-81 and 74-90		Section 34A-5 provides that the standards for destruction or inactivation of wells (including injection wells and monitoring wells) are set forth in DWR Bulletin No. 74-81 (Water Well Standards), as supplemented by Bulletin No. 74-90.	Applicable	Substantive requirements only.
Waste Management Units - General Closure Requirements	23 CCR §§ 2580(a), (b) and (d)		Section 2580 provides that waste management units must be closed according to an approved closure and post-closure maintenance plan that provides for continued compliance with applicable standards for waste containment and precipitation and drainage controls in Article 4 and the monitoring program requirements in Article 5.	Relevant and Appropriate	Substantive requirements only.
Final Cover – Vegetation Requirements	23 CCR § 2580(e)		Subsection (e) of Section 2580 provides that vegetation must not impair the integrity of the final cover.	Relevant and Appropriate	Substantive requirements only.
Water Quality					
Compliance with Clean Water Act	Federal Water Pollution Control Act, 33 U.S.C. 1251, et seq.; Cal. Water Code § 13370 et seq.		Federal law requires compliance with the federal Clean Water Act requirements for point source surface water discharges. State law also requires compliance.	Applicable	Federal law is ARAR where state law is not more stringent. Substantive requirements only.
Safe Drinking Water Act; MCLs	Safety of Public Water Systems, 42 U.S.C. 300f-g, h; 22 CCR Sections 64431, 64439, and 64444		Establishes maximum contaminant levels for public water supply systems. Relevant and appropriate for aquifers that are current or potential public or private supply sources.	Relevant and Appropriate	Federal law is ARAR unless specific California MCLs are more stringent than federal MCLs.
State Water Resources Control Board (SWRCB) "Statement of Policy with Respect to Maintaining	SWRCB Resolution No. 68-16, set forth at Central Coast Regional Water		Policy requiring maintenance of existing water quality unless demonstrated that the change is consistent with maximum benefit to the people of the State, will not unreasonably affect present	Applicable	Applies if any action would degrade water quality.

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
High Quality of Waters in California" (Anti-Degradation Policy)	Quality Control Board (RWQCB) Water Quality Control Plan (Basin Plan), Appendix A-2		or anticipated beneficial uses, and will not result in water quality less than what is prescribed by other state policies.		
SWRCB "Sources of Drinking Water" Policy	SWRCB Resolution No. 88-63, set forth at Central Coast RWQCB Basin Plan, Appendix A-9		Statement of policy that surface waters and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply except under specified circumstances.	Applicable	
SWRCB "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304	SWRCB Resolution No. 92-49	Statewide Policy, adopted by SWRCB under California Water Code Sections 13140 and 13307, approved by Office of Administrative Law	Statement of Policies and Procedures for investigation and cleanup of groundwater	The Central Coast Water Board has identified SWRCB Resolution No. 92-49 as an ARAR for the remedial action being selected at the Casmalia site in this document. EPA disagrees with the Central Coast Water Board about whether Resolution No. 92-49 is an ARAR for the remedial actions being proposed in this plan, namely adoption of Alternative 3. There is, however, no substantive dispute as to the selected remedies and cleanup levels for this cleanup action, and the Central Coast Water Board believes the selected remedies and cleanup	EPA has selected Alternative #3 in the ROD, and EPA has not made any substantial changes to the selected remedy since the Proposed Plan.

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
				levels set forth in the proposed plan substantively comply with Resolution No. 92-49. The Central Coast Water Board reserves any and all rights to assert Resolution No. 92-49 as an ARAR in the ROD and without prejudice to its position, the Central Coast Water Board agrees to concur with this proposed plan. Should Alternative 3 be substantially modified, or another Alternative be selected, then the Central Coast Water Board reserves the right to assert the applicability of 92-49 as an ARAR to EPA's proposed modified final remedy.	
Porter-Cologne Water Quality Act	Water Code §§ 13260-13269		Establishes that nearly all groundwater and surface water are considered suitable, or potentially suitable, for municipal or domestic water supply.	Applicable	
Water Quality Monitoring and Response Programs for Waste Management Units	23 CCR Div. 3, Ch. 15 as specified below				See below.

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
Precipitation and Drainage Controls	23 CCR § 2546		Provides performance standards related to precipitation and drainage controls for design and construction of containment structures and cover materials.	Relevant and Appropriate	Substantive Requirements Only.
Seismic Design Standards	23 CCR § 2547		Provides that Class I waste management units (e.g., including landfills) must be designed to withstand the maximum credible earthquake without damage to the foundation or structures, which control leachate, surface drainage, erosion or gas.	Relevant and Appropriate	Substantive Requirements Only.
Water Quality Monitoring and Response Programs for Waste Management Units – Corrective Action	23 CCR §§ 2550.10(a), (b), (d), and (g)(1)			Relevant and Appropriate	Substantive Requirements only.
Central Coast RWQCB Water Quality Control Plan (September 1994, as amended April 1995) (Basin Plan)			General WQOs for groundwater: Shall not contain taste or odor producing substances in concentrations that adversely affect beneficial uses.	Relevant and Appropriate	
			Municipal and domestic supply groundwater: Shall not contain organic chemicals in excess of the limiting concentrations in 22 CCR § 64444 [as renumbered] and listed in Table 3.1 of Basin Plan, and shall not contain concentrations of chemical constituents in excess of limits in 22 CCR § 64431 [as renumbered] (MCLs).	Relevant and Appropriate	
			Agricultural supply groundwater: Shall not contain constituents "in amounts that adversely affect such beneficial uses." Table 3.3 identifies adverse effects guidelines. No "controllable water quality factor" shall degrade the quality of any groundwater resource or adversely affect long-term soil productivity.	Relevant and appropriate	

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
			Groundwater Management Principle: "Wastewaters percolated into groundwater shall be of such quality at the point where they enter the ground so as to assure the continued usability of all groundwaters of the basin."	Relevant and Appropriate	
			Discharge Prohibitions: Wastes discharged to ground waters shall be free of toxic substances in excess of accepted drinking water standards; taste, odor, or color producing substances; and specified nitrogen compounds.	Applicable	
			Beneficial Uses of Surface Water in the San Antonio Hydrologic Unit, Table 2-1, Sec. 11-12: Defines beneficial uses for surface waters at the Casmalia Canyon and Shuman Canyon Creeks as: municipal/ domestic supply; agricultural supply; water contact recreation; non-contact water recreation; wildlife habitat; warm fresh water habitat; spawning, reproduction, and/or early development; and commercial and sport fishing.	Relevant and Appropriate	
General Permit for Stormwater Discharges Associated with Construction Activity	SWRCB Order No. 99-08-DWQ		Sets forth NPDES requirements for stormwater runoff from certain construction activities that disturb land equal to one (1) acre or more. Includes substantive requirements for developing and implementing a stormwater pollution prevention plan and performing monitoring of stormwater discharges.	Relevant and Appropriate	Substantive requirements only.
LOCATION-SPECIFIC ARARs					
Endangered Species and Migratory Birds					
U.S. Fish and Wildlife Service					
Federal Endangered Species Act (ESA)	16 U.S.C. §§ 1531-1544	Sitewide	Federal requirements governing endangered and threatened species. Section 1538 (Prohibited Acts) will be considered as a potential ARAR during the FS if any of the remedial alternatives being evaluated may be expected to adversely	Applicable	

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
			affect threatened or endangered species. Pursuant to 50 CFR § 402.14(b), EPA need not initiate formal consultation if, as a result of informal consultation or preparing a biological assessment, EPA determines (with the written concurrence of the U.S. Fish and Wildlife Service) that the response action is not likely to adversely affect listed species.		
California Fish and Game Code (F&G Code)					
Diversion of / Changes to Streams	F&G Code § 1603	Surface water	Prohibits the substantial diversion or obstruction of the natural flow or substantial changes to the bed, channel, or bank of any river, stream or lake designated by the Department of Fish and Game, or the use of any material from the streambeds, without first notifying the Department and otherwise complying with the statute.	Applicable	Substantive only.
Rare/Endangered Native Plants	F&G Code § 1908	Sitewide	Prohibits the taking of rare or endangered native plants.	Relevant and Appropriate	Substantive provisions only.
Migratory Bird Treaty Act	16 U.S.C. § 703-712	Onsite Ponds	Establishes protections for migratory birds at the site.	Applicable	Substantive provisions only.
Bald and Golden Eagle Act	16 U.S.C. § 668(a)	Sitewide	Establishes protections for bald and golden eagles.	Applicable	Substantive provisions only.
	14 CCR § 472 and § 475		Describes the exceptions to the prohibition on the take of nongame birds and mammals, and exceptions to the manner in which nongame birds and mammals may be taken.	Relevant and Appropriate	Substantive provisions only.
Endangered or Threatened Species	F&G Code 2080	Onsite Ponds	Prohibits import, export, take, possession, purchase or sale of any endangered or threatened species.	Relevant and Appropriate for “take” provision only	Substantive provisions only.
Fully Protected Animals	F&G Code 4700	Sitewide	Prohibits the take of any fully protected animal, including the ring-tailed cat.	Relevant and Appropriate for “take” provision only	Substantive provisions only.

Table D-1. List of ARARs

Standard / Requirement	Citation	Action / Media	Description	Status / Preliminary Determination	Comments
Mountain Lions	F&G Code 4800	Sitewide	Prohibits the take, injury, possession, transport, import or sale of any mountain lion.	Relevant and appropriate for "take" and "injure" provisions only	Substantive provisions only.
Institutional Controls*					
DTSC Requirements for Land Use Covenants	22 CCR §67391.1	Sitewide, Land Use Covenants	Provides standards for implementation of land use covenants where hazardous materials will remain onsite.	Relevant and appropriate	Substantive provisions only, specifically sub-sections (a)(2), (d), (e), (f) and (i) * Note: California Civil Code Section 1471 is California's implementing statute for the recording of land use covenants that run with the land.

Source: Modified from Appendix B, *Final Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).

Notes:

ARAR	applicable or relevant and appropriate requirement
CCR	California Code of Regulations
CFR	*Code of Federal Regulations*
DTSC	Department of Toxic Substances Control
F&G	Fish and Game (Code)
FS	feasibility study
MCL	maximum contaminant level
NPDES	National Pollutant Discharge Elimination System
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
TBC	to be considered
TI	Technical Impracticability
U.S.C.	United States Code
UST	underground storage tank
WMA	waste management area
WQO	water quality objective

Appendix E
Cost Estimate Detail for Selected Remedy

Remedial Alternative: Evapotranspirative (ET) Cap (BTA, CDA) (5 feet) + Resource Conservation and Recovery Act (RCRA) Cap (Polychlorinated biphenyl [PCB] Landfill) + Stormwater Controls + Institutional Controls (ICs) + Monitoring

Alternative Description: This remedial alternative involves installing a RCRA cap on the PCB Landfill (4.4 acres) and installing a ET soil cap on the Burial Trench Area (5.5 acres) and the Central Drainage (18.8 acres) as shown on Figure 11-2A. The ET soil cap is 5 feet of engineered low permeability claylike soil with a compacted 1-foot foundation layer and a 4-foot vegetative layer that is lightly compacted to about 85 percent. The soil cap is intended to store water, allow growth of vegetation and removal of soil moisture through transpiration. These caps would be tied into the adjacent Capped Landfills Area. The RCRA Cap and the ET Cap prevents eco-receptors from potential exposures to shallow soil (0 to 5 feet below ground surface [bgs]) contaminants and significantly reduces rainwater infiltration into soil and groundwater to reduce further volatile organic compound (VOC) migration in soil and groundwater. The stormwater will be directed by surface drains towards a culvert near PSCT-1 and then flow through a drainage channel to the southern portion of the site and then onto Pond 13 and offsite to the B-Drainage.

Table E-1. Area 1, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Capital Costs					
Mobilization / Demobilization					
Site Setup, Equipment Mobilization/Demobilization	1	ls	$200,000	$200,000	Based on contractor budgetary quotes
Remediation Documentation/Reporting	1	each	$100,000	$100,000	Based on previous remediation project experience
Surveying, Settlement monuments	1	ls	$100,000	$100,000	Based on contractor budgetary quotes
Pre-Remedial Testing					
Site Investigation/Reporting	1	ls	$-	$-	
Geotechnical testing/Geophysical Investigation	1	ls	$100,000	$100,000	Evaluate site stability, buried waste, geotech properties
Site Work					
Site Clearance/Grubbing	29	acre	$6,500	$189,000	Site clearance/grading prep for cap starting with the foundation layer
Existing wells protection/new well completion	30	wells	$5,000	$150,000	Protect well, raise well completion to reach new cap topo surface
Dust controls	60	days	$1,000	$60,000	Based on contractor unit costs and 3 months, 12 weeks, 60 days
RCRA Cap - PCB Landfill (4.4 acres)					PCB Landfill area (acres) = 4.4
Cut/Fill Leveling Layer (grading)	20,000	ft^3	$5	$100,000	Based on existing slopes estimated by CAD; contractor unit cost
Foundation layer (2 feet), transport and compact	16,000	ft^3	$6	$96,000	Soil volume based on estimated cap area, 10% shrink factor, contractor unit cost quote
GCL Bento Liner (material + labor)	4.4	acre	$34,500	$152,000	Assume $0.80/$ft^2$ based on GSE Liner quote including tax, shipping
HDPE liner (600-mil)(material + labor)	4.4	acre	$34,500	$152,000	Assume $0.70/$ft^2$ for HDPE liner per GSE Liner quote including tax, shipping
Geocomposite 200 mil fabrinet, material+labor	4.4	acre	$30,500	$134,000	Assume $0.70/$ft^2$ per GSE Liner quote including tax, shipping
Biotic barrier (200-mil Geonet)(material + labor)	4.4	acre	$21,800	$96,000	Assume $0.50/$ft^2$ per GSE Liner quote including tax, shipping
Vegetative cover (2 feet), transport and compact	16,000	ft^3	$6	$96,000	2 feet clean soil cover borrowed from northwest corner of site
Revegetation/Hydroseeding	4.4	acre	$4,000	$18,000	Top soil and hydroseeding
Evapotranspirative Soil Cap - BTA (5.5 acres)					BTA area (acres) = 5.5
Cut/Fill Leveling Layer (grading)	61,000	ft^3	$5	$305,000	Based on existing slopes estimated by CAD; contractor unit cost
Clay cover (1 feet): borrow and process	10,000	ft^3	$14	$140,000	Assume clayey soil from NW borrow area that is preprocessed with screens and some portion is crushed in a pugmill raises unit cos

Table E-1. Area 1, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Place clay soil and compact, 6-inch lifts	10,000	ft^3	$3	$30,000	Based on contractor unit cost
Vegetative Layer, Clay (4 feet): borrow and process	39,000	ft^3	$6	$234,000	Assume clayey soil from northwest borrow area that is preprocessed with screens and some portion is crushed in a pugmill raises unit cos
Place clay soil and compact, 12-inch lifts	39,000	ft^3	$2	$78,000	Based on contractor unit cost
Soil Amendments: fertilizer, gypsum, biosolids	5.5	acre	$20,000	$110,000	Based on gypsum, fertilizer, biosolids costs for 4-foot thickness Top soil and hydroseeding
Revegetation/Hydroseeding	5.5	acre	$4,000	$22,000	Top soil and hydroseeding
Evapotranspirative Soil Cap - CDA (18.8 acres)					CDA area (acres) = 18.8
Cut/Fill Leveling Layer (grading)	120,000	ft^3	$5	$600,000	Based on existing slopes estimated by CAD; Figure 11-1C
Clay cover (1 feet): borrow and process	33,000	ft^3	$14	$462,000	Assume clayey soil from northwest borrow area that is pre-processed with screens and some portion is crushed in a pugmill raises unit cost
Place clay soil and compact, 6-inch lifts	33,000	ft^3	$3	$99,000	Based on contractor unit cost
Vegetative Layer (4 feet): borrow and process	133,000	ft^3	$6	$798,000	Assume clayey soil from northwest borrow area that is pre-processed with screens and some portion is crushed in a pugmill raises unit cost
Place clay soil and compact, 12-inch lifts	133,000	ft^3	$2	$266,000	Based on contractor unit cost
Soil Amendments: fertilizer, gypsum, biosolids	18.8	acre	$20,000	$376,000	Based on gypsum, fertilizer, biosolids costs for 4-foot thickness
Revegetation/Hydroseeding	18.8	acre	$4,000	$75,000	Top soil and hydroseeding
Stormwater Controls					
Surface features - Stormwater ditches, Bench V-ditches	8,000	linear feet	$30	$240,000	Based on contractor unit cost quotes
Stormwater drain pipes	1,000	linear feet	$100	$100,000	Based on contractor unit cost quotes
Stormwater - culvert crossing, 3 inlet structures, riprap	1	ls	$100,000	$100,000	Based on contractor budgetary lump sum quote
Concrete drainage channel for Area 1 stormwater	1,500	linear feet	$60	$90,000	Cost based on channel length to RCF pond; use double unit cost for V-drains
Monitoring/Sampling/Testing					
Air Monitoring/Sampling (during implementation)	160	samples	$500	$80,000	160 air/dust samples (2/day)(VOCs, PCBs, dichlorodiphenyltrichloroethane (DDT), metals)
Compaction testing: Geotech engr	60	days	$500	$30,000	60 days of testing w Geotech engr/nuclear gage at $500/day
Wetlands - Upgrading for increased southwest flow					Upgrade B-Drainage wetlands per the Wetlands Plan (April 2011) and add diversion drainage channels on either side of wetland
Complete Erosion Improvements Described in Draft Wetlands Plan (April 2011)	1	see previous cost est	$100,000	$100,000	Reference for previous cost estimate
Grading of East Slope B-Drainage hillside, gullies/rills	5	acre	$20,000	$100,000	
Erosion control - Turf reinforcement mats	3	acre	$54,000	$162,000	
Surface features - Stormwater ditches, Bench V-ditches	4,500	linear feet	$30	$135,000	
General NPDES Stormwater Permit - Revision	1	ls	$50,000	$50,000	Assumed lump sum cost for entire site

Table E-1. Area 1, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Green Remediation	1	ls	$50,000	$50,000	Assumed lump sum cost per FS Area for green remediation
Health and Safety / Quality Control					
Construction QA/QC Program	1	ls	$200,000	$200,000	Based on contractor quotes
Health and Safety Program, ODCs	1	ls	$40,000	$40,000	Based on contractor quotes
Direct Capital Total:					
Contingency (35%)				**$2,385,000**	
Total Capital Cost:				**$9,200,000**	
Project / Construction Management					
Remedial Design/Engineering	5%	of	$6,815,000	$341,000	Engineering and management costs based on industry standards and experience.
Project Management, Agency Reporting and Coordination	3%	of	$6,815,000	$204,000	
EPA Oversight Costs	10%	of	$6,815,000	$682,000	
Construction Management	5%	of	$6,815,000	$341,000	
Total PM/CM Cost:				**$1,568,000**	
Total Capital Cost:				**$10,768,000**	Direct Capital Cost per Acre = $371,000
Operation and Maintenance Costs					
Cap Inspection / Maintenance					
Cap, Drainage Channel Inspection and Maintenance	1	year	$60,000	$60,000	Based on current site O&M costs
Settlement repair/Regrading/Erosion control	1	year	$80,000	$80,000	Based on current site O&M costs
Settlement survey/Reporting	1	year	$-	$-	
Misc repairs, ODCs	1	year	$40,000	$40,000	
Subtotal Annual O&M Cost:				$180,000	
Contingency (50%):				$90,000	
Project Management/Technical Support	1	year	$36,000	$36,000	
Total Annual O&M Cost:				**$306,000**	Based on current site O&M costs
Periodic Costs					
EPA Five-Year Review (5, 10, 15, 20, 25, and 30 years)	6	5-year	$25,000	$150,000	Based on previous experience with other sites; cost is divided by 5 and assigned to each FS area
Replace one half of caps	1	100-year	$5,384,000	$5,384,000	Assume half of cap would need to be replaced

PRESENT VALUE ANALYSIS (2012 $K)

Cost Type	Year	Total Cost	Cost/Year) (2012 $K)	Net Present Value at 3% DF (2012 $K)	Net Present Value at 7% DF (2012 $K)	
Capital Cost		$10,768		$10,768	$10,768	
Annual O&M Cost (post construction)	0 - 5	$1,555	$311	$1,424	$1,275	
Annual O&M Cost (post construction)	6 – 30	$7,775	$311	$4,671	$2,584	

Table E-1. Area 1, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description		Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Annual O&M Cost (post construction)	31 - 100	$26,804	$383	$4,594	$712	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$16,864,000**	**$14,627,000**	2012 $
Total Present Value of Alternative (Capital + 100 Year O&M)				**$21,458,000**	**$15,340,000**	
PRESENT VALUE ANALYSIS (2014 $K)						
Total Capital Cost (2014):					**$11,177,184**	2014 $ = 2012 $ adjusted by 3.8% construction cost inflation rate. (Reference: California Construction Cost Index Table, Engineering News Record, May 2014)
Total Annual O&M Cost, Annual (2014):					**$317,628**	
Periodic Cost, 5-year (2014):					**$25,950**	
Periodic Cost, 100-year (2014):					**$5,588,592**	
Cost Type	**Year**	**Total Cost (2014 $K)**	**Cost/Year (2014 $K)**	**Net Present Value at 3% DF (2014 $K)**	**Net Present Value at 7% DF (2014 $K)**	
Capital Cost		**$11,177**	**$2,235.44**	**$9,939**	**$8,566**	FS Area 1 remedy is expected to be constructed during the second construction season (2017) but present value of Capital Cost is assumed to be based on average capital cost for each year of the 5-year construction period.
Annual O&M Cost (postconstruction)	0 - 5	$1,614	$322.82	$1,478	$1,324	FS Remedy construction will take 5 years (projected to occur from 2016 to 2020). Annual O&M Costs post construction begin in 2021. Please note prior to and during construction the site will continue to incur O&M and EPA oversight costs
Annual O&M Cost (postconstruction)	6 - 30	$8,070	$322.82	$4,849	$2,682	
Annual O&M Cost (postconstruction)	31 - 100	$27,823	$397.47	$4,769	$739	
Present Value of Capital				**$9,939,000**	**$8,566,000**	2014 $ = 2012 $ adjusted by 3.8%
Present Value of 30 Year O&M				**$6,327,000**	**$4,006,000**	
Present Value of 100 Year O&M				**$11,096,000**	**$4,745,000**	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$16,267,000**	**$12,572,000**	
Total Present Value of Alternative (Capital + 100 Year O&M)				**$21,036,000**	**$13,311,000**	

Notes:

Source: Table E-1-2 from the *Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).

[1] PCB landfill (4.4 acres), BTA (5.5 acres) and CDA (18.8 acres) cover total area of about 29 acres. Alternative cost includes RCRA cap for PCB Landfill, ET soil cap (5 feet) for BTA and CDA areas, and associated stormwater controls.

[2] Assume active gas control is not required. New PCB and BTA caps will require special termination trench details.

[3] RCRA cap profile - 2 feet foundation, Drainage layer, Geomembrane, Geocomposite, 2 feet vegetative layer with biotic barrier.

[4] ET soil cap profile - 1 feet foundation clay, 4 feet vegetative layer

[5] Assumed fill for foundation layer is adequate to smooth existing grades for drainage or lessen steeper slopes for potential stability issues.

[6] Some of the existing V-ditches will need to be reconstructed after new capping of PCB and BTA.

[7] Existing membrane component of existing cap will need to be tied to the new PCB landfill cap with a special detailed tie-in.

[8] Drainage channel for Area 1 is to be a 1,500-foot concrete channel starting at the PSCT and passing through the footprint of the RCF Pond to Pond 13.

[9] As discussed with EPA, agency oversight is typically assumed to be 10% of capital cost.

BTA = Burial Trench Area

CAD = computer-aided design

CDA = Central Drainage Area

DF = discount factor

EPA = U.S. Environmental Protection Agency

FS = Feasibility Study

GSE = GSE Environmental

HDPE = high-density polyethylene

ls = lump sum

O&M = operations and maintenance

ODC = other direct costs

of = other fixed costs

PM/CM = Project / Construction Management

PSCT= Perimeter Source Control Trench

RCF = Runoff Control Facility

Remedial Alternative: RCRA-Equivalent Mono Soil Cap (West slope RCRA Canyon) (5 feet) + Excavate (West Canyon Spray Area [WCSA] remedial area) (5 feet) + Grading/best management practices (BMPs) (Uncapped Areas) + Stormwater Controls (Segregate Capped and Uncapped Area SW) + ICs + Monitoring

Alternative Description: This remedial alternative involves installing a RCRA equivalent mono soil cap on the west slope of the RCRA Canyon (approximately 8.4 acre) and the impacted portion of the WCSA (5.5 acres) will be excavated and the soil used as fill in Pond A-5 (Figure 11-6A). The RCRA equivalent mono soil cap is 5-foot of low permeability claylike soil with a 4-foot compacted layer to meet the 10-6 cm/s permeability criterion and a top 1-foot vegetative layer that is compacted to 85 percent of maximum dry density. The RCRA equivalent cap will control potential exposures to ecological receptors and will reduce surface water infiltration. The extent of the excavation is approximate and sidewal sampling will be used to confirm cleanup goals. The excavated portions of the WCSA will be backfilled to match grades. This remedial alternative assumes some grading and additional borrow soil is required to reduce the steepness of some of the sloped areas to install the cap. The final surfaces of the western slope of the RCRA Canyon will be sloped and include surface drains to allow drainage of storm water from the west slope of the RCRA canyon to flow into a new retention basin that will be constructed in the footprint of the former Pond A-5. This stormwater will be discharged by pipeline to the B-Drainage via the General NPDES permit. The uncapped area of the east slope and WCSA will implement grading and BMPs as part of erosion control. The surface water runoff from the eastern slope of the RCRA Canyon (i.e. WCSA) will be collected/managed in a new onsite evaporation pond constructed in the footprint of the A-Series Pond.

Table E-2. Area 2, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Capital Costs					
Mobilization / Demobilization					
Site Setup, Equipment Mobilization/Demobilization	1	ls	$200,000	$200,000	Based on contractor budgetary quotes
Remediation Documentation/Reporting	1	each	$100,000	$100,000	Based on previous remediation project experience
Surveying, Settlement monuments	1	ls	$80,000	$80,000	Based on contractor budgetary quotes
Pre-Remedial Testing					
Site Investigation/Reporting	1	ls	$-	$-	
Prelim Geotech investigation/Geophysical Eval	1	ls	$100,000	$100,000	Geophysical to identify any buried features, preliminary geotechnical sampling, testing, physical properties
Detailed Geotechnical Evaluation/Reporting	1	ls	$200,000	$200,000	Evaluate slope stability for capping in steep slopes and erosion control measures
Site Work					
Site Preparation/Clearance/Grubbing	13.9	acre	$6,500	$90,000	Site clearance/grubbing/grading prep of north and south canyons and canyon bottoms
Existing wells protection/new well completion	20	wells	$5,000	$100,000	Protect well, raise well completion to reach new cap topo surface
Dust controls: water truck/day	50	days	$1,000	$50,000	Based on contractor unit costs and 2.5 months, 10 weeks, 50 days
RCRA-equivalent Mono Cap 5 feet - West Slope (8.4 acres)					
Cut/Fill Leveling Layer (grading)	100,000	ft^3	$5	$500,000	Based on cap area, existing slopes; grading to reduce steep slopes
Clay Layer (4 feet)	60,000	ft^3	$14	$840,000	Assume clayey soil from NW borrow area that is pre-processed with screens and some portion is crushed in a pugmill raises unit cost

Table E-2. Area 2, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Place clay soil and compact, 6-inch lifts	60,000	ft^3	$3	$180,000	Based on contractor unit cost quotes
Clay soil from borrow area, 1 feet vegetative layer	15,000	ft^3	$6	$90,000	Based on 1 feet veg layer requiring addition of amendments and some preprocessing of soils
Place and compact, 12-inch lifts	15,000	ft^3	$2	$30,000	Lightly compacted, 85% relative compaction, 12-inch lifts
Erosion control - jute mesh, silt fencing	8.4	acre	$31,500	$264,600	Cap erosion control on sloped areas, jute mesh, TRM, silt fencing; use average unit cost of 0.2/ft^2 and 1.00/ft^2
Revegetation/Hydroseeding	8.4	acre	$4,000	$34,000	Top soil and hydroseeding
Excavation, 5 feet - WCSA; Grading (5.5 acres)					
Excavation (5 feet bgs)	44,000	ft^3	$6	$264,000	Based on contractor unit costs
Backfill/compact of excavation to match grades	48,000	ft^3	$4	$192,000	Grading of WCSA area outside of excavation to partially backfill excavation and reduce slope steepness
Erosion control - jute mesh, silt fencing	5.5	acre	$31,500	$173,250	Cap erosion control on sloped areas, jute mesh, TRM, silt fencing; use average unit cost of 0.2/ft^2 and 1.00/ft^2
Revegetation/Hydroseeding	5.5	acre	$4,000	$22,000	Top soil and hydroseeding
Grading/BMPs All Uncapped Areas (19.3 acres)					
Grading of uncapped East Slope area, gullies/rills	7	acre	$20,000	$140,000	Grading of uncapped east slope to remove gullies, rills for erosion control, assume 7 out of 19.3 acres
Erosion control - Turf reinforcement mats	3	acre	$54,000	$162,000	Turf reinforcement mats in Uncapped areas; Unit cost from Caltrans
Erosion control - jute mesh, silt fencing, rip rap	6	acre	$9,000	$54,000	Erosion control toolbox; assume 3 out of 21 acres
Revegetation/Hydroseeding	19.3	acre	$4,000	$77,000	Unit cost from Caltrans Erosion control toolbox; assume 6 out of 21 acres
Stormwater and Erosion Controls					
Surface features on cap - bench roads/V-ditches	6,000	linear feet	$30	$180,000	Top soil and hydroseeding
Culverts, inlet structures	1	ls	$150,000	$150,000	
Concrete channel - Capped area stormwater flow	2,000	linear feet	$30	$60,000	Surface features for drainage - concrete V-drains, perimeter ditches Based on contractor unit cost quotes
Concrete channel - Uncapped area stormwater flow	2,500	linear feet	$30	$75,000	Based on contractor unit cost quotes
Incremental Evaporation Pond cost	3	acre	$206,000	$618,000	Based on contractor unit cost quotes
Remedial Monitoring/Sampling					Incremental evaporation pond capacity needed based on unit cost for evaporation pond construction (see Area 4 cost estimate)

Table E-2. Area 2, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Air Monitoring/Sampling (during implementation)	150	samples	$500	$75,000	
Soil Compaction Testing: Geotech engr	40	days	$500	$20,000	150 air/dust samples (10/day) (VOCs, PCBs, DDT, metals) 40 days of testing with Geotech engr/nuclear gage at $500/day
Soil Confirmation Sampling and Analysis	400	samples	$200	$80,000	Analyze for metals including 6,010 total metals, soluble metals barium, hexavalent chromium, other parameters
Green Remediation	1	ls	$50,000	$50,000	Assumed lump sum cost per FS Area for green remediation
Health and Safety / Quality Control					
Construction QA/QC Program	1	ls	$250,000	$250,000	Based on contractor quotes
Health and Safety Program, ODCs	1	ls	$50,000	$50,000	Based on contractor quotes
			Direct Capital Total:	**$5,551,000**	
			Contingency (35%)	**$1,943,000**	
			Total Capital Cost:	**$7,494,000**	
Project / Construction Management					
Remedial Design/Engineering	5%	of	$5,551,000	$278,000	Engineering and management costs based on industry standards and experience.
Project Management, Agency Reporting and Coordination	3%	of	$5,551,000	$167,000	
EPA Oversight Costs	10%	of	$5,551,000	$555,000	
Construction Management	5%	of	$5,551,000	$278,000	
			Total PM/CM Cost:	**$1,278,000**	
			Total Capital Cost:	**$8,772,000**	Direct Capital Cost per Acre = $631,000
Operation and Maintenance Costs					
Cap Inspection / Maintenance					
Cap, Drainage Channel Inspection and Maintenance	1	year	$40,000	$40,000	Based on current site O&M costs
Settlement repair/Regrading/Erosion control	1	year	$100,000	$100,000	Based on current site O&M costs
Settlement survey/Reporting	1	year	$-	$-	
Misc repairs, ODCs	1	year	$50,000	$50,000	Based on current site O&M costs
			Subtotal Annual O&M Cost:	$190,000	
			Contingency (50%):	$95,000	
Project Management/Technical Support	1		$36,000	$36,000	
			Total Annual O&MM Cost:	**$321,000**	Based on current site O&M costs

Table E-2. Area 2, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description		Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Periodic Costs						
EPA Five-year Review (5,10,15,20,25 and 30 years)		6	5-year	$25,000	$150,000	Based on previous experience with other sites; cost is divided by 5 and assigned to each FS Area
Replace one half of caps		1	100-year	$4,386,000	$4,386,000	Assume 1/2 of cap would need to be replaced over the 100-year period
PRESENT VALUE ANALYSIS (2012 $K)						
Cost Type	**Year**	**Total Cost (2014 $K)**	**Cost/Year (2014 $K)**	**Net Present Value at 3% DF (2012 $K)**	**Net Present Value at 7% DF (2012 $K)**	
Capital Cost		$8,772		$8,772	$8,772	
Annual O&M Cost (post construction)	0 - 5	$1,630	$326	$1,493	$1,337	
Annual O&M Cost (post construction)	6 – 30	$8,150	$326	$4,897	$2,709	
Annual O&M Cost (post construction)	31 - 100	$26,856	$384	$4,603	$714	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$15,162,000**	**$12,817,000**	2012 $
Total Present Value of Alternative (Capital + 100 Year O&M)				**$19,765,000**	**$13,531,000**	
PRESENT VALUE ANALYSIS (2014 $K)						
Total Capital Cost (2014):					**$9,105,336**	2014 $ = 2012 $ adjusted by 3.8% construction cost inflation rate. (Reference: California Construction Cost Index Table, Engineering News Record, May 2014)
Total Annual O&M Cost, Annual (2014):					**$333,198**	
Periodic Cost, 5-year (2014):					**$25,950**	
Periodic Cost, 100-year (2014):					**$4,552,668**	
Cost Type	**Year**	**Total Cost (2014 $K)**	**Cost/Year (2014 $K)**	**Net Present Value at 3% DF (2014 $K)**	**Net Present Value at 7% DF (2014 $K)**	
Capital Cost		**$9,105**	**$1,821**	$8,097	$6,978	S Area 2 remedy is expected to be constructed during the first construction season (2016) but present value of Capital Cost is assumed to be based on average capital cost for each year of the 5-year construction period.
Annual O&M Cost (postconstruction)	0 - 5	$1,692	$338.39	$1,550	$1,387	S Remedy construction will take 5 years (projected to occur from 2016 to 2020). Annual O&M Costs post construction begin in 2021. Please note prior to and during construction, the site will continue to incur O&M and EPA oversight costs
Annual O&M Cost (postconstruction)	6 - 30	$8,460	$338.39	$5,083	$2,812	
Annual O&M Cost (postconstruction)	31 - 100	$27,877	$398.24	$4,778	$741	
Present Value of Capital				**$8,097,000**	**$6,978,000**	2014 $ = 2012 $ adjusted by 3.8%
Present Value of 30 Year O&M				**$6,633,000**	**$4,199,000**	
Present Value of 100 Year				**$11,411,000**	**$4,940,000**	

Table E-2. Area 2, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
O&M					
Total Present Value of Alternative (Capital + 30 Year O&M)			**$14,730,000**	**$11,177,000**	
Total Present Value of Alternative (Capital + 100 Year O&M)			**$19,508,000**	**$11,918,000**	

Notes:

Source: Table E-2-2 from the *Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).

1 This alternative involves RCRA-equivalent soil cap (5 feet) for remediation areas on the West slope and excavation (5 feet) for the WCSA remedial area and grading to reduce and smooth out steep slopes.

2 RCRA canyon West slope (8.4 acres) and WCSA remedial area (5.5 acres) cover a total of about 13.9 acres. Extent of excavation is approximate and could change depending on sidewall sampling to confirm cleanup goals.

3 Assumes additional site contaminant investigation is not necessary for capping and excavation areas.

4 Soil volumes for RCRA canyon are based on area of remediation derived by risk-based approach, Appendix C.

5 Clean soil is borrowed from northwest corner of site and trucked down the canyon for use as soil cover.

6 Clayey soils from northwest Borrow area are preprocessed with screening and pulverizing with pug mill. No supplemental bentonite or other clay included.

O&MM = operations, maintenance, and monitoring
TRM = turf replacement mat

Remedial Alternative: RCRA Cap (Locations 2) + Excavate ([Location 3] [20 feet]; [Location 4] [5 feet]) + Excavate/New Asphalt Cap (Location 1) (5 feet) + Groundwater Monitoring (Location 10) + Grading/BMPs (Uncapped Areas) + Stormwater Controls + ICs + Monitoring

Remedial Alternative Description: This remedial alternative involves extending the RCRA cap which is discussed for Area 1 over the Maintenance Shed Area (Location 2) and excavation of Hotspot Locations 3 and 4 south of the PSCT for disposal in the PCB Landfill (Figure 11-14A). The excavation will be backfilled with clean borrow soil. The surface of the cap would be sloped and includes surface drains to direct stormwater on the cap to flow southeast towards the drainage channel near PSCT-1. The stormwater in the drainage channel will flow under a culvert on RCF Road to Pond 13 and then offsite through or around the wetlands under the site's General NPDES permit. Hotspot Location 1 will be excavated and paved with a new 4-inch asphalt cap. For Hotspot Location 10 (RISBON-59), the alternative proposes two additional UHSU downgradient groundwater monitoring wells to ensure that there is no impact in the future to groundwater from this deep soil impacted area.

Table E-3. Area 3, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Capital Costs					
Mobilization / Demobilization					
Site Setup, Equipment Mobilization/Demobilization	1	ls	$100,000	$100,000	Based on contractor budgetary quotes
Remediation Documentation/Reporting	1	each	$50,000	$50,000	Based on previous remediation project experience
Surveying, Settlement monuments	1	ls	$50,000	$50,000	Based on contractor budgetary quotes
Pre-Remedial Testing					
Site Investigation/Reporting	1	ls	$75,000	$75,000	
Geotechnical testing/Geophysical Investigation/Surveying	1	ls	$75,000	$75,000	Addtnl site investigations to define extent
Site Work					Evaluate site stability, buried waste, geotech soil properties
Demo Maintenance Shed Building	1	ls	$100,000	$100,000	
UST Removals, 2 Tanks	1	ls	$100,000	$100,000	Includes removal and disposal of MSA bldg and foundation
Existing wells protection/new aboveground well completion	15	wells	$5,000	$75,000	Includes excavation, disposal, sampling, reporting and consultant costs for two USTs 5,000 gal and 2,000 gal
Site Clearance/Grubbing for RCRA cap	6.6	acre	$6,500	$43,000	Protect well, raise well completion to reach new cap topo surface Site clearance/grading prep for cap starting with the foundation layer Only a portion of the 2-acre area is excavated
Excavation/Backfill/Asphalt Cap (5 feet) - Location 1 (1 acre)					Based on estimated remediation area, existing slopes; contractor cost Borrow area transport and compact
Excavation (5 feet): Soil portion of Location 1	8,000	ft^3	$6	$48,000	
Backfill from Borrow Area and compact	8,800	ft^3	$6	$53,000	Assumes asphalt paving of unpaved areas, approx 1 acre
Excavated Soil onsite Placement at PCB Landfill	8,800	ft^3	$2	$18,000	
4-inch Asphalt Pavement capping (with 4-inch aggregate base)	43,500	ft^2	$5	$218,000	Location 2 area (acres) = 2.8
RCRA Cap - Location 2 (MSA, N of PSCT) (2.8 acres)					Based on estimate from CAD; contractor unit cost

Table E-3. Area 3, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Cut/Fill Leveling Layer (grading)	17,000	ft^3	$5	$85,000	Site clearance/grading prep for cap starting with the foundation layer.
Foundation layer (2 feet): borrow and compact	9,900	ft^3	$6	$59,000	Soil volume based on cap area, contractor unit cost quote
GCL Bento Liner (material + labor)	2.8	acre	$34,500	$97,000	Assume $0.80/$ft^2$ based on GSE Liner quote incl. tax, shipping
HDPE liner (60-mil)(material + labor)	2.8	acre	$34,500	$97,000	Assume $0.70/$ft^2$ for 60 mil HDPE liner per GSE Liner quote
Geocomposite 200-mil fabrinet, material+labor	2.8	acre	$30,500	$85,000	Assume $0.70/$ft^2$ per GSE Liner quote including tax, shipping
Biotic barrier (200-mil Geonet)(material + labor)	2.8	acre	$21,800	$61,000	Assume $0.50/$ft^2$ per GSE Liner quote including tax, shipping
Vegetative cover (2 feet)	9,900	ft^3	$6	$59,000	2 feet clean soil cover borrowed from northwest corner of site
Revegetation/Hydroseeding	2.8	acre	$4,000	$11,000	Top soil and hydroseeding
Excavation/Backfill (20 feet) - Location 3 (2.2 acres)					Location 3 (acres) 2.2
Excavation (0-20')	71,000	ft^3	$6	$426,000	Based on estimated remediation area and 1:1 side slopes. Assume no shoring is necessary. Segregate unimpacted soils as fill
Segregate unimpacted soils use as fill and compact	24,000	ft^3	$3	$72,000	Assume unimpacted soil is 1/3rd of excavated soil
Backfill: borrow and compact	54,000	ft^3	$6	$324,000	Borrow from northwest Borrow area; no preprocessing
Revegetation/Hydroseeding	2.2	acre	$4,000	$9,000	Top soil and hydroseeding
Excavated Soil Transport/Dispose PCB Landfill	47,000	ft^3	$2	$94,000	Assume PCB landfill disposal of 2/3rds of excavated soil
Excavation/Backfill (5 feet) - Location 4 (1.6 acres)					
Excavation	13,000	ft^3	$6	$78,000	
Backfill: borrow and compact	14,300	ft^3	$6	$86,000	Based on estimated remediation area, existing slopes; contractor cost
Revegetation/Hydroseeding	1.6	acre	$4,000	$6,000	Borrow from northwest Borrow area; no pre-processing
Excavated Soil Transport/Dispose at PCB Landfill	13,000	ft^3	$2	$26,000	Top soil and hydroseeding
GW Monitoring Wells - Location 10 (RISBON-59)					
Install 2 Upper HSU groundwater monitoring wells downgradient of RISBON-59	2	wells	$15,000	$30,000	4-inch Sch 80 PVC well casing, total depth 40 feet
Stormwater Controls					
Surface features - Stormwater ditches, Bench V-ditches	1,800	linear feet	$30	$54,000	Estimated length of surface drainage ditches
BMPs - Grading to remove rills and gullies	15	acre	$20,000	$300,000	Assumed areas that needs BMPs is 15 out of 40 acres

Table E-3. Area 3, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
BMPs - Turf reinforcement mats, jute mesh, silt fence	15	acre	$43,500	$653,000	Assumed areas that needs BMPs
BMPs - hydroseeding	15	acre	$4,000	$60,000	Assumed areas that needs BMPs
Remedial Monitoring/Sampling					
Air Monitoring/Sampling (during remedy implementation)	50	samples	$500	$25,000	50 air/dust samples, analysis+labor for tank removals, Locations 1,2,3,4,10 excavations
Soil Confirmation Sampling and Analyses	60	samples	$100	$6,000	
Compaction testing: Geotech engr	30	days	$500	$15,000	30 days of testing with Geotech engr/nuclear gage at $500/day
Green Remediation	1	ls	$50,000	$50,000	Assumed lump sum cost per FS Area for green remediation
Health and Safety / Quality Control					
Construction QA/QC Program	1	ls	$150,000	$150,000	Based on contractor quotes
Health and Safety Program, ODCs	1	ls	$50,000	$50,000	Based on contractor quotes
			Direct Capital Total:	**$4,073,000**	
			Contingency (35%)	**$1,426,000**	
			Direct Capital Cost:	**$5,499,000**	Direct Capital Cost per Acre = $668,000
Operation and Maintenance Costs					
Project / Construction Management					Engineering and management costs based on industry standards and experience.
Remedial Design/Engineering	5%	of	$4,073,000	$204,000	
Project Management, Agency Reporting and Coordination	3%	of	$4,073,000	$122,000	
EPA Oversight Costs	10%	of	$4,073,000	$407,000	
Construction Management	5%	of	$4,073,000	$204,000	
			Total ON.CM Cost:	**$937,000**	
			Total Capital Cost:	**$6,436,000**	
Operation and Maintenance Costs					
Cap Inspection / Maintenance					
Cap, Drainage Channel Inspection and Maintenance	1	year	$30,000	$30,000	Based on current site O&M costs
Settlement repair/Regrading/Erosion control	1	year	$40,000	$40,000	Based on current site O&M costs
Settlement survey/Reporting	1	year	$-	$-	Included in Area 5 cost estimate for sitewide groundwater monitoring

Table E-3. Area 3, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Groundwater monitoring (RISBON-59 area, Location 10)					
Misc repairs, ODCs	1	year	$40,000	$40,000	
			Subtotal Annual O&M Cost:	$110,000	
			Contingency (50%):	$55,000	
Project Management/Technical Support	1	year	$24,000	$24,000	
			Total Annual O&MM Cost:	**$189,000**	Based on current site O&M costs
Periodic Costs					
US EPA Five-year Review (5,10,15,20,25 and 30 years)	6	5-year	$25,000	$150,000	Based on previous experience with other sites; cost is divided by 5 and assigned to each FS Area
Replace one half of caps	1	100-year	$3,218,000	$3,218,000	Assume 1/2 of cap would need to be replaced over the 100-year period

PRESENT VALUE ANALYSIS (2012 $K)

Cost Type	Year	Total Cost (2014 $K)	Cost/Year (2014 $K)	Net Present Value at 3% DF (2012 $K)	Net Present Value at 7% DF (2012 $K)	
Capital Cost		$6,436		$6,436	$6,436	
Annual O&M Cost (post construction)	0 - 5	$970	$194	$888	$795	
Annual O&M Cost (post construction)	6 – 30	$4,850	$194	$2,914	$1,612	
Annual O&M Cost (post construction)	31 - 100	$16,448	$235	$2,819	$437	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$10,238,000**	**$8,843,000**	2012 $
Total Present Value of Alternative (Capital + 100 Year O&M)				**$13,058,000**	**$9,280,000**	

PRESENT VALUE ANALYSIS (2014 $K)

				Total Capital Cost (2014):	**$6,680,568**	2014 $ = 2012 $ adjusted by 3.8% construction cost inflation rate. (Reference: California Construction Cost Index Table, Engineering News Record, May 2014)
				Total Annual O&M Cost, Annual (2014):	**$196,182**	
				Periodic Cost, 5-year (2014):	**$25,950**	
				Periodic Cost, 100-year (2014):	**$3,340,284**	

Cost Type	Year	Total Cost (2014 $K)	Cost/Year (2014 $K)	Net Present Value at 3% DF (2014 $K)	Net Present Value at 7% DF (2014 $K)	

Table E-3. Area 3, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description		Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Capital Cost		$6,681	$1,336.11	$5,941.00	$5,120	FS Area 2 remedy is expected to be constructed during the first construction season (2016) but PV of Capital Cost is assumed to be based on average capital cost for each year of the 5-year construction period.
Annual O&M Cost (postconstruction)	0 - 5	$1,007	$201.37	$922	$826	FS Remedy construction will take 5 years (projected to occur from 2016 to 2020). Annual O&M Costs post construction begin in 2021. Please note prior to and during construction the site will continue to incur O&M and EPA oversight costs
Annual O&M Cost (postconstruction)	6 - 30	$5,034	$201.37	$3,025	$1,673	
Annual O&M Cost (postconstruction)	31 - 100	$17,073	$243.90	$2,926	$454	
Present Value of Capital				**$5,941,000**	**$5,120,000**	2014 $ = 2012 $ adjusted by 3.8%
Present Value of 30 Year O&M				**$3,947,000**	**$2,499,000**	
Present Value of 100 Year O&M				**$6,873,000**	**$2,953,000**	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$9,888,000**	**$7,619,000**	
Total Present Value of Alternative (Capital + 100 Year O&M)				**$12,814,000**	**$8,072,000**	

Notes:

Source: Table E-3-2 from the *Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).

1. This alternative addresses the ten impacted soil locations identified for FS Area 3 in Figure 11-14A.
2. Location 1 is in Liquid Treatment Area and partial excavation of hot spots is assumed with asphalt replacement where needed.
3. Location 2 is to capped with a RCRA cap that will tie into the Area 1 RCRA cap.
4. Locations 3 and 4 are to be excavated down to 20 and 5 feet bgs respectively and backfilled.
5. Locations 5-9 - No action based on ecological risk modeling and statistical analysis that confirm area-wide risk-based requirements are met.
6. Location 10, RISBON-59 assumes long term groundwater monitoring of existing and two new downgradient monitoring wells in the UHSU.

Capital cost for Maintenance Shed building demolition and removal of two USTs are included prior to remedial activities.

PVC = polyvinyl chloride
QA = quality assurance
QC = quality control
UST = underground storage tank

Remedial Alternative: ALT 3 - Eco-Cap (RCF Pond, Segregate East RCF) (2 feet) + Construct Lined Evaporation Pond (A-Series Pond) + RCRA Cap (Pond 18) + Lined Retention Basin (Pond A-5, Pond13) + Stormwater Controls + ICs + Monitoring

Remedial Alternative Description: This remedial alternative involves extending the RCRA cap which is discussed for Area 1 over the Maintenance Shed Area (Location 2) and excavation of Hotspot Locations 3 and 4 south of the PSCT for disposal in the PCB Landfill (Figure 11-14A). The excavation will be backfilled with clean borrow soil. The surface of the cap would be sloped and includes surface drains to direct stormwater on the cap to flow southeast towards the drainage channel near PSCT-1. The stormwater in the drainage channel will flow under a culvert on RCF Road to Pond 13 and then offsite through or around the wetlands under the site's General NPDES permit. Hotspot Location 1 will be excavated and paved with a new 4-inch asphalt cap. For Hotspot Location 10 (RISBON-59), the alternative proposes two additional UHSU downgradient groundwater monitoring wells to ensure that there is no impact in the future to groundwater from this deep soil impacted area.

Table E-4. Area 4, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Capital Costs					
Mobilization / Demobilization					
Site Setup, Equipment Mobilization/Demobilization	1	ls	$ 250,000	$ 250,000	Based on contractor quotes
Remediation Documentation/Reporting	1	each	$ 100,000	$ 100,000	Based on previous remediation project experience
Pre-Remedial Testing					
Site Investigation/Delineation/Reporting	1	ls	$ 150,000	$ 150,000	Additional investigations (environmental, geotechnical, geophysical); refine nature and extent
Geotechnical testing/Geophysical Investigation	1	ls	$ -	$ -	
Site Work					
Pump existing pond water to new evap pond	1	ls	$ 5,000	$ 5,000	Assumed cost for transferring pond water to new evaporation pond
Dust controls	80	ls	$ 1,000	$ 80,000	Based on contractor unit cost-water truck-4 months, 80 days
Pond A-5 - Lined Retention Basin					
Fill from WCSA excavation/transport/compact	40,000	ft^3	$ 6	$ 240,000	Transport and compact WCSA 5-foot excavated soil, raise bottom and place liner to serve as retention basin; 49,000 ft^3 - 9,000 ft^3 = 40,000 ft^3
Foundation layer (2 feet)	9,000	ft^3	$ 6	$ 54,000	Transport and compact 2 feet foundation layer soil. Use WCSA excavated soil as fill
Geocomposite Pond liner (HDPE liner 20 mil, geotextile)	2.5	acre	$ 56,500	$ 141,000	Assume $1.30/$ft^2$ for GCL Bentomat pond liner per CETCO including material, labor, taxes, shipping
Soil cover (1 foot): borrow and compact	4,400	ft^3	$ 6	$ 26,000	1 foot clean soil cover from soil borrow area
Revegetation/Hydroseeding	2.5	acre	$ 4,000	$ 10,000	Top soil and hydroseeding
Pond 18 - RCRA Cap					
Cut/Fill (grading)	8,000	ft^3	$ 4	$ 32,000	Volume from CAD figure; Knockdown dike adjacent to A-Series Pond and raise pond bottom with fill and compact
Foundation layer (2 feet): borrow dike and compact	10,000	ft^3	$ 4	$ 40,000	Borrow soils from dike excavation
GCL Bento Liner (matl + labor)	2.8	acre	$ 34,500	$ 97,000	Assume $0.80/$ft^2$ based on GSE Liner quote including tax, shipping

Table E-4. Area 4, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
HDPE liner (60-mil)(material + labor)	2.8	acre	$ 34,500	$ 97,000	Assume $0.80/ft² for 60-mil HDPE liner per GSE Liner quote, tax
Geocomposite 200-mil fabrinet, (material+labor)	2.8	acre	$ 30,500	$ 85,000	Assume $0.70/ft² per GSE Liner quote including tax, shipping
Biotic barrier (200-mil Geonet)(material + labor)	2.8	acre	$ 21,800	$ 61,000	Assume $0.50/ft² per GSE Liner quote including tax
Vegetative cover (2 feet)	10,000	ft³	$ 6	$ 60,000	2 feet clean soil cover borrowed from northwest corner of site
Revegetation/Hydroseeding	2.8	acre	$ 4,000	$ 11,000	Top soil and hydroseeding
A-Series Pond - Lined Evaporation Pond					A-Series proposed (acres) 11.00
Cut Pont NE shoreline, fill Pond bottom	48,000	ft³	$ 6	$ 288,000	Cut soil from NE shoreline to expand pond and obtain fill for pond bottom
Additional Fill for Pond bottom	37,000	ft³	$ 6	$ 222,000	Additional fill to raise bottom to 425 feet above mean sea level based on CAD estimate including foundation layer
Construct sumps for leachate collection and leak detection	6	ls	$ 50,000	$ 300,000	Bottom sloped to sumps for leachate collection and leak detection filled with gravel and piping laid up the sideslope to a recovery tank
HDPE geomembrane, 60 mil, primary liner	14	acre	$ 34,800	$ 478,500	60 mil HDPE primary liner, 25% larger for sideslopes and anchor
Geonet 200 mil	14	acre	$ 21,750	$ 299,063	Intermediate drainage layer, 25% larger for sideslopes and anchor
HDPE geomembrane, 60 mil, secondary liner	14	acre	$ 34,800	$ 478,500	60 mil HDPE secondary liner, 25% larger for sideslopes and anchor
Foundation layer + 1 feet soil cover	54,000	ft³	$ 6	$ 324,000	1 feet clean soil cover borrowed from northeast shore of A-Series Pond
Ecological Protection - Evaporation Pond					
Eco-protection, outer fencing	8,000	linear feet	$ 15	$ 120,000	Wildlife controls including outer fencing, netting, inner fencing, hazing
Eco-protection, hazing (radar system)	1	ls	$ 400,000	$ 400,000	Chain link fence, 6 feet high, get-a-quote.com
Eco-protection, drift fencing	8,000	linear feet	$ 11	$ 88,000	Bird-Avert system; 50% higher than for 6-acre pond
Eco-protection, netting	11	acre	$ 40,645	$ 447,000	tin flashing material doitbest.com ($150 per 50-foot incl. tax) + labor ($100/hr x 2 workers x 8 weeks x 50 hrs); $3+$8/foot
Initial Biological Surveys and Vegetation clearing	1	ls	$ 80,000	$ 80,000	Material $0.60/ft² for pond netting, online price at pondbiz.com; Framing material and labor $15k per acre
RCF Pond - Eco Cap West RCF (8.6 acres) + Berm to segregate East RCF (2.8 acres)					Initial biosurveys every 3 months for 1st year
Raise Pond Bottom: Borrow and compact	55,000	ft³	$ 6	$ 330,000	RCF Pond Area (acres) 11.40
Ecocap Soil cover (2 feet)	37,000	ft³	$ 6	$ 222,000	Raise pond bottom well above modeled groundwater level of 390 to 400 above mean sea level to 415 above mean sea level on west RCF. Borrow soil from Offsite NW borrow area
Biotic barrier (200-mil Geonet)	0.0	acre	$ 21,800	$ -	Based on 10.4 acres of eco-cap with 2 feet soil cover because 1 acre taken up by berm
Construct berms, 750 feet long, 5 feet high, 25 feet wide	6,000	ft³	$ 12	$ 72,000	Based on $0.50/ft² per GSE Liner quote including tax, shipping

Table E-4. Area 4, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Drainage: V-drains, ditches	3,000	linear feet	$ 30	$ 90,000	Clean import fill from borrow area, transport and compact for berm; 750 feet long, 25 feet wide, 5 to 8 feet high
Erosion control BMPs for sideslopes, jute mesh, TRM	5	acre	$ 8,700	$ 44,000	Assume 3,000 feet of concrete drains including diversion ditch above RCF
Pond 13 - Lined Retention Basin connects to Wetlands					Assume 5 acres of steep sides of RCF Pond need erosion control
Fill from borrow area to raise bottom	6,000	ft^3	$ 6	$ 36,000	Transport and compact borrow soil, raise bottom above WT and place liner to serve as retention basin that connects to wetlands
Foundation layer (2 feet)	7,000	ft^3	$ 6	$ 42,000	Transport and compact borrow soil that is 2 feet thick
Geocomposite Pond liner (HDPE liner 20-mil, geotextile)	1.9	acre	$ 56,500	$ 107,000	Assume $1.30/$ft^2$ for GCL Bentomat pond liner per CETCO including material, labor, taxes, shipping
Soil cover (1 feet)	3,500	ft^3	$ 6	$ 21,000	1 feet clean soil cover from soil borrow area
Revegetation/Hydroseeding	1.9	acre	$ 4,000	$ 8,000	Top soil and hydroseeding
Stormwater Controls					
Stormwater ditches, bench roads/V-ditches	3,000	linear feet	$ 30	$ 90,000	Surface features for drainage - grading, swales, V-drains to drain RCF Pond and Pond 18 stormwater; use 25% less drains
Stormwater drain pipes	1,200	linear feet	$ 100	$ 120,000	Based on contractor unit cost quote
Stormwater inlet/outlet structures, rip-rap	1	ls	$ 50,000	$ 50,000	Based on contractor budgetary estimate
Culvert under RCF Road to Pond 13	250	linear feet	$ 800	$ 200,000	Based on contractor unit cost quote
Drainage channel, 750 feet for Area 1 drainage	750	linear feet	$ 60	$ 45,000	concrete channel, double unit cost for wider channel to Pond 13
Enhanced Evaporation System (A-Series Evap Pond)					
TurboMist System to enhance evaporation, 80 gpm	1	each	$ 100,000	$ 100,000	Assumed cost for 1 land-based turbo mister systems 80 gpm each based on quote from Slimline, maker of Turbomister
Remedial Monitoring/Sampling					
Air Monitoring/Sampling (during implementation)	120	samples	$ 500	$ 60,000	
Compaction testing: Geotech engineer	100	days	$ 500	$ 50,000	150 air/dust samples analyzed for VOCs, PCBs, DDT, metals
Soil Confirmation Sampling and Analysis	100	samples	$ 100	$ 10,000	100 days of testing with Geotech engr/nuclear gage at $500/day
Green Remediation	1	ls	$ 50,000	$ 50,000	Analyze for metals including 6010 total metals, barium, nickel, chromium, copper, soluble metals
Health and Safety / Quality Control					Assumed lump sum cost per FS Area for green remediation
Construction QA/QC Program	1	ls	$ 250,000	$ 250,000	Based on contractor quotes

Table E-4. Area 4, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Health and Safety Program, ODCs	1	ls	$ 50,000	$ 50,000	Based on contractor quotes
			Direct Capital Cost:	**$ 7,111,000**	
Contingency - Pond Water Treatment (GAC+RO)					
GAC and RO to treat pond water with high TDS for discharge under site specific NPDES permit	20,000,000	gal			Contingency is relevant if ponds cannot be closed due to residual water that cannot be addressed by evaporation pond
			Contingency (35%):	**$937,000**	Assume unit cost of $0.10/gallon for GAC/RO treatment based on verbal discussion with Siemens vendor
			Direct Capital Total:	**$6,436,000**	
Project / Construction Management					
Remedial Design/Engineering	5%	of	$ 7,111,000	$ 356,000	
Project Management, Agency Reporting and Coordination	3%	of	$ 7,111,000	$ 213,000	Engineering and management costs based on industry standards and experience.
EPA Oversight Costs	10%	of	$ 7,111,000	$ 711,000	
Construction Management	5%	of	$ 7,111,000	$ 356,000	
			Total PM/CM Cost:	**$ 1,636,000**	
			Total Capital Cost:	**$ 13,236,000**	
Operation and Maintenance Costs					
Cap/Pond Inspection / Maintenance					
Pond, Storm channel, liner inspection and monitoring	1	year	$ 50,000	$ 50,000	Based on current site O&M costs
Pond, Liner repair and maintenance/erosion control	1	year	$ 100,000	$ 100,000	Based on current site O&M costs
Evap Pond - Annual biological survey, Vegetation removal	1	year	$ 24,000	$ 24,000	Annual bio survey labor and reporting - 50% greater than 6-acre pond
Drainage, Culvert maintenance, monitoring	1	year	$ 36,000	$ 36,000	Based on current site O&M costs
Utilities: electricity	1	year	$ 36,000	$ 36,000	Utilities for turbomister system, 40-horseport motor, 20-horsepower pump, 30-kW, operating 8 months per year
Misc: Equipment rentals / PID / FID / ODCs	1	year	$ 24,000	$ 24,000	
			Subtotal Annual O&M Cost:	$ 270,000	
			Contingency (50%):	$ 135,000	
Project Management/Technical Support	$ 36,000				
			Total Annual O&M Cost:	**$ 441,000**	Based on current site O&M costs

Table E-4. Area 4, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
EPA Five-year Review (5, 10, 15, 20, 25, and 30 years)	6	5-year	$ 25,000	$ 150,000	Based on previous experience with other sites; cost is divided by 5 and assigned to each FS Area
Replace eco-protection drift fence, netting	1	5-year	$ 535,000	$ 535,000	Assumes replacement every 5 years
Replace eco-protection outer fence, radar system	1	10-year	$ 520,000	$ 520,000	Assumes replacement every 10 years
Evaporation Pond Sediment sampling (every 5 years)	6	5-year	$ 75,000	$ 450,000	Sampling sediment at 15 locations in A-Series Pond and analysis for inorganics/metals
Periodic dredging of sediment	1	20-year	$ 1,643,000	$ 1,643,000	Assume 6 acres of upper 12 inches of sediment is dredged ($50/ft^3) and sent to Kettleman for disposal as nonRCRA haz ($80/ton)
Replace EcoCap/Biotic barrier and Pond liners	1	50-year	$ 6,618,000	$ 6,618,000	Assume half of capital cost of pond liner and cap would need to be replaced in a 100-year period

PRESENT VALUE ANALYSIS (2012 $K)

Cost Type	Year	Total Cost (2014 $K)	Cost/Year (2014 $K)	Net Present Value at 3% DF (2012 $K)	Net Present Value at 7% DF (2012 $K)	
Capital Cost		$13,236		$13,236	$13,236	
Annual O&M Cost (post construction)	0 - 5	$2,840	$568	$2,601	$2,329	
Annual O&M Cost (post construction)	6 – 30	$17,403	$696	$10,456	$5,784	
Annual O&M Cost (post construction)	31 - 100	$62,858	$898	$10,774	$1,670	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$26,294,000**	**$21,349,000**	2012 $
Total Present Value of Alternative (Capital + 100 Year O&M)				**$37,068,000**	**$23,019,000**	

PRESENT VALUE ANALYSIS (2014 $K)

Total Capital Cost (2014):	**$ 13,738,968**	2014 $ = 2012 $ adjusted by 3.8% construction cost inflation rate. (Reference: California Construction Cost Index Table, Engineering News Record, May 2014)
Total Annual O&M Cost, Annual (2014):	**$ 457,758**	
Periodic Cost, 5-year (2014):	**$ 659,130**	
Periodic Cost, 10-year (2014):	**$ 539,760**	
Periodic Cost, 20-year (2014):	**$ 1,705,434**	
Periodic Cost, 50-year (2014):	**$ 6,869,484**	

Table E-4. Area 4, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description		Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Cost Type	**Year**	**Total Cost (2014 $K)**	**Cost/Year (2014 $K)**	**Net Present Value at 3% DF (2014 $K)**	**Net Present Value at 7% DF (2014 $K)**	
Capital Cost		$13,236	$2,748	$12,218	$10,529	FS Area 4 remedy is expected to be constructed during the third and fourth construction seasons (2018 and 2019) but PV of Capital Cost is assumed to be based on average capital cost for each year of the 5-year construction period.
Annual O&M Cost (postconstruction)	0 - 5	$2,948	$590	$2,700	$2,417	FS Remedy construction will take 5 years (projected to occur from 2016 to 2020). Annual O&M Costs post construction begin in 2021. Please note prior to and during construction the site will continue to incur O&M and EPA oversight costs
Annual O&M Cost (postconstruction)	6 - 30	$17,525	$701	$10,529	$5,824	
Annual O&M Cost (postconstruction)	31 - 100	$62,247	$932.09	$11,184	$1,734	
Present Value of Capital				**$12,218,000**	**$10,529,000**	2014 $ = 2012 $ adjusted by 3.8%
Present Value of 30 Year O&M				**$13,229,000**	**$8,242,000**	
Present Value of 100 Year O&M				**$24,413,000**	**$9,976,000**	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$25,447,000**	**$18,771,000**	
Total Present Value of Alternative (Capital + 100 Year O&M)				**$36,631,000**	**$20,505,000**	

Notes:

Source: Table E-4-2 from the *Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).

1. This alternative involves pumping existing pond water to the new evaporation pond located on the footprint of the existing A-Series Pond.
2. The A-Series and RCF Pond will be graded and filled to raise the low-lying areas of the ponds to ensure there is no groundwater intrusion.
3. Pond A-5 and Pond 13 will be lined with the following: foundation layer, geocomposite liner (HDPE membrane/geotextile), gravel and a soil cap.
4. Pond A-5 will be filled using WCSA excavation soil and lined to be used as a retention basin for capped RCRA Canyon stormwater.
5. Pond 18 will also be capped with a RCRA cap after the adjacent berm is knocked down to provide fill soil.
6. RCF Pond will be covered with an eco-cap that is sloped to drain water out of the RCF to Pond 13.
7. RCF Pond will include a drainage channel that conveys clean stormwater out of the Capped Landfills.

Stormwater from the capped RCRA Canyon, the Capped Landfills and the eco-capped RCF will be drained out through or around the wetlands through Pond 13.

GAC = granular activated carbon

GCL = geosynthetic clay late

gpm = gallons per minute

kW = kilowatt

RO = reverse osmosis

Remedial Alternative: Extraction (PSCT, Gallery Well) + Extraction (nonaqueous phase liquid [NAPL]-only in Pesticide/Solvent [P/S] Landfill) + Extraction (NAPL-only in CDA, 4 wells) + Monitoring (12 new LHSU wells) + Treat and Discharge PSCT Groundwater to Onsite Evaporation Pond + ICs + Monitoring

Alternative Description: This alternative includes continued extraction of liquids and NAPL from the Gallery Well and PSCT trenches as discussed in Alternative 2. In addition, this alternative adds NAPL-only extraction from 16 new NAPL-only wells in the UHSU under the P/S Landfill. Four wells will be located on Bench 1 and four more on a new bench road between Bench 1 and Bench 2. In addition, two new bench roads south of Bench 1 will have four wells each near the toe of the P/S Landfill (Figure 11-25A). NAPL-only extraction anticipates utilizing 4-inch diameter wells which are pumped as necessary when sufficient DNAPL and LNAPL has collected in the well. Twelve new LHSU monitoring wells are proposed just upgradient of PSCT-1 and PSCT-4 to monitor any potential VOC migration under the PSCT in the LHSU. The PSCT liquids would be treated onsite for removal of organics (via an upgraded GAC system) and pumped to a new upgraded onsite treatment system designed to remove organics. The treated PSCT liquids will be pumped to a new lined evaporation pond in the A-Series Pond footprint as in Alternative 2. The extracted NAPL and leachate will be sent offsite to a permitted facility for disposal. Sitewide groundwater monitoring is included as currently implemented and described in the RGMEW workplan dated March 2009.

Table E-5. Area 5N, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Capital Costs					
Mobilization / Demobilization					
Site Setup, Equipment Mobilization / Demobilization	1	ls	$ 150,000	$ 150,000	Based on contractor budgetary quotes
Remediation Documentation/Reporting	1	each	$ 125,000	$ 125,000	Based on previous remediation project experience
Pre-Remedial Testing					
Site Investigation/Delineation/Reporting	1	ls	$ 50,000	$ 50,000	Additional investigations in the vicinity of expected DNAPL at the toe of the P/S Landfill and refine nature & extent
Site Preparation/Geophysical survey	1	ls	$ -	$ -	
DNAPL-Only Extraction Pilot Testing	1	ls	$ 50,000	$ 50,000	3-month long field pilot test for periodic DNAPL-only pumping incl. rentals NAPL pumps and cost estimate
Site Work					
Construct three new bench roads	3	each	$ 200,000	$ 600,000	400 feet long bench road construction for DNAPL well installation in the southern portion of the P/S Landfill
GWTS Upgrade for PSCT Flow (Treat VOCs)					PSCT extraction rate (gal/year) 1,900,000
DNAPL stainless steel tanks: Primary, Secondary	2	ls	$ 150,000	$ 300,000	Based on TS7C tank replacement costs
Water storage tank: carbon steel	2	ls	$ 40,000	$ 80,000	Based on previous tank replacement costs four pumps
GW extraction pumps, controllers	5	each	$ 10,000	$ 50,000	PSCT wells, one in Gallery well
Six 2,000-pound LPGAC pressure vessels	6	each	$ 25,000	$ 150,000	Means Cost Handbook 2005

Table E-5. Area 5N, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Transfer pumps, bag filters, piping	1	ls	$ 35,000	$ 35,000	Assumed based on experience
Control system	1	ls	$ 75,000	$ 75,000	Estimated based on experience with other projects
Treatment system pad	1	ls	$ 30,000	$ 30,000	Means Cost Handbook 2005; assume 40 x 100 feet at $10/ft^2
Collection-discharge piping upgrade	3,000	feet	$ 30	$ 90,000	Assume 8,000 feet of piping to connect 12 wells
Construction, startup, shakedown	1	ls	$ 50,000	$ 50,000	Assumed based on experience
NAPL-Only Well Installation in P/S Landfill					Well install unit cost, $/linear feet = $420
NAPL well drilling, sonic drilling, casing	16	each	$ 30,000	$ 480,000	80 feet deep, 20 feet sump, steel casing w sonic drilling; Boart Longyear quote
Well development	16	each	$ 2,000	$ 32,000	Well development, 8 days
Consultant oversight, reporting	16	each	$ 5,000	$ 80,000	Assume workplan, oversight during well install, logging, reporting; 3 days per well; 10 weeks to complete well install
Waste disposal, H&S, ODCs	16	each	$ 5,000	$ 80,000	RCRA hazardous disposal offsite to Kettleman at $300/drum, 15 drums/boring
NAPL-Only Treatment System for P/S Landfill					
NAPL skimmer pumps, wellhead assemblies, controllers	16	each	$ 5,000	$ 80,000	
Collection piping, trenching, cabling to the LTA	3,000	feet	$ 60	$ 180,000	Xitech vendor
NAPL-water separator	1	ls	$ 150,000	$ 150,000	Based on contractor estimate with double containment piping
Storage tanks, instrumentation, transfer pumps	1	ls	$ 100,000	$ 100,000	Based on Means Cost Handbook 2005
Equipment installation	1	ls	$ 75,000	$ 75,000	Assume use of DNAPL tanks from GWTS upgrade
LHSU Well Installation					
LHSU well drilling, installation, well box	12	each	$ 20,000	$ 240,000	Assumed based on experience
Well development	12	each	$ 2,000	$ 24,000	50 feet deep wells just south of PSCT-1 and PSCT-4; well screened in the top 20 feet of LHSU below the contact
Consultant oversight, reporting	12	each	$ 5,000	$ 60,000	Well development, 2 days
Waste disposal, H&S, ODCs	12	each	$ 5,000	$ 60,000	Assume workplan, oversight during well install, logging, reporting; 2 days per well; 2 weeks of drilling to complete well install

Table E-5. Area 5N, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Remedial Monitoring/Sampling					
Air Monitoring/Sampling (during implementation)	16	samples	$ 500	$ 8,000	RCRA haz disposal offsite to Kettleman at $300/drum, 15 drums/boring
Soil Confirmation Sampling and Analysis	16	samples	$ 500	$ 8,000	16 air/dust samples analyze for VOCs, PCBs, DDT, metals during drilling in DNAPL area
Groundwater Sampling and Analysis	16	samples	$ 500	$ 8,000	Analyze for VOCs, DNAPL saturation, 6010 total metals, soluble metals barium, hexavalent chromium, other parameters
Health and Safety / Quality Control					
Construction QA/QC Program	1	ls	$ 125,000	$ 125,000	Based on contractor quotes
Health and Safety Program, ODCs	1	ls	$ 75,000	$ 75,000	Based on contractor quotes
			Direct Capital Total:	**$ 3,700,000**	
			Contingency (35%)	**$ 1,295,000**	
			Direct Capital Total:	**$ 4,995,000**	
Project / Construction Management					
Remedial Design/Engineering	5%	of	$ 3,700,000	$ 185,000	Engineering and management costs based on industry standards and experience
Project Management, Agency Reporting and Coordination	3%	of	$ 3,700,000	$ 111,000	
EPA Oversight Costs	10%	of	$ 3,700,000	$ 370,000	
Construction Management	5%	of	$ 3,700,000	$ 185,000	
			Total PM/CM Cost	**$ 851,000**	
			Total Capital Cost:	**$ 5,846,000**	
Operation and Maintenance Costs					
GWTS Operation and Maintenance					
GWTS Maintenance and Monitoring (labor)	12	months	$ 20,000	$ 240,000	Based on current site O&M costs; labor at $100/hour
GWTS water sampling for compliance	1	year	$ 15,000	$ 15,000	Based on current site O&M costs
Gallery Well liquids disposal; 450,000 gal/year	0	gal	$ 1.50	$ -	See below under Variable O&M Costs See below under Variable O&M Costs
NAPL disposal - Gallery well; 3,000 gal/year	0	gal	$ 3.50	$ -	Based on current site O&M costs

Table E-5. Area 5N, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
LPGAC and VPGAC carbon vessels and replacement	1	year	$ 40,000	$ 40,000	Based on current site O&M for PSCT ext
Utilities: electricity	12	months	$ 2,000	$ 24,000	Based on current site O&M for PSCT ext
Repair, Replacement: Pumps, motors, valves, fittings, electric	1	year	$ 35,000	$ 35,000	
Misc: Equipment rentals /Generator/Forklift/ODCs	1	year	$ 26,000	$ 26,000	
NAPL-only extraction in P/S Landfill O&M					Same as current GWTS cost + DNAPL costs
NAPL extraction O&M	12	months	$ 8,000	$ 96,000	NAPL extraction for 10 years
NAPL disposal - 16 NAPL-only well liquids	0	gal	$ 3.50	$ -	80 hours/months O&M labor at $100/hour
LPGAC and VPGAC carbon vessels and replacement	1	year	$ 8,000	$ 8,000	See below under Variable O&M Costs
Utilities: electricity	1	year	$ 2,000	$ 2,000	Vapor phase carbon replacement used with NAPL storage tanks
Repair/Replacement: pumps, motors, valves, electrical sub	1	year	$ 6,000	$ 6,000	$300/month for periodic operation of extraction pumps
Misc: Equipment rentals /Generator/Forklift/ODCs	1	year	$ 24,000	$ 24,000	Based on costs from current NAPL extraction and treatment system
LHSU Groundwater Monitoring					
Annual Sampling, Analysis, Reporting for 12 wells	1	ls	$ 24,000	$ 24,000	Same as current GWTS cost + DNAPL costs
			Subtotal Annual O&M Cost:	$ 540,000	
			Contingency (50%):	$ 270,000	Sampling, analysis, reporting, annual, VOCs analysis
Project Management/Technical Support	1	year	$36,000	$36,000	Based on experience previous GWTS construction experience
Sitewide Groundwater Monitoring	1	year	$ 242,000	$ 242,000	
Total Annual O&M Cost (w/o Variable cost items, Years 1-10):				**$ 1,088,000**	NAPL-only and Gallery Well extraction P/S Landfill duration is 10 years
Total Annual O&M Cost (w/o Variable cost items, Year 11 onwards)				**$ 884,000**	Includes PSCT GWTS O&M and groundwater monitoring
Annual Variable O&M Cost Items (include 50% Contingency)					
Gallery Well liquids disposal, Year 1	450,000	gal	$ 1.50	$ 1,013,000	Assume Gallery Well liquid decreases at 5% per year initially decreasing to an average of 250,000 gallons per year for years 6 through 10, at which point approximately 3,286,000 gallons are recovered.
Gallery Well liquids disposal, Year 2	427,500	gal	$ 1.50	$ 962,000	
Gallery Well liquids disposal, Year 3	406,125	gal	$ 1.50	$ 914,000	
Gallery Well liquids disposal, Year 4	385,819	gal	$ 1.50	$ 868,000	

Table E-5. Area 5N, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Gallery Well liquids disposal, Year 5	366,528	gal	$ 1.50	$ 825,000	
Gallery Well liquids disposal, Year 6 - 10 (average)	250,000	gal	$ 1.50	$ 563,000	
NAPL disposal, Year 1	13,000	gal	$ 3.50	$ 68,000	Assume 10,000 gallons of NAPL recovered from extraction of P/S LF liquids and 3,000 gallons of NAPL from GW liquids for Year 1. The NAPL quantities in the P/S LF liquids decrease 20% per year. A more rapid decrease in NAPL recovered is assumed for the remaining years.
NAPL disposal, Year 2	10,400	gal	$ 3.50	$ 55,000	
NAPL disposal, Year 3	8,320	gal	$ 3.50	$ 44,000	
NAPL disposal, Year 4	6,700	gal	$ 3.50	$ 35,000	
NAPL disposal, Year 5	5,300	gal	$ 3.50	$ 28,000	
NAPL disposal, Year 6 - 10 (average)	1,500	gal	$ 3.50	$ 8,000	
Periodic Costs (No Contingency)					
EPA Five-year Review (5, 10, 15, 20, 25, and 30 years)	6	5-year	$ 25,000	$ 150,000	Based on previous experience with other sites; cost is divided by 5 and assigned to each FS Area
Replace portion of PSCT trench	2	50-year	$ 1,500,000	$ 3,000,000	Assume 1,500 feet length would need to be replaced using a $1,000/linear foot of trench estimate derived from PCT-C Trench
Replace GWTS	2	50-year	$ 860,000	$ 1,720,000	Replace GWTS for PSCT and NAPL-only system

PRESENT VALUE ANALYSIS (2012 $K)

Cost Type	Year	Total Cost (2014 $K)	Cost/Year (2014 $K)	Net Present Value at 3% DF (2014 $K)	Net Present Value at 7% DF (2014 $K)	
Capital Cost		$5,846		$5,846	$5,846	
Annual O&M Cost (post construction)	0 - 5	$10,277	$2,055	$9,413	$8,428	
Annual O&M Cost (post construction)	6 – 30	$26,100	$1,044	$15,682	$8,674	
Annual O&M Cost (post construction)	31 - 100	$66,000	$951	$11,416	$1,770	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$30,941,000**	**$22,948,000**	2012 $
Total Present Value of Alternative (Capital + 100 Year O&M)				**$42,356,000**	**$24,718,000**	

PRESENT VALUE ANALYSIS (2014 $K)

Total Capital Cost (2014):	**$ 6,068,148**	2014 $ = 2012 $ adjusted by 3.8% construction cost inflation rate. (Reference: California Construction Cost Index Table, Engineering News Record, May 2014)
Total Annual O&M Cost Years 1-10, Annual (2014):	**$ 1,129,344**	
Total Annual O&M Cost Years 11-onward, Annual (2014):	**$ 917,592**	

Table E-5. Area 5N, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description		Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
				Total Variable Annual O&M Cost Years 0-5 (2014):	**$ 4,994,856**	
				Total Variable Annual O&M Cost Years 6-10 (2014):	**$ 2,963,490**	
				Periodic Cost, 5-year (2014):	**$ 25,950**	
				Periodic Cost, 50-year (2014):	**$ 2,449,680**	
Cost Type	**Year**	**Total Cost (2014 $K)**	**Cost/Year (2014 $K)**	**Net Present Value at 3% DF (2014 $K)**	**Net Present Value at 7% DF (2014 $K)**	
Capital Cost		$6,068	$1,214	$5,396	$4,651	FS Area 5 remedy is expected to be constructed during the fifth construction season (2020) but present value of Capital Cost is assumed to be based on average capital cost for each year of the 5-year construction period.
Annual O&M Cost (postconstruction)	0 - 5	$10,668	$2,134	$9,771	$8,748	FS Remedy construction will take 5 years (projected to occur from 2016 to 2020). Annual O&M Costs post construction begin in 2021. Please note prior to and during construction the site will continue to incur O&M and EPA oversight costs
Annual O&M Cost (postconstruction)	6 - 30	$27,092	$1,084	$16,278	$9,004	
Annual O&M Cost (postconstruction)	31 - 100	$69,131	$988	$11,849	$1,837	
				Present Value of Capital	**$5,396,000**	**$4,651,000**	2014 $ = 2012 $ adjusted by 3.8%
				Present Value of 30 Year O&M	**$26,048,000**	**$17,752,000**	
				Present Value of 100 Year O&M	**$37,898,000**	**$19,589,000**	
				Total Present Value of Alternative (Capital + 30 Year O&M)	**$31,445,000**	**$22,402,000**	
				Total Present Value of Alternative (Capital + 100 Year O&M)	**$43,294,000**	**$24,240,000**	

Notes:

Source: Table E-5-2 from the *Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).

1. This alternative assumes that the existing extraction through PSCT wells, Gallery well continue as currently, and adds NAPL-only extraction with 16 extraction wells pumped periodically with the objective of NAPL-only removal as shown in Figure 11-25A.
2. Groundwater PSCT extraction rates are anticipated to decrease significantly from site capping and closing ponds due to reduced infiltration.
3. Groundwater treatment plant is upgraded with new treatment equipment, extraction pumps, repaired/new collection/discharge piping, etc.
4. NAPL is extracted periodically by pumping DNAPL and LNAPL skimmer pumps from 16 wells for a duration of 10 years.
5. Gallery well extraction rate decreases with time as the P/S Landfill is dewatered over a period of 10 years.
6. NAPL-only wells are 4-foot-diameter steel casing wells about 80 feet deep located on Bench 1 and three other new bench roads in the southern part of the P/S landfill.

NAPL is separated in an oil-water separator and then sent offsite for disposal as hazardous waste like current onsite operations.
DNAPL = dense nonaqueous phase liquid
GWTS = groundwater treatment system

Remedial Alternative: Extraction (Perimeter Control Trench [PCT]-A, PCT-B) + Treat and Discharge Offsite + Monitored Natural Attenuation + ICs + Monitoring

Alternative Description: This remedial alternative includes continued extraction of liquids from PCT-A and PCT-B as in Alternative 2. The extracted PCT-A and PCT-B liquids will be treated for organics and inorganics and discharged offsite in accordance with the site-specific NPDES permit (Figure 11-31A). Note that anticipated capping remedies for the FS Areas and 1 and 3 would minimize leaching to groundwater. This combined with natural attenuation of organics would reduce contaminant concentrations over the long term. Groundwater monitoring is included as currently implemented and described in the RGMEW workplan dated March 2009.

Table E-6. Area 5S, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Capital Costs					
Mobilization / Demobilization					
Site Setup, Equipment Mobilization / Demobilization	1	ls	$ 150,000	$ 150,000	Based on Contractor quotes
Remediation Documentation/Reporting	1	each	$ 50,000	$ 50,000	Projected based on experience with other remediation projects
Pre-Remedial Testing					
Site Preparation/Geophysical survey	1	ls	$ 20,000	$ 20,000	Include surveying location of existing collection piping runs
Refurbish PCT-B Trench					
Excavate existing trench, gravel/clay barrier	3,000	ft^3	$ 35	$ 105,000	Based on excavation of trench 500 feet long, 3 feet thick, 50 feet deep
Overburden excavation and backfill	12,000	ft^3	$ 10	$ 120,000	Assume overburden in 4 times trench volume
Backfill gravel/sand in trench	3,750	tons	$ 30	$ 113,000	Based on contractor quotes from Cal-Portland delivered; 0.5-inch leach rock
Backfill clay on top layer	500	ft^3	$ 30	$ 15,000	Based on contractor unit cost quotes
Install replacement wells	2	each	$ 30,000	$ 60,000	80 feet deep, stainless steel casing wells
Transport and place in PCB Landfill	3,300	ft^3	$ 10	$ 33,000	Disposal of gravel barrier in the PCB Landfill
PCT-A, PCT-B Extraction					Disposal of gravel barrier in the PCB Landfill
GW extraction pumps, controllers	4	each	$ 10,000	$ 40,000	
Collection-discharge piping upgrade	5,000	feet	$ 60	$ 300,000	
GWTS for PCT (VOCs, Inorganics treatment)					Five pumps, level controllers in RAP wells in PCT-A, PCT-B
Water storage tanks and transfer tanks: carbon steel	4	ls	$ 50,000	$ 200,000	Assume 5,000 feet of piping to connect 4 wells to GWTS/evap pond
LPGAC vessels – four 2,000-pound pressure vessels	4	units	$ 25,000	$ 100,000	PCT-A,B extraction (gal/year) = 5,600,000
Reverse Osmosis Units (Pair in series @ 10 gpm)	2	ls	$ 70,900	$ 142,000	Based on previous tank replacement costs
Reject concentrator (3-module VSEP system)	1	ls	$ 173,600	$ 174,000	Two trains of two 2,000-pound LPGAC vessels, Siemens quote

Table E-6. Area 5S, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Transfer pumps, bag filters, piping, instrumentation	1	ls	$ 75,000	$ 75,000	Based on scaling with cost exponent factor using costs obtained for GWTS in Appendix A for this 10 gpm RO system; two units in series based on scaling with cost exponent factor using costs obtained for GWTS in Appendix A for this 10 gpm RO system
Control system	1	ls	$ 75,000	$ 75,000	Assumed based on experience
Equipment pad, secondary containment, fence	1	ls	$ 75,000	$ 75,000	PLC controls, programming, alarms, level controls in pumps
Electrical, Utilities Hookups	1	ls	$ 50,000	$ 50,000	Means Cost Handbook 2005; assume 75 feet x 100 feet at $10/ft^2
Equipment installation and startup	1	ls	$ 125,000	$ 125,000	Assumed lump sum based on past project experience Subcontractor labor for equipment hookups, startup, testing
Equipment rentals, PID/FID, misc ODCs	1	ls	$ 50,000	$ 50,000	sOX additional 20,000-gallon tanks to store groundwater that cannot be discharged due to non-compliance with stringent NPDES limits for inorganics and may need to be treated again
Additional tankage for groundwater and brine storage	6	ls	$ 50,000	$ 300,000	
PCT well redevelopment	1	ls	$ 25,000	$ 25,000	Redevelop wells in PCT-A and PCT-B
Health and Safety / Quality Control					PCT-C length (linear feet) = 1500
Construction QA/QC Program	1	ls	$ 50,000	$ 50,000	Based on Contractor quotes
Health and Safety Program, ODCs	1	ls	$ 25,000	$ 25,000	Based on Contractor quotes
			Direct Capital Total:	**$ 2,472,000**	
			Contingency (35%)	**$ 1,236,000**	Assume higher 50% contingency for challenges with number of RO units needed, level of pretreatment and filtration needed; e.g. iron filtration units may be required due to elevated dissolved iron
			Direct Capital Total:	**$ 3,708,000**	
Project / Construction Management					
Remedial Design/Engineering	5%	of	$ 2,472,000	$ 124,000	Engineering and management costs based on industry standards and experience.
Project Management, Agency Reporting and Coordination	3%	of	$ 2,472,000	$ 74,000	
EPA Oversight Costs	10%	of	$ 2,472,000	$ 247,000	
Construction Management	5%	of	$ 2,472,000	$ 124,000	
			Total PM/CM Cost	**$ 569,000**	
			Total Capital Cost:	**$ 4,277,000**	
Operation and Maintenance Costs					
GWTS Operation and Maintenance					PCT-A,B extraction (gal/year) 5,600,000 Design flow rate (gpm) 10

Table E-6. Area 5S, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
GWTS Maintenance and Monitoring (labor)	12	months	$ 15,000	$ 180,000	1 FTE worker
GWTS water sampling for compliance	12	months	$ 2,000	$ 24,000	Assume $2000 sampling cost per month
LPGAC carbon vessels and replacement	12	months	$ 3,000	$ 36,000	Assume one 2000-pound vessel changed out per month
Utilities: electricity	12	months	$ 2,000	$ 24,000	Assume 20 kW (14 horsepower) rated equipment power usage
Membranes, filters - waste disposal	12	months	$ 4,000	$ 48,000	RO membranes, filters, solid waste
Well redevelopment, annual	1	year	$ 30,000	$ 30,000	one event per year for all wells
Repair/Replacement: Pumps, motors, valves, electrical sub	1	year	$ 50,000	$ 50,000	Assumed based on experience
Misc: Equipment rentals /Generator/Forklift/ODCs	1	year	$ 50,000	$ 50,000	Same as current GWTS cost
Brine disposal	840,000	gal	$ 0.66	$ 554,000	Brine concentrate disposal quote from American Integrated; per 5,000-gallon truck, $0.50/gallon + $800/load for truck/driver ($0.16/gallon)
			Subtotal Annual O&M Cost:	$ 996,000	
			Contingency (50%):	$ 491,000	
Project Management/Technical Support	1	year	$ 16,000	$ 16,000	Assume double PM cost for Alt 2 Area 5S
Sitewide Groundwater Monitoring	1	year	$ 121,000	$ 121,000	Assume double PM cost for Alt 2 Area 5S
			Total Annual O&M Cost:	**$ 1,631,000**	
PERIODIC COSTS (NO CONTINGENCY)					
EPA Five-year Review (5, 10, 15, 20, 25, and 30 years)	6	5-year	$ 25,000	$ 150,000	Based on previous experience with other sites; cost is divided by 5 and assigned to each FS Area
Replace portion of PSCT trench	2	50-year	$ 1,500,000	$ 3,000,000	Assume entire length of PCT trenches (3,000 feet) would need to be replaced based on unit cost for PCT-C Trench $1,000/linear foot
Replace GWTS	2	50-year	$ 1,391,000	$ 2,782,000	Assume entire GWTS is replaced every 50 years

PRESENT VALUE ANALYSIS (2012 $K)

Cost Type	Year	Total Cost (2014 $K)	Cost/Year (2014 $K)	Net Present Value at 3% DF (2014 $K)	Net Present Value at 7% DF (2014 $K)	
Capital Cost		$4,277		$4,277	$4,277	
Annual O&M Cost (postconstruction)	0 - 5	$8,180	$1,636	$7,492	$6,708	
Annual O&M Cost (postconstruction)	6 – 30	$40,900	$1,636	$24,574	$13,593	
Annual O&M Cost (postconstruction)	31 - 100	$119,952	$1,714	$20,561	$3,188	

Table E-6. Area 5S, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description		Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Total Present Value of Alternative (Capital + 30 Year O&M)				**$36,343,000**	**$24,578,000**	2012 $
Total Present Value of Alternative (Capital + 100 Year O&M)				**$56,904,000**	**$27,766,000**	
PRESENT VALUE ANALYSIS (2014 $K)						
Total Capital Cost (2014):					**$ 4,439,526**	2014 $ = 2012 $ adjusted by 3.8% construction cost inflation rate. (Reference: California Construction Cost Index Table, Engineering News Record, May 2014)
Total Annual O&M Cost, Annual (2014):					**$ 1,692,978**	
Periodic Cost, 5-year (2014):					**$ 25,950**	
Periodic Cost, 50-year (2014):					**$ 3,000,858**	
Cost Type	**Year**	**Total Cost (2014 $K)**	**Cost/Year (2014 $K)**	**Net Present Value at 3% DF (2014 $K)**	**Net Present Value at 7% DF (2014 $K)**	
Capital Cost		$4,440	$887.91	$3,948	$3,402	FS Area 5 remedy is expected to be constructed during the fifth construction season (2020) but PV of Capital Cost is assumed to be based on average capital cost for each year of the 5-year construction period.
Annual O&M Cost (postconstruction)	0 - 5	$8,491	$1,698.17	$7,777	$6,963	
Annual O&M Cost (postconstruction)	6 - 30	$42,454	$1,698.17	$25,508	$14,110	
Annual O&M Cost (postconstruction)	31 - 100	$124,510	$1,778.72	$21,342	$3,309	
Present Value of Capital				**$3,948,000**	**$3,402,000**	2014 $ = 2012 $ adjusted by 3.8%
Present Value of 30 Year O&M				**$33,285,000**	**$21,073,000**	
Present Value of 100 Year O&M				**$54,627,000**	**$24,381,000**	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$37,233,000**	**$24,475,000**	
Total Present Value of Alternative (Capital + 100 Year O&M)				**$58,575,000**	**$27,784,000**	

Notes:

Source: Table E-6-2 from the *Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).

1. This alternative assumes that the existing extraction through the RAP wells continue as currently.
2. Groundwater RAP extraction rates at PCT-A and B are assumed to decrease due to site capping and closing ponds that will reduce infiltration.
3. Groundwater treatment plant is upgraded with new treatment equipment, extraction pumps, repaired/new collection/discharge piping, etc.

FID = flame ionization detection
LPGAC = liquid-phase granular activated charcoal
NPDES = National Pollutant Discharge Elimination System
PID = photoionization detection
RAP = remedial action plan
VSEP = vibratory shear enhanced processing

Remedial Alternative: Extraction (PCT-C) + Treat/Discharge Offsite + Monitored Natural Attenuation + ICs + Monitoring

Alternative Description: This remedial alternative includes continued extraction of liquids from PCT-C as is required to meet current action levels and prevent offsite migration. The extracted PCT-C liquids will be pumped to the new lined 11-acre evaporation pond which we are proposing be located in the footprint of the A-Series Pond (Figure 11-35A). Note that anticipated capping remedies for the RCRA Canyon/WCSA (FS Area 2) and Pond A-5 and A-Series Pond (FS Area 4) that are upgradient would minimize leaching to groundwater and this would attenuate inorganic concentrations over the long term. Groundwater monitoring is included as currently implemented and described in the RGMEW workplan dated March 2009. The waste brine from inorganics treatment is sent offsite for disposal

Table E-7. Area 5W, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Capital Costs					
Mobilization / Demobilization					
Site Setup, Equipment Mobilization / Demobilization	1	ls	$ 50,000	$ 50,000	Based on Contractor quotes
Remediation Documentation/Reporting	1	each	$ 50,000	$ 50,000	Projected based on experience with other remediation projects
Pre-Remedial Testing					
Site Preparation/Geophysical survey	1	ls	$ 20,000	$ 20,000	Include surveying location of existing collection piping runs
Refurbish PCT-C Trench					Unit cost for trench per linear foot = $1,000
Excavating existing gravel trench	8,000	ft^3	$ 35	$ 280,000	Based on 1,500 linear feet of trench that is 3 feet thick excavated down to an average depth of 50 feet; unit cost from Means Handbook 2000
Overburden excavation and backfill	32,000	ft^3	$ 10	$ 320,000	Assume overburden in 4 times trench volume
Backfill gravel/sand in trench	10,800	tons	$ 30	$ 324,000	Based on contractor quotes from Cal-Portland delivered; 0.5-inch leach rock
Backfill clay on top layer	800	ft^3	$ 30	$ 24,000	Based on contractor quotes
Install replacement wells	2	each	$ 30,000	$ 60,000	80 feet deep, stainless steel casing wells
Disposal of excavated gravel	8,800	ft^3	$ 10	$ 88,000	Disposal of gravel/clay barrier in the PCB Landfill
PCT-C Extraction					
GW extraction pumps, controllers	2	each	$ 10,000	$ 20,000	
Collection-discharge piping upgrade	4,000	feet	$ 60	$ 240,000	Two pumps in RAP wells
GWTS for PCT (VOCs and Inorganics treatment)					Assume 4,000 feet of piping to connect wells to system and discharge offsite
					PCT-C extraction (gallons per year) = 4,200,000
Water storage tanks and transfer tanks: carbon steel	4	ls	$ 50,000	$ 200,000	Design flow rate (gpm) 10
LPGAC vessels – four 2,000-pound pressure	4	units	$ 25,000	$ 100,000	Based on previous tank replacement costs

Table E-7. Area 5W, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
vessels					
Reverse Osmosis Units (Pair in series @ 10 gpm)	2	ls	$ 70,900	$ 142,000	Two trains of two 2,000-pound LPGAC vessels, Siemens quote
Reject concentrator (3-module VSEP system)	1	ls	$ 173,600	$ 174,000	Based on scaling with cost exponent factor using costs obtained for GWTS in Appendix A for this 10 gpm RO system; two units in series based on scaling with cost exponent factor using costs obtained for GWTS in Appendix A for this 10 gpm RO system
Transfer pumps, bag filters, piping, instrumentation	1	ls	$ 75,000	$ 75,000	Assumed based on experience
Control system	1	ls	$ 75,000	$ 75,000	PLC controls, programming, alarms, level controls in pumps
Equipment pad, secondary containment, fence	1	ls	$ 75,000	$ 75,000	Means Cost Handbook 2005; assume 75 x 100 at $10/ft^2
Electrical, Utilities Hookups	1	ls	$ 50,000	$ 50,000	Assumed lump sum based on past project experience
Equipment installation and startup	1	ls	$ 125,000	$ 125,000	Subcontractor labor for equipment hookups, startup, testing
Equipment rentals, PID/FID, misc ODCs	1	ls	$ 50,000	$ 50,000	Three additional 20,000-gallon tanks to store groundwater that cannot be discharged due to non-compliance with stringent NPDES limits for inorganics and may need to be treated again Redevelop wells in PCT-A and PCT-B PCT-C length (linear feet) = 1,500
Additional tankage for groundwater storage	3	ls	$ 50,000	$ 150,000	
PCT well redevelopment	1	ls	$ 20,000	$ 20,000	
Health and Safety / Quality Control					
Construction QA/QC Program	1	ls	$ 50,000	$ 50,000	Based on Contractor quotes
Health and Safety Program, ODCs	1	ls	$ 25,000	$ 25,000	Based on Contractor quotes
			Direct Capital Total:	**$ 2,787,000**	
			Contingency (35%)	**$ 1,394,000**	Assume higher 50% contingency for challenges with RO technology, number of RO units needed, and level of pre-treatment and filtration needed, e.g. additional iron pretreatment may be required
			Direct Capital Total:	**$ 4,181,000**	
Project / Construction Management					
Remedial Design/Engineering	5%	of	$ 2,787,000	$ 139,000	Engineering and management costs based on industry standards and experience.
Project Management, Agency Reporting and Coordination	3%	of	$ 2,787,000	$ 84,000	
EPA Oversight Costs	10%	of	$ 2,787,000	$ 279,000	
Construction Management	5%	of	$ 2,787,000	$ 139,000	
			Total PM/CM Cost	**$ 641,000**	
			Total Capital Cost:	**$ 4,822,000**	
Operation and Maintenance Costs					

Table E-7. Area 5W, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
GWTS for PCT (VOCs and Inorganics treatment)					PCT-A,B extraction (gallons per year) 5,600,000 Design flow rate (gpm) 10
					1.2 FTE worker
GWTS Maintenance and Monitoring (Labor)	12	months	$ 20,000	$ 240,000	Assume $2000 sampling cost per month
GWTS water sampling for compliance	12	months	$ 2,000	$ 24,000	Based on current site O&M costs
LPGAC vessels and replacement	12	months	$ 3,000	$ 36,000	Assume 50 kW (35 horsepower) rated equipment power usage
Utilities: electricity	12	months	$ 5,000	$ 60,000	RO membranes, filters, solid waste
Membranes, filters - waste disposal	12	months	$ 6,000	$ 72,000	one event per year for all wells
Well redevelopment, annual	1	year	$ 20,000	$ 20,000	Assumed based on experience
Repair/Replacement: Pumps, motors, valves, electrical sub	1	year	$ 100,000	$ 100,000	Same as current GWTS cost + DNAPL costs
Misc: Equipment rentals / Generator/Forklift/ODCs	1	year	$ 75,000	$ 50,000	Brine concentrate disposal quote from American Integrated (AIS); per 5,000-gallon truck, $0.50/gallon + $800/load for truck/driver ($0.16/gallon)
Brine disposal	630,000		$ 0.66	$ 416,000	
			Subtotal Annual O&M Cost:	$ 1,018,000	
			Contingency (50%):	$ 509,000	
Project Management/Technical Support	1	year	$ 8,000	$ 8,000	Assume 1/3rd of PM cost for Alt 2 Area 5NS
Sitewide Groundwater Monitoring	1	year	$ 121,000	$ 121,000	Annual 1/3rd cost of current sampling program + 25%
			Total Annual O&M Cost:	**$ 1,656,000**	
PERIODIC COSTS (NO CONTINGENCY)					
USEPA Five-year Review (5,10,15,20,25 and 30 years)	6	5-year	$ 25,000	$ 150,000	Based on previous experience with other sites; cost is divided by 5 and assigned to each FS Area
Replace PCT-C trench	2	50-year	$ 1,500,000	$ 3,000,000	Assume entire length of PCT trenches (3,000 feet) would need to be replaced based on unit cost for PCT-C Trench $1,000/linear foot
Replace GWTS	2	50-year	$ 1,236,000	$ 2,472,000	Assume entire GWTS is replaced every 50 years

PRESENT VALUE ANALYSIS (2012 $K)

Cost Type	Year	Total Cost (2014 $K)	Cost/Year (2014 $K)	Net Present Value at 3% DF (2014 $K)	Net Present Value at 7% DF (2014 $K)	
Capital Cost		$4,822		$4,822	$4,822	

Table E-7. Area 5W, Alternative 3 –Selected Remedy, Casmalia Resources Superfund Site, Final Feasibility Study

Task Description		Estimated Quantity	Unit	Unit Cost	Estimated Cost	Notes / Assumptions
Annual O&M Cost (post construction)	0 - 5	$8,305	$1,661	$7,607	$6,810	
Annual O&M Cost (post construction)	6 - 30	$41,525	$1,661	$24,949	$13,801	
Annual O&M Cost (post construction)	31 - 100	$121,392	$1,734	$20,807	$3,226	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$37,378,000**	**$25,433,000**	2012 $
Total Present Value of Alternative (Capital + 100 Year O&M)				**$58,186,000**	**$28,659,000**	
PRESENT VALUE ANALYSIS (2014 $K)						
Total Capital Cost (2014):					**$ 5,005,236**	2014 $ = 2012 $ adjusted by 3.8% construction cost inflation rate. (Reference: California Construction Cost Index Table, Engineering News Record, May 2014)
Total Annual O&M Cost, Annual (2014):					**$ 1,718,928**	
Periodic Cost, 5-year (2014):					**$ 25,950**	
Periodic Cost, 50-year (2014):					**$ 2,839,968**	
Cost Type	**Year**	**Total Cost (2014 $K)**	**Cost/Year (2014 $K)**	**Net Present Value at 3% DF (2014 $K)**	**Net Present Value at 7% DF (2014 $K)**	
Capital Cost		$5,005	$1,001.05	$4,451	$3,836	FS Area 5 remedy is expected to be constructed during the fifth construction season (2020) but PV of Capital Cost is assumed to be based on average capital cost for each year of the 5-year construction period.
Annual O&M Cost (postconstruction)	0 - 5	$8,621	$1,742.12	$7,896	$7,069	FS Remedy construction will take 5 years (projected to occur from 2016 to 2020). Annual O&M Costs post construction begin in 2021. Please note prior to and during construction the site will continue to incur O&M and EPA oversight cost
Annual O&M Cost (postconstruction)	6 - 30	$43,103	$1,724.12	$25,898	$14,325	
Annual O&M Cost (postconstruction)	31 - 100	$126,005	$1,800.08	$21,598	$3,349	
Present Value of Capital				**$4,451,000**	**$3,836,000**	2014 $ = 2012 $ adjusted by 3.8%
Present Value of 30 Year O&M				**$33,793,000**	**$21,395,000**	
Present Value of 100 Year O&M				**$55,392,000**	**$24,743,000**	
Total Present Value of Alternative (Capital + 30 Year O&M)				**$38,244,000**	**$25,231,000**	
Total Present Value of Alternative (Capital + 100 Year O&M)				**$59,843,000**	**$28,579,000**	

Source: Table E-7-2 from the *Feasibility Study Report, Casmalia Resources Superfund Site* (CSC, 2016).

Notes/Assumptions

1. This alternative assumes that the existing extraction through RAP wells at PCT-C.
2. Groundwater RAP extraction rates are assumed to be decreased due to site capping and closing ponds.
3. Groundwater treatment plant is upgraded with new treatment equipment, extraction pumps, repaired/new collection/discharge piping.

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Appendix F
Administrative Record Index

Doc ID	Doc Date	Title	Author	Addressee
2268060	3/29/1976	Public Notice: Notice of preparation of proposed negative declarations, calls comments fr public & agencies or officials, announces upcoming hearing 4/15/76, w/attchs	R09: (Santa Barbara County - Office of Environmental Quality)	
2268408	5/29/1976	Public Notice: Public hearing, case # 76-CP-6, K Hunter conditional use permit for expansion of waste facility	R09: (Santa Barbara County - Planning & Development Dept)	R09: (*Santa Maria Times* (Newspaper))
2268415	6/23/1976	Public Notice: Public hearing, case # 76-CP-6, K Hunter conditional use permit for expansion of waste facility, requests written public comments, w/marginalia	R09: (Santa Barbara County - Planning & Development Dept)	
2268416	6/23/1976	Public Notice: Announces public hearing, case # 76-CP-6, K Hunter conditional use permit for expansion of waste facility	R09: (Santa Barbara County - Planning & Development Dept)	R09: (*Santa Barbara News-Press* (Newspaper))
2267046	11/20/1981	Newsclip: Casmalia connection, State investigates PCBs in Santa Maria water	R09: (*Santa Barbara News-Press* (Newspaper))	
2267045	5/31/1985	Newsclip: Santa Maria forced to shut down city well, w/marginalia	R09: (*Santa Barbara News-Press* (Newspaper))	
2259872	11/21/1985	Public Notice: Santa Barbara County Planning Commission announces public hearing, notice of intention to declare violation of conditional use permit	R09: Mccurdy, Albert (Santa Barbara County - Planning & Development Dept)	
2108514	1/1/1986	Newsclip: Bill seeks temporary dump closure - Hart measure links closure to off-site groundwater [06940006]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2108515	1/1/1986	Newsclip: Landfills due for shutdown - Casmalia facilities face new standards [06940007]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2259850	1/27/1986	Public Notice: Santa Barbara County Planning Commission notice of public hearing on 2/19/86, re appeal of land use permit denial (RCRA Landfill), w/attchs & marginalia	R09: Mccurdy, Albert (Santa Barbara County - Planning & Development Dept)	
2268744	3/10/1986	Public Notice: Describes review procedure to gather public comments re construction of truck inspection station adjacent to access road to facility, deadline 3/24/86, w/attchs & marginalia	R09: Cooney, Michael (Price, Postel & Parma (Attorneys))	R09: Appel, Lawrence (Santa Barbara County - Planning & Development Dept)
41784	4/1/1986	Article: Welcome (cough) to Casmalia (California Magazine, p8, 31, 39, 40, 51, 52 & 54) [01-0019292-01-0019298]	R09: Steinhart, Peter (California Magazine)	

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2269089	5/21/1987	Public Notice: Casmalia Resources office/lab building permit proposed for public review	R09: (Santa Barbara County - Resources Management Dept)	
2259760	6/6/1987	Newsclip: Pollutants found in water wells - Results of lab tests could be in error [EPA 012667]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2260375	6/6/1987	Newsclip: Pollutants found in water wells - Results of lab tests could be in error	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2267044	8/11/1987	Newsclip: Tests show wells pose no great risk, further study urged of Santa Maria basin, w/marginalia	R09: (*Santa Barbara News-Press* (Newspaper))	
2259815	1/1/1988	Pamphlet: What can you do to promote closure of Casmalia Toxic Waste Dump?	R09: (Physicians Against Casmalia)	
2053209	2/26/1988	Press Release: EPA releases National Enforcement Investigations Center (NEIC) rpt on site, w/post-it note [02-0086234-235]	R09: (Environmental Protection Agency - Region 9)	
2108680	3/2/1988	Newsclip: Doctors build Casmalia fight fund [06940222]	R09: (Santa Barbara News-Press (Newspaper))	
2259818	5/9/1988	Press Release: Announces cleanup or abatement order (C&AO) 88-76 requiring Casmalia Resources to install additional monitoring wells & conduct investigation of groundwater contamination by 10/14/88, & submit remedial action plan by 11/4/88	R09: Gobler, Eric (CA Regional Water Quality Control Board - Central Coast Region)	
2260679	6/8/1988	Fact Sheet: Interagency activity & status of enforcement & monitoring	R09: (CA Dept of Health Services)	
2260676	6/19/1988	Newsclip: Uneasy neighbors - Toxic dump fears worsen as town's illnesses increase	R09: Corwin, Miles (*Los Angeles Times* (Newspaper))	
2259831	6/21/1988	Public Notice: Notice of public hearing 7/8/88 in matter of cease & desist order for threatened violations of order 87-194 & order 80-43, w/encls & TL to K Hunter fr W Leonard	R09: (CA Regional Water Quality Control Board - Central Coast Region)	
2259832	6/21/1988	Public Notice: Notice of public hearing 7/8/88 in matter of cease & desist order for threatened violations of order 87-194 & order 80-43, w/encls & TL to K Hunter fr W Leonard	R09: (CA Regional Water Quality Control Board - Central Coast Region)	

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2260675	6/21/1988	Newsclip: Tiny town plans Prop 65 lawsuit against dump (fax copy 6/29/88)	R09: Brank, Glenn (*Sacramento Bee* (Newspaper))	
2054509	7/17/1988	Newsclip: EPA tentatively denies Casmalia Resources permit, w/marginalia [02-0086177-178]	R09: Weiss, Clyde (*Lompoc Record* (Newspaper))	
41718	8/1/1988	Fact sheet: EPA proposes to deny RCRA permit for four existing Casmalia landfills in Santa Barbara County [01-0018889-01-0018890]	R09: (Environmental Protection Agency - Region 9)	
2257036	8/1/1988	Fact Sheet: EPA proposes to deny RCRA permit for four existing landfills at site, invitation for public comment through 9/5/88, w/marginalia	R09: (Environmental Protection Agency - Region 9)	
2053205	8/24/1988	Public Notice: To all Central Coast residents - Notifies of 8/24/88 mtg at Veteran's Memorial Center, Santa Maria & urges attendance [02-0086117]	R09: (Concerned Citizens of Casmalia)	
2108547	8/24/1988	Newsclip: Toxic waste dump may lose permit - Neighbors testify to EPA on hazards of chemical clouds [06940043]	R09: Kay, Jane (*San Francisco Examiner, The* (Newspaper))	
2260656	8/24/1988	Public Notice: Santa Barbara County Planning Commission hearing on request of K Hunter to covert building & replace single wide office trailer with triple wide decontamination trailer	R09: Mccurdy, Albert (Santa Barbara County - Planning & Development Dept)	
2054507	8/25/1988	Newsclip: Casmalia protest - Hundreds turn out for EPA hearing - Casmalia foes turn out in force [02-0086179]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2054508	8/25/1988	Newsclip: Most in crowd of 300 opposed to Casmalia [02-0086180]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2053206	8/27/1988	Public Notice: Casmalia toxic dump is still open - Join us to demand its closure now - Vigil on 8/27/88 outside City Hall [02-0086118]	R09: (Concerned Citizens of Casmalia)	
2269522	9/12/1988	Public Notice: Announces hearing 10/17/88 re appeal of 76-CP-6SC denial of conversion of Zimpro building office re substantial conformity to conditional use permit (CUP), w/marginalia	R09: Pettitt, Kenneth (Santa Barbara County - Office of the County Clerk-Recorder)	

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2260648	12/7/1988	Public Notice: Santa Barbara County Planning Commission hearing re request of Casmalia Resources to construct interim bulk liquid solidification system & expand building at site	R09: Mccurdy, Albert (Santa Barbara County - Planning & Development Dept)	
2249730	2/9/1989	Public notice: Public hearing & public comment period on rev draft environmental impact rpt for Casmalia Resources modernization plan	R09: (CA Dept of Health Services)	
2267716	2/14/1989	Newsclip: Long-awaited Casmalia rpt due out today, w/marginalia	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2267713	2/16/1989	Newsclip: Bill would close dump - Hart wants groundwater plan	R09: Wert, David (*Lompoc Record* (Newspaper))	
2267714	2/16/1989	Newsclip: Hart bill would close Casmalia	R09: Siegel, Amy (*Santa Maria Times* (Newspaper))	
2267715	2/16/1989	Newsclip: Further delays in Casmalia dump closure	R09: (*Santa Barbara Independent, The* (Newspaper))	
2267709	2/17/1989	Newsclip: Hart's bill prompted by regulatory inaction	R09: Wert, David (*Lompoc Record* (Newspaper))	
2267710	2/17/1989	Newsclip: Hart: Dump legislation overdue	R09: (*Santa Maria Times* (Newspaper))	
2267711	2/17/1989	Newsclip: Closure tops panel's dump requests	R09: Siegel, Amy (*Santa Maria Times* (Newspaper))	
2267712	2/17/1989	Newsclip: Bill seeks temporary dump closure - Hart measure links closure to off-site ground water	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2267708	3/29/1989	Newsclip: During cleanup plan Casmalia Resources faces stream of deadlines	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2268399	3/30/1989	Newsclip: Casmalia cleanup plan more like alchemy (ltr to editor)	R09: Harrison, Resident, Bill (City of Santa Barbara)	R09: (*Santa Barbara News-Press* (Newspaper))
2267707	4/5/1989	Newsclip: Casmalia tax monies must be made up	R09: Foster, Katharine (*Lompoc Record* (Newspaper))	
2267706	4/6/1989	Newsclip: Casmalia Resources faces stiffer fine	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	

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2267705	4/16/1989	Newsclip: Dump fine called not high enough	R09: (Santa Maria Times (Newspaper))	
2267704	4/17/1989	Newsclip: Under the gun - Casmalia Resources may find its dump closed, editorial	R09: (*Santa Barbara News-Press* (Newspaper))	
2267703	4/19/1989	Newsclip: Tainted water found at Casmalia	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2268389	4/19/1989	Newsclip: More poisoned water is found (editorial)	R09: (*Santa Maria Times* (Newspaper))	
2268390	4/19/1989	Newsclip: Dump faces another fine for pollution	R09: Wert, David (*Lompoc Record* (Newspaper))	
2267702	4/20/1989	Newsclip: County's mixed-up priorities shine through, ltr to editor	R09: Conrad, Resident, Les (City of Santa Barbara)	R09: (*Santa Barbara News-Press* (Newspaper))
2268391	4/20/1989	Newsclip: Casmalia fined $130,000 (editorial)	R09: (*Santa Barbara Independent, The* (Newspaper))	
2268392	4/22/1989	Newsclip: Attorneys refile Casmalia lawsuit - State health chief Kizer named as new defendant	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2268393	4/23/1989	Newsclip: Hearing set on dump permit denial (editorial)	R09: (*Santa Maria Times* (Newspaper))	
2268394	4/24/1989	Newsclip: Board may extend Casmalia deadline	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2268395	4/25/1989	Newsclip: Casmalia options on supervisors' agenda	R09: (*Santa Barbara News-Press* (Newspaper))	
2259538	4/28/1989	Newsclip: Casmalia fined, but still open	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2267659	5/7/1989	Newsclip: Bill would require Casmalia dump shutdown, w/marginalia	R09: Harry, Joseph (*Santa Barbara News-Press* (Newspaper))	
2267658	5/11/1989	Newsclip: Bitter anniversary - Toxic spill plaintiffs out of luck (p 1 only)	R09: Welsh, Nick (*Santa Barbara Independent, The* (Newspaper))	

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2267657	5/13/1989	Newsclip: Miyoshi urges dump shutdown	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2267656	5/18/1989	Newsclip: Casmalia waste site may temporarily shut down	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2267655	6/14/1989	Newsclip: EPA - Casmalia not qualified for permit	R09: (*Santa Barbara News-Press* (Newspaper))	
2267662	7/2/1989	Newsclip: Casmalia as tax source falls short - Santa Maria, Lompoc singled out for contribution to collection program	R09: Chaid, Steve (*Santa Maria Times* (Newspaper))	
2268111	7/18/1989	Newsclip: Ltr to editor - Complains of lack of Casmalia subsurface info	R09: Koval, Resident, Paul (City of Santa Maria)	
2267661	7/22/1989	Newsclip: Casmalia to turn away some waste - 12 workers laid off, officials deny site is closing, w/marginalia	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2268112	7/24/1989	Newsclip: Ltr to editor - Wants public to share doubts about Casmalia toxic dump	R09: (*Santa Maria Times* (Newspaper))	
2268096	7/25/1989	Newsclip: Miyoshi asked not to speak at hearing	R09: (*Santa Maria Times* (Newspaper))	
2268097	7/25/1989	Newsclip: Board to file complaint against dump - County discovers leaking liquid	R09: Bolcom, C (*Lompoc Record* (Newspaper))	
2267660	7/26/1989	Newsclip: Landfill ordered to transport liquids offsite	R09: Harry, Joseph (*Santa Barbara News-Press* (Newspaper))	
2268098	7/26/1989	Newsclip: Dump leak discovery irks board - Health hazard worries Owens	R09: Bolcom, C (*Lompoc Record* (Newspaper))	
2268100	7/26/1989	Newsclip: Board asks for halt of chemicals at Casmalia	R09: (*Santa Maria Times* (Newspaper))	
2268099	7/28/1989	Newsclip: Waste dump won't appeal permit denial - County still plans nuisance suit	R09: Bolcom, C (*Lompoc Record* (Newspaper))	
2268101	7/28/1989	Newsclip: Casmalia to replace toxic ponds	R09: Caine, Winston (*San Luis Obispo Telegram Tribune*)	

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2268102	7/28/1989	Newsclip: Company negotiates for dump	R09: Bolcom, C (*Lompoc Record* (Newspaper))	
2268103	7/28/1989	Newsclip: Casmalia Resources withdraws appeal	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2268104	7/29/1989	Newsclip: Casmalia, BFI discuss dump sale (p 1 only)	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2268105	7/30/1989	Newsclip: 3-day vigil focuses on Casmalia	R09: Moulton, Tracy (*Santa Maria Times* (Newspaper))	
2268108	7/30/1989	Newsclip: Casmalia may sell operation	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2267671	7/31/1989	Article: Rpt to EPA, Casmalia Resources, toxic waste landfill that has contaminated Santa Maria groundwater basin, w/marginalia	R09: Conrad, Resident, Les (City of Santa Barbara)	R09: (Environmental Protection Agency - Region 9)
2268106	8/1/1989	Newsclip: Firm is a target of rally - Protesters assail bid to buy dump	R09: Hulse, Jane (*Santa Barbara News-Press* (Newspaper))	
2268107	8/3/1989	Newsclip: Firm files lien against Casmalia	R09: (*Santa Barbara News-Press* (Newspaper))	
2058079	8/4/1989	Article: EPA's innocent landowner policy - Practical approach to liability under Superfund - Analysis & perspective (Bureau of National Affairs, pp 646-649) [02-0083510-513]	R09: Leifer, Steven (Bureau of National Affairs, Inc)	
2268109	8/12/1989	Newsclip: DA investigating work at Casmalia dump	R09: Harry, Joseph (*Santa Barbara News-Press* (Newspaper))	
2268110	8/30/1989	Newsclip: Dump site owner to file lawsuit	R09: Harry, Joseph (*Santa Barbara News-Press* (Newspaper))	
2268377	8/30/1989	Newsclip: Hunter to sue county for denying permits - Addition of restrictions criticized	R09: Bolcom, C (*Lompoc Record* (Newspaper))	
2268376	8/31/1989	Newsclip: Casmalia owner vows to sue county - Groundwater under facility seeps off site (p 1 only)	R09: (*Santa Barbara Independent, The* (Newspaper))	
2268375	9/6/1989	Newsclip: What would Casmalia closure do to hazardous waste producers here?	R09: Cane, Bob (*San Bernardino County Sun* (Newspaper))	

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2268374	9/7/1989	Newsclip: Casmalia cleanup plan appears limited	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2268090	9/20/1989	Newsclip: Dump has 30 days to respond to EPA - It may remain open, accept waste	R09: Bolcom, C (*Lompoc Record* (Newspaper))	
2268373	9/20/1989	Newsclip: Local critics want toxic dump to close as early as possible	R09: Bolcom, C (*Lompoc Record* (Newspaper))	
2268084	9/28/1989	Newsclip: EPA issues order for dump closure - Continued operation would add fines	R09: Henning, Rita-helen (*Lompoc Record* (Newspaper))	
2268085	9/28/1989	Newsclip: Casmalia fined, but still open	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2268087	9/28/1989	Newsclip: EPA fines, shuts down Casmalia	R09: Fairbanks, Ann (*San Luis Obispo Telegram Tribune*)	
2268115	9/28/1989	Press Release: EPA cites Casmalia waste capacity, opens new permit review	R09: Zemsky, Al (Environmental Protection Agency - Region 9)	
2268117	9/28/1989	Press Release: DHS announces opening of Casmalia public comment period re closure plans & surface impoundments, press conference 9/28/89, formal public hearing 11/8/89 with EPA, w/marginalia	R09: Plaza, Allan (CA Dept of Health Services), R09: Dickerson, Dennis (CA Dept of Health Services - Toxic Substances Control Div), R09: Hinton, John (CA Dept of Health Services - Toxic Substances Control Div)	
2268372	9/28/1989	Newsclip: Close Casmalia order expected - Lagomarsino: EPA to shut down facility	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2268083	9/29/1989	Newsclip: Editorial - End of Casmalia still not in sight (p 1 only)	R09: (*Santa Maria Times* (Newspaper))	
2268086	9/29/1989	Newsclip: Casmalia questions fine	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2268088	9/29/1989	Newsclip: Casmalia wins time to fight closure	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2268089	9/29/1989	Newsclip: Casmalia closure could cause toxic-waste crisis - County firms would feel burden in crunch	R09: Bernath, James (*Ventura Star Free Press* (Newspaper))	

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2268091	9/29/1989	Newsclip: Casmalia dump may get new life - Successful appeal could expand it, give it another 10 years of use (p 1 only)	R09: Fairbanks, Ann (*San Luis Obispo Telegram Tribune*)	
2268371	9/29/1989	Newsclip: Casmalia wins time to fight closure	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2108523	10/1/1989	Fact Sheet: Casmalia update [06940013]	R09: (CA Dept of Health Services - Toxic Substances Control Div)	
2268092	10/4/1989	Newsclip: 'Peaceful' Casmalia protest ends in 11 arrests	R09: White, Karen (*Santa Maria Times* (Newspaper))	
2268093	10/8/1989	Newsclip: Casmalia fined $6.2 million	R09: (*Santa Barbara News-Press* (Newspaper))	
2268094	10/15/1989	Newsclip: Casmalia countdown continues	R09: Magee, Jack (*Lompoc Record* (Newspaper))	
2267718	10/16/1989	Public Notice: Santa Barbara County zoning administrator notice of public hearing re conditional use permit to use 2 trailers as temporary offices	R09: (Santa Barbara County - Resources Management Dept)	
2269707	10/16/1989	Public Notice: Santa Barbara County zoning administrator notice of public hearing re conditional use permit to use 2 trailers as temporary offices, w/marginalia	R09: (Santa Barbara County - Resources Management Dept)	
2268095	10/19/1989	Newsclip: Update - Casmalia - It ain't over 'til it's over (editorial)	R09: (*Santa Barbara Independent, The* (Newspaper))	
2108522	12/1/1989	Fact Sheet: Questions & answers re Casmalia Resources Commercial Hazardous Waste Management Facility [06940014]	R09: (Environmental Protection Agency - Region 9)	
41719	1/1/1990	Fact sheet: Questions & answers about Casmalia Resources, Inc [01-0018891-01-0018892]	R09: (Environmental Protection Agency - Region 9)	
2259778	1/1/1990	Newsclip: My kids are always sick - Casmalia residents want dump closed, residents protest in Sacramento, w/marginalia	R09: Paddock, Richard (*Los Angeles Times* (Newspaper))	
2259555	1/18/1990	Newsclip: County may take Casmalia to court	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	

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2259556	1/24/1990	Newsclip: Quiet start to Casmalia hearings, w/marginalia	R09: Miller, Ken (*Santa Maria Times* (Newspaper)), R09: Moulton, Tracy (*Santa Maria Times* (Newspaper))	
2259554	1/25/1990	Newsclip: Casmalia cleanup tests work - Method would let SB County close dump during work, w/marginalia	R09: Greene, Jan (*San Luis Obispo County Telegram-Tribune*)	
2259557	1/25/1990	Newsclip: Casmalia expansion opposed at hearing	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2259558	1/25/1990	Newsclip: Security tightened for Casmalia hearing	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2282918	5/1/1990	Fact Sheet: Consideration of waste discharge requirements for Casmalia Resources, order 90-027, w/marginalia	R09: (CA Regional Water Quality Control Board - Central Coast Region)	
2195856	1/1/1991	Final construction rpt for perimeter source control trench, w/apps A-E & TL to W Leonard fr T Lyman 1/15/91 [CDM101701-801]	R09: (Brierley & Lyman Inc)	R09: (Casmalia Resources)
2259777	1/23/1991	Newsclip: Ltr to the Editor, Anti-Casmalia dump group wrong to disrupt mtg	R09: Wolf, Resident, Kenneth (City of Santa Maria)	
41721	2/1/1991	Fact sheet: Environmental update re activities & issues at site [01-0018895-01-0018898]	R09: (Environmental Protection Agency - Region 9)	
2259734	2/20/1991	Newsclip: Two firms interested in buying Casmalia	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2259733	3/8/1991	Newsclips (2): Dump's troubles alarm officials, & Officials: Hunter deserting Casmalia	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
2259731	3/16/1991	Newsclip: Only link in Cirrus, Casmalia is the C - Board to consider action on dump	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	

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2259732	3/17/1991	Newsclip: Casmalia bills may get dumped on government	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
41722	8/1/1991	Fact sheet: Status of EPA enforcement actions & permit & closure plans [01-0018899-01-0018900]	R09: (Environmental Protection Agency - Region 9)	
2242378	8/1/1991	Fact Sheet: Status of EPA enforcement actions, w/marginalia	R09: (Environmental Protection Agency - Region 9)	
2061030	9/1/1991	Newsclip: Experts question staggering costs of toxic cleanups - New view of perils [02-0022223-224]	R09: Passell, Peter (*New York Times* (Newspaper))	
2061011	9/3/1991	Ltr: Expresses viewpoint re denying Casmalia Resources use of its monies to close site & greatest probability of harm coming fr having leachate shipped to TX, & transmits relevant article (newsclip), w/o attch [02-0022221-224]	R09: Coleman, Howard (Nossaman, Guthner, Knox & Elliott (Attorneys))	R09: Dickerson, Daniel (CA Dept of Health Services - Toxic Substances Control Div)
74664	1/1/1992	Public Notice: Availability of administrative record for selection of removal action at site	R09: Zuroski, Donn (Environmental Protection Agency - Region 9)	
2113092	1/1/1992	Newsclip: County, EPA sue Casmalia owner, w/marginalia [01-100144]	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
2113093	1/1/1992	Newsclip: Casmalia residents living on edge [01-100154-155]	R09: Weber, Tad (*Santa Barbara News-Press* (Newspaper))	
41723	4/1/1992	Fact sheet: EPA, State of CA & Santa Barbara County enforcement actions underway, facility closure plans [01-0018901-01-0018904]	R09: (Environmental Protection Agency - Region 9)	
41825	7/11/1992	Newsclip: Official says dump too poor to pay bills [01-0019393]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
65884	8/1/1992	Fact Sheet: Environmental update - EPA to conduct stabilization work at Casmalia Resources facility [01-110994-01-110995]	R09: (Environmental Protection Agency - Region 9)	
41793	8/5/1992	Press release: Site stabilization work begins, public mtg set [01-0019343]	R09: (Environmental Protection Agency - Region 9)	

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41827	8/6/1992	Newsclip: EPA earmarks $2 million for cleanup at Casmalia [01-0019395-01-0019396]	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
41828	8/7/1992	Newsclip: Casmalia dump - 20 years at a glance [01-0019397]	R09: (*Santa Maria Times* (Newspaper))	
41836	8/7/1992	Newsclip: Casmalia - living in shadow of toxic dump, w/related story - EPA plans Casmalia mtg [01-0019402]	R09: Pratt, Steve (*Santa Maria Times* (Newspaper))	
2113089	8/7/1992	Newsclip: Nobody likes to talk about it, w/marginalia [01-100140]	R09: (*Santa Maria Times* (Newspaper))	
41829	8/8/1992	Newsclip: Dump may re-open [01-0019398]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2113091	8/8/1992	Newsclip: Stoker fears Casmalia dump may re-open - Casmalia concerns, w/marginalia [01-100142]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41831	8/11/1992	Newsclip: County urges US role in Casmalia fight [01-0019399]	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
41833	8/12/1992	Newsclip: EPA's hot potato - County moves to keep feds on job in Casmalia [01-0019400]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2241592	8/12/1992	Newsclip: County to 'politicize' Casmalia fight (Santa Barbara News Press)	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
41834	8/14/1992	Newsclip: EPA dumps Casmalia - putting state in charge of cleanup a step backward (editorial) [01-0019401]	R09: (*Santa Barbara News-Press* (Newspaper))	
2113074	8/16/1992	Newsclip: Behind the gate [01-100106]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2113088	8/16/1992	Newsclip: Behind the gate, w/marginalia [01-100138-139]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2241593	8/18/1992	Newsclip: EPA, county plan new effort to force Casmalia cleanup (Santa Barbara News-Press)	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
41826	8/26/1992	Newsclip: Casmalia may get ok for own cleanup [01-0021485]	R09: Mariani, Teresa (Santa Barbara News-Press (Newspaper))	

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41837	8/26/1992	Newsclip: Board maps Casmalia cleanup strategy [01-0019403]	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
2113090	9/6/1992	Newsclip: EPA earmarks $2 million for cleanup at Casmalia [01-100141]	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
2053210	1/1/1993	Fact Sheet: EPA Region 9 seeking approval of ceiling increase & exemption fr 2 million dollars statutory limit of CERCLA to continue removal action at site [02-0012377]	R09: (Environmental Protection Agency - Region 9)	
42080	3/22/1993	Fact sheet: Region 9 seeking ceiling increase & exemption fr $2 million CERCLA limit to continue removal action [01-0020835]	R09: (Environmental Protection Agency - Region 9)	
42618	4/1/1993	Fact sheet: Casmalia update - what's happening at Casmalia? what's next? what about contaminated gw? etc [01-0018905-01-0018906]	R09: (Environmental Protection Agency - Region 9)	
2242376	4/1/1993	Fact Sheet: What's happening at Casmalia? What about contaminated groundwater? w/questions & answers following public mtg 5/11/93	R09: (Environmental Protection Agency - Region 9)	
41824	4/11/1993	Newsclip: EPA wants Casmalia users to fund toxic dump's cleanup [01-0019392]	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
42200	5/5/1993	Press release: Environmental News - EPA community mtg & supervisors briefing re Casmalia on 5/11/93 [01-0021476]	R09: (Environmental Protection Agency - Region 9)	
2241594	5/11/1993	Newsclip: Government calendar, EPA community mtg on Casmalia Resources, open house & formal presentation	R09: (*Santa Maria Times* (Newspaper))	
41821	5/12/1993	Newsclip: Casmalia cleanup costly task [01-0019389]	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
42203	5/21/1993	Press release: Environmental News - photo opportunity concerning Casmalia Resources, invitation to news media to watch EPA ship contaminated water to facility in NJ for treatment on 5/24/93 [01-0021478]	R09: (Environmental Protection Agency - Region 9)	

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41819	5/24/1993	Newsclip: Casmalia cleanup underway - 140,000 gallons of waste bound for NJ [01-0019387]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2257045	5/24/1993	Newsclip: Casmalia cleanup under way, 140,000 gallons of waste bound for New Jersey, w/marginalia (incomplete fax copy of p1 only)	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41816	9/9/1993	Newsclip: Dump cleanup costs exceed $3.5 million [01-0019381]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
42619	10/1/1993	Fact sheet: Casmalia update - EPA continues work at site, over 3 million gallons of contaminated gw treated, CNS liquids removed, EPA community mtg on 10/12/93, etc [01-0018907-01-0018908]	R09: (Environmental Protection Agency - Region 9)	
2242377	10/1/1993	Fact Sheet: EPA continues work at site, & upcoming mtg 10/12/93, w/attchs	R09: (Environmental Protection Agency - Region 9)	
42202	10/7/1993	Press release: Environmental News - EPA community mtg & supervisors briefing re Casmalia on 10/12/93 [01-0021477]	R09: (Environmental Protection Agency - Region 9)	
41815	10/22/1993	Newsclip: EPA covers landfill site - seeding may stop erosion [01-0019380]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41809	11/26/1993	Newsclip: EPA suspects tainted water is spreading fr Casmalia [01-0019377]	R09: Mariani, Teresa (*Santa Barbara News-Press* (Newspaper))	
2032078	12/1/1993	Fact Sheet: Desperate remedies newsletter - EPA doesn't know what exactly is happening in landfills	R09: Conrad, Les (Desperate Remedies Newsletter)	
2113073	1/10/1994	Newsclip: Casmalia cleanup millions over budget [01-100105]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
42045	2/1/1994	Fact sheet: Casmalia update - EPA sends additional liquids for treatment [01-0020652-01-0020653]	R09: (Environmental Protection Agency - Region 9)	
42205	2/4/1994	Press release: Environmental News - EPA community mtg & supervisors briefing re Casmalia on 2/8/94 [01-0021479]	R09: (Environmental Protection Agency - Region 9)	
41812	2/9/1994	Newsclip: EPA says Casmalia no threat to water [01-0019374]	R09: Corey, Scott (*Santa Barbara News-Press* (Newspaper))	
41813	2/9/1994	Newsclip: Drinking water free of Casmalia toxins [01-0019375]	R09: Harber, Terri (*Lompoc Record* (Newspaper))	

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41822	5/7/1994	Newsclip: NJ gets waste fr cleanup at Casmalia [01-0019390]	R09: (*Santa Barbara News-Press* (Newspaper))	
2258658	6/26/1994	Newsclip: Who will inherit Casmalia? With the federal government unwilling to pay for upkeep of closed toxic waste dump, its former customers will likely get bill, & 'Stabilization,' not cleanup, EPA's goal for toxic dump	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41783	6/28/1994	Newsclip: Editorials - Casmalia dilemma, w/marginalia & map [01-0019291; 01-0019205-06]	R09: (*Santa Barbara News-Press* (Newspaper))	
2113075	6/29/1994	Newsclip: Editorials - Casmalia dilemma - EPA's focus on few companies is far too narrow in scope [01-100107]	R09: (*Santa Barbara News-Press* (Newspaper))	
42620	8/1/1994	Fact sheet: EPA to hold community mtg on 8/16/94, removal update [01-0018909-01-0018910]	R09: (Environmental Protection Agency - Region 9)	
44318	8/1/1994	Newsclip: Environment - Casmalia cleanup millions over budget [01-0021516]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41838	1/1/1995	Newsclip: Who will inherit Casmalia? - with federal government unwilling to pay for upkeep of closed toxic waste dump, its former customers will likely get bill, & stabilization, not cleanup, EPA's goal for toxic dump [01-0019404-01-0019406]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41856	1/1/1995	Newsclip: Fines levied to help clean toxic dump - Casmalia facility targeted [01-0019410]	R09: Hoy, Matthew (*Lompoc Record* (Newspaper))	
41871	1/1/1995	Newsclip: Former customers will help clean up Casmalia [01-0019425]		
2113083	1/1/1995	Newsclip: Agencies still spitting over other's roles - Official says toxics migrating toward groundwater, but no public threat yet [01-100126-127]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41810	1/9/1995	Newsclip: Casmalia - a legacy of toxic woes [01-0019371-01-0019372]	R09: (*Los Angeles Times* (Newspaper))	
2052720	2/17/1995	Newsclip: Firms cleared - cleanup to resume - State EPA exonerates local companies [02-0014141-142]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2052719	2/18/1995	Newsclip: Dump delays cost taxpayers half million - US EPA official blasts bureaucratic infighting [02-0014139-140]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	

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41325	3/1/1995	Fact sheet: Casmalia Resources update (State Issues) [01-0027496-01-0027499]	R09: (Environmental Protection Agency - Region 9)	
41782	3/2/1995	Newsclip: Water's toxicity levels rising [01-0019290]	R09: Fairbanks, Ann (*San Luis Obispo Telegram Tribune*)	
2113087	4/7/1995	Newsclip: Toxic tracking compromised - Bureaucratic mistake throws kink into state's computerized system [01-100135-136]	R09: Schmitt, Christopher (*San Jose Mercury News* (Newspaper))	
41772	6/20/1995	Newsclip: EPA memo cites danger in toxic dump [01-0019306]	R09: Kay, Jane (*San Francisco Examiner, The* (Newspaper))	
41775	6/20/1995	Newsclip: Memo - Casmalia leaks a danger - EPA's role in portraying dump threat questioned [01-0019277-01-0019279]	R09: Kay, Jane (*San Francisco Examiner, The* (Newspaper)), R09: (*Santa Maria Times* (Newspaper))	
41787	6/20/1995	Press release: Toxic time bomb at site - residents, Greenpeace release leaked internal EPA documents [01-0019313-01-0019314]	R09: (Greenpeace)	
41773	6/21/1995	Newsclip: EPA warns of toxic threat at dump [01-0019273-01-0019274]	R09: Weber, Tad (*Santa Barbara News-Press* (Newspaper))	
41774	6/21/1995	Newsclip: EPA says Casmalia dump may pose health threat [01-0019275-01-0019276]	R09: Arax, Mark (*Los Angeles Times* (Newspaper))	
41776	6/21/1995	Newsclip: Casmalia activists demanding action [01-0019280-01-0019282]	R09: Whitman, Hazel (*Santa Maria Times* (Newspaper))	
41777	6/21/1995	Newsclip: EPA memo - Casmalia disaster impending - toxics at waste dump near Santa Maria leaking [01-0019283]	R09: (*San Luis Obispo Telegram Tribune*)	
41778	6/21/1995	Newsclip: Closed toxics dump primed for disaster, EPA memo says [01-0019284]	R09: (*Sacramento Bee* (Newspaper))	
41790	6/21/1995	Newsclip: Internal EPA memo details danger at closed dump [01-0019310]	R09: (*Contra Costa Times* (Newspaper))	
41802	6/21/1995	Newsclip: Internal EPA memo details danger at closed toxic dump [01-0019354-01-0019355]	R09: (*Oxnard Star* (Newspaper))	
41779	6/22/1995	Newsclip: News of the week - Casmalia dump in precarious shape [01-0019285-01-0019286]	R09: (*Santa Barbara Independent, The* (Newspaper))	
41800	6/22/1995	Newsclip: Oxnard faces funding cleanup of toxic dump [01-0019352-01-0019353]	R09: (*Oxnard Star* (Newspaper))	

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2241599	7/1/1995	Fact Sheet: Casmalia site update, EPA's current funding situation & outlook, community mtg to be held 7/12/95	R09: (Environmental Protection Agency - Region 9)	
41785	7/7/1995	Press release: EPA to hold public mtg on issues at site [01-0019303]	R09: (Environmental Protection Agency - Region 9)	
2113081	7/11/1995	Newsclip: Casmalia - Community mtg centers on leaked memo [01-100115]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41786	7/12/1995	Public Notice: Toxic time bomb [01-0019304-01-0019305]	R09: (Greenpeace)	
41770	7/13/1995	Newsclip: EPA takes its lumps - federal agency castigated at Wednesday public workshop, w/marginalia [01-0019301-01-0019302]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41771	7/14/1995	Newsclip: Memo writer leaving EPA [01-0019270-01-0019271]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41789	7/14/1995	Newsclip: EPA taps into Casmalia closure fund [01-0019308-01-0019309]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2113080	7/16/1995	Newsclip: Clean up Casmalia, w/fax transmittal note to T Brubaker fr J Guevarra [01-100114]		
2113078	7/26/1995	TL: Newspaper articles requested [01-100110]	R09: Lawrence, Peter (C E T Environmental Services, Inc)	R09: Zuroski, Donn (Environmental Protection Agency - Region 9)
41788	7/27/1995	Newsclip: CA dam agency to inspect Casmalia, pond containing rainwater lacks spillway or drain (w/site map), w/Post-it TL fr M McCorkle of KSBY-TV to L Grunwald [01-0019307]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2113076	7/27/1995	Newsclip: California dam agency to inspect Casmalia - Pond containing rainwater lacks spillway or drain, w/fax transmittal to L Grunwald fr M McCorkle [01-100108]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2113086	8/9/1995	Newsclip: EPA shipping more dirty water to New Jersey [01-100134]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2113085	8/10/1995	Newsclip: More toxic waste is headed out of state [01-100133]	R09: (*Santa Barbara News-Press* (Newspaper))	
41319	9/24/1995	Newsclip: Casmalia - EPA talks up cleanup, treatment plant going in at dump [01-0027475-01-0027476]	R09: Firpo, Eric (*Santa Maria Times* (Newspaper))	

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41333	9/26/1995	Press release: EPA issues update on Casmalia Resources site [01-0027511-01-0027512]	R09: (Environmental Protection Agency - Region 9)	
52951	9/26/1995	Press Release: EPA moves aggressively on 4 actions to safeguard site during anticipated heavy rainfall season	R09: (Environmental Protection Agency - Region 9)	
2241580	9/29/1995	Newsclip: Dumping plan raises concern, US Fish, Wildlife sees problem at lagoon	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41875	10/5/1995	Newsclip: EPA delays Casmalia water release [01-0019429]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2241596	10/5/1995	Newsclip: Casmalia runoff cools Vandenberg AFB fire, w/marginalia	R09: (*Santa Maria Times* (Newspaper))	
41877	10/6/1995	Newsclip: Casmalia dump water used to extinguish fire [01-0019431]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2241597	10/6/1995	Newsclip: Casmalia dump water used to extinguish fire, EPA says dump water is safe	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41896	10/10/1995	Newsclip: EPA to continue to oversee Casmalia cleanup [01-0019450]	R09: Carter, Matt (*Lompoc Record* (Newspaper))	
41860	10/13/1995	Newsclip: Public tours reveal disastrous possibilities at Casmalia dump [01-0019413]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41879	10/14/1995	Newsclip: State water quality board agrees on release of rainwater at dump [01-0019433]	R09: Fairbanks, Ann (*San Luis Obispo Telegram Tribune*)	
41882	10/14/1995	Newsclip: At Casmalia dump, 'bad foo' is on the brink, w/photo of D Zuroski [01-0019436]	R09: Fairbanks, Ann (*San Luis Obispo Telegram Tribune*)	
2113071	10/14/1995	Newsclips (2): At Casmalia dump, 'the bad foo' is on brink & State water quality board agrees on release of rainwater at dump [01-100100 & 01-100103]	R09: Fairbanks, Ann (*San Luis Obispo Telegram Tribune*)	
41798	10/17/1995	Press release: EPA to hold mtg on plan for Casmalia stormwater [01-0019348-01-0019349]	R09: (Environmental Protection Agency - Region 9)	
52969	10/17/1995	Press Release: EPA to hold mtg on plan for stormwater	R09: (Environmental Protection Agency - Region 9)	

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41334	10/18/1995	Press Release: Actors Steven Seagal & Ed Bagley to join environmentalists to demand government action on leaking Casmalia toxic dump, press conference with celebrities & environmental activists on 10/18/95 in LA (faxed 10/26/95 by Bridge USA) [01-0027513]	R09: Dunn, Resident, Lewis (City of Casmalia)	
41344	10/18/1995	Press release: Greenpeace & local residents to blast EPA tonight at community mtg on plan to release toxic water - EPA community mtg on 10/18/95 in Santa Maria on escalating controversy on dangerous Casmalia toxic dump situation [01-0027526]	R09: (Greenpeace)	
41878	10/18/1995	Newsclip: Casmalia pond water is tainted - plan to discharge rainwater stored at former toxic dump to be aired today [01-0019432]	R09: Fairbanks, Ann (*San Luis Obispo Telegram Tribune*)	
52971	10/18/1995	Newsclip: Runoff plan draws some Hollywood opposition	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41859	10/19/1995	Newsclip: Plan still on to release water fr Casmalia waste site [01-0019412]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2113070	10/19/1995	Newsclip: Skepticism rains on runoff plan - Green groups critical of proposed releases into Casmalia Creek [01-100097-098]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2113077	10/19/1995	Newsclip: Skepticism rains on runoff plan - Green groups critical of proposed releases into Casmalia Creek (original) [01-100109]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41880	10/31/1995	Newsclip: Guest column - answers needed in Casmalia [01-0019434]	R09: Stricklin, Resident, Terri (City of Casmalia), R09: (*Santa Maria Times* (Newspaper))	
41335	11/13/1995	Press release: Environmental News - EPA to release stormwater fr Casmalia to Creek [01-0027514-01-0027515]	R09: (Environmental Protection Agency - Region 9)	
41873	11/14/1995	Newsclip: Rainwater will flow fr waste dump - EPA to release 200 million gallons [01-0019427]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	

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41881	11/15/1995	Newsclip: Casmalia runoff to flow into creek [01-0019435]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41886	11/15/1995	Newsclip: Discharge of pond water at Casmalia starts today [01-0019440]	R09: (*Five Cities Times Press Recorder*)	
41781	11/16/1995	Newsclip: EPA starts pumping water - Official [says] "pond water cleaner than creek water", w/photo of dump [01-0019288-01-0019289]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41865	11/16/1995	Newsclip: Casmalia pumping underway [01-0019418]	R09: Hoy, Matthew (*Lompoc Record* (Newspaper))	
41866	11/16/1995	Newsclip: EPA workers begin Casmalia pumping - scientists to monitor runoff into creek [01-0019419]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41861	11/17/1995	Newsclip: A way of life [01-0019414]	R09: Whittenden, Sarah (City of Santa Barbara)	
42565	11/22/1995	Unilateral administrative order for removal response activities, docket #96-04, w/attch (contact list) [01-0023872-01-0023888]	R09: Takata, Keith (Environmental Protection Agency - Region 9)	
41336	12/1/1995	Press release: Environmental News - EPA to hold science workshop on 12/5/95 & public mtg in Casmalia Resources site on 12/6/95 [01-0027516]	R09: (Environmental Protection Agency - Region 9)	
41870	12/1/1995	Newsclip: Ltr to editor, your turn - environment vs tax base [01-0019424]	R09: Blair, Resident, Bob (City of Arroyo Grande)	
41868	12/2/1995	Newsclip: Mtg, workshop review rainwater removal by EPA [01-0019422]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41320	12/5/1995	Newsclip: EPA - 12 ex-Casmalia users must help clean up dump, responsibility involves shipment of hazardous liquids to treatment plant in New Jersey (faxed) [01-0027477-01-0027478]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41863	12/7/1995	Newsclip: Customers must aid Casmalia cleanup - EPA says 12 cos could face fines of up to $25,000 per day if they don't comply with order [01-0019416]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	

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2118414	12/7/1995	Newsclip: Generators get tab to move toxics - Violating EPA order would be costly [CDM188237]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41885	12/12/1995	Newsclip: Public will get crack at cleanup concept [01-0019439]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41867	12/17/1995	Newsclip: Environment - working at center of protecting CA [01-0019420-01-0019421]	R09: Chytilo, Marc (Environmental Defense Center)	
2118411	12/22/1995	Newsclip: Agencies open rpt on Cachuma contract (complete) [CDM188250]	R09: Van De Kamp, Mark (*Santa Barbara News-Press* (Newspaper))	
2113069	12/28/1995	Newsclip: Budget cuts leave environment agency facing layoffs [01-100095]	R09: Cushman, John (*New York Times* (Newspaper))	
41857	1/4/1996	Newsclip: Shutdown not hurting cleanup in Casmalia [01-0019411]	R09: Bondy, Coleen (*San Luis Obispo Telegram Tribune*)	
2247200	1/5/1996	Unilateral administrative order (UAO) for removal response activities, docket #96-04a [02-0015142-02-0015152]	R09: (Environmental Protection Agency - Region 9)	
41848	1/30/1996	Newsclip: Firms agree to help pay for dump cleanup - EPA will receive nearly $380,000 fr former customers of Casmalia hazardous waste site, payment fr other companies are pending [01-0019407; 01-0027518-19]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2113068	1/30/1996	Newsclip: Small fry make big settlement - Dump customers paying some costs for cleanup [01-100092]	R09: Bedell, Christine (*Santa Maria Times* (Newspaper))	
2118408	1/30/1996	Newsclip: Small fry make big settlement - Dump customers paying some costs for cleanup [CDM188260]	R09: Bedell, Christine (*Santa Maria Times* (Newspaper))	
2118413	1/30/1996	Newsclip: Fines levied to help clean toxic dump - Casmalia facility targeted [CDM188238]	R09: Hoy, Matthew (*Lompoc Record* (Newspaper))	
2113067	1/31/1996	Photo: Newsclip photo of water pump at site, w/fax TL to D Brubaker fr B Mandel [01-100090-091]	R09: (*Santa Maria Times* (Newspaper))	
2118415	2/1/1996	Newsclip: "News of the week - Environment - Former customers will help clean up Casmalia"	R09: (*Santa Barbara Independent, The* (Newspaper))	
41337	2/2/1996	Press release: Environmental News - Casmalia Resources update, unilateral orders [01-0027517]	R09: (Environmental Protection Agency - Region 9)	

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41874	2/15/1996	Newsclip: Citizens alert, benefits, protests, mtgs & forums - Regional Board to hold mtg in Salinas on 2/9/96 re Casmalia dump [01-0019428]	R09: (*San Luis Obispo New Times* (Newspaper))	
2118409	2/15/1996	Newsclip: Citizens alert, benefits, protests, mtgs & forums - CA Regional Water Quality Control Board to hold mtg in Salinas on 2/9/96 re Casmalia toxic waste dump [CDM188264]	R09: (*San Luis Obispo New Times* (Newspaper))	
2118412	2/22/1996	Newsclip: Your turn - Environment vs tax base	R09: Blair, Resident, Bob (City of Arroyo Grande)	R09: (Santa Maria Times (Newspaper))
41872	3/14/1996	Newsclip: EPA again delays settlement fr waste generators [01-0019426]	R09: Miller, Ken *(Santa Maria Times* (Newspaper))	
41876	3/19/1996	Newsclip: 'Tin bldg', Casmalia fuel debate - (4th Supervisorial District candidates) Howerton, Staffel sparring heats up in televised showdown, w/photos of Howerton & Staffel [01-0019430]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
2118410	3/19/1996	Newsclip: 4th District Supervisor forum held - Howerton, Staffel face off on TV (complete) [CDM188246]	R09: Harber, Terri (*Lompoc Record* (Newspaper))	
69625	3/22/1996	Videotape: Casmalia newsclips, 5/11/93 to 3/22/96		
41853	4/1/1996	Newsclip: Generators get tab to move toxics - violating EPA order would be costly [01-0019408]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41340	4/24/1996	Press release: Environmental News - EPA dismisses Casmalia lawsuit, moves toward cleanup pact [01-0027523]	R09: (Environmental Protection Agency - Region 9)	
41780	4/25/1996	Newsclip: EPA drops Hunter lawsuit [01-0019287]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41855	4/25/1996	Newsclip: EPA holds talks with owner of toxic dump - agency hopes to negotiate settlement with Kenneth Hunter Jr so he will help pay for Casmalia site cleanup [01-0019409]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41862	4/25/1996	Newsclip: Agencies drop Hunter lawsuit - Casmalia cleanup continues [01-0019415]	R09: Hoy, Matthew (*Lompoc Record* (Newspaper))	
2258656	4/25/1996	Newsclip: EPA holds talks with owner of toxic dump - agency hopes to negotiate settlement with Kenneth Hunter Jr so he will help pay for Casmalia site cleanup, fax copy to L Grunwald fr J Cornfield 4/28/96	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	

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95226	4/29/1996	Technical Memo: Revised TM re slope stability & slope monitoring [01-0041274]	R09: Roner, Carl (Roy F Weston, Inc), R09: Woodruff, Kenneth (Roy F Weston, Inc - Weston/REAC)	R09: Nadeau, Royal (Environmental Protection Agency - Emergency Response Section)
41326	5/1/1996	Fact sheet: EPA will conduct public mtg 6/5/96 on issues involving Casmalia Resources facility [01-0027500-01-0027501]	R09: (Environmental Protection Agency - Region 9)	
2113084	5/6/1996	Newsclip: More hazardous waste on its way to NJ [01-100132]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41893	5/31/1996	Newsclip: EPA plans update on Casmalia dump [01-0019447]	R09: (*Santa Maria Times* (Newspaper))	
2193557	6/4/1996	Fact Sheets (2): Revised de micromis guidance & orphan share reform [02-0077244-45]	R09: (Environmental Protection Agency)	
41889	6/6/1996	Newsclip: Agreement for Casmalia work is close - 50 waste contributors involved [01-0019443]	R09: Hoy, Matthew (*Lompoc Record* (Newspaper))	
41890	6/6/1996	Newsclip: Waste generators on track to take over cleanup of hazardous site (faxed 6/10/98) [01-0027525]	R09: Miller, Ken (Santa Maria Times (Newspaper))	
41891	6/7/1996	Newsclip: State tags millions for Casmalia, may pay $18M to help clean up dump - All former dump users liable in cleanup, plan includes 4 phases [01-0019445]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41892	6/9/1996	Newsclip: Agency (CA DTSC) seeking cleanup money [01-0019446]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
42564	6/20/1996	Administrative order on consent (AOC) #96-04B for removal response activities, USA v Crosby & Overton, Inc, [01-0023900-01-0023905]	R09: Takata, Keith (Environmental Protection Agency - Region 9)	
41329	9/1/1996	Public Notice: EPA schedules 3 public mtgs on Casmalia consent decree (CD), mtg dates 9/17/96, 10/9/96 & 10/15/96 [01-0027502-01-0027503]	R09: (Environmental Protection Agency - Region 9)	
41331	9/1/1996	Fact sheet: EPA reaches agreement with coalition of entities, site work to begin immediately [01-0027506-01-0027510]	R09: (Environmental Protection Agency - Region 9)	
2281781	9/17/1996	Press Release: EPA enters into Casmalia accord with 49 companies, w/attchs	R09: (Environmental Protection Agency - Region 9)	

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2113066	9/18/1996	Newsclip: Toxic makers get bill - EPA lodges decree to assess largest waste generators [01-100083-084]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
41903	9/19/1996	Newsclip: Dumpers' deal on Casmalia [01-0019460]	R09: (*Santa Barbara Independent, The* (Newspaper))	
41901	10/4/1996	Newsclip: Ltr to editor - Casmalia proves need for good environmental laws [01-0019458]	R09: Ferguson, Resident, Robert (City of Atascadero), R09: (*San Luis Obispo Telegram Tribune*)	
41899	10/8/1996	Newsclip: Toxic makers get bill - EPA lodges decree to assess largest waste generators, w/class of '96, companies or agencies who will pay combined $30 million for next 5 years under CD [01-0019455]	R09: Miller, Ken (*Santa Maria Times* (Newspaper))	
43463	10/8/1996	Newsclip: EPA to hold workshop on Casmalia, cleanup plans on agenda - major project, there are 49 participants in agreement to contain & eventually close site (faxed 7/1/97) [01-0033398]	R09: Carter, Matt (*Lompoc Record* (Newspaper))	
41587	10/15/1996	Public comments concerning Casmalia Resources hazardous waste management facility, 10/15/96, Santa Maria, CA [01-0018916-01-0018942]	R09: (Environmental Protection Agency - Region 9)	
41904	10/15/1996	Newsclip: EPA consent pact reviewed at mtg tonight [01-0019461]	R09: (*Santa Maria Times* (Newspaper))	
2281790	10/15/1996	Public Notice: EPA schedules 3 public mtgs on site consent decree for 9/17/96, 10/9/96, & 10/15/96	R09: (Environmental Protection Agency - Region 9)	
41897	10/16/1996	Newsclip: Questions remain on Casmalia, cleanup agreement reviewed - at hearing, court will consider comments, EPA's response, when deciding whether to approve decree [01-0019451]	R09: Carter, Matt (*Lompoc Record* (Newspaper))	
41900	10/16/1996	Newsclip: Casmalia back before (Santa Barbara County) board of supervisors [01-0019457]	R09: (*Santa Maria Times* (Newspaper))	
41902	10/16/1996	Newsclip: Only handful hear details of dump cleanup pact - local activist compares Casmalia toxic site to Stringfellow [01-0019459]	R09: Armijo, Gilbert (*Santa Maria Times* (Newspaper))	

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41207	10/18/1996	Mtg Agenda/Public Notice: Regional Board public mtgs on 10/17/96 & 10/18/96 in San Luis Obispo, w/item #4 - workshop on consent decree (CD) (State Issues) [01-0031660-01-0031670]	R09: (CA Regional Water Quality Control Board - Central Coast Region)	
2241584	10/19/1996	Newsclip: What's news, Casmalia mtgs	R09: (*San Luis Obispo New Times* (Newspaper))	
2241582	10/23/1996	Newsclip: County signs onto EPA plans for cleaning up Casmalia, consent decree seen as making the best of a bad situation	R09: Armijo, Gilbert (*Santa Maria Times (* Newspaper))	
41905	11/11/1996	Newsclip: Ltr to editor - putting Casmalia settlement in perspective (with Stringfellow) [01-0019462]	R09: Conrad, Resident, Les (City of Santa Barbara), R09: (*Santa Barbara News-Press* (Newspaper))	
41218	11/30/1996	Newsclip: Casmalia stabilization begins 1st phase, former dump users financing opening start of project [02-0066157-02-0066159]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2060996	11/30/1996	Newsclip: Casmalia stabilization begins 1st phase, former dump users financing opening start of project, w/attchs [02-0067108-112]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
43095	12/17/1996	Newsclip: Specter of oozing dumps unites cities big & small (faxed 12/17/96 fr Boone & Associates) [02-0066160-02-0066161]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2265909	2/21/1997	Community relations documents - Press releases, newsclips, FOIA requests, fact sheet, press update, w/marginalia [02-0005076 - 02-0005193]		
52862	6/23/1997	Consent decree (CD) #96-6518 KMW (JGX), USA v ABB Vetco Gray Inc, et al, w/signature pp & apps A-D (SOW, map, schematic diagram & lists of settling defendants & affiliates)	R09: (US Dept of Justice - Environment & Natural Resources Div)	
41952	8/25/1997	Ltr: Potential CA ARARs for pesticides/solvents (P/S) landfill cap, w/encls (CD Deliverable) (State Issues) [01-0034422-01-0034430]	R09: Rudolph, Caroline (CA Environmental Protection Agency - Dept of Toxic Substances Control)	R09: Geiser, Dennis (Environmental Protection Agency - Region 9)

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2073437	8/25/1997	Ltr: Potential CA ARARs for pesticides/solvents (P/S) landfill cap, w/encls & attch [01-0041751-782]	R09: Rudolph, Caroline (CA Environmental Protection Agency - Dept of Toxic Substances Control)	R09: Geiser, Dennis (Environmental Protection Agency - Region 9)
41951	8/26/1997	Ltr: Transmits & discusses CA Dept of Fish & Game list of potential ARARs related to pesticides/solvents (P/S) landfill cap, w/encls (CD Deliverable) (State Issues) [01-0034415-01-0034416; 01-0041790; 01-0034417-01-0034421]	R09: Rudolph, Caroline (CA Environmental Protection Agency - Dept of Toxic Substances Control)	R09: Geiser, Dennis (Environmental Protection Agency - Region 9)
2363128	11/2/1997	Newsclip: EPA poised to file suit against owner of dump	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41073	1/1/1998	Fact Sheet: Casmalia Newsletter, w/marginalia [01-0043738-01-0043741]	R09: (Environmental Protection Agency - Region 9)	
2025155	1/1/1998	Fact Sheet: Casmalia Newsletter	R09: (Environmental Protection Agency - Region 9)	
2241578	1/1/1998	Fact Sheet: Cashout cost estimate for site	R09: (Environmental Protection Agency - Region 9)	
65879	1/8/1998	Newsclip: Casmalia dump owner sued by EPA [01-1101060-01-1101062]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
41177	1/12/1998	Technical memo: Request to revise schedule for submittal of draft addendum to general workplan covering other landfill cap designs (CD Deliverable) [01-0035234]	R09: Bertelsen, Corey (Casmalia Site Remediation Project)	R09: Geiser, Dennis (Environmental Protection Agency - Region 9)
2054504	6/27/1998	Newsclip: Letters to Times - Neighbors of Casmalia, w/marginalia [02-0086185]	R09: Vasquez, Resident, Vahnita (City of Santa Maria), R09: Newman, Penny (Concerned Neighbors in Action), R09: Vasquez, Elizabeth (West Coast Laminating)	
2076532	8/3/1998	Newsclip: Casmalia landfill is to be capped, w/fax transmittal note to D Geiser fr C Rudolph, 8/7/98 [01-0046232-233]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	

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2076550	8/6/1998	Newsclip: EPA will drop plastic cap atop biggest toxic site, w/marginalia & TL to D Geiser fr C Bertelsen [01-0046228-231]	R09: Cuenco, Candy (*Santa Maria Times* (Newspaper))	
2076551	8/7/1998	Memo: Transmits articles/newsclips on Casmalia of interest before public workshops, w/attchs [01-0046225-227]	R09: Gasperini, Michelle (Santa Barbara County - Planning & Development Dept)	R09: Geiser, Dennis (Environmental Protection Agency - Region 9)
2074159	9/4/1998	Technical Memo: Modification of operations - Short term collection, treatment & disposal of contaminated liquids component of work [01-0046036-056]	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)
65890	10/1/1998	Fact Sheet: Casmalia disposal site - construction of pesticides/solvents (P/S) landfill cover begins	R09: (Environmental Protection Agency - Region 9)	Not applicable
2241587	10/7/1998	Public Notice: Public mtg to be held 10/19/98	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
2241588	10/12/1998	Public Notice: CSC announces availability of technical support grant	R09: Cooper, David (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
75373	10/20/1998	Newsclip: EPA steps up Casmalia collection efforts, seeks settlements by 2/99 [01-2000114]	R09: Cuenco, Candy (*Santa Maria Times* (Newspaper))	
75375	11/29/1998	Newsclip: EPA bills smaller firms for Casmalia cleanup [01-2000119-01-2000123]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
89087	1/1/1999	Administrative order on consent de minimis contributors #99-02(a), w/o signature pp & apps A-D	R09: (Environmental Protection Agency - Region 9)	
75374	1/4/1999	Newsclip: Endangered frogs now jump at dump - species presence at closed Casmalia hazardous waste site may complicate cleanup [01-2000115-01-2000118]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2257052	1/4/1999	Newsclip: Endangered frogs now jump at dump, species' presence at closed Casmalia hazardous waste site may complicate cleanup, w/marginalia (fax copy 1/5/99)	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2257053	1/4/1999	Newsclip: Permit sought, w/marginalia (fax copy 1/5/99)	R09: (*Santa Barbara News-Press* (Newspaper))	
75369	1/8/1999	Newsclip: Taking care of business - frogs win over toxic cleanup, w/photo of A Caldwell [01-2000113]	R09: Caldwell, Andy (Coalition of Labor, Agriculture & Business)	R09: (Santa Maria Times (Newspaper))

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75367	1/12/1999	Press release: Environmental News - EPA makes settlement offers to more than 800 PRPs at Casmalia disposal site [01-2000112]	R09: (Environmental Protection Agency - Region 9)	
75366	1/21/1999	Newsclip: Bill comes due for Casmalia cleanup - EPA asks hazardous waste site's former customers to contribute total of $110 million, w/partial list of local agencies & businesses being asked to make contributions to cleanup [01-2000108-01-2000111]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
70022	2/1/1999	Fact sheet: Actualizacion de foyeto informativo comunitario (community update, Spanish) [CDM090287-CDM090296]	R09: (Environmental Protection Agency - Region 9)	
70029	2/1/1999	Fact sheet: Casmalia disposal site - community update [CDM091421-CDM091428]	R09: (Environmental Protection Agency - Region 9)	
2022769	2/12/1999	Newsclip: Pay to exit - Minor cast members in contamination of Santa Barbara waste disposal site converge [CDM070628-629]	R09: Wick, William (Crosby, Heafey, Roach & May (Attorneys))	R09: (San Francisco Daily Journal)
75382	3/31/1999	Newsclip: Local agencies consider toxic waste settlement [01-2000138]	R09: Robertson, Nick (Valley Voice)	
75386	4/5/1999	Newsclip: Fight continues over Casmalia cleanup fee, former dump customers contesting cleanup charges - EPA has collected only fraction of $399 million it says is owed by ex-customers of toxic waste dump [01-2000140-01-2000142]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2258646	4/5/1999	Newsclip: Fight continues over Casmalia cleanup fees - EPA has collected only fraction of $399 million it says is owed by ex-customers of toxic waste dump (fr website)	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
75376	4/6/1999	Newsclip: Editorial - cleaning up, EPA goes after small firms, agencies that used Casmalia, w/list of editorials & articles re Casmalia site/de minimis settlement in Santa Barbara News Dispatch [sic], week of 4/5/99 [01-2000124-01-2000126; 01-2000139]	R09: (*Santa Barbara News-Press* (Newspaper))	
2258645	4/6/1999	Newsclip: Cleaning Up, editorial on collection of settlement fr local business (fr website)	R09: (*Santa Barbara News-Press* (Newspaper))	

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75388	4/18/1999	Newsclip: Bills for toxic waste cleanup contested, former dump users including 18 Ventura County firms that have joined fight against EPA billings must pay $399 million to clean site [01-2000144-01-2000145]	R09: Johnson, Pamela (*Santa Maria Times* (Newspaper))	
75389	4/21/1999	Newsclip: Frogs, quakes cause 1-year delay in start of Casmalia dump cap [01-2000146]	R09: Lyons, Cheryl (*Santa Maria Times* (Newspaper))	
129537	4/21/1999	Newsclip: Casmalia work behind schedule [01-200013 - 01-200015]	R09: Carter, Matt (*Lompoc Record* (Newspaper))	
129346	4/22/1999	Newsclip: Frogs still thriving at Casmalia dump [01-200016 - 01-200018]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
129348	4/22/1999	Newsclip: Grant drawing little interest in Casmalia [01-200019 - 01-200020]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
129349	4/28/1999	Newsclip: Attack of the giants - do red-legged frogs & Ken Starr have anything in common? [01-200028 - 01200030]	R09: Lankford, John (*Santa Barbara News-Press* (Newspaper))	
2258655	5/6/1999	Newsclip: Public agencies may catch break in Casmalia, exception for municipal solid waste, w/marginalia	R09: Lyons, Cheryl (*Santa Maria Times* (Newspaper))	
129350	5/11/1999	Newsclip: Discount for certain Casmalia customers clears major hurdle [01-200024 - 01-200025]	R09: Lyons, Cheryl (*Santa Maria Times* (Newspaper))	
129351	5/11/1999	Newsclip: EPA may OK break on Casmalia bills [01-200021 - 01-200023]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
129352	5/16/1999	Newsclips (2): "US seeks ruling on dump cleanup" & "Start of payments reset to October" [01-200032 - 01200034]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2241589	5/21/1999	Public Notice: Request for comments to draft community relations plan (fax copy dated 7/1/99)	R09: Cooper, David (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
2241590	6/1/1999	Newsclip: 10 years later, is Casmalia dump doomed to remain an albatross, w/attch	R09: Lyons, Cheryl (*Santa Maria Times* (Newspaper))	

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70024	7/1/1999	Fact Sheet: Landfill cover construction begins (English/Spanish version)	R09: (Environmental Protection Agency - Region 9)	
2257048	7/1/1999	Public Notice: Request for comments to draft community relations plan for Casmalia Disposal Site (fax copy)	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
129353	7/5/1999	Newsclip: State cracking down on toxics [01-200035 - 01-200036]	R09: Kay, Jane (*San Francisco Examiner, The* (Newspaper))	
2022796	7/12/1999	Public Notice: 8/4/99 community workshop at Casmalia Elementary School re proposed adoption of Order #99-034, w/attchs, [CSA005481-485]	R09: Briggs, Roger (CA Regional Water Quality Control Board - Central Coast Region)	
129362	7/15/1999	Newsclip: Work begins on Casmalia landfill cover, w/TL to Dennis Geiser [01-200037]	R09: Lyons, Cheryl (*Santa Maria Times* (Newspaper))	
129364	7/23/1999	Newsclip: Water drainage OK sought at Casmalia [01-200038 - 01-200040]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
129365	7/29/1999	Newsclip: Insurer wants out of Hunter defense [01-200041 - 01-200044]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2171839	8/1/1999	1999 cost estimate	R09: (CH2M Hill, Inc)	R09: (Environmental Protection Agency - Region 9)
75390	9/13/1999	Newsclip: Cover-up operation - work is under way on capping worst landfill section at Casmalia Resources hazardous waste site, w/News-Press staff rpt on notification snafu stalls creek session & photo of D Geiser [01-2000147-01-2000151]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
129368	10/8/1999	Press Release: New EPA cleanup strategy for Casmalia to save over $100 million, substantially reduced payments offered to 800+ parties [01-200094 - 01-200095]	R09: (Environmental Protection Agency - Region 9)	
129371	10/9/1999	Newsclip: EPA cuts cost of Casmalia cleanup, revised estimate eases financial burden for hazardous waste site's former customers [01-200098 - 01-2000100]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	

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168205	10/26/1999	Newsclip: Judge inclined against Casmalia - government presses for owner to help pay for waste facility's cleanup, w/marginalia	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2257047	11/18/1999	Newsclip: Lawmakers question Casmalia plan, w/marginalia (fax copy)	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
129376	11/28/1999	Newsclip: Restricted releases OK'd for Casmalia ponds [CDM063240-1]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
129377	12/8/1999	Newsclip: Casmalia customers catch up to cleanup, EPA collects $22 million from more than 300 users at closed dump site [CDM065675-7]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
129379	12/13/1999	Newsclip: City tries to cut Casmalia costs [CDM066239-41]	R09: Cannon, Paulette (*Lompoc Record* (Newspaper))	
75406	1/4/2000	Sampling & analysis plan for compliance monitoring, NPDES permit #99-034, w/TL 1/18/00 fr C Bertelsen to D Niles [CSA015328-CSA015425]	R09: (Harding Lawson Assoc)	R09: (Casmalia Resources Site Steering Committee)
129626	2/22/2000	Ltr: Requests additions to ARARs listing for Runoff Containment Facility & A-Series dams [CDM173638]	R09: Verigin, Stephen (CA Dept of Water Resources - Div of Safety of Dams)	R09: Rudolph, Caroline (CA Environmental Protection Agency - Dept of Toxic Substances Control)
2026466	3/7/2000	Public Notice: Informational mtg re cleanup strategy, costs & settlement efforts, w/attchs, [CDM083045-074, CDM083279-298]	R09: (Environmental Protection Agency - Region 9)	
2236739	4/1/2000	Fact Sheet: Proposed small party settlement nets $27 million for Casmalia work [English & Spanish versions]	R09: (Environmental Protection Agency - Region 9)	
129383	4/5/2000	Newsclip: Ghosts of toxics past haunt Santa Barbara, EPA wants city, others who used Casmalia to help fund cleanup [CDM095676-8]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
122645	4/11/2000	Ltr: Submits comments on & requests public hearing re proposed de minimis settlement [CDM096755-9]	R09: Coleman, Howard (Nossaman, Guthner, Knox & Elliott (Attorneys))	R09: (Environmental Protection Agency - Region 9)

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147079	4/13/2000	Ltr: Submits public comments, requests public hearing & urges finalizing de minimis settlement under specific conditions [CDM096779 - CDM096780]	R09: Rich, Nancy (Katten, Muchin & Zavis (Attorneys))	R09: (Environmental Protection Agency - Region 9), R09: (Environmental Protection Agency - Office of Regional Counsel)
76488	5/26/2000	Public Notice: US EPA announces public hearing on 6/26/00 in Santa Maria re proposed AOC for de minimis settlement	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Barbara News-Press (Newspaper))
115099	5/26/2000	Public Notice: US EPA announces public hearing on 6/26/00, on proposed administrative order on consent for de minimis settlement, w/invoice	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
2241591	5/26/2000	Newsclip: County must share cost of dump cleanup, taxpayers responsible for sludge sent to Casmalia	R09: Finucane, Stephanie (San Luis Obispo Tribune)	
2241400	6/1/2000	Fact Sheet: Summary of proposed cashout settlement between EPA & 400+ parties	R09: (Environmental Protection Agency - Region 9)	
114387	6/23/2000	Ltr: Comments of Compaq Computer Corp on administrative order on consent for de minimis settlement (EPA docket #99-02(a) [CDM137755-757]	R09: Garvin, Anthony (Brobeck, Phleger & Harrison (Attorneys))	R09: (Environmental Protection Agency - Region 9)
149238	8/13/2000	Newsclip: "Whose land is it anyway? Red Mountain new battleground in property rights" [CDM134776 - CDM134778]	R09: Blevins, Jason (*Denver Post, The* (Newspaper))	
89093	11/1/2000	Fact Sheet: Construction of additional covers scheduled for summer 2001	R09: (Environmental Protection Agency - Region 9)	
97218	4/1/2001	Fact Sheet: US EPA proposes remedy for 3 landfills & announces public comment period & community mtg	R09: (Environmental Protection Agency - Region 9)	
115101	4/6/2001	Public Notice: Request for comments on 3 landfills proposed remedy	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
2111272	4/30/2001	Press Release: Governor Davis announces agreement with US EPA involving Casmalia & Stringfellow hazardous waste sites [CDM195285]	R09: (CA Environmental Protection Agency)	
2193436	4/30/2001	Newsclip: Living in aftermath of Casmalia [CDM228136-38]	R09: Burns, Melinda (*Santa Barbara News-Press* (Newspaper))	

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2051641	5/1/2001	Press Release: Groundwater protection - State to pay for cleanup of toxic site, 5/1/01 [CDM168479]	R09: (Associated Press)	
2051642	6/14/2001	Press Release: EPA proposes Casmalia landfill as federal Superfund site - Action kicks off public comment period [CDM168477-478]	R09: (Environmental Protection Agency - Region 9)	
108926	6/20/2001	Public Notice: Request for comments - site proposed for Superfund National Priorities List, public comment mtg on 7/11/01	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
96535	6/27/2001	Action Memo: Request for removal action to cap "EE/CA Site" at Casmalia Resources Superfund site, w/attchs 1-6 & TL 6/29/01 [CDM167646-795]	R09: Cooper, Craig (Environmental Protection Agency - Region 9)	R09: Takata, Keith (Environmental Protection Agency - Region 9)
114698	8/5/2001	Newsclip: EPA finds more waste - residents, agency disagree as to how best to proceed [CDM173944]	R09: Waldner, Erin (*Los Angeles Times* (Newspaper))	
112194	9/10/2001	Public Notice: Community mtg on 9/25/01 at Casmalia re gw program at site & update on construction of landfill covers	R09: (*Santa Maria Times* (Newspaper))	
2051616	9/13/2001	Press Release: EPA finalizes Casmalia landfill as federal Superfund site [CDM169424]	R09: (Environmental Protection Agency - Region 9)	
2004927	12/28/2001	Press Release: US & CA reach 15 million dollar settlement on Casmalia, agreement resolves state's landfill liability at site, [CDM173017-018]	R09: (US Dept of Justice), R09: (Environmental Protection Agency)	
2004926	12/29/2001	Article: State agrees to Casmalia cleanup bill, [CDM173015-016]	R09: Hadly, Scott (*Santa Barbara News-Press* (Newspaper))	
106333	2/1/2002	Fact Sheet: Site construction update, EPA proposes settlement with State, public comment meeting on 3/6/02 at Casmalia (English & Spanish)	R09: (Environmental Protection Agency - Region 9)	
108929	2/13/2002	Public Notice: Request for comments - proposed settlement with State of CA, public comment mtg on 3/6/02	R09: (*Santa Maria Times* (Newspaper))	
112193	4/1/2002	Fact Sheet: EPA proposes settlement with Casmalia Resources, Hunter Resources & Kenneth Hunter Jr Living Trust - announces public comment mtg on 4/8/02, w/correction sheet (Spanish & English text)	R09: (Environmental Protection Agency - Region 9)	

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2193434	4/10/2002	Newsclip: Casmalians, $6.9 million offer too small, w/TL to K Kitchingman & S Chern 4/11/02 [CDM228130, 228132]	R09: Firpo, Eric (*Santa Barbara News-Press* (Newspaper))	
116130	4/16/2002	Public Notice: Correction to contact information for proposed settlements	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
2243665	9/1/2002	Fact Sheet: Landfill cover project nears completion & mtg notice 9/18/02 (in English & Spanish) [CDM 185082-185089]	R09: (Environmental Protection Agency - Region 9)	
132326	9/4/2002	Public Notice: Community meeting to be held 9/18/02 in Casmalia re construction activities at caustic/cyanide & acids landfills, & actions to settle PRP liability	R09: (Environmental Protection Agency - Region 9), R09: (*Santa Maria Times* (Newspaper))	
1174466	9/20/2002	Partial consent decree, civil action #03-1078 DDP VDKx, US vs Samson Hydrocarbons Co. et al	R09: Marvel, Nancy (Environmental Protection Agency - Region 9), R09: Sansonetti, Thomas (US Dept of Justice - Environment & Natural Resources Div), R09: Yang, Debra (US Dept of Justice - US Attorney's Office, Central District of California)	R09: (US District Court - Central District of California)
2092528	11/22/2002	Consent decree #01-11161 CAS RZ for reimbursement of response costs, USA v State of CA, w/fax TL to T Bloomfield fr Dept of Justic, 11/27/02 [CDM192671-728]	R09: (US Dept of Justice - Environment & Natural Resources Div)	
2111274	2/14/2003	Press Release: Nearly 32 million dollars in settlements reached to aid in cleanup at site [CDM195283-284]	R09: (US Dept of Justice), R09: (Environmental Protection Agency - Region 9)	
2284323	2/14/2003	Press Release: Nearly $32 million in settlements reached to aid in cleanup at CA Superfund site [CDM188225-CDM188226]	R09: (US Dept of Justice - Environment & Natural Resources Div), R09: (Environmental Protection Agency - Region 9)	
2284308	2/15/2003	Newsclip: Millions pledged to dump cleanup	R09: Overend, William (*Los Angeles Times* (Newspaper))	
2111273	2/17/2003	Newsclip: $32 million settlement for Superfund site [CDM195282]	R09: (*Silicon Valley/San Jose Business Journal*)	

Doc ID	Doc Date	Title	Author	Addressee
139746	3/1/2003	Fact Sheets (2): EPA proposes cashout settlements with major waste generators (English & Spanish)	R09: (Environmental Protection Agency - Region 9)	
142335	3/12/2003	Public Notice: Request for comments re proposed settlement with major waste generators	R09: (Environmental Protection Agency - Region 9), R09: (*Santa Maria Times* (Newspaper))	
2255915	3/25/2003	Mtg Agenda: Community update mtg, public comments & RI presentation	R09: (Environmental Protection Agency - Region 9)	
2193442	4/17/2003	Newsclip: Croakin' at Casmalia, endangered frog wages comeback at toxic Superfund site [CDM228167-70]	R09: Welsh, Nick (*Santa Barbara Independent, The* (Newspaper))	
2111275	6/1/2003	Fact Sheet: EPA proposes cashout settlement with de minimis waste generators (English & Spanish) [CDM195278-281]	R09: (Environmental Protection Agency - Region 9)	
155998	6/27/2003	Public Notice: Requests comments on proposed settlement with 25 de minimis waste generators fr 6/27/03 to 7/27/03	R09: (Environmental Protection Agency - Region 9)	
2241391	6/30/2003	Public Notice: Request for comments, proposed settlement with de minimis waste generators	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
2075103	7/22/2003	Consent decree (CD) #03-1078 CAS (RZx), USA v Samson Hydrocarbons Co, et al, as to Quintana Petroleum Corp, w/apps A-B & marginalia [CDM193782-812]	R09: (US Dept of Justice - Environment & Natural Resources Div)	
2075104	7/22/2003	Consent decree (CD) #03-1078 CAC (RZx), USA v Samson Hydrocarbons Co, et al, as to Crosby & Overton, Inc, w/marginalia & apps A-D [CDM193813-848]	R09: (US Dept of Justice - Environment & Natural Resources Div)	
2075105	7/22/2003	Consent decree (CD) #03-1078 CAs (RZx), USA v Samson Hydrocarbons Co, et al, as to Baumgartner Oil & Gas Co, w/apps A-C & marginalia [CDM193849-882]	R09: (US Dept of Justice - Environment & Natural Resources Div)	
168160	10/1/2003	Fact Sheet: Community update mtg (invitation to meeting on 11/18/03 at Casmalia Elementary School)	R09: (Environmental Protection Agency - Region 9)	
2004961	11/4/2003	Public Notice: Casmalia Resources Superfund Site community update mtg on 11/18/03 at Winfred Wollam Elementary School, Casmalia	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
161086	11/10/2003	Administrative order on consent #99-02(d), de minimis contributors, w/o signature pp & apps A-D	R09: (Environmental Protection Agency - Region 9)	

Doc ID	Doc Date	Title	Author	Addressee
2041896	7/13/2004	Public Notice: Request for comments re proposed settlement with de minimis waste generators by 8/13/04, w/marginalia	R09: (Environmental Protection Agency - Region 9)	
2257213	9/1/2004	Administrative order on consent #99-02(c) for de minimis contributors to reach final settlement for response costs, w/o apps A-B [CDM204489 - CDM204529]	R09: (Environmental Protection Agency - Region 9)	
2125205	9/28/2004	Ltr: Responds to comments dated 7/20/2007 fr DTSC re public health assessment for site	R09: Underwood, Marilyn (CA Dept of Health Services), R09: Barreau, Tracy (CA Dept of Health Services)	R09: Rudolph, Caroline (CA Environmental Protection Agency - Dept of Toxic Substances Control)
2125206	9/28/2004	Ltr: Responds to comments fr US EPA re public health assessment for site	R09: Underwood, Marilyn (CA Dept of Health Services), R09: Barreau, Tracy (CA Dept of Health Services - Environmental Health Investigations Branch)	R09: Kitchingman, Kent (Environmental Protection Agency - Region 9)
2125207	9/28/2004	Ltr: Responds to comments dated 7/15/2004 fr Casmalia Community Group (CCG) re public health assessment for site	R09: Underwood, Marilyn (CA Dept of Health Services), R09: Barreau, Tracy (CA Dept of Health Services)	R09: Strauss, Peter (Casmalia Community Group), R09: Stricklin, Terri (Casmalia Community Group)
2125208	9/28/2004	Ltr: Responds to comments dated 7/19/2004 fr CA Regional Water Quality Control Board - Central Coast Region re public health assessment for site	R09: Underwood, Marilyn (CA Dept of Health Services), R09: Barreau, Tracy (CA Dept of Health Services)	R09: Briggs, Roger (CA Regional Water Quality Control Board - Central Coast Region)
2241598	11/1/2004	Fact Sheet: Actualizacion del sitio superfondo de recursos de Casmalia, reunion publica 12/8/04 (update, Spanish version)	R09: (Environmental Protection Agency - Region 9)	
2242380	11/1/2004	Fact Sheet: Site update, mtg announcement 12/7/04	R09: (Environmental Protection Agency - Region 9)	
2241576	11/22/2004	Public Notice: Community update mtg on 12/7/04 in Casmalia	R09: (*Santa Maria Times* (Newspaper))	
2051624	12/7/2004	Public Notice: Community update mtg on 12/7/04	R09: (Environmental Protection Agency - Region 9)	

Doc ID	Doc Date	Title	Author	Addressee
2243333	7/1/2005	Fact Sheet: EPA proposes 2 cashout settlements with de minimis waste generators, public hearing to be held 7/18/05, w/marginalia [CDM 215193-215194]	R09: (Environmental Protection Agency - Region 9)	
2109643	9/28/2005	Public health assessment for site - Final release, w/TL	R09: (US Dept of Health & Human Services - Agency for Toxic Substances & Disease Registry), R09: (CA Dept of Health Services)	
1174463	4/18/2006	Administrative order on consent, de minimis contributors, docket #99-02(c)(supplemental), w/appendices A-D & signature pages	R09: (Environmental Protection Agency - Region 9)	
1174464	4/18/2006	Administrative order on consent, de minimis contributors, docket #99-02(e), w/appendices A-C & E, & signature pages	R09: (Environmental Protection Agency - Region 9)	
2100671	5/1/2006	Fact Sheet: RI update - Settlements bring additional funds	R09: (Environmental Protection Agency - Region 9)	
2105053	5/17/2006	Public Notice: Request for comments - Proposed settlements with de minimis waste generators - fr 5/22/06 to 6/23/06	R09: (Environmental Protection Agency - Region 9)	
2359055	6/2/2006	Ltr: Interim progress rpt, revised appendix H & final IPR errata, w/attch, w/o compact discs	R09: Bertelsen, Corey (Casmalia Site Remediation Project)	R09: Deschambault, Lynda (Environmental Protection Agency - Region 9), R09: Mechem Ii, Russell (Environmental Protection Agency - Region 9)
2379122	6/2/2006	Ltr: Interim progress rpt, revised appendix H & final IPR errata, w/attch (compact discs only)	R09: Bertelsen, Corey (Casmalia Site Remediation Project)	R09: Deschambault, Lynda (Environmental Protection Agency - Region 9), R09: Mechem Ii, Russell (Environmental Protection Agency - Region 9)

Doc ID	Doc Date	Title	Author	Addressee
1174563	6/28/2006	Ltr: Interim progress rpt, revised appendix N, w/app N (attchs N-1 - N-4 only)	R09: Bertelsen, Corey (Casmalia Site Remediation Project)	R09: Deschambault, Lynda (Environmental Protection Agency - Region 9), R09: Mechem Ii, Russell (Environmental Protection Agency - Region 9)
2359074	6/28/2006	Ltr: Interim progress rpt, revised appendix N, w/app N, w/o attchs N-1 - N-4	R09: Bertelsen, Corey (Casmalia Site Remediation Project)	R09: Deschambault, Lynda (Environmental Protection Agency - Region 9), R09: Mechem Ii, Russell (Environmental Protection Agency - Region 9)
2113751	6/29/2006	Agreement for recovery of response costs, #2006-08, w/app A & signature pages	R09: (Environmental Protection Agency - Region 9)	
1124617	9/26/2006	Log of boring RISB-02 (borehole log for piezometers in P/S landfill), draft final RI rpt plate E9-54	R09: (MACTEC, Inc)	
2296536	1/1/2007	Consent & authorization signature pages - 4/2006-1/2007, AOC 99-02(c)(supp), w/attchs		R09: (Environmental Protection Agency - Region 9)
2132840	7/19/2007	Public Notice: Request for public comments on proposed settlements	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
1108906	10/12/2007	Ltr: Biological opinion for site stormwater management, stormwater pond closures, & replacement wetlands construction	R09: Root, Roger (US Fish & Wildlife Service)	R09: Hiett, Richard (Environmental Protection Agency - Region 9)
2183955	6/10/2008	Final design rpt, B-drainage alternate habitat area, w/apps A-D & TL to R Mechem fr C Bertelsen	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)
2183954	6/12/2008	Final construction workplan, B-drainage wetlands, w/apps A-C & TL to R Mechem fr C Bertelsen	R09: (Corey Bertelsen Consulting, Inc)	R09: (Casmalia Resources Site Steering Committee)
2166749	7/28/2008	Ltr: Amendment to & authorization of biologist for biological opinion for Casmalia site stormwater management, stormwater pond closures, & replacement wetlands construction	R09: Root, Roger (US Fish & Wildlife Service)	R09: Mechem Ii, Russell (Environmental Protection Agency - Region 9)

Doc ID	Doc Date	Title	Author	Addressee
2177758	10/2/2008	Final operations & maintenance manual, B drainage wetlands, w/TL to R Mechem fr C Bertelsen	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)
1115513	2/9/2009	Sampling & analysis plan (SAP) for tier 2 ecological risk assessment, w/apps A-F & TLs	R09: (ARCADIS U S, Inc)	R09: (Environmental Protection Agency - Region 9)
2167997	2/12/2009	B-drainage wetlands - construction completion rpt/as-built rpt (oversize drawings only)	R09: (Corey Bertelsen Consulting, Inc)	R09: (Casmalia Resources Site Steering Committee)
2167998	2/12/2009	B-drainage wetlands - construction completion rpt/as-built rpt (compact disc only - app G)	R09: (Corey Bertelsen Consulting, Inc)	R09: (Casmalia Resources Site Steering Committee)
2179940	2/12/2009	B-drainage wetlands - construction completion rpt/as-built rpt, w/apps A-F, w/o oversize drawings & compact disc (app G)	R09: (Corey Bertelsen Consulting, Inc)	R09: (Casmalia Resources Site Steering Committee)
2182720	3/27/2009	Sampling & analysis plan (SAP), w/apps A-G & TLs	R09: (ARCADIS U S, Inc)	R09: (Environmental Protection Agency - Region 9)
2191496	7/17/2009	Public Notice: Request for public comments on proposed de minimis settlements for site	R09: (Environmental Protection Agency - Region 9)	R09: (Santa Maria Times (Newspaper))
2258642	4/8/2011	Public Notice: Notice of proposed CERCLA administrative de minimis settlement & request for comments	R09: Diamond, Jane (Environmental Protection Agency - Region 9)	R09: (Federal Register (Periodical))
2241465	6/30/2011	Administrative settlement agreement & order on consent, de minimis contributors, docket #99-02(f), w/appendices A-C & signature pages	R09: (Environmental Protection Agency - Region 9)	
2346494	2/1/2016	Final FS, v 1 of 4 (oversize maps only)	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)
2346495	2/1/2016	Final FS, v 2 of 4 (oversize maps only)	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)
2346496	2/1/2016	Final FS, v 3 of 4 - apps A-D (oversize maps only)	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)

Doc ID	Doc Date	Title	Author	Addressee
2354831	2/1/2016	Final FS, v 1 of 4, w/TL, w/o oversize maps	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)
2354832	2/1/2016	Final FS, v 2 of 4, w/o oversize maps	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)
2354833	2/1/2016	Final FS, v 3 of 4 - apps A-D, w/o oversize maps	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)
2354834	2/1/2016	Final FS, v 4 of 4 - apps E-J	R09: (Casmalia Resources Site Steering Committee)	R09: (Environmental Protection Agency - Region 9)
1159820	5/31/2016	Ltr: 2015 Annual routine groundwater monitoring rpt, w/apps A-F	R09: (Geosyntec Consultants, Inc)	R09: (C B C Inc)
1159815	6/4/2016	Ltr: 2016 soil vapor monitoring rpt, w/attchs & TL to R Mechem & M Samolis fr C Bertelsen	R09: Coffman, Kevin (Geosyntec Consultants, Inc), R09: Ettinger, Robert (Geosyntec Consultants, Inc)	R09: Bertelsen, Corey (Casmalia Resources Site Steering Committee)
1174465	8/1/2016	Administrative settlement agreement & order on consent, de minimis contributors, docket #99-02(i), w/appendices A-C & signature pages	R09: (Environmental Protection Agency - Region 9)	
1174937	7/18/2017	List of US EPA guidance documents consulted during development & selection of response action for site	R09: (Environmental Protection Agency - Region 9)	
1176009	8/4/2017	Casmalia Resources Casmalia California Proposed Plan administrative record (AR) index	R09: (Environmental Protection Agency - Region 9)	
100001042	11/1/2017	Final proposed plan, Casmalia Resources Superfund Site, w/appendix A	R09: (Environmental Protection Agency - Region 9)	
100006141	12/4/2017	Newsclip: EPA settles on final Casmalia toxic dump cleanup plan - public comment sought	R09: Hodgson, Mike (*Santa Maria Times* (Newspaper))	
100006143	12/4/2017	Newsclip: Toxic pollutants at Casmalia hazardous waste dump are many	R09: Hodgson, Mike (*Santa Maria Times* (Newspaper))	
100004441	12/6/2017	Mtg Transcript: Public hearing for proposed plan, w/errata	R09: Mendoza, Theresa (Atkinson-Baker, Inc)	

Doc ID	Doc Date	Title	Author	Addressee
100005390	12/6/2017	Presentation: Public hearing on proposed plan for site	R09: (Environmental Protection Agency - Region 9)	
100006142	12/12/2017	Newsclip: EPA takes public comment before pushing forward with Casmalia Resources Superfund site	R09: Cole, Spencer (*Santa Maria Sun* (Newspaper))	
100006202	4/16/2018	Press Release: US EPA priorities cleanup of Casmalia Superfund site	R09: (Environmental Protection Agency - Region 9)	
100006203	4/16/2018	Press Release: Administrator Pruitt updates list of Superfund sites targeted for immediate, intense action	R09: (Environmental Protection Agency - Office of Land & Emergency Management)	
100006204	4/16/2018	List of Superfund sites targeted for immediate, intense action	R09: (Environmental Protection Agency)	
100006284	4/17/2018	Newsclip: EPA updates Superfund priority list, San Jacinto Waste Pits removed	R09: (Waste Dive)	
100006286	4/18/2018	Newsclip: EPA's Pruitt targets Casmalia site for expedited work	R09: (*Santa Maria Sun* (Newspaper))	
100006285	4/19/2018	Newsclip: Casmalia Superfund site draws renewed EPA focus	R09: (*Santa Barbara Independent, The* (Newspaper))	
100006753	5/7/2018	Ltr: Concurs with selected remedy for site, w/encl	R09: Nazemi, Mohsen (CA Environmental Protection Agency - Dept of Toxic Substances Control)	R09: Manzanilla, Enrique (Environmental Protection Agency - Region 9)
100006960	5/7/2018	Ltr: Land disposal program - Central Coast Regional Water Quality Control Board response to draft ROD	R09: Robertson, John (CA Regional Water Quality Control Board - Central Coast Region)	R09: Singh, Angela (CA Environmental Protection Agency - Dept of Toxic Substances Control)
100006961	5/8/2018	Email: Transmits response to draft ROD fr Central Coast Regional Water Quality Control Board, w/o attch	R09: Hume, Richard (CA Environmental Protection Agency - Dept of Toxic Substances Control)	R09: Mechem Ii, Russell (Environmental Protection Agency - Region 9)
100007242	5/24/2018	List of guidance documents consulted during development & selection of response action for site	R09: (Environmental Protection Agency - Region 9)	
100007208	5/30/2018	Ltr: Response to comments fr Central Coast Regional Water Quality Control Board on draft Record of Decision	R09: Barton, Dana (Environmental Protection Agency - Region 9)	R09: Hume, Richard (CA Environmental Protection Agency - Dept of Toxic Substances Control)

Doc ID	Doc Date	Title	Author	Addressee
155245	Undated	Newsclip: EPA sends notices to 800 de minimis parties linked to contamination of site between 1973 to 1989, [CDM010440]	R09: Whetzel, Carolyn (NONE)	
2038331	Undated	Responsiveness summary for public comments - Proposed administrative order on consent for de minimis contributors #99-02(a), [CDM135657-691]	R09: (Environmental Protection Agency - Region 9)	
2054505	Undated	Newsclip: EPA deals Casmalia key setback - Permit for 4 landfills denied - Hearing scheduled [02-0086183-184]	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2054506	Undated	Newsclip: EPA may deny Casmalia permit [02-0086176]	R09: Kessel, Nancy (*Santa Maria Times* (Newspaper))	
2060264	Undated	Administrative order on consent for removal response activities, docket #96-04, w/TLs to G O'Hara fr J Marchetta, 12/19/95 (unsigned) [02-0016281-288]	R09: (Environmental Protection Agency - Region 9)	
2062189	Undated	Emergency contingency plan for Casmalia Resources hazardous waste transfer operations, w/attchs, TL to M Shepard fr M Hingerty, 2/6/95, & fax transmittal note [02-0011821-847]		
2062239	Undated	Consent decree (CD) #CV 97-9449 CAS (RZx) & #CV 98-0074 CAS (RZx) [consolidated] for RA & recovery of costs, USA v Kenneth Hunter Jr et al & CRSSC v Kenneth Hunter Jr et al, w/apps A-I [CDM173966 - CDM174241]	R09: (US Dept of Justice - Environment & Natural Resources Div)	
2260699	Undated	Newsclip: Casmalia residents want dump closed - My kids are always sick - Residents protest in Sacramento	R09: Paddock, Richard (*Los Angeles Times* (Newspaper))	
2267047	Undated	Newsclips (2): Lompoc repository moved to Santa Barbara, info still available in Lompoc, & Casmalia public health nurse on call (incomplete)		
2267667	Undated	Newsclip: Casmalia ready to drop fight for landfills	R09: Finucane, Stephanie (*Santa Barbara News-Press* (Newspaper))	
2290485	Undated	Ltr: Proposed AOC 99-02(e)(supp) on consent, de minimis contributors, w/signature pages (executed & non-executed), w/o encls	R09: (Environmental Protection Agency - Region 9)	R09: Takata, Keith (Environmental Protection Agency - Region 9)

Doc ID	Doc Date	Title	Author	Addressee
2304564	Undated	Administrative settlement agreement & order on consent #99-02(g) - de minimis contributors, w/apps A-C	R09: (Environmental Protection Agency - Region 9)	

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Appendix G
Responsiveness Summary for Proposed Plan Comments

Table G-1. Responsiveness Summary

Comment Number	Comment	EPA Response
ORAL COMMENTS: Public Comments Made Orally During the Public Meeting for the Proposed Plan - December 6, 2017 These comments were consolidated from the transcript of the meeting and from cards handed out at the public meeting. The transcript of the meeting is in the Administrative Record.		
1	**Commenter: Mr. Kenneth Wolf** In the booklet here, on page 3 it speaks about highly fractured and less fractured of the clay stone, and I wanted to know, in terms of seismic integrity, should there be an earthquake, is there a certain magnitude there where it will really impact the landfill, and that's a concern I have.	There is not a single threshold magnitude that has been designated for the Casmalia Resources Superfund Site (the Site) that can be directly linked to potential earthquake damage. As is the case for many locales, potential damage would depend on numerous factors, including distance from the earthquake's epicenter, design and construction of individual site features, and localized geologic conditions. In terms of landfill design, the landfill cap designs must comply with federal and state of California requirements. As stated in Section 6.3 of the Proposed Plan (Applicable or Relevant and Appropriate Requirements [ARARs]), State requirements, such as Title 22, Title 23, and Title 27 regulations, apply to the design, construction, post-closure care, and monitoring of landfill-like closure systems. Such requirements address engineered capping systems (for example, seismic design), surface water management, and development of monitoring systems. As part of site operations and maintenance (O&M), the landfills and other areas of the Site are inspected on a regular basis. In addition, Site systems are carefully inspected after natural events such as a large storm or an earthquake. If the inspections reveal there are adverse impacts on the landfills (or other areas of the Site), the impacts will be addressed and corrected.
2	**Commenter: Mr. Kenneth Wolf** The money that's collected, is it kept separate from other funds, in other words, strictly just for Casmalia?	Yes, funding for work that is conducted at the Casmalia Resources Superfund Site is maintained in an account that is specifically designated for the Site. EPA has settled with over 2,000 Casmalia Resources potentially responsible parties (PRPs) who have paid into an account to finance the work. Over 1,900 of these entities are referred to as *de minimis* contributors because they sent relatively small amounts of waste to the Site. The remaining parties include the former owners, operators, and customers that are referred to as "major" waste generators. Altogether, these settlements have recovered funds to help fund response actions at the Site.

Table G-1. Responsiveness Summary

Comment Number	Comment	EPA Response
		All settlement money collected is in a fund used only for work at the Casmalia Resources Site. In addition to funds recovered as part of settlements, the Casmalia Steering Committee (CSC), the main PRP group, has provided direct funding to cover work they perform that is related to Site investigations, operations and monitoring, evaluation of alternative remedial actions, and preparation of the Remedial Investigation (RI) report and Feasibility Study (FS) report.
3	**Commenter: Mr. Kenneth Wolf** San Francisco has been doing a great job, but who has the final say? Does Washington have the final say or does San Francisco have the final say, as far as what goes on here in Casmalia?	The EPA Administrator signs the Record of Decision (ROD) and Region 9 staff manage and oversee implementation of the work.
4	**Commenter: Mr. Kenneth Wolf** You mentioned that there are wetlands. Will there be more than one wetland, or will the one that's there be expanded? Wetlands are very important, and I strongly support that.	A series of six interconnected artificial wetland pools was constructed in 2008, in the upper reaches of the B-Drainage. It is referred to as the B-Drainage wetlands. More aquatic habitat may be constructed nearby as part of a habitat mitigation program that is a component of the Selected Remedy. EPA has and will continue to work closely with the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Wildlife (CDFW) as appropriate, to determine the objectives and scope for any potential additional aquatic habitat mitigation work with the goal of protection for federal and state special-status species.
5	**Commenter: Mr. Kenneth Wolf** You spoke about DNAPL, and that's very challenging because you have different chemicals interacting with each other, different compounds that you may not be aware of, and that's a challenge, and I commend you on taking that responsibility.	EPA appreciates the comment.

Table G-1. Responsiveness Summary

Comment Number	Comment	EPA Response
6	**Commenter: Mr. Kenneth Wolf** And the other side effect I wanted to ask, what are we, eight miles Vandenberg, I think it is, with all the rockets launching, does that have any effect on the ground, cause we feel that in Santa Maria, does that have any effect on the fracture, high or low level fractures, those continuous vibration from the type of rockets launched from Vandenberg?	EPA has seen no evidence that rocket launches at Vandenberg Air Force Base have any adverse effects on the Site, based on many years of active oversight. As noted in the response to Comment 1, the landfills and other areas of the Site are subject to routine inspections. In addition, the CSC conducts settlement studies on the capped landfills on a regular basis and no unusual settlement has been noted, particularly none that could be attributed to any specific source such as rocket launchings. However, if future inspections reveal there are adverse impacts on the landfills (or other areas of the Site), the impacts will be addressed and corrected.
7	**Commenter: Mr. Kenneth Wolf** Should there ever be an earthquake negatively impacting the Casmalia landfill who would be responsible financially to repair damage caused by the earthquake? Is earthquake insurance available for this site?	The account that has been established for legal settlements with the PRPs would help pay for future work at the Casmalia site, potentially including earthquake damage that may be incurred. EPA is not aware of earthquake insurance that might be available for a Superfund site of this size. Under the Casmalia Consent Decree (CD), the CSC is obligated to construct the Selected Remedy and perform operations, maintenance, and monitoring (OM&M) for the first 5 years following remedy construction. After the first 5 years of OM&M, the CSC or other PRPs, will continue to perform long-term OM&M essentially in perpetuity, with oversight from EPA. Also see the response to Comment 1.
8	**Commenter: Mr. Kenneth Wolf** Would university students who are pursuing higher degrees in environmental science be allowed on site to the landfill to further their studies?	Generally, yes. Visitors can arrange with EPA and the CSC site representatives to visit the Site under certain circumstances. Small group tours can be conducted on a case-by-case basis with adequate advance coordination (e.g., several weeks advanced notice). Health and safety are a key concern for EPA. Access to visitors may be limited to maintenance roads, and all visitors are required to review a site-specific health and safety plan with a Site representative before visiting the landfill area.

Table G-1. Responsiveness Summary

Comment Number	Comment	EPA Response
9	**Commenter: Mr. Nick Tompkins** I actually just had a couple of questions. One, I'd like to thank you guys for spending the time to kind of explain where you are and the steps and the process, and, clearly, I think Casmalia would have appreciated if the landfill had been placed somewhere else, but in retrospect, obviously, looking forward, is that the mistakes that maybe got the landfill there, avoid the same mistakes in the cleanup so that the appropriate things are done that don't necessarily provide the simplest solution, the easiest solution, but the best solution.	EPA appreciates the comment.
10	**Commenter: Mr. Nick Tompkins** I guess -- and these are more questions, and I don't think this is a question/answer thing, but I'll give the questions. Of the $119 million that's been collected, how much has been spent?	An escrow account has been established to contain and manage funds collected from EPA's settlements with PRPs. These funds are available for a variety of site-related activities as detailed in settlement agreements with PRPs, such as the 1997 Casmalia CD. The $119 million presented in the Proposed Plan is the approximate total settlement amount of funds placed into the escrow account. EPA has managed or overseen environmental response work at the Site that has been funded by different sources. EPA funds were used for initial site evaluations and early response work. A large portion of the work has been funded from the escrow account settlements with PRPs, who managed the Site or transported waste to the Site. In addition, the CSC has provided funds directly to perform Site investigations, operations and monitoring, and prepare the RI report and FS reports, per requirements of the 1997 CD. Also see the response to Comment 2.
11	**Commenter: Mr. Nick Tompkins** The detention basins on the south side, which I think they're on the south side, that are there to kind of make sure that there's no runoff coming down towards Casmalia or any of the surrounding areas, are they sized at 50-year or 100-year, 500-year events, and what is that sizing?	The Site currently has a surface water management system to control: (a) clean stormwater runoff, and (b) treated and untreated liquids that are extracted from groundwater collection systems. The systems for clean stormwater and extracted Site liquids are kept separate to allow for efficient collection, conveyance, storage and control. Separation is also intended to prevent cross-contamination of clean stormwater with contaminated Site liquids. The separate systems for clean stormwater and Site liquids each include multiple features, such as ponds, pipelines and conveyance systems, enhanced evaporation systems, and liquids

Table G-1. Responsiveness Summary

Comment Number	Comment	EPA Response
		treatment to control surface water at the Site. Section 2.2.5 of the FS report provides a detailed description of the surface water management systems. The existing ponds will be properly closed as part of the Selected Remedy, and new and lined stormwater retention basins will be designed to capture and direct clean stormwater from an approximate 100-year, 24-hour storm event.
12	**Commenter: Mr. Nick Tompkins** There was a lot of comments in terms of the contamination being maintained and kept on site within the 240 plus acre site, and I guess I was just – as evidenced by what? How much -- where are the monitoring wells outside of the 240, and they're -- probably most of the people in here probably know that, but I didn't know where are those monitoring wells, how is that being checked, how frequently, and how broad a sample and how broad, when you're doing those testings, is it looking at the full spectrum of things that maybe have tendency to move laterally more than others?	An extensive network of approximately 400 monitoring wells and piezometers has been installed in onsite and offsite areas. Figure A-1 (Appendix A) of the ROD shows the location of the monitoring wells. These monitoring wells and piezometers were installed to allow for measurement of groundwater levels, evaluation of groundwater flow patterns, collection of groundwater samples, and evaluation of the nature and extent of impacted groundwater. Numerous monitoring wells are located onsite (Zone 1) and in offsite (Zone 2) areas within the A drainage, B, Drainage, C Drainage and North Drainage. A subset of these monitoring wells is included within the groundwater monitoring program are sampled on a semi-annual basis for site-related contaminants, and results are reported to EPA. The groundwater monitoring program includes laboratory analysis of site-related contaminants. Groundwater extraction began in 1980, when the Gallery Well began operation. In 1988, Sump 9B was constructed near the former Pad 9B waste pad. In 1989, three perimeter control trenches (PCT-A, PCT-B, and PCT-C) were installed. Finally, in 1990 the Perimeter Source Control Trench (PSCT) was installed downgradient of the landfills. The CSC continues to operate and maintain these groundwater collection facilities under EPA's oversight through the requirements of the 1997 CD. These facilities have resulted in the removal of millions of gallons of impacted liquids (see Table 2-1 of the ROD), and help limit the potential for offsite contaminant migration.
13	**Commenter: Mr. Nick Tompkins** In terms of -- it sounds like there's a significant amount of extra capita,	EPA will explore various options, including possible use of the escrow account, to help pay for any habitat mitigation that might be

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	maybe through an inefficient -- not an inefficient, but you have an endangered species that needs to be protected, and protected by laws, and it's important to keep, but has there been thought about mitigation fees or mitigation banks for red-legged frogs and salamanders off site as a mechanism to be able to clean up the site more efficiently by paying into enhance another area?	determined necessary for the Site. As noted in the Proposed Plan, this ROD, and the response to Comment 4, additional habitat mitigation is included as a component of the Selected Remedy. EPA has, and will continue to work closely with the USFWS, and with the CDFW as appropriate, to determine the scope and objectives of any aquatic habitat mitigation. with the goal of protection for federal and state special-status species.
14	**Commenter: Mr. Nick Tompkins** Okay. Then the other thing, this is kind of a last thing, and it had nothing to do specifically with what you brought forward, and I really do appreciate what you brought forward. There are multiple landfill sites still operating in California, you got stuff in Nevada, Utah, obviously, operating under a different environment up there, but what -- what led to the closure here? What risk to the site or to the surrounding area led to the closure of this while Kettleman and everything went on, and are those risks contemplated in a cleanup, of the current cleanup plan, you know, if it was just -- it's a problem we got there, it's -- and maybe there was no room to expand, maybe it was poor management, I don't know what it is, but how those risks were understood at that time, and does this plan deal with those same risks today, given that it was a closure created out of it, and that was it.	As described in Section 2.2 of the ROD, Casmalia Resources did not receive the required permits to continue operating the Site. It became clear by 1988 that a RCRA Part B permit would not be forthcoming. The facility also experienced operational, regulatory, and financial challenges that led to increased regulatory and community concerns. Site operators stopped accepting waste in 1989, ramped down Site activities, and effectively abandoned the Site in 1991. To date, many significant actions have been completed to stabilize the Site, remove and contain contamination, control risks, conduct characterization, evaluate remedial alternatives, and set the stage for final Site remediation. As described in Section 2.7.5 of this ROD, the Selected Remedy addresses a variety of contaminated media and risks. The Site contains many different waste materials along with multiple impacted media, including: (1) surface and shallow waste materials and contaminated soil, (2) contaminated surface water, (3) extracted contaminated subsurface liquids, (4) contaminated pond sediments, (5) soil vapor, (6) large-volume sources of non-aqueous-phase liquids (NAPL), and (7) contaminated groundwater with multiple commingled constituents. The Selected Remedy includes multiple components to contain waste materials and contamination, prevent migration, prevent exposure to human and ecological receptor populations, and monitor performance of the environmental systems.
15	**Commenter: Mr. Peter Strauss** Now, Terry asked the question before about what's the difference between a WMA and a TI zone, and Russell responded, and most of that was correct, but TI zones need, as opposed to a WMA, have to be revisited if there are new technologies or the new -- there's any	The waste management area (WMA) and Technical Impracticability (TI) Zone are different regulatory approaches that apply in different circumstances. However, they are similar in that certain remediation

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Comment Number	Comment	EPA Response
	indication of new stuff that's happening, and that requires a burden of proof by the regulatory community to say to CSC or whoever is the operator in the future, say, hey, you need to go back and you need to do something about this particular thing.	goals do not apply within designated areas associated with the WMA and TI Zone. As described in Section 1.4 of the ROD, the area that is circumscribed by the boundaries of the five hazardous waste landfills is designated as a WMA because waste materials are being left in place and removal is not practicable. The WMA designation also means that groundwater directly below the area circumscribing the five landfills will not be remediated pursuant to the National Contingency Plan (NCP) and EPA guidance on WMAs. A TI waiver is appropriate for Area 5 North because the presence of light non-aqueous-phase liquids (LNAPL), dense non-aqueous-phase liquids (DNAPL), and dissolved-phase organic and inorganic contamination in low-permeability fractured bedrock, both within and south of the Pesticides/Solvents (P/S) Landfill, make it technically impracticable to meet drinking water standards in this area. The presence of LNAPL and/or DNAPL is observed up to 500 feet south of the P/S Landfill in the CDA; there is no expectation that groundwater within this area can be remediated for beneficial use. The WMA has been delineated within the boundaries of the TI Zone. Where they overlap, both designations apply. A Point of Compliance (POC) will encompass both the WMA and the TI Zone, and will be located at the Area 5 North boundary to ensure that groundwater quality is not further degraded outside this area. The NCP at 40 CFR Section 300.430 (f)(4)(ii) requires a 5-year review if the remedial action results in hazardous substances, pollutants, or contaminants remaining onsite above levels that allow for unlimited use and unrestricted exposure. This review evaluates whether a remedy currently is, or will be, protective of human health and the environment. The 5-year review will also include evaluation of the TI Zone, the effectiveness of NAPL extraction and institutional controls (ICs), and other pertinent requirements. The 5-year review process allows for modifications to the Selected Remedy as warranted and approved by EPA.

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16	**Commenter: Mr. Peter Strauss** We think it's premature to designate a TI zone at this time. I think that it's more appropriate to designate -- to go with the proposed plan, and there are a lot of zones underneath that landfill, which is the source of this -- of most of the contamination of the groundwater, and we don't know when -- what's there.	As described in the Proposed Plan and the ROD, EPA conducted a thorough technical impracticability evaluation (TIE) that was included in the RI report and summarized in the FS report. Consistent with EPA guidance, the TIE evaluated the potential of cleaning up groundwater at the Site to performance standards based on engineering considerations. The TIE concluded that it is technically impracticable to clean up groundwater throughout Area 5 North to maximum contaminant levels (MCLs) within any reasonable time frame. In fact, groundwater modeling indicated that even the most aggressive cleanup strategies could not achieve full restoration of groundwater to MCLs even after several thousand years of extraction and treatment. The TIE was also conducted consistent with legal requirements, including the NCP, EPA guidance, and the 1997 CD. The CD included performance of a TIE as a component of the scope of work for the remedial investigations for the Site. The 1997 CD required the CSC to "*perform an analysis, substantiated by data and other evaluative information, consistent with § 300.43O(f)(ii)(C) of the NCP and the Guidance for Evaluating the Technical Impracticability of Groundwater Restoration, EPA Directive 9234.2-25, of the technical practicability of restoring groundwater in the Zone 1 area*." Technical impracticability is one of the statutory bases for waiver of ARARs, and groundwater within the TI Zone is not required to meet cleanup standards which are established for groundwater outside the TI Zone. EPA has also designated the footprint of the five landfills within Area 5 North as a WMA. This delineation is consistent with the NCP and EPA policy and practice for landfills at Superfund sites, where waste is being left in place and where there is no expectation that groundwater can be restored to performance standards in a reasonable time frame. ARARs for drinking water standards do not apply within the WMA. Please refer to key EPA documents for the Site, including the RI report, the FS report, the Proposed Plan, and appropriate sections of the ROD.
17	**Commenter: Mr. Peter Strauss** It's estimated there's all sorts of modeling, as Russell pointed out, that	Computer simulation modeling of groundwater and contaminant movement is a viable tool that can be used to help understand site

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	it's like a weather report, the model, but we know what weather reports are. It's a bad example, Russell. So, I will just say that, and I'm going to write this in more detail, that the -- that the TI zone really should not be granted at this time. It should be granted later on when we actually really know what's going on.	characteristics and to predict future behavior. Such computer modeling is used as a standard method of analysis at many remediation sites throughout the country, including many Superfund sites. The accuracy, reliability, and overall value of groundwater modeling depends on many factors, including data quality, the overall "fit" of the model to actual site circumstances, and the careful application of a model to answer specific site questions. For the Site, the CSC, EPA, and state agencies have all devoted careful attention to the development of a model that provides useful information about groundwater flow and movement of contamination at the Site. See response to Comment 16 to address the rationale and timing for designation of the TI Zone.
18	**Commenter: Mr. Peter Strauss** There is a segment of monitored natural attenuation. We have several questions, and I'll put them in writing, about whether monitored natural attenuation is ongoing. One of the things Russell mentioned when he described monitored natural attenuation is that – is that it's -- it means that chemicals are breaking down over time, and that's what -- that's incorrect. What it means is that if groundwater is contaminated and goes from -- travels from one point to another, the concentration in the groundwater is decreasing over time. That doesn't mean breaking down. Some of it is trapped in the soil and some of it is being polluted by additional groundwater coming into the site, or clean groundwater coming into the site. So, it's not biological degradation that breaks down, or not necessarily, and we -- we feel that there is not enough proof in the document to support that monitored natural attenuation is ongoing. We want a robust long-term monitoring plan. I know that it's not to the stage where we set the monitoring plan.	Monitored natural attenuation (MNA) is a remedial component that relies upon natural processes to reduce the concentrations of contaminants over time. Natural attenuation processes can reduce the mass, toxicity, mobility, volume, or concentration of contaminants. The reduction of contamination can happen from a variety of biological, chemical, and physical processes, such as biodegradation, volatilization, dispersion, dilution, and sorption. Biodegradation and volatilization can result in significant reductions of total contaminant mass from soil and groundwater. The other natural attenuation mechanisms can result in a reduction of concentration, but not an actual reduction of contaminant mass, because the contamination is either spread over a larger area (dispersion, dilution) or removed from the aqueous phase (sorption). The natural attenuation processes play an important role at the Site, effectively contributing to the reduction in contaminant concentrations and limiting the nature and extent of groundwater contamination. When employed as part of a remedy, MNA refers to the ongoing evaluation and verification of natural attenuation processes. Section 3.11 of the Proposed Plan and Section 2.5.8 of the ROD describe that extensive groundwater monitoring data, collected between 1998 and 2008, provide strong evidence that natural attenuation processes reduce contaminant concentrations and contribute to the effective containment of groundwater contamination

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		within Zone 1. The RI and FS reports include detailed MNA evaluations that address organic and inorganic chemicals in groundwater in a manner consistent with EPA policy and guidance. At the Site, MNA is not a stand-alone remedy, but will be combined with active remediation. In addition, as suggested by the commenter, the Selected Remedy will require a rigorous long-term OM&M program, including monitoring for both overall performance and regulatory compliance (for example, long-term compliance monitoring for groundwater at the POC [Area 5 North boundary] and the Site boundary). Additional contingency measures, such as additional monitoring and focused extraction in localized areas, will be conducted if determined necessary by EPA.
19	**Commenter: Mr. Peter Strauss** Yeah, and I really only have one area to address, and that is that we want the robust long-term management plan. I mean, I know that this is going to happen in a later phase of this project where -- where they actually designate where all the monitoring wells will be in the future, and where there is an -- and laying out a contingency plan if something goes beyond the boundary, and we would like it as full as possible. We also expect that the community should be involved in one way or the other in that phase of the design. It's very important, and from my perspective in working on a lot of Superfund sites in some of the landfills, that that's where the community really is, you know, that's where protection either breaks down or it doesn't, and it is very important that the community be involved.	See response to Comment 18 regarding the long-term OM&M activities. Regarding community involvement, EPA has and will continue to work with the community to keep them informed of site activities, and to solicit input on ongoing and future work. EPA has helped support a Community Technical Assistance Consultant (CTAC) to review and provide community input on technical initiatives and site response work. EPA will continue to work with the community and explore ways to provide Site information to the community in a readily accessible manner.
20	**Commenter: Ms. Christie Truer** I'm Christy Truer, and thank you for presenting -- excuse me -- the information on -- excuse me, I have a cold. I appreciate all of the information. I do have a question about the Alternative 3 cleanup. There was mention that the remediation technology was tried and proven and had some valuable history behind it as far as being effective, and I imagine efficient. I was wondering if any of the other alternatives for 5 or 6 would provide maybe newer technology and	The FS identified a wide range of potential remediation technologies and strategies for each of the different site areas. The FS evaluated technologies, including new and innovative technologies, to both treat and contain wastes. The FS then identified six sitewide alternatives for overall Site remediation. Alternatives 5 and 6 provide aggressive liquids extraction and treatment through horizontal wells (Alternative 5) and vertical wells (Alternative 6), but are also more vulnerable to increased project risks and technical complexities. The risks and complexities

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	opportunity to predict efficiency and provide value to future remediation. Thank you.	associated with Alternative 5 include challenges in installing horizontal wells in heterogeneous materials and at the proper depths and spacing to capture sufficient DNAPL. Both Alternatives 5 and 6 include risks and complexities with long-term handling and offsite shipment and disposal of large volumes of hazardous liquids. The Selected Remedy (Alternative 3) is protective and Alternatives 5 and 6 do not provide significantly more protection.
21	**Commenter: Ms. Terri Stricklin** Terry Stricklin, S-t-r-i-c-k-l-i-n. Some of the questions that some folks in the community have asked me to ask are the barrels that are buried, I know they're a bit of a mystery, but if they get worse, if the leaking gets worse, I mean, some of the barrels may be impacted, some may not, but mostly, I know, a lot aren't, what happens when they all deteriorate?	The Selected Remedy incudes a component to remove liquids (NAPL and groundwater) from the P/S Landfill, where most of the barrels are located. This NAPL source removal component will specifically address pooled contaminated liquids that have, and may continue to accumulate, at the base of the landfill. EPA expects that at least some of the buried drums have leaked over the past years, impacting groundwater and allowing accumulation of NAPL in the vicinity of the P/S Landfill. As described in the response to Comment 12, response actions have been in place since 1980 to extract NAPL and impacted groundwater from the Gallery Well and Sump 9B in the P/S Landfill area. Considerable volumes (several million gallons) have been extracted from these extraction wells (see Table 2-1 of the ROD). The Selected Remedy will include continued extraction to remove liquids from the P/S Landfill area, including liquids that could leak from barrels in the future. The Selected Remedy will rely on continued extraction from the Gallery Well and Sump 9B, as well as approximately 16 new NAPL-only extraction wells.

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22	**Commenter: Ms. Terri Stricklin** Another question they had was about the funding. The Casmalia Steering Committee funding, specifically, for if this plan is approved, do they pay up front, or is this ongoing? Do they pay as the work is ongoing. And on the funding, it said the settlements were so far to date 119.1 million, how much more is expected to be recovered, and how much has CSC spent to date on their efforts up there? I suppose we should know how much EPA has spent also, to date, since 1992. For people who may not know, the responsible parties did pay a lot of money to dump up there, legally. What they did was legal. They didn't do anything illegal. They weren't the ones that bailed on us and left us with this mess, and I appreciate that the responsible parties are doing what they're doing, although that hasn't always been easy. I don't know how many parties are still left that they're going after, but, personally, for me, I think going after the little mom-and-pop companies that paid a lot of money to dump waste that they had to dump, I think it's time to quit going after the little guys.	See response to Comment 10 regarding the escrow account funded from the various legal settlements with PRPs. EPA appreciates the comment.
23	**Commenter: Ms. Terri Stricklin** One thing we particularly want to make sure is that during construction that we have -- EPA has someone up there overseeing the Casmalia Steering Committee. I think that's imperative to the community, to have someone else up there.	EPA appreciates the comment and recognizes the benefits of direct, field-based oversight of the work that has been conducted at the Site. EPA will continue to provide an appropriate level of technical and field oversight to monitor work progress and ensure protection of human health and the environment.
24	**Commenter: Ms. Terri Stricklin** I'd like to know how many red-legged frogs and tiger salamanders there are up there, because I know at one time there were a lot, and then the population dwindled, and I know they're spending a lot of money to protect them, but how many are actually left.	Biological surveys have been conducted annually, during the winter rain season (generally December through March), following construction of the B-Drainage Wetlands in 2008. Surveys have documented about 0 to 5 California Red-legged Frogs each year. However, no California Tiger Salamanders have been observed from 2008 to the present. The actual number of California Red-legged Frogs and California Tiger Salamanders within the Site vicinity cannot be reliably estimated, but biological surveys and related activities will continue as part of the Selected Remedy, with the goal of protection for federal and state special-status species.

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25	**Commenter: Ms. Terri Stricklin** You said the treatment plan is very expensive if you go with the no evaporation ponds. How much more expensive than if you go with Alternative 3. The other question about Alternative 6, if you have unlimited funds, is that the alternative you would go with?	Remedy selection is not determined solely based on the availability of funds. EPA evaluates and selects remedial actions based on nine Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) criteria described in the law and implementing regulations. The nine CERCLA evaluation criteria are grouped as Threshold, Balancing, and Modifying criteria. Cost is included as one of the balancing criteria, but does not take precedence over other criteria. EPA seeks to select the most appropriate remedy for a site, and then looks for ways to make sure the work is properly funded and implemented. Table 2-18 of the ROD presents the cost estimate for each of the remedial alternative under consideration. Alternative 4, which includes offsite discharge of the effluent from a new upgraded treatment plant, adds about $6 million in capital costs and $3.7 million in annual O&M costs compared to Alternative 3 (the Selected Remedy). Alternative 6, which includes additional groundwater extraction and offsite discharge of the effluent from a new upgraded treatment plant, adds above $32 million in capital costs and almost $9 million in annual O&M costs compared to Alternative 3 (the Selected Remedy). Even if unlimited funds were available, EPA would not select Alternative 6 because it includes additional risk and technical complexity, and would still result in excessively long timeframes for groundwater remediation to MCLs (largely because of the contaminant mass residing within the rock matrix), without significantly increasing protectiveness.
26	**Commenter: Ms. Terri Stricklin** And then you talked about securing the boundaries around the site, where is that area and how much of the area is it? Whose property is that, and how do we know that that will never be developed?	The main portion of the Site (Zone 1), which includes the 252-acre former waste management facility, is controlled by the CSC. Zone 1 is surrounded by perimeter security fencing and signage. The integrity of the fencing and signage is regularly evaluated as part of routine inspections conducted during site operations, and this will also be a component of long-term OM&M activities. As described in Section 2.12.9 of the ROD, the Selected Remedy includes land use covenants to help ensure protectiveness since waste materials will remain in place. Covenants have been established for six

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		parcels (Property), which include a total of about 1,247.25 acres in all of Zone 1 and portions of Zone 2 located to the north and south of the Site. The covenants establish various environmental restrictions to which the Property is subject, including how the Property is used, occupied, leased, sold, and/or conveyed. The environmental restrictions run with the land pursuant to California Civil Code Section 1471, and successive owners of the Property are bound to such restrictions. EPA is also included as a third-party beneficiary to these covenants, allowing it full access to the Site and the ability under the law to enforce the terms of the covenants.
27	**Commenter: Ms. Terri Stricklin** At one point you said the waste was essentially contained on site. What does that mean, "essentially"? That's my big question. I think that's it for me. Thank you. I wanted to thank everybody, EPA and state water, and, of course, Jim that is up at the site, and the responsible parties, because although it hasn't been easy, they're doing it, and I should have said something at the beginning, but every time someone says the term "cleanup," the hair on the back of my neck stands up because the site will never be cleaned up. Those words should never be used at any Superfund site. I wish they'd change the wording.	The nature and extent of contamination in the various media are summarized in Section 2.5.6 of the ROD. Figure 2-18 of the ROD presents a plan view summary of the chemical detections and exceedances for each media. This figure shows that chemical concentrations that exceed the various risk-based cleanup levels are contained within the main portion of the Site (Zone 1), which includes the 252-acre former waste management facility. The ongoing operation of perimeter control trenches (PCT)-A, PCT-B, and PCT-C also contributes to containment of impacted groundwater within the main portion of the Site (Zone 1).
28	**Commenter: UNIDENTIFIED PERSON** I'm going to try to articulate this like you guys do. So, for the cleanup, my only question is the evaporation ponds and the air travel. So, if you find that as you're cleaning up and fixing everything over there, if things start getting started there, are you going to do air quality tests here, and if you find something that's traveling over here via airwaves, are you prepared to do something different at that time?	As described in Section 2.12.7 of the ROD, an appropriate level of monitoring will be conducted during remedial construction activities. The monitoring protocols will be identified during the remedial design and remedial action phases. Such monitoring will likely include air monitoring in active work areas and along the Site's perimeter as determined necessary by EPA. If air monitoring results show contaminant emissions, controls will be put in place immediately to limit and control any release.
EMAIL COMMENTS: Public Comments Received by Email		
1	**Commenter: Latanya Rios - December 27, 2017 Email** My Name is Latanya Rios. I am a resident out in Casmalia. I just wanted a couple of question to be addressed. #1 How is it being recorded, or measurements are in place to make sure Casmalia residents are safe	Regarding Part 1 of the comment, the landfill caps were installed between 1999 and 2002. The construction materials selected for the landfill caps included fine-grained soils and high-density polyethylene (HDPE) geomembranes to restrict transport of air emissions from the

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	from this toxic dump site - when the wind picks up are we breathing in toxins from the dump? # 2 There is livestock- cows, that roam the Hills of Casmalia, has there been in protocols in place to keep their food and water safe or, keep them out of the toxic dump site?	Site. The human health risk assessment evaluated outdoor air inhalation and concluded that risks to residents in the town of Casmalia did not exceed risk-based criteria. Air monitoring is routinely conducted as part of ongoing site operations for protection of site workers. Finally, as described in the response to Comment 28, an appropriate level of air monitoring will be conducted during remedial construction activities. Regarding Part 2 of the comment, the main portion of the Site (Zone 1), which includes the 252-acre former waste management facility, is surrounded by perimeter security fencing, which restricts livestock from grazing in this area. The food and water for livestock are sourced from areas outside the Zone 1 boundary.
2	**Commenter: Bradley Angel - December 4, 2017 Email** I just got this email moments ago about an important meeting on the Casmalia toxic disaster to be held in two days. This is ridiculous. I have been involved in Casmalia since the 1980's as EPA knows very well. It is unfortunate that EPA cannot get its act together to provide proper notice. But of course EPA let this criminal toxic dump operate for decades as residents kept dying and kids kept getting sick, so I am not surprised.	EPA believes it provided the appropriate level of advance public notice regarding the December 6, 2017 public meeting. The Fact Sheet was mailed to the Site mailing list on November 9, 2017. The public notice was published in the Santa Maria Times on November 14, 2017. The public notice was announced on the EPA website beginning November 16, 2017. The notice informed the public that there was a 60-day public comment period, from November 22, 2017 through January 22, 2018.

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LETTER COMMENTS: Public Comment Letters Received by Email		
A	**Commenter: U.S. Fish and Wildlife Service - Mr. Stephen P. Henry, January 19, 2018 Letter**	
1	We are writing in response to your request for comments on the Proposed Plan for Casmalia Resources Superfund Site (Proposed Plan) received in our office on November 15, 2017. The U.S. Environmental Protection Agency' s (USEPA) Proposed Plan includes a Preferred Alternative that outlines USEPA's proposed cleanup actions for the five study areas that comprise the site. The U.S. Fish and Wildlife Service (Service) has been collaborating with USEPA for many years to provide technical assistance on issues that relate to the federally endangered California tiger salamander (*Ambystoma californiense*) and the federally threatened California red-legged frog (*Rana draytonii*) and its designated critical habitat. The mission of the Service is working with others to conserve, protect, and enhance, fish, wildlife, plants, and their habitats for the continuing benefit of the American people. To assist in meeting this mandate, the Service provides comments on public notices issued for projects that may have an effect on those resources, especially federally listed plants and wildlife. The Service's responsibilities include administering the Endangered Species Act of 1973, as amended (Act). Section 9 of the Act prohibits the taking of any federally listed endangered or threatened wildlife species. "Take" is defined at Section 3(19) of the Act to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Service regulations (50 CFR I 7.3) define "harm" to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. The Act provides for civil and criminal penalties for the unlawful taking of listed wildlife species. Such taking may be.	EPA appreciates the comment. EPA plans to coordinate closely with the USFWS during design and implementation of the remedial work. Please see responses below (as warranted by the comment).

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	authorized by the Service in two ways: through interagency consultation for projects with Federal involvement pursuant to section 7, or through the issuance of an incidental take permit under section 1 0(a)(1)(B) of the Act The California tiger salamander and the California red-legged frog have been documented at the Casmalia Resources Superfund Site and the site is within unit STB-2 of designated critical habitat for the California red-legged frog. As detailed in Appendix P of the Final Remedial Investigation Report (Casmalia Steering Committee 2011). biological surveys were conducted at the site in the late 1990s and early 2000s in support of the ecological risk assessment and remedial investigation. Surveys for California red-legged frogs were conducted in 1998, 1999, 2001, 2002, 2003, and 2004. Surveys for California tiger salamanders were conducted in 2002/ 2003, and 2004/2005. California red-legged frogs were detected in all survey efforts with the exception of 2003 and 2004. California tiger salamanders were detected during drift fence surveys in 2004/2005. The trend in observations of California red-legged frogs throughout the 1998 to 2004 study period demonstrated a rapid decline from over 50 individuals detected in 1998 to no individuals detected in 2003 or 2004. As we have discussed with USEPA and representatives of the Casmalia Steering Committee, the evaporation ponds that would be constructed as part of the Preferred Alternative will pose a risk to California red-legged frogs and California tiger salamanders. Amphibians require water to reproduce, and are attracted to ponded water features, such as those that would be constructed in the Preferred Alternative. Measures to reduce amphibian access to the evaporation ponds, such as fencing and gravel roads are not expected to completely preclude access to evaporation ponds, as amphibians have been documented to breach fences and substrate barriers at other sites. Even if a barrier could be constructed to preclude amphibian access to the evaporation ponds, amphibians are anticipated to be attracted to the water and would expend energy traveling along the barrier, which would make them susceptible to predation and exhaustion.	The remedial design phase will identify the appropriate measures to reduce amphibian access to the evaporation ponds. These measures may include gravel roads, fencing, and other measures.

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	One solution that has been discussed between the Service, USEPA, and the Casmalia Steering Committee is the improvement of aquatic habitat within Casmalia Creek and the construction of off-channel ponds along the Casmalia Creek corridor suitable for California tiger salamander and California red-legged frog reproduction. The Service believes that this alternative suitable habitat would provide a safe refuge and would act as a translocation site for animals that are found attempting to enter the evaporation ponds. We anticipate that the proper construction and maintenance of habitat for California red-legged frogs and California tiger salamanders in the Casmalia Creek corridor would. provide a benefit to these listed species and designated critical habitat that would greatly outweigh the negative impacts of creating evaporation ponds.	The Selected Remedy includes habitat mitigation as a component. EPA has and will continue to work closely with the USFWS and CDFW as appropriate, to determine the objectives and scope of any habitat mitigation work.
	As discussed with USEPA and the Casmalia Steering Committee, the Service anticipates entering into formal consultation pursuant to section 7(a)(2) of the Act with USEPA following the close of the public comment period and selection of a final remedy. The consultation would analyze effects of the remedy on California tiger salamanders, California red-legged frogs and designated critical habitat for California red-legged frogs. We anticipate that USEPA would include the improvements to Casmalia Creek and the construction of off-channel ponds to benefit California tiger salamanders and California red-legged frogs in their project description as part of that consultation.	As stated above, the Selected Remedy includes habitat mitigation as a component, which will be conducted as necessary based on coordination with the USFWS and with CDFW, as appropriate, during the remedial design phase.
B	**Commenter: Morgan Lewis & Bockius - Mr. James J. Dragna, January 22, 2018 Letter**	
1	**Description of the TI Zone and the Point of Compliance for Area 5 North:** The Preferred Alternative identified in the draft Proposed Plan incorporates actions for five separate study areas (Areas 1 through 5). Area 5 is then further divided into three subareas: Area 5 North, Area 5 South, and Area 5 West. Figure 11 identifies these five study areas and figure 12 illustrates the further division of the three Area 5 subareas. The illustration in Figure 12 defines the southern border of Area 5 North as the Perimeter Source Control Trench (PSCT). Consistent with Figure 12, Figure 19 also depicts Area 5 North and identifies the	EPA has revised Figure 23 of the Proposed Plan to depict the southern boundary of Area 5 North, the TI Zone, and the POC as being in alignment with the PSCT. This is consistent with the text of the ROD. The revised figure is now included as Figure 27 in the ROD. Also see Section 1.4 of the ROD for a description of the spatial relationship between the WMA, TI Zone, and POC.

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	boundary and the Point of Compliance (POC) for Area 5 North as the PSCT. The text of the Proposed Plan corresponds with the depiction of Area 5 North in both Figures 12 and 19. Specifically, in Section 8.10.5 of the draft Proposed Plan, EPA locates the Point of Compliance (POC) for Area 5 North as "along the boundary of the TI Zone (same as the boundary of Area 5 North)..." As illustrated in Figure 12 and 19, this boundary or POC is the PSCT. This definition of Area 5 North, with the POC identified as the PSCT, is also consistent with the Technical Impracticability Evaluation (TIE) conducted by the Casmalia Steering Committee in connection with the Feasibility Study. However, Figure 23 in the draft Proposed Plan, which identifies the "Location of Waste Management Area and Technical Impracticability Zone" depicts a different POC around the southern perimeter of the TI Zone. The POC depicted in Figure 23 does not correspond with the PSCT. Given this inconsistency, the Casmalia Steering Committee requests that EPA revise Figure 23 to depict the POC as the PSCT, which is consistent with the text of the draft Proposed Plan, Figures 12 and 19, and the TIE conducted by the Casmalia Steering Committee.	
2	**Designation of Area 5 North as a Technical Impracticability Zone:** As required under Feasibility Study, the Casmalia Steering Committee conducted a TIE for the entire Area 5 North. As a result of this TIE, it was recommended that the entirety of Area 5 North be designated as a TI Zone. Despite the TIE and resulting recommendation, the draft Proposed Plan inconsistently identifies only a portion of Area 5 North as a designated TI Zone. Specifically, in portions of the draft Proposed Plan, EPA refers to the TI Zone as Area 5 North "except in the area that is circumscribed by the boundaries of the five hazardous waste landfills which is being designated as a waste management area (WMA)." See draft Proposed Plan at page 3 (Introduction).	The requested clarification regarding the WMA, TI Zone, and POC is provided in several sections of the ROD. Section 1.4 of the ROD states that the area circumscribed by the boundaries of the five hazardous waste landfills is designated as a WMA because waste materials are being left in place and removal is not practicable. Groundwater remediation levels (RLs) do not apply within the WMA. The WMA designation also means that groundwater directly below the area circumscribing the five landfills will also not be remediated to ARARs pursuant to the NCP and EPA guidance on WMAs. The WMA is within the boundaries of the TI Zone. Where they overlap, both designations apply. A POC will encompass both the WMA and the

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	Further on page 74 of the draft Proposed Plan (which discusses the designation of the WMA and TI Zone), EPA again states the "[t]he area between the WMA and Area 5 North boundary is designated as a TI Zone". See also draft Proposed Plan Section 8.10.4 (the Preferred Alternative "includes a TI Zone within the area located between the WMA and Area 5 North boundary, as shown on Figure 23." On the other hand, Figure 19 in the draft Proposed Plan is consistent with the TIE conducted by the Casmalia Steering Committee and depicts the TI Zone as the entirety of Area 5 North, including those areas designated as a WMA. It should be noted that EPA guidance, and precedent at other sites, allow for designating a portion of a TI Zone as a WMA. In such instances, where the WMA and TI Zone overlap, the portions designated as a WMA do not lose the TI Zone designation. Given the inconsistencies within the draft Proposed Plan and the inconsistencies between the draft Proposed Plan and the recommendations of the TIE, the Casmalia Steering Committee requests that EPA clarify throughout the Proposed Plan that the entirety of Area 5 North is designated as a TI Zone and, within this TI Zone, the boundaries of the five hazardous waste landfills are also designated as a WMA.	TI Zone, and will be located at the Area 5 North boundary to ensure that groundwater quality is not further degraded outside this area.
3	**Area 3 Remedy for "Hotspots"** On page 52 and 55 of the draft Proposed Plan, EPA discusses the Proposed Plan remedy for Area 3. Specifically, the draft Proposed Plan states that "Area 3 would be remediated by addressing the five soil hotspot locations, which would reduce the residual ecological risks to acceptable levels". See Section 3.9.1 of the draft Proposed Plan for identification of these "Hotspots". The draft proposed plan goes on to state that the "hotspots" on the former Ponds A/B, the area south of PSCT-1 and the Liquids Treatment Area would be excavated and placed under the RCRA cap of the PCB Landfill." The draft Proposed Plan presupposes that excavation of these Hotspots is the only remedial alternative, without discussing other options. The Casmalia Steering Committee believes that capping these hotspots may also meet all of the Remedial Action Objectives (RAOs) and should be	The ROD includes the option of excavation and/or capping of selected hotspots, with the final approach to be selected during the remedial design phase. The ROD provides a numerical designation for the five hotspots (i.e., Hotspot-1 [HS-1], HS-2, HS-3, HS-4, and HS-10) that are consistently referenced in the text, tables, and figures of the ROD. The location of hotspots HS-1, HS-2, HS-3, HS-4, and HS-10 is the same as those identified as Hotspot 1, Hotspot 2, Hotspot 3, Hotspot 4, and Hotspot 10, respectively, in the FS report. The ROD provides an option, subject to EPA approval, for excavation and/or capping for HS-1 in the Liquids Treatment Area, HS-3 in the former Ponds A/B area, and the addition of HS-4 located south of the PSCT. EPA will decide whether excavation and/or capping are

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	considered by EPA as a remedial alternative. The Casmalia Steering Committee intends to discuss these alternatives with EPA during the remedial design phase of the project. Therefore, the Casmalia Steering Committee recommends that the final Proposed Plan allow for an option of evaluating the remedial alternatives of excavation and/or capping of these hotspots within Area 3.	appropriate for these hotspots, and provide approval, during the remedial design phase.
C	**Commenter: California Department of Toxic Substances - Ms. Angela Singh, January 22, 2018 Letter**	
1	In November 2017, the U.S. Environmental Protection Agency (USEPA) issued the Proposed Plan to present the preferred alternatives for the Casmalia Resources Superfund Site located in Santa Barbara County, California. The Proposed Plan was open for a 60 day public comment period ending January 22, 2018. USEPA has worked collaboratively with the Central Coast Regional Water Quality Control Board (RWQCB) California Department of Fish and Wildlife (DFW) and the Department of Toxic Substances Control (Collectively, the "State Agencies)" for many years during the investigations and development of the preferred alternatives. The State Agencies have reviewed the Proposed Plan and do not have any further comments. The State Agencies look forward to continuing to work collaboratively during the issuance of the Record of Decision and the design phase.	EPA appreciates the comment.

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D	**Commenter: Casmalia Community Group - Mr. Peter Strauss January 22, 2018 Letter**	
a	The Casmalia Community Group (CCG) and its Technical Consultant appreciate this opportunity to comment on the Proposed Plan for the Casmalia Resources Superfund Site. They are submitted on behalf of the Casmalia Community Group. We wish to thank EPA, the California state regulators and the Casmalia Steering Committee (CSC) for its hard work over the years that have led to this document. These comments are organized along four major categories: Community Goals, Areas of Agreement, Areas of Disagreement, Additional Items For Consideration, and Additional Questions.	EPA appreciates the comment.
	Community Goals The goal of the Casmalia Communty Group (CCG) is to ensure that remediation of this site is as thorough as is possible, and will not cause an undue burden on future generations of Casmalia residents and business owners. This includes making sure that remedies are constructed and installed properly so that they do not require excessive and premature repairs. CCG wants the responsible parties to put as much effort as is reasonably possible at this time, including expending sufficient capital costs so that long-term management and repairs are minimized. Furthermore, CCG is not certain that the regulatory agencies will be in a position to ensure future enforcement and proper regulatory oversight. We have seen cutbacks from both the State of California and the U.S. EPA with regards to allocating resources for environmental protection.	EPA will continue to provide regulatory oversight of the PRPs during all phases of the project, including the design, construction, and long-term OM&M of the Selected Remedy.
	• **Areas of Agreement With the Proposed Remedy** CCG agrees with the following components of the proposed remedy. These include: Placement of a unified cap covering the existing caps and the central drainage area, the burial trench area and the PCB Landfill.	EPA appreciates the comment regarding agreement with components of the Selected Remedy. See clarification below regarding two of the bulleted items.

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	• Placement of an evapotranspiration (ET) or RCRA-equivalent performance cap on the RCRA landfill and west canyon spray Areas. • Extraction of liquids from under this unified cap in the southern portion of the P/S landfill (up to 16 new extraction wells) to remove non-aqueous-phase liquids (NAPLs), both light (LNAPLs) and dense (DNAPLs). Sump 9B the Gallery Well liquids will be pumped if there is sufficient water. Extracted liquids will be stored and shipped offsite for treatment and disposed at an approved facility. • Installation of approximately 12 new low HSU monitoring wells upgradient from PSCT-1 and PSCT-4 to verify that NAPLs are not migrating underneath the PSCT. As a contingency measure, one or more of these wells will be converted to an extraction well if contaminants are discovered • Continue to operate and extract liquids from the perimeter source control trench (PSCT) extraction wells 1 – 4. This trench runs through the middle of the site from east to west. The PSCT is keyed to the area that is on the margin of the upper and lower HSU. There are four extraction points along this trench, and groundwater that flows beneath the unified cap is supposed to be captured by this trench. These extraction wells will continue to operate indefinitely. • Removal of liquids from existing ponds and either eliminate them or place a high-density polyethylene (HDPE) layer and a geosynthetic clay layer (GCL) over pond bottoms and converting them to either new retention basins. • Extraction and treatment of contaminated liquids that are captured by the perimeter control trenches (PCTs) A-C. • Building a new treatment system to treat contaminated liquids from the PSCT and PCTs onsite. Treated effluent would be sent to one or more new on-site evaporation ponds. Rigorous performance and compliance monitoring programs also will be implemented.	The Selected Remedy includes extraction from the PSCT, but does not specifically identify that extraction will occur from PSCT wells 1 – 4. In recent years, extraction has only occurred from PSTC-1, PSCT-2, and PSCT-4, because water is not recoverable from PSTC-3. The operational details for the PSCT will be finalized during the remedial design.

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	• Excavation and covering of several areas south of the PSCT that have shown high concentrations of contaminants (i.e., hotspots). Excavated material will be placed in the PCB landfill before it is covered. The excavations will be covered with a RCRA-equivalent cap. • The future use of the site is to remain a landfill. Institutional Controls (ICs) will be designed to ensure that the entire site is restricted from other uses, unless approved by all parties. Groundwater at the site will not be used for drinking water.	The Selected Remedy includes the option, subject to EPA's sole discretion, for excavation or covering with a RCRA cap (to be confirmed during the remedial design). For any soil hotspots that are excavated, EPA will determine if it is necessary to cover the excavations with a RCRA cap.
b	**Areas of Disagreement with the Proposed Remedy** **There are three areas where we have disagreements with the plan: Contingency trigger levels, the Technical Impracticability (TI) Waiver for Area 5 North, and the appropriateness of MNA in Area 5 South. These objections are described below.**	
1	**Contingency Trigger Levels:** Contingency actions for the new monitoring wells in the lower HSU north of the PSCT will be triggered by exceedence of the drinking water standards (i.e., MCLs). We believe that it is more appropriate and health conservative to use EPA's Regional Screening Levels (RSL) and the California Human Health Screening Levels (CHHSLs) as trigger levels to undertake contingency actions. It is recommended that the most stringent of these apply. This recommendation also applies to all sites being considered for contingency measures in the future and will have groundwater trigger levels. If there are no screening levels, we suggest that the MCL be used as a default trigger level.	EPA appreciates the comment. Section 2.8.6 of the ROD presents the following Remedial Action Objective (RAO) for groundwater: "*Where technically practicable (Area 5 South and Area 5 West), restore the beneficial use of groundwater by achieving MCLs, or other applicable cleanup goals for chemicals without MCLs*." Section 2.8.8 of the ROD also establishes RLs for groundwater. Although groundwater was not considered a risk to human health or ecological receptors because there was not a complete pathway, concentrations of dissolved-phase constituents will be required to meet MCLs (or other applicable cleanup goals for chemicals without MCLs) in those areas, including Area 5 South and Area 5 West, located beyond the designated TI Zone of Area 5 North. EPA believes groundwater RLs, as described in the ROD, are appropriate in Area 5 South and Area 5 West. In addition, there is no reasonable expectation that Site groundwater will be subject to beneficial use, and ICs are in place to eliminate groundwater use. The applicable cleanup goals for those chemicals without MCLs will be identified during the remedial design phase. The EPA RSLs and State CHHSLs are not

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		federally-promulgated guidelines and are therefore not likely to be designated as appropriate RLs for groundwater during the remedial design phase.
2	**TI Waiver** We are in strong disagreement that the spatial area Area 5 North be granted a TI Waiver. As noted in the Proposed Plan, the National Contingency Plan (NCP) preamble sets forth EPA policy for groundwater as follows, "remediation levels generally should be attained throughout the contaminated plume, or at and beyond the edge of the waste management area when waste is left in place". Since a waste management area (WMA) is now designated as part of the proposed TI Zone that contains most of the waste left on site (the landfills), we think that this designation is sufficient to contain those wastes. However, clearly contaminants have migrated past the borders of the WMA into the Central Drainage Area (CDA) and in other areas that are not designated in the WMA. These areas, when covered, would become part of the proposed TI Zone. The "proposed" waiver would be limited to waiving the requirement to meet the Maximum Contaminant Levels (MCLs) for groundwater underlying the unified cap area. With a waiver, the CSC would still be required to extract both DNAPL and LNAPL from the Gallery well area in the south end of the Pesticides/Solvents (P/S) Landfill, from Sump 9B, and from the extraction points within the PSCT. The extraction would largely take place in the weathered claystone, referred to as the upper hydrostratigraphic unit (HSU). The lower HSU is less permeable than the upper unit, and extraction is understandably difficult.	EPA appreciates the comment. See response to Comment 16. Also, see responses below to the various portions of this comment that invite a response. The NCP preamble and EPA guidance indicate that designation of a WMA is an appropriate regulatory approach for waste that will be left in place in association with multiple closely-spaced sources. EPA has determined that both a WMA and a TI Zone are appropriate for Area 5 North at the Site. Area 5 North contains multiple former waste management units, and waste materials and NAPL are present beyond the WMA boundary. The effects of both designations (the WMA and TI Zone) are similar because there is no expectation that waste materials or groundwater throughout all of Area 5 North can be cleaned up to ARARs.

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	It is our opinion that granting a TI Waiver for this area is premature and it may encumber the EPA and other regulatory agencies in later years. Instead, we propose that the EPA adopt an Interim Remedy for this area. This Interim Remedy would not alter the outlined remedial measures in this area, but it will allow EPA, the regulators, the stakeholders and CSC to have a better understanding of the effects of a containment strategy that is proposed for this portion of the site, while continuing extraction of known pockets of DNAPL in the upper HSU, and pumping of the PSCT.	EPA believes it is not necessary or appropriate to adopt an interim remedy approach for the Site or for Area 5 North. As described in EPA guidance (EPA-540-R-98-031, July 1999), "*An interim action is limited in scope and only addresses area/media that also will be addressed in a final site/operable unit ROD. Reasons for taking an interim action could include the need to: [t]ake quick action to protect human health and the environment from an imminent threat in the short term, while a final remedial solution is being developed; or [i]nstitute temporary measures to stabilize the site or operable unit and/or prevent further migration of contaminants or further environmental degradation*." An interim action might be taken in the absence of an RI or FS. In the case of the Site, EPA has collected extensive environmental information over the course of many years, conducted multiple interim actions (response actions) to stabilize the Site and address immediate risks, completed RI and FS reports, issued a Proposed Plan, and is now selecting a final remedy in a ROD. The Selected Remedy includes continued NAPL extraction, long-term OM&M, and statutory 5-year reviews to evaluate remedy effectiveness. Contingency and corrective measures will be conducted if determined necessary by EPA.
	Groundwater contaminated with volatile organic compounds (VOCs) in both the Upper and Lower HSU has already passed the PSCT, albeit by a small distance. This leads to uncertainty about whether the PSCT is fully containing all contamination. Even the soils below PSCT 1, 3, and 4 were contaminated to such an extent that there will be hotspot removal of soils. We think that after more is known about the contaminants in the subsurface with the increased extraction regimen and cap performance, we will know more about where to "patch" the system, if indeed it needs patching. We may also find out that the upper HSU outside of the WMA can be remediated to meet most cleanup goals. The FS notes that the volume of free-phase DNAPL covered by the TI Waiver is estimated to be up to 100,000 gallons, although the actual amount "is uncertain". Additionally, the thickness of NAPL in this area	Groundwater impacted by various VOCs occurs in both the Upper and Lower HSU both north and south of the PSCT. The highest groundwater concentrations clearly occur in Area 5 North. The PSCT was constructed to provide containment and to restrict the migration of contamination from Area 5 North to Area 5 South. Extensive groundwater monitoring data shows that the PSCT has been providing capture based on the concentrations and spatial distribution of individual constituents north and south of the PSCT (see Figure 2-18 of the ROD). As described in the RI report, there are several former waste management units located south of the PSCT that contributed to groundwater contamination within Area 5 South. Groundwater in Area 5 South may also have been impacted by contamination that migrated from Area 5 North prior to construction of the PSCT. The area has been extensively studied through various drilling, geophysical, and

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	exceeds 10 feet in some locations. In some areas, such as the burial trench area and the central drainage area, there are NAPLs in the soil and groundwater that may potentially flow through this soil and mobilize contaminants.	groundwater monitoring activities. Contingency measures, including additional monitoring and installation of additional monitoring and/or extraction wells, may be undertaken if determined appropriate by EPA. As described in the ROD and elsewhere in this Responsiveness Summary, a TIE that was conducted as part of the remedial investigations and summarized in the FS report concluded that it is technically impracticable to clean up groundwater within Area 5 North to MCLs. The Upper HSU outside the WMA is impacted most directly by NAPL from the P/S Landfill, and EPA has no expectation that groundwater in this area (Area 5 North) can be remediated for beneficial use
	In addition, much of the DNAPL and pesticides were placed in drums and other containers. These containers have a limited lifetime. It is unknown how much still resides in these containers, and it is equally uncertain of where these are located within the landfill. It is clear, however, that there will be a continued release of these contaminants over time.	The Selected Remedy includes NAPL and groundwater extraction systems to address ongoing releases from drums and other containers. Also see response to Comment 21.
	The CSC groundwater model, which serves as the one of the key bases for assuming that contaminants will not migrate beyond the boundaries of the TI zone, is an approximation: it should not be considered as fact until there is firm data to support it. The CSC groundwater model has estimated that after the area is capped, extraction rates in the landfill will continue to decline and groundwater will ultimately dry up. If the model is correct, there would be no groundwater in the P/S landfill in the upper HSU within several decades, and a limited amount of groundwater will be flowing through the area covered by the TI Waiver. We think that this is a big "if". Even the best models rely on many assumptions. This particular model and assumptions were a disputed components of the Remedial Investigation. Although we accept a groundwater model as one of the many tools in the toolbox for characterizing the site, we are unconvinced that there is a good understanding the existing contaminants in the subsurface and the way	See response to Comment 17 regarding the use of the groundwater model as a common method of analysis at many remediation sites throughout the country, including many Superfund Sites.

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	that these contaminants will behave in the future – especially those that will be released by the slow corrosion of drums and containers.	
	We only have to look at recent events surrounding the "seep" at Sump 9B to highlight the lack of understanding. This seep led to NAPL coming to the surface and saturating soil around the sump. In its Technical Memorandum about the cause and fix of the problem, CSC stated that "The CSC believes that the root cause of the 9B seep is the elevated groundwater levels in that area which are in turn the result of increased rainfall and water levels in the stormwater runoff retention basin. As such the CSC is proposing to eliminate the seep by increasing extraction for Sump 9B to lower those localized groundwater levels."	Seeps near Sump 9B have been observed periodically over the years in response to rising water levels following winter rain events. Sump 9B was installed to allow for extraction from this area to mitigate the occurrence of these seeps. The Selected Remedy will include installation of a RCRA cap over the Central Drainage Area, including the Sump 9B area, which will reduce infiltration from rainfall, lower water levels, and eliminate seeps in this area.
	The lack of understanding of the amount, location and behavior of contaminants in the subsurface, in essence, is the gist of our opposition to the TI Waiver at this time. Instead, we propose an Interim Record of Decision with a phased approach, setting interim remediation goals to contain the contaminants, remove as much mass as practicable, and protect the public from exposure. This retains all of the components of remedial activities for the preferred remedy for proposed TI Area, while allowing the CSC and EPA to gain a better understanding of the subsurface in this particular area of the site, and to adjust extraction points if necessary.	As described above, EPA has extensive information, collected over many years and as documented in the Proposed Plan and ROD, to designate a TI Waiver for Area 5 North as a component of the Selected Remedy. EPA will evaluate the long-term effectiveness of the Selected Remedy through long-term OM&M activities and the 5-year review process, and will implement contingency measures as warranted.
	The understanding about the amount, location and behavior of contaminants in the subsurface is critical in order to grant a TI Waiver. Section 3.0 of the EPA's *Guidance for Evaluating Technical Impracticability of Ground-Water Restoration* (September 1993, OSWER Directive 9234.2-25) - Remedial Strategy for DNAPL Sites states that the three areas that should be delineated at a DNAPL site are the DNAPL entry location, the DNAPL zone, and the aqueous contaminant plume. This section goes on to state that delineation "is critical for remedy design and evaluation of restoration potential of the site". Furthermore, Section 4.3 (4a) of the Guidance states that a Waiver requires a "demonstration that contamination sources have been	As described above, EPA has extensive information, collected over many years and as documented in the Proposed Plan and ROD, to sufficiently delineate the contaminant sources, the nature and extent of impacted groundwater, and to designate a TI Waiver for Area 5 North as a component of the Selected Remedy. The elements cited in the 1993 OSWER Directive 9234.2-25, including delineation of the DNAPL entry location, DNAPL zone, and the aqueous contaminant plume, were addressed in the TIE for the Site.

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	identified and have been, or will be, removed and contained to the extent practicable". We believe that these areas have not been delineated, nor will they be adequately delineated until there is further experience at the site, including cap performance and its effects on groundwater levels. Additionally, because a large portion of the waste was buried in drums and other containers that have a limited lifetime, it will take a prolonged period to be assured that most of the waste leaking from these containers is delineated. There has not been an estimate of the lifetime of these containers done for this site.	As described above, the Selected Remedy includes NAPL and groundwater extraction systems to address ongoing releases from drums and other containers.
	A phased-approach is "recommended" for DNAPL sites by the Guidance cited above. Short-term objectives should be to prevent exposure and removal of DNAPL sources where there is sufficient information. Long-term remediation objectives suggested by the Guidance include removing "free-phase, residual and vapor-phase DNAPL to the extent practicable and contain DNAPL sources that cannot be removed. Removal of DNAPL mass should be pursued wherever practicable and, in general where significant reduction of current and future risk will result". The Casmalia Community Group fully supports these long-term objectives and they mirror our own objectives to reduce the risk to future generations.	The Selected Remedy addresses both the proposed short-term and long-term objectives, as it includes active NAPL extraction from the existing Gallery Well and Sump 9B, as well as from approximately 16 new NAPL extraction wells to be installed near the southern end of the P/S Landfill. The Selected Remedy also includes contingency measures, such as additional monitoring and focused extraction in localized areas, if routine monitoring indicates that NAPL and/or groundwater contamination is migrating beyond area boundaries.
	The phased approach is also consistent with Section 2.1 of EPA's Guidance. For example, it states "At sites with very complex groundwater contamination problems, it may be difficult to determine whether required cleanup levels are achievable at the time a remedy selection is made...", and "site remediation activities can be conducted in phases to achieve interim goals, while developing a more accurate understanding of the restoration potential of the contaminated aquifer."	See responses within this comment above.

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	One of our underlying concerns is that if a TI Waiver is granted, the regulatory agencies will bare a heavy burden if they think that increased NAPL extraction is needed. We followed the controversy surrounding EPA's request that piezometers be used in the P/S landfill to extract liquids, and this request was objected to by the CSC. We know that the Region IX staff have worked long and hard on this project, but the community, as well as future generations of Casmalia residents will bare the risks of any relaxation in regulatory oversight now and in the future.	See responses within this comment above. The Selected Remedy includes contingency measures, such as additional monitoring and focused extraction in localized areas, if NAPL and/or groundwater contamination is migrating beyond area boundaries.
	Mr. Strauss participated in the Interstate Technology and Regulatory Council's (ITRC) team involving remediation management for complex sites. The ITRC Team included several staff EPA headquarters. The team's guidance document recommends that interim remedies be part and parcel of remediation strategies for complex contaminated sites. Mr. Strauss has also researched landfill remedies in California and nationwide, looking at alternatives to a TI Waiver. Some landfills have received a TI Waiver, but most do not have a TI Waiver with the remedy. As a technical advisor to a group at in Idaho, he notes that even for a radioactive waste management facility containing long-lived nuclear isotopes at the Idaho National Laboratory, there was no request for a TI Waiver requested. Rather, this site was capped and adequate monitoring was instituted to assure that contaminants in the landfill were contained.	See responses within this comment above. In addition to the TI Waiver, the Selected Remedy includes NAPL source reduction, groundwater treatment, landfill capping, long-term OM&M, and other measures to provide overall protectiveness.
	In addition, on February 28, 2013, EPA issued a Proposed Plan for the Lower Duwamish Waterway Superfund Site near Seattle. Paraphrasing the final decision on a TI Waiver, it stated that if long-term monitoring data and trends indicate that some Applicable or Relevant and Appropriate Requirements (ARARs) based cleanup levels selected in the ROD are not met, a waiver of these ARARs could be considered by EPA in a future decision document. For example, if monitoring shows that levels have exceeded the ARARs for sediment quality, but have not reached the surface water Regional Screening Levels (RSLs), and EPA were to conclude that no further action would practicably improve.	The Site has many significant differences relative to the Lower Duwamish Waterway Site. The key differences include the presence of large volumes of waste material within landfills, a diverse array of contaminants, NAPL in low permeability bedrock, and the ability to apply ICs to restrict long-term site use.

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	these levels, the ARARs that are not met would be eligible for a TI waiver. Because EPA cannot know whether and to what extent ARARs for these various levels for different COCs will be achieved, consideration of the potential for such a waiver prior to the collection of monitoring data sufficient to inform any TI waiver decision(s) is neither warranted nor justifiable." Although this site is not similar to the Casmalia Resources site in either geology or contaminants, it is instructive that a TI Waiver is being deferred until there is sufficient information to inform such a decision. Our proposal is to merely take the same approach.	
	In the event that EPA does not accept CCG's recommendation not to grant a TI Waiver until more is understood about the subsurface, we recommend that it be reviewed contemporaneously with the Five-Year Review to make sure that it is still applicable. This review should include queries about: • Technological innovations that could be applied to the area that call into question the original TI Evaluation or area involved; • Necessary adjustments to the TI Area; • Whether the containment strategy is still working.	EPA will evaluate the long-term effectiveness of the Selected Remedy through long-term OM&M activities and the 5-year review process, and will implement contingency measures as warranted.
	In addition, part of the justification for the TI Waiver is that if there is a "remedy failure", EPA can order the responsible parties to take additional actions within the TI Zone. However, remedy failure is not a term of art, and is not defined either by CERCLA or the NCP. We recommend that it be defined for the purposes of this remedial action.	See responses within this comment above.
	Finally, if a TI Waiver is granted, it appears that there are some areas beyond the "unified cap" are included in TI Zone. These areas, as shown as uncolored in Figure 12-2A, appear to be a buffer zone. If they are merely buffer zones for the point of compliance, they are not appropriate and should not qualify as part of the TI Zone.	The Selected Remedy includes a TI Zone (and corresponding TI Waiver) for all of Area 5 North. The TI Zone designation accounts for the presence of former waste management operations (ponds and pads) in the western and southern portions of Area 1, beyond the landfill areas (WMA) but overlying Area 5 North. The northwestern portion of Area 5 North, just north of the PCB Landfill, is also included as part of the TI Zone; this is because prior waste management operations, including waste staging prior to disposal into the nearby landfills, may have

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		impacted groundwater in this area, and there is a lack of groundwater monitoring wells in this area to demonstrate that groundwater is not impacted.
3	**MNA** The community feels strongly that for Monitored Natural Attenuation (MNA) for groundwater in Area 5-South (i.e., groundwater south of the PSCT) to be approved, it must have a large component of biological degradation. The Site accepted over 5.6 billion pounds of waste including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides and metals comprising more than 300 chemicals of interest that are commingled and dispersed throughout various Site areas. While the physical and chemical components (that is, dilution, dispersion and sorption) of natural attenuation are evidenced, there is not enough information to conclude that biological mechanisms are actively degrading all of the compounds in Area 5 South. The microcosm study (bacterial study) done for the site deals with one set of chlorinated compounds: tetrachloroethene (PCE) and trichloroethene (TCE) and the presence of dehalococcoides (Dhc). However there are numerous chlorinated compounds in the subsurface at the site, as well as SVOCs, pesticides and metals. While the presence of Dhc suggests that the PCE-TCE chain can be degraded, other chlorinated compounds such as chloroform, trichloroethane (TCA), and chlorofluorocarbons all inhibit Dhc, and are not degraded by it. Therefore the microcosm study done for the site does not show degradation of all chlorinated compounds.	See response to Comment 18 above. Biological degradation is only one of the processes that contributes to natural attenuation. The reduction of contamination can happen because of biological, chemical, and physical processes, such as biodegradation, volatilization, dispersion, dilution, and sorption. MNA processes play an important role at the Site, effectively contributing to the reduction in contaminant concentrations and limiting the nature and extent of groundwater contamination.
	Furthermore, it is possible that with some in-situ bioremediation and/or bioaugmentation that most chlorinated solvents can be degraded sufficiently to meet cleanup standards. CCG proposes that enhanced in-situ bioremediation or chemical oxidation be investigated as part of the remedial design.	As described in the FS report and summarized in the Proposed Plan and ROD, in situ technologies, such as bioremediation or chemical oxidation, would also have very limited effectiveness because of the difficulty in achieving widespread contact between the injected remedial amendments and the contaminants.

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4	**Long-term Management.** Because tons of wastes will be left on site, both within and outside of the WMA, CCG wants a robust long-term management (LTM) plan. We recognize that this will be prepared in the design phase. It should account for the following: the amount of monitoring wells; location of monitoring well; the frequency of sampling events; and, the type and frequency of inspections. To assure the community, we recommend that this plan be as conservative as possible, with many redundancies added.	EPA appreciates the comment. As described in the ROD, the Selected Remedy includes a component to address long-term OM&M activities. A long-term OM&M plan will be developed during the remedial design and implemented. Optimization studies will be performed to establish effective design and operating characteristics.
	The LTM plan should include the development of contingency plan. Many of these measures are set forth in the proposed plan with regards to Area 5 North. As mentioned above, we recommend that the trigger levels be adjusted to conform to the RSLs and CHHSLs. We also suggest that the contingency plan include failure of physical controls (e.g., failure of a cap or barrier, failure of systems to capture contaminated liquids), chemical parameters (e.g., migration of a plume or detection of unexpected contaminants), and institutional parameters (e.g., regulatory agencies no longer able to perform oversight, violations of institutional controls).	The OM&M plan will include contingency measures to address potential migration of NAPL and/or groundwater contamination beyond specified area boundaries.
	The LTM plan should include a provision that it be periodically optimized. Optimization may include the following provisions: • Evaluate well locations and screened intervals within the context of the hydrogeologic regime to determine if the site is well characterized; • Evaluate overall plume stability through trend and moment analysis; • Evaluate individual well concentration trends over time for target chemicals of potential concern (COPCs); • Develop sampling location recommendations based on an analysis of spatial uncertainty; • Develop sampling frequency recommendations based on qualitative and quantitative statistical analysis results;	The OM&M plan will include procedures for optimization of the NAPL and groundwater collection and treatment facilities.

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	• Evaluate individual well analytical data for statistical sufficiency and identify locations that have achieved clean-up goals. • Evaluate potential improvements to cap integrity	
5	**Community Engagement** The CCG was fortunate to receive the first Technical Assistance Program (TAP) award in EPA's history. The TAP is somewhat analogous to the Technical Assistance Grant (TAG) program, but differs in the following manner. Whereas the TAG program is funded by EPA and the costs that are passed through to the Responsible Parties, the TAP award is mandated by the Consent Decree and costs paid directly to the Community Technical Assistance Consultant (CTAC) by the responsible parties. Additionally, the recipient organization (i.e., CCG) does not have to a 501(c) 3 non-profit organization. As noted in the Proposed Plan the CTAC has been involved with the site since 2000. For the foreseeable future, it is incumbent upon EPA to support community engagement activities. Activities may include public meetings, consultation during any major revisions to the remediation strategy, development and approval of remedial design documents consistent with the preferred remedy. Because waste will remain at the Site, EPA will conduct statutory Five-Year Reviews to continue to evaluate and ensure the long-term protectiveness of the final remedy. The Five-Year Reviews include evaluations of remedy protectiveness. If it is determined that components of the remedy are not protective, EPA will evaluate corrective actions and implement the preferred action to ensure continued protectiveness. CCG recommends that these reviews have active community participation during development and approval. These reviews not only inform the public of the progress at the site, but also are a platform to solicit community input.	EPA appreciates the comment and recognizes that the community technical assistance consultant has provided many benefits to the community in terms of (1) providing information to community representatives concerning the technical work being conducted at the Site, (2) representing the community in providing comments to EPA, and (3) providing valuable input to EPA and other stakeholders during regular coordination activities. Because waste will remain at the Site, EPA will conduct statutory 5-year reviews to continue to evaluate and ensure the long-term protectiveness of the Selected Remedy. In conducting these reviews, EPA will follow its normal practices of actively working with the public to solicit input about the Site and disseminate information about the 5-year review process and results.
	It is CCG's expectation that a CTAC will be available through the first Five-Year Review, although we expect that the annual cost for this service will decrease substantially.	EPA understands the community's interest in receiving technical support to help review Site documents, participate in planning discussions, and help provide community input to EPA and other

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		stakeholders. Although EPA cannot make commitments at this time in terms of future funding levels and scheduling for a CTAC, EPA will continue to encourage and explore efforts and activities to provide technical assistance to the community as part of its community involvement programs.
6	Are all of the contingency measures included in the Proposed Plan, or will some be added in the remedial design phase?	The ROD generally addresses the potential for implementing contingency measures, but does not provide detail regarding the full range of potential contingency measures. Contingency measures will be developed during the remedial design and presented in the OM&M plan. The contingency measures will be situation-specific; the nature of a response action will be determined based on the specifics of an issue of concern. Generally, contingency measures could include additional localized Site investigations, including additional monitoring and construction of additional monitoring and/or extraction wells if EPA determines that to be necessary, and development of recommendations for follow-up actions. Follow-up actions could include additional measures to prevent further migration or to provide localized treatment.
7	Please provide an example of how EPA would determine protectiveness if monitoring and 5 Year Review indicate that highly contaminated groundwater from Area 5 North had approached the boundary of the PSCT, or there were indications that it had moved beyond the PSCT in the lower HSU? Does EPA anticipate using some action levels? If so, have you determined what they will be?	The Selected Remedy includes a long-term OM&M component. EPA is also required to conduct statutory 5-year reviews for sites where waste materials have been left in place as part of the selected remedy. During the 5-year review process, EPA conducts interviews with people who are knowledgeable about the Site, reviews Site information, and studies the results of OM&M data. The goal is to evaluate the continued protectiveness of the remedial action. If Site information indicates that follow-up actions are appropriate, EPA could undertake a variety of responses. Responses would be situation-specific, possibly including additional monitoring at existing monitoring wells, installation of additional monitoring wells, or even installation of extraction wells within the immediate area. EPA could take other actions as necessary depending on the situation.

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		In performing long-term OM&M, contingency measures could be initiated based on exceedances of action levels that will be identified in the OM&M plan, developed during the remedial design, and/or review of temporal and spatial trends in monitoring data.
8	Has there been any evidence that contamination from the Heavy Metals, Caustics/Cyanide, and Acids landfills have leaked, or its contents migrated to the PSCT? Please be specific about which chemicals have been detected.	Results of the RI report show that groundwater samples from Area 5 North contain many contaminants, primarily VOCs such as PCE and TCE, but also metals such as arsenic, nickel, cadmium, and selenium. This suggests that the Heavy Metals, Caustics/Cyanide, and Acids landfills, which were unlined, may have contributed to groundwater contamination in the area upgradient of the PSCT. The PSCT was designed and constructed with a configuration that was intended to contain potential groundwater migration from these former landfills.
9	What wastes remain in RCRA Canyon and West Canyon Spray Area?	As described in the Section 2.5.4.1 of the ROD, Casmalia Resources excavated the limited amount of RCRA Canyon wastes in 1989-1990 (that had been placed in late 1983 to early 1984), and transferred the wastes to the P/S Landfill. However, the remedial investigation documented the presence of residual levels of contaminants (primarily metals including copper, chromium, and zinc), resulting in the need for capping of these areas as part of the Selected Remedy.
10	Is it EPA's expectation that additional monitoring wells will be installed in lower HSU in Area 5-South? There appear to be a few south of the BTA but only one south of the PSCT for the P/S landfill.	There are currently several monitoring wells (approximately five) located south of the PSCT to monitor groundwater in the Lower HSU. Although the Selected Remedy calls for installation of new Lower HSU wells north of the PSCT, the remedy relies on existing Lower HSU wells south of the PSCT to monitor groundwater quality in Area 5 South. See Figure A-1 (Appendix A) in the ROD for well locations. EPA retains the authority to require additional monitoring, including installation of additional monitoring wells, if determined necessary
11	Currently, one cannot say for certain where fractures are in the Lower HSU, and where DNAPL filled fractures reside. There are a few areas in Area 5-South where there are detections of VOCs in the lower HSU. Were they residual (from past operations at the site) or have they been the result of recent migration from Area 5-North?	The Site has been thoroughly studied and includes nearly 400 monitoring wells and probes that have been installed at various times to characterize and monitor the nature and extent of Site contamination. See the response to Comment 10 regarding the presence of Lower HSU wells in Area 5 South. EPA can require

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		additional monitoring, including installation of additional monitoring wells, if determined necessary. As described in the RI report, there are several former waste management units located south of the PSCT that contributed to groundwater impacts within Area 5 South. Groundwater in Area 5 South may also have been impacted by contamination that migrated from Area 5 North prior to construction of the PSCT. The OM&M plan, to be developed during the remedial design, will include contingency measures to address potential migration of NAPL and/or groundwater contamination beyond specified area boundaries.

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