53-02 SVQ

FINAL SUMMARY REPORT

TIME CRITICAL REMOVAL ACTIONS AT SEAD-59 AND SEAD-71

12 MARCH 2003

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Date: March 12, 2003

Subject: Data Review Summary Report for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart, Branch Chief, Environmental Chemistry Branch
Denise MacMillan, QA Officer, Environmental Chemistry Branch

To: Janet Fallo, New York District

Overview

Columbia Analytical Services and Mitkem Corporation submitted numerous data packages for the Time Critical Removal Actions at SEAD-59 and SEAD-71. In support of the project team, the Environmental Chemistry Branch (ECB) reviewed the data packages based on the Quality Assurance Project Plan (QAPP) requirements and based on ECB standard operating procedures for analytical data review. All quality control information submitted with the data packages was reviewed along with the analytical data results. The level of quality control information provided with each data package was variable; and the level ranged from none to a complete set of quality control information including method blanks, surrogate recoveries, laboratory control sample recoveries, matrix spike recoveries, post digestion spike recoveries, laboratory duplicate results, and relative percent differences for duplicate analyses.

The majority of the analytical data was found to meet the project QAPP Quality Control (QC) performance criteria, and deficiencies were noted and discussed in the individual reports (Attachment 1). Overall, the analytical results were found to be usable for their intended purposes, but this statement is made without consideration of quality control samples that were not submitted for review.

Summary

The issues regarding the data packages of most significance are completeness of the data packages, quality control deficiencies, and data usability. The three issues are discussed throughout this report and in the individual reports in Attachment 1.

There was a wide range of completeness in the data packages, but all of the data packages were well organized and easy to follow. Many of the data packages contained no method specific quality control information, and many of the data packages contained a complete summary of the method specific quality control information. All of the data reviews were based on available information, so the level of review was variable. In instances where the method QC was not reported fully, the primary information that could be reviewed included holding times, surrogate recoveries, reporting limits, and analytical results. In instances where the reporting package was more complete, the review included holding times, surrogate recoveries, reporting limits, analytical results, matrix spike recoveries, laboratory control sample recoveries, duplicate results,

post digestion spikes, method or preparation blanks, and relative percent differences for duplicates.

There are a number of major and minor deficiencies noted in the following paragraphs and discussed more fully in the individual data package review reports provided in Attachment 1. The most obvious major discrepancies were failures to report all the analytes listed in the QAPP for a specific method, and this type of omission was noted for volatile organics and semivolatile organics. There were some instances of apparent failure to meet the DQOs for specific analytes especially for semivolatile organics. In some instances, the matrix spike recoveries were unacceptable and did not support the analytical data; for example, the antimony matrix spike recoveries indicated that the associated data is biased low. Surrogate recoveries were outside the acceptable limits for some analyses, and the recoveries indicated a bias for associated data. Another critical QC deficiency was the reported failure to meet calibration requirements for certain methods, and the failures indicated that associated data would likely be unusable. In most instances where there were extensive surrogate failures or calibration failures, the laboratory indicated that the samples would be re-analyzed.

Major Deficiency

Quality control or reporting deficiencies that would seriously affect usability of the data are outlined below; a more comprehensive presentation is included in the individual review reports (Attachment 1) for each data package. Determination of deficiencies is based on comparison of the submitted quality control information with the requirements listed in the Quality Assurance Project Plan (QAPP) for the Time Critical Removal Actions at SEAD-59 and SEAD-71. As shown in the individual reports, complete quality control information was not submitted with many of the sample delivery groups. For all data associated with the incomplete data packages, the review is incomplete and the potential quality control deficiencies remain unknown. The following summary of major and minor deficiencies is intended to give the reader an idea of the types of deficiencies found in the individual data review reports (Attachment 1).

Volatile Organics

- A general deficiency was noted for Columbia Analytical Services volatile organics data. A project specific target analyte for confirmation samples, 1,2-dibromoethane, was not reported. Another analyte, 1,2-dichloroethane, was reported instead. Determination of the seriousness of this general deficiency depends on project specific requirements unavailable to the reviewer.

- A general deficiency was noted for the Mitkem Corporation volatile organics data. Two project specific target compounds for confirmation sampling listed in the QAPP were not reported by Mitkem: (1) 1,2,3-trichloropropane and (2) 1,3-dichloropropane. As above, determination of the seriousness of this general deficiency depends on project specific requirements unavailable to the reviewer.

Semivolatile Organics

- Surrogate recovery failures were observed for each sample in Columbia Analytical Services WG13810 analyzed by method TAGM 8270C. Columbia Analytical Services indicated in their review summary that the samples would be re-analyzed. Since some of the recovery failures were near the lower fail limit, it is possible that some recoveries will be inside the limits upon re-analysis. Other recoveries that are significantly below the lower fail limit, such as the 44% recovery for nitrobenzene-d5 for sample, CL-59-OtherC-F01, and the low recoveries for each surrogate for sample CL-59-OtherC-WN1, are unlikely to increase sufficiently upon re-analysis to be acceptable. Based on this assumption, and without the re-analysis results, target analyte data from method TAGM 8270C for the following samples should be considered to have a low recovery bias and should be qualified UJ: CL-59-OtherC-

WE1, CL-59-OtherC-WN1, FD-59-CL-01, CL-59-OtherC-WW1, CL-59-OtherC-F01, and WS-59-03-001-1.

- A general problem was noted for the Mitkem Corporation analytical data because some of the QAPP QC requirements were not met. Aniline is listed as a target analyte for confirmatory soil samples but was not reported. The reported result for the method blank for 2,4,5-trichlorophenol does not meet QAPP QC performance criteria. For LCS and MS: 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported, therefore the QAPP QC performance criteria were not met.

- The Mitkem Corporation semivolatile organics reporting limits do not meet DQO requirements for benzo(a)pyrene, 2-methylphenol, etc. Clarification of MDLs for those target analytes is needed to complete the assessment of data usability. The situation represents a major deficiency if the MDLs do not meet DQO requirements.

Polychlorinated Biphenyls (PCB)

- For Columbia Analytical Services WG 2214189, there was an unspecified method failure for the PCBs analysis and all associated samples were to be re-analyzed. This initial data should be rejected. The re-analysis results were not located within the submitted information.

Pesticides

- For Columbia Analytical Services WG 2213831, calibration failure occurred for the pesticides and associated data should be flagged as estimated. The laboratory indicated that the results were considered preliminary.

- For Mitkem Corporation WG A1448, the pesticides data had many surrogate failures and other method QC failures. The data usability is limited and should be addressed on a sample specific basis.

Metals

- In several Mitkem Corporation metals QC data packages, the matrix spike recovery for antimony was unacceptably low and the associated data has limited usability. For example, in Mitkem Corporation SDG A1435, the antimony matrix spike recovery was reported as 29.1% indicating a significant low bias for associated data.

Characteristics

There are four parameters reported for hazardous characteristics in the data packages from the two laboratories: cyanide reactivity, flash point, pH, and sulfide reactivity. The data packages were generally free of deficiencies as indicated below.

- For several work groups, a general deficiency with Mitkem Corporation data was noted for reactive cyanide. Although a low spike recovery is not unusual for reactive cyanide due to the method application, the results presented by Mitkem had 0% recoveries for laboratory control samples and matrix spikes. This is a major deficiency because the manner in which the QC was completed provides no support for the quality of the data.

Minor Deficiencies

Numerous minor quality control deficiencies were noted in the data packages from the two laboratories. In general, data quality control deficiencies were considered minor if the technical

impact of the deficiency was expected to have little affect on the usability of the data, even though the deficiency was outside the QAPP quality control performance criteria.

Volatile Organics

- For Columbia Analytical Services data in general, the laboratory quantitation limits for volatile organics, with the exception of acetone, met the method quantitation limit (MQL) requirements specified in the project QAPP. The PQL for acetone was 20 ug/kg, which is twice the QAPP limit. Acetone is a common laboratory contaminant and the DQO for acetone is 200 ug/kg, so the laboratory PQL of 20 ug/kg should, in all instances, be acceptable for assessment of acetone data usability. The reporting limits for all analytes for both Columbia Analytical Services and Mitkem Corporation often slightly exceeded the QAPP MQLs due to sample moisture. Neither of the above observations should affect the data usability.

- There were several isolated observations of volatile organics surrogate recoveries slightly outside the QAPP QC performance requirements, but the deficiencies should not significantly impact the data usability. Examples of surrogate recoveries outside performance criteria include the following. Surrogate recoveries were high for at least one volatile organic surrogate compound for five samples in SDG A1380 based on the QAPP QC performance criteria. Mitkem Corporation indicated that samples were being re-analyzed. Since surrogate recoveries were high for five samples, and no target analytes were detected near DQOs, the surrogate recoveries failures should not impact data usage for SDG A1380. For Mitkem SDG 1433, surrogate recoveries met QAPP QC performance criteria except three samples had slightly high surrogate recoveries.

- Matrix spikes were generally not run and not reported with the volatile organics analytical information. The failure to complete matrix spikes on a routine basis does not meet QAPP QC performance criteria. We are unable to assess the effect of the matrix on volatile organics recoveries, and we cannot use matrix as a parameter for judging the usability of the volatiles data.

Semivolatile Organics

- For Columbia Analytical Services WG 2213774, all surrogate recoveries were acceptable, with the exception of the recovery for phenol-d6 at 31% for the water sample, ER-09-18. The acceptance limit for recovery of phenol-d6 is 45-135%. In this sample, the target analyte phenol, at least, should be flagged with UJ. As the QAPP does not specify DQO and MQL criteria for water samples, the usability of the sample data is not affected.

- For Columbia Analytical Services WG 2213785, all surrogate recoveries were acceptable, with the exception of the recoveries of the base surrogates for sample WS-59-01-005-1. The laboratory did not indicate that corrective action for the failures was taken. All base and polyaromatic hydrocarbon analytes for the sample should be flagged as estimated.

- There were several instances of laboratory control sample recoveries outside QAPP QC performance criteria. For instance, Mitkem Corporation SDG A1433 had low LCS and LCSD recoveries for N-nitroso-di-n-propylamine and a low LCSD recovery for pentachlorophenol. The findings indicate that the associated results for these and related analytes may be biased low.

Polychlorinated Biphenyls (PCB)

- There were several data packages without matrix spikes reported with the PCB results. For example, Mitkem Corporation SDG A1380 did not have matrix spikes reported. This omission is inconsistent with the QAPP QC requirements. We are unable to assess the effect of the matrix on PCB recoveries, and we cannot use matrix as a parameter for judging the usability of the PCB data.

Pesticides

- For Mitkem Corporation WG A1434, the surrogate recoveries were observed to be low for four of the samples in the data package. Also, the matrix spike recoveries did not meet QAPP QC performance requirements in this data package. In WG A1448, two samples had high recoveries for one surrogate. The deficiencies indicate potential recovery biases for associated data.

Metals

- Preparation blanks for metals analysis often contained low levels of metals above the method detection limit. For instance, Columbia Analytical Services WG 2213755, the metals preparation blank contained copper. Since the reported detections for copper were significantly above the project specific MQL, the contamination should not affect data use. There were numerous instances of metals reported in the preparation blank below the MQLs; this contamination does not impact data usability.

- Matrix spikes were not reported for some of the Mitkem Corporation metals data packages. The failure to report matrix spikes does not meet QAPP QC requirements for metals analysis. We are unable to assess the effect of the matrix on metals recoveries, and we cannot use matrix as a parameter for judging the usability of the metals data.

- For several Columbia Analytical Services data packages, the metals practical quantitation limits (PQL) reported by the laboratory did not meet the QAPP MQL requirements. For example, in Columbia Analytical Services WG 2214359 the QAPP MQL for barium, iron, lead, selenium, and zinc were slightly exceeded. The effect of the slightly high laboratory PQLs could not be fully assessed because the DQOs for some metals are set to site background.

Other

- Several QC deficiencies were noted for toxicity characteristic leaching procedure (TCLP) semivolatile organics in various data packages. For example, in Mitkem Corporation WG A1448, laboratory control sample recoveries, matrix spike recoveries, and MS/MSD RPDs met QAPP QC performance criteria for the reported compounds except the MS/MSD recoveries for pentachlorophenol (29%/33%) and pyridine (41%/39%) were low and the LCS recovery (48%) for pyridine was low. For both compounds, the results should be considered bias low.

- For Columbia Analytical Services WG 2213738, the terphenyl-d14 surrogate recovery was omitted from the data report.

Report Content Statement

Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability. Project specific requirements were obtained from the QAPP for the Time Critical Removal Actions at SEAD-59 and SEAD-71, with particular emphasis on the DQOs, MQLs, and the quality control performance criteria. The level of review for the individual reports was limited in many instances by the extent of quality control information provided with the sample delivery group or work group.

Attachments

Appendix 1 – Review Reports for Data Packages From Columbia Analytical Services and Mitkem Corporation

ATTACHMENT 1

Review Reports for Data Packages
From Columbia Analytical Services
And Mitkem Corporation

Columbia Lab Submission Number	Mitkem Sample Delivery Group
2213734	1380/1377
2213737	1433
2213738	1434
2213755	1435
2213774	1448
2213785	1453
2213810	1462
2213831	1469
2213882	1480
2213883	1486
2213937	1488
2213970	
2214027	
2214107	
2214112	
2214113	
2214120	
2214141	
2214142	
2214167	
2214189	
2214190	
2214204	
2214205	
2214228	
2214229	
2214359	

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420 South 18th Street
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Date: October 30, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213734 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for eight (8) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by unidentified method(s). All the reported samples were collected on 9/16/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The PQLs for all analytes, with the exception of acetone, met the quantitation limit requirements specified in the project QAPP. The PQL for acetone was 20 ug/kg, which is twice the QAPP limit. The reporting limits for all analytes slightly exceeded the PQLs due to sample moisture.
   d. 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   e. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. Surrogate recoveries were acceptable for four of the eight samples. All surrogate recoveries from sample CL-59-OtherC-WN1 were below QAPP acceptance limits. All results for target analytes in the sample should be considered as estimated and flagged with UJ or J as appropriate. Recoveries for two surrogates (nitrobenzene-d5 and 2-fluorophenol) were below QAPP acceptance limits for sample CL-59-OtherC-WE1. The recovery of nitrobenzene-d5 (44%) was slightly below the QAPP range (45-135%) for sample CL-59-OtherC-FO1. Recoveries of nitrobenzene-d5, fluorobiphenyl, and 2-fluorophenol were below QAPP limits for sample WS-59-03-001-1. Results for all target analytes for the sample should be flagged as UJ or J as appropriate and should be considered to

be estimated. Overall, the low surrogate recoveries should not be cause for rejection of the data due to the high action limits for the extractable organics.

b. Extraction and analysis holding times were met.
c. All reported analyte PQLs met quantitation limits specified in the project QAPP. The reporting limits for the analytes were slightly elevated due to sample moisture.
d. For some analytes, estimated concentrations were detected in several of the samples. All detections were below the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**
   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported analyte PQLs met quantitation limit requirements specified in the project QAPP. Reporting limits were slightly elevated due to sample moisture and in one instance, dilution.
   d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**
   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to sample dilution and sample moisture, however, the analyte reporting limits were approximately six (6) times greater than the PQLs. None of the concentrations of the detected analytes approached the DQO values. Also, the DQO values were significantly higher than the sample reporting limit values.
   d. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. A note from the laboratory indicated that the laboratory control sample for the sample set gave a high recovery for antimony (188%). All antimony results should be flagged UJ due to the high bias. Since antimony was not detected above the PQL, the high bias should not affect data usability.
   b. Holding times for digestion and analysis were met for all samples.
   c. PQLs were not reported for analytes that were detected in the field samples. The PQLs for analytes that were not detected were reported. Of those, the PQL for selenium slightly exceeded the quantitation limit specified in the QAPP.
   d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for semi-volatile organics, PCBs, pesticides, and volatiles are usable for the intended purposes. Low surrogate recoveries for two samples analyzed for semi-volatile organics suggest a low bias for the target analyte recoveries. The action limit for the semi-volatile organics is significantly above the range of observed results, so the data usability is not affected. No target analytes were observed above DQO limits.

3. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: October 11, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213737 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for eight (8) soil samples and two (2) water samples analyzed for volatile organics by method TAGM 8260B. All the reported samples were collected on 9/25/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. All reported analyte PQLs met quantitation limit requirements specified in the project QAPP except xylenes (total) and acetone. Note, however, that 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for volatiles are usable for the intended purposes. No target analytes were observed above DQO limits.

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Date: October 11, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213738 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for twelve (12) soil samples analyzed for cyanide, reactivity, flash point, pH, metals (three samples), sulfide reactivity (methods not reported), and extractable organics (method 8270C) following toxicity characteristic leaching procedure (TCLP). All the reported samples were collected on 9/19/02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. All holding times for pH met the QAPP requirements. However, typically samples are run ASAP, and the pH measurements for these project samples were run one week after receipt.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

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Date: October 18, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213755 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for ten (10) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by an unidentified method(s). All the reported samples were collected on 9/17/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs, however, due to sample moisture. Also 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. All surrogate recoveries were acceptable.
   b. Extraction and analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs, however, due to sample moisture.
   d. All detections were below the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**

   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.

c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs, however, due to sample moisture.
d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**
   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to sample moisture and dilution, however, the analyte reporting limits were approximately six (6) times greater than the PQLs. None of the concentrations of the detected analytes approached the DQO values. Also, the DQO values were significantly higher than the sample reporting limit values.
   d. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
   b. Holding times for digestion and analysis were met for all samples.
   c. The preparation blank was contaminated with copper. Data usability should not be jeopardized since copper detections were significantly above the MQL..
   d. In some instances, results were flagged, such as with an asterisk or "N." The meanings of the flags were not given.
   e. PQLs were not reported for analytes that were detected in the field samples. The PQLs for analytes that were not detected were reported. Of those, the PQL for selenium slightly exceeded the quantitation limit specified in the QAPP.
   f. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for pesticides, volatiles, PCBs, and semi-volatiles are usable for the intended purposes. No target analytes (or total concentrations of the observed analytes) were observed above DQO limits.
3. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: October 10, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213774 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for nine (9) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by an unidentified method(s). In addition, results for analysis of extractable organics by Method TAGM 8270C were reported for one (1) water sample. Trip blank results were not reported. All the reported samples were collected on 9/18/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. All reported analytes met quantitation limit requirements specified in the project QAPP. Note, however, that 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. All surrogate recoveries were acceptable, with the exception of the recovery for phenol-d6 at 31% for the water sample, ER-09-18. The acceptance limit for recovery of phenol-d6 is 45-135%. In this sample, the target analyte phenol, at least, should be flagged with UJ. As the QAPP does not specify DQO and MQL criteria for water samples, the usability of the sample data is not affected.
   b. Extraction and analysis holding times were met.
   c. All reported analytes met quantitation limits specified in the project QAPP.
   d. For some analytes, estimated concentrations were detected in several of the samples. All detections were below the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**
    a. Surrogate recoveries were acceptable for all samples.
    b. Holding times for extraction and analysis were met for all samples.
    c. All reported analytes met quantitation limit requirements specified in the project QAPP.
    d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**
    a. Surrogate recoveries were acceptable for all samples.
    b. Holding times for extraction and analysis were met for all samples.
    c. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to sample dilution, however, the analyte reporting limits were approximately six (6) times greater than the PQLs. None of the concentrations of the detected analytes approached the DQO values. Also, the DQO values were significantly higher than the sample reporting limit values.
    d. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
    a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
    b. Holding times for digestion and analysis were met for all samples.
    c. PQLs were not reported for analytes that were detected in the field samples. The PQLs for analytes that were not detected were reported. Of those, the PQL for selenium slightly exceeded the quantitation limit specified in the QAPP.
    d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for semi-volatile organics, PCBs, pesticides, and volatiles are usable for the intended purposes. No target analytes were observed above DQO limits.
3. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: October 17, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213785 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for twelve (12) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by an unidentified method(s). The laboratory also indicated that the report included results for a trip blank and another field sample (ER-09-19) which were not located within the data package. All the reported samples were collected on 9/19/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs, however, due to sample moisture and, for some samples, dilution. Also 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. All surrogate recoveries were acceptable, with the exception of the recoveries of the base surrogates for sample WS-59-01-005-1. The laboratory did not indicate that corrective action for the failures was taken. All base and polyaromatic hydrocarbon analytes for the sample should be flagged as estimated.
   b. Extraction and analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs, however, due to sample moisture and, for some samples, dilution.

d. All detections were below the DQOs specified in the QAPP. Polyaromatic hydrocarbons were detected in most of the samples, but the total concentrations were less than the DQO limits.

3. **Extractable Organics by Method TAGM 8082**

   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs, however, due to sample moisture and dilution.
   d. No target analytes were observed above DQO levels specified in the QAPP.
   e. The laboratory reported that all data should be considered preliminary due to a failed calibration verification. For this reason, all analytes should be flagged UJ.

4. **Extractable Organics by Method TCL 8081A**

   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to sample moisture and dilution, however, the analyte reporting limits were approximately six (6) times greater than the PQLs. None of the concentrations of the detected analytes approached the DQO values. Also, the DQO values were significantly higher than the sample reporting limit values.
   d. No target analytes were observed above DQO levels specified in the QAPP.
   e. For one sample (WS-59-01-005-1), DDT was observed above the calibration limit for the analysis. The analyte should be flagged as estimated (J).

5. **Metals by Unidentified Method(s)**

   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
   b. Holding times for digestion and analysis were met for all samples.
   c. The method blank was contaminated with cadmium and thallium. Cadmium and thallium concentrations near the PQL should be considered to be estimated.
   d. In some instances, results were flagged, such as with an asterisk or "N." The meanings of the flags were not given.
   e. PQLs were not reported for analytes that were detected in the field samples. The PQLs for analytes that were not detected were reported. Of those, the PQL for selenium slightly exceeded the quantitation limit specified in the QAPP.
   f. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for pesticides, and volatiles are usable for the intended purposes. All the semi-volatile results are usable as reported with the exception of the base/neutral analytes in sample WS-59-01-005-1 which should be considered to be

estimated (J flag). All PCB results should be considered as estimated and flagged UJ due to a calibration verification failure. No target analytes (or total concentrations of the observed analytes) were observed above DQO limits.

3. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: October 4, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213810 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for eight (8) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TAGM 8081A, and metals by an unidentified method(s). All the reported samples were collected on 9/16/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. All reported analytes met quantitation limit requirements specified in the project QAPP. Note, however, that 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. Surrogate recovery failures were observed for each sample analyzed by method TAGM 8270C. Columbia Analytical Services indicated in their review summary that the samples would be re-analyzed. Since some of the recovery failures were near the lower fail limit, it is possible that some recoveries will be inside the limits upon re-analysis. Other recoveries that are significantly below the lower fail limit, such as the 44% recovery for nitrobenzene-d5 for sample, CL-59-OtherC-F01, and the low recoveries for each surrogate for sample CL-59-OtherC-WN1, are unlikely to increase sufficiently upon re-analysis to be acceptable. Based on this assumption, and without the re-analysis results, target analyte data from method TAGM 8270C for the following samples should be considered to have a low recovery bias and should be qualified UJ: CL-59-OtherC-WE1, CL-59-OtherC-WN1, FD-59-CL-01, CL-59-OtherC-WW1, CL-59-OtherC-F01, and WS-59-03-001-1.

b. Extraction and analysis holding times were met.
c. All reported analytes met quantitation limits specified in the project QAPP.
d. Benzo(a)pyrene was observed above the DQO level of 61 ug/kg for three (3) samples: CL-59-OtherC-WN1, FD-59-CL-01, and WS-59-03-001-1. Since these samples are included in the list of ones which exhibited a low recovery bias, the actual results for benzo(a)pyrene may be greater than reported.

3. **Extractable Organics by Method TAGM 8082**
   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported analytes met quantitation limit requirements specified in the project QAPP.
   d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TAGM 8081A**
   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported analytes met quantitation limit requirements specified in the project QAPP.
   d. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
   b. Holding times for digestion and analysis were met for all samples.
   c. All reported analytes met quantitation limit requirements specified in the project QAPP, with the exception of selenium. The PQL reported for the field samples slightly exceeded the 0.5 mg/kg MQL specified in the QAPP. Selenium was not observed above the PQL or above the DQO limit for any of the samples, however.
   d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for PCBs, pesticides, and volatiles are usable for the intended purposes. No target analytes were observed above DQO limits.
3. Data for samples for the semi-volatile extractable organics by Method TAGM 8270C should be qualified as UJ and considered to have a low bias. The observed result for benzo(a)pyrene exceeded the DQO limit for three samples. Since the results are biased low, the actual concentration of benzo(a)pyrene present in the samples is likely to be higher than reported.
4. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: October 31, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213831 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for thirteen (13) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by unidentified methods. All the reported samples were collected on 9/23/02. Results for the associated quality control samples were not provided. Results for a trip blank and sample ER-09-23 were listed as part of the submission group but were not reported.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The PQLs for all analytes, with the exception of acetone, met the quantitation limit requirements specified in the project QAPP. The PQL for acetone was 20 ug/kg, which is twice the QAPP limit. The reporting limits for all analytes slightly exceeded the QAPP MQLs due to sample moisture.
   d. A project-specific target analyte for confirmation samples, 1,2-dibromoethane, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   e. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. Surrogate recoveries were acceptable for all samples with the exception of sample WS-59-01-006-10. That sample was diluted twenty times and surrogates were not observed above the reporting limits.
   b. Extraction and analysis holding times were met.
   c. All reported analyte PQLs met quantitation limits specified in the project QAPP. The reporting limits for the analytes were elevated compared to QAPP MQLs due to dilution and sample moisture. All but two samples in this submission group were diluted over a range of three to twenty times due to matrix interference.

d. Target analytes were observed for most of the samples. All detections were below the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**
   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported analyte PQLs met quantitation limit requirements specified in the project QAPP. Reporting limits were slightly elevated compared to QAPP MQLs due to sample moisture.
   d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**
   a. Results of the pesticides analysis were preliminary due to a calibration failure. For this reason, and without additional information, all results should be considered as estimated and flagged UJ or J as appropriate.
   b. Preliminary surrogate recoveries were acceptable for all samples.
   c. Holding times for extraction and preliminary analysis were met for all samples.
   d. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to sample dilution and sample moisture, however, the analyte reporting limits were from five to twenty times greater than the PQLs and QAPP MQLs. None of the preliminary concentrations of the detected analytes approached the DQO values. Also, the DQO values were significantly higher than the preliminary sample reporting limit values.
   e. No target analytes in the preliminary analyses were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
   b. Holding times for digestion and analysis were met for all samples.
   c. All PQLs were acceptable according to QAPP MQL requirements, with some exceptions. The PQL for selenium in all samples slightly exceeded the quantitation limit specified in the QAPP. The PQL for sodium was slightly high in samples WS-59-01-006-5, WS-59-01-006-6, WS-59-01-006-8, and WS-59-01-06-12. For the same samples, the PQL for calcium was higher than the QAPP MQL, and all results for calcium in those samples were reported from a ten-fold sample dilution.
   d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for semi-volatile organics, PCBs, and volatiles are usable for the intended purposes. All pesticide data are preliminary due to calibration failure and all results should be flagged as estimated. Since the extent of the calibration failure was not reported, the pesticide data should be rejected for use. No target analytes were observed above DQO limits for semi-volatile organics, PCBs, and volatiles samples.

3. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: October 31, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213882 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for twelve (12) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by unidentified methods. All the reported samples were collected on 9/24/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The PQLs for all analytes, with the exception of acetone, met the quantitation limit requirements specified in the project QAPP. The PQL for acetone was 20 ug/kg, which is twice the QAPP limit. The reporting limits for all analytes slightly exceeded the QAPP MQLs due to sample moisture.
   d. A project-specific target analyte for confirmation samples, 1,2-dibromoethane, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   e. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. Surrogate recoveries were acceptable for all samples.
   b. Extraction and analysis holding times were met.
   c. All reported analyte PQLs met quantitation limits specified in the project QAPP. The reporting limits for the analytes were elevated compared to QAPP limits due to dilution and sample moisture. All samples in this submission group were diluted from five to ten times due to matrix interference.
   d. Target analytes were observed for all samples in this submission group. All detections were below the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**
    a. Surrogate recoveries were acceptable for all samples.
    b. Holding times for extraction and analysis were met for all samples.
    c. All reported analyte PQLs met quantitation limit requirements specified in the project QAPP. Reporting limits were slightly elevated compared to QAPP limits due to sample moisture.
    d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**
    a. All DDT results in this submission group should be flagged as estimated due to a calibration failure. The DDT in the check standard was observed at a lower than acceptable concentration, so all sample results for DDT may be biased low. All results for DDT for the samples here were significantly below action limits specified in the QAPP, so the low bias should not affect the usability of the data.
    b. Surrogate recoveries were acceptable for all samples.
    c. Holding times for extraction and analysis were met for all samples.
    d. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to a five-fold sample dilution and sample moisture in all samples, the analyte reporting limits were elevated compared to the QAPP limits. None of the concentrations of the detected analytes approached the DQO values. Also, the DQO values were significantly higher than the sample reporting limit values.
    e. No target analytes in the preliminary analyses were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
    a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
    b. Holding times for digestion and analysis were met for all samples.
    c. All PQLs were acceptable according to QAPP MQL requirements, with the exception of selenium. The PQL for selenium in all samples slightly exceeded the quantitation limit specified in the QAPP.
    d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.
    e. The calcium result for sample WS-59-01-007-12 appears to be reported erroneously and should be rejected.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for semi-volatile organics, PCBs, pesticides, and volatiles are usable for the intended purposes. No target analytes were observed above DQO limits for semi-volatile organics, PCBs, pesticides, and volatiles samples.
3. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes, with the exception of the calcium result for sample WS-59-01-007-12 that is unusable. Without site background information, however, DQO exceedences cannot be identified.

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Date: October 22, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213883 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for twenty-two (22) soil samples analyzed by unspecified methods for cyanide reactivity, flash point, pH, sulfide reactivity, and metals (one sample only), and extractable organics (five samples, method 8270C) following toxicity characteristic leaching procedure (TCLP). All the reported samples were collected on 9/23/02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. All analysis holding times for pH met the QAPP requirements. However, typically samples are run ASAP, and the pH measurements for these project samples were run ten days after receipt.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

4. **Sulfide Reactivity (method not reported)**
    a. All analysis holding times for sulfide reactivity met the QAPP reuirements. However, typically, sulfide reactivity is measured ASAP and the project samples were held two weeks prior to analysis.
    b. The reported sulfide reactivity practical quantitation limit met the specified regulatory requirement.
    c. All reported results for reactive sulfide were below the regulatory limit. However, sample WS-59-01-004-3 had a measured value above the PQL.

5. **Metals (method(s) not reported)**
    a. Holding times for TCLP extraction and analysis were met for all samples.
    b. All reported analyte practical quantitation limits met regulatory limits.
    c. No target analytes were observed above regulatory levels, and only a low level of barium was observed in one sample.

6. **Extractable Organics (8270C)**
    a. Surrogate recoveries for extractable organics were within the laboratory QC limits for all samples. However, the QC limits provided in the data package are wider than expected for neutral compounds for this analysis. Although there appears to be no problem with the current data set, low surrogate recoveries could present a potential problem. Slightly low laboratory control sample recoveries for four target compounds were noted in the brief narrative; matrix spike recoveries were reported to be within QC limits. There are no specific QAPP QC performance criteria listed for semivolatiles analysis of toxicity characteristic leaching procedure extracts.
    b. It appears that extraction holding times were met, although the data provided was incomplete since only one extraction date was listed.
    c. All reported analyte practical quantitation limits met the regulatory requirements for extractable organics.
    d. All reported results for TCLP extractable organics were below the regulatory threshold.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for cyanide reactivity, flash point, pH, TCLP metals, and sulfide reactivity are usable for the intended purposes based on the QAPP. However, for tests such as pH, sulfide reactivity, etc. the analyses should be completed ASAP following sample receipt. For the current samples, analyses were completed 10-18 days after sample receipt. No target compounds were observed above regulatory limits.
3. The results for TCLP extractable organics are usable for their intended purpose; however, the extraction dates should be clarified in future data submittals. Low laboratory control sample recoveries noted in the narrative should not limit the data usability. There are no specific QAPP QC performance criteria listed for semivolatiles analysis following toxicity characteristic leaching procedure.

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Date: March 5, 2003

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213937 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for eight (8) soil samples and two (2) water samples analyzed for volatile organics by method TAGM 8260B. All the reported samples were collected on 9/25/02. Results for the associated quality control samples were not provided.

Findings

I. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable, and the recoveries met the QAPP QC Performance Criteria for soil samples.
   b. All analysis holding times were met.
   c. All reported analyte PQLs met quantitation limit requirements specified in the project QAPP except xylenes (total) and acetone. Note, however, that 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Based on the limited quality control information provided, data for samples analyzed for volatiles are usable for the intended purposes. No target analytes were observed above DQO limits.

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Date: October 8, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2213970 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for ten (10) soil samples analyzed for volatile organics by method TAGM 8260B, extractable organics by methods TAGM 8270C, TAGM 8081A, and TAGM 8082; and metals by an unidentified method(s). All the reported samples were collected on 9/26/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. All reported analytes met quantitation limit requirements specified in the project QAPP. Note, however, that 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. All surrogate recoveries were acceptable.
   b. All extraction and analysis holding times were met.
   c. All reported analytes met quantitation limits specified in the project QAPP.
   d. The majority of the samples had observed results that exceeded the project DQOs for soil confirmatory samples.

3. **Extractable Organics by Method TAGM 8082**
   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported analytes met quantitation limit requirements specified in the project QAPP.

d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TAGM 8081A**
   a. Surrogate recoveries were acceptable for all samples.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported analytes met quantitation limit requirements specified in the project QAPP.
   d. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
   b. Holding times for digestion and analysis were met for all samples.
   c. All reported analytes met quantitation limit requirements specified in the project QAPP, with the exception of lead and selenium. The lead PQL reported by Columbia far exceeded the QAPP MQL while the selenium PQL reported slightly exceeded the QAPP MQL.
   d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for PCBs, pesticides, and volatiles are usable for the intended purposes. No target analytes were observed above DQO limits.
3. Data for samples for semi-volatile organics are usable for their in tended purposes. Results for semivolatile organics in many instances exceeded the QAPP soil DQOs for confirmatory soil samples.
4. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: October 31, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214027 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for seven (7) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by unidentified methods. All the reported samples were collected on 9/30/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The PQLs for all analytes, with the exception of acetone, met the quantitation limit requirements specified in the project QAPP. The PQL for acetone was 20 ug/kg, which is twice the QAPP limit. The reporting limits for all analytes slightly exceeded the QAPP MQLs due to sample moisture.
   d. A project-specific target analyte for confirmation samples, 1,2-dibromoethane, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   e. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. Surrogate recoveries were acceptable for all samples.
   b. Extraction and analysis holding times were met.
   c. All reported analyte PQLs met quantitation limits specified in the project QAPP. The reporting limits for the analytes were elevated compared to QAPP limits due sample moisture and for two samples, dilution.
   d. All target analyte concentrations were below the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**
   a. Surrogate recoveries were acceptable for all samples.

b. Holding times for extraction and analysis were met for all samples.
c. All reported analyte PQLs met quantitation limit requirements specified in the project QAPP. Reporting limits were slightly elevated compared to QAPP limits due to sample moisture.
d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**
   a. Surrogate recoveries were acceptable.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to a five-fold sample dilution and sample moisture in all samples, the analyte reporting limits were elevated compared to the QAPP limits. No target analyte concentrations approached the DQO values. Also, the DQO values were significantly higher than the sample reporting limit values.
   d. No target analytes in the preliminary analyses were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
   b. Holding times for digestion and analysis were met for all samples.
   c. All PQLs were acceptable according to QAPP MQL requirements, with some exceptions. The PQLs for selenium, silver, beryllium, and cadmium in all samples slightly exceeded the quantitation limit specified in the QAPP. The PQL for sodium was acceptable according to the QAPP limit only for three of the seven samples: CL-59-01-WS1, CL-59-01-F04, and CL-59-04-WS1.
   d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for semi-volatile organics, PCBs, pesticides, and volatiles are usable for the intended purposes. No target analytes were observed above DQO limits for semi-volatile organics, PCBs, pesticides, and volatiles samples.
3. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: November 5, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214107 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for seven (7) soil samples analyzed by unspecified methods for cyanide reactivity, flash point, pH, sulfide reactivity, and metals (two samples only) and extractable organics (one sample, method 8270C) following toxicity characteristic leaching procedure (TCLP). All the reported samples were collected on 9/25/02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. All analysis holding times for pH met the QAPP requirements. However, typically samples are run ASAP, and the pH measurements for these project samples were run fourteen days after receipt.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

4. **Sulfide Reactivity (method not reported)**
    a. All analysis holding times for sulfide reactivity met the QAPP reuirements. However, typically, sulfide reactivity is measured ASAP and the project samples were held almost two weeks prior to analysis.
    b. The reported sulfide reactivity practical quantitation limit met the specified regulatory requirement.
    c. All reported results for reactive sulfide were below the regulatory limit.

5. **Metals (method(s) not reported)**
    a. Holding times for TCLP extraction and analysis were met for all samples.
    b. All reported analyte practical quantitation limits met regulatory limits.
    c. No target analytes were observed above regulatory levels; however, one sample had an observed amount of lead following the TCLP extraction.

6. **Extractable Organics (8270C)**
    a. Surrogate recoveries for extractable organics were within the laboratory QC limits for all samples. However, the QC limits provided in the data package are wider than expected for neutral compounds for this analysis. The laboratory flagged four surrogate recoveries as outside method 8270C limits; but this action is inconsistent with the QAPP QC performance criteria for 8270C, so the source of the acceptance limits used to flag the recoveries is not clear. No other method specific quality control information was provided in the data package. There are no specific QAPP QC performance criteria listed for semivolatiles analysis of toxicity characteristic leaching procedure extracts.
    b. It appears that extraction holding times were met, although the data provided was incomplete since only one extraction date was listed.
    c. All reported analyte practical quantitation limits met the regulatory requirements for extractable organics.
    d. All reported results for TCLP extractable organics were below the regulatory threshold.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for cyanide reactivity, flash point, pH, TCLP metals, and sulfide reactivity are usable for the intended purposes based on the QAPP. However, for tests such as pH, sulfide reactivity, etc. the analyses should be completed ASAP following sample receipt. For the current samples, analyses were completed 12-17 days after sample receipt. No target compounds were observed above regulatory limits.
3. The results for TCLP extractable organics are usable for their intended purpose; however, the extraction dates should be clarified in future data submittals. The surrogate recoveries should not impact data usability since most recoveries are within the QAPP QC performance criteria for semivolatiles by method 8270C and PQLs are much below the regulatory limits. There are no specific QAPP QC performance criteria listed for semivolatiles analysis following toxicity characteristic leaching procedure.

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Date: November 4, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214112 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for eleven (11) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by unidentified methods. All the reported samples were collected on 10/4/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The PQLs for all analytes, with the exception of acetone, met the quantitation limit requirements specified in the project QAPP. The PQL for acetone was 20 ug/kg, which is twice the QAPP limit. The reporting limits for all analytes slightly exceeded the QAPP MQLs due to sample moisture.
   d. A project-specific target analyte for confirmation samples, 1,2-dibromoethane, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   e. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. Surrogate recoveries were acceptable for all samples.
   b. Extraction and analysis holding times were met.
   c. All reported analyte PQLs met quantitation limits specified in the project QAPP. The reporting limits for the analytes were elevated compared to QAPP limits due sample moisture and dilution. All samples were reported with a five-fold dilution.
   d. All target analyte concentrations were below the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**
   a. Surrogate recoveries were acceptable for all samples.

b. Holding times for extraction and analysis were met for all samples.
c. All reported analyte PQLs met quantitation limit requirements specified in the project QAPP. Reporting limits were slightly elevated compared to QAPP limits due to sample moisture.
d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**
   a. Surrogate recoveries were acceptable.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. For all samples, five-fold dilution and sample moisture contributed to elevated analyte reporting limits. No target analyte concentrations approached the DQO values. Also, the DQO values were significantly higher than the sample reporting limit values.
   d. No target analytes in the preliminary analyses were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
   b. Holding times for digestion and analysis were met for all samples.
   c. All PQLs were acceptable according to QAPP MQL requirements, with some exceptions. The PQL for lead was ten times the QAPP MQL. The PQL for selenium was twice the value required by the QAPP. For all samples, the PQLs were met for antimony, silver, and thallium, but the reporting limits for the analytes slightly exceeded the PQL. For sample WS-59-01-015-2, the reporting limit for cadmium was slightly above the QAPP PQL.
   d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for semi-volatile organics, PCBs, pesticides, and volatiles are usable for the intended purposes. No target analytes were observed above DQO limits for semi-volatile organics, PCBs, pesticides, and volatiles samples.
3. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: November 5, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214113 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for eleven (11) soil samples analyzed for cyanide, flash point, pH, and reactive sulfide. All the reported samples were collected on10-4-02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. The holding time for analysis was exceeded for all samples by one day. All cyanide results should be flagged UJ and considered to be estimated.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. Holding time was exceeded for all samples. All pH results should be considered estimated.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

4. **Sulfide Reactivity (method not reported)**
    a. Holding times for sulfide reactivity specified in the QAPP were met. However, typically, sulfide reactivity is measured ASAP and the project samples were held approximately two weeks prior to analysis.
    b. The reported sulfide reactivity practical quantitation limit met the specified regulatory requirement.
    c. All reported results for reactive sulfide were below the regulatory limit.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for cyanide reactivity and pH were acquired past analytical holding time and should be used as estimates. Data for flash point and sulfide reactivity are usable for the intended purposes based on the QAPP. No target analytes were observed above regulatory limits.

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Date: November 14, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214120 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for thirteen (13) soil samples analyzed by unspecified methods for cyanide reactivity, flash point, pH, sulfide reactivity, and metals (four samples only) and extractable organics (two samples, method 8270C) following toxicity characteristic leaching procedure (TCLP). All the reported samples were collected on 10/07/02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. All analysis holding times for pH met the QAPP requirements. However, typically samples are run ASAP, and the pH measurements for these project samples were completed nine days after sample collection.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

4. **Sulfide Reactivity (method not reported)**
    a. All analysis holding times for sulfide reactivity met the QAPP reuirements. However, typically, sulfide reactivity is measured ASAP and the project samples were analyzed 9-14 days after sample collection.
    b. The reported sulfide reactivity practical quantitation limit met the specified regulatory requirement.
    c. All reported results for reactive sulfide were below the regulatory limit.

5. **Metals (method(s) not reported)**
    a. Holding times for TCLP extraction and analysis were met for all samples.
    b. All reported analyte practical quantitation limits met regulatory limits.
    c. Lead was measured in three samples and barium in two samples following TCLP extraction of the soil samples. Two of the concentrations measured for lead were far above the regulatory limit.

6. **Extractable Organics (8270C)**
    a. Surrogate recoveries for extractable organics were within the laboratory QC limits for all samples. However, the QC limits provided in the data package are wider than expected for neutral compounds for this analysis. No other method specific quality control information was provided in the data package. There are no specific QAPP QC performance criteria listed for semivolatiles analysis of toxicity characteristic leaching procedure extracts.
    b. It appears that extraction holding times were met, although the data provided was incomplete since only one extraction date was listed.
    c. All reported analyte practical quantitation limits met the regulatory requirements for extractable organics.
    d. All reported results for TCLP extractable organics were below the regulatory threshold.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for cyanide reactivity, flash point, pH, TCLP metals, and sulfide reactivity are usable for the intended purposes based on the QAPP. However, for tests such as pH, sulfide reactivity, etc. the analyses should be completed ASAP following sample receipt. For the current samples, analyses were completed 9-14 days after sample receipt. Lead was measured in two TCLP extracts at concentrations far above the regulatory limit.
3. The results for TCLP extractable organics are usable for their intended purpose; however, the extraction dates should be clarified in future data submittals. There are no specific QAPP QC performance criteria listed for semivolatiles analysis following toxicity characteristic leaching procedure.
4. **No** method specific quality control information was submitted with the data package.

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Date: March 6, 2003

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214141 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for twelve (12) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, polychlorinated biphenyls by TAGM 8082, pesticides by TCL 8081A, and metals by an unidentified method(s). All the reported samples were collected on 10/08/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable, and met QAPP QC Performance Criteria for soils.
   b. All analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP, except for xylenes (total) and acetone. The reporting limits for all analytes were above the QAPP MQLs due to sample moisture. Also 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. All surrogate recoveries were acceptable, and met QAPP QC Performance Criteria for soils.
   b. Extraction and analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. However, the actual laboratory reporting limits for results for all analytes were above the QAPP MQLs, due to sample moisture and sample dilution.

d. Polyaromatic hydrocarbons were detected at significant levels and above the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**

   a. Surrogate recoveries were acceptable for the samples, and met QAPP QC Performance Criteria for soils.
   b. Holding times for extraction and analysis were met for all samples.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs due to sample moisture.
   d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**

   a. Surrogate recoveries were acceptable for the samples, and met QAPP QC Performance Criteria for soils, except surrogates were not reported for four samples WS-59-01-015-17, -18, -19, -20, due to an apparent reporting error.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to sample moisture and dilution, the analyte reporting limits were greater than the PQLs.
   d. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**

   a. Holding times for digestion and analysis were met for all samples.
   b. The laboratory reported practical quantitation limits (PQL) met the QAPP MQL requirements for all metals except selenium.
   c. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.
   d. The sample contained measurable amounts of many target metals, generally at low levels.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for volatile organics, semivolatile organics, polychlorinated biphenyls, pesticides, and metals are usable for their intended purposes based on the limited quality control information provided. However, for many target analytes the reported PQLs exceed QAPP MQLs and/or DQOs, which could impact overall data usability.

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Date: November 14, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214142 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for twelve (12) soil samples analyzed by unspecified methods for cyanide reactivity, flash point, pH, sulfide reactivity, and metals following toxicity characteristic leaching procedure (TCLP). All the reported samples were collected on 10/08/02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. All analysis holding times for pH met the QAPP requirements. However, typically samples are run ASAP, and the pH measurements for these project samples were completed nine days after sample collection.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

4. **Sulfide Reactivity (method not reported)**
    a. All analysis holding times for sulfide reactivity met the QAPP reuirements. However, typically, sulfide reactivity is measured ASAP and the project samples were analyzed thirteen days after sample collection.
    b. The reported sulfide reactivity practical quantitation limit met the specified regulatory requirement.
    c. All reported results for reactive sulfide were below the regulatory limit.

5. **Metals (method(s) not reported)**
    a. Holding times for TCLP extraction and analysis were met for all samples.
    b. All reported analyte practical quantitation limits met regulatory limits.
    c. No target analytes were observed above regulatory levels; however, one sample had a measurable level of barium following the TCLP extraction.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for cyanide reactivity, flash point, pH, sulfide reactivity, and TCLP metals are usable for the intended purposes based on the QAPP. However, for tests such as pH, sulfide reactivity, etc. the analyses should be completed ASAP following sample receipt. For the current samples, analyses were completed 8-13 days after sample collection. No target compounds were observed above regulatory limits. **No** method specific quality control information was submitted with the data package.

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Date: November 5, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214167 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for twelve (12) soil samples analyzed for cyanide reactivity, flash point, pH, and sulfide reactivity. Metals TCLP (method not identified) data were reported for one sample. All the reported samples were collected on 10-9-02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. The holding time for analysis was exceeded for all samples. All cyanide results should be flagged UJ and considered to be estimated.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. Holding time was exceeded for all samples. All pH results should be considered estimated.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

4. **Sulfide Reactivity (method not reported)**
    a. Holding times for sulfide reactivity specified in the QAPP were met. However, typically, sulfide reactivity is measured ASAP and the project samples were held approximately two weeks prior to analysis.
    b. The reported sulfide reactivity practical quantitation limit met the specified regulatory requirement.
    c. All reported results for reactive sulfide were below the regulatory limit.

5. **TCLP Metals (method not reported)**
    a. Holding times were met for extraction and analysis, though only one date was provided.
    b. All reported analyte PQLs met regulatory limits.
    c. No analytes were observed above regulatory limits. Note, however, that mercury was reported at a limit that was ten times greater than the reported PQL.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for cyanide reactivity and pH were acquired past analytical holding time and should be used as estimates. Data for flash point and sulfide reactivity are usable for the intended purposes based on the QAPP. Data for TCLP metals are usable as reported. No target analytes were observed above regulatory limits.

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420 South 18th Street
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Date: November 5, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214189 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for eleven (11) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by unidentified methods. All the reported samples were collected on 10/10/02. Results for the associated quality control samples were not provided. Results for a trip blank and sample ER-10-10 were not included.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The PQLs for all analytes, with the exception of acetone, met the quantitation limit requirements specified in the project QAPP. The PQL for acetone was 20 ug/kg, which is twice the QAPP limit. The reporting limits for all analytes slightly exceeded the QAPP MQLs due to sample moisture.
   d. A project-specific target analyte for confirmation samples, 1,2-dibromoethane, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   e. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. Surrogate recoveries were acceptable for all samples.
   b. Extraction and analysis holding times were met.
   c. All reported analyte PQLs met quantitation limits specified in the project QAPP. The reporting limits for the analytes were elevated compared to QAPP limits due sample moisture and dilution. Six samples were reported with a three-fold dilution, and five samples were reported with a five-fold dilution.
   d. All target analyte concentrations were below the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**

   As indicated by the laboratory, the PCB data are unusable. The apparent method failure was not identified. The laboratory reported that all samples will be reanalyzed.

4. **Extractable Organics by Method TCL 8081A**

   a. Surrogates were not recovered due to a 1:25 dilution. Assessment of potential analyte recovery cannot be made.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. For all samples, a 1:25 dilution and sample moisture contributed to elevated analyte reporting limits.
   d. The reporting limits for aldrin, heptachlor epoxide, and dieldrin exceeded the QAPP DQOs. No other target analytes were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**

   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
   b. Holding times for digestion and analysis were met for all samples.
   c. All PQLs were acceptable according to QAPP MQL requirements, with the exception of selenium. For all samples, the PQL for selenium was slightly elevated compared to the value required by the QAPP.
   d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for semi-volatile organics and volatiles are usable for the intended purposes. No target analytes were observed above DQO limits for semi-volatile organics and volatiles samples.
3. Data for the PCB samples are unusable due to an apparent method failure. The samples are to be reanalyzed.
4. Data for the pesticide samples are unusable due to high dilution. Surrogates were not recovered at the dilution level used, which prevents assessment of potential analyte recovery. Aldrin, heptachlor epoxide, and dieldrin were reported above the QAPP DQOs due to the high dilution.
5. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: November 14, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214190 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for eleven (11) soil samples analyzed by unspecified methods for cyanide reactivity, flash point, pH, sulfide reactivity, and metals (two samples only) following toxicity characteristic leaching procedure (TCLP). All the reported samples were collected on 10/10/02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. All analysis holding times for pH met the QAPP requirements. However, typically samples are run ASAP, and the pH measurements for these project samples were run eight days after receipt.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

4. **Sulfide Reactivity (method not reported)**
    a. All analysis holding times for sulfide reactivity met the QAPP reuirements. However, typically, sulfide reactivity is measured ASAP and the project samples were held thirteen days prior to analysis.
    b. The reported sulfide reactivity practical quantitation limit met the specified regulatory requirement.
    c. All reported results for reactive sulfide were below the regulatory limit.

5. **Metals (method(s) not reported)**
    a. Holding times for TCLP extraction and analysis were met for all samples.
    b. All reported analyte practical quantitation limits met regulatory limits.
    c. No target analytes were observed above regulatory levels; however, one sample had an observed amount of lead following the TCLP extraction.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for cyanide reactivity, flash point, pH, TCLP metals, and sulfide reactivity are usable for the intended purposes based on the QAPP. However, for tests such as pH, sulfide reactivity, etc. the analyses should be completed ASAP following sample receipt. For the current samples, analyses were completed 8-13 days after sample receipt. No target compounds were observed above regulatory limits. **No** method specific quality control information was submitted with the data package.

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Date: November 4, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214204 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for field samples were received for twelve (12) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, TAGM 8082, and TCL 8081A, and metals by unidentified methods. All the reported samples were collected on 10/11/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The PQLs for all analytes, with the exception of acetone, met the quantitation limit requirements specified in the project QAPP. The PQL for acetone was 20 ug/kg, which is twice the QAPP limit. The reporting limits for all analytes slightly exceeded the QAPP MQLs due to sample moisture.
   d. A project-specific target analyte for confirmation samples, 1,2-dibromoethane, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   e. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. Surrogate recoveries were acceptable for all samples.
   b. Extraction and analysis holding times were met.
   c. All reported analyte PQLs met quantitation limits specified in the project QAPP. The reporting limits for the analytes were elevated compared to QAPP limits due sample moisture and dilution. Five samples were reported with a three-fold dilution, and two samples were reported with a five-fold dilution.
   d. All target analyte concentrations were below the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**

a. Surrogate recoveries were acceptable for all samples.
b. Holding times for extraction and analysis were met for all samples.
c. All reported analyte PQLs met quantitation limit requirements specified in the project QAPP. Reporting limits were slightly elevated compared to QAPP limits due to sample moisture.
d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**
   a. Surrogate recoveries were acceptable.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. For all samples, five-fold dilution and sample moisture contributed to elevated analyte reporting limits. No target analyte concentrations approached the DQO values. Also, the DQO values were significantly higher than the sample reporting limit values.
   d. No target analytes in the preliminary analyses were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
   a. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples.
   b. Holding times for digestion and analysis were met for all samples.
   c. All PQLs were acceptable according to QAPP MQL requirements, with the exception of selenium. For all samples, the PQL for selenium was slightly elevated compared to the value required by the QAPP.
   d. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for semi-volatile organics, PCBs, pesticides, and volatiles are usable for the intended purposes. No target analytes were observed above DQO limits for semi-volatile organics, PCBs, pesticides, and volatiles samples.
3. Data quality for the metals analysis cannot be fully assessed without the results from the accompanying batch quality control samples. From the reported information, data for samples analyzed for metals appear to be usable for the intended purposes. Without site background information, however, DQO exceedences cannot be identified.

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Date: November 14, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214205 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for seven (7) soil samples analyzed by unspecified methods for cyanide reactivity, flash point, pH, and sulfide reactivity. All the reported samples were collected on 10/11/02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. All analysis holding times for pH met the QAPP requirements. However, typically samples are run ASAP, and the pH measurements for these project samples were run twelve days after receipt.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

4. **Sulfide Reactivity (method not reported)**
    a. All analysis holding times for sulfide reactivity met the QAPP reuirements. However, typically, sulfide reactivity is measured ASAP and the project samples were held fourteen days prior to analysis.
    b. The reported sulfide reactivity practical quantitation limit met the specified regulatory requirement.
    c. All reported results for reactive sulfide were below the regulatory limit.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for cyanide reactivity, flash point, pH, and sulfide reactivity are usable for the intended purposes based on the QAPP. However, for tests such as pH, sulfide reactivity, etc. the analyses should be completed ASAP following sample receipt. For the current samples, analyses were completed 12-14 days after sample receipt. No target compounds were observed above regulatory limits. **No** method specific quality control information was submitted with the data package.

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Date: March 6, 2003

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214228 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for three (3) soil/sediment samples analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, polychlorinated biphenyls by TAGM 8082, pesticides by TCL 8081A, and metals by an unidentified method(s). All the reported samples were collected on 10/22/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable, and met QAPP QC Performance Criteria for soils.
   b. All analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP, except for xylenes (total) and acetone. The reporting limits for all analytes were above the QAPP MQLs due to sample moisture. Also 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. All surrogate recoveries were acceptable, and met QAPP QC Performance Criteria for soils.
   b. Extraction and analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. However, the actual laboratory reporting limits for results for all analytes were above the QAPP MQLs, due to sample moisture and sample dilution.

d. Several polyaromatic hydrocarbons were detected in the samples. There were a few results above the DQOs specified in the QAPP.

3. **Extractable Organics by Method TAGM 8082**

   a. Surrogate recoveries were acceptable for the samples, and met QAPP QC Performance Criteria for soils.
   b. Holding times for extraction and analysis were met for all samples.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs due to sample moisture.
   d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**

   a. Surrogate recoveries were acceptable for the samples, and met QAPP QC Performance Criteria for soils.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to sample moisture and dilution, the analyte reporting limits were greater than the PQLs.
   d. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**

   a. Holding times for digestion and analysis were met for all samples.
   b. The laboratory reported practical quantitation limits (PQL) met the QAPP MQL requirements for all metals except calcium and selenium.
   c. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.
   d. The sample contained measurable amounts of many target metals including significant concentrations of arsenic, lead, nickel, and zinc.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for volatile organics, semivolatile organics, polychlorinated biphenyls, pesticides, and metals are usable for their intended purposes based on the limited quality control information provided. However, for many target analytes the reported PQLs exceed QAPP MQLs and/or DQOs, which could impact overall data usability.

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Date: November 14, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214229 was received and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for three (3) soil samples analyzed by unspecified methods for cyanide reactivity, flash point, pH, sulfide reactivity, and metals following toxicity characteristic leaching procedure (TCLP). All the reported samples were collected on 10/11/02. Results for the associated quality control samples were not provided.

Findings

1. **Cyanide Reactivity (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported cyanide reactivity practical quantitation limit met the specified regulatory requirement for cyanide reactivity.
   c. Reactive cyanide was not measured above the PQL for any project samples.

2. **Flash Point (method not reported)**
   a. All analysis holding times met the QAPP requirements.
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test and the samples had measured flash points above the regulatory limit.

3. **pH (method not reported)**
   a. All analysis holding times for pH met the QAPP requirements. However, typically samples are run ASAP, and the pH measurements for these project samples were run nine days after sample collection.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

4. **Sulfide Reactivity (method not reported)**
    a. All analysis holding times for sulfide reactivity met the QAPP reuirements. However, typically, sulfide reactivity is measured ASAP and the project samples were analyzed eleven days after sample collection.
    b. The reported sulfide reactivity practical quantitation limit met the specified regulatory requirement.
    c. All reported results for reactive sulfide were below the regulatory limit.

5. **Metals (method(s) not reported)**
    a. Holding times for TCLP extraction and analysis were met for all samples.
    b. All reported analyte practical quantitation limits met regulatory limits.
    c. No target analytes were observed above regulatory levels; however, two samples had measurable levels of lead and one sample had a measurable level of barium following the TCLP extraction. One of the samples had a lead level in the TCLP extract near the regulatory limit.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for cyanide reactivity, flash point, pH, TCLP metals, and sulfide reactivity are usable for the intended purposes based on the QAPP. However, for tests such as pH, sulfide reactivity, etc. the analyses should be completed ASAP following sample receipt. For the current samples, analyses were completed 9-11 days after sample collection. No target compounds were observed above regulatory limits. **No** method specific quality control information was submitted with the data package.

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Date: November 15, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Columbia Analytical Services Analytical Test Report for Lab Submission No.: R2214359 was received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data for one (1) soil/sediment sample analyzed for volatile organics by TAGM 8260B, extractable organics by TAGM 8270C, polychlorinated biphenyls by TAGM 8082, pesticides by TCL 8081A, and metals by an unidentified method(s). All the reported samples were collected on 10/22/02. Results for the associated quality control samples were not provided.

Findings

1. **Volatile Organics by Method TAGM 8260B**
   a. All surrogate recoveries were acceptable.
   b. All analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs due to sample moisture. Also 1,2-dibromoethane, a project-specific target analyte for confirmation samples, was not reported. Another analyte, 1,2-dichloroethane, was reported instead.
   d. No target analytes were observed above DQO levels specified in the QAPP.

2. **Extractable Organics by Method TAGM 8270C**
   a. All surrogate recoveries were acceptable.
   b. Extraction and analysis holding times were met.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. However, the actual laboratory reporting limits for results for all analytes were above the QAPP MQLs, due to sample moisture and sample dilution.
   d. All detections (fluoranthene and pyrene) were below the DQOs specified in the QAPP. No polyaromatic hydrocarbons other than fluoranthene and pyrene were detected in the sample.

3. **Extractable Organics by Method TAGM 8082**

   a. Surrogate recoveries were acceptable for the sample.
   b. Holding times for extraction and analysis were met for all samples.
   c. The practical quantitation limits (PQL) for all reported analytes met quantitation limit requirements specified in the project QAPP. The reporting limits for all analytes were above the QAPP MQLs due to sample moisture.
   d. No target analytes were observed above DQO levels specified in the QAPP.

4. **Extractable Organics by Method TCL 8081A**
   a. Surrogate recoveries were acceptable for the sample.
   b. Holding times for extraction and analysis were met for all samples.
   c. All reported PQLs met quantitation limit requirements specified in the project QAPP. Due to sample moisture and dilution, however, the analyte reporting limits were approximately twelve (12) times greater than the PQLs Also, the DQO values were significantly higher than the sample reporting limit values.
   d. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals by Unidentified Method(s)**
   a. Holding times for digestion and analysis were met for all samples.
   b. The laboratory reported practical quantitation limits (PQL) met the QAPP MQL requirements for all metals except barium, iron, lead, selenium, and zinc.
   c. DQO limits for some metal analytes are set to site background levels. As this information was not available, conclusions about the observed metal concentrations with respect to the DQO limits could not be made.
   d. The sample contained measurable amounts of all target metals including significant concentrations of antimony, arsenic, lead, mercury, nickel, and zinc.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for volatile organics, semivolatile organics, polychlorinated biphenyls, pesticides, and metals are usable for their intended purposes based on the limited quality control information provided. However, for many target analytes the reported PQLs exceed QAPP MQLs and/or DQOs, which could impact overall data usability.

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Date: October 16, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for soil samples that were analyzed for volatile organics and semivolatile organics by EPA CLP SOW OLM03.0, polychlorinated biphenyls and organochlorine pesticide by unspecified methods, and metals by methods 6010 and 7471. The associated method specific quality control results were not provided for some analyses as noted below. Importantly, the quality control performance criteria listed in the QAPP have not been incorporated into the laboratory results reports.

Findings

1. **Volatile Organics**
   Results for SDG A1380 and SDG A1377 were obtained following CLP SOW OLM03.0. Ten soil samples were included in SDG A1380 and nineteen soil samples were included with SDG A1377.
   a. SDG A1380: Surrogate recoveries were high for at least one volatile organic surrogate compound for five samples in SDG A1380 based on the QAPP QC performance criteria. Mitkem Corporation indicated that samples were being re-analyzed. Since surrogate recoveries were high for five samples, and no target analytes were detected near DQOs, the surrogate recoveries failures should not impact data usage for SDG A1380. Surrogate recoveries for SDG A1377 met the QAPP QC performance criteria.
   b. SDG A1380 and SDG A1377: Holding times appeared to be met, since samples were analyzed within 3 days of receipt. Sampling dates were not provided.
   c. SDG A1380 and SDG A1377: Laboratory control sample recoveries met QAPP QC performance criteria. The method blanks were free of contamination from target compounds. Matrix spikes were not run and were not reported for SDG A1380. Matrix spikes met QAPP QC performance criteria for SDG A1377
   d. SDG A1380 and SDG A1377: The target compounds reported by Mitkem met quantitation limit requirements specified in the project QAPP. Two project specific target compounds for confirmation sampling listed in the QAPP were not reported by Mitkem: (1) 1,2,3-trichloropropane and (2) 1,3-dichloropropane.

e. No reported target analytes were observed above DQO levels specified in the QAPP.

2. **Semivolatile Organics**
Data packages for SDG A1380 (ten soil samples) and SDG A1377 (19 soil samples) were reported; results were obtained following EPA CLP SOW OLM03.0.
   a. Surrogate recoveries were acceptable for all samples in SDG A1380 and SDG A1377.
   b. Holding times for extraction and analysis appeared to be met for all samples since extraction and analysis were completed immediately; however, sampling dates were not reported.
   c. Method blanks were free of contamination from target compounds for both SDGs; however, the laboratory reporting limit for 2,4,5-trichlorophenol exceeds the QAPP MQL and DQO. No other batch specific quality control information was reported for SDG1380. For SDG A1377, laboratory control sample recoveries met QAPP performance criteria except 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported as semivolatile target compounds (they were reported as volatile target compounds).
   d. The Mitkem reported quantitation limit did not meet DQO requirements for numerous analytes and Mitkem MDLs could not be evaluated for meeting DQO requirements for 2,4,5-trichlorophenol and aniline because the MDLs were not reported. Also, aniline was not reported as a target analyte by Mitkem.
   e. No reported target analytes were observed above DQO levels specified in the QAPP.

3. **Polychlorinated biphenyls (PCB)**
Data packages for SDG A1380 (10 soil samples) and SDG A1377 (19 soil samples) were reported; the specific analysis method was not reported. Method specific quality control summary data was reported for both SDGs.
   a. Surrogate recoveries were acceptable for all samples. Method blanks were free of contamination from target compounds for both SDGs.
   b. Holding times for extraction and analysis appeared to be met because extraction and analysis was completed immediately. Sampling dates were not reported.
   c. For SDG A1380 and SDG A1377, the laboratory control sample recoveries met QAPP QC performance criteria. For SDG A1377, matrix spike recoveries met QAPP QC performance criteria. Matrix spikes were not completed with SDG A1380.
   d. All reported analytes met quantitation limit requirements specified in the project QAPP.
   e. No target analytes were observed above DQO levels specified in the QAPP.

4. **Organochlorine pesticides**
Data packages for SDG A1380 (10 samples) and SDG A1377 (19 samples) were reported; the specific analysis method was not reported. Method specific quality control summary data was reported for both SDGs.
   a. Surrogate recoveries were acceptable for all samples. The method blank for SDG A1377 was free of target compounds; method blank results for SDG A1380 were not reported.
   b. Holding times for extraction and analysis appeared to be met, since extraction and analysis was completed immediately for all samples; sampling dates were not reported.
   c. For SDG A1380 and SDG A1377, the laboratory control sample recoveries met QAPP QC performance criteria. For SDG A1377, matrix spike recoveries met QAPP QC performance criteria. Matrix spikes were not completed with SDG A1380

d. All reported analytes met quantitation limit requirements specified in the project QAPP.
e. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals**
Data packages for SDG A1380 (10 samples) and SDG A1377 (19 samples) were reported; the analytical methods were listed as 6010 and 7471, which are standard EPA methods (however the method update is not specified).
   a. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spikes were not reported for either SDG. Preparation blank results met QAPP QC performance criteria for confirmatory samples.
   b. Holding times appear to have been met for all samples in SDG A1380 and SDG A1377.
   c. All reported metals met quantitation limit requirements specified in the project QAPP.
   d. DQO limits for most metals are set to site background levels. Since the site background data is not available, conclusions about the observed metals concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for PCBs and organochlorine pesticides are usable for the intended purposes. No target analytes were observed above DQO limits.
3. Data for volatile organics for five samples in SDG A1380 should be considered biased high and qualified as UJ due to high surrogate recoveries. However, since there were no target analytes observed near the DQO limits, data for both SDGs are usable for the intended purposes.
4. Data for semivolatile organics should be considered usable for most target analytes. However, the Mitkem reporting limits do not meet DQO requirements for benzo(a)pyrene, 2-methylphenol, etc. Clarification of MDLs for those target analytes is needed to complete the assessment of data usability. Aniline is listed as a target analyte for confirmatory soil samples but was not reported. The reported result for the method blank for 2,4,5-trichlorophenol does not meet QAPP QC performance criteria. For LCS and MS: 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported, therefore the QAPP QC performance criteria were not met.
5. Mitkem reported data for most metals appears to be usable based on the information provided. However, without site background information, DQO exceedences cannot be identified.

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Date: October 18, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1433 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for soil samples that were analyzed for volatile organics by EPA CLP SOW OLM03.0; semivolatile organics, polychlorinated biphenyls, organochlorine pesticides and metals by unspecified methods. The associated method specific quality control results were provided for all analyses; matrix spikes were not reported except for metals. Importantly, the quality control performance criteria listed in the QAPP have not been incorporated into the laboratory results reports.

Findings

1. **Volatile Organics**
   Results for SDG 1433 containing eleven samples were obtained following CLP SOW OLM03.0.
   a. Surrogate recoveries met QAPP QC performance criteria except three samples had slightly high surrogate recoveries.
   b. Holding times appeared to be met, since samples were analyzed within two days of receipt. Sampling dates were not provided.
   c. Laboratory control sample recoveries met QAPP QC performance criteria. The method blank had no measured contaminants at or above the MDL. Matrix spikes were not completed with this SDG.
   d. The target compounds reported by Mitkem met quantitation limit requirements specified in the project QAPP except six samples with higher moisture content had reporting limits exceeding the QAPP MQLs. Two project specific target compounds for confirmation sampling listed in the QAPP were not reported by Mitkem: (1) 1,2,3-trichloropropane and (2) 1,3-dichloropropane.
   e. No reported target analytes were observed above DQO levels specified in the QAPP.

2. **Semivolatile Organics**
Results for SDG A1433 containing 11 soil samples were obtained by an unspecified method.
    a. Surrogate recoveries for all samples except one met QAPP QC performance criteria.
    b. Holding times for extraction and analysis appeared to be met for all samples since extraction and analysis were completed immediately; however, sampling dates were not reported.
    c. Method blanks were free of contamination from target compounds; however, the laboratory reporting limit for 2,4,5-trichlorophenol exceeds the QAPP MQL and DQO. Laboratory control sample recoveries and relative percent differences (RPDs) met QAPP performance criteria except 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported as semivolatile target compounds (they were reported as volatile target compounds), and N-Nitroso-di-n-propylamine recoveries were low for the LCS and LCSD and the pentachlorophenol recovery was low for the LCSD.
    d. The Mitkem reported quantitation limits did not meet DQO requirements for numerous analytes and Mitkem MDLs could not be evaluated for meeting DQO requirements for 2,4,5-trichlorophenol and aniline because the MDLs were not reported. Also, aniline was not reported as a target analyte by Mitkem.
    e. Target compounds were observed above DQO levels specified in the QAPP for most samples.

3. **Polychlorinated biphenyls (PCB)**
Results for SDG A1433 containing 11 soil samples were obtained by an unspecified method.
    a. Surrogate recoveries on the primary column were acceptable for all samples; the high surrogate recovery for one sample on the confirmation column is inconsequential because no PCBs were observed on the primary column. Method blanks were free of contamination from target compounds.
    b. Holding times for extraction and analysis appeared to be met because extraction and analysis was completed immediately. Sampling dates were not reported.
    c. The laboratory control sample recoveries and LCS relative percent differences met QAPP QC performance criteria. Matrix spikes were not completed.
    d. All reported analytes slightly exceeded quantitation limit requirements specified in the project QAPP due to sample percent moisture.
    e. No target analytes were observed above DQO levels specified in the QAPP.

4. **Organochlorine pesticides**
Results for SDG A1433 containing 11 soil samples were obtained by an unspecified method.
    a. Surrogate recoveries were acceptable on the primary column for all samples; surrogate recoveries were outside acceptable limits on the secondary column so confirmation analyses were not substantiated. The method blank was free of target compounds.
    b. Holding times for extraction and analysis appeared to be met, since extraction and analysis was completed immediately for all samples; sampling dates were not reported.
    c. The laboratory control sample recoveries and LCS relative percent differences met QAPP QC performance criteria. Matrix spikes were not completed.
    d. Reported analytes did not meet quantitation limit requirements specified in the project QAPP because of sample dilution.
    e. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals**
   Data package for SDG A1433 (11 soil samples) were reported; the analytical methods were listed as ICP and CVAA, which are standard EPA methods (however the method number is not specified).
   a. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spike recoveries were within QAPP QC performance criteria except the antimony, chromium, and mercury spike recoveries were below QAPP QC performance criteria. Preparation blank results met QAPP QC performance criteria for confirmatory samples.
   b. Holding times appear to have been met for all samples, although digestion and analysis dates were not provided.
   c. All reported metals met quantitation limit requirements specified in the project QAPP.
   d. DQO limits for most metals are set to site background levels. Since the site background data is not available, conclusions about the observed metals concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for PCBs and volatile organics are usable for the intended purposes. Organochlorine pesticide results for three samples should be flagged as unconfirmed because confirmation column surrogate recoveries were outside the QAPP QG performance criteria. No target analytes were observed above DQO limits.
3. Data for semivolatile organics should be considered usable for most target analytes. However, the Mitkem reporting limits do not meet DQO requirements for benzo(a)pyrene, 2-methylphenol, etc. Clarification of MDLs for those target analytes is needed to complete the assessment of data usability. Aniline is listed as a target analyte for confirmatory soil samples but was not reported. The reported result for the method blank for 2,4,5-trichlorophenol does not meet QAPP QC performance criteria. For LCS and MS: 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported, therefore the QAPP QC performance criteria were not met. Target compounds ere observed above DQO levels for several samples.
4. Mitkem reported data for most metals appears to be usable based on the information provided except the antimony and mercury results should be considerable biased low and rejected because the matrix spike recoveries were unacceptably low.. However, without site background information, DQO exceedences cannot be identified.

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Date: October 17, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1434 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for soil samples that were analyzed for volatile organics by EPA CLP SOW OLM03.0; semivolatile organics, polychlorinated biphenyls, organochlorine pesticides, toxicity characteristic leaching procedure semivolatiles, and metals by unspecified methods. The associated method specific quality control results were provided for all analyses except matrix spikes were not reported for polychlorinated biphenyls. Importantly, the quality control performance criteria listed in the QAPP have not been incorporated into the laboratory results reports.

Findings

1. **Volatile Organics**
   Results for SDG A1434 containing nine samples were obtained following CLP SOW OLM03.0.
   a. Surrogate recoveries met QAPP QC performance criteria.
   b. Holding times appeared to be met, since samples were analyzed within 1 day of receipt. Sampling dates were not provided.
   c. Laboratory control sample recoveries met QAPP QC performance criteria. The method blank was free of contamination from target compounds. Matrix spikes and MS/MSD relative percent differences (RPD) met QAPP QC performance criteria.
   d. The target compounds reported by Mitkem met quantitation limit requirements specified in the project QAPP except three samples with higher moisture content had reporting limits exceeding the QAPP MQLs. Two project specific target compounds for confirmation sampling listed in the QAPP were not reported by Mitkem: (1) 1,2,3-trichloropropane and (2) 1,3-dichloropropane.
   e. No reported target analytes were observed above DQO levels specified in the QAPP.

2. **Semivolatile Organics**
Results for SDG A1434 containing 13 soil samples were obtained by an unspecified method.
    a. Surrogate recoveries for all samples met QAPP QC performance criteria.
    b. Holding times for extraction and analysis appeared to be met for all samples since extraction and analysis were completed immediately; however, sampling dates were not reported.
    c. Method blanks were free of contamination from target compounds; however, the laboratory reporting limit for 2,4,5-trichlorophenol exceeds the QAPP MQL and DQO. Laboratory control sample recoveries, matrix spike recoveries, and matrix spike/matrix spike duplicate relative percent differences (RPD) met QAPP performance criteria except 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported as semivolatile target compounds (they were reported as volatile target compounds).
    d. The Mitkem reported quantitation limits did not meet DQO requirements for numerous analytes and Mitkem MDLs could not be evaluated for meeting DQO requirements for 2,4,5-trichlorophenol and aniline because the MDLs were not reported. Also, aniline was not reported as a target analyte by Mitkem.
    e. Target compounds were observed above DQO levels specified in the QAPP for most samples.

3. **Polychlorinated biphenyls (PCB)**
Results for SDG A1434 containing 13 soil samples were obtained by an unspecified method.
    a. Surrogate recoveries on the primary column were acceptable for all samples; high surrogate recoveries for the confirmation column are inconsequential because no PCBs were observed on the primary column. Method blanks were free of contamination from target compounds.
    b. Holding times for extraction and analysis appeared to be met because extraction and analysis was completed immediately. Sampling dates were not reported.
    c. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spikes were not completed.
    d. All reported analytes met quantitation limit requirements specified in the project QAPP.
    e. No target analytes were observed above DQO levels specified in the QAPP.

4. **Organochlorine pesticides**
Results for SDG A1434 containing 13 soil samples were obtained by an unspecified method.
    a. Surrogate recoveries were acceptable except four samples had high recoveries for at least one surrogate. The method blank was free of target compounds.
    b. Holding times for extraction and analysis appeared to be met, since extraction and analysis was completed immediately for all samples; sampling dates were not reported.
    c. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spike recoveries did not meet QAPP QC performance criteria.
    d. Reported analytes did not meet quantitation limit requirements specified in the project QAPP because of sample dilution.
    e. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals**
Data package for SDG A1434 (13 soil samples) were reported; the analytical methods were listed as ICP and CVAA, which are standard EPA methods (however the method number is not specified).

a. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spike recoveries were within QAPP QC performance criteria except the antimony spike recovery was unacceptably low. Preparation blank results met QAPP QC performance criteria for confirmatory samples.
b. Holding times appear to have been met for all samples, although digestion and analysis dates were not provided.
c. All reported metals met quantitation limit requirements specified in the project QAPP.
d. DQO limits for most metals are set to site background levels. Since the site background data is not available, conclusions about the observed metals concentrations with respect to the DQO limits could not be made.

6. **Toxicity Characteristic Leaching Procedure Semivolatile Organics**
Results for SDG A1434 containing 13 soil samples were obtained by an unspecified method. The QAPP does not address toxicity characteristic leaching procedure semivolatile organics, so performance criteria used for evaluation is from semivolatile organics.
   a. Surrogate recoveries met QAPP QC performance criteria.
   b. Holding times for extraction and analysis appeared to be met for all samples since extraction and analysis were completed immediately; however, sampling dates were not reported.
   c. Laboratory control sample recoveries, matrix spike recoveries, and MS/MSD RPDs met QAPP QC performance criteria for the reported compounds.
   d. The Mitkem reported qualtitation limits met QAPP DQO requirements except for four samples due to higher concentration volumes, and the Mitkem MDL could not be evaluated for meeting DQO requirements for 2,4,5-trichlorophenol because the MDL was not reported.
   e. Target compounds were not observed above DQO levels specified in the QAPP.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for PCBs, volatile organics, and organochlorine pesticides are usable for the intended purposes. No target analytes were observed above DQO limits.
3. Data for semivolatile organics should be considered usable for most target analytes. However, the Mitkem reporting limits do not meet DQO requirements for benzo(a)pyrene, 2-methylphenol, etc. Clarification of MDLs for those target analytes is needed to complete the assessment of data usability. Aniline is listed as a target analyte for confirmatory soil samples but was not reported. The reported result for the method blank for 2,4,5-trichlorophenol does not meet QAPP QC performance criteria. For LCS and MS: 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported, therefore the QAPP QC performance criteria were not met. Target compounds were observed above DQO levels for several samples.
4. Data for toxicity characteristic leaching procedure semivolatile organics should be considered usable, although QAPP QC performance criteria was not provided.
5. Mitkem reported data for most metals appears to be usable based on the information provided except the antimony results should be considerable biased low and rejected because the matrix spike was unacceptably low. Without site background information, DQO exceedences cannot be identified.

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Date: March 6, 2003

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1435 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for one soil sample that was analyzed for volatile organics by EPA CLP SOW OLM03.0; semivolatile organics, polychlorinated biphenyls, organochlorine pesticides, and metals by unspecified methods. The associated method specific quality control results were provided for all analyses except matrix spikes were not reported for volatile organics

Findings

1. **Volatile Organics**
   Results for SDG A1435 containing one sample were obtained following CLP SOW OLM03.0.
   a. Surrogate recoveries met QAPP QC performance criteria.
   b. Holding times appeared to be met, since samples were analyzed within 1 day of receipt. Sampling dates were not provided.
   c. Laboratory control sample recoveries met QAPP QC performance criteria. The method blank was free of contamination from target compounds. Matrix spikes were not reported.
   d. The target compounds reported by Mitkem met quantitation limit requirements specified in the project QAPP. Mitkem did not report two project specific target compounds listed in the QAPP: (1) 1,2,3-trichloropropane and (2) 1,3-dichloropropane.
   e. No reported target analytes were observed above DQO levels specified in the QAPP.

2. **Semivolatile Organics**
   Results for SDG A1435 containing one soil sample were obtained by an unspecified method.
   a. Surrogate recoveries for all samples met QAPP QC performance criteria.

b. Holding times for extraction and analysis appeared to be met for all samples since extraction and analysis were completed immediately; however, sampling dates were not reported.
c. Method blanks were free of contamination from target compounds; however, the laboratory reporting limit for 2,4,5-trichlorophenol exceeds the QAPP MQL and DQO. Laboratory control sample recoveries, matrix spike recoveries, and matrix spike/matrix spike duplicate relative percent differences (RPDs) met QAPP performance criteria except 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported as semivolatile target compounds (they were reported as volatile target compounds); and the MS/MSD recoveries for pentachlorophenol were low.
d. Mitkem reported quantitation limits did not meet DQO requirements for numerous analytes and Mitkem MDLs could not be evaluated for meeting DQO requirements for 2,4,5-trichlorophenol and aniline because the MDLs were not reported. Also, aniline was not reported as a target analyte by Mitkem.
e. No target compounds were observed above DQO levels specified in the QAPP.

3. **Polychlorinated biphenyls (PCB)**
Results for SDG A1435 containing one soil sample were obtained by an unspecified method.
a. Surrogate recoveries were acceptable, and met QAPP QC requirements. Method blanks were free of contamination from target compounds.
b. Holding times for extraction and analysis appeared to be met because extraction and analysis were completed immediately. Sampling dates were not reported.
c. The laboratory control sample recoveries and matrix spike recoveries met QAPP QC performance criteria.
d. All reported analytes met quantitation limit requirements specified in the project QAPP.
e. No target analytes were observed above DQO levels specified in the QAPP.

4. **Organochlorine pesticides**
Results for SDG A1435 containing one soil sample were obtained by an unspecified method.
a. Surrogate recoveries met QAPP QC requirements except the decachlorobiphenyl recovery was slightly high on the secondary column for the matrix spike. The method blank was free of target compounds.
b. Holding times for extraction and analysis appeared to be met, since extraction and analysis was completed immediately for all samples; sampling dates were not reported.
c. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spike recoveries did not meet QAPP QC performance criteria for DDT for the matrix spike (-154%) or matrix spike duplicate (-192%).
d. Reported analyte quantitation limits met QAPP MQLs.
e. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals**
Results for SDG A1435 (one soil sample) were reported; the analytical methods were listed as ICP and CVAA, which are standard EPA methods (however the method number is not specified).
a. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spike recoveries were within QAPP QC performance criteria except the antimony spike recovery (29.1%) was unacceptably low, and the zinc matrix spike recovery (247.7%) was unacceptably high. Preparation blank results met QAPP QC performance criteria for confirmatory samples. The laboratory duplicate RPDs exceeded QAPP requirements (>20%) for five metals, especially

zinc which had an RPD of 105.3% indicating that the reported result for zinc has high variance.

b. Holding times appear to have been met for all samples, although digestion and analysis dates were not provided.
c. All reported metals met quantitation limit requirements specified in the project QAPP.
d. DQO limits for most metals are set to site background levels. Since the site background data is not available, conclusions about the observed metals concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for volatile organics and PCBs are usable for the intended purposes. No target analytes were observed above DQO limits.
3. The organochlorine pesticides QC data is acceptable except the matrix spike recoveries for DDT were low and the data may be biased low. Except as noted, the pesticide data should be usable for its intended purpose.
4. Data for semivolatile organics should be considered usable for most target analytes. However, the Mitkem reporting limits do not meet DQO requirements for benzo(a)pyrene, 2-methylphenol, etc. Clarification of MDLs for those target analytes is needed to complete the assessment of data usability. Aniline is listed as a target analyte for confirmatory soil samples but was not reported. For LCS and MS: 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported, therefore the QAPP QC performance criteria were not met. Low matrix spike recoveries for pentachlorophenol suggest that data for that compound are biased low.
5. Mitkem reported data for most metals appears to be usable based on the information provided except the antimony results should be considerable biased low and rejected because the matrix spike was unacceptably low. High matrix spike recovery and high duplicate RPDs indicate that the zinc result has excessive variance and should be flagged as estimated. Without site background information, DQO exceedences cannot be identified.

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Date: October 22, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1448 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for soil samples that were analyzed for volatile organics by EPA CLP SOW OLM03.0; semivolatile organics, polychlorinated biphenyls, organochlorine pesticides, metals, and, toxicity characteristic leaching procedure semivolatiles, by unspecified methods. The associated method specific quality control results were provided for all analyses except matrix spikes were not reported for volatile organics. Importantly, the quality control performance criteria listed in the QAPP have not been incorporated into the laboratory results reports.

Findings

1. **Volatile Organics**
   Results for SDG A1448 containing nineteen samples were obtained following CLP SOW OLM03.0.
   a. Surrogate recoveries met QAPP QC performance criteria except five samples had low BFB recoveries.
   b. Holding times appeared to be met, since samples were analyzed within 1 day of receipt. Sampling dates were not provided.
   c. Laboratory control sample recoveries met QAPP QC performance criteria. The method blank was free of contamination from target compounds. Matrix spikes and MS/MSD relative percent differences (RPD) met QAPP QC performance criteria.
   d. The target compounds reported by Mitkem met quantitation limit requirements specified in the project QAPP except three with higher moisture content had reporting limits exceeding the QAPP MQLs.. Two project specific target compounds for confirmation sampling listed in the QAPP were not reported by Mitkem: (1) 1,2,3-trichloropropane and (2) 1,3-dichloropropane.
   e. No reported target analytes were observed above DQO levels specified in the QAPP.

2. **Semivolatile Organics**

Results for SDG A1448 containing 17 soil samples were obtained by an unspecified method.

a. Surrogate recoveries for all samples met QAPP QC performance criteria except for three samples with slightly high surrogates.
b. Holding times for extraction and analysis appeared to be met for all samples since extraction and analysis were completed immediately; however, sampling dates were not reported.
c. Method blanks were free of contamination from target compounds; however, the laboratory reporting limit for 2,4,5-trichlorophenol exceeds the QAPP MQL and DQO. Laboratory control sample recoveries, matrix spike recoveries, and matrix spike/matrix spike duplicate relative percent differences (RPDs) met QAPP performance criteria except 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported as semivolatile target compounds (they were reported as volatile target compounds); and the MS/MSD recoveries for pentachlorophenol were low.
d. The Mitkem reported quantitation limits did not meet DQO requirements for numerous analytes and Mitkem MDLs could not be evaluated for meeting DQO requirements for 2,4,5-trichlorophenol and aniline because the MDLs were not reported. Also, aniline was not reported as a target analyte by Mitkem.
e. Target compounds were observed above DQO levels specified in the QAPP for several samples.

3. **Polychlorinated biphenyls (PCB)**

Results for SDG A1448 containing 17 soil samples were obtained by an unspecified method.

a. Surrogate recoveries were acceptable except two samples had high recoveries for one surrogate on the primary column. Method blanks were free of contamination from target compounds.
b. Holding times for extraction and analysis appeared to be met because extraction and analysis was completed immediately. Sampling dates were not reported.
c. The laboratory control sample recoveries and matrix spike recoveries met QAPP QC performance criteria.
d. All reported analytes met, or slightly exceeded due to percent moisture, quantitation limit requirements specified in the project QAPP.
e. No target analytes were observed above DQO levels specified in the QAPP.

4. **Organochlorine pesticides**

Results for SDG A1448 containing 17 soil samples were obtained by an unspecified method.

a. Surrogate recoveries were high for ten samples. The method blank was free of target compounds.
b. Holding times for extraction and analysis appeared to be met, since extraction and analysis was completed immediately for all samples; sampling dates were not reported.
c. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spike recoveries did not meet QAPP QC performance criteria for endrin for the MSD.
d. Reported analytes did not meet quantitation limit requirements specified in the project QAPP because of sample dilution or % moisture.
e. No target analytes were observed above DQO levels specified in the QAPP.

5. **Metals**
Data package for SDG A1448 (18 soil samples) were reported; the analytical methods were listed as ICP and CVAA, which are standard EPA methods (however the method number is not specified).
    a. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spike recoveries were within QAPP QC performance criteria except the antimony spike recovery was unacceptably low. Preparation blank results met QAPP QC performance criteria for confirmatory samples.
    b. Holding times appear to have been met for all samples, although digestion and analysis dates were not provided.
    c. All reported metals met quantitation limit requirements specified in the project QAPP.
    d. DQO limits for most metals are set to site background levels. Since the site background data is not available, conclusions about the observed metals concentrations with respect to the DQO limits could not be made.

6. **Toxicity Characteristic Leaching Procedure Semivolatile Organics**
Results for SDG A1448 containing 9 soil samples were obtained by an unspecified method. The QAPP does not address toxicity characteristic leaching procedure semivolatile organics, so performance criteria used for evaluation is from semivolatile organics.
    a. Surrogate recoveries met QAPP QC performance criteria.
    b. Holding times for extraction and analysis appeared to be met for all samples since extraction and analysis were completed immediately; however, sampling dates were not reported.
    c. Laboratory control sample recoveries, matrix spike recoveries, and MS/MSD RPDs met QAPP QC performance criteria for the reported compounds except the MS/MSD recoveries for pentachlorophenol (29%/33%) and pyridine (41%/39%) were low and the LCS recovery (48%) for pyridine was low. For both compounds, the results should be considered bias low.
    d. The Mitkem reported quantitation limits met target regulatory limits for all compounds.
    e. Two samples had target compounds reported as detected but the levels were below regulatory limits.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for volatile organics and PCBs are usable for the intended purposes except several samples with low surrogate recovery. No target analytes were observed above DQO limits.
3. The organochlorine pesticides data has many surrogate failures and other method QC failures. The data usability is limited and should be addressed on a sample specific basis. The QAPP QC performance criteria were not met.
4. Data for semivolatile organics should be considered usable for most target analytes. However, the Mitkem reporting limits do not meet DQO requirements for benzo(a)pyrene, 2-methylphenol, etc. Clarification of MDLs for those target analytes is needed to complete the assessment of data usability. Aniline is listed as a target analyte for confirmatory soil samples but was not reported. The reported result for the method blank for 2,4,5-trichlorophenol does not meet QAPP QC performance criteria. For LCS and

MS: 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported, therefore the QAPP QC performance criteria were not met. Target compounds ere observed above DQO levels for several samples. Slightly high surrogate recoveries indicate a high bias and the low matrix spike recoveries for pentachlorophenol suggest that data for that compound.

5. Data for toxicity characteristic leaching procedure semivolatile organics should be considered usable, although QAPP QC performance criteria was not provided.
6. Mitkem reported data for most metals appears to be usable based on the information provided except the antimony results should be considerable biased low and rejected because the matrix spike was unacceptably low. However, without site background information, DQO exceedences cannot be identified.

United States Army Corps of Engineers
Engineer Research and Development Center
Environmental Laboratory

Environmental Chemistry Branch
420 South 18th Street
Omaha, NE 68102

Date: November 14, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1453 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for seven soil samples, obtained 30 September 02, that were analyzed for ignitability, reactive cyanide, reactive sulfide, and pH by SW-846 methods appropriate for waste characterization, and for toxicity characteristic leaching procedure metals by SW-846 methods for ICP and cold vapor AA. Representative method specific quality control results were provided in the data package.

Findings

1. **Ignitability**
   Results for SDG A1453 containing seven soil samples were obtained following SW-846 method 1010.
   a. All analysis holding times met QAPP requirements
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test, and the samples had measured flash points above the regulatory limit.

2. **Reactive Cyanide**
   Results for SDG A1453 containing seven soil samples were obtained by SW-846 method 7.3.3.2.
   a. All analysis holding times met the QAPP requirements.
   b. The method blank was free of contamination and the %RPD for the sample duplicate was acceptable. The laboratory control sample (0%) and matrix spike (0%) recoveries were unacceptably low, and the data for reactive cyanide for this batch is unusable and should be flagged as rejected.
   c. The reported reactive cyanide practical quantitation limit met the specified regulatory requirement for reactive cyanide.
   d. Reactive cyanide was not measured above the PQL for any project samples.

3. **Reactive Sulfide**
Results for SDG A1453 containing seven soil samples were obtained by SW-846 method an SW-846 method 7.3.4.2.
    a. All analysis holding times for reactive sulfide met the QAPP requirements. However, samples typically are analyzed ASAP, and the reactive sulfide measurements for these project samples were run nine days after sample receipt.
    b. The method blank was free of contamination and the laboratory control sample recovery was acceptable. The duplicate analysis %RPD was high because the sample result was 4.3 mg/kg and the duplicate result was estimated as 0.3 J mg/kg. The matrix spike recovery (15.2%) was low. Results for this data set for reactive sulfide are usable but should be flagged and considered biased low.
    c. The reported reactive sulfide practical quantitation limit met the specified regulatory requirement.
    d. All reactive sulfide results were far below the regulatory limit; however, low levels of reactive sulfide were measured in three samples.

4. **pH**
Results for SDG A1453 containing seven soil samples were obtained by SW-846 method 9045C.
    a. All analysis holding times for pH met the QAPP requirements. However, samples are typically analyzed ASAP, and the pH measurements for these project samples were run eight days after sample receipt.
    b. The reported pH practical quantitation limit met the specified regulatory requirement.
    c. All pH results were within the acceptable regulatory range.

5. **Metals**
Results for TCLP metals for SDG A1453 containing four soil samples were obtained by SW-846 methods for ICP and cold vapor AA following the TCLP extraction.
    a. All analysis holding times were met.
    b. The method quality control information including matrix spikes, preparation blanks, laboratory control sample recoveries, and laboratory duplicate results were acceptable. Low levels of barium were observed in both preparation blanks and a low level of lead was observed in one preparation blank.
    c. The reported metals practical quantitation limits met the specified regulatory requirement.
    d. All metals results were below the regulatory threshold; however, all samples had low levels of barium and moderate to high levels of lead in the TCLP extracts.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for ignitability, pH, and metals are usable for the intended purposes. No target analytes were observed except low levels of barium and moderate to high levels of lead in the TCLP extracts.
3. Data for samples analyzed for reactive sulfide should be flagged as considered biased low because the matrix spike recovery reported with the data package was low (15.2%); the data should be usable since the reported results were far below the regulatory threshold.

4. Data for samples analyzed for reactive cyanide are **not** usable since the laboratory control sample and matrix spike sample recoveries were 0%. The unacceptably low reactive cyanide recoveries indicate a serious laboratory quality control problem for this sample batch.

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Date: November 5, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1462 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for seven soil samples that were analyzed for ignitability, reactive cyanide, reactive sulfide, and pH by SW-846 methods appropriate for waste characterization. Representative method specific quality control results were provided in the data package.

Findings

1. **Ignitability**
   Results for SDG A1462 containing seven soil samples were obtained following SW-846 method 1010.
   a. All analysis holding times met QAPP requirements
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test, and the samples had measured flash points above the regulatory limit.

2. **Reactive Cyanide**
   Results for SDG A1462 containing seven soil samples were obtained by SW-846 method 7.3.3.2.
   a. All analysis holding times met the QAPP requirements.
   b. The method blank was free of contamination and the %RPD for the sample duplicate was acceptable. The laboratory control sample (0%) and matrix spike (0%) recoveries were unacceptably low, and the data for reactive cyanide for this batch is unusable and should be flagged as rejected.
   c. The reported reactive cyanide practical quantitation limit met the specified regulatory requirement for reactive cyanide.
   d. Reactive cyanide was not measured above the PQL for any project samples.

3. **Reactive Sulfide**
   Results for SDG A1462 containing seven soil samples were obtained by SW-846 method an Sw-846 method 7.3.4.2.
   a. All analysis holding times for reactive sulfide met the QAPP requirements. However, samples typically are analyzed ASAP, and the reactive sulfide measurements for these project samples were run nine days after sample receipt.
   b. The reported reactive sulfide practical quantitation limit met the specified regulatory requirement.
   c. All reactive sulfide results were far below the regulatory limit; however, low levels of reactive sulfide were measured in five samples.

4. **pH**
   Results for SDG A1462 containing seven soil samples were obtained by SW-846 method 9045C.
   a. All analysis holding times for pH met the QAPP requirements. However, samples are typically analyzed ASAP, and the pH measurements for these project samples were run eight days after sample receipt.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for ignitability, reactive sulfide, and pH are usable for the intended purposes. No target analytes were observed except low levels of reactive sulfide, which were far below regulatory limits.
3. Data for samples analyzed for reactive cyanide are **not** usable since the laboratory control sample and matrix spike sample recoveries were 0%. The unacceptably low reactive cyanide recoveries indicate a serious laboratory quality control problem for this sample batch.

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Date: November 21, 2002

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1469 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for eleven (11) soil samples that were analyzed for polychlorinated biphenyls and organochlorine pesticides by unspecified methods. The associated method specific quality control results were provided for both analyses. Importantly, the quality control performance criteria listed in the QAPP have not been incorporated into the laboratory results reports.

Findings

1. **Polychlorinated biphenyls (PCB)**
   Results for SDG A1469 containing eleven (11) soil samples were obtained by an unspecified method.
   a. Surrogate recoveries met QAPP quality control performance criteria for soil samples. The method blank was free of contamination from target compounds, and the results met QAPP QC criteria for soil samples.
   b. Holding times for extraction and analysis appeared to be met because extraction and analysis was completed immediately. Sampling dates were not reported.
   c. The laboratory control sample recoveries and matrix spike recoveries met QAPP QC performance criteria.
   d. All reported analytes met, or slightly exceeded due to percent moisture, quantitation limit requirements specified in the project QAPP.
   e. No target analytes were observed above DQO levels specified in the QAPP.

2. **Organochlorine pesticides**
   Results for SDG A1469 containing eleven (11) soil samples were obtained by an unspecified method.
   a. Surrogate recoveries met QAPP quality control performance criteria for soil samples. The method blank was free of contamination from target compounds, and the results met QAPP QC criteria for soil samples.

b. Holding times for extraction and analysis appeared to be met, since extraction and analysis was completed immediately for all samples; sampling dates were not reported.
c. The laboratory control sample recoveries met QAPP QC performance criteria, except the recoveries for the following compounds were slightly high: 4,4'-DDE (138%); endrin (146%); endrin ketone (138%); endosulfan II (131%); 4,4'-DDD (131%); and 4,4'-DDT (131%). Matrix spike recoveries met QAPP QC performance criteria, except the matrix spike (213%) and the matrix spike duplicate (187%) recoveries for 4,4'-DDE were high and exceeded QAPP QC performance criteria.
d. All reported analytes met, or slightly exceeded due to percent moisture, quantitation limit requirements specified in the project QAPP.
e. No target analytes were observed above DQO levels specified in the QAPP.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for polychlorinated biphenyls and organochlorine pesticides are usable for the intended purposes. No target analytes were observed above DQO limits.

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Date: February 28, 2003

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1480 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for twelve soil samples, received at Mitkem on 10 October 02, that were analyzed for polychlorinated biphenyls (PCB) and organochlorine pesticides by unspecified methods, and for metals by SW-846 methods for ICP and cold vapor AA. Representative method specific quality control results were provided in the data package.

Findings

1. **Polychlorinated Biphenyls**
   Results for SDG A1480 containing twelve soil samples were obtained by an unspecified method following sample preparation by sonication.
   a. All analysis holding times met QAPP requirements
   b. The method blank was free of contamination and the laboratory control sample recoveries met QAPP requirements. Surrogate spike recoveries met QAPP requirements except the decachlorobiphenyl recovery (189%) was high on one column for sample CL5901WS5. There were no matrix spikes reported with the preparation/analysis batch.
   c. The reported quantitation limits were slightly above the QAPP MQLs due to adjustment for percent solids.
   d. There were no results for PCBs above the laboratory quantitation limit; and all results were below the QAPP DQOs.

2. **Pesticides**
   Results for SDG A1480 containing twelve soil samples were obtained by an unspecified method following sample preparation by sonication.
   a. All analysis holding times met the QAPP requirements.
   b. The method blank was free of contamination. The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) recoveries met QAPP requirements except the endrin LCS recovery (131%) slightly exceeded QAPP

QC requirements. Surrogate spike recoveries met QAPP requirements except the decachlorobiphenyl recoveries for sample CL5901WS5 were high. There were no matrix spikes reported with the preparation/analysis batch.

c. The reported quantitation limits were slightly above the QAPP MQLs due to adjustment for percent solids.
d. There were no results for organochlorine pesticides above the QAPP DQOs.

3. **Metals**

Results for metals for SDG A1480 containing twelve soil samples were obtained by SW-846 methods for ICP and cold vapor AA.

a. All analysis holding times were met.
b. The method quality control information included a preparation blank, laboratory control sample, laboratory duplicate, and matrix and post digestion spikes. The preparation blank contained low levels of several metals: 0.306 mg/kg barium, 0.822 mg/kg copper, 3.372 mg/kg iron, 0.263 mg/kg manganese, 0.032 mg/kg nickel, 8.778 mg/kg potassium, 10.383 mg/kg sodium, and 0.646 mg/kg zinc. None of the metals found in the preparation blank are at concentrations that exceed the QAPP MQLs. Laboratory control sample recoveries were acceptable. Laboratory duplicate RPDs were acceptable for most metals, although the following metals had high RPDs: arsenic (63.2%), barium (29.9%), calcium (20.7%), copper (34.0%), manganese (42.1%), and selenium (200%). The metals listed above have LD RPDs that exceed the QAPP DQOs. Matrix spike recoveries were acceptable except the recoveries were low for antimony (38.8%), copper (73.0%), and lead (35.5%). The post digestion spike recoveries were acceptable except the recovery (70.4%) for lead was slightly low. The low matrix spike recovery for antimony suggests that results for antimony are biased low and should be flagged.
c. The laboratory reported metals practical quantitation limits met the QAPP MQLs.
d. Metals results appeared in some instances to exceed the QAPP DQOs; however, the results evaluation is incomplete because the metals site background (SB) concentrations were not available.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for polychlorinated biphenyls and organochlorine pesticides are usable for the intended purposes. No target analytes were observed above the QAPP DQOs. There were minor QC deficiencies that should not impact data usage.
3. Data for samples analyzed for metals are usable for the intended purposes with the following reservations. The results for antimony should be flagged as biased low based on the low matrix spike recovery. The high RPDs for several metals exceed QAPP DQOs, although RPDs for metals greater than 20% are not unusual for soil samples; and the sample results should be flagged per QAPP instructions.

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Date: March 7, 2003

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1486 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for seven soil samples that were analyzed for ignitability, reactive cyanide, reactive sulfide, and pH by SW-846 methods appropriate for waste characterization. Representative method specific quality control results were provided in the data package.

Findings

1. **Ignitability**
   Results for SDG A1486 containing seven soil samples were obtained following SW-846 method 1010.
   a. All analysis holding times met QAPP requirements
   b. The reported flash point practical quantitation limit met the specified regulatory requirement for flash point.
   c. All samples passed the flash point test, and the samples had measured flash points above the regulatory limit.

2. **Reactive Cyanide**
   Results for SDG A1486 containing seven soil samples were obtained by SW-846 method 7.3.3.2.
   a. All analysis holding times met the QAPP requirements.
   b. The method blank was free of contamination. The laboratory control sample (0%) recovery was unacceptably low, and the data for reactive cyanide for this batch is unusable and should be flagged as rejected. The combination of the expected 10-15% recovery for reactive cyanide and the low cyanide spike level contribute to the observed 0% recovery.
   c. The reported reactive cyanide practical quantitation limit met the specified regulatory requirement for reactive cyanide.
   d. Reactive cyanide was not measured above the PQL for any project samples.

3. **Reactive Sulfide**
   Results for SDG A1486 containing seven soil samples were obtained by SW-846 method 7.3.4.2.
   a. All analysis holding times for reactive sulfide met the QAPP requirements. However, samples typically are analyzed ASAP, and the reactive sulfide measurements for these project samples were run twelve days after sample receipt.
   b. The reported reactive sulfide practical quantitation limit met the specified regulatory requirement.
   c. All reactive sulfide results were far below the regulatory limit; however, low levels of reactive sulfide were measured in five samples.

4. **pH**
   Results for SDG A1486 containing seven soil samples were obtained by SW-846 method 9045C.
   a. All analysis holding times for pH met the QAPP requirements. However, samples are typically analyzed ASAP, and the pH measurements for these project samples were run thirteen days after sample receipt.
   b. The reported pH practical quantitation limit met the specified regulatory requirement.
   c. All pH results were within the acceptable regulatory range.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for ignitability, reactive sulfide, and pH are usable for the intended purposes. No target analytes were observed except low levels of reactive sulfide, which were far below regulatory limits.
3. Data for samples analyzed for reactive cyanide are not usable since the laboratory control sample recovery was 0%.

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Date: March 7, 2003

Subject: Data Usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71

From: Douglas Taggart and Denise MacMillan, Environmental Chemistry Branch, Environmental Laboratory

To: Janet Fallo, New York District

Overview

The Mitkem Corporation analytical data for work order number A1488 were received electronically and reviewed for usability for the Time Critical Removal Actions at SEAD-59 and SEAD-71. Data were received for nine soil samples that were analyzed for volatile organics, semivolatile organics, and metals by unspecified methods. The associated method specific quality control results were provided for all analyses except matrix spikes were not reported for volatile organics.

Findings

1. **Volatile Organics**
   Results for SDG A1488 containing nine samples were obtained by an unspecified method.
   a. Surrogate recoveries met QAPP QC performance criteria, except seven samples had slightly low recoveries (55-69%) for bromofluorobenzene, which indicates that the associated data could be biased low. Information regarding reanalysis was not submitted with the data package.
   b. Holding times appeared to be met, since samples were analyzed within 1 day of receipt. Sampling dates were not provided.
   c. Laboratory control sample recoveries met QAPP QC performance criteria. The method blank was free of contamination from target compounds. Matrix spikes were not reported.
   d. The target compounds reported by Mitkem met quantitation limit requirements specified in the project QAPP. Mitkem did not report two project specific target compounds listed in the QAPP: (1) 1,2,3-trichloropropane and (2) 1,3-dichloropropane.
   e. No target analytes were observed above DQO levels specified in the QAPP.

2. **Semivolatile Organics**
   Results for SDG A1488 containing nine soil samples were obtained by an unspecified method.
   a. Surrogate recoveries for all samples met QAPP QC performance criteria.

b. Holding times for extraction and analysis appeared to be met for all samples since extraction and analysis were completed immediately; however, sampling dates were not reported.
c. Method blanks were free of contamination from target compounds; however, the laboratory reporting limit for 2,4,5-trichlorophenol exceeds the QAPP MQL and DQO. Laboratory control sample recoveries, matrix spike recoveries, and matrix spike/matrix spike duplicate relative percent differences (RPDs) met QAPP performance criteria except 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported as semivolatile target compounds (they were reported as volatile target compounds).
d. Mitkem reported quantitation limits did not meet DQO requirements for numerous analytes and Mitkem MDLs could not be evaluated for meeting DQO requirements for 2,4,5-trichlorophenol and aniline because the MDLs were not reported. Also, aniline was not reported as a target analyte by Mitkem.
e. For some samples, target compounds were observed above DQO levels specified in the QAPP.

3. **Metals**
Results for SDG A1488 (nine soil samples) were reported; the analytical methods were listed as ICP and CVAA, which are standard EPA methods (however the method numbers are not specified).
   a. The laboratory control sample recoveries met QAPP QC performance criteria. Matrix spike recoveries were within QAPP QC performance criteria except the antimony spike recovery (36.2%) was unacceptably low. Preparation blank results met QAPP QC performance criteria for confirmatory samples. The laboratory duplicate RPDs slightly exceeded QAPP requirements (>20%) for two metals.
   b. Holding times appear to have been met for all samples, although digestion and analysis dates were not provided.
   c. All reported metals met quantitation limit requirements specified in the project QAPP.
   d. DQO limits for most metals are set to site background levels. Since the site background data is not available, conclusions about the observed metals concentrations with respect to the DQO limits could not be made.

Data Usability Assessment

1. Data review was completed following standard guidelines presented in the EPA Draft G-8 document on data verification and data validation and the Environmental Chemistry Branch SOP Q-036-ECBO-QA Data Verification and Validation. The evaluation is focused on compliance with project-specific and method requirements to ensure data usability.
2. Data for samples analyzed for volatile organics might have a low bias due to the slightly low surrogate recovery for seven of the nine samples. No target analytes were observed above DQO limits.
3. Data for semivolatile organics should be considered usable for most target analytes. However, the Mitkem reporting limits do not meet DQO requirements for benzo(a)pyrene, 2-methylphenol, etc. Clarification of MDLs for those target analytes is needed to complete the assessment of data usability. Aniline is listed as a target analyte for confirmatory soil samples but was not reported. For LCS and MS: 1,4-dichlorobenzene and 1,2,4-trichlorobenzene were not reported, therefore the QAPP QC performance criteria were not met.
4. Mitkem reported data for metals are usable based on the information provided except the antimony results should be considerable biased low and rejected because the matrix spike was unacceptably low.

Seneca Army Depot
Time Critical Removal
SEAD-59 and SEAD-71
Exceedences

Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/16/2002	WS-59-OtherC-001-1	584344		X	Hg	0.16		0.13
9/16/2002	CL-59-OtherC-WE1	584348		X	Zn	175		126
9/16/2002	CL-59-OtherC-WE1	584348		X	Hg	0.17		0.13
9/16/2002	CL-59-OtherC-WE1	584348		X	Cr	51.3		32.7
9/16/2002	CL-59-OtherC-WN1	584349	X					
9/16/2002	FD-59-CL-01	584351	X					
9/16/2002	CL-59-OtherC-WW1	584352	X					
9/16/2002	CL-59-OtherC-F01	584354	X					
9/16/2002	CL-59-OtherC-WS1	584357		X	Hg	0.17		0.13
9/16/2002	CL-59-OtherC-WS1	584357		X	Pb	73.7		45.5
9/16/2002	WS-59-03-001-1	584360	X					
9/17/2002	WS-59-03-001-2	584658	X					
9/17/2002	WS-59-03-001-3	584659	X					
9/17/2002	FD-59-WS-01	584660	X					
9/17/2002	WS-59-03-002-1	584661	X					
9/17/2002	WS-59-03-002-2	584662	X					
9/17/2002	WS-59-03-002-4	584663	X					
9/17/2002	WS-59-03-002-3	584664	X					
9/17/2002	CL-59-03-F01	584665	X					
9/17/2002	CL-59-03-F02	584666	X					
9/17/2002	CL-59-03-F03	584667	X					
9/18/2002	WS-59-02-002-1	585277	X					
9/18/2002	WS-59-02-002-2	585278	X					
9/18/2002	WS-59-02-002-3	585279	X					
9/18/2002	WS-59-02-003-1	585280	X					
9/18/2002	WS-59-02-003-2	585281	X					
9/18/2002	WS-59-02-003-3	585282	X					

Seneca Army Depot
Time Critical Removal
SEAD-59 and SEAD-71
Exceedences

Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/18/2002	WS-59-02-003-4	585283	X					
9/18/2002	WS-59-02-003-5	585284	X					
9/18/2002	WS-59-02-004-1	585285	X					
9/19/2002	CL-59-0A-F01	A1380-05A		X	Ag	1.8		0.87
9/19/2002	CL-59-0A-WE1	A1380-04A		X	Ag	2.5		0.87
9/19/2002	CL-59-0A-WN1	A1380-01A		X	Hg	0.14		0.13
9/19/2002	CL-59-0A-WN1	A1380-01A		X	Ag	2.9		0.87
9/19/2002	CL-59-0A-WS1	A1380-03A		X	Hg	0.14		0.13
9/19/2002	CL-59-0A-WS1	A1380-03A		X	Ag	2.8		0.87
9/19/2002	CL-59-0A-WW1	A1380-02A		X	Ag	2.6		0.87
9/19/2002	CL-59-0B-F01	A1380-06A		X	Ag	2		0.87
9/19/2002	CL-59-0B-WE1	A1380-09A		X	Ag	2.1		0.87
9/19/2002	CL-59-0B-WN1	A1380-07A		X	Ag	2.5		0.87
9/19/2002	CL-59-0B-WS1	A1380-10A		X	Ag	2.3		0.87
9/19/2002	CL-59-0B-WW1	A1380-08A		X	Ag	1.7		0.87
9/19/2002	CL-59-02-F01	A1377-17A		X	Ag	2.2		0.87
9/19/2002	CL-59-02-F02	A1377-18A		X	Ag	1.4		0.87
9/19/2002	CL-59-02-WE1	A1377-15A		X	Ag	1.6		0.87
9/19/2002	CL-59-02-WE2	A1377-16A	X					
9/19/2002	CL-59-02-WN1	A1377-13A		X	Ag	1.9		0.87
9/19/2002	CL-59-02-WN2	A1377-14A		X	Ag	1.1		0.87
9/19/2002	CL-59-02-WS1	A1377-10A		X	Ag	1.9		0.87
9/19/2002	CL-59-02-WS2	A1377-09A		X	Ag	1.1		0.87
9/19/2002	CL-59-02-WW1	A1377-11A	X					
9/19/2002	CL-59-02-WW2	A1377-12A		X	Ag	2.6		0.87
9/19/2002	CL-59-02-WE1	A1377-01A		X	Ag	2.4		0.87
9/19/2002	CL-59-03-WN1	A1377-02A		X	Ag	2.5		0.87
9/19/2002	CL-59-03-WN2	A1377-03A		X	Ag	1.1		0.87
9/19/2002	CL-59-03-WN3	A1377-04A	X					
9/19/2002	CL-59-03-WS1	A1377-05A	X					

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/19/2002	CL-59-03-WS2	A1377-06A	X					
9/19/2002	CL-59-03-WS3	A1377-07A		X	Ag	1.3		0.87
9/19/2002	CL-59-03-WW1	A1377-08A		X	Ag	2.1		0.87
9/19/2002	FD-59-CL-02	A1377-19A	X					
9/19/2002	WS-59-01-004-2	585662		X	Pb	46.7		45.5
9/19/2002	WS-59-01-004-2	585662		X	Benzo(A) Anthracene	9		0.23
9/19/2002	WS-59-01-004-2	585662		X	Benzo(A) Pyrene	9		0.25
9/19/2002	WS-59-01-004-2	585662		X	Benzo(B) Fluoranthene	6		1.1
9/19/2002	WS-59-01-004-2	585662		X	Benzo(K) Fluoranthene	6.7		1.1
9/19/2002	WS-59-01-004-2	585662		X	Indeno (1,2,3-CD) Pyrene	5		3.2
9/19/2002	WS-59-01-004-2	585662		X	Chrysene	9		0.4
9/19/2002	WS-59-01-004-2	585662		X	Dibenzo(A,H) Anthracene	1.9 J		0.072
9/19/2002	WS-59-01-004-3	585663		X	Benzo(A) Anthracene	9.5		0.23
9/19/2002	WS-59-01-004-3	585663		X	Benzo(A) Pyrene	15		0.25
9/19/2002	WS-59-01-004-3	585663		X	Benzo(B) Fluoranthene	11		1.1
9/19/2002	WS-59-01-004-3	585663		X	Benzo(K) Fluoranthene	10		1.1
9/19/2002	WS-59-01-004-3	585663		X	Indeno (1,2,3-CD) Pyrene	8.8		3.2
9/19/2002	WS-59-01-004-3	585663		X	Chrysene	9.7		0.4
9/19/2002	WS-59-01-004-3	585663		X	Dibenzo(A,H) Anthracene	3.2		0.072
9/19/2002	WS-59-01-004-4	585664		X	Pb	47.7		45.5
9/19/2002	WS-59-01-004-4	585664		X	Benzo(A) Anthracene	4.5		0.23
9/19/2002	WS-59-01-004-4	585664		X	Benzo(A) Pyrene	4.7		0.25
9/19/2002	WS-59-01-004-4	585664		X	Benzo(B) Fluoranthene	3.5		1.1
9/19/2002	WS-59-01-004-4	585664		X	Benzo(K) Fluoranthene	3.6		1.1
9/19/2002	WS-59-01-004-4	585664		X	Chrysene	4.4		0.4
9/19/2002	WS-59-01-004-4	585664		X	Dibenzo(A,H) Anthracene	0.99 J		0.072
9/19/2002	WS-59-01-004-5	585665		X	Pb	65.8		45.5
9/19/2002	WS-59-01-004-5	585665		X	Benzo(A) Anthracene	3.6		0.23
9/19/2002	WS-59-01-004-5	585665		X	Benzo(A) Pyrene	4.3		0.25
9/19/2002	WS-59-01-004-5	585665		X	Benzo(B) Fluoranthene	3		1.1
9/19/2002	WS-59-01-004-5	585665		X	Benzo(K) Fluoranthene	3.2		1.1

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9/19/2002	WS-59-01-004-5	585665		X	Chrysene	3.4		0.4
9/19/2002	WS-59-01-004-5	585665		X	Dibenzo(A,H) Anthracene	1		0.072
9/19/2002	WS-59-01-004-6	585666		X	Hg	0.14		0.13
9/19/2002	WS-59-01-004-6	585666		X	Benzo(A) Anthracene	1.2 J		0.23
9/19/2002	WS-59-01-004-6	585666		X	Benzo(A) Pyrene	1.5		0.25
9/19/2002	WS-59-01-004-6	585666		X	Benzo(B) Fluoranthene	1.1 J		1.1
9/19/2002	WS-59-01-004-6	585666		X	Benzo(K) Fluoranthene	1.1 J		1.1
9/19/2002	WS-59-01-004-6	585666		X	Chrysene	1.2		0.4
9/19/2002	WS-59-01-004-6	585666		X	Dibenzo(A,H) Anthracene	0.31		0.072
9/19/2002	WS-59-01-003-6	585667		X	Benzo(A) Anthracene	6.1		0.23
9/19/2002	WS-59-01-003-6	585667		X	Benzo(A) Pyrene	7		0.25
9/19/2002	WS-59-01-003-6	585667		X	Benzo(B) Fluoranthene	5.4		1.1
9/19/2002	WS-59-01-003-6	585667		X	Benzo(K) Fluoranthene	5.3		1.1
9/19/2002	WS-59-01-003-6	585667		X	Indeno (1,2,3-CD) Pyrene	4		3.2
9/19/2002	WS-59-01-003-6	585667		X	Chrysene	6.6		0.4
9/19/2002	WS-59-01-003-6	585667		X	Dibenzo(A,H) Anthracene	1.5 J		0.072
9/19/2002	FD-59-WS-02	585668		X	Pb	81.9		45.5
9/19/2002	FD-59-WS-02	585668		X	Hg	0.18		0.13
9/19/2002	FD-59-WS-02	585668		X	Benzo(A) Anthracene	2.3		0.23
9/19/2002	FD-59-WS-02	585668		X	Benzo(A) Pyrene	2.8		0.25
9/19/2002	FD-59-WS-02	585668		X	Benzo(B) Fluoranthene	2.1		1.1
9/19/2002	FD-59-WS-02	585668		X	Benzo(K) Fluoranthene	1.9		1.1
9/19/2002	FD-59-WS-02	585668		X	Chrysene	2.3		0.4
9/19/2002	FD-59-WS-02	585668		X	Dibenzo(A,H) Anthracene	0.59		0.072
9/19/2002	WS-59-01-003-7	585669		X	Pb	102		45.5
9/19/2002	WS-59-01-003-7	585669		X	Zn	132		126
9/19/2002	WS-59-01-003-7	585669		X	Benzo(A) Anthracene	2.7		0.23
9/19/2002	WS-59-01-003-7	585669		X	Benzo(A) Pyrene	3.1		0.25
9/19/2002	WS-59-01-003-7	585669		X	Benzo(B) Fluoranthene	2.3		1.1
9/19/2002	WS-59-01-003-7	585669		X	Benzo(K) Fluoranthene	2.2		1.1
9/19/2002	WS-59-01-003-7	585669		X	Chrysene	2.8		0.4

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9/19/2002	WS-59-01-003-7	585669		X	Dibenzo(A,H) Anthracene	0.58		0.072
9/19/2002	WS-59-01-005-1	585670		X	Pb	47.9		45.5
9/19/2002	WS-59-01-005-1	585670		X	Benzo(A) Anthracene	0.66		0.23
9/19/2002	WS-59-01-005-1	585670		X	Benzo(A) Pyrene	0.84		0.25
9/19/2002	WS-59-01-005-1	585670		X	Chrysene	0.68		0.4
9/19/2002	WS-59-01-005-2	585671		X	Pb	73.1		45.5
9/19/2002	WS-59-01-005-2	585671		X	Benzo(A) Anthracene	2.7		0.23
9/19/2002	WS-59-01-005-2	585671		X	Benzo(A) Pyrene	3.3		0.25
9/19/2002	WS-59-01-005-2	585671		X	Benzo(B) Fluoranthene	2.2		1.1
9/19/2002	WS-59-01-005-2	585671		X	Benzo(K) Fluoranthene	2.5		1.1
9/19/2002	WS-59-01-005-2	585671		X	Chrysene	2.6		0.4
9/19/2002	WS-59-01-005-2	585671		X	Dibenzo(A,H) Anthracene	0.63		0.072
9/19/2002	WS-59-01-005-3	585672		X	Pb	56.8		45.5
9/19/2002	WS-59-01-005-3	585672		X	Benzo(A) Anthracene	2.6		0.23
9/19/2002	WS-59-01-005-3	585672		X	Benzo(A) Pyrene	2.8		0.25
9/19/2002	WS-59-01-005-3	585672		X	Benzo(B) Fluoranthene	1.8		1.1
9/19/2002	WS-59-01-005-3	585672		X	Benzo(K) Fluoranthene	2		1.1
9/19/2002	WS-59-01-005-3	585672		X	Chrysene	2.6		0.4
9/19/2002	WS-59-01-005-4	585673		X	Pb	55.3		45.5
9/19/2002	WS-59-01-005-4	585673		X	Benzo(A) Anthracene	1.7		0.23
9/19/2002	WS-59-01-005-4	585673		X	Benzo(A) Pyrene	1.8		0.25
9/19/2002	WS-59-01-005-4	585673		X	Benzo(B) Fluoranthene	1.2		1.1
9/19/2002	WS-59-01-005-4	585673		X	Benzo(K) Fluoranthene	1.3		1.1
9/19/2002	WS-59-01-005-4	585673		X	Chrysene	1.7		0.4
9/19/2002	WS-59-01-005-4	585673		X	Dibenzo(A,H) Anthracene	0.31		0.072
9/20/2002	WS-59-01-005-5	586079		X	Benzo(A) Anthracene	0.44		0.23
9/20/2002	WS-59-01-005-5	586079		X	Benzo(A) Pyrene	0.5		0.25
9/20/2002	WS-59-01-005-5	586079		X	Chrysene	0.46		0.4
9/20/2002	WS-59-01-005-5	586079		X	Dibenzo(A,H) Anthracene	0.12 J		0.072
9/20/2002	WS-59-01-005-6	586080		X	Hg	0.14		0.13

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9/20/2002	WS-59-01-005-6	586080		X	Benzo(A) Anthracene	1.2		0.23
9/20/2002	WS-59-01-005-6	586080		X	Benzo(A) Pyrene	1.1		0.25
9/20/2002	WS-59-01-005-6	586080		X	Chrysene	1.1		0.4
9/20/2002	WS-59-01-005-6	586080		X	Dibenzo(A,H) Anthracene	0.23 J		0.072
9/20/2002	WS-59-01-005-7	586081		X	Benzo(A) Anthracene	1.2		0.23
9/20/2002	WS-59-01-005-7	586081		X	Benzo(A) Pyrene	1.4		0.25
9/20/2002	WS-59-01-005-7	586081		X	Benzo(K) Fluoranthene	1.1		1.1
9/20/2002	WS-59-01-005-7	586081		X	Chrysene	1.2		0.4
9/20/2002	WS-59-01-005-7	586081		X	Dibenzo(A,H) Anthracene	0.34 J		0.072
9/20/2002	WS-59-01-005-8	586082		X	Pb	78.1		45.5
9/20/2002	WS-59-01-005-8	586082		X	Benzo(A) Anthracene	4.8		0.23
9/20/2002	WS-59-01-005-8	586082		X	Benzo(A) Pyrene	5.5		0.25
9/20/2002	WS-59-01-005-8	586082		X	Benzo(B) Fluoranthene	3.7		1.1
9/20/2002	WS-59-01-005-8	586082		X	Benzo(K) Fluoranthene	4		1.1
9/20/2002	WS-59-01-005-8	586082		X	Indeno (1,2,3-CD) Pyrene	3.5		3.2
9/20/2002	WS-59-01-005-8	586082		X	Chrysene	4.6		0.4
9/20/2002	WS-59-01-005-8	586082		X	Dibenzo(A,H) Anthracene	1.3 J		0.072
9/20/2002	WS-59-01-005-9	586083		X	Pb	66.4	400	45.5
9/20/2002	WS-59-01-005-9	586083		X	Benzo(A) Anthracene	9.1	8.8	0.23
9/20/2002	WS-59-01-005-9	586083		X	Benzo(A) Pyrene	10	0.88	0.25
9/20/2002	WS-59-01-005-9	586083		X	Benzo(B) Fluoranthene	6.9	8.8	1.1
9/20/2002	WS-59-01-005-9	586083		X	Benzo(K) Fluoranthene	7.3	19	1.1
9/20/2002	WS-59-01-005-9	586083		X	Indeno (1,2,3-CD) Pyrene	6.2	8.8	3.2
9/20/2002	WS-59-01-005-9	586083		X	Chrysene	8.8	7.1	0.4
9/20/2002	WS-59-01-005-9	586083		X	Dibenzo(A,H) Anthracene	2.3	0.88	0.072
9/20/2002	WS-59-01-005-10	586084		X	Sb	10.2		6.8
9/20/2002	WS-59-01-005-10	586084		X	Pb	66.4	400	45.5
9/20/2002	WS-59-01-005-10	586084		X	Benzo(A) Anthracene	11	8.8	0.23
9/20/2002	WS-59-01-005-10	586084		X	Benzo(A) Pyrene	1[illegible]	0.88	0.25

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9/20/2002	WS-59-01-005-10	586084		X	Benzo(B) Fluoranthene	8	8.8	1.1
9/20/2002	WS-59-01-005-10	586084		X	Benzo(K) Fluoranthene	8.8	19	1.1
9/20/2002	WS-59-01-005-10	586084		X	Indeno (1,2,3-CD) Pyrene	7.4	8.8	3.2
9/20/2002	WS-59-01-005-10	586084		X	Chrysene	10	7.1	0.4
9/20/2002	WS-59-01-005-10	586084		X	Dibenzo(A,H) Anthracene	2.7	0.88	0.072
9/20/2002	WS-59-01-006-1	586085		X	Pb	82.9	400	45.5
9/20/2002	WS-59-01-006-1	586085		X	Benzo(A) Anthracene	5.5	8.8	0.23
9/20/2002	WS-59-01-006-1	586085		X	Benzo(A) Pyrene	6	0.88	0.25
9/20/2002	WS-59-01-006-1	586085		X	Benzo(B) Fluoranthene	4	8.8	1.1
9/20/2002	WS-59-01-006-1	586085		X	Benzo(K) Fluoranthene	4.3	19	1.1
9/20/2002	WS-59-01-006-1	586085		X	Indeno (1,2,3-CD) Pyrene	3.6	8.8	3.2
9/20/2002	WS-59-01-006-1	586085		X	Chrysene	5.3	7.1	0.4
9/20/2002	WS-59-01-006-1	586085		X	Dibenzo(A,H) Anthracene	1.4 J	0.88	0.072
9/20/2002	WS-59-01-006-2	586086		X	Benzo(A) Anthracene	2	8.8	0.23
9/20/2002	WS-59-01-006-2	586086		X	Benzo(A) Pyrene	2.8	0.88	0.25
9/20/2002	WS-59-01-006-2	586086		X	Benzo(B) Fluoranthene	2	8.8	1.1
9/20/2002	WS-59-01-006-2	586086		X	Benzo(K) Fluoranthene	1.9	19	1.1
9/20/2002	WS-59-01-006-2	586086		X	Chrysene	2.1	7.1	0.4
9/20/2002	WS-59-01-006-2	586086		X	Dibenzo(A,H) Anthracene	0.63 J	0.88	0.072
9/20/2002	WS-59-01-006-3	586088		X	Pb	56.7	500	45.5
9/20/2002	WS-59-01-006-3	586088		X	Benzo(A) Anthracene	5.3	8.8	0.23
9/20/2002	WS-59-01-006-3	586088		X	Benzo(A) Pyrene	6.9	0.88	0.25
9/20/2002	WS-59-01-006-3	586088		X	Benzo(B) Fluoranthene	4.6	8.8	1.1
9/20/2002	WS-59-01-006-3	586088		X	Benzo(K) Fluoranthene	4.3	19	1.1
9/20/2002	WS-59-01-006-3	586088		X	Indeno (1,2,3-CD) Pyrene	4.5	8.8	3.2
9/20/2002	WS-59-01-006-3	586088		X	Chrysene	5.4	7.1	0.4
9/20/2002	WS-59-01-006-3	586088		X	Dibenzo(A,H) Anthracene	1.6 J	0.88	0.072

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9/20/2002	WS-59-01-006-4	586090		X	Pb	54.9	400	45.5
9/20/2002	WS-59-01-006-4	586090		X	Benzo(A) Anthracene	2.5	8.8	0.23
9/20/2002	WS-59-01-006-4	586090		X	Benzo(A) Pyrene	3.1	0.88	0.25
9/20/2002	WS-59-01-006-4	586090		X	Benzo(B) Fluoranthene	2.2	8.8	1.1
9/20/2002	WS-59-01-006-4	586090		X	Benzo(K) Fluoranthene	2.2	19	1.1
9/20/2002	WS-59-01-006-4	586090		X	Chrysene	2.5	7.1	0.4
9/20/2002	WS-59-01-006-4	586090		X	Dibenzo(A,H) Anthracene	0.71 J	0.88	0.072
9/23/2002	FD-WS-03	586521		X	Lead	50.9	400	45.5
9/23/2002	FD-WS-03	586521		X	Zinc	135		126
9/23/2002	FD-WS-03	586521		X	Benzo(A) Anthracene	2	8.8	0.23
9/23/2002	FD-WS-03	586521		X	Benzo(A) Pyrene	2.4	0.88	0.25
9/23/2002	FD-WS-03	586521		X	Benzo(B) Fluoranthene	1.6	8.8	1.1
9/23/2002	FD-WS-03	586521		X	Benzo(K) Fluoranthene	1.6	19	1.1
9/23/2002	FD-WS-03	586521		X	Chrysene	2	7.1	0.4
9/23/2002	FD-WS-03	586521		X	Dibenzo(A,H) Anthracene	0.56 J	0.88	0.072
9/23/2002	WS-59-01-006-10	586518		X	Lead	48.8	400	45.5
9/23/2002	WS-59-01-006-10	586518		X	Zinc	163		126
9/23/2002	WS-59-01-006-10	586518		X	Benzo(A) Anthracene	39	8.8	0.23
9/23/2002	WS-59-01-006-10	586518		X	Benzo(A) Pyrene	37	0.88	0.25
9/23/2002	WS-59-01-006-10	586518		X	Benzo(B) Fluoranthene	26	8.8	1.1
9/23/2002	WS-59-01-006-10	586518		X	Benzo(K) Fluoranthene	27	19	1.1
9/23/2002	WS-59-01-006-10	586518		X	Chrysene	38	7.1	0.4
9/23/2002	WS-59-01-006-10	586518		X	Indeno (1,2,3-CD) Pyrene	19	8.88	3.2
9/23/2002	WS-59-01-006-10	586518		X	Dibenzo(A,H) Anthracene	7.1	0.88	0.072
9/23/2002	WS-59-01-006-10	586518		X	Fluoranthene	82	50	50
9/23/2002	WS-59-01-006-10	586518		X	Phenanthrene	87	50	50
9/23/2002	WS-59-01-006-10	586518		X	Pyrene	77	50	50
9/23/2002	WS-59-01-006-10	586518		X	Dibenzofuran	6.7		6.2

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/23/2002	WS-59-01-006-11	586519		X	Lead	70.4	400	45.5
9/23/2002	WS-59-01-006-11	586519		X	Benzo(A) Anthracene	3.2	8.8	0.23
9/23/2002	WS-59-01-006-11	586519		X	Benzo(A) Pyrene	3.8	0.88	0.25
9/23/2002	WS-59-01-006-11	586519		X	Benzo(B) Fluoranthene	2.7	8.8	1.1
9/23/2002	WS-59-01-006-11	586519		X	Benzo(K) Fluoranthene	2.6	19	1.1
9/23/2002	WS-59-01-006-11	586519		X	Chrysene	3.2	7.1	0.4
9/23/2002	WS-59-01-006-11	586519		X	Indeno (1,2,3-CD) Pyrene	2.6	8.8	3.2
9/23/2002	WS-59-01-006-11	586519		X	Dibenzo(A,H) Anthracene	0.9 J	0.88	0.072
9/23/2002	WS-59-01-006-12	586520		X	Lead	69.1	400	45.5
9/23/2002	WS-59-01-006-12	586520		X	Benzo(A) Anthracene	5.3	8.8	0.23
9/23/2002	WS-59-01-006-12	586520		X	Benzo(A) Pyrene	6.4	0.88	0.25
9/23/2002	WS-59-01-006-12	586520		X	Benzo(B) Fluoranthene	4.3	8.8	1.1
9/23/2002	WS-59-01-006-12	586520		X	Benzo(K) Fluoranthene	4.1	19	1.1
9/23/2002	WS-59-01-006-12	586520		X	Chrysene	3.2	7.1	0.4
9/23/2002	WS-59-01-006-12	586520		X	Indeno (1,2,3-CD) Pyrene	4	8.8	3.2
9/23/2002	WS-59-01-006-12	586520		X	Dibenzo(A,H) Anthracene	1.5 J	0.88	0.072
9/23/2002	WS-59-01-006-5	586513		X	Lead	58.1	400	45.5
9/23/2002	WS-59-01-006-5	586513		X	Benzo(A) Anthracene	3.1	8.8	0.23
9/23/2002	WS-59-01-006-5	586513		X	Benzo(A) Pyrene	3.9	0.88	0.25
9/23/2002	WS-59-01-006-5	586513		X	Benzo(B) Fluoranthene	2.6	8.8	1.1
9/23/2002	WS-59-01-006-5	586513		X	Benzo(K) Fluoranthene	2.8	19	1.1
9/23/2002	WS-59-01-006-5	586513		X	Chrysene	3.1	7.1	0.4
9/23/2002	WS-59-01-006-5	586513		X	Dibenzo(A,H) Anthracene	0.94 J	0.88	0.072
9/23/2002	WS-59-01-006-6	586514		X	Lead	48.7	400	45.5
9/23/2002	WS-59-01-006-6	586514		X	Mercury	0.23		0.13
9/23/2002	WS-59-01-006-6	586514		X	Benzo(A) Anthracene	1.3	8.8	0.23
9/23/2002	WS-59-01-006-6	586514		X	Benzo(A) Pyrene	1.6	0.88	0.25
9/23/2002	WS-59-01-006-6	586514		X	Benzo(B) Fluoranthene	1.1	8.8	1.1

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/23/2002	WS-59-01-006-6	586514		X	Benzo(K) Fluoranthene	1.1	19	1.1
9/23/2002	WS-59-01-006-6	586514		X	Chrysene	1.2	7.1	0.4
9/23/2002	WS-59-01-006-6	586514		X	Dibenzo(A,H) Anthracene	0.4 J	0.88	0.072
9/23/2002	WS-59-01-006-7	586515		X	Lead	77	400	45.5
9/23/2002	WS-59-01-006-7	586515		X	Benzo(A) Anthracene	4.3	8.8	0.23
9/23/2002	WS-59-01-006-7	586515		X	Benzo(A) Pyrene	5.4	0.88	0.25
9/23/2002	WS-59-01-006-7	586515		X	Benzo(B) Fluoranthene	3.9	8.8	1.1
9/23/2002	WS-59-01-006-7	586515		X	Benzo(K) Fluoranthene	3.7	19	1.1
9/23/2002	WS-59-01-006-7	586515		X	Chrysene	4.4	7.1	0.4
9/23/2002	WS-59-01-006-7	586515		X	Indeno (1,2,3-CD) Pyrene	3.6	8.8	3.2
9/23/2002	WS-59-01-006-7	586515		X	Dibenzo(A,H) Anthracene	1.4 J	0.88	0.072
9/23/2002	WS-59-01-006-8	586516		X	Lead	164	400	45.5
9/23/2002	WS-59-01-006-8	586516		X	Zinc	135		126
9/23/2002	WS-59-01-006-8	586516		X	Benzo(A) Anthracene	2	8.8	0.23
9/23/2002	WS-59-01-006-8	586516		X	Benzo(A) Pyrene	2.3	0.88	0.25
9/23/2002	WS-59-01-006-8	586516		X	Benzo(B) Fluoranthene	1.7	8.8	1.1
9/23/2002	WS-59-01-006-8	586516		X	Benzo(K) Fluoranthene	1.5	19	1.1
9/23/2002	WS-59-01-006-8	586516		X	Chrysene	1.9	7.1	0.4
9/23/2002	WS-59-01-006-8	586516		X	Dibenzo(A,H) Anthracene	0.51 J	0.88	0.072
9/23/2002	WS-59-01-006-9	586517		X	Lead	51.8	400	45.5
9/23/2002	WS-59-01-006-9	586517		X	Zinc	185		126
9/23/2002	WS-59-01-006-9	586517		X	Benzo(A) Anthracene	5.6	8.8	0.23
9/23/2002	WS-59-01-006-9	586517		X	Benzo(A) Pyrene	7.4	0.88	0.25
9/23/2002	WS-59-01-006-9	586517		X	Benzo(B) Fluoranthene	5.4	8.8	1.1
9/23/2002	WS-59-01-006-9	586517		X	Benzo(K) Fluoranthene	5.4	19	1.1
9/23/2002	WS-59-01-006-9	586517		X	Chrysene	5.7	7.1	0.4
9/23/2002	WS-59-01-006-9	586517		X	Indeno (1,2,3-CD) Pyrene	3.8	8.8	3.2
9/23/2002	WS-59-01-006-9	586517		X	Dibenzo(A,H) Anthracene	1.5 J	0.88	0.072

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/23/2002	WS-59-01-007-1	586522		X	Lead	64.6	400	45.5
9/23/2002	WS-59-01-007-1	586522		X	Silver	1.1		0.87
9/23/2002	WS-59-01-007-1	586522		X	Benzo(A) Anthracene	5.2	8.8	0.23
9/23/2002	WS-59-01-007-1	586522		X	Benzo(A) Pyrene	5.4	0.88	0.25
9/23/2002	WS-59-01-007-1	586522		X	Benzo(B) Fluoranthene	3.6	8.8	1.1
9/23/2002	WS-59-01-007-1	586522		X	Benzo(K) Fluoranthene	3.6	19	1.1
9/23/2002	WS-59-01-007-1	586522		X	Chrysene	5	7.1	0.4
9/23/2002	WS-59-01-007-1	586522		X	Dibenzo(A,H) Anthracene	1.1 J	0.88	0.072
9/23/2002	WS-59-01-007-2	586525		X	Benzo(A) Anthracene	4.3	8.8	0.23
9/23/2002	WS-59-01-007-2	586525		X	Benzo(A) Pyrene	4.6	0.88	0.25
9/23/2002	WS-59-01-007-2	586525		X	Benzo(B) Fluoranthene	3.3	8.8	1.1
9/23/2002	WS-59-01-007-2	586525		X	Benzo(K) Fluoranthene	3.4	10	1.1
9/23/2002	WS-59-01-007-2	586525		X	Chrysene	4.2	7.1	0.4
9/23/2002	WS-59-01-007-2	586525		X	Dibenzo(A,H) Anthracene	0.87 J	0.88	0.072
9/24/2002	WS-59-01-007-10	587004		X	Lead	66.2	400	45.5
9/24/2002	WS-59-01-007-10	587004		X	Benzo(A) Anthracene	2.2	8.8	0.23
9/24/2002	WS-59-01-007-10	587004		X	Benzo(B) Fluoranthene	2	8.8	1.1
9/24/2002	WS-59-01-007-10	587004		X	Benzo(K) Fluoranthene	2	19	1.1
9/24/2002	WS-59-01-007-10	587004		X	Chrysene	2.3	7.1	0.4
9/24/2002	WS-59-01-007-10	587004		X	Dibenzo(A,H) Anthracene	0.55 J	0.88	0.072
9/24/2002	WS-59-01-007-11	587005		X	Lead	47.9	400	45.5
9/24/2002	WS-59-01-007-11	587005		X	Benzo(A) Anthracene	3	8.8	0.23
9/24/2002	WS-59-01-007-11	587005		X	Benzo(B) Fluoranthene	2.3	8.8	1.1
9/24/2002	WS-59-01-007-11	587005		X	Benzo(K) Fluoranthene	2.4	19	1.1
9/24/2002	WS-59-01-007-11	587005		X	Chrysene	3.2	7.1	0.4
9/24/2002	WS-59-01-007-12	587006		X	Lead	59.4	400	45.5

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/24/2002	WS-59-01-007-12	587006		X	Benzo(A) Anthracene	5.4	8.8	0.23
9/24/2002	WS-59-01-007-12	587006		X	Benzo(A) Pyrene	5.9	0.88	0.25
9/24/2002	WS-59-01-007-12	587006		X	Benzo(B) Fluoranthene	4.3	8.8	1.1
9/24/2002	WS-59-01-007-12	587006		X	Benzo(K) Fluoranthene	4.5	19	1.1
9/24/2002	WS-59-01-007-12	587006		X	Chrysene	5.4	7.1	0.4
9/24/2002	WS-59-01-007-12	587006		X	Dibenzo(A,H) Anthracene	1.1 J	0.88	0.072
9/24/2002	WS-59-01-007-13	587007		X	Lead	45.5	400	45.5
9/24/2002	WS-59-01-007-13	587007		X	Benzo(A) Anthracene	3.8	8.8	0.23
9/24/2002	WS-59-01-007-13	587007		X	Benzo(A) Pyrene	4.3	0.88	0.25
9/24/2002	WS-59-01-007-13	587007		X	Benzo(B) Fluoranthene	2.9	8.8	1.1
9/24/2002	WS-59-01-007-13	587007		X	Benzo(K) Fluoranthene	3.2	19	1.1
9/24/2002	WS-59-01-007-13	587007		X	Chrysene	3.8	7.1	0.4
9/24/2002	WS-59-01-007-13	587007		X	Dibenzo(A,H) Anthracene	0.78 J	0.88	0.072
9/24/2002	WS-59-01-007-14	587008		X	Benzo(A) Anthracene	13	8.8	0.23
9/24/2002	WS-59-01-007-14	587008		X	Benzo(A) Pyrene	14	0.88	0.25
9/24/2002	WS-59-01-007-14	587008		X	Benzo(B) Fluoranthene	9.8	8.8	1.1
9/24/2002	WS-59-01-007-14	587008		X	Benzo(K) Fluoranthene	11	19	1.1
9/24/2002	WS-59-01-007-14	587008		X	Indeno(1,2,3-CD) Pyrene	7	8.8	3.2
9/24/2002	WS-59-01-007-14	587008		X	Chrysene	13	7.1	0.4
9/24/2002	WS-59-01-007-14	587008		X	Dibenzo(A,H) Anthracene	2.5 J	0.88	0.072
9/24/2002	WS-59-01-007-3	586997		X	Zinc	133		126
9/24/2002	WS-59-01-007-3	586997		X	Benzo(A) Anthracene	3.1	8.8	0.23
9/24/2002	WS-59-01-007-3	586997		X	Benzo(A) Pyrene	3.2	0.88	0.25
9/24/2002	WS-59-01-007-3	586997		X	Benzo(B) Fluoranthene	2.5	8.8	1.1
9/24/2002	WS-59-01-007-3	586997		X	Benzo(K) Fluoranthene	2.6	19	1.1
9/24/2002	WS-59-01-007-3	586997		X	Chrysene	3.2	7.1	0.4
9/24/2002	WS-59-01-007-3	586997		X	Dibenzo(A,H) Anthracene	0.71 J	0.88	0.072

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/24/2002	WS-59-01-007-4	586998		X	Lead	53.6	400	45.5
9/24/2002	WS-59-01-007-4	586998		X	Benzo(A) Pyrene	2.4 J	0.88	0.25
9/24/2002	WS-59-01-007-4	586998		X	Chrysene	2 J	7.1	0.4
9/24/2002	WS-59-01-007-4	586998		X	Benzo(A) Anthracene	2 J	8.8	0.23
9/24/2002	WS-59-01-007-4	586998		X	Benzo(B) Fluoranthene	1.8 J	8.8	1.1
9/24/2002	WS-59-01-007-4	586998		X	Benzo(K) Fluoranthene	1.8 J	19	1.1
9/24/2002	WS-59-01-007-4	586998		X	Dibenzo(A,H) Anthracene	0.51 J	0.88	0.072
9/24/2002	WS-59-01-007-5	586999		X	Lead	77.5	400	45.5
9/24/2002	WS-59-01-007-5	586999		X	Benzo(A) Anthracene	3.6	8.8	0.23
9/24/2002	WS-59-01-007-5	586999		X	Benzo(A) Pyrene	4.4	0.88	0.25
9/24/2002	WS-59-01-007-5	586999		X	Benzo(B) Fluoranthene	3.2	8.8	1.1
9/24/2002	WS-59-01-007-5	586999		X	Benzo(K) Fluoranthene	3.4	19	1.1
9/24/2002	WS-59-01-007-5	586999		X	Chrysene	3.6	7.1	0.4
9/24/2002	WS-59-01-007-5	586999		X	Dibenzo(A,H) Anthracene	0.94 J	0.88	0.072
9/24/2002	WS-59-01-007-6	587000		X	Benzo(A) Anthracene	3.4	8.8	0.23
9/24/2002	WS-59-01-007-6	587000		X	Benzo(A) Pyrene	3.6	0.88	0.25
9/24/2002	WS-59-01-007-6	587000		X	Benzo(B) Fluoranthene	2.8	8.8	1.1
9/24/2002	WS-59-01-007-6	587000		X	Benzo(K) Fluoranthene	2.7	19	1.1
9/24/2002	WS-59-01-007-6	587000		X	Chrysene	3.3	7.1	0.4
9/24/2002	WS-59-01-007-6	587000		X	Dibenzo(A,H) Anthracene	0.74 J	0.88	0.072
9/24/2002	WS-59-01-007-7	587001		X	Benzo(A) Anthracene	2.2 J	8.8	0.23
9/24/2002	WS-59-01-007-7	587001		X	Benzo(A) Pyrene	2.5 J	0.88	0.25
9/24/2002	WS-59-01-007-7	587001		X	Benzo(B) Fluoranthene	2 J	8.8	1.1
9/24/2002	WS-59-01-007-7	587001		X	Benzo(K) Fluoranthene	2 J	19	1.1
9/24/2002	WS-59-01-007-7	587001		X	Chrysene	2.2 J	7.1	0.4
9/24/2002	WS-59-01-007-7	587001		X	Dibenzo(A,H) Anthracene	0.46 J	0.88	0.072
9/24/2002	WS-59-01-007-8	587002		X	Benzo(A) Anthracene	6.9	8.8	0.23

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/24/2002	WS-59-01-007-8	587002		X	Benzo(A) Pyrene	8.2	0.88	0.25
9/24/2002	WS-59-01-007-8	587002		X	Benzo(B) Fluoranthene	5.8	8.8	1.1
9/24/2002	WS-59-01-007-8	587002		X	Benzo(K) Fluoranthene	6.3	19	1.1
9/24/2002	WS-59-01-007-8	587002		X	Indeno(1,2,3-CD) Pyrene	4.1	8.8	3.2
9/24/2002	WS-59-01-007-8	587002		X	Chrysene	7	7.1	0.4
9/24/2002	WS-59-01-007-8	587002		X	Dibenzo(A,H) Anthracene	1.6 J	0.88	0.072
9/24/2002	WS-59-01-007-9	587003		X	Benzo(A) Anthracene	2.9	8.8	0.23
9/24/2002	WS-59-01-007-9	587003		X	Benzo(A) Pyrene	3	0.88	0.25
9/24/2002	WS-59-01-007-9	587003		X	Benzo(B) Fluoranthene	2.1	8.8	1.1
9/24/2002	WS-59-01-007-9	587003		X	Benzo(K) Fluoranthene	2.4	19	1.1
9/24/2002	WS-59-01-007-9	587003		X	Chrysene	2.9	7.1	0.4
9/24/2002	WS-59-01-007-9	587003		X	Dibenzo(A,H) Anthracene	0.64 J	0.88	0.072
9/25/2002	WS-59-01-008-1	587661		X	Benzo(A) Anthracene	5.4	8.8	0.23
9/25/2002	WS-59-01-008-1	587661		X	Benzo(A) Pyrene	5.8	0.88	0.25
9/25/2002	WS-59-01-008-1	587661		X	Benzo(B) Fluoranthene	3.9	8.8	1.1
9/25/2002	WS-59-01-008-1	587661		X	Benzo(K) Fluoranthene	3.9	19	1.1
9/25/2002	WS-59-01-008-1	587661		X	Chrysene	5.4	7.1	0.4
9/25/2002	WS-59-01-008-1	587661		X	Dibenzo(A,H) Anthracene	1.2 J	0.88	0.072
9/25/2002	WS-59-01-008-2	587663		X	Benzo(A) Anthracene	8.4	8.8	0.23
9/25/2002	WS-59-01-008-2	587663		X	Benzo(A) Pyrene	11	0.88	0.25
9/25/2002	WS-59-01-008-2	587663		X	Benzo(B) Fluoranthene	7.3	8.8	1.1
9/25/2002	WS-59-01-008-2	587663		X	Benzo(K) Fluoranthene	7.2	19	1.1
9/25/2002	WS-59-01-008-2	587663		X	Indeno(1,2,3-CD) Pyrene	5.9	8.8	3.2
9/25/2002	WS-59-01-008-2	587663		X	Chrysene	8.5	7.1	0.4
9/25/2002	WS-59-01-008-2	587663		X	Dibenzo(A,H) Anthracene	2.2 J	0.88	0.072
9/25/2002	WS-59-01-008-3	587665		X	Benzo(A) Anthracene	7.8	8.8	0.23
9/25/2002	WS-59-01-008-3	587665		X	Benzo(A) Pyrene	9.4	0.88	0.25

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9/25/2002	WS-59-01-008-3	587665		X	Benzo(B) Fluoranthene	6.7	8.8	1.1
9/25/2002	WS-59-01-008-3	587665		X	Benzo(K) Fluoranthene	6.5	19	1.1
9/25/2002	WS-59-01-008-3	587665		X	Indeno(1,2,3-CD) Pyrene	5.2	8.8	3.2
9/25/2002	WS-59-01-008-3	587665		X	Chrysene	7.9	7.1	0.4
9/25/2002	WS-59-01-008-3	587665		X	Dibenzo(A,H) Anthracene	1.9 J	0.88	0.072
9/25/2002	WS-59-01-004-7	587666		X	Benzo(A) Anthracene	0.28	8.8	0.23
9/25/2002	WS-59-01-004-7	587666		X	Benzo(A) Pyrene	0.35	0.88	0.25
9/25/2002	WS-71-D-009-2	587667		X	Lead	97.5	1250	45.5
9/25/2002	WS-71-D-009-2	587667		X	Benzo(A) Anthracene	1.3	8.8	0.23
9/25/2002	WS-71-D-009-2	587667		X	Benzo(A) Pyrene	1.5	0.88	0.25
9/25/2002	WS-71-D-009-2	587667		X	Benzo(B) Fluoranthene	1.4	6.4	1.1
9/25/2002	WS-71-D-009-2	587667		X	Benzo(K) Fluoranthene	1.3	6.4	1.1
9/25/2002	WS-71-D-009-2	587667		X	Chrysene	1.6	2.3	0.4
9/25/2002	WS-71-D-009-2	587667		X	Dibenzo(A,H) Anthracene	0.31 J	0.88	0.072
9/25/2002	WS-71-E2-009-2	587668		X	Copper	86.4		62.8
9/25/2002	WS-71-E2-009-2	587668		X	Lead	588	400	45.5
9/25/2002	WS-71-E2-009-2	587668		X	Zinc	156		126
9/25/2002	WS-71-E2-009-2	587668		X	Benzo(A) Anthracene	0.92	8.8	0.23
9/25/2002	WS-71-E2-009-2	587668		X	Benzo(A) Pyrene	0.85	0.88	0.25
9/25/2002	WS-71-E2-009-2	587668		X	Chrysene	0.93	2.3	0.4
9/25/2002	WS-71-E2-009-2	587668		X	Dibenzo(A,H) Anthracene	0.16 J	0.88	0.072
9/25/2002	FD-59--WS-04	587669		X	Benzo(A) Anthracene	0.89	8.8	0.23
9/25/2002	FD-59--WS-04	587669		X	Benzo(A) Pyrene	1.1	0.88	0.25
9/25/2002	FD-59--WS-04	587669		X	Chrysene	0.98	2.3	0.4
9/25/2002	FD-59--WS-04	587669		X	Dibenzo(A,H) Anthracene	0.24 J	0.88	0.072
9/25/2002	WS-71-E1-009-3	587670		X	Copper	102		62.8
9/25/2002	WS-71-E1-009-3	587670		X	Benzo(A) Anthracene	0.39	8.8	0.23

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/25/2002	WS-71-E1-009-3	587670		X	Benzo(A) Pyrene	0.33 J	0.88	0.25
9/25/2002	WS-71-E1-009-3	587670		X	Chrysene	0.51	2.3	0.4
9/25/2002	WS-71-E1-009-3	587670		X	Dibenzo(A,H) Anthracene	0.086 J	0.88	0.072
9/25/2002	5901WN1	A1406-01A		X	Zinc	147		126
9/25/2002	5901WN2	A1406-04A		X	4-Chloroaniline	1.3		0.22
9/25/2002	5901WN2	A1406-04A		X	Arsenic	32.2		21.5
9/25/2002	5901WN2	A1406-04A		X	Beryllium	2.6		1.4
9/25/2002	5901WN2	A1406-04A		X	Chromium	39.3		32.7
9/25/2002	5901WN2	A1406-04A		X	Cobalt	47.8		30
9/25/2002	5901WN2	A1406-04A		X	Copper	194		62.8
9/25/2002	5901WN2	A1406-04A		X	Iron	64000		38600
9/25/2002	5901WN2	A1406-04A		X	Lead	140	1250	45.5
9/25/2002	5901WN2	A1406-04A		X	Mercury	0.15		0.13
9/25/2002	5901WN2	A1406-04A		X	Nickel	88.3		62.3
9/25/2002	5901WN2	A1406-04A		X	Silver	2.3		0.87
9/25/2002	5901WN2	A1406-04A		X	Zinc	298		126
9/25/2002	5901WN3	A1406-05A	X					
9/25/2002	5901WW1	A1406-02A		X	Mercury	0.15		0.13
9/25/2002	5901WW1	A1406-02A		X	Silver	1.9		0.87
9/25/2002	5901WW2	A1406-03A		X	Silver	2.1		0.87
9/25/2002	5901WW3	A1406-05A		X	Mercury	0.13		0.13
9/25/2002	5901WW3	A1406-05A		X	Silver	1.9		0.87
9/25/2002	5901WW4	A1406-06A		X	Mercury	0.24		0.13
9/25/2002	5901WW4	A1406-06A		X	Silver	1.2		0.87

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/25/2002	59CL3	A1406-07A		X	Silver	1.5		0.87
9/25/2002	71DF01	A1406-12A	X					
9/25/2002	71DWE1	A1406-08A		X	Benzo(A) Anthracene	1.3	8.8	0.23
9/25/2002	71DWE1	A1406-08A		X	Silver	1.1		0.87
9/25/2002	71DWN1	A1406-11A		X	Benzo(B) Fluoranthene	1.3	6.4	1.1
9/25/2002	71DWN1	A1406-11A		X	Chrysene	1.5	2.3	0.4
9/25/2002	71DWS1	A1406-10A		X	Silver	0.96		0.87
9/25/2002	71DWW1	A1406-09A		X	Antimony	93.1		6.8
9/25/2002	71DWW1	A1406-09A		X	Chromium	43.1		32.7
9/25/2002	71DWW1	A1406-09A		X	Copper	740		62.8
9/25/2002	71DWW1	A1406-09A		X	Lead	15700	1250	45.5
9/25/2002	71DWW1	A1406-09A		X	Silver	1.2		0.87
9/25/2002	71DWW1	A1406-09A		X	Zinc	204		126
9/26/2002	CL-71-C-WN1	588279		X	Chromium	37.1		32.7
9/26/2002	CL-71-C-WN1	588279		X	Copper	67.6		62.8
9/26/2002	CL-71-C-WN1	588279		X	Lead	169	1250	45.5
9/26/2002	CL-71-C-WN1	588279		X	Zinc	162		126
9/26/2002	CL-71-C-WN1	588279		X	Benzo(A) Anthracene	4.7	8.8	0.23
9/26/2002	CL-71-C-WN1	588279		X	Benzo(A) Pyrene	6.5	0.88	0.25
9/26/2002	CL-71-C-WN1	588279		X	Benzo(B) Fluoranthene	5.9	6.4	1.1
9/26/2002	CL-71-C-WN1	588279		X	Benzo(K) Fluoranthene	5.5	6.4	1.1
9/26/2002	CL-71-C-WN1	588279		X	Indeno (1,2,3-CD) Pyrene	4.9	8.8	3.2
9/26/2002	CL-71-C-WN1	588279		X	Chrysene	6.3	2.3	0.4
9/26/2002	CL-71-C-WN1	588279		X	Dibenzo(A,H) Anthracene	1.7 J	0.88	0.072

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/26/2002	CL-71-C-WW2	588280	X					
9/26/2002	CL-71-C-WE1	588281	X					
9/26/2002	CL-71-C-WS1	588282		X	Lead	188	1250	45.5
9/26/2002	CL-71-C-WS1	588282		X	Zinc	357		126
9/26/2002	CL-71-C-WS1	588282		X	Benzo(A) Anthracene	10	8.8	0.23
9/26/2002	CL-71-C-WS1	588282		X	Benzo(A) Pyrene	9	0.88	0.25
9/26/2002	CL-71-C-WS1	588282		X	Benzo(B) Fluoranthene	6.7	6.4	1.1
9/26/2002	CL-71-C-WS1	588282		X	Benzo(K) Fluoranthene	7.7	6.4	1.1
9/26/2002	CL-71-C-WS1	588282		X	Indeno (1,2,3-CD) Pyrene	5.2	8.8	3.2
9/26/2002	CL-71-C-WS1	588282		X	Chrysene	10	2.3	0.4
9/26/2002	CL-71-C-WS1	588282		X	Dibenzo(A,H) Anthracene	1.9 J	0.88	0.072
9/26/2002	CL-71-C-WW1	588283	X					
9/26/2002	CL-71-C-WE2	588284	X					
9/26/2002	CL-71-C-FO1	588285		X	Benzo(A) Anthracene	1	8.8	0.23
9/26/2002	CL-71-C-FO1	588285		X	Benzo(A) Pyrene	0.8	0.88	0.25
9/26/2002	CL-71-C-FO1	588285		X	Chrysene	0.88	2.3	0.4
9/26/2002	CL-71-C-FO1	588285		X	Dibenzo(A,H) Anthracene	0.17 J	0.88	0.072
9/26/2002	CL-71-C-FO2	588286		X	Benzo(A) Anthracene	0.31 J	8.8	0.23
9/26/2002	CL-71-C-FO2	588286		X	Benzo(A) Pyrene	0.5	0.88	0.25
9/26/2002	CL-71-C-FO2	588286		X	Chrysene	0.51	2.3	0.4
9/26/2002	CL-71-C-FO2	588286		X	Dibenzo(A,H) Anthracene	0.14 J	0.88	0.072
9/26/2002	CL-71-E1-FO1	588287	X					
9/26/2002	CL-71-E1-WE1	588288	X					

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9/26/2002	CL71AWE1	A1418-06A	X					
9/26/2002	CL5901F01	A1418-11A		X	Silver	0.98 B		0.87
9/26/2002	CL5901F02	A1418-13A		X	Silver	1.4		0.87
9/26/2002	CL71AF01	A1418-07A		X	Silver	1.6 B		0.87
9/26/2002	CL71AWN1	A1418-01A	X					
9/26/2002	CL71AWS1	A1418-05A		X	Silver	1.4 B		0.87
9/26/2002	CL71AWW1	A1418-08A		X	Silver	0.92 B		0.87
9/26/2002	CL71BF01	A1418-10A	X					
9/26/2002	CL71BWN1	A1418-09A		X	Silver	1.2 B		0.87
9/26/2002	CL71BWN1	A1418-09A		X	Benzo(A) Anthracene	3.1 E	8.8	0.23
9/26/2002	CL71BWN1	A1418-09A		X	Benzo(A) Pyrene	3.1 E	0.88	0.25
9/26/2002	CL71BWN1	A1418-09A		X	Benzo(B) Fluoranthene	4.0 E	6.4	1.1
9/26/2002	CL71BWN1	A1418-09A		X	Benzo(K) Fluoranthene	2.2	6.4	1.1
9/26/2002	CL71BWN1	A1418-09A		X	Chrysene	2.9 E	2.3	0.4
9/26/2002	CL71E1WN1	A1418-02A		X	Silver	1.8		0.87
9/26/2002	CL71E1WN1	A1418-02A		X	Benzo(A) Anthracene	0.3 J	8.8	0.23
9/26/2002	CL71E1WN1	A1418-02A		X	Benzo(A) Pyrene	0.39	0.88	0.25
9/26/2002	CL71E1WN1	A1418-02A		X	Chrysene	0.49	2.3	0.4
9/26/2002	CL71E1WS1	A1418-04A		X	Silver	1.7		0.87

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/26/2002	CL71E1WW1	A1418-03A		X	Silver	1.6		0.87
9/26/2002	FD71CL04	A1418-12A	X					
9/27/2002	CL5904F01	A1424-01A		X	Silver	1.6		0.87
9/27/2002	CL5904WN1	A1424-02A	X					
9/27/2002	CL5904WN2	A1424-03A	X					
9/27/2002	CL71BWE1	A1424-04A		X	Antimony	86.9 N		6.8
9/27/2002	CL71BWE1	A1424-04A		X	Barium	428		300
9/27/2002	CL71BWE1	A1424-04A		X	Copper	419		62.8
9/27/2002	CL71BWE1	A1424-04A		X	Lead	6820	1250	45.5
9/27/2002	CL71BWE1	A1424-04A		X	Mercury	7.8		0.13
9/27/2002	CL71BWE1	A1424-04A		X	Zinc	343		126
9/27/2002	CL71BWE1	A1424-04A		X	Benzo(A) Anthracene	0.75	8.8	0.23
9/27/2002	CL71BWE1	A1424-04A		X	Chrysene	0.82	2.3	0.4
9/27/2002	CL71BWW1	A1424-05A	X					
9/27/2002	CL71BWW2	A1424-06A	X					
9/27/2002	CL71BWE2	A1424-07A		X	Antimony	11.5 N		6.8
9/27/2002	CL71BWE2	A1424-07A		X	Lead	635	400	45.5
9/27/2002	CL71BWE2	A1424-07A		X	Mercury	0.43		0.13
9/27/2002	CL71BWE2	A1424-07A		X	Zinc	128		126
9/27/2002	CL71BWE2	A1424-07A		X	Benzo(A) Anthracene	1.4	8.8	0.23
9/27/2002	CL71BWE2	A1424-07A		X	Benzo(A) Pyrene	1.4	0.88	0.25
9/27/2002	CL71BWE2	A1424-07A		X	Benzo(B) Fluoranthene	1.6	6.4	1.1
9/27/2002	CL71BWE2	A1424-07A		X	Benzo(K) Fluoranthene	1.2	6.4	1.1

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9/27/2002	CL71BWE2	A1424-07A		X	Chrysene	1.8	2.3	0.4
9/27/2002	CL71BWS1	A1424-08A		X	Lead	452	1250	45.5
9/27/2002	CL71BWS1	A1424-08A		X	Mercury	1		0.13
9/27/2002	CL71BWS1	A1424-08A		X	Benzo(A) Anthracene	0.47	8.8	0.23
9/27/2002	CL71BWS1	A1424-08A		X	Chrysene	0.62	2.3	0.4
9/27/2002	CL71E2WN1	A1424-09A		X	Silver	1.4 B		0.87
9/27/2002	CL71E2F01	A1424-10A		X	Silver	1.0 B		0.87
9/27/2002	CL71E2F01	A1424-10A		X	Benzo(A) Anthracene	0.32 J	8.8	0.23
9/30/2002	CL5904WS2	A1423-01A	X					
9/30/2002	WS71B0098	A1423-02A		X	Copper	98.2		62.8
9/30/2002	WS71B0098	A1423-02A		X	Lead	797	1250	45.5
9/30/2002	WS71B0098	A1423-02A		X	Mercury	0.31		0.13
9/30/2002	WS71B0098	A1423-02A		X	Benzo(A) Anthracene	1.7	8.8	0.23
9/30/2002	WS71B0098	A1423-02A		X	Benzo(A) Pyrene	1.4	0.88	0.25
9/30/2002	WS71B0098	A1423-02A		X	Benzo(B) Fluoranthene	1.9	6.4	1.1
9/30/2002	WS71B0098	A1423-02A		X	Chrysene	1.6	2.3	0.4
9/30/2002	WS71B0098	A1423-02A		X	Dibenzo(A,H) Anthracene	0.25 J	0.88	0.072
9/30/2002	WS71A00909	A1423-03A		X	Silver	0.88 B		0.87
9/30/2002	WS71A00909	A1423-03A		X	Benzo(A) Anthracene	0.48	8.8	0.23
9/30/2002	WS71A00909	A1423-03A		X	Benzo(A) Pyrene	0.39	0.88	0.25
9/30/2002	WS71A00909	A1423-03A		X	Chrysene	0.43	2.3	0.4
9/30/2002	CL5904WE1	A1423-04A	X					
9/30/2002	CL5904F04	A1423-05A	X					

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9/30/2002	CL5904WW1	A1423-06A		X	Silver	1.7		0.87
9/30/2002	WS71B0097	A1423-07A		X	Antimony	33.7 N		6.8
9/30/2002	WS71B0097	A1423-07A		X	Copper	103		62.8
9/30/2002	WS71B0097	A1423-07A		X	Lead	2070	1250	45.5
9/30/2002	WS71B0097	A1423-07A		X	Mercury	0.91		0.13
9/30/2002	WS71B0097	A1423-07A		X	Silver	1.0 B		0.87
9/30/2002	WS71B0097	A1423-07A		X	Zinc	129		126
9/30/2002	WS71B0097	A1423-07A		X	Benzo(A) Anthracene	0.57	8.8	0.23
9/30/2002	WS71B0097	A1423-07A		X	Benzo(A) Pyrene	0.67	0.88	0.25
9/30/2002	WS71B0097	A1423-07A		X	Chrysene	0.67	2.3	0.4
9/30/2002	WS71B0097	A1423-07A		X	Dibenzo(A,H) Anthracene	0.12 J	0.88	0.072
9/30/2002	WS71B0096	A1423-08A		X	Antimony	9.2		6.8
9/30/2002	WS71B0096	A1423-08A		X	Lead	565	1250	45.5
9/30/2002	WS71B0096	A1423-08A		X	Mercury	0.68		0.13
9/30/2002	WS71B0096	A1423-08A		X	Benzo(A) Anthracene	0.8	8.8	0.23
9/30/2002	WS71B0096	A1423-08A		X	Benzo(A) Pyrene	0.86	0.88	0.25
9/30/2002	WS71B0096	A1423-08A		X	Benzo(B) Fluoranthene	1.2	6.4	1.1
9/30/2002	WS71B0096	A1423-08A		X	Chrysene	0.86	2.3	0.4
9/30/2002	WS71B0096	A1423-08A		X	Dibenzo(A,H) Anthracene	0.15 J	0.88	0.072
9/30/2002	WS59040105	A1423-09A		X	Mercury	0.42		0.13
9/30/2002	WS59040105	A1423-09A		X	Silver	2.1		0.87
9/30/2002	WS59040105	A1423-09A		X	Benzo(A) Anthracene	2	8.8	0.23
9/30/2002	WS59040105	A1423-09A		X	Benzo(A) Pyrene	1.8	0.88	0.25
9/30/2002	WS59040105	A1423-09A		X	Benzo(B) Fluoranthene	2.2	8.8	1.1
9/30/2002	WS59040105	A1423-09A		X	Dibenzo(A,H) Anthracene	0.30 J	0.88	0.072
9/30/2002	WS59040105	A1423-09A		X	Chrysene	1.8	7.1	0.4

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9/30/2002	WS59040106	A1423-10A		X	Mercury	0.95		0.13
9/30/2002	WS59040106	A1423-10A		X	Silver	2.6		0.87
9/30/2002	WS59040106	A1423-10A		X	Benzo(A) Anthracene	1.3	8.8	0.23
9/30/2002	WS59040106	A1423-10A		X	Benzo(A) Pyrene	1.2	0.88	0.25
9/30/2002	WS59040106	A1423-10A		X	Benzo(B) Fluoranthene	1.4	8.8	1.1
9/30/2002	WS59040106	A1423-10A		X	Dibenzo(A,H) Anthracene	0.19 J	0.88	0.072
9/30/2002	WS59040106	A1423-10A		X	Chrysene	1.2	7.1	0.4
9/30/2002	WS59040107	A1423-11A		X	Mercury	0.51		0.13
9/30/2002	WS59040107	A1423-11A		X	Silver	2.1		0.87
9/30/2002	WS59040107	A1423-11A		X	Benzo(A) Anthracene	0.36 J	8.8	0.23
9/30/2002	WS59040107	A1423-11A		X	Benzo(A) Pyrene	0.33 J	0.88	0.25
9/30/2002	CL-71-E2-WW1	588950		X	Lead	99.2	1250	45.5
9/30/2002	CL-71-E2-WS1	588951		X	Lead	363	1250	45.5
9/30/2002	CL-71-E2-WS1	588951		X	Benzo(A) Anthracene	9.1	8.8	0.23
9/30/2002	CL-71-E2-WS1	588951		X	Benzo(A) Pyrene	6.1	0.88	0.25
9/30/2002	CL-71-E2-WS1	588951		X	Benzo(B) Fluoranthene	5	6.4	1.1
9/30/2002	CL-71-E2-WS1	588951		X	Benzo(K) Fluoranthene	5.5	6.4	1.1
9/30/2002	CL-71-E2-WS1	588951		X	Indeno(1,2,3-CD) Pyrene	3.3	8.8	3.2
9/30/2002	CL-71-E2-WS1	588951		X	Chrysene	8.8	2.3	0.4
9/30/2002	CL-71-E2-WS1	588951		X	Dibenzo(A,H) Anthracene	1.4 J	0.88	0.072
9/30/2002	CL-71-E2-WE1	588952		X	Benzo(A) Anthracene	9	8	0.23
9/30/2002	CL-71-E2-WE1	588952		X	Benzo(A) Pyrene	8.8	8	0.25
9/30/2002	CL-71-E2-WE1	588952		X	Benzo(B) Fluoranthene	7.4	6.4	1.1
9/30/2002	CL-71-E2-WE1	588952		X	Benzo(K) Fluoranthene	8	6.4	1.1
9/30/2002	CL-71-E2-WE1	588952		X	Indeno(1,2,3-CD) Pyrene	5.4	8.8	3.2
9/30/2002	CL-71-E2-WE1	588952		X	Chrysene	10	2.3	0.4
9/30/2002	CL-71-E2-WE1	588952		X	Dibenzo(A,H) Anthracene	2	0.88	0.072

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
9/30/2002	CL-59-01-WS1	588953	X					
9/30/2002	FD-59-CL-05	588954	X					
9/30/2002	CL-59-01-F04	588955	X					
9/30/2002	CL-59-04-WS1	588956	X					
10/1/2002	WS59040102	A1434-01A		X	Copper	77.8		62.8
10/1/2002	WS59040102	A1434-01A		X	Mercury	1.2		0.13
10/1/2002	WS59040102	A1434-01A		X	Silver	8.3		0.87
10/1/2002	WS59040102	A1434-01A		X	Zinc	165		126
10/1/2002	WS59040102	A1434-01A		X	Benzo(A) Anthracene	0.54	8.8	0.23
10/1/2002	WS59040102	A1434-01A		X	Benzo(A) Pyrene	0.55	0.88	0.25
10/1/2002	WS59040102	A1434-01A		X	Chrysene	0.56	7.1	0.4
10/1/2002	WS59040102	A1434-01A		X	Dibenzo(A,H) Anthracene	0.09 J	0.88	0.072
10/1/2002	WS59040101	A1434-02A		X	Mercury	0.23		0.13
10/1/2002	WS59040101	A1434-02A		X	Silver	2.3		0.87
	WS59040103	A1434-03A		X	Mercury	0.14		0.13
10/1/2002	WS59040103	A1434-03A		X	Silver	0.94		0.87
10/1/2002	WS59040104	A1434-04A		X	Mercury	0.27		0.13
10/1/2002	WS59040104	A1434-04A		X	Benzo(A) Anthracene	1.1	8.8	0.23
10/1/2002	WS59040104	A1434-04A		X	Benzo(A) Pyrene	0.99	0.88	0.25
10/1/2002	WS59040104	A1434-04A		X	Benzo(B) Fluoranthene	1.2	8.8	1.1
10/1/2002	WS59040104	A1434-04A		X	Chrysene	0.99	7.1	0.4
10/1/2002	WS59040104	A1434-04A		X	Dibenzo(A,H) Anthracene	0.14 J	0.88	0.072

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/1/2002	WS59040108	A1434-05A		X	Mercury	0.52		0.13
10/1/2002	WS59040108	A1434-05A		X	Silver	4.1		0.87
10/1/2002	WS59040109	A1434-06A		X	Mercury	0.4		0.13
10/1/2002	WS59040109	A1434-06A		X	Silver	1.9		0.87
10/1/2002	WS59040109	A1434-06A		X	Benzo(A) Anthracene	0.69	8.8	0.23
10/1/2002	WS59040109	A1434-06A		X	Benzo(A) Pyrene	0.66	0.88	0.25
10/1/2002	WS59040109	A1434-06A		X	Chrysene	0.62	7.1	0.4
10/1/2002	WS59040109	A1434-06A		X	Dibenzo(A,H) Anthracene	0.33 J	0.88	0.072
10/1/2002	WS590401011	A1434-07A	X					
10/1/2002	WS590401010	A1434-08A		X	Mercury	0.29		0.13
10/1/2002	WS590401010	A1434-08A		X	Silver	2.8		0.87
10/1/2002	FD59WS05	A1434-09A	X					
10/1/2002	WS59010111	A1434-10A		X	Benzo(A) Anthracene	8.2	8.8	0.23
10/1/2002	WS59010111	A1434-10A		X	Benzo(A) Pyrene	9.5	0.88	0.25
10/1/2002	WS59010111	A1434-10A		X	Benzo(B) Fluoranthene	10	8.8	1.1
10/1/2002	WS59010111	A1434-10A		X	Benzo(K) Fluoranthene	4.2	19	1.1
10/1/2002	WS59010111	A1434-10A		X	Indeno(1,2,3-CD) Pyrene	5.8	8.8	3.2
10/1/2002	WS59010111	A1434-10A		X	Chrysene	8	7.1	0.4
10/1/2002	WS59010111	A1434-10A		X	Dibenzo(A,H) Anthracene	1.6 J	0.88	0.072
10/1/2002	WS59010112	A1434-11A		X	Silver	0.93		0.87
10/1/2002	WS59010112	A1434-11A		X	Benzo(A) Anthracene	6.9	8.8	0.23
10/1/2002	WS59010112	A1434-11A		X	Benzo(A) Pyrene	7.4	0.88	0.25
10/1/2002	WS59010112	A1434-11A		X	Benzo(B) Fluoranthene	8.1	8.8	1.1
10/1/2002	WS59010112	A1434-11A		X	Benzo(K) Fluoranthene	3.2	19	1.1
10/1/2002	WS59010112	A1434-11A		X	Indeno(1,2,3-CD) Pyrene	4.5	8.8	3.2

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10/1/2002	WS59010112	A1434-11A		X	Chrysene	6.6	7.1	0.4
10/1/2002	WS59010112	A1434-11A		X	Dibenzo(A,H) Anthracene	1.2 J	0.88	0.072
10/1/2002	WS59010113	A1434-12A		X	Benzo(A) Anthracene	2.6	8.8	0.23
10/1/2002	WS59010113	A1434-12A		X	Benzo(A) Pyrene	3	0.88	0.25
10/1/2002	WS59010113	A1434-12A		X	Benzo(B) Fluoranthene	3.5	8.8	1.1
10/1/2002	WS59010113	A1434-12A		X	Benzo(K) Fluoranthene	1.5 J	19	1.1
10/1/2002	WS59010113	A1434-12A		X	Chrysene	2.5	7.1	0.4
10/1/2002	WS59010113	A1434-12A		X	Dibenzo(A,H) Anthracene	0.52 J	0.88	0.072
10/1/2002	WS59010114	A1434-13A		X	Benzo(A) Anthracene	2.2	8.8	0.23
10/1/2002	WS59010114	A1434-13A		X	Benzo(A) Pyrene	2.5	0.88	0.25
10/1/2002	WS59010114	A1434-13A		X	Benzo(B) Fluoranthene	2.9	8.8	1.1
10/1/2002	WS59010114	A1434-13A		X	Benzo(K) Fluoranthene	1.1 J	19	1.1
10/1/2002	WS59010114	A1434-13A		X	Chrysene	2.1	7.1	0.4
10/1/2002	WS59010114	A1434-13A		X	Dibenzo(A,H) Anthracene	0.41 J	0.88	0.072
10/3/2002	WS59010121	A1448-01A		X	Silver	1.1 B		0.87
10/3/2002	WS59010121	A1448-01A		X	Benzo(A) Anthracene	1.8	8.8	0.23
10/3/2002	WS59010121	A1448-01A		X	Benzo(A) Pyrene	2.1	0.88	0.25
10/3/2002	WS59010121	A1448-01A		X	Benzo(B) Fluoranthene	2.3	8.8	1.1
10/3/2002	WS59010121	A1448-01A		X	Chrysene	1.8	7.1	0.4
10/3/2002	WS59010121	A1448-01A		X	Dibenzo(A,H) Anthracene	0.32 J	0.88	0.072
10/3/2002	FD59W56	A1448-02A		X	Benzo(A) Anthracene	6.8 E	8.8	0.23
10/3/2002	FD59W56	A1448-02A		X	Benzo(A) Pyrene	8.1 E	0.88	0.25
10/3/2002	FD59W56	A1448-02A		X	Benzo(B) Fluoranthene	9.0 E	8.8	1.1
10/3/2002	FD59W56	A1448-02A		X	Benzo(K) Fluoranthene	4.9 E	19	1.1
10/3/2002	FD59W56	A1448-02A		X	Indeno(1,2,3-CD) Pyrene	3.6 E	8.8	3.2
10/3/2002	FD59W56	A1448-02A		X	Chrysene	6.9 E	7.1	0.4
10/3/2002	FD59W56	A1448-02A		X	Dibenzo(A,H) Anthracene	1.1	0.88	0.072

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/3/2002	WS59010122	A1448-03A		X	Benzo(A) Anthracene	4.9 E	8.8	0.23
10/3/2002	WS59010122	A1448-03A		X	Benzo(A) Pyrene	5.9 E	0.88	0.25
10/3/2002	WS59010122	A1448-03A		X	Benzo(B) Fluoranthene	6.9 E	8.8	1.1
10/3/2002	WS59010122	A1448-03A		X	Benzo(K) Fluoranthene	3.3 E	19	1.1
10/3/2002	WS59010122	A1448-03A		X	Chrysene	5.1 E	7.1	0.4
10/3/2002	WS59010122	A1448-03A		X	Dibenzo(A,H) Anthracene	0.82	0.88	0.072
10/3/2002	WS59010141	A1448-04A		X	Silver	0.96 B		0.87
10/3/2002	WS59010141	A1448-04A		X	Benzo(A) Anthracene	0.49	8.8	0.23
10/3/2002	WS59010141	A1448-04A		X	Benzo(A) Pyrene	0.65	0.88	0.25
10/3/2002	WS59010141	A1448-04A		X	Chrysene	0.55	7.1	0.4
10/3/2002	WS59010141	A1448-04A		X	Dibenzo(A,H) Anthracene	0.10 J	0.88	0.072
10/3/2002	WS59010142	A1448-05A		X	Benzo(A) Anthracene	1.4	8.8	0.23
10/3/2002	WS59010142	A1448-05A		X	Benzo(A) Pyrene	2.1	0.88	0.25
10/3/2002	WS59010142	A1448-05A		X	Benzo(B) Fluoranthene	2.7	8.8	1.1
10/3/2002	WS59010142	A1448-05A		X	Chrysene	1.6	7.1	0.4
10/3/2002	WS59010142	A1448-05A		X	Dibenzo(A,H) Anthracene	0.32 J	0.88	0.072
10/3/2002	WS59010143	A1448-06A		X	Silver	1.1 B		0.87
10/3/2002	WS59010143	A1448-06A		X	Benzo(A) Anthracene	0.27 J	8.8	0.23
10/3/2002	WS59010143	A1448-06A		X	Benzo(A) Pyrene	0.36 J	0.88	0.25
10/3/2002	WS59010144	A1448-07A		X	Silver	0.96 B		0.87
10/3/2002	WS59010144	A1448-07A		X	Benzo(A) Anthracene	1	8.8	0.23
10/3/2002	WS59010144	A1448-07A		X	Benzo(A) Pyrene	0.89	0.88	0.25
10/3/2002	WS59010144	A1448-07A		X	Benzo(B) Fluoranthene	1.1	8.8	1.1
10/3/2002	WS59010144	A1448-07A		X	Chrysene	0.97	7.1	0.4
10/3/2002	WS59010144	A1448-07A		X	Dibenzo(A,H) Anthracene	0.38 J	0.88	0.072

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/3/2002	CL5901WN3	A1448-10A		X	Chromium	33.6		32.7
10/3/2002	CL5901WN3	A1448-10A		X	Cobalt	30.4		30
10/3/2002	CL5901WN3	A1448-10A		X	Copper	96.7		62.8
10/3/2002	CL5901WN3	A1448-10A		X	Lead	108	400	45.5
10/3/2002	CL5901WN3	A1448-10A		X	Silver	1.3 B		0.87
10/3/2002	CL5901WN3	A1448-10A		X	Zinc	233		126
10/3/2002	CL5901WN3	A1448-10A		X	Benzo(A) Anthracene	0.67	8.8	0.23
10/3/2002	CL5901WN3	A1448-10A		X	Benzo(A) Pyrene	0.62	0.88	0.25
10/3/2002	CL5901WN3	A1448-10A		X	Chrysene	0.7	7.1	0.4
10/3/2002	CL5901WN3	A1448-10A		X	Dibenzo(A,H) Anthracene	0.26 J	0.88	0.072
10/3/2002	CL5901WN4	A1448-11A		X	Lead	81.5	400	45.5
10/3/2002	CL5901WN4	A1448-11A		X	Silver	1.0 B		0.87
10/3/2002	CL5901WN4	A1448-11A		X	Benzo(A) Anthracene	0.6	8.8	0.23
10/3/2002	CL5901WN4	A1448-11A		X	Benzo(A) Pyrene	0.64	0.88	0.25
10/3/2002	CL5901WN4	A1448-11A		X	Chrysene	0.59	7.1	0.4
10/3/2002	CL5901WN4	A1448-11A		X	Dibenzo(A,H) Anthracene	0.099 J	0.88	0.072
10/3/2002	CL5901WN4	A1448-11A		X	Silver	1.0 B		0.87
10/3/2002	CL5901WN5	A1448-12A		X	Silver	1.2 B		0.87
10/3/2002	CL5901WN6	A1448-13A	X					
10/3/2002	CL5901WE1	A1448-14A		X	Silver	1.2 B		0.87
10/3/2002	CL5901WE2	A1448-15A		X	Silver	1.3 B		0.87
10/3/2002	CL5901F07	A1448-16A		X	Silver	1.0 B		0.87
10/3/2002	CL5901F06	A1448-17A		X	Silver	1.5 B		0.87

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10/3/2002	CL5901F05	A1448-18A		X	Silver	1.2 B		0.87
10/3/2002	WS59010145	A1448-19A		X	Benzo(A) Anthracene	0.37 J	8.8	0.23
10/3/2002	WS59010145	A1448-19A		X	Benzo(A) Pyrene	0.43	0.88	0.25
10/3/2002	WS59010145	A1448-19A		X	Chrysene	0.42	7.1	0.4
10/3/2002	WS59010145	A1448-19A		X	Dibenzo(A,H) Anthracene	0.073 J	0.88	0.072
10/4/2002	WS-59-01-015-1	590477		X	Benzo(A) Anthracene	3	8.8	0.23
10/4/2002	WS-59-01-015-1	590477		X	Benzo(A) Pyrene	2.7	0.88	0.25
10/4/2002	WS-59-01-015-1	590477		X	Benzo(B) Fluoranthene	2.1	8.8	1.1
10/4/2002	WS-59-01-015-1	590477		X	Benzo(K) Fluoranthene	2.5	19	1.1
10/4/2002	WS-59-01-015-1	590477		X	Chrysene	2.9	7.1	0.4
10/4/2002	WS-59-01-015-1	590477		X	Dibenzo(A,H) Anthracene	0.58 J	0.88	0.072
10/4/2002	WS-59-01-015-2	590478		X	Benzo(A) Anthracene	1.9 J	8.8	0.23
10/4/2002	WS-59-01-015-2	590478		X	Benzo(A) Pyrene	2	0.88	0.25
10/4/2002	WS-59-01-015-2	590478		X	Benzo(B) Fluoranthene	1.7 J	8.8	1.1
10/4/2002	WS-59-01-015-2	590478		X	Benzo(K) Fluoranthene	1.7 J	19	1.1
10/4/2002	WS-59-01-015-2	590478		X	Chrysene	1.9 J	7.1	0.4
10/4/2002	WS-59-01-015-2	590478		X	Dibenzo(A,H) Anthracene	0.41 J	0.88	0.072
10/4/2002	WS-59-01-015-3	590480		X	Benzo(A) Anthracene	0.52 J	8.8	0.23
10/4/2002	WS-59-01-015-3	590480		X	Benzo(A) Pyrene	0.57 J	0.88	0.25
10/4/2002	WS-59-01-015-3	590480		X	Chrysene	0.49 J	7.1	0.4
10/4/2002	WS-59-01-015-4	590481		X	Benzo(A) Anthracene	4.2	8.8	0.23
10/4/2002	WS-59-01-015-4	590481		X	Benzo(A) Pyrene	6.2	0.88	0.25
10/4/2002	WS-59-01-015-4	590481		X	Benzo(B) Fluoranthene	4.7	8.8	1.1
10/4/2002	WS-59-01-015-4	590481		X	Benzo(K) Fluoranthene	4.7	19	1.1
10/4/2002	WS-59-01-015-4	590481		X	Indeno(1,2,3-CD) Pyrene	3.8	8.8	3.2
10/4/2002	WS-59-01-015-4	590481		X	Chrysene	4.3	7.1	0.4

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10/4/2002	WS-59-01-015-4	590481		X	Dibenzo(A,H) Anthracene	1.3 J	0.88	0.072
10/4/2002	WS-59-01-015-5	590482		X	Benzo(A) Anthracene	2.2	8.8	0.23
10/4/2002	WS-59-01-015-5	590482		X	Benzo(A) Pyrene	2.5	0.88	0.25
10/4/2002	WS-59-01-015-5	590482		X	Benzo(B) Fluoranthene	2.0 J	8.8	1.1
10/4/2002	WS-59-01-015-5	590482		X	Benzo(K) Fluoranthene	2.1	19	1.1
10/4/2002	WS-59-01-015-5	590482		X	Chrysene	2.3	7.1	0.4
10/4/2002	WS-59-01-015-5	590482		X	Dibenzo(A,H) Anthracene	0.5 J	0.88	0.072
10/4/2002	WS-59-01-015-6	590484		X	Benzo(A) Anthracene	2.7	8.8	0.23
10/4/2002	WS-59-01-015-6	590484		X	Benzo(A) Pyrene	2.9	0.88	0.25
10/4/2002	WS-59-01-015-6	590484		X	Benzo(B) Fluoranthene	2.2	8.8	1.1
10/4/2002	WS-59-01-015-6	590484		X	Benzo(K) Fluoranthene	2.3	19	1.1
10/4/2002	WS-59-01-015-6	590484		X	Chrysene	2.7	7.1	0.4
10/4/2002	WS-59-01-015-6	590484		X	Dibenzo(A,H) Anthracene	0.59 J	0.88	0.072
10/4/2002	WS-59-01-015-7	590485		X	Benzo(A) Anthracene	1.7 J	8.8	0.23
10/4/2002	WS-59-01-015-7	590485		X	Benzo(A) Pyrene	1.8 J	0.88	0.25
10/4/2002	WS-59-01-015-7	590485		X	Benzo(B) Fluoranthene	1.4 J	8.8	1.1
10/4/2002	WS-59-01-015-7	590485		X	Benzo(K) Fluoranthene	1.4 J	19	1.1
10/4/2002	WS-59-01-015-7	590485		X	Chrysene	1.8 J	7.1	0.4
10/4/2002	WS-59-01-015-7	590485		X	Dibenzo(A,H) Anthracene	0.36 J	0.88	0.072
10/4/2002	WS-59-01-015-8	590487		X	Benzo(A) Anthracene	3.7	8.8	0.23
10/4/2002	WS-59-01-015-8	590487		X	Benzo(A) Pyrene	4.2	0.88	0.25
10/4/2002	WS-59-01-015-8	590487		X	Benzo(B) Fluoranthene	3.2	8.8	1.1
10/4/2002	WS-59-01-015-8	590487		X	Benzo(K) Fluoranthene	3.4	19	1.1
10/4/2002	WS-59-01-015-8	590487		X	Chrysene	3.6	7.1	0.4
10/4/2002	WS-59-01-015-8	590487		X	Dibenzo(A,H) Anthracene	0.84 J	0.88	0.072
10/4/2002	WS-59-01-015-9	590488		X	Benzo(A) Anthracene	1.9 J	8.8	0.23

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10/4/2002	WS-59-01-015-9	590488		X	Benzo(A) Pyrene	2.4	0.88	0.25
10/4/2002	WS-59-01-015-9	590488		X	Benzo(B) Fluoranthene	1.9 J	8.8	1.1
10/4/2002	WS-59-01-015-9	590488		X	Benzo(K) Fluoranthene	1.8 J	19	1.1
10/4/2002	WS-59-01-015-9	590488		X	Chrysene	2	7.1	0.4
10/4/2002	WS-59-01-015-9	590488		X	Dibenzo(A,H) Anthracene	0.49 J	0.88	0.072
10/4/2002	WS-59-01-015-10	590489		X	Benzo(A) Anthracene	1.7 J	8.8	0.23
10/4/2002	WS-59-01-015-10	590489		X	Benzo(A) Pyrene	2	0.88	0.25
10/4/2002	WS-59-01-015-10	590489		X	Benzo(B) Fluoranthene	1.5 J	8.8	1.1
10/4/2002	WS-59-01-015-10	590489		X	Benzo(K) Fluoranthene	1.6 J	19	1.1
10/4/2002	WS-59-01-015-10	590489		X	Chrysene	1.7 J	7.1	0.4
10/4/2002	WS-59-01-015-10	590489		X	Dibenzo(A,H) Anthracene	0.39 J	0.88	0.072
10/4/2002	WS-59-01-015-11	590490		X	Antimony	11.1		6.8
10/4/2002	WS-59-01-015-11	590490		X	Benzo(A) Anthracene	1.9 J	8.8	0.23
10/4/2002	WS-59-01-015-11	590490		X	Benzo(A) Pyrene	2.3	0.88	0.25
10/4/2002	WS-59-01-015-11	590490		X	Benzo(B) Fluoranthene	1.8 J	8.8	1.1
10/4/2002	WS-59-01-015-11	590490		X	Benzo(K) Fluoranthene	1.8 J	19	1.1
10/4/2002	WS-59-01-015-11	590490		X	Chrysene	1.9 J	7.1	0.4
10/4/2002	WS-59-01-015-11	590490		X	Dibenzo(A,H) Anthracene	0.45 J	0.88	0.072
10/7/2002	WS-59-01-015-12	590823		X	Mercury	7.7		0.13
10/7/2002	WS-59-01-015-12	590823		X	Benzo(A) Anthracene	4	8.8	0.23
10/7/2002	WS-59-01-015-12	590823		X	Benzo(A) Pyrene	4.5	0.88	0.25
10/7/2002	WS-59-01-015-12	590823		X	Benzo(B) Fluoranthene	3.4	8.8	1.1
10/7/2002	WS-59-01-015-12	590823		X	Benzo(K) Fluoranthene	3.7	19	1.1
10/7/2002	WS-59-01-015-12	590823		X	Chrysene	4.2	7.1	0.4
10/7/2002	WS-59-01-015-12	590823		X	Dibenzo(A,H) Anthracene	0.97 J	0.88	0.072
10/7/2002	WS-59-01-015-13	590824		X	Antimony	14.3		6.8
10/7/2002	WS-59-01-015-13	590824		X	Zinc	137		126

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/7/2002	WS-59-01-015-13	590824		X	Benzo(A) Anthracene	1.8 J	8.8	0.23
10/7/2002	WS-59-01-015-13	590824		X	Benzo(A) Pyrene	2.1	0.88	0.25
10/7/2002	WS-59-01-015-13	590824		X	Benzo(B) Fluoranthene	1.6 J	8.8	1.1
10/7/2002	WS-59-01-015-13	590824		X	Benzo(K) Fluoranthene	1.7 J	19	1.1
10/7/2002	WS-59-01-015-13	590824		X	Chrysene	1.8 J	7.1	0.4
10/7/2002	WS-59-01-015-13	590824		X	Dibenzo(A,H) Anthracene	0.43 J	0.88	0.072
10/7/2002	FD-59-WS-07	590825		X	Zinc	145		126
10/7/2002	FD-59-WS-07	590825		X	Benzo(A) Anthracene	16	8.8	0.23
10/7/2002	FD-59-WS-07	590825		X	Benzo(A) Pyrene	14	0.88	0.25
10/7/2002	FD-59-WS-07	590825		X	Benzo(B) Fluoranthene	12	8.8	1.1
10/7/2002	FD-59-WS-07	590825		X	Benzo(K) Fluoranthene	13	19	1.1
10/7/2002	FD-59-WS-07	590825		X	Indeno(1,2,3-CD) Pyrene	8.7	8.8	3.2
10/7/2002	FD-59-WS-07	590825		X	Chrysene	16	7.1	0.4
10/7/2002	FD-59-WS-07	590825		X	Dibenzo(A,H) Anthracene	2.9 J	0.88	0.072
10/7/2002	WS-59-01-015-14	590826		X	Antimony	43.9		6.8
10/7/2002	WS-59-01-015-14	590826		X	Lead	195	400	45.5
10/7/2002	WS-59-01-015-14	590826		X	Zinc	126		126
10/7/2002	WS-59-01-015-14	590826		X	Benzo(A) Anthracene	4.2	8.8	0.23
10/7/2002	WS-59-01-015-14	590826		X	Benzo(A) Pyrene	4.8	0.88	0.25
10/7/2002	WS-59-01-015-14	590826		X	Benzo(B) Fluoranthene	3.6	8.8	1.1
10/7/2002	WS-59-01-015-14	590826		X	Benzo(K) Fluoranthene	3.8	19	1.1
10/7/2002	WS-59-01-015-14	590826		X	Chrysene	4.3	7.1	0.4
10/7/2002	WS-59-01-015-14	590826		X	Dibenzo(A,H) Anthracene	0.88 J	0.88	0.072
10/7/2002	WS-59-01-015-15	590827		X	Benzo(A) Anthracene	4	8.8	0.23
10/7/2002	WS-59-01-015-15	590827		X	Benzo(A) Pyrene	4.3	0.88	0.25
10/7/2002	WS-59-01-015-15	590827		X	Benzo(B) Fluoranthene	3.2	8.8	1.1
10/7/2002	WS-59-01-015-15	590827		X	Benzo(K) Fluoranthene	3.3	19	1.1
10/7/2002	WS-59-01-015-15	590827		X	Chrysene	3.9	7.1	0.4

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/7/2002	WS-59-01-015-15	590827		X	Dibenzo(A,H) Anthracene	0.78 J	0.88	0.072
10/7/2002	WS-71-C-009-4	590828		X	Antimony	110		6.8
10/7/2002	WS-71-C-009-4	590828		X	Barium	410		300
10/7/2002	WS-71-C-009-4	590828		X	Copper	578		62.8
10/7/2002	WS-71-C-009-4	590828		X	Lead	6410	1250	45.5
10/7/2002	WS-71-C-009-4	590828		X	Mercury	10.6		0.13
10/7/2002	WS-71-C-009-4	590828		X	Zinc	126		126
10/7/2002	WS-71-C-009-4	590828		X	Benzo(A) Anthracene	12	8.8	0.23
10/7/2002	WS-71-C-009-4	590828		X	Benzo(A) Pyrene	11	0.88	0.25
10/7/2002	WS-71-C-009-4	590828		X	Benzo(B) Fluoranthene	8.5	6.4	1.1
10/7/2002	WS-71-C-009-4	590828		X	Benzo(K) Fluoranthene	9.4	6.4	1.1
10/7/2002	WS-71-C-009-4	590828		X	Indeno(1,2,3-CD) Pyrene	5.5	8.8	3.2
10/7/2002	WS-71-C-009-4	590828		X	Chrysene	12	2.3	0.4
10/7/2002	WS-71-C-009-4	590828		X	Dibenzo(A,H) Anthracene	2	0.88	0.072
10/7/2002	WS-71-C-009-5	590829		X	Antimony	19		6.8
10/7/2002	WS-71-C-009-5	590829		X	Copper	221		62.8
10/7/2002	WS-71-C-009-5	590829		X	Lead	1310	1250	45.5
10/7/2002	WS-71-C-009-5	590829		X	Mercury	2.8		0.13
10/7/2002	WS-71-C-009-5	590829		X	Zinc	148		126
10/7/2002	WS-71-C-009-5	590829		X	Benzo(A) Anthracene	0.65	8.8	0.23
10/7/2002	WS-71-C-009-5	590829		X	Benzo(A) Pyrene	0.74	0.88	0.25
10/7/2002	WS-71-C-009-5	590829		X	Chrysene	0.91	2.3	0.4
10/7/2002	WS-71-C-009-5	590829		X	Dibenzo(A,H) Anthracene	0.16 J	0.88	0.072
10/7/2002	WS-59-01-012-3	590830		X	Benzo(A) Anthracene	10	8.8	0.23
10/7/2002	WS-59-01-012-3	590830		X	Benzo(A) Pyrene	16	0.88	0.25
10/7/2002	WS-59-01-012-3	590830		X	Benzo(B) Fluoranthene	11	8.8	1.1
10/7/2002	WS-59-01-012-3	590830		X	Benzo(K) Fluoranthene	13	19	1.1
10/7/2002	WS-59-01-012-3	590830		X	Indeno(1,2,3-CD) Pyrene	7.8	8.8	3.2

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/7/2002	WS-59-01-012-3	590830		X	Chrysene	11	7.1	0.4
10/7/2002	WS-59-01-012-3	590830		X	Dibenzo(A,H) Anthracene	2.9	0.88	0.072
10/7/2002	WS-59-01-011-9	590831		X	Benzo(A) Anthracene	7.7	8.8	0.23
10/7/2002	WS-59-01-011-9	590831		X	Benzo(A) Pyrene	9.9	0.88	0.25
10/7/2002	WS-59-01-011-9	590831		X	Benzo(B) Fluoranthene	7.7	8.8	1.1
10/7/2002	WS-59-01-011-9	590831		X	Benzo(K) Fluoranthene	7.6	19	1.1
10/7/2002	WS-59-01-011-9	590831		X	Indeno(1,2,3-CD) Pyrene	5.1	8.8	3.2
10/7/2002	WS-59-01-011-9	590831		X	Chrysene	7.7	7.1	0.4
10/7/2002	WS-59-01-011-9	590831		X	Dibenzo(A,H) Anthracene	1.9 J	0.88	0.072
10/7/2002	WS-59-01-011-7	590832		X	Benzo(A) Anthracene	14	8.8	0.23
10/7/2002	WS-59-01-011-7	590832		X	Benzo(A) Pyrene	16	0.88	0.25
10/7/2002	WS-59-01-011-7	590832		X	Benzo(B) Fluoranthene	11	8.8	1.1
10/7/2002	WS-59-01-011-7	590832		X	Benzo(K) Fluoranthene	13	19	1.1
10/7/2002	WS-59-01-011-7	590832		X	Indeno(1,2,3-CD) Pyrene	8	8.8	3.2
10/7/2002	WS-59-01-011-7	590832		X	Chrysene	13	7.1	0.4
10/7/2002	WS-59-01-011-7	590832		X	Dibenzo(A,H) Anthracene	2.8 J	0.88	0.072
10/7/2002	WS-59-01-011-8	590833		X	Benzo(A) Anthracene	12	8.8	0.23
10/7/2002	WS-59-01-011-8	590833		X	Benzo(A) Pyrene	15	0.88	0.25
10/7/2002	WS-59-01-011-8	590833		X	Benzo(B) Fluoranthene	11	8.8	1.1
10/7/2002	WS-59-01-011-8	590833		X	Benzo(K) Fluoranthene	11	19	1.1
10/7/2002	WS-59-01-011-8	590833		X	Indeno(1,2,3-CD) Pyrene	7	8.8	3.2
10/7/2002	WS-59-01-011-8	590833		X	Chrysene	12	7.1	0.4
10/7/2002	WS-59-01-011-8	590833		X	Dibenzo(A,H) Anthracene	2.6	0.88	0.072
10/7/2002	WS-59-01-011-6	590834		X	Benzo(A) Anthracene	5.8	8.8	0.23
10/7/2002	WS-59-01-011-6	590834		X	Benzo(A) Pyrene	6.3	0.88	0.25
10/7/2002	WS-59-01-011-6	590834		X	Benzo(B) Fluoranthene	4.6	8.8	1.1
10/7/2002	WS-59-01-011-6	590834		X	Benzo(K) Fluoranthene	5.1	19	1.1

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/7/2002	WS-59-01-011-6	590834		X	Chrysene	5.9	7.1	0.4
10/7/2002	WS-59-01-011-6	590834		X	Dibenzo(A,H) Anthracene	1.1 J	0.88	0.072
10/7/2002	WS-59-01-011-5	590835		X	Antimony	15.7		6.8
10/7/2002	WS-59-01-011-5	590835		X	Benzo(A) Anthracene	1.6	8.8	0.23
10/7/2002	WS-59-01-011-5	590835		X	Benzo(A) Pyrene	1.9	0.88	0.25
10/7/2002	WS-59-01-011-5	590835		X	Benzo(B) Fluoranthene	1.6	8.8	1.1
10/7/2002	WS-59-01-011-5	590835		X	Benzo(K) Fluoranthene	1.6	19	1.1
10/7/2002	WS-59-01-011-5	590835		X	Chrysene	1.6	7.1	0.4
10/7/2002	WS-59-01-011-5	590835		X	Dibenzo(A,H) Anthracene	0.33 J	0.88	0.072
10/8/2002	WS-59-01-013-1	591333		X	Benzo(A) Anthracene	7.8	8.8	0.23
10/8/2002	WS-59-01-013-1	591333		X	Benzo(A) Pyrene	7	0.88	0.25
10/8/2002	WS-59-01-013-1	591333		X	Benzo(B) Fluoranthene	5.2	8.8	1.1
10/8/2002	WS-59-01-013-1	591333		X	Benzo(K) Fluoranthene	5.6	19	1.1
10/8/2002	WS-59-01-013-1	591333		X	Indeno(1,2,3-CD) Pyrene	3.7	8.8	3.2
10/8/2002	WS-59-01-013-1	591333		X	Chrysene	7.5	7.1	0.4
10/8/2002	WS-59-01-013-1	591333		X	Dibenzo(A,H) Anthracene	1.4 J	0.88	0.072
10/8/2002	WS-59-01-013-2	591334		X	Benzo(A) Anthracene	4.6	8.8	0.23
10/8/2002	WS-59-01-013-2	591334		X	Benzo(A) Pyrene	5.1	0.88	0.25
10/8/2002	WS-59-01-013-2	591334		X	Benzo(B) Fluoranthene	3.9	8.8	1.1
10/8/2002	WS-59-01-013-2	591334		X	Benzo(K) Fluoranthene	4	19	1.1
10/8/2002	WS-59-01-013-2	591334		X	Indeno(1,2,3-CD) Pyrene	3.2	8.8	3.2
10/8/2002	WS-59-01-013-2	591334		X	Chrysene	4.7	7.1	0.4
10/8/2002	WS-59-01-013-2	591334		X	Dibenzo(A,H) Anthracene	1.1 J	0.88	0.072
10/8/2002	WS-59-01-013-3	591335		X	Benzo(A) Anthracene	2.8	8.8	0.23
10/8/2002	WS-59-01-013-3	591335		X	Benzo(A) Pyrene	2.9	0.88	0.25
10/8/2002	WS-59-01-013-3	591335		X	Benzo(B) Fluoranthene	2.3	8.8	1.1
10/8/2002	WS-59-01-013-3	591335		X	Benzo(K) Fluoranthene	2.5	19	1.1

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/8/2002	WS-59-01-013-3	591335		X	Chrysene	2.9	7.1	0.4
10/8/2002	WS-59-01-013-3	591335		X	Dibenzo(A,H) Anthracene	0.62 J	0.88	0.072
10/8/2002	WS-59-01-013-4	591336		X	Benzo(A) Anthracene	1.1	8.8	0.23
10/8/2002	WS-59-01-013-4	591336		X	Benzo(A) Pyrene	1.4	0.88	0.25
10/8/2002	WS-59-01-013-4	591336		X	Benzo(B) Fluoranthene	1.1	8.8	1.1
10/8/2002	WS-59-01-013-4	591336		X	Benzo(K) Fluoranthene	1.1	19	1.1
10/8/2002	WS-59-01-013-4	591336		X	Chrysene	1.3	7.1	0.4
10/8/2002	WS-59-01-013-4	591336		X	Dibenzo(A,H) Anthracene	0.31 J	0.88	0.072
10/8/2002	WS-59-01-013-5	591337		X	Copper	305		62.8
10/8/2002	WS-59-01-013-5	591337		X	Lead	84.6	400	45.5
10/8/2002	WS-59-01-013-5	591337		X	Benzo(A) Anthracene	1.6 J	8.8	0.23
10/8/2002	WS-59-01-013-5	591337		X	Benzo(A) Pyrene	2	0.88	0.25
10/8/2002	WS-59-01-013-5	591337		X	Benzo(B) Fluoranthene	1.7 J	8.8	1.1
10/8/2002	WS-59-01-013-5	591337		X	Benzo(K) Fluoranthene	1.6 J	19	1.1
10/8/2002	WS-59-01-013-5	591337		X	Chrysene	1.8 J	7.1	0.4
10/8/2002	WS-59-01-013-5	591337		X	Dibenzo(A,H) Anthracene	0.46 J	0.88	0.072
10/8/2002	WS-59-01-013-6	591338		X	Benzo(A) Anthracene	2.3	8.8	0.23
10/8/2002	WS-59-01-013-6	591338		X	Benzo(A) Pyrene	2.7	0.88	0.25
10/8/2002	WS-59-01-013-6	591338		X	Benzo(B) Fluoranthene	2.1	8.8	1.1
10/8/2002	WS-59-01-013-6	591338		X	Benzo(K) Fluoranthene	2.3	19	1.1
10/8/2002	WS-59-01-013-6	591338		X	Chrysene	2.3	7.1	0.4
10/8/2002	WS-59-01-013-6	591338		X	Dibenzo(A,H) Anthracene	0.65 J	0.88	0.072
10/8/2002	WS-59-01-015-16	591339		X	Antimony	12		6.8
10/8/2002	WS-59-01-015-16	591339		X	Lead	149	400	45.5
10/8/2002	WS-59-01-015-16	591339		X	Benzo(A) Anthracene	3.4	8.8	0.23
10/8/2002	WS-59-01-015-16	591339		X	Benzo(A) Pyrene	4	0.88	0.25
10/8/2002	WS-59-01-015-16	591339		X	Benzo(B) Fluoranthene	2.7	8.8	1.1

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Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/8/2002	WS-59-01-015-16	591339		X	Benzo(K) Fluoranthene	3	19	1.1
10/8/2002	WS-59-01-015-16	591339		X	Chrysene	3.4	7.1	0.4
10/8/2002	WS-59-01-015-16	591339		X	Dibenzo(A,H) Anthracene	0.77 J	0.88	0.072
10/8/2002	WS-59-01-015-17	591340		X	Lead	61.6	400	45.5
10/8/2002	WS-59-01-015-17	591340		X	Benzo(A) Anthracene	5.4	8.8	0.23
10/8/2002	WS-59-01-015-17	591340		X	Benzo(A) Pyrene	5.4	0.88	0.25
10/8/2002	WS-59-01-015-17	591340		X	Benzo(B) Fluoranthene	3.6	8.8	1.1
10/8/2002	WS-59-01-015-17	591340		X	Benzo(K) Fluoranthene	4.3	19	1.1
10/8/2002	WS-59-01-015-17	591340		X	Chrysene	5.3	7.1	0.4
10/8/2002	WS-59-01-015-17	591340		X	Dibenzo(A,H) Anthracene	0.89 J	0.88	0.072
10/8/2002	WS-59-01-013-7	591341		X	Benzo(A) Anthracene	1.3	8.8	0.23
10/8/2002	WS-59-01-013-7	591341		X	Benzo(A) Pyrene	1.4	0.88	0.25
10/8/2002	WS-59-01-013-7	591341		X	Benzo(B) Fluoranthene	1.2	8.8	1.1
10/8/2002	WS-59-01-013-7	591341		X	Benzo(K) Fluoranthene	1.2	19	1.1
10/8/2002	WS-59-01-013-7	591341		X	Chrysene	1.3	7.1	0.4
10/8/2002	WS-59-01-013-7	591341		X	Dibenzo(A,H) Anthracene	0.32 J	0.88	0.072
10/8/2002	WS-59-01-015-19	591342		X	Lead	80.8	400	45.5
10/8/2002	WS-59-01-015-19	591342		X	Benzo(A) Anthracene	3.6	8.8	0.23
10/8/2002	WS-59-01-015-19	591342		X	Benzo(A) Pyrene	3.8	0.88	0.25
10/8/2002	WS-59-01-015-19	591342		X	Benzo(B) Fluoranthene	2.9	8.8	1.1
10/8/2002	WS-59-01-015-19	591342		X	Benzo(K) Fluoranthene	3.1	19	1.1
10/8/2002	WS-59-01-015-19	591342		X	Chrysene	3.6	7.1	0.4
10/8/2002	WS-59-01-015-19	591342		X	Dibenzo(A,H) Anthracene	0.66 J	0.88	0.072
10/8/2002	WS-59-01-015-18	591343		X	Antimony	7.9		6.8
10/8/2002	WS-59-01-015-18	591343		X	Lead	57.7	400	45.5
10/8/2002	WS-59-01-015-18	591343		X	Benzo(A) Anthracene	3.1	8.8	0.23
10/8/2002	WS-59-01-015-18	591343		X	Benzo(A) Pyrene	3.6	0.88	0.25

Seneca Army Depot
Time Critical Removal
SEAD-59 and SEAD-71
Exceedences

Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/8/2002	WS-59-01-015-18	591343		X	Benzo(B) Fluoranthene	2.9	8.8	1.1
10/8/2002	WS-59-01-015-18	591343		X	Benzo(K) Fluoranthene	3	19	1.1
10/8/2002	WS-59-01-015-18	591343		X	Chrysene	3.5	7.1	0.4
10/8/2002	WS-59-01-015-18	591343		X	Dibenzo(A,H) Anthracene	0.66 J	0.88	0.072
10/8/2002	WS-59-01-015-20	591344		X	Lead	57.7	400	45.5
10/8/2002	WS-59-01-015-20	591344		X	Benzo(A) Anthracene	5.6	8.8	0.23
10/8/2002	WS-59-01-015-20	591344		X	Benzo(A) Pyrene	5.9	0.88	0.25
10/8/2002	WS-59-01-015-20	591344		X	Benzo(B) Fluoranthene	4.5	8.8	1.1
10/8/2002	WS-59-01-015-20	591344		X	Benzo(K) Fluoranthene	4.9	19	1.1
10/8/2002	WS-59-01-015-20	591344		X	Chrysene	5.4	7.1	0.4
10/8/2002	WS-59-01-015-20	591344		X	Dibenzo(A,H) Anthracene	1.0 J	0.88	0.072
10/8/2002	CL5901F03	A1469-01A		X	Silver	1.0 B		0.87
10/8/2002	CL5901WE3	A1469-02A		X	Acetone	0.22		0.2
10/8/2002	CL5901WE4	A1469-03A		X	Acetone	0.68 E		0.2
10/8/2002	CL5901F08	A1469-04A	X					
10/8/2002	CL5901F09	A1469-05A		X	Benzo(A) Anthracene	0.51	8.8	0.23
10/8/2002	CL5901F09	A1469-05A		X	Benzo(A) Pyrene	0.52	0.88	0.25
10/8/2002	CL5901F09	A1469-05A		X	Chrysene	0.49	7.1	0.4
10/8/2002	CL5901F09	A1469-05A		X	Dibenzo(A,H) Anthracene	1.0 J	0.88	0.072
10/8/2002	CL5901F10	A1469-06A	X					
10/8/2002	FD59CL06	A1469-07A	X					
10/8/2002	CL5901F11	A1469-08A	X					

Seneca Army Depot
Time Critical Removal
SEAD-59 and SEAD-71
Exceedences

Sample Date	Sample Location	Laboratory ID	Pass	Fail	Analyte	Observed Concentration, mg/kg	TAGM Derived from RFQ	Higher of Seneca Background or TAGM Limit, mg.kg
10/8/2002	CL5901F13	A1469-09A	X					
10/8/2002	CL5901F14	A1469-10A	X					
10/8/2002	CL5901F15	A1469-11A	X					

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File

SEAD 59/71

May 29, 2002

Commander
U.S. Army Corps of Engineers
Engineering and Support Center, Huntsville
Attn: CEHNC-FS-IS (Marshall Greene)
4820 University Square
Huntsville, Alabama 35816-1822

SUBJECT: **Seneca Army Depot Activity – Romulus, New York**
December 17, 2001 Letter on the Action Memorandum for Removal Actions at SWMUs SEAD-59 and SEAD-71

Dear Mr. Greene:

Parsons Engineering Science, Inc. (Parsons) is pleased to submit the response to EPA comments on the December 17, 2001 Letter on the Final Action Memorandum for Removal Actions at SEAD-59 and SEAD-71 at the Seneca Army Depot Activity located in Romulus, New York. This letter included Attachment A – Development of Cleanup Goals for Organics Using TAGM 4046. This work was performed in accordance with the Scope of Work (SOW) for Delivery Order 00017 to the Parsons ES Contract DACA87-95-D-0031. This submittal has also been provided under separate cover to Mr. Julio Vasquez at the USEPA and Ms. Alicia Thorne at NYSDEC.

Parsons appreciates the opportunity to work with the USACE on this project and looks forward to a continued relationship on this and other projects. Please feel free to call me at (781) 401-2361 if you have any questions or comments.

Sincerely,

PARSONS

Eliza D. Schacht, P.E.
Task Order Manager

cc: S. Absolom, SEDA
J. Fallo
K. Healy
K. Hoddinott, USACHPPM
C. Kim, USAEC
B. Wright, USAIOC
M. Brock, USACOE, New England

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May 29, 2002

Mr. Julio Vasquez
USEPA, Region II
Superfund Federal Facilities Section
290 Broadway, 18th Floor
New York, NY 10007-1866

Ms. Alicia Thorne
New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation
Bureau of Eastern Remedial Action
625 Broadway 11th Floor
Albany, NY 12233-7015

SUBJECT: **Seneca Army Depot – Romulus, New York**
December 17, 2001 Letter on the Final Action Memorandum for Removal Actions at SWMUs SEAD-59 and SEAD-71

Dear Mr. Vasquez/Ms. Thorne:

Parsons Engineering Science (Parsons) is pleased to submit the response to EPA comments on the December 17, 2001 Letter on the Final Action Memorandum for Removal Actions at SEAD-59 and SEAD-71 at the Seneca Army Depot Activity located in Romulus, New York. This letter included Attachment A – Development of Cleanup Goals for Organics Using TAGM 4046.

Parsons appreciates the opportunity to provide you with this report. Please feel free to call me at (781) 401-2361 if you have any questions or comments.

Sincerely,

PARSONS

Eliza D. Schacht, P.E.
Task Order Manager

cc: S. Absolom, SEDA
J. Fallo, USACOE
K. Healy, USACOE
K. Hoddinott, USACHPPM
C. Kim, USAEC
B. Wright, USAIOC
M. Brock, USACOE, New England
E. Kashdan, Gannett Fleming

Response to Comments From
United States Environmental Protection Agency (US EPA)

Subject: Response of December 17, 2001 on the Action Memorandum for Removal Actions at SEAD-59 and SEAD-71
Seneca Army Depot Activity, Romulus, NY

Comments Dated: February 7, 2002

Date of Comment Response: May 9, 2002

General Comments:

Comment 1: The Army proposed a "time-critical" removal action back in June 2001. In our comment letter of August 3, 2001, EPA cautioned the Army that should the intention of the proposed removal actions be the final measure for these sites, the cleanup goals would need to be carefully developed (and approved by EPA and NYSDEC). Recently, the second round of Army-proposed cleanup goals have been rejected by the NYSDEC (NYSDEC letter of January 8, 2001). Furthermore, considering the time that has elapsed since the proposal of this action, it should not be considered "time-critical" and EPA recommends that the Army undertake a non-time critical approach for these actions or that the normal CERCLA remedial (ROD) process be followed.

Response: As stated in the Army's responses to EPA and NYSEC comments, which were submitted with the Final Action Memorandum/Decision Document on April 16, 2002, the Army recognizes that the removal action may not be the final remedy for the sites. Following the completion of the removal action, the Army will assess remaining contaminant concentrations in both soil and groundwater to determine if additional action is required. The Army recognizes that the CERCLA process will need to be completed prior to implementation of the final remedy. The Army's intent in performing a removal action is not to circumvent the RI/FS process. After completion of the removal action, the Army intends on completing the RI/FS process.

Furthermore, the Final Action Memorandum/Decision Document states that the goal of the removal action at SEADs-59 and 71 is to meet the cleanup objectives presented in NYSDEC's Technical and Administrative Guidance Memorandum # 4046. The Army will conduct verification sampling to demonstrate the acceptability of the surrounding soil quality after the excavation of debris and soils. The soil samples will be analyzed and the results compared to the soil cleanup goals presented in Tables 1, 2, 3, and 4 of TAGM 4046. The results of the verification sampling will be used to complete the RI/FS process and to determine if additional action is required.

On April 11, 2001, Seneca Army Depot Activity notified the EPA that a time critical removal action was being planned for SEAD-59 and SEAD-71 because of the reuse initiatives on the depot. The

decision was made as a result of concerns by the community and NYSDOH that access control for the site would become more difficult as more re-users were brought on. They were concerned that while there was not an acute hazard on the site, incidental contact could potentially result in chronic effects. Thus, the change to a time critical removal action occurred.

Subsequently, repeated comments have been made on the Action Memorandum/Decision Document indicating that the proposed cleanup goals described in the document did not adequately protect human health and the environment. The delay in execution has come from the Army's attempts to address all regulatory comments on the clean up goals.

The impact of the delay has been lessened with the delay of the Local Reuse Authority's (LRA) delay in executing the lease. While it was expected to be signed in May 2001, the lease was executed by the LRA on February 10, 2002. The need for expeditious action as a time critical removal to reduce the incidental contact will only now occur and apply.

Considering the current reuse initiatives, the Army disagrees that a non-time critical approach is appropriate and still contends that a time critical removal action is necessary to protect human health and the environment by mitigating the potential for incidental contact by reusers.

Comment 2/3. The Army is proposing to calculate an impact to groundwater by noting the location of the nearest current receptor. And using a groundwater dispersion model. This is not an approach accepted at any other site known to the reviewer. We typically use the Soil Screening Guidance to calculate an impact to groundwater. The result is based on keeping the contaminant levels below targets at the source, not at some point downgradient. Source elimination should not allow contaminants to enter the groundwater at levels above the criteria.

Response: As stated in the Response above, cleanup goals have been revised based on TAGM 4046, which develops general soil cleanup goals based on contaminant concentrations that are protective of human health and groundwater quality.

Comment 4. There are some inherent differences in the way that cleanup goals are developed using NYSDEC methods outlined in the Technical and Administrative Guidance Memorandum (TAGM)#4046 and using USEPA methods outlined in Risk Assessment Guidance for Superfund (RAGS) Part B. It may be prudent to calculate cleanup goals using both methodologies and choose the most conservative concentration for each chemical as a compromise. Using the most conservative concentration should lead to acceptance by all regulatory parties involved.

Response: The human health and ecological risk assessments, which had been conducted in order to back calculate site-specific cleanup goals for SEAD-59 and SEAD-71, have been removed from the Decision Document. The Decision Document now presents TAGM 4046 as the goal for the removal action. Therefore, this comment no longer applies.

Comment 5. All of the comments made by the USEPA appear to be satisfactorily addressed. The only exception would be Comments 34 and 35. It appears that the comment made by the USEPA reviewer was not understood. I believe the reviewer was indicating that only one significant figure should be used to express the potential carcinogenic risk at the site. Thus, the recommendation of 2E-5 and 3E-04.

Response: Acknowledged.

SPECIFIC COMMENTS

Comment 1 - Page 1, Section 1.0, Constituents of Concern, fourth sentence: It is indicated that seven chemicals, which exceed TAGM values, are co-located with other COCs (Constituents of concern) and were not selected as COCs. Please explain this statement and provide additional rationale and supporting documentation for not selecting these chemicals as COCs.

Response: No response will be provided for this comment because Attachment A – Development of Cleanup Goals for Organics Using TAGM 4046 is no longer being considered for the establishment of cleanup goals. The Army has established that the goal of the removal actions at SEAD-59 and SEAD-71 is to meet the cleanup objectives presented in TAGM 4046.

Comment 2 – Page 2, Section 2.1 Methodology, last paragraph, third sentence: It is referenced that the TAGM approach considers only ingestion of chemical in soils in assessing risk-based concentrations. RAGS Part B uses ingestion of chemicals in soil for deriving risk-based preliminary remediation goals (PRGs) for residential soil, however for deriving PRGs for commercial/industrial land use, PRGs for inhalation of volatiles from soil and inhalation of particulates from soil, in addition to direct ingestion of chemicals in soil, should be calculated and summed (see RAGS Part B, Section 3.2.2, page 25).

Response: No response will be provided for this comment because Attachment A – Development of Cleanup Goals for Organics Using TAGM 4046 is no longer being considered for the establishment of cleanup goals. The Army has established that the goal of the removal actions at SEAD-59 and SEAD-71 is to meet the cleanup objectives presented in TAGM 4046.

Comment 3 – Page 5, Section 2.3 Results and Discussions, third paragraph: The rationale for comparing the most stringent CUGs for all the potential receptors under the industrial scenario to the maximum soil cleanup objectives for SVOCs and VOCs defined by TAGM 4046 and then choosing the lower value as the final human health risk-based CUGs is not clearly understood. The purpose of calculating site-specific cleanup goals is to achieve cleanup concentrations that will protective of the populations using the site by using assumptions related to the anticipated land use and receptor populations. Defaulting to the lower values identified in TAGM 4046 for SVOCs and VOCs, which were developed for a residential scenario, indicate that all chemical-specific values should also be compared to the TAGM 4046 values and that the lower of the two values should be used. This is in effect would lead to choosing all of the values listed in TAGM 4046, as the assumptions used to calculate the TAGM 4046 values are more conservative than those used to calculate the industrial site-specific cleanup goals. While deviation from the calculated CUGs, as long as the deviation is more conservative, would be accepted, the rationale for being more conservative for some chemicals than others is not clearly understood.

Response: No response will be provided for this comment because Attachment A is no longer being considered for the establishment of cleanup goals.

Comment 4 – Table 2 – Summary of Exposure Parameters:

- 70kg – Exposure Factors Handbook, August 1997 – page 7-10 last paragraph states "When using values other than 70 kg, however, the assessor should consider if the dose estimate will be used to estimate risk by combining with a dose-response relationship which was derived assuming a body weight of 70 kg. The Integrated Risk Information System (IRIS) does not use a 70 kg body weight assumption in the derivation of RfCs or RfDs, but does make this assumption in the derivation of cancer slope factors and unit risks." Thus, 70kg should be used for adult body weight in the calculations (see RAGS Part B, Appendix B, P.52 [residential] and P.53 [industrial]).
- 70 years – Exposure Factors Handbook, August 1997 – page 8-1, section 8.2, last paragraph states "When using values other than 70 years, however, the assessor should consider if the dose estimate will be used to estimate risk by combining with a dose-response relationship which was derived assuming a lifetime of 70 years....The Integrated Risk Information System (IRIS) does not use a 70-year lifetime assumption in the derivation of RfCs or RfDs, but does make this assumption in the derivation of cancer slop factors and unit risks." Thus, 70 years should be used for child and adult lifetime in the calculations (see RAGS Part B, Appendix B, P.52 [residential] and P.53 [industrial]).

- Resident (Child and Adult) – Note that the reference made above to use 70 kg for adult body weight is reinforced when following the reference (RAGS Part B, Appendix B, P.52) given for the age-adjusted ingestion rate, which uses 70 kg for the adult portion of the calculation.

Response: No response will be provided for this comment because Attachment A is no longer being considered for the establishment of cleanup goals.

Comment 5 – Tables 6a and 6b – Soil Cleanup Goals for SEAD-59 and SEAD-71: The definition of footnote (1) is confusing. Although the most conservative concentration is identified in the proposed soil clean goal column, the wording appears to indicate that the maximum soil concentration was chosen, which would not be the most conservative choice. Suggest rewording the footnote definition to indicate that if the calculated CUG exceeded the TAGM 4046 cleanup objective, then the TAGM 4046 cleanup objective was used as the proposed soil cleanup goal.

Response: No response will be provided for this comment because Attachment A is no longer being considered for the establishment of cleanup goals.

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

REPLY TO
ATTENTION OF

January 16, 2001

Engineering and
Environmental Office

Mr. Julio Vazquez
U.S. Environmental Protection Agency
Emergency & Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. James A. Quinn
NYS Department of Environmental Conservation
Division of Hazardous Waste Remediation
Bureau of Eastern Remedial Action
50 Wolf Road, Room 208
Albany, New York 12233-7010

Re: Engineering Evaluation/Cost Analysis (EE/CA) and Removal Action for Sead-59, 71

Dear Mr. Vazquez/Mr. Quinn:

In accordance with Article 18 (Extensions) of the Federal Facility Agreement (FFA) for Seneca Army Depot (SEDA), SEDA requests a 1-month extension for the Draft EE/CA at SEAD-59, 71. The revised due date for the Draft EE/CA is February 14, 2001 with the remainder of the schedule adjusted accordingly. The revised schedule is attached. The extension is necessary because we need to revise the EE/CA after evaluating clean-up options and issues such as regulations that apply regarding landfills.

Questions may be directed to Stephen Absolom, BRAC Environmental Coordinator, at (607) 869-1309.

Sincerely,

Stephen M. Absolom
Commander's Representative

Enclosure

Copies Furnished:

Michael Duchesneau, Parsons Engineering Science, Inc.,
30 Dan Road
Canton, Massachusetts 02021

Commander, U.S. Corps of Engineers, Huntsville
Division, ATTN: CEHND-ED-CS (Kevin Healy and Major David Sheets)
P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Corps of Engineers, Seneca Army
Depot Activity, ATTN: CENAN-PP-M (Janet Fallo)
SEDA Resident Office, Romulus, New York 14541-5001

ATTACHMENT 5
SCHEDULES

The schedule of IRP work completed to date and planned through completion of all restoration work at SEDA is as follows:

RELEVANT MILESTONES (1)(2)

ASH LANDFILL (SEAD-003, 006, 008, 014, and 015) OU1

Draft Work Plan	(04 Dec 90)
Draft RI	(20 Oct 93)
Draft FS	(19 Sep 94)
Draft PRAP	(07 Mar 97)
Draft ROD	(30 Aug 98)

OPEN BURNING GROUNDS (SEAD-023) OU2

Draft Work Plan	(29 Aug 91)
Draft RI	(28 Jan 94)
Draft FS	(09 Mar 94)
Draft PRAP	(04 Jul 96)
Draft ROD	(14 Nov 97)

REMEDIAL INVESTIGATIONS/FEASIBILITY STUDIES (3)(4)
FIRE TRAINING AREAS (SEAD-025, 026) OU3

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(27 Jun 96)
Draft FS Submission	(05 Dec 97)
Draft PRAP	(31 Oct 00)*
Draft ROD	(19 May 01)

DEACTIVATION FURNACES (SEAD-016, 017) OU4

Draft RI/FS Work Plan	(29 Mar 95)
Draft RI Submission	(08 May 97)
Draft FS Submission	(21 Nov 97)
Draft PRAP	(13 Oct 00)on hold
Draft ROD	(26 Apr 01)

*Requested extension on 01 Nov 00.

RAD SITES (SEAD-012) OU5

Draft RI/FS Work Plan		(19 Dec 95)
Draft RI Submission		(22 May 00)
Draft FS Submission		(10 May 01)
Draft PRAP		(28 Aug 01)
Draft ROD		(11 Mar 02)

SEAD-059, 071 Fill Area/Paint Disposal

Draft RI/FS Work Plan		(30 Jan 96)
Draft RI Submission	See Footnote #8	(16 Jul 98)
Draft FS Submission	(On Hold)	(10 Nov 98)
Draft PRAP	(On Hold)	(28 Feb 99)
Draft ROD	(On Hold)	(11 Sep 99)

SEAD-004 Munitions Washout Facility

Draft RI/FS Work Plan		(25 Oct 95)
Draft RI Submission		(15 Nov 99)
Draft FS Submission		(17 Mar 01)
Draft PRAP		(05 Jul 01)
Draft ROD		(16 Jan 02)

SEAD-011, 64A, 64D Old Construction Debris Landfills (5)

Draft RI/FS Work Plan		(15 Jun 95)
Draft RI Submission	See Footnote #9	(06 Nov 98)
Draft FS Submission	(On Hold)	(31 Mar 99)
Draft PRAP	(On Hold)	(19 Jul 99)
Draft ROD	(On Hold)	(30 Jan 00)

SEAD-013 IRFNA Disposal Site

Draft RI/FS Work Plan	(14 Nov 95)
Draft RI Submission (See Footnote #10)	(29 Aug 99)
Draft FS Submission	(22 Jan 00)
Draft PRAP	(11 May 00)
Draft ROD	(22 Nov 00)

SEAD-052, 060 Bldg 612 Complex

Draft RI/FS Work Plan	(19 Jan 96)
Draft RI Submission	(29 Aug 00)
Draft FS Submission	(23 Jan 01)
Draft PRAP	(10 May 01)
Draft ROD	(24 Nov 01)

SEAD-045, and 057 Demo Area/EOD (6)

Draft RI/FS Work Plan	(26 Feb 96)

SEAD-046 Small Arms Range (6)

Draft RI/FS Work Plan	(09 May 96)

SEAD-045, 046, and 057 Demo Area/EOD/Small Arms Range (6)

Draft RI/FS Work Plan	(See above)
Draft RI Submission	(01 Mar 01)
Draft FS Submission	(25 Jul 01)
Draft PRAP	(22 Nov 01)
Draft ROD	(06 Jun 02)

SEAD-048 Pitchblende Storage Area

Draft RI/FS Work Plan	(19 Dec 95)
Draft RI Submission - on hold (See Footnote #11)	(05 Nov 00)
Draft FS Submission	(30 Mar 01)
Draft PRAP	(18 Jul 01)
Draft ROD	(29 Jan 02)

SEAD-066 Pesticide Storage Areas

Draft RI/FS Work Plan	(02 Dec 96)
Draft RI Submission	(05 Nov 00)
Draft FS Submission	(30 Mar 01)
Draft PRAP	(18 Jul 01)
Draft ROD	(29 Jan 02)

FOOTNOTES:

(1) Draft and Draft-Final submissions are based on the InterAgency Agreement (IAG) stipulation of 45 days for Army preparation and 30 days for regulatory review. Final dates are based upon the IAG stipulation that all documents become final automatically within 30 days of the Draft-Final submission if no comments are received.

(2) Multiple document submittals will be likely considering the amount of work required and the tight schedules for performance. All schedules assume that regulatory reviews will be conducted concurrently, if required, as is assumed in the IAG.

(3) All schedules for RIs to be performed assume that two phases of fieldwork will be required. If Phase II RI fieldwork is unnecessary for SEADs 25 and 26, SEADs 16 and 17, SEAD 4, SEADs 12, 48, and 63; all draft documents for these operable units shall be submitted to the USEPA and NYSDEC earlier than the deadlines in Attachment 5: Facility Master Schedule. The Army shall submit a revised Attachment 5 to the USEPA and NYSDEC to reflect the new deadlines within 30 days of NYSDEC and USEPA indicating that Phase II RI fieldwork would not be needed for the above-mentioned SEADs.

(4) Operable unit designation will be assigned after project has been funded and consistent with definition, Section 2, paragraph 14.

(5) Years will continue to be designated by their last two digits in the year 2000, e.g. "00", "01", "02", etc.

(6) SEAD-045, and 057 (Demo Area/EOD) have been combined with SEAD-046 (Small Arms Range) for Draft RI Submission.

(7) SEAD 63 EE/CA Notification November 6, 1998. See attached schedule.

(8) SEAD 059, 71 EE/CA Notification November 6, 1998. See attached schedule.

(9) SEAD 011, 64A, 64D EE/CA Notification November 3, 1998. See attached schedule.

(10) SEAD-13 Notification of Decision Document, August 31, 1999.

(11) SEAD-48 Project status notification November 7, 2000.

(7) SEAD-63 EE/CA Dates

Draft EE/CA Approval Memorandum Document	05 Oct 98
Draft EE/CA Document	23 Oct 99
Draft EE/CA Action Memorandum Document	23 Oct 99
Release for Public Comment	14 Mar 99
Draft Removal Work Plans	25 Apr 99
Removal Action Begins	21 Jul 99
Draft Removal Report	19 Sep 99

(8) SEAD-59, 71 EE/CA Dates

Draft EE/CA Approval Memorandum Document	31 Dec 98
Draft EE/CA Document	14 Feb 01
Draft EE/CA Action Memorandum Document	14 Feb 01
Release for Public Comment	13 Apr 01
Draft Removal Work Plans	25 May 01
Draft Removal Report	24 Oct 01

(9) SEAD-11, EE/CA Dates

Draft EE/CA Approval Memorandum Document	11 Dec 98
Draft EE/CA Document	14 Feb 01
Draft EE/CA Action Memorandum Document	14 Feb 01
Release for Public Comment	13 Apr 01
Draft Removal Work Plans	25 May 01
Draft Removal Report	24 Oct 01

File
SEAD 59/71

PARSONS ENGINEERING SCIENCE, INC.

MEMORANDUM

EE/CA

TO: Steve Absolom, SEDA
Janet Fallo

DATE: September 6, 2000

FROM: Eliza Schacht

COPIES:

SUBJECT: Removal Actions Considered for SEAD-59, Fill Area West of Building 135 and SEAD-71, Alleged Paint Disposal Area
Cost Comparison of Alternatives 1B, 2, and 3 for SEAD-59

As you requested, this memo provides you with a cost comparison of alternatives for SEAD-59. Please refer to the memo that I sent you dated June 28, 2000 which summarizes the findings of investigations conducted at SEADs-59 and 71 and outlines the proposed removal actions. Attached are the TRACES cost estimates for three alternatives for SEAD-59 and a table comparing the costs involved with the alternatives.

The following table lists the costs of each Alternative for SEAD-59.

SEAD-59

Option	*Cost*
1A. Clay Cover/Slurry Wall	***$2,857,913***
1B. Clay Cover	***$2,754,553***
1C. Vegetative Cover	***$2,660,833***
2. Excavation/Stabilization/Disposal On-site	***$7,616,923***
3. Excavation/Disposal Off-Site	***$6,238,855***
4. Excavate Buried Drums and Paint Cans/ Confirmatory Sampling/ Risk Assessment	***$1,784,790***

TRACES cost estimates have been included for the three bolded alternatives. Based on the conference call with NYSDEC and EPA on July 31, 2000, I believe that Alternative 1B was suggested by NYSDEC as being the most acceptable. For this cost estimate, the clay cover was assumed to be for a Construction Debris Landfill. However, John Swanson (NYSDEC) said that the cover should be for a solid waste landfill. I need to determine the difference between the two types of covers and may need to revise this part of the cost estimate. If you see any other areas where we may cut costs, please let me know.

Eliza Schacht, P.E.
Task Order Manager

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Comparison of Costs - SEADs-59/71

Items	Alternative 1B Clay Cover at Area 1	Alternative 2 Excavate/Stabilize/ On-site Disposal	Alternative 3 Excavate/ Off-site Disposal	Difference between Alt. 1 and 2	Difference between Alt. 1 and 3
Mob	$7,870	$7,870	$7,870	$0	$0
Sampling	$112,890	$449,500	$323,080	$336,610	$210,190
Site Work	$363,270	$363,270	$363,270	$0	$0
Fencing	$46,060	$46,060	$46,060	$0	$0
Wastewater	$16,030	$16,030	$16,030	$0	$0
Air Stripping	$20,890	$20,890	$20,890	$0	$0
Soil Remediation	$558,340	$2,657,190	$2,969,240	$2,098,850	$2,410,900
Clay Cover	$178,430	$178,430	$0	$0	-$178,430
Stabilize	$0	$2,827,850	$0	$2,827,850	$0
Drum Removal	$4,880	$4,880	$4,880	$0	$0
Disposal	$601,050	$200,120	$2,462,140	-$400,930	$1,861,090
Well Const.	$3,900	$3,900	$0	$0	-$3,900
Demob	$25,390	$25,390	$25,390	$0	$0
Subtotal	$1,939,010	$6,801,380	$6,238,860	$4,862,380	$4,299,850
Annual Monitoring	$815,543	$815,543	0	$0	-$815,543
Total	$2,754,553	$7,616,923	$6,238,860	$4,862,380	$3,484,307

Breakdown of costs of soils remediation	Alternative 1B 6095 cy	Alternative 2 30,000 cy	Alternative 3 30,000 cy
Excavation	$26,825	$150,000	$150,000
Screening	$107,300	$600,000	$600,000
Fill Material	$27,400	$28,000	$151,800

* Note that all these prices include the markups that are listed on page 4 of the TRACES cost estimates.

SEAD-59 REMOVAL OPTION 1B: CLAY COVER

The following are the components included in the cost estimate for the Clay Cover option at SEAD-59:

1. Remove full drums and containers buried at the Fill Area (Area 1) (approximately 730 cy). Full drums will be placed in overpacks and disposed of in a hazardous waste landfill. Full paint cans will placed in drums and disposed of in a hazardous waste landfill. No confirmatory sampling will be conducted in-situ. Soils excavated with the drums and debris will be analyzed to determine if concentrations exceed TAGMs. Any soil with concentrations exceeding twice the TAGM will be disposed of in an off-site solid waste landfill; all other soils will be backfilled into the fill area north of the road (Area 1).
2. Excavate Areas 2, 3, 4 and Others (approximately 5,365cy). The Other Areas include unknown geophysical anomalies located south of the road. Remove full drums/containers buried at these areas. Excavations will be backfilled with clean fill.
3. Dewater excavation and store in holding tank for testing.
4. Treat water (from dewatering excavation) by air stripping, if necessary and discharge into storm drain, sewer, or drainage ditch, as available.
5. Transport drums/containers to hazardous waste landfill. (Assume total of 20 drums for landfill disposal for entire site.)
6. Add excavated soils from SEAD-59, and possibly from SEAD-71, to the Fill Area.
7. Install a clay cover over the Fill Area (1.5 acres) according to 6 NYCRR Part 360 for a Construction Debris Landfill. This cover will include a 12" clay layer, 12" drainage layer, protection layer, 12" gas venting layer, groundwater drainage system, and vegetative top.
8. Install monitoring wells. Monitor groundwater and vented gas semi-annually for 30 years.

NOTE: $5000/yr is included in Annual Cost (shown below) for cover maintenance.

Cost to Prime:	$1,057,003
Cost to Owner:	$1,396,260
Project Cost:	$1,939,010
Annual Monitoring Costs:	$47,163
30 Year Present Worth Cost:	$815,543
TOTAL EVALUATED PRICE:	**$2,754,553**

SEAD-59
INSTALLATION OF CLAY COVER

Designed By: Parsons ES
Estimated By: Parsons ES

Prepared By: Parsons ES

Preparation Date: 04/20/00
Effective Date of Pricing: 10/03/96
Est Construction Time: 200 Days

Sales Tax: 7.0%

PROJECT BREAKDOWN:

The estimate is structured as follows and uses a 2 digit number at each level. The 2 digit numbers for the first 3 title levels are taken from the HTRW Remedial Action Work Breakdown Structure. The 2 digit numbers for the remaining title levels are user defined. The detail items are at LEVEL 6.

LEVEL 1 - WBS Level 1 (Account)
LEVEL 2 - WBS Level 2 (System)
LEVEL 3 - WBS Level 3 (Subsystem)
LEVEL 4 - User Defined (Assembly Category or Other)
LEVEL 5 - User Defined (Assembly or Other)

PROJECT DESCRIPTION:

The following is a summary of the activities that are presently included in Alternative 1A.

- Mobilize, site prep, clear/grub, erosion control, and survey
- Excavate buried drums and paint containers,
- Excavate soils in Area 2, 3, 4, and Others and backfill into Area 1.
- Screen soil to remove drums,paint cans, and debris.
- Install clay cover
- Install underdrainage and gas venting and sotrm water detention pond for water runoff from clay cover.
- Backfill excavated areas with common fill & topsoil and hydroseed
- Demobilize
- Install monitoring wells

PRODUCTIVITY:

Productivity, as a baseline and as taken from the Unit Price Book (UPB) Database, assumes a non-contaminated working environment with no level of protection productivity reduction factors. When required,

productivity for appropriate activities will be adjusted for this project as follows:

1. Level of Protection A - Productivity ___%
2. Level of Protection B - Productivity ___%
3. Level of Protection C - Productivity ___%
4. Level of Protection D - Productivity 85%.

All activities are conducted in Level of Protection D.

The following daily time breakdown was assumed.

	Level A	Level B	Level C	Level D
Availiable Time (minutes)	480	480	480	480
Non-Productive Time (minutes):				
Safety meetings	20	20	10	10
Suit-up/off	60	60	40	10
Air tank change	160	20	0	0
*Breaks	60	60	40	30
Cleanup/decontamination	20	20	20	20
Productive Time (minutes)	160	300	370	410
Productivity:	160/480 X100%	300/480 X100%	370/480 X100%	410/480 X100%
	33%	63%	77%	85%
Example:				
Normal Production Rate (CY/HR)	250	250	250	250
X Productivity	.33	.63	.77	.85
=Reduced Production Rate(CY/HR)	83	158	193	213
* Break time ranges (minutes)	60-140	60-140	40-140	30-70

The following list are the areas where there is the biggest potential for changes in cost due to uncertainties:

1. The volume of excavation and disposal could vary based on the results of

---

the confirmatory sampling.

2. The volume of material requiring treatment prior to disposal could vary depending on the TCLP test results.

Contractor costs are calculated as a percentage of running total as
- 5 % for field office support
- 15 % for home office support
- 10 % for profit
- 4 %for bond

Owner's cost are calculated as a percentage of running total as
- 10 % for design contingency
- 3 % for escalation
- 17.5 % for construction contingency
- 3.5 % for other costs
- 8 % for construction management

OTHER GOVERNMENT COSTS:

Other Government Costs consist of:

*Engineering and Design During Construction (EDC)	1.5%
As-Builts	0.5%
Operation and Maintenance (O&M) Manuals	0.5%
Laboratory Quality Assurance	1.0%

Total, use	3.5%

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

33.01. Mobilization	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
33. Remedial Action									
33.01. Mobilization									
USR AA Mobilization	1.00	EA	0	793	2,500	535	0	3,828	3827.72
33.02. Sampling, & Testing									
33.02.06. Groundwater									
HTW AA For Disposal: NYSDEC CLP TCL VOCs, volatile organics , groundwater (Severn Trent Lab 9/98) (Assume 1 sample for each tank)	4.00	EA	0	0	0	0	700	700	175.00
AFH AA For Disposal: NYSDEC CLP TAL SVOCs modified , groundwater, (Severn Trent Lab, 9/98) (Assume 1 sample per tank)	4.00	EA	0	0	0	0	1,480	1,480	370.00
AFH AA For Disposal: NYSDEC TAL - Inorganics, groundwater (Severn Trent Lab, 9/98) (Assume 1 sample per tank)	4.00	EA	0	0	0	0	620	620	155.00
33.02.11. Soil									
AFH AA NYSDEC CLP-SVOCs , soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall and floor of excavation.	49.00	EA	0	0	0	0	18,130	18,130	370.00
AFH AA NYSDEC CLP TAL - Metals , soil (Severn Trent	49.00	EA	0	0	0	0	7,595	7,595	155.00
HTW AA NYSDEC CLP, volatile organics, soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall adn floor or excavation.	49.00	EA	0	0	0	0	8,575	8,575	175.00
33.02.12. Soil - off site disposal									
HTW AA For Disposal: TCLP, volatile organics (SW-846 Methods 1311&8240), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy: 30000cy / 150cy)	49.00	EA	0	0	0	0	5,880	5,880	120.00
AFH AA For Disposal: TCLP-SVOCs (SW-846 Methods 1311 & 8270A), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy: 30000cy / 150cy)	49.00	EA	0	0	0	0	11,270	11,270	230.00
AFH AA For Disposal: TCLP - Metals (SW-846 Methods 1311 & 6010 & 7470), soil (Severn Trent Lab, 9/99) (Assume 1 sample every	49.00	EA	0	0	0	0	5,880	5,880	120.00

33.02. Sampling, & Testing	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
150cy: 30000cy / 150cy)									
33.02.16. Confirmatory-Soil									
33.03. Site Work									
33.03.02. Clearing and Grubbing									
AF AA Clearing, brush w/dozer & brush rake, light brush	3.00	ACR	48	1,298	1,887	0	0	3,185	1061.54
33.03.08. Survey Remediation Area									
Survey remediation area									
USR AA Survey remediation area	10.00	DAY	0	15,000	2,500	2,675	0	20,175	2017.50
33.03.11. Erosion control									
B MIL AA Silt Fence: Installation and materials	16000	LF	3,360	80,000	8,000	25,680	0	113,680	7.11
high, polypropylene									
B HTW AA Hay bales - stalked	16000	LF	5	2,720	0	17,120	0	19,840	1.24
B MIL AA Maintain silt fence and remove	16000	LF	107	2,720	0	17,120	0	19,840	1.24
33.04. Fencing									
MIL Site dml, chain link fence, remove & salvage for reuse	2000.00	LF	103	2,600	0	0	0	2,600	1.30
MIL Fence, CL scty, std FE-6, 6' high, no gates/signs	2000.00	LF	96	2,820	0	39,847	0	42,667	21.33
MIL Fence, CL, set in conc, 6' H, indl, corner post, galv stl, 4" OD	4.00	EA	2	55	9	295	0	358	89.48
MIL Fence, CL, double, 24' W, indl, gates, swing, 6' high	1.00	EA	0	0	0	435	0	435	435.38
33.05. Wastewater									
33.05. 1. Wastewater									
L MIL Pump, cntfgl,6"D, horiz mtd, horiz splt, sgl stg,1500GPM,50HP	1.00	EA	0	0	0	10,767	0	10,767	10766.88
M HTW 21,000 Gal, Steel, hold tank stationary	4.00	EA	0	0	0	5,264	0	5,264	1316.10
33.07. Air Stripping									
HTW HTRW,PTTU,1'dia,14.5'pkng hgt, 30GPM,850CFM,FRP shell	1.00	EA	97	3,257	0	7,009	0	10,265	10265.47
AFH HTRW,PTTU, >= 12' high, install air strip tower, 1'- 3' diam.	1.00	EA	91	3,035	226	0	0	3,261	3261.05
HTW HTRW, PT opt, air flow switch (loss of air flow - motor failure)	1.00	EA	0	0	0	512	0	512	511.81

		33.10. Soil Remediation	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
		33.10. Soil Remediation									
		33.10.02. Sitework - Areas 2,3,4 All fill, topsoil, and seeding items for soil remediation are included in the Sitework - Soils category.									
L	MIL AA	Excavate and stockpile (volumes used for estimate are 30% greater than in-situ volumes)	5365.00	CY	475	10,730	16,095	0	0	26,825	5.00
	USR AA	Plastic sheeting for ground: 6mil polyethylene liner (1000sf	358000	SF	0	0	0	30,645	0	30,645	0.09
	USR AA	Cover stockpiles w/ plastic sheeting: Plastic sheeting: 6mil polyethylene liner (1000sf / roll; 1 roll = $75)	537000	SF	0	0	0	45,967	0	45,967	0.09
	USR AA	Screen Soil	5365.00	CY	0	0	0	0	107,300	107,300	20.00
	USR AA	Common fill (6") - Material for Backfill, includes cost of material (bank sand) and delivery (DeWitt 1999)	5887.00	TON	0	0	0	27,401	0	27,401	4.65
	MIL AA	Loam or topsoil, furnish & place, imported, 6" deep	700.00	CY	62	1,869	973	13,654	0	16,496	23.57
	CIV	Hauling, off hwy haulers, 85 CY , 1 mile RT @ 20 mph (4.2 cyc/hr)	5365.00	CY	19	483	3,434	0	0	3,916	0.73
	AF AA	Fill, spread borrow w/dozer	5000.00	CY	60	1,800	3,250	0	0	5,050	1.01
	AF	Compaction, steel wheel tandem roller, 5 ton	5000.00	CY	36	1,050	900	0	0	1,950	0.39
	RSM AA	Seeding, athletic field mix, 8#/MSFpush spreader	19.13	MSF	19	483	0	851	0	1,335	69.79
		33.10.04. Sitework - Area 1									
L	MIL AA	Excavate and remove drums and paint cans greater than in-situ volumes)	730.00	CY	65	1,460	2,190	0	0	3,650	5.00
L	MIL AA	Excavate ditch greater than in-situ volumes)	76.00	CY	7	152	228	0	0	380	5.00
	AF AA	Fill, spread borrow w/dozer	5365.00	CY	64	1,931	3,487	0	0	5,419	1.01
		33.10.05. Clay Cover -Area 1									
	AFH	Cont, SBCC, soil & gravel cover , clay backfill	2365.00	CY	0	0	0	13,918	0	13,918	5.89
B	MIL	Drainage, drainage matl, 3/4" gravel fill in trench	2785.00	TON	0	0	0	0	12,115	12,115	4.35
	USR	Barrier Layer	5570.00	TON	0	0	0	25,926	0	25,926	4.65
B	MIL	Gas venting layer	2785.00	TON	0	0	0	0	12,115	12,115	4.35
	MIL	Piping, subdrainage, perforated PVC, 8" dia	300.00	LF	50	1,311	102	969	0	2,382	7.94
	MIL AA	Loam or topsoil, furnish & place, imported, 6" deep	2365.00	CY	209	6,315	3,287	46,132	0	55,734	23.57
	AF AA	Fill, spread borrow w/dozer	10700	CY	128	3,852	6,955	0	0	10,807	1.01

	33.10. Soil Remediation	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
AF	Compaction, steel wheel tandem roller, 5 ton	10000	CY	71	2,100	1,800	0	0	3,900	0.39
RSM AA	Seeding, athletic field mix, 8#/MSFpush spreader	63.90	MSF	64	1,615	0	2,844	0	4,460	69.79
M AF	Soil testing of layers including sieve analysis, compaction,	1.00	EA	0	0	0	0	10,000	10,000	10000.00
	33.10.06. Disposal									
	Transportation of drums to hazardous waste landfill									
HTW AA	Soils: Transport and Dispose nonhaz waste, bulk Meadows, 11/97)	7176.00	TON	0	0	0	0	287,040	287,040	40.00
HTW	HW packaging, overpacks, 18"dia x 34"H, 16ga stl drum, 55gal, DOT 17C	20.00	EA	0	0	0	1,583	0	1,583	79.13
USR AA	Drums/Paint Cans: Transportation of Drums by dedicated van	1.00	EA	0	0	0	0	546	546	545.70
USR AA	Drums/Paint Cans: Disposal of Drums (Price quoted by Waste	20.00	EA	0	0	0	2,862	0	2,862	143.11
USR AA	Extra fees for overpack use	20.00	EA	0	0	0	0	800	800	40.00
	33.10.07. Drum Removal									
L MIL AA	Excavator for drum removal at Level B	20.00	EA	2	323	445	0	0	768	38.40
L MIL AA	Excavator for drum moving at Level B	20.00	EA	2	323	445	0	0	768	38.40
L MIL AA	Level B breathing unit, suit, overboots, gloves	4.00	EA	0	0	2,000	0	0	2,000	500.00
	33.26. Demobilization									
TOTAL	Decontaminate Equipment	1.00	EA	0	1,321	5,000	2,500	0	8,821	8821.20
TOTAL	Demobilization	1.00	EA	0	528	2,500	500	0	3,528	3528.48
	33.31. Well Installation									
B CIV AB	Mob/Demob facility	1.00	EA	0	0	0	0	600	600	600.00
L AFH	Decon Pad	1.00	EA	0	0	0	0	150	150	150.00
B HTW	Installation of Monitoring well threaded	4.00	EA	0	0	0	0	2,320	2,320	580.00
L HTW	Monitor well, drilling, HS auger, 4.25" ID x 8" OD	40.00	LF	0	0	0	0	720	720	18.00
TOTAL	SEAD-59			5,240	151,945	68,212	343,011	493,835	1,057,003	

	QUANTY	UOM	CONTRACT	DES CONT	ESCALATN	CON CONT	OTHER	CON MGMT	TOTAL COST	UNIT COST
33 Remedial Action										
33.01 Mobilization	1.00	EA	5,290	530	170	1,050	250	580	7,870	7868.38
TOTAL Mobilization	1.00	EA	5,290	530	170	1,050	250	580	7,870	7868.38
33.02 Sampling, & Testing										
33.02.06 Groundwater	1.00	EA	3,870	390	130	770	180	430	5,760	5755.77
33.02.11 Soil	1.00	EA	47,380	4,740	1,560	9,390	2,210	5,220	70,510	70508.12
33.02.12 Soil - off site d	1.00	EA	31,810	0	950	0	1,150	2,710	36,630	36627.60
TOTAL Sampling, & Testi	1.00	EA	83,060	5,120	2,650	10,160	3,530	8,360	112,890	112891.49
33.03 Site Work										
33.03.02 Clearing and Grub	3.00	ACR	4,400	440	150	870	200	480	6,550	2182.13
33.03.08 Survey Remediatio	1.00	ACR	27,870	2,790	920	5,530	1,300	3,070	41,470	41472.34
33.03.11 Erosion control	1.00	LF	211,850	21,180	6,990	42,000	9,870	23,350	315,250	315251.49
TOTAL Site Work	1.00	EA	244,120	24,410	8,060	48,400	11,370	26,910	363,270	363270.22
33.04 Fencing	1.00	EA	46,060	0	0	0	0	0	46,060	46060.11
33.05 Wastewater										
33.05. 1 Wastewater	1.00	EA	16,030	0	0	0	0	0	16,030	16031.28
TOTAL Wastewater	1.00	EA	16,030	0	0	0	0	0	16,030	16031.28
33.07 Air Stripping	1.00	EA	14,040	1,400	460	2,780	650	1,550	20,890	20890.43
33.10 Soil Remediation										
33.10.02 Sitework - Areas	1.00	EA	366,430	36,640	12,090	72,650	17,070	40,390	545,290	545288.64
33.10.04 Sitework - Area 1	1.00	EA	13,050	0	0	0	0	0	13,050	13052.18
33.10.05 Clay Cover -Area	1.00	EA	178,430	0	0	0	0	0	178,430	178434.23
33.10.06 Disposal	1.00	EA	403,910	40,390	13,330	80,080	18,820	44,520	601,050	601053.12
33.10.07 Drum Removal	1.00	EA	4,880	0	0	0	0	0	4,880	4884.56
TOTAL Soil Remediation	1.00	EA	966,710	77,030	25,420	152,740	35,890	84,910	1,342,710	1342712.73
33.26 Demobilization										
33.26.04 Decontaminate Equ	1.00	EA	12,190	1,220	400	2,420	570	1,340	18,130	18133.13
33.26.06 Demobilization	1.00	EA	4,870	490	160	970	230	540	7,250	7253.25

	QUANTY	UOM	CONTRACT	DES CONT	ESCALATN	CON CONT	OTHER	CON MGMT	TOTAL COST	UNIT COST
TOTAL Demobilization	1.00	EA	17,060	1,710	560	3,380	790	1,880	25,390	25386.38
33.31 Well Installation	1.00	EA	3,900	0	0	0	0	0	3,900	3896.96
TOTAL Remedial Action	1.00	EA	1,396,260	110,210	37,320	218,520	52,500	124,200	1,939,010	1939007.96

R2032: 330216	STL04	Confirmatory	Detail item has zero quantity - no costs reported
R2032: 330216	STL05	Confirmatory	Detail item has zero quantity - no costs reported
R2032: 330216	STL06	Confirmatory	Detail item has zero quantity - no costs reported

* * * END OF ERROR REPORT * * *

SEAD-59 REMOVAL OPTION 2: EXCAVATION/STABILIZATION/ DISPOSAL ON-SITE

The following are the components included in the cost estimate for the Excavation/Stabilization/ Dispose On-Site option at SEAD-59:

1. Layout areas to be excavated.
2. Excavate soils from Areas 1, 2, 3, 4, and Others (23,025cy for entire site, depths of 3 to 9.5 ft depending on area of site). The areas include: Area 1 (18,900 cy); Area 2 (1215 cy); Area 3 (1260 cy); Area 4 (1100 cy); and Others (550 cy). The Other Areas include unknown geophysical anomalies located south of the road. The total volume including a 30% expansion factor is approximately 30,000 cy.
3. Dewater excavation and store in holding tank for testing and treatment.
4. Treat water by air stripping and discharge into storm drain, sewer, or drainage ditch, as available.
5. Screen excavated soils to remove debris.
6. Dispose of screened debris. Full drums (20 drums) will be placed in overpacks and disposed of in hazardous waste landfill. Full paint cans will placed in drums and disposed of in hazardous waste landfill. Construction debris will be disposed of as solid waste.
7. Stabilize screened soil. A cement-based mixture is assumed to be the stabilizing media unless treatability studies prove the cement ineffective. Pozzolan-based or thermoplastic (asphalt batching) mixtures will be used as alternatives.
8. Return stabilized soil to Area 1 and cover the area with a clay cover as required by 6 NYCRR Part 360 for a Construction Debris Landfill.
9. Install monitoring wells (if additional wells are necessary). Monitor groundwater semi-annually for 30 years.

NOTE: $5000/yr is included in Annual Cost (shown below) for cover maintenance.

Cost to Prime:	$4,456,320
Cost to Owner:	$5,602,660
Project Cost:	$6,801,380
Annual Monitoring Costs:	$47,163
30 Year Present Worth Cost:	$815,543
TOTAL EVALUATED PRICE:	**$7,616,923**

SEAD-59
EXCAVATION/ON-SITE DISPOSAL

Designed By: Parsons ES
Estimated By: Parsons ES

Prepared By: Parsons ES

Preparation Date: 04/20/00
Effective Date of Pricing: 10/03/96
Est Construction Time: 200 Days

Sales Tax: 7.0%

PROJECT BREAKDOWN:

The estimate is structured as follows and uses a 2 digit number at each level. The 2 digit numbers for the first 3 title levels are taken from the HTRW Remedial Action Work Breakdown Structure. The 2 digit numbers for the remaining title levels are user defined. The detail items are at LEVEL 6.

LEVEL 1 - WBS Level 1 (Account)
LEVEL 2 - WBS Level 2 (System)
LEVEL 3 - WBS Level 3 (Subsystem)
LEVEL 4 - User Defined (Assembly Category or Other)
LEVEL 5 - User Defined (Assembly or Other)

PROJECT DESCRIPTION:

The following is a summary of the activities that are presently included in Alternative 2.

On-Site Disposal: Excavate/Stabilize/On-site Disposal
- Mobilize, site prep, clear/grub, erosion control, and survey
- Excavate soils in Area 1, 2, and Others.
- Treat water by air stripping.
- Screen excavated soils to remove debris.
- Dispose of screened debris. Full drums will be placed in overpacks and sent to a hazardous waste landfill. Construction debris will be sent to a solid waste landfill.
- Stabilize screened soil.
- Return stabilized soil to excavations.
- Cover with topsoil and vegetate.
- Install monitoring wells.
- Demobilize

PRODUCTIVITY:

Productivity, as a baseline and as taken from the Unit Price Book (UPB) Database, assumes a non-contaminated working environment with no level of protection productivity reduction factors. When required,

productivity for appropriate activities will be adjusted for this project as follows:

1. Level of Protection A - Productivity ___%
2. Level of Protection B - Productivity ___%
3. Level of Protection C - Productivity ___%
4. Level of Protection D - Productivity 85%.

All activities are conducted in Level of Protection D.

The following daily time breakdown was assumed.

	Level A	Level B	Level C	Level D
Availiable Time (minutes)	480	480	480	480
Non-Productive Time (minutes):				
Safety meetings	20	20	10	10
Suit-up/off	60	60	40	10
Air tank change	160	20	0	0
*Breaks	60	60	40	30
Cleanup/decontamination	20	20	20	20
Productive Time (minutes)	160	300	370	410
Productivity:	160/480 X100%	300/480 X100%	370/480 X100%	410/480 X100%
	33%	63%	77%	85%
Example:				
Normal Production Rate (CY/HR)	250	250	250	250
X Productivity	.33	.63	.77	.85
=Reduced Production Rate(CY/HR)	83	158	193	213
* Break time ranges (minutes)	60-140	60-140	40-140	30-70

The following list are the areas where there is the biggest potential for changes in cost due to uncertainties:

- The volume of excavation and disposal could vary based on the results of

---

the confirmatory sampling.

- The volume of material requiring treatment prior to disposal could vary depending on the TCLP test results.

Contractor costs are calculated as a percentage of running total as

5 % for field office support
15 % for home office support
10 % for profit
4 %for bond

Owner's cost are calculated as a percentage of running total as

10 % for design contingency
3 % for escalation
17.5 % for construction contingency
3.5 % for other costs
8 % for construction management

OTHER GOVERNMENT COSTS:

Other Government Costs consist of:

*Engineering and Design During Construction (EDC)	1.5%
As-Builts	0.5%
Operation and Maintenance (O&M) Manuals	0.5%
Laboratory Quality Assurance	1.0%
Total, use	3.5%

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

33.01. Mobilization	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
33. Remedial Action									
33.01. Mobilization									
USR AA Mobilization	1.00	EA	0	793	2,500	535	0	3,828	3827.72
33.02. Sampling, & Testing									
33.02.06. Groundwater									
HTW AA For Disposal: NYSDEC CLP TCL VOCs, volatile organics , groundwater (Severn Trent Lab 9/98) (Assume 1 sample for each tank)	24.00	EA	0	0	0	0	4,200	4,200	175.00
AFH AA For Disposal: NYSDEC CLP TAL SVOCs modified , groundwater, (Severn Trent Lab, 9/98) (Assume 1 sample per tank)	24.00	EA	0	0	0	0	8,880	8,880	370.00
AFH AA For Disposal: NYSDEC TAL - Inorganics, groundwater (Severn Trent Lab, 9/98) (Assume 1 sample per tank)	24.00	EA	0	0	0	0	3,720	3,720	155.00
33.02.11. Soil									
AFH AA NYSDEC CLP TAL - Metals , soil (Severn Trent	240.00	EA	0	0	0	0	37,200	37,200	155.00
AFH AA NYSDEC CLP-SVOCs , soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall and floor of excavation.	240.00	EA	0	0	0	0	88,800	88,800	370.00
HTW AA NYSDEC CLP, volatile organics, soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall adn floor or excavation.	240.00	EA	0	0	0	0	42,000	42,000	175.00
33.02.16. Confirmatory-Soil									
HTW AA Confirmatory: NYSDEC CLP, volatile organics, soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall adn floor or excavation.	72.00	EA	0	0	0	0	12,600	12,600	175.00
AFH AA Confirmatory: NYSDEC CLP-SVOCs , soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall and floor of excavation.	72.00	EA	0	0	0	0	26,640	26,640	370.00
AFH AA Confirmatory: NYSDEC CLP TAL - Metals , soil (Severn Trent	72.00	EA	0	0	0	0	11,160	11,160	155.00

33.03. Site Work	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
33.03. Site Work									
33.03.02. Clearing and Grubbing									
AF AA Clearing, brush w/dozer & brush rake, light brush	3.00	ACR	48	1,298	1,887	0	0	3,185	1061.54
33.03.08. Survey Remediation Area									
Survey remediation area									
USR AA Survey remediation area	10.00	DAY	0	15,000	2,500	2,675	0	20,175	2017.50
33.03.11. Erosion control									
B MIL AA Silt Fence: Installation and materials high, polypropylene	16000	LF	3,360	80,000	8,000	25,680	0	113,680	7.11
B HTW AA Hay bales - stalked	16000	LF	5	2,720	0	17,120	0	19,840	1.24
B MIL AA Maintain silt fence and remove	16000	LF	107	2,720	0	17,120	0	19,840	1.24
33.04. Fencing									
MIL Site dml, chain link fence, remove & salvage for reuse	2000.00	LF	103	2,600	0	0	0	2,600	1.30
MIL Fence, CL scty, std FE-6, 6' high, no gates/signs	2000.00	LF	96	2,820	0	39,847	0	42,667	21.33
MIL Fence, CL, set in conc, 6' H, indl, corner post, galv stl, 4" OD	4.00	EA	2	55	9	295	0	358	89.48
MIL Fence, CL, double, 24' W, indl, gates, swing, 6' high	1.00	EA	0	0	0	435	0	435	435.38
33.05. Wastewater									
33.05. 1. Wastewater									
L MIL Pump, cntfgl,6"D, horiz mtd, horiz splt, sgl stg,1500GPM,50HP	1.00	EA	0	0	0	10,767	0	10,767	10766.88
M HTW 21,000 Gal, Steel, hold tank stationary	4.00	EA	0	0	0	5,264	0	5,264	1316.10
33.07. Air Stripping									
HTW HTRW,PTTU,1'dia,14.5'pkng hgt, 30GPM,850CFM,FRP shell	1.00	EA	97	3,257	0	7,009	0	10,265	10265.47
AFH HTRW,PTTU, >= 12' high, install air strip tower, 1'- 3' diam.	1.00	EA	91	3,035	226	0	0	3,261	3261.05
HTW HTRW, PT opt, air flow switch (loss of air flow - motor failure)	1.00	EA	0	0	0	512	0	512	511.81

			33.10. Soil Remediation	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
			33.10. Soil Remediation									
			33.10.02. Sitework - Soils									
			All fill, topsoil, and seeding items for soil remediation are included in the Sitework - Soils category.									
L	MIL	AA	Excavate and stockpile (volumes used for estimate are 30% greater than in-situ volumes)	30000	CY	2,655	60,000	90,000	0	0	150,000	5.00
	USR	AA	Plastic sheeting for ground: 6mil polyethylene liner (1000sf	2000000	SF	0	0	0	171,200	0	171,200	0.09
	USR	AA	Cover stockpiles w/ plastic sheeting: Plastic sheeting: 6mil polyethylene liner (1000sf / roll; 1 roll = $75)	3000000	SF	0	0	0	256,800	0	256,800	0.09
	USR	AA	Screen Soil	30000	CY	0	0	0	0	600,000	600,000	20.00
	MIL	AA	Loam or topsoil, furnish & place, imported, 6" deep	3100.00	CY	273	8,277	4,309	60,469	0	73,055	23.57
	AF	AA	Fill, spread borrow w/dozer	27700	CY	332	9,972	18,005	0	0	27,977	1.01
	AF		Compaction, steel wheel tandem roller, 5 ton	27700	CY	197	5,817	4,986	0	0	10,803	0.39
	RSM	AA	Seeding, athletic field mix, 8#/MSFpush spreader	82.90	MSF	83	2,096	0	3,690	0	5,786	69.79
			33.10.03. Clay Cover -Area 1									
	AFH		Cont, SBCC, soil & gravel cover , clay backfill	2365.00	CY	0	0	0	13,918	0	13,918	5.89
B	MIL		Drainage, drainage matl, 3/4" gravel fill in trench	2785.00	TON	0	0	0	0	12,115	12,115	4.35
	USR		Barrier Layer	5570.00	TON	0	0	0	25,926	0	25,926	4.65
B	MIL		Gas venting layer	2785.00	TON	0	0	0	0	12,115	12,115	4.35
	MIL		Piping, subdrainage, perforated PVC, 8" dia	300.00	LF	50	1,311	102	969	0	2,382	7.94
	MIL	AA	Loam or topsoil, furnish & place, imported, 6" deep	2365.00	CY	209	6,315	3,287	46,132	0	55,734	23.57
	AF	AA	Fill, spread borrow w/dozer	10700	CY	128	3,852	6,955	0	0	10,807	1.01
	AF		Compaction, steel wheel tandem roller, 5 ton	10000	CY	71	2,100	1,800	0	0	3,900	0.39
	RSM	AA	Seeding, athletic field mix, 8#/MSFpush spreader	63.90	MSF	64	1,615	0	2,844	0	4,460	69.79
M	AF		Soil testing of layers includin g sieve analysis, compaction,	1.00	EA	0	0	0	0	10,000	10,000	10000.00
			33.10.04. Stabilize									
B	AF	AB	Soil stbln, w/cement stabilized base matl	30000	CY	0	0	0	0	2,400,000	2,400,000	80.00

33.10. Soil Remediation	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
33.10.05. Drum Removal									
L MIL AA Excavator for drum removal at Level B	20.00	EA	2	323	445	0	0	768	38.40
L MIL AA Excavator for drum moving at Level B	20.00	EA	2	323	445	0	0	768	38.40
L MIL AA Level B breathing unit, suit, overboots, gloves	4.00	EA	0	0	2,000	0	0	2,000	500.00
33.10.06. Disposal									
Transportation of drums to hazardous waste landfill and debris to solid waste landfill.									
HTW HW packaging, overpacks, 18"dia x 34"H, 16ga stl drum, 55gal, DOT 17C	20.00	EA	0	0	0	1,583	0	1,583	79.13
USR AA Debris: Transport and Dispose nonhaz waste, bulk solid,	2300.00	TON	0	0	0	0	92,000	92,000	40.00
USR AA Drums/Paint Cans: Transportation of Drums by dedicated van	1.00	EA	0	0	0	0	546	546	545.70
USR AA Drums/Paint Cans: Disposal of Drums (Price quoted by Waste	20.00	EA	0	0	0	2,862	0	2,862	143.11
USR AA Extra fees for overpack use	20.00	EA	0	0	0	0	800	800	40.00
33.26. Demobilization									
TOTAL Decontaminate Equipment	1.00	EA	0	1,321	5,000	2,500	0	8,821	8821.20
TOTAL Demobilization	1.00	EA	0	528	2,500	500	0	3,528	3528.48
33.31. Well Installation									
B CIV AB Mob/Demob facility	1.00	EA	0	0	0	0	600	600	600.00
L AFH Decon Pad	1.00	EA	0	0	0	0	150	150	150.00
B HTW Installation of Monitoring well threaded	4.00	EA	0	0	0	0	2,320	2,320	580.00
L HTW Monitor well, drilling, HS auger, 4.25" ID x 8" OD	40.00	LF	0	0	0	0	720	720	18.00
TOTAL SEAD-59			7,975	218,148	154,955	716,652	3,366,565	4,456,320	

	QUANTY	UOM	CONTRACT	DES CONT	ESCALATN	CON CONT	OTHER	CON MGMT	TOTAL COST	UNIT COST
33 Remedial Action										
33.01 Mobilization	1.00	EA	5,290	530	170	1,050	250	580	7,870	7868.38
TOTAL Mobilization	1.00	EA	5,290	530	170	1,050	250	580	7,870	7868.38
33.02 Sampling, & Testing										
33.02.06 Groundwater	1.00	EA	23,210	2,320	770	4,600	1,080	2,560	34,530	34534.59
33.02.11 Soil	1.00	EA	232,070	23,210	7,660	46,010	10,810	25,580	345,350	345345.92
33.02.16 Confirmatory-Soil	1.00	EA	69,620	0	0	0	0	0	69,620	69621.55
TOTAL Sampling, & Testi	1.00	EA	324,900	25,530	8,420	50,620	11,890	28,140	449,500	449502.06
33.03 Site Work										
33.03.02 Clearing and Grub	3.00	ACR	4,400	440	150	870	200	480	6,550	2182.13
33.03.08 Survey Remediatio	1.00	ACR	27,870	2,790	920	5,530	1,300	3,070	41,470	41472.34
33.03.11 Erosion control	1.00	LF	211,850	21,180	6,990	42,000	9,870	23,350	315,250	315251.49
TOTAL Site Work	1.00	EA	244,120	24,410	8,060	48,400	11,370	26,910	363,270	363270.22
33.04 Fencing	1.00	EA	46,060	0	0	0	0	0	46,060	46060.11
33.05 Wastewater										
33.05. 1 Wastewater	1.00	EA	16,030	0	0	0	0	0	16,030	16031.28
TOTAL Wastewater	1.00	EA	16,030	0	0	0	0	0	16,030	16031.28
33.07 Air Stripping	1.00	EA	14,040	1,400	460	2,780	650	1,550	20,890	20890.43
33.10 Soil Remediation										
33.10.02 Sitework - Soils	1.00	EA	1,785,620	178,560	58,930	354,040	83,200	196,830	2,657,190	2657186.27
33.10.03 Clay Cover -Area	1.00	EA	178,430	0	0	0	0	0	178,430	178434.23
33.10.04 Stabilize	1.00	EA	2,827,850	0	0	0	0	0	2,827,850	2827846.61
33.10.05 Drum Removal	1.00	EA	4,880	0	0	0	0	0	4,880	4884.56
33.10.06 Disposal	1.00	EA	134,480	13,450	4,440	26,660	6,270	14,820	200,120	200122.95
TOTAL Soil Remediation	1.00	EA	4,931,270	192,010	63,360	380,710	89,470	211,650	5,868,470	5868474.63
33.26 Demobilization										
33.26.04 Decontaminate Equ	1.00	EA	12,190	1,220	400	2,420	570	1,340	18,130	18133.13
33.26.06 Demobilization	1.00	EA	4,870	490	160	970	230	540	7,250	7253.25

** PROJECT OWNER SUMMARY - SUBSYSTM (Rounded to 10's) **

	QUANTY	UOM	CONTRACT	DES CONT	ESCALATN	CON CONT	OTHER	CON MGMT	TOTAL COST	UNIT COST
TOTAL Demobilization	1.00	EA	17,060	1,710	560	3,380	790	1,880	25,390	25386.38
33.31 Well Installation	1.00	EA	3,900	0	0	0	0	0	3,900	3896.96
TOTAL Remedial Action	1.00	EA	5,602,660	245,590	81,040	486,940	114,430	270,710	6,801,380	6801380.44

SEAD-59 REMOVAL OPTION 3: EXCAVATION/DISPOSAL OFF-SITE

The following are the components included in the cost estimate for the Excavation/Off-site Disposal option at SEAD-59:

1. Layout areas to be excavated.
2. Excavate soils (23,025cy for entire site, depths of 3 to 9.5 ft depending on area of site). The areas include: Area 1 (18,900 cy); Area 2 (1215 cy); Area 3 (1260 cy); Area 4 (1100 cy); and Others (550 cy). The Other Areas include unknown geophysical anomalies located south of the road. The total volume including a 30% expansion factor is approximately 30, 000 cy.
3. Dewater excavation and store in holding tank for testing and treatment.
4. Treat water by air stripping and discharge into storm drain, sewer, or drainage ditch, as available.
5. Screen excavated soils to remove debris.
6. Dispose of screened debris. Construction debris will be disposed of as solid waste. Full drums (20 drums) will be placed in overpacks and disposed of in hazardous waste landfill. Full paint cans will be placed in drums and disposed of in hazardous waste landfill.
7. All of the excavated soils will be analyzed for TCLP to determine which soils should be disposed of in an off-site hazardous waste or solid waste landfill. The results of the ESI and the RI indicate that concentrations in the soil will not exceed TCLP limits and the soil will be able to be disposed of as a solid waste.
8. Transport and dispose excavated soils to the appropriate landfill.
9. Backfill the excavations with clean fill obtained off-site.
10. Cover with topsoil and vegetative cover.

Cost to Prime:	$3,091,880
Cost to Owner:	$4,237,300
Project Cost:	$6,238,860

No Annual Monitoring/Maintenance Costs Assumed.

TOTAL EVALUATED PRICE: $6,238,860

SEAD-59
EXCAVATION/OFF-SITE DISPOSAL

Designed By: Parsons ES
Estimated By: Parsons ES

Prepared By: Parsons ES

Preparation Date: 04/20/00
Effective Date of Pricing: 10/03/96
Est Construction Time: 120 Days

Sales Tax: 7.0%

PROJECT BREAKDOWN:

The estimate is structured as follows and uses a 2 digit number at each level. The 2 digit numbers for the first 3 title levels are taken from the HTRW Remedial Action Work Breakdown Structure. The 2 digit numbers for the remaining title levels are user defined. The detail items are at LEVEL 6.

LEVEL 1 - WBS Level 1 (Account)
LEVEL 2 - WBS Level 2 (System)
LEVEL 3 - WBS Level 3 (Subsystem)
LEVEL 4 - User Defined (Assembly Category or Other)
LEVEL 5 - User Defined (Assembly or Other)

PROJECT DESCRIPTION:

The following is a summary of the activities that are presently included in Alternative 3.

Off-Site Disposal: Excavate/Off-site Disposal
- Mobilize, site prep, clear/grub, erosion control, and survey
- Excavate and screen soils less than TAGMs in Area 1, 2, and Others.
- Treat water by air stripping.
- Screen excavated soils to remove debris.
- Dispose of screend debris. Drums to hazardous waste landfill and construction debris to solid waste landfill.
- Transport excatated soils to landfill.
- Backfill excavations with clean fill.
- Cover with topsoil and vegetate.
- Demobilize
- No long-term monitoring

PRODUCTIVITY:

Productivity, as a baseline and as taken from the Unit Price Book (UPB) Database, assumes a non-contaminated working environment with no level of protection productivity reduction factors. When required, productivity for appropriate activities will be adjusted for this project

as follows:

1. Level of Protection A - Productivity ___%
2. Level of Protection B - Productivity ___%
3. Level of Protection C - Productivity ___%
4. Level of Protection D - Productivity 85%.

All activities are conducted in Level of Protection D.

The following daily time breakdown was assumed.

	Level A	Level B	Level C	Level D
Availiable Time (minutes)	480	480	480	480
Non-Productive Time (minutes):				
Safety meetings	20	20	10	10
Suit-up/off	60	60	40	10
Air tank change	160	20	0	0
*Breaks	60	60	40	30
Cleanup/decontamination	20	20	20	20
Productive Time (minutes)	160	300	370	410
Productivity:	160/480 X100%	300/480 X100%	370/480 X100%	410/480 X100%
	33%	63%	77%	85%
Example:				
Normal Production Rate (CY/HR)	250	250	250	250
X Productivity	.33	.63	.77	.85
=Reduced Production Rate(CY/HR)	83	158	193	213
* Break time ranges (minutes)	60-140	60-140	40-140	30-70

The following list are the areas where there is the biggest potential for changes in cost due to uncertainties:

- Quantities of soil over TAGMs could increase based on the results of the confirmatory sampling done in the excavation.

- The quantities of soil requiring disposal as hazardous waste could increase based on the results of the confirmatory sampling done in the soil piles.

Contractor costs are calculated as a percentage of running total as
- 5 % for field office support
- 15 % for home office support
- 10 % for profit
- 4 %for bond

Owner's cost are calculated as a percentage of running total as
- 10 % for design contingency
- 3 % for escalation
- 17.5 % for construction contingency
- 3.5 % for other costs
- 8 % for construction management

OTHER GOVERNMENT COSTS:

Other Government Costs consist of:

*Engineering and Design During Construction (EDC)	1.5%
As-Builts	0.5%
Operation and Maintenance (O&M) Manuals	0.5%
Laboratory Quality Assurance	1.0%
Total, use	3.5%

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

33.01. Mobilization	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
33. Remedial Action									
33.01. Mobilization									
USR AA Mobilization	1.00	EA	0	793	2,500	535	0	3,828	3827.72
33.02. Sampling, & Testing									
33.02.06. Groundwater									
HTW AA For Disposal: NYSDEC CLP TCL VOCs, volatile organics , groundwater (Severn Trent Lab 9/98) (Assume 1 sample for each tank)	15.00	EA	0	0	0	0	2,625	2,625	175.00
AFH AA For Disposal: NYSDEC CLP TAL SVOCs modified , groundwater, (Severn Trent Lab, 9/98) (Assume 1 sample per tank)	15.00	EA	0	0	0	0	5,550	5,550	370.00
AFH AA For Disposal: NYSDEC TAL - Inorganics, groundwater (Severn Trent Lab, 9/98) (Assume 1 sample per tank)	15.00	EA	0	0	0	0	2,325	2,325	155.00
33.02.11. Soil									
HTW AA For Disposal: TCLP, volatile organics (SW-846 Methods 1311&8240), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy: 30000cy / 150cy)	240.00	EA	0	0	0	0	28,800	28,800	120.00
AFH AA For Disposal: TCLP-SVOCs (SW-846 Methods 1311 & 8270A), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy: 30000cy / 150cy)	240.00	EA	0	0	0	0	55,200	55,200	230.00
AFH AA For Disposal: TCLP - Metals (SW-846 Methods 1311 & 6010 & 7470), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy: 30000cy / 150cy)	240.00	EA	0	0	0	0	28,800	28,800	120.00
33.02.16. Confirmatory-Soil									
HTW AA Confirmatory: NYSDEC CLP, volatile organics, soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall adn floor or excavation.	72.00	EA	0	0	0	0	12,600	12,600	175.00
AFH AA Confirmatory: NYSDEC CLP-SVOCs , soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall and floor of excavation.	72.00	EA	0	0	0	0	26,640	26,640	370.00
AFH AA Confirmatory: NYSDEC CLP TAL - Metals , soil (Severn Trent	72.00	EA	0	0	0	0	11,160	11,160	155.00

		33.03. Site Work	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
		33.03. Site Work									
		33.03.02. Clearing and Grubbing									
AF	AA	Clearing, brush w/dozer & brush rake, light brush	3.00	ACR	48	1,298	1,887	0	0	3,185	1061.54
		33.03.08. Survey Remediation Area									
		Survey remediation area									
USR	AA	Survey remediation area	10.00	DAY	0	15,000	2,500	2,675	0	20,175	2017.50
		33.03.11. Erosion control									
B MIL	AA	Silt Fence: Installation and materials	16000	LF	3,360	80,000	8,000	25,680	0	113,680	7.11
		high, polypropylene									
B HTW	AA	Hay bales - stalked	16000	LF	5	2,720	0	17,120	0	19,840	1.24
B MIL	AA	Maintain silt fence and remove	16000	LF	107	2,720	0	17,120	0	19,840	1.24
		33.04. Fencing									
MIL		Site dml, chain link fence, remove & salvage for reuse	2000.00	LF	103	2,600	0	0	0	2,600	1.30
MIL		Fence, CL scty, std FE-6, 6' high, no gates/signs	2000.00	LF	96	2,820	0	39,847	0	42,667	21.33
MIL		Fence, CL, set in conc, 6' H, indl, corner post, galv stl, 4" OD	4.00	EA	2	55	9	295	0	358	89.48
MIL		Fence, CL, double, 24' W, indl, gates, swing, 6' high	1.00	EA	0	0	0	435	0	435	435.38
		33.05. Wastewater									
		33.05. 1. Wastewater									
L MIL		Pump, cntfgl,6"D, horiz mtd, horiz splt, sgl stg,1500GPM,50HP	1.00	EA	0	0	0	10,767	0	10,767	10766.88
M HTW		21,000 Gal, Steel, hold tank stationary	4.00	EA	0	0	0	5,264	0	5,264	1316.10
		33.07. Air Stripping									
HTW		HTRW,PTTU,1'dia,14.5'pkng hgt, 30GPM,850CFM,FRP shell	1.00	EA	97	3,257	0	7,009	0	10,265	10265.47
AFH		HTRW,PTTU, >= 12' high, install air strip tower, 1'- 3' diam.	1.00	EA	91	3,035	226	0	0	3,261	3261.05
HTW		HTRW, PT opt, air flow switch (loss of air flow - motor failure)	1.00	EA	0	0	0	512	0	512	511.81

		33.10. Soil Remediation	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
		33.10. Soil Remediation									
		33.10.02. Sitework - Soils All fill, topsoil, and seeding items for soil remediation are included in the Sitework - Soils category.									
L	MIL AA	Excavate and stockpile (volumes used for estimate are 30% greater than in-situ volumes)	30000	CY	2,655	60,000	90,000	0	0	150,000	5.00
	USR AA	Plastic sheeting for ground: 6mil polyethylene liner (1000sf	2000000	SF	0	0	0	171,200	0	171,200	0.09
	USR AA	Cover stockpiles w/ plastic sheeting: Plastic sheeting: 6mil polyethylene liner (1000sf / roll; 1 roll = $75)	3000000	SF	0	0	0	256,800	0	256,800	0.09
	USR AA	Screen Soil	30000	CY	0	0	0	0	600,000	600,000	20.00
	MIL AA	Loam or topsoil, furnish & place, imported, 6" deep	3100.00	CY	273	8,277	4,309	60,469	0	73,055	23.57
	USR AA	Common fill (6") - Material for Backfill, includes cost of material (bank sand) and delivery (DeWitt 1999)	32615	TON	0	0	0	151,807	0	151,807	4.65
	AF AA	Fill, spread borrow w/dozer	27700	CY	332	9,972	18,005	0	0	27,977	1.01
	AF	Compaction, steel wheel tandem roller, 5 ton	27700	CY	197	5,817	4,986	0	0	10,803	0.39
	RSM AA	Seeding, athletic field mix, 8#/MSFpush spreader	82.90	MSF	83	2,096	0	3,690	0	5,786	69.79
		33.10.04. Drum Removal Approx. 20 drums in Area 1									
L	MIL AA	Excavator for drum removal at Level B	20.00	EA	2	323	445	0	0	768	38.40
L	MIL AA	Excavator for drum moving at Level B	20.00	EA	2	323	445	0	0	768	38.40
L	MIL AA	Level B breathing unit, suit, overboots, gloves	4.00	EA	0	0	2,000	0	0	2,000	500.00
		33.10.06. Disposal Transportation of drums, debris, and soil to hazardous waste landfill									
	HTW	HW packaging, overpacks, 18"dia x 34"H, 16ga stl drum, 55gal, DOT 17C	20.00	EA	0	0	0	1,583	0	1,583	79.13
	HTW AA	Soils: Transport and Dispose nonhaz waste, bulk (Seneca Meadows, 11/97)	27100	TON	0	0	0	0	1,084,000	1,084,000	40.00
	USR AA	Debris: Transport and Dispose nonhaz waste, bulk solid,	2710.00	TON	0	0	0	0	108,400	108,400	40.00
	USR AA	Drums/Paint Cans: Transportation of Drums by dedicated van	1.00	EA	0	0	0	0	546	546	545.70
	USR AA	Drums/Paint Cans: Disposal of Drums (Price quoted by Waste	20.00	EA	0	0	0	2,862	0	2,862	143.11

33.10. Soil Remediation	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
USR AA Extra fees for overpack use	20.00	EA	0	0	0	0	800	800	40.00
33.26. Demobilization									
TOTAL Decontaminate Equipment	1.00	EA	0	1,321	5,000	2,500	0	8,821	8821.20
TOTAL Demobilization	1.00	EA	0	528	2,500	500	0	3,528	3528.48
TOTAL SEAD-59			7,453	202,955	142,811	778,669	1,967,446	3,091,880	

	QUANTY	UOM	CONTRACT	DES CONT	ESCALATN	CON CONT	OTHER	CON MGMT	TOTAL COST	UNIT COST
33 Remedial Action										
33.01 Mobilization	1.00	EA	5,290	530	170	1,050	250	580	7,870	7868.38
TOTAL Mobilization	1.00	EA	5,290	530	170	1,050	250	580	7,870	7868.38
33.02 Sampling, & Testing										
33.02.06 Groundwater	1.00	EA	14,500	1,450	480	2,880	680	1,600	21,580	21584.12
33.02.11 Soil	1.00	EA	155,820	15,580	5,140	30,900	7,260	17,180	231,880	231875.12
33.02.16 Confirmatory-Soil	1.00	EA	69,620	0	0	0	0	0	69,620	69621.55
TOTAL Sampling, & Testi	1.00	EA	239,950	17,030	5,620	33,770	7,940	18,770	323,080	323080.79
33.03 Site Work										
33.03.02 Clearing and Grub	3.00	ACR	4,400	440	150	870	200	480	6,550	2182.13
33.03.08 Survey Remediatio	1.00	ACR	27,870	2,790	920	5,530	1,300	3,070	41,470	41472.34
33.03.11 Erosion control	1.00	LF	211,850	21,180	6,990	42,000	9,870	23,350	315,250	315251.49
TOTAL Site Work	1.00	EA	244,120	24,410	8,060	48,400	11,370	26,910	363,270	363270.22
33.04 Fencing	1.00	EA	46,060	0	0	0	0	0	46,060	46060.11
33.05 Wastewater										
33.05. 1 Wastewater	1.00	EA	16,030	0	0	0	0	0	16,030	16031.28
TOTAL Wastewater	1.00	EA	16,030	0	0	0	0	0	16,030	16031.28
33.07 Air Stripping	1.00	EA	14,040	1,400	460	2,780	650	1,550	20,890	20890.43
33.10 Soil Remediation										
33.10.02 Sitework - Soils	1.00	EA	1,995,330	199,530	65,850	395,620	92,970	219,940	2,969,240	2969244.38
33.10.04 Drum Removal	1.00	EA	4,880	0	0	0	0	0	4,880	4884.56
33.10.06 Disposal	1.00	EA	1,654,550	165,460	54,600	328,060	77,090	182,380	2,462,140	2462138.72
TOTAL Soil Remediation	1.00	EA	3,654,760	364,990	120,450	723,680	170,060	402,320	5,436,270	5436267.66
33.26 Demobilization										
33.26.04 Decontaminate Equ	1.00	EA	12,190	1,220	400	2,420	570	1,340	18,130	18133.13
33.26.06 Demobilization	1.00	EA	4,870	490	160	970	230	540	7,250	7253.25
TOTAL Demobilization	1.00	EA	17,060	1,710	560	3,380	790	1,880	25,390	25386.38

		QUANTY	UOM	CONTRACT	DES CONT	ESCALATN	CON CONT	OTHER	CON MGMT	TOTAL COST	UNIT COST
TOTAL	Remedial Action	1.00	EA	4,237,300	410,070	135,320	813,070	191,070	452,020	6,238,860	6238855.23

APPROVAL MEMORANDUM FOR ENGINEERING EVALUATION/COST ANALYSIS (EE/CA) SEAD-5, SEWAGE SLUDGE WASTE PILES SENECA ARMY DEPOT ACTIVITY

Background

This document has been prepared to justify the need to perform an EE/CA for SEAD-5, Sewage Sludge Waste Piles, at the Seneca Army Depot Activity (SEDA). It will outline the conditions for initiating a removal action and show that the required action is non-time-critical. It provides site background; threats to public health, welfare, or the environment posed by the site; enforcement activities; and project cost.

Sewage sludge was stockpiled at this site during the early 1980's. SEAD-5 consists of 5 or 6 sewage sludge piles ranging 5-10 feet high. The entire site covers an area approximately 200 feet by 200 feet.

Threat to Public Health, Welfare, or the Environment

The Sludge Piles subsurface soil and groundwater have been tested for heavy metals, pesticides/polychlorinated biphenyls, nitrates, cyanides, and semivolatile and volatile organic compounds. Results of testing conducted showed no impact on groundwater and subsurface soils. Some semivolatile organic compounds and inorganic elements have impacted the sludge piles and surface soil. Heavy metals such as copper, mercury, silver, and zinc were detected in levels above respective limits.

Sludge piles at SEAD-5 present the potential for human and environmental exposure to semivolatile organic compounds, inorganic compounds, pesticides, nitrate/nitrite nitrogen, cyanide and heavy metals. The primary migration pathway is potential surface runoff and infiltration from precipitation. There is no imminent or substantial endangerment present. Therefore, the action is non-time-critical.

Enforcement Actions

This section is not applicable to this removal action since the lead agency, the Army, is the Principle Responsible Party to this site and is taking responsibility for the removal action.

Proposed Project and Cost

Off-site disposal was the most cost-effective method for the small volume of material and chosen as the preferred remedial alternative. The EE/CA process will include preparation of the EE/CA document, a 30-day public comment period, and an Action Memorandum to document the decision. The non-time-critical removal action will be performed, and then a site closeout report will be prepared. The estimated project cost is $100,000.

Approval/Disapproval

_____ _____

BRIAN K. FRANK Date
LTC, OD
Commanding
Seneca Army Depot Activity

_____ _____

LARRY V. GULLEDGE Date
Deputy to the Commander
Industrial Operations Command

ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)
SEWAGE SLUDGE WASTE PILES, SEAD-5
SENECA ARMY DEPOT ACTIVITY

Executive Summary

This EE/CA presents alternatives for a non-time-critical Removal Action for SEAD-5, Sewage Sludge Waste Piles, at the Seneca Army Depot Activity (SEDA). It was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Acts of 1986 (SARA), and the National Contingency Plan (NCP). It will provide site characterization, identification of Removal Action objectives, identification and analysis of alternatives, and the recommended Removal Action alternative.

The Removal Action is intended to be the final remedy for this site. The primary objective is to eliminate or significantly reduce the potential for human or environmental exposure to impacted soil.

Site Characterization

Sewage sludge was stockpiled at this site during the early 1980's. SEAD-5 is located approximately 600 feet due west of building 135 and consists of 5-6 sewage sludge piles ranging 5-10 feet high derived from 2 onsite sewage treatment plants, building numbers 4 and 715. The sludge was removed from drying beds and transported to this site on two-month intervals from the above mentioned onsite sewage treatment plants. The entire site covers an area approximately 200 feet by 200 feet.

The sludge piles subsurface soil and ground water have been tested for heavy metals, pesticides/polychlorinated biphenyls, nitrates, cyanides, and semivolatile and volatile organic compounds. Results of testing conducted showed no impact on groundwater and subsurface soils. Some semivolatile organic compounds and inorganic elements have impacted the sludge piles and surface soil. Heavy metals such as copper, mercury, silver, and zinc were detected in levels above respective limits.

Sludge piles at SEAD-5 present the potential for human and environmental exposure to semivolatile organic compounds, inorganic compounds, pesticides, nitrate/nitrite nitrogen, cyanide and heavy metals. The primary migration pathway is potential surface runoff and infiltration from precipitation.

Identification of Removal Action Objectives

The selected alternative will be protective of human health and the environment, attain Federal and State requirements that are applicable or relevant and appropriate to this

removal action, and be cost effective. It will satisfy the statutory preferences that reduce toxicity, mobility, and volume as a principal element.

Because this Removal Action will not result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, the five-year review will not apply to this action.

It is Department of Defense (DOD) and Army Policy to involve the local community as early as possible and throughout the installation restoration process at an installation. To accomplish this, the SEDA Community Relations Plan (CRP) and Federal Facilities Agreement (FFA) will be followed to conduct community relations activities at this site. A public notice is scheduled to announce a 30-day comment period beginning May 1, 2000. Pending acceptance of the preferred alternative, fieldwork is scheduled to begin June 1, 2000 and take approximately 60 days.

Identification and Analysis of Removal Action Alternatives

Two alternative actions for the sludge piles were considered: land spreading and off-site disposal. Land spreading was eliminated from consideration based on the small volume of material and the effort and associated cost required to permit the land spreading of the sludge.

Off-site disposal was the most cost-effective method for the small volume of material and chosen as the preferred alternative.

Recommended Removal Action Alternative

The recommended alternative is to load the sludge piles on trucks and haul them to a New York State permitted landfill. The landfill will be permitted to accept industrial waste, which the sludge is classified as. After the piles have been removed from the site, virgin soil underneath will be removed to a minimum depth of six (6) inches or until confirmatory sampling meets agreed upon values. This will result in no hazardous materials left on the site. Confirmatory samples will be taken for each 50 square foot area excavated for a total of sixteen samples. Copper, mercury, silver, and zinc are the contaminants of concern. The goal is for the confirmatory sampling to attain TAGM (Technical Assistance Guidance Memorandum) values or less. The action will be considered complete when NYSDEC and EPA review confirmatory sampling results and agree that they are acceptable. The TAGM values for these contaminants are 25.0 mg/kg for copper, 0.1 mg/kg for mercury, 0.8 mg/kg for silver, and 20 mg/kg for zinc. The excavated area will then be backfilled to grade with clean fill, graded, and seeded.

A removal closeout report will include a description and schedule of the removal activities and results of confirmatory samples.

Response to Comments
EE/CA SEAD-5, Sewage Sludge Waste Piles
at Seneca Army Depot Activity, NY

NYSDEC, February 28, 2000 comment:

Recommended Removal Action Alternative: SEDA proposes that the action will be complete when soil samples result in contaminants 3 times the Technical Assistance Guidance Memorandum (TAGM) values or less. NYSDEC cannot accept this arbitrary criteria for completing the action. The completion values for the contaminants of concern should be at or below their respective TAGM values. The text should be changed to reflect this. The EE/CA also states that, "After the piles have been removed from the site, virgin soil underneath will be removed to a depth of six (6) inches. This will result in no hazardous materials left on the site." This assumption is unacceptable in that simply removing six (6) inches of virgin soil would not imply that all hazardous material has been removed. This can only be proven by sampling for contaminants of concern and, if the sampling round shows values above their respective TAGM values, virgin soil at a depth greater than six (6) inches would need to be removed. The text should be changed to reflect this. The TAGM values listed for copper, and zinc are incorrect. The values should be 25 ppm (or sight background) for copper, and 20 ppm (or sight background) for zinc.

Response:

Agreed. The document has been revised accordingly.

USEPA, April 6, 2000 comment:

After reviewing the EE/CA for the above subject area of concern, I find it to be acceptable. However, I would like to see some sampling at the drainage ditch running north-south along the western boundary of SEAD-59 as part of the confirmatory effort.

Response:

Disagree. Sampling along the western boundary of SEAD-59 will be included as part of a separate report for SEAD-59 and SEAD-71.

USEPA, April 6, 2000 comment:

Also, I would like to reiterate the requirement to document this removal action for the site's Record of Decision document, which will represent our final determination for this site.

Response:

Acknowledged.

File 59/71

Attachment A – Development of Cleanup Goals for Organics Using TAGM 4046

In order to calculate acceptable cleanup goals (CUGs) for organics for SEADs-59 and –71 (hereafter referred to as the "Site"), the Army followed an approach adopted by the New York State Department of Environmental Conservation (NYSDEC). The "Technical and Administrative Guidance Memorandum #4046" (hereafter referred to as the "TAGM") was published in 1994 by the NYSDEC to provide a basis and procedure to determine soil cleanup levels. The TAGM approach for organics is mainly based on: (1) human health based levels that correspond to a target non-cancer hazard quotient or excess lifetime cancer risk; (2) environmental concentrations that are protective of groundwater/drinking water quality. Using the procedures presented in the TAGM, the NYSDEC proposed the recommended soil cleanup objectives listed in Tables 1, 2, 3 and 4 of the document. This attachment presents the derived CUGs for the Site using the site-specific conditions according to the procedures presented in the TAGM. The major site-specific factors considered include:

(1) The future use receptor. The site is proposed for industrial use while the TAGM values are based on human health levels protective of a residential child receptor; therefore, the CUGs were modified to be protective of receptors under the industrial use scenario.
(2) Distance to the nearest potential groundwater user. Groundwater dispersion in the aquifer from the site boundary to the closest potential groundwater user has been considered while only dispersion within the site itself is incorporated into the recommended soil cleanup objective provided in Appendix A of TAGM 4046.

Site-specific CUGs were calculated using the following steps:

1) Identification of constituents of concern (COCs) based on exceedances of the TAGM,
2) Calculation of human health risk-based CUGs using site specific receptors,
3) Estimation of soil CUGs to protect groundwater quality at the Seneca site border, and

The proposed CUGs for the Site are the lower value of either the human health risk-based CUGs or the CUGs aimed to protect the groundwater quality at the Seneca site border.

1.0 Constituents of Concern (COCs)

COCs were determined based on the magnitude and frequency of the exceedances of the recommended cleanup objectives shown in Appendix A of TAGM 4046 (referred to as TAGMs). A summary table of the chemicals detected in Site soils in exceedance of theTAGM is presented (**Table 1**). A total of 17 organic compounds have been detected exceeding the TAGM values for SEAD-59 or SEAD-71. Of all the chemicals with TAGM exceedances, 2-methylnaphthalene, benzo(g,h,i)perylene, dibenzofuran, fluorene, heptachlor epoxide and endrin have four or less exceedances and the maximum detected values are less than an order of magnitude higher than the TAGM value. Additionally, these contaminants are co-located with other COCs. These chemicals were not selected as COCs. As a result, three VOCs (benzene, toluene, and total xylenes), and 12 PAHs were identified as COCs and were included in the following CUG calculation.

2.0 Human Health Risk-Based CUGs

Risk-based CUGs represent chemical concentration thresholds at a defined level of risk. A risk-based CUG is calculated based on exposure to contaminated environmental media such as soil or groundwater, and the value of the CUG depends on the amount of chemical exposure. Activities that involve frequent chemical exposure, give rise to lower (more stringent) CUGs; activities that involve infrequent chemical exposure will yield higher (less stringent) CUGs at an equivalent "acceptable" risk threshold. Because a CUG depends on the frequency of exposure, CUGs are developed based on a type of activity expected to occur at a site. As such, the CUGs are derived as a function of the land use expected for a site.

The health-based soil cleanup objectives described in TAGM 4046 are based on an average scenario of exposure via soil ingestion by a residential child. However, the future land use of SEADs-59 and –71 is industrial. Therefore, the direct use of the TAGM values is not appropriate for this Site. This section discusses the approach used to calculate the risk-based concentrations to be protective of all future potential receptors. This approach is in accordance with the NYSDEC TAGM 4046 approach (outlined in Section 2 of TAGM 4046) and the U.S. EPA risk assessment guidelines (U.S. EPA, 1991).

2.1 Methodology

The risk-based CUG values are derived essentially by reversing the risk calculations performed in a risk assessment. For example, if the risk equation is written as:

Cancer Risk = Concentration (C) × Chemical Toxicity Factor (CSF) × Intake Factors (IF)

then the CUG is estimated by choosing a target risk level, and solving the above equation for the concentration that yields this risk.

The CUG concentration for each risk driving chemical of concern was calculated according to the following general approach:

$$Cleanup\ Goal\ (CUG) = \frac{Acceptable\ Risk}{Chemical\ Toxicity\ Factor \times Intake\ Factor}$$

In addition to the CUGs corresponding to the target cancer risk endpoints, CUGs for non-cancer endpoints were calculated. The lowest of the non-cancer and cancer based CUGs were used as the limiting health-based CUGs. The TAGM approach considers only ingestion of chemicals in soils in assessing risk-based concentrations. Specific on-site receptors used to estimate CUGs included the construction worker, industrial worker, and trespasser child (1-6 yr). Three residential receptors (an adult, a child ages 1-6 years, and a child and adult) were included for comparison purposes only, since the future site use is proposed to be industrial. A child and adult receptor was used to quantify chronic exposure for an exposure duration of 30 years based on a combination of exposure for a residential receptor, ages 1-6 years and 7-31 years.
The specific equations used to calculate the CUGs for cancer and non-cancer endpoints are summarized below.

CUG for Cancer Endpoints

$$CUG_{cancer}\left(\frac{mg}{kg}\right) = \frac{TCR}{SF_{oral}\left(\frac{mg}{kg \cdot day}\right)^{-1} \times IF_{oral}\left(\frac{1}{day}\right)}$$

where:

TCR = target cancer risk (10^{-6})

SF_{oral} = oral cancer slope factor $(mg/kg\text{-}day)^{-1}$

IF_{oral} = oral intake factor (1/day)

$$IF_{oral}\left(\frac{1}{day}\right)=\frac{IR_{soil}\left(\frac{mg}{day}\right)\times FS\times EF\left(\frac{days}{yr}\right)\times ED(yr)\times 10^{-6}\,\frac{kg}{mg}}{BW(kg)\times AT(days)}$$

where:

IR_{soil} = the soil ingestion rate (mg/day),

FS = the fraction of contaminated soil from the site (unitless),

EF = the exposure frequency (days/year),

ED = the exposure duration (years),

BW = the body weight (kg), and

AT = the averaging time (days).

For the residential child and adult receptor:

$$IF_{oral}\left(\frac{1}{day}\right)=\frac{IF_{soil/adj}\left(\frac{mg\cdot yr}{kg\cdot day}\right)\times FS\times EF\left(\frac{days}{yr}\right)\times 10^{-6}\,\frac{kg}{mg}}{AT(days)}$$

where:

$IF_{soil/adj}$ = the age-adjusted soil ingestion factor (mg-yr/kg-day)

CUG for Noncancer Endpoints:

$$CUG_{nocancer}\left(\frac{mg}{kg}\right)=\frac{THQ\times RfD\left(\frac{mg}{kg\cdot day}\right)}{IF_{oral}\left(\frac{1}{day}\right)}$$

where:

THQ = target hazard quotient (1)

RfD = oral reference dose (mg/kg-day)

IF_{oral} = oral intake factor (1/day)

2.2 Exposure and Toxicity Factors

The exposure factors used to calculate site-specific preliminary cleanup goals using the TAGM approach are based on the USEPA's Exposure Factors Handbook (1991), USEPA Region III RBC Table Technical Background Information, and professional judgment based on the site conditions. **Table 2** presents the exposure factors for the selected receptors.

The toxicity factors including the oral cancer slope factor and oral chronic reference dose were obtained from the USEPA's Integrated Risk Information System (IRIS) database, USEPA's Health Effects Assessment Summary Tables (HEAST), and USEPA Region III RBC Table. **Table 3** presents the toxicity factors for the COCs.

The NYSDEC TAGM 4046 adopted a target excess lifetime cancer risk of one in a million for Class A and B carcinogens and one in 100,000 for Class C carcinogens. In order to be conservative (i.e., human health protective), a target excess lifetime cancer risk of one in a million and a target non-cancer hazard quotient of 1 were used to develop the human health risk based CUGs.

2.3 Results and Discussions

Table 4 summarizes receptor-specific human health risk-based CUGs corresponding to the target cancer risk of 10^{-6}. The CUGs based on the exposure scenario for the trespasser child receptor are the most stringent CUGs for all the potential receptors under the industrial scenario.

Table 5 presents receptor-specific human health risk-based soil concentrations corresponding to the target hazard quotient of 1. The CUGs based on the exposure scenario for the trespasser child receptor are the most stringent CUGs for all the potential receptors under the industrial scenario.

The most stringent CUGs for all the potential receptors under the industrial scenario were used as the final human health risk-based CUGs. For benzene and heptachlor, since both cancer risk-

based CUGs and non-cancer risk-based CUGs are available, the lowest value of the two was used as the final human health risk-based CUGs. **Table 6a** and **Table 6b** present the final human health risk-based CUGs for SEAD-59 and SEAD-71, respectively.

The human health risk-based CUGs were calculated according to the TAGM approach and the USEPA Risk Assessment Guidelines. Conservative assumptions were made throughout the calculation to be protective of the potential receptors. For example, a trespasser child, ages 1-6 years was included as a potential receptor. It is highly unlikely that a child would trespass at asite designed for industrial use.

3.0 Groundwater Protection-Based CUGs

Approach

Groundwater quality protection will be evaluated based on both actual groundwater monitoring data, and theoretical calculations that show that groundwater quality standards will not be exceeded at potential receptor areas. Potential receptors include site areas where groundwater may be ingested or the site property lines.

The NYSDEC TAGM 4046 uses the water-soil equilibrium partition theory to develop soil cleanup goals that will be protective of groundwater quality at the source area. The soil cleanup objectives are calculated based on the following equation as noted in Section 3 of TAGM 4046:

$$Cs = f \times Koc \times Cw \times CF$$

Where:
- Cs = allowable soil concentration
- F = fraction of organic carbon of the natural soil medium
- Koc = partition coefficient
- Cw = applicable water quality criteria
- CF = correction factor = 100

The applicable water quality standard (Cw) is the New York State Water Quality Standard for Class GA groundwaters.

It is the Army's understanding based on a review of the other RODs in New York State that this standard shall be met the location of a potential receptor. Accordingly, the Army has used a simple dispersion analysis to develop cleanup goals for soil that will be protective of groundwater

quality at the location of a potential receptor. The dispersion analysis substitutes the applicable water quality criteria with a theoretical water concentration at the source area that will disperse to concentrations below the Class GA standards at the nearest receptor. The modified water concentration is input into the water-soil portioning equation above to develop a site specific soil cleanup objective. It should be noted that institutional controls would be proposed during the final remedy to ensure that the groundwater is not used where actual groundwater monitoring results show that concentrations exceed Class GA standards.

Dispersion Analysis

The revised soil cleanup goal was established by considering all of the water flowing between SEAD-59 or SEAD-71 and a receptor, assumed to be at the Seneca site boundary. The position of SEAD 59 and 71 relative to the site boundaries is shown on Figure 1. The water included in this analysis consists of groundwater flowing through the aquifer from an upgradient source and water from precipitation that has infiltrated into the aquifer. This model is described by the mass balance and the continuity equation, (equations 2 and 3), respectively. The mass balance equation, Equation 2, confines the concentration and the flow of all water entering the area between the operable unit and the receptor (including rain water and contaminated groundwater) to be equal to the flow and concentration of the water reaching the receptor.

$$C_{out}Q_{out} = C_{in}Q_{in} + C_pQ_p \qquad (2)$$

$$Q_{out} = Q_{in} + Q_p \qquad (3)$$

Where:

C_{out} = concentration of chemical in groundwater at the location of the receptor.

C_{in} = concentration of chemical in groundwater at SEAD-59/71.

C_p = concentration of chemical in water from precipitation.

Q_{out} = flowrate of groundwater at the location of the receptor.

Q_{in} = flowrate of groundwater at SEAD-59/71.

Q_p = flowrate of water from precipitation into the aquifer.

Substituting the continuity equation into the mass balance and rearranging, the expression for the allowable concentration in the groundwater at SEAD-59/71 becomes:

$$C_{in} = \frac{C_{out}\left(Q_{in} + Q_p\right)}{Q_{in}} \qquad (4)$$

To solve this equation, the C_w value from TOGS 1.1.1 is used for C_{out}. The flow rates are determined from site-specific information. Equation 5 defines the groundwater flowrate through the aquifer.

$$Q_{in} = A_{in} \times q \qquad (5)$$

Where:

A_{in} = cross sectional area of the aquifer, (width of SEAD-59/71) x (depth of water)

q = Darcy velocity = k_h x i, where k_h is hydraulic conductivity and i is the hydraulic gradient. The hydraulic conductivity and the hydraulic gradient are known quantities that have been measured at SEDA.

Equation 6 expresses the flowrate of precipitation that enters the aquifer.

$$Q_p = A_p \times I \qquad (6)$$

Where:

A_p = infiltration area, (width of SEAD-59/71) x (distance between SEAD-59/71 and the receptor)

I = infiltration rate, which is a measured value from SEDA.

Once **Equation 4** is solved, C_{in} is considered the new C_w. In order to convert this groundwater concentration to the allowable concentration of the chemical in the soil, the new C_w value is plugged into **Equation 1**. To establish a cleanup goal value, the TAGM applies a correction factor, CF, of 100 to the concentration C_s. The correction factor accounts for mechanisms that may occur during transport that prevent all of the contamination that would leave the contaminated soil from impacting the immediate site groundwater.

The revised soil cleanup objectives are presented in Table 1. The revised cleanup goals are based on very conservative estimates. The distance used for the derivation of the new cleanup goals was the shortest distance to a potential receptor, the area designated for housing, which is upgradient of the site. In reality, the flow moves downgradient, which places the receptor at a much greater distance from SEAD-59/71. Similar calculations were performed using the distance between SEAD-59/71 and the western border of SEDA (downgradient direction), as well as the distance between SEAD-59/71 and the eastern border of SEDA (upgradient direction), which lies beyond the housing area. The cleanup goals that were derived using the distance to the downgradient receptor, the more realistic model, exceed the proposed new cleanup goals (based on the distance to the housing area) by a factor of 10. This analysis also does not consider other factors that will reduce concentrations in the aquifer such as retardation, biodegradation and adsorption in the dispersion area, among others.

It should be noted that site groundwater quality will be evaluated to show that exceedances of Class GA groundwater standards for the COCs are limited to very short distances from the source areas, if at all. Additionally, groundwater quality will improve after source removal.

4.0 Proposed CUGs

The proposed CUGs for the Site are presented in **Table 6**. As shown on Table 6, the total non-carcinogenic PAH cleanup goals are less than 500 mg/kg, which is an acceptable value in other New York State RODs. Additionally, the total carcinogenic PAH cleanup goals are approximately 10 mg/kg that is also lower than the typical ROD cleanup goal.

Overall, the proposed CUGs by Parsons were calculated following the NYSDEC TAGM approach for the potential site receptors under the industrial scenario. In addition, groundwater dilution in the aquifer from the site boundary to the closest residential well has been considered to calculate the CUGs aimed to protect groundwater. The human health based CUGs were also in compliance with the EPA Guidelines (1991). In addition, the proposed CUGs for PAHs are comparable or even lower than the background concentrations or the background intakes.

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TABLE 6b
Soil Cleanup Goals for SEAD-71
SEAD 59/71
Seneca Army Depot Activity

Analyte	Human Health Based Clean Up Goals[1] (mg/kg)	Soil Concentration to be Protective of Groundwater [2] (mg/kg)	Proposed Soil Cleanup Goal (mg/kg)	(mg/kg)
Semivolatiles				
Anthracene	105,288	4,062	50*	50,000*
Benzo(a)anthracene	8.8	16	8.8	8,811
Benzo(a)pyrene	0.88	64	0.88	881
Benzo(b)fluoranthene	8.8	6.4	6.4	6,382
Benzo(k)fluoranthene	88	6.4	6.4	6,382
Chrysene	881	2.3	2.3	2,321
Dibenz(a,h)anthracene	0.88	50*	0.88	881
Dibenzofuran	1,404	36	36	35,684
Fluoranthene	14,038	11,024	50*	50,000*
Indeno(1,2,3-cd)pyrene	8.8	19	8.8	8,811
Naphthalene	7,019	75	50*	50,000*
Phenanthrene		1,266	50*	50,000*
Pyrene	10,529	3,857	50*	50,000*
Pesticides/PCBs				
Heptachlor epoxide	1	0.02 [3]	0.02	20

Notes:

(1) The human health based cleanup goals were derived from the lower of the cancer and non-cancer RBC values for all potential receptors under the industrial scenario.

(2) Soil concentrations to be protective of groundwater were calculated based on SEAD-71 site conditions.

(3) The NYSDEC soil cleanup objective to protect groundwater quality was used since the groundwater standard for heptachlor epoxise is ND.

*Default cleanup goal since proposed value would exceed maximum value of 50,000 ug/kg for an individual SVOC.

Cells in this table were intentionally left blank due to lack of toxicity data.

TABLE 5
Human Health Risk Based Soil Concentration Under Industrial Scenarios (Noncancer Risk)
SEAD 59/71
Seneca Army Depot Activity

Equation for RBC calculation (mg/kg)[1]: $RBC = \frac{HQ \times BW \times AT \times RfD}{IR \times CF \times FI \times EF \times ED}$

Analyte	Ref Dose(RfD) (mg/kg/day)	Industrial Worker	Construction Worker	Trespasser Child	Resident (Adult)	Resident (Child)
Volatile Organics (mg/kg)						
Benzene	3.00E-03	6.29E+03	1.57E+03	1.05E+03	2.25E+03	2.35E+02
Toluene	2.00E-01	4.19E+05	1.05E+05	7.02E+04	1.50E+05	1.56E+04
Total Xylenes	2.00E+00	4.19E+06	1.05E+06	7.02E+05	1.50E+06	1.56E+05
Semivolatiles (mg/kg)						
Anthracene	3.00E-01	6.29E+05	1.57E+05	1.05E+05	2.25E+05	2.35E+04
Benzo(a)anthracene	NA					
Benzo(a)pyrene	NA					
Benzo(b)fluoranthene	NA					
Benzo(k)fluoranthene	NA					
Chrysene	NA					
Dibenz(a,h)anthracene	NA					
Dibenzofuran	4.00E-03	8.39E+03	2.10E+03	1.40E+03	3.00E+03	3.13E+02
Fluoranthene	4.00E-02	8.39E+04	2.10E+04	1.40E+04	3.00E+04	3.13E+03
Indeno(1,2,3-cd)pyrene	NA					
Naphthalene	2.00E-02	4.19E+04	1.05E+04	7.02E+03	1.50E+04	1.56E+03
Phenanthrene	NA					
Pyrene	3.00E-02	6.29E+04	1.57E+04	1.05E+04	2.25E+04	2.35E+03
Pesticides/PCBs (mg/kg)						
Heptachlor epoxide	1.30E-05	2.73E+01	6.81E+00	4.56E+00	9.73E+00	1.02E+00

Assumptions		Industrial Worker	Construction Worker	Trespasser Child	Resident (Adult)	Resident (Child)
Assuming HQ = 1						
Body Weight (BW), [kg] =		72	72	15	72	15
Averaging Time (AT) [days] =		9125	365	2190	8760	2190
Ingestion Rate (IR), [mg soil/day] =		50	200	200	100	200
Conversion Factor (CF), [kg/mg] =		1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06
Fraction Ingestion (FI), [unitless] =		1	1	1	1	1
Exposure Frequency (EF), [day/year] =		250	250	78	350	350
Exposure Duration (ED), [year] =		25	1	6	24	6
Age Adjusted Ingestion Factor ($IF_{soil\ adj}$), [mg-yr/kg-day]=						

Notes:
(1) RBCs correspond to a target noncancer HQ = 1. Only soil ingestion exposure was considered.
Cells in this table were intentionally left blank due to lack of toxicity data.
Residential receptors were listed only for comparison purposes.

TABLE 4
Human Health Risk Based Soil Concentration Under Industrial Scenarios (Cancer Risk)
SEAD 59/71
Seneca Army Depot Activity

Equation for RBC (mg/kg) calculation[1]:

$$RBC = \frac{CancerR \times BW \times AT}{IR \times CF \times FI \times EF \times ED \times Cancer\_slope\_factor}$$

For the resident (child and adult), RBC[1] (mg/kg):

$$\frac{CancerR \times AT}{CF \times EF \times IF_{soil/adj} \times cancer\_slope\_factor}$$

Analyte	Cancer Oral Slope Factor (mg/kg-day)-1	Industrial Worker	Construction Worker	Trespasser Child	Resident (Adult)	Resident (Child)	Resident (Child and Adult)
Volatile Organics (mg/kg)							
Benzene	0.055	1.17E+02	7.31E+02	8.16E+01	4.35E+01	1.82E+01	1.28E+01
Toluene	NA						
Total Xylenes	NA						
Semivolatiles (mg/kg)							
Anthracene	NA						
Benzo(a)anthracene	0.73	8.81E+00	5.51E+01	6.15E+00	3.28E+00	1.37E+00	9.61E-01
Benzo(a)pyrene	7.3	8.81E-01	5.51E+00	6.15E-01	3.28E-01	1.37E-01	9.61E-02
Benzo(b)fluoranthene	0.73	8.81E+00	5.51E+01	6.15E+00	3.28E+00	1.37E+00	9.61E-01
Benzo(k)fluoranthene	0.073	8.81E+01	5.51E+02	6.15E+01	3.28E+01	1.37E+01	9.61E+00
Chrysene	0.0073	8.81E+02	5.51E+03	6.15E+02	3.28E+02	1.37E+02	9.61E+01
Dibenz(a,h)anthracene	7.3	8.81E-01	5.51E+00	6.15E-01	3.28E-01	1.37E-01	9.61E-02
Dibenzofuran	NA						
Fluoranthene	NA						
Indeno(1,2,3-cd)pyrene	0.73	8.81E+00	5.51E+01	6.15E+00	3.28E+00	1.37E+00	9.61E-01
Naphthalene	NA						
Phenanthrene	NA						
Pyrene	NA						
Pesticides (mg/kg)							
Heptachlor epoxide	9.1	7.07E-01	4.42E+00	4.93E-01	2.63E-01	1.10E-01	7.71E-02
Assumptions							
Target Cancer Risk (Cancer R): 1.00E-06		Industrial Worker	Construction Worker	Trespasser Child	Resident (Adult)	Resident (Child)	Resident (Child and Adult)
Body Weight (BW), [kg]=		71.8	71.8	15	71.8	15	
Averaging Time (AT), [days]=		27995.5	27995.5	27995.5	27995.5	27995.5	27995.5
Ingestion Rate (IR), [mg soil/day]=		50	200	200	100	200	
Conversion Factor (CF), [kg/mg]=		1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06
Fraction Ingestion (FI), [unitless]=		1	1	1	1	1	
Exposure Frequency (EF), [day/year]=		250	250	78	350	350	350
Exposure Duration (ED), [years]=		25	1	6	24	6	
Age Adjusted Ingestion Factor ($IF_{soil\ adj}$), [mg-yr/kg-day]=							114

Notes:

(1) RBCs corresponding to a target cancer risk of 10^{-6}. Only soil ingestion exposure was considered.
Cells in this table were intentionally left blank due to lack of toxicity data
Residential receptors were only listed for comparison purposes.

********** -COMM.JOURNAL- ********** DATE JAN-08-2002 ***** TIME 08:41 *** P.01

MODE = MEMORY TRANSMISSION START=JAN-08 08:41 END=JAN-08 08:41

FILE NO.= 190

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Regarding: ATTACHED ARE the Cost Curves AND DATA For SEAD 4 AND SEAD 16/17. Also Included is the Summary Cost For SEAD 11 Comparision. For SEAD 11 WHAT DOES NOT show up is the ESTIMATE 3 years to get TO ROD to BE ABLE to CAP this site. I BELIEVE REMOVAL CAN BE DONE AND site CLOSED OUT IN 2 year or less if we perform REMOVAL. INFO ON SEAD 50/54 will come LATER today. You should HAVE RECIEVED the INFO ON 59/71 over the HOLIDAYS. I will CALL YOU THIS AFTERNOON to DISCUSS

S M Absolom

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