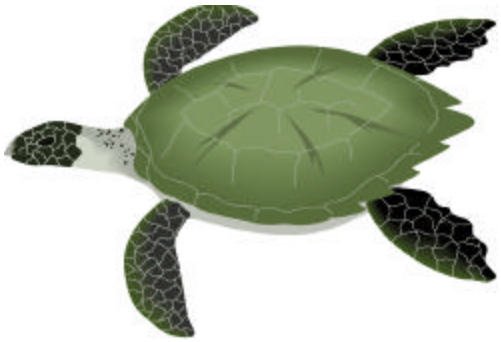
United States Air Force
15th Air Base Wing
Environmental Restoration Program

ENGINEERING EVALUATION/COST ANALYSIS (EE/CA) REPORT FOR SITE LF01

Operable Unit 1,
Bellows Air Force Station, Oahu, Hawaii



Attachment C

Estimated Costs of Removal Action Alternatives for Site LF01

Attachment C: Estimated Costs of Removal Action Alternatives for Site LF01

As described in Section 4.0 of this EE/CA Report, three removal action alternatives have been developed for Site LF01. Tables C-1 through C-3 in this attachment present detailed cost estimates for each of three alternatives**.**

Cost is one of the criteria used to evaluate the alternatives in Sections 4.3 and 4.4. Estimates of the capital costs, annual operation and maintenance (O&M) costs, and present worth costs for the alternatives are included.

Overview of Cost Estimates

Cost estimates were prepared to aid in the evaluation of alternatives using information currently available. Final project costs will depend on actual labor and material costs, actual site conditions, competitive market conditions, the final project scope, the final project schedule, the firm selected for engineering, and other variables. As a result, the final project costs will vary from these estimates. Because of these factors, financial needs must be carefully reviewed before specific financial decisions are made or final removal action budgets are established.

The cost estimates are order-of-magnitude cost estimates with an intended accuracy of +50 to –30 percent. This range applies only to the alternatives defined in Section 4.3 and does not account for major changes in the scope of any alternative. Each technology "selection" in the EE/CA Report is intended not to limit flexibility during design, but to provide a basis for making cost estimates for the interim removal action alternatives for Site LF01. The actual removal action and cost estimates will be determined during selection of the remedy and during the final design.

Cost estimates include total capital costs and annual O&M costs, which are also represented as the total present worth of each alternative. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

Capital Costs

Capital costs are the direct and indirect costs required to initiate and implement the components of a removal action. Capital costs include only those expenditures needed to design, construct, and implement a removal action. They exclude the costs needed to maintain a removal action throughout its design life.

Installation costs include items such as costs for construction, site development, and buildings and services. Construction costs include costs needed to prepare for or implement

the actions, such as the costs for materials, labor, and equipment. Decontamination facilities, health and safety equipment, and costs associated with confirmatory sampling have also been included.

Indirect capital costs include engineering, supervision during construction, licenses and permits, and other services necessary to carry out a removal action. They are not incurred as part of the removal action, but instead are ancillary to implementation and construction costs. Indirect capital costs include bid and scope contingencies that reduce the likelihood of a cost overrun. Bid contingencies cover unknowns associated with the construction of the project such as material or labor shortages. Scope contingencies include provisions for changes that normally occur as part of the final design and implementation.

Annual Operating Costs

Annual operating costs for a removal action include the costs incurred each year following construction or implementation of a project. For the purposes of the economic evaluation, they are assumed to be paid at the end of the year in which they occur.

Annual O&M costs are only applicable to Alternative 3, which includes O&M of the soil/vegetative cover and LTM of groundwater in the vicinity of Site LF01. O&M of the cover is assumed to occur once every 3 years for up to 15 years (five O&M events), and LTM of groundwater is assumed to occur once each year for 5 years. Present worth analyses provide a method for comparing costs that occur over different periods of time by discounting future costs to the present year. The present worth analyses were calculated assuming 3 percent interest rates, and are detailed in Tables C-4 through C-7 (for LTM of groundwater) and C-8 through C-12 (for O&M of the cover). Future costs are not escalated for inflation.

TABLE C-1
Order-of-Magnitude Cost Estimate
Alternative 1: No Action
EE/CA for Site LF01, Bellows AFS

Estimated Costs	Quantity	Units	Estimated Cost per Unit	Total Estimated Cost, Alternative 1
Direct/Indirect				**$0**
O&M/LTM			(in 2001 Dollars)	**$0**
TOTAL ESTIMATED PRESENT WORTH OF DIRECT/INDIRECT AND O&M/LTM COSTS				**$0**

TABLE C-2

Order-of-Magnitude Cost Estimate

Alternative 2: Soil/Landfill Materials Excavation and Disposal/Recycling

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
Direct/Indirect				
Remedial Design/Remedial Action (Year 0)				
Work Plan/RD/UXO Hazard Avoidance Plan	1	Each	$75,000	$75,000
Community Relations Support	1	Each	$5,000	$5,000
Mobilization & Demobilization	1	Lump Sum	$16,800	$16,800
Site Clearing & Grubbing	1	Lump Sum	$30,000	$30,000
Well Abandonment (8 wells)	3	Days	$4,500	$13,500
Temporary Erosion & Sedimentation Control	1	Lump Sum	$10,000	$10,000
Decon Station	1	Lump Sum	$10,000	$10,000
UXO Oversight	30	Person-Days	$1,000	$30,000
Excavation Subcontractor (excavate soil/landfill materials)	8,500	Cubic Yards	$15	$127,500
Concrete Transport (20%)	2,550	Ton	$10	$25,500
Concrete Recycling	2,550	Ton	$5	$12,750
Metal Transport (20%)	2,550	Ton	$10	$25,500
Metal Recycling	2,550	Ton	$5	$12,750
Landfill Materials Transport to Local Landfill (20%)	2,550	Ton	$10	$25,500
Landfill Materials Disposal - Local Landfill	2,550	Ton	$5	$12,750
Soil/Landfill Materials Transport to RCRA Landfill (40%)	5,100	Ton	$390	$1,987,000
Soil/Landfill Materials Disposal - RCRA Landfill	5,100	Ton	$250	$1,275,000
Site Labor (oversight)	30	Person-Days	$1,000	$30,000
Field Equipment Costs	30	Days	$500	$15,000
Import Cover Material	3,400	Cubic Yards	$20	$68,000
Import Top Soil	900	Cubic Yards	$30	$27,000
Excavation Subcontractor (place clean fill and top soil)	4,300	Cubic Yards	$10	$43,000
Revegetation	45,800	Square Feet	$0.1	$4,580
Oversight Report	1	Lump Sum	$15,000	$15,000
Soil Disposal Profile Sampling (Year 0)				
Sampling and Analysis Plan, IDW, and H&S Plan	1	Each	$25,000	$25,000
Site Labor (2 person crew)	2	Person-Week	$3,500	$7,000
Field Equipment Costs	5	Days	$500	$2,500
Sample Shipping	300	pounds	$2	$600
Laboratory Analytical Costs (TCLP Metals)	40	Each	$200	$8,000
Data Management/Validation	1	Round	$5,000	$5,000
Reporting	1	Each	$10,000	$10,000
Confirmation Sampling (Year 0)				
Sampling and Analysis Plan, IDW, and H&S Plan	1	Each	$25,000	$25,000
Site Labor (2 person crew)	2	Person-Week	$3,500	$7,000
Field Equipment Costs	5	Days	$500	$2,500
Sample Shipping	200	pounds	$2	$400
Laboratory Analytical Costs (lead, mercury, and zinc)	25	Each	$100	$2,500
Data Management/Validation	1	Round	$5,000	$5,000
Reporting	1	Each	$10,000	$10,000
ERPIMS	1	Each	$6,000	$6,000
SUBTOTAL DIRECT/INDIRECT COSTS				**$4,013,630**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of direct/indirect costs)				$401,363
Program Admin. & Support (2% of direct/indirect costs)				$80,273
Contingency (15% of total costs)				$674,290
TOTAL DIRECT/INDIRECT COSTS			(in 2001 Dollars)	**$5,171,100**
TOTAL O&M /LTM DIRECT COSTS				**$0**
TOTAL ESTIMATED PRESENT WORTH OF DIRECT/INDIRECT AND O&M/LTM COSTS				**$5,171,100**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-3

Order-of-Magnitude Cost Estimate

Alternative 3: Soil/Vegetative Cover with Long-Term Monitoring of Groundwater

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
Direct/Indirect				
Design and Construct Cover System (Year 0)				
Work Plan/RD	1	Each	$100,000	$100,000
Community Relations Support	1	Each	$5,000	$5,000
Mobilization & Demobilization	1	Lump Sum	$13,700	$13,700
Site Clearing/Grubbing	1	Lump Sum	$30,000	$30,000
Temporary Erosion & Sedimentation Control	1	Lump Sum	$10,000	$10,000
Other Site Control Measures (e.g., drainage, signs, gates)	1	Lump Sum	$20,000	$20,000
Site Labor (oversight)	30	Person-Day	$1,000	$30,000
Import Cover Material	4,500	Cubic Yards	$20	$90,000
Import Top Soil	1,100	Cubic Yards	$30	$33,000
Excavation Subcontractor (place clean fill)	5,600	Cubic Yards	$10	$56,000
Revegetation	55,800	Square Feet	$0.10	$5,580
Oversight Reports	1	Lump Sum	$15,000	$15,000
Prepare As-builts	1	Lump Sum	$15,000	$15,000
Prepare Excavation Management Plan	1	Each	$50,000	$50,000
Initial O&M/LTM Planning/Implementation (Year 0)				
O&M Plan for Cover	1	Each	$15,000	$15,000
Sampling and Analysis Plan, IDW, and H&S Plan	1	Each	$15,000	$15,000
IDW Staging Area	1	Lump Sum	$1,000	$1,000
LTM of Groundwater (Year 0)				
Mobilization/Demobilization	1	LS	$2,000	$2,000
Site Labor (sample 8 wells)	1	Rounds	$10,000	$10,000
Field Equipment Costs	5	Days	$1,000	$5,000
Sample Shipping	300	pounds	$2	$600
Laboratory Analytical Costs (full suite)	10	Each	$1,500	$15,000
Data Management/Validation	1	Rounds	$5,000	$5,000
Annual Report	1	Each	$10,000	$10,000
ERPIMS	1	Each	$5,000	$5,000
Update Plans	1	Each	$2,000	$2,000
SUBTOTAL DIRECT/INDIRECT COSTS				**$558,880**
MAPs Update	1	Lump Sum	$500	$500
Administrative Record	1	Lump Sum	$1,000	$1,000
Project Management (10% of direct/indirect costs)				$55,888
Program Admin & Support (2% of direct/indirect costs)				$11,178
Contingency (20% of total direct/indirect costs)				$125,189
O&M and LTM (Years 1 through 15)				
Year 1 -- LTM of Groundwater		[see Table C4 for details]		**$65,329**
Year 2 -- LTM of Groundwater		[see Table C-5 for details]		**$62,578**
Year 3 -- LTM of Groundwater		[see Table C-6 for details]		**$59,140**
Year 3 -- O&M of Cover		[see Table C-7 for details]		**$11,885**
Year 4 -- LTM of Groundwater		[see Table C-8 for details]		**$56,389**
Year 6 -- O&M of Cover		[see Table C-9 for details]		**$10,365**
Year 9 -- O&M of Cover		[see Table C-10 for details]		**$8,845**
Year 12 -- O&M of Cover		[see Table C-11 for details]		**$7,739**
Year 15 -- O&M of Cover, Well Abandonment		[see Table C-12 for details]		**$14,617**
TOTAL PRESENT WORTH COSTS OF O&M AND LTM FOR YRS 1-15 @ 3% INFLATION RATE, with 5% NET DISCOUNT RATE				**$296,887**
TOTAL ESTIMATED PRESENT WORTH OF DIRECT/INDIRECT AND O&M/LTM COSTS				**$1,049,500**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-4

Order-of-Magnitude Cost Estimate: Year 1 -- LTM of Groundwater

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
LTM of Groundwater				
Mobilization/Demobilization	1	LS	$2,000	$2,000
Site Labor (sample 8 wells)	1	Rounds	$10,000	$10,000
Field Equipment Costs	5	Days	$1,000	$5,000
Sample Shipping	300	pounds	$2	$600
Laboratory Analytical Costs (full suite)	10	Each	$1,500	$15,000
Data Management/Validation	1	Rounds	$5,000	$5,000
Annual Report	1	Each	$10,000	$10,000
ERPIMS	1	Each	$5,000	$5,000
Update Plans	1	Each	$2,000	$2,000
TOTAL DIRECT COSTS FOR LTM OF GROUNDWATER				**$54,600**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of total costs)				$5,460
Program Admin & Support (2% of costs)				$1,092
Contingency (10% of total costs)				$6,115
TOTAL COSTS FOR LTM OF GROUNDWATER			**(in 2001 Dollars)**	**$68,767**
Present Value Factor (Year 1 at 3% inflation rate, with 5% net discount rate)				*0.95*
TOTAL PRESENT WORTH COSTS FOR LTM OF GROUNDWATER				**$65,329**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-5

Order-of-Magnitude Cost Estimate: Year 2 -- LTM of Groundwater

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
LTM of Groundwater				
Mobilization/Demobilization	1	LS	$2,000	$2,000
Site Labor (sample 8 wells)	1	Rounds	$10,000	$10,000
Field Equipment Costs	5	Days	$1,000	$5,000
Sample Shipping	300	pounds	$2	$600
Laboratory Analytical Costs (full suite)	10	Each	$1,500	$15,000
Data Management/Validation	1	Rounds	$5,000	$5,000
Annual Report	1	Each	$10,000	$10,000
ERPIMS	1	Each	$5,000	$5,000
Update Plans	1	Each	$2,000	$2,000
TOTAL DIRECT COSTS FOR LTM OF GROUNDWATER				**$54,600**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of total costs)				$5,460
Program Admin & Support (2% of costs)				$1,092
Contingency (10% of total costs)				$6,115
TOTAL COSTS FOR LTM OF GROUNDWATER			**(in 2001 Dollars)**	**$68,767**
Present Value Factor (Year 2 at 3% inflation rate, with 5% net discount rate)				*0.91*
TOTAL PRESENT WORTH COSTS FOR LTM OF GROUNDWATER				**$62,578**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-6

Order-of-Magnitude Cost Estimate: Year 3 -- LTM of Groundwater

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
LTM of Groundwater				
Mobilization/Demobilization	1	LS	$2,000	$2,000
Site Labor (sample 8 wells)	1	Rounds	$10,000	$10,000
Field Equipment Costs	5	Days	$1,000	$5,000
Sample Shipping	300	pounds	$2	$600
Laboratory Analytical Costs (full suite)	10	Each	$1,500	$15,000
Data Management/Validation	1	Rounds	$5,000	$5,000
Annual Report	1	Each	$10,000	$10,000
ERPIMS	1	Each	$5,000	$5,000
Update Plans	1	Each	$2,000	$2,000
TOTAL DIRECT COSTS FOR LTM OF GROUNDWATER				**$54,600**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of total costs)				$5,460
Program Admin & Support (2% of costs)				$1,092
Contingency (10% of total costs)				$6,115
TOTAL COSTS FOR LTM OF GROUNDWATER			**(in 2001 Dollars)**	**$68,767**
Present Value Factor (year 3 at 3% inflation rate, with 5% net discount rate)				*0.86*
TOTAL PRESENT WORTH COSTS FOR LTM OF GROUNDWATER				**$59,140**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-7

Order-of-Magnitude Cost Estimate: Year 4 -- LTM of Groundwater

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
LTM of Groundwater				
Mobilization/Demobilization	1	LS	$2,000	$2,000
Site Labor (sample 8 wells)	1	Rounds	$10,000	$10,000
Field Equipment Costs	5	Days	$1,000	$5,000
Sample Shipping	300	pounds	$2	$600
Laboratory Analytical Costs (full suite)	10	Each	$1,500	$15,000
Data Management/Validation	1	Rounds	$5,000	$5,000
Annual Report	1	Each	$10,000	$10,000
ERPIMS	1	Each	$5,000	$5,000
Update Plans	1	Each	$2,000	$2,000
TOTAL DIRECT COSTS FOR LTM OF GROUNDWATER				**$54,600**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of total costs)				$5,460
Program Admin & Support (2% of costs)				$1,092
Contingency (10% of total costs)				$6,115
TOTAL COSTS FOR LTM OF GROUNDWATER			**(in 2001 Dollars)**	**$68,767**
Present Value Factor (Year 4 at 3% inflation rate, with 5% net discount rate)				*0.82*
TOTAL PRESENT WORTH COSTS FOR LTM OF GROUNDWATER				**$56,389**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-8

Order-of-Magnitude Cost Estimate: Year 3 -- O&M of Cover

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
O&M of Cover				
Site Labor	1	Rounds	$2,000	$2,000
Cover Maintenance	1	LS	$5,000	$5,000
Report	1	Each	$3,000	$3,000
TOTAL DIRECT COSTS FOR O&M OF COVER				**$10,000**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of total O&M and LTM costs)				$1,000
Program Admin & Support (2% of O&M and LTM costs)				$200
Contingency (10% of total O&M and LTM costs)				$1,120
TOTAL COSTS FOR O&M OF COVER			**(in 2001 Dollars)**	**$13,820**
Present Value Factor (year 3 at 3% inflation rate, with 5% net discount rate)				*0.86*
TOTAL PRESENT WORTH COSTS FOR O&M OF COVER				**$11,885**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-9

Order-of-Magnitude Cost Estimate: Year 6 -- O&M of Cover

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
O&M of Cover				
Site Labor	1	Rounds	$2,000	$2,000
Cover Maintenance	1	LS	$5,000	$5,000
Report	1	Each	$3,000	$3,000
TOTAL DIRECT COSTS FOR O&M OF COVER				**$10,000**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of total O&M and LTM costs)				$1,000
Program Admin & Support (2% of O&M and LTM costs)				$200
Contingency (10% of total O&M and LTM costs)				$1,120
TOTAL COSTS FOR O&M OF COVER			**(in 2001 Dollars)**	**$13,820**
Present Value Factor (year 6 at 3% inflation rate, with 5% net discount rate)				*0.75*
TOTAL PRESENT WORTH COSTS OF O&M OF COVER				**$10,365**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-10

Order-of-Magnitude Cost Estimate: Year 9 -- O&M of Cover

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
O&M of Cover				
Site Labor	1	Rounds	$2,000	$2,000
Cover Maintenance	1	LS	$5,000	$5,000
Report	1	Each	$3,000	$3,000
TOTAL DIRECT COSTS FOR O&M OF COVER				**$10,000**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of total O&M and LTM costs)				$1,000
Program Admin & Support (2% of O&M and LTM costs)				$200
Contingency (10% of total O&M and LTM costs)				$1,120
TOTAL COSTS FOR O&M OF COVER			**(in 2001 Dollars)**	**$13,820**
Present Value Factor (year 9 at 3% inflation rate, with 5% net discount rate)				*0.64*
TOTAL PRESENT WORTH COSTS OF O&M OF COVER				**$8,845**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-11

Order-of-Magnitude Cost Estimate: Year 12 -- O&M of Cover

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
O&M of Cover				
Site Labor	1	Rounds	$2,000	$2,000
Cover Maintenance	1	LS	$5,000	$5,000
Report	1	Each	$3,000	$3,000
TOTAL DIRECT COSTS FOR O&M OF COVER				**$10,000**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of total O&M and LTM costs)				$1,000
Program Admin & Support (2% of O&M and LTM costs)				$200
Contingency (10% of total O&M and LTM costs)				$1,120
TOTAL COSTS FOR O&M OF COVER			**(in 2001 Dollars)**	**$13,820**
Present Value Factor (year 12 at 3% inflation rate, with 5% net discount rate)				*0.56*
TOTAL PRESENT WORTH COSTS OF O&M OF COVER				**$7,739**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.

TABLE C-12

Order-of-Magnitude Cost Estimate: Year 15 -- O&M of Cover, Well Abandonment

EE/CA for Site LF01, Bellows AFS

Work Items	Est. Quantity	Units	Estimated Cost per Unit	Extended Cost
O&M of Cover, Well Abandonment				
Site Labor	1	Rounds	$2,000	$2,000
Cover Maintenance	1	LS	$5,000	$5,000
Well Abandonment (8 wells)	3	Days	$4,500	$13,500
Report	1	Each	$3,000	$3,000
TOTAL DIRECT COSTS FOR COVER O&M, WELL AB.				**$23,500**
MAPs Update	1	Each	$500	$500
Administrative Record	1	Each	$1,000	$1,000
Project Management (10% of total O&M and LTM costs)				$2,350
Program Admin & Support (2% of O&M and LTM costs)				$470
Contingency (10% of total O&M and LTM costs)				$2,632
TOTAL COSTS FOR COVER O&M, WELL ABANDONMENT			**(in 2001 Dollars)**	**$30,452**
Present Value Factor (year 15 at 3% inflation rate, with 5% net discount rate)				*0.48*
TOTAL PRESENT WORTH COSTS OF O&M OF COVER, WELL ABANDONMENT				**$14,617**

Notes:

The cost estimate shown has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, the final project scope, the final implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Unit prices are based on construction cost data (e.g., Means, 1998), quotes from vendors, and best professional judgment.