





Characterization of the 14 Areas of Concern at RVAAP



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March 22, 2006







Overview of the Project

- RVAAP 14 AOC Characterization
 - Characterization of Medium to High priority sites
 - Sample Media Soil, Groundwater, Surface Water and Sediment
 - Large Scale Multi-Incremental sampling effort
 - Objective Provide complete and valid data for risk assessment
 - Preliminary Draft Report was submitted in the summer of 2005.





Sampling Quantities (Planned)

Area of Concern	Soil & Sediment (MI)	Test Trench	Soil, Sewer Geotech	GW Samples	SW, Springs Sewer
C-Block Quarry	9			4	3
Load Line 12			3	19	
Building 1200	12	1		4	2
LF North of Winklepeck	18	1	21	4	5
Pistol Range	8				1
NACA Test Area		7	3	12	
Load Line 5	29	3	15	6	14
Load Line 7	40	6	16	6	11
Load Line 8	24	6	15	6	19
Load Line 10	36	4	29	6	25
Wet Storage Area	19				
Building F-15 / F-16	20				2
Anchor Test Area	7				
Atlas Scrap Yard	33	8	19	10	16
TOTAL	255	36	121	77	98





RVAAP 14 AOC Site Map







List of Sites

- C-Block Quarry Rock quarry; disposal of annealing wastes
- Load Line 12 Ammonium nitrate Production and Munitions Demil
- Building 1200 Munitions QA and Sectioning
- Landfill North of Winklepeck Former Household Waste Landfill
- Pistol Range Small Arms practice and certification range
- NACA Test Area Field test explosion–proof aircraft fuel tanks
- Load Line 5 manufacture/assemble primer and delay components





List of Sites

- Load Line 7 Booster assembly, shape charges, 40-mm grenades
- Load Line 8 Booster loading with primary explosives
- Load Line 10 Primer and Percussion element manufacturing
- Wet Storage Area Storage magazines for primary explosives
- Building F-15 / F-16 Testing of explosives and propellants, QA
- Anchor Test Area Testing explosively charged anchoring devices
- Atlas Scrap Yard Original Construction camp for the RVAAP





Load Line #10 Sampling Locations











Multi-Incremental Sampling

- Benefits
 - A method to improve data reliability and to better represent site characteristics
 - Enables fewer samples for risk analysis
 - Reduces number of samples for lab analysis
 - Less chance for missed contaminants
 - Reduces field sampling and laboratory sub sampling processing induced errors
 - High quality data at a much lower cost





Thought Process







Typical Shallow Soil MI Sample

- 32 random sampling points marked in each MI grid
 - All cleared for MEC
 - 30 aliquots collected
 - 2 extra flagged points (in case of refusal)
 - Cleared 1 ft diameter around each flag (in case of refusal)
- MI "discrete" VOC sample
 - Collected in field at biased aliquot
 - Still awaiting further MI guidance for future MI VOC collection
 - MI sample aliquot location flag
 - MI sample corner/boundary flag







Typical Shallow Soil MI Grid







Typical Ditch MI Grid







Field Collection

- Equipment requirements
 - Soil probe
 - Slide hammer/T-handle (if necessary)
 - Five gallon bucket
 - Bucket liner
 - Mattock
 - Duct tape/marker
 - Field forms



















Sample Processing

Eight sample processing steps

- 1. Log samples into Building1036 (Processing Center)
- 2. Spread and dry soil or mix sediment
- 3. Physically process sample
 - a. Prepare soil for sieving (crush; remove rocks/organics)
 - b. Sieve sample (#4 and #10)
 - c. Grind sieved soil
- 4. Incrementally fill sampling jars
- 5. Log filled, labeled sampling jars into refrigerator
- 6. Clean, decon processing station
- 7. Prepare processing station for next sample
- 8. Pack and ship samples to labs





























Statistical Comparison QA/QC Samples – Lead @ RVAAP

RESULTS for LEAD	Discrete Duplicates	MI Duplicates	MI "QA" Samples	
Matrix	Discrete Shallow Soil	MI Shallow Soil	MI Shallow Soil	
Sample Population	11	27	10	
Description	Traditional field duplicate	QC of MI sample processing	QC of MI sample collection	
Average Relative % Difference (RPD)	24.98%	9.5%	10.7%	
Average Standard Deviation (precision)	4.9	7.8	4.7	

- Discrete sample data was from separate project.





Summary

- Project initiated in July 2004
- Work Plans Completed and approved in September 2004
- Significant planning and coordination with the Ohio EPA
- First large scale implementation of MI Sampling Very successful
- Laboratory data received, validated and summarized for agency review
- Preliminary Draft Report submitted in the summer of 2005
- Currently responding to comments from review of the Preliminary Draft Report
- Next Step Risk Assessment as part of the next contract





Questions?