65061

COST ESTIMATES

FOR THE TUTU WELLS SITE

(SRA 2 - SRA 5 AND GRA 1 - GRA 4)

PREPARED BY de maximis, Inc.
Dated July 1996
(Revised Cost Estimates using 5% Discount Rate)

Table 5-4R. Cost Estimate - SRA 2 (Institutional Controls/Capping), TuTu Wells Site, St. Thomas, U.S. Virgin Islands.

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
CAPTIAL COSTS				
Deed Restrictions	1	L.S.	$10,000	$10,000
Pavement Restoration & Capping				
Curriculum Center	27	S.Y.	$20	$540
Texaco TuTu Service Station	25	S.Y.	$20	$500
Esso TuTu Service Station	41	S.Y.	$20	$820
Western Auto	117	S.Y.	$20	$2,340
O'Henry Dry Cleaners	44	S.Y.	$20	$880
		Subtotal		*$15,080*
		Administration & Legal Costs (20%)		*$3,016*
		Engineering Design (10%)		*$1,508*
		Construction Supervision (15%)		*$2,262*
		Contingency (25%)		*$3,770*
		TOTAL CAPITAL COST		***$25,636***
			SAY	$26,000
TOTAL CAPITAL COST - SRA 2				*$26,000*
TOTAL CAPITAL COST - SCP AT ESSO (In-Situ SVE)				*$150,000*
TOTAL CAPITAL COST - SCP AT TEXACO (In-Situ SVE)				*$135,000*
TOTAL CAPITAL COSTS - SRA 2 AND SCPs				***$311,000***
O&M (ANNUAL) COSTS - SRA 2				
Pavement & Cap Maintenance (Sealing, Patching)				
Curriculum Center	27	S.Y.	$3	$81
Texaco TuTu Service Station	25	S.Y.	$3	$75
Esso TuTu Service Station	41	S.Y.	$3	$123
Western Auto	117	S.Y.	$3	$351
O'Henry Dry Cleaners	44	S.Y.	$3	$132
		Subtotal		*$762*
		Administration & Legal Costs (15%)		*$114*
		Contingency (25%)		*$191*
		TOTAL ANNUAL O&M COSTS		*$1,067*
O&M (ANNUAL) PRESENT WORTH - SRA 2, YEAR 30 (5% discount rate)				$16,405
Pavement & Cap Replacement	1	L.S.	$5,000	$5,000
O&M PRESENT WORTH - SRA 2, YEAR 15 (5% discount rate)				$2,405
TOTAL O&M PRESENT WORTH - SRA 2				***$18,810***
			SAY	$19,000

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ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
O&M (ANNUAL) COSTS (TO YEAR 5) - SCPs (continued)				
SCP at Esso	1	L.S.	$20,000	$20,000
SCP at Texaco	1	L.S.	$67,000	$67,000
O&M (ANNUAL) PRESENT WORTH - SCPs, YEAR 5 (5% discount rate)				*$376,658*
TOTAL O&M PRESENT WORTH - SCPs (In-Situ SVE)			SAY	$377,000
TOTAL O&M PRESENT WORTH - SRA 2 AND SCPs				*$396,000*
GRAND TOTAL - SRA 2				*$45,000*
GRAND TOTAL - SRA 2 AND SCPs				*$707,000*

L.S. Lump Sum.
C.Y. Cubic Yard.
S.Y. Square Yard.
SRA Soil Remedial Alternative.
SCP Source Control Plan.
O&M Operation and Maintenance.

Source (design and O&M assumptions) used for cost estimate is presented in Appendix C.

Tutu Wellfield Site
FS Addendum
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Table 5-5R. Cost Estimate - SRA 3 (Institutional Controls/Capping/In-Situ SVE [Soil and Bedrock]/Excavation and Off-Site Disposal), TuTu Wells Site, St. Thomas, U.S. Virgin Islands.

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
CAPTIAL COSTS				
Deed Resrictions	1	L.S.	$10,000	$10,000
Pavement Restoration & Capping				
Curriculum Center	5	C.Y.	$70	$350
Excavation	5	C.Y.	$2,230	$11,150
Off-Site Disposal	5	C.Y.	$50	$250
Excavated soil sample analysis	1	EA.	$1,500	$1,500
Western Auto				
Excavation	181	C.Y.	$70	$12,670
Off-Site Disposal	146	C.Y.	$2,230	$325,580
Site Restoration	181	C.Y.	$50	$9,050
Excavated soil sample analysis	9	EA.	$1,500	$13,500
In-Situ SVE Systems				
Curriculum Center (in bedrock)	1	L.S.	$170,000	$170,000
O'Henry Dry Cleaners (in soils)	1	L.S.	$50,000	$50,000
O'Henry Dry Cleaners (in bedrock)	1	L.S.	$130,000	$130,000
		Subtotal		*$734,050*
		Administration & Legal Costs (20%)		*$146,810*
		Engineering Design (10%)		*$73,405*
		Construction Supervision (15%)		*$110,108*
		Contingency (25%)		*$183,513*
		TOTAL CAPITAL COST		*$1,247,886*
			SAY	$1,248,000
TOTAL CAPITAL COST - SRA 3				*$1,248,000*
TOTAL CAPITAL COST - SCP AT ESSO (In-Situ SVE)				*$150,000*
TOTAL CAPITAL COST - SCP AT TEXACO (In-Situ SVE)				*$135,000*
TOTAL CAPITAL COSTS - SRA 3 AND SCPs				*$1,533,000*
O&M (ANNUAL) COSTS - SRA 3				
In-Situ SVE Systems				
Curriculum Center (in bedrock)	1	L.S.	$35,000	$35,000
O'Henry Dry Cleaners (in soils)	1	L.S.	$14,500	$14,500
O'Henry Dry Cleaners (in bedrock)	1	L.S.	$35,000	$35,000
		Subtotal		*$84,500*
		Administration & Legal Costs (15%)		*$12,675*
		Contingency (25%)		*$21,125*
		TOTAL ANNUAL O&M COST		*$118,300*

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
O&M (ANNUAL) COSTS (TO YEAR 5) - SRA 3 (continued)				
O&M (ANNUAL) PRESENT WORTH - SRA 3, YEAR 1 TO 5 (5% discount rate)				$512,168
O&M (ANNUAL) COSTS (YEARS 6 TO 30) - SRA 3				
In-Situ SVE Systems				
Curriculum Center (in bedrock)	1	L.S.	$35,000	$35,000
O'Henry Dry Cleaners (in bedrock)	1	L.S.	$35,000	$35,000
Subtotal				*$70,000*
Administration & Legal Costs (15%)				*$10,500*
Contingency (25%)				*$17,500*
TOTAL ANNUAL O&M COST				***$98,000***
O&M (ANNUAL) PRESENT WORTH - SRA 3, YEAR 6 TO 30 (5% discount rate)				$1,082,200
EQUIPMENT INSTALLATION AND MATERIAL REPLACEMENT - SRA 3				
Major Equipment	1	L.S.	$160,000	$160,000
O&M PRESENT WORTH (YEAR 15) 5% discount rate				$76,960
Minor Equipment	1	L.S.	$5,000	$5,000
O&M PRESENT WORTH (YEARS 5, 10, 15, 20, 25) 5% discount rate				$12,750
TOTAL O&M PRESENT WORTH - SRA 3				$1,685,000
O&M (ANNUAL) COSTS (TO YEAR 5) - SCPs				
SCP at Esso	1	L.S.	$20,000	$20,000
SCP at Texaco	1	L.S.	$67,000	$67,000
O&M (ANNUAL) PRESENT WORTH - SCPs, (YEAR 5) 5% discount rate				$376,658
TOTAL O&M PRESENT WORTH - SCPs (In-Situ SVE)			*SAY*	***$377,000***
TOTAL O&M PRESENT WORTH - SRA AND SCPs				***$2,062,000***
GRAND TOTAL - SRA 3				***$2,933,000***
GRAND TOTAL - SRA AND SCPs				***$3,595,000***

L.S. Lump Sum.
EA. Each.
S.Y. Square Yard.
C.Y. Cubic Yard.
SVE Soil Vapor Extraction.
O&M Operation and Maintenance.
SRA Soil Remediation Alternative.
SCP Source Control Plan.

Source (design and O&M assumptions) used for cost estimate is presented in Appendix C.

Table 5-6R. Cost Estimate - SRA 4 (Institutional Controls/Capping/Ex-Situ SVE/In-Situ SVE/Excavation and On-Site Disposal), TuTu Wells Site, St. Thomas, U.S. Virgin Islands.

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
CAPITAL COSTS				
Deed Restrictions	1	L.S.	$10,000	$10,000
Pavement Restoration & Capping				
Western Auto				
Excavation	181	C.Y.	$70	$12,670
Off-Site Disposal	146	C.Y.	$2,230	$325,580
Site Restoration	181	C.Y.	$50	$9,050
Excavated soil sample analysis	9	EA.	$1,500	$13,500
Ex-Situ SVE Systems				
Curriculum Center	1	L.S.	$10,000	$10,000
O'Henry Dry Cleaners	1	L.S.	$35,000	$35,000
In-Situ SVE Systems				
Curriculum Center (in bedrock)	1	L.S.	$170,000	$170,000
O'Henry Dry Cleaners (in bedrock)	1	L.S.	$130,000	$130,000
		Subtotal		*$715,800*
		Administration & Legal Costs (20%)		*$143,160*
		Engineering Design (10%)		*$71,580*
		Construction Supervision (15%)		*$107,370*
		Contingency (25%)		*$178,950*
		TOTAL CAPITAL COST		***$1,216,860***
			SAY	**$1,217,000**
TOTAL CAPITAL COST - SRA 4				*$1,217,000*
TOTAL CAPITAL COST - SCP AT ESSO (In-Situ SVE)				*$150,000*
TOTAL CAPITAL COST - SCP AT TEXACO (In-Situ SVE)				*$135,000*
TOTAL CAPITAL COSTS - SRA 4 AND SCPs				*$1,502,000*
O&M (ANNUAL) COSTS - SRA 4				
Ex-Situ SVE Systems				
Curriculum Center	1	L.S.	$12,000	$12,000
O'Henry Dry Cleaners	1	L.S.	$12,000	$12,000
In-Situ SVE Systems				
Curriculum Center (in bedrock)	1	L.S.	$35,000	$35,000
O'Henry Dry Cleaners (in bedrock)	1	L.S.	$35,000	$35,000
		Subtotal		*$94,000*
		Administration & Legal Costs (15%)		*$14,100*
		Contingency (25%)		*$23,500*
TOTAL (ANNUAL) O&M COSTS (YEARS 1 AND 2) - SRA 4				*$131,600*

ITEMS	QUANTITY	UNIT	UNIT COST	UNIT COST
O&M (ANNUAL) COSTS (YEARS 1 AND 2) - SRA 4 (continued)				
		O&M PRESENT WORTH (Years 1 and 2) (5% discount rate)		**$251,803**
In-Situ SVE Systems			**SAY**	**$250,000**
Curriculum Center (in bedrock)	1	L.S.	$35,000	$35,000
O'Henry Dry Cleaners (in bedrock)	1	L.S.	$35,000	$35,000
		Subtotal		*$70,000*
		Administration & Legal Costs (15%)		*$10,500*
		Contingency (25%)		*$17,500*
TOTAL (ANNUAL) O&M COSTS (YEARS 3 TO 30) - SRA 4				**$98,000**
		O&M PRESENT WORTH (Years 3 to 30) (5% discount rate)		$1,318,977
			SAY	**$1,319,000**
EQUIPMENT INSTALLATION AND MATERIAL REPLACEMENT - SRA 4				
Major Equipment	1	L.S.	$160,000	$160,000
O&M PRESENT WORTH (YEAR 15) 5% discount rate				**$76,960**
Minor Equipment	1	L.S.	$5,000	$5,000
O&M PRESENT WORTH (YEARS 5, 10, 15, 20, 25) 5% discount rate				**$12,750**
TOTAL O&M PRESENT WORTH - SRA 4				$1,660,490
			SAY	**$1,661,000**
O&M (ANNUAL) COSTS (TO YEAR 5) - SCPs				
SCP at Esso	1	L.S.	$20,000	$20,000
SCP at Texaco	1	L.S.	$67,000	$67,000
O&M (ANNUAL) PRESENT WORTH - SCPs, (YEAR 5) 5% discount rate				$376,658
TOTAL O&M PRESENT WORTH - SCPs (In-Situ SVE)			***SAY***	***$377,000***
TOTAL O&M PRESENT WORTH - SRA 4 AND SCPs				***$2,038,000***
GRAND TOTAL - SRA 4				***$2,878,000***
GRAND TOTAL - SRA AND SCPs				***$3,540,000***

L.S. Lump Sum.
EA. Each.
S.Y. Square Yard.
C.Y. Cubic Yard.
SVE Soil Vapor Extraction.
O&M Operation and Maintenance.
SRA Soil Remediation Alternative.
SCP Source Control Plan.

Tutu Wellfield Site
FS Addendum
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de maximis, inc.

Source (design and O&M assumptions) used for cost estimate is presented in Appendix C.

Table 5-7R. Cost Estimate - SRA 5 (Institutional Controls/Capping/In-Situ SVE [Bedrock]/Excavation and Off-Site Disposal), TuTu Wells Site, St. Thomas, U.S. Virgin Islands.

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
CAPITAL COSTS				
Deed Restrictions	1	L.S.	$10,000	$10,000
Excavation	305	C.Y.	$70	$21,350
Off-Site Disposal	270	C.Y.	$2,230	$602,100
Site Restoration	305	C.Y.	$50	$15,250
Excavated soil sample analysis	16	EA.	$1,500	$24,000
In-Situ SVE Systems				
Curriculum Center	1	L.S.	$170,000	$170,000
O'Henry Dry Cleaners	1	L.S.	$130,000	$130,000
		Subtotal		*$972,700*
		Administration & Legal Costs (20%)		*$291,810*
		Engineering Design (10%)		*$97,270*
		Construction Supervision (15%)		*$145,905*
		Contingency (25%)		*$243,175*
		TOTAL CAPITAL COST		***$1,750,860***
			SAY	**$1,750,000**
TOTAL CAPITAL COST - SRA 5				*$1,750,000*
TOTAL CAPITAL COST - SCP AT ESSO (In-Situ SVE)				*$150,000*
TOTAL CAPITAL COST - SCP AT TEXACO (In-Situ SVE)				*$135,000*
TOTAL CAPITAL COSTS - SRA 5 AND SCPs				*$2,035,000*
O&M (ANNUAL) COSTS - SRA 5				
In-Situ SVE Systems				
Curriculum Center (in bedrock)	1	L.S.	$35,000	$35,000
O'Henry Dry Cleaners (in bedrock)	1	L.S.	$35,000	$35,000
		Subtotal		*$70,000*
		Administration & Legal Costs (15%)		*$10,500*
		Contingency (25%)		*$17,500*
TOTAL (ANNUAL) O&M COSTS				*$98,000*
O&M PRESENT WORTH - SRA 5 (YEAR 30) 5% discount rate				$1,319,000
EQUIPMENT INSTALLATION AND MATERIAL REPLACEMENT - SRA 4				
Major Equipment	1	L.S.	$160,000	$160,000
O&M PRESENT WORTH (YEAR 15) 5% discount rate				$76,960
Minor Equipment	1	L.S.	$5,000	$5,000
O&M PRESENT WORTH (YEARS 5, 10, 15, 20, 25) 5% discount rate				$12,750
TOTAL O&M PRESENT WORTH - SRA 5				$1,408,710
			SAY	**$1,409,000**

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
O&M (ANNUAL) COSTS (TO YEAR 5) - SCPs (continued)				
SCP at Esso	1	L.S.	$20,000	$20,000
SCP at Texaco	1	L.S.	$67,000	$67,000
O&M (ANNUAL) PRESENT WORTH - SCPs, (YEAR 5) 5% discount rate				$376,660
TOTAL O&M PRESENT WORTH - SCPs (In-Situ SVE)			*SAY*	*$377,000*
TOTAL O&M PRESENT WORTH - SRA 5 AND SCPs				*$1,786,000*
GRAND TOTAL - SRA 5				*$3,159,000*
GRAND TOTAL - SRA AND SCPs				*$3,821,000*

L.S. Lump Sum.
EA. Each.
S.Y. Square Yard.
C.Y. Cubic Yard.
SVE Soil Vapor Extraction.
O&M Operation and Maintenance.
SRA Soil Remediation Alternative.
SCP Source Control Plan.

Source (design and O&M assumptions) used for cost estimate is presented in Appendix C.

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Table 5-8R. Cost Estimate - GRA 1 (No Action/Institutional Controls), TuTu Wells Site, St. Thomas, U.S. Virgin Islands.

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
<u>CAPITAL COSTS</u>				
Deed Restrictions	1	L.S.	$10,000	$10,000
		Subtotal		*$10,000*
		Administration & Legal Costs (20%)		*$2,000*
		Contingency (25%)		*$2,500*
		TOTAL CAPITAL COST - TREATMENT		$14,500
TOTAL CAPITAL COST - GRA 1			***SAY***	***$15,000***
<u>O&M (ANNUAL) COSTS</u>				
Groundwater Monitoring	2	Sample rounds/year	$32,000	$64,000
		Subtotal		*$64,000*
		Administration & Legal Costs (15%)		*$9,600*
		Contingency (25%)		*$16,000*
TOTAL (ANNUAL) O&M COSTS				*$89,600*
O&M PRESENT WORTH, YEAR 30 (5% discount rate)				$1,377,372
			SAY	*$1,377,000*
TOTAL O&M PRESENT WORTH - GRA 1				***$1,377,000***
GRAND TOTAL -GRA 1				***$1,392,000***

GRA Groundwater Remedial Alternative.
L.S. Lump Sum.
O&M Operation and Maintenance.

Source (design and O&M assumptions) used for cost estimates are presented in Appendix C.

Tutu Wellfield Site
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Table 5-9R. Cost Estimate - GRA 2 (Institutional Controls/Source Containment/POET Systems/Treatment/Discharge), TuTu Wells Site, St. Thomas, U.S. Virgin Islands.

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
CAPITAL COSTS				
Deed Restrictions	1	L.S.	$10,000	$10,000
Site Preparation/Mobilization	1	L.S.	$40,000	$40,000
Well Decommissioning	12	EA.	$1,000	$12,000
Site Acquisition				
Groundwater Extraction System				
Recovery Well Installation				
Submersible Pumps (installed)	2	EA.	$38,000	$76,000
4"-6" Double-Walled PVC Pipe	2	EA.	$6,000	$12,000
(installed, with leak detection)	2,300	L.F.	$65	$149,500
Pre-Treatment (PO4)	1	L.S.	$15,000	$15,000
Low Profile Air Stripper (installed)	1	L.S.	$25,000	$25,000
Thermal Oxidizer (installed, if required)	1	L.S.	$185,000	$185,000
Liquid Phase Carbon Treatment System (installed, if required)	1	L.S.	$35,000	$35,000
Process Pumps Piping (installed)	4	EA.	$5,000	$20,000
	200	L.F.	$10	$2,000
Discharge Pumps Piping (installed)	2	EA.	$10,000	$20,000
	50	L.F.	$30	$1,500
Treatment Building (installed)	600	S.F.	$60	$36,000
Electric				
Electric Panel and Plant Wiring	1	L.S.	$50,000	$50,000
Conduit to Wells	2,300	L.F.	$2	$4,600
POET Systems (includes new well pump)				
GAC Unit (1-10 gpm)	5	EA.	$5,000	$25,000
General Contractor	1	L.S.	$80,000	$80,000
		Subtotal		*$823,600*
		Administration & Legal Costs (20%)		*$164,720*
		Engineering Design (10%)		*$82,360*
		Construction Supervision (15%)		*$123,450*
		Contingency (25%)		*$205,900*
		TOTAL CAPITAL COST - TREATMENT		**$1,400,120**
TOTAL CAPITAL COST - GRA 2				*$1,401,000*
TOTAL CAPITAL COST - SCP AT ESSO				*$100,000*
TOTAL CAPITAL COST - SCP AT TEXACO				*$865,000*
TOTAL CAPITAL COST - GRA 2 AND SCPs				*$2,366,000*

O&M (ANNUAL) COSTS				
Groundwater Monitoring	2	Sample rounds/year	$32,000	$64,000
Electricity (Avg)	240,000	Kilowatt-hour	$0.10	$24,000
Chemical Usage (PO4)	1	L.S.	$10,000	$10,000
Supplemental Fuel (Propane)	1	L.S.	$25,000	$25,000
Carbon Replacement	2,000	Pounds of carbon	$6	$12,000
Carbon Replacement (POET)	1,000	Pounds of carbon	$6	$6,000
System Operation (one person - full time)	1	L.S.	$35,000	$35,000
POET System Monitoring (Avg)	60	EA.	$1,000	$60,000
Treatment System Monitoring (Avg)	12	EA.	$1,000	$12,000
		Subtotal		*$248,000*
		Administration & Legal Costs (15%)		*$37,200*
		Contingency (25%)		*$62,000*
TOTAL (ANNUAL) O&M COSTS				*$347,200*
O&M PRESENT WORTH - GRA 2, YEAR 30 (5% discount rate)				**$5,377,000**
EQUIPMENT REPLACEMENT - GRA 2				
Major Equipment Replacement	1	L.S.	$260,000	$260,000
O&M PRESENT WORTH, YEAR 15 (5% discount rate)				**$125,060**
Minor Equipment Replacement	1	L.S.	$25,000	$25,000
O&M PRESENT WORTH, YEARS 5, 10, 15, 20, 25 (5% discount rate)				**$63,765**
TOTAL O&M PRESENT WORTH GRA 2				**$5,526,000**
O&M (ANNUAL) COSTS (TO YEAR 5) - SCPs				
SCP at Esso	1	L.S.	$60,000	$60,000
SCP at Texaco	1	L.S.	$101,000	$101,000
TOTAL ANNUAL O&M COST				**$161,000**
O&M PRESENT WORTH - SCPs, YEAR 5 (5% discount rate)				$697,000
O&M PRESENT WORTH - GRA 2 and SCPs				**$6,223,000**
GRAND TOTAL - GRA 2				$6,927,000
GRAND TOTAL - GRA 2 AND SCPs				$8,589,000

L.F. Linear Feet.
S.F. Square Feet.
L.S. Lump Sum.
EA. Each.
gpm Gallons Per Minute.
POET Point-of-Entry Treatment.
GAC Granular Activated Carbon.
PO4 Orthophosphates.
O&M Operation and Maintenance.
PVC Polyvinyl Chloride.
SCP Source Control Plan.
GRA Groundwater Remedial Alternative.

Source (design and O&M assumptions) for cost estimates is presented in Appendix C.
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Tutu Wellfield Site
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Table 5-10R. Cost Estimate - GRA 3 (Institutional Controls/Plume Containment/Treatment/Discharge), TuTu Wells Site, St. Thomas, U.S. Virgin Islands.

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
CAPITAL COSTS				
Deed Restrictions	1	L.S.	$10,000	$10,000
Site Preparation/Mobilization	1	L.S.	$40,000	$40,000
Well Decommissioning	17	EA.	$1,000	$17,000
Site Acquisition	1	L.S.	$25,000	$25,000
Groundwater Extraction System				
Recovery Well Installation				
Submersible Pumps (installed)	3	EA.	$38,000	$114,000
4"-6" Double-Walled PVC Pipe	3	EA.	$6,000	$18,000
(installed, with leak detection)	3,300	L.F.	$65	$214,500
Pre-Treatment (PO4)	1	L.S.	$15,000	$15,000
Low Profile Air Stripper (installed)	1	L.S.	$25,000	$25,000
Thermal Oxidizer (installed, if required)	1	L.S.	$185,000	$185,000
Liquid Phase Carbon Treatment System (installed, if required)	1	L.S.	$35,000	$35,000
Process Pumps Piping (installed)	4	EA.	$5,000	$20,000
	200	L.F.	$10	$2,000
Discharge Pumps Piping (installed)	2	EA.	$10,000	$20,000
	50	L.F.	$30	$1,500
Treatment Building (installed)	600	S.F.	$60	$36,000
Electric				
Electric Panel and Plant Wiring	1	L.S.	$50,000	$50,000
Conduit to Wells	3,300	L.F.	$2	$6,600
General Contractor	1	L.S.	$90,000	$90,000
		Subtotal		*$924,600*
		Administration & Legal Costs (20%)		*$184,920*
		Engineering Design (10%)		*$92,460*
		Construction Supervision (15%)		*$138,690*
		Contingency (25%)		*$231,150*
		TOTAL CAPITAL COST - TREATMENT		**$1,571,820**
TOTAL CAPITAL COST - GRA 3				*$1,572,000*
TOTAL CAPITAL COST - SCP AT ESSO				*$100,000*
TOTAL CAPITAL COST - SCP AT TEXACO				*$865,000*
TOTAL CAPITAL COST - GRA 3 AND SCPs				*$2,537,000*

<u>O&M (ANNUAL) COSTS - GRA 3</u>				
Groundwater Monitoring	2	Sample rounds/year	$32,000	$64,000
Electricity (Avg)	270,000	Kilowatt-hour	$0.10	$24,000
Chemical Usage (PO4)	1	L.S.	$10,000	$10,000
Supplemental Fuel (Propane)	1	L.S.	$25,000	$25,000
Carbon Replacement	2,000	Pounds of carbon	$6	$12,000
System Operation (one person - full time)	1	L.S.	$35,000	$35,000
Treatment System Monitoring (Avg)	12	EA.	$1,000	$12,000
		Subtotal		*$185,000*
		Administration & Legal Costs (15%)		*$27,750*
		Contingency (25%)		*$46,250*
TOTAL (ANNUAL) O&M COSTS				*$259,000*
O&M PRESENT WORTH - GRA 3, YEAR 30 (5% discount rate)				**$3,982,000**
<u>EQUIPMENT REPLACEMENT - GRA 3</u>				
Major Equipment Replacement	1	L.S.	$260,000	$260,000
O&M PRESENT WORTH, YEAR 15 (5% discount rate)				$125,000
Minor Equipment Replacement	1	L.S.	$49,035	$49,035
O&M PRESENT WORTH, YEARS 5, 10, 15, 20, 25 (5% discount rate)				$125,000
TOTAL O&M PRESENT WORTH GRA 3				**$4,232,000**
<u>O&M (ANNUAL) COSTS (TO YEAR 5) - SCPs</u>				
SCP at Esso	1	L.S.	$60,000	$60,000
SCP at Texaco	1	L.S.	$101,000	$101,000
TOTAL ANNUAL O&M COST				$161,000
O&M PRESENT WORTH - SCPs, YEAR 5 (5% discount rate)				**$697,000**
O&M PRESENT WORTH - GRA 3 and SCPs				**$4,929,000**
GRAND TOTAL - GRA 3				**$5,804,000**
GRAND TOTAL - GRA 3 and SCPs				**$7,466,000**

L.F. Linear Feet.
S.F. Square Feet.
L.S. Lump Sum.
EA. Each.
PVC Polyvinyl Chloride.
PO4 Orthophosphates.
O&M Operation and Maintenance.
SCP Source Control Plan.
GRA Groundwater Remedial Alternative.
Source (design and O&M assumptions) for cost estimates is presented in Appendix C.

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Table 5-11R. Cost Estimate - GRA 4 (Institutional Controls/Source and Plume Containment/Treatment/Discharge), TuTu Wells Site, St. Thomas, U.S. Virgin Islands.

ITEMS	QUANTITY	UNIT	UNIT COST	TOTAL COST
CAPITAL COSTS				
Deed Restrictions	1	L.S.	$10,000	$10,000
Site Preparation/Mobilization	1	L.S.	$40,000	$40,000
Well Decommissioning	17	EA.	$1,000	$17,000
Site Acquisition	1	L.S.	$25,000	$25,000
Groundwater Extraction System				
Recovery Well Installation				
Submersible Pumps (installed)	5	EA.	$38,000	$190,000
4"-6" Double-Walled PVC Pipe	5	EA.	$6,000	$30,000
(installed, with leak detection)	5,200	L.F.	$65	$338,500
Pre-Treatment (PO4)	1	L.S.	$25,000	$25,000
Low Profile Air Stripper (installed)	1	L.S.	$40,000	$40,000
Thermal Oxidizer (installed, if required)	1	L.S.	$250,000	$250,000
Liquid Phase Carbon Treatment System (installed, if required)	1	L.S.	$50,000	$50,000
Process Pumps Piping (installed)	4	EA.	$5,000	$20,000
	200	L.F.	$10	$2,000
Discharge Pumps Piping (installed)	5	EA.	$10,000	$20,000
	20	L.F.	$30	$1,500
Treatment Building (installed)	600	S.F.	$60	$36,000
Electric				
Electric Panel and Plant Wiring	1	L.S.	$70,000	$70,000
Conduit to Wells	5,200	L.F.	$2	$10,400
General Contractor	1	L.S.	$125,000	$125,000
		Subtotal		*$1,2992,900*
		Administration & Legal Costs (20%)		*$259,980*
		Engineering Design (10%)		*$129,990*
		Construction Supervision (15%)		*$194,985*
		Contingency (25%)		*$324,975*
		TOTAL CAPITAL COST - TREATMENT		**$2,209,830**
TOTAL CAPITAL COST - GRA 4				*$2,210,000*
TOTAL CAPITAL COST - SCP AT ESSO				*$100,000*
TOTAL CAPITAL COST - SCP AT TEXACO				*$865,000*
TOTAL CAPITAL COST - GRA 4 AND SCPs				*$3,175,000*

<u>O&M (ANNUAL) COSTS - GRA 4</u>				
Groundwater Monitoring	2	Sample rounds/year	$32,000	$64,000
Electricity (Avg)	270,000	Kilowatt-hour	$0.10	$24,000
Supplemental Fuel (Propane)	1	L.S.	$38,000	$38,000
Chemical Usage (PO4)	1	L.S.	$10,000	$10,000
Carbon Replacement	3,000	Pounds of carbon	$6	$18,000
System Operation (one person - full time)	1	L.S.	$35,000	$35,000
Treatment System Monitoring (Avg)	12	EA.	$1,000	$12,000
		Subtotal		*$224,000*
		Administration & Legal Costs (15%)		*$33,600*
		Contingency (25%)		*$56,000*
TOTAL (ANNUAL) O&M COSTS				*$313,600*
O&M PRESENT WORTH - GRA 5, YEAR 30 (5% discount rate)				$4,821,000
<u>EQUIPMENT REPLACEMENT - GRA 4</u>				
Major Equipment Replacement	1	L.S.	$365,000	$365,000
O&M PRESENT WORTH, YEAR 15 (5% discount rate)				**$176,000**
Minor Equipment Replacement	1	L.S.	$63,490	$63,490
O&M PRESENT WORTH, YEARS 5, 10, 15, 20, 25 (5% discount rate)				$162,000
TOTAL O&M PRESENT WORTH GRA 4				**$5,159,000**
<u>O&M (ANNUAL) COSTS (TO YEAR 5) - SCPs</u>				
SCP at Esso	1	L.S.	$60,000	$60,000
SCP at Texaco	1	L.S.	$101,000	$101,000
		TOTAL ANNUAL O&M COST		$161,000
O&M PRESENT WORTH - SCPs, YEAR 5 (5% discount rate)				$697,000
O&M PRESENT WORTH - GRA 4 and SCPs				**$5,856,000**
GRAND TOTAL - GRA 4				**$7,369,000**
GRAND TOTAL - GRA 4 and SCPs				**$9,031,000**

L.F.	Linear Feet.
S.F.	Square Feet.
L.S.	Lump Sum.
EA.	Each.
PVC	Polyvinyl Chloride.
GRA	Groundwater Remedial Alternative.
PO4	Orthophosphates.
O&M	Operation and Maintenance.
SCP	Source Control Plan.

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Source (design and O&M assumptions) for cost estimates is presented in Appendix C.

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Table 5-12R. Cost Comparison of Remedial Alternatives, TuTu Wells Site, St. Thomas, U.S. Virgin Islands.

Remedial Alternative	*Capital Cost*	*Present Worth O&M*	*Total Cost*
SRA 1	$15,000	NA	$15,000
SRA 2 and SCPs	$311,000	$396,000	$707,000
SRA 3 and SCPs	$1,533,000	$2,062,000	$3,595,000
SRA 4 and SCPs	$1,502,000	$2,038,000	$3,540,000
SRA 5 and SCPs	$2,035,000	$1,786,000	$3,821,000
GRA 1	$15,000	$1,377,000	$1,392,000
GRA 2 and SCPs	$2,366,000	$6,223,000	$8,589,000
GRA 3 and SCPs	$2,537,000	$4,929,000	$7,466,000
GRA 4 and SCPs	$3,175,000	$5,856,000	$9,031,000

SRA Soil Remedial Alternative.
SCPs Source Control Plans for the Texaco and Esso properties.
GRA Groundwater Remedial Alternative.
O&M Operations and Maintenance.

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