RPO Inventory and Prioritization Tool

Dave Parse
Earth Tech
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Earth Tech's Role

- Technical Development of the RPO Implementation Tool
  - Initial & Detailed Questionnaires
  - Database
  - Site Data Sheets
  - Inventory & Prioritization
- Application of Tool at Air Force Materiel Command Facilities

Initial Questionnaire

1. Major Command:	Air Force Materiel Command
2. Base/Plant Name?	Air Force Plant 4
3. Number of Remediation Systems at Base/Plant?	5
4. Is there a Base-/Plant-Wide Long-Term Monitoring (LTM) Program?	**Yes**

5. Name/Contact Information for person filling out questionnaire:

Name:	George Walters
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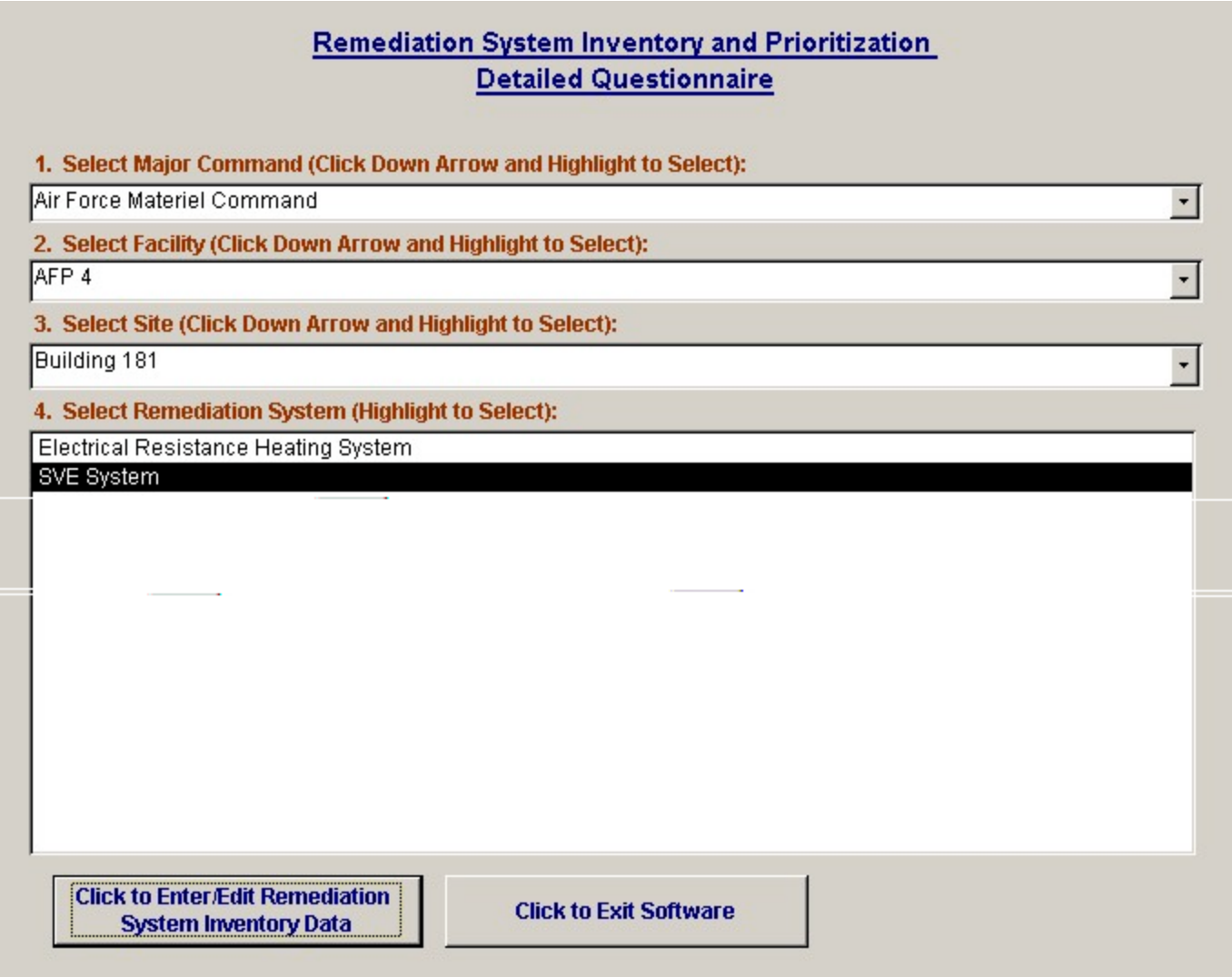
	1801 Tenth Street, Suite 2
	WPAFB, OH 45433-7626
Phone Number:	(937) 255-1988
Fax Number:	(937) 255-9985
Email Address:	George.Walters@wpafb.af.mil

6. Inventory of Remediation Systems and Base-/Plant-Wide LTM Programs:

Remediation Site Name:	System/LTM Program Name:	Contact Name / Employer / Phone # / Email Address / Access Version:	System Type:
Landfill No. 3	Vacuum-Enhanced Pumping System	Rick Wice / Shaw E&I / (412) 858-3309 / richard.wice@shawgrp.com / Access 2000	Dual-Phase
East Parking Lot	Pump & Treat System	Rick Wice / Shaw E&I / (412) 858-3309 / richard.wice@shawgrp.com / Access 2000	Pump & Treat
Building 181	Electrical resistance heating system	Steve Fain / URS / (512) 419-5072 / stephen_fain@urscorp.com / Access 2000	Thermal technology
Building 181	SVE System	Rick Wice / Shaw E&I / (412) 858-3309 / richard.wice@shawgrp.com / Access 2000	Dual-Phase
Fuel Saturation Area No. 1	Pump & Treat System	Rick Wice / Shaw E&I / (412) 858-3309 / richard.wice@shawgrp.com / Access 2000	Pump & Treat
AFP4	Plant-Wide LTM Program	Dave Parse / Earth Tech / (703) 706-0508 / david.parse@earthtech.com / Access 97	Plant-Wide LTM Program

Detailed Questionnaire



Detailed Questionnaire (cont'd)

Remediation System Data Inventory

1. Major Command:	Air Force Materiel Command
2. Facility:	AFP 4
3. Site:	Building 181
4. Remediation System:	SVE System

Click to Return to Previous Form

5. Click to Edit/Add Contacts for the Remediation System

6 Type of Remediation System? — Oxidation - Continuous Injection (e.g., permanganate, ozone, peroxide)

- Pump & Treat
- Soil-Vapor Extraction (SVE)
- Dual-Phase (Groundwater & Soil Gas)
- Air Sparging/Soil-Vapor Extraction
- UVB wells
- Bioventing
- Biosparging
- Nutrient Enhancement - Single Injection (e.g., HRC, ORC, vegetable oil)

7. Legal Driver for Remediation?

8. Legal Status of Remedy?

9. LNAPL known to be present?

10. DNAPL known to be present?

11. Average Annual Operation and Maintenance Costs ($/year)? — $0.00

for Groundwater/Soil Vapor Monitoring? — $0.00

ths? — $0.00

14. Highlight the Primary COC(s) for the Remediation System

- Chlorinated Hydrocarbons (e.g., TCE, TCA, DCE, vinyl chloride)
- Petroleum Hydrocarbons (e.g., BTEX)
- Semivolatile Organic Compounds
- Polynuclear Aromatic Hydrocarbons (PAHs)
- Pesticides/Herbicides
- Polychlorinated Biphenyls (PCBs)
- Perchlorates
- Metals
- Other

Please provide below any general comments or a brief explanation for any of the above questions that were not answered or were answered "Other"

Click to Edit/Add Remediation System Optimization Data

Click to View Inventory Report

Detailed Questionnaire (cont'd)

Remediation System Data Inventory

1. Major Command:	Air Force Materiel Command
2. Facility:	AFP 4
3. Site:	Building 181
4. Remediation System:	SVE System

Click to Return to Previous Form

5. Click to Edit/Add Contacts for the Remediation System

6 Type of Remediation System?	Soil-Vapor Extraction (SVE)
7. Legal Driver for Remediation?	
8. Legal Status of Remedy?	
9. LNAPL known to be present?	
10. DNAPL known to be present?	

11. Average Annual Operation and Maintenance Costs ($/year)?	12. Portion of Average Annual Operation and Maintenance Costs ($/year) Used Only for Groundwater/Soil Vapor Monitoring?	13. Operation and Maintenance Costs ($) Over the Past 12 Months?
$0.00	$0.00	$0.00

14. Highlight the Primary COC(s) for the Remediation System

- Chlorinated Hydrocarbons (e.g., TCE, TCA, DCE, vinyl chloride)
- Petroleum Hydrocarbons (e.g., BTEX)
- Semivolatile Organic Compounds
- Polynuclear Aromatic Hydrocarbons (PAHs)
- Pesticides/Herbicides
- Polychlorinated Biphenyls (PCBs)
- Perchlorates
- Metals
- Other

Please provide below any general comments or a brief explanation for any of the above questions that were not answered or were answered "Other"

Click to Edit/Add Remediation System Optimization Data

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Detailed Questionnaire (cont'd)

Soil-Vapor Extraction

Major Command:	Air Force Materiel Command
Facility:	AFP 4
Site:	Building 181
Remediation System:	SVE System

Click to Return to Previous Form

Click to View Detailed Remediation System Report

15. Primary Remedial Objective?	
16. When did the System Become Operational (mm/yyyy)?	
17. Expected Completion Date for Remedial Action (mm/yyyy)?	
18. Is there a Documented Conceptual Site Model?	
19. Are the Remedial Objectives Being Achieved?	
20. Has System Effectiveness Been Evaluated?	
23. Number of Soil-Vapor Extraction Wells (In Use)?	0
24. Soil-Vapor Extraction Rate (cubic feet/minute)?	0
25. Estimated Average System Downtime (weeks/year)?	0

Monitoring

27. Number of Soil-Vapor Wells Regularly Monitored?	0
28. Frequency of Soil-Vapor Monitoring (events/year)?	0

29. Please provide below: [1] average influent and effluent concentrations for the primary COCs; [2] a brief summary of any previous system performance evaluations; [3] any general comments; and [4] a brief explanation for any of the above questions that were not answered or were answered "Other"

21. Expected Degree of Difficulty in Implementing Minor Changes to the Remediation System?

22. Expected Degree of Difficulty in Implementing Major Changes to the Remediation System?

26. Highlight One or More of the Following Aboveground Treatment Processes:

- Carbon adsorption
- Flare
- Catalytic oxidation
- None/other/not sure

Detailed Questionnaire (cont'd)

Remediation System Data Inventory

1. Major Command:	Air Force Materiel Command
2. Facility:	AFP 4
3. Site:	Building 181
4. Remediation System:	Electrical Resistance Heating System

Click to Return to Previous Form

5. Click to Edit/Add Contacts for the Remediation System

6 Type of Remediation System?	Dual-Phase (Groundwater & Soil Gas)
7. Legal Driver for Remediation?	
8. Legal Status of Remedy?	
9. LNAPL known to be present?	
10. DNAPL known to be present?	

11. Average Annual Operation and Maintenance Costs ($/year)?	12. Portion of Average Annual Operation and Maintenance Costs ($/year) Used Only for Groundwater/Soil Vapor Monitoring?	13. Operation and Maintenance Costs ($) Over the Past 12 Months?
$0.00	$0.00	$0.00

14. Highlight the Primary COC(s) for the Remediation System

- Chlorinated Hydrocarbons (e.g., TCE, TCA, DCE, vinyl chloride)
- Petroleum Hydrocarbons (e.g., BTEX)
- Semivolatile Organic Compounds
- Polynuclear Aromatic Hydrocarbons (PAHs)
- Pesticides/Herbicides
- Polychlorinated Biphenyls (PCBs)
- Perchlorates
- Metals
- Other

Please provide below any general comments or a brief explanation for any of the above questions that were not answered or were answered "Other"

Click to Edit/Add Remediation System Optimization Data

Click to View Inventory Report

Detailed Questionnaire (cont'd)

Dual-Phase (Groundwater and Soil Gas)

Major Command:	Air Force Materiel Command
Facility:	AFP 4
Site:	Building 181
Remediation System:	SVE System

Click to Return to Previous Form

Click to View Detailed Remediation System Report

15. Primary Remedial Objective?	
16. When did the System Become Operational (mm/yyyy)?	
17. Expected Completion Date for Remedial Action (mm/yyyy)?	
18. Is there a Documented Conceptual Site Model?	
19. Are the Remedial Objectives Being Achieved?	
20. Is the System Successfully Controlling Plume Migration?	
21. Has System Effectiveness Been Evaluated?	
24. Number of Groundwater Extraction Wells (In Use)?	0
25. Number of Soil-Vapor Extraction Wells (In Use)?	0
26. Number of Dual-Phase Wells (In Use)?	0
27. Number of Groundwater Injection Wells (In Use)?	0
28. Groundwater Extraction Rate (gallons/minute)?	0
29. Soil-Vapor Extraction Rate (cubic feet/minute)?	0
30. Groundwater Injection Rate (gallons/minute)?	0
31. Estimated Average System Downtime (weeks/year)?	0

22. Expected Degree of Difficulty in Implementing Minor Changes to the Remediation System?

23. Expected Degree of Difficulty in Implementing Major Changes to the Remediation System?

32. Highlight One or More of the Following Aboveground Treatment Processes:

- Air stripping
- Carbon adsorption
- Catalytic oxidation
- UV oxidation
- Flare
- Metals precipitation
- Filtration
- Biological treatment
- Off-gas treatment
- Ion exchange
- Reverse osmosis
- None/other/not sure

Monitoring

33. Number of Groundwater Wells Regularly Monitored?	0
34. Frequency of Groundwater Monitoring (events/year)?	0
35. Number of Soil-Vapor Wells Regularly Monitored?	0
36. Frequency of Soil-Vapor Monitoring (events/year)?	0

37. Please provide below: [1] average influent and effluent concentrations for the primary COCs; [2] a brief summary of any previous system performance evaluations; [3] any general comments; and [4] a brief explanation for any of the above questions that were not answered or were answered "Other"

Detailed Questionnaire (cont'd)

Remediation System Data Inventory

1. Major Command:	Air Force Materiel Command
2. Facility:	AFP 4
3. Site:	Building 181
4. Remediation System:	Electrical Resistance Heating System

Click to Return to Previous Form

5. Click to Edit/Add Contacts for the Remediation System

6 Type of Remediation System?	Nutrient Enhancement - Continuous Injection (e.g., HRC, ORC, vegetable oil)
7. Legal Driver for Remediation?	
8. Legal Status of Remedy?	
9. LNAPL known to be present?	
10. DNAPL known to be present?	

11. Average Annual Operation and Maintenance Costs ($/year)?	12. Portion of Average Annual Operation and Maintenance Costs ($/year) Used Only for Groundwater/Soil Vapor Monitoring?	13. Operation and Maintenance Costs ($) Over the Past 12 Months?
$0.00	$0.00	$0.00

14. Highlight the Primary COC(s) for the Remediation System

- Chlorinated Hydrocarbons (e.g., TCE, TCA, DCE, vinyl chloride)
- Petroleum Hydrocarbons (e.g., BTEX)
- Semivolatile Organic Compounds
- Polynuclear Aromatic Hydrocarbons (PAHs)
- Pesticides/Herbicides
- Polychlorinated Biphenyls (PCBs)
- Perchlorates
- Metals
- Other

Please provide below any general comments or a brief explanation for any of the above questions that were not answered or were answered "Other"

Click to Edit/Add Remediation System Optimization Data

Click to View Inventory Report

Detailed Questionnaire (cont'd)

Nutrient Enhancement (Continuous Injection)

Major Command:	Air Force Materiel Command
Facility:	AFP 4
Site:	Building 181
Remediation System:	SVE System

Click to Return to Previous Form

Click to View Detailed Remediation System Report

15. Primary Remedial Objective?	
16. When did the System Become Operational (mm/yyyy)?	
17. Expected Completion Date for Remedial Action (mm/yyyy)?	
18. Is there a Documented Conceptual Site Model?	
19. Are the Remedial Objectives Being Achieved?	
20. Has System Effectiveness Been Evaluated?	
23. Type of Nutrient?	
24. Number of Injection Wells Used to Apply Nutrient?	0
25. Water Source for Nutrient Injection?	
26. Total Nutrient Injection Rate (gallons/minute)?	0
27. Total Amount (lbs) of Nutrient Injected per Year?	0
28. Estimated Average System Downtime (weeks/year)?	0

21. Expected Degree of Difficulty in Implementing Minor Changes to the Remediation System?

22. Expected Degree of Difficulty in Implementing Major Changes to the Remediation System?

Groundwater Monitoring

29. Number of Groundwater Wells Regularly Monitored?	0
30. Frequency of Groundwater Monitoring (events/year)?	0

31. Please provide below: [1] average influent and effluent concentrations for the primary COCs; [2] a brief summary of any previous system performance evaluations; [3] any general comments; and [4] a brief explanation for any of the above questions that were not answered or were answered "Other"

Detailed Questionnaire (cont'd)

Remediation System Data Inventory

1. Major Command:	Air Force Materiel Command
2. Facility:	AFP 4
3. Site:	Building 181
4. Remediation System:	Electrical Resistance Heating System

Click to Return to Previous Form

5. Click to Edit/Add Contacts for the Remediation System

6 Type of Remediation System?	Thermal Technology (e.g., electrical resistance heating, steam enhanced extraction)
7. Legal Driver for Remediation?	
8. Legal Status of Remedy?	
9. LNAPL known to be present?	
10. DNAPL known to be present?	

11. Average Annual Operation and Maintenance Costs ($/year)?	12. Portion of Average Annual Operation and Maintenance Costs ($/year) Used Only for Groundwater/Soil Vapor Monitoring?	13. Operation and Maintenance Costs ($) Over the Past 12 Months?
$0.00	$0.00	$0.00

14. Highlight the Primary COC(s) for the Remediation System

- Chlorinated Hydrocarbons (e.g., TCE, TCA, DCE, vinyl chloride)
- Petroleum Hydrocarbons (e.g., BTEX)
- Semivolatile Organic Compounds
- Polynuclear Aromatic Hydrocarbons (PAHs)
- Pesticides/Herbicides
- Polychlorinated Biphenyls (PCBs)
- Perchlorates
- Metals
- Other

Please provide below any general comments or a brief explanation for any of the above questions that were not answered or were answered "Other"

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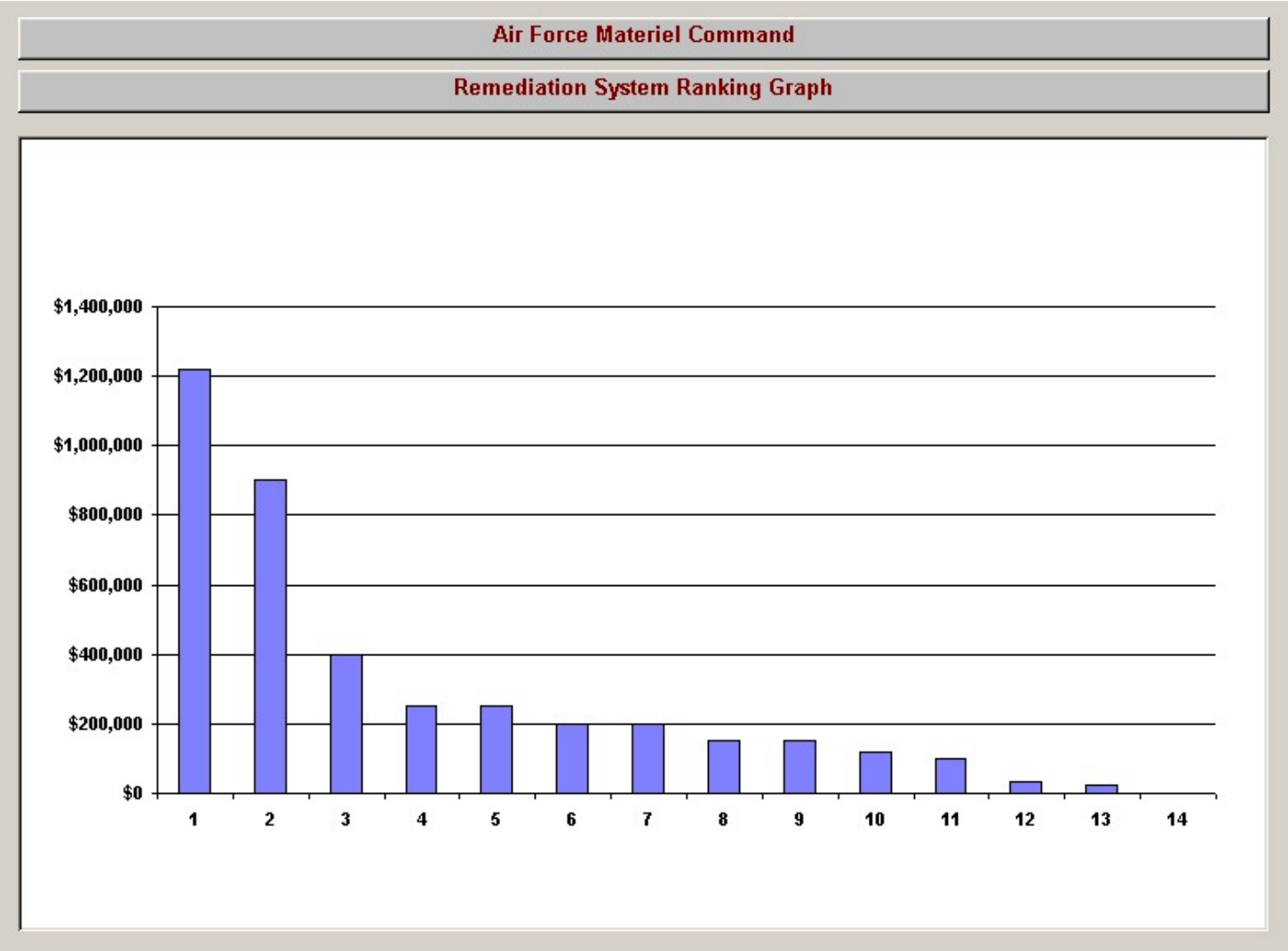
Detailed Questionnaire (cont'd)