Table 35
Summary of Present Value Analysis for Cost Estimate of the Selected Remedy

Net Present Value Factor	**7%**														
Discount Rate	**7%**														
Inflation Rate	**0%**														
YEAR	**COST PV**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Waste - Alternative 2, Removal and Off-Site Disposal															
TOTAL PRESENT VALUE	**$ 1,580,700**		**$ 1,798,211**												
Capital Costs	**$ 1,580,700**	**$ -**	**$ 163,474**	**$ 1,634,738**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 152,800	$ -	$ 163,474	$ -	$ -	$ -									
Mobilization and Demobilization	$ 59,500	$ -	$ -	$ 68,114	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 1,189,900	$ -	$ -	$ 1,362,281	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 178,500	$ -	$ -	$ 204,342	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Soil/Fill - Alternative 2, Institutional Controls and LNAPL Removal															
TOTAL PRESENT VALUE	**$ 356,100**														
Capital Costs	**$ 268,000**	**$ -**	**$ 50,302**	**$ 253,020**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 47,000	$ -	$ 50,302	$ -	$ -	$ -									
Mobilization and Demobilization	$ 9,200	$ -	$ -	$ 10,543	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 184,200	$ -	$ -	$ 210,850	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 27,600	$ -	$ -	$ 31,628	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ 88,100**	**$ -**	**$ -**	**$ -**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**
Soil/Fill - Alternative 3 Institutional Controls, Engineering Controls (Cap, Sheet Pile) and LNAPL Removal															
TOTAL PRESENT VALUE	**$ 10,600,700**														
Capital Costs	**$ 9,787,800**	**$ -**	**$ 1,362,335**	**$ 9,948,350**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 1,273,200	$ -	$ 1,362,335	$ -	$ -	$ -									
Mobilization and Demobilization	$ 354,800	$ -	$ -	$ 406,181	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 7,095,500	$ -	$ -	$ 8,123,625	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 1,064,300	$ -	$ -	$ 1,218,544	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Diamond Alkali OU2 Contingency	$ 174,700	$ -	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ 812,900**	**$ -**	**$ -**	**$ -**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**
Soil/Fill - Alternative 4, Institutional Controls, Engineering Controls (Cap, Sheet Pile), Focused Removal, and LNAPL Removal															
TOTAL PRESENT VALUE	**$ 12,782,900**														
Capital Costs	**$ 11,970,000**	**$ -**	**$ 1,588,040**	**$ 12,205,400**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 1,484,100	$ -	$ 1,588,040	$ -	$ -	$ -									
Mobilization and Demobilization	$ 436,900	$ -	$ -	$ 500,225	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 8,738,300	$ -	$ -	$ 10,004,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 1,310,700	$ -	$ -	$ 1,500,675	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Diamond Alkali OU2 Contingency	$ 174,700	$ -	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ 812,900**	**$ -**	**$ -**	**$ -**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**
Soil/Fill - Alternative 5, Institutional Controls, Engineering Controls (Sheet Pile), In-Situ Remediation, and LNAPL Removal															
TOTAL PRESENT VALUE	**$ 14,118,800**														
Capital Costs	**$ 13,373,700**	**$ -**	**$ 1,733,210**	**$ 13,657,100**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 1,619,800	$ -	$ 1,733,210	$ -	$ -	$ -									
Mobilization and Demobilization	$ 489,700	$ -	$ -	$ 560,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 9,795,000	$ -	$ -	$ 11,214,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 1,469,200	$ -	$ -	$ 1,682,138	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Diamond Alkali OU2 Contingency	$ 174,700	$ -	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ 745,100**	**$ -**	**$ -**	**$ -**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**
Soil Gas - Alternative 2, Institutional Controls, Monitoring/Engineering Controls, and Site-Wide Engineering Controls															

Table 35
Summary of Present Value Analysis for Cost Estimate of the Selected Remedy

2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
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$ 8,125	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**	**$ 8,125**
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$ 75,000	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**
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$ 75,000	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**
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$ 68,750	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**	**$ 68,750**

Table 35
Summary of Present Value Analysis for Cost Estimate of the Selected Remedy

2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068
$ -																
$ 8,125																
$ 75,000																
$ 75,000																
$ 68,750																

Table 35
Summary of Present Value Analysis for Cost Estimate of the Selected Remedy

TOTAL PRESENT VALUE	**$ 449,800**																
Capital Costs	**$ 108,400**	**$ -**	**$ 8,006**	**$ 115,519**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 7,500	$ -	$ 8,006	$ -	$ -	$ -											
Mobilization and Demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 99,900	$ -	$ -	$ 114,375	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 1,000	$ -	$ -	$ 1,144	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ 341,400**	**$ -**	**$ -**	**$ -**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**
Soil Gas - Alternative 3, Institutional Controls, Site-Wide Engineering Controls, and In-Situ Remediation																	
TOTAL PRESENT VALUE	**$ 4,050,800**																
Capital Costs	**$ 4,050,800**	**$ -**	**$ 653,904**	**$ 3,938,064**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 611,100	$ -	$ 653,904	$ -	$ -	$ -											
Mobilization and Demobilization	$ 147,000	$ -	$ -	$ 168,293	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 2,939,900	$ -	$ -	$ 3,365,867	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 352,800	$ -	$ -	$ 403,904	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sewer Water - Alternative 2, Removal and Off-Site Disposal																	
TOTAL PRESENT VALUE	**$ 24,900**																
Capital Costs	**$ 24,900**	**$ -**	**$ 6,606**	**$ 21,375**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 6,200	$ -	$ 6,606	$ -	$ -	$ -											
Mobilization and Demobilization	$ 800	$ -	$ -	$ 891	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 15,600	$ -	$ -	$ 17,813	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 2,300	$ -	$ -	$ 2,672	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Groundwater - Alternative 2, Institutional Controls, Containment at River, and Pump and Treat																	
TOTAL PRESENT VALUE	**$ 34,258,600**																
Capital Costs	**$ 23,608,500**	**$ -**	**$ 1,261,844**	**$ 1,261,844**	**$ 1,261,844**	**$ 26,805,313**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 3,311,500	$ -	$ 1,261,844	$ 1,261,844	$ 1,261,844	$ -											
Mobilization and Demobilization	$ 845,700	$ -	$ -	$ -	$ -	$ 1,108,555	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 16,914,200	$ -	$ -	$ -	$ -	$ 22,171,094	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 2,537,100	$ -	$ -	$ -	$ -	$ 3,325,664	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Diamond Alkali OU2 Contingency	$ 152,600	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ 10,650,100**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**
Groundwater - Alternative 3, Institutional Controls and In-Situ Remediation																	
TOTAL PRESENT VALUE	**$ 20,844,800**																
Capital Costs	**$ 19,602,300**	**$ -**	**$ 1,051,811**	**$ 1,051,811**	**$ 1,051,811**	**$ 14,894,343**	**$ -**	**$ -**	**$ -**	**$ 6,939,996**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 3,469,998**		
Pre-construction Activities	$ 2,760,300	$ -	$ 1,051,811	$ 1,051,811	$ 1,051,811	$ -											
Mobilization and Demobilization	$ 804,400	$ -	$ -	$ -	$ -	$ 1,054,347	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 13,624,500	$ -	$ -	$ -	$ -	$ 10,676,953	$ -	$ -	$ -	$ 6,939,996	$ -	$ -	$ -	$ -	$ 3,469,998		
Other Indirect Costs	$ 2,413,100	$ -	$ -	$ -	$ -	$ 3,163,042	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ 1,242,500**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**
Groundwater - Alternative 4, Institutional Controls, Targeted Pump and Treat, and Targeted Periodic In-Situ Remediation																	
TOTAL PRESENT VALUE	**$ 24,234,400**																
Capital Costs	**$ 10,034,200**	**$ -**	**$ 729,750**	**$ 729,750**	**$ 729,750**	**$ 10,642,500**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Pre-construction Activities	$ 1,915,100	$ -	$ 729,750	$ 729,750	$ 729,750	$ -											
Mobilization and Demobilization	$ 338,300	$ -	$ -	$ -	$ -	$ 443,438	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Implentation Costs	$ 6,765,900	$ -	$ -	$ -	$ -	$ 8,868,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other Indirect Costs	$ 1,014,900	$ -	$ -	$ -	$ -	$ 1,330,313	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O&M Costs	**$ 14,200,200**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**

Table 35
Summary of Present Value Analysis for Cost Estimate of the Selected Remedy

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$ 31,500	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**	**$ 31,500**
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$ 1,125,000	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**	**$ 1,125,000**
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$ 131,250	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**	**$ 131,250**
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$ 1,500,000	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**

Table 35
Summary of Present Value Analysis for Cost Estimate of the Selected Remedy

$ 31,500		
$ -		
$ -		
$ 1,125,000	$ 1,125,000	$ 1,125,000
$ 131,250	$ 131,250	$ 131,250
$ 1,500,000	$ 1,500,000	$ 1,500,000

Table 35
Summary of Present Value Analysis for Cost Estimate of the Selected Remedy

Table 35
Summary of Present Value Analysis for Cost Estimate of the Selected Remedy

Table 35
Summary of Present Value Analysis for Cost Estimate of the Selected Remedy

SUMMARY TABLE

Component	Total Capital Costs	Total Annual O&M Costs	Total Net Present Worth
Waste			
Alternative 1 - No Action	$ -	$ -	$ -
Alternative 2 - Removal and Off-Site Disposal	$ 1,798,211	$ -	$ 1,580,700
Soil/Fill			
Alternative 1 - No Action	$ -	$ -	$ -
Alternative 2 - Institutional Controls and NAPL Removal	$ 303,322	$ 8,125	$ 356,100
Alternative 3 - Institutional Controls, Engineering Controls, and NAPL Removal	$ 11,310,685	$ 75,000	$ 10,600,700
Alternative 4 - Institutional Controls, Engineering Controls, Focused Removal with Off-Site Disposal of Lead, and NAPL Removal	$ 13,793,440	$ 75,000	$ 12,782,900
Alternative 5 - Institutional Controls, In-Situ Remediation, Engineering Controls, and NAPL Removal	$ 15,390,310	$ 68,750	$ 14,118,800
Groundwater			
Alternative 1 - No Action	$ -	$ -	$ -
Alternative 2 - Institutional Controls, Site Containment at River Edge, and Pump and Treat	$ 30,590,844	$ 1,125,000	$ 34,258,600
Alternative 3 - Institutional Controls and In-Situ Remediation	$ 28,459,770	$ 131,250	$ 20,844,800
Alternative 4 - Institutional Controls, Pump and Treat, and Targeted Periodic In-Situ Remediation	$ 12,831,750	$ 1,500,000	$ 24,234,400
Sewer Water			
Alternative 1 - No Action	$ -	$ -	$ -
Alternative 2 - Removal and Off-Site Disposal	$ 27,981	$ -	$ 24,900
Soil Gas			
Alternative 1 - No Action	$ -	$ -	$ -
Alternative 2 - Institutional Controls, Air Monitoring or Engineering Controls (existing occupied buildings) and Site-Wide Engineering Controls (future buildings)	$ 123,525	$ 31,500	$ 449,800
Alternative 3 - Institutional Controls, Site-Wide Engineering Controls (future buildings), and Air Monitoring or Engineering Controls and In-Situ Remediation of Soil/Fill (existing occupied buildings)	$ 4,591,968	$ -	$ 4,050,800

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

TABLE B-W1 - PRELIMINARY COST ESTIMATE
WASTE - ALTERNATIVE 1
NO ACTION

Component	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Capital Cost	Estimated Annual O&M Cost
Capital Costs					
Direct Implementation Costs				$ -	
Subtotal - Direct Costs				$ -	
Indirect Costs					
Remedial Design	(10% of Direct Costs)			$ -	
Mobilization/Misc. Site Prep	(5% of Direct Costs)			$ -	
Site Administration	(5% of Direct Costs)			$ -	
Permitting/Legal Costs	(2% of Direct Costs)			$ -	
Construction Management/Oversight	(10% of Direct Costs)			$ -	
Subtotal - Indirect Costs				$ -	
Contingency - 25% of Direct and Indirect Costs				$ -	
Total Capital Costs				**$ -**	
Operation and Maintenance Costs					$ -
Subtotal - O&M Costs					$ -
Contingency Reserve - 25% of O&M Costs					$ -
Total Annual O&M Costs					$ -
Net Present Worth of Annual O&M Costs				**$ -**	
Total Net Present Worth of Alternative				**$ -**	

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

TABLE B-W2 - PRELIMINARY COST ESTIMATE
WASTE - ALTERNATIVE 2
REMOVAL AND OFF-SITE DISPOSAL

Component	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Capital Cost
Capital Costs				
Direct Implementation Costs				
Consolidation/Containerization of Wastes	1	LS	$ 25,000	$ 25,000
UST Removal/Disposal	6	Ea	$ 15,000	$ 90,000
Impacted Soil Removal at USTs	3,500	CY	$ 22	$ 77,000
Clean Backfill (provide/place/compact)	5,600	Ton	$ 60	$ 336,000
6" Gravel Surface at NAPL Footprint	800	SY	$ 18	$ 14,400
Waste Disposal, UST Soil (T&D)	5,800	Ton	$ 75	$ 435,000
Waste Disposal, Non-haz liquids (T&D)	34,700	Gal	$ 0.25	$ 8,675
Waste Disposal, LNAPLs (T&D)	4,500	Gal	$ 1	$ 4,500
Waste Disposal, Non-haz solids/tanks (T&D)	30	Ton	$ 75	$ 2,250
Soil Treatment for Disposal	880	Ton	$ 25	$ 22,000
Water Management/Disposal	1	LS	$ 55,000	$ 55,000
UST Closure Sampling/Reporting	1	LS	$ 20,000	$ 20,000
			Subtotal - Direct Costs	$ 1,089,825
Indirect Costs				
Remedial/Geotechnical Design	(10% of Direct Costs)			$ 108,983
Mobilization/Misc. Site Prep	(5% of Direct Costs)			$ 54,491
Site Administration	(5% of Direct Costs)			$ 54,491
Permitting/Legal Costs	(2% of Direct Costs)			$ 21,797
Construction Management/Oversight	(10% of Direct Costs)			$ 108,983
			Subtotal - Indirect Costs	$ 348,744
			Contingency - 25% of Direct and Indirect Costs	$ 359,642
			Total Capital Costs	**$ 1,798,211**
Operation and Maintenance Costs				
			Subtotal - O&M Costs	
			Contingency Reserve - 25% of O&M Costs	
			Total Annual O&M Costs	
			Net Present Worth of Annual O&M Costs	**$ -**
Total Net Present Worth of Alternative				**$ 1,580,700**

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

Estimated Annual O&M Cost
$ -
$ -
$ -
$ -

TABLE B-SF1 - PRELIMINARY COST ESTIMATE
SOIL/FILL - ALTERNATIVE 1
NO ACTION

Component	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Capital Cost	Estimated Annual O&M Cost
Capital Costs					
Direct Implementation Costs					
			Subtotal - Direct Costs	$ -	
Indirect Costs					
Remedial Design	(10% of Direct Costs)			$ -	
Mobilization/Misc. Site Prep	(5% of Direct Costs)			$ -	
Site Administration	(5% of Direct Costs)			$ -	
Permitting/Legal Costs	(2% of Direct Costs)			$ -	
Construction Management/Oversight	(10% of Direct Costs)			$ -	
			Subtotal - Indirect Costs	$ -	
			Contingency - 25% of Direct and Indirect Costs	$ -	
			Total Capital Costs	**$ -**	
Operation and Maintenance Costs					
Site Inspections/Maintenance					$ -
Five-Year Reviews					$ -
			Subtotal - O&M Costs		$ -
			Contingency Reserve - 25% of O&M Costs		$ -
			Total Annual O&M Costs		**$ -**
			Present Worth of Annual O&M Costs	**$ -**	
Total Net Present Worth of Alternative				**$ -**	

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

TABLE B-SF2 - PRELIMINARY COST ESTIMATE
SOIL/FILL - ALTERNATIVE 2
INSTITUTIONAL CONTROLS AND NAPL REMOVAL

Component	Estimated Quantity	Unit	Estimated Unit Cost
Capital Costs			
Direct Implementation Costs			
Deed Restrictions (legal/filing)	15	Lots	$ 4,000
Fencing Enhancements	1,000	LF	$ 20
NAPL Removal			
Excavate/Load Soil/Fill	310	CY	$ 15
Waste Disposal, Petroleum-impacted (T&D)	510	Ton	$ 75
Soil Treatment	510	Ton	$ 25
Clean Backfill (provide/place/compact)	510	Ton	$ 60
6" Gravel Surface at NAPL Footprint	135	SY	$ 18
			Subtotal - Direct Costs
Indirect Costs			
Predesign Investigation	Lump Sum		
Remedial Design	(10% of Direct Costs)		
Mobilization/Misc. Site Prep	(5% of Direct Costs)		
Site Administration	(5% of Direct Costs)		
Permitting/Legal Costs	(2% of Direct Costs)		
Construction Management/Oversight	(10% of Direct Costs)		
			Subtotal - Indirect Costs
			Contingency - 25% of Direct and Indirect Costs
			Total Capital Costs
Operation and Maintenance Costs			
Site Inspections/Maintenance	1	Annual	$ 1,500
Five-Year Reviews	1	Annualized	$ 5,000
			Subtotal - O&M Costs
			Contingency Reserve - 25% of O&M Costs
			Total Annual O&M Costs
			Net Present Worth of Annual O&M Costs
Total Net Present Worth of Alternative			

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

Estimated Capital Cost	Estimated Annual O&M Cost
$ 60,000	
$ 20,000	
$ 4,650	
$ 38,250	
$ 12,750	
$ 30,600	
$ 2,430	
$ 168,680	
$ 20,000	
$ 16,868	
$ 8,434	
$ 8,434	
$ 3,374	
$ 16,868	
$ 73,978	
$ 60,664	
$ 303,322	
	$ 1,500
	$ 5,000
	$ 6,500
	$ 1,625
	$ 8,125
$ 88,100	
$ 356,100	

TABLE B-SF3 - PRELIMINARY COST ESTIMATE
SOIL/FILL - ALTERNATIVE 3
INSTITUTIONAL CONTROLS, ENGINEERING CONTROLS, AND NAPL REMOVA

Component	Estimated Quantity	Unit	Estimated Unit Cost
Capital Costs			
Direct Implementation Costs			
Deed Restrictions (legal/filing)	15	Lots	$ 4,000
Fencing Enhancements	1,000	LF	$ 20
Site Preparation			
Clear Vegetation	0.5	Ac	$ 1,500
Asphalt and Debris Removal	1	LS	$ 25,000
Asphalt and Debris Disposal (T&D)	7800	Ton	$ 75
Asphalt Cap			
Regrade as needed to level surface	2000	CY	$ 20
Base gravel - 6"	28,400	SY	$ 18
Bituminous concrete - 6"	28,400	SY	$ 48
Seal coating	28,400	SY	$ 1.25
NAPL Removal			
Excavate/Load Soil/Fill	310	CY	$ 15
Waste Disposal, Petroleum-impacted (T&D)	510	Ton	$ 75
Soil Treatment	510	Ton	$ 25
Clean Backfill (provide/place/compact)	510	Ton	$ 60
Vertical Barrier			
Temporary Silt Screens in river	1	LS	$ 25,000
Old Wall Excavation (non soil/fill debris)	240	CY	$ 50
Decontamination and Disposal of Old Wall (non-soil/fill debris, T&D)	400	Ton	$ 250
Sheet Pile Installation (800' x 30')	24,000	SF	$ 150
Seal inactive wall pipes	1	LS	$ 35,000
			Subtotal - Direct Costs
Indirect Costs			
Geotechnical Investigation	Lump Sum		
Predesign Investigation/Soil Delineation	Lump Sum		
Remedial/Geotechnical Design	(10% of Direct Costs)		
Mobilization/Misc. Site Prep	(5% of Direct Costs)		
Site Administration	(5% of Direct Costs)		
Permitting/Legal Costs	(2% of Direct Costs)		
Construction Management/Oversight	(10% of Direct Costs)		
			Subtotal - Indirect Costs
			Diamond Alkali OU2 Contingency
			Contingency - 25% of Direct and Indirect Costs
			Total Capital Costs

L

Estimated Capital Cost	Estimated Annual O&M Cost
$ 60,000	
$ 20,000	
$ 750	
$ 25,000	
$ 585,000	
$ 40,000	
$ 511,200	
$ 1,363,200	
$ 35,500	
$ 4,650	
$ 38,250	
$ 12,750	
$ 30,600	
$ 25,000	
$ 12,000	
$ 100,000	
$ 3,600,000	
$ 35,000	
$ 6,498,900	
$ 60,000	
$ 250,000	
$ 649,890	
$ 324,945	
$ 324,945	
$ 129,978	
$ 649,890	
$ 2,389,648	
$ 200,000	
$ 2,222,137	
$ 11,310,685	

Operation and Maintenance Costs			
Site Inspections/Maintenance	4	Qtr	$ 5,000
Renew Top Coat every 10 yrs (annualized cost)	1	annualized	$ 35,000
Five-Year Reviews	1	annualized	$ 5,000
			Subtotal - O&M Costs
			Contingency Reserve - 25% of O&M Costs
			Total Annual O&M Costs
			Net Present Worth of Annual O&M Costs
Total Net Present Worth of Alternative			

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

	$ 20,000
	$ 35,000
	$ 5,000
	$ 60,000
	$ 15,000
	$ 75,000
$ 812,900	
$ 10,600,700	

TABLE B-SF4 - PRELIMINARY COST ESTIMATE
SOIL/FILL - ALTERNATIVE 4
INSTITUTIONAL CONTROLS, ENGINEERING CONTROLS, FOCUSED REMOVAL W
OFF-SITE DISPOSAL OF LEAD, AND NAPL REMOVAL

	Estimated Quantity	Unit	Estimated Unit Cost
Capital Costs			
Direct Implementation Costs			
Deed Restrictions (legal/filing)	15	Lots	$ 4,000
Fencing Enhancements	1,000	LF	$ 20
Site Preparation			
Clear Vegetation	0.5	Ac	$ 1,500
Asphalt and Debris Removal	1	LS	$ 25,000
Asphalt and Debris Disposal (T&D)	7800	Ton	$ 75
Asphalt Cap			
Regrade as needed to level surface	2000	CY	$ 20
Base gravel - 6"	28,400	SY	$ 18
Bituminous concrete - 6"	26,000	SY	$ 48
Seal coating	26,000	SY	$ 1.25
NAPL Removal			
Excavate/Load Soil/Fill	310	CY	$ 15
Waste Disposal, Petroleum-impacted (T&D)	510	Ton	$ 75
Soil Treatment	510	Ton	$ 25
Clean Backfill (provide/place/compact)	510	Ton	$ 60
Vertical Barrier			
Temporary Silt Screens in river	1	LS	$ 25,000
Old Wall Excavation (non soil/fill debris)	240	CY	$ 50
Decontamination and Disposal of Old Wall (non-soil/fill debris, T&D)	400	Ton	$ 250
Sheet Pile Installation (800' x 30')	24,000	SF	$ 150
Seal inactive wall pipes	1	LS	$ 35,000
Limited Excavation/Disposal			
Foundation Protection During Excavation	1	LS	$ 200,000
Excavate/load soils	5,100	CY	$ 15
Disposal of soils (non-haz, T&D)	8,415	Ton	$ 75
Soil Treatment for Disposal	8,415	Ton	$ 25
Clean Backfill (provide/place/compact)	8,415	Ton	$ 60
			Subtotal - Direct Costs
Indirect Costs			
Geotechnical Investigation	Lump Sum		
Predesign Investigation/Soil Delineation	Lump Sum		
Remedial Design	(10% of Direct Costs)		
Mobilization/Misc. Site Prep	(5% of Direct Costs)		
Site Administration	(5% of Direct Costs)		

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Estimated Capital Cost	Estimated Annual O&M Cost
$ 60,000	
$ 20,000	
$ 750	
$ 25,000	
$ 585,000	
$ 40,000	
$ 511,200	
$ 1,248,000	
$ 32,500	
$ 4,650	
$ 38,250	
$ 12,750	
$ 30,600	
$ 25,000	
$ 12,000	
$ 100,000	
$ 3,600,000	
$ 35,000	
$ 200,000	
$ 76,500	
$ 631,125	
$ 210,375	
$ 504,900	
$ 8,003,600	
$ 60,000	
$ 250,000	
$ 800,360	
$ 400,180	
$ 400,180	

Permitting/Legal Costs	(2% of Direct Costs)		
Oversight/Post-Ex Sampling	(10% of Direct Costs)		
			Subtotal - Indirect Costs
			Diamond Alkali OU2 Contingency
			Contingency - 25% of Direct and Indirect Costs
			Total Capital Costs
Operation and Maintenance Costs			
Site Inspections/Maintenance	4	Qtr	$ 5,000
Renew Top Coat every 10 yrs (annualized cost)	1	annualized	$ 35,000
Five-Year Reviews	1	annualized	$ 5,000
			Subtotal - O&M Costs
			Contingency Reserve - 25% of O&M Costs
			Total Annual O&M Costs
			Net Present Worth of Annual O&M Costs
Total Net Present Worth of Alternative			

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

$ 160,072	
$ 800,360	
$ 2,871,152	
$ 200,000	
$ 2,718,688	
$ 13,793,440	
	$ 20,000
	$ 35,000
	$ 5,000
	$ 60,000
	$ 15,000
	$ 75,000
$ 812,900	
$ 12,782,900	

TABLE B-SF5 - PRELIMINARY COST ESTIMATE
SOIL/FILL - ALTERNATIVE 5
INSTITUTIONAL CONTROLS, IN-SITU REMEDIATION, ENGINEERING CONTROLS, AND NA

Component	Estimated Quantity	Unit	Estimated Unit Cost
Capital Costs			
Direct Implementation Costs			
Deed Restrictions (legal/filing)	15	Lots	$ 4,000
Fencing Enhancements	1,000	LF	$ 20
Site Preparation			
Clear Vegetation	0.5	Ac	$ 1,500
Asphalt and Debris Removal	1	LS	$ 25,000
Asphalt and Debris Disposal (T&D)	7800	Ton	$ 75
NAPL Removal			
Excavate/Load Soil/Fill	310	CY	$ 15
Waste Disposal, Petroleum-impacted (T&D)	510	Ton	$ 75
Soil Treatment	510	Ton	$ 25
Clean Backfill (provide/place/compact)	510	Ton	$ 60
Vertical Barrier			
Temporary Silt Screens in river	1	LS	$ 25,000
Old Wall Excavation (non soil/fill debris)	240	CY	$ 50
Decontamination and Disposal of Old Wall (non-soil/fill debris, T&D)	400	Ton	$ 250
Sheet Pile Installation (800' x 30')	24,000	SF	$ 150
Seal inactive wall pipes	1	LS	$ 35,000
In-Situ Treatment			
Excavate top 18"	5100	CY	$ 15
Dispose top 18" (T&D)	8,420	Ton	$ 75
Regrade as needed to level surface	500	CY	$ 20
Insitu Solidification and Stabilization	30,500	CY	$ 60
Base gravel - 6"	28,400	SY	$ 18
Bituminous concrete - 6"	28,400	SY	$ 48
			Subtotal - Direct Costs
Indirect Costs			
Geotechnical Investigation	Lump Sum		
Predesign Investigation/Soil Delineation	Lump Sum		
Remedial Design, incl. treatability testing	(10% of Direct Costs)		
Mobilization/Misc. Site Prep	(5% of Direct Costs)		
Site Administration	(5% of Direct Costs)		
Permitting/Legal Costs	(2% of Direct Costs)		
Constr. Mgmt/Oversight/Post-Ex Sampling	(10% of Direct Costs)		
			Subtotal - Indirect Costs
			Diamond Alkali OU2 Contingency

PL REMOVAL

Estimated Capital Cost	Estimated Annual O&M Cost
$ 60,000	
$ 20,000	
$ 750	
$ 25,000	
$ 585,000	
$ 4,650	
$ 38,250	
$ 12,750	
$ 30,600	
$ 25,000	
$ 12,000	
$ 100,000	
$ 3,600,000	
$ 35,000	
$ 76,500	
$ 631,500	
$ 10,000	
$ 1,830,000	
$ 511,200	
$ 1,363,200	
$ 8,971,400	
$ 60,000	
$ 250,000	
$ 897,140	
$ 448,570	
$ 448,570	
$ 179,428	
$ 897,140	
$ 3,180,848	
$ 200,000	

Contingency - 25% of Direct and Indirect Costs			
Total Capital Costs			
Operation and Maintenance Costs			
Site Inspections/Maintenance	4	Qtr	$ 3,750
Renew Top Coat every 10 yrs	1	annualized	$ 35,000
Five-Year Reviews	1	annualized	$ 5,000
Subtotal - O&M Costs			
Contingency Reserve - 25% of O&M Costs			
Total Annual O&M Costs			
Net Present Worth of Annual O&M Costs			
Total Net Present Worth of Alternative			

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

$ 3,038,062	
$ 15,390,310	
	$ 15,000
	$ 35,000
	$ 5,000
	$ 55,000
	$ 13,750
	$ 68,750
$ 745,100	
$ 14,118,800	

TABLE B-GW1 - PRELIMINARY COST ESTIMATE
GROUNDWATER - ALTERNATIVE 1
NO ACTION

Component	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Capital Cost
Capital Costs				
Direct Implementation Costs				$ -
			Subtotal - Direct Costs	$ -
Indirect Costs				
Remedial Design	(10% of Direct Costs)			$ -
Mobilization/Misc. Site Prep	(5% of Direct Costs)			$ -
Site Administration	(5% of Direct Costs)			$ -
Permitting/Legal Costs	(2% of Direct Costs)			$ -
Construction Management/Oversight	(10% of Direct Costs)			$ -
			Subtotal - Indirect Costs	$ -
			Contingency - 25% of Direct and Indirect Costs	$ -
			Total Capital Costs	$ -
Operation and Maintenance Costs				
Site Inspections/Maintenance				
Five-year Reviews (annualized cost)				
			Subtotal - O&M Costs	
			Contingency Reserve - 25% of O&M Costs	
			Total Annual O&M Costs	
			Net Present Worth of Annual O&M Costs	**$ -**
Total Net Present Worth of Alternative				**$ -**

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

Estimated Annual O&M Cost
$ -
$ -
$ -
$ -
$ -

TABLE B-GW2 - PRELIMINARY COST ESTIMATE
GROUNDWATER - ALTERNATIVE 2
INSTITUTIONAL CONTROLS, CONTAINMENT AT RIVER AT RIVER EDGE, AND PUMP

Component	Estimated Quantity	Unit	Estimated Unit Cost
Capital Costs			
Direct Implementation Costs			
CEA/WRA Submissions	1	LS	$ 75,000
Year 1 Groundwater Monitoring	4	LS	$ 45,000
Sheet Pile Containment Installation	70,000	SF	$ 150
Fill Between Old and New Wall	975	CY	$ 125
Extraction Well, pump, riser, well head, pump	20	EA	$ 2,500
Conveyance Trenching/Fill	2,500	LF	$ 40
Piping, conduit, wiring, instrumentation	30,000	LF	$ 37
Treatment Building, Pad, Utilities	7,500	SF	$ 250
Utilities (sewer, water, electrical)	1	LS	$ 100,000
Discharge line	500	LF	$ 150
200 gpm Treatment System (includes equipment, installation, labor)			
Process Water Tanks	1	LS	$ 150,000
Oxidation System	1	LS	$ 500,000
Filtration Units	1	LS	$ 400,000
Metals Precipitaion System	1	LS	$ 275,000
Sludge Processing	1	LS	$ 150,000
Carbon Adsorption Units	1	LS	$ 250,000
Pumps and Piping	1	LS	$ 150,000
Electrical, Instrumentation, Controls	1	LS	$ 1,500,000
Chemical Feed System	1	LS	$ 175,000
			Subtotal - Direct Costs
Indirect Costs			
Predesign Investigation	Lump Sum		
Geotechnical Investigation	Lump Sum		
Remedial Design	(10% of Direct Costs)		
Mobilization/Misc. Site Prep	(5% of Direct Costs)		
Site Administration	(5% of Direct Costs)		
Permitting/Legal Costs	(2% of Direct Costs)		
Construction Management/Oversight	(10% of Direct Costs)		
			Subtotal - Indirect Costs
			Diamond Alkali OU2 Contingency
			Contingency - 25% of Direct and Indirect Costs
			Total Capital Costs
Operation and Maintenance Costs			
Routine Groundwater Monitoring	2	event	$ 45,000

AND TREAT

Estimated Capital Cost	Estimated Annual O&M Cost
$ 75,000	
$ 180,000	
$ 10,500,000	
$ 121,875	
$ 50,000	
$ 100,000	
$ 1,110,000	
$ 1,875,000	
$ 100,000	
$ 75,000	
$ 150,000	
$ 500,000	
$ 400,000	
$ 275,000	
$ 150,000	
$ 250,000	
$ 150,000	
$ 1,500,000	
$ 175,000	
$17,736,875	
$ 750,000	
$ 150,000	
$ 1,773,688	
$ 886,844	
$ 886,844	
$ 354,738	
$ 1,773,688	
$ 6,575,800	
$ 200,000	
$ 6,078,169	
$ 30,590,844	
	$ 90,000

Biennial Sampling Per CEA (annualized costs)	1	event	$ 10,000
Treatment System			
Utilities	1	LS	$ 150,000
Chemicals (oxidant, pH adjustment, etc.)	1	LS	$ 50,000
Carbon Changeout	1	LS	$ 50,000
Sludge/Waste Management	1	LS	$ 50,000
Routine O&M (staffed 40 hrs per wk)	1	LS	$ 320,000
Non Routine Maintenance	1	LS	$ 25,000
Performance Sampling	1	LS	$ 150,000
Five-Year Reviews	1	annualized	$ 5,000
			Subtotal - O&M Costs
			Contingency Reserve - 25% of O&M Costs
			Total Annual O&M Costs
			Net Present Worth of Annual O&M Costs
Total Net Present Worth of Alternative			

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

	$ 10,000
	$ 150,000
	$ 50,000
	$ 50,000
	$ 50,000
	$ 320,000
	$ 25,000
	$ 150,000
	$ 5,000
	$ 900,000
	$ 225,000
	$ 1,125,000
$ 10,650,100	
$ 34,258,600	

Cost pased on flow rate

SITE WORK			
Treatment plant			
Treatability studies	#REF!	#REF!	
Site preparation work	#REF!	#REF!	
Concrete pad	#REF!	#REF!	#REF!
Pre-engineerind building and installation	#REF!	#REF!	
Construction Labor	#REF!	#REF!	
Treatment Train			
DNAPL separator	#REF!	#REF!	
Multi-media filters	#REF!	#REF!	
Catalytic media filters	#REF!	#REF!	
UV oxidation	#REF!	#REF!	
GAC	#REF!	#REF!	
Filter press	#REF!	#REF!	
Process Building			
Process water tanks	#REF!	#REF!	
Chemical tanks	#REF!	#REF!	
Process pumps	#REF!	#REF!	
Chemical pumps	#REF!	#REF!	
Interior piping installation	#REF!	#REF!	
Air compressor	#REF!	#REF!	
Electrical panels	#REF!	#REF!	
Electrical installation	#REF!	#REF!	
Instrumentation and controls			
SCADA package	#REF!	#REF!	
PLCs and programming	#REF!	#REF!	
Instrumentation	#REF!	#REF!	
Trenching and Piping			
Plant to extraction wells	#REF!	#REF!	
Plant to Bound Brook discharge point	#REF!	#REF!	
Extraction wells	#REF!	#REF!	
Extraction pumps	#REF!	#REF!	
Permitting	#REF!	#REF!	
Health and Safety Equipment	#REF!	#REF!	
Startup Costs	#REF!	#REF!	
Reporting	#REF!	#REF!	

#REF! use $250

TABLE B-GW3 - PRELIMINARY COST ESTIMATE
GROUNDWATER - ALTERNATIVE 3
INSTITUTIONAL CONTROLS AND IN-SITU REMEDIATION

Component	Estimated Quantity	Unit	Estimated Unit Cost
Capital Costs			
Direct Implementation Costs			
CEA/WRA Submissions	1	LS	$ 75,000
1st Year Groundwater Monitoring	4	Event	$ 45,000
Initial Chemical Treatment (organics)	1,622,250	LB	$ 1.75
Initial Chemical Treatment (inorganics)	1,954,500	LB	$ 2.25
Inject labor/equipment	300	Day	$ 3,500
Round 2 Injections (67% , chemicals and labor)	1	LS	$ 5,551,997
Round 3 Injections (33% , chemicals and labor)	1	LS	$ 2,775,998
			Subtotal - Direct Costs
Indirect Costs			
Predesign Investigation	Lump Sum		
Remedial Design	(10% of Direct Costs)		
Mobilization/Misc. Site Prep	(5% of Direct Costs)		
Site Administration	(5% of Direct Costs)		
Permitting/Legal Costs	(2% of Direct Costs)		
Construction Management/Oversight	(10% of Direct Costs)		
			Subtotal - Indirect Costs
			Contingency - 25% of Direct and Indirect Costs
			Total Capital Costs
Operation and Maintenance Costs			
Routine Groundwater Monitoring	2	Event	$ 45,000
Biennial Sampling per CEA (annualized cost)	1	Event	$ 10,000
Five-year Reviews (annualized cost)	1	(annualized)	$ 5,000
			Subtotal - O&M Costs
			Contingency Reserve - 25% of O&M Costs
			Total Annual O&M Costs
			Net Present Worth of Annual O&M Costs
Total Net Present Worth of Alternative			

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

Estimated Capital Cost	Estimated Annual O&M Cost
$ 75,000	
$ 180,000	
$ 2,838,938	
$ 4,397,625	
$ 1,050,000	
$ 5,551,997	
$ 2,775,998	
$16,869,558	
$ 500,000	
$ 1,686,956	
$ 843,478	
$ 843,478	
$ 337,391	
$ 1,686,956	
$ 5,898,259	
$ 5,691,954	
$ 28,459,770	
	$ 90,000
	$ 10,000
	$ 5,000
	$ 105,000
	$ 26,250
	$ 131,250
$ 1,242,500	
$ 20,844,800	

TABLE B-GW4 - PRELIMINARY COST ESTIMATE
GROUNDWATER - ALTERNATIVE 4
INSTITUTIONAL CONTROLS, PUMP AND TREAT, AND TARGETED PERIODIC IN-SITU F

Component	Estimated Quantity	Unit	Estimated Unit Cost
Capital Costs			
Direct Implementation Costs			
CEA/WRA Submissions	1	LS	$ 75,000
Year 1 Groundwater Monitoring	4	LS	$ 45,000
Extraction Well, pump, riser, well head, pump	20	EA	$ 1,500
Conveyance Trenching/Fill	2,500	CY	$ 40
Piping, conduit, wiring, instrumentation	30,000	LF	$ 37
Treatment Building, Pad, Utilities	7,500	SF	$ 250
Utilities (sewer, water, electrical)	1	LS	$ 100,000
Discharge line	500	LF	$ 150
200 gpm Treatment System, includes equipment, installation, labor			
Process Water Tanks	1	LS	$ 150,000
Oxidation System	1	LS	$ 500,000
Filtration Units	1	LS	$ 400,000
Metals Precipitaion System	1	LS	$ 275,000
Sludge Processing	1	LS	$ 150,000
Carbon Adsorption Units	1	LS	$ 250,000
Pumps and Piping	1	LS	$ 150,000
Electrical, Instrumentation, Controls	1	LS	$ 1,500,000
Chemical Feed System	1	LS	$ 175,000
			Subtotal - Direct Costs
Indirect Costs			
Predesign Investigation	Lump Sum		
Geotechnical Investigation	Lump Sum		
Remedial Design	(10% of Direct Costs)		
Mobilization/Misc. Site Prep	(5% of Direct Costs)		
Site Administration	(5% of Direct Costs)		
Permitting/Legal Costs	(2% of Direct Costs)		
Construction Management/Oversight	(10% of Direct Costs)		
			Subtotal - Indirect Costs
			Contingency - 25% of Direct and Indirect Costs
			Total Capital Costs
Operation and Maintenance Costs			
Routine Groundwater Monitoring	2	event	$ 45,000
Biennial Sampling Per CEA (annualized costs)	1	event	$ 10,000
Treatment System			

REMEDIATION

Estimated Capital Cost	Estimated Annual O&M Cost
$ 75,000	
$ 180,000	
$ 30,000	
$ 100,000	
$ 1,110,000	
$ 1,875,000	
$ 100,000	
$ 75,000	
$ 150,000	
$ 500,000	
$ 400,000	
$ 275,000	
$ 150,000	
$ 250,000	
$ 150,000	
$ 1,500,000	
$ 175,000	
$7,095,000	
$ 750,000	
$ 150,000	
$ 709,500	
$ 354,750	
$ 354,750	
$ 141,900	
$ 709,500	
$ 3,170,400	
$ 2,566,350	
$ 12,831,750	
	$ 90,000
	$ 10,000

Utilities	1	LS	$ 150,000
Chemicals (oxidant, pH adjustment, etc.)	1	LS	$ 50,000
Carbon Changeout	1	LS	$ 50,000
Sludge/Waste Management	1	LS	$ 50,000
Routine O&M (staffed 40 hrs per wk)	1	LS	$ 320,000
Non Routine Maintenance	1	LS	$ 25,000
Performance Sampling	1	LS	$ 150,000
In-Situ Targetted Treatment for Selected Contaminants	1	LS	$ 300,000
Five-year Reviews	1	annualized	$ 5,000
			Subtotal - O&M Costs
			Contingency Reserve - 25% of O&M Costs
			Total Annual O&M Costs
			Net Present Worth of Annual O&M Costs
Total Net Present Worth of Alternative			

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

	$ 150,000
	$ 50,000
	$ 50,000
	$ 50,000
	$ 320,000
	$ 25,000
	$ 150,000
	$ 300,000
	$ 5,000
	$ 1,200,000
	$ 300,000
	$ 1,500,000
$ 14,200,200	
$ 24,234,400	

Cost pased on flow rate

SITE WORK			
Treatment plant			
Treatability studies	#REF!	#REF!	
Site preparation work	#REF!	#REF!	
Concrete pad	#REF!	#REF!	#REF!
Pre-engineerind building and installation	#REF!	#REF!	
Construction Labor	#REF!	#REF!	
Treatment Train			
DNAPL separator	#REF!	#REF!	
Multi-media filters	#REF!	#REF!	
Catalytic media filters	#REF!	#REF!	
UV oxidation	#REF!	#REF!	
GAC	#REF!	#REF!	
Filter press	#REF!	#REF!	
Process Building			
Process water tanks	#REF!	#REF!	
Chemical tanks	#REF!	#REF!	
Process pumps	#REF!	#REF!	
Chemical pumps	#REF!	#REF!	
Interior piping installation	#REF!	#REF!	
Air compressor	#REF!	#REF!	
Electrical panels	#REF!	#REF!	
Electrical installation	#REF!	#REF!	
Instrumentation and controls			
SCADA package	#REF!	#REF!	
PLCs and programming	#REF!	#REF!	
Instrumentation	#REF!	#REF!	
Trenching and Piping			
Plant to extraction wells	#REF!	#REF!	
Plant to Bound Brook discharge point	#REF!	#REF!	
Extraction wells	#REF!	#REF!	
Extraction pumps	#REF!	#REF!	
Permitting	#REF!	#REF!	
Health and Safety Equipment	#REF!	#REF!	
Startup Costs	#REF!	#REF!	
Reporting	#REF!	#REF!	

#REF! use $250

TABLE B-SW1 - PRELIMINARY COST ESTIMATE
SEWER WATER - ALTERNATIVE 1
NO ACTION

Component	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Capital Cost
Capital Costs				
Direct Implementation Costs				
			Subtotal - Direct Costs	$ -
Indirect Costs				
Remedial Design	(10% of Direct Costs)			$ -
Mobilization/Misc. Site Prep	(5% of Direct Costs)			$ -
Site Administration	(5% of Direct Costs)			$ -
Permitting/Legal Costs	(2% of Direct Costs)			$ -
Construction Management/Oversight	(10% of Direct Costs)			$ -
			Subtotal - Indirect Costs	$ -
			Contingency - 25% of Direct and Indirect Costs	$ -
			Total Capital Costs	**$ -**
Operation and Maintenance Costs				
			Subtotal - O&M Costs	
			Contingency Reserve - 25% of O&M Costs	
			Total Annual O&M Costs	
			Net Present Worth of Annual O&M Costs	**$ -**
Total Net Present Worth of Alternative				**$ -**

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

Estimated Annual O&M Cost
$ -
$ -
$ -
$ -

TABLE B-SW2 - PRELIMINARY COST ESTIMATE
SEWER WATER - ALTERNATIVE 2
REMOVAL AND OFF-SITE DISPOSAL

Component	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Capital Cost
Capital Costs				
Direct Implementation Costs				
Removal of Liquids/Solids	1	LS	$ 5,000	$ 5,000
Pressure Wash Manhole	1	LS	$ 3,000	$ 3,000
Waste Disposal (liquids, non-haz, T&D)	2,500	Gallons	$ 0.30	$ 750
Waste Disposal (solids, non-haz, T&D)	2	Drums	$ 250	$ 500
Disconnect and Grout Pipe and Manhole	1	LS	$ 5,000	$ 5,000
			Subtotal - Direct Costs	$ 14,250
Indirect Costs				
Remedial Design	Lump Sum			$ 5,000
Mobilization/Misc. Site Prep	(5% of Direct Costs)			$ 713
Site Administration	(5% of Direct Costs)			$ 713
Permitting/Legal Costs	(2% of Direct Costs)			$ 285
Construction Management/Overisght	(10% of Direct Costs)			$ 1,425
			Subtotal - Indirect Costs	$ 8,135
			Contingency - 25% of Direct and Indirect Costs	$ 5,596
			Total Capital Costs	**$ 27,981**
Operation and Maintenance Costs				
			Subtotal - O&M Costs	
			Contingency Reserve - 25% of O&M Costs	
			Total Annual O&M Costs	
			Net Present Worth of Annual O&M Costs	**$ -**
Total Net Present Worth of Alternative				**$ 24,900**

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

Estimated Annual O&M Cost
$ -
$ -
$ -
$ -

TABLE B-SG1 - PRELIMINARY COST ESTIMATE
SOIL GAS - ALTERNATIVE 1

Component	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Capital Cost	Estimated Annual O&M Cost
Capital Costs					
Direct Implementation Costs					
			Subtotal - Direct Costs	$ -	
Indirect Costs					
Remedial Design	(10% of Direct Costs)			$ -	
Mobilization/Misc. Site Prep	(5% of Direct Costs)			$ -	
Site Administration	(5% of Direct Costs)			$ -	
Permitting/Legal Costs	(2% of Direct Costs)			$ -	
Construction Management/Oversight	(10% of Direct Costs)			$ -	
			Subtotal - Indirect Costs	$ -	
			Contingency - 25% of Direct and Indirect Costs	$ -	
			Total Capital Costs	**$ -**	
Operation and Maintenance Costs					$ -
			Contingency Reserve - 25% of O&M Costs		$ -
			Total Annual O&M Costs		**$ -**
			Net Present Worth of Annual O&M Costs	**$ -**	

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

TABLE B-SG2 - PRELIMINARY COST ESTIMATE
SOIL GAS - ALTERNATIVE 2
INSTITUTIONAL CONTROLS, AIR **MONITORING/**EN**GINEERING CONTROLS, AND SITE-WIDE ENGINEERING CON**

Component	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Capital Cost
Capital Costs				
Direct Implementation Costs				
Deed Restrictions/CEAs	15	Lots	$ 4,000	$ 60,000
Initial Round of Indoor Air Monitoring (3/bldg)	21	Sample	$ 1,500	$ 31,500
			Subtotal - Direct Costs	$ 91,500
Indirect Costs				
Remedial Design	(5% of Direct Costs)			$ 4,575
Site Administration	(1% of Direct Costs)			$ 915
Permitting/Legal Costs	(1% of Direct Costs)			$ 1,830
			Subtotal - Indirect Costs	$ 7,320
			Contingency - 25% of Direct and Indirect Costs	$ 24,705
			Total Capital Costs	**$ 123,525**
Operation and Maintenance Costs				
Indoor Air Monitoring	21	Sample	$ 1,500	
			Subtotal - O&M Costs	
			Contingency - 25% of O&M Costs	
			Net Present Worth of Annual O&M Costs	**$ 341,400**
Total Net Present Worth of Alternative				**$ 449,800**

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

ITROLS

Estimated Annual O&M Cost
$ 31,500
$ 31,500
$ 31,500

Institutional Controls, Air Monitoring or Engineering Controls (existing occupied buildings) and Site-Wide Engineering Co

TABLE B-SG3 - PRELIMINARY COST ESTIMATE
SOIL GAS - ALTERNATIVE 3
INSTITUTIONAL CONTROLS, SITE-WIDE ENGINEERING CONTROLS, AND IN-SITU REMEDIATION

Component	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Capital Cost
Capital Costs				
Direct Implementation Costs				
Deed Restrictions/CEAs	15	Lots	$ 4,000	$ 60,000
In-Situ Treatment				
Initial Chemical Treatment (organics)	570,322	LB	$ 1.75	$ 998,064
Inject labor/equipment	90	Day	$ 3,500	$ 315,000
Round 2 Injections (67% , chemicals and labor)	1	LS	$ 879,753	$ 879,753
Round 3 Injections (33% , chemicals and labor)	1	LS	$ 439,876	$ 439,876
			Subtotal - Direct Costs	$ 2,692,693
Indirect Costs				
Delineation/Treatability Study	Lump Sum			$ 200,000
Remedial Design	(10% of Direct Costs)			$ 269,269
Mobilization/Misc. Site Prep	(5% of Direct Costs)			$ 134,635
Site Administration	(2% of Direct Costs)			$ 53,854
Permitting/Legal Costs	(2% of Direct Costs)			$ 53,854
Construction Management/Oversight	(10% of Direct Costs)			$ 269,269
			Subtotal - Indirect Costs	$ 980,881
			Contingency - 25% of Direct and Indirect Costs	$ 918,394
			Total Capital Costs	**$ 4,591,968**
Operation and Maintenance Costs				
			Subtotal - O&M Costs	
			Contingency Reserve - 25% of O&M Costs	
			Total Annual O&M Costs	
			Net Present Worth of Annual O&M Costs	**$ -**
Total Net Present Worth of Alternative				**$ 4,050,800**

Note: At time estimate was prepared, ENRCCI = 11392 (January 2020)

Estimated Annual O&M Cost
$ -
$ -
$ -
$ -