RAAP 050506\05009

RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

Soil Screening Report, SWMUs 8 and 36

FINAL DOCUMENT
JANUARY 2004

PREPARED BY:

URS

5540 FALMOUTH STREET, SUITE 201
RICHMOND, VIRGINIA 23230
(804) 965-9000 MAIN
(804) 965-9764 FAX

ARCHITECT-ENGINEER SERVICES
CONTRACT NO. DACA31-00-D-0011
DELIVERY ORDER NO. 0060

RADFORD ARMY AMMUNITION PLANT, VIRGINIA

Decision Document

SWMU 8: Calcium Sulfate Treatment/Disposal Area
No Further Action

Final **July 2005**

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1.0 PURPOSE

This Decision Document (DD) is prepared in accordance with the Assistant Chief of Staff for Installation Management (ACSIM) memorandum (ACSIM 2003) detailing policies for staffing and approving DDs, Defense Environmental Restoration Program (DERP) management guidance (DERP 2001), and the Radford Army Ammunition Plant (RFAAP) Resource Conservation and Recovery Act (RCRA) Permit, Part II section D (4) (USEPA 2000) (EPA ID No. VA1210020730). This DD describes the selection of No Further Action for Solid Waste Management Unit (SWMU) 8 - the "Calcium Sulfate ($CaSO_4$) Settling Lagoon." No Further Action was selected in accordance with the 1976 RCRA, the Hazardous and Solid Waste Amendments of 1984 (HSWA), the RFAAP RCRA Permit requirements (USEPA 2000), and the Final RCRA Corrective Action Plan (USEPA, 1994), as applicable. This task effort was performed in accordance with Work Plan Addendum (WPA) 015 Soil Sampling Investigation for SWMUs 8 and 36, Final March 2003 (URS 2003a), which incorporated by reference, the elements of the RFAAP Master Work Plan (MWP; URS 2003b). The data screening assessments and evaluations are contained in the Soil Screening Report, SWMUs 8 and 36, Final Document January 2004 (URS 2004) and serves as the basis for this DD.

SWMU 8 originally consisted of two unlined, below-grade, earthen, $CaSO_4$ settling lagoons (eastern and western), both approximately 200 feet (ft) long and 150 ft wide. The eastern lagoon has been replaced with a concrete tank and the western lagoon has been removed and is being replaced with a concrete tank. The project objectives of the Site Screening at SWMU 8 were to:

- Evaluate the presence or absence of hazardous constituents in soil and $CaSO_4$ sludge; and
- Assess soil and $CaSO_4$ sludge to be removed from SWMU 8 during construction activities for RCRA hazardous waste characteristics.

The results of the human health and ecological risk screening indicated that no unacceptable risk is associated with unrestricted reuse of the SWMU 8 area. This assumes a more conservative use of the property than the current or anticipated future land use for SWMU 8 (industrial). Based on no unacceptable risk to human health and the environment, the Army has selected No Further Action as the preferred remedial alternative for SWMU 8. Documents supporting this decision are available to the community in the RFAAP information repository.

2.0 EVALUATION OF SWMU 8 DATA

Presence and Absence of Constituents

Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), and pesticides were detected in one or more discrete samples. Explosives and polychlorinated biphenyls (PCBs) were not detected in discrete samples. Each of the targeted Target Analyte List (TAL) metals was detected in one or more discrete samples. The soil screening indicated the presence of selected constituents.

Human Health Risk Screening

Point comparisons of the discrete soil data to USEPA Region III adjusted Residential Risk-Based Concentrations (R-RBCs), Industrial-RBCs (I-RBCs), and RFAAP background did not indicate a potential threat to human health (USEPA 2003, IT Corp 2002). Detected VOC, SVOC, PAH, and pesticide constituents were below their respective R-RBCs. Inorganic constituent concentrations were within RFAAP background range or below RBCs, except in one surface sample (8SB3A) collected north of SWMU 8, where manganese was detected at a concentration above its I-RBC and RFAAP background. Manganese

was detected in the associated subsurface soil sample 8SB3C but at a concentration below its Facility-wide background point estimate. Potential human health risk in the area of 8SB3A is unlikely since surface soil in this area has been removed as part of the current construction activities at SWMU 8.

Ecological Risk Screening

Point comparisons of the discrete VOC, SVOC, PAH, and pesticide/PCB soil data to USEPA Draft Biological Technical Assistance Group (BTAG) Screening Levels (USEPA 1995) did not indicate a potential threat to the environment. Comparisons of the TAL metals data to BTAG Screening Levels indicated the following constituents of potential ecological concern: antimony, lead, magnesium, manganese, selenium, and silver. Potential ecological risk in the SWMU 8 area related to inorganic constituents is low since source material in sampled areas was removed as part of construction activities. Furthermore, this unit is and will remain an engineered process support unit and as such is not considered habitat for ecological receptors.

Soil Screening Level Comparison

Chemical concentrations detected in soil samples were compared to USEPA soil to groundwater Soil Screening Levels (SSL) using a dilution attenuation factor of 20 (USEPA 2003). SSL screening indicated minimal risk from migration of chemicals from site soil to groundwater. Results indicate three TAL metals (arsenic, chromium, and manganese) were detected exceeding SSLs. Arsenic and chromium exceeded SSL criteria but at concentrations below background point estimates and manganese slightly exceeded its SSL and background point estimate in one sample. Two organic compounds slightly exceeded their SSL screening values at estimated concentrations (J-flag value) for beta BHC (two samples) and 1,2-dibromo-3-chloropropane (one sample).

3.0 COMMUNITY RELATIONS RESPONSIVENESS SUMMARY

A community relations plan has been developed for RFAAP that establishes an effective program to inform the community of the RFAAP Installation Restoration Program (IRP) and provide for early and continuous community involvement in the cleanup process. RFAAP has made a commitment to keep citizens informed and give communities a role in environmental cleanup decisions. RFAAP disseminates information on environmental restoration activities, provides opportunities for comment, and seeks public participation on the IRP Restoration Advisory Board (RAB).

RFAAP and local citizens formed a RAB to provide information and solicit comments and concerns regarding site cleanup activities. The RAB includes members of the local community, representatives from USEPA and Virginia Department of Environmental Quality, and the U.S. Army Environmental Restoration RFAAP Program Manager. Comments to the WPA 15 (URS 2003a) and Soil Screening Report (URS 2004) were received from the USEPA and VDEQ and considered by the U.S. Army, which subsequently revised the reports and responded to comments with the final submitted document.

4.0 SUMMARY AND CONCLUSIONS

The primary objectives of this Site Screening Investigation were to assess the current conditions of soil and calcium sulfate sludge at SWMU 8, specifically, the presence or absence of hazardous constituents in soil and $CaSO_4$ sludge and to assess whether soil and $CaSO_4$ sludge managed during a construction project would be a RCRA hazardous waste.

Soil sampling at SWMU 8 was necessary to properly manage excavated soil that were generated as part of a project to remove and replace the SWMU 8 western lagoon with an engineered tank structure. The Site

Screening Investigation results assisted RFAAP with proper management of the excavated material during removal and construction and prevented the need to sample under the new tank after construction.

Based upon current conditions and the results and conclusions within the Site Screening Report (URS 2004), No Further Action is necessary to ensure protection of human health or the environment. Specifically, pursuant to the results presented in the Soil Screening Report, a RCRA Facility Investigation (RFI) is not required for SWMU 8 per the USEPA RCRA Corrective Action Permit, RFAAP, Part II, Sections D.7.a, and b (USEPA 2000).

5.0 APPROVAL AND SIGNATURE

Approved By:

James J. McKenna
Restoration Program Manager
Radford AAP

07/25/2005
Date

Paige Holt
Acting Environmental Manager
Alliant Ammunition and Powder Company, LLC

7/25/05
Date

Robert G. Thomson
Remedial Project Manager
USEPA Region III

10/16/06
Date

6.0 REFERENCES

Assistant Chief of Staff for Installation Management (ACSIM). 2003. Memorandum from Major General Larry J. Lust: Policies for Staffing and Approving Decision Documents (DDs), dated 09 September 2003.

Defense Environmental Restoration Program (DERP). 2001. Memorandum for Assistant Secretary of the Army: Management Guidance for the Defense Environmental Restoration Program, dated 28 September 2001.

IT Corporation (IT Corp). 2002. Facility-Wide Background Study: Prepared for USACE Baltimore District.

URS Group, Inc. (URS). 2003a. Radford Army Ammunition Plant, Radford, Virginia. Work Plan Addendum 015 Soil Sampling Investigation for SWMUs 8 and 36, Final March 2003. Prepared for U.S. Army Corps of Engineers, Baltimore District.

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URS Group, Inc. (URS). 2004. Radford Army Ammunition Plant, Radford, Virginia. Soil Screening Report SWMUs 8 and 36, Final Document January 2004. Prepared for U.S. Army Corps of Engineers, Baltimore District.

U.S. Army Environmental Center (USAEC). 1998. U.S. Army Environmental Program Guidance Manual.

U.S. Environmental Protection Agency (USEPA). 1995. Region III Draft BTAG Screening Levels. Biological Technical Assistance Group, Region III. August 9, 1995.

U.S. Environmental Protection Agency (USEPA). 2000. Permit for Corrective Action and Waste Minimization: Pursuant to the Resource Conservation and Recovery Act as Amended by the Hazardous and Solid Waste Amendments of 1984, Radford Army Ammunition Plant, Radford, Virginia, VA1210020730.

U.S. Environmental Protection Agency (USEPA). 2003. USEPA Region III Risk-Based Concentration Table. October 15, 2003.

RADFORD ARMY AMMUNITION PLANT, VIRGINIA

Decision Document

SWMU 36: Calcium Sulfate Drying Beds
No Further Action

Final **July 2005**

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1.0 PURPOSE

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SWMU 36 consists of three $CaSO_4$ drying beds (northern, eastern, and southern), each approximately 80 feet wide by 200 feet long. The project objectives of the Soil Screening at SWMU 36 were to:

- Evaluate the presence or absence of hazardous constituents in soil and $CaSO_4$ sludge; and
- Assess soil and $CaSO_4$ sludge to be removed from SWMU 36 during construction activities for RCRA hazardous waste characteristics.

The results of the human health and ecological risk screening indicated that no unacceptable risk is associated with unrestricted reuse of the SWMU 36 area. This assumes a more conservative use of the property than the current or anticipated future land use for SWMU 36 (industrial). Based on no unacceptable risk to human health and the environment, the Army has selected No Further Action as the preferred alternative for SWMU 36. Documents supporting this decision are available to the community in the RFAAP information repository.

2.0 EVALUATION OF SWMU 36 DATA

Presence and Absence of Constituents

Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), and pesticides were detected in one or more discrete samples. Explosives and polychlorinated biphenyls (PCBs) were not detected in discrete samples. Each of the targeted Target Analyte List (TAL) metals was detected in one or more discrete samples. The soil screening indicated the presence of selected constituents.

Human Health Risk Screening

Point comparisons of the discrete soil data to USEPA Region III adjusted Residential Risk-Based Concentrations (R-RBCs), Industrial RBCs (I-RBCs), and RFAAP background did not indicate a potential threat to human health (USEPA 2003, IT Corp 2002). Explosives and PCBs were not detected in discrete samples. Detected VOC, SVOC, PAH, and pesticide constituents were below their respective R-RBCs. Inorganic constituent concentrations were within RFAAP background range or below RBCs.

Ecological Risk Screening

Point comparisons of the discrete VOC, SVOC, PAH, and pesticide/PCB soil data to USEPA Draft Biological Technical Assistance Group (BTAG) Screening Levels did not indicate a potential threat to the environment. Comparisons of the TAL metals data to BTAG Screening Levels indicated the following

constituents of potential ecological concern: antimony, lead, magnesium, mercury, and zinc. This unit is and will remain an engineered treatment unit and is not considered habitat for ecological receptors.

Soil Screening Level Comparison

Chemical concentrations detected in soil samples were compared to USEPA Region III Soil Screening Levels (SSLs) using a dilution attenuation factor of 20 (USEPA 2003). SSL screening indicates minimal risk from migration of chemicals from site soil to groundwater. Results indicate one TAL metal, arsenic, was detected exceeding its SSL. Arsenic exceeded the SSL criterion but at a concentration below its background point estimate. Chloroform was detected in one sample at a concentration of 2 µg/kg (J-flagged value), slightly exceeding the SSL of 0.91 µg/kg.

3.0 COMMUNITY RELATIONS RESPONSIVENESS SUMMARY

A community relations plan has been developed for RFAAP that establishes an effective program to inform the community of the RFAAP Installation Restoration Program (IRP) and provide for early and continuous community involvement in the cleanup process. RFAAP has made a commitment to keep citizens informed and give communities a role in environmental cleanup decisions. RFAAP disseminates information on environmental restoration activities, provides opportunities for comment, and seeks public participation on the IRP Restoration Advisory Board (RAB).

RFAAP and local citizens formed a RAB to provide information and solicit comments and concerns regarding site cleanup activities. The RAB includes members of the local community, representatives from USEPA and Virginia Department of Environmental Quality, and the U.S. Army Environmental Restoration RFAAP Program Manager. Comments to the WPA 15 (URS 2003a) and Soil Screening Report (URS 2004) were received from the USEPA and VDEQ and considered by the U.S. Army, which subsequently revised the reports and responded to comments with the final submitted document.

4.0 SUMMARY AND CONCLUSIONS

The primary objectives of this Soil Screening Investigation were to assess the current conditions of soil and $CaSO_4$ sludge at SWMU 36, specifically, the presence or absence of hazardous constituents in soil and $CaSO_4$ sludge and to assess whether soil and $CaSO_4$ sludge managed during a construction project would be a RCRA hazardous waste.

Soil sampling at SWMU 36 was necessary to properly manage excavated soil that would be generated as part of a project to replace the SWMU 36 drying beds with engineered structures. The Soil Screening Investigation results will assist RFAAP with proper management of the excavated material during possible future construction and prevent the need to sample under the structure(s) after construction completion.

Based upon current conditions and the results and conclusions within the Soil Screening Report (URS 2004), No Further Action is necessary to ensure protection of human health or the environment. Specifically, pursuant to the results presented in this report, a RCRA Facility Investigation is not required for SWMU 36 per the USEPA RCRA Corrective Action Permit, RFAAP, Part II, Sections D.7.a, and b (USEPA 2000).

5.0 APPROVAL AND SIGNATURE

Approved By:

James J. McKenna
Restoration Program Manager
Radford AAP

07/25/2005
Date

Paige Holt
Acting Environmental Manager
Alliant Ammunition and Powder Company, LLC

7/25/2005
Date

Robert G. Thomson
Remedial Project Manager
USEPA Region III

10/16/06
Date

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U.S. Environmental Protection Agency (USEPA). 2003. USEPA Region III Risk-Based Concentration Table. October 15, 2003.

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-REH

25 AUG 2005

MEMORANDUM FOR Office of Environmental Quality (SJMRF-OP-EQ/Mr. Jim McKenna), Radford Army Ammunition Plant, P.O. Box 2, Radford, VA 24143-0002

SUBJECT: Review of the Decision Documents (DDs) for SWMU-8, Calcium Sulfate Treatment/Disposal Area and SWMU-36, Calcium Sulfate Drying Beds, Radford Army Ammunition Plant, Virginia, July 2005

1. The U.S. Army Center for Health Promotion and Preventive Medicine reviewed the subject DDs on behalf of the Office of The Surgeon General pursuant to Army Regulation 200-1 (Environmental Protection and Enhancement). Thank you for the opportunity to review these documents.

2. The selection of No Further Action for these sites will be protective of human health and the environment.

3. The DDs were reviewed by Mr. Dennis Druck, Environmental Health Risk Assessment Program. He can be reached at DSN 584-2953, commercial (410) 436-2953 or electronic mail "dennis.druck@us.army.mil".

FOR THE COMMANDER:

JACK M. HELLER, Ph.D.
Director, Health Risk Management

CF:
HQDA (DASG-HS-PE)
IMA, NERO (IMNE-PWD-E)
USACE (CENWO-HX-H)
USAEC (SFIM-AEC-CD/Mr. Tony Perry)

Printed on Recycled Paper

Radford Army Ammunition Plant
Route 114, P.O. Box 1
Radford, VA 24143-0100
USA

July 25, 2005

Mr. Robert Thomson
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: Decision Document, SWMU 8 Calcium Sulfate Settling Lagoon - No Further Action, Final July 2005
Radford Army Ammunition Plant
EPA ID# VA1 2100020730

Dear Mr. Thomson:

Enclosed are three copies of the subject Decision Documents per Part II, D.4 of the RCRA Corrective Action permit. This document has been prepared as a summary discussion of the assessments and evaluations performed in the Soil Screening Report, SWMUs 8 and 36 Final Document, January 2004 that supports the conclusion of no further action. EPA approved the Soil Screening Report on May 3, 2004.

Please coordinate with and provide any questions or comments to myself at (540) 639-8266, Jerry Redder of my staff (540) 639-7536 or Jim McKenna, ACO Staff (540) 639-8641.

Sincerely,

Paige M. Holt

Paige Holt, Acting Environmental Manager
Alliant Ammunition and Powder Company LLC

Enclosure

c: Russell Fish, P.E., EPA Region III

Jim Cutler
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240-0009

Durwood Willis
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240-0009

E. A. Lohman
Virginia Department of Environmental Quality
West Central Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

05-815-138
JMcKenna/JJRedder

946

Tony Perry
U.S. Army Environmental Center
5179 Hoadley Road, Attn: SFIM-AEC-CDN
Aberdeen Proving Ground, MD 21010-5401

Karen Colmie Heckelman
U.S. Army Environmental Center, Office of Counsel
Beal Road, Bldg E4460
Aberdeen Proving Ground, MD 21010-5401

Dennis Druck
U.S. Army Center for Health Promotion and Preventive Medicine
5158 Blackhawk Road, Attn: MCHB-TS-REH
Aberdeen Proving Ground, MD 21010-5403

Steve Wood
Corps of Engineers, Baltimore District
ATTN: CENAB-EN-HM
10 South Howard Street
Baltimore, MD 21201

Coordination: J. McKenna

bc: Administrative File
J. McKenna, ACO Staff
Rob Davie-ACO Staff
P. W. Holt
J. J. Redder
Env. File

05-815-138
JMcKenna/JJRedder

Concerning the following:

Decision Document,
SWMU 8: Calcium Sulfate Settling Lagoon
Final July 2005
Radford Army Ammunition Plant

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

SIGNATURE: _____
PRINTED NAME: Ronald F. Fizer
TITLE: Lieutenant Colonel, US Army
Commanding Officer

SIGNATURE: _____
PRINTED NAME: K. D. Dolph
TITLE: Vice President Operations
Alliant Ammunition and Powder Company, LLC

05-815-138
JMcKenna/JJRedder

RADFORD ARMY AMMUNITION PLANT, VIRGINIA

Decision Document

SWMU 8: Calcium Sulfate Treatment/Disposal Area
No Further Action

Final **July 2005**

1.0 PURPOSE

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was detected in the associated subsurface soil sample 8SB3C but at a concentration below its Facility-wide background point estimate. Potential human health risk in the area of 8SB3A is unlikely since surface soil in this area has been removed as part of the current construction activities at SWMU 8.

Ecological Risk Screening

Point comparisons of the discrete VOC, SVOC, PAH, and pesticide/PCB soil data to USEPA Draft Biological Technical Assistance Group (BTAG) Screening Levels (USEPA 1995) did not indicate a potential threat to the environment. Comparisons of the TAL metals data to BTAG Screening Levels indicated the following constituents of potential ecological concern: antimony, lead, magnesium, manganese, selenium, and silver. Potential ecological risk in the SWMU 8 area related to inorganic constituents is low since source material in sampled areas was removed as part of construction activities. Furthermore, this unit is and will remain an engineered process support unit and as such is not considered habitat for ecological receptors.

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Screening Investigation results assisted RFAAP with proper management of the excavated material during removal and construction and prevented the need to sample under the new tank after construction.

Based upon current conditions and the results and conclusions within the Site Screening Report (URS 2004), No Further Action is necessary to ensure protection of human health or the environment. Specifically, pursuant to the results presented in the Soil Screening Report, a RCRA Facility Investigation (RFI) is not required for SWMU 8 per the USEPA RCRA Corrective Action Permit, RFAAP, Part II, Sections D.7.a, and b (USEPA 2000).

5.0 APPROVAL AND SIGNATURE

Approved By:

James J. McKenna — Date: 07/25/2005
Restoration Program Manager
Radford AAP

Paige Holt — Date: 7/25/05
Acting Environmental Manager
Alliant Ammunition and Powder Company, LLC

Robert G. Thomson — Date
Remedial Project Manager
USEPA Region III

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Defense Environmental Restoration Program (DERP). 2001. Memorandum for Assistant Secretary of the Army: Management Guidance for the Defense Environmental Restoration Program, dated 28 September 2001.

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URS Group, Inc. (URS). 2003a. Radford Army Ammunition Plant, Radford, Virginia. Work Plan Addendum 015 Soil Sampling Investigation for SWMUs 8 and 36, Final March 2003. Prepared for U.S. Army Corps of Engineers, Baltimore District.

URS Group, Inc. (URS). 2003b. Radford Army Ammunition Plant, Radford, Virginia. Final Master Work Plan, August 2004. Prepared for U.S. Army Corps of Engineers, Baltimore District.

URS Group, Inc. (URS). 2004. Radford Army Ammunition Plant, Radford, Virginia. Soil Screening Report SWMUs 8 and 36, Final Document January 2004. Prepared for U.S. Army Corps of Engineers, Baltimore District.

U.S. Army Environmental Center (USAEC). 1998. U.S. Army Environmental Program Guidance Manual.

U.S. Environmental Protection Agency (USEPA). 1995. Region III Draft BTAG Screening Levels. Biological Technical Assistance Group, Region III. August 9, 1995.

U.S. Environmental Protection Agency (USEPA). 2000. Permit for Corrective Action and Waste Minimization: Pursuant to the Resource Conservation and Recovery Act as Amended by the Hazardous and Solid Waste Amendments of 1984, Radford Army Ammunition Plant, Radford, Virginia, VA1210020730.

U.S. Environmental Protection Agency (USEPA). 2003. USEPA Region III Risk-Based Concentration Table. October 15, 2003.

Radford Army Ammunition Plant
Route 114, P.O. Box 1
Radford, VA 24143-0100
USA

July 25, 2005

Mr. Robert Thomson
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: Decision Document, SWMU 36 Calcium Sulfate Drying Beds - No Further Action, Final July 2005
Radford Army Ammunition Plant
EPA ID# VA1 210020730

Dear Mr. Thomson:

Enclosed are three copies of the subject Decision Document per Part II, D.4 of the RCRA Corrective Action permit. This document has been prepared as a summary discussion of the assessments and evaluations performed in the Soil Screening Report, SWMUs 8 and 36 Final Document, January 2004 that supports the conclusion of no further action. EPA approved the Soil Screening Report on May 3, 2004.

Please coordinate with and provide any questions or comments to myself at (540) 639-8266, Jerry Redder of my staff (540) 639-7536 or Jim McKenna, ACO Staff (540) 639-8641.

Sincerely,

Paige M. Holt

Paige Holt, Acting Environmental Manager
Alliant Ammunition and Powder Company LLC

Enclosure

c: Russell Fish, P.E., EPA Region III

Jim Cutler
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240-0009

Durwood Willis
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240-0009

E. A. Lohman
Virginia Department of Environmental Quality
West Central Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

05-815-139
JMcKenna/JJRedder

284

Tony Perry
U.S. Army Environmental Center
5179 Hoadley Road, Attn: SFIM-AEC-CDN
Aberdeen Proving Ground, MD 21010-5401

Karen Colmie Heckelman
U.S. Army Environmental Center, Office of Counsel
Beal Road, Bldg E4460
Aberdeen Proving Ground, MD 21010-5401

Dennis Druck
U.S. Army Center for Health Promotion and Preventive Medicine
5158 Blackhawk Road, Attn: MCHB-TS-REH
Aberdeen Proving Ground, MD 21010-5403

Steve Wood
Corps of Engineers, Baltimore District
ATTN: CENAB-EN-HM
10 South Howard Street
Baltimore, MD 21201

Coordination: J. McKenna

bc: Administrative File
J. McKenna, ACO Staff
Rob Davie-ACO Staff
P. W. Holt
J. J. Redder
Env. File

05-815-139
JMcKenna/JJRedder

Concerning the following:

Decision Document,
SWMU 36: Calcium Sulfate Drying Beds
Final July 2005
Radford Army Ammunition Plant

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

SIGNATURE: _____
PRINTED NAME: Ronald F. Fizer
TITLE: Lieutenant Colonel, US Army
Commanding Officer

SIGNATURE: _____
PRINTED NAME: K. D. Dolph
TITLE: Vice President Operations
Alliant Ammunition and Powder Company, LLC

05 - 0-139
JMcKenna/JJRedder

RADFORD ARMY AMMUNITION PLANT, VIRGINIA

Decision Document

SWMU 36: Calcium Sulfate Drying Beds
No Further Action

Final **July 2005**

SWMU 36
DECISION DOCUMENT
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1.0 PURPOSE

This Decision Document (DD) is prepared in accordance with the Assistant Chief of Staff for Installation Management (ACSIM) memorandum (ACSIM 2003) detailing policies for staffing and approving DDs, Defense Environmental Restoration Program (DERP) management guidance (DERP 2001), and the Radford Army Ammunition Plant (RFAAP) Resource Conservation and Recovery Act (RCRA) Permit, Part II section D (4) (USEPA 2000) (EPA ID No. VA1210020730). This DD describes the selection of No Further Action for Solid Waste Management Unit (SWMU) 36 - the "Calcium Sulfate ($CaSO_4$) Drying Beds." No Further Action was selected in accordance with the 1976 RCRA, the Hazardous and Solid Waste Amendments of 1984 (HSWA), the RFAAP RCRA Permit requirements (USEPA 2000), and the Final RCRA Corrective Action Plan (USEPA, 1994), as applicable. This task effort was performed in accordance with Work Plan Addendum (WPA) 015 Soil Sampling Investigation for SWMUs 8 and 36, Final March 2003 (URS 2003a), which incorporated by reference, the elements of the RFAAP Master Work Plan (MWP; URS 2003b). The data screening assessments and evaluations are contained in the Soil Screening Report, SWMUs 8 and 36, Final Document January 2004 (URS 2004) and serves as the basis for this DD.

SWMU 36 consists of three $CaSO_4$ drying beds (northern, eastern, and southern), each approximately 80 feet wide by 200 feet long. The project objectives of the Soil Screening at SWMU 36 were to:

- Evaluate the presence or absence of hazardous constituents in soil and $CaSO_4$ sludge; and
- Assess soil and $CaSO_4$ sludge to be removed from SWMU 36 during construction activities for RCRA hazardous waste characteristics.

The results of the human health and ecological risk screening indicated that no unacceptable risk is associated with unrestricted reuse of the SWMU 36 area. This assumes a more conservative use of the property than the current or anticipated future land use for SWMU 36 (industrial). Based on no unacceptable risk to human health and the environment, the Army has selected No Further Action as the preferred alternative for SWMU 36. Documents supporting this decision are available to the community in the RFAAP information repository.

2.0 EVALUATION OF SWMU 36 DATA

Presence and Absence of Constituents

Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), and pesticides were detected in one or more discrete samples. Explosives and polychlorinated biphenyls (PCBs) were not detected in discrete samples. Each of the targeted Target Analyte List (TAL) metals was detected in one or more discrete samples. The soil screening indicated the presence of selected constituents.

Human Health Risk Screening

Point comparisons of the discrete soil data to USEPA Region III adjusted Residential Risk-Based Concentrations (R-RBCs), Industrial RBCs (I-RBCs), and RFAAP background did not indicate a potential threat to human health (USEPA 2003, IT Corp 2002). Explosives and PCBs were not detected in discrete samples. Detected VOC, SVOC, PAH, and pesticide constituents were below their respective R-RBCs. Inorganic constituent concentrations were within RFAAP background range or below RBCs.

Ecological Risk Screening

Point comparisons of the discrete VOC, SVOC, PAH, and pesticide/PCB soil data to USEPA Draft Biological Technical Assistance Group (BTAG) Screening Levels did not indicate a potential threat to the environment. Comparisons of the TAL metals data to BTAG Screening Levels indicated the following

constituents of potential ecological concern: antimony, lead, magnesium, mercury, and zinc. This unit is and will remain an engineered treatment unit and is not considered habitat for ecological receptors.

Soil Screening Level Comparison

Chemical concentrations detected in soil samples were compared to USEPA Region III Soil Screening Levels (SSLs) using a dilution attenuation factor of 20 (USEPA 2003). SSL screening indicates minimal risk from migration of chemicals from site soil to groundwater. Results indicate one TAL metal, arsenic, was detected exceeding its SSL. Arsenic exceeded the SSL criterion but at a concentration below its background point estimate. Chloroform was detected in one sample at a concentration of 2 µg/kg (J-flagged value), slightly exceeding the SSL of 0.91 µg/kg.

3.0 COMMUNITY RELATIONS RESPONSIVENESS SUMMARY

A community relations plan has been developed for RFAAP that establishes an effective program to inform the community of the RFAAP Installation Restoration Program (IRP) and provide for early and continuous community involvement in the cleanup process. RFAAP has made a commitment to keep citizens informed and give communities a role in environmental cleanup decisions. RFAAP disseminates information on environmental restoration activities, provides opportunities for comment, and seeks public participation on the IRP Restoration Advisory Board (RAB).

RFAAP and local citizens formed a RAB to provide information and solicit comments and concerns regarding site cleanup activities. The RAB includes members of the local community, representatives from USEPA and Virginia Department of Environmental Quality, and the U.S. Army Environmental Restoration RFAAP Program Manager. Comments to the WPA 15 (URS 2003a) and Soil Screening Report (URS 2004) were received from the USEPA and VDEQ and considered by the U.S. Army, which subsequently revised the reports and responded to comments with the final submitted document.

4.0 SUMMARY AND CONCLUSIONS

The primary objectives of this Soil Screening Investigation were to assess the current conditions of soil and $CaSO_4$ sludge at SWMU 36, specifically, the presence or absence of hazardous constituents in soil and $CaSO_4$ sludge and to assess whether soil and $CaSO_4$ sludge managed during a construction project would be a RCRA hazardous waste.

Soil sampling at SWMU 36 was necessary to properly manage excavated soil that would be generated as part of a project to replace the SWMU 36 drying beds with engineered structures. The Soil Screening Investigation results will assist RFAAP with proper management of the excavated material during possible future construction and prevent the need to sample under the structure(s) after construction completion.

Based upon current conditions and the results and conclusions within the Soil Screening Report (URS 2004), No Further Action is necessary to ensure protection of human health or the environment. Specifically, pursuant to the results presented in this report, a RCRA Facility Investigation is not required for SWMU 36 per the USEPA RCRA Corrective Action Permit, RFAAP, Part II, Sections D.7.a, and b (USEPA 2000).

060

5.0 APPROVAL AND SIGNATURE

Approved By:

James J. McKenna
Restoration Program Manager
Radford AAP

07/25/2005
Date

Paige Holt
Acting Environmental Manager
Alliant Ammunition and Powder Company, LLC

7/25/2005
Date

Robert G. Thomson
Remedial Project Manager
USEPA Region III

Date

6.0 REFERENCES

Assistant Chief of Staff for Installation Management (ACSIM). 2003. Memorandum from Major General Larry J. Lust: Policies for Staffing and Approving Decision Documents (DDs), dated 09 September 2003.

Defense Environmental Restoration Program (DERP). 2001. Memorandum for Assistant Secretary of the Army: Management Guidance for the Defense Environmental Restoration Program, dated 28 September 2001.

IT Corporation (IT Corp). 2002. Facility-Wide Background Study: Prepared for USACE Baltimore District.

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U.S. Army Environmental Center (USAEC). 1998. U.S. Army Environmental Program Guidance Manual.

U.S. Environmental Protection Agency (USEPA). 1995. Region III Draft BTAG Screening Levels. Biological Technical Assistance Group, Region III. August 9, 1995.

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U.S. Environmental Protection Agency (USEPA). 2003. USEPA Region III Risk-Based Concentration Table. October 15, 2003.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

May 3, 2004

In reply
Refer to 3HS13

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commander,
Radford Army Ammunition Plant
Attn: SIORF-SE-EQ (Jim McKenna)
P.O. Box 2
Radford, VA 24141-0099

C.A. Jake
Environmental Manager
Alliant Techsystems, Inc.
Radford Army Ammunition Plant
P.O. Box 1
Radford, VA 24141-0100

Re: Radford Army Ammunition Plant
SWMUs 8 and 36
Draft *Soil Screening Report*
Review of the Army's 2/6/04 response to EPA's 12/11/03 comment letter

Dear Mr. McKenna and Ms. Jake:

The U.S. Environmental Protection Agency (EPA) has reviewed the Army's February 6, 2004 response to EPA's December 11, 2003 letter concerning the review of the Army's draft *Soil Screening Report* for SWMUs 8 and 36, located at the Radford Army Ammunition Plant (RFAAP). Outlined below, please find EPA's comments based upon that review:

EPA General Comment 2

2. As concluded in Section 5.0 of the Report, the soil screening at Solid Waste Management Units (SWMUs) 8 and 36 indicated the presence of "selected targeted constituents." However, it is concluded in this section that "point comparisons of the discrete data to Residential RBCs [risk-based concentrations], Industrial RBCs, and

RFAAP background did not indicate a potential to human health." There are potential flaws in this conclusion, among them:

- The screening process was not completed in accordance with the RFAAP *Site Screening Process* (SSP [October 26, 2001]). At this stage, the chemicals of potential concern (COPCs) should have been identified (COPC identification step in Section 6.1.1.1 of the SSP). Based on the data presented in the report, it appears manganese, lead, mercury, zinc, and antimony are the COPCs.

RFAAP Response

In order to achieve the project objectives of assessing for the presence or absence of hazardous constituents in soil and characterizing site materials for RCRA characteristics, particular elements enumerated in the RFAAP SSP were used to perform qualitative risk screening for the SWMUs 8 and 36 Soil Screening. There was no intent within the Report to identify COPCs for purposes of conducting an RFI risk assessment, thus the screening process for SWMUs 8 and 36 did not follow every element within the SSP developed at RFAAP for Site Screening Areas.

EPA review

Please note that the SSP, as envisioned, is not conducive towards the elimination of process steps within the SSP. It is not a "pick and choose" methodology. Either the SSP process is followed or it isn't. In the future, please follow the SSP process. The central questions that need to be answered BY THIS REPORT are: (a) which soil constituents failed the residential soil screening criteria and are above background values; (b) which soil constituents failed the industrial soil screening criteria and are above background values; (c) which soil constituents failed the BTAG soil screening criteria and are above background values; and (d) what soil constituents failed the SSL soil screening criteria and are above background values. The Report generally answers these questions, but not in a direct approach. Additionally, in the future, please differentiate between those soil constituents which exceed the residential RBC and background and those soil constituents which exceed the industrial RBC and background values. This is important in determining whether or not the site will need long-term monitoring, i.e. whether waste is left in-place. The conclusions section of the report should address this in future SSP documents.

EPA General Comment 2 continued

- No cumulative risk screening was conducted in accordance with the SSP. This evaluation includes uncertainty analysis of the cumulative risk screening. As the vertical and horizontal extent of contamination of all the chemicals detected in soil is not fully characterized, whether the data generated from this soil screening is sufficient to conduct a cumulative risk assessment will also need to be demonstrated.

RFAAP Response

The objectives of the Soil Screening did not include full characterization of the site for completion of a cumulative risk assessment. Characterization of the site, if necessary, will take place at some time after treatment activities cease at these locations.

EPA review

It is important to note that defining the full nature and extent of contamination is NOT part of the SSP, but is the function of the RFI. The uncertainty section of the SSP basically acknowledges this. The function of the SSP is to determine whether or not there has been a release at the site. To accomplish this, a proposed number of samples contained in an approved Work Plan is sufficient. Thus, the central questions that need to be answered revolve around (a) which soil constituents failed the residential soil screening criteria and are above background values; (b) which soil constituents failed the industrial soil screening criteria and are above background values; (c) which soil constituents failed the BTAG soil screening criteria and are above background values; and (d) what soil constituents failed the SSL soil screening criteria and are above background values. Defining nature and extent is left to the RFI phase, if needed.

EPA General Comment 2 continued

• Some potential exposure pathways were not evaluated. According to the conceptual site models (CSMs) presented in Figures 2-4 and 2-5, the potential impact from soil to groundwater and eventually surface water exists. However, the Report does not evaluate chemical migration of contaminants from soil to groundwater as required by the SSP. The SSP requires use of USEPA's *Soil Screening Guidance* (USEPA, 1996) as a source of information when conducting comparison to soil screening levels (SSLs). The Report did not compare soil concentrations to the USEPA Region 3 SSLs listed on the RBC Table. Based on the data provided in the Report, several metals (e.g., arsenic, chromium, manganese, vanadium, etc.) exceed their respective SSLs at dilution attenuation factor (DAF) 20.

RFAAP Response

The report will be revised to include a comparison of soil concentrations to the USEPA Region 3 soil to groundwater SSLs at DAF 20 listed on the most recent RBC Table.

EPA review

The Army's response is acceptable. However, in the future, please include the SSL screening in the text of the screening section of the report. Please note that the SSL screening was not discussed in Section 4 of the report.

EPA comment 2 continued

• In the Summary (Section 4.4) of the Report, only those metals with concentrations exceeding both the RBCs and the background concentrations are noted. Other metals that exceeded one or more screening criteria are dismissed

because their concentrations did not exceed the site background values. The risk conclusions, thus, consider only those metals noted in Section 4.4. At this stage, it appears inappropriate to eliminate metals from the risk assessment based solely on a comparison to background or ambient levels. In order to provide a more complete characterization of potential risks associated with exposures at the site, metals that exceed risk-based screening concentrations should not be excluded from quantitative consideration in the risk assessment. The contribution to the overall risk due to metals with high background concentrations should be presented in a risk characterization (EPA. 2002. *Role of Background in the CERCLA Cleanup Process.* Office of Solid Waste and Emergency Response. OSWER 9285.6-0P. April 26).

RFAAP Response

Per previous agreement with USEPA, investigations performed prior to WPA 016 would be allowed to screen out COPCs based on background comparison. Work at SWMUs 8 and 36 was performed under WPA 015. Also, please refer to the response to specific USEPA cornment 18 below regarding the presentation of data for constituents exceeding relevant screening criteria but not their inorganic constituent background point estimates.

EPA review

The Army's response is acceptable.

This concludes EPA's review of the Army's February 6, 2004 response to EPA's December 11, 2003 letter concerning the review of the Army's draft *Soil Screening Report* for SWMUs 8 and 36, located at the RFAAP. All Army responses to EPA's December 11, 2003 letter were determined to be acceptable. The above comments reflect a need for refinement in the submittal of SSP documents in the future.

Based upon our review, the January, 2004 *Soil Screening Report* for SWMUs 8 and 36 is approved. In accordance with Part II.(G)(2) of RFAAP's Corrective Action Permit, the January, 2004 *Soil Screening Report* for SWMUs 8 and 36 is now considered final.

Based upon the above, please submit a draft *SWMU Decision Document* for SWMU 8 and 36, separately, to EPA for review. Please bear in mind the comments outlined above when preparing the text of the draft *SWMU Decision Documents.*

If you have any questions, please call me at 215-814-3357.

Sincerely,

Robert Thomson, PE
Federal Facilities Branch

cc: Russell Fish, EPA
Leslie Romanchik, VDEQ-RCRA

Radford Army Ammunition Plant
Route 114, P.O. Box 1
Radford, VA 24143-0100
USA

February 6, 2004

Mr. Robert Thomson
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: Soil Screening Report, SWMUs 8 and 36, Final, January 2004
Radford Army Ammunition Plant
EPA ID# VA1 210020730

Dear Mr. Thomson:

Enclosed is one certified copy of Soil Screening Report, SWMUs 8 and 36, Final, January 2004 Radford Army Ammunition Plant for your review and comment or approval. Your additional three copies will be sent under separate cover as well as additional copies to the Virginia Department of Environmental Quality (VDEQ), U.S. Army Environmental Center, U.S. Army Center for Health Promotion and Preventive Medicine.

Attached are our responses to your comments dated December 11, 2003. This report replaces any previous report and/or findings for SWMUs 8 and 36. Based on the findings in this report, we believe no further action is necessary at SWMUs 8 and 36 under the RCRA Correction Action permit.

Please coordinate with and provide any questions or comments to myself at (540) 639-8266, Jerry Redder of my staff (540) 639-7536 or Jim McKenna, ACO Staff (540) 639-8641.

Sincerely,

C. A. Jake, Environmental Manager
Alliant Ammunition and Powder Company, LLC

Enclosure

c: w/o enclosure

Russell Fish, P.E., EPA Region III

w/ enclosure

Durwood Willis
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240-0009

Mark Leeper
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240-0009

04-815-14
JMcKenna/JJRedder

907

E. A. Lohman
Virginia Department of Environmental Quality
West Central Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

Tony Perry
U.S. Army Environmental Center
5179 Hoadley Road, Attn: SFIM-AEC-ERP
Aberdeen Proving Ground, MD 21010-5401

Katie Watson
Engineering & Environment, Inc.
7927 Camberley Drive
Powell, TN 37849

Dennis Druck
U.S. Army Center for Health Promotion and Preventive Medicine
5158 Blackhawk Road, Attn: MCHB-TS-HER
Aberdeen Proving Ground, MD 21010-5403

John Tesner
Corps of Engineers, Baltimore District
ATTN: CENAB-EN-HM
10 South Howard Street
Baltimore, MD 21201

Coordination: J. McKenna

bc: Administrative File
J. McKenna, ACO Staff
Rob Davie-ACO Staff
C. A. Jake
J. J. Redder
Env. File

04-815-14
JMcKenna/JJRedder

Concerning the following:

Soil Screening Report SWMUs 8 and 36, Final
January 2004
Radford Army Ammunition Plant

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

SIGNATURE:
PRINTED NAME: Anthony R. Skinner
TITLE: LTC, CM, Commanding
Radford AAP

SIGNATURE:
PRINTED NAME: Anthony Miano
TITLE: Vice President Operations
Alliant Ammunition and Powder Company, LLC

04-815-14
JMcKenna/JJRedder

Response to USEPA Comments Dated 11 December 2003
for
Draft Soil Screening Report
SWMUs 8 and 36
August 2003

General Response

The primary objectives of this Soil Screening Investigation were to assess the current condition of soil and calcium sulfate sludge at Solid Waste Management Units (SWMUs) 8 and 36, specifically, the presence or absence of hazardous constituents in soil and calcium sulfate sludge and to assess whether soil and calcium sulfate sludge managed during a construction project would be a Resource Conservation and Recovery Act (RCRA) hazardous waste. These SWMUs are active and are expected to remain that way for some time therefore further investigation and any associated action may occur at a future time when treatment activities cease. As both SWMUs 8 and 36 are ineligible for Army restoration program funding, funding for this investigation was secured in conjunction with and to support a construction project. This construction project is to replace the remaining western SWMU 8 lagoon and the SWMU 36 drying beds with new engineered structures performing the same treatment activity. This Soil Screening Report provides information and data for SWMUs 8 and 36 that gives insight into the nature of the material that is present (i.e., non-hazardous solid waste) as well as the qualitative nature of the site subsequent to construction activity.

GENERAL COMMENTS

EPA Comment 1:
Throughout Section 4.0 of the Report, it is stated that a background range has not been established for thallium at RFAAP. However, in the RFAAP Final *Facility-Wide Background Study Report* (December 2001) a range of 1.3 to 5 milligrams per kilogram (mg/kg) and a 95% upper tolerance limit (UTL) of 2.11 mg/kg are specified for thallium. In addition, Table 4-1 lists the Facility-Wide Background Point Estimate for thallium as 2.11 mg/kg. Please revise the Report to correct this issue involving thallium, especially in Section 4.

RFAAP Response
The Report will be revised to include a comparison of thallium sample analytical results with its established Facility-Wide Background Point Estimate.

EPA Comment 2:
As concluded in Section 5.0 of the Report, the soil screening at SWMUs 8 and 36 indicated the presence of "selected targeted constituents." However, it is concluded in this section that "point comparisons of the discrete data to Residential RBCs [(risk-based concentrations)], Industrial RBCs, and RFAAP background did not indicate a potential to human health." There are potential flaws in this conclusion, among them:

- The screening process was not completed in accordance with the RFAAP *Site Screening Process* (SSP [October 26, 2001]). At this stage, the chemicals of potential concern (COPCs) should have been identified (COPC identification step in Section 6.1.1.1 of the SSP). Based on the data presented in the report, it appears manganese, lead, mercury, zinc, and antimony are the COPCs.

  RFAAP Response
  In order to achieve the project objectives of assessing for the presence or absence of hazardous constituents in soil and characterizing site materials for RCRA characteristics, particular elements enumerated in the RFAAP SSP were used to perform qualitative risk screening for the SWMUs 8 and 36 Soil Screening. There was no intent within the Report to identify COPCs for purposes of conducting an RFI risk assessment, thus the screening process for SWMUs 8 and 36 did not follow every element within the SSP developed at RFAAP for Site Screening Areas.

- No cumulative risk screening was conducted in accordance with the SSP. This evaluation includes uncertainty analysis of the cumulative risk screening. As the vertical and horizontal extent of contamination of all the chemicals detected in soil is not fully characterized, whether the data generated from this soil screening is sufficient to conduct a cumulative risk assessment will also need to be demonstrated.

  RFAAP Response
  The objectives of the Soil Screening did not include full characterization of the site for completion of a cumulative risk assessment. Characterization of the site, if necessary, will take place at some time after treatment activities cease at these locations.

- Some potential exposure pathways were not evaluated. According to the conceptual site models (CSMs) presented in Figures 2-4 and 2-5, the potential impact from soil to groundwater and eventually surface water exists. However, the Report does not evaluate chemical migration of contaminants from soil to groundwater as required by the SSP. The SSP requires use of USEPA's *Soil Screening Guidance* (USEPA, 1996) as a source of information when conducting comparison to soil screening levels (SSLs). The Report did not compare soil concentrations to the USEPA Region 3 SSLs listed on the RBC Table. Based on the data provided in the Report, several metals (e.g., arsenic, chromium, manganese, vanadium, etc.) exceed their respective SSLs at dilution attenuation factor (DAF) 20.

  RFAAP Response
  The report will be revised to include a comparison of soil concentrations to the USEPA Region 3 soil to groundwater SSLs at DAF 20 listed on the most recent RBC Table.

- In the Summary (Section 4.4) of the Report, only those metals with concentrations exceeding both the RBCs and the background concentrations are noted. Other metals that exceeded one or more screening criteria are dismissed because their concentrations did not exceed the site background values. The risk conclusions, thus, consider only those

metals noted in Section 4.4. At this stage, it appears inappropriate to eliminate metals from the risk assessment based solely on a comparison to background or ambient levels. In order to provide a more complete characterization of potential risks associated with exposures at the site, metals that exceed risk-based screening concentrations should not be excluded from quantitative consideration in the risk assessment. The contribution to the overall risk due to metals with high background concentrations should be presented in a risk characterization (EPA. 2002. *Role of Background in the CERCLA Cleanup Process*. Office of Solid Waste and Emergency Response. OSWER 9285.6-0P.).

RFAAP Response
Per previous agreement with USEPA, investigations performed prior to WPA 016 would be allowed to screen out COPCs based on background comparison. Work at SWMUs 8 and 36 was performed under WPA 015. Also, please refer to the response to specific USEPA comment 18 below regarding the presentation of data for constituents exceeding relevant screening criteria but not their inorganic constituent background point estimates.

Please revise the Report to remove the premature conclusions stated in Section 5.0 regarding risk to human health and address the issues listed above.

RFAAP Response
In addition to the responses included above, the report will be revised to refine the conclusions presented in Section 5.0 regarding risk to human health.

EPA Comment 3:
The Report identifies the COPCs for ecological receptors as antimony, magnesium, manganese, mercury, lead, selenium, [thallium,] and zinc. However, it concludes that "potential residual [ecological] risk in the SWMUs 8 and 36 areas related to inorganic constituents is likely low since residual material in the sampled areas will be excavated as part of future construction activities." This determination can only be made after the determination of the horizontal and vertical extent of contamination at the SWMUs and after data generated from post-excavation confirmation sampling are evaluated. Please remove this statement from the report and provide additional investigation and remedial actions necessary to remove risk to ecological receptors. The same situation would apply if one was conducting a remedial action at a site.

RFAAP Response
The general qualitative statement in Section 5.0 supposing "potential residual risk ... is likely low since residual material in the sampled areas will be excavated as part of future construction activities" is considered accurate given the data presented in this report. A definitive assessment of these SWMUs will not occur until treatment activity is no longer performed at the locations.

EPA Comment 4:
Some of the comparisons required by the screening procedure of the SSP were not conducted. These include the EPA Region 3 SSLs. Please revise the text of the Report and tables to

compare all the available data to the EPA Region 3 SSLs at DAF 20 and revise any conclusion drawn from the current comparisons accordingly.

RFAAP Response
The report will be revised to include a comparison of soil concentrations to the USEPA Region 3 soil to groundwater SSLs at DAF 20 listed on the most recent RBC Table.

EPA Comment 5:
The detection limits for the sampling data presented in the Report are not clearly indicated in the tables. The SSP requires, to the greatest extent practicable, that the analytical reporting limits (RLs) should be ensured not to exceed the screening levels the resulting data will be compared to. Please revise the Report to include the detection limits of all constituents analyzed for within the text or summary tables of the report and discuss the RLs that do not comply with the SSP requirement (e.g. detection limits for the polynuclear aromatic hydrocarbons).

RFAAP Response
Since the reporting limits are based upon variable sample characteristics that were unknown during work plan development (i.e., dilutions, sample volumes, percent solids), the reporting limits (RLs) were used for comparison in WPA 015's Quality Assurance Plan to ensure that the analytical reporting limits did not exceed the screening criteria (to the greatest extent practicable). The RLs represented the levels of quantitation at 1x dilution, standard sample size, and 100% solids. There were limited cases where proposed USEPA methodology resulted in actual sample RLs that were not sufficiently sensitive to compare with the screening criteria. Method selection for WPA 015 was based upon a variety of factors that included the Quality Assurance Plan (QAP) scope, comparability, sensitivity, and technical factors.

The Soil Screening Report discusses those RLs that were insensitive to the relevant screening criteria in Appendix F, *Quality Control Evaluation and Data Validation Reports*. Specifically, Section F.1.2.3, *Sensitivity*, identifies minor anomalies with method sensitivity due to sample dilutions. Additionally, the complete data validation reports have been included at the end of Appendix F.

EPA Comment 6:
It is conventional standard to present descriptions of sampling procedures, methodologies, equipment used, other information pertaining to field activities and any deviations from the work plan. The Report does not provide this information. What samplers were used, how samples were composited and other details about the sampling are not provided. Also, the Report presents the conclusions of the toxicity characteristic leaching procedure (TCLP), corrosivity, and paint filter tests. However, the details of these tests are not provided. Please revise the Report to address this deficiency.

RFAAP Response
Appendix B to the Soil Screening Investigation Report, *Summary of Field Soil Screening Program*, describes the sampling procedures, methodologies, equipment used, and other

information pertaining to field activities including deviations from the work plan (Section B.2, *Work Plan Deviations*). Additionally, Standard Operating Procedures from the Master Work Plan were included within WPA 015 Appendix A and within the Soil Screening Report Appendix B that outline the standard procedures followed at RFAAP during field investigations.

WPA 015 presents the USEPA SW-846 Test Methods that were proposed for the SWMUs 8 and 36 field investigation and discussed the specific methodology for the TCLP leaching and corrosivity testing. No deviations were reported by the laboratory performing the testing and validation of the resultant data indicated no anomalies with the TCLP, corrosivity, and paint filter testing.

EPA Comment 7:
Although the Report used the EPA Region 3 RBC Table of April 2003, which was current during the preparation of the report, some RBC values appear to have been revised in the current RBC Table (October 2003). For example, the concentrations of vanadium in soil, which rarely exceeded the RBCs when compared to the April 2003 RBC Table, will now in most cases exceed its current RBC values. As another example, the RBCs for acetone have been increased by about an order of a magnitude. When revising the Report, please update the comparisons provided in Table 4-1 using the October 2003 RBC values or the most current RBC Table during the revision.

RFAAP Response
Screening comparisons will be updated in the report using the October 2003 RBCs or the most current USEPA Region 3 RBC values.

EPA Comment 8:
A large percentage of the data for antimony (34 of 35), arsenic (13 of 35), vanadium (13 of 35), and zinc (15 of 35) are qualified "L" (Analyte present. Reported value may be biased low. Actual result may be higher.) Please clarify how these qualified data were utilized in the screening procedure and revise the Analytical Results and Residential Risk Screening Section (Section 4.0) to note that discrete antimony (34 of 35), arsenic (13 of 35), vanadium (13 of 35), and zinc (15 of 35) results were qualified "L." In addition, since a large percentage of antimony, arsenic, vanadium, and zinc data are potentially biased low, the conclusions in Section 5.0, Human Health Risk Screening, that "point comparisons of discrete soil data to Residential RBCs, do not indicate a potential threat to human health" and "concentrations of chemicals detected in SWMU 36 do not pose a residential risk even if undisturbed" cannot be supported at this time. Please discuss in Section 5.0.

RFAAP Response
The data validation reports presented in Appendix F indicate that data for antimony, arsenic, vanadium, and zinc were qualified "L" (Analyte present. Reported value may be biased low. Actual result may be higher.) due to low matrix spike recovery (recoveries between 30% and 75%) and data for antimony were additionally qualified "L" due to low initial Contract Required Detection Limit (CRDL) percent recoveries. These qualified

data were considered usable in the qualitative risk screening for comparison with the established screening criteria.

SPECIFIC COMMENTS

EPA Comment 9:
Section 1.1, Objective, page 1-1: This section states that the Soil Screening at SWMUs 8 and 36 is designed to (second bullet) "provide data that can be used to evaluate residual risk..." emphasis added. The term residual risk is generally used when a site has been remediated to some level (e.g., preliminary remediation goals) and after confirmatory sampling to address risk from the residual contamination not addressed by the remedial action. Based on the information provided in the Report, it appears no removal action was undertaken at SWMUs 8 and 36. Please revise the Report to remove the term "residual" from the text or provide data related to previous remedial actions at the SWMUs.

RFAAP Response
The term "residual" will be removed from the text as requested.

EPA Comment 10:
Section 2.1.3, Geology and Soil, page 2-3: The fourth paragraph on this page states "sampler refusal occurred at boring 8SB2 and 8SB4 at depths of 8 and 10 ft [feet] bgs [below ground surface], respectively, on apparent weathered siltstone." According to boring logs provided in Appendix C, sample refusal occurred at borings 8SB2 and 8SB4 at depths of 10 and 8.5 ft bgs, respectively. In addition, it is stated in this paragraph that the thickness of the clay layer below the sludge was 2.5 feet at 8SB4. The boring logs indicate this thickness to be 2 feet. Please revise this section to resolve these discrepancies and correct the text accordingly.

RFAAP Response
The text of the report will be revised to accurately present the boring log data.

EPA Comment 11:
Section 2.2.1.5, New River and Tributaries Study – 1997, on page 2-11 states that one sample was collected from the New River downstream from SWMUs 8 and 36 that had concentrations of cadmium and chromium above BTAG sediment screening levels. An evaluation on the relevance of these sample results relative to these SWMUs should be provided.

RFAAP Response
An evaluation of the relevance of the sediment sample collected downstream from SWMUs 8 and 36 during the 1997 New River and Tributaries Study will be added to Section 2.2.1.5.

EPA Comment 12:
Section 2.2.2, Conceptual Site Model, page 2-11: The last paragraph states "although current and future land-use scenarios are limited to industrial operations, both industrial and residential scenarios have been considered." However, the CSMs presented in Figures 2-6 and 2-7 do not

account for all the human receptors under residential or industrial scenario. For example, no trespasser (child or adult) is considered a receptor in the CSMs for soil pathway and no child or adult receptor is considered for groundwater or surface water use. Please revise the Report to discuss why all potential receptors under residential and/or industrial scenarios were not considered in the CSMs or revise the CSMs to include all potential receptors.

RFAAP Response

Adult and child residential receptors for soil will be added to the CSM. This approach will be more conservative than the trespasser scenario. Because of the karst geology at RFAAP, groundwater flow is complex. Therefore, groundwater is being addressed separately as part of WPA 009 and future investigations. These future investigations will evaluate the completeness of the groundwater pathway.

EPA Comment 13:

Section 2.2.2, Conceptual Site Model, on page 2-11 states that a possible pathway exists to groundwater via infiltration of water that may collect in the lagoons. Site groundwater may be hydraulically connected to the New River. The Report should state how and when groundwater will be evaluated for these sites, particularly when they discharge to the New River and potentially impact surface water and sediment.

RFAAP Response

Because of the complexity of the groundwater pathway (i.e., karst and fractured bedrock flow regime) in the Main Manufacturing Area (MMA) and possibly SWMUs 8 and 36, the groundwater pathway at SWMUs 8 and 36 will be investigated under WPA 009 and/or future groundwater studies of the MMA. The CSM will be revised to include information on how the groundwater pathway will be addressed at SWMUs 8 and 36.

EPA Comment 14:

Section 2.2.2, Conceptual Site Model, on page 2-16, and on Figures 2-6 and 2-7, groundwater is identified as a potential pathway. The potential receptors are identified as construction workers. If groundwater is identified for humans, groundwater should also be identified for biota, as the groundwater is released in seeps and likely is released directly in the stream bed of the New River (i.e., as the last sentence of paragraph two, page 2-11 states, "...Site groundwater discharge may be hydraulically connected to the New River...").

RFAAP Response

The site groundwater discharge may be hydraulically connected to the New River but the completeness of the groundwater pathway to surface water is unknown. Should future investigations indicate a completed groundwater to surface water pathway, biota in the New River will be identified as potential receptors of groundwater.

EPA Comment 15:

Section 3.0, Sampling and Analysis Plan, presents a description of soil samples that were collected at these sites. However, no figure is provided showing the locations of these samples. Because no figure is provided, it is difficult to assess whether the sampling locations are

sufficient to adequately characterize the soil and sludge at the site. A figure should be provided showing all sampling locations.

RFAAP Response

Appendix B to the Soil Screening Investigation Report, *Summary of Field Soil Screening Program*, describes the soil samples that were collected at these sites and further shows the locations of these samples on Figure B-1. This figure showing the sampling locations will be duplicated in Section 3.0 for clarity.

EPA Comment 16:

Section 3.1.1, Borings Inside SWMUs 8 and 36, on page 3-1 states that borings were advanced within the SWMU 8 lagoon and the SWMU 36 drying beds to provide information regarding the chemical nature of native soil underlying the sludge material. The section later states that samples were collected from these borings approximately 6 and 2.5 feet below the sludge-native soil interface. If the purpose of these borings was to determine if contaminants from sludge had contaminated the native soil beneath, it is unclear why the first sample was collected 2.5 feet below this interface. If the sample at 2.5 feet is not contaminated, it is unclear how a determination of contamination in depths less than 2.5 feet will be made.

RFAAP Response

Samples 8SB2 and 8SB4 were collected from *in situ* soil immediately underlying the sludge/native soil interface. As shown on the boring logs presented in Appendix B, the entire aliquot of soil from the sludge/soil interface to the boring termination was collected for the needed sample volume. The text of the report will be clarified to indicate that samples were collected from each boring from the entire 6 feet and 2.5 feet intervals of soil between the sludge interface and the boring termination.

EPA Comment 17:

Section 4.0, Analytical Results and Residual Risk Screening, on page 4-1 states the ecological risk screening consisted of a comparison of analytical data to BTAG soil screening levels. This only addresses direct toxicity to plants and soil invertebrates. The report should explain why food chain modeling was not performed to evaluate potential risk to upper trophic level receptors.

RFAAP Response

As discussed in the introductory paragraphs above, the primary objectives of this Soil Screening Investigation were to assess the presence or absence of hazardous constituents during future construction activities and to assess whether soil managed during this future construction would be a RCRA hazardous waste. SWMUs 8 and 36 are and will remain active treatment units. Further risk assessment may occur in the future when treatment activities cease at these locations and site closure sought.

EPA Comment 18:

Section 4.1.1, Discrete Surface Soil Sample Results, page 4-2: This section does not summarize all the metals that exceed the RBCs and background concentrations. Please revise

this section, under "TAL Metals," to discuss all metals exceeding the residential and industrial RBCs and the background 95% UTL. For example, it must be identified in this section that lead and mercury concentrations exceed their respective background levels.

RFAAP Response
Sample analytical results presented in Tables 4-1 and E-1 present the Facility background inorganic constituent concentration point estimates developed during the RFAAP Facility Wide Background Study. These tables illuminate the inorganic constituent concentrations that exceed their respective background point estimates.

Analytical results discussed within the text of the report for inorganic constituents are indicated as exceedances of relevant screening criteria (i.e., RBCs and Draft BTAG screening levels) when detected above the derived background 95% UTLs. Considering the stated investigation objectives, elimination of screening level exceedances that are below established background 95% UTLs highlights site-attributable constituents and is consistent with previous agreements made regarding screening using background values with USEPA.

EPA Comment 19:
Section 4.2.2, Discrete Subsurface Soil Samples, page 4-4: The last paragraph indicates that detected concentrations of lead above background were 48.4 mg/kg at boring 8SB3A and 119 mg/kg at 36SB9A. Based on data provided on Table 4-1 and Appendix E, detections of lead concentrations in surface above background were 48.4 mg/kg and 36.5 mg/kg (duplicate) at boring 8SB7B and 119 mg/kg at 36SB8C. Please resolve these discrepancies and correct the text accordingly.

RFAAP Response
The report will be revised to accurately present this data and resolve these discrepancies.

EPA Comment 20:
Section 5.0, Conclusions, on page 5-1 states that comparisons of inorganic data to BTAG screening levels indicated several inorganic contaminants of potential concern. The section further states that potential residual ecological risk related to inorganic constituents is likely low since residual material in the sampled areas will be excavated as part of future construction activities. The nature of the construction activities should be described in this or future documents to show that the action would be protective of ecological receptors.

RFAAP Response
The text of the report will be revised to more fully discuss the investigation objectives. SWMUs 8 and 36 are and will remain active treatment units. Further risk assessment may occur in the future when treatment activities cease at these locations and site closure sought.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

December 11, 2003

In reply
Refer to 3HS13

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commander,
Radford Army Ammunition Plant
Attn: SIORF-SE-EQ (Jim McKenna)
P.O. Box 2
Radford, VA 24141-0099

C.A. Jake
Environmental Manager
Alliant Techsystems, Inc.
Radford Army Ammunition Plant
P.O. Box 1
Radford, VA 24141-0100

Re: Radford Army Ammunition Plant
SWMUs 8 and 36
Review of the Army's draft *Soil Screening Report*

Dear Mr. McKenna and Ms. Jake:

The U.S. Environmental Protection Agency (EPA) has reviewed the Army's draft *Soil Screening Report* for SWMUs 8 and 36, located at the Radford Army Ammunition Plant (RFAAP). Outlined below, please find EPA's comments based upon that review:

GENERAL COMMENTS

1. Throughout Section 4.0 of the Report, it is stated that a background range has not been established for thallium at RFAAP. However, in the RFAAP Final *Facility-Wide Background Study Report* (December 2001) a range of 1.3 to 5 milligrams per kilogram (mg/kg) and a 95% upper tolerance limit (UTL) of 2.11 mg/kg are specified for

thallium. In addition, Table 4-1 lists the Facility-Wide Background Point Estimate for thallium as 2.11 mg/kg. Please revise the Report to correct this issue involving thallium, especially in Section 4.

2. As concluded in Section 5.0 of the Report, the soil screening at Solid Waste Management Units (SWMUs) 8 and 36 indicated the presence of "selected targeted constituents." However, it is concluded in this section that "point comparisons of the discrete data to Residential RBCs [risk-based concentrations], Industrial RBCs, and RFAAP background did not indicate a potential to human health." There are potential flaws in this conclusion, among them:

- The screening process was not completed in accordance with the RFAAP *Site Screening Process* (SSP [October 26, 2001]). At this stage, the chemicals of potential concern (COPCs) should have been identified (COPC identification step in Section 6.1.1.1 of the SSP). Based on the data presented in the report, it appears manganese, lead, mercury, zinc, and antimony are the COPCs.

- No cumulative risk screening was conducted in accordance with the SSP. This evaluation includes uncertainty analysis of the cumulative risk screening. As the vertical and horizontal extent of contamination of all the chemicals detected in soil is not fully characterized, whether the data generated from this soil screening is sufficient to conduct a cumulative risk assessment will also need to be demonstrated.

- Some potential exposure pathways were not evaluated. According to the conceptual site models (CSMs) presented in Figures 2-4 and 2-5, the potential impact from soil to groundwater and eventually surface water exists. However, the Report does not evaluate chemical migration of contaminants from soil to groundwater as required by the SSP. The SSP requires use of USEPA's *Soil Screening Guidance* (USEPA, 1996) as a source of information when conducting comparison to soil screening levels (SSLs). The Report did not compare soil concentrations to the USEPA Region 3 SSLs listed on the RBC Table. Based on the data provided in the Report, several metals (e.g., arsenic, chromium, manganese, vanadium, etc.) exceed their respective SSLs at dilution attenuation factor (DAF) 20.

- In the Summary (Section 4.4) of the Report, only those metals with concentrations exceeding both the RBCs and the background concentrations are noted. Other metals that exceeded one or more screening criteria are dismissed because their concentrations did not exceed the site background values. The risk conclusions, thus, consider only those metals noted in Section 4.4. At this stage, it appears inappropriate to eliminate metals from the risk assessment based solely on a comparison to background or ambient levels. In order to provide a more complete characterization of potential risks associated with exposures at the site, metals that exceed risk-based screening concentrations should not be

excluded from quantitative consideration in the risk assessment. The contribution to the overall risk due to metals with high background concentrations should be presented in a risk characterization (EPA. 2002. *Role of Background in the CERCLA Cleanup Process*. Office of Solid Waste and Emergency Response. OSWER 9285.6-0P. April 26).

Please revise the Report to remove the premature conclusions stated in Section 5.0 regarding risk to human health and address the issues listed above.

3. The Report identifies the COPCs for ecological receptors as antimony, magnesium, manganese, mercury, lead, selenium, and zinc. However, it concludes that "potential residual risk in the SWMUs 8 and 36 areas related to inorganic constituents is likely low since residual material in the sampled areas will be excavated as part of future construction activities." This determination can only be made after the determination of the horizontal and vertical extent of contamination at the SWMUs and after data generated from post-excavation confirmation sampling are evaluated. Please remove this statement from the report and provide additional investigation and remedial actions necessary to remove risk to ecological receptors. The same situation would apply if one was conducting a remedial action at a site.

4. Some of the comparisons required by the screening procedure of the SSP were not conducted. These include the EPA Region 3 SSLs. Please revise the text of the Report and tables to compare all the available data to the EPA Region 3 SSLs at DAF 20 and revise any conclusion drawn from the current comparisons accordingly.

5. The detection limits for the sampling data presented in the Report are not clearly indicated in the tables. The SSP requires, to the greatest extent practicable, that the analytical reporting limits (RLs) should be ensured not to exceed the screening levels the resulting data will be compared to. Please revise the Report to include the detection limits of all constituents analyzed for within the text or summary tables of the report and discuss the RLs that do not comply with the SSP requirement (e.g. detection limits for the polynuclear aromatic hydrocarbons).

6. It is conventional standard to present descriptions of sampling procedures, methodologies, equipment used, other information pertaining to field activities and any deviations from the work plan. The Report does not provide this information. What samplers were used, how samples were composited and other details about the sampling are not provided. Also, the Report presents the conclusions of the toxicity characteristic leaching procedure (TCLP), corrosivity, and paint filter tests. However, the details of these tests are not provided. Please revise the Report to address this deficiency.

7. Although the Report used the EPA Region 3 RBC Table of April 2003, which was current during the preparation of the report, some RBC values appear to have been revised in the current RBC Table (October 2003). For example, the concentrations of vanadium in soil, which rarely exceeded the RBCs when compared to the April 2003 RBC Table, will now in most cases exceed its current RBC values. As another example, the RBCs for acetone have been increased by about an order of a magnitude.

When revising the Report, please update the comparisons provided in Table 4-1 using the October 2003 RBC values or the most current RBC Table during the revision.

8. A large percentage of the data for antimony (34 of 35), arsenic (13 of 35), vanadium (13 of 35), and zinc (15 of 35) are qualified "L" (Analyte present. Reported value may be biased low. Actual result may be higher.) Please clarify how these qualified data were utilized in the screening procedure and revise the Analytical Results and Residential Risk Screening Section (Section 4.0) to note that discrete antimony (34 of 35), arsenic (13 of 35), vanadium (13 of 35), and zinc (15 of 35) results were qualified "L." In addition, since a large percentage of antimony, arsenic, vanadium, and zinc data are potentially biased low, the conclusions in Section 5.0, Human Health Risk Screening, that "point comparisons of discrete soil data to Residential RBCs, do not indicate a potential threat to human health" and "concentrations of chemicals detected in SWMU 36 do not pose a residential risk even if undisturbed" cannot be supported at this time. Please discuss in Section 5.0.

SPECIFIC COMMENTS

9. **Section 1.1, Objective, page 1-1:** This section states that the Soil Screening at SWMUs 8 and 36 is designed to (second bullet) "provide data that can be used to evaluate residual risk ..." emphasis added. The term residual risk is generally used when a site has been remediated to some level (e.g., preliminary remediation goals) and after confirmatory sampling to address risk from the residual contamination not addressed by the remedial action. Based on the information provided in the Report, it appears no removal action was undertaken at SWMUs 8 and 36. Please revise the Report to remove the term "residual" from the text or provide data related to previous remedial actions at the SWMUs.

10. **Section 2.1.3, Geology and Soil, page 2-3:** The fourth paragraph on this page states "sampler refusal occurred at boring 8SB2 and 8SB4 at depths of 8 and 10 ft [feet] bgs [below ground surface], respectively, on apparent weathered siltstone." According to boring logs provided in Appendix C, sample refusal occurred at borings 8SB2 and 8SB4 at depths of 10 and 8.5 ft bgs, respectively. In addition, it is stated in this paragraph that the thickness of the clay layer below the sludge was 2.5 feet at 8SB4. The boring logs indicate this thickness to be 2 feet. Please revise this section to resolve these discrepancies and correct the text accordingly.

11. **Section 2.2.1.5, New River and Tributaries Study – 1997,** on page 2-11 states that one sample was collected from the New River downstream from SWMUs 8 and 36 that had concentrations of cadmium and chromium above BTAG sediment screening levels. An evaluation on the relevance of these sample results relative to these SWMUs should be provided.

12. **Section 2.2.2, Conceptual Site Model, page 2-11:** The last paragraph states "although current and future land-use scenarios are limited to industrial operations, both industrial and residential scenarios have been considered." However, the CSMs presented in Figures 2-6 and 2-7 do not account for all the human receptors under residential or industrial scenario. For example, no trespasser (child or adult) is considered a receptor in the CSMs for soil pathway and no child or adult receptor is

considered for groundwater or surface water use. Please revise the Report to discuss why all potential receptors under residential and/or industrial scenarios were not considered in the CSMs or revise the CSMs to include all potential receptors.

13. **Section 2.2.2, Conceptual Site Model,** on page 2-11 states that a possible pathway exists to groundwater via infiltration of water that may collect in the lagoons. Site groundwater may be hydraulically connected to the New River. The Report should state how and when groundwater will be evaluated for these sites, particularly when they discharge to the New River and potentially impact surface water and sediment.

14. **Section 2.2.2, Conceptual Site Model**, on page 2-16, and on Figures 2-6 and 2-7, groundwater is identified as a potential pathway. The potential receptors are identified as construction workers. If groundwater is identified for humans, groundwater should also be identified for biota, as the groundwater is released in seeps and likely is released directly in the stream bed of the New River (i.e. as the last sentence of paragraph two, page 2-11 states, "...Site groundwater discharge may be hydraulically connected to the New River...").

15. **Section 3.0, Sampling and Analysis Plan**, presents a description of soil samples that were collected at these sites. However, no figure is provided showing the locations of these samples. Because no figure is provided, it is difficult to assess whether the sampling locations are sufficient to adequately characterize the soil and sludge at the site. A figure should be provided showing all sampling locations.

16. **Section 3.1.1, Borings Inside SWMUs 8 and 36**, on page 3-1 states that borings were advanced within the SWMU 8 lagoon and the SWMU 36 drying beds to provide information regarding the chemical nature of native soil underlying the sludge material. The section later states that samples were collected from these borings approximately 6 and 2.5 feet below the sludge-native soil interface. If the purpose of these borings was to determine if contaminants from sludge had contaminated the native soil beneath, it is unclear why the first sample was collected 2.5 feet below this interface. If the sample at 2.5 feet is not contaminated, it is unclear how a determination of contamination in depths less than 2.5 feet will be made.

17. **Section 4.0, Analytical Results and Residual Risk Screening**, on page 4-1 states the ecological risk screening consisted of a comparison of analytical data to BTAG soil screening levels. This only addresses direct toxicity to plants and soil invertebrates. The report should explain why food chain modeling was not performed to evaluate potential risk to upper trophic level receptors.

18. **Section 4.1.1, Discrete Surface Soil Sample Results, page 4-2:** This section does not summarize all the metals that exceed the RBCs and background concentrations. Please revise this section, under "TAL Metals," to discuss all metals exceeding the residential and industrial RBCs and the background 95% UTL. For example, it must be identified in this section that lead and mercury concentrations exceed their respective background levels.

19. **Section 4.2.2, Discrete Subsurface Soil Samples, page 4-4:** The last paragraph indicates that detected concentrations of lead above background were 48.4

mg/kg at boring 8SB3A and 119 mg/kg at 36SB9A. Based on data provided on Table 4-1 and Appendix E, detections of lead concentrations in surface above background were 48.4 mg/kg and 36.5 mg/kg (duplicate) at boring 8SB7B and 119 mg/kg at 36SB8C. Please resolve these discrepancies and correct the text accordingly.

20. **Section 5.0, Conclusions**, on page 5-1 states that comparisons of inorganic data to BTAG screening levels indicated several inorganic contaminants of potential concern. The section further states that potential residual ecological risk related to inorganic constituents is likely low since residual material in the sampled areas will be excavated as part of future construction activities. The nature of the construction activities should be described in this or future documents to show that the action would be protective of ecological receptors.

This concludes EPA's review of the Army's draft *Soil Screening Report* for SWMUs 8 and 36, located at the RFAAP. The referenced draft *Report* is disapproved by EPA in its current form, and must be revised to reflect the comments above. Per Part II, Section E.4.e. of the EPA RCRA Corrective Action Permit, the Army is required to revise the draft document and submit a revised draft copy to EPA for review within 60 days of the receipt of EPA comments on the draft document. Part II, Section E.4.f. of the Permit allows for an additional 20 days for issuing the revised draft document to EPA, provided that timely notice is given, i.e. within 10 days. Additional time extensions can be requested under Part II, Section F. of the permit.

If you have any questions, please call me at 215-814-3357.

Sincerely,

Robert Thomson

Robert Thomson, PE
Federal Facilities Branch

cc: Russell Fish, EPA
Leslie Romanchik, VDEQ-RCRA
Mark Leeper, VDEQ-CERCLA

McKenna, Jim

From: McKenna, Jim
Sent: Thursday, October 16, 2003 3:05 PM
To: 'Tony Perry'; 'john e tesner'
Cc: Davie, Robert; Redder, Jerome
Subject: FW: Review of WPA 18 and soil screening documents

fyi.
-----Original Message-----
From: Williams, Keith J Mr USACHPPM [mailto:keith.j.williams@us.army.mil]
Sent: Thursday, October 16, 2003 2:49 PM
To: McKenna, Jim
Subject: Review of WPA 18 and soil screening documents

Hi Jim,
Attached are the review memos for WPA 18 and the soil screening report. Hard copies will follow in the mail.

Thanks,
Keith

MCHB-TS-REH (40)

MEMORANDUM FOR Radford Army Ammunition Plant ATTN: SOSRF-OP-EQ (Jim McKenna), PO Box 2, Radford, VA 24143-0002

SUBJECT: Draft Soil Screening Report for SWMUs 8 and 36, August, 2003

1. The US Army Center for Health Promotion and Preventive Medicine reviewed the subject document on behalf of the Office of The Surgeon General pursuant to AR 200-1 (Environmental Protection and Enhancement). Thank you for the opportunity to review this document. We concur with the conclusions and recommendations contained in this report.

2. The scientist reviewing this document and our point of contact is Mr. Keith Williams, Environmental Health Risk Assessment Program, at DSN 584-7722 or commercial (410) 436-7722.

FOR THE COMMANDER:

DAVID A. REED
Program Manager
Environmental Health Risk
Assessment

CF:
HQDA(DASG-HS-PE)
USAMEDCOM (MCHO-CL-W)
USACE (CENWO-HX-H)
USAEC (SFIM-AEC-ER)
IMA, NERO (SFIM-NE-PW-ER)

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
www.deq.state.va.us

Robert G. Burnley
Director

(804) 698-4000
1-800-592-5482

October 7, 2003

Mr. James McKenna
Radford Army Ammunition Plant
SIORF-SE-EQ
P.O. Box 2
Radford, VA 24141-0099

RE: Work Plan Addendum No. 18, SWMU 41
Soil Screening Report SWMU 8
Soil Screening Report SWMU 36

Dear Mr. McKenna:

Thank you for providing the staff the opportunity to review and comment on the referenced documents. The staff has the following comments:

Work Plan Addendum No. 18, SWMU 41

Figure 1-16. The symbol for soil boring in the legend (closed black circle) does not correspond to the symbol used in the figure (open circle). Also, Table 1-9 indicates that soil samples SB 6, 7 and 8 will be taken outside Area B, while the figure clearly shows the samples to be within the inferred boundary line.

Figure 1-15. Table 1-9 indicates that soil samples SB 3, 4 and 5 will be taken outside Area A, while Figure 1-15 shows the samples within the inferred boundary line. Please explain.

Soil Screening Reports SWMUs 8 and 36

There are no additional comments on the Soil Screening Reports for SWMUs 8 and 36.

Please do not hesitate to contact Jennifer Jones, 804-698-4328, or myself if you have questions concerning these comments.

Sincerely,

Durwood Willis

Durwood Willis
Federal Facilities Program Manager

CC: Norman L. Auldridge, VDEQ - WCRO

987

Radford Army Ammunition Plant
Route 114, P.O. Box 1
Radford, VA 24141
USA

September 4, 2003

Mr. Robert Thomson
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: Soil Screening Report, SWMUs 8 and 36,
Radford Army Ammunition Plant
EPA ID# VA1 210020730

Dear Mr. Thomson:

Enclosed is one certified copy of Soil Screening Report, SWMUs 8 and 36, Radford Army Ammunition Plant for your review and comment or approval. Your additional five copies will be sent under separate cover as well as additional copies to the Virginia Department of Environmental Quality (VDEQ), U.S. Army Environmental Center, U.S. Army Center for Health Promotion and Preventive Medicine.

This report has not been submitted previously and replaces any previous report and/or findings for SWMUs 8 and 36. Based on the findings in this report, we believe no further action is necessary at SWMUs 8 and 36 until operations cease.

Please coordinate with and provide any questions or comments to myself at (540) 639-8266, Jerry Redder of my staff (540) 639-7536 or Jim McKenna, ACO Staff (540) 639-8641.

Sincerely,

C. A. Jake, Environmental Manager
Alliant Ammunition and Powder Company LLC

Enclosure

w/o enclosure

c: Russell Fish, P.E., EPA Region III

Durwood Willis
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240-0009

Mark Leeper
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240-0009

03-815-137
JMcKenna/JJRedder

E. A. Lohman
Virginia Department of Environmental Quality
West Central Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

Tony Perry
U.S. Army Environmental Center
5179 Hoadley Road, Attn: SFIM-AEC-ERP
Aberdeen Proving Ground, MD 21010-5401

Katie Watson
Engineering & Environment, Inc.
7927 Camberley Drive
Powell, TN 37849

Dennis Druck
U.S. Army Center for Health Promotion and Preventive Medicine
5158 Blackhawk Road, Attn: MCHB-TS-HER
Aberdeen Proving Ground, MD 21010-5403

John Tesner
Corps of Engineers, Baltimore District
ATTN: CENAB-EN-HM
10 South Howard Street
Baltimore, MD 21201

US Army Corps of Engineers
Attn: CENAO-PM-M, Ms. Lisa Bobotas
803 Front Street
Norfolk, VA 23510-1096

Coordination: J. McKenna
J. McKenna

bc: Administrative File
[redacted]
Rob Davie-ACO Staff
C. A. Jake
J. J. Redder
Env. File

Lisa Bobotas
Corps of Engineers, Norfolk District
Attn: CENAO-PM-M
803 Front Street
Norfolk, VA 23510-1096

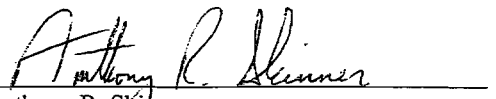
Randolph Evans, ACO Staff

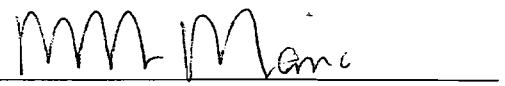
03-815-137
JMcKenna/JJRedder

Concerning the following:

Soil Screening Report SWMUs 8 and 36
Radford Army Ammunition Plant

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

SIGNATURE: 
PRINTED NAME: Anthony R. Skinner
TITLE: LTC, CM, Commanding
Radford AAP

SIGNATURE: 
PRINTED NAME: Anthony Miano
TITLE: Vice President Operations
Alliant Ammunition and Powder Company LLC

03-815-137
JMcKenna/JJRedder

PREFACE

A two-stage approach has been developed to facilitate and streamline Resource Conservation Recovery Act (RCRA) site investigations at Radford Army Ammunition Plant (RFAAP) pursuant to the Permit for Corrective Action and Waste Minimization (October 2000). The approach consists of a single Facility-wide Master Work Plan and multiple site-specific Work Plan Addenda.

The Master Work Plan provides comprehensive discussions of standard procedures, protocol, and methodologies that are to be followed during execution of field investigations at RCRA sites within the RFAAP. The Master Work Plan is a generic plan designed to streamline site-specific work plan addenda development, review, and approval.

Each Work Plan Addendum describes the site-specific information for each RCRA site, providing detailed data on past site operations, possible constituents of potential concern, sampling strategy, etc. Each addendum, through reference to the Master Work Plan, is developed as a concise document focused on site-specific investigations.

RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

Soil Screening Report, SWMUs 8 and 36

FINAL DOCUMENT
JANUARY 2004

PREPARED BY:

URS

5540 FALMOUTH STREET, SUITE 201
RICHMOND, VIRGINIA 23230
(804) 965-9000 MAIN
(804) 965-9764 FAX

ARCHITECT-ENGINEER SERVICES
CONTRACT NO. DACA31-00-D-0011
DELIVERY ORDER NO. 0060

SOIL SCREENING REPORT, SWMUs 8 AND 36
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Appendix C Boring Logs
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Appendix E Complete Analytical Data Table and Laboratory Analytical Data (Form I)
Appendix F Quality Control Evaluation and Data Validation Reports
Appendix G Soil Screening Level Comparison

LIST OF ABBREVIATIONS AND ACRONYMS

%..... Percent
%D..... Percent Difference
ASTM..... ASTM International
ATK..... Alliant TechSystems
bgs ..... Below Ground Surface
BTAG..... Biological Technical Assistance Group
°C..... Degrees Celsius
$Ca(OH)_2$..... Calcium Hydroxide
$CaSO_4$ ..... Calcium Sulfate
CCV..... Continuing Calibration Verification
CFR ..... Code of Federal Regulations
CLC ..... Common Laboratory Contaminants
cm/sec..... Centimeters Per Second
EPIC ..... Environmental Photographic Interpretation Center
ft ..... Feet
gm..... Gram
GPS..... Global Positioning System
HBN..... Health-Based Number
IDL ..... Instrument Detection Limit
IDM ..... Investigation-Derived Material
LCS..... Laboratory Control Sample
MDL..... Method Detection Limit
meq ..... Milliequivalents Per Gram
mg..... Milligram
mg/kg..... Milligrams Per Kilogram
MMA..... Main Manufacturing Area
MQAP ..... Master Quality Assurance Plan
MS/MSD ..... Matrix Spike/Matrix Spike Duplicate
msl ..... Mean Sea Level
MWP ..... Master Work Plan
Na_2CO_3 ..... Sodium Carbonate
PAH..... Polynuclear Aromatic Hydrocarbon
PCB ..... Polychlorinated Biphenyl
PID..... Photoionization Detector
PPE..... Personal Protective Equipment
QA ..... Quality Assurance
QC ..... Quality Control
QA/QC..... Quality Assurance/Quality Control
RBC..... Risk-Based Concentration
RCRA ..... Resource Conservation and Recovery Act
RFA ..... RCRA Facility Assessment
RFAAP ..... Radford Army Ammunition Plant
RL..... Reporting Limit
RPD ..... Relative Percent Difference
SAP..... Sampling and Analysis Plan
SOP..... Standard Operating Procedure

LIST OF ABBREVIATIONS AND ACRONYMS (CONTINUED)

SSL ..... Soil Screening Level
SSP ..... Site Screening Process
SVOC ..... Semivolatile Organic Compound
SWMU..... Solid Waste Management Unit
TAL ..... Target Analyte List
TCL ..... Target Compound List
TCLP ..... Toxicity Characteristic Leaching Procedure
URS ..... URS Group, Inc.
USACE..... United States Army Corps of Engineers
USEPA ..... United States Environmental Protection Agency
UTL ..... Upper Tolerance Limit
VDEQ..... Virginia Department of Environmental Quality
VI..... Verification Investigation
VOC..... Volatile Organic Compound
VPDES ..... Virginia Pollutant Discharge Elimination System
WPA ..... Work Plan Addendum

1.0 INTRODUCTION

In accordance with Contract Number DACA31-00-D-0011, Delivery Order No. 60, URS Group, Inc. (URS) has been tasked by the United States Army Corps of Engineers (USACE), Baltimore District to perform a Soil Screening at Solid Waste Management Unit (SWMU) 8, the Calcium Sulfate ($CaSO_4$) Treatment/Disposal Area, and SWMU 36, the $CaSO_4$ Drying Beds, at the Radford Army Ammunition Plant (RFAAP), Radford, Virginia (Figure 1-1). URS performed this task in accordance with Work Plan Addendum (WPA) 015, which incorporates by reference, the elements of the RFAAP Master Work Plan (MWP; URS 2003).

1.1 OBJECTIVE

The project objectives of the Soil Screening at SWMUs 8 and 36 are to assess:

- The presence or absence of hazardous constituents in soil and calcium sulfate sludge; and
- Whether soil or calcium sulfate sludge removed from SWMUs 8 and 36 during planned construction activities would be a RCRA characteristic hazardous waste.

SWMU 8 originally consisted of two unlined, below-grade, earthen, $CaSO_4$ settling lagoons (eastern and western), both approximately 200 feet (ft) long and 150 ft wide. The Eastern Lagoon has been replaced with a concrete tank and the Western Lagoon remains in its original state. SWMU 36 consists of three $CaSO_4$ drying beds, each approximately 80 ft wide by 200 ft long.

The plan of action and associated programmatic scope of work for SWMUs 8 and 36 assumes that a construction project is programmed to replace the western SWMU 8 lagoon and the SWMU 36 drying beds with new engineered structures. The SWMUs 8 and 36 WPA 015 was developed to collect data sufficient to test and validate the assumptions for the plan of action. Future investigations, including WPA 009 and subsequent groundwater studies of the Main Manufacturing Area, will assess the existence and completeness of the groundwater pathway at SWMUs 8 and 36. Further investigation at these SWMUs may occur at some future time when treatment activities cease at these locations.

The Soil Screening at SWMUs 8 and 36 was designed to:

- Collect and chemically analyze surface soil, subsurface soil, and sludge samples;
- Provide usable screening data for evaluation of risk from soil exposure; and
- Provide data that can be used to evaluate sludge and soil with respect to Resource Conservation and Recovery Act (RCRA) hazardous waste characteristics and to assess appropriate disposal method(s) for material excavated during future construction.

1.2 REPORT ORGANIZATION

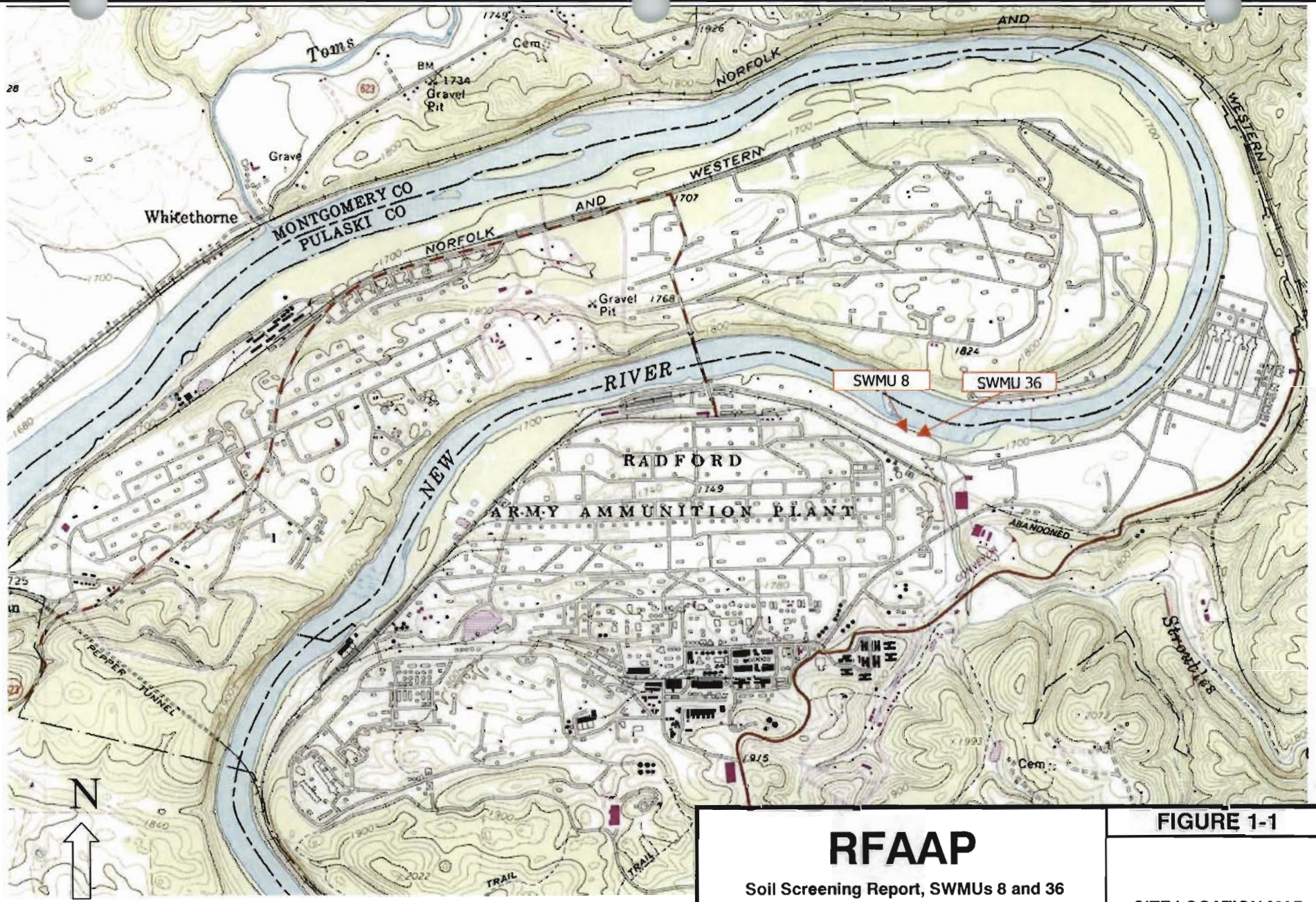
This Soil Screening Report is organized into the following six sections:

- Section 1 – Introduction
- Section 2 – Description of Current Conditions
- Section 3 – Sampling and Analysis Plan
- Section 4 – Analytical Results and Risk Screening

- Section 5 - Conclusions
- Section 6 - References

Seven appendices are located at the end of this Soil Screening Report including:

- Appendix A – Site Photographs
- Appendix B – Summary of Field Investigation and Standard Operating Procedures (SOPs)
- Appendix C – Boring Logs
- Appendix D – Investigation-Derived Material (IDM) Data
- Appendix E – Complete Analytical Data Tables (Tables E.1 and E.2) and Laboratory Analytical Data (Form I)
- Appendix F – Quality Control Evaluation and Data Validation Reports
- Appendix G – Soil Screening Level Comparison



RFAAP

Soil Screening Report, SWMUs 8 and 36

FIGURE 1-1

SITE LOCATION MAP

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2.0 DESCRIPTION OF CURRENT CONDITIONS

The following sections describe the current conditions at SWMUs 8 and 36 including the environmental setting, site background/history, previous investigations, conceptual site model, and data gap analysis.

2.1 SITE BACKGROUND – ENVIRONMENTAL SETTING

The environmental setting for the RFAAP is presented in Section 3.0 of the MWP. Project-specific information is presented below and in Section 2.2.1, Previous Investigations.

2.1.1 Physiography

SWMUs 8 and 36 are situated on the south bank of the New River in the northeast section of the RFAAP Main Manufacturing Area (MMA). Topography near SWMUs 8 and 36 slopes gently down to the north with elevations ranging from 1,700 to 1,705 ft above mean sea level (msl; Figure 2-1). To the north, the RFAAP Installation perimeter fence separates these SWMUs from the New River and prevents access by trespassers attempting to enter RFAAP from the New River. Beyond the perimeter fence, the area is wooded and the topography steeply slopes down to the New River.

SWMU 8 originally consisted of two unlined, below-grade, earthen, $CaSO_4$ Settling Lagoons (Eastern and Western Lagoons). The Eastern Lagoon has been replaced with a concrete settling tank. The Western Lagoon is approximately 200 ft long, 150 ft wide, and 10 ft deep (Dames and Moore 1992) and contains a series of weirs and gates.

SWMU 36 is located immediately east of, and adjacent to SWMU 8. SWMU 36 consists of three separate unlined $CaSO_4$ drying beds that were excavated into natural grade. The northern bed, located closest to the New River, and the adjacent southern bed are each approximately 200 ft long, 80 ft wide, and 10 ft deep. The eastern bed is approximately 200 ft long by 80 ft wide; however, the depth of this bed is unknown. The drying beds are densely vegetated and enclosed by vegetated earthen berms.

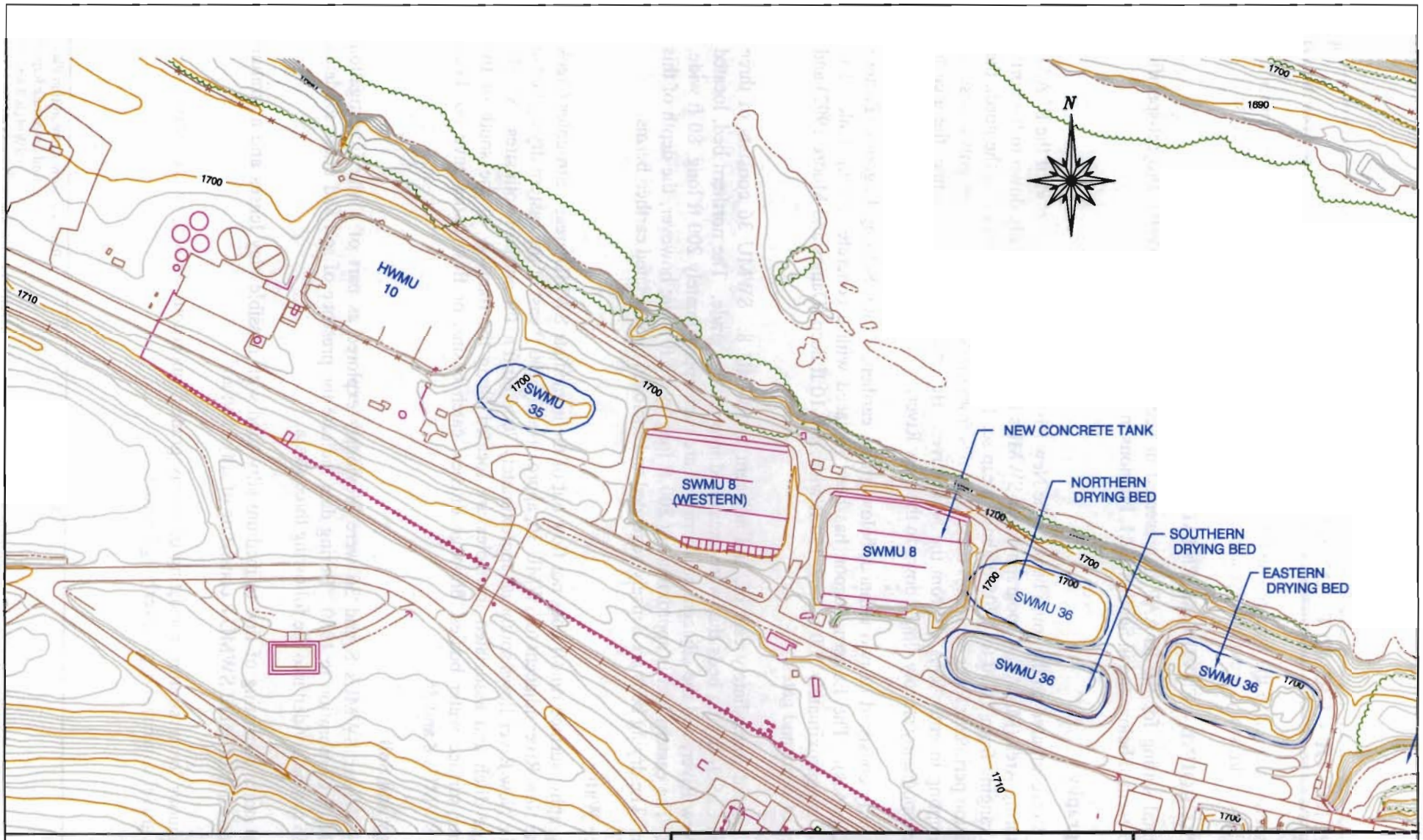
2.1.2 Surface Water

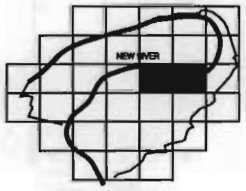
Based on topography, surface runoff does not flow out of the immediate SWMU areas. Stroubles Creek flows east to the New River adjacent to SWMU 36, approximately 100 ft east of the eastern drying bed at SWMU 36. The New River flows southeast approximately 70 to 80 ft to the north of both sites. A well-defined drainage ditch and associated manholes are located along the roadway to the south of the SWMUs. Other surface water bodies, drainage ditches, catch basins, or flow paths have not been identified near SWMUs 8 and 36.

2.1.3 Geology and Soil

Geology and soil near SWMUs 8 and 36 were previously explored as part of a site investigation conducted by NUS Corporation in 1980. Boring data indicate the presence of soil and unconsolidated alluvium, which can be divided into the following three strata:

- Two upper strata consisting of fine to medium silty sand with possible clay lenses and a stratum identified down gradient of SWMU 8 consisting of silty clay; and
- A discontinuous lower stratum consisting of poorly graded, micaceous, brown, sandy, gravel with increasing gravel content at depth overlying bedrock.





VICINITY MAP
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1 inch = 200 feet

RFAAP

Soil Screening Report, SWMUs 8 and 36

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FIGURE 2-1

SITE TOPOGRAPHY LAYOUT (MODIFIED FROM HERCULES, INC., 1992)

A subsurface exploration program was conducted by Froehling & Robertson, Inc., in 2002 (F&R 2002) and consisted of fourteen standard penetration test borings, two offset borings, and four hand-auger borings. The test borings were advanced through the overburden to a planned termination depth or auger refusal. Representative portions of the split-spoon soil samples were evaluated in general accordance with techniques outlined in the ASTM International (ASTM) Standard D 2488 identification procedure. Soil cuttings were observed and classified by an F&R representative in the field based on the Unified Soil Classification System. Soil descriptions are based on visual observations and should be considered approximate.

The F&R test borings encountered surficial soil, fill material, and/or sludge material underlain by alluvial soil and auger refusal material. Material described as fill was encountered to a depth ranging from 2 to 13 feet below ground surface (ft bgs). Fill material was described as sandy clays, sandy silts, and clayey sands with varying amounts of concrete, rubber, wood, and wire fragments. Sludge material was encountered in the explored locations and the thickness reportedly ranged from 4 to 7 ft. Alluvial soil was encountered beneath overlying surficial soil, fill material, or sludge. Alluvial soil was described as sandy clays, sandy silts, and sands with varying amounts of silt and clay (F&R 2002).

Subsurface conditions encountered in the URS soil borings completed in the area of SWMUs 8 and 36 were generally consistent with previous investigations. Micaceous silty sand and sandy silt were encountered in borings completed down gradient (north) of the western lagoon and drying beds to the depths explored (15 ft bgs). Fill material was absent at boring locations north (down gradient) of the western lagoon and drying beds, except at boring 8SB3 where clay and gravel fill material was present to a depth of 6 ft bgs.

Within the western lagoon, approximately 3.5 to 6 ft of sludge was encountered in the URS borings. Sandy clay was encountered below the sludge. Sampler refusal occurred at borings 8SB2 and 8SB4 at depths of 10 and 8.5 ft bgs, respectively, on apparent weathered siltstone. The thickness of the clay layer below the sludge was 6 ft at 8SB2 and 2 ft at 8SB4. Sampler refusal also occurred at boring 8SB6 (15 ft bgs) advanced west of boring 8SB4 at a location outside of the western lagoon.

Within the drying beds, approximately 4.5 to 8 ft of sludge were encountered in the URS borings. Micaceous silty sand was encountered below the sludge to the depths explored. Physical soil samples were collected from URS borings 8SB3 and 36SB3 at depths of 11 to 12 ft bgs for testing of moisture content, organic content, pH, and grain size analysis. Both samples were classified as silty sand (SM) and had organic contents of 1.6% or less and pH values less than 7 (Table 2-1).

Table 2-1
Physical Soil Sample Testing Results

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS						
			WATER CONTENT (%)	USCS SYMBOL (1)	SIEVE MINUS NUMBER 200 (%)	HYDROMETER % MINUS 2 µm (%)	ORGANIC CONTENT (burn off) (%)	pH	
								Distilled Water	0.01 M CaCl Solution
8SB3	1	11.5-12	14.2	SM	19.6	6	0.8	6.4	5.9
36SB3	1	11.5-12	17.8	SM	29.8	9	1.6	6.5	6.9

Notes:
µm = micrometer
ft = feet
M = Molar
SM = Silty Sand with Gravel
(1) Plasticity of fines for USCS symbol based on visual observation

Gray limestone of the Elbrook Formation underlies the soil, fill, and alluvium at the sites. Bedrock is highly weathered and fractured with many calcite filled fractures and vugs present (NUS 1980). Depth to bedrock in the immediate area of these SWMUs ranges from 18 to 28 ft bgs. Figures 2-2 and 2-3 present representative north-south geologic cross-sections and indicate the presence of soil and unconsolidated alluvium overlying the limestone. Based on Figure 4-1 of the Current Conditions Report (IT 2002a), bedrock is present in the New River north of SWMUs 8 and 36.

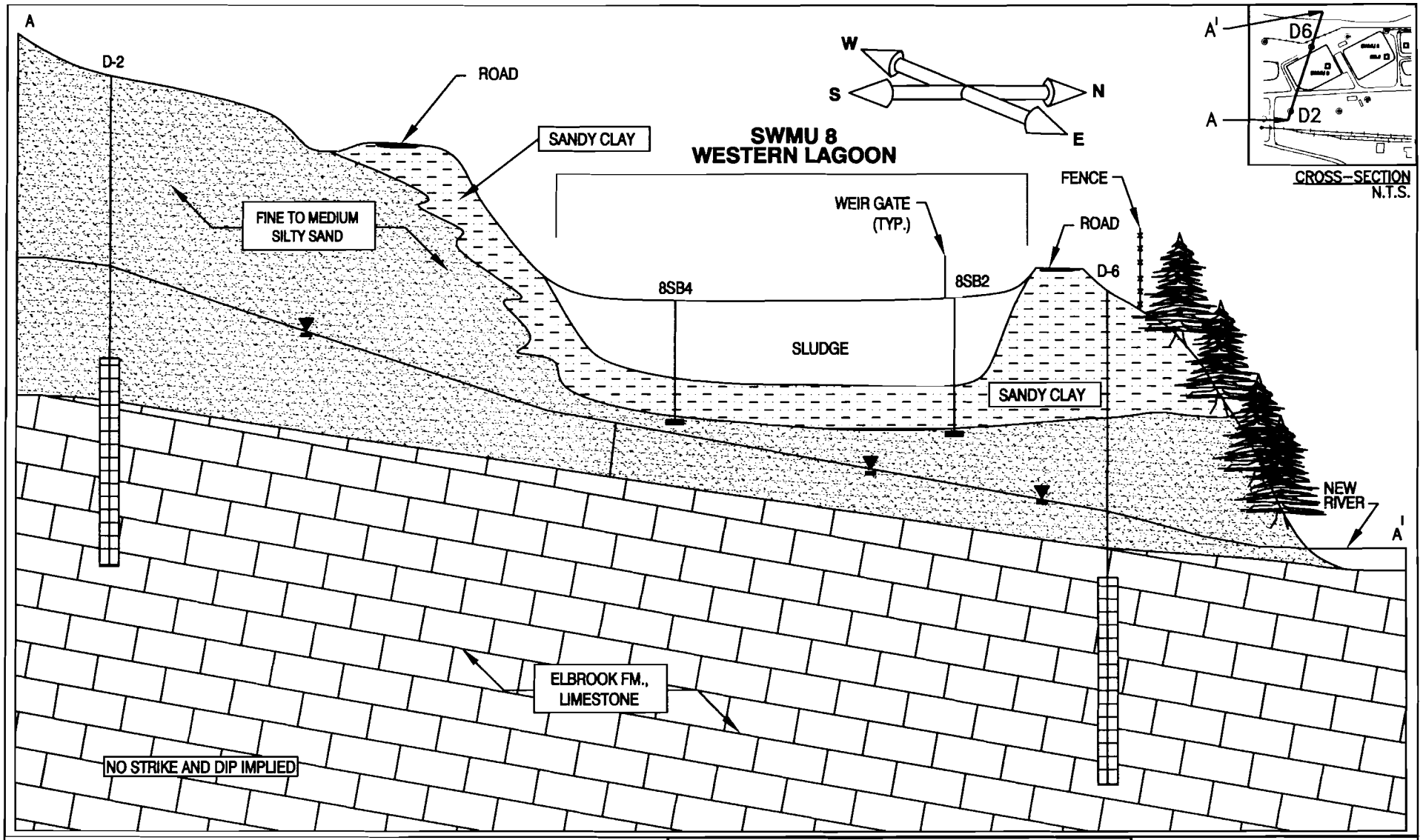
2.1.4 Groundwater

Field and laboratory permeability (hydraulic conductivity) tests were performed during the NUS Hydrogeologic Investigation although the exact methodologies are not described. Media tested can roughly be grouped as sand and silt, gravel, and limestone (based on NUS classifications). Permeabilities in sand and silt reportedly ranged from 3.2×10^{-3} to 1.37×10^{-2} centimeters per second (cm/sec) with an average of 1.79×10^{-3} cm/sec. Permeabilities in gravel reportedly ranged from 2.17×10^{-3} to 8.33×10^{-3} cm/sec with an average of 4.83×10^{-3} cm/sec. Permeabilities in limestone ranged from 1.73×10^{-4} to 2.08×10^{-2} cm/sec with an average of 7.42×10^{-3} cm/sec. These values indicate an increase in average permeability values with an increasing depth from sand and silt to gravel to limestone.

Groundwater monitoring well data from SWMU 8 indicates that the potentiometric surface is present at depths ranging from approximately 13 to 25 ft bgs. Well data indicate that groundwater flow is north toward the New River with a component of flow east of SWMU 36 toward Stroubles Creek (NUS 1980).

2.1.5 Tanks and Structures

SWMU 35, $CaSO_4$ Drying Bed, is located immediately to the west and adjacent to SWMU 8, and SWMU 10, Bioplant Basin, is located adjacent and to the west of SWMU 35. Other tanks and structures near SWMU 8 and SWMU 36 include the new concrete settling tank located at SWMU 8 (Eastern Lagoon) and an underground water line leading to the New River.



LEGEND

Well Screen

Static Groundwater Elevation

Horizontal Scale: 0 — 200; 1 inch = 200 feet

Vertical Scale: 0 — 200; 1 inch = 200 feet

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Soil Screening Report, SWMUs 8 and 36

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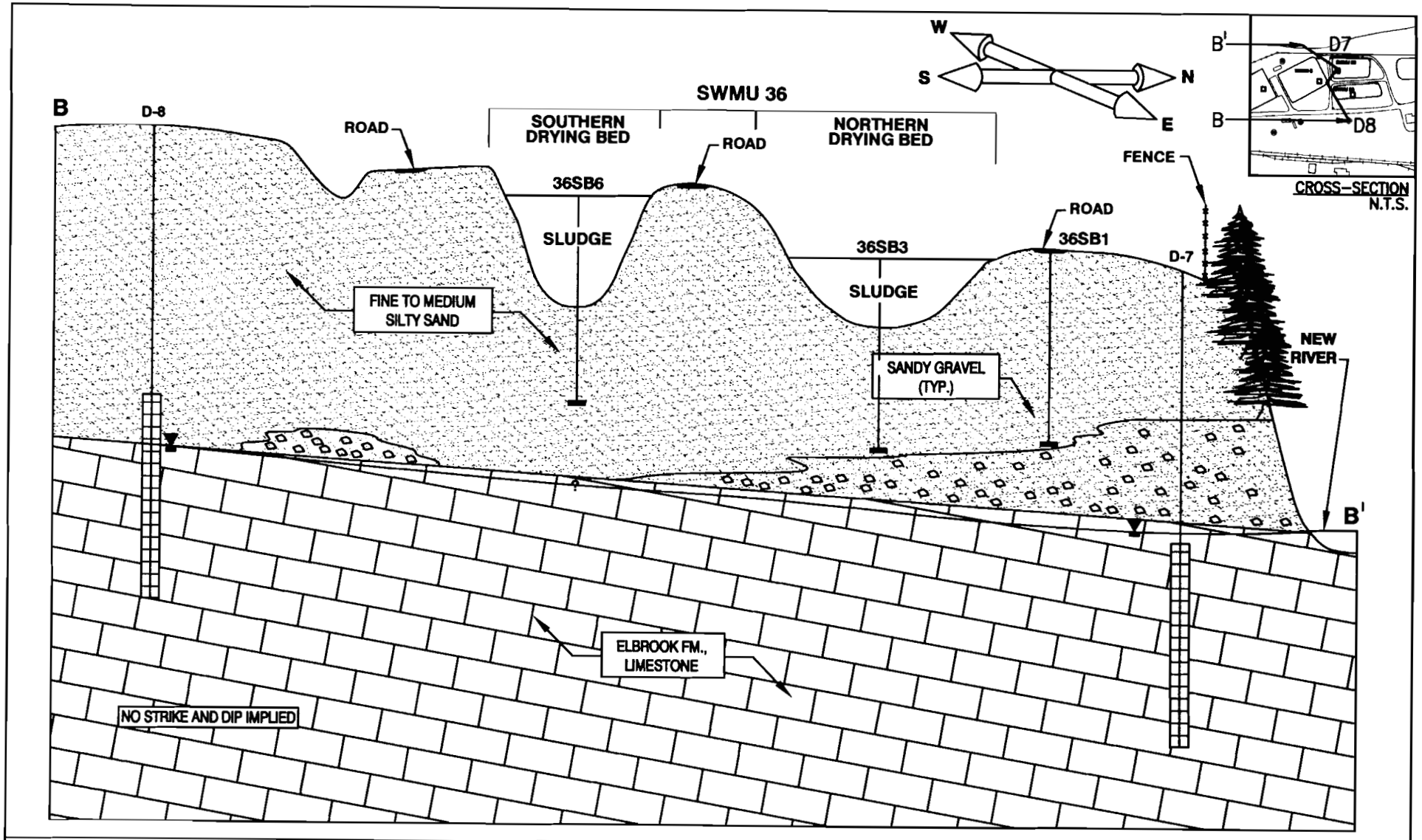
FIGURE 2-2

GEOLOGIC CROSS-SECTION FOR SWMU 8



LEGEND

Well Screen

Static Groundwater Elevation

Horizontal Scale

0 200

1 inch = 200 feet

Vertical Scale

0 200

1 inch = 200 feet

RFAAP

Soil Screening Report, SWMUs 8 and 36

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AUGUST 2003	*KDC/DR*
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FIGURE 2-3

GEOLOGIC CROSS-SECTION FOR SWMU 36

2.2 SITE BACKGROUND – HISTORY

SWMUs 8 and 36 are units used for the settling (SWMU 8) and drying (SWMU 36) of $CaSO_4$ sludge (USEPA 1987). Historically, the SWMU 8 lagoons have received treated wastewater from the A-B Line Acidic Wastewater Treatment Plants (ATK 2003). The A-B Line Acidic Wastewater Treatment Plant has received acidic wastewater from the acid sewer collection system in the acid area and from the B-Line nitrocellulose production area. The acid area produced concentrated nitric acid and sulfuric acid for production of nitrocellulose and nitroglycerin. Until the mid-1990s, the wastewater from C-Line nitrocellulose manufacturing went to the C-Line Acidic Wastewater Treatment Plant and then to SWMU 9. In the 1990s, the C-Line wastewater was directed to the A-B Line Acidic Wastewater Treatment and then to SWMU 8. The neutralization process at the Acidic Wastewater Treatment Plant uses hydrated lime ($Ca(OH)_2$) and soda ash (Na_2CO_3) resulting in the primary byproducts calcium sulfate and water.

The treated wastewater received by SWMU 8 was directed through a series of weir gates in the lagoons, allowing the $CaSO_4$ to precipitate and settle in the lagoons as sludge (Dames and Moore 1992). The supernatant was discharged to the New River via Virginia Pollutant Discharge Elimination System (VPDES) Outfall 007 adjacent to the unit. The SWMU 8 lagoons were operated on an alternating basis to accommodate maintenance and sludge removal. The $CaSO_4$ sludge was periodically removed from the SWMU 8 lagoons and placed into the adjacent drying beds at SWMU 36 (Dames and Moore 1992). Between 1982 and 1991, dried sludge removed from the beds was disposed of in Fly Ash Landfill No. 2 (SWMU 29). On December 14, 1998, the Closure Report for the Eastern Lagoon of SWMU 8 was submitted to USEPA. In October 1999, the lagoon was replaced with a concrete tank. Each drying bed of SWMU 36 no longer received sludge after October 1999. No sludge has been removed from the drying beds since 1991.

2.2.1 Previous Investigations

The following section reviews previous site investigations, emphasizing the usability of collected data and the screening of historical data with respect to current criteria (i.e., current Risk-Based Concentrations [RBCs] and USEPA Region III Biological Technical Assistance Group [BTAG] Screening Values).

2.2.1.1 Hydrogeologic Investigation – 1980

In 1980, as part of a hydrogeologic investigation, NUS Corporation advanced eight monitoring well borings near SWMU 8 to study subsurface conditions at the site. Analyses of selected physical properties were conducted (i.e., soil permeability and cation-exchange capacity). Tested samples were identified as fine sand or silt and exhibited a cation-exchange capacity between 2.9 and 11.4 milliequivalents per gram (meq)/100 gram (gm) of soil (NUS 1980). Boring logs presented by NUS were used, in part, to generate the geologic cross-sections presented as Figures 2-2 and 2-3.

2.2.1.2 RCRA Facility Assessment – 1987

In 1987, USEPA conducted a RCRA Facility Assessment (RFA) of RFAAP, which was designed to "evaluate releases of hazardous waste or hazardous constituents and to implement corrective actions, as necessary, under the broad authorities of the 1984 Hazardous and Solid Waste Amendments (HSWA) (USEPA 1987)." SWMU 8 was identified as managing neutralized acidic wastewater from the Acidic Wastewater Treatment Plant (USEPA 1987).

USEPA noted during the 1987 site visit, "each of these units contained what appeared to be calcium sulfate sludge and received 1,000 tons of sludge." In 1982, the sludge from SWMU 8 was analyzed for

reactivity. The data indicated that the sludge was not a reactive waste (USEPA 1987). Visible signs of release were noted absent during the April 1987 site visit (USEPA 1987).

2.2.1.3 Verification Investigation – 1992

In 1992, as part of a Verification Investigation (VI), Dames and Moore collected and analyzed sludge samples from SWMUs 8 and 36 to "evaluate whether hazardous constituent concentrations exceed[ed] the [then current] health based numbers (HBNs) in the [Facility] permit." One sample was collected from the top one foot of sludge from each of the two lagoons at SWMU 8 (samples 8SL1 and 8SL2). The two sludge samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and toxicity characteristic leaching procedure (TCLP) metals.

A composite sludge sample was collected from each of the three drying beds (samples 36SL1, 36SL2, and 36SL3). A five-foot hand-auger boring was advanced near the center of each bed and a sample was composited from multiple depth intervals in each five-foot boring to provide a representative sample of numerous sludge-drying episodes (Dames and Moore 1992). The samples were analyzed for VOCs, SVOCs, and TCLP metals.

Tables 2-2 and 2-3 present a summary of the detected constituents as part of the waste characterization investigation at SWMUs 8 and 36. Reported constituent concentrations were below both current Residential and Industrial Risk-Based Concentrations (R-RBCs and I-RBCs; October 2003) and TCLP Regulatory Limits. Concentrations of fluoranthene in sample 36SL1 and phenanthrene in samples 36SL1 and 36SL2 were above the ecological Draft BTAG Soil Screening Levels.

Table 2-2
Summary of Detected Analytes for Sludge Samples Collected at SWMUs 8 and 36
Modified from Dames and Moore Verification Investigation Report
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID Sample Date Sample Depth (ft bgs)	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SL1 1/15/1992 5.0	36SL2 1/15/1992 5.0	36SL3 1/15/1992 5.0	8SL1 1/15/1992 1.0	8SL2 1/15/1992 1.0
Volatiles (mg/kg)								
1,1,1-TRICHLOROETHANE	2,190	28,616	0.031	<0.004	0.011	<0.004	<0.004	0.025
ACETONE	7,039	91,980	--	0.229	<0.017	<0.017	<0.017	<0.017
CHLOROFORM	78.2	1,022	0.300	<0.001	<0.001	<0.001	0.016	<0.001
Semivolatiles (mg/kg)								
DI-N-BUTYL PHTHALATE	782	10,220	1.40	4.4	1.11	<0.305	<0.305	<0.305
N-NITROSODIPHENYLAMINE[1]	130	584	0.028	24.3	12.3	12.2	<0.95	<0.95
FLUORANTHENE	313	4,088	0.600	4.77	<0.34	<0.34	<0.34	<0.34
PHENANTHRENE [2]	235	3,066	0.240	2.12	0.43	<0.165	<0.165	<0.165

Notes:

ft bgs = Feet Below Ground Surface

RBC = Risk-Based Concentration

BTAG = USEPA Region III Draft Biological Technical Assistance Group Screening Levels

USEPA = U.S. Environmental Protection Agency

USEPA Region III Risk-Based Concentration (RBC) values from the October 15, 2003 RBC Table

Adjusted RBCs = a Hazard Quotient (HQ) of 0.1 applied to non-carcinogens

mg/kg = Milligram Per Kilogram

VI = Verification Investigation

-- = No Risk Criteria Available

= Concentration Above Soil Residential RBC

= Concentration Above Soil Industrial RBC

= Concentration exceeds BTAG Screening Level

[1] = RBC value is for the sum of the isomers called aminodinitrotoluenes

[2] = RBC value for pyrene was used for phenanthrene

Table 2-3
Summary of Detected TCLP Analytes for Sludge Samples Collected at SWMUs 8 and 36
Modified from Dames and Moore Verification Investigation Report
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID Sample Date Sample Depth (ft bgs)	TCLP Regulatory Threshold	36SL1 1/15/1992 5.0	36SL2 1/15/1992 5.0	36SL3 1/15/1992 5.0	8SL1 1/15/1992 1.0	8SL2 1/15/1992 1.0
TCLP Metals (µg/L)						
BARIUM	100,000	284	209	371	341	231
CHROMIUM	5,000	36.2	30.4	<6.02	15.4	40.6
SILVER	5,000	7.84	6.21	12.5	5.49	5.29

Notes:

ft bgs = Feet Below Ground Surface

µg/L = Microgram Per Liter

SWMU = Solid Waste Management Unit

TCLP = Toxicity Characteristic Leaching Procedure

= Concentration Above TCLP Regulatory Threshold

2.2.1.4 Installation Assessment (Air Photo Interpretation) – 1992

The Environmental Photographic Interpretation Center (EPIC), under direction of the USEPA, performed an assessment of multiple SWMUs at RFAAP using selected aerial photographs from 1937 to 1986. Two lagoons at SWMU 8, first visible in the 1953 photograph and visible again in the 1962 photograph, appear to be empty in both photographs (USEPA 1992). USEPA noted that both lagoons remained unchanged through the 1971 photograph. In the 1986 photograph, the Western Lagoon "appears to contain low vegetation."

One drying bed at SWMU 36 was first noted on the 1962 photograph as "containing liquid." USEPA reported, "Between 1962 and 1966, two lagoons were constructed where one lagoon was visible in the 1962 photography" and "the eastern most lagoon in this site was constructed between 1966 and 1970." The 1962 photograph reportedly depicts the eastern-most lagoon contained "medium-toned liquid," while those to the west contained "medium- and dark-toned material." Reportedly, the 1986 photograph depicts each lagoon at SWMU 36 "appear to be dry at this time." This photograph depicts the eastern lagoon as "partially vegetated with light- and dark-toned material present and the northern lagoon appears to be completely re-vegetated, while the southern lagoon appears to contain a light-toned material."

2.2.1.5 New River and Tributaries Study – 1997

The objective of this study was to provide data for migration pathways along the river and tributaries to assess adverse impacts to human health and the environment (Parsons 1997). One sediment sample (NRSE11) was collected from the New River downstream from SWMUs 8 and 36. The sample was analyzed for VOCs, SVOCs, pesticides/polychlorinated biphenyls (PCBs), explosives, total organic carbon, total organic halogens, and Target Analyte List (TAL) metals. VOCs, SVOCs, explosives, and pesticides/PCBs were not detected at concentrations above detection limits. Several TAL metals were detected but at concentrations below their respective Facility-wide background point estimates.

2.2.2 Conceptual Site Model

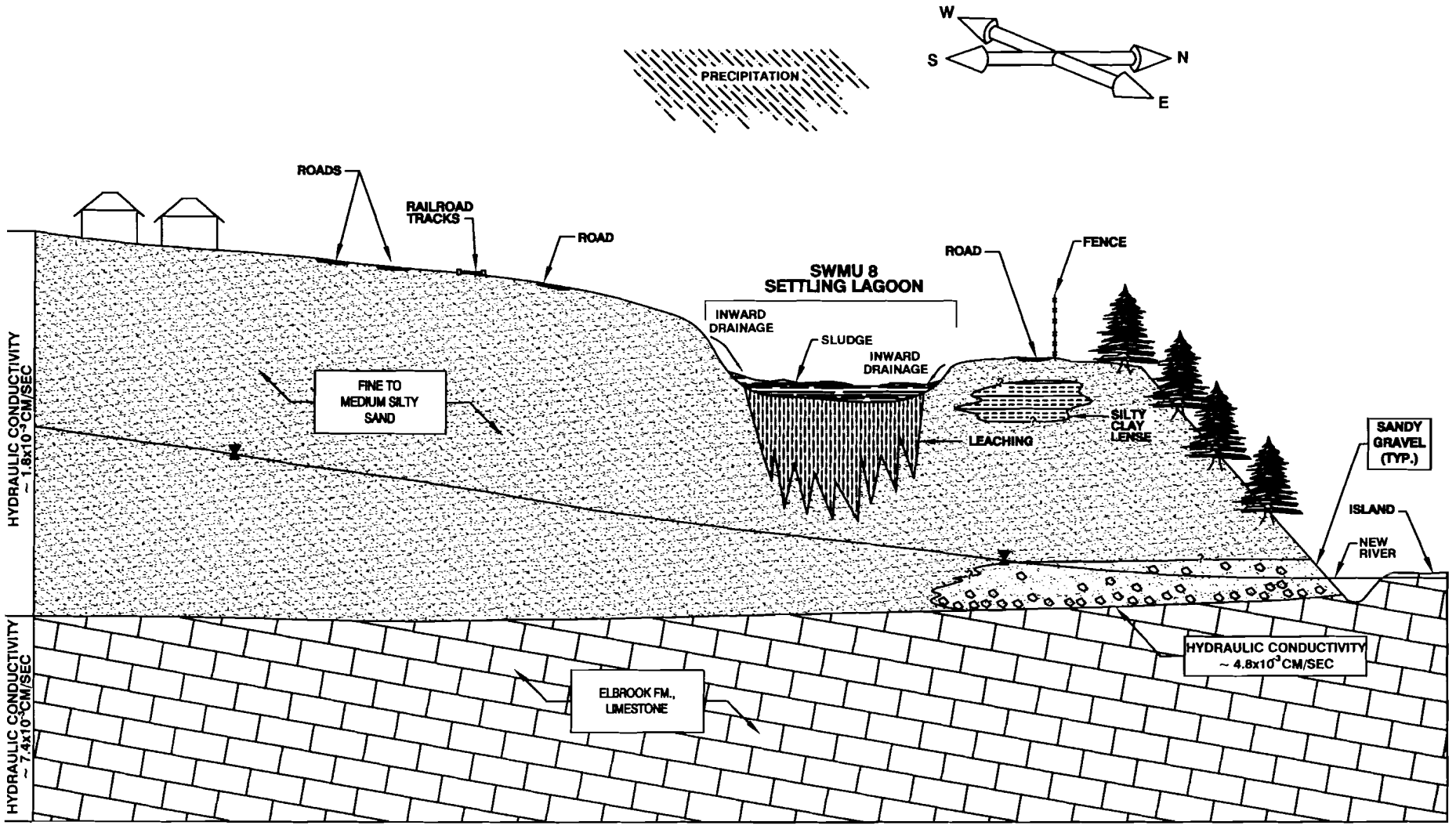
A site-specific CSM has been developed for SWMUs 8 and 36 to assess potential contaminant sources, exposure pathways, and human and ecological receptors (Figure 2-4 and 2-5). Potentially affected media include surface soil, subsurface soil, and groundwater. The SWMUs are located within gently sloping topography adjacent to the steep banks of the New River and Stroubles Creek (SWMU 36). Both SWMUs 8 and 36 are depressed, suggesting that precipitation will infiltrate into the ground rather than migrate overland to a surface water body from the SWMUs.

Subsurface geology is indicated as a fine to medium, silty sand stratum with increasing gravel with depth. Gravel rich deposits are represented as discontinuous layers. Silty clay observed in boring D-6 is represented as a possible clay lens down gradient of SWMU 8. The water table surface is represented as sloping moderately to gently down toward the New River. Limited data regarding depth to groundwater indicates a variable water table surface within soil and alluvium as well as bedrock. A possible pathway may exist to groundwater via infiltration of water that may collect in the lagoons.

While site groundwater discharge may be hydraulically connected to the New River, the completeness of this pathway is unknown. Due to the complexity of the groundwater pathway (i.e., potential karst features and a fractured bedrock flow regime) in the MMA and at SWMUs 8 and 36, the groundwater pathway at SWMUs 8 and 36 will be investigated under WPA 009 and subsequent groundwater studies at the MMA.

Although current and future land-use scenarios are limited to industrial operations, both industrial and residential scenarios have been considered. SWMUs 8 and 36 are enclosed by the site perimeter fence; therefore, receptors for a potential future residential scenario and for the current industrial scenario include possible future residents, site workers, future construction workers, and terrestrial biota. Figures 2-6 and 2-7 present the potential exposure pathways for each receptor at each SWMU. Based on current data available for the sites, leaching of constituents into subsurface soil is a potential migration pathway at both SWMU 8 and SWMU 36. Direct deposition of wastewater (SWMU 8) and sludge (SWMU 36) is considered a release mechanism to surface soil at these sites. Site workers, construction workers, and terrestrial biota could contact surface soil via incidental ingestion of soil, inhalation of fugitive dust, and dermal absorption through direct contact with soil.

Leaching of constituents through site soil is considered a potential release mechanism to subsurface soil and possibly groundwater at the site. In turn, subsurface soil and groundwater may be received by potential future construction workers via incidental ingestion of soil or groundwater, inhalation of dust or groundwater, and dermal absorption through direct contact with soil or groundwater.



CONCEPTUAL DRAWING - NO SCALE IMPLIED

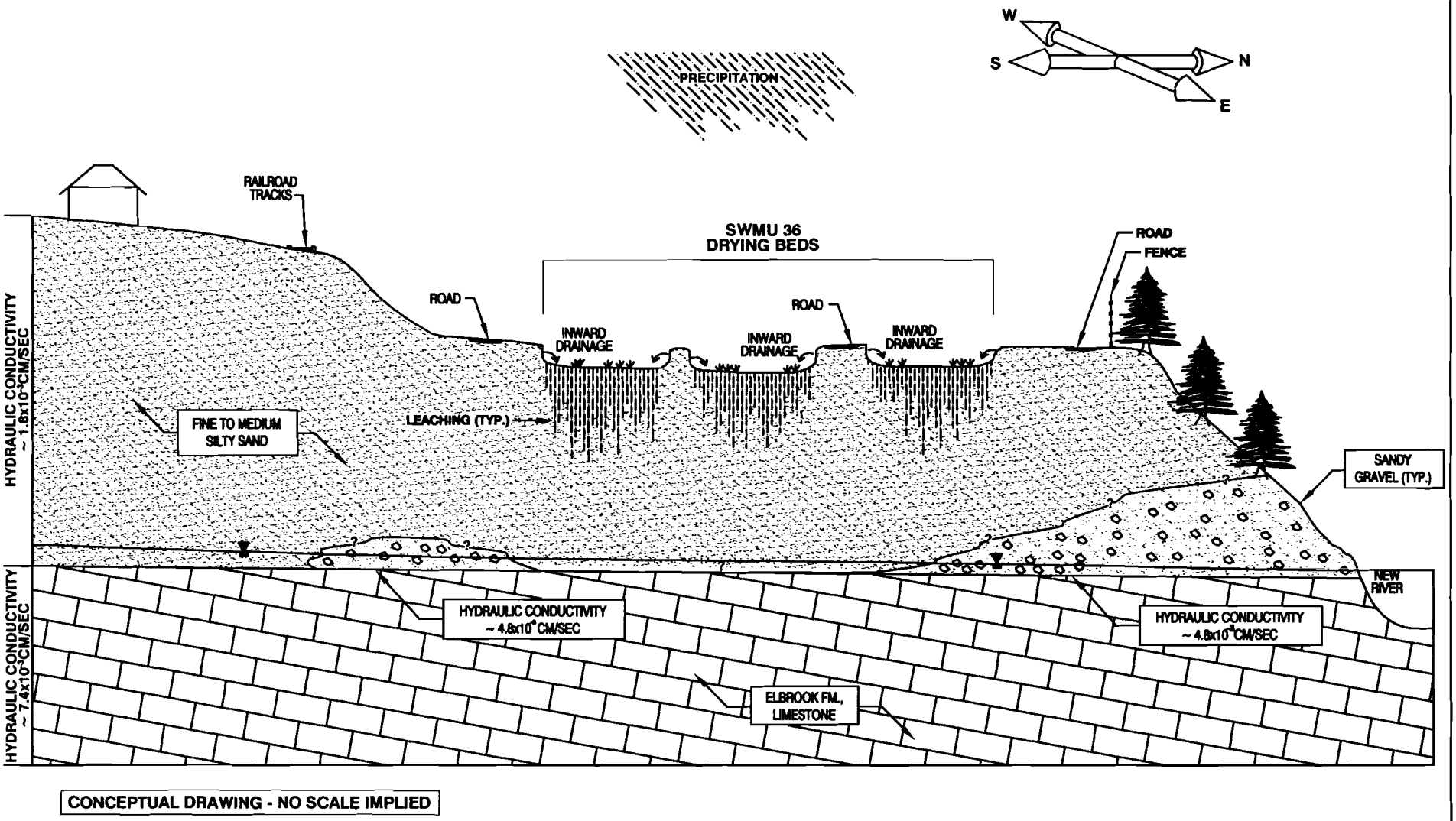
RFAAP

Soil Screening Report, SWMUs 8 and 36

Date:	Prepared By:
AUGUST 2003	*KDC/DR*
Scale:	**File Name:**
NO SCALE	*09604-323-155*

FIGURE 2-4

CONCEPTUAL SITE MODEL FIGURE FOR SWMU 8



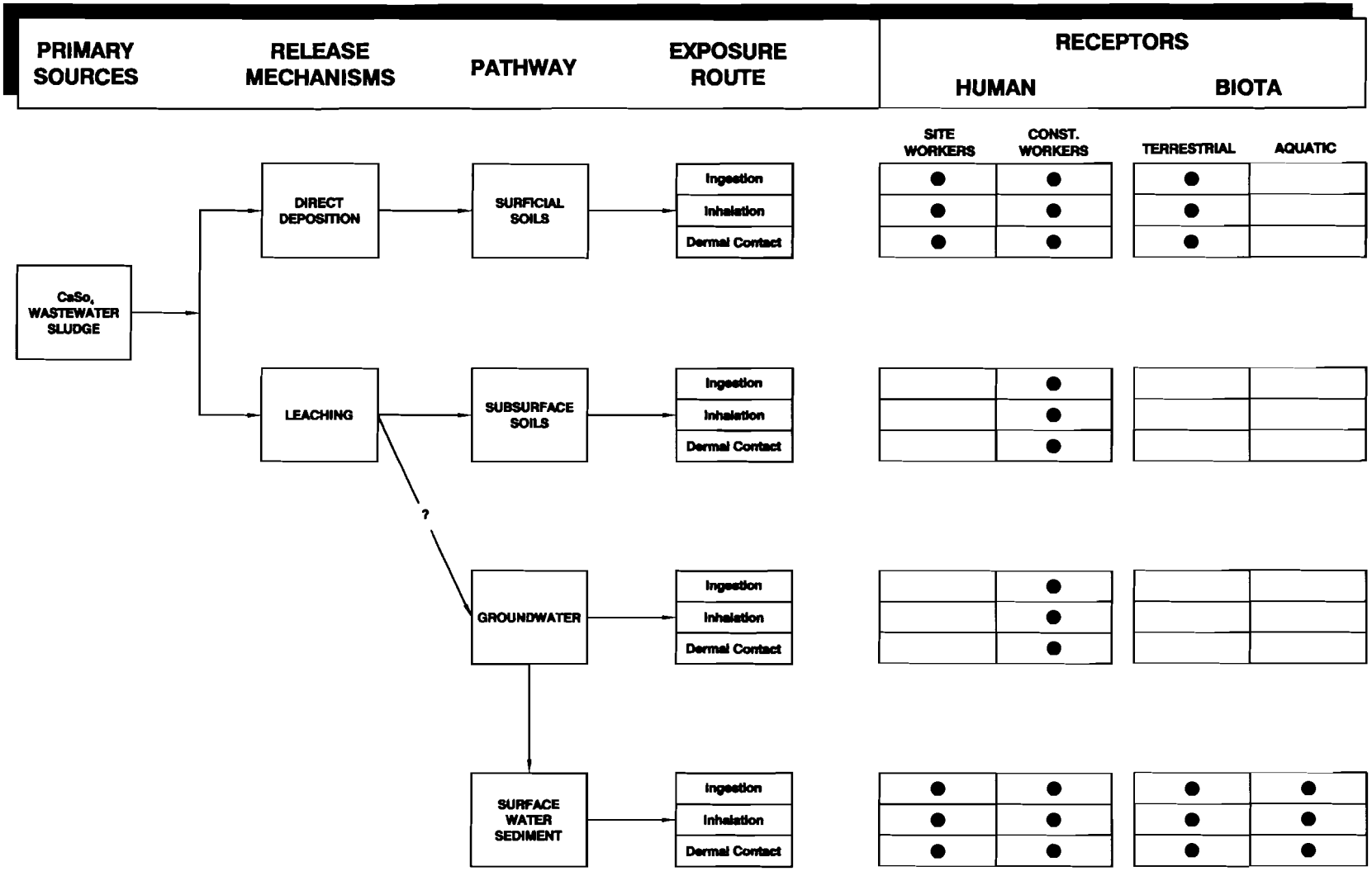
RFAAP

Soil Screening Report, SWMUs 8 and 36

Date: *AUGUST 2003*	**Prepared By:** *KDC/DR*
Scale: *NO SCALE*	**File Name:** *09604-323-155*

FIGURE 2-5

CONCEPTUAL SITE MODEL FIGURE FOR SWMU 36



RFAAP

Soil Screening Report, SWMUs 8 and 36

Date:	Prepared By:
AUGUST 2003	*KDC/DR*
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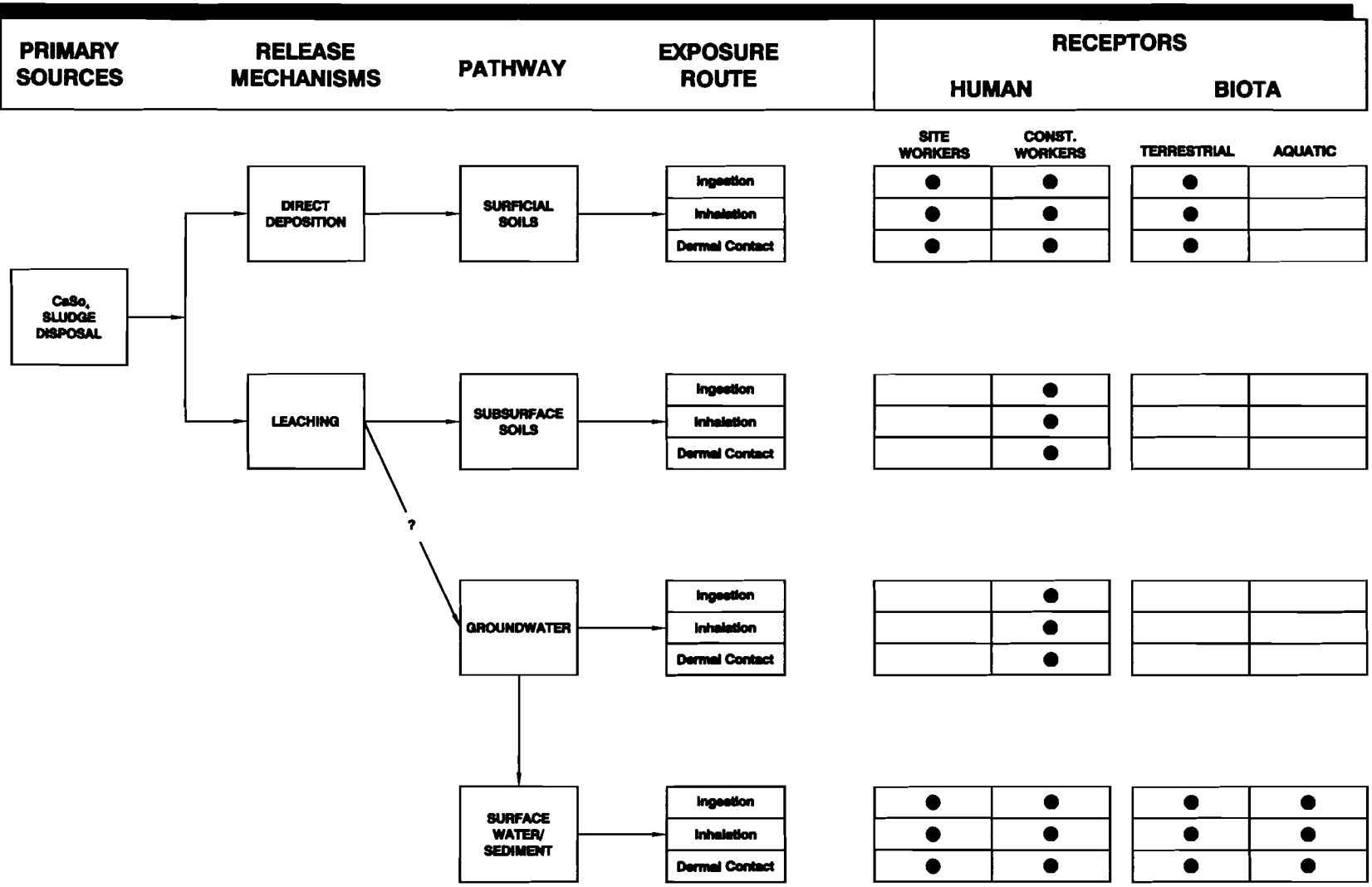
FIGURE 2-6

CONCEPTUAL SITE MODEL DIAGRAM FOR SWMU 8



RFAAP

Soil Screening Report, SWMUs 8 and 36

Date:	Prepared By:
AUGUST 2003	*KDC/DR*
Scale:	**File Name:**
NO SCALE	*09604-323-155*

FIGURE 2-7

CONCEPTUAL SITE MODEL DIAGRAM FOR SWMU 36

2.2.3 Data Gap Analysis

The data gap analysis presented in WPA 015 indicated that limited sludge sampling had occurred at SWMUs 8 and 36; however, chemical data regarding deeper soil and perimeter soil had not been collected prior to this Soil Screening investigation (see WPA 015, Section 1.2.5). The following data gaps were identified in WPA 015:

- TCL VOCs represented a data gap for surface and subsurface soil;
- TCL SVOCs and polynuclear aromatic hydrocarbons (PAHs) represented a data gap for surface and subsurface soil;
- TCL pesticides/PCBs represented a data gap for surface soil;
- Explosives (including nitroglycerin) represented a data gap for surface and subsurface soil;
- TAL metals represented a data gap for surface and subsurface soil;
- RCRA hazardous waste characterization data for soil and sludge was lacking; and
- Physical soil data to access the mobility of constituents in soil was lacking.

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3.0 SAMPLING AND ANALYSIS PLAN

The following sections discuss the sampling and analysis plan (SAP) for the Soil Screening at SWMUs 8 and 36. Figure 3-1 and Table 3-1 present sample identifiers, analytical test methods, and sample collection locations. Appendix B, *Summary of Field Investigation Program and Standard Operating Procedures*, presents detailed descriptions of sampling procedures, methodologies, equipment used, and deviations from the WPA. Figure B.1 and Table B.1 in Appendix B present complete soil boring and sample location information and correlate the boring information with the sample identifiers.

3.1 DISCRETE SAMPLING

An objective of the Soil Screening was to evaluate risk from soil at SWMUs 8 and 36 and within the surrounding soil during possible future construction activities. Data collected from the discrete sampling was used to conduct the risk screening presented in Section 4.0 and to characterize soil that may remain in place after the future construction is completed. Twenty-four borings were advanced as described below.

3.1.1 Borings Inside SWMUs 8 and 36

Borings advanced within the SWMU 8 lagoon and the SWMU 36 drying beds were selected to provide information regarding the chemical nature of native (*in situ*) soil underlying the sludge material. Borings 8SB2 and 8SB4 were completed inside SWMU 8 to sampler refusal approximately 10 and 8.5 ft bgs respectively. At borings 8SB2 and 8SB4, one discrete soil sample was collected from below the sludge-native soil interface rather than the planned two samples at this location because of the shallower than expected depth of refusal. Samples collected from below the sludge in these borings were composed of the entire interval of soil between the sludge/*in situ* soil interface and the soil boring termination.

Borings 36SB3, 36SB6, and 36SB10 were completed inside SWMU 36 to a depth approximately 10 ft below the sludge-native soil interface (boring completion depth approximately 15 ft bgs). For these borings, discrete samples were collected from directly below the sludge-native soil interface and from the bottom of the boring (approximately 10 ft below the sludge/soil interface). Sample identifiers, depths, and locations are presented in Figure 3-1 and Table 3-1.

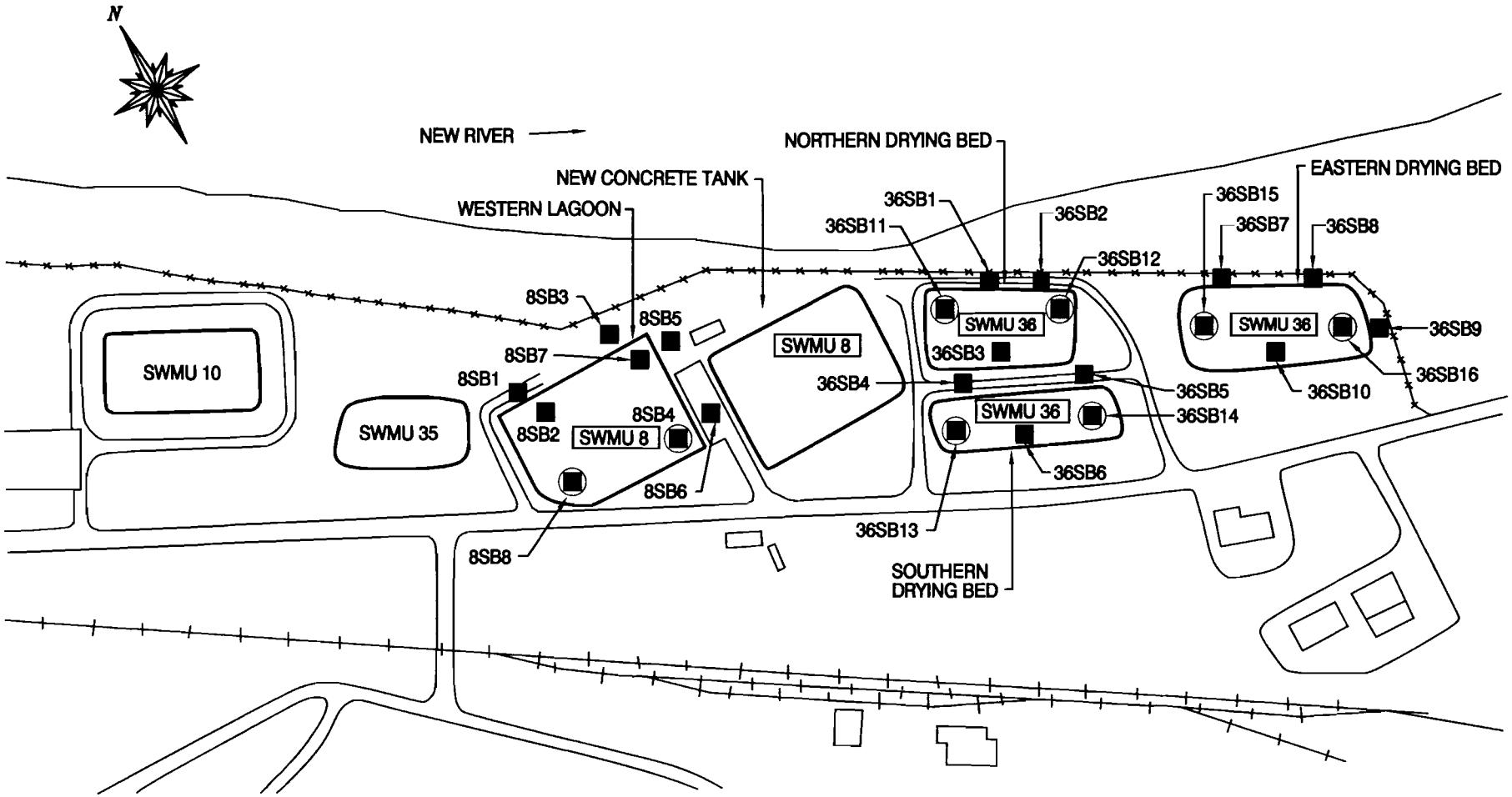
3.1.2 Borings Outside of SWMUs 8 and 36

Borings 8SB1, 8SB3, 8SB5, and 8SB6 were completed outside of the bermed area of SWMU 8. Borings 36SB1, 36SB2, 36SB4, 36SB5, 36SB7, 36SB8, and 36SB9 were completed outside the bermed areas of SWMU 36. Each of these borings was advanced to a depth of approximately 15 ft bgs. Discrete samples were collected at the surface (0 to 6 inches bgs below vegetative, or organic layers and 6 to 12 inches bgs for VOCs) and at the boring termination depth (15 ft bgs). Figure 3-1 and Table 3-1 present sample identifiers, depths, and locations.

3.1.3 Chemical Analysis of Discrete Samples

Thirty-one discrete soil samples (not including field QA/QC samples) were collected for chemical analyses and analyzed for the following parameters (Figure 3-1 and Table 3-1):

- TCL VOCs by SW-846 Test Method 8260B;
- TCL SVOCs by SW-846 Test Method 8270C;
- PAHs by SW-846 Test Method 8310;



LEGEND

- Soil Borings
- Sludge Composite Sample Borings Only

0 200

1 inch = 200 feet

RFAAP

Soil Screening Report, SWMUs 8 and 36

Date:	Prepared By:
AUGUST 2003	*KDC/DR*
Scale:	**File Name:**
AS SHOWN	*09604-353-155*

FIGURE 3-1

SOIL BORING AND SAMPLING LOCATIONS (MODIFIED FROM DAMES & MOORE, 1992)

Table 3-1
Summary of Soil Sample Analyses
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

		Sample Position			Chemical Analysis									Physical Analysis					
Sample ID	Depth (ft bgs)	Outside Sludge Area	Sludge Material	Below Sludge	SW-846 Method 8260B	SW-846 Method 8270C	SW-846 Method 8310	SW-846 Methods 8330/8332	SW-846 Methods 8081A/8082	SW-846 Method 6010B/7471A	TCLP full list	SW-846 Method 9045C Corrosivity	SW-846 Method 9095B Paint Filter	Grain Size ASTM D 422-98	Total Organic Content ASTM D 2974-00	Water Content ASTM D 2216-98e1	Hydrometer ASTM D 4318-00	pH ASTM D 4972-01	USCS Symbol
SWMU 8																			
Surface Soil																			
8SB1A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X		X									
8SB3A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X	X	X									
8SB5A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X		X									
8SB6A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X	X	X									
Subsurface Soil																			
8SB1C	15	X			X	X	X	X		X									
8SB2B	5			X	X	X	X	X	X	X									
8SB3C	15	X			X	X	X	X		X				X	X	X	X	X	X
8SB4C	8.5			X	X	X	X	X		X									
8SB5C	15	X			X	X	X	X		X									
8SB6C	15	X			X	X	X	X		X									
8SB7B	5			X	X	X	X	X	X	X									
8SB7B-DUP	5			X	X	X	X	X	X	X									
Composite Sample																			
8SC1			X								X	X	X						
8SC2			X								X	X	X						

Table 3-1 (Continued)
Summary of Soil Sample Analyses
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID	Depth (ft bgs)	Sample Position			Chemical Analysis									Physical Analysis					
		Outside Sludge Area	Sludge Material	Below Sludge	SW-846 Method 8260B	SW-846 Method 8270C	SW-846 Method 8310	SW-846 Methods 8330/8332	SW-846 Methods 8081A/8082	SW-846 Method 6010B/7471A	TCLP full list	SW-846 Method 9045C Corrosivity	SW-846 Method 9095B Paint Filter	Grain Size ASTM D 422-98	Total Organic Content ASTM D 2974-00	Water Content ASTM D 2216-98e1	Hydrometer ASTM D 4318-00	pH ASTM D 4972-01	USCS Symbol
SWMU 36																			
Surface Soil																			
36SB1A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X		X									
36SB2A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X	X	X									
36SB4A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X		X									
36SB5A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X		X									
36SB5A-DUP	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X		X									
36SB7A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X	X	X									
36SB8A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X		X									
36SB9A	0-0.5 (0.5-1 for VOCs)	X			X	X	X	X	X	X									
Subsurface Soil																			
36SB1C	15	X			X	X	X	X		X									
36SB2C	15	X			X	X	X	X	X	X									
36SB3B	5			X	X	X	X	X	X	X									
36SB3C	15			X	X	X	X	X		X				X	X	X	X	X	X
36SB4C	15	X			X	X	X	X		X									
36SB5C	15	X			X	X	X	X		X									
36SB6B	7-10			X	X	X	X	X	X	X									
36SB6C	14-15			X	X	X	X	X		X									
36SB7C	15	X			X	X	X	X		X									
36SB8C	15	X			X	X	X	X		X									
36SB9C	15	X			X	X	X	X		X									
36SB9C-DUP	15	X			X	X	X	X		X									
36SB10B	5-6			X	X	X	X	X	X	X									
36SB10C	15			X	X	X	X	X		X									
36SB10C-DUP	15			X	X	X	X	X		X									
Composite Sample																			
36SC1			X								X	X	X						
36SC2			X								X	X	X						
36SC3			X								X	X	X						
36SC4			X								X	X							

Notes:
ft bgs = Feet Below Ground Surface
VOC = Volatile Organic Compound
SVOC = Semivolatile Organic Compound
TCLP = Toxicity Characteristic Leaching Procedure
USCS = Unified Soil Classification System

- Explosives (including nitroglycerin) by SW-846 Test Methods 8330 and 8332;
- TCL pesticides and PCBs (11 selected samples) by SW-846 Test Methods 8081A and 8082; and
- TAL metals by SW-846 Test Methods 6010B and 7471A.

3.1.4 Physical Testing of Discrete Samples

Two representative discrete soil samples were analyzed for the following physical parameters:

- Grain-size analysis (ASTM D 422-98);
- Soil moisture content (ASTM D 2216-98e1);
- Total organic content (ASTM D 2974-00);
- pH (ASTM D 4972-01); and
- Visual manual soil classification modified to use grain-size analysis data (ASTM D 2488-94).

3.2 COMPOSITE SAMPLING

A second objective of the sampling investigation at SWMUs 8 and 36 was to evaluate SWMU material and subsurface soil with respect to hazardous waste characteristics. The RCRA hazardous waste characteristic data was used to assess appropriate handling method(s) for media excavated during future construction activities. Composite sampling is discussed in the following sections.

3.2.1 *In Situ* Soil below Sludge

Two composite samples of *in situ* soil directly underlying the sludge material were collected from SWMUs 8 and 36 at the following locations:

- Western Lagoon of SWMU 8 – one sample (8SC1) of *in situ* soil was collected and composited from borings 8SB2 and 8SB4; and
- Northern, Eastern, and Southern Drying Beds of SWMU 36 – one sample (36SC1) of *in situ* soil from borings 36SB3, 36SB6, and 36SB10 was collected and composited (Figure B-1 and Table B-1 in Appendix B).

Borings 8SB2 and 8SB4 were advanced to sampler refusal at depths of 10 ft bgs and 8.5 ft bgs, respectively. Borings 36SB3, 36SB6, and 36SB10 were advanced to the planned terminational depth of 15 ft bgs (Table 3-1).

3.2.2 Sludge Material

Four composite samples (8SC2, 36SC2, 36SC3, and 36SC4) of sludge material were collected and composited from multiple locations. The boring locations were completed to the bottom of the sludge layer approximately 5 ft bgs and samples were composited to be representative of multiple layers within the sludge material. Specifically, the following samples were collected to provide information regarding the characteristics of the sludge at each SWMU.

- Western Lagoon of SWMU 8 – a sludge sample (8SC2) was collected and composited from borings 8SB7 and 8SB8;

- Northern Drying Bed of SWMU 36 – a sludge sample (36SC2) was collected and composited from borings 36SB11 and 36SB12;

- Eastern Drying Bed of SWMU 36 – a sludge sample (36SC3) was collected and composited from borings 36SB13 and 36SB14; and

- Southern Drying Bed of SWMU 36 – a sludge sample (36SC4) was collected and composited from borings 36SB15 and 36SB16.

3.2.3 Composite Chemical Analysis

The six composite soil and sludge samples collected for RCRA hazardous waste characterization were analyzed for the following parameters:

- Toxicity Characteristic Leaching Procedure (TCLP) extraction with analyses including VOCs, SVOCs, pesticides, herbicides, and metals by various SW-846 Methods (full TCLP List);

- Corrosivity (pH); and

- Paint filter test.

4.0 ANALYTICAL RESULTS AND RISK SCREENING

The following sections present the analytical results for the SWMUs 8 and 36 Soil Screening including discrete and composite samples. Analytical results for discrete and composite samples are summarized in Tables 4-1 and 4-2, respectively (located at the end of Section 4.0). Tables 4-1 and 4-2 summarize the results for detected constituents; complete tables of analytical results are included in Appendix E (Tables E.1 and E.2); and Data Validation Qualifiers, Laboratory Qualifiers, and Data Validation Reason Codes are presented in Tables 4-3 to 4-5. Appendix E includes Laboratory Form I and Tentatively Identified Compound data sheets and Appendix F includes the Data Validation Reports.

The Soil Screening at SWMUs 8 and 36, consistent with the conceptual site model presented in Section 2.2.2, consists of the following components:

- Human Health Risk Screening – consisting of a comparison of the analytical data in Table 4-1 and Table E.1 (Appendix E) to the USEPA Region III R-RBCs and I-RBCs (October 2003) and the established Facility-wide inorganic background point estimate concentrations for metals (IT 2002b);

- Ecological Risk Screening – consisting of a comparison of the analytical data in Table 4-1 and Table E.1 (Appendix E) to the USEPA Draft BTAG Screening Levels (EPA 1995) and the established Facility-wide inorganic background point estimate concentrations for metals (IT 2002b); and

- Soil Screening Levels (SSLs) Comparison – consisting of a comparison of the analytical data in Table 4-1 and Table E.1 to the USEPA SSLs for leaching of contaminants from soil to groundwater using a dilution attenuation factor (DAF) of 20 (i.e., soil to groundwater screening levels, presented in Appendix G) and the established Facility-wide inorganic background point estimate concentrations for metals (IT 2002b).

Analytical chemistry results for the samples collected during the SWMUs 8 and 36 Soil Screening are compared to USEPA Region III R-RBCs and I-RBCs (USEPA 2003b) and to Facility-wide background soil inorganic constituent concentration point estimates (95% Upper Tolerance Limits) established in the Facility-Wide Background Study Report (IT 2002b). In accordance with USEPA Region III guidance, R-RBCs and I-RBCs for non-carcinogenic analytes have been adjusted downward to a Hazard Quotient (HQ) of 0.1 to ensure that chemicals with additive effects are not prematurely eliminated during screening.

Analytical results for inorganic constituents are indicated as exceedances when detected above an RBC and background point estimate. Elimination of screening level exceedances that are below established background soil inorganic constituent point estimates highlights site-attributable constituents on the tables and figures. Tables located at the end of this section summarize the comparison of analytical chemistry results for detected constituents with the current RBC screening values (October 2003) and background point estimates.

The second component of the evaluation was the comparison of composite sample data for sludge material and subsurface soil at SWMUs 8 and 36 to regulatory hazardous waste characteristics threshold values established in 40 CFR Part 261 (TCLP and other levels). These regulatory thresholds are used as the basis for assessing whether a waste material meets the definition of a RCRA characteristic hazardous waste. Comparisons of the composite data with established regulatory thresholds for RCRA characteristic hazardous waste are presented in Table 4-2 and Table E.2 (Appendix E).

4.1 HUMAN HEALTH RISK SCREENING

The following sections present a summary of the analytical results for discrete soil samples collected from surface soil and subsurface soil at SWMUs 8 and 36. Human health risk screening results are also presented in these sections.

4.1.1 Discrete Surface Soil Sample Results

The analytical results for the 11 surface soil samples are presented below and summarized in Table 4-1 (located at the end of Section 4) and Table E.1 (Appendix E).

TCL VOCs - Fifteen VOCs were detected in surface soil samples but at concentrations below their R-RBCs and I-RBCs. VOC detections were reported in each of the 11 samples collected.

TCL SVOCs - Three SVOCs were detected in surface soil samples but at concentrations below their R-RBCs and I-RBCs. SVOC detections were reported in two samples.

PAHs - Eight PAHs were detected in surface soil samples but at concentrations below their R-RBCs and I-RBCs. PAH detections were reported in five samples.

TCL Pesticides/PCBs – Five of the 11 surface soil samples collected were selected for analysis of TCL pesticides/PCBs (two from SWMU 8 and three from SWMU 36). Beta-BHC was detected in samples 36SB7A and 36SB9A. The concentrations of Beta-BHC detected were below the R-RBCs and I-RBCs. PCBs were not detected in surface soil samples.

Explosives – Explosive constituents were not detected in surface soil samples.

TAL Metals – Twenty-three metals were detected in surface soil samples. One metal, manganese, exceeded its corresponding Facility inorganic background point estimate and an RBC.

Manganese was detected in one surface sample (8SB3A) at a concentration above the I-RBC and RFAAP background. Manganese was detected in sample 8SB3A at a concentration of 3,210 mg/kg compared with the background 95% UTL of 2,543 mg/kg.

4.1.2 Discrete Subsurface Soil Sample Results

The analytical results for the 20 subsurface soil samples are presented below and summarized in Table 4-1 (located at the end of Section 4) and Table E.1 (Appendix E).

Sample results from inside and outside the bermed areas of SWMUs 8 and 36 are presented together since the soil concentrations and screening results were not obviously distinguishable.

TCL VOCs – Twenty-five VOCs were detected in subsurface soil samples but at concentrations below their R-RBCs and I-RBCs. VOC detections were reported in each of the 20 samples.

TCL SVOCs - Two SVOCs were detected in subsurface soil samples but at concentrations below their R-RBCs and I-RBCs. SVOC detections were reported in five subsurface samples.

PAHs - Eleven PAHs were detected in subsurface soil samples but at concentrations below their R-RBCs and I-RBCs. PAH detections were reported in 13 subsurface samples.

TCL Pesticides/PCBs – Five of the 20 subsurface soil samples were selected for analysis of TCL pesticides/PCBs (two from SWMU 8 and three from SWMU 36). Seven pesticides were detected in subsurface soil samples but at concentrations below their R-RBCs and I-RBCs. Pesticide detections were reported in five samples. PCBs were not detected in subsurface soil samples.

Explosives – Explosives were not detected in subsurface soil samples.

TAL Metals – Twenty-three metals were detected in subsurface soil samples but at concentrations below their R-RBCs and I-RBCs.

4.2 ECOLOGICAL RISK SCREENING

The following sections present the results of the ecological risk screening for the SWMUs 8 and 36 Soil Screening.

4.2.1 Discrete Surface Soil Sample Results

The results of the environmental risk screen for surface soil samples are summarized below and presented in Table 4-1 (located at the end of Section 4) and Table E.1 (Appendix E).

TCL VOCs – Detected VOC concentrations in surface soil samples were below USEPA Region III Draft BTAG Screening Levels.

TCL SVOCs – Detected SVOC concentrations in surface soil samples were below USEPA Region III Draft BTAG Screening Levels.

PAHs – Detected PAH concentrations in surface soil samples were below USEPA Region III Draft BTAG Screening Levels with the exception of benzo(k)fluoranthene in the duplicate sample at 36SB5A. Benzo(k)fluoranthene was not detected in 36SB5A and therefore, a detection above the Draft BTAG Screening Level was not confirmed at this location.

TCL Pesticides/PCBs – Detected pesticide concentrations in surface soil samples were below the USEPA Region III Draft BTAG Screening Levels. PCBs were not detected in surface soil samples.

Explosives – Explosives were not detected in surface soil samples.

TAL Metals – Twenty-three metals were detected in surface soil samples. Calcium, potassium, and sodium are essential nutrients and do not have Draft BTAG Soil Screening Levels. Aluminum, beryllium, chromium, cobalt, copper, iron, nickel, thallium, vanadium, and zinc were detected above their respective Draft BTAG Soil Screening Levels but were below their corresponding Facility inorganic background point estimate concentrations. Risk screening results for the other seven metals are presented below.

Antimony was detected in three surface soil samples at concentrations above the USEPA Region III Draft BTAG Screening Level of 0.48 mg/kg. The concentration range detected above this screening level was 0.59 mg/kg (8SB5A) to 1.6 mg/kg (36SB3A). A background range has not been established for antimony at RFAAP (IT 2002b).

Lead was detected in 11 surface soil samples at concentrations above the USEPA Region III Draft BTAG Screening Level of 0.010 mg/kg. Three samples (8SB3A, 36SB1A, and 36SB9A) had lead concentrations above the RFAAP background 95% UTL of 26.8 mg/kg (IT 2002b). Detected concentrations above background ranged from 32.8 mg/kg (8SB3A) to 48.8 mg/kg (36SB1A).

Magnesium was detected in 11 surface soil samples at concentrations above the USEPA Region III Draft BTAG Screening Level of 4,400 mg/kg. A background range has not been established for magnesium at RFAAP (IT 2002b).

Manganese was detected in 10 surface soil samples at concentrations above the USEPA Region III Draft BTAG Soil Screening Level of 330 mg/kg. Manganese concentrations detected in surface samples were within the range of background, with the exception of sample 8SB3A. The concentration of magnesium detected in sample 8SB3A (3,210 mg/kg) was above the background 95% UTL of 2,543 mg/kg (IT 2002b).

Mercury was detected in five surface soil samples at concentrations above the USEPA Region III Draft BTAG Soil Screening Level of 0.058 mg/kg. One sample (36SB8A) had a concentration above the background 95% UTL of 0.13 mg/kg (IT 2002b). The concentration of mercury reported for sample 36SB8A was 0.15 mg/kg.

Selenium was detected in one surface soil sample (8SB3A) at a concentration above the USEPA Region III Draft BTAG Screening Level of 1.8 mg/kg. The concentration of selenium detected in sample 8SB3A was 2.4 mg/kg. A background range has not been established for selenium at RFAAP (IT 2002b).

Silver was detected in two surface soil samples at a concentration above the USEPA Region III Draft BTAG Screening Level of 0.0000098 mg/kg. Both of the detections (8SB3A and 8SB7A) were estimated concentrations below the laboratory RL of 0.11 mg/kg. A background range has not been established for silver at RFAAP (IT 2002b).

4.2.2 Discrete Subsurface Soil Sample Results

The results of the ecological risk screen for subsurface soil samples are summarized below and presented in Table 4-1 (located at the end of Section 4) and Table E-1 (Appendix E).

TCL VOCs – Detected VOC concentrations in subsurface soil samples were below the USEPA Region III Draft BTAG Screening Levels.

TCL SVOCs – Detected SVOC concentrations in subsurface soil samples were below the USEPA Region III Draft BTAG Screening Levels.

PAHs – Detected PAH concentrations in subsurface soil samples were below the USEPA Region III Draft BTAG Screening Levels.

TCL Pesticides/PCBs – Detected pesticide concentrations in subsurface soil samples were below their Draft BTAG Soil Screening Levels except for sample 8SB7B-DUP, the duplicate for sample 8SB7B. 4,4-DDT was detected above the USEPA Region III Draft BTAG Soil Screening Level of <100 µg/kg in 8SB7B-DUP (DUP-4) at a concentration of 120 µg/kg. This detection was not confirmed in the associated co-located sample, 8SB7B (<5.8 µg/kg). PCBs were not detected in subsurface soil samples.

Explosives – Explosives were not detected in subsurface soil samples.

TAL Metals – Twenty-three metals were detected in subsurface soil samples. Calcium, potassium, and sodium are essential nutrients and do not have USEPA Region III Draft BTAG Screening Levels. Aluminum, beryllium, chromium, cobalt, copper, iron, manganese, nickel, thallium, and vanadium were detected above the Draft BTAG Soil Screening Levels but were below their corresponding Facility

inorganic background point estimate concentrations. Risk screening results for the other six metals are presented below.

Antimony was detected in six subsurface soil samples at concentrations above the USEPA Region III Draft BTAG Screening Level of 0.48 mg/kg. The concentration range detected above this screening level was 0.51 mg/kg (8SB4C) to 1.2 mg/kg (8SB7B). A background range has not been established for antimony at RFAAP (IT 2002b).

Lead was detected in 11 subsurface soil samples at concentrations above the USEPA Region III Draft BTAG Screening Level of 0.010 mg/kg. Two subsurface soil samples (8SB7B and 36SB8C) had lead concentrations above the RFAAP background 95% UTL of 26.8 mg/kg (IT 2002b). Detected concentrations above background were 48.4 mg/kg (8SB7B), 36.5 mg/kg (8SB7B-DUP), and 119 mg/kg (36SB8C).

Magnesium was detected in nine subsurface soil samples at concentrations above the USEPA Region III Draft BTAG Soil Screening Level of 4,400 mg/kg. The detected concentrations ranged from 4,500 mg/kg (8SB9C) to 30,300 mg/kg (8SB4C). A background range has not been established for magnesium at RFAAP (IT 2002b).

Mercury was detected in five subsurface soil samples at concentrations above the USEPA Region III Draft BTAG Screening Level of 0.058 mg/kg. Three samples (8SB2B, 8SB5C, and 8SB7B) had a concentration above the 95% UTL of 0.13 mg/kg (IT 2002b). The concentrations of mercury reported for these samples ranged from 0.14 to 0.41 mg/kg.

Silver was detected in one subsurface soil sample (8SB7B) at a concentration above the USEPA Region III Draft BTAG Screening Level of 0.0000098 mg/kg. The detection in 8SB7B was an estimated concentration below the laboratory RL of 0.11 mg/kg. A background range has not been established for silver at RFAAP (IT 2002b).

Zinc was detected in 20 subsurface soil samples at concentrations above the USEPA Region III Draft BTAG Screening Level of 10 mg/kg. One sample (36SB8C) had a zinc concentration above its 95% UTL of 202 mg/kg (IT 2002b). Zinc was detected in sample 36SB8C at a concentration of 259 mg/kg.

4.3 HAZARDOUS WASTE CHARACTERISTICS EVALUATION

The following sections present a summary of the analytical results for composite samples collected from SWMUs 8 and 36. Comparisons of the composite data to regulatory levels established in 40 CFR Part 261 (TCLP and other levels) are presented in Table 4-2 (located at the end of Section 4) and Table E.2 (Appendix E).

4.3.1 *In Situ* Soil Sample Results (Below Sludge Layer)

The analytical results for the two *in situ* composite soil samples (8SC1 and 36SC1) are presented below and summarized in Table 4-2 and Table E.2 (Appendix E).

TCLP VOCs – TCLP VOCs were not detected in the *in situ* composite soil samples.

TCLP SVOCs – TCLP SVOCs were not detected in the *in situ* composite soil samples.

TCLP Pesticides –TCLP pesticides were not detected in the *in situ* composite soil samples.

TCLP Herbicides – TCLP herbicides were not detected in the *in situ* composite soil samples.

TCLP Metals – TCLP metals barium, cadmium, chromium, lead, and selenium were detected in the *in situ* composite soil samples but at concentrations below their TCLP regulatory thresholds.

pH – the pH levels reported for the *in situ* composite soil samples were between the regulatory limits of 2 and 12.5.

Paint Filter – *In situ* composite soil samples did not contain free liquids as confirmed by the paint filter test.

4.3.2 Sludge Sample Results

The analytical results for the four composite samples of sludge material (8SC2, 36SC2, 36SC3, and 36SC4) are presented below and summarized in Table 4-2 and Table E.2 (Appendix E).

TCLP VOCs – TCLP VOCs were not detected in the sludge composite samples.

TCLP SVOCs – TCLP SVOCs were not detected in the sludge composite samples.

TCLP Pesticides – One TCLP pesticide (Gamma-BHC [Lindane]) was detected in two sludge composite samples but at concentrations below the TCLP regulatory threshold.

TCLP Herbicides – TCLP herbicides were not detected in the sludge composite samples.

TCLP Metals – The TCLP metals arsenic, barium, cadmium, chromium, lead, and selenium were detected in the sludge composite samples but at concentrations below their respective TCLP regulatory limits.

pH – the pH levels reported for the *in situ* composite soil samples were between the regulatory thresholds of 2 and 12.5.

Paint Filter – *In situ* composite soil samples did not contain free liquids as shown by the paint filter test.

4.4 SUMMARY

Review of the analytical results and risk screening for the discrete samples indicated:

- Explosives and PCBs were not detected in surface or subsurface discrete soil samples;
- Detected organic constituent concentrations (VOC, SVOC, PAH) in discrete soil samples collected from SWMUs 8 and 36 were below their RBC and Draft BTAG risk screening benchmarks;
- One inorganic constituent, manganese in surface sample 8SB3A, was detected at a concentration above both its R-RBC and established RFAAP inorganic background levels. The concentration of manganese reported in this sample exceeded the Draft BTAG Screening Level;
- Lead concentrations in three surface soil samples and two subsurface soil samples were above their Draft BTAG Screening Levels and their established RFAAP background levels;
- One metal, mercury, was detected in one surface soil sample and three subsurface soil samples at concentrations above both the Draft BTAG Screening Level and the established RFAAP background point estimate;
- One metal, zinc, was detected in one subsurface sample at a concentration above both its Draft BTAG Screening Level and RFAAP background point estimate; and

- Antimony, magnesium, nickel, and selenium were detected at concentrations above Draft BTAG Screening Levels. Background levels have not been established at RFAAP for these constituents.

Review of the composite analytical results and comparisons to regulatory threshold values indicated:

- TCLP organics were not detected in the *in situ* composite soil samples;
- TCLP metals concentrations detected in sludge and *in situ* composite samples were below their TCLP regulatory thresholds;
- TCLP VOCs, SVOCs, and herbicides were not detected in the sludge composite samples;
- One TCLP pesticide (gamma-BHC [Lindane]) was detected in two sludge composite samples but at concentrations below the TCLP regulatory threshold;
- pH levels reported in composite samples were between the regulatory limits of 2 and 12.5; and
- Free liquids were not reported present in the composite samples submitted for the paint filter tests.

Table 4-1
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	21,000		9,050		27,600		23,000		5,350	
ANTIMONY	--	3.1	41	0.48	0.72	BN,L,m	0.38	BN,L,m	0.7	BN,L,m	1.6	N,L,m	<0.5	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	5.4	N,L,m	0.85	BN,L,m	3.1	N,L,m	9		<0.49	U
BARIUM	209	548	7,154	440	79.5		67.8		74.6		109	E,J,s	48.1	E,J,s
BERYLLIUM	1.02	16	204	0.02	0.54	B	0.47	B	0.5	B	0.81	E,J,s	0.43	BE,J,s
CADMIUM	0.69	7.8	102	2.5	0.06	B,K,w	0.11	B,K,w	0.12	B,K,w	<0.05	UN,UL,m	<0.04	UN,UL,m
CALCIUM	--	--	--	--	1,980	*,J,k	1,370	*,J,k	4,670	*,J,k	1,080	E,J,s	981	E,J,s
CHROMIUM	65.3	23.5	307	0.008	32.4		15.1		31.8		52.5	E,J,s	9.8	E,J,s
COBALT	72.3	156	2,044	100	14.3		5.1		6.6		30.2	E,J,s	4.5	E,J,s
COPPER	53.5	313	4,088	15.0	11.9		7.4		16.1		14.1	NE,K,m	10.2	NE,K,m
IRON	50,962	2,346	30,660	12	30,900		14,500		28,500		39,200	E,J,s	8,680	E,J,s
LEAD [1]	26.8	400	750	0.01	18.5		5.8		19.3		32.8	*E,J,k	3.9	*E,J,k
MAGNESIUM	--	--	--	4,400	1,310	*,J,k	2,370	*,J,k	3,160	*,J,k	766	E,J,s	1,400	E,J,s
MANGANESE	2,543	156	2,044	330	1,290		291		358		3,210		199	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	0.093	N,B,p	0.039	BN,B,p	0.23	N,L,m	0.13		<0.019	U
NICKEL	62.8	156	2,044	2.0	7.8		8.9		13.7		8.1	E,J,s	6.8	E,J,s
POTASSIUM	--	--	--	--	673	E,J,s	997	E,J,s	1,240	E,J,s	865	E,J,s	700	E,J,s
SELENIUM	--	39.1	511	1.8	1.1	N,L,m	0.41	BN,K,w	0.73	N,L,m	2.4	N,L,m	<0.29	UN,UL,w
SILVER	--	39.1	511	0.0000098	<0.11	U	<0.11	U	<0.11	U	0.4	B,B,p	<0.09	U
SODIUM	--	--	--	--	269		250	B,B,x	277		111	B,B,x	133	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	<0.35	UN*,R,m	<0.37	UN*,R,m	<0.35	UN*,R,m	<0.8	UN,UL,m	<0.77	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	60.2	N,L,m	24.6	N,L,m	53.2	N,L,m	74.4		11.8	
ZINC	202	2,346	30,660	10.0	36	N,L,m	37.9	N,L,m	39.3	N,L,m	83.6	*E,J,k	30.7	*E,J,k
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	--		--		<4.8	U	<0.32	U	--	
4,4'-DDE	--	1,879	8,416	100	--		--		<6.1	U	<0.4	U	--	
4,4'-DDT	--	1,879	8,416	100	--		--		17	JP,J,g	<0.39	U	--	
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	--		--		<3.3	U	<0.22	U	--	
BETA-BHC	--	355	1,590	--	--		--		53	P,J,g	<0.28	U	--	
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	--		--		<5.2	U	<0.35	U	--	
METHOXYCHLOR	--	39,107	511,000	100	--		--		<21	U	<1.4	U	--	

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	14,600		13,700		6,330		19,000		13,900	
ANTIMONY	–	3.1	41	0.48	0.51	BN,L,m	0.59	BN,L,m	0.4	BN,L,m	<0.52	UN,UL,w	<0.59	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	5.9	N,L,m	1.8	N,L,m	0.38	BN,L,m	0.51	B	1.4	
BARIUM	209	548	7,154	440	56.9		116		78.1		123	E,J,s	47.2	E,J,s
BERYLLIUM	1.02	16	204	0.02	0.7		0.66		0.22	B	0.74	E,J,s	0.85	E,J,s
CADMIUM	0.69	7.8	102	2.5	0.17	B,K,w	0.27	B,K,w	0.03	B,K,w	<0.05	UN,UL,m	<0.05	UN,UL,m
CALCIUM	–	–	–	–	10,700	*,J,k	5,970	*,J,k	8,040	*,J,k	2,200	E,J,s	13,400	E,J,s
CHROMIUM	65.3	23.5	307	0.008	34.9		23.7		14.3		27.2	E,J,s	25.2	E,J,s
COBALT	72.3	156	2,044	100	22.1		8		2.3		9.7	E,J,s	8.4	E,J,s
COPPER	53.5	313	4,088	15.0	18.8		12.4		5.9		30.6	NE,K,m	20.1	NE,K,m
IRON	50,962	2,346	30,660	12	29,000		22,900		11,800		24,600	E,J,s	21,000	E,J,s
LEAD [1]	26.8	400	750	0.01	20.5		14.4		5.2		9.4	*E,J,k	9.3	*E,J,k
MAGNESIUM	–	–	–	4,400	30,300	*,J,k	6,030	*,J,k	5,670	*,J,k	4,150	E,J,s	25,700	E,J,s
MANGANESE	2,543	156	2,044	330	435		431		194		388	*E,J,s	356	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	0.046	BN,B,p	0.046	N,B,p	0.14	N,L,m	0.02	B	<0.02	U
NICKEL	62.8	156	2,044	2.0	26.6		11.7		6.7		13.4	E,J,s	13.3	E,J,s
POTASSIUM	–	–	–	–	2,850	E,J,s	1,440	E,J,s	732	E,J,s	1,530	E,J,s	4,630	E,J,s
SELENIUM	–	39.1	511	1.8	0.43	BN,K,w	0.51	BN,K,w	<0.28	UN,UL,m	0.59	N,L,m	0.57	BN,L,w
SILVER	–	39.1	511	0.0000098	<0.11	U	<0.1	U	<0.11	U	<0.09	U	<0.1	U
SODIUM	–	–	–	–	221	B	243		303		244		121	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	<0.37	UN*,R,m	<0.31	UN*,R,m	<0.36	UN*,R,m	1.3	N,L,m	<0.91	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	46.5	N,L,m	37.4	N,L,m	15.6	N,L,m	43.3		33.1	
ZINC	202	2,346	30,660	10.0	25.8	N,L,m	63.4	N,L,m	30.7	N,L,m	59.5	*E,J,k	16.7	*E,J,k
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	–	2,661	11,923	100	–		–		–		<0.32	U	–	
4,4'-DDE	–	1,879	8,416	100	–		–		–		<0.4	U	–	
4,4'-DDT	–	1,879	8,416	100	–		–		–		<0.39	U	–	
ALPHA-CHLORDANE [3]	–	1,825	8,176	100	–		–		–		<0.22	U	–	
BETA-BHC	–	355	1,590	–	–		–		–		<0.28	U	–	
GAMMA-CHLORDANE [3]	–	1,825	8,176	100	–		–		–		<0.35	U	–	
METHOXYCHLOR	–	39,107	511,000	100	–		–		–		<1.4	U	–	

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	23,100		17,500		17,300		7,550		16,500	
ANTIMONY	--	3.1	41	0.48	1.2	BN,L,m	0.62	BN,L,m	<0.59	UN,UL,w	<0.6	UN,UL,w	<0.61	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	5.4	N,L,m	5	N,L,m	1.1	B	<0.59	U	0.87	B
BARIUM	209	548	7,154	440	113		111		154	E,J,s	75.1	E,J,s	136	E,J,s
BERYLLIUM	1.02	16	204	0.02	0.81		0.74		0.97	E,J,s	0.57	BE,J,s	0.91	E,J,s
CADMIUM	0.69	7.8	102	2.5	0.2	B,K,w	0.22	B,K,w	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m
CALCIUM	--	--	--	--	6,650	*,J,k	6,780	*,J,k	3,710	E,J,s	1,310	E,J,s	1,890	E,J,s
CHROMIUM	65.3	23.5	307	0.008	53.5		55.8		23.9	E,J,s	13.7	E,J,s	23.9	E,J,s
COBALT	72.3	156	2,044	100	9.9		9.2		10.5	E,J,s	5.5	E,J,s	11.1	E,J,s
COPPER	53.5	313	4,088	15.0	27.1		24.6		27.7	NE,K,m	7.2	NE,K,m	22.7	NE,K,m
IRON	50,962	2,346	30,660	12	32,200		29,900		26,100	E,J,s	11,600	E,J,s	22,900	E,J,s
LEAD [1]	26.8	400	750	0.01	48.4		36.5		48.8	*E,J,k	4.7	*E,J,k	9.9	*E,J,k
MAGNESIUM	--	--	--	4,400	3,080	*,J,k	3,650	*,J,k	3,210	E,J,s	2,000	E,J,s	3,680	E,J,s
MANGANESE	2,543	156	2,044	330	911		825		756	*E,J,s	286	*E,J,s	544	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	0.41	N,L,m	0.48	N,L,m	0.031	B	<0.021	U	0.023	B
NICKEL	62.8	156	2,044	2.0	17		16.2		13.4	E,J,s	8.3	E,J,s	13.5	E,J,s
POTASSIUM	--	--	--	--	1,250	E,J,s	1,160	E,J,s	1,520	E,J,s	861	E,J,s	1,560	E,J,s
SELENIUM	--	39.1	511	1.8	1.1	N,L,m	0.83	N,L,m	0.44	BN,L,w	<0.35	UN,UL,w	<0.36	UN,UL,w
SILVER	--	39.1	511	0.0000098	0.35	B	0.24	B	<0.11	U	<0.11	U	<0.11	U
SODIUM	--	--	--	--	241	B	210	B	381		179	B,B,x	240	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	<0.4	UN*,R,m	<0.34	UN*,R,m	1.1	BN,K,w	<0.94	UN,UL,m	<0.96	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	54.8	N,L,m	45.5	N,L,m	37.6		16.1		38	
ZINC	202	2,346	30,660	10.0	124	N,L,m	90	N,L,m	165	*E,J,k	41.1	*E,J,k	61.5	*E,J,k
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	<4.8	U	9.1	J	<0.32	U	--		--	
4,4'-DDE	--	1,879	8,416	100	<6.1	U	8.5	J	<0.4	U	--		--	
4,4'-DDT	--	1,879	8,416	100	<5.8	U	120		<0.39	U	--		--	
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	94	,J,m	31	J	<0.22	U	--		--	
BETA-BHC	--	355	1,590	--	<4.2	U	8.9	J,J,g	<0.28	U	--		--	
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	74	,J,m	20		<0.35	U	--		--	
METHOXYCHLOR	--	39,107	511,000	100	<21	U	32	J	<1.4	U	--		--	

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	8,600		18,300		12,600		18,500		11,200	
ANTIMONY	–	3.1	41	0.48	<0.58	UN,UL,w	0.57	BN,L,m	0.4	BN,L,m	<0.51	UN,UL,w	<0.51	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	<0.56	U	1.7	N,L,m	4.7	N,L,m	3		0.6	B
BARIUM	209	548	7,154	440	82.2	E,J,s	161		63.2		51.2	E,J,s	76.8	E,J,s
BERYLLIUM	1.02	16	204	0.02	0.64	BE,J,s	0.9		0.59	B	0.45	BE,J,s	0.57	E,J,s
CADMIUM	0.69	7.8	102	2.5	<0.05	UN,UL,m	0.24	B,K,w	0.17	B,K,w	<0.05	UN,UL,m	<0.04	UN,UL,m
CALCIUM	–	–	–	–	1,700	E,J,s	2,070	*,J,k	4,780	*,J,k	454	E,J,s	1,170	E,J,s
CHROMIUM	65.3	23.5	307	0.008	14.4	E,J,s	27.1		23		21.7	E,J,s	20	E,J,s
COBALT	72.3	156	2,044	100	6	E,J,s	8.6		5.6		12.7	E,J,s	9.6	E,J,s
COPPER	53.5	313	4,088	15.0	13.8	NE,K,m	14.3		16.2		12.4	NE,K,m	23.4	NE,K,m
IRON	50,962	2,346	30,660	12	12,900	E,J,s	26,600		20,300		25,100	E,J,s	22,200	E,J,s
LEAD [1]	26.8	400	750	0.01	5.3	*E,J,k	10.6		17.3		14.7	*E,J,k	9.5	*E,J,k
MAGNESIUM	–	–	–	4,400	2,130	E,J,s	4,580	*,J,k	11,700	*,J,k	876	E,J,s	2,710	E,J,s
MANGANESE	2,543	156	2,044	330	322	*E,J,s	422		450		401	*E,J,s	429	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	<0.02	U	0.06	N,B,p	0.046	N,B,p	0.065		<0.02	U
NICKEL	62.8	156	2,044	2.0	9	E,J,s	16.1		12.3		8	E,J,s	11.1	E,J,s
POTASSIUM	–	–	–	–	924	E,J,s	1,530	E,J,s	1,040	E,J,s	1,040	E,J,s	1,620	E,J,s
SELENIUM	–	39.1	511	1.8	<0.33	UN,UL,w	0.58	BN,K,w	0.68	N,L,m	<0.3	UN,UL,w	<0.29	UN,UL,w
SILVER	–	39.1	511	0.0000098	<0.1	U	<0.11	U	<0.11	U	<0.09	U	<0.09	U
SODIUM	–	–	–	–	206	B,B,x	257		111	B,B,x	109	B,B,x	212	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	<0.9	UN,UL,m	<0.34	UN*,R,m	<0.34	UN*,R,m	<0.8	UN,UL,m	<0.79	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	18		45.9	N,L,m	29.3	N,L,m	50		36.1	
ZINC	202	2,346	30,660	10.0	42.4	*E,J,k	68.4	N,L,m	113	N,L,m	33.3	*E,J,k	46	*E,J,k
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	–	2,661	11,923	100	–		<0.32	U	–		–		–	
4,4'-DDE	–	1,879	8,416	100	–		<0.4	U	–		–		–	
4,4'-DDT	–	1,879	8,416	100	–		<0.39	U	–		–		–	
ALPHA-CHLORDANE [3]	–	1,825	8,176	100	–		<0.22	U	–		–		–	
BETA-BHC	–	355	1,590	–	–		<0.28	U	–		–		–	
GAMMA-CHLORDANE [3]	–	1,825	8,176	100	–		<0.35	U	–		–		–	
METHOXYCHLOR	–	39,107	511,000	100	–		<1.4	U	–		–		–	

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	16,200		15,800		14,900		17,200		12,400	
ANTIMONY	–	3.1	41	0.48	<0.5	UN,UL,w	<0.57	UN,UL,w	<0.6	UN,UL,w	0.59	BN,L,m	0.56	BN
ARSENIC	15.8	0.43	1.9	328	1	B	1.7		2.1		1.9	N,L,m	2.1	N,L,m
BARIUM	209	548	7,154	440	97	E,J,s	92.5	E,J,s	91.7	E,J,s	118		82.5	
BERYLLIUM	1.02	16	204	0.02	0.75	E,J,s	0.81	E,J,s	0.8	E,J,s	0.78		0.65	
CADMIUM	0.69	7.8	102	2.5	<0.04	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	0.16	B,K,w	0.17	B,K,w
CALCIUM	–	–	–	–	1,490	E,J,s	971	E,J,s	921	E,J,s	1,960	*,J,k	1,610	*,J,k
CHROMIUM	65.3	23.5	307	0.008	24	E,J,s	25.1	E,J,s	23.5	E,J,s	28.4		24.2	
COBALT	72.3	156	2,044	100	10.3	E,J,s	11.6	E,J,s	11.7	E,J,s	10.5		9	
COPPER	53.5	313	4,088	15.0	29.2	NE,K,m	28.5	NE,K,m	27.3	NE,K,m	19.3		16.8	
IRON	50,962	2,346	30,660	12	25,500	E,J,s	26,000	E,J,s	25,900	E,J,s	29,300		25,800	
LEAD [1]	26.8	400	750	0.01	15.4	*E,J,k	11.8	*E,J,k	11.4	*E,J,k	11.8		13.9	
MAGNESIUM	–	–	–	4,400	3,330	E,J,s	3,720	E,J,s	3,600	E,J,s	4,140	*,J,k	2,970	*,J,k
MANGANESE	2,543	156	2,044	330	507	*E,J,s	453	*E,J,s	463	*E,J,s	511		169	
MERCURY [2]	0.13	2.35	30.7	0.058	0.035	B	<0.021	U	<0.021	U	0.047	N,B,p	0.038	BN,B,p
NICKEL	62.8	156	2,044	2.0	12.6	E,J,s	13.2	E,J,s	13.2	E,J,s	15.1		13	
POTASSIUM	–	–	–	–	1,660	E,J,s	1,940	E,J,s	1,990	E,J,s	2,170	E,J,s	1,490	E,J,s
SELENIUM	–	39.1	511	1.8	<0.29	UN,UL,w	<0.33	UN,UL,w	<0.34	UN,UL,w	0.5	BN,K,w	0.53	BN,K,w
SILVER	–	39.1	511	0.0000098	<0.09	U	<0.1	U	<0.11	U	<0.11	U	<0.11	U
SODIUM	–	–	–	–	228		208	B,B,x	217	B,B,x	235	B,B,x	229	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	0.88	BN,K,w	<0.89	UN,UL,m	<0.93	UN,UL,m	<0.36	UN*,R,m	<0.35	UN*,R,m
VANADIUM	108	2.35	30.7	0.50	42.8		39.3		39.3		49.5	N,L,m	40.8	N,L,m
ZINC	202	2,346	30,660	10.0	61	*E,J,k	49.2	*E,J,k	51.5	*E,J,k	59.3	N,L,m	53.4	N,L,m
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	–	2,661	11,923	100	–		–		–		<0.32	U	–	
4,4'-DDE	–	1,879	8,416	100	–		–		–		<0.4	U	–	
4,4'-DDT	–	1,879	8,416	100	–		–		–		<0.39	U	–	
ALPHA-CHLORDANE [3]	–	1,825	8,176	100	–		–		–		<0.22	U	–	
BETA-BHC	–	355	1,590	–	–		–		–		0.57	JP,J,g	–	
GAMMA-CHLORDANE [3]	–	1,825	8,176	100	–		–		–		<0.35	U	–	
METHOXYCHLOR	–	39,107	511,000	100	–		–		–		<1.4	U	–	

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	14,800		16,800		16,100		12,900		10,700	
ANTIMONY	–	3.1	41	0.48	<0.57	UN,UL,w	<0.58	UN,UL,w	<0.54	UN,UL,w	<0.54	UN,UL,w	<0.58	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	3.1		0.97	B	2		1.3		2	
BARIUM	209	548	7,154	440	51.6	E,J,s	144	E,J,s	152	E,J,s	129	E,J,s	117	E,J,s
BERYLLIUM	1.02	16	204	0.02	0.37	BE,J,s	1	E,J,s	0.99	E,J,s	0.81	E,J,s	0.63	BE,J,s
CADMIUM	0.69	7.8	102	2.5	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m
CALCIUM	–	–	–	–	419	E,J,s	1,250	E,J,s	1,720	E,J,s	1,550	E,J,s	17,800	E,J,s
CHROMIUM	65.3	23.5	307	0.008	17.2	E,J,s	24.3	E,J,s	23.3	E,J,s	18.9	E,J,s	17.9	E,J,s
COBALT	72.3	156	2,044	100	4.6	E,J,s	10.9	E,J,s	9.9	E,J,s	8	E,J,s	8.5	E,J,s
COPPER	53.5	313	4,088	15.0	8	NE,K,m	28.2	NE,K,m	29.6	NE,K,m	21.3	NE,K,m	13	NE,K,m
IRON	50,962	2,346	30,660	12	17,500	E,J,s	22,000	E,J,s	21,100	E,J,s	19,900	E,J,s	21,700	E
LEAD [1]	26.8	400	750	0.01	11.7	*E,J,k	10	*E,J,k	21.8	*E,J,k	119	*E,J,k	46.7	*E,J,k
MAGNESIUM	–	–	–	4,400	864	E,J,s	3,710	E,J,s	3,010	E,J,s	2,550	E,J,s	10,100	E,J,s
MANGANESE	2,543	156	2,044	330	280	*E,J,s	595	*E,J,s	573	*E,J,s	698	*E,J,s	548	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	0.069		0.022	B	0.15		0.023	B	0.021	B
NICKEL	62.8	156	2,044	2.0	6.7	E,J,s	14	E,J,s	14.3	E,J,s	10.8	E,J,s	10.9	E,J,s
POTASSIUM	–	–	–	–	801	E,J,s	1,130	E,J,s	2,060	E,J,s	1,300	E,J,s	1,330	E,J,s
SELENIUM	–	39.1	511	1.8	0.65	N,L,m	0.59	BN,L,w	0.49	BN,L,w	0.67	N,L,m	0.4	BN,L,w
SILVER	–	39.1	511	0.0000098	0.13	B,B,p	<0.1	U	<0.1	U	<0.1	U	<0.1	U
SODIUM	–	–	–	–	109	B,B,x	226	B,B,x	262		484		369	
THALLIUM	2.11	0.55	7.2	0.001	<0.89	UN,UL,m	<0.9	UN,UL,m	<0.84	UN,UL,m	1.2	BN,K,w	<0.91	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	34.8		33.3		35.7		27.5		29.9	
ZINC	202	2,346	30,660	10.0	27.5	*E,J,k	61.4	*E,J,k	81.1	*E,J,k	259	*E,J,k	164	*E,J,k
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	–	2,661	11,923	100	<0.32	U	–		–		–		<0.32	U
4,4'-DDE	–	1,879	8,416	100	<0.4	U	–		–		–		<0.4	U
4,4'-DDT	–	1,879	8,416	100	<0.39	U	–		–		–		<0.39	U
ALPHA-CHLORDANE [3]	–	1,825	8,176	100	<0.22	U	–		–		–		<0.22	U
BETA-BHC	–	355	1,590	–	0.9	JP,J,g	–		–		–		1.8	JP,J,g
GAMMA-CHLORDANE [3]	–	1,825	8,176	100	<0.35	U	–		–		–		<0.35	U
METHOXYCHLOR	–	39,107	511,000	100	<1.4	U	–		–		–		<1.4	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	18,200		14,000		20,500		18,600		15,400	
ANTIMONY	--	3.1	41	0.48	<0.58	UN,UL,w	<0.52	UN,UL,w	0.52	BN,L,m	0.53	BN,L,m	0.66	BN,L,m
ARSENIC	15.8	0.43	1.9	328	1	B	1.6		1.9	N,L,m	3.8	N,L,m	2.6	N,L,m
BARIUM	209	548	7,154	440	98.5	E,J,s	80.8	E,J,s	202		120		133	
BERYLLIUM	1.02	16	204	0.02	0.69	E,J,s	0.66	E,J,s	1.1		0.81		0.76	
CADMIUM	0.69	7.8	102	2.5	<0.05	UN,UL,m	<0.05	UN,UL,m	0.25	B,K,w	0.3	B,K,w	0.29	B,K,w
CALCIUM	--	--	--	--	883	E,J,s	835	E,J,s	2,060	*,J,k	2,670	*,J,k	2,330	*,J,k
CHROMIUM	65.3	23.5	307	0.008	24.6	E,J,s	22.6	E,J,s	30.7		31.1		26.5	
COBALT	72.3	156	2,044	100	8.8	E,J,s	8.8	E,J,s	11.3		8		9.8	
COPPER	53.5	313	4,088	15.0	29.7	NE,K,m	25.9	NE,K,m	15.5		24.7		17.6	
IRON	50,962	2,346	30,660	12	23,200	E	22,100	E,J,s	30,000		34,600		28,300	
LEAD [1]	26.8	400	750	0.01	9.5	*E,J,k	9.2	*E,J,k	12.6		10.5		12.7	
MAGNESIUM	--	--	--	4,400	4,500	E,J,s	3,520	E,J,s	5,020	*,J,k	14,800	*,J,k	4,570	*,J,k
MANGANESE	2,543	156	2,044	330	187	*E,J,s	308	*E,J,s	616		913		464	
MERCURY [2]	0.13	2.35	30.7	0.058	<0.022	U	<0.02	U	0.072	N,B,p	0.052	N,B,p	0.047	N,B,p
NICKEL	62.8	156	2,044	2.0	15.8	E,J,s	11.8	E,J,s	18.1		16.7		15.1	
POTASSIUM	--	--	--	--	2,350	E,J,s	1,480	E,J,s	1,480	E,J,s	1,430	E,J,s	1,570	E,J,s
SELENIUM	--	39.1	511	1.8	<0.34	UN,UL,w	<0.3	UN,UL,w	0.71	N,L,m	0.63	BN,K,w	0.57	BN,K,w
SILVER	--	39.1	511	0.0000098	<0.1	U	<0.09	U	<0.1	U	<0.12	U	<0.12	U
SODIUM	--	--	--	--	246	B,B,x	202	B,B,x	209	B,B,x	294		271	
THALLIUM	2.11	0.55	7.2	0.001	<0.91	UN,UL,m	<0.81	UN,UL,m	<0.34	UN*,R,m	<0.39	UN*,R,m	<0.38	UN*,R,m
VANADIUM	108	2.35	30.7	0.50	39.3		37.5		50.4	N,L,m	40.7	N,L,m	42.4	N,L,m
ZINC	202	2,346	30,660	10.0	54.5	*E,J,k	45	*E,J,k	77.2	N,L,m	49.9	N,L,m	60.3	N,L,m
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	--		--		<0.32	U	--		--	
4,4'-DDE	--	1,879	8,416	100	--		--		<0.4	U	--		--	
4,4'-DDT	--	1,879	8,416	100	--		--		<0.39	U	--		--	
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	--		--		<0.22	U	--		--	
BETA-BHC	--	355	1,590	--	--		--		<0.28	U	--		--	
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	--		--		<0.35	U	--		--	
METHOXYCHLOR	--	39,107	511,000	100	--		--		<1.4	U	--		--	

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.2	U	<0.1	U	<0.2	U,UJ,i	<0.16	U	<0.19	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.6	U	<0.5	U	1	J	<0.61	U	<0.71	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.4	U	<0.3	U	<0.5	U,UJ,i	<0.37	U	<0.43	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.3	U	<0.2	U	<0.3	U,UJ,i	<0.25	U	<0.29	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.2	U	<0.1	U	<0.2	U,UJ,i	<0.16	U	<0.19	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.2	U	<0.2	U	<0.3	U,UJ,i	<0.24	U	<0.28	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.2	U	<0.2	U	<0.3	U,UJ,i	<0.22	U	<0.26	U
2-BUTANONE	--	4,692,857	61,320,000	--	11	J	<1	U	<2	U	4	J	<1.3	U
2-HEXANONE	--	--	--	--	5	J	<0.5	U	<0.7	U	<0.54	U	<0.62	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.5	U	0.6	J	0.9	J	<0.52	U	0.7	J
ACETONE	--	7,039,286	91,980,000	--	89		22		52	B	43		30	
BROMOFORM	--	80,851	362,228	--	<0.2	U	<0.2	U	0.5	J	<0.24	U	<0.28	U
BROMOMETHANE	--	10,950	143,080	--	8		6		<1	U	<0.9	U	2	J,J,c
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.5	U	<0.4	U	1	J	<0.47	U	<0.54	U
CHLOROFORM	--	78,214	1,022,000	300	<0.4	U	<0.3	U	<0.5	U	<0.35	U	<0.41	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.3	U	<0.3	U	<0.4	U	<0.33	U	<0.38	U
CYCLOHEXANE	--	--	--	--	<0.4	U	<0.4	U	<0.6	U	<0.42	U	<0.49	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.2	U	<0.1	U	<0.2	U	<0.16	U	<0.19	U
METHYL ACETATE	--	7,821,429	102,200,000	--	15	,B,x	2	J,B,x	8	J,B,x	<0.5	U	2	J
METHYLCYCLOHEXANE	--	--	--	--	<0.4	U	<0.4	U	<0.5	U	<0.4	U	<0.47	U
METHYLENE CHLORIDE	--	85,163	381,547	300	0.8	JB,B,z	0.6	JB,B,z	1	J	<0.48	U	0.8	J
TETRACHLOROETHENE	--	1,183	5,299	300	<0.3	U	<0.3	U	<0.4	U	<0.33	U	<0.39	U
TOLUENE	--	1,564,286	20,440,000	100	<0.4	U	0.4	JB,B,z	1	JB,B,z	<0.37	U	0.6	J
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.4	U	0.4	J	<0.5	U	<0.35	U	<0.41	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.5	U	<0.4	U	<0.6	U	<0.49	U	<0.57	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.2	U	<0.1	U	<0.2	U	<0.16	U	<0.21	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.7	U	<0.5	U	<0.9	U	<0.59	U	<0.8	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.5	U	<0.3	U	<0.5	U	<0.36	U	<0.49	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.3	U	<0.2	U	<0.4	U	<0.24	U	<0.32	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.2	U	<0.1	U	<0.2	U	<0.16	U	<0.21	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.3	U	<0.2	U	<0.3	U	<0.23	U	<0.31	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.3	U	<0.2	U	<0.3	U	<0.21	U	<0.29	U
2-BUTANONE	--	4,692,857	61,320,000	--	3	JB,B,z	2	J,B,x	<2	U	4	J	2	J
2-HEXANONE	--	--	--	--	5	J	<0.5	U	<0.8	U	<0.52	U	<0.7	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.6	U	<0.5	U	<0.8	U	<0.5	U	<0.68	U
ACETONE	--	7,039,286	91,980,000	--	47	B,B,z	22		22	J	21		27	
BROMOFORM	--	80,851	362,228	--	0.4	J	<0.2	U	<0.3	U	<0.23	U	<0.31	U
BROMOMETHANE	--	10,950	143,080	--	3	J	<0.8	U	11		<0.87	U	<1.2	U
CARBON DISULFIDE	--	782,143	10,220,000	--	0.8	J	<0.4	U	<0.7	U	<0.46	U	<0.61	U
CHLOROFORM	--	78,214	1,022,000	300	<0.4	U	<0.3	U	<0.5	U	<0.34	U	<0.46	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.4	U	<0.3	U	<0.5	U	<0.32	U	<0.43	U
CYCLOHEXANE	--	--	--	--	<0.5	U	<0.4	U	<0.6	U	<0.41	U	<0.55	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.2	U	<0.1	U	<0.2	U	<0.16	U	<0.21	U
METHYL ACETATE	--	7,821,429	102,200,000	--	<0.6	U	4	J,B,x	3	J,B,x	<0.48	U	<0.65	U
METHYLCYCLOHEXANE	--	--	--	--	<0.5	U	<0.4	U	<0.6	U	<0.39	U	<0.52	U
METHYLENE CHLORIDE	--	85,163	381,547	300	1	J	0.5	JB,B,z	1	JB,B,z	<0.46	U	<0.63	U
TETRACHLOROETHENE	--	1,183	5,299	300	0.7	JB,B,z	<0.3	U	<0.5	U	<0.33	U	<0.44	U
TOLUENE	--	1,564,286	20,440,000	100	1	JB,B,z	<0.3	U	<0.5	U	<0.36	U	0.9	J
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	1	JB,B,z	0.4	J	0.7	J	<0.34	U	<0.46	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.6	U	<0.4	U	<0.7	U	<0.47	U	<0.64	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.2	U,UJ,i	0.5	J,J,i	<0.15	U	<0.19	U	<0.14	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	1	J,J,d	0.9	J	<0.58	U	<0.73	U	<0.54	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.5	U,UJ,i	0.8	JB,B,z	0.8	JB,B,z	<0.45	U	<0.33	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.3	U,UJ,i	1	J,J,i	<0.24	U	<0.3	U	<0.22	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.2	U,UJ,i	0.5	JB,B,z	0.6	J	<0.19	U	<0.14	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.3	U,UJ,i	0.5	JB,B,z	0.3	JB,B,z	<0.29	U	<0.21	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.3	U,UJ,i	0.5	JB,B,z	0.4	JB,B,z	<0.26	U	<0.2	U
2-BUTANONE	--	4,692,857	61,320,000	--	17	JB,B,z	14	JB	<1.1	U	<1.4	U	7	J
2-HEXANONE	--	--	--	--	6	J,J,d	3	J	1	J	<0.64	U	2	J
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.7	U	2	J	<0.49	U	1	J	<0.46	U
ACETONE	--	7,039,286	91,980,000	--	200	B,J,d	130	B	67		15	J	63	
BROMOFORM	--	80,851	362,228	--	<0.3	U	<0.2	U	<0.23	U	<0.29	U	<0.21	U
BROMOMETHANE	--	10,950	143,080	--	<1	U	<0.9	U	2	J,J,c	2	J,J,c	<0.8	U
CARBON DISULFIDE	--	782,143	10,220,000	--	2	J,J,d	2	J	<0.45	U	<0.56	U	<0.42	U
CHLOROFORM	--	78,214	1,022,000	300	<0.4	U	0.5	J	<0.34	U	<0.42	U	<0.31	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.4	U	<0.3	U	<0.31	U	<0.39	U	<0.29	U
CYCLOHEXANE	--	--	--	--	<0.5	U	<0.4	U	<0.4	U	<0.5	U	<0.37	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.2	U	0.3	J	<0.15	U	<0.19	U	<0.14	U
METHYL ACETATE	--	7,821,429	102,200,000	--	21	,J,m	15	,B,x	<0.47	U	<0.6	U	<0.44	U
METHYLCYCLOHEXANE	--	--	--	--	<0.5	U	<0.4	U	<0.38	U	<0.48	U	<0.36	U
METHYLENE CHLORIDE	--	85,163	381,547	300	1	J,J,d	1	J	<0.45	U	<0.57	U	0.7	JB,B,z
TETRACHLOROETHENE	--	1,183	5,299	300	<0.4	U	0.9	JB,B,z	<0.32	U	<0.4	U	<0.3	U
TOLUENE	--	1,564,286	20,440,000	100	1	JB,B,z	0.7	JB,B,z	0.6	J	0.7	J	0.5	JB,B,z
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.4	U	<0.3	U	<0.34	U	<0.42	U	<0.31	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.6	U	<0.5	U	<0.46	U	<0.58	U	<0.43	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.16	U	<0.2	U	<0.1	U	<0.16	U	<0.19	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.6	U	<0.6	U	<0.6	U	<0.61	U	<0.7	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.36	U	<0.3	U	<0.3	U	<0.37	U	<0.42	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.24	U	<0.2	U	<0.2	U	<0.25	U	<0.28	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.16	U	<0.2	U	<0.1	U	<0.16	U	<0.19	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.23	U	<0.2	U	<0.2	U	<0.24	U	<0.27	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.21	U	<0.2	U	<0.2	U	<0.22	U	<0.25	U
2-BUTANONE	--	4,692,857	61,320,000	--	5	J	3	JB,B,z	2	JB,B,z	<1.1	U	<1.3	U
2-HEXANONE	--	--	--	--	8	J	0.9	J	<0.5	U	<0.53	U	<0.61	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.5	U	<0.5	U	<0.5	U	<0.52	U	0.8	J
ACETONE	--	7,039,286	91,980,000	--	36		34	B	14	B,B,z	11	J	13	J
BROMOFORM	--	80,851	362,228	--	<0.23	U	<0.2	U	<0.2	U	<0.24	U	<0.27	U
BROMOMETHANE	--	10,950	143,080	--	<0.88	U	<0.8	U	<0.8	U	<0.9	U	3	J,J,c
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.46	U	0.6	J	<0.4	U	<0.47	U	<0.53	U
CHLOROFORM	--	78,214	1,022,000	300	2	J	<0.3	U	0.5	J	<0.35	U	<0.4	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.32	U	<0.3	U	<0.3	U	<0.32	U	<0.37	U
CYCLOHEXANE	--	--	--	--	<0.41	U	<0.4	U	<0.4	U	<0.42	U	<0.48	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.16	U	<0.2	U	<0.1	U	<0.16	U	<0.19	U
METHYL ACETATE	--	7,821,429	102,200,000	--	7		1	J,B,x	1	J,B,x	0.7	J	<0.57	U
METHYLCYCLOHEXANE	--	--	--	--	<0.39	U	<0.4	U	<0.4	U	<0.4	U	<0.46	U
METHYLENE CHLORIDE	--	85,163	381,547	300	0.7	JB,B,z	<0.4	U	<0.4	U	<0.48	U	0.8	J
TETRACHLOROETHENE	--	1,183	5,299	300	<0.33	U	<0.3	U	<0.3	U	<0.33	U	<0.38	U
TOLUENE	--	1,564,286	20,440,000	100	0.5	JB,B,z	<0.3	U	<0.3	U	<0.37	U	0.6	J
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.35	U	<0.3	U	<0.3	U	<0.35	U	<0.4	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.48	U	<0.5	U	<0.4	U	<0.49	U	<0.56	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.16	U	<0.2	U	<0.15	U	<0.2	U	<0.2	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.59	U	<0.77	U	<0.58	U	<0.6	U	<0.6	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.36	U	<0.47	U	<0.35	U	<0.4	U	<0.4	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.24	U	<0.31	U	<0.23	U	<0.2	U	<0.2	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.16	U	<0.2	U	<0.15	U	<0.2	U	<0.2	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.23	U	<0.3	U	<0.23	U	<0.2	U	<0.2	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.21	U	<0.28	U	<0.21	U	<0.2	U	<0.2	U
2-BUTANONE	--	4,692,857	61,320,000	--	5	J	<1.4	U	2	J	3	J,B,x	<1	U
2-HEXANONE	--	--	--	--	<0.51	U	<0.67	U	<0.5	U	<0.5	U	<0.5	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.5	U	<0.65	U	<0.49	U	<0.5	U	<0.5	U
ACETONE	--	7,039,286	91,980,000	--	93		14	J	15	J	22		11	JB,B,z
BROMOFORM	--	80,851	362,228	--	<0.23	U	<0.3	U	<0.23	U	<0.2	U	<0.2	U
BROMOMETHANE	--	10,950	143,080	--	<0.86	U	<1.1	U	2	J,J,c	7		<0.9	U
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.45	U	<0.59	U	<0.44	U	<0.4	U	<0.4	U
CHLOROFORM	--	78,214	1,022,000	300	<0.34	U	<0.45	U	<0.33	U	<0.3	U	<0.3	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.31	U	<0.41	U	<0.31	U	<0.3	U	0.5	J
CYCLOHEXANE	--	--	--	--	<0.4	U	<0.53	U	<0.4	U	<0.4	U	<0.4	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.16	U	<0.2	U	<0.15	U	<0.2	U	<0.2	U
METHYL ACETATE	--	7,821,429	102,200,000	--	<0.48	U	<0.63	U	<0.47	U	3	J,B,x	<0.5	U
METHYLCYCLOHEXANE	--	--	--	--	<0.39	U	<0.51	U	<0.38	U	<0.4	U	<0.4	U
METHYLENE CHLORIDE	--	85,163	381,547	300	<0.46	U	<0.6	U	<0.45	U	0.8	JB,B,z	0.9	J
TETRACHLOROETHENE	--	1,183	5,299	300	<0.32	U	<0.42	U	<0.32	U	<0.3	U	0.4	JB,B,z
TOLUENE	--	1,564,286	20,440,000	100	<0.36	U	<0.47	U	0.6	J	<0.4	U	<0.4	U
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.34	U	<0.45	U	<0.33	U	0.5	J	0.6	JB,B,z
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.47	U	<0.61	U	<0.46	U	<0.5	U	2	J

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.15	U	<0.17	U	<0.15	U	0.4	J	<0.15	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.56	U	<0.64	U	<0.55	U	<0.81	U	<0.55	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.34	U	<0.39	U	<0.33	U	1	JB,B,z	<0.34	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.23	U	<0.26	U	<0.22	U	0.4	J	<0.22	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	0.2	JB,B,z	<0.17	U	<0.15	U	0.8	JB,B,z	<0.15	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.22	U	<0.25	U	<0.21	U	0.8	JB,B,z	<0.22	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.2	U	<0.23	U	<0.2	U	1	JB,B,z	<0.2	U
2-BUTANONE	--	4,692,857	61,320,000	--	8	J	<1.2	U	<1	U	10	J	9	J
2-HEXANONE	--	--	--	--	2	J	<0.56	U	<0.48	U	3	J	<0.48	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.47	U	<0.54	U	<0.46	U	1	J	<0.47	U
ACETONE	--	7,039,286	91,980,000	--	63		19	B,B,z	17	B,B,z	96		87	
BROMOFORM	--	80,851	362,228	--	<0.22	U	<0.25	U	<0.21	U	<0.32	U	<0.22	U
BROMOMETHANE	--	10,950	143,080	--	<0.82	U	1	JB,B,z	<0.8	U	10	,J,d	8	
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.43	U	<0.49	U	<0.42	U	<0.62	U	3	J
CHLOROFORM	--	78,214	1,022,000	300	<0.32	U	<0.37	U	<0.32	U	<0.47	U	<0.32	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.3	U	<0.34	U	<0.29	U	<0.43	U	<0.29	U
CYCLOHEXANE	--	--	--	--	<0.38	U	<0.44	U	<0.38	U	<0.56	U	0.8	J
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.15	U	<0.17	U	<0.15	U	<0.22	U	<0.15	U
METHYL ACETATE	--	7,821,429	102,200,000	--	<0.45	U	<0.52	U	<0.44	U	<0.66	U	<0.45	U
METHYLCYCLOHEXANE	--	--	--	--	<0.37	U	<0.42	U	<0.36	U	<0.53	U	1	J
METHYLENE CHLORIDE	--	85,163	381,547	300	0.8	JB,B,z	<0.5	U	<0.43	U	1	JB,B,z	<0.43	U
TETRACHLOROETHENE	--	1,183	5,299	300	<0.31	U	<0.35	U	<0.3	U	<0.45	U	<0.3	U
TOLUENE	--	1,564,286	20,440,000	100	<0.34	U	0.6	J	<0.33	U	4	JB	<0.34	U
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	0.5	J	<0.37	U	<0.32	U	0.7	J	0.5	J
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.45	U	<0.51	U	<0.44	U	<0.65	U	<0.44	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.16	U	<0.16	U	<0.2	U	0.2	J	<0.2	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.59	U	<0.6	U	1	J	<0.6	U	<0.7	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	0.7	JB,B,z	0.6	JB,B,z	<0.5	U	0.7	J	<0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.24	U	<0.25	U	<0.3	U	0.5	J	<0.3	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	0.4	JB,B,z	0.3	JB,B,z	<0.2	U	0.6	J	<0.2	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	0.4	JB,B,z	<0.24	U	<0.3	U	0.5	J	<0.3	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	0.5	JB,B,z	0.4	JB,B,z	<0.3	U	0.5	J	<0.3	U
2-BUTANONE	--	4,692,857	61,320,000	--	<1.1	U	<1.1	U	7	JB,B,z	8	JB,B,z	4	JB,B,z
2-HEXANONE	--	--	--	--	<0.52	U	<0.53	U	<0.7	U	2	J	<0.7	U
4-METHYL-2-PENTANONE	--	--	--	100,000	0.7	J	<0.51	U	<0.7	U	<0.5	U	<0.6	U
ACETONE	--	7,039,286	91,980,000	--	9	JB,B,z	9	JB,B,z	58	B	42	B	48	B,B,z
BROMOFORM	--	80,851	362,228	--	<0.23	U	<0.24	U	<0.3	U	0.3	J	<0.3	U
BROMOMETHANE	--	10,950	143,080	--	2	JB,B,z	<0.89	U	2	J	<0.9	U	<1	U
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.46	U	<0.46	U	0.8	J	<0.5	U	<0.6	U
CHLOROFORM	--	78,214	1,022,000	300	<0.34	U	<0.35	U	<0.4	U	0.6	J	<0.4	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.32	U	<0.32	U	<0.4	U	<0.3	U	<0.4	U
CYCLOHEXANE	--	--	--	--	<0.41	U	<0.42	U	<0.5	U	<0.4	U	<0.5	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.16	U	<0.16	U	<0.2	U	<0.2	U	<0.2	U
METHYL ACETATE	--	7,821,429	102,200,000	--	<0.48	U	<0.49	U	5	J,B,x	1	J,B,x	<0.6	U
METHYLCYCLOHEXANE	--	--	--	--	<0.39	U	<0.4	U	<0.5	U	<0.4	U	<0.5	U
METHYLENE CHLORIDE	--	85,163	381,547	300	0.7	J	0.6	J	0.9	J	<0.5	U	1	J
TETRACHLOROETHENE	--	1,183	5,299	300	<0.33	U	<0.33	U	<0.4	U	<0.3	U	0.7	JB,B,z
TOLUENE	--	1,564,286	20,440,000	100	0.7	J	<0.37	U	0.8	JB,B,z	0.6	JB,B,z	0.9	JB,B,z
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.34	U	<0.35	U	<0.4	U	<0.3	U	0.8	JB,B,z
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.47	U	<0.48	U	<0.6	U	<0.5	U	<0.6	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	–	15,643	204,400	–	<20	U	<20	U	<300	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	–	45,623	204,400	–	60	J	<32	U	<480	U	<32	U	<32	U
CAPROLACTAM	–	3,910,714	51,100,000	–	<62	U	<62	U	<930	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	–	782,143	10,220,000	–	<27	U	<27	U	<400	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	–	469,286	6,132,000	100	<5.9	U	<5.9	U	<89	U	<5.9	U	19	J
BENZO(A)ANTHRACENE	–	875	3,920	100	<2.2	U	<2.2	U	<33	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	–	87	392	100	<1.6	U	<1.6	U	<25	U	<1.6	U	<1.6	U
BENZO(B)FLUORANTHENE	–	875	3,920	100	<1.7	U	<1.7	U	<26	U	<1.7	U	<1.7	U
BENZO(K)FLUORANTHENE	–	8,750	39,200	100	<1.4	U	<1.4	U	<21	U	<1.4	U	<1.4	U
CHRYSENE	–	87,497	392,000	100	<2.4	U	<2.4	U	<36	U	<2.4	U	<2.4	U
FLUORANTHENE	–	312,857	4,088,000	100	<2.1	U	<2.1	U	<32	U	<2.1	U	<2.1	U
FLUORENE	–	312,857	4,088,000	100	<14	U	<14	U	<220	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	–	875	3,920	100	<2.5	U	<2.5	U	<37	U	<2.5	U	<2.5	U
PHENANTHRENE [4]	–	234,643	3,066,000	100	<8.5	U	<8.5	U	<130	U	<8.5	U	<8.5	U
PYRENE	–	234,643	3,066,000	100	<4.3	U	<4.3	U	<65	U	<4.3	U	<4.3	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
SWMUs 8 and 36 Soil Screening Report
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	--	15,643	204,400	--	<20	U	<20	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<32	U	<32	U	<32	U	<32	U	<32	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<62	U	<62	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<27	U	<27	U	<27	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	70		<5.9	U	<5.9	U	<5.9	U	34	J
BENZO(A)ANTHRACENE	--	875	3,920	100	12		61		<2.2	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	87	392	100	2.7	J	6.4	J	<1.6	U	<1.6	U	<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	3	J	<1.7	U	<1.7	U	<1.7	U	<1.7	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	3.5	J	61		<1.4	U	<1.4	U	<1.4	U
CHRYSENE	--	87,497	392,000	100	9.6	J	<2.4	U	<2.4	U	<2.4	U	<2.4	U
FLUORANTHENE	--	312,857	4,088,000	100	10	J	5.8	J	<2.1	U	<2.1	U	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<14	U	<14	U	<14	U	<14	U	20	J
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	4.5	J	<2.5	U	<2.5	U	<2.5	U	<2.5	U
PHENANTHRENE [4]	--	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	234,643	3,066,000	100	6.2	J	5.3	J	<4.3	U	<4.3	U	7.3	J

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	--	15,643	204,400	--	<300	U	<300	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<480	U	1300	J	<32	U	<32	U	<32	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<930	U	<930	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<400	U	<400	U	<27	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<89	U	<89	U	19	J	<5.9	U	20	J
BENZO(A)ANTHRACENE	--	875	3,920	100	<33	U	<33	U	<2.2	U	<2.2	U	3.7	J
BENZO(A)PYRENE	--	87	392	100	<25	U	<25	U	<1.6	U	<1.6	U	<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<26	U	<26	U	<1.7	U	2.8	J,B,z	<1.7	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<21	U	<21	U	2.1	J	11	J	<1.4	U
CHRYSENE	--	87,497	392,000	100	<36	U	<36	U	24		<2.4	U	<2.4	U
FLUORANTHENE	--	312,857	4,088,000	100	<32	U	<32	U	<2.1	U	<2.1	U	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<220	U	<220	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<37	U	<37	U	<2.5	U	<2.5	U	<2.5	U
PHENANTHRENE [4]	--	234,643	3,066,000	100	<130	U	<130	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	234,643	3,066,000	100	<65	U	<65	U	<4.3	U	<4.3	U	8.6	J

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	--	15,643	204,400	--	<20	U	<20	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<32	U	<32	U	<32	U	<32	U	<32	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<62	U	<62	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<27	U	<27	U	<27	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<2.2	U	6.6	J	<2.2	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	87	392	100	<1.6	U	5.3	J	<1.6	U	<1.6	U	<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	2.6	J,B,z	5.1	J	<1.7	U	<1.7	U	<1.7	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<1.4	U	3.7	J	<1.4	U	<1.4	U	<1.4	U
CHRYSENE	--	87,497	392,000	100	<2.4	U	9.3	J	<2.4	U	<2.4	U	<2.4	U
FLUORANTHENE	--	312,857	4,088,000	100	<2.1	U	11	J	<2.1	U	<2.1	U	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
PHENANTHRENE [4]	--	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	234,643	3,066,000	100	<4.3	U	12	J	<4.3	U	<4.3	U	<4.3	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	–	15,643	204,400	--	28	J	<20	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	–	45,623	204,400	--	<32	U	<32	U	71	J	45	J	<32	U
CAPROLACTAM	–	3,910,714	51,100,000	--	<62	U	<62	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	–	782,143	10,220,000	--	89	J	<27	U	<27	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	–	469,286	6,132,000	100	<5.9	U	<5.9	U	21	J	<5.9	U	<5.9	U
BENZO(A)ANTHRACENE	–	875	3,920	100	<2.2	U	<2.2	U	<2.2	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	–	87	392	100	<1.6	U	32		<1.6	U	<1.6	U	<1.6	U
BENZO(B)FLUORANTHENE	–	875	3,920	100	<1.7	U	5.2	J,B,z	2.5	J,B,z	<1.7	U	2.5	J
BENZO(K)FLUORANTHENE	–	8,750	39,200	100	<1.4	U	190		<1.4	U	<1.4	U	3	J
CHRYSENE	–	87,497	392,000	100	<2.4	U	<2.4	U	<2.4	U	<2.4	U	3.6	J
FLUORANTHENE	–	312,857	4,088,000	100	<2.1	U	<2.1	U	<2.1	U	<2.1	U	<2.1	U
FLUORENE	–	312,857	4,088,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	–	875	3,920	100	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
PHENANTHRENE [4]	–	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	–	234,643	3,066,000	100	<4.3	U	6.3	J	<4.3	U	<4.3	U	<4.3	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID Sample Date Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	--	15,643	204,400	--	<20	U	<20	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<32	U	<32	U	<32	U	42	J	<32	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<62	U	<62	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<27	U	<27	U	<27	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<5.9	U	<5.9	U	<5.9	U	26	J,J,m	<5.9	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<2.2	U	<2.2	U	<2.2	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	87	392	100	<1.6	U	<1.6	U	<1.6	U	<1.6	U,UJ,m	<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<1.7	U	14		<1.7	U	5.7	J,B,z	<1.7	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	3.5	J	<1.4	U	2.9	J	2.4	J,J,d	<1.4	U
CHRYSENE	--	87,497	392,000	100	<2.4	U	<2.4	U	7.7	J	<2.4	U	<2.4	U
FLUORANTHENE	--	312,857	4,088,000	100	<2.1	U	<2.1	U	<2.1	U	8.8	J,J,d	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<14	U	<14	U	<14	U	47	J,J,m	<14	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
PHENANTHRENE [4]	--	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	234,643	3,066,000	100	<4.3	U	<4.3	U	<4.3	U	<4.3	U	<4.3	U

Table 4-1 (Continued)
Summary of Analytes Detected in Soil/Sludge Samples at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	--	15,643	204,400	--	<20	U	<20	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<32	U	<32	U	<32	U	69	J	<32	U
CAPROLACTAM	--	3,910,714	51,100,000	--	100	J	<62	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<27	U	<27	U	<27	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<2.2	U	<2.2	U	5.2	J	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	87	392	100	<1.6	U	<1.6	U	<1.6	U	24		<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	2.7	J,B,z	<1.7	U	2.4	J	<1.7	U	<1.7	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	37		<1.4	U	2.2	J	<1.4	U	<1.4	U
CHRYSENE	--	87,497	392,000	100	<2.4	U	<2.4	U	5	J	<2.4	U	<2.4	U
FLUORANTHENE	--	312,857	4,088,000	100	<2.1	U	<2.1	U	8.6	J	<2.1	U	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
PHENANTHRENE[4]	--	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	25	J	<8.5	U
PYRENE	--	234,643	3,066,000	100	8.6	J	<4.3	U	<4.3	U	<4.3	U	<4.3	U

Notes:

ft bgs = Feet Below Ground Surface
RBC = Risk-Based Concentration
USEPA = U.S. Environmental Protection Agency
USEPA Region III Risk-Based Concentration (RBC) values from the October 15, 2003 RBC Table
Adjusted RBCs = a Hazard Quotient (HQ) of 0.1 applied to non-carcinogens
mg/kg = Milligram Per Kilogram
µg/kg = Microgram Per Kilogram
TCL = Target Compound List
PCB = Polychlorinated Biphenyl
VOC = Volatile Organic Compound
SVOC = Semivolatile Organic Compound
PAH = Polynuclear Aromatic Hydrocarbon
-- = No Risk Criteria Available
LQ = Laboratory Qualifier
VQ = Validation Qualifier
r = Reason Code (Table 4-5)

[A] = Facility-Wide Background Point Estimate as Reported in the Facility-Wide Background Study Report (IT 2002b)

[1] = Lead criteria are Action Levels; see USEPA Region III guidance
[2] = Mercuric chloride soil RBC value used
[3] = Chlordane value is for sum of isomers
[4] = RBC value for pyrene was used for phenanthrene

= Concentration Exceeds Soil Residential RBC

bold = Concentration Exceeds Soil Industrial RBC

= Concentration Exceeds Draft BTAG Screening Level

underline = Concentration Exceeds Site Background Values

Table 4-2
Summary of TCLP Analytes Detected in Composite *In Situ* Soil and Sludge Samples
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date	TCLP Regulatory Limit	8SC1 4/17/2003		8SC2 4/17/2003		36SC1 4/16/2003		36SC2 4/16/2003		36SC3 4/16/2003		36SC4 4/16/2003	
		Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCLP Metals (µg/L)													
ARSENIC	5000	<2.2	U,UL,p	6.9	B,L,p	<2.2	U,UL,p	4.4	B,L,p	3	B,L,p	2.5	B,L,p
BARIUM	100000	346	B	453	B	338	B	248	B	201	B	286	B
CADMIUM	1000	0.37	B,B,o	1.9	B,B,o	0.24	B,L,p	4.6	B,K,w	2.5	B,K,w	2.9	B,K,w
CHROMIUM	5000	5.5	B,L,w	988	B,L,w	2.8	B,L,w	375	B,L,w	367	B,L,w	295	B,L,w
LEAD	5000	2.6	B	15.5	B	2.1	B	50.7	B	30.1	B	8.9	B
SELENIUM	1000	6.6	B,K,w	12.2	B,K,w	7	B,K,w	8.3	B,K,w	10.6	B,K,w	10.9	B,K,w
TCLP Pesticides (µg/L)													
GAMMA-BHC (LINDANE)	400	<0.017	U	<0.017	U	<0.087	U	0.87		0.26	J	<0.017	U

Notes:

µg/L = Microgram Per Liter
SC = Soil/Sludge Composite
SWMU = Solid Waste Management Unit
TCLP = Toxicity Characteristic Leaching Procedure

LQ = Laboratory Qualifier
VQ = Validation Qualifier
r = Reason Code (See Table 4-5)
[ ] = Concentration is above TCLP Regulatory Limit

Table 4-3
USEPA Region III
Data Validation Qualifiers
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Codes Relating to Identification (Confidence Concerning Presence or Absence of Compounds)

Qualifier	Description
U	Not detected. The associated number indicates the approximate sample concentration necessary to be detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
R	Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
N	Tentative Identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

Codes Relating to Quantitation (can be used for both positive results and sample quantitation limits)

B	Not detected substantially above the level reported in laboratory or field blanks.
N	Tentative Identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.
J	Analyte present. Reported value may not be accurate or precise.
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
UJ	Not detected, quantitation limit may be inaccurate or imprecise.
UL	Not detected, quantitation limit is probably higher.

Other Codes

Q	No analytical result.

Notes:

1. Source of Data Qualifier Codes: United States Environmental Protection Agency (USEPA) Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses, April 1993.
2. Source of Data Qualifier Codes: United States Environmental Protection Agency (USEPA) Region III Modifications to National Functional Guidelines for Organic Data Review Multimedia, Multi-Concentration (OLMO1.0-OLMO1.9), September 1994.

Table 4-4
Laboratory Data Qualifiers
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Organic Compounds

Qualifier	Description
U	The compound was analyzed for but not detected. The reporting limit will be adjusted to reflect any dilution, and for soil, the percent moisture.
J	Estimated value. The flag is used as detailed below:
	1) When estimating a concentration for tentatively identified compounds (TICs) where a response factor of 1.0 is assumed for the TIC analyte.
	2) When the mass spectral and retention time data indicate the presence of a compound that meet the volatile and semi-volatile gas chromotography/mass spectra (GC/MS) identification criteria, and the result is less than the reporting limit but greater than zero
	3) When the retention time data indicate the presence of a compound that meets the pesticide/Arochlor or other GC or High Performance Liquid Chromotography (HPLC) identification criteria, and the result is less than the reporting limit but greater than zero.
N	Presumptive evidence of a compound.
P	Greater than 40% difference for detected concentrations between the two GC or HPLC columns.
C	GC or HPLC identification has been confirmed by GC/MS.
B	Analyte found in associated blank as well as in the sample.
E	Concentration exceeded the upper level of the calibration range of the instrument for that specific analysis.
D	Diluted sample.

Inorganic Compounds

Concentration Qualifier	Description
U	The compound was analyzed for but not detected. This reported value was obtained from a reading that was less than the instrument detection limit (IDL). The IDL will be adjusted to reflect any dilution, and for soil, the percent moisture.
B	Analyte was analyzed for and the reported value was obtained from a reading that was less than the reporting limit but greater than or equal to the IDL.
Q Qualifier on Form I	Description
E	Estimated value when the serial dilution results are not within 10%.
N	Sample spike recovery is outside of control limits.
*****	Sample and associated duplicate are not within control limits.

Table 4-5
Data Validation Reason Codes
SWMUs 8 and 36 Soil Screening Report
Radford Army Ammunition Plant, Radford, Virginia

GC/MS Organics		GC and HPLC Organics		Inorganics and Conventionals	
Code	Interpretation	Code	Interpretation	Code	Interpretation
a	Incorrect or incomplete analytical sequence	a	Incorrect or incomplete analytical sequence	a	Incorrect or incomplete analytical sequence
c	Calibration failure; poor (RRF) or unstable (%D) response	b	Instrument performance failure or poor chromatography	c	Calibration failure
d	MS/MSD or LCS/LCSD RPD imprecision	c	Calibration failure; poor or unstable (%D) response	d	MS/MSD or LCS/LCSD RPD imprecision
e	Sample preservation or cooler temperature failure	d	MS/MSD or LCS/LCSD RPD imprecision	e	Sample preservation or cooler temperature failure
f	Field duplicate imprecision	e	Sample preservation or cooler temperature failure	f	Field duplicate imprecision
h	Holding time violation	f	Field duplicate imprecision	h	Holding time violation
I	Tuning Failure or poor mass spectrometer performance	g	Dual column confirmation imprecision	k	Laboratory duplicate imprecision
j	LCS recovery failure	h	Holding time violation	l	LCS recovery failure
l	MS/MSD recovery failure	I	LCS recovery failure	m	MS/MSD recovery failure
m	Internal standard failure	l	MS/MSD recovery failure	n	ICP interference check sample failure
p	Air bubble (> 6 mm or ¼ inch) in VOC vials	m	Air bubble (> 6 mm or ¼ inch) in VOC vials	o	Calibration blank contamination
q	Concentration exceeded the linear range	p	Concentration exceeded the linear range	p	Preparation blank contamination
r	linearity (%RSD or r) failure in initial calibration	q	linearity (%RSD or r) failure in initial calibration	q	Concentration exceeded the linear range
s	Surrogate failure	r	Surrogate failure	r	Linearity failure (Darren) in calibration or MSA
t	Tentatively identified Compound	s	No confirmation column	s	Serial dilution failure
w	Identification criteria failure	u	Identification criteria failure	v	Post-digestion spike failure
x	Field and/or equipment blank contamination	w	Field and/or equipment blank contamination	x	CRDL standard recovery failure
y	Trip blank contamination	x	Trip blank contamination	z	Field and/or equipment blank contamination
z	Method blank and/or storage blank contamination	z	Method blank and/or storage blank contamination	w	Laboratory storage blank contamination

Notes:

The reason code indicates the type of quality control anomaly that led to the application of the data validation flag.

5.0 CONCLUSIONS

Presence and Absence of Constituents

VOCs, SVOCs, PAHs, and pesticides were detected in one or more discrete samples. Explosives and PCBs were not detected in discrete samples. Each of the targeted TAL metals was detected in one or more discrete samples. The Soil Screening indicated the presence of selected constituents.

Human Health Risk Screening

Point comparisons of the discrete soil data to R-RBCs, I-RBCs, and RFAAP background did not indicate a potential threat to human health. Detected VOC, SVOC, PAH, and pesticide/PCB constituents were below their respective R-RBCs. Inorganic constituent concentrations were within RFAAP background range or below RBCs, except for one surface sample (8SB3A) north of SWMU 8, where manganese was detected at a concentration above its I-RBC and RFAAP background. Manganese was detected in subsurface soil sample 8SB3C but at a concentration below its Facility-wide background point estimate. Potential human health risk in the area of 8SB3A is unlikely since surface soil in this area will be excavated as part of future construction activities at SWMUs 8 and 36.

Ecological Risk Screening

Point comparisons of the discrete VOC, SVOC, PAH, and pesticide/PCB soil data to Draft BTAG Screening Levels did not indicate a potential threat to the environment. Comparisons of the TAL metals data to BTAG Screening Levels indicated the following ecological constituents of potential concern: antimony, lead, magnesium, manganese, mercury, selenium, silver, and zinc. Potential ecological risk in the SWMUs 8 and 36 areas related to inorganic constituents is likely low since source material in sampled areas will be excavated as part of future construction activities. Further, these units are and will remain engineered treatment units and as such are not considered habitat for ecological receptors.

Hazardous Waste Characteristic Evaluation

Hazardous waste characteristic testing indicated that sludge and associated soil from SWMUs 8 and 36 does not exhibit the characteristics of a RCRA hazardous waste. TCLP constituents were not detected in composite sludge and soil samples at concentrations above regulatory thresholds and sample pH levels were between the lower and upper regulatory limits. Based on the waste characterization results, excavated sludge and soil materials can be managed as non-hazardous waste.

Soil Screening Level Comparison

Chemical concentrations detected in soil samples were compared to USEPA Region III soil to groundwater Soil Screening Levels (SSL) using a dilution attenuation factor (DAF) of 20 (USEPA, 2003). SSL screening indicates minimal risk from migration of chemicals from site soil to groundwater. Table G.1 in Appendix G indicates three TAL metals (arsenic, chromium, and manganese) were detected exceeding SSLs. Arsenic and chromium exceed SSL criteria but at concentrations below background point estimates and manganese slightly exceeds its SSL and background point estimate in one of thirty-five soil samples. Three organic compounds exceed SSL screening values. Specifically, beta-benzene hexachloride (beta-BHC) was detected in 5 of eleven samples with two samples exceeding the SSL (J-flag estimated values). Technical-grade BHC contains several isomers including gamma-BHC (Lindane) and beta-BHC and was once commonly used as an insecticide throughout the U.S. Chloroform was detected in one of thirty-five samples at a concentration of 2 µg/kg (J-flag value), slightly exceeding the

SSL of 0.91 µg/kg. The compound 1,2-dibromo-3-chloropropane was detected in one of thirty-five samples at a concentration of 1.0 µg/kg (J-flag value), slightly above the SSL of 0.87 µg/kg.

Conclusion

The primary objectives of this Soil Screening Investigation were to assess the current condition of soil and calcium sulfate sludge at SWMUs 8 and 36, specifically, the presence or absence of hazardous constituents in soil and calcium sulfate sludge and to assess whether soil and calcium sulfate sludge managed during a construction project would be a RCRA hazardous waste. These SWMUs are active and are expected to remain that way for some time, therefore, further investigation and associated action may occur at a future time when treatment activities cease. This construction project is to replace the western SWMU 8 lagoon and the SWMU 36 drying beds with new engineered structures performing the same treatment activity. This Soil Screening Report provides information and data for SWMUs 8 and 36 that gives insight into the nature of the material that is present (i.e., non-hazardous solid waste) as well as the qualitative nature of the site subsequent to construction activity.

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APPENDIX A
SITE PHOTOGRAPHS

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PHOTO 1: Panoramic view looking southwest to west across SWMU 8, Western Lagoon.

PHOTO 2: View looking southeast across SWMU 36, Northeastern Drying Bed.

PHOTO 3: View looking east across SWMU 36, Southern Drying Bed. Calcium Sulfate residue is visible in the middle ground.

PHOTO 4: Close view of Calcium Sulfate residue in SWMU 36, Southern Drying Bed.

PHOTO 5: View looking northeast across SWMU 36, Northwestern Drying Bed. Note the New River in the background.

PHOTO 6: View looking west across SWMU 36, Northwestern Drying Bed. Note the steep berms and heavy vegetation.

PHOTO 7: View looking south across SWMU 36, Eastern Drying Bed.

PHOTO 8: View looking southeast across SWMU 8.

APPENDIX B

SUMMARY OF FIELD INVESTIGATION PROGRAM AND STANDARD OPERATING PROCEDURES

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B.0 SUMMARY OF FIELD SOIL SCREENING PROGRAM

The following sections describe the Soil Screening field program conducted at SWMUs 8 and 36 (documented in accordance with standard operating procedure (SOP) 10.1, *Field Logbook*) including:

- Soil sampling;
- Soil boring;
- Global Positioning System survey of the soil boring and sampling locations;
- Management of investigation-derived material (IDM);
- Work Plan deviations.

B.1 SOIL SCREENING METHODOLOGY

The following sections describe sampling procedures, methodologies, equipment used, field methods, and other information pertaining to Soil Screening at SWMUs 8 and 36.

B.1.1 Soil Sampling

Surface and subsurface soil samples were collected for chemical and physical analysis during the Soil Screening consistent with SOP 30.1 included at the end of Appendix B and as described in Section 5.9 of the MWP (URS, 2002). Soil sampling procedures for analysis of VOCs followed MWP SOP 30.9 (Appendix B).

Surface soil samples were collected from 0 to 6-inches bgs, below gravel or organic layers at the surface, except for VOC samples (collected from 6 to 12-inches bgs).

Upon retrieval of soil for sample processing, the soil was field screened for the presence of VOCs using a photoionization detector (PID). Field screening consisted of cutting a cross-sectional slice from the core or center of the sample with a decontaminated stainless steel knife or trowel and inserting the PID probe. PID readings were recorded in the field logbook and on the boring log for samples collected from soil borings. After the PID readings were recorded, a sample for VOC analysis was immediately collected from the appropriate interval using a disposable EnCore® sampler.

Once the fraction for VOC analysis was completed, the soil core interval was examined and classified by the site geologist and recorded in the field logbook and on the boring log consistent with SOPs 10.1 and 10.3, respectively (Appendix B). Soil for non-VOC analysis was then extracted from the appropriate interval, placed in a stainless steel bowl, and homogenized. The appropriate sample containers were filled, labeled, and placed into coolers with ice and maintained near 4 degrees Celsius (°C). Sample labeling, packaging, and shipping were completed consistent with procedures outlined in MWP Addendum No. 015 and SOPs 50.1 and 50.2 (see Appendix B). Samples were express shipped under chain-of-custody procedures to the designated analytical laboratory for this Soil Screening investigation (CompuChem Laboratories, Inc.).

B.1.2 Soil Borings

Twenty-four soil borings (eight borings at SWMU 8 and sixteen borings at SWMU 36) were advanced to depths ranging from 5 to 15 ft bgs (Figure B-1). Surface and subsurface samples were collected from 21 of the 24 soil borings advanced at SWMUs 8 and 36 using a tractor-mounted direct push rig (Geoprobe®). This rig was equipped with 1.25-inch diameter push rods, 4-feet (ft) long, 2-inch diameter, stainless steel closed solid barrel sampler (Macro-core®) with a

disposable acetate liner and stainless steel cutting shoes. A percussion hammer was used to advance the sampling assembly. Following withdrawal of the Macro-core® and removal of the acetate liner, a cutting device was used to open the liner prior inspection and processing of the samples.

The western lagoon at SWMU 8 was not accessible for sampling personnel entry at the time of the field investigation (i.e., the lagoon contained $CaSO_4$ process wastewater). Therefore, sludge and soil samples were collected from the lagoon remotely using a customized boom-mounted direct-push sampling device. The sampling mechanism used two-inch (inner diameter) threaded carbon steel pipe that was attached to a truck-mounted hydraulic boom with a reach sufficient to be extended over the lagoon from the lagoon berm. The pipe was advanced in sections to the prescribed sampling depths using a pneumatic hammer. Samples were withdrawn from the pipe by manual extrusion with a specially designed carbon steel push rod.

Once the termination depth of the boring was reached and sample collection was completed, the borehole was backfilled with bentonite chips. Excess soil cuttings remaining after sample processing were managed as investigation-derived material (IDM) and placed into 55-gallon drums (see Section B.1.4). Soil boring completion data are summarized in Table B-1. Boring logs prepared by the site geologist are included in Appendix C.

B.1.3 Global Positioning System Survey

At the conclusion of the field investigation, the location and elevation of samples and borings were obtained using a Trimble Pathfinder Pro XRS global positioning system unit. Horizontal position information (to the nearest meter) was recorded in the U.S. State [Virginia South] Plane Coordinate System (measured in U.S. survey feet) using the North American Datum 1983. The vertical control was measured in feet using the National Vertical Datum of 1929. Boring location coordinates and elevations are presented in Table B-1.

B.1.4 Management of Investigation-Derived Material

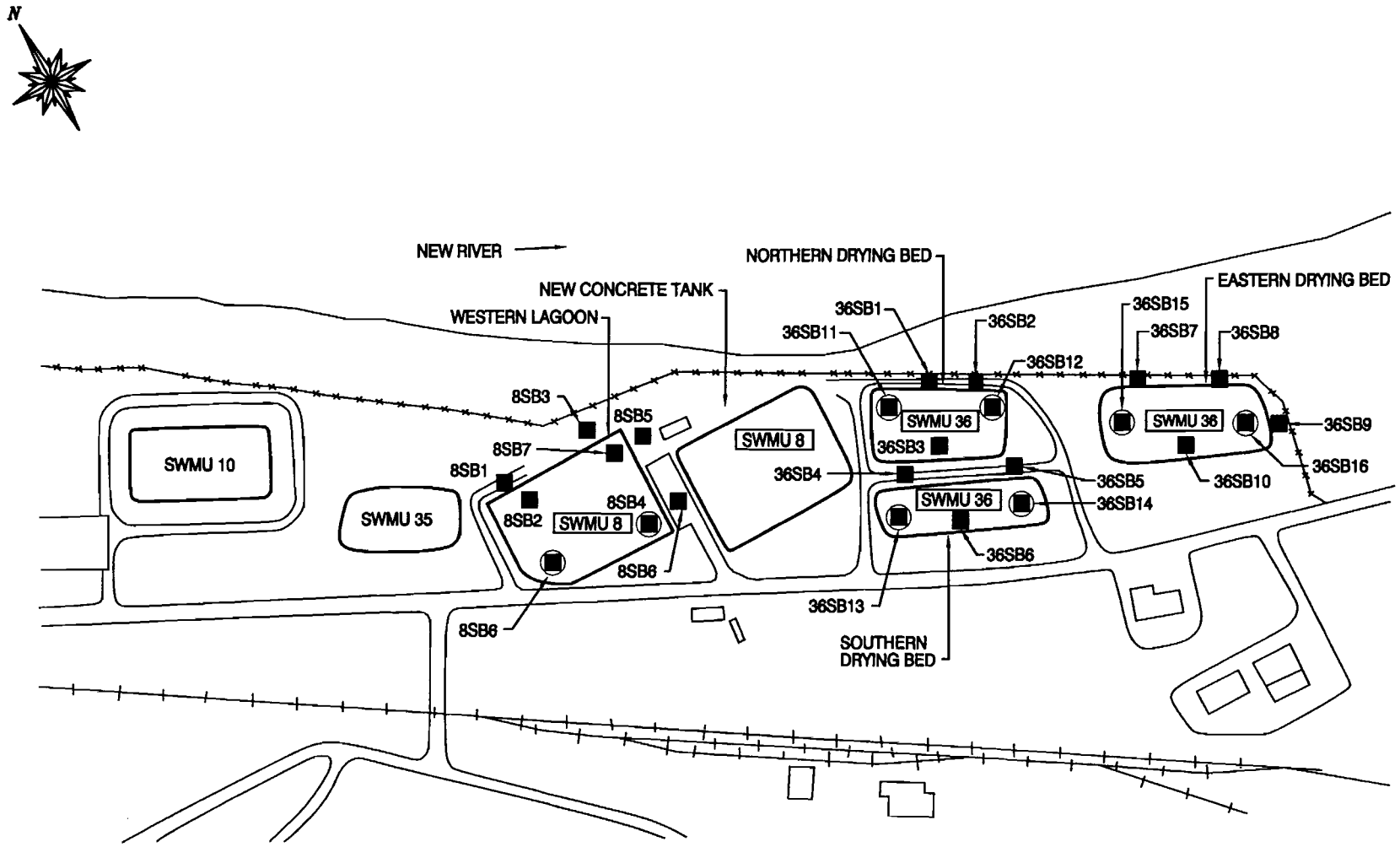
Investigation-derived material (IDM) management activities for the Soil Screening were conducted consistent with the procedures outlined in WPA No. 015 (URS 2003), as approved by the USEPA Region III and VDEQ. IDM management activities described below were documented in field logbooks.

B.1.4.1 Accumulation

IDM accumulated during field sampling activities conducted from April 14 through 17, 2003, included the following materials and containers:

- Soil cuttings – two 55-gallon drums;
- Personal protective equipment (PPE), acetate liners, and plastic sheeting – two 55-gallon drums; and
- Decontamination water – two 55-gallon drums.

IDM accumulation and labeling was conducted as outlined in MWP SOP 70.1 (Appendix B). Drums were transferred to an approved container accumulation area to be held pending analysis and profiling.



LEGEND

- Soil Borings
- Sludge Composite Sample Borings Only

0 200

1 inch = 200 feet

RFAAP

Soil Screening Report, SWMUs 8 and 36

Date:	Prepared By:
AUGUST 2003	*KDC/DR*
Scale:	**File Name:**
AS SHOWN	*09604-353-155*

FIGURE B.1

SOIL BORING AND SAMPLING LOCATIONS (MODIFIED FROM DAMES & MOORE, 1992)

Table B-1
Summary of Soil/Sludge Samples Collected at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

SWMU	Macrocore Designation	Date Advanced	Total Depth of Macrocore	Soil Sample Interval	Soil Sample ID	Date of Sample	Surface Elevation	GPS Coordinates [A]	
			Feet bgs	Feet bgs			Feet MSL	Northing	Easting
8	8SB1	4-15-03	15	0-0.5 (0.5-1 for VOCs)	8SB1A	4-15-03	1702.20	3600218.882	10892692.87
				13-15	8SB1C	4-15-03			
8	8SB2	4-17-03	15	4-8	8SB2B	4-17-03	--	--	--
				8-10	8SC1	4-17-03			
8	8SB3	4-15-03	15	0-0.5 (0.5-1 for VOCs)	8SB3A	4-15-03	1698.93	3600210.620	10892840.38
				13-15	8SB3C	4-15-03			
8	8SB4	4-17-03	8.5	6-8.5	8SB4C	4-17-03	--	--	--
				6-8.5	8SC1	4-17-03			
8	8SB5	4-15-03	15	0-0.5 (0.5-1 for VOCs)	8SB5A	4-15-03	1700.18	3600163.313	10892906.06
				13-15	8SB5C	4-15-03			
				13-15	8SB5CMS	4-15-03			
				13-15	8SB5CMSD	4-15-03			
8	8SB6	4-15-03	15	0-0.5 (0.5-1 for VOCs)	8SB6A	4-15-03	1698.47	3600065.048	10892874.69
				13-15	8SB6C	4-15-03			
8	8SB7	4-17-03	5	0-3.5	8SC2	4-17-03	--	--	--
				3.5-5	8SB7B	4-17-03			
				3.5-5	8SB7B-DUP (DUP-4)	4-17-03	--	--	--
				3.5-5	8SB7BMS	4-17-04	--	--	--
				3.5-5	8SB7BMSD	4-17-05	--	--	--

Table B-1 (Continued)
Summary of Soil/Sludge Samples Collected at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

SWMU	Macrocore Designation	Date Advanced	Total Depth of Macrocore	Soil Sample Interval	Soil Sample ID	Date of Sample	Surface Elevation	GPS Coordinates [A]	
			Feet bgs	Feet bgs			Feet MSL	Northing	Easting
8	8SB8	4-17-03	5	0-5	8SC2	4-17-03	–	–	–
36	36SB1	4-15-03	15	0-0.5 (0.5-1 for VOCs)	36SB1A	4-15-03	1702.55	3600026.552	10893231.12
				14-15	36SB1C	4-15-03			
36	36SB2	4-15-03	15	0-0.5 (0.5-1 for VOCs)	36SB2A	4-15-03	1704.99	3599996.908	10893293.41
				14-15	36SB2C	4-15-03			
36	36SB3	4-16-03	15	4.5	36SC1	4-16-03	1697.56	3599922.096	10893269.87
				5-6	36SB3B	4-16-03			
				13-15	36SB3C	4-16-02			
36	36SB4	4-15-03	15	0-0.5 (0.5-1 for VOCs)	36SB4A	4-15-03	1699.62	3599915.075	10893178.19
				14-15	36SB4C	4-15-03			
36	36SB5	4-15-03	15	0-0.5 (0.5-1 for VOCs)	36SB5A	4-15-03	1707.84	3599882.530	10893319.02
				0-0.5 (0.5-1 for VOCs)	36SB5A-DUP (DUP-2)	4-15-03			
				14-15	36SB5C	4-15-03			
36	36SB6	4-16-03	15	7	36SC1	4-16-03	1697.14	3599855.046	10893251.65
				7-10	36SB6B	4-16-03			
				14-15	36SB6C	4-16-03			
36	36SB7	4-15-03	15	0-0.5 (0.5-1 for VOCs)	36SB7A	4-15-03	1706.68	3599926.477	10893461.73
				14-15	36SB7C	4-15-03			

Table B-1 (Continued)
Summary of Soil/Sludge Samples Collected at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

SWMU	Macrocore Designation	Date Advanced	Total Depth of Macrocore	Soil Sample Interval	Soil Sample ID	Date of Sample	Surface Elevation	GPS Coordinates [A]	
			Feet bgs	Feet bgs			Feet MSL	Northing	Easting
36	36SB8	4-15-03	15	0-0.5 (0.5-1 for VOCs)	36SB8A	4-15-03	1704.89	3599872.529	10893596.16
				13-15	36SB8C	4-15-03			
				13-15	36SB8CMS	4-15-03			
				13-15	36SB8CMSD	4-15-03			
36	36SB9	4-15-03	15	0-0.5 (0.5-1 for VOCs)	36SB9A	4-15-03	1704.97	3599791.036	10893632.75
				13-15	36SB9C	4-15-03			
				13-15	36SB9C-DUP (DUP-1)	4-15-03			
36	36SB10	4-16-03	15	4.7	36SC1	4-16-03	1705.71	3599843.894	10893505.84
				5-6	36SB10B	4-16-03			
				14-15	36SB10C	4-16-03			
				14-15	36SB10C-DUP (DUP-3)	4-16-03			
36	36SB11	4-16-03	12	0-8	36SC2	4-16-03	1696.84	3599985.276	10893207.49
	36SB12	4-16-03	8	0-6.5		4-16-03	1699.53	3599947.810	10893288.64
36	36SB13	4-16-03	8	0-3	36SC3	4-16-03	1697.80	3599873.648	10893166.00
	36SB14	4-16-03	8	0-6		4-16-03	1696.81	3599853.235	10893290.43
36	36SB15	4-16-03	8	0-5	36SC4	4-16-03	1707.2096	3599873.918	10893434.00
	36SB16	4-16-03	8	0-4		4-16-03	1703.15	3599820.291	10893587.71

Table B-1 (Continued)
Summary of Soil/Sludge Samples Collected at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

SWMU	Macrocore Designation	Date Advanced	Total Depth of Macrocore	Soil Sample Interval	Soil Sample ID	Date of Sample	Surface Elevation	GPS Coordinates (A)	
			Feet bgs	Feet bgs			Feet MSL	Northing	Easting
IDM Samples									
8/36	836IDMSOIL	4-25-03	NA	NA	836IDMSOIL	4-25-03	NA	NA	NA
8/36	836IDMH2O	4-25-03	NA	NA	836IDMH2O	4-25-03	NA	NA	NA

Notes:
bgs = Below Ground Surface
DUP = Duplicate Sample
GPS = Global Positioning System
IDM = Investigation-Derived Material
MS = Matrix Spike
MSD = Matrix Spike Duplicate
MSL = Mean Sea Level
SWMU = Solid Waste Management Unit
VOC = Volatile Organic Compound
– = data not collected
NA = Not Applicable

(A) = Horizontal - North American Datum 1983, U.S. State Plane Coordinates (Virginia South)
Vertical - National Vertical Datum 1929

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B.1.4.2 Material Characterization

Separate IDM characterization samples were collected for soil cuttings and decontamination water contained in 55-gallon drums. IDM was characterized to evaluate whether it was a characteristic hazardous waste as described in Part 40 of the Code of Federal Regulations (CFR) Part 261, Subpart C (as referenced in the Virginia Hazardous Waste Management Regulations).

The analytical results of the IDM characterization indicated that the IDM samples for soil cuttings and decontamination water did not exhibit the characteristics of a RCRA hazardous waste (Appendix D).

B.1.4.3 Transporter, Storage, and Disposal Facility

Before disposal, waste profile results were provided to the Installation, IDM management subcontractor, and the proposed disposal facility for review and approval. Shipping documents were reviewed and signed by Installation personnel before loading and transport of the IDM. The Installation maintains a record of the shipping documents and related information including analytical testing results and waste profiles.

Soil and PPE material contained in four 55-gallon drums was transported by First Piedmont and disposed of at their landfill in Chatham, Virginia, on May 21, 2003.

B.1.4.4 Decontamination Water

Following analysis, the Installation was provided with a copy of the decontamination water IDM sample results. After receiving approval, decontamination water from SWMUs 8 and 36 was disposed of into the collection system of the Process Water Treatment Plant on May 21, 2003.

B.2 WORK PLAN DEVIATIONS

In some cases, deviations to the Work Plan were necessary to adjust for field conditions as they occurred during field sampling. Specific deviations to the Work Plan included the following:

- As discussed in Section B.1.2, a modification to the planned boring and sampling methodology was required within the Western Lagoon of SWMU 8 to collect the planned discrete and composite samples.
- A "B" interval sample was collected from boring 8SB2 because of shallower than expected sampler refusal and limited sample recovery at depths greater than immediately below the sludge/soil interface. Originally, a "C" interval sample was also planned at the boring termination depth.
- A "C" interval sample was collected from the boring 8SB4 because of shallower than expected sampler refusal and limited sample recovery. Originally, a "B" interval sample was also planned at this location. The planned "B" interval sample was relocated from 8SB4 to 8SB7, where composite sampling was originally planned.
- Hazardous waste characteristics evaluation samples were analyzed for explosives (Test Method 8330 and 8332) in lieu of reactivity (Test Method 9010B) and ignitability (Test Method 1010) to assess these hazardous waste characteristics.

Standard Operating Procedures

SOP SERIES	TITLE
10.0	**DOCUMENTATION**
10.1	Field Logbook
10.2	Surface Water, Groundwater, and Soil/Sediment Field Logbooks
10.3	Boring Logs
10.4	Chain-of-Custody Forms
20.0	**SUBSURFACE INVESTIGATION**
20.3	Well and Boring Abandonment
20.11	Drilling Methods and Procedures
30.0	**SAMPLING**
30.1	Soil Sampling
30.6	Containerized Material
30.7	Sampling Strategies
30.9	Collection of Soil Samples By USEPA SW-846 Method 5035 Using Disposable Samplers
50.0	**SAMPLE MANAGEMENT**
50.1	Sample Labels
50.2	Sample Packaging
70.0	**INVESTIGATION-DERIVED MATERIAL**
70.1	Investigation-Derived Material
80.0	**DECONTAMINATION**
80.1	Decontamination
90.0	**AIR MONITORING EQUIPMENT**
90.1	Photoionization Detector (HNu Model PI-101 and HW-101)

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STANDARD OPERATING PROCEDURE 10.1
FIELD LOGBOOK

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to delineate protocols for recording daily site investigation activities.

Records should contain sufficient information so that anyone can reconstruct the sampling activity without relying on the collector's memory.

2.0 MATERIALS

- Field Logbook;
- Indelible ink pen; and
- Clear tape.

3.0 PROCEDURE

Information pertinent to site investigations will be recorded in a bound logbook. Each page/form will be consecutively numbered, dated, and signed. All entries will be made in indelible ink, and all corrections will consist of line out deletions that are initialed and dated. If only part of a page is used, the remainder of the page should have an "X" drawn across it. At a minimum, entries in the logbook will include but not be limited to the following:

- Project name (cover);
- Name and affiliation of personnel on site;
- Weather conditions;
- General description of the field activity;
- Sample location;
- Sample identification number;
- Time and date of sample collection;
- Specific sample attributes (e.g., sample collection depth flow conditions or matrix);
- Sampling methodology (grab or composite sample);
- Sample preservation, as applicable;
- Analytical request/methods;

- Associated quality assurance/quality control (QA/QC) samples;
- Field measurements/observations, as applicable; and
- Signature and date of personnel responsible for documentation.

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

None.

6.0 REFERENCES

USEPA. 1990. *Sampler's Guide to the Contract Laboratory Program.* EPA/540/P-90/006, Directive 9240.0-06, Office of Emergency and Remedial Response, Washington, DC.

USEPA. 1991. *User's Guide to the Contract Laboratory Program.* EPA/540/O-91/002, Directive 9240.0-01D, Office of Emergency and Remedial Response, January.

USEPA. 1998. *EPA Requirements for Quality Assurance Project Plans.* EPA/600/R-98/018, QA/R5, Final, Office of Research and Development, Washington, D.C.

STANDARD OPERATING PROCEDURE 10.2
SURFACE WATER, GROUNDWATER, AND SOIL/SEDIMENT FIELD LOGBOOKS

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to delineate protocols for recording surface water, groundwater, and soil/sediment sampling information, as well as instrument calibration data in field logbooks.

2.0 MATERIAL

- Applicable field logbook (see attached forms); and
- Indelible ink pen.

3.0 PROCEDURE

All information pertinent to surface water, groundwater, or soil/sediment sampling will be recorded in the appropriate logbook. Each page/form of the logbook will be consecutively numbered. All entries will be made with an indelible ink pen. All corrections will consist of line out deletions that are initialed and dated.

3.1 SOIL/SEDIMENT

3.1.1 Field Parameters/Logbook (Form 10.2-a)

1. HIGH CONCENTRATION EXPECTED?: Answer "Yes" or "No.";
2. HIGH HAZARD?: Answer "Yes" or "No.";
3. INSTALLATION/SITE: Record the complete name of the installation or site;
4. AREA: Record the area designation of the sample site;
5. INST. NAME: Record the two-letter installation name for Radford Army Ammunition Plant – "RD";
6. SAMPLE MATRIX CODE: Record the appropriate sample matrix code. Common codes are "SD" for solid - sediment, "SI" for soil - gas, "SL for solid sludge, "SO" for surface other, "SS" for solid – soil, "SW" for surface wipe, "WD" for water – potable, "WG" for water – ground, "WS" water – surface, "WT" – water treated and "WW" water -waste;
7. SITE ID: Record a code up to 20 characters or numbers that is unique to the site;
8. ENV. FIELD SAMPLE IDENTIFIER: Record a code up to 20 characters specific for the sample;
9. DATE: Enter the date the sample was taken;
10. TIME: Enter the time (12-hour or 24-hour clock acceptable as long as internally consistent) the sample was taken;

11. AM PM: Circle "AM" or "PM" to designate morning or afternoon (12-hour clock);
12. SAMPLE PROG: Record "RFI" (RCRA Facility Investigation) or other appropriate sample program;
13. DEPTH (TOP): Record the total depth sampled;
14. DEPTH INTERVAL: Record the intervals at which the plug will be sampled;
15. UNITS: Record the units of depth (feet, meters);
16. SAMPLE MEASUREMENTS: Check the appropriate sampling method;
17. CHK: Check off each container released to a laboratory;
18. ANALYSIS: Record the type of analysis to be performed on each sample container;
19. SAMPLE CONTAINER: Record the sample container type and size;
20. NO.: Record the number of containers;
21. REMARKS: Record any remarks about the sample;
22. TOTAL NUMBER OF CONTAINERS FOR SAMPLE: Record the total number of containers;
23. SITE DESCRIPTION: Describe the location where the sample was collected;
24. SAMPLE FORM: Record the form of the sample (i.e., clay, loam, etc.) using The Unified Soil Classification System (USCS);
25. COLOR: Record the color of the sample as determined from standard Munsell Color Charts;
26. ODOR: Record the odor of the sample or "none";
27. PID: Record the measured PID values or other similar measurement instrument value;
28. UNUSUAL FEATURES: Record anything unusual about the site or sample;
29. WEATHER/TEMPERATURE: Record the weather and temperature; and
30. SAMPLER: Record your name.

3.1.2 Map File Form (refer to form 10.2-c)

1. SITE ID: Record the Site ID from the field parameter form;
2. POINTER: Record the field sample number for the sample being pointed to;
3. DESCRIPTION/MEASUREMENTS: Describe the location where the sample was taken, along with distances to landmarks;
4. SKETCH/DIMENSIONS: Diagram the surroundings and record the distances to landmarks;
5. MAP REFERENCE: Record which U.S.G.S. Quad Map references the site;
6. COORDINATE DEFINITION: Write the compass directions and the X- and Y-coordinates of the map run;
7. COORDINATE SYSTEM: Write "UTM" (Universal Transverse Mercator);
8. SOURCE: Record the 1-digit code representing the Map Reference;
9. ACCURACY: Give units (e.g., write "1-M" for 1 meter);
10. X-COORDINATE: Record the X-coordinate of the sample site location;

11. Y-COORDINATE: Record the Y-coordinate of the sample site location;
12. UNITS: Record the units used to measure the map sections;
13. ELEVATION REFERENCE: Record whether topography was determined from a map or a topographical survey;
14. ELEVATION SOURCE: Record the 1-digit code representing the elevation reference;
15. ACCURACY: Record the accuracy of the map or survey providing the topographical information;
16. ELEVATION: Record the elevation of the sampling site;
17. UNITS: Write the units in which the elevation is recorded; and
18. SAMPLER: Write your name.

3.2 SURFACE WATER

3.2.1 Field Parameter Logbook (Forms 10.2-b and 10.2-c)

1. CAL REF: Record the calibration reference for the pH meter;
2. pH: Record the pH of the sample;
3. TEMP: Record the temperature of the sample in degrees Celsius;
4. COND: Record the conductivity of the water;
5. Description of site and sample conditions (refer to 10.2-b);
6. Map File Form (refer to Section 3.1.2).

3.3 GROUNDWATER (FORMS 10.2- D)

3.3.1 Field Parameter Logbook (Form 10.2.b)

Refer to Section 3.2.1.

3.3.2 Map File and Purging Forms

1. WELL NO. OR ID: Record the abbreviation appropriate for where the sample was taken. Correct abbreviations can be found on pages 18-21 of the IRDMIS User's Guide for chemical data entry;
2. SAMPLE NO.: Record the reference number of the sample;
3. WELL/SITE DESCRIPTION: Describe the location where the sample was taken, along with distances to landmarks;
4. X-COORD AND Y-COORD: Record the survey coordinates for the sampling site;
5. ELEV: Record the elevation where the sample was taken;
6. UNITS: Record the units the elevation was recorded in;
7. DATE: Record the date in the form MM/DD/YY;
8. TIME: Record the time, including a designation of AM or PM;
9. AIR TEMP.: Record the air temperature, including a designation of C or F (Celsius or Fahrenheit);
10. WELL DEPTH: Record the depth of the well in feet and inches;

11. CASING HEIGHT: Record the height of the casing in feet and inches;
12. WATER DEPTH: Record the depth (underground) of the water in feet and inches;
13. WELL DIAMETER: Record the diameter of the well in inches;
14. WATER COLUMN HEIGHT: Record the height of the water column in feet and inches;
15. SANDPACK DIAM.: Record the diameter of the sandpack. Generally, this will be the same as the bore diameter;
16. EQUIVALENT VOLUME OF STANDING WATER: Use one of the following equations to determine one equivalent volume (EV);

    1 EV = volume in casing + volume in saturated sandpack. Or:

    $1\ EV = [\pi R_w^2 h_w + 0.30p(R_s^2 - R_w^2)h_s] * (0.0043)$

Where:

R_s = radius of sandpack in inches
R_w = radius of well casing in inches
h_s = height of sandpack in inches
h_w = water depth in inches

$0.0043 = gal/in^3$

and filter pack porosity is assumed as 30%, or

Volume in casing =
$(0.0043\ gal/in^3)(p)(12\ in/ft)(R_c^2)(W_h)$

Where:

R_c = radius of casing in inches, and
W_h = water column height in feet

Vol. in sandpack =
(0.0043 gal/in3)(p)(12 in/ft)(Rb2 - Rc2)(Wh)(0.30)

(if Wh is less than the length of the sandpack), or

Vol. in sandpack =
(0.0043 gal/in3)(p)(12 in/ft)(Rb2 - Rc2)(Sh)(0.30)

(if Wh is greater than the length of the sandpack).

where:

Rb = radius of the borehole, and
Sh = length of the sandpack.

Show this calculation in the comments section.

1. PUMP RATE: Record pump rate;
2. TOTAL PUMP TIME: Record total purge time and volume;
3. WELL WENT DRY? Write "YES" or "NO";
4. PUMP TIME: Record pump time that made the well go dry;
5. VOLUME REMOVED: Record the volume of water (gal) removed before the well went dry;
6. RECOVERY TIME: Record the time required for the well to refill;
7. PURGE AGAIN?: Answer "YES" or "NO";
8. TOTAL VOL. REMOVED: Record the total volume of water (in gallons) removed from the well;
9. CAL REF.: Record the calibration reference for the pH meter;
10. TIME: Record time started (INITIAL T(0)), 2 times DURING the sampling and the time sampling ended (FINAL);
11. pH: Record the pH at start of sampling (INITIAL), twice DURING the sampling, and at the end of sampling (FINAL);
12. TEMP: Record the water temperature (Celsius) at the start of sampling, twice DURING the sampling, and at the end of sampling (FINAL);
13. COND: Record the conductivity of the water at the start of sampling, twice DURING the sampling, and at the end of sampling (FINAL);
14. D.O.: Record the dissolved oxygen level in the water at the start of sampling, twice DURING the sampling, and at the end of sampling (FINAL);
15. TURBIDITY: Record the readings from the turbidity meter (nephelometer) and units at the start of sampling, twice DURING the sampling, and at the end of sampling (FINAL);
16. ORD: Record the oxidation/reduction (RedOx) potential of the water sample at the start of sampling, twice DURING the sampling, and at the end of sampling (FINAL);
17. HEAD SPACE: Record any positive readings from organic vapor meter reading taken in well headspace before sampling;
18. NAPL: Record the presence and thickness of any non-aqueous phase liquids (LNAPL and DNAPL)
19. COMMENTS: Record any pertinent information not already covered in the form; and
20. SIGNATURE: Sign the form.

3.4 FIELD CALIBRATION FORMS (REFER TO FORM 10.2-E)

1. Record time and date of calibration;
2. Record calibration standard reference number;
3. Record meter ID number;
4. Record initial instrument reading, recalibration reading (if necessary), and final calibration reading on appropriate line;
5. Record value of reference standard (as required);
6. COMMENTS: Record any pertinent information not already covered on form; and

7. SIGNATURE: Sign form.

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

None.

6.0 REFERENCE

USEPA. 1991. *User's Guide to the Contract Laboratory Program.* EPA/540/O-91/002, Directive 9240.0-01D, Office of Emergency and Remedial Response, January.

FIELD PARAMETER/LOGBOOK FORM 10.2-a
SOIL AND SEDIMENT SAMPLES

HIGH CONCENTRATION EXPECTED? _____ HIGH HAZARD?

INSTALLATION/SITE _____ AREA _____

INST NAME _____ FILE NAME _____

SAMPLE MATRIX CODE _____ SITE ID _____
ENV. FIELD SAMPLE IDENTIFIER _____

DATE (MM/DD/YY) __/__/__ TIME _____ AM PM SAMPLE PROGRAM

DEPTH (TOP) _____ DEPTH INTERVAL _____ UNIT _____

SAMPLING METHOD:

SPLIT SPOON __ AUGER __ SHELBY TUBE __ SCOOP __ OTHER

CHK	ANALYSIS	SAMPLE CONTAINER	NO.	REMARKS

TOTAL NUMBER OF CONTAINERS FOR SAMPLE_____

DESCRIPTION OF SITE AND SAMPLE CONDITIONS

SITE DESCRIPTION:_____

_____

_____

SAMPLE FORM _____ COLOR _____ ODOR _____

PID (HNu)_____ UNUSUAL FEATURES_____

_____

WEATHER/TEMPERATURE

SAMPLER _____

FIELD PARAMETER/LOGBOOK FORM 10.2-b
GROUNDWATER AND SURFACE WATER SAMPLES

HIGH CONCENTRATION EXPECTED? _____ HIGH HAZARD?

INSTALLATION/SITE _____ AREA

INST CODE _____ FILE NAME _____ SITE TYPE

SITE ID _____ FIELD SAMPLE NUMBER

DATE (MM/DD/YY) __/__/__ TIME _____ AM PM SAMPLE PROG.

DEPTH (TOP) _____ DEPTH INTERVAL _____ UNITS

SAMPLING MEASUREMENTS

CAL REF. ____ pH ____ TEMPERATURE °C ____ CONDUCTIVITY ____ REDOX ____

DISSOLVED OXYGEN ____ TURBIDITY ____ OTHER

CHK	ANALYSIS	SAMPLE CONTAINER	NO.	REMARKS

TOTAL NUMBER OF CONTAINERS FOR SAMPLE_____

DESCRIPTION OF SITE AND SAMPLE CONDITIONS

SITE DESCRIPTION_____

SAMPLING METHOD_____

SAMPLE FORM _____ COLOR _____ ODOR _____

PID (HNu)_____

UNUSUAL FEATURES_____

WEATHER/TEMPERATURE_____ SAMPLER _____

EXAMPLE MAP FILE LOGBOOK FORM 10.2-c
SURFACE WATER, SOIL, AND SEDIMENT SAMPLES

SITE ID_____ POINTER_____

DESCRIPTION/MEASUREMENTS_____

SKETCH/DIMENSIONS :

MAP REFERENCE_____

COORDINATE DEFINITION (X is _____ Y is _____)

COORDINATE SYSTEM _____ SOURCE _____ ACCURACY_____

X-COORDINATE _____ Y-COORDINATE _____ UNITS_____

ELEVATION REFERENCE_____

ELEVATION SOURCE _____ ACCURACY _____ELEVATION_____

UNITS_____

SAMPLER_____

EXAMPLE MAP FILE AND PURGING LOGBOOK FORM 10.2-d
GROUNDWATER SAMPLES

WELL COORD. OR ID _____ SAMPLE NO._____

WELL/SITE DESCRIPTION_____

_____

X-COORD. _____ Y-COORD. _____ ELEV. _____ UNITS

DATE ____/____/____ TIME _____ AIR TEMP.

WELL DEPTH _____ FT. _____ IN. CASING HT. _____ FT. _____ IN.

WATER DEPTH _____ FT. _____ IN. WELL DIAMETER _____ IN.

WATER COLUMN HEIGHT _____ FT. _____ IN. SANDPACK DIAM. _____ IN.

EQUIVALENT VOLUME OF STANDING WATER _____ (GAL) (L)

VOLUME OF BAILER _____ (GAL) (L) or PUMP RATE _____ (GPM) (LPM)

TOTAL NO. OF BAILERS (5 EV) _____ or PUMP TIME _____ MIN.

WELL WENT DRY? [Yes] [No] NUM. OF BAILERS _____ or PUMP TIME

VOL. REMOVED _____ (GAL) (L) RECOVERY TIME

PURGE AGAIN? [Yes] [No] TOTAL VOL. REMOVED _____ (GAL) (L)

DATE & TIME	QUANTITY REMOVED	TIME REQ'D	pH	Cond	Temp	ORD	Turb	DO	Character of water (color / clarity / odor / partic.)
(before)									
(during)									
(during)									
(during									
(after)									

COMMENTS_____

SIGNATURE_____

EXAMPLE FIELD CALIBRATION FORM 10.2-e
FOR pH, CONDUCTIVITY, TEMPERATURE, TURBIDITY,
ORD, AND DISSOLVED OXYGEN METERS

INITIAL CALIBRATION	FINAL CALIBRATION
DATE:	DATE:
TIME:	TIME:

pH METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO:_____

METER ID_____

pH STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
7.0			
10.0			
4.0			

CONDUCTIVITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO:_____

METER ID_____

COND. STANDARD	INITIAL READING	RECALIB. READING	FINAL READING

TEMPERATURE METER CALIBRATION

METER ID_____

TEMP. STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
ICE WATER			
BOILING WATER			
OTHER _____			

EXAMPLE FIELD CALIBRATION FORM 10.2-e
FOR pH, CONDUCTIVITY, TEMPERATURE, TURBIDITY,
ORD, AND DISSOLVED OXYGEN METERS

TURBIDITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO:_____

METER ID_____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING

ORD METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO:_____

METER ID_____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING

DISSOLVED OXYGEN METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO:_____

METER ID_____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING

COMMENTS_____

SIGNATURE_____

STANDARD OPERATING PROCEDURE 10.3
BORING LOGS

1.0 INTRODUCTION

The purpose of this standard operating procedure (SOP) is to describe the methods to be followed for classifying soil and rock, as well as preparing borehole logs and other types of soil reports.

2.0 MATERIALS

The following equipment is required for borehole logging:

- HTRW ENG Form 5056-R and 5056A-R boring log forms;
- Daily inspection report forms;
- Chain-of-custody forms;
- Request for analysis forms;
- ASTM D 2488 classification flow chart;
- Soil and/or Rock color chart (i.e., Munsell®);
- Grain size and roundness chart;
- Graph paper;
- Engineer's scale;
- Previous reports and boring logs;
- Pocketknife or putty knife;
- Hand lens;
- Dilute hydrochloric acid (10% volume);
- Gloves;
- Personal protective clothing and equipment, as described in work plan addenda health and safety plan;
- Photoionization detector or other appropriate monitoring equipment per site-specific health and safety plan; and
- Decontamination supplies (SOP 80.1).

3.0 PROCEDURE

Each boring log should fully describe the subsurface environment and the procedures used to obtain this description.

Boring logs should be prepared in the field on USACE Engineer Form 5056-R and 5056-R. Logs should be recorded in the field directly on the boring log form and not transcribed from a field book.

A "site geologist" should conduct borehole logging and soil/rock identification and description or other professional trained in the identification and description of soil/rock.

3.1 BORING LOG INFORMATION

As appropriate, the following information should be recorded on the boring log during the course of drilling and sampling activities:

- Project information including name, location, and project number;
- Each boring and well should be uniquely numbered and located on a sketch map as part of the log;
- Type of exploration;
- Weather conditions including events that could affect subsurface conditions;
- Dates and times for the start and completion of borings, with notations by depth for crew shifts and individual days;
- Depths/heights in feet and in decimal fractions of feet;
- Descriptions of the drilling equipment including rod size, bit type, pump type, rig manufacturer and model, and drilling personnel;
- Drilling sequence and descriptions of casing and method of installation;
- Description and identification of soils in accordance with ASTM Standard D 2488;
- Descriptions of each intact soil sample for the parameters identified in Section 3.2;
- Descriptions and classification of each non-intact sample (e.g., wash samples, cuttings, auger flight samples) to the extent practicable;
- Description and identification of rock;
- Description of rock (core(s)) for the parameters identified in Section 3.7;
- Scaled graphic sketch of the rock core (included or attached to log) according to the requirements identified in Section 3.7;
- Lithologic boundaries, with notations for estimated boundaries;
- Depth of water first encountered in drilling, with the method of first determination (any distinct water level(s) below the first zone will also be noted);
- Interval by depth for each sample taken, classified, and/or retained, with length of sample recovery and sample type and size (diameter and length);
- Blow counts, hammer weight, and length of fall for driven samplers;

- Rate of rock coring and associated rock quality designation (RQD) for intervals cored;
- Drilling fluid pressures, with driller's comments;
- Total depth of drilling and sampling;
- Drilling fluid losses and gains should be recorded;
- Significant color changes in the drilling fluid returned;
- Soil gas or vapor readings with the interval sampled, with information on instrument used and calibration;
- Depth and description of any in-situ test performed; and
- Description of other field tests conducted on soil and rock samples.

3.2 SOIL PARAMETERS FOR LOGGING

In general, the following soil parameters should be included on the boring log when appropriate:

- Identification per ASTM D 2488 with group symbol;
- Secondary components with estimated percentages per ASTM D 2488;
- Color;
- Plasticity per ASTM D 2488;
- Density of non-cohesive soil or consistency of cohesive soil;
- Moisture condition per ASTM D 2488 (dry, moist, or wet);
- Presence of organic material;
- Cementation and HCL reaction testing per ASTM D 2488;
- Coarse-grained particle description per ASTM D 2488 including angularity, shapes, and color;
- Structure per ASTM D 2488 and orientation;
- Odor; and
- Depositional environment and formation, if known.

ASTM D 2488 categorizes soils into 13 basic groups with distinct geologic and engineering properties based on visual-manual identification procedures. The following steps are required to classify a soil sample:

1. Observe basic properties and characteristics of the soil. These include grain size grading and distribution, and influence of moisture on fine-grained soil.
2. Assign the soil an ASTM D 2488 classification and denote it by the standard group name and symbol.
3. Provide a written description to differentiate between soils in the same group if necessary.

Many soils have characteristics that are not clearly associated with a specific soil group. These soils might be near the borderline between groups, based on particle distribution or plasticity characteristics. In such a

case, assigning dual group names and symbols (e.g., GW/GC or ML/CL) might be an appropriate method of describing the soil. The two general types of soils, for which classification is performed, coarse- and fine-grained soils, are discussed in the following sections.

3.3 COURSE-GRAINED SOIL IDENTIFICATION

For soils in the coarse-grained soils group, more than half of the material in the soil matrix will be retained by a No. 200 sieve (75-μm).

1. Coarse-grained soils are identified on the basis of the following:
   a) Grain size and distribution;
   b) Quantity of fine-grained material (i.e., silt and clay as a percentage); and
   c) Character of fine-grained material.
2. The following symbols are used for classification:

Basic Symbols	Modifying Symbols
G = gravel	W = well graded
S = sand	P = poorly graded
	M = with silty fines
	C = with clayey fines

3. The following basic facts apply to coarse-grained soil classification.

- The basic symbol G is used if the estimated percentage of gravel is greater than that for sand. In contrast, the symbol S is used when the estimated percentage of sand is greater than the percentage of gravel.
- Gravel ranges in size from 3-inch to 1/4-inch (No. 4 sieve) diameter. Sand ranges in size from the No. 4 sieve to No. 200 sieve. The Grain Size Scale used by Engineers (ASTM Standards D 422-63 and D 643-78) is the appropriate method to further classify grain size as specified by ASTM D 2488.
- Modifying symbol W indicates good representation of all particle sizes.
- Modifying symbol P indicates that there is an excess or absence of particular sizes.
- The symbol W or P is used only when there are less than 15% fines in a sample.
- Modifying symbol M is used if fines have little or no plasticity (silty).
- Modifying symbol C is used if fines have low to high plasticity (clayey).

Figure 10.03a is a flowchart for identifying coarse-grained soils by ASTM D 2488.

3.4 FINED-GRAINED SOIL IDENTIFICATON

If one-half or more of the material will pass a No. 200 sieve (75 μm), the soil is identified as fine-grained.

1. Fine-grained soils are classified based on dry strength, dilatancy, toughness, and plasticity.
2. Classification of fine-grained soils uses the following symbols:

Basic Symbols			Modifying Symbols		
M	=	silt (non plastic)	L	=	low liquid limit (lean)
C	=	clay (plastic)	H	=	high liquid limit (fat)
O	=	organic			
Pt	=	peat			

3. The following basic facts apply to fine-grained soil classification:
   - The basic symbol M is used if the soil is mostly silt, while the symbol C applies if it consists mostly of clay.
4. Use of symbol O (group name OL/OH) indicates that organic matter is present in an amount sufficient to influence soil properties. The symbol Pt indicates soil that consists mostly of organic material.

- Modifying symbols (L and H) are based on the following hand tests conducted on a soil sample:
  - — Dry strength (crushing resistance).
  - — Dilatancy (reaction to shaking).
  - — Toughness (consistency near plastic limit).
- Soil designated ML has little or no plasticity and can be recognized by slight dry strength, quick dilatency, and slight toughness.
- CL indicates soil with slight to medium plasticity, which can be recognized by medium to high dry strength, very slow dilatancy, and medium toughness.

Criteria for describing dry strength per ASTM D 2488 are as follows:

Description	Criteria
None	Dry sample crumbles into powder with pressure of handling
Low	Dry specimen crumbles into powder with some finger pressure
Medium	Dry specimen breaks into pieces or crumbles with considerable finger pressure
High	Dry specimen cannot be broken with finger pressure but will break into pieces between thumb and a hard surface
Very high	Dry specimen cannot be broken between the thumb and a hard surface stiffness

Criteria for describing dilatancy per ASTM D 2488 are as follows:

None	No visible change in the sample
Slow	Water appears slow on the surface of the sample during shaking and does not disappear or disappears slowly upon squeezing
Rapid	Water appears quickly on the surface of the sample during shaking and disappears quickly upon squeezing

Criteria for describing toughness per ASTM D 2488 are as follows:

Description	Criteria
Low	Only slight pressure is required to roll the thread near the plastic limit and the thread and lump are weak and soft
Medium	Medium pressure is required to roll the thread to near the plastic limit and the thread and lump have medium stiffness
High	Considerable pressure is required to roll the thread to near the plastic limit and the thread and lump have very high stiffness

Figure 10.03b is a flowchart for identifying fine-grained soils by ASTM D 2488.

3.5 DENSITY AND CONSISTENCY

Relative density for coarse-grained soils and consistency for fine-grained soils can be estimated using standard penetration test blow count data (ASTM D 1586). The number of blows required for each 6 inches of penetration or fraction thereof is recorded. If the sampler is driven less than 18 inches, the number of blows per each complete 6-inch interval and per partial interval is recorded.

For partial increments, the depth of penetration should be recorded to the nearest 1 inch. If the sampler advances below the bottom of the boring under the weight of rods (static) and/or hammer, then this information should be recorded on the log.

The following are some "rule-of-thumb" guidelines for describing the relative density of coarse-grained soils:

Blow Count	Relative Density for Sand
0–4	Very loose
4–10	Loose
10–30	Medium dense
30–50	Dense
>50	Very Dense

The following are some "rule-of-thumb" guidelines for describing the consistency of fine-grained soils:

Blow Count	Consistency for Clays	Description
0–2	Very Soft	Sample sags or slumps under its own weight
2–4	Soft	Sample can be pinched in two between the thumb and forefinger
4–8	Medium Stiff	Sample can be easily imprinted with fingers
8–16	Stiff	Sample can be imprinted only with considerable pressure of fingers
16–32	Very Stiff	Sample can be imprinted very slightly with fingers
>32	Hard	Sample cannot be imprinted with fingers; can be pierced with pencil

3.6 OTHER DESCRIPTIVE INFORMATION

The approximate percentage of gravel, sand, and fines (use a percentage estimation chart) should be recorded per ASTM D 2488 as follows:

Modifiers	Descriptions
Trace	Less than 5%
Few	5%–10%
Little	15%–25%
Some	30%–45%
Mostly	50%–100%

Color/discoloration should be recorded and described using a soil color chart, such as the Munsell® Soil Color Charts. A narrative and numerical description should be given from the color chart, such as Brown 10 YR, 5/3 (Munsell®). Odor should be described if organic or unusual.

Plasticity should be described as follows:

Description	Criteria
Non-plastic	A 1/8-inch thread cannot be rolled at any water content
Low	Thread can barely be rolled and lump cannot be formed when drier than plastic limit.
Medium	Thread is easy to roll; plastic limit can be reached with little effort and lump crumbles when drier than plastic limit.
High	Considerable time is required to reach the plastic limit and lump can be formed without crumbling when drier than plastic limit

Moisture condition should be recorded as dry (absence of moisture), moist (damp but no visible water) or wet (visible free water).

Cementation should be recorded (carbonates or silicates) along with the results of HCL reaction testing. The reaction with HCL should be described as none (no visible reaction), weak (some reaction with slowly forming bubbles) or strong (violent reaction with bubbles forming immediately).

Particle description information for coarse-grained soil should be recorded where appropriate per ASTM D 2488 including maximum particle size, angularity (angular, subangular, subrounded, or rounded), shape (flat, elongated or flat and elongated), and color.

Structure (along with orientation) should be reported using the following ASTM D 2488 descriptions:

Description	Criteria
Stratified	Alternating layers of varying material or color with layers greater than 6 millimeters thick
Laminated	Alternating layers of varying material or color with layers less than 6 millimeters thick
Fissured	Breaks along definite planes of fracture with little resistance
Slickensided	Fracture planes that appear polished or glossy, can be striated
Blocky	Inclusion of small pockets of different soils
Homogeneous	Same color and appearance throughout

3.7 ROCK CORE PARAMETERS FOR LOGGING

In general, the following parameters should be included on the boring log when rock coring is conducted:

- Rock type;
- Formation;
- Modifier denoting variety;
- Bedding/banding characteristics;
- Color;
- Hardness;
- Degree of cementation;
- Texture;
- Structure and orientation;
- Degree of weathering;
- Solution or void conditions;
- Primary and secondary permeability including estimates and rationale; and
- Lost core interval and reason for loss.

A scaled graphic sketch of the core should provided on or attached to the log, denoting by depth, location, orientation, and nature (natural, coring-induced, or for fitting into core box) of all core breaks. Where fractures are too numerous to be shown individually, their location may be drawn as a zone.

The RQD values for each core interval (run) should be calculated and included on the boring log. The method of calculating the RQD is as follows per ASTM D 6032:

RQD = [Σ length of intact core pieces > 100 mm (4-inches)] x 100%/total core length.

3.8 PROCEDURES FOR ROCK CLASSIFICATION

For rock classification record mineralogy, texture, and structural features (e.g., biotite and quartz fine grains, foliated parallel to relict bedding oriented 15 to 20 degrees to core axis, joints coated with iron oxide). Describe the physical characteristics of the rock that are important for engineering considerations such as fracturing (including minimum, maximum, and most common and degree of spacing), hardness, and weathering.

1. The following is to be used as a guide for assessing fracturing:

AEG Fracturing	Spacing
Crushed	up to 0.1 foot
Intense	0.1–0.5 foot
Moderate	0.5 foot–10 feet
Slight	1.0 foot–3.0 feet
Massive	>3.0 feet

2. Record hardness using the following guidelines:

Hardness	Criteria
Soft	Reserved for plastic material
Friable	Easily crumbled by finger pressure
Low	Deeply gouged or carved with pocketknife
Moderate	Readily scratched with knife; scratch leaves heavy trace of dust
Hard	Difficult to scratch with knife; scratch produces little powder and is often faintly visible
Very Hard	Cannot be scratched with knife

3. Describe weathering using the following guidelines:

Weathering	Decomposition	Discoloration	Fracture Condition
Deep	Moderate to complete alteration of minerals feldspars altered to clay, etc.	Deep and thorough	All fractures extensively coated with oxides, carbonates, or clay
Moderate	Slight alteration of minerals, cleavage surface lusterless and stained	Moderate or localized and intense	Thin coatings or stains
Weak	No megascopic alteration of minerals	Slight and intermittent and localized	Few strains on fracture surfaces
Fresh	Unaltered, cleavage, surface glistening		

3.9 PROCEDURE FOR LOGGING REFUSE

The following procedure applies to the logging of subsurface samples composed of various materials in addition to soil as may be collected from a landfill or other waste disposal site.

1. Observe refuse as it is brought up by the hollow stem auger, bucket auger, or backhoe.

2. If necessary, place the refuse in a plastic bag to examine the sample.

3. Record observations according to the following criteria:

   - Composition (by relative volume), e.g., paper, wood, plastic, cloth, cement, or construction debris. Use such terms as "mostly" or "at least half." Do not use percentages;
   - Moisture condition: dry, moist, or wet;
   - State of decomposition: highly decomposed, moderately decomposed, slightly decomposed, etc.;
   - Color: obvious mottling and/or degree of mottling;
   - Texture: spongy, plastic (cohesive), friable;
   - Odor;

- Combustible gas readings (measure down hole and at surface); and
- Miscellaneous: dates of periodicals and newspapers, ability to read printed materials, degree of drilling effort (easy, difficult, and very difficult).

3.10 SUBMITTAL REQUIREMENTS

Each original boring log should be submitted to the Contracting Officer Representative (CRO) after completion of the boring. When a monitoring well will be installed in a boring, the boring log and well installation diagram should be submitted together.

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

Not applicable.

6.0 REFERENCES

ASTM Standard D 1586–84 (1992). 1992. *Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils.*

ASTM Standard D 2488-93. 1993. *Standard Practice for Description and Identification of Soils Visual-Manual Procedure).*

ASTM Standard D 5434-93. 1993. *Guide for Field Logging of Subsurface Explorations of Soil and Rock.*

ASTM Standard D 6032-96. 1996. *Standard Test Method for Determining Rock Quality Designation (RQD) of Rock Core.*

Compton, R. R. 1962. *Manual of Field Geology.* John Wiley & Sons, Inc., New York.

USACE. 1998. *Monitoring Well Design, Installation, and Documentation at Hazardous, Toxic, and Radioactive Waste Sites.* EM 1110-1-4000, 1, November.

U.S. Department of the Interior. 1989. *Earth Manual.* Water and Power Resources Service, Washington, DC.

STANDARD OPERATING PROCEDURE 10.4
CHAIN-OF-CUSTODY FORM

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to delineate protocols for use of the chain-of-custody form. An example is provided as part of this SOP. Other formats with similar levels of detail are acceptable.

2.0 MATERIALS

- Chain-of-custody form; and
- Indelible ink pen.

3.0 PROCEDURE

1. Record the project name and number.
2. Record the project contact's name and phone number.
3. Print sampler's names in "Samplers" block.
4. Enter the Field Sample No.
5. Record the sampling dates for all samples.
6. List the sampling times (military format) for all samples.
7. Indicate, "grab" or "composite" sample with an "X."
8. Record matrix (e.g., aqueous, soil).
9. List the analyses/container volume across top.
10. Enter the total number of containers per Field Sample No. in the "Subtotal" column.
11. Enter total number of containers submitted per analysis requested.
12. State the carrier service and airbill number, analytical laboratory, and custody seal numbers.
13. List any comments or special requests in the "Remarks" section.
14. Sign, date, and time the "Relinquished By" section when the cooler is relinquished to the next party.
15. Upon completion of the form, retain the shipper copy and place the forms and the other copies in a zip seal bag to protect from moisture. Affix the zip seal bag to the inside lid of the sample cooler to be sent to the designated laboratory.

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

None.

6.0 REFERENCES

USEPA. 1990. *Sampler's Guide to the Contract Laboratory Program.* EPA/540/P-90/006, Directive 9240.0-06, Office of Emergency and Remedial Response, Washington, DC, December 1990.

USEPA. 1991. *User's Guide to the Contract Laboratory Program..* EPA/540/O-91/002, Directive 9240.0-01D, Office of Emergency and Remedial Response, January 1991.

USEPA. 1998. *EPA Requirements for Quality Assurance Project Plans.* EPA/600/R-98/018, QA/R5, Final, Office of Research and Development, Washington, D.C.

FIGURE 10.4-a
EXAMPLE CHAIN-OF-CUSTODY FORM

Project Number	Project Name				Matrix	A N A L Y S E S									LAB :
Project Contact (Name and Phone Number)															AIRBILL No:
Samplers:															Courier:
Field Sample No.	Date (MM-DD-YY)	Time	Comp	Grab										Subtotal	REMARKS
TOTAL															

Relinquished by:	Date/time	Received by:	Relinquished by:	Date/Time	Received by:
Relinquished by:	Date/time	Received by: (for lab)	Date/Time	Remarks	

STANDARD OPERATING PROCEDURE 20.3
WELL AND BORING ABANDONMENT

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to establish the protocols by which all borings and wells will be abandoned. The primary objective of boring or well abandonment activities is to permanently abandon the boring or well so that the natural migration of groundwater or soil vapor is not significantly influenced.

2.0 MATERIALS

- Well abandonment equipment including appropriate grout mixing/placement equipment, and heavy equipment as appropriate (drill rig, crane, backhoe, etc.);
- Pure sodium bentonite powder with no additives (bentonite);
- Bentonite pellets (seal);
- Cement (Portland Type II); and
- Approved source water.

3.0 PROCEDURE

The volume of grout required for borehole or well abandonment should be calculated prior to proceeding with abandonment. These calculations should consider loss of material to the formation, changes in borehole diameter, potential zones of washout, and shrinkage of material. Calculations should be recorded on an abandonment record (see Section 3.1.4).

In general, cement grout should be used for boring and well abandonment per the specifications in Section 3.1 and procedures identified in the following sections. Specialized narrow diameter soil borings (3-inches or less) associated with direct push methods or hand augers may be abandoned using bentonite pellets or chips (see Section 3.5).

Any replacement borings or wells associated with the abandonment should be offset at least 20 feet from any abandoned site in a presumed up- or cross-gradient direction.

3.1 GROUT

Grout used in construction will be composed by weight of the following:

- Type II Portland cement (Type IV Portland Cement if sulfate concentrations are greater than 1,500 ppm);
- Bentonite (2 to 5% dry bentonite per 94-lb sack of dry cement); and

- A maximum of 6 to 7 gallons of approved water per 94-lb sack of cement.

Neither additives nor borehole cuttings will be mixed with the grout. Bentonite will be added after the required amount of cement is mixed with the water.

All grout material will be combined in an aboveground container and mechanically blended to produce a thick, lump-free mixture. The mixed grout will be recirculated through the grout pump before placement.

Grout placement will be performed using a commercially available grout pump and a rigid tremie pipe. Removal and grouting will be accomplished in stages, aquifer by aquifer, sealing the boring from the bottom to ground surface. This will be accomplished by placing a grout pipe to the bottom and pumping grout through the pipe until undiluted grout reaches the bottom of the next higher section of casing or, for the top-most section, until grout flows from the boring at ground surface.

After 24 hours, the abandoned drilling site will be checked for grout settlement. Any settlement will be filled with grout and rechecked 24 hours later. This process will be repeated until firm grout remains at the ground surface.

3.2 BORINGS

The term "borings" as used in this SOP applies to any drilled hole made that is not completed as a well. This includes soil test borings, soil sampling borings, and deep stratigraphic borings. Whether completed to the planned depth or aborted for any reason before reaching that depth, borings will be grouted and will be normally closed within 12 hours.

To achieve an effective seal, the borehole to be abandoned should be free of debris and foreign matter that may restrict the adhesion of the grout to the borehole wall. Borehole flushing with a tremie pipe may be required to remove such materials prior to grouting.

Each boring to be abandoned should be sealed by grouting from the bottom of the boring to the ground surface. This will be accomplished by placing a tremie pipe to the bottom of the borehole and pumping grout through the pipe at a steady rate. The grouting should be completed slowly and continuously to prevent channeling of material. The tremie pipe should be raised when pumping pressure increases significantly or when undiluted grout reaches the surface.

After 24 hours of completing the abandonment, the abandoned boring or well should be checked for any grout settlement. The settlement depression should be filled with grout and rechecked 24 hours later. Grout should be placed with a tremie pipe if the open hole is 15 feet or deeper or if the hole is not dry. Otherwise, the grout may be poured from the surface.

3.3 NARROW BORINGS

Narrow borings, those with diameter less than 3 inches, advanced by hand auger or direct push methods, may be sealed using bentonite pellets or chips rather than a grout mixture. Often times a grout pump is not available to mix the grout when these methods have been used. Bentonite pellets or chips will be poured into the boring from the ground surface. Then bentonite will hydrate by absorbing moisture from the ground; unapproved water should not be added to the boring. After 24 hours, the abandoned boring will be checked, and any grout settlement will be topped off with more bentonite. The process will be repeated until bentonite remains at ground surface unless site condition indicates otherwise.

3.4 WELLS

The following procedure applies to wells aborted before completion and existing wells determined to be ineffective or otherwise in need of closure.

General Considerations

A number of techniques are available for abandoning monitoring wells and other monitoring devices including:

- Abandonment in place by grouting the well screen and casing in place;
- Removal of the well by pulling; and
- Overdrilling.

The particular method used for abandonment should be specified in the work plan addenda developed for a site-specific investigation. Several factors must be considered when selecting the appropriate abandonment technique including well construction, well condition, and subsurface conditions.
In general the preferred method for abandonment of wells is to remove all existing well materials to:

- Reduce the potential for the formation of a vertical conduit to occur at the contact between the casing and annular seal;
- Reduce the potential for well materials interfering with the abandonment procedures; and
- Decrease the potential for reaction between the well materials and grout used for abandonment.

In general, all well materials will be removed during abandonment (including screen and casing) by either pulling out the casing, screen, and associated materials or by overdrilling using a rotary or hollow stem auger drilling procedure.

Abandonment with Well Materials In Place

In the event that it is not possible to remove the casing and screen, the casing and screen will be perforated using a suitable tool. A minimum of four rows of perforations several inches long and a minimum of five perforations per linear foot of casing or screen is recommended.

After the screen and casing have been appropriately perforated, the well should be abandoned by grouting from the bottom of the well to the ground surface using a tremie pipe as described in Section 3.2. The tremie pipe should be raised when pumping pressure increases significantly or when undiluted grout reaches the surface.

After 24 hours of completing the abandonment, the abandoned well should be checked for any grout settlement. The settlement depression should be filled with grout and rechecked 24 hours later. Grout should be placed with a tremie pipe if the open hole is 15 feet or deeper or if the hole is not dry. Otherwise, the grout may be poured from the surface.

Abandonment by Removal

Site conditions permitting, relatively shallow monitoring wells may be successfully abandoned by removal providing that the well is generally good condition and sections of casing (including screen) can be successfully removed with materials intact.

This method of abandonment is generally accomplished by removing (pulling) sections of casing and screen out of the subsurface using a drill rig, backhoe, crane, etc. of sufficient capacity. Materials with lower tensile strength such as polyvinyl chloride (PVC) generally cannot be removed by pulling if they have been appropriately cemented in place.

Once the well materials have been removed from the borehole, the borehole should be abandoned by grouting in the same manner discussed for borings in Section 3.2. If the borehole collapses after removal of well materials, then the borehole should be over drilled to remove all material and then grouted to the surface.

Overdrilling

With this method of abandonment, the well materials are removed by overdrilling (overreaming) the well location. Overdrilling using rotary techniques may be accomplished using an overreaming tool. This tool consists of a pilot bit that is approximately the same size as the inner diameter of well casing and a reaming bit that is slightly larger than the diameter of the borehole. As drilling proceeds, all well materials are destroyed and returned to the surface. After completion of the overdrilling, the borehole should be immediately grouted with a tremie pipe as described in Section 3.2.

In the case of overburden wells, a hollow stem auger may be used for overdrilling providing that this method of drilling appropriate for the subsurface conditions. The hollow stem auger should be equipped with outward facing carbide-cutting teeth with a diameter 2 to 4 inches larger than the well casing. With this method, the casing guides the cutting head and remains inside the auger. When the auger reaches the bottom of the well boring and the well materials have been removed, the borehole may be grouted with a tremie pipe (Section 3.2) through the augers as the augers are gradually withdrawn.

Considerations for Fractured Bedrock and Karst Wells

Multi-cased wells completed into bedrock as screened wells, open wells, or open-lined wells may be abandoned with the outer casing left in place providing that the integrity of this casing and associated annular seal is good. A cement bond log (acoustic amplitude boring geophysical log) may be used to evaluate the integrity of the casing and annular seal, if the outer casing is to be left in place.

Borings or wells completed in karst zones may be difficult to abandon because of the potential presence of large conduits, which may make it difficult to grout. Where large conduits exist or difficulties are encountered when abandoning a boring or well, fill the portion of the borehole penetrating the solution cavity with inert gravel (quartz, claystone, etc.). Packers can be used to isolate critical intervals for filling with grout above and below these zones.

3.5 RESTORATION

All work areas around the borings or wells abandoned should be restored to a condition essentially equivalent to that before the borings and wells were installed.

3.6 INVESTIGATION-DERIVED MATERIAL

Investigation-derived material should be managed in accordance with the requirements of SOP 70.1 and the work plan addenda associated with the site investigation

3.7 DOCUMENTATION

For each abandoned boring or well, a record should be prepared to include the following as appropriate:

- Project and boring/well designation;
- Location with respect to replacement boring well (if any);
- Open depth of well/annulus/boring prior to grouting;
- Casing or items left in hole by depth, description, composition, and size;
- Copy of the boring log;
- Copy of construction diagram for abandoned well;
- Reason for abandonment;
- Description and total quantity of grout used initially;
- Description and daily quantities of grout used to compensate for settlement;
- Disposition of investigation-derived material;
- Water or mud level prior to grouting and date measured; and
- Remaining casing above ground surface, height above ground surface, size, and disposition of each.

Daily investigation activities at the site related to boring and well abandonment should be recorded in field logbooks as described in SOPs 10.1 and 10.2.

4.0 PRECAUTIONS

Refer to the health and safety plan associated with the Work Plan Addenda and the Master Health and Safety Plan.

5.0 REFERENCES

ASTM Standard D 5299-92. 1992. *Standard Guide for Decommissioning of Ground Water Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities.*

USACE. 1998. *Monitoring Well Design, Installation, and Documentation at Hazardous, Toxic, and Radioactive Waste Sites.* EM 1110-1-4000, 1 November.

STANDARD OPERATING PROCEDURE 20.11
DRILLING METHODS AND PROCEDURES

1.0 SCOPE AND APPLICATION

The use of an appropriate drilling procedure is contingent upon the existing conditions at the project site. The purpose of this standard operating procedure (SOP) is to outline procedures for the various methods of soil and rock drilling identified in the Master Work Plan. In addition it provides procedures for using sampling devices commonly used during soil and rock drilling such as split-barrel sampling, thin walled tube sampling, direct push samplers, and rock coring. For a particular site investigation, the associated work plan addendum will identify the appropriate drilling method and method of sampling, along with proposed sampling depths and intervals and any special procedures or methods.

2.0 MATERIALS

The following types of materials are generally appropriate for drilling:

2.1 SPLIT-BARREL SAMPLING

- Split barrel sampler;
- Borehole logging materials per SOP 10.3 and sampling equipment and materials, as appropriate per SOP 30.1;
- Containers to manage investigation-derived material per SOP 70.1; and
- Decontamination supplies and equipment per SOP 80.1.

2.2 THIN WALLED TUBE SAMPLING

- Thin walled tubes;
- Sealing materials for sample such as sealing wax, metal disks, wood disks, tape, cheesecloth, caps, etc;
- Borehole logging materials per SOP 10.3 and sampling equipment and materials, as appropriate per SOP 30.1;
- Containers to manage investigation-derived material per SOP 70.1; and
- Decontamination supplies and equipment per SOP 80.1.

2.3 DIRECT PUSH SAMPLING

- Direct push unit with hydraulic ram, hammer, etc;
- Sample collection devices, associated equipment and expendable supplies such as sample liners, sample retainers, appropriate lubricants, etc;
- Hollow extension rods;
- Auxiliary tools for handling, assembling, and disassembling tools and samplers;

- Borehole logging materials per SOP 10.3 and sampling equipment and materials, as appropriate per SOP 30.1;
- Containers to manage investigation-derived material per SOP 70.1; and
- Decontamination supplies and equipment per SOP 80.1.

2.4 HOLLOW-STEM AUGER DRILLING

- Drill rig and associated equipment;
- Hollow stem auger assemblies for drilling to appropriate depth including auger heads, drive assembly, pilot assembly, and hollow-stem auger sections;
- Auxiliary devices such as wrenches, auger forks, hoisting hooks, swivels, and adaptors;
- Borehole logging materials per SOP 10.3 and sampling equipment and materials, as appropriate per SOP 30.1;
- Containers to manage investigation-derived material per SOP 70.1; and
- Decontamination supplies and equipment per SOP 80.1.

2.5 DIRECT AIR ROTARY DRILLING

- Drill rig with rotary table and Kelly or top-head drive unit;
- Drill rods, bits, and core barrels (as appropriate);
- Casing;
- Sampling devices and equipment, as appropriate;
- Air compressor and filters, pressure lines, discharge hose, swivel, dust collector, and air-cleaning device (cyclone separator);
- Auxiliary tools for handling, assembling, and disassembling tools and samplers;
- Borehole logging materials per SOP 10.3 and sampling equipment and materials, as appropriate per SOP 30.1;
- Containers to manage investigation-derived material per SOP 70.1; and
- Decontamination supplies and equipment per SOP 80.1.

2.6 DRILL-THROUGH CASING DRIVER

- Drill rig equipped with a mast-mounted, percussion driver;
- Casing, drill rods, and drill bits or hammers;
- Air compressor and filters, pressure lines, discharge hose, swivel, dust collector, and air-cleaning device (cyclone separator);
- Sampling devices and equipment, as appropriate;
- Auxiliary tools for handling, assembling, and disassembling tools and samplers;
- Welding equipment and materials for installation of casing;

- Borehole logging materials per SOP 10.3 and sampling equipment and materials, as appropriate per SOP 30.1;
- Containers to manage investigation-derived material per SOP 70.1; and
- Decontamination supplies and equipment per SOP 80.1.

2.7 DIRECT WATER-BASED ROTARY DRILLING

- Drill rig with derrick, rotary table and Kelly or top-head drive unit;
- Drill rods, bits, and core barrels (as appropriate);
- Casing;
- Water based drilling fluid, with approved additives as appropriate;
- Mud tub, suction hose, cyclone de-sander(s), drilling fluid circulation pump, pressure hose, and swivel;
- Auxiliary tools for handling, assembling, and disassembling tools and samplers;
- Borehole logging materials per SOP 10.3 and sampling equipment and materials, as appropriate per SOP 30.1;
- Containers to manage investigation-derived material per SOP 70.1.
- Decontamination supplies and equipment per SOP 80.1.

2.8 DIRECT ROTARY WIRELINE-CASING ADVANCEMENT DRILLING

- Drill rig with either hollow spindle or top-head drive;
- Drill rods, coring or casing bits, overshot assembly, pilot bit, and core barrel;
- Water based drilling fluid, with approved additives as appropriate;
- Mud tub, suction hose, drilling fluid circulation pump, pressure hose, and swivel;
- Auxiliary tools for handling, assembling, and disassembling tools and samplers;
- Borehole logging materials per SOP 10.3 and sampling equipment and materials, as appropriate per SOP 30.1;
- Containers to manage investigation-derived material per SOP 70.1; and
- Decontamination supplies and equipment per SOP 80.1.

2.9 DIAMOND CORE DRILLING

- Direct rotary drill rig and associated equipment (see Sections 2.4, 2.5 or 2.6);
- Core barrels and core bits;
- Core lifters;
- Core boxes, engineers scale, permanent marking pen, and camera for photographing cores;
- Auxiliary tools for handling, assembling, and disassembling tools and samplers;
- Borehole logging materials per SOP 10.3 and sampling equipment and materials, as appropriate per SOP 30.1;

- Containers to manage investigation-derived material per SOP 70.1; and
- Decontamination supplies and equipment per SOP 80.1.

3.0 PROCEDURES

3.1 PENETRATION TEST AND SPLIT-BARREL SAMPLING OF SOILS

The following general procedure may be followed as outlined in ASTM Standard Test Method D 1586-84.

1. Advance the boring to the desired sampling depth using an appropriate drilling method (see sections below) and remove excessive cuttings from the borehole.
2. Attach the split-barrel sampler to the sampling rods and lower into the borehole. Do not allow the sampler to drop onto the soil to be sampled.
3. Position the hammer above and attach the anvil to the top of the drilling rods.
4. Rest the dead weight of the sampler, rods, anvil, and drive weight on the bottom of the boring and apply a seating blow. If excessive cuttings are encountered at the bottom of the borehole, remove the sampler and rods from borehole and remove the cuttings.
5. Mark the drill rods in three successive 6-inch increments so that the advance of the sampler can be observed.
6. Drive the sampler with blow from the 140 pound hammer and count the number of blows applied in each 6-inch increment until:
   a. Fifty (50) blows have been applied during one of the three 6-inch increments.
   b. A total of 100 blows have been applied.
   c. There is no observed advance of the sampler during the application of 10 successive blows of the hammer.
7. The sampler is advanced the complete 18-inches without the limiting blow counts occurring as described above.
8. Record the number of blows that is required to achieve each 6-inch increment of penetration or fraction of this increment on the boring.
   a. The first 6 inches is considered the seating driver.
   b. The sum of the second and third 6-inch penetration intervals is termed the "standard penetration resistance" or "N-value."
   c. If the sampler is driven less than 18 inches as discussed in No. 6, then the number of blow for each partial increment will be recorded.
   d. For partial increments, the depth of penetration should be recorded to the nearest 1-inch on the boring log.
   e. If the sampler advances below the bottom of the boring under the weight of rods (static) and/or hammer, then this information will be recorded on the boring log.
9. The raising and dropping of the 140 pound hammer may be accomplished by:
   a. Using a trip, automatic, or semi-automatic hammer drop system that lifts the hammer and allows it to drop 30± 1 inches.

b. Using a cathead shall be essentially free of rust, oil, or grease and have a diameter in the range of 6 to 10 inches. The cathead should be operated at a minimum speed of rotation of 100 revolutions per minute. No more than 2-1/4 rope turns on the cathead may be used when conducting the penetration test.

10. For each hammer blow, a 30-inch lift and drop shall be used.

11. After completing the penetration test, retrieve the sampler and open. Record the percent recovery or the length of sample recovered. Following the procedures outlined in SOP 30.1 when collecting environmental soil samples.

12. Borehole logging should be completed per SOP 10.3.

13. Split-barrel samples must be decontaminated before and after each use per the requirements of SOP 80.1.

3.2 THIN WALLED TUBE SAMPLING

The following general procedure may be followed for collection of relatively undisturbed, thin walled tube samples (e.g., Shelby tube) as outlined in ASTM Standard Practice D 1587-94.

1. Clean out the borehole to targeted sampling depth using most appropriate method, which avoids disturbing the material to be sampled. If groundwater is encountered, maintain the liquid level in the borehole at or above the groundwater level during sampling.
2. Place the sample tub so that its bottom rests on the bottom of the borehole.
3. Advance the sampler without rotation by a continuous relatively rapid motion.
4. Determine the length of the advance by the resistance and condition of the formation, the length of the advance should never exceed 5 to 10 diameters of the tube in sands and 10 to 15 diameters of the tube in clay.
5. When the formation is too hard for push type of sampling, the tube may be driven or the practice used for ring-lined barrel sampling may be used per ASTM Standard D 3550-84 (1995). When a sample is driven, the weight and fall of the hammer must be recorded along with the penetration achieved.
6. The maximum length of sample advance will be no longer than the sample-tube length minus an allowance for the sample head and a minimum of 3-inches for sludge-end cuttings.
7. Upon removal of the tube, measure the length of the sample in the tube. Remove the disturbed material in the upper end of the tube and re-measure the sample length.
8. Remove at least one-inch of material from the lower end of the tube for soil description and identification per SOP 10.3. Measure the overall sample length. Seal the lower end of the tube. If directed, the material from the end of the tube will not be removed for soil identification and description; in this case the tube will be sealed promptly.
9. Prepare sample labels and affix (or markings) on the tube.

3.3 DIRECT PUSH SOIL BORING

The following general procedures outlined in this section may be followed as described in ASTM Standard Test Method D 6282-98.

General considerations for this method include the following:

- A variety of direct push drive systems may be used to advance soil borings based on the intended sampling depths and subsurface conditions and include the following:

  Shallower Depths and Less Difficult Conditions

  - Percussive driving systems – use hydraulically operated hammers and mechanically operated hammers.
  - Static push drive systems – use hydraulic rams to apply pressure and exert static pull (e.g., cone penetrometer systems).
  - Vibratory/sonic systems – use a vibratory device, which is attached to the top of the sampler extension rods.

  Greater Depths and More Difficult Conditions

  - Sonic or resonance drilling systems – use a high power vibratory system to advance larger diameter single or dual tube systems.
  - Rotary drilling equipment – use hydraulic system of drill rig for direct push.

- The equipment used for direct push must be capable of apply sufficient static force, or dynamic force, or both, to advance the sampler to the required depth of collection. Additionally, this equipment must have adequate retraction force to remove the sampler and extension/drive rods once the sample has been collected.
- Avoid using excessive down pressure when advancing the drilling tools/sampler. Excessive pressure may cause the direct push unit to offset from the boring location and may damage drilling tools and samplers.
- Sample liners should be compatible with the material being sampled and the type of analysis to be conducted on the sample. Sealing of liners for submittal to the laboratory for physical testing should be accomplished according to ASTM Standard D 4220-95 (Standard Practice for Preserving and Transporting Soil Samples).
- The general procedure for completing direct push soil borings is the following:

1. Stabilize direct push unit and raise mast at desired location.
2. Attach the hammer assembly to the drill head if not permanently attached. Attach the anvil assembly in the prescribed manner, slide the direct push unit the position over the borehole, and ready the tools for insertion.
3. Inspect the direct push tools before and after use. Decontaminate all down hole tools before and after use per SOP 80.1.
4. Inspect drive shoes for damaged cutting edges, dents or thread failures and these conditions could cause loss of sample recovery and slow the rate of advancement.
5. Assemble samplers and install where required, install sample retainers where needed, and install and secure sampler pistons to ensure proper operation where needed (see Steps 14 through 20 for the various sampler assembly procedures, etc.).
6. After sampler has been appropriately installed (see Steps 14 through 20 for installation procedures, etc.) advance the boring to the target sampling depth using an appropriate direct push technique, as identified above under general considerations.
7. Collect the soil sample from the target sampling depth using one of the methods identified in Steps 14 through 20.

8. Retrieve the sampler and appropriately process the soil sample as identified in Steps 14 through 20 below and in SOP 30.1.
9. Log the borehole per the requirements of SOP 10.3.
10. If collecting another soil sample, decontaminate the sampler for reuse per the requirements of SOP 80.1 or use another decontaminated sampler.
11. Appropriately manage investigation-derived material (discarded samples, decontamination fluids, etc.) per SOP 70.1.
12. Upon completion of the boring and collection of the desired soil samples, abandon the boring per the requirements of SOP 20.2.
13. The following single tube sampling systems (generally piston rod) may be used to collect soil samples (see Steps 14 through 16 below):
    a. Open Solid Barrel Sampler;
    b. Closed Solid Barrel Sampler (e.g. Geoprobe Macro-Core® Piston Rod Sampler); and
    c. Standard Split Barrel Sampler (see Section 3.1).
14. The following two tube sampling systems may be used to collect soil samples (see Steps 17 through 20 below):
    a. Split Barrel Sampler;
    b. Thin Wall Tubes;
    c. Thin Wall Tube Piston Sampler; and
    d. Open Solid Barrel Samplers.
15. Sampling with the single tube, open solid barrel sampler:
    a. Attach the required liner to the cutting shoe by insertion into the machined receptacle are or by sliding over the machined tube.
    b. Insert the liner and shoe into the solid barrel and attach the shoe.
    c. Attach the sampler head to the sampler barrel.
    d. Attach the sampler assembly to the drive rod and the drive head to the drive rod.
    e. Position the sampler assembly under the hammer anvil and advance the sampler assembly into the soil at a steady rate slow enough to allow the soil to be cut by the shoe and move up into the sample barrel.
    f. At the completion of the sampling interval, removal the sampler from the borehole. Remove the filled sampler liner from the barrel by unscrewing the shoe. Cap the liner for laboratory testing or split open for field processing (see SOP 30.1).
    g. Log the borehole per the requirements of SOP 10.3.
16. Sampling with the closed, solid barrel sampler (e.g., Macro-Core® sampler).
    a. Insert or attach the sample liner to the shoe and insert the assembly into the solid barrel sampler. Install the sample, retaining basket, if desired.
    b. Attach the latch coupling or sampler head to the sampler barrel, and attach the piston assembly with point and "O" rings if free water is present, to the latching mechanism.
    c. Insert the piston or packer into the liner to its proper position so that the point leads the sampler shoe. Set latch, charge packer, or install locking pin, and attach assembled sampler to drive rod.
    d. Add drive head and position under the hammer anvil. Apply down pressure, and hammer if needed, to penetrate the soil strata above the targeted sampling interval.

e. When the sampling interval is reached, insert the piston latch release and recovery tool, removing the piston, or insert the locking pin removal/extension rods through the drive rods, turn counter clockwise, and remove the piston locking pin so the piston can float on top of the sample, or release any other piston holding device.

f. Direct push or activate the hammer to advance the sampler the desired interval.

g. Retrieve the sampler from the borehole by removing the extension/drive rods. Remove the shoe, and withdraw the sample line with sample for processing (see SOP 30.1).

h. Clean and decontaminate the sampler, reload as described above and repeat the same procedure for collection of addition samples.

i. Log the borehole per the requirements of SOP 10.3.

17. Sampling with standard split barrel (split spoon) sampler generally consists of the following:

a. Attach the split barrel sampler to an extension rod or drill rod.

b. Using a mechanical or hydraulic hammer drive the ampler into the soil the desired interval. The maximum interval that should be driven is equal to the sample chamber length of the split barrel sampler, which is either 18-inches or 24-inches.

c. Retrieve the sampler from the borehole by removing the extension/drive rods.

d. Split the sampler open for field processing (see SOP 30.1).

e. Clean and decontaminate the sampler (SOP 80.1), re-attach and repeat the same procedure for collection of additional samples.

f. Log the borehole per the requirements of SOP 10.3.

18. Sampling with a two tube, split barrel sampler generally consists of the following:

a. Assemble the outer casing with the drive shoe on the bottom, attach the drive head to the top of the outer casing, and attach the sampler to the extension rods.

b. Connect the drive head to the top of the sampler extension rods, and insert the sampler assembly into the outer casing.

c. The cutting shoe of the sampler should contact the soil ahead of the outer casing to minimize sample disturbance.

d. The sample barrel should extend a minimum of 0.25 inches ahead of the outer casing.

e. Mark the outer casing to identify the required drive length, position the outer casing and sampler assembly under the drill head.

f. Move the drill head downward to apply pressure on the tool string. Advance the casing assembly into the soil at a steady rate, which is slow enough to allow the soil to be cut by the shoe and move up inside the sample barrel.

g. Occasional hammer action during the push may assist recovery.

h. If smooth push advancement is not possible because of subsurface conditions, use the hammer to advance the sampler.

i. Stop the application of pressure or hammering when target interval has been sampled. Move the drill head off the drive head. Attach a pulling device to the extension rods or position the hammer bail and retrieve the sampler from the borehole.

j. At the surface, remove the sampler from the extension rods and process the sample per Section 3.01 and SOP 30.1.

k. Log the borehole per the requirements of SOP 10.3.

19. Sampling with a two tube, thin wall tube sampler generally consists of the following:
    a. Attach the tube to the tube head using removable screws.
    b. Attach the tube assembly to the extension rods and position at the base of the outer casing shoe protruding a minimum of 0.25 inches to contact the soil ahead of the outer casing.
    c. Advance the tube with or without the outer casing at a steady rate.
    d. After completing the sampling interval, let the tube remain stationary for one minute. Rotate the tube slowly two revolutions to shear off the sample.
    e. Remove the tube from the borehole and measure the recovery, and log the borehole per the requirements of SOP 10.3.
    f. For field processing, extrude the sample from the tube sampler and process per SOP 30.1. Alternatively, the tube may be sealed and shipped to the laboratory.
20. Sampling with two tube, thin wall tube, piston sampler generally consists of the following:
    a. Check the fixed piston sampling equipment for proper operation of the cone clamping assembly and the condition of the "O" rings.
    b. Slide the thin wall tube over the piston, and attach it to the tube head. Position the piston at the sharpened end of the thin wall tube just above the sample relief bend.
    c. Attach the tube assembly to the extension rods and lower the sampler into position through the outer casing. Install the actuator rods through the extension rod, and attach to the actuator rod in the sampler assembly.
    d. Attach a holding ring to the to top of the actuator rod string and hook the winch cable or other hook to the holding ring to hold the actuator rods in a fixed position.
    e. Attach the pushing fork to the drill head/probe hammer and slowly apply downward pressure to the extension rods advancing the thin wall tube over the fixed piston into the soil for the length of the sampling interval.
    f. After completing the sampling interval, let the tube remain stationary for one minute. Rotate the tube slowly one revolution to shear off the sample.
    g. Remove the tube sampler from the borehole and measure the recovery, and log the borehole per the requirements of SOP 10.3.
    h. For field processing, extrude the sample from the tube sampler and process per SOP 30.1.
21. Sampling with an two tube, open solid barrel sampler generally consists of the following:
    a. This sampling technique may be used when soil conditions prevent advancement of a split barrel sampler or advancement of an outer casing.
    b. The solid, single, or segmented barrel sampler requires the use of a liner.
    c. Use sampler in advance of outer casing when this casing cannot be advanced.
    d. Follow the procedures outlined for two tube, split barrel sampling.

3.4 HOLLOW-STEM AUGER DRILLING

The following general procedure may be followed as outlined in ASTM Standard Guide D 5784.

1. Stabilize drill rig and raise mast at desired location.
2. Attach an initial assembly of hollow-stem auger components (hollow stem auger, hollow auger head, center rod and pilot assembly, as appropriate) to the rotary drive of the drill rig.
3. Push the auger assembly below the ground surface and initiate rotation at a low velocity.

4. Decontamination of auger head may be necessary after this initial penetration if this surface soil is contaminated.
5. Continue drilling from the surface, usually at a rotary velocity of 50 to 100 rotations per minute to the depth where sampling or in-situ testing is required or until the drive assembly is within approximately 6- to 18 inches of the ground surface.
6. As appropriate, collect a soil sample from the required depth interval. The sample may be conducted by
    a. Removing the pilot assembly, if used, and inserting and driving a sampler through the hollow stem auger of the auger column; or
    b. Using a continuous sampling device within the lead auger section, where the sampler barrel fills with material as the auger is advanced.
7. Additional sections of hollow stems augers may be added to drill to a greater depth. After these auger sections are added, rotation of the hollow-stem auger assembly may be resumed.
8. When drilling through material suspected of being contaminated, the installation of single or multiple (nested) outer casings may be required to isolate zones suspected contamination (see SOP 20.1). Outer casings may be installed in a pre-drilled borehole or using a method in which casing is advanced at the same of drilling.

    Monitoring wells or piezometers may be installed using hollow-stem augers by:

    a. Drilling with or without sampling to the target depth.
    b. Removal of the pilot assembly, if used, and insertion of the monitoring well (or piezometer) assembly.
    c. The hollow stem auger column should be removed incrementally as the monitoring well (or piezometer) completion materials are placed (see SOP 20.1 for grouting).
9. If materials enter the bottom of the auger hollow stem during the removal of the pilot assembly, it should be removed with a drive sampler or other appropriate device.
10. If sampling or *in-situ* testing is not required during completion of the boring, the boring may be advanced with an expendable knock out plate or plug of an appropriate material instead of a pilot assembly.
11. Drill cuttings should be appropriately controlled and contained as IDM per SOP 70.1. It may be necessary to drill through a hole of sheet of plywood or similar material to prevent cuttings from contacting the ground surface.
12. The hollow-auger assembly and sampling devices must be decontaminated before and after each use per the methods specified in SOP 80.1.
13. Borehole logging should be completed per SOP 10.3.
14. Borehole abandonment, when required, should be conducted according to SOP 20.3.

3.5 DIRECT AIR ROTARY DRILLING

The following general procedure may be followed as outlined in ASTM Standard Guide D 5784-95.

1. Stabilize drill rig and raise mast at desired location. Appropriately position the cyclone separator and seal it to the ground surface considering the prevailing wind direction (exhaust).
2. Establish point for borehole measurements.
3. Attach an initial assembly of a bit, down hole hammer, or core barrel with a single section of drill rod, below the rotary table or top-head drive unit, with the bit placed below the top of the dust collector.
4. Activate the air compressor to circulate air through system.

5. Initiate rotation of bit.
6. Continue with air circulation and rotation of the drill-rod column to the depth where sampling or in-situ testing is required or until the length of the drill rod section limits further penetration.
7. Monitor air pressure during drilling operations. Maintain low air pressure at bit to prevent fracturing of surrounding material.
8. Stop rotation and lift the bit slightly off the bottom of the hole to facilitate removal of drill cuttings and continue air circulation until the drill cuttings are removed from the borehole annulus.
9. Open reaching a desired depth of sampling, stop the air circulation and rest bit on bottom of hole to determine the depth. Record the borehole depth and any resultant caving in. If borehole caving is apparent set a decontaminated casing to protect the boring.
10. When sampling, remove the drill rod column from the borehole or leave the drill rod assembly in place if the sampling can be performed through the hollow axis of the drill rods and bit.
11. Compare the sampling depth to clean-out depth by first resting the sampler on the bottom of the hole and compare that measurement with the clean-out depth measurement.
12. If bottom-hole contamination is apparent (indicated by comparison of sample depth to clean-out depth), it is recommended that the minimum depth below the sampler/bit be 18 inches for testing. Record the depth of sampling or in-situ testing and the depth below the sampler/bit.
13. The procedure described in Steps 8 through 12 should be conducted for each sampling or testing interval.
14. Drilling to a greater depth may be accomplished by attaching an additional drill rod section to the top of the previously advanced drill-rod column and resuming drilling operations as described above.
15. When drilling through material suspected of being contaminated, the installation of single or multiple (nested) outer casings may be required to isolate zones suspected contamination (see SOP 20.1 for grouting requirements). Outer casings may be installed in a pre-drilled borehole or using a method in which casing is advanced at the same of drilling.
16. Monitoring wells or piezometers may be installed by:
    a. Drilling with or without sampling to the target depth.
    b. Removal of the drill rod assembly and insertion of the monitoring well (or piezometer) assembly.
    c. Addition of monitoring well (or piezometer) completion materials (see SOP 20.1).
17. Drill cuttings should be appropriately controlled and contained as IDM per SOP 70.1.
18. The drill rod assembly, sampling devices, and other drilling equipment contacting potentially contaminated material must be decontaminated before and after each use per the methods specified in SOP 80.1.
19. Borehole logging should be completed per SOP 10.3.
20. Borehole abandonment, when required, should be conducted according to SOP 20.3

3.6 DRILL-THROUGH CASING DRILLING

The following general procedure may be followed as outlined in ASTM Standard Guide D 5872-95.

1. Stabilize drill rig and raise mast at desired location. Appropriately position the cyclone separator and seal it to the ground surface considering the prevailing wind direction (exhaust).
2. Establish point for borehole measurements.
3. Attach an initial assembly of a bit or down hole hammer with a single section of drill rod and casing to the top-head drive unit.

4. Activate the air compressor to circulate air through system.
5. Drilling may be accomplished by
    a. Method 1- the casing will fall, or can be pushed downward behind the bit.
    b. To drill using Drive the casing first followed by drilling out the plug inside the casing.
    c. Method 2 - Advancing the casing and bit as a unit, with the drill bit or hammer, extending up to 12-inches below the casing.
6. Method 3 - Under reaming method where bit or hammer pens a hole slightly larger than the casing so that Method 1, drive the casing first and drill out the plug in the casing by moving the bit or hammer beyond the casing and then withdrawing it into the casing. Air exiting the bit will remove the cuttings up the hole. Separate cuttings from the return air with a cyclone separator or similar device.
7. To drill using Method 2, advance casing and bit as unit with the bit or hammer extending up to 12-inches beyond the casing depending on the conditions. While drilling, occasionally stop the casing advancement, retract the bit or hammer inside the casing to clear and maintain air circulation to clear cuttings.
8. To drill using Method 3, use a special down hole bit or hammer to open a hole slightly larger than the outside diameter of the casing so that the casing will fall or can be pushed downward immediately behind the bit. After advancing the casing, retract the radial dimension of the drill bit to facilitate removal of the down hole bit or hammer and drill tools inside the casing. Cuttings are removed from the borehole with the air that operates the bit or hammer and can be separated from the air with a cyclone separator or similar device.
9. Monitor air pressure during drilling operations. Maintain low air pressure at bit or hammer to prevent fracturing of surrounding material.
10. Continue air circulation and rotation of the drill rod column until drilling is completed to the target depth (for sampling, in-situ sampling, etc.) or until the length of the drill-rod section limits further penetration.
11. Stop rotation and lift bit or hammer slightly off the bottom of the hole to facilitate removal of drill cuttings and continue air circulation until the drill cuttings are removed from the borehole annulus.
12. After reaching a desired depth of sampling, stop the air circulation and rest the bit on bottom of hole to determine the depth. Record the borehole depth and any resultant caving in. If borehole caving is apparent set a decontaminated casing to protect the boring.
13. When sampling, remove the drill rod column from the borehole. Compare the sampling depth to clean-out depth by first resting the sampler on the bottom of the hole and compare that measurement with the clean-out depth measurement.
14. If bottom-hole contamination is apparent (indicated by comparison of sample depth to clean-out depth), it is recommended that the minimum depth below the sampler/bit be 18 inches for testing. Record the depth of sampling or in-situ testing and the depth below the sampler/bit.
15. The procedure described in Steps 11 through 14 should be conducted for each sampling or testing interval.
16. Drilling to a greater depth may be accomplished by attaching an additional drill rod section and casing section to the top of the previously advanced drill-rod column/casing and resuming drilling operations as described above.
17. Monitoring wells or piezometers may be installed by:
    a. Casing advancement in increments, with or without sampling to the target depth.
    b. Removal of the drill rods and the attached drill bit while the casing is temporarily left in place to support the borehole wall.

c. Insertion of the monitoring well (or piezometer) assembly.

d. Addition of monitoring well (or piezometer) completion materials (see SOP 20.1).

18. Drill cuttings should be appropriately controlled and contained as IDM per SOP 70.1.

19. The drill rod assembly, casing, sampling devices, and other drilling equipment contacting potentially contaminated material must be decontaminated before and after each use per the methods specified in SOP 80.1.

20. Borehole logging should be completed per SOP 10.3.

21. Borehole abandonment, when required, should be conducted according to SOP 20.3.

3.7 DIRECT WATER-BASED ROTARY DRILLING

The following general procedure may be followed as outlined in ASTM Standard Guide D 5783-95.

1. Stabilize drill rig and raise mast at desired location. Appropriately position the mud tub and install surface casing and seal at the ground surface.

2. Establish point for borehole measurements.

3. Attach an initial assembly of a bit or core barrel with a single section of drill rod, below the rotary table or top-head drive unit, with the bit placed with the top of the surface casing.

4. Activate the drilling-fluid circulation pump to circulate drill fluid through the system.

5. Initiate rotation of bit and apply axial force to bit.

6. Document drilling conditions and sequence (fluid loss, circulation pressures, depths of lost circulation, etc.) as described in SOP 10.3.

7. Continue with drill fluid circulation as rotation and axial force are applied to the bit until drilling to the depth

   a) Where sampling or in-situ testing is required;

   b) Until the length of the drill rod section limits further penetration; or

   c) Until core specimen has completely entered the core barrel (when coring) or blockage has occurred.

8. Stop rotation and the lift bit slightly off the bottom of the hole to facilitate removal of drill cuttings and continue fluid circulation until the drill cuttings are removed from the borehole annulus.

9. After reaching a desired depth of sampling, stop the fluid circulation and rest the bit on bottom of hole to determine the depth. Record the borehole depth and any resultant caving in. If borehole caving is apparent set a decontaminated casing to protect the boring.

10. When sampling, drill rod removal is not necessary if the sampling can be performed through the hollow axis of the drill rods and bit.

11. Compare the sampling depth to clean-out depth by first resting the sampler on the bottom of the hole and compare that measurement with the clean-out depth measurement.

12. If bottom-hole contamination is apparent (indicated by comparison of sample depth to clean-out depth), it is recommended that the minimum depth below the sampler/bit be 18 inches for testing. Record the depth of sampling or in-situ testing and the depth below the sampler/bit.

13. The procedure described in Steps 8 through 11 should be conducted for each sampling or testing interval.

14. Drilling to a greater depth may be accomplished by attaching an additional drill rod section to the top of the previously advanced drill-rod column and resuming drilling operations as described above.

15. When drilling through material suspected of being contaminated, the installation of single or multiple (nested) outer casings may be required to isolate zones suspected contamination (see SOP 20.1 for grouting requirements). Outer casings may be installed in a pre-drilled borehole or using a method in which casing is advanced at the same of drilling.
16. Monitoring wells or piezometers may be installed using hollow-stem augers by:
    a. Drilling with or without sampling to the target depth.
    b. Removal of the drill rod assembly and insertion of the monitoring well (or piezometer) assembly.
    c. Addition of monitoring well (or piezometer) completion materials (see SOP 20.1).
17. Drill cuttings and fluids should be appropriately controlled and contained as IDM per SOP 70.1.
18. The drill rod assembly, sampling devices, and other drilling equipment contacting potentially contaminated material must be decontaminated before and after each use per the methods specified in SOP 80.1.
19. Borehole logging should be completed per SOP 10.3.
20. Borehole abandonment, when required, should be conducted according to SOP 20.3.

3.8 DIRECT ROTARY WIRELINE CASING ADVANCEMENT DRILLING

The following general procedure may be followed as outlined in ASTM Standard Guide D 5876-95.

1. Stabilize drill rig and raise mast at desired location. Appropriately position the mud tub (for water based rotary) and install surface casing and seal at the ground surface.
2. Record the hole depth by knowing the length of the rod-bit assemblies and comparing its position relative to the established surface datum.
3. Attach an initial assembly of a lead drill rod and a bit or core barrel below the top-head drive unit, with the bit placed with the top of the surface casing.
4. Activate the drilling-fluid circulation pump to circulate drill fluid through the system.
5. Initiate rotation of bit and apply axial force to bit.
6. Document drilling conditions and sequence (fluid loss, circulation pressures, depths of lost circulation, down feed pressures etc.) as described in SOP 10.3.
7. In general, the pilot bit or core barrel can be inserted or removed at any time during the drilling process and the large inside diameter rods can act as a temporary casing for testing or installation of monitoring devices.
8. Continue with drill fluid circulation as rotation and axial force are applied to the bit until drilling to the depth
    a) Where sampling or in-situ testing is required;
    b) Until the length of the drill rod section limits further penetration; or
    c) Until core specimen has completely entered the core barrel (when coring) or blockage has occurred.
9. Stop rotation and lift the bit slightly off the bottom of the hole to facilitate removal of drill cuttings and continue fluid circulation until the drill cuttings are removed from the borehole annulus.
10. After reaching a desired depth of sampling, stop the fluid circulation and rest the bit on bottom of hole to determine the depth. Record the borehole depth and any resultant caving in. If borehole caving is apparent set a decontaminated casing to protect the boring.

11. When sampling, drill rod removal is not necessary if the sampling can be performed through the hollow axis of the drill rods and bit.
12. Compare the sampling depth to clean-out depth by first resting the sampler on the bottom of the hole and compare that measurement with the clean-out depth measurement.
13. If bottom-hole contamination is apparent (indicated by comparison of sample depth to clean-out depth), it may be necessary to further clean the hole by rotary recirculation.
14. Continuous sampling may be conducted with a soil core barrel or rock core barrel (see Section 1.7).
15. The pilot bit or core barrel may need to be removed during drilling such as when core barrels are full or there is evidence of core blocking. Before the drill string is reinserted, the depth of the boring should be rechecked to evaluate hole quality and determine whether casing may be required.
16. Water testing may be performed in consolidated deposits by pulling back on the drill rods and passing inflatable packer(s) with pressure fitting to test the open borehole wall (see ASTM Standards D 4630 and D 4631).
17. Drilling to a greater depth may be accomplished by attaching an additional drill rod section to the top of the previously advanced drill-rod column and resuming drilling operations as described above.
18. When drilling through material suspected of being contaminated, the installation of single or multiple (nested) outer casings might be required to isolate zones suspected contamination (see SOP 20.1 for grouting requirements). Outer casings may be installed in a pre-drilled borehole or using a method in which casing is advanced at the same of drilling.
19. Monitoring wells or piezometers may be installed by:
    a. Drilling with or without sampling to the target depth.
    b. Removal of the pilot bit or core barrel and insertion of the monitoring well (or piezometer) assembly.
    c. Addition of monitoring well (or piezometer) completion materials (see SOP 20.1).
20. Drill cuttings and fluids should be appropriately controlled and contained as IDM per SOP 70.1.
21. The drill rod assembly, sampling devices, and other drilling equipment contacting potentially contaminated material must be decontaminated before and after each use per the methods specified in SOP 80.1.
22. Borehole logging should be completed per SOP 10.3.
23. Borehole abandonment, when required, should be conducted according to SOP 20.3.

3.9 DIAMOND CORE DRILLING

The following general procedure may be followed as outlined in ASTM Standard Practice D 2113-83 (1993).

1. Use core-drilling procedures, such as the water-rotary drilling method outlined in Section 3.6.
2. Seat the casing on bedrock or firm formation to prevent raveling of the borehole and to prevent loss of drilling fluid. Level the formation that the casing will be seated on as needed.
3. Begin core drilling using an N-size double-tube, swivel-type core barrel or other approved size or type. Continue core drilling until core blockage occurs or until the net length of the core has been drilled.
4. Remove the core barrel from the borehole, and dis-assemble the core barrel as necessary to remove the core.
5. Reassemble the core barrel and return it to hole.
6. Continue core drilling.

7. Place the recovered core in the core box with the upper (surface) end of the core at the upper-left corner of the core box. Wrap soft or friable cores, etc. as needed or required. Use spacer blocks or slugs properly marked to indicate any noticeable gap in recovered core that might indicate a change or void in the formation. Fit fracture, bedded, or jointed pieces of core together as they naturally occurred.
8. The core within each completed box should be photographed after core surface has been cleaned or peeled, as appropriate, and wetted. Each photo should be in sharp focus and contain a legible scale in feet and tenths of feet (or metric if appropriate). The core should be oriented so that the top of the core is at the top of the photograph. A color chart should be included in the photograph frame as a check on photographic accuracy. The inside lid of the box should also be shown.
9. The inside of the box lid should be labeled at a minimum with the facility name, project name, boring number, box number, and core interval.
10. A preliminary field log of the core must be completed before the core box has been packed for transport (see SOP 10.3). Detailed logging may be conducted at a later time providing the core is appropriately handled and transported.
11. Four levels of sample protection may be used depending on character of the rock and the intended use of the rock core including:
    a. *Routine care* – for rock cored in 5 to 10 foot runs. Consists of placing in structurally sound boxes. Lay flat tubing may be used prior to placing the core.
    b. *Special care* – for rock samples to be tested that are potentially moisture sensitive, such as shale. This care consists of sealing with a tight fitting wrapping of plastic film and application of wax at the ends of the sample.
    c. *Critical care* – for rock samples that may be sensitive to shock and vibration and/or temperature. Protect by encasing each sample in cushioning material, such as sawdust, rubber, polystyrene, foam, etc. A minimum one-inch thick layer of cushioning material should be used. Thermally insulate samples that are potentially sensitive to changes in temperature.
    d. *Soil-Like care* – handle per ASTM Standard D 4220-95.
12. Drilling conditions and sequence (fluid loss, circulation pressures, depths of lost circulation, down feed pressures, core blockage etc.) should be documented on the boring log as described in SOP 10.3.
13. Drill cuttings and fluids should be appropriately controlled and contained as investigation-derived material per SOP 70.1.
14. The drill rod assembly, sampling devices, and other drilling equipment contacting potentially contaminated material must be decontaminated before and after each use per the methods specified in SOP 80.1.
15. Borehole logging should be completed per SOP 10.3.
16. Borehole abandonment, when required, should be conducted according to SOP 20.3.

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

Refer to site-specific health and safety plan included in work plan addenda.

6.0 REFERENCES

ASTM Standard D 2113-83 (1993). 1993. *Standard Practice for Diamond Core Drilling for Site Investigation.*

ASTM Standard D 1586-84 (1992). 1992. *Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils.*

ASTM Standard D 1587-94. 1994. *Standard Practice for Thin-Walled Tube Geotechnical Sampling of Soils.*

ASTM Standard D 4220-95. 1995. *Standard Practices for Preserving and Transporting Soil Samples.*

ASTM Standard D 5079-90. 1995. *Standard Practices for Preserving and Transporting Rock Core Samples.*

ASTM Standard D 5782-95. 1995. *Standard Guide for Use of Direct Air-Rotary Drilling for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices.*

ASTM Standard D 5783-95. 1995. *Standard Guide for Use of Direct Rotary Drilling with Water-Based Drilling Fluid for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices.*

ASTM Standard D 5784-95. 1995. *Standard Guide for Use of Hollow-Stem Augers for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices.*

ASTM Standard D 5872-95. 1995. *Standard Guide for Use of Casing Advancement Drilling Methods for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices.*

ASTM Standard D 5876-95. 1995. *Standard Guide for Use of Direct Rotary Wireline Casing Advancement Drilling Methods for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices.*

ASTM Standard D 6282-98. 1998. *Standard Guide for Direct Push Soil Sampling for Environmental Site Characterizations.*

USACE. 1998. *Monitoring Well Design, Installation, and Documentation at Hazardous, Toxic, and Radioactive Waste Sites.* EM 1110-1-4000. 1, November.

STANDARD OPERATING PROCEDURE 30.1
SOIL SAMPLING

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to delineate protocols for sampling surface and subsurface soils.

2.0 MATERIALS

- Stainless steel scoop, spoon, trowel, knife, spatula, (as needed);
- Split-spoon, Shelby tube, or core barrel sampler;
- Hand auger or push tube sampler;
- Drill rig and associated equipment (subsurface soil);
- Stainless steel bowls;
- Photoionization detector or other appropriate instrument as specified in site-specific health and safety plan;
- Sampling equipment for collection of volatile organic samples;
- Appropriate sample containers;
- Appropriate sample labels and packaging material.;
- Personal protective equipment and clothing (PPE) per site-specific health and safety plan; and
- Decontamination equipment and supplies (SOP 80.1).

3.0 PROCEDURE

3.1 DOCUMENTATION

Soil sampling information should be recorded in the field logbooks as described in SOPs 10.1 and 10.2.

3.2 SURFICIAL SOIL SAMPLES

The targeted depths for surficial soil samples (surface and near surface) will be specified in the work plan addenda developed for site-specific investigations.

1. All monitoring equipment should be appropriately calibrated before beginning sampling according to the requirements of the work plan addenda and SOP 90.1 or 90.2.
2. All sampling equipment should be appropriately decontaminated before and after use according to the requirements of the work plan addendum and SOP 80.1.
3. Use a spade, shovel, or trowel or other equipment (manufactured from material, which is compatible with the soil to be sampled) to remove any overburden material present (including vegetative mat) to the level specified for sampling.
4. Measure and record the depth at which the sample will be collected with an engineers scale or tape.

5. Remove the thin layer that was in contact with the overburden removal equipment using a clean stainless steel scoop or equivalent and discard it.

6. Begin sampling with the acquisition of any discrete sample(s) for analysis of volatile organic compounds (VOCs), with as little disturbance as possible. VOC samples will not be composited or homogenized.

7. When a sample will not be collected with a core type of sampler (push tube, split spoon, etc.), the sample for VOC analysis will be collected from freshly exposed soil. The method of collection will follow the procedures specified in SOP 30.8 (Methanol Preservation Method) or 30.9 (En Core® Method) based on the requirements of the work plan addenda.

8. Field screen the sample with properly calibrated photoionization detector (PID) or other appropriate instrument. Cut a cross-sectional slice from the core or center of the sample and insert the monitoring instrument(s). Based on the screening results, collect the VOC fraction, as applicable.

9. Collect a suitable volume of sample from the targeted depth with a clean stainless steel scoop (or similar equipment), push tube sampler, or bucket auger

10. For core type of samplers, rough trimming of the sampling location surface should be considered if the sampling surface is not fresh or other waste, different soil strata, or vegetation may contaminate it. Surface layers can be removed using a clean stainless steel, spatula, scoop, or knife. Samples collected with a bucket auger or core type of sampler should be logged per the requirements of SOP 10.3.

11. If homogenization or compositing of the sampling location is not appropriate for the remaining parameters, the sample should be directly placed into appropriate sample containers with a stainless steel spoon or equivalent.

12. If homogenization of the sample location is appropriate or compositing of different locations is desired, transfer the sample to a stainless steel bowl for mixing. The sample should be thoroughly mixed with a clean stainless steel spoon, scoop, trowel, or spatula and then placed in appropriate sample containers per the requirements for containers and preservation specified in work plan addenda. Secure the cap of each container tightly.

13. Appropriately, label the samples (SOP 50.1), complete the chain-of-custody (SOP 10.4), and package the samples for shipping (SOP 50.2).

14. Return any remaining unused soil to the original sample location. If necessary, add clean sand to bring the subsampling areas back to original grade. Replace the vegetative mat over the disturbed areas.

3.3 SUBSURFACE SAMPLES

All sampling equipment should be appropriately decontaminated before and after use according to the requirements of the work plan addendum and SOP 80.1.

1. All monitoring equipment should be appropriately calibrated before sampling according to the requirement of the work plan addendum and SOP 90.1 or SOP 90.2.

2. All sampling equipment should be appropriately decontaminated before and after use according to the requirements of the work plan addendum and SOP 80.1.

3. Collect split-spoon; core barrel, Shelby tube, sonic core or other similar samples during drilling.

4. Upon opening sampler or extruding sample, immediately screen soil for VOCs using a PID or appropriate instrument. If sampling for VOCs, determine the area of highest concentration; use a

stainless steel knife, trowel, or lab spatula to cut the sample; and screen for VOCs with monitoring instrument(s).

5. Log the sample on the boring log before extracting from the sampler per the requirements of SOP 10.3.
6. Any required VOC samples will be collected first followed by the other parameters. VOC samples will not be composited or homogenized and will be collected from the area exhibiting the highest screening level. The method of VOC sample collection will follow the procedures specified in SOP 30.8 (Methanol Preservation Method) or 30.9 (En Core® Method) based on the requirements of the work plan addenda.
7. Field screen the sample with properly calibrated photoionization detector (PID) or other appropriate instrument. Cut a cross-sectional slice from the core or center of the sample and insert the monitoring instrument(s). Based on the screening results, collect the VOC fraction, as applicable.
8. Rough trimming of the sampling location surface should be considered if the sampling surface is not fresh or other waste, different soil strata, or vegetation may contaminate it. Surface layers can be removed using a clean stainless steel, spatula, scoop, or knife.
9. If homogenization or compositing of the sampling location is not appropriate for other parameters, the sample should be directly placed into appropriate sample containers with a stainless steel spoon or equivalent.
10. If homogenization of the sample location is appropriate or compositing of different locations is desired, transfer the sample to a stainless steel bowl for mixing. The sample should be thoroughly mixed with a clean stainless steel spoon, scoop, trowel, or spatula and placed in appropriate sample containers per the requirements for containers and preservation specified in work plan addenda. Secure the cap of each container tightly.
15. Appropriately, label the samples (SOP 50.1), complete the chain-of-custody (SOP 10.4), and package the samples for shipping (SOP 50.2).
16. Discard any remaining sample into the drums used for collection of cuttings.
17. Abandon borings according to procedures outlined in SOP 20.2.

3.4 INVESTIGATION-DERIVED MATERIAL

Investigation-derived material will be managed in accordance with procedures defined in the work plan addenda for the site being investigated and SOP 70.1.

NOTES: If sample recoveries are poor, it may be necessary to composite samples before placing them in jars. In this case, the procedure will be the same except that two split-spoon samples (or other types of samples) will be mixed together. The boring log should clearly state that the samples have been composited, which samples were composited, and why the compositing was done. In addition, VOC fraction should be collected from the first sampling device.

When specified, samples taken for geotechnical analysis (e.g., percent moisture, density, porosity, and grain size) will be undisturbed samples, such as those collected using a thin-walled (Shelby tube) sampler, sonic core sampler, etc.

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

Refer to the site-specific health and safety plan.

Soil samples will not include vegetative matter, rocks, or pebbles unless the latter are part of the overall soil matrix.

6.0 REFERENCES

ASTM Standard D 1586-84. 1984. *Penetration Test and Split-Barrel Sampling of Soils.*

ASTM Standard D 1587-83. 1983. *Thin Walled Sampling of Soils.*

ASTM Standard D 5633-94. 1994. *Standard Practice for Sampling with a Scoop.*

USACE. 2001. *Requirements for the Preparation of Sampling and Analysis Plans.* EM 200-1-3. 1 February.

STANDARD OPERATING PROCEDURE 30.6
CONTAINERIZED MATERIAL

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to delineate protocols for the opening and sampling of containerized liquids of potentially unknown substances.

2.0 MATERIALS

- Work Plans;
- Field logbooks;
- Personal protective equipment and clothing per the site-specific health and safety plan;
- Monitoring instruments per the site-specific health and safety plan;
- Decontamination equipment and supplies (SOP 80.1);
- Tools;
- Historical data, if available;
- Sampling tube; and
- Remote samplers, as required.

3.0 PROCEDURE

Sealed containers with unknown contents represent potential severely hazardous situations for sampling teams. Even when the original identity of the contents is reasonably certain, contents may be under pressure or in a decomposed state and may readily react (sometimes violently) with air or water vapor in the atmosphere.

Only hazardous material specialists that have appropriate training and experience will inspect and sample unidentifiable drums or containers. Specialist team members will use extreme caution and care when opening sealed drums or cans of unknown content for purposes of inspection and sampling.

Efforts will be made to determine the identity of the contents, through markings, history of activities at the site, and similarity and proximity to containers of known contents. The range of possible hazards will dictate which specific procedure will be followed, and specific procedures will be identified in work plan addenda. All predetermined procedures will be strictly followed as designated by the site-specific conditions.

Using this SOP and appropriate health and safety protocols, field personnel will use extreme caution and care in opening sealed drums or cans of unknown contents for purposes of inspection and sampling. Specific activities include the following:

- Determine the identity of the contents through markings, history of activities at the site, and similarity and proximity to containers of known contents. The range of possible hazards will dictate which specific procedure should be followed.
- Handle containers as little as possible; however, if it is necessary to reorient a drum to allow access to a bung or cap, perform this activity using remote-handling forklift equipment with special drum-holding attachments.
- If contents are deemed to be under pressure, highly reactive, or highly toxic (or if these possibilities cannot be disproven), perform initial opening of the container remotely.
- Air monitoring stations will be established as necessary, using the following procedures:
  1. Affix a remote bung opener to the drum.
  2. Evacuate personnel to a safe distance or station them behind a barricade.
  3. Activate the non-sparking motor of the opener.
  4. After the bung is removed, monitor the drum for potential activity of the contents, such as vapor emission, smoking, or audible reaction.
  5. Approach cautiously while monitoring for toxic levels of airborne contaminants.
- If the contents of the drum pose acceptable hazards, accomplish opening (or inspection if previously opened remotely) and sampling with one of three approved devices. The preferred method is to use a clean glass tube, with or without bottom stopper, which can be placed in the drum (breaking it if necessary) after sampling is complete. Alternately (if a bung has been removed), a well sampler such as a Kemmererbailer can be used (but would require removal and cleaning or disposal according to the nature of the waste). By opening either of these devices at a desirable depth, stratified sampling can be performed. Also, the sampling tubes can be made with a plunger rod and O-ring seals at selected intervals, allowing simultaneous collection of multiple samples in a stratified medium.
- Following sampling, the drum will be resealed and/or overpacked to prevent any possibility of leakage while analysis determines the identity of the contents.
- Drums that do not have removable bungs may be opened remotely with a solenoid-activated punch (this requires that the drum be recontainerized or overpacked after sampling is complete).

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

Not applicable.

6.0 REFERENCE

USEPA, 1989. A Compendium of Superfund Field Operation Methods. EPA/540/P-87/001. December.

STANDARD OPERATING PROCEDURE 30.7
SAMPLING STRATEGIES

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to delineate sampling strategies for sampling various media.

2.0 MATERIALS

- Historical site data;
- Site topography;
- Soil types; and
- Sampled media.

3.0 PROCEDURE

The primary goal of any investigation is to collect samples representative of existing site conditions. Statistics are generally used to ensure samples are as representative as possible. Sampling plans may employ more than one approach to ensure project data quality objectives are adequately addressed. A comparison of sampling strategies is presented in Table 1.

3.1 CLASSICAL STATISTICAL SAMPLING

Classical statistical sampling strategies are appropriately applied to either sites where the source of contamination is known or small sites where the entire area is remediated as one unit. Primary limitations of this sampling approach include (1) inability to address media variability; (2) inadequate characterization of heterogenous sites; and (3) inadequate characterization of sites with unknown contamination characteristics.

3.1.1 Simple Random Sampling

Simple random sampling is generally more costly than other approaches because of the number of samples required for site characterization. This approach is generally used when minimal site information is available and visible signs of contamination are not evident and includes the following features:

- Sampling locations are chosen using random chance probabilities.
- This strategy is most effective when the number of sampling points is large.

3.1.2 Stratified Random Sampling

This sampling approach is a modification to simple random sampling. This approach is suited for large site investigations that encompass a variety of soil types, topographic features, and/or land uses. By dividing the site into homogenous sampling strata based on background and historical data, individual random sampling techniques are applied across the site. Data acquired from each stratum can be used to determine the mean or total contaminant levels and provide these advantages:

- Increased sampling precision results due to sample point grouping and application of random sampling approach.

- Control of variances associated with contamination, location, and topography.

3.1.3 Systematic Grid

The most common statistical sampling strategy is termed either systematic grid or systematic random sampling. This approach is used when a large site must be sampled to characterize the nature and extent of contamination.

Samples are collected at predetermined intervals within a grid pattern according to the following approach:

- Select the first sampling point randomly; remaining sampling points are positioned systematically from the first point.
- Determine the grid design: one or two-dimensional. One-dimensional sample grids may be used for sampling along simple man-made features. Two-dimensional grid systems are ideal for most soil applications.
- Determine the grid type: square or triangular. Sampling is usually performed at each grid-line intersection. Other strategies include sampling within a grid center or obtaining composite samples within a grid.
- Each stratum is sampled based on using the simple random sampling approach but determined using a systematic approach.

3.1.4 Hot-Spot Sampling

Hot spots are small, localized areas of media characterized by high contaminant concentrations. Hot-spot detection is generally performed using a statistical sampling grid. The following factors should be addressed:

- Grid spacing and geometry. The efficiency of hot-spot searches is improved by using a triangular grid. An inverse relationship exists between detection and grid point spacing, e.g., the probability of hot-spot detection is increased as the spacing between grid points is decreased.
- Hot-spot shape/size. The larger the hot spot, the higher the probability of detection. Narrow or semicircular patterns located between grid sampling locations may not be detected.
- False-negative probability. Estimate the false negative (β-error) associated with hot-spot analysis.

3.1.5 Geostatistical Approach

Geostatistics describe regional variability in sampling and analysis by identifying ranges of correlation or zones of influence. The general two-stage approach includes the following:

- Conducting a sampling survey to collect data defining representative sampling areas.
- Defining the shape, size, and orientation of the systematic grid used in the final sampling event.

3.2 NON-STATISTICAL SAMPLING

3.2.1 Biased Sampling

Specific, known sources of site contamination may be evaluated using biased sampling. Locations are chosen based on existing information.

3.2.2 Judgmental Sampling

This sampling approach entails the subjective selection of sampling locations that appear to be representative of average conditions. Because this method is highly biased, it is suggested that a measure of precision be included through the collection of multiple samples.

4.0 MAINTENANCE

Not applicable.

5.0 REFERENCES

USACE. 2001. *Requirements for the Preparation of Sampling and Analysis Plans.* EM200-1-3. 1 February.

TABLE 1
SAMPLING STRATEGIES

SAMPLING STRATEGY	DESCRIPTION	APPLICATION	LIMITATIONS
Classical Statistical Sampling Strategies			
Simple Random Sampling	Representative sampling locations are chosen using the theory of random chance probabilities.	Sites where background information is not available and no visible signs of contamination are present.	May not be cost-effective because samples may be located too close together. Does not take into account spatial variability of media.
Stratified Random Sampling	Site is divided into several sampling areas (strata) based on background or site survey information.	Large sites characterized by a number of soil types, topographic features, past/present uses, or manufacturing storage areas.	Often more cost-effective than random sampling. More difficult to implement in the field and analyze results. Does not take into account spatial variability of media.
Systematic Grid Sampling	Most common statistical strategy; involves collecting samples at predetermined, regular intervals within a grid pattern.	Best strategy for minimizing bias and providing complete site coverage. Can be used effectively at sites where no background information exists. Ensures that samples will not be taken too close together.	Does not take into account spatial variability of media.
Hot-Spot Sampling	Systematic grid sampling strategy tailored to search for hot spots.	Sites where background information or site survey data indicate that hot spots may exist.	Does not take into account spatial variability of media. Tradeoffs between number of samples, chance of missing a hot spot, and hot spot size/shape must be weighed carefully.
Geostatistical Approach	Representative sampling locations are chosen based on spatial variability of media. Resulting data are analyzed using kriging, which creates contour maps of the contaminant concentrations and the precision of concentration estimates.	More appropriate than other statistical sampling strategies because it takes into account spatial variability of media. Especially applicable to sites where presence of contamination is unknown.	Previous investigation data must be available and such data must be shown to have a spatial relationship.
Non-Statistical Sampling Strategies			
Biased Sampling	Sampling locations are chosen based on available information.	Sites with known contamination sources.	Contaminated areas can be overlooked if background information or visual signs of contamination do not indicate them. Best used if combined with a statistical approach, depending on the project objectives.
Judgmental Sampling	An individual subjectively selects sampling locations that appear to be representative of average conditions.	Homogenous, well-defined sites.	Not usually recommended due to bias imposed by individual, especially for final investigations.

STANDARD OPERATING PROCEDURE 30.9
COLLECTION OF SOIL SAMPLES BY USEPA SW 846 METHOD 5035 USING DISPOSABLE SAMPLERS

1.0 SCOPE AND APPLICATION

This standard operating procedure (SOP) outlines the recommended protocol and equipment for collection of representative soil samples to monitor potential volatile organic contamination in soil samples.

This method of sampling is appropriate for surface or subsurface soils contaminated with low to high levels of volatile organic compounds (VOCs). This sampling procedure may be used in conjunction with any appropriate determinative gas chromatographic procedure, including, but not necessarily limited to, SW-846 Method 8015, 8021, and 8260.

2.0 MATERIALS

- Work Plans;
- Field Logbook;
- Photoionization Detector (PID) or other monitoring instrument(s) per site-specific health and safety plan;
- Personal protective equipment and clothing per site-specific health and safety plan;
- Soil sampling equipment, as applicable (SOP 30.1);
- Disposable sampler;
- T-handle and/or Extrusion Tool; and
- Decontamination equipment and supplies (SOP 80.1).

3.0 PROCEDURE

3.1 METHOD SUMMARY

Disposable samplers are sent to the field to be used to collect soil samples. Three samplers must be filled for each soil sampling location, two for the low-level method (sodium bisulfate preservation) and one for the high level method (methanol preservation). After sample collection, disposable samplers are immediately shipped back to the laboratory for preservation (adding soil sample into methanol and sodium bisulfate solution). The ratio of volume of methanol to weight of soil is 1:1 as specified in SW-846 Method 5035 (Section 2.2.2). The amount of preservative in the solution corresponds to approximately 0.2 g of preservative for each 1 g of sample. Enough sodium bisulfate should be present to ensure a sample pH of ≤ 2.

If quality assurance/quality control (QA/QC) samples are needed, seven samplers will be needed for the original, matrix spike, and matrix spike duplicate analysis. Soil samples are collected in the field using the

disposable samplers, sealed and returned to the laboratory. A separate aliquot of soil is collected in a 125-mL container for dry weight determination.

3.2 SAMPLE CONTAINERS, PRESERVATION, HANDLING AND STORAGE

After sample collection, the disposable samplers must be cooled to and maintained at 4°C. The contents of the samplers will be analyzed using EPA methods 8015, 8021, and/or 8260. The **disposable** sampler is a single use device. It cannot be cleaned and/or reused.

Disposable samplers have a 48 hour holding time from sample collection to sample preparation in the laboratory. Return the samplers to the laboratory immediately after sampling.

3.3 SAMPLE PROCEDURES

Before sampling, the disposable sampler should be prepared as follows:

1. Unpack the cooler/sampling kit received from the laboratory. Disposable samplers are packed in sealed aluminized bags. These should be over packed in plastic zip lock bags. A T-Handle will also be needed to collect samples with the disposable sampler.
2. Hold coring body and push plunger rod down until small 0-ring rests against tabs. This will assure that plunger moves freely.
3. Depress locking lever on the sampler T-Handle (or other extraction device). Place coring body, plungers end first, into the open end of the T-Handle, aligning the two slots on the coring body with the two locking pins in the T-Handle. Twist the coring body clockwise to lock the pins in the slots. Check to ensure the sampler is locked in place. Sampler is ready for use.

The following procedure should be followed when using a disposable sampler to sample for VOCs in soil:

1. After the soil-sampling device (split spoon, corer, etc.) is opened, the sampling process should be completed in a minimum amount of time with the least amount of disruption.
2. Visual inspection and soil screening should be conducted after the sampler is opened and a fresh surface is exposed to the atmosphere. Soil screening should be conducted with an appropriate instrument (PID or FID).
3. Rough trimming of the sampling location surface should be considered if the sampling surface is not fresh or other waste, different soil strata, or vegetation may contaminate it. Surface layers can be removed using a clean stainless steel, spatula, scoop, or knife.
4. Orient the T-Handle with the T-up and the coring body down. This positions the plunger bottom flush with bottom of coring body (ensure that plunger bottom is in position). Using T-Handle, push sampler into soil until the coring body is completely full taking care not to trap air behind the sampler. When full, the small o-ring will be centered in the T-Handle viewing hole. Remove sampler from soil. Wipe excess soil from coring body exterior with a clean disposable paper towel.
5. Cap coring body while it is still on the T-Handle. ***Push*** cap over flat area of ridge ***and twist*** to lock cap in place. ***Cap must be seated to seal sampler.***
6. Remove the capped sampler by depressing locking lever on T-Handle while twisting and pulling sampler from T-Handle.
7. Lock plunger by rotating extended plunger rod fully counterclockwise until wings rest firmly against tabs.

8. Fill the 125-mL wide mouth jar for the non-preserved portion of the sample to be used for a moisture determination. These may be in a cardboard box. Retain all packaging to return the samples.
9. The disposable sampler should collect approximately 5 grams of soil (not necessary to weigh in the field). After a sample has been collected and capped, tear off the identification tag found at the bottom of the label on the aluminized bag. This tag is added to the sampler on the cap used to seal the sampler.
10. Place the sampler back in the aluminized bag and seal the top (a zip-lock seal). Make sure all the appropriate information is on the label. Record the sampler ID number on the chain-of-custody. Make sure each sampler and 125-mL container is labeled with the same location identification. The sampler should be placed inside the plastic zip-lock bags.
11. Place the 125-mL wide mouth jars in the cooler with the sampler on top. These should be sandwiched between bags of ice to maintain the correct temperature. If sent with the jars and samplers, a temperature bottle (used to evaluate the temperature on receipt) should be placed in the middle of the jars. The sample temperature should be 4°C during shipment.
12. Ship the samples so that they will be received within 24 hours of sampling. The laboratory must receive the sampler within 40 hours of the collection so that they can be correctly preserved.

3.4 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

1. All data must be documented on chain-of-custody forms, field data sheets and in the field logbook.
2. An equipment blank is a QA/QC sample that will determine potential contamination from sampling equipment used to collect and transfer samples from the point of collection to the sample container. An equipment blank is performed by pouring demonstrated analyte free water from one sample container, over a sampler, and into a separate set of identical sample containers. The equipment blank is optional when sampling with the methanol preservation technique. It may be required on a site-specific basis if elevated analytical results are suspected to be due to cross contamination from sampling equipment.
3. A trip blank is a QA/QC sample, which will determine additional sources of contamination that may potentially influence the samples. The sources of the contamination may be from the laboratory, sample containers, or during shipment. The laboratory prepares a trip blank at the same time and in the same manner as the sample containers. The trip blank must accompany the sample containers to the field and back to the laboratory along with the collected samples for analysis. It must remain sealed at all times until it is analyzed at the laboratory. The frequency of collection for the trip blank must be at a rate of one per sample shipment.

3.5 LIMITATIONS IN SAMPLING

This sampling protocol will not be applicable to all solid environmental matrices, such as those that cannot be cored including non-cohesive granular material, gravel, or hard dry clay. In this case, the procedure for collecting VOC samples using Methanol Preservation should be used (see SOP 30.8).

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

None.

6.0 REFERENCES

En Novative Technologies, Inc. 2000. Users Manual for En Core® Sampler. February 2001.

USACE. 2001. *Requirements for the Preparation of Sampling and Analysis Plans.* EM 200-1-3, 1 February.

USEPA. 1997. *Test Methods for Evaluating Solid Waste, Volume IB: Laboratory Manual Physical/Chemical Methods,* Third Edition, (as updated through update IIIA). Office of Solid Waste and Emergency Response, Washington, DC.

STANDARD OPERATING PROCEDURE 50.1
SAMPLE LABELS

1.0 SCOPE AND APPLICATION

Every sample will have a sample label uniquely identifying the sampling point and analysis parameters. The purpose of this standard operating procedure (SOP) is to delineate protocols for the use of sample labels. An example label is included as Figure 50.1-A. Other formats with similar levels of detail are acceptable.

2.0 MATERIALS

- Sample label; and
- Indelible marker.

3.0 PROCEDURE

The use of preprinted sample labels is encouraged and should be requested from the analytical support laboratory during planning activities.
As each sample is collected, fill out a sample label ensuring the following information has been collected:

- Project name;
- Sample ID: enter the SWMU number and other pertinent information concerning where the sample was taken. This information should be included in site-specific work plan addenda;
- Date of sample collection;
- Time of sample collection;
- Initials of sampler(s);
- Analyses to be performed (NOTE: Due to number of analytes, details of analysis should be arranged with lab *a priori*); and
- Preservatives (water samples only).

Double-check the label information to make sure it is correct. Detach the label, remove the backing and apply the label to the sample container. Cover the label with clear tape, ensuring that the tape completely encircles the container.

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

None.

6.0 REFERENCES

USEPA. 1998. *EPA Requirements for Quality Assurance Project Plans.* EPA/600/R-98/018, QA/R5, Final, Office of Research and Development, Washington, D.C.

FIGURE 50.1-A
SAMPLE LABEL

PROJECT NAME _____

SAMPLE ID _____

DATE: ___/___/___ TIME: _____:_____

ANALYTES: VOC SVOC P/P METALS CN
PAH D/F HERBs ANIONS TPH
ALK TSS

PRESERVATIVE: [HCl] [HNO_3] [NaOH] [H_2SO_4]

SAMPLER: _____

STANDARD OPERATING PROCEDURE 50.2
SAMPLE PACKAGING

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to delineate protocols for the packing and shipping of samples to the laboratory for analysis.

2.0 MATERIALS

- Waterproof coolers (hard plastic or metal);
- Metal cans with friction-seal lids (e.g., paint cans);
- Chain-of-custody forms;
- Chain-of-custody seals (optional);
- Packing material;
- Sample documentation;
- Ice;
- Plastic garbage bags;
- Clear Tape;
- Zip-top plastic bags; and
- Temperature blanks provided by laboratory for each shipment.

3.0 PROCEDURE

1. Check cap tightness and verify that clear tape covers label and encircles container.
2. Wrap sample container in bubble wrap or closed cell foam sheets. Samples may be enclosed in a secondary container consisting of a clear zip-top plastic bag. Sample containers must be positioned upright and in such a manner that they will not touch during shipment.
3. Place several layers of bubble wrap, or at least 1 in. of vermiculite on the bottom of the cooler. Line cooler with open garbage bag, place all the samples upright inside the garbage bag and tie.
4. Double bag and seal loose ice to prevent melting ice from soaking the packing material. Place the ice outside the garbage bags containing the samples.
5. Pack shipping containers with packing material (closed-cell foam, vermiculite, or bubble wrap). Place this packing material around the sample bottles or metal cans to avoid breakage during shipment.
6. A temperature blank (provided by laboratory) will be included in each shipping container to monitor the internal temperature. Samples should be cooled to 4 degrees C on ice immediately after sampling.

7. Enclose all sample documentation (i.e., Field Parameter Forms, Chain-of-Custody forms) in a waterproof plastic bag and tape the bag to the underside of the cooler lid. If more than one cooler is being used, each cooler will have its own documentation. Add the total number of shipping containers included in each shipment on the chain-of-custody form.
8. Seal the coolers with signed and dated custody seals so that if the cooler were opened, the custody seal would be broken. Place clear tape over the custody seal to prevent damage to the seal.
9. Tape the cooler shut with packing tape over the hinges and place tape over the cooler drain.
10. Ship all samples via overnight delivery on the same day they are collected if possible.

4.0 MAINTENANCE

Not applicable.

5.0 PRECAUTIONS

5.1 PERMISSIBLE PACKAGING MATERIALS

- Non-absorbent
  — Bubble wrap; and
  — Closed cell foam packing sheets.
- Absorbent
  — Vermiculite.

5.2 NON-PERMISSIBLE PACKAGING MATERIALS

- Paper;
- Wood shavings (excelsior); and
- Cornstarch "peanuts".

6.0 REFERENCES

USEPA. 1990. *Sampler's Guide to the Contract Laboratory Program.* EPA/540/P-90/006, Directive 9240.0-06, Office of Emergency and Remedial Response, Washington, D.C., December 1990.

USEPA. 1991. *User's Guide to the Contract Laboratory Program.* EPA/540/O-91/002, Directive 9240.0-01D, Office of Emergency and Remedial Response. January 1991.

USEPA. 1998. *EPA Requirements for Quality Assurance Project Plans.* EPA/600/R-98/018, QA/R5, Final, Office of Research and Development, Washington, D.C

STANDARD OPERATING PROCEDURE 70.1
INVESTIGATION-DERIVED MATERIAL

1.0 SCOPE AND APPLICATION

Management of investigation-derived material (IDM) minimizes the potential for the spread of waste material onsite or offsite through investigation activities. The purpose of this standard operating procedure (SOP) is to provide general guidelines for appropriate management of potentially contaminated materials derived from the field investigations. Specific procedures related to the transportation and disposal of hazardous waste are beyond the scope of this SOP.

2.0 INTRODUCTION

Investigation derived material (IDM) consists of waste materials that are known or suspected to be contaminated with waste substances through the actions of sample collection or personnel and equipment decontamination. These materials include decontamination solutions, disposable equipment, drill cuttings and fluids, and water from groundwater monitoring well development and purging. To the extent possible, the site manager will attempt to minimize the generation of these materials through careful design of decontamination schemes and groundwater sampling programs. Testing conducted on soil and water investigation-derived material will show if they are also hazardous wastes as defined by RCRA. This will determine the proper handling and ultimate disposal requirements.

The criteria for designating a substance as hazardous waste according to RCRA is provided in 40 CFR 261.3. If IDM meet these criteria, RCRA requirements will be followed for packaging, labeling, transporting, storing, and record keeping as described in 40 CFR 262.34. Those materials that are judged potentially to meet the criteria for a regulated solid or hazardous waste will be placed in DOT-approved 55-gallon steel drums or another type of DOT approved container; based on waste characteristics and volume.
Investigation-derived material will be appropriately placed in containers, labeled, and tested to determine disposal options in accordance with RCRA regulations and Virginia Hazardous Waste Management Regulations.

3.0 INVESTIGATION-DERIVED MATERIAL MANAGEMENT

Procedures that minimize potential for the spread of waste material include minimizing the volume of material generated, material segregation, appropriate storage, and disposal according to RCRA requirements.

3.1 WASTE MINIMIZATION

In the development of work plan addenda, each aspect of the investigation will be reviewed to identify areas where excess waste generation can be eliminated. General procedures that will eliminate waste include avoidance of unnecessary exposure of materials to hazardous material and coordination of sampling schedules to avoid repetitious purging of wells and use of sampling equipment.

3.2 WASTE SEGREGATION

Waste accumulation and management procedures to be used depend upon the type of material generated. For this reason, IDM described below are segregated into separate 55-gallon storage drums or other appropriate DOT containers. Waste materials that are known to be free of potential hazardous waste contamination (such as broken sample bottles or equipment containers and wrappings) must be collected separately for disposal to municipal systems. Large plastic garbage or "lawn and leaf" bags are useful for collecting this trash. Even "clean" sample bottles or Tyvek should be disposed of with care. Although they are not legally a problem, if they are discovered by the public they may cause concern. Therefore, items that are known to be free from contamination but are also known to represent "hazardous or toxic waste" to the public must not be disposed of in any public trash receptacle, such as found at your hotel or park.

3.2.1 Decontamination Solutions

Solutions considered investigation-derived materials range from detergents, organic solvents, and acids used to decontaminate small hand samplers to steam-cleaning rinsate used to wash drill rigs and other large equipment. These solutions are to be placed in 55-gallon drums with bolt-sealed lids or other appropriate DOT approved containers. Residual liquid IDM from decontamination pads will be removed and appropriately placed in container(s) at the end of each field day.

3.2.2 Soil Cuttings and Drilling Muds

Soil cuttings are solid to semi-solid soils generated during trenching activities or drilling for the collection of subsurface soil samples or the installation of monitoring wells. Depending on the type of drilling, drilling fluids known as "muds" may be used to remove soil cuttings. Drilling fluids flushed from the borehole must be directed into a settling section of a mud pit. This allows reuse of the decanted fluids after removal of the settled sediments. Drill cuttings, whether generated with or without drilling fluids, are to be removed with a flat-bottomed shovel and placed in 55-gallon drums with bolt-sealed lids or other appropriate DOT containers, as conditions or volume of IDM dictate.

3.2.3 Well Development and Purge Water

Well development and purge water is removed from monitoring wells to repair damage to the aquifer following well installation, obtain characteristic aquifer groundwater samples, or measure aquifer hydraulic properties. The volume of groundwater to be generated will determine the appropriate container to be used for accumulation of IDM.

For well development and purging, 55-gallon drums are typically an efficient container for accumulation. When larger volumes of water are removed from wells, such as when pumping tests are conducted, the use of large-volume portable tanks such as "Baker Tanks" should be considered for IDM accumulation.

Analytical data for groundwater samples associated with the well development and purge water will be used to assist in characterizing IDM and evaluating disposal options.

3.2.4 Personal Protective Equipment and Disposable Sampling Equipment

Personal protective equipment and clothing (PPE) may include such items as Tyvek coveralls, gloves, booties, and APR cartridges. Disposable sampling equipment may include such items as plastic sheeting, bailers, disposable filters, disposable tubing and paper towels. PPE and disposable sampling equipment that have or may have contacted contaminated media (soil, water, etc.) will be segregated and placed in 55-gallon drums separate from soil and water IDM. Disposition of this type of IDM will be determined by the results of IDM testing of the media in which the PPE and sampling equipment contacted.

3.3 MATERIAL ACCUMULATION

The IDM in containers must be placed in an appropriate designated RCRA container accumulation area at RFAAP, where it is permissible to accumulate such waste. IDM placed into a designated 90-day accumulation area will be properly sealed, labeled and covered. All drums will be placed on pallets.

A secure and controlled waste staging area will be designated by the installation prior the commencement of field sampling activities. Per the facility's requirements as a RCRA large quantity generator, waste accumulation cannot exceed 90 days for materials presumed or shown to be RCRA-designated hazardous wastes; waste which is known not to be RCRA-designated waste should be promptly disposed to municipal waste systems or appropriate facility.

3.3.1 IDM Accumulation Containers

Containers will be DOT-approved (DOT 17H 18/16GA OH unlined) open-head steel drums or other DOT approved container, as appropriate.

Container lids should lift completely off be secured by a bolt ring (for drum). Order enough containers to accumulate all streams of expected IDM including soil, PPE and disposable sampling equipment, decontamination water, purge water, etc.

Solid and liquid waste streams will not be mixed in a container. PPE and expendable sampling equipment will be segregated from other IDM and placed in different containers than soil. Containers inside containers are not permitted. PPE must be placed directly in a drum not in a plastic bag.

Pallets are often required to allow transport of filled drums to the staging area with a forklift. Normal pallets are 3×4 ft and will hold two to three 55-gallon drums depending on the filled weight. If pallets are required for drum transport or storage, field personnel are responsible for ensuring that the empty drums are placed on pallets before they are filled and that the lids are sealed on with the bolt-tighten ring after the drums are filled. Because the weight of one drum can exceed 500 lbs, under no circumstances should personnel attempt to move the drums by hand.

3.3.2 Container Labeling

Each container that is used to accumulate IDM will be appropriately labeled at the time of accumulation and assigned a unique identification number for tracking purposes. The following information will be written in permanent marker on a drum label affixed on the exterior side at a location at least two-thirds of the way up from the bottom of the drum.

- Facility name.
- Accumulation start date and completion date.
- Site identifier information (SWMU, boring, well, etc.).
- Description of IDM.
- Drum ID No.

4.0 MATERIAL CHARACTERIZATION AND DISPOSAL

IDM will be characterized and tested to determine whether it is a hazardous waste as defined by 40 CFR Part 261 and to determine what disposal options exist in accordance with RCRA regulations and the Virginia Hazardous Waste Management Regulations (VHWMR).

In general, IDM will be considered a hazardous waste if it contains a listed hazardous waste or if the IDM exhibits a characteristic of hazardous waste.

Work plan addenda will identify the appropriate characterization and testing program for IDM based on the following:

- Site-specific conditions related to chemicals of concern, etc.
- The nature and quantity of expected IDM to be generated during site-specific investigations.
- Applicable Federal, State, and local regulations, such as RCRA, VHWMR regulations and policies and procedures, and Army Regulation 200-1.
- RFAAP specific requirements and policies for IDM characterization and disposal at the time of the investigation.

In general, appropriate USEPA SW 846 Test Methods for Evaluating Solid Waste will be used for testing IDM and will be specified in work plan addenda. Other appropriate test methods may be specified by RFAAP in addition to SW 846 Methods that are specific to installation operations, the site of interest (percent explosive content, reactivity, etc.), or requirements for disposal at RFAAP water treatment facilities or publicly owned treatment works.

Responsibility for the final disposal of IDM will be determined before field activities are begun and will be described in work plan addenda. Off-site disposal of IDM will be coordinated with RFAAP (generator) to ensure appropriate disposition. The contractor will coordinate IDM transportation and disposal activities for RFAAP (generator).

At the direction of RFAAP, appropriate waste manifests will be prepared by the USACE contractor or Alliant Techsystems subcontractor for transportation and disposal. Alliant Techsystems or other appropriate RFAAP entity will be listed as the generator and an appointed representative from RFAAP will review and sign the manifest for offsite disposal.

RFAAP will make the final decision on the selection of the transporter, storage, and disposal facility (TSDFs) or recycling facility. RFAAP will provide the contractor a listing of previously used TSDFs for priority consideration. Proposed facilities that are not included on the listing are required to provide a copy of the TSDFs most recent state or federal inspection to the installation. Waste characterization and testing results will be submitted to RFAAP (generator) for review and approval before final disposition of the material.

Hazardous waste: Prior to final disposition, a hazardous waste manifest will be furnished by the TSDF to accompany transport to the disposal facility. Following final disposition, a certificate of disposal will be furnished by the disposal facility. Copies of the manifests and certificates of disposal are to be provided to RFAAP and retained on file by the contractor or subcontractor.

4.0 PRECAUTIONS

- Because the weight of one drum can exceed 500 lbs, under no circumstances should personnel attempt to move drums by hand.
- Refer to the site-specific health and safety plan when managing IDM.

5.0 REFERENCES

Safety Rules for Contractors and Subcontractors, 1995. Alliant Techsystems, Incorporated, Radford Army Ammunition Plant.

STANDARD OPERATING PROCEDURE 80.1
DECONTAMINATION

1.0 SCOPE AND APPLICATION

Before leaving the site, all personnel or equipment involved in intrusive sampling or having entered a hazardous waste site during intrusive sampling must be thoroughly decontaminated to prevent adverse health effects and minimize the spread of contamination. Equipment must be decontaminated between sites to preclude cross-contamination. Decontamination water will be free of contaminants as evidenced through either chemical analyses or certificates of analysis. This standard operating procedure (SOP) describes general decontamination requirements for site personnel and sampling equipment. Decontamination procedures for contaminants requiring a more stringent procedure, e.g., dioxins/furans, will be included in site-specific addenda.

2.0 MATERIALS

- Plastic sheeting, buckets or tubs, pressure sprayer, rinse bottles, and brushes;
- U.S. Army Corps of Engineers or installation approved decontamination water source;
- Deionized ultra-filtered, HPLC-grade organic free water (DIUF);
- Non-phosphate laboratory detergent;
- Nitric Acid, 0.1 Normal (N) solution;
- Pesticide-grade solvent, Methanol;
- Aluminum foil;
- Paper towels;
- Plastic garbage bags; and
- Appropriate containers for management of investigation-derived material (IDM).

3.0 PROCEDURE

3.1 SAMPLE BOTTLES

At the completion of each sampling activity the exterior surfaces of the sample bottles must be decontaminated as follows:

- Be sure that the bottle lids are on tight.
- Wipe the outside of the bottle with a paper towel to remove gross contamination.

3.2 PERSONNEL DECONTAMINATION

Review the site-specific health and safety plan for the appropriate decontamination procedures.

3.3 EQUIPMENT DECONTAMINATION

3.3.1 Drilling Rigs

Drilling rigs and associated equipment, such as augers, drill casing, rods, samplers, tools, recirculation tank, and water tank (inside and out), will be decontaminated before site entry, after over-the-road mobilization and immediately upon departure from a site after drilling a hole. Supplementary cleaning will be performed before site entry. There is a likelihood that contamination has accumulated on tires and as spatter or dust en route from one site to the next.

1. Place contaminated equipment in an enclosure designed to contain all decontamination residues (water, sludge, etc.).
2. Steam-clean equipment until all dirt, mud, grease, asphaltic, bituminous, or other encrusting coating materials (with the exception of manufacturer-applied paint) has been removed.
3. Water used will be taken from an approved source.
4. When cross-contamination from metals is a concern, rinse sampling components such as split spoons, geo-punch stems, and augers with nitric acid, 0.1N.
5. Rinse with DIUF water.
6. When semi-volatile and non-volatile organics may be present, rinse the sampling components with pesticide-grade solvent methanol.
7. Double rinse the sampling components with DIUF water.
8. Decontamination residues and fluids will be appropriately managed as IDM per work plan addenda and SOP 80.1.

3.3.2 Well Casing and Screen

Prior to use, well casing and screen materials will be decontaminated. This activity will be performed in the leak proof, decontamination pad, which will be constructed prior to commencement of the field investigation. The decontamination process will include:

- Steam cleaning with approved source water.
- Rinse with DUIF water.
- Air-dry on plastic sheeting.
- Wrap in plastic sheeting to prevent contamination during storage/transit.

3.3.3 Non Dedicated Submersible Pumps Used for Purging and Sampling

1. Scrub the exterior of the pump to remove gross (visible) contamination using appropriate brushes, approved water, and non-phosphate detergent (steam cleaning may be substituted for detergent scrub).
2. Pump an appropriate amount of laboratory detergent solution (minimum 10 gallons) to purge and clean the interior of the pump.
3. Rinse by pumping no less than 10 gallons of approved water to rinse.
4. Rinse the pump exterior with approved decontamination water.
5. When cross-contamination from metals is a concern, rinse the pump exterior with approved nitric acid 0.1N solution.

6. Rinse the pump exterior with DIUF water.
7. When semi-volatile and non-volatile organics may be present, rinse the pump exterior with pesticide-grade solvent methanol.
8. Double rinse the pump exterior with DIUF water.
9. Air-dry on aluminum foil or clean plastic sheeting.
10. Wrap pump in aluminum foil or clean plastic sheeting, or store in a clean, dedicated PVC or PTFE storage container.
11. Solutions and residuals generated from decontamination activities will be managed appropriately as IDM per work plan addenda and SOP 80.1.

3.3.4 Sample Equipment and Measuring Water Level Devices

1. Scrub the equipment to remove gross (visible) contamination using appropriate brush (es), approved water, and non-phosphate detergent.
2. Rinse with approved source water.
3. When cross-contamination from metals is a concern, rinse the sampling equipment with approved nitric acid 0.1N solution.
4. Rinse equipment with DIUF water.
5. When semi-volatile and non-volatile organics may be present, rinse the sampling equipment with pesticide-grade solvent methanol.
6. Double rinse the sampling equipment with DIUF water.
7. Air-dry on aluminum foil or clean plastic sheeting.
8. Wrap in aluminum foil, clean plastic sheeting, or zip top bag or store in a clean, dedicated PVC or PTFE storage container.
9. Solutions and residuals generated from decontamination activities will be managed appropriately as IDM per work plan addenda and SOP 80.1.

3.3.5 Other Sampling and Measurement Probes

Temperature, pH, conductivity, Redox, and dissolved oxygen probes will be decontaminated according to manufacturer's specifications. If no such specifications exist, remove gross contamination and triple-rinse probe with DIUF water.

4.0 PRECAUTIONS

- Manage IDM appropriately according to the requirements specified in work plan addenda.
- Follow appropriate procedures as specified in the site-specific health and safety plan.

5.0 REFERENCES

USACE. 2001. Requirements for the Preparation of Sampling and Analysis Plans. EM 200-1-3. 1 February.

STANDARD OPERATING PROCEDURE 90.1
PHOTOIONIZATION DETECTOR (HNu Model PI–101 and HW–101)

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to delineate protocols for field operations with a photoionization detector (HNu Systems Model PI–101 or HW–101). The photoionization detector (PID) detects total ionizables; hence it is used to monitor both organic and inorganic vapors and gases to determine relative concentrations of air contaminants. This information is used to establish level of protection and other control measures such as action levels. The PID cannot effectively detect compounds having ionization potentials above the photon energy level of the lamp used; therefore, methane, which has an ionization potential of 12.98 eV, is undetectable by PIDs because the lamps produce 9.5, 10.2, or 11.7 eV.

Use of brand names in this SOP is in not intended as an endorsement or mandate that a given brand be used. Alternate equivalent brands of detectors, sensors, meters, etc., are acceptable. If alternate equipment is to be used, the contractor shall provide applicable and comparable SOPs for its maintenance and calibration.

2.0 MATERIALS

- HNu Systems Model PI–101 or HW–101 survey probe with 9.5, 10.2, or 11.7 eV lamp;
- Lead-acid gel-cell battery;
- Calibration gas (e.g., isobutylene, 101 ppm) with regulator;
- Tygon tubing;
- Tedlar bag (optional);
- Instrument logbook; and
- Field logbook.

3.0 PROCEDURE

These procedures are to be followed when using the HNu in the field.

3.1 STARTUP

1. Before attaching the probe, check the function switch on the control panel to ensure that it is in the off position. Attach the probe by plugging it into the interface on the top of the readout module.
2. Turn the function switch to the battery check position. The needle on the meter should read within or above the green battery arc on the scale; if not, recharge the battery. If the red indicator light comes on, the battery needs recharging or service may be indicated.
3. Turn the function switch to any range setting. Listen for the hum of the fan motor. Check meter function by holding a solvent-based marker pen near the sample intake. If there is no needle deflection, look briefly into the end of the probe (no more than 1 or 2 sec) to see if the lamp is on; if it is on, it will give a purple glow. Do not stare into the probe any longer than 2 sec. Long-term exposure to UV light can damage the eyes. (See further information in Section 5.)

4. To zero the instrument, turn the function switch to the standby position and rotate the zero adjustment until the meter reads zero. A calibration gas is not needed since this is an electronic zero adjustment. If the span adjustment setting is changed after the zero is set, the zero should be rechecked and adjusted if necessary. Allow the instrument to warm up for 3–5 min to ensure that the zero reading is stable. If necessary, readjust the zero.

3.2 OPERATIONAL CHECK

Follow the startup procedure in Section 3.1.
With the instrument set on the 0–20 range, hold a solvent-based marker near the probe tip. If the meter deflects upscale, the instrument is working.

3.3 FIELD CALIBRATION PROCEDURE

1. Follow the startup procedures in Section 3.1 and the operational check in Section 3.2.
2. Set the function switch to the range setting for the concentration of the calibration gas.
3. Attach a regulator HNu P/N 101-351 or equivalent (flow = 200 to 300 ml/min) to a disposable cylinder of isobutylene (HNu 101-351 or equivalent). Connect the regulator to the probe of the HNu with a piece of clean Tygon tubing. Turn on the valve of the regulator.
4. After 5 sec, adjust the span dial until the meter reading equals the benzene concentration of the calibration gas used, corrected to its equivalence, which should be marked on the canister (Isobutylene ~0.7X benzene).
5. Record in the field log the instrument ID No., serial No., initial and final span settings, date, time, location, concentration and type of calibration gas used, and the signature of the person who calibrated the instrument.
6. If the HNu does not function or calibrate properly, the project equipment manager is to be notified as soon as possible. Under no circumstances is work requiring monitoring with a PI–101 or HW–101 to be done with a malfunctioning instrument.

3.4 CALIBRATION TO A GAS OTHER THAN ISOBUTYLENE

The HNu may be calibrated to any certified calibration gas. However, after calibration, all subsequent instrument readings will be relative to the calibration gas used. General procedures include the following:

1. Calibrate according to procedure 3.3.
2. Partially fill and flush one-to-two times a gas bag (Tedlar recommended) with the certified National Institute of Standards and Technology (NIST) (formerly NBS) traceable calibration gas. Then fill the bag with 1–3 L of the calibration gas. If the gas is toxic, this must be done in a fume hood.
3. Feed the calibration gas into the probe with the range set for the value of the gas. After 5 sec, adjust the span control until the meter reads the value of the calibration gas.
4. Record the results of the calibration on the calibration/maintenance log and attach a new calibration sticker (if available) or correct the existing sticker to reflect the new calibration data. All subsequent readings will be relative to the new calibration gas.

3.5 OPERATION

1. Follow the startup procedure, operational check, and calibration check (refer to Section 3.1).

2. Set the function switch to the appropriate range. If the concentration of gas vapors is unknown, set the function switch to 0-20 ppm range. Adjust if necessary.
3. Prevent exposing the HNu to excessive moisture, dirt, or contaminant while monitoring the work activity as specified in the Site Health and Safety Plan.
4. When the activity is completed, or at the end of the day, carefully clean the outside of the HNu with a damp disposable towel to remove all visible dirt. Return the HNu to a secure area and place on charge. Charge after each use; the lead acid batteries cannot be ruined by over charging.
5. With the exception of the probe's inlet and exhaust, the HNu can be wrapped in clear plastic to prevent it from becoming contaminated and to prevent water from getting inside in the event of precipitation. If the instrument becomes contaminated, make sure to take necessary steps to decontaminate it. Call the Equipment Administrator if necessary; under no circumstances should an instrument be returned from the field in a contaminated condition.

4.0 MAINTENANCE

Calibration/maintenance logs are to be filled in completely whenever a PI-101 or HW-101 receives servicing. This is true of both contractor-owned and rental instruments.

The equipment manager should be called to arrange for a fresh instrument when necessary. The contractor's equipment facility is responsible for arranging all repairs that cannot be performed by the project equipment manager.

4.1 ROUTINE SERVICE

The PID's performance is affected by a number of factors. These include but are not limited to the decay of the UV lamp output over time and the accumulation of dust and other particulate material and contaminates on the lamp and in the ion chamber. Because of these factors, the PID should not be left in the field for a period of more than 2 weeks before being replaced with a fresh instrument. If a site is going to be inactive for a period of more than a week, all monitoring instruments are to be returned to the project equipment manager or his trained designee for servicing and/or reassignment. The following procedures are to be performed at the designated intervals for routine service.

Procedure	Frequency
Operational check	Before use and at instrument return
Field calibration	Before use and at instrument return
Full calibration	Bi-weekly (return instrument to equipment manager for replacement with a fresh unit)
Clean UV lamp and	Bi-weekly or as needed ion chamber
Replace UV Lamp	As needed

4.1.1 UV Lamp and Ion Chamber Cleaning

During periods of analyzer operation, dust and other foreign materials are drawn into the probe forming deposits on the surface of the UV lamp and in the ion chamber. This condition is indicated by meter readings

that are low, erratic, unstable, non-repeatable, or drifting and show apparent moisture sensitivity. These deposits interfere with the ionization process and cause erroneous readings. Check for this condition regularly to ensure that the HNu is functioning properly. If the instrument is malfunctioning, call your equipment manager to arrange to have a fresh replacement.

4.1.2 Lamp eV Change

If different applications for the analyzer would require different eV lamps, separate probes, each with its own eV lamp, must be used. A single readout assembly will serve for any of the probes (9.5, 10.2, and 11.7 eV). A change in probe will require resetting of the zero control and recalibrating the instrument. The 11.7 eV lamp will detect more compounds than either of the two lower eV lamps. However, the 11.7 eV probe needs more frequent calibration; it burns out much faster than the lower eV lamps.

5.0 PRECAUTIONS

- The HNu PI–101 and HW–101 are designed to sample air or vapors only. *Do not allow any liquids or low boiling vapors to get into the probe or meter assembly.*
- High concentrations of any gas can cause erroneous readings. High humidity can also cause the instrument readings to vary significantly from the actual concentration of gases or vapors present. This is true even through the HNu cannot react to water vapor.
- High humidity, dust, and exposure to concentrations of low boiling vapors will contaminate the ion chamber, causing a steady decrease in sensitivity.
- Continued exposure to ultraviolet light generated by the light source can be harmful to eyesight. If a visual check of the UV lamp is performed *do not look at the light source from a distance closer than 6 inches with unprotected eyes.* Use eye protection (UV-blocking sunglasses or safety glasses). Only look briefly—never more than about 2 sec.

Place the instrument on charge after each use; the lead batteries cannot be ruined by over charging.

- If at any time the instrument does not check out or calibrate properly in the field, the equipment manager is to be notified immediately and a replacement obtained for the malfunctioning instrument. Under no circumstances should fieldwork requiring continuous air monitoring for organic vapors and/or gases be done with a malfunctioning Hnu or without a HNu or an approved comparable instrument.

6.0 REFERENCES

Manufacturer's Equipment Manual.

APPENDIX C

BORING LOGS

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Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 8SB1

Sheet 1 of 1

Date(s) Drilled	4/15/03 15:00-15:15	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-Inch Macrocore	Ground Surface Elevation	1702 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,600,218.9 E 10,892,692.9

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							7.5YR 3/2, dark brown, SILT, moist, micaceous, hard, friable	Sample 8SB1A collected from 0-0.5 ft bgs. Sample 8SB1A VOCs collected from 0.5-1 ft bgs.
1700	2		1	75	ND				
	4							7.5YR 3/1, very dark gray, very fine SANDY SILT, moist, micaceous, soft	
	6		2	100	ND		ML		
1695	8							7.5YR 4/2, brown, very fine SANDY SILT, moist, trace clay, micaceous, cohesive	
	10		3	100	ND				
1690	12								
	14		4	85	ND		SP	7.5YR 4/4, brown, fine to medium SAND, moist, poorly graded, micaceous, very loose	Sample 8SB1C collected from 13-15 ft bgs.
	16							Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	

Report: EN ...S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 8SB1

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 8SB2

Sheet 1 of 1

Date(s) Drilled	4/17/03 15:00-15:50	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	10.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	

Elevation, feet	Downhole Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES %Recovery	SAMPLES PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, pale brown sludge, wet, very soft	
	1								
	2		1	75	ND		SLUDGE		
	3								
	4							7.5YR 4/6, strong brown, fine SANDY CLAY, moist, stiff, slightly plastic	Recovery of soil was limited to volume needed for sample 8SB2B collected at 5 ft bgs.
	5								
	6		2	40	ND				
	7						CL		
	8							Intermittent soft and hard lenses. Recovered approximately 2 inches of 2.5Y 5/3, light olive brown, SANDY SILT, moist, weathered siltstone	
	9		3	40	ND				
	10							Borehole terminated at 10 feet below ground surface. Probe refusal at 10 feet below ground surface.	Sample collected as part of in-situ composite sample 8SC1 collected fr 10 ft bgs.
	11								

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 8SB2

URS

Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Log of Boring 8SB3 Sheet 1 of 1

Date(s) Drilled	4/15/03 13:35-14:00	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1699 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,600,210.6 E 10,892,840.4

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							5YR 4/4, reddish brown, CLAY, trace SAND (fill), moist, plastic	Sample 8SB3A collected from 0-0.5 ft bgs. Sample 8SB3A VOCs collected from 0.5-1 ft bgs.
	2		1	75	ND		CL		
1695	4						GM	7.5YR 4/1, dark gray GRAVEL (fill) with sand, moist	
	6		2	100	ND			7.5YR 4/2, brown, SILTY fine SAND, moist, micaceous, medium dense	
	8								
1690	10		3	100	ND		SM	Grading to less silt	
	12								
1685	14		4	85	ND		SP	7.5YR 4/4, brown, fine SAND, moist, trace silt, micaceous, very loose	Sample 8SB3C collected from 13-15 ft bgs.
	16							Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	

Report: EN .S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 8SB3

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 8SB4

Sheet 1 of 1

Date(s) Drilled	4/17/03 10:15-13:05	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	8.5 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, pale brown sludge, wet, very soft	
	1								
	2		1	70	ND				
	3						SLUDGE		
	4								
	5								
	6		2	70	ND			7.5YR 4/4, brown, SANDY CLAY, moist, stiff, slightly plastic	Sample 8SB4C collected from 6-8.5 ft bgs. Composite *in situ* sample collected from 6-8.5 ft bgs as part of sample 8SC1.
	7						CL		
	8		3	70	ND		ST	10YR 6/4, light yellowish brown, SILTSTONE, moist, highly weathered, thinly bedded and 10YR 7/3, very pale brown, highly weathered CLAYSTONE	
								Borehole terminated at 8.5 feet below ground surface. Probe refusal encountered at 8.5 feet below ground surface.	
	9								
	10								

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 8SB4

URS

Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Log of Boring 8SB5 Sheet 1 of 1

Date(s) Drilled	4/15/03 14:25-14:45	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1700 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,600,163.3 E 10,892,906.1

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
1700	0							7.5YR 2.5/2, very dark brown, very fine SAND and SILT, dry to moist, micaceous, very loose	Sample 8SB5A collected from 0-0.5 ft bgs. Sample 8SB5A VOCs collected from 0.5-1 ft bgs.
	2		1	75	ND				
	4								
1695							SM/ML	5YR 4/3, brown, fine SAND and SILT, moist, micaceous, very loose	
	6		2	100	ND				
	8							lenses of increasing and decreasing silt	
1690	10		3	100	ND			7.5YR 5/4, brown, fine SAND, moist, micaceous, very loose	
	12						SP		
	14		4	85	ND				Samples 8SB5C, MS and MSD collected from 13-15 ft bgs.
1685	16							Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	

Report: EA_S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 8SB5

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 8SB6

Sheet 1 of 1

Date(s) Drilled	4/15/03 13:00-13:15	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1698 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,600,065.0 E 10,892,874.7

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							7.5YR 4/4, brown, very fine SANDY SILT, moist, micaceous	Sample 8SB6A collected from 0-0.5 ft bgs. Sample 8SB6A VOCs collected from 0.5-1.0 ft bgs.
	2		1	75	ND		ML		
1695									
	4								
	6		2	100	ND			7.5YR 4/4, brown, fine to coarse GRAVEL with silt and fine to coarse sand, moist, loose	
	8								
1690									
	10		3	100	ND		GM		
	12								
1685			4	75	ND			7.5YR 5/2, brown, SILTSTONE, moist, highly weathered with 10YR 5/4, yellowish brown very soft silt and clay, nonplastic	Sample 8SB6C collected from 13-15 ft bgs.
	14						ST		
	16							Borehole terminated at 15 feet below ground surface. Probe refusal encountered at 15 feet below ground surface.	

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 8SB6

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 8SB7

Sheet 1 of 1

Date(s) Drilled	4/17/03 10:45-11:15	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	5.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	

Elevation, feet	Downhole Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES %Recovery	SAMPLES PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, very pale brown, sludge, wet, very soft	Composite sample collected as part of sample 8SC2 collected from 0-3.5 ft bgs.
	1								
	2		1	40	ND		SLUDGE		
	3								
	4							7.5YR 4/4, brown, very fine to fine SANDY CLAY, wet	Samples 8SB7B, DUP-4, MS, and MSD collected from 3.5-5 ft bgs.
	5		2	40	ND		CL	Borehole terminated at 5 feet below ground surface. Probe refusal not encountered.	
	6								

Report: EI ...S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 8SB7

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 8SB8

Sheet 1 of 1

Date(s) Drilled	4/17/03 11:45-12:10	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	5.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	

Elevation, feet	Downhole Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES %Recovery	SAMPLES PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, pale brown, sludge, wet, very soft	Composite sample as part of 8SC2 collected from 0-5 ft bgs.
	1								
	2		1	100	ND		SLUDGE		
	3								
	4								
			2	100	ND				
	5							Borehole terminated at 5 feet below ground surface. Probe refusal not encountered.	
	6								

URS

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 8SB8

Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Log of Boring 36SB1 Sheet 1 of 1

Date(s) Drilled	4/15/03 10:25-11:00	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1703 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,600,026.6 E 10,893,231.1

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							7.5YR 4/3, brown, SILTY fine SAND, moist, with clay, micaceous, medium dense	Sample 36SB1A collected from 0-0.5 ft bgs. Sample 36SB1A VOCs collected from 0.5-1.0 ft bgs.
	2		1	75	ND				
1700									
	4							Grading to less clay	
	6		2	100	ND		SM		
1695									
	8							7.5YR 4/4, brown, fine SAND, moist, micaceous, loose, medium dense	
	10		3	100	ND				
	12							7.5YR 5/4, brown, fine SAND, moist, trace silt, micaceous, loose	
1690									
	14		4	85	ND		SP/SM		Sample 36SB1C collected from 14-15 ft bgs.
								Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	
	16								

Report: EI S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB1

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 36SB2

Sheet 1 of 1

Date(s) Drilled	4/15/03 9:40-10:10	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1705 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,996.9 E 10,893,293.4

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							7.5YR 4/3, brown, fine SAND, moist, trace silt, micaceous, dense	Sample 36SB2A collected from 0-0.5 ft bgs. Sample 36SB2A VOCs collected from 0.5-1.0 ft bgs.
	2		1	75	ND				
	4								
1700									
	6		2	100	ND		SM	Grading to 7.5YR 4/4, brown, moist, less silt, loose	
	8								
1695	10		3	100	ND				
	12							7.5YR 2.5/2, very dark brown, very fine SAND and SILT, moist, micaceous, loose, homogeneous	
	14		4	85	ND		SM/ML		Sample 36SB2C collected from 14-15 ft bgs.
1690								Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	
	16								

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB2

URS

Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Log of Boring 36SB3 Sheet 1 of 1

Date(s) Drilled	4/16/03 9:50-10:15	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1698 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,922.1 E 10,893,269.9

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 5/4, very pale brown, sludge, moist, soft	
	2		1	75	ND		SLUDGE		
1695									
	4								
	6		2	100	ND			10YR 4/4, dark yellowish-brown, SILTY very fine SILT, moist, some clay, micaceous, homogeneous	Sample collected at Soil/Sludge Interface (4.5 ft bgs) as part of composite sample 36SC1 . Sample 36SB3B collected at 5-6 ft bgs.
1690									
	8								
								Grading to fine to very fine sand	
	10		3	100	ND		SM		
	12								
1685									
			4	75	ND				Sample 36SB3C collected at 13-15 ft bgs.
	14							Becoming gravelly	
								Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	
	16								

Report: EN_S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB3

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 36SB4

Sheet 1 of 1

Date(s) Drilled	4/15/03 11:10-11:25	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1700 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,915.1 E 10,893,178.2

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							7.5YR 4/4, brown SILTY fine SAND, moist, trace clay, micaceous, medium dense	Sample 36SB4A collected from 0-0.5 ft bgs. Sample 36SB4A VOCs collected from 0.5-1.0 ft bgs.
	2		1	75	ND				
	4								
1695									
	6		2	100	ND			Grading to less clay	
	8						SM		
1690								7.5YR 5/4, strong brown, fine to medium SAND, moist, some fine to medium gravel, with trace silt, loose	
	10		3	100	ND				
	12								
			4	85	ND			7.5YR 5/4, strong brown, medium SAND with fine to medium gravel, moist, trace silt, loose	
	14								Sample 36SB4C collected from 14-15 ft bgs.
1685									
								Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	
	16								

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB4

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 36SB5

Sheet 1 of 1

Date(s) Drilled	4/15/03 11:35-12:05	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1708 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,882.5 E 10,893,319.0

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							7.5YR 4/4, brown, SILTY fine SAND, moist, trace clay and medium to coarse sand, micaceous, medium dense	Samples 36SB5A and Dup-2 collected from 0-0.5 ft bgs. Samples 36SB5A and Dup-2 VOCs collected from 0.5-1 ft bgs.
	2		1	75	ND				
1705									
	4								
	6		2	100	ND		SM	increased coarse sand, trace fine to medium gravel	
1700									
	8							coarse sand/gravel grading out	
	10		3	100	ND				
	12								
1695								7.5YR 4/6, fine to medium GRAVELLY fine SAND, moist, slightly micaceous, loose	
	14		4	85	ND		SP		Sample 36SB5C collected from 14-15 ft bgs.
								Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	
	16								

Report: E...\S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB5

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 36SB6

Sheet 1 of 1

Date(s) Drilled	4/16/03 11:20-11:30	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	16.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1697 feet msl
Groundwater Level(s)	15.5	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,855.0 E 10,893,251.7

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 6/4, light yellowish brown and 10YR 7/4, very pale brown sludge, moist, very soft	
1695	2		1	75	ND				
	4						SLUDGE		
	6		2	100	ND				
1690								10YR 4/4, dark yellowish brown, SILTY very fine SAND, moist, poorly graded, micaceous, loose, homogeneous	Sample collected at Soil/Sludge Interface (7 ft bgs) as part of composite sample 36SC1 .
	8								Sample 36SB6B collected from 7-10 ft bgs.
	10		3	100	ND		SM		
1685	12							Grading to less silt	
	14		4	75	ND		SP	10YR 5/4, yellowish brown, fine to medium SAND, moist, slightly silty, poorly graded, micaceous, loose, homogeneous	Sample 36SB6C collected from 14-15 ft bgs.
								Wet at 15.5 ft bgs	
	16							Borehole terminated at 16 feet below ground surface. Probe refusal not encountered.	

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB6

URS

Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Log of Boring 36SB7 Sheet 1 of 1

Date(s) Drilled	4/15/03 9:00-9:30	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1707 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,926.5 E 10,893,461.7

Elevation, feet	Downhole Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES %Recovery	SAMPLES PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 3/2, dark brown SILT, moist, trace sand, micaceous, hard	Sample 36SB7A collected from 0-0.5 ft bgs. Sample 36SB7A VOCs collected from 0.5-1.0 ft bgs.
1705	2		1	75	ND		ML		
	4								
	6		2	100	ND			10YR 3/3, dark brown, SILTY fine to very fine SAND, moist, micaceous, medium dense	
1700	8								
	10		3	100	ND		SM		
1695	12							less silt, loose	
	14		4	75	ND			7.5YR 4/4, brown, fine SAND, moist, trace silt, micaceous, loose	Sample 36SB7C collected from 14-15 ft bgs.
	16							Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	

Report: EN_ _AS_CLEVELAND+/-USCS; File: RFAAP_8836.GPJ; 7/22/2003 36SB7

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 36SB8

Sheet 1 of 1

Date(s) Drilled	4/15/03 8:15-8:30	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1705 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,872.5 E 10,893,596.2

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							7.5YR 5/4, brown, SILTY fine SAND, moist, slightly clayey, trace medium-coarse sand, micaceous, medium dense, homogeneous	Sample 36SB8A collected at 0-0.5 ft bgs Sample 36SB8A VOCs collected at 0.5-1.0 ft bgs.
	2		1	75	ND				
	4								
1700							SM		
	6		2	100	ND				
	8								
1695	10		3	100	ND			7.5YR 3/3, dark brown, very fine SANDY SILT, moist, slightly clayey, micaceous, medium dense, homogeneous	
	12						ML		
	14		4	75	ND		SM	7.5YR 5/4, brown, SILTY fine SAND, moist, micaceous, loose, homogeneous	Samples 36SB8C, MS, and MSD collected at 13-15 ft bgs.
1690								Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	
	16								

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB8

URS

Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Log of Boring 36SB9 Sheet 1 of 1

Date(s) Drilled	4/15/03 7:30-7:55	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1705 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,791.0 E 10,893,632.8

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
1700	0							7.5YR 4/4, brown, very fine SAND, moist, poorly graded, silty, micaceous, slight gravel, medium dense	Sample 36SB9A collected at 0-0.5 ft bgs. Sample 36SB9A VOCs collected at 0.5-1.0 ft bgs.
	2		1	75	ND				
	4								
	6		2	100	ND			10YR 4/2, dark grayish brown, SILTY very fine SAND, moist, slightly clayey, trace coarse sand, micaceous, medium dense	
	8						SM		
1695	10		3	100	ND			7.5YR 4/4, brown, fine SAND, moist, slightly silty, micaceous, loose, homogeneous	
	12								
	14		4	75	ND				Samples 36SB9C and DUP-1 collected at 13-15 ft bgs.
1690	16							Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	

Report: E:\S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB9

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 36SB10

Sheet 1 of 1

Date(s) Drilled	4/16/03 8:30-9:00	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	15.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-Inch Macrocore	Ground Surface Elevation	1706 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,843.9 E 10,893,505.8

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
1706	0							10YR 7/4, very pale brown, sludge, moist, soft	
1705	2		1	75	ND		SLUDGE		
	4								
1700	6		2	100	ND			7.5YR5/4 , brown, fine SAND, moist, poorly graded, silty, micaceous, homogenous	Sample collected Soil/Sludge Interf. (4.7 ft bgs) as part o. composite sample 36SC1 . Sample 36SB10B collected at 5-6 ft bgs.
	8								
1695	10		3	100	ND		SM	With occasional clayey sand seams	
	12							Grading loose, less silt	
	14		4	75	ND				Samples 36SB10C and DUP-3 collected at 14-15 ft bgs.
1690	16							Borehole terminated at 15 feet below ground surface. Probe refusal not encountered.	

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB10

URS

Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Log of Boring 36SB11 Sheet 1 of 1

Date(s) Drilled	4/16/03 8:30-9:50	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	12.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1697 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,985.3 E 10,893,207.5

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, very pale brown, sludge, moist, soft	
	1								
1695	2		1	75	ND				
	3								
	4						SLUDGE		Sample collected as part of Composite Sample 36SC2 collected from 0-8 ft bgs.
	5								
	6		2	100	ND				
1690	7								
	8							7.5YR 4/4, brown, SILTY fine SAND, moist, micaceous	
	9								
	10		3	85	ND		SM		
	11								
1685	12							Borehole terminated at 12 feet below ground surface. Probe refusal not encountered.	
	13								

Report: Ei ...AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB11

URS

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Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Log of Boring 36SB12 Sheet 1 of 1

Date(s) Drilled	4-16-03 10:25-10:33	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	8.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-Inch Macrocore	Ground Surface Elevation	1700 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,947.8 E 10,893,288.6

Elevation, feet	Downhole Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES %Recovery	SAMPLES PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, very pale brown,sludge, moist, soft	
	1								
	2		1	75					
	3						SLUDGE		Composite sample of sludge as part of sample 36SC2 collected from 0-6.5 ft bgs.
	4								
1695									
	5								
	6		2	100					
	7						SP	10YR 4/4, dark yellowish-brown, fine SAND, moist, poorly graded, micaceous, homogeneous	
	8							Borehole terminated at 8 feet below ground surface. Probe refusal not encountered.	
	9								

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB12

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 36SB13

Sheet 1 of 1

Date(s) Drilled	4/16/03 11:50-12:00	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	8.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1698 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,873.6 E 10,893,166.0

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, very pale brown, sludge, moist, very soft	Composite sample as part of sample 36SC3 collected from 0-3 ft bgs.
	1								
	2		1	75	ND				
1695	3						SLUDGE		
	4								
	5								
	6		2	100	ND				
	7							7.5YR 4/4, brown, fine SAND,moist, poorly graded, slightly silty, micaceous, loose, homogeneous	
1690	8						SM	Borehole terminated at 8 feet below ground surface. Probe refusal not encountered.	
	9								

Report: El... \S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB13

URS

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Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 36SB14

Sheet 1 of 1

Date(s) Drilled	4/16/03 11:35-11:45	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	8.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-Inch Macrocore	Ground Surface Elevation	1697 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,853.2 E 10,893,290.4

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, very pale brown sludge, moist, very soft	Composite sample as part of sample 36SC3 collected from 0-6 ft bgs.
	1								
1695	2		1	75	ND				
	3						SLUDGE		
	4								
	5								
	6		2	75	ND			7.5YR 4/4, brown, fine SAND, moist, silty, micaceous, poorly graded, loose, homogeneous	
1690	7						SM		
	8							Borehole terminated at 8 feet below ground surface. Probe refusal not encountered.	
	9								

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8836.GPJ; 7/22/2003 36SB14

URS

Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Log of Boring 36SB15 Sheet 1 of 1

Date(s) Drilled	4/16/03 9:00-9:30	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	8.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-inch Macrocore	Ground Surface Elevation	1707 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,873.9 E 10,893,434.0

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, very pale brown, sludge, moist, soft	
	1								
	2		1	75	ND				
1705							SLUDGE		Composite sludge sample as part of sample 36SC4 collected from 0-5 ft bgs.
	3								
	4								
	5							7.5YR 4/4, brown, SILTY fine SAND, moist, micaceous, medium dense	
	6		2	100	ND				
	7						SM		
1700									
	8							Borehole terminated at 8 feet below ground surface. Probe refusal not encountered.	
	9								

Report: E:\...\S_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB15

URS

Project: RFAAP SWMUs 8 & 36
Project Location: Radford, Virginia
Project Number: 09604-323

Log of Boring 36SB16

Sheet 1 of 1

Date(s) Drilled	4/16/03 8:00-8:30	Logged By	J. Spangler	Reviewed By	J. Spencer
Drilling Method	Geoprobe- Hydraulic Push	Drilling Contractor	Richard Simmons Drilling Co., Inc.	Total Depth of Borehole	8.0 feet
Drill Rig Type	AMS - Tractor Mounted	Drill Bit Size/Type	2-Inch Macrocore	Ground Surface Elevation	1703 feet msl
Groundwater Level(s)	NA	Sampling Method	Continuous core	Hammer Data	NA
Borehole Backfill	Bentonite Chips	Comments		Coordinates	N 3,599,820.3 E 10,893,587.7

Elevation, feet	Downhole Depth, feet	SAMPLES Type	Number	%Recovery	PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
	0							10YR 7/4, very pale brown, sludge, very soft	Composite sample as part of sample 36SC4 collected from 0-4 ft bgs.
	1								
	2		1	75	ND		SLUDGE		
1700	3								
	4							7.5YR 4/4, brown, SILTY very fine SAND, moist, micaceous	
	5								
	6		2	100	ND		SM		
	7								
1695	8							Borehole terminated at 8 feet below ground surface. Probe refusal not encountered.	
	9								

Report: ENV_12AS_CLEVELAND+/-USCS; File: RFAAP_8&36.GPJ; 7/22/2003 36SB16

URS

Project: RFAAP SWMUs 8 & 36 Project Location: Radford, Virginia Project Number: 09604-323	Key to Geoprobe-Hydraulic Push Log Sheet 1

Elevation feet	Downhole Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: %Recovery	SAMPLES: PID (ppm)	Graphic Log	Lithologic Log (USCS Code)	MATERIAL DESCRIPTION	FIELD NOTES
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.

2 **Downhole Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number.

5 **Recovery:** Length of sample in inches recovered in continuous sampling interval; "NA" indicates data not recorded.

6 **PID (ppm):** Subsurface soil samples were screened for the presence of organic vapors using a photo ionization detector (PID); PID readings are displayed in parts-per-million (ppm)

7 **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.

8 **USCS Code:** Unified Soil Classification System (USCS) group symbol code for associated soil strata.

9 **Material Description:** Description of material encountered; may include color, moisture, grain size, and density/consistency.

10 **Field Notes:** Observations regarding drilling or sampling made by driller or field personnel.

TYPICAL SOIL GRAPHIC SYMBOLS

- SILTY SAND
- SANDY SILT
- Poorly graded SILTY SAND
- Low to medium plastic SANDY or SILTY CLAY
- (ST) SILTSTONE, MUDSTONE
- NOT SURE OF DESCRIPTION, ASK JIM
- SILTY GRAVEL, GRAVEL-SILT-SAND mixtures
- SILTY SAND/SANDY SILT mixtures
- SLUDGE

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Macrocore® geoprobe soil core
- Shelby Tube

OTHER GRAPHIC SYMBOLS

- Water Level

GENERAL NOTES

Report: EN ...AS_CLEVELAND_W/USCS_KEY; File: RFAAP_8&36.GPJ; 7/21/2003 Geoprobe Key

URS

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APPENDIX D
INVESTIGATION-DERIVED MATERIAL DATA

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SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

836IDMSOIL

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: V2946

Matrix (soil/water): SOIL Lab Sample ID: V2946-1

Date Received: 4/28/03 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): pH units

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Corrosivity as pH	7.27				4/29/03
Paint Filter	NO				4/29/03

Comments: Corrosivity is reported in pH units, Paint Filter is reported as YES/NO as to the presence of free liquids.

05/08/03 12:36 FAX 919 379 4070 COMPUCHEM 004

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMSOIL

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: V2946

Matrix: (soil/water) WATER Lab Sample ID: V2946-1

Sample wt/vol: 100.0 (g/mL) ML- Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/30/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/01/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.50	U
72-20-8	Endrin	2.0	U
76-44-8	Heptachlor	0.50	U
1024-57-3	Heptachlor Epoxide	0.50	U
72-43-5	Methoxychlor	5.0	U
8001-35-2	Toxaphene	50	U
12789-03-6	Technical Chlordane	16	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMSOIL

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: V2946

Matrix: (soil/water) WATER Lab Sample ID: V2946-1

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/30/03

Concentrated Extract Volume: 2500(ul) Date Analyzed: 05/01/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	12	U
93-72-1	silvex	2.5	U

FORM I PEST

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

836IDMSOIL

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: V2946

Matrix: (soil/water) WATER Lab Sample ID: V2946-1

Sample wt/vol: 5 (g/ml) ML Lab File ID: V2946-1A62

Level: (low/med) LOW Date Received: 04/28/03

% Moisture: not dec. _____ Date Analyzed: 05/01/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	5	U
75-35-4	1,1-Dichloroethene	5	U
78-93-3	2-butanone	13	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
127-18-4	Tetrachloroethene	5	U
108-90-7	Chlorobenzene	5	U

05/08/03 14:43 FAX 919 379 4070 COMPUCHEM

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMSOIL

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: V2946

Matrix: (soil/water) SOIL Lab Sample ID: V2946-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:05/05/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 05/07/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

05/08/03 12:36 FAX 919 379 4070 COMPUCHEM 002

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMSOIL

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: V2946

Matrix: (soil/water) SOIL Lab Sample ID: V2946-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:05/05/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 05/07/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

0014

05/08/03 12:36 FAX 919 379 4070 COMPUCHEM 003

SW-846 METALS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

836IDMBOIL

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: V2946

Matrix (soil/water): WATER Lab Sample ID: V2946-1

Level (low/med): LOW Date Received: 04/28/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	B		P
7440-39-3	Barium	140	B	E	P
7440-43-9	Cadmium	1.6	B		P
7440-47-3	Chromium	275	B	E	P
7439-92-1	Lead	102	B	E	P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	8.4	B		P
7440-22-4	Silver	0.90	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

05/08/03 12:36 FAX 919 379 4070 COMPUCHEM 007

207

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

836IDMSOIL

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: V2946

Matrix: (soil/water) WATER Lab Sample ID: V2946-1

Sample wt/vol: 100 (g/mL) ML Lab File ID: V2946-1B64

Level: (low/med) LOW Date Received: 04/28/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/30/03

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/01/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	50	U
106-44-5	4-Methylphenol	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

05/08/03 12:36 FAX 919 379 4070 COMPUCHEM 0006

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 5 (g/ml) ML Lab File ID: U2946-1A62

Level: (low/med) LOW Date Received: 04/28/03

% Moisture: not dec. _____ Date Analyzed: 04/30/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	5	U
75-35-4	1,1-Dichloroethene	5	U
78-93-3	2-butanone	13	U
67-66-3	Chloroform	6	
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
127-18-4	Tetrachloroethene	5	U
108-90-7	Chlorobenzene	5	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 100 (g/mL) ML Lab File ID: U2946-1B64

Level: (low/med) LOW Date Received: 04/28/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/30/03

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/01/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	50	U
106-44-5	4-Methylphenol	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/30/03

Concentrated Extract Volume: 20000(ul) Date Analyzed: 04/30/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	8.0	U
99-35-4	1,3,5-Trinitrobenzene	6.0	U
121-82-4	RDX	6.0	U
99-65-0	1,3-Dinitrobenzene	6.0	U
118-96-7	2,4,6-Trinitrotoluene	6.0	U
479-45-8	Tetryl	8.0	U
98-95-3	Nitrobenzene	6.0	U
121-14-2	2,4-Dinitrotoluene	6.0	U
606-20-2	2,6-Dinitrotoluene	8.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	8.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	8.0	U
88-72-2	2-Nitrotoluene	6.0	U
99-99-0	4-Nitrotoluene	6.0	U
99-08-1	3-Nitrotoluene	6.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/30/03

Concentrated Extract Volume: 20000(ul) Date Analyzed: 04/30/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
55-63-0	Nitroglycerin	120	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Contract: 8081A-TCLP

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/30/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/01/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.50	U
72-20-8	Endrin	2.0	U
76-44-8	Heptachlor	0.50	U
1024-57-3	Heptachlor Epoxide	0.50	U
72-43-5	Methoxychlor	5.0	U
8001-35-2	Toxaphene	50	U
12789-03-6	Technical Chlordane	16	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Contract: 8151A-TCLP

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/30/03

Concentrated Extract Volume: 2500(ul) Date Analyzed: 05/01/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	2.6	J
93-72-1	silvex	2.5	U

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

836IDMH20

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: U2946

Matrix (soil/water): WATER Lab Sample ID: U2946-1

Date Received: 4/28/03 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): pH units

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Corrosivity as pH	7.40				4/29/03

Comments:

SW846 METALS

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix (soil/water): WATER Lab Sample ID: U2946-1

Level (low/med): LOW Date Received: 4/28/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.2	U		P
7440-39-3	Barium	59.2	B		P
7440-43-9	Cadmium	0.91	B		P
7440-47-3	Chromium	1.9	B		P
7439-92-1	Lead	9.2	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	0.90	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

836IDMH20

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: U2946

Matrix (soil/water): WATER Lab Sample ID: U2946-1

Date Received: 4/28/03 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): pH units

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Corrosivity as pH	7.40				4/29/03

Comments:

2

COMPUCHEM ENVIRONMENTAL

Client Sample ID: 836IDMH20

General Chemistry

Lot-Sample #...: C3D300132-001 Work Order #...: FMT23 Matrix.....: WATER
Date Sampled...: 04/25/03 Date Received..: 04/30/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chemical Oxygen Demand (COD)	91.5	10.0	mg/L	MCAWW 410.4	05/07/03	3127450

Dilution Factor: 1 Analysis Time..: 15:00 MS Run #..... .: 3127200

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
836IDMB20

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix (soil/water): WATER Lab Sample ID: U2946-1

Level (low/med): LOW Date Received: 4/28/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.2	U		P
7440-39-3	Barium	59.2	B		P
7440-43-9	Cadmium	0.91	B		P
7440-47-3	Chromium	1.9	B		P
7439-92-1	Lead	9.2	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	0.90	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

836IDMH2O

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 5 (g/ml) ML Lab File ID: U2946-1A62

Level: (low/med) LOW Date Received: 04/28/03

% Moisture: not dec. _____ Date Analyzed: 04/30/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	5	U
75-35-4	1,1-Dichloroethene	5	U
78-93-3	2-butanone	13	U
67-66-3	Chloroform	6	
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
127-18-4	Tetrachloroethene	5	U
108-90-7	Chlorobenzene	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.: TRIPBLANK

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-2

Sample wt/vol: 5 (g/ml) ML Lab File ID: U2946-2A62

Level: (low/med) LOW Date Received: 04/28/03

% Moisture: not dec. _____ Date Analyzed: 04/30/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	5	U
75-35-4	1,1-Dichloroethene	5	U
78-93-3	2-butanone	13	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
127-18-4	Tetrachloroethene	5	U
108-90-7	Chlorobenzene	5	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

836IDMH2O

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 100 (g/mL) ML Lab File ID: U2946-1B64

Level: (low/med) LOW Date Received: 04/28/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/30/03

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/01/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	50	U
106-44-5	4-Methylphenol	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

Fax: 919-379-4050

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Contract: 8330

Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/30/03

Concentrated Extract Volume: 20000(ul) Date Analyzed: 04/30/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	8.0	U
99-35-4	1,3,5-Trinitrobenzene	6.0	U
121-82-4	RDX	6.0	U
99-65-0	1,3-Dinitrobenzene	6.0	U
118-96-7	2,4,6-Trinitrotoluene	6.0	U
479-45-8	Tetryl	8.0	U
98-95-3	Nitrobenzene	6.0	U
121-14-2	2,4-Dinitrotoluene	6.0	U
606-20-2	2,6-Dinitrotoluene	8.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	8.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	8.0	U
88-72-2	2-Nitrotoluene	6.0	U
99-99-0	4-Nitrotoluene	6.0	U
99-08-1	3-Nitrotoluene	6.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/30/03

Concentrated Extract Volume: 20000(ul) Date Analyzed: 04/30/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
55-63-0	Nitroglycerin	120	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

836IDMH2O

Lab Name: COMPUCHEM Contract: 8081A-TCLP

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 04/30/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/01/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.50	U
72-20-8	Endrin	2.0	U
76-44-8	Heptachlor	0.50	U
1024-57-3	Heptachlor Epoxide	0.50	U
72-43-5	Methoxychlor	5.0	U
8001-35-2	Toxaphene	50	U
12789-03-6	Technical Chlordane	16	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

836IDMH2O

Lab Name: COMPUCHEM Contract: 8151A-TCLP

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: U2946

Matrix: (soil/water) WATER Lab Sample ID: U2946-1

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/28/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/30/03

Concentrated Extract Volume: 2500(ul) Date Analyzed: 05/01/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	2.6	J
93-72-1	silvex	2.5	U

APPENDIX E

COMPLETE ANALYTICAL DATA TABLE AND LABORATORY ANALYTICAL DATA (FORM I)

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Table E.1
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
ANTIMONY	--	3.1	41	0.48	[redacted]	BN,L,m	0.38	BN,L,m	[redacted]	BN,L,m	[redacted]	N,L,m	<0.5	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	5.4	N,L,m	0.85	BN,L,m	3.1	N,L,m	9		<0.49	U
BARIUM	209	548	7,154	440	79.5		67.8		74.6		109	E,J,s	48.1	E,J,s
BERYLLIUM	1.02	16	204	0.02	[redacted]	B	[redacted]	B	[redacted]	B	[redacted]	E,J,s	[redacted]	BE,J,s
CADMIUM	0.69	7.8	102	2.5	0.06	B,K,w	0.11	B,K,w	0.12	B,K,w	<0.05	UN,UL,m	<0.04	UN,UL,m
CALCIUM	--	--	--	--	1,980	*,J,k	1,370	*,J,k	4,670	*,J,k	1,080	E,J,s	981	E,J,s
CHROMIUM	65.3	23.5	307	0.008	[redacted]		[redacted]		[redacted]		[redacted]	E,J,s	[redacted]	E,J,s
COBALT	72.3	156	2,044	100	14.3		5.1		6.6		30.2	E,J,s	4.5	E,J,s
COPPER	53.5	313	4,088	15.0	11.9		7.4		[redacted]		14.1	NE,K,m	10.2	NE,K,m
IRON	50,962	2,346	30,660	12	[redacted]		[redacted]		[redacted]		[redacted]	E,J,s	[redacted]	E,J,s
LEAD [1]	26.8	400	750	0.01	[redacted]		[redacted]		[redacted]		[redacted]	*E,J,k	[redacted]	*E,J,k
MAGNESIUM	--	--	--	4,400	1,310	*,J,k	2,370	*,J,k	3,160	*,J,k	766	E,J,s	1,400	E,J,s
MANGANESE	2,543	156	2,044	330	[redacted]		291		[redacted]		[redacted]		199	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	[redacted]	N,B,p	0.039	BN,B,p	[redacted]	N,L,m	[redacted]		<0.019	U
NICKEL	62.8	156	2,044	2.0	[redacted]		[redacted]		[redacted]		[redacted]	E,J,s	[redacted]	E,J,s
POTASSIUM	--	--	--	--	673	E,J,s	997	E,J,s	1,240	E,J,s	865	E,J,s	700	E,J,s
SELENIUM	--	39.1	511	1.8	1.1	N,L,m	0.41	BN,K,w	0.73	N,L,m	2.4	N,L,m	<0.29	UN,UL,w
SILVER	--	39.1	511	0.0000098	<0.11	U	<0.11	U	<0.11	U	[redacted]	B,B,p	<0.09	U
SODIUM	--	--	--	--	269		250	B,B,x	277		111	B,B,x	133	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	<0.35	UN*,R,m	<0.37	UN*,R,m	<0.35	UN*,R,m	<0.8	UN,UL,m	<0.77	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	[redacted]	N,L,m	[redacted]	N,L,m	[redacted]	N,L,m	[redacted]		[redacted]	
ZINC	202	2,346	30,660	10.0	[redacted]	N,L,m	[redacted]	N,L,m	[redacted]	N,L,m	[redacted]	*E,J,k	[redacted]	*E,J,k

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Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
ANTIMONY	--	3.1	41	0.48	[redacted]	BN,L,m	[redacted]	BN,L,m	[redacted]	BN,L,m	<0.52	UN,UL,w	<0.59	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	5.9	N,L,m	1.8	N,L,m	0.38	BN,L,m	0.51	B	1.4	
BARIUM	209	548	7,154	440	56.9		116		78.1		123	E,J,s	47.2	E,J,s
BERYLLIUM	1.02	16	204	0.02	[redacted]		[redacted]		[redacted]	B	[redacted]	E,J,s	[redacted]	E,J,s
CADMIUM	0.69	7.8	102	2.5	0.17	B,K,w	0.27	B,K,w	0.03	B,K,w	<0.05	UN,UL,m	<0.05	UN,UL,m
CALCIUM	--	--	--	--	10,700	*,J,k	5,970	*,J,k	8,040	*,J,k	2,200	E,J,s	13,400	E,J,s
CHROMIUM	65.3	23.5	307	0.008	[redacted]		[redacted]		[redacted]		[redacted]	E,J,s	[redacted]	E,J,s
COBALT	72.3	156	2,044	100	22.1		8		2.3		9.7	E,J,s	8.4	E,J,s
COPPER	53.5	313	4,088	15.0	[redacted]		12.4		5.9		[redacted]	NE,K,m	[redacted]	NE,K,m
IRON	50,962	2,346	30,660	12	[redacted]		[redacted]		[redacted]		[redacted]	E,J,s	[redacted]	E,J,s
LEAD [1]	26.8	400	750	0.01	[redacted]		[redacted]		[redacted]		[redacted]	*E,J,k	[redacted]	*E,J,k
MAGNESIUM	--	--	--	4,400	[redacted]	*,J,k	[redacted]	*,J,k	[redacted]	*,J,k	4,150	E,J,s	[redacted]	E,J,s
MANGANESE	2,543	156	2,044	330	[redacted]		[redacted]		194		[redacted]	*E,J,s	[redacted]	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	0.046	BN,B,p	0.046	N,B,p	[redacted]	N,L,m	0.02	B	<0.02	U
NICKEL	62.8	156	2,044	2.0	[redacted]		[redacted]		[redacted]		[redacted]	E,J,s	[redacted]	E,J,s
POTASSIUM	--	--	--	--	2,850	E,J,s	1,440	E,J,s	732	E,J,s	1,530	E,J,s	4,630	E,J,s
SELENIUM	--	39.1	511	1.8	0.43	BN,K,w	0.51	BN,K,w	<0.28	UN,UL,m	0.59	N,L,m	0.57	BN,L,w
SILVER	--	39.1	511	0.0000098	<0.11	U	<0.1	U	<0.11	U	<0.09	U	<0.1	U
SODIUM	--	--	--	--	221	B	243		303		244		121	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	<0.37	UN*,R,m	<0.31	UN*,R,m	<0.36	UN*,R,m	[redacted]	N,L,m	<0.91	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	[redacted]	N,L,m	[redacted]	N,L,m	[redacted]	N,L,m	[redacted]		[redacted]	
ZINC	202	2,346	30,660	10.0	[redacted]	N,L,m	[redacted]	N,L,m	[redacted]	N,L,m	[redacted]	*E,J,k	[redacted]	*E,J,k

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	23,100		17,600		17,600		7,650		9,500	
ANTIMONY	--	3.1	41	0.48	1.2	BN,L,m	0.59	BN,L,m	<0.59	UN,UL,w	<0.6	UN,UL,w	<0.61	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	5.4	N,L,m	5	N,L,m	1.1	B	<0.59	U	0.87	B
BARIUM	209	548	7,154	440	113		111		154	E,J,s	75.1	E,J,s	136	E,J,s
BERYLLIUM	1.02	16	204	0.02	0.89		0.74		0.77	E,J,s	0.57	BE,J,s	0.91	E,J,s
CADMIUM	0.69	7.8	102	2.5	0.2	B,K,w	0.22	B,K,w	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m
CALCIUM	--	--	--	--	6,650	*,J,k	6,780	*,J,k	3,710	E,J,s	1,310	E,J,s	1,890	E,J,s
CHROMIUM	65.3	23.5	307	0.008	35.5		30.3		25.7	E,J,s	13.7	E,J,s	19.6	E,J,s
COBALT	72.3	156	2,044	100	9.9		9.2		10.5	E,J,s	5.5	E,J,s	11.1	E,J,s
COPPER	53.5	313	4,088	15.0	22.4		21.8		17	NE,K,m	7.2	NE,K,m	19.6	NE,K,m
IRON	50,962	2,346	30,660	12	32,200		29,800		28,100	E,J,s	15,600	E,J,s	19,600	E,J,s
LEAD [1]	26.8	400	750	0.01	8.1		7.8		5.8	*E,J,k	1.9	*E,J,k	3.8	*E,J,k
MAGNESIUM	--	--	--	4,400	3,080	*,J,k	3,650	*,J,k	3,210	E,J,s	2,000	E,J,s	3,680	E,J,s
MANGANESE	2,543	156	2,044	330	911		1,010		750	*E,J,s	286	*E,J,s	1,010	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	0.41	N,L,m	0.38	N,L,m	0.031	B	<0.021	U	0.023	B
NICKEL	62.8	156	2,044	2.0	17		16		13	E,J,s	6.8	E,J,s	15	E,J,s
POTASSIUM	--	--	--	--	1,250	E,J,s	1,160	E,J,s	1,520	E,J,s	861	E,J,s	1,560	E,J,s
SELENIUM	--	39.1	511	1.8	1.1	N,L,m	0.83	N,L,m	0.44	BN,L,w	<0.35	UN,UL,w	<0.36	UN,UL,w
SILVER	--	39.1	511	0.0000098	0.36	B	0.32	B	<0.11	U	<0.11	U	<0.11	U
SODIUM	--	--	--	--	241	B	210	B	381		179	B,B,x	240	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	<0.4	UN*,R,m	<0.34	UN*,R,m	0.57	BN,K,w	<0.94	UN,UL,m	<0.96	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	54.3	N,L,m	45	N,L,m	39.2		19.1		38	
ZINC	202	2,346	30,660	10.0	124	N,L,m	114	N,L,m	94.6	*E,J,k	41.1	*E,J,k	61.6	*E,J,k

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Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
ANTIMONY	--	3.1	41	0.48	<0.58	UN,UL,w	[redacted]	BN,L,m	0.4	BN,L,m	<0.51	UN,UL,w	<0.51	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	<0.56	U	1.7	N,L,m	4.7	N,L,m	3		0.6	B
BARIUM	209	548	7,154	440	82.2	E,J,s	161		63.2		51.2	E,J,s	76.8	E,J,s
BERYLLIUM	1.02	16	204	0.02	[redacted]	BE,J,s	[redacted]		[redacted]	B	[redacted]	BE,J,s	[redacted]	E,J,s
CADMIUM	0.69	7.8	102	2.5	<0.05	UN,UL,m	0.24	B,K,w	0.17	B,K,w	<0.05	UN,UL,m	<0.04	UN,UL,m
CALCIUM	--	--	--	--	1,700	E,J,s	2,070	*,J,k	4,780	*,J,k	454	E,J,s	1,170	E,J,s
CHROMIUM	65.3	23.5	307	0.008	[redacted]	E,J,s	[redacted]		[redacted]		[redacted]	E,J,s	[redacted]	E,J,s
COBALT	72.3	156	2,044	100	6	E,J,s	8.6		5.6		12.7	E,J,s	9.6	E,J,s
COPPER	53.5	313	4,088	15.0	13.8	NE,K,m	14.3		16.2		12.4	NE,K,m	23.4	NE,K,m
IRON	50,962	2,346	30,660	12	[redacted]	E,J,s	[redacted]		[redacted]		[redacted]	E,J,s	[redacted]	E,J,s
LEAD [1]	26.8	400	750	0.01	[redacted]	*E,J,k	[redacted]		[redacted]		[redacted]	*E,J,k	[redacted]	*E,J,k
MAGNESIUM	--	--	--	4,400	2,130	E,J,s	[redacted]	*,J,k	[redacted]	*,J,k	876	E,J,s	2,710	E,J,s
MANGANESE	2,543	156	2,044	330	322	*E,J,s	[redacted]		[redacted]		[redacted]	*E,J,s	[redacted]	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	<0.02	U	[redacted]	N,B,p	0.046	N,B,p	[redacted]		<0.02	U
NICKEL	62.8	156	2,044	2.0	[redacted]	E,J,s	[redacted]		[redacted]		[redacted]	E,J,s	[redacted]	E,J,s
POTASSIUM	--	--	--	--	924	E,J,s	1,530	E,J,s	1,040	E,J,s	1,040	E,J,s	1,620	E,J,s
SELENIUM	--	39.1	511	1.8	<0.33	UN,UL,w	0.58	BN,K,w	0.68	N,L,m	<0.3	UN,UL,w	<0.29	UN,UL,w
SILVER	--	39.1	511	0.0000098	<0.1	U	<0.11	U	<0.11	U	<0.09	U	<0.09	U
SODIUM	--	--	--	--	206	B,B,x	257		111	B,B,x	109	B,B,x	212	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	<0.9	UN,UL,m	<0.34	UN*,R,m	<0.34	UN*,R,m	<0.8	UN,UL,m	<0.79	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	[redacted]		[redacted]	N,L,m	[redacted]	N,L,m	[redacted]		[redacted]	
ZINC	202	2,346	30,660	10.0	[redacted]	*E,J,k	[redacted]	N,L,m	[redacted]	N,L,m	[redacted]	*E,J,k	[redacted]	*E,J,k

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	16,200		15,800		14,900		17,200		12,400	
ANTIMONY	--	3.1	41	0.48	<0.5	UN,UL,w	<0.57	UN,UL,w	<0.6	UN,UL,w	0.5	BN,L,m	0.55	BN
ARSENIC	15.8	0.43	1.9	328	1	B	1.7		2.1		1.9	N,L,m	2.1	N,L,m
BARIUM	209	548	7,154	440	97	E,J,s	92.5	E,J,s	91.7	E,J,s	118		82.5	
BERYLLIUM	1.02	16	204	0.02	0.75	E,J,s	0.61	E,J,s	0.6	E,J,s	0.78		0.66	
CADMIUM	0.69	7.8	102	2.5	<0.04	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	0.16	B,K,w	0.17	B,K,w
CALCIUM	--	--	--	--	1,490	E,J,s	971	E,J,s	921	E,J,s	1,960	*,J,k	1,610	*,J,k
CHROMIUM	65.3	23.5	307	0.008	29	E,J,s	31	E,J,s	30.5	E,J,s	28.7		24.9	
COBALT	72.3	156	2,044	100	10.3	E,J,s	11.6	E,J,s	11.7	E,J,s	10.5		9	
COPPER	53.5	313	4,088	15.0	20	NE,K,m	19	NE,K,m	18	NE,K,m	19		16	
IRON	50,962	2,346	30,660	12	25,300	E,J,s	24,700	E,J,s	23,500	E,J,s	27,000		22,900	
LEAD [1]	26.8	400	750	0.01	58	*E,J,k	60	*E,J,k	57	*E,J,k	43		39.0	
MAGNESIUM	--	--	--	4,400	3,330	E,J,s	3,720	E,J,s	3,600	E,J,s	4,140	*,J,k	2,970	*,J,k
MANGANESE	2,543	156	2,044	330	240	*E,J,s	240	*E,J,s	230	*E,J,s	220		169	
MERCURY [2]	0.13	2.35	30.7	0.058	0.035	B	<0.021	U	<0.021	U	0.047	N,B,p	0.038	BN,B,p
NICKEL	62.8	156	2,044	2.0	31	E,J,s	33	E,J,s	31	E,J,s	31		25	
POTASSIUM	--	--	--	--	1,660	E,J,s	1,940	E,J,s	1,990	E,J,s	2,170	E,J,s	1,490	E,J,s
SELENIUM	--	39.1	511	1.8	<0.29	UN,UL,w	<0.33	UN,UL,w	<0.34	UN,UL,w	0.5	BN,K,w	0.53	BN,K,w
SILVER	--	39.1	511	0.0000098	<0.09	U	<0.1	U	<0.11	U	<0.11	U	<0.11	U
SODIUM	--	--	--	--	228		208	B,B,x	217	B,B,x	235	B,B,x	229	B,B,x
THALLIUM	2.11	0.55	7.2	0.001	0.5	BN,K,w	<0.89	UN,UL,m	<0.93	UN,UL,m	<0.36	UN*,R,m	<0.35	UN*,R,m
VANADIUM	108	2.35	30.7	0.50	42		41		39		43	N,L,m	33	N,L,m
ZINC	202	2,346	30,660	10.0	60	*E,J,k	60	*E,J,k	57	*E,J,k	65	N,L,m	51	N,L,m

Appendix X (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
ANTIMONY	--	3.1	41	0.48	<0.57	UN,UL,w	<0.58	UN,UL,w	<0.54	UN,UL,w	<0.54	UN,UL,w	<0.58	UN,UL,w
ARSENIC	15.8	0.43	1.9	328	3.1		0.97	B	2		1.3		2	
BARIUM	209	548	7,154	440	51.6	E,J,s	144	E,J,s	152	E,J,s	129	E,J,s	117	E,J,s
BERYLLIUM	1.02	16	204	0.02	[redacted]	BE,J,s	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	BE,J,s
CADMIUM	0.69	7.8	102	2.5	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m
CALCIUM	--	--	--	--	419	E,J,s	1,250	E,J,s	1,720	E,J,s	1,550	E,J,s	17,800	E,J,s
CHROMIUM	65.3	23.5	307	0.008	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E,J,s
COBALT	72.3	156	2,044	100	4.6	E,J,s	10.9	E,J,s	9.9	E,J,s	8	E,J,s	8.5	E,J,s
COPPER	53.5	313	4,088	15.0	8	NE,K,m	[redacted]	NE,K,m	[redacted]	NE,K,m	[redacted]	NE,K,m	13	NE,K,m
IRON	50,962	2,346	30,660	12	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E
LEAD [1]	26.8	400	750	0.01	[redacted]	*E,J,k	[redacted]	*E,J,k	[redacted]	*E,J,k	[redacted]	*E,J,k	[redacted]	*E,J,k
MAGNESIUM	--	--	--	4,400	864	E,J,s	3,710	E,J,s	3,010	E,J,s	2,550	E,J,s	[redacted]	E,J,s
MANGANESE	2,543	156	2,044	330	280	*E,J,s	[redacted]	*E,J,s	[redacted]	*E,J,s	[redacted]	*E,J,s	[redacted]	*E,J,s
MERCURY [2]	0.13	2.35	30.7	0.058	[redacted]		0.022	B	[redacted]		0.023	B	0.021	B
NICKEL	62.8	156	2,044	2.0	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E,J,s	[redacted]	E,J,s
POTASSIUM	--	--	--	--	801	E,J,s	1,130	E,J,s	2,060	E,J,s	1,300	E,J,s	1,330	E,J,s
SELENIUM	--	39.1	511	1.8	0.65	N,L,m	0.59	BN,L,w	0.49	BN,L,w	0.67	N,L,m	0.4	BN,L,w
SILVER	--	39.1	511	0.0000098	[redacted]	B,B,p	<0.1	U	<0.1	U	<0.1	U	<0.1	U
SODIUM	--	--	--	--	109	B,B,x	226	B,B,x	262		484		369	
THALLIUM	2.11	0.55	7.2	0.001	<0.89	UN,UL,m	<0.9	UN,UL,m	<0.84	UN,UL,m	[redacted]	BN,K,w	<0.91	UN,UL,m
VANADIUM	108	2.35	30.7	0.50	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
ZINC	202	2,346	30,660	10.0	[redacted]	*E,J,k	[redacted]	*E,J,k	[redacted]	*E,J,k	[redacted]	*E,J,k	[redacted]	*E,J,k

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	7,821	102,200	1	16,200		14,000		20,500		18,600		16,400	
ANTIMONY	--	3.1	41	0.48	<0.58	UN,UL,w	<0.52	UN,UL,w	0.82	BN,L,m	0.63	BN,L,m	0.66	BN,L,m
ARSENIC	15.8	0.43	1.9	328	1.3	B	1.6		1.9	N,L,m	3.8	N,L,m	2.6	N,L,m
BARIUM	209	548	7,154	440	98.5	E,J,s	80.8	E,J,s	202		120		133	
BERYLLIUM	1.02	16	204	0.02	0.89	E,J,s	0.66	E,J,s	0.9		0.61		0.74	
CADMIUM	0.69	7.8	102	2.5	<0.05	UN,UL,m	<0.05	UN,UL,m	0.25	B,K,w	0.3	B,K,w	0.29	B,K,w
CALCIUM	--	--	--	--	883	E,J,s	835	E,J,s	2,060	*,J,k	2,670	*,J,k	2,330	*,J,k
CHROMIUM	65.3	23.5	307	0.008	24.6	E,J,s	22	E,J,s	30		31		26	
COBALT	72.3	156	2,044	100	8.8	E,J,s	8.8	E,J,s	11.3		8		9.8	
COPPER	53.5	313	4,088	15.0	29	NE,K,m	23	NE,K,m	21		21		17	
IRON	50,962	2,346	30,660	12	29,200	E	27,100	E,J,s	30,300		27,800		25,900	
LEAD [1]	26.8	400	750	0.01	9.3	*E,J,k	8	*E,J,k	9.2		8.6		8.1	
MAGNESIUM	--	--	--	4,400	7,500	E,J,s	7,020	E,J,s	7,170	*,J,k	7,210	*,J,k	6,770	*,J,k
MANGANESE	2,543	156	2,044	330	187	*E,J,s	308	*E,J,s	316		291		460	
MERCURY [2]	0.13	2.35	30.7	0.058	<0.022	U	<0.02	U	0.072	N,B,p	0.052	N,B,p	0.047	N,B,p
NICKEL	62.8	156	2,044	2.0	16.8	E,J,s	14	E,J,s	19.6		16.1		15.8	
POTASSIUM	--	--	--	--	2,350	E,J,s	1,480	E,J,s	1,480	E,J,s	1,430	E,J,s	1,570	E,J,s
SELENIUM	--	39.1	511	1.8	<0.34	UN,UL,w	<0.3	UN,UL,w	0.71	N,L,m	0.63	BN,K,w	0.57	BN,K,w
SILVER	--	39.1	511	0.0000098	<0.1	U	<0.09	U	<0.1	U	<0.12	U	<0.12	U
SODIUM	--	--	--	--	246	B,B,x	202	B,B,x	209	B,B,x	294		271	
THALLIUM	2.11	0.55	7.2	0.001	<0.91	UN,UL,m	<0.81	UN,UL,m	<0.34	UN*,R,m	<0.39	UN*,R,m	<0.38	UN*,R,m
VANADIUM	108	2.35	30.7	0.50	39.3		37.5		50.1	N,L,m	47.7	N,L,m	42.1	N,L,m
ZINC	202	2,346	30,660	10.0	45	*E,J,k	40	*E,J,k	52	N,L,m	49	N,L,m	50	N,L,m

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	--		--		<4.8	U	<0.32	U	--	
4,4'-DDE	--	1,879	8,416	100	--		--		<6.1	U	<0.4	U	--	
4,4'-DDT	--	1,879	8,416	100	--		--		17	JP,J,g	<0.39	U	--	
ALDRIN	--	38	168	100	--		--		<2.5	U	<0.17	U	--	
ALPHA-BHC	--	101	454	--	--		--		<3.9	U	<0.26	U	--	
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	--		--		<3.3	U	<0.22	U	--	
BETA-BHC	--	355	1,590	--	--		--		53	P,J,g	<0.28	U	--	
DELTA-BHC	--	101	454	--	--		--		<2.3	U	<0.15	U	--	
DIELDRIN	--	40	179	100	--		--		<6.4	U	<0.43	U	--	
ENDOSULFAN I [4]	--	46,929	613,200	--	--		--		<6.5	U	<0.43	U	--	
ENDOSULFAN II [4]	--	46,929	613,200	--	--		--		<8.7	U	<0.58	U	--	
ENDOSULFAN SULFATE	--	--	--	--	--		--		<6.1	U	<0.4	U	--	
ENDRIN	--	2,346	30,660	100	--		--		<5.3	U	<0.35	U	--	
ENDRIN ALDEHYDE	--	2,346	30,660	--	--		--		<5.3	U	<0.35	U	--	
ENDRIN KETONE	--	2,346	30,660	--	--		--		<5.8	U	<0.39	U	--	
GAMMA-BHC (LINDANE)	--	491	2,201	100	--		--		<3.2	U	<0.22	U	--	
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	--		--		<5.2	U	<0.35	U	--	
HEPTACHLOR	--	142	636	--	--		--		<5.1	U	<0.34	U	--	
HEPTACHLOR EPOXIDE	--	70	314	100	--		--		<3.9	U	<0.26	U	--	
METHOXYCHLOR	--	39,107	511,000	100	--		--		<21	U	<1.4	U	--	
TOXAPHENE	--	581	2,601	--	--		--		<380	U	<18	U	--	
AROCLOR-1016	--	548	7,200	100	--		--		<270	U	<15	U	--	
AROCLOR-1221	--	319	1,431	100	--		--		<190	U	<14	U	--	
AROCLOR-1232	--	319	1,431	100	--		--		<190	U	<5.4	U	--	
AROCLOR-1242	--	319	1,431	100	--		--		<90	U	<10	U	--	
AROCLOR-1248	--	319	1,431	100	--		--		<130	U	<9	U	--	
AROCLOR-1254	--	156	1,431	100	--		--		<130	U	<9	U	--	
AROCLOR-1260	--	319	1,431	100	--		--		<150	U	<9.2	U	--	

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	--		--		--		<0.32	U	--	
4,4'-DDE	--	1,879	8,416	100	--		--		--		<0.4	U	--	
4,4'-DDT	--	1,879	8,416	100	--		--		--		<0.39	U	--	
ALDRIN	--	38	168	100	--		--		--		<0.17	U	--	
ALPHA-BHC	--	101	454	--	--		--		--		<0.26	U	--	
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	--		--		--		<0.22	U	--	
BETA-BHC	--	355	1,590	--	--		--		--		<0.28	U	--	
DELTA-BHC	--	101	454	--	--		--		--		<0.15	U	--	
DIELDRIN	--	40	179	100	--		--		--		<0.43	U	--	
ENDOSULFAN I [4]	--	46,929	613,200	--	--		--		--		<0.43	U	--	
ENDOSULFAN II [4]	--	46,929	613,200	--	--		--		--		<0.58	U	--	
ENDOSULFAN SULFATE	--	--	--	--	--		--		--		<0.4	U	--	
ENDRIN	--	2,346	30,660	100	--		--		--		<0.35	U	--	
ENDRIN ALDEHYDE	--	2,346	30,660	--	--		--		--		<0.35	U	--	
ENDRIN KETONE	--	2,346	30,660	--	--		--		--		<0.39	U	--	
GAMMA-BHC (LINDANE)	--	491	2,201	100	--		--		--		<0.22	U	--	
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	--		--		--		<0.35	U	--	
HEPTACHLOR	--	142	636	--	--		--		--		<0.34	U	--	
HEPTACHLOR EPOXIDE	--	70	314	100	--		--		--		<0.26	U	--	
METHOXYCHLOR	--	39,107	511,000	100	--		--		--		<1.4	U	--	
TOXAPHENE	--	581	2,601	--	--		--		--		<18	U	--	
AROCLOR-1016	--	548	7,200	100	--		--		--		<15	U	--	
AROCLOR-1221	--	319	1,431	100	--		--		--		<14	U	--	
AROCLOR-1232	--	319	1,431	100	--		--		--		<5.4	U	--	
AROCLOR-1242	--	319	1,431	100	--		--		--		<10	U	--	
AROCLOR-1248	--	319	1,431	100	--		--		--		<9	U	--	
AROCLOR-1254	--	156	1,431	100	--		--		--		<9	U	--	
AROCLOR-1260	--	319	1,431	100	--		--		--		<9.2	U	--	

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Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	<4.8	U	9.1	J	<0.32	U	--		--	
4,4'-DDE	--	1,879	8,416	100	<6.1	U	8.5	J	<0.4	U	--		--	
4,4'-DDT	--	1,879	8,416	100	<5.8	U	120		<0.39	U	--		--	
ALDRIN	--	38	168	100	<2.5	U	<2.5	U	<0.17	U	--		--	
ALPHA-BHC	--	101	454	--	<3.9	U	<3.9	U	<0.26	U	--		--	
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	94	,J,m	31	J	<0.22	U	--		--	
BETA-BHC	--	355	1,590	--	<4.2	U	8.9	J,J,g	<0.28	U	--		--	
DELTA-BHC	--	101	454	--	<2.3	U	<2.3	U	<0.15	U	--		--	
DIELDRIN	--	40	179	100	<6.4	U	<6.4	U	<0.43	U	--		--	
ENDOSULFAN I [4]	--	46,929	613,200	--	<6.5	U,UJ,m	<6.5	U	<0.43	U	--		--	
ENDOSULFAN II [4]	--	46,929	613,200	--	<8.7	U	<8.7	U	<0.58	U	--		--	
ENDOSULFAN SULFATE	--	--	--	--	<6.1	U	<6.1	U	<0.4	U	--		--	
ENDRIN	--	2,346	30,660	100	<5.3	U	<5.3	U	<0.35	U	--		--	
ENDRIN ALDEHYDE	--	2,346	30,660	--	<5.3	U	<5.3	U	<0.35	U	--		--	
ENDRIN KETONE	--	2,346	30,660	--	<5.8	U	<5.8	U	<0.39	U	--		--	
GAMMA-BHC (LINDANE)	--	491	2,201	100	<3.2	U	<3.2	U	<0.22	U	--		--	
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	74	,J,m	20		<0.35	U	--		--	
HEPTACHLOR	--	142	636	--	<5.1	U	<5.1	U	<0.34	U	--		--	
HEPTACHLOR EPOXIDE	--	70	314	100	<3.9	U	<3.9	U	<0.26	U	--		--	
METHOXYCHLOR	--	39,107	511,000	100	<21	U	32	J	<1.4	U	--		--	
TOXAPHENE	--	581	2,601	--	<380	U	<270	U	<18	U	--		--	
AROCLOR-1016	--	548	7,200	100	<230	U	<270	U	<15	U	--		--	
AROCLOR-1221	--	319	1,431	100	<210	U	<190	U	<14	U	--		--	
AROCLOR-1232	--	319	1,431	100	<81	U	<190	U	<5.4	U	--		--	
AROCLOR-1242	--	319	1,431	100	<150	U	<90	U	<10	U	--		--	
AROCLOR-1248	--	319	1,431	100	<140	U	<130	U	<9	U	--		--	
AROCLOR-1254	--	156	1,431	100	<140	U	<130	U	<9	U	--		--	
AROCLOR-1260	--	319	1,431	100	<140	U	<150	U	<9.2	U	--		--	

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	--		<0.32	U	--		--		--	
4,4'-DDE	--	1,879	8,416	100	--		<0.4	U	--		--		--	
4,4'-DDT	--	1,879	8,416	100	--		<0.39	U	--		--		--	
ALDRIN	--	38	168	100	--		<0.17	U	--		--		--	
ALPHA-BHC	--	101	454	--	--		<0.26	U	--		--		--	
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	--		<0.22	U	--		--		--	
BETA-BHC	--	355	1,590	--	--		<0.28	U	--		--		--	
DELTA-BHC	--	101	454	--	--		<0.15	U	--		--		--	
DIELDRIN	--	40	179	100	--		<0.43	U	--		--		--	
ENDOSULFAN I [4]	--	46,929	613,200	--	--		<0.43	U	--		--		--	
ENDOSULFAN II [4]	--	46,929	613,200	--	--		<0.58	U	--		--		--	
ENDOSULFAN SULFATE	--	--	--	--	--		<0.4	U	--		--		--	
ENDRIN	--	2,346	30,660	100	--		<0.35	U	--		--		--	
ENDRIN ALDEHYDE	--	2,346	30,660	--	--		<0.35	U	--		--		--	
ENDRIN KETONE	--	2,346	30,660	--	--		<0.39	U	--		--		--	
GAMMA-BHC (LINDANE)	--	491	2,201	100	--		<0.22	U	--		--		--	
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	--		<0.35	U	--		--		--	
HEPTACHLOR	--	142	636	--	--		<0.34	U	--		--		--	
HEPTACHLOR EPOXIDE	--	70	314	100	--		<0.26	U	--		--		--	
METHOXYCHLOR	--	39,107	511,000	100	--		<1.4	U	--		--		--	
TOXAPHENE	--	581	2,601	--	--		<25	U	--		--		--	
AROCLOR-1016	--	548	7,200	100	--		<18	U	--		--		--	
AROCLOR-1221	--	319	1,431	100	--		<13	U	--		--		--	
AROCLOR-1232	--	319	1,431	100	--		<12	U	--		--		--	
AROCLOR-1242	--	319	1,431	100	--		<6	U	--		--		--	
AROCLOR-1248	--	319	1,431	100	--		<8.5	U	--		--		--	
AROCLOR-1254	--	156	1,431	100	--		<8.4	U	--		--		--	
AROCLOR-1260	--	319	1,431	100	--		<10	U	--		--		--	

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	--		--		--		<0.32	U	--	
4,4'-DDE	--	1,879	8,416	100	--		--		--		<0.4	U	--	
4,4'-DDT	--	1,879	8,416	100	--		--		--		<0.39	U	--	
ALDRIN	--	38	168	100	--		--		--		<0.17	U	--	
ALPHA-BHC	--	101	454	--	--		--		--		<0.26	U	--	
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	--		--		--		<0.22	U	--	
BETA-BHC	--	355	1,590	--	--		--		--		0.57	JP,J,g	--	
DELTA-BHC	--	101	454	--	--		--		--		<0.15	U	--	
DIELDRIN	--	40	179	100	--		--		--		<0.43	U	--	
ENDOSULFAN I [4]	--	46,929	613,200	--	--		--		--		<0.43	U	--	
ENDOSULFAN II [4]	--	46,929	613,200	--	--		--		--		<0.58	U	--	
ENDOSULFAN SULFATE	--	--	--	--	--		--		--		<0.4	U	--	
ENDRIN	--	2,346	30,660	100	--		--		--		<0.35	U	--	
ENDRIN ALDEHYDE	--	2,346	30,660	--	--		--		--		<0.35	U	--	
ENDRIN KETONE	--	2,346	30,660	--	--		--		--		<0.39	U	--	
GAMMA-BHC (LINDANE)	--	491	2,201	100	--		--		--		<0.22	U	--	
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	--		--		--		<0.35	U	--	
HEPTACHLOR	--	142	636	--	--		--		--		<0.34	U	--	
HEPTACHLOR EPOXIDE	--	70	314	100	--		--		--		<0.26	U	--	
METHOXYCHLOR	--	39,107	511,000	100	--		--		--		<1.4	U	--	
TOXAPHENE	--	581	2,601	--	--		--		--		<25	U	--	
AROCLOR-1016	--	548	7,200	100	--		--		--		<18	U	--	
AROCLOR-1221	--	319	1,431	100	--		--		--		<13	U	--	
AROCLOR-1232	--	319	1,431	100	--		--		--		<12	U	--	
AROCLOR-1242	--	319	1,431	100	--		--		--		<6	U	--	
AROCLOR-1248	--	319	1,431	100	--		--		--		<8.5	U	--	
AROCLOR-1254	--	156	1,431	100	--		--		--		<8.4	U	--	
AROCLOR-1260	--	319	1,431	100	--		--		--		<10	U	--	

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	<0.32	U	--		--		--		<0.32	U
4,4'-DDE	--	1,879	8,416	100	<0.4	U	--		--		--		<0.4	U
4,4'-DDT	--	1,879	8,416	100	<0.39	U	--		--		--		<0.39	U
ALDRIN	--	38	168	100	<0.17	U	--		--		--		<0.17	U
ALPHA-BHC	--	101	454	--	<0.26	U	--		--		--		<0.26	U
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	<0.22	U	--		--		--		<0.22	U
BETA-BHC	--	355	1,590	--	0.9	JP,J,g	--		--		--		1.8	JP,J,g
DELTA-BHC	--	101	454	--	<0.15	U	--		--		--		<0.15	U
DIELDRIN	--	40	179	100	<0.43	U	--		--		--		<0.43	U
ENDOSULFAN I [4]	--	46,929	613,200	--	<0.43	U	--		--		--		<0.43	U
ENDOSULFAN II [4]	--	46,929	613,200	--	<0.58	U	--		--		--		<0.58	U
ENDOSULFAN SULFATE	--	--	--	--	<0.4	U	--		--		--		<0.4	U
ENDRIN	--	2,346	30,660	100	<0.35	U	--		--		--		<0.35	U
ENDRIN ALDEHYDE	--	2,346	30,660	--	<0.35	U	--		--		--		<0.35	U
ENDRIN KETONE	--	2,346	30,660	--	<0.39	U	--		--		--		<0.39	U
GAMMA-BHC (LINDANE)	--	491	2,201	100	<0.22	U	--		--		--		<0.22	U
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	<0.35	U	--		--		--		<0.35	U
HEPTACHLOR	--	142	636	--	<0.34	U	--		--		--		<0.34	U
HEPTACHLOR EPOXIDE	--	70	314	100	<0.26	U	--		--		--		<0.26	U
METHOXYCHLOR	--	39,107	511,000	100	<1.4	U	--		--		--		<1.4	U
TOXAPHENE	--	581	2,601	--	<18	U	--		--		--		<18	U
AROCLOR-1016	--	548	7,200	100	<15	U	--		--		--		<15	U
AROCLOR-1221	--	319	1,431	100	<14	U	--		--		--		<14	U
AROCLOR-1232	--	319	1,431	100	<5.4	U	--		--		--		<5.4	U
AROCLOR-1242	--	319	1,431	100	<10	U	--		--		--		<10	U
AROCLOR-1248	--	319	1,431	100	<9	U	--		--		--		<9	U
AROCLOR-1254	--	156	1,431	100	<9	U	--		--		--		<9	U
AROCLOR-1260	--	319	1,431	100	<9.2	U	--		--		--		<9.2	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	2,661	11,923	100	--		--		<0.32	U	--		--	
4,4'-DDE	--	1,879	8,416	100	--		--		<0.4	U	--		--	
4,4'-DDT	--	1,879	8,416	100	--		--		<0.39	U	--		--	
ALDRIN	--	38	168	100	--		--		<0.17	U	--		--	
ALPHA-BHC	--	101	454	--	--		--		<0.26	U	--		--	
ALPHA-CHLORDANE [3]	--	1,825	8,176	100	--		--		<0.22	U	--		--	
BETA-BHC	--	355	1,590	--	--		--		<0.28	U	--		--	
DELTA-BHC	--	101	454	--	--		--		<0.15	U	--		--	
DIELDRIN	--	40	179	100	--		--		<0.43	U	--		--	
ENDOSULFAN I [4]	--	46,929	613,200	--	--		--		<0.43	U	--		--	
ENDOSULFAN II [4]	--	46,929	613,200	--	--		--		<0.58	U	--		--	
ENDOSULFAN SULFATE	--	--	--	--	--		--		<0.4	U	--		--	
ENDRIN	--	2,346	30,660	100	--		--		<0.35	U	--		--	
ENDRIN ALDEHYDE	--	2,346	30,660	--	--		--		<0.35	U	--		--	
ENDRIN KETONE	--	2,346	30,660	--	--		--		<0.39	U	--		--	
GAMMA-BHC (LINDANE)	--	491	2,201	100	--		--		<0.22	U	--		--	
GAMMA-CHLORDANE [3]	--	1,825	8,176	100	--		--		<0.35	U	--		--	
HEPTACHLOR	--	142	636	--	--		--		<0.34	U	--		--	
HEPTACHLOR EPOXIDE	--	70	314	100	--		--		<0.26	U	--		--	
METHOXYCHLOR	--	39,107	511,000	100	--		--		<1.4	U	--		--	
TOXAPHENE	--	581	2,601	--	--		--		<25	U	--		--	
AROCLOR-1016	--	548	7,200	100	--		--		<18	U	--		--	
AROCLOR-1221	--	319	1,431	100	--		--		<13	U	--		--	
AROCLOR-1232	--	319	1,431	100	--		--		<12	U	--		--	
AROCLOR-1242	--	319	1,431	100	--		--		<6	U	--		--	
AROCLOR-1248	--	319	1,431	100	--		--		<8.5	U	--		--	
AROCLOR-1254	--	156	1,431	100	--		--		<8.4	U	--		--	
AROCLOR-1260	--	319	1,431	100	--		--		<10	U	--		--	

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,1-TRICHLOROETHANE	--	2,190,000	28,616,000	300	<0.5	U	<0.4	U	<0.6	U	<0.47	U	<0.54	U
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.2	U	<0.1	U	<0.2	U,UJ,i	<0.16	U	<0.19	U
1,1,2-TRICHLORO-1,2,2-TRIFLUO	--	234,642,857	3,066,000,000	--	<0.6	U	<0.5	U	<0.8	U	<0.57	U	<0.67	U
1,1,2-TRICHLOROETHANE	--	11,206	50,204	300	<0.1	U	<0.1	U	<0.2	U	<0.14	U	<0.17	U
1,1-DICHLOROETHANE	--	782,143	10,220,000	300	<0.3	U	<0.3	U	<0.4	U	<0.3	U	<0.34	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.6	U	<0.5	U	1	J	<0.61	U	<0.71	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.4	U	<0.3	U	<0.5	U,UJ,i	<0.37	U	<0.43	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.3	U	<0.2	U	<0.3	U,UJ,i	<0.25	U	<0.29	U
1,2-DIBROMOETHANE	--	8	34	5,000	<0.2	U	<0.2	U	<0.2	U	<0.18	U	<0.21	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.2	U	<0.1	U	<0.2	U,UJ,i	<0.16	U	<0.19	U
1,2-DICHLOROETHANE	--	7,019	31,446	870,000	<0.3	U	<0.3	U	<0.4	U	<0.31	U	<0.36	U
1,2-DICHLOROPROPANE	--	9,393	42,082	300	<0.2	U	<0.2	U	<0.2	U	<0.17	U	<0.2	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.2	U	<0.2	U	<0.3	U,UJ,i	<0.24	U	<0.28	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.2	U	<0.2	U	<0.3	U,UJ,i	<0.22	U	<0.26	U
2-BUTANONE	--	4,692,857	61,320,000	--	11	J	<1	U	<2	U	4	J	<1.3	U
2-HEXANONE	--	--	--	--	5	J	<0.5	U	<0.7	U	<0.54	U	<0.62	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.5	U	0.6	J	0.9	J	<0.52	U	0.7	J
ACETONE	--	7,039,286	91,980,000	--	89		22		52	B	43		30	
BENZENE	--	11,613	52,029	100	<0.4	U	<0.3	U	<0.5	U	<0.36	U	<0.42	U
BROMODICHLOROMETHANE	--	10,302	46,155	450,000	<0.2	U	<0.2	U	<0.2	U	<0.18	U	<0.21	U
BROMOFORM	--	80,851	362,228	--	<0.2	U	<0.2	U	0.5	J	<0.24	U	<0.28	U
BROMOMETHANE	--	10,950	143,080	--	8		6		<1	U	<0.9	U	2	J,J,c
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.5	U	<0.4	U	1	J	<0.47	U	<0.54	U
CARBON TETRACHLORIDE	--	4,913	22,012	300	<0.5	U	<0.4	U	<0.6	U	<0.47	U	<0.54	U
CHLOROBENZENE	--	156,429	2,044,000	100	<0.2	U	<0.2	U	<0.3	U	<0.22	U	<0.26	U
CHLOROETHANE	--	220,250	986,759	--	<0.5	U	<0.4	U	<0.6	U	<0.44	U	<0.51	U
CHLOROFORM	--	78,214	1,022,000	300	<0.4	U	<0.3	U	<0.5	U	<0.35	U	<0.41	U
CHLOROMETHANE	--	--	--	--	<0.9	U	<0.8	U	<1	U	<0.87	U	<1	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.3	U	<0.3	U	<0.4	U	<0.33	U	<0.38	U
CIS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.3	U	<0.3	U	<0.4	U	<0.29	U	<0.33	U
CYCLOHEXANE	--	--	--	--	<0.4	U	<0.4	U	<0.6	U	<0.42	U	<0.49	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.2	U	<0.1	U	<0.2	U	<0.16	U	<0.19	U
DICHLORODIFLUOROMETHANE	--	1,564,286	20,440,000	--	<0.4	U	<0.4	U	<0.6	U	<0.42	U	<0.49	U
ETHYLBENZENE	--	782,143	10,220,000	100	<0.4	U	<0.3	U	<0.5	U	<0.35	U	<0.41	U
ISOPROPYLBENZENE	--	782,143	10,220,000	--	<0.3	U	<0.3	U	<0.4	U	<0.29	U	<0.33	U
METHYL ACETATE	--	7,821,429	102,200,000	--	15	,B,x	2	J,B,x	8	J,B,x	<0.5	U	2	J
METHYL-TERT-BUTYL ETHER	--	159,682	715,400	--	<0.4	U	<0.3	U	<0.5	U	<0.34	U	<0.4	U
METHYLCYCLOHEXANE	--	--	--	--	<0.4	U	<0.4	U	<0.5	U	<0.4	U	<0.47	U
METHYLENE CHLORIDE	--	85,163	381,547	300	0.8	JB,B,z	0.6	JB,B,z	1	J	<0.48	U	0.8	J
STYRENE	--	1,564,286	20,440,000	100	<0.2	U	<0.2	U	<0.3	U	<0.23	U	<0.27	U
TETRACHLOROETHENE	--	1,183	5,299	300	<0.3	U	<0.3	U	<0.4	U	<0.33	U	<0.39	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg) - Continued														
TOLUENE	--	1,564,286	20,440,000	100	<0.4	U	0.4	JB,B,z	1	JB,B,z	<0.37	U	0.6	J
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.4	U	0.4	J	<0.5	U	<0.35	U	<0.41	U
TRANS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.2	U	<0.2	U	<0.3	U	<0.2	U	<0.23	U
TRICHLOROETHENE	--	1,597	7,154	300	<0.4	U	<0.3	U	<0.5	U	<0.36	U	<0.42	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.5	U	<0.4	U	<0.6	U	<0.49	U	<0.57	U
VINYL CHLORIDE [6]	--	90	3,974	300	<0.4	U	<0.4	U	<0.6	U	<0.43	U	<0.5	U
XYLENE (TOTAL)	--	1,564,286	20,440,000	100	<1	U	<1	U	<2	U	<1.2	U	<1.4	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,1-TRICHLOROETHANE	--	2,190,000	28,616,000	300	<0.6	U	<0.4	U	<0.7	U	<0.46	U	<0.61	U
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.2	U	<0.1	U	<0.2	U	<0.16	U	<0.21	U
1,1,2-TRICHLORO-1,2,2-TRIFLUO	--	234,642,857	3,066,000,000	--	<0.7	U	<0.5	U	<0.8	U	<0.56	U	<0.75	U
1,1,2-TRICHLOROETHANE	--	11,206	50,204	300	<0.2	U	<0.1	U	<0.2	U	<0.14	U	<0.19	U
1,1-DICHLOROETHANE	--	782,143	10,220,000	300	<0.4	U	<0.3	U	<0.4	U	<0.29	U	<0.39	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.7	U	<0.5	U	<0.9	U	<0.59	U	<0.8	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.5	U	<0.3	U	<0.5	U	<0.36	U	<0.49	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.3	U	<0.2	U	<0.4	U	<0.24	U	<0.32	U
1,2-DIBROMOETHANE	--	8	34	5,000	<0.2	U	<0.2	U	<0.3	U	<0.18	U	<0.24	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.2	U	<0.1	U	<0.2	U	<0.16	U	<0.21	U
1,2-DICHLOROETHANE	--	7,019	31,446	870,000	<0.4	U	<0.3	U	<0.4	U	<0.3	U	<0.4	U
1,2-DICHLOROPROPANE	--	9,393	42,082	300	<0.2	U	<0.2	U	<0.3	U	<0.17	U	<0.22	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.3	U	<0.2	U	<0.3	U	<0.23	U	<0.31	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.3	U	<0.2	U	<0.3	U	<0.21	U	<0.29	U
2-BUTANONE	--	4,692,857	61,320,000	--	3	JB,B,z	2	J,B,x	<2	U	4	J	2	J
2-HEXANONE	--	--	--	--	5	J	<0.5	U	<0.8	U	<0.52	U	<0.7	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.6	U	<0.5	U	<0.8	U	<0.5	U	<0.68	U
ACETONE	--	7,039,286	91,980,000	--	47	B,B,z	22		22	J	21		27	
BENZENE	--	11,613	52,029	100	<0.4	U	<0.3	U	<0.5	U	<0.35	U	<0.47	U
BROMODICHLOROMETHANE	--	10,302	46,155	450,000	<0.2	U	<0.2	U	<0.3	U	<0.18	U	<0.24	U
BROMOFORM	--	80,851	362,228	--	0.4	J	<0.2	U	<0.3	U	<0.23	U	<0.31	U
BROMOMETHANE	--	10,950	143,080	--	3	J	<0.8	U	11		<0.87	U	<1.2	U
CARBON DISULFIDE	--	782,143	10,220,000	--	0.8	J	<0.4	U	<0.7	U	<0.46	U	<0.61	U
CARBON TETRACHLORIDE	--	4,913	22,012	300	<0.6	U	<0.4	U	<0.7	U	<0.46	U	<0.61	U
CHLOROBENZENE	--	156,429	2,044,000	100	<0.3	U	<0.2	U	<0.3	U	<0.21	U	<0.29	U
CHLOROETHANE	--	220,250	986,759	--	<0.5	U	<0.4	U	<0.6	U	<0.43	U	<0.57	U
CHLOROFORM	--	78,214	1,022,000	300	<0.4	U	<0.3	U	<0.5	U	<0.34	U	<0.46	U
CHLOROMETHANE	--	--	--	--	<1	U	<0.8	U	<1	U	<0.85	U	<1.1	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.4	U	<0.3	U	<0.5	U	<0.32	U	<0.43	U
CIS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.4	U	<0.3	U	<0.4	U	<0.28	U	<0.38	U
CYCLOHEXANE	--	--	--	--	<0.5	U	<0.4	U	<0.6	U	<0.41	U	<0.55	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.2	U	<0.1	U	<0.2	U	<0.16	U	<0.21	U
DICHLORODIFLUOROMETHANE	--	1,564,286	20,440,000	--	<0.5	U	<0.4	U	<0.6	U	<0.41	U	<0.55	U
ETHYLBENZENE	--	782,143	10,220,000	100	<0.4	U	<0.3	U	<0.5	U	<0.34	U	<0.46	U
ISOPROPYLBENZENE	--	782,143	10,220,000	--	<0.4	U	<0.3	U	<0.4	U	<0.28	U	<0.38	U
METHYL ACETATE	--	7,821,429	102,200,000	--	<0.6	U	4	J,B,x	3	J,B,x	<0.48	U	<0.65	U
METHYL-TERT-BUTYL ETHER	--	159,682	715,400	--	<0.4	U	<0.3	U	<0.5	U	<0.33	U	<0.45	U
METHYLCYCLOHEXANE	--	--	--	--	<0.5	U	<0.4	U	<0.6	U	<0.39	U	<0.52	U
METHYLENE CHLORIDE	--	85,163	381,547	300	1	J	0.5	JB,B,z	1	JB,B,z	<0.46	U	<0.63	U
STYRENE	--	1,564,286	20,440,000	100	<0.3	U	<0.2	U	<0.3	U	<0.22	U	<0.3	U
TETRACHLOROETHENE	--	1,183	5,299	300	0.7	JB,B,z	<0.3	U	<0.5	U	<0.33	U	<0.44	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg) - Continued														
TOLUENE	--	1,564,286	20,440,000	100	1	JB,B,z	<0.3	U	<0.5	U	<0.36	U	0.9	J
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	1	JB,B,z	0.4	J	0.7	J	<0.34	U	<0.46	U
TRANS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.2	U	<0.2	U	<0.3	U	<0.2	U	<0.26	U
TRICHLOROETHENE	--	1,597	7,154	300	<0.4	U	<0.3	U	<0.5	U	<0.35	U	<0.47	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.6	U	<0.4	U	<0.7	U	<0.47	U	<0.64	U
VINYL CHLORIDE [6]	--	90	3,974	300	<0.5	U	<0.4	U	<0.6	U	<0.42	U	<0.56	U
XYLENE (TOTAL)	--	1,564,286	20,440,000	100	<2	U	<1	U	<2	U	<1.2	U	<1.6	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,1-TRICHLOROETHANE	--	2,190,000	28,616,000	300	<0.6	U	<0.5	U	<0.45	U	<0.56	U	<0.42	U
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.2	U,UJ,i	0.5	J,J,i	<0.15	U	<0.19	U	<0.14	U
1,1,2-TRICHLORO-1,2,2-TRIFLUO	--	234,642,857	3,066,000,000	--	<0.7	U	<0.6	U	<0.55	U	<0.69	U	<0.51	U
1,1,2-TRICHLOROETHANE	--	11,206	50,204	300	<0.2	U	<0.1	U	<0.14	U	<0.17	U	<0.13	U
1,1-DICHLOROETHANE	--	782,143	10,220,000	300	<0.4	U	<0.3	U	<0.28	U	<0.36	U	<0.26	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	1	J,J,d	0.9	J	<0.58	U	<0.73	U	<0.54	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.5	U,UJ,i	0.8	JB,B,z	0.8	JB,B,z	<0.45	U	<0.33	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.3	U,UJ,i	1	J,J,i	<0.24	U	<0.3	U	<0.22	U
1,2-DIBROMOETHANE	--	8	34	5,000	<0.2	U	<0.2	U	<0.17	U	<0.22	U	<0.16	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.2	U,UJ,i	0.5	JB,B,z	0.6	J	<0.19	U	<0.14	U
1,2-DICHLOROETHANE	--	7,019	31,446	870,000	<0.4	U	<0.3	U	<0.29	U	<0.37	U	<0.27	U
1,2-DICHLOROPROPANE	--	9,393	42,082	300	<0.2	U	<0.2	U	<0.16	U	<0.21	U	<0.15	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.3	U,UJ,i	0.5	JB,B,z	0.3	JB,B,z	<0.29	U	<0.21	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.3	U,UJ,i	0.5	JB,B,z	0.4	JB,B,z	<0.26	U	<0.2	U
2-BUTANONE	--	4,692,857	61,320,000	--	17	JB,B,z	14	JB	<1.1	U	<1.4	U	7	J
2-HEXANONE	--	--	--	--	6	J,J,d	3	J	1	J	<0.64	U	2	J
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.7	U	2	J	<0.49	U	1	J	<0.46	U
ACETONE	--	7,039,286	91,980,000	--	200	B,J,d	130	B	67		15	J	63	
BENZENE	--	11,613	52,029	100	<0.5	U	<0.4	U	<0.35	U	<0.44	U	<0.32	U
BROMODICHLOROMETHANE	--	10,302	46,155	450,000	<0.2	U	<0.2	U	<0.17	U	<0.22	U	<0.16	U
BROMOFORM	--	80,851	362,228	--	<0.3	U	<0.2	U	<0.23	U	<0.29	U	<0.21	U
BROMOMETHANE	--	10,950	143,080	--	<1	U	<0.9	U	2	J,J,c	2	J,J,c	<0.8	U
CARBON DISULFIDE	--	782,143	10,220,000	--	2	J,J,d	2	J	<0.45	U	<0.56	U	<0.42	U
CARBON TETRACHLORIDE	--	4,913	22,012	300	<0.6	U	<0.5	U	<0.45	U	<0.56	U	<0.42	U
CHLOROBENZENE	--	156,429	2,044,000	100	<0.3	U	<0.2	U	<0.21	U	<0.26	U	<0.2	U
CHLOROETHANE	--	220,250	986,759	--	<0.6	U,UJ,m	<0.4	U	<0.42	U	<0.53	U	<0.39	U
CHLOROFORM	--	78,214	1,022,000	300	<0.4	U	0.5	J	<0.34	U	<0.42	U	<0.31	U
CHLOROMETHANE	--	--	--	--	<1	U	<0.8	U	<0.83	U	<1	U	<0.77	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.4	U	<0.3	U	<0.31	U	<0.39	U	<0.29	U
CIS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.4	U	<0.3	U	<0.27	U	<0.34	U	<0.25	U
CYCLOHEXANE	--	--	--	--	<0.5	U	<0.4	U	<0.4	U	<0.5	U	<0.37	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.2	U	0.3	J	<0.15	U	<0.19	U	<0.14	U
DICHLORODIFLUOROMETHANE	--	1,564,286	20,440,000	--	<0.5	U	<0.4	U	<0.4	U	<0.5	U	<0.37	U
ETHYLBENZENE	--	782,143	10,220,000	100	<0.4	U	<0.3	U	<0.34	U	<0.42	U	<0.31	U
ISOPROPYLBENZENE	--	782,143	10,220,000	--	<0.4	U	<0.3	U	<0.27	U	<0.34	U	<0.25	U
METHYL ACETATE	--	7,821,429	102,200,000	--	21	,J,m	15	,B,x	<0.47	U	<0.6	U	<0.44	U
METHYL-TERT-BUTYL ETHER	--	159,682	715,400	--	<0.4	U	<0.3	U	<0.33	U	<0.41	U	<0.31	U
METHYLCYCLOHEXANE	--	--	--	--	<0.5	U	<0.4	U	<0.38	U	<0.48	U	<0.36	U
METHYLENE CHLORIDE	--	85,163	381,547	300	1	J,J,d	1	J	<0.45	U	<0.57	U	0.7	JB,B,z
STYRENE	--	1,564,286	20,440,000	100	<0.3	U	<0.2	U	<0.22	U	<0.28	U	<0.2	U
TETRACHLOROETHENE	--	1,183	5,299	300	<0.4	U	0.9	JB,B,z	<0.32	U	<0.4	U	<0.3	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg) - Continued														
TOLUENE	--	1,564,286	20,440,000	100	1	JB,B,z	0.7	JB,B,z	0.6	J	0.7	J	0.5	JB,B,z
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.4	U	<0.3	U	<0.34	U	<0.42	U	<0.31	U
TRANS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.3	U	<0.2	U	<0.19	U	<0.24	U	<0.18	U
TRICHLOROETHENE	--	1,597	7,154	300	<0.5	U	<0.4	U	<0.35	U	<0.44	U	<0.32	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.6	U	<0.5	U	<0.46	U	<0.58	U	<0.43	U
VINYL CHLORIDE [6]	--	90	3,974	300	<0.5	U	<0.4	U	<0.41	U	<0.52	U	<0.38	U
XYLENE (TOTAL)	--	1,564,286	20,440,000	100	<2	U	<1	U	<1.2	U	<1.5	U	<1.1	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,1-TRICHLOROETHANE	--	2,190,000	28,616,000	300	<0.46	U	<0.4	U	<0.4	U	<0.47	U	<0.53	U
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.16	U	<0.2	U	<0.1	U	<0.16	U	<0.19	U
1,1,2-TRICHLORO-1,2,2-TRIFLUO	--	234,642,857	3,066,000,000	--	<0.56	U	<0.5	U	<0.5	U	<0.57	U	<0.65	U
1,1,2-TRICHLOROETHANE	--	11,206	50,204	300	<0.14	U	<0.1	U	<0.1	U	<0.14	U	<0.16	U
1,1-DICHLOROETHANE	--	782,143	10,220,000	300	<0.29	U	<0.3	U	<0.3	U	<0.3	U	<0.34	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.6	U	<0.6	U	<0.6	U	<0.61	U	<0.7	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.36	U	<0.3	U	<0.3	U	<0.37	U	<0.42	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.24	U	<0.2	U	<0.2	U	<0.25	U	<0.28	U
1,2-DIBROMOETHANE	--	8	34	5,000	<0.18	U	<0.2	U	<0.2	U	<0.18	U	<0.21	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.16	U	<0.2	U	<0.1	U	<0.16	U	<0.19	U
1,2-DICHLOROETHANE	--	7,019	31,446	870,000	<0.3	U	<0.3	U	<0.3	U	<0.31	U	<0.35	U
1,2-DICHLOROPROPANE	--	9,393	42,082	300	<0.17	U	<0.2	U	<0.2	U	<0.17	U	<0.2	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.23	U	<0.2	U	<0.2	U	<0.24	U	<0.27	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.21	U	<0.2	U	<0.2	U	<0.22	U	<0.25	U
2-BUTANONE	--	4,692,857	61,320,000	--	5	J	3	JB,B,z	2	JB,B,z	<1.1	U	<1.3	U
2-HEXANONE	--	--	--	--	8	J	0.9	J	<0.5	U	<0.53	U	<0.61	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.5	U	<0.5	U	<0.5	U	<0.52	U	0.8	J
ACETONE	--	7,039,286	91,980,000	--	36		34	B	14	B,B,z	11	J	13	J
BENZENE	--	11,613	52,029	100	<0.36	U	<0.3	U	<0.3	U	<0.36	U	<0.41	U
BROMODICHLOROMETHANE	--	10,302	46,155	450,000	<0.18	U	<0.2	U	<0.2	U	<0.18	U	<0.21	U
BROMOFORM	--	80,851	362,228	--	<0.23	U	<0.2	U	<0.2	U	<0.24	U	<0.27	U
BROMOMETHANE	--	10,950	143,080	--	<0.88	U	<0.8	U	<0.8	U	<0.9	U	3	J,J,c
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.46	U	0.6	J	<0.4	U	<0.47	U	<0.53	U
CARBON TETRACHLORIDE	--	4,913	22,012	300	<0.46	U	<0.4	U	<0.4	U	<0.47	U	<0.53	U
CHLOROBENZENE	--	156,429	2,044,000	100	<0.21	U	<0.2	U	<0.2	U	<0.22	U	<0.25	U
CHLOROETHANE	--	220,250	986,759	--	<0.43	U	<0.4	U	<0.4	U	<0.44	U	<0.5	U
CHLOROFORM	--	78,214	1,022,000	300	2	J	<0.3	U	0.5	J	<0.35	U	<0.4	U
CHLOROMETHANE	--	--	--	--	<0.85	U	<0.8	U	<0.8	U	<0.87	U	<0.99	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.32	U	<0.3	U	<0.3	U	<0.32	U	<0.37	U
CIS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.28	U	<0.3	U	<0.3	U	<0.29	U	<0.33	U
CYCLOHEXANE	--	--	--	--	<0.41	U	<0.4	U	<0.4	U	<0.42	U	<0.48	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.16	U	<0.2	U	<0.1	U	<0.16	U	<0.19	U
DICHLORODIFLUOROMETHANE	--	1,564,286	20,440,000	--	<0.41	U	<0.4	U	<0.4	U	<0.42	U	<0.48	U
ETHYLBENZENE	--	782,143	10,220,000	100	<0.35	U	<0.3	U	<0.3	U	<0.35	U	<0.4	U
ISOPROPYLBENZENE	--	782,143	10,220,000	--	<0.28	U	<0.3	U	<0.3	U	<0.29	U	<0.33	U
METHYL ACETATE	--	7,821,429	102,200,000	--	7		1	J,B,x	1	J,B,x	0.7	J	<0.57	U
METHYL-TERT-BUTYL ETHER	--	159,682	715,400	--	<0.34	U	<0.3	U	<0.3	U	<0.34	U	<0.39	U
METHYLCYCLOHEXANE	--	--	--	--	<0.39	U	<0.4	U	<0.4	U	<0.4	U	<0.46	U
METHYLENE CHLORIDE	--	85,163	381,547	300	0.7	JB,B,z	<0.4	U	<0.4	U	<0.48	U	0.8	J
STYRENE	--	1,564,286	20,440,000	100	<0.22	U	<0.2	U	<0.2	U	<0.23	U	<0.26	U
TETRACHLOROETHENE	--	1,183	5,299	300	<0.33	U	<0.3	U	<0.3	U	<0.33	U	<0.38	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID Sample Date Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg) - Continued														
TOLUENE	--	1,564,286	20,440,000	100	0.5	JB,B,z	<0.3	U	<0.3	U	<0.37	U	0.6	J
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.35	U	<0.3	U	<0.3	U	<0.35	U	<0.4	U
TRANS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.23	U
TRICHLOROETHENE	--	1,597	7,154	300	<0.36	U	<0.3	U	<0.3	U	<0.36	U	<0.41	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.48	U	<0.5	U	<0.4	U	<0.49	U	<0.56	U
VINYL CHLORIDE [6]	--	90	3,974	300	<0.42	U	<0.4	U	<0.4	U	<0.43	U	<0.49	U
XYLENE (TOTAL)	--	1,564,286	20,440,000	100	<1.2	U	<1	U	<1	U	<1.2	U	<1.4	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,1-TRICHLOROETHANE	--	2,190,000	28,616,000	300	<0.45	U	<0.59	U	<0.44	U	<0.4	U	<0.4	U
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.16	U	<0.2	U	<0.15	U	<0.2	U	<0.2	U
1,1,2-TRICHLORO-1,2,2-TRIFLUO	--	234,642,857	3,066,000,000	--	<0.55	U	<0.72	U	<0.54	U	<0.5	U	<0.5	U
1,1,2-TRICHLOROETHANE	--	11,206	50,204	300	<0.14	U	<0.18	U	<0.14	U	<0.1	U	<0.1	U
1,1-DICHLOROETHANE	--	782,143	10,220,000	300	<0.28	U	<0.37	U	<0.28	U	<0.3	U	<0.3	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.59	U	<0.77	U	<0.58	U	<0.6	U	<0.6	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.36	U	<0.47	U	<0.35	U	<0.4	U	<0.4	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.24	U	<0.31	U	<0.23	U	<0.2	U	<0.2	U
1,2-DIBROMOETHANE	--	8	34	5,000	<0.17	U	<0.23	U	<0.17	U	<0.2	U	<0.2	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	<0.16	U	<0.2	U	<0.15	U	<0.2	U	<0.2	U
1,2-DICHLOROETHANE	--	7,019	31,446	870,000	<0.29	U	<0.39	U	<0.29	U	<0.3	U	<0.3	U
1,2-DICHLOROPROPANE	--	9,393	42,082	300	<0.17	U	<0.22	U	<0.16	U	<0.2	U	<0.2	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.23	U	<0.3	U	<0.23	U	<0.2	U	<0.2	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.21	U	<0.28	U	<0.21	U	<0.2	U	<0.2	U
2-BUTANONE	--	4,692,857	61,320,000	--	5	J	<1.4	U	2	J	3	J,B,x	<1	U
2-HEXANONE	--	--	--	--	<0.51	U	<0.67	U	<0.5	U	<0.5	U	<0.5	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.5	U	<0.65	U	<0.49	U	<0.5	U	<0.5	U
ACETONE	--	7,039,286	91,980,000	--	93		14	J	15	J	22		11	JB,B,z
BENZENE	--	11,613	52,029	100	<0.35	U	<0.46	U	<0.34	U	<0.3	U	<0.3	U
BROMODICHLOROMETHANE	--	10,302	46,155	450,000	<0.17	U	<0.23	U	<0.17	U	<0.2	U	<0.2	U
BROMOFORM	--	80,851	362,228	--	<0.23	U	<0.3	U	<0.23	U	<0.2	U	<0.2	U
BROMOMETHANE	--	10,950	143,080	--	<0.86	U	<1.1	U	2	J,J,c	7		<0.9	U
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.45	U	<0.59	U	<0.44	U	<0.4	U	<0.4	U
CARBON TETRACHLORIDE	--	4,913	22,012	300	<0.45	U	<0.59	U	<0.44	U	<0.4	U	<0.4	U
CHLOROBENZENE	--	156,429	2,044,000	100	<0.21	U	<0.28	U	<0.21	U	<0.2	U	<0.2	U
CHLOROETHANE	--	220,250	986,759	--	<0.42	U	<0.55	U	<0.41	U	<0.4	U	<0.4	U
CHLOROFORM	--	78,214	1,022,000	300	<0.34	U	<0.45	U	<0.33	U	<0.3	U	<0.3	U
CHLOROMETHANE	--	--	--	--	<0.84	U	<1.1	U	<0.82	U	<0.8	U	<0.8	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.31	U	<0.41	U	<0.31	U	<0.3	U	0.5	J
CIS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.28	U	<0.36	U	<0.27	U	<0.3	U	<0.3	U
CYCLOHEXANE	--	--	--	--	<0.4	U	<0.53	U	<0.4	U	<0.4	U	<0.4	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.16	U	<0.2	U	<0.15	U	<0.2	U	<0.2	U
DICHLORODIFLUOROMETHANE	--	1,564,286	20,440,000	--	<0.4	U	<0.53	U	<0.4	U	<0.4	U	<0.4	U
ETHYLBENZENE	--	782,143	10,220,000	100	<0.34	U	<0.45	U	<0.33	U	<0.3	U	<0.3	U
ISOPROPYLBENZENE	--	782,143	10,220,000	--	<0.28	U	<0.36	U	<0.27	U	<0.3	U	<0.3	U
METHYL ACETATE	--	7,821,429	102,200,000	--	<0.48	U	<0.63	U	<0.47	U	3	J,B,x	<0.5	U
METHYL-TERT-BUTYL ETHER	--	159,682	715,400	--	<0.33	U	<0.43	U	<0.32	U	<0.3	U	<0.3	U
METHYLCYCLOHEXANE	--	--	--	--	<0.39	U	<0.51	U	<0.38	U	<0.4	U	<0.4	U
METHYLENE CHLORIDE	--	85,163	381,547	300	<0.46	U	<0.6	U	<0.45	U	0.8	JB,B,z	0.9	J
STYRENE	--	1,564,286	20,440,000	100	<0.22	U	<0.29	U	<0.22	U	<0.2	U	<0.2	U
TETRACHLOROETHENE	--	1,183	5,299	300	<0.32	U	<0.42	U	<0.32	U	<0.3	U	0.4	JB,B,z

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID Sample Date Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg) - Continued														
TOLUENE	--	1,564,286	20,440,000	100	<0.36	U	<0.47	U	0.6	J	<0.4	U	<0.4	U
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.34	U	<0.45	U	<0.33	U	0.5	J	0.6	JB,B,z
TRANS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.19	U	<0.25	U	<0.19	U	<0.2	U	<0.2	U
TRICHLOROETHENE	--	1,597	7,154	300	<0.35	U	<0.46	U	<0.34	U	<0.3	U	<0.3	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.47	U	<0.61	U	<0.46	U	<0.5	U	2	J
VINYL CHLORIDE [6]	--	90	3,974	300	<0.41	U	<0.54	U	<0.41	U	<0.4	U	<0.4	U
XYLENE (TOTAL)	--	1,564,286	20,440,000	100	<1.2	U	<1.6	U	<1.2	U	<1	U	<1	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,1-TRICHLOROETHANE	--	2,190,000	28,616,000	300	<0.43	U	<0.49	U	<0.42	U	<0.62	U	<0.42	U
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.15	U	<0.17	U	<0.15	U	0.4	J	<0.15	U
1,1,2-TRICHLORO-1,2,2-TRIFLUO	--	234,642,857	3,066,000,000	--	<0.52	U	<0.6	U	<0.51	U	<0.76	U	<0.52	U
1,1,2-TRICHLOROETHANE	--	11,206	50,204	300	<0.13	U	<0.15	U	<0.13	U	<0.19	U	<0.13	U
1,1-DICHLOROETHANE	--	782,143	10,220,000	300	<0.27	U	<0.31	U	<0.26	U	<0.39	U	<0.27	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.56	U	<0.64	U	<0.55	U	<0.81	U	<0.55	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	<0.34	U	<0.39	U	<0.33	U	1	JB,B,z	<0.34	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.23	U	<0.26	U	<0.22	U	0.4	J	<0.22	U
1,2-DIBROMOETHANE	--	8	34	5,000	<0.17	U	<0.19	U	<0.16	U	<0.24	U	<0.16	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	0.2	JB,B,z	<0.17	U	<0.15	U	0.8	JB,B,z	<0.15	U
1,2-DICHLOROETHANE	--	7,019	31,446	870,000	<0.28	U	<0.32	U	<0.27	U	<0.41	U	<0.28	U
1,2-DICHLOROPROPANE	--	9,393	42,082	300	<0.16	U	<0.18	U	<0.15	U	<0.23	U	<0.16	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	<0.22	U	<0.25	U	<0.21	U	0.8	JB,B,z	<0.22	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	<0.2	U	<0.23	U	<0.2	U	1	JB,B,z	<0.2	U
2-BUTANONE	--	4,692,857	61,320,000	--	8	J	<1.2	U	<1	U	10	J	9	J
2-HEXANONE	--	--	--	--	2	J	<0.56	U	<0.48	U	3	J	<0.48	U
4-METHYL-2-PENTANONE	--	--	--	100,000	<0.47	U	<0.54	U	<0.46	U	1	J	<0.47	U
ACETONE	--	7,039,286	91,980,000	--	63		19	B,B,z	17	B,B,z	96		87	
BENZENE	--	11,613	52,029	100	<0.33	U	<0.38	U	<0.32	U	<0.48	U	<0.33	U
BROMODICHLOROMETHANE	--	10,302	46,155	450,000	<0.17	U	<0.19	U	<0.16	U	<0.24	U	<0.16	U
BROMOFORM	--	80,851	362,228	--	<0.22	U	<0.25	U	<0.21	U	<0.32	U	<0.22	U
BROMOMETHANE	--	10,950	143,080	--	<0.82	U	1	JB,B,z	<0.8	U	10	,J,d	8	
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.43	U	<0.49	U	<0.42	U	<0.62	U	3	J
CARBON TETRACHLORIDE	--	4,913	22,012	300	<0.43	U	<0.49	U	<0.42	U	<0.62	U	<0.42	U
CHLOROBENZENE	--	156,429	2,044,000	100	<0.2	U	<0.23	U	<0.2	U	<0.29	U	<0.2	U
CHLOROETHANE	--	220,250	986,759	--	<0.4	U	<0.46	U	<0.39	U	<0.59	U	<0.4	U
CHLOROFORM	--	78,214	1,022,000	300	<0.32	U	<0.37	U	<0.32	U	<0.47	U	<0.32	U
CHLOROMETHANE	--	--	--	--	<0.79	U	<0.9	U	<0.78	U	<1.2	U	<0.78	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.3	U	<0.34	U	<0.29	U	<0.43	U	<0.29	U
CIS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.26	U	<0.3	U	<0.26	U	<0.38	U	<0.26	U
CYCLOHEXANE	--	--	--	--	<0.38	U	<0.44	U	<0.38	U	<0.56	U	0.8	J
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.15	U	<0.17	U	<0.15	U	<0.22	U	<0.15	U
DICHLORODIFLUOROMETHANE	--	1,564,286	20,440,000	--	<0.38	U	<0.44	U	<0.38	U	<0.56	U	<0.38	U
ETHYLBENZENE	--	782,143	10,220,000	100	<0.32	U	<0.37	U	<0.32	U	<0.47	U	<0.32	U
ISOPROPYLBENZENE	--	782,143	10,220,000	--	<0.26	U	<0.3	U	<0.26	U	<0.38	U	<0.26	U
METHYL ACETATE	--	7,821,429	102,200,000	--	<0.45	U	<0.52	U	<0.44	U	<0.66	U	<0.45	U
METHYL-TERT-BUTYL ETHER	--	159,682	715,400	--	<0.31	U	<0.36	U	<0.31	U	<0.46	U	<0.31	U
METHYLCYCLOHEXANE	--	--	--	--	<0.37	U	<0.42	U	<0.36	U	<0.53	U	1	J
METHYLENE CHLORIDE	--	85,163	381,547	300	0.8	JB,B,z	<0.5	U	<0.43	U	1	JB,B,z	<0.43	U
STYRENE	--	1,564,286	20,440,000	100	<0.21	U	<0.24	U	<0.21	U	<0.31	U	<0.21	U
TETRACHLOROETHENE	--	1,183	5,299	300	<0.31	U	<0.35	U	<0.3	U	<0.45	U	<0.3	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID Sample Date Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg) - Continued														
TOLUENE	--	1,564,286	20,440,000	100	<0.34	U	0.6	J	<0.33	U	4	JB	<0.34	U
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	0.5	J	<0.37	U	<0.32	U	0.7	J	0.5	J
TRANS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.18	U	<0.21	U	<0.18	U	<0.27	U	<0.18	U
TRICHLOROETHENE	--	1,597	7,154	300	<0.33	U	<0.38	U	<0.32	U	<0.48	U	<0.33	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.45	U	<0.51	U	<0.44	U	<0.65	U	<0.44	U
VINYL CHLORIDE [6]	--	90	3,974	300	<0.39	U	<0.45	U	<0.38	U	<0.57	U	<0.39	U
XYLENE (TOTAL)	--	1,564,286	20,440,000	100	<1.1	U	<1.3	U	<1.1	U	<1.7	U	<1.1	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,1-TRICHLOROETHANE	--	2,190,000	28,616,000	300	<0.46	U	<0.46	U	<0.6	U	<0.5	U	<0.6	U
1,1,2,2-TETRACHLOROETHANE	--	3,194	14,308	300	<0.16	U	<0.16	U	<0.2	U	0.2	J	<0.2	U
1,1,2-TRICHLORO-1,2,2-TRIFLUO	--	234,642,857	3,066,000,000	--	<0.56	U	<0.57	U	<0.7	U	<0.6	U	<0.7	U
1,1,2-TRICHLOROETHANE	--	11,206	50,204	300	<0.14	U	<0.14	U	<0.2	U	<0.1	U	<0.2	U
1,1-DICHLOROETHANE	--	782,143	10,220,000	300	<0.29	U	<0.29	U	<0.4	U	<0.3	U	<0.4	U
1,1-DICHLOROETHENE	--	391,071	5,110,000	--	<0.59	U	<0.6	U	1	J	<0.6	U	<0.7	U
1,2,4-TRICHLOROBENZENE	--	78,214	1,022,000	100	0.7	JB,B,z	0.6	JB,B,z	<0.5	U	0.7	J	<0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	--	456	2,044	--	<0.24	U	<0.25	U	<0.3	U	0.5	J	<0.3	U
1,2-DIBROMOETHANE	--	8	34	5,000	<0.18	U	<0.18	U	<0.2	U	<0.2	U	<0.2	U
1,2-DICHLOROBENZENE	--	703,929	9,198,000	100	0.4	JB,B,z	0.3	JB,B,z	<0.2	U	0.6	J	<0.2	U
1,2-DICHLOROETHANE	--	7,019	31,446	870,000	<0.3	U	<0.3	U	<0.4	U	<0.3	U	<0.4	U
1,2-DICHLOROPROPANE	--	9,393	42,082	300	<0.17	U	<0.17	U	<0.2	U	<0.2	U	<0.2	U
1,3-DICHLOROBENZENE	--	234,643	3,066,000	--	0.4	JB,B,z	<0.24	U	<0.3	U	0.5	J	<0.3	U
1,4-DICHLOROBENZENE	--	26,614	119,233	100	0.5	JB,B,z	0.4	JB,B,z	<0.3	U	0.5	J	<0.3	U
2-BUTANONE	--	4,692,857	61,320,000	--	<1.1	U	<1.1	U	7	JB,B,z	8	JB,B,z	4	JB,B,z
2-HEXANONE	--	--	--	--	<0.52	U	<0.53	U	<0.7	U	2	J	<0.7	U
4-METHYL-2-PENTANONE	--	--	--	100,000	0.7	J	<0.51	U	<0.7	U	<0.5	U	<0.6	U
ACETONE	--	7,039,286	91,980,000	--	9	JB,B,z	9	JB,B,z	58	B	42	B	48	B,B,z
BENZENE	--	11,613	52,029	100	<0.35	U	<0.36	U	<0.5	U	<0.4	U	<0.4	U
BROMODICHLOROMETHANE	--	10,302	46,155	450,000	<0.18	U	<0.18	U	<0.2	U	<0.2	U	<0.2	U
BROMOFORM	--	80,851	362,228	--	<0.23	U	<0.24	U	<0.3	U	0.3	J	<0.3	U
BROMOMETHANE	--	10,950	143,080	--	2	JB,B,z	<0.89	U	2	J	<0.9	U	<1	U
CARBON DISULFIDE	--	782,143	10,220,000	--	<0.46	U	<0.46	U	0.8	J	<0.5	U	<0.6	U
CARBON TETRACHLORIDE	--	4,913	22,012	300	<0.46	U	<0.46	U	<0.6	U	<0.5	U	<0.6	U
CHLOROBENZENE	--	156,429	2,044,000	100	<0.21	U	<0.22	U	<0.3	U	<0.2	U	<0.3	U
CHLOROETHANE	--	220,250	986,759	--	<0.43	U	<0.43	U	<0.6	U	<0.4	U	<0.5	U
CHLOROFORM	--	78,214	1,022,000	300	<0.34	U	<0.35	U	<0.4	U	0.6	J	<0.4	U
CHLOROMETHANE	--	--	--	--	<0.85	U	<0.86	U	<1	U	<0.9	U	<1	U
CIS-1,2-DICHLOROETHENE	--	78,214	1,022,000	300	<0.32	U	<0.32	U	<0.4	U	<0.3	U	<0.4	U
CIS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.28	U	<0.28	U	<0.4	U	<0.3	U	<0.4	U
CYCLOHEXANE	--	--	--	--	<0.41	U	<0.42	U	<0.5	U	<0.4	U	<0.5	U
DIBROMOCHLOROMETHANE	--	7,604	34,067	--	<0.16	U	<0.16	U	<0.2	U	<0.2	U	<0.2	U
DICHLORODIFLUOROMETHANE	--	1,564,286	20,440,000	--	<0.41	U	<0.42	U	<0.5	U	<0.4	U	<0.5	U
ETHYLBENZENE	--	782,143	10,220,000	100	<0.34	U	<0.35	U	<0.4	U	<0.3	U	<0.4	U
ISOPROPYLBENZENE	--	782,143	10,220,000	--	<0.28	U	<0.28	U	<0.4	U	<0.3	U	<0.4	U
METHYL ACETATE	--	7,821,429	102,200,000	--	<0.48	U	<0.49	U	5	J,B,x	1	J,B,x	<0.6	U
METHYL-TERT-BUTYL ETHER	--	159,682	715,400	--	<0.33	U	<0.34	U	<0.4	U	<0.3	U	<0.4	U
METHYLCYCLOHEXANE	--	--	--	--	<0.39	U	<0.4	U	<0.5	U	<0.4	U	<0.5	U
METHYLENE CHLORIDE	--	85,163	381,547	300	0.7	J	0.6	J	0.9	J	<0.5	U	1	J
STYRENE	--	1,564,286	20,440,000	100	<0.22	U	<0.23	U	<0.3	U	<0.2	U	<0.3	U
TETRACHLOROETHENE	--	1,183	5,299	300	<0.33	U	<0.33	U	<0.4	U	<0.3	U	0.7	JB,B,z

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg) - Continued														
TOLUENE	--	1,564,286	20,440,000	100	0.7	J	<0.37	U	0.8	JB,B,z	0.6	JB,B,z	0.9	JB,B,z
TRANS-1,2-DICHLOROETHENE	--	156,429	2,044,000	300	<0.34	U	<0.35	U	<0.4	U	<0.3	U	0.8	JB,B,z
TRANS-1,3-DICHLOROPROPENE [5]	--	6,387	28,616	300	<0.2	U	<0.2	U	<0.3	U	<0.2	U	<0.2	U
TRICHLOROETHENE	--	1,597	7,154	300	<0.35	U	<0.36	U	<0.5	U	<0.4	U	<0.4	U
TRICHLOROFLUOROMETHANE	--	2,346,429	30,660,000	--	<0.47	U	<0.48	U	<0.6	U	<0.5	U	<0.6	U
VINYL CHLORIDE [6]	--	90	3,974	300	<0.42	U	<0.43	U	<0.5	U	<0.4	U	<0.5	U
XYLENE (TOTAL)	--	1,564,286	20,440,000	100	<1.2	U	<1.2	U	<2	U	<1	U	<2	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
1,1'-BIPHENYL	--	391,071	5,110,000	--	<22	U	<22	U	<330	U	<22	U	<22	U
2,2'-OXYBIS(1-CHLOROPROPANE)	--	9,125	40,880	--	<30	U	<30	U	<450	U	<30	U	<30	U
2,4,5-TRICHLOROPHENOL	--	782,143	10,220,000	100	<49	U	<49	U	<730	U	<49	U	<49	U
2,4,6-TRICHLOROPHENOL	--	58,066	260,145	100	<50	U	<50	U	<760	U	<50	U	<50	U
2,4-DICHLOROPHENOL	--	23,464	306,600	100	<22	U	<22	U	<330	U	<22	U	<22	U
2,4-DIMETHYLPHENOL	--	156,429	2,044,000	100	<30	U	<30	U	<460	U	<30	U	<30	U
2,4-DINITROPHENOL	--	15,643	204,400	100	<170	U	<170	U	<2600	U	<170	U	<170	U
2,4-DINITROTOLUENE	--	15,643	204,400	--	<20	U	<20	U	<300	U	<20	U	<20	U
2,6-DINITROTOLUENE	--	7,821	102,200	--	<21	U	<21	U	<310	U	<21	U	<21	U
2-CHLORONAPHTHALENE	--	625,714	8,176,000	--	<22	U	<22	U	<330	U	<22	U	<22	U
2-CHLOROPHENOL	--	39,107	511,000	100	<18	U	<18	U	<270	U	<18	U	<18	U
2-METHYLNAPHTHALENE	--	156,429	2,044,000	--	<24	U	<24	U	<370	U	<24	U	<24	U
2-METHYLPHENOL	--	391,071	5,110,000	100	<27	U	<27	U	<400	U	<27	U	<27	U
2-NITROANILINE	--	23,464	306,600	--	<29	U	<29	U	<440	U	<29	U	<29	U
2-NITROPHENOL	--	--	--	--	<26	U	<26	U	<390	U	<26	U	<26	U
3,3'-DICHLOROBENZIDINE	--	1,419	6,359	--	<29	U,UJ,c	<29	U,UJ,c	<440	U	<29	U,UJ,c	<29	U,UJ,c
3-NITROANILINE	--	2,346	30,700	--	<34	U	<34	U	<510	U	<34	U	<34	U
4,6-DINITRO-2-METHYLPHENOL	--	782	10,220	--	<35	U	<35	U	<520	U	<35	U	<35	U
4-BROMOPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<320	U	<21	U	<21	U
4-CHLORO-3-METHYLPHENOL	--	--	--	--	<29	U	<29	U	<430	U	<29	U	<29	U
4-CHLOROANILINE	--	31,286	408,800	--	<16	U	<16	U	<240	U	<16	U	<16	U
4-CHLOROPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<320	U	<21	U	<21	U
4-METHYLPHENOL	--	39,107	511,000	100	<48	U	<48	U	<720	U	<48	U	<48	U
4-NITROANILINE	--	23,500	143,080	--	<39	U	<39	U	<590	U	<39	U	<39	U
4-NITROPHENOL	--	--	--	100	<75	U	<75	U	<1100	U	<75	U	<75	U
ACENAPHTHENE	--	469,286	6,132,000	100	<21	U	<21	U	<320	U	<21	U	<21	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<17	U	<17	U	<260	U	<17	U	<17	U
ACETOPHENONE	--	782,143	10,220,000	--	<23	U	<23	U	<350	U	<23	U	<23	U
ANTHRACENE	--	2,346,429	30,660,000	100	<25	U	<25	U	<380	U	<25	U	<25	U
ATRAZINE	--	2,903	13,007	--	<16	U	<16	U	<240	U	<16	U	<16	U
BENZALDEHYDE	--	782,143	10,220,000	--	<39	U	<39	U	<590	U,R,I	<39	U,R,I	<39	U,R,I
BENZO(A)ANTHRACENE	--	875	3,920	100	<29	U	<29	U	<430	U	<29	U	<29	U
BENZO(A)PYRENE	--	87	392	100	<23	U	<23	U	<350	U	<23	U	<23	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<36	U	<36	U	<540	U	<36	U	<36	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<23	U	<23	U	<340	U	<23	U	<23	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<29	U	<29	U	<430	U	<29	U	<29	U
BIS(2-CHLOROETHOXY) METHANE	--	--	--	--	<21	U	<21	U	<320	U	<21	U	<21	U
BIS(2-CHLOROETHYL)ETHER	--	581	2,601	--	<18	U	<18	U	<270	U	<18	U	<18	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	60	J	<32	U	<480	U	<32	U	<32	U
BUTYLBENZYL PHTHALATE	--	1,564,286	20,440,000	--	<23	U	<23	U	<350	U	<23	U	<23	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<62	U	<62	U	<930	U	<62	U	<62	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg) - Continued														
CARBAZOLE	--	31,936	143,080	--	<29	U	<29	U	<430	U	<29	U	<29	U
CHRYSENE	--	87,497	392,000	100	<28	U	<28	U	<420	U	<28	U	<28	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<27	U	<27	U	<400	U	<27	U	<27	U
DI-N-OCTYL PHTHALATE	--	312,857	4,088,000	--	<21	U	<21	U	<320	U	<21	U	<21	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<21	U	<21	U	<310	U	<21	U	<21	U
DIBENZOFURAN	--	15,643	204,400	--	<24	U	<24	U	<360	U	<24	U	<24	U
DIETHYL PHTHALATE	--	6,257,143	81,760,000	--	<25	U	<25	U	<380	U	<25	U	<25	U
DIMETHYL PHTHALATE	--	78,214,286	1,022,000,000	--	<23	U	<23	U	<340	U	<23	U	<23	U
FLUORANTHENE	--	312,857	4,088,000	100	<18	U	<18	U	<270	U	<18	U	<18	U
FLUORENE	--	312,857	4,088,000	100	<18	U	<18	U	<270	U	<18	U	<18	U
HEXACHLOROBENZENE	--	399	1,789	--	<22	U	<22	U	<320	U	<22	U	<22	U
HEXACHLOROBUTADIENE	--	1,560	20,400	--	<24	U	<24	U	<360	U	<24	U	<24	U
HEXACHLOROCYCLOPENTADIENE	--	46,929	613,200	--	<67	U	<67	U	<1000	U	<67	U	<67	U
HEXACHLOROETHANE	--	7,800	102,200	--	<17	U	<17	U	<260	U	<17	U	<17	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<20	U	<20	U	<300	U	<20	U	<20	U
ISOPHORONE	--	672,343	3,012,211	--	<28	U	<28	U	<420	U	<28	U	<28	U
NAPHTHALENE	--	156,429	2,044,000	100	<21	U	<21	U	<320	U	<21	U	<21	U
NITROBENZENE	--	3,911	51,100	--	<28	U	<28	U	<430	U	<28	U	<28	U
N-NITROSO-DI-N-PROPYLAMINE	--	91	409	--	<21	U	<21	U	<310	U	<21	U	<21	U
N-NITROSODIPHENYLAMINE(1)	--	130,352	584,000	--	<19	U	<19	U	<280	U	<19	U	<19	U
PENTACHLOROPHENOL	--	5,323	23,847	100	<46	U	<46	U	<690	U	<46	U	<46	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<24	U	<24	U	<360	U	<24	U	<24	U
PHENOL	--	2,346,429	30,660,000	100	<34	U	<34	U	<510	U	<34	U	<34	U
PYRENE	--	234,643	3,066,000	100	<24	U	<24	U	<370	U	<24	U	<24	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
1,1'-BIPHENYL	--	391,071	5,110,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2,2'-OXYBIS(1-CHLOROPROPANE)	--	9,125	40,880	--	<30	U	<30	U	<30	U	<30	U	<30	U
2,4,5-TRICHLOROPHENOL	--	782,143	10,220,000	100	<49	U	<49	U	<49	U	<49	U	<49	U
2,4,6-TRICHLOROPHENOL	--	58,066	260,145	100	<50	U	<50	U	<50	U	<50	U	<50	U
2,4-DICHLOROPHENOL	--	23,464	306,600	100	<22	U	<22	U	<22	U	<22	U	<22	U
2,4-DIMETHYLPHENOL	--	156,429	2,044,000	100	<30	U	<30	U	<30	U	<30	U	<30	U
2,4-DINITROPHENOL	--	15,643	204,400	100	<170	U	<170	U	<170	U	<170	U	<170	U
2,4-DINITROTOLUENE	--	15,643	204,400	--	<20	U	<20	U	<20	U	<20	U	<20	U
2,6-DINITROTOLUENE	--	7,821	102,200	--	<21	U	<21	U	<21	U	<21	U	<21	U
2-CHLORONAPHTHALENE	--	625,714	8,176,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2-CHLOROPHENOL	--	39,107	511,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
2-METHYLNAPHTHALENE	--	156,429	2,044,000	--	<24	U	<24	U	<24	U	<24	U	<24	U
2-METHYLPHENOL	--	391,071	5,110,000	100	<27	U	<27	U	<27	U	<27	U	<27	U
2-NITROANILINE	--	23,464	306,600	--	<29	U	<29	U	<29	U	<29	U	<29	U
2-NITROPHENOL	--	--	--	--	<26	U	<26	U	<26	U	<26	U	<26	U
3,3'-DICHLOROBENZIDINE	--	1,419	6,359	--	<29	U	<29	U,UJ,c	<29	U,UJ,c	<29	U,UJ,c	<29	U,UJ,c
3-NITROANILINE	--	2,346	30,700	--	<34	U	<34	U	<34	U	<34	U	<34	U
4,6-DINITRO-2-METHYLPHENOL	--	782	10,220	--	<35	U	<35	U	<35	U	<35	U	<35	U
4-BROMOPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-CHLORO-3-METHYLPHENOL	--	--	--	--	<29	U	<29	U	<29	U	<29	U	<29	U
4-CHLOROANILINE	--	31,286	408,800	--	<16	U	<16	U	<16	U	<16	U	<16	U
4-CHLOROPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-METHYLPHENOL	--	39,107	511,000	100	<48	U	<48	U	<48	U	<48	U	<48	U
4-NITROANILINE	--	23,500	143,080	--	<39	U	<39	U	<39	U	<39	U	<39	U
4-NITROPHENOL	--	--	--	100	<75	U	<75	U	<75	U	<75	U	<75	U
ACENAPHTHENE	--	469,286	6,132,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<17	U	<17	U	<17	U	<17	U	<17	U
ACETOPHENONE	--	782,143	10,220,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
ANTHRACENE	--	2,346,429	30,660,000	100	<25	U	<25	U	<25	U	<25	U	<25	U
ATRAZINE	--	2,903	13,007	--	<16	U	<16	U	<16	U	<16	U	<16	U
BENZALDEHYDE	--	782,143	10,220,000	--	<39	U	<39	U	<39	U	<39	U,R,I	<39	U,R,I
BENZO(A)ANTHRACENE	--	875	3,920	100	<29	U	<29	U	<29	U	<29	U	<29	U
BENZO(A)PYRENE	--	87	392	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<36	U	<36	U	<36	U	<36	U	<36	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<29	U	<29	U	<29	U	<29	U	<29	U
BIS(2-CHLOROETHOXY) METHANE	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
BIS(2-CHLOROETHYL)ETHER	--	581	2,601	--	<18	U	<18	U	<18	U	<18	U	<18	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<32	U	<32	U	<32	U	<32	U	<32	U
BUTYLBENZYL PHTHALATE	--	1,564,286	20,440,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<62	U	<62	U	<62	U	<62	U	<62	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg) - Continued														
CARBAZOLE	--	31,936	143,080	--	<29	U	<29	U	<29	U	<29	U	<29	U
CHRYSENE	--	87,497	392,000	100	<28	U	<28	U	<28	U	<28	U	<28	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<27	U	<27	U	<27	U	<27	U	<27	U
DI-N-OCTYL PHTHALATE	--	312,857	4,088,000	--	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZOFURAN	--	15,643	204,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
DIETHYL PHTHALATE	--	6,257,143	81,760,000	--	<25	U	<25	U	<25	U	<25	U	<25	U
DIMETHYL PHTHALATE	--	78,214,286	1,022,000,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
FLUORANTHENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
FLUORENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
HEXACHLOROBENZENE	--	399	1,789	--	<22	U	<22	U	<22	U	<22	U	<22	U
HEXACHLOROBUTADIENE	--	1,560	20,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
HEXACHLOROCYCLOPENTADIENE	--	46,929	613,200	--	<67	U	<67	U	<67	U	<67	U	<67	U
HEXACHLOROETHANE	--	7,800	102,200	--	<17	U	<17	U	<17	U	<17	U	<17	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<20	U	<20	U	<20	U	<20	U	<20	U
ISOPHORONE	--	672,343	3,012,211	--	<28	U	<28	U	<28	U	<28	U	<28	U
NAPHTHALENE	--	156,429	2,044,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
NITROBENZENE	--	3,911	51,100	--	<28	U	<28	U	<28	U	<28	U	<28	U
N-NITROSO-DI-N-PROPYLAMINE	--	91	409	--	<21	U	<21	U	<21	U	<21	U	<21	U
N-NITROSODIPHENYLAMINE(1)	--	130,352	584,000	--	<19	U	<19	U	<19	U	<19	U	<19	U
PENTACHLOROPHENOL	--	5,323	23,847	100	<46	U	<46	U	<46	U	<46	U	<46	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U
PHENOL	--	2,346,429	30,660,000	100	<34	U	<34	U	<34	U	<34	U	<34	U
PYRENE	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
1,1'-BIPHENYL	--	391,071	5,110,000	--	<330	U	<330	U	<22	U	<22	U	<22	U
2,2'-OXYBIS(1-CHLOROPROPANE)	--	9,125	40,880	--	<450	U	<450	U	<30	U,UJ,c	<30	U,UJ,c	<30	U,UJ,c
2,4,5-TRICHLOROPHENOL	--	782,143	10,220,000	100	<730	U	<730	U	<49	U	<49	U	<49	U
2,4,6-TRICHLOROPHENOL	--	58,066	260,145	100	<760	U	<760	U	<50	U	<50	U	<50	U
2,4-DICHLOROPHENOL	--	23,464	306,600	100	<330	U	<330	U	<22	U	<22	U	<22	U
2,4-DIMETHYLPHENOL	--	156,429	2,044,000	100	<460	U	<460	U	<30	U	<30	U	<30	U
2,4-DINITROPHENOL	--	15,643	204,400	100	<2600	U	<2600	U	<170	U	<170	U	<170	U
2,4-DINITROTOLUENE	--	15,643	204,400	--	<300	U	<300	U	<20	U	<20	U	<20	U
2,6-DINITROTOLUENE	--	7,821	102,200	--	<310	U	<310	U	<21	U	<21	U	<21	U
2-CHLORONAPHTHALENE	--	625,714	8,176,000	--	<330	U	<330	U	<22	U	<22	U	<22	U
2-CHLOROPHENOL	--	39,107	511,000	100	<270	U	<270	U	<18	U	<18	U	<18	U
2-METHYLNAPHTHALENE	--	156,429	2,044,000	--	<370	U	<370	U	<24	U	<24	U	<24	U
2-METHYLPHENOL	--	391,071	5,110,000	100	<400	U	<400	U	<27	U	<27	U	<27	U
2-NITROANILINE	--	23,464	306,600	--	<440	U	<440	U	<29	U	<29	U	<29	U
2-NITROPHENOL	--	--	--	--	<390	U	<390	U	<26	U	<26	U	<26	U
3,3'-DICHLOROBENZIDINE	--	1,419	6,359	--	<440	U	<440	U	<29	U	<29	U	<29	U
3-NITROANILINE	--	2,346	30,700	--	<510	U	<510	U	<34	U	<34	U	<34	U
4,6-DINITRO-2-METHYLPHENOL	--	782	10,220	--	<520	U	<520	U	<35	U	<35	U	<35	U
4-BROMOPHENYL-PHENYLETHER	--	--	--	--	<320	U	<320	U	<21	U	<21	U	<21	U
4-CHLORO-3-METHYLPHENOL	--	--	--	--	<430	U	<430	U	<29	U	<29	U	<29	U
4-CHLOROANILINE	--	31,286	408,800	--	<240	U	<240	U	<16	U	<16	U	<16	U
4-CHLOROPHENYL-PHENYLETHER	--	--	--	--	<320	U	<320	U	<21	U	<21	U	<21	U
4-METHYLPHENOL	--	39,107	511,000	100	<720	U	<720	U	<48	U	<48	U	<48	U
4-NITROANILINE	--	23,500	143,080	--	<590	U	<590	U	<39	U	<39	U	<39	U
4-NITROPHENOL	--	--	--	100	<1100	U	<1100	U	<75	U	<75	U	<75	U
ACENAPHTHENE	--	469,286	6,132,000	100	<320	U	<320	U	<21	U	<21	U	<21	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<260	U	<260	U	<17	U	<17	U	<17	U
ACETOPHENONE	--	782,143	10,220,000	--	<350	U	<350	U	<23	U	<23	U	<23	U
ANTHRACENE	--	2,346,429	30,660,000	100	<380	U	<380	U	<25	U	<25	U	<25	U
ATRAZINE	--	2,903	13,007	--	<240	U	<240	U	<16	U,UJ,c	<16	U,UJ,c	<16	U,UJ,c
BENZALDEHYDE	--	782,143	10,220,000	--	<590	U,R,I	<590	U,R,I	<39	U,R,I	<39	U,R,I	<39	U,R,I
BENZO(A)ANTHRACENE	--	875	3,920	100	<430	U	<430	U	<29	U	<29	U	<29	U
BENZO(A)PYRENE	--	87	392	100	<350	U	<350	U	<23	U	<23	U	<23	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<540	U	<540	U	<36	U	<36	U	<36	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<340	U	<340	U	<23	U	<23	U	<23	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<430	U	<430	U	<29	U	<29	U	<29	U
BIS(2-CHLOROETHOXY) METHANE	--	--	--	--	<320	U	<320	U	<21	U	<21	U	<21	U
BIS(2-CHLOROETHYL)ETHER	--	581	2,601	--	<270	U	<270	U	<18	U	<18	U	<18	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<480	U	1300	J	<32	U	<32	U	<32	U
BUTYLBENZYL PHTHALATE	--	1,564,286	20,440,000	--	<350	U	<350	U	<23	U	<23	U	<23	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<930	U	<930	U	<62	U	<62	U	<62	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg) - Continued														
CARBAZOLE	--	31,936	143,080	--	<430	U	<430	U	<29	U	<29	U	<29	U
CHRYSENE	--	87,497	392,000	100	<420	U	<420	U	<28	U	<28	U	<28	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<400	U	<400	U	<27	U	<27	U	<27	U
DI-N-OCTYL PHTHALATE	--	312,857	4,088,000	--	<320	U	<320	U	<21	U	<21	U	<21	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<310	U	<310	U	<21	U	<21	U	<21	U
DIBENZOFURAN	--	15,643	204,400	--	<360	U	<360	U	<24	U	<24	U	<24	U
DIETHYL PHTHALATE	--	6,257,143	81,760,000	--	<380	U	<380	U	<25	U	<25	U	<25	U
DIMETHYL PHTHALATE	--	78,214,286	1,022,000,000	--	<340	U	<340	U	<23	U	<23	U	<23	U
FLUORANTHENE	--	312,857	4,088,000	100	<270	U	<270	U	<18	U	<18	U	<18	U
FLUORENE	--	312,857	4,088,000	100	<270	U	<270	U	<18	U	<18	U	<18	U
HEXACHLOROBENZENE	--	399	1,789	--	<320	U	<320	U	<22	U	<22	U	<22	U
HEXACHLOROBUTADIENE	--	1,560	20,400	--	<360	U	<360	U	<24	U	<24	U	<24	U
HEXACHLOROCYCLOPENTADIENE	--	46,929	613,200	--	<1000	U	<1000	U	<67	U	<67	U	<67	U
HEXACHLOROETHANE	--	7,800	102,200	--	<260	U	<260	U	<17	U	<17	U	<17	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<300	U	<300	U	<20	U	<20	U	<20	U
ISOPHORONE	--	672,343	3,012,211	--	<420	U	<420	U	<28	U	<28	U	<28	U
NAPHTHALENE	--	156,429	2,044,000	100	<320	U	<320	U	<21	U	<21	U	<21	U
NITROBENZENE	--	3,911	51,100	--	<430	U	<430	U	<28	U	<28	U	<28	U
N-NITROSO-DI-N-PROPYLAMINE	--	91	409	--	<310	U	<310	U	<21	U	<21	U	<21	U
N-NITROSODIPHENYLAMINE(1)	--	130,352	584,000	--	<280	U	<280	U	<19	U	<19	U	<19	U
PENTACHLOROPHENOL	--	5,323	23,847	100	<690	U	<690	U	<46	U	<46	U	<46	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<360	U	<360	U	<24	U	<24	U	<24	U
PHENOL	--	2,346,429	30,660,000	100	<510	U	<510	U	<34	U	<34	U	<34	U
PYRENE	--	234,643	3,066,000	100	<370	U	<370	U	<24	U	<24	U	<24	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
1,1'-BIPHENYL	--	391,071	5,110,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2,2'-OXYBIS(1-CHLOROPROPANE)	--	9,125	40,880	--	<30	U,UJ,c	<30	U	<30	U	<30	U,UJ,c	<30	U,UJ,c
2,4,5-TRICHLOROPHENOL	--	782,143	10,220,000	100	<49	U	<49	U	<49	U	<49	U	<49	U
2,4,6-TRICHLOROPHENOL	--	58,066	260,145	100	<50	U	<50	U	<50	U	<50	U	<50	U
2,4-DICHLOROPHENOL	--	23,464	306,600	100	<22	U	<22	U	<22	U	<22	U	<22	U
2,4-DIMETHYLPHENOL	--	156,429	2,044,000	100	<30	U	<30	U	<30	U	<30	U	<30	U
2,4-DINITROPHENOL	--	15,643	204,400	100	<170	U	<170	U	<170	U	<170	U	<170	U
2,4-DINITROTOLUENE	--	15,643	204,400	--	<20	U	<20	U	<20	U	<20	U	<20	U
2,6-DINITROTOLUENE	--	7,821	102,200	--	<21	U	<21	U	<21	U	<21	U	<21	U
2-CHLORONAPHTHALENE	--	625,714	8,176,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2-CHLOROPHENOL	--	39,107	511,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
2-METHYLNAPHTHALENE	--	156,429	2,044,000	--	<24	U	<24	U	<24	U	<24	U	<24	U
2-METHYLPHENOL	--	391,071	5,110,000	100	<27	U	<27	U	<27	U	<27	U	<27	U
2-NITROANILINE	--	23,464	306,600	--	<29	U	<29	U	<29	U	<29	U	<29	U
2-NITROPHENOL	--	--	--	--	<26	U	<26	U	<26	U	<26	U	<26	U
3,3'-DICHLOROBENZIDINE	--	1,419	6,359	--	<29	U	<29	U,UJ,c	<29	U,UJ,c	<29	U	<29	U
3-NITROANILINE	--	2,346	30,700	--	<34	U	<34	U	<34	U	<34	U	<34	U
4,6-DINITRO-2-METHYLPHENOL	--	782	10,220	--	<35	U	<35	U	<35	U	<35	U	<35	U
4-BROMOPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-CHLORO-3-METHYLPHENOL	--	--	--	--	<29	U	<29	U	<29	U	<29	U	<29	U
4-CHLOROANILINE	--	31,286	408,800	--	<16	U	<16	U	<16	U	<16	U	<16	U
4-CHLOROPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-METHYLPHENOL	--	39,107	511,000	100	<48	U	<48	U	<48	U	<48	U	<48	U
4-NITROANILINE	--	23,500	143,080	--	<39	U	<39	U	<39	U	<39	U	<39	U
4-NITROPHENOL	--	--	--	100	<75	U	<75	U	<75	U	<75	U	<75	U
ACENAPHTHENE	--	469,286	6,132,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<17	U	<17	U	<17	U	<17	U	<17	U
ACETOPHENONE	--	782,143	10,220,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
ANTHRACENE	--	2,346,429	30,660,000	100	<25	U	<25	U	<25	U	<25	U	<25	U
ATRAZINE	--	2,903	13,007	--	<16	U,UJ,c	<16	U	<16	U	<16	U,UJ,c	<16	U,UJ,c
BENZALDEHYDE	--	782,143	10,220,000	--	<39	U,R,I	<39	U	<39	U	<39	U,R,I	<39	U,R,I
BENZO(A)ANTHRACENE	--	875	3,920	100	<29	U	<29	U	<29	U	<29	U	<29	U
BENZO(A)PYRENE	--	87	392	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<36	U	<36	U	<36	U	<36	U	<36	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<29	U	<29	U	<29	U	<29	U	<29	U
BIS(2-CHLOROETHOXY) METHANE	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
BIS(2-CHLOROETHYL)ETHER	--	581	2,601	--	<18	U	<18	U	<18	U	<18	U	<18	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<32	U	<32	U	<32	U	<32	U	<32	U
BUTYLBENZYL PHTHALATE	--	1,564,286	20,440,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<62	U	<62	U	<62	U	<62	U	<62	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg) - Continued														
CARBAZOLE	--	31,936	143,080	--	<29	U	<29	U	<29	U	<29	U	<29	U
CHRYSENE	--	87,497	392,000	100	<28	U	<28	U	<28	U	<28	U	<28	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<27	U	<27	U	<27	U	<27	U	<27	U
DI-N-OCTYL PHTHALATE	--	312,857	4,088,000	--	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZOFURAN	--	15,643	204,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
DIETHYL PHTHALATE	--	6,257,143	81,760,000	--	<25	U	<25	U	<25	U	<25	U	<25	U
DIMETHYL PHTHALATE	--	78,214,286	1,022,000,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
FLUORANTHENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
FLUORENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
HEXACHLOROBENZENE	--	399	1,789	--	<22	U	<22	U	<22	U	<22	U	<22	U
HEXACHLOROBUTADIENE	--	1,560	20,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
HEXACHLOROCYCLOPENTADIENE	--	46,929	613,200	--	<67	U	<67	U	<67	U	<67	U	<67	U
HEXACHLOROETHANE	--	7,800	102,200	--	<17	U	<17	U	<17	U	<17	U	<17	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<20	U	<20	U	<20	U	<20	U	<20	U
ISOPHORONE	--	672,343	3,012,211	--	<28	U	<28	U	<28	U	<28	U	<28	U
NAPHTHALENE	--	156,429	2,044,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
NITROBENZENE	--	3,911	51,100	--	<28	U	<28	U	<28	U	<28	U	<28	U
N-NITROSO-DI-N-PROPYLAMINE	--	91	409	--	<21	U	<21	U	<21	U	<21	U	<21	U
N-NITROSODIPHENYLAMINE(1)	--	130,352	584,000	--	<19	U	<19	U	<19	U	<19	U	<19	U
PENTACHLOROPHENOL	--	5,323	23,847	100	<46	U	<46	U	<46	U	<46	U	<46	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U
PHENOL	--	2,346,429	30,660,000	100	<34	U	<34	U	<34	U	<34	U	<34	U
PYRENE	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
1,1'-BIPHENYL	--	391,071	5,110,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2,2'-OXYBIS(1-CHLOROPROPANE)	--	9,125	40,880	--	<30	U,UJ,c	<30	U	<30	U,UJ,c	<30	U	<30	U
2,4,5-TRICHLOROPHENOL	--	782,143	10,220,000	100	<49	U	<49	U	<49	U	<49	U	<49	U
2,4,6-TRICHLOROPHENOL	--	58,066	260,145	100	<50	U	<50	U	<50	U	<50	U	<50	U
2,4-DICHLOROPHENOL	--	23,464	306,600	100	<22	U	<22	U	<22	U	<22	U	<22	U
2,4-DIMETHYLPHENOL	--	156,429	2,044,000	100	<30	U	<30	U	<30	U	<30	U	<30	U
2,4-DINITROPHENOL	--	15,643	204,400	100	<170	U	<170	U	<170	U	<170	U	<170	U
2,4-DINITROTOLUENE	--	15,643	204,400	--	28	J	<20	U	<20	U	<20	U	<20	U
2,6-DINITROTOLUENE	--	7,821	102,200	--	<21	U	<21	U	<21	U	<21	U	<21	U
2-CHLORONAPHTHALENE	--	625,714	8,176,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2-CHLOROPHENOL	--	39,107	511,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
2-METHYLNAPHTHALENE	--	156,429	2,044,000	--	<24	U	<24	U	<24	U	<24	U	<24	U
2-METHYLPHENOL	--	391,071	5,110,000	100	<27	U	<27	U	<27	U	<27	U	<27	U
2-NITROANILINE	--	23,464	306,600	--	<29	U	<29	U	<29	U	<29	U	<29	U
2-NITROPHENOL	--	--	--	--	<26	U	<26	U	<26	U	<26	U	<26	U
3,3'-DICHLOROBENZIDINE	--	1,419	6,359	--	<29	U	<29	U,UJ,c	<29	U	<29	U,UJ,c	<29	U,UJ,c
3-NITROANILINE	--	2,346	30,700	--	<34	U	<34	U	<34	U	<34	U	<34	U
4,6-DINITRO-2-METHYLPHENOL	--	782	10,220	--	<35	U	<35	U	<35	U	<35	U	<35	U
4-BROMOPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-CHLORO-3-METHYLPHENOL	--	--	--	--	<29	U	<29	U	<29	U	<29	U	<29	U
4-CHLOROANILINE	--	31,286	408,800	--	<16	U	<16	U	<16	U	<16	U	<16	U
4-CHLOROPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-METHYLPHENOL	--	39,107	511,000	100	<48	U	<48	U	<48	U	<48	U	<48	U
4-NITROANILINE	--	23,500	143,080	--	<39	U	<39	U	<39	U	<39	U	<39	U
4-NITROPHENOL	--	--	--	100	<75	U	<75	U	<75	U	<75	U	<75	U
ACENAPHTHENE	--	469,286	6,132,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<17	U	<17	U	<17	U	<17	U	<17	U
ACETOPHENONE	--	782,143	10,220,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
ANTHRACENE	--	2,346,429	30,660,000	100	<25	U	<25	U	<25	U	<25	U	<25	U
ATRAZINE	--	2,903	13,007	--	<16	U,UJ,c	<16	U	<16	U,UJ,c	<16	U	<16	U
BENZALDEHYDE	--	782,143	10,220,000	--	<39	U,R,I	<39	U,R,I	<39	U,R,I	<39	U	<39	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<29	U	<29	U	<29	U	<29	U	<29	U
BENZO(A)PYRENE	--	87	392	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<36	U	<36	U	<36	U	<36	U	<36	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<29	U	<29	U	<29	U	<29	U	<29	U
BIS(2-CHLOROETHOXY) METHANE	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
BIS(2-CHLOROETHYL)ETHER	--	581	2,601	--	<18	U	<18	U	<18	U	<18	U	<18	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<32	U	<32	U	71	J	45	J	<32	U
BUTYLBENZYL PHTHALATE	--	1,564,286	20,440,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<62	U	<62	U	<62	U	<62	U	<62	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg) - Continued														
CARBAZOLE	--	31,936	143,080	--	<29	U	<29	U	<29	U	<29	U	<29	U
CHRYSENE	--	87,497	392,000	100	<28	U	<28	U	<28	U	<28	U	<28	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	89	J	<27	U	<27	U	<27	U	<27	U
DI-N-OCTYL PHTHALATE	--	312,857	4,088,000	--	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZOFURAN	--	15,643	204,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
DIETHYL PHTHALATE	--	6,257,143	81,760,000	--	<25	U	<25	U	<25	U	<25	U	<25	U
DIMETHYL PHTHALATE	--	78,214,286	1,022,000,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
FLUORANTHENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
FLUORENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
HEXACHLOROBENZENE	--	399	1,789	--	<22	U	<22	U	<22	U	<22	U	<22	U
HEXACHLOROBUTADIENE	--	1,560	20,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
HEXACHLOROCYCLOPENTADIENE	--	46,929	613,200	--	<67	U	<67	U	<67	U	<67	U	<67	U
HEXACHLOROETHANE	--	7,800	102,200	--	<17	U	<17	U	<17	U	<17	U	<17	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<20	U	<20	U	<20	U	<20	U	<20	U
ISOPHORONE	--	672,343	3,012,211	--	<28	U	<28	U	<28	U	<28	U	<28	U
NAPHTHALENE	--	156,429	2,044,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
NITROBENZENE	--	3,911	51,100	--	<28	U	<28	U	<28	U	<28	U	<28	U
N-NITROSO-DI-N-PROPYLAMINE	--	91	409	--	<21	U	<21	U	<21	U	<21	U	<21	U
N-NITROSODIPHENYLAMINE(1)	--	130,352	584,000	--	<19	U	<19	U	<19	U	<19	U	<19	U
PENTACHLOROPHENOL	--	5,323	23,847	100	<46	U	<46	U	<46	U	<46	U	<46	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U
PHENOL	--	2,346,429	30,660,000	100	<34	U	<34	U	<34	U	<34	U	<34	U
PYRENE	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
1,1'-BIPHENYL	--	391,071	5,110,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2,2'-OXYBIS(1-CHLOROPROPANE)	--	9,125	40,880	--	<30	U,UJ,c	<30	U,UJ,c	<30	U,UJ,c	<30	U,UJ,c	<30	U,UJ,c
2,4,5-TRICHLOROPHENOL	--	782,143	10,220,000	100	<49	U	<49	U	<49	U	<49	U	<49	U
2,4,6-TRICHLOROPHENOL	--	58,066	260,145	100	<50	U	<50	U	<50	U	<50	U	<50	U
2,4-DICHLOROPHENOL	--	23,464	306,600	100	<22	U	<22	U	<22	U	<22	U	<22	U
2,4-DIMETHYLPHENOL	--	156,429	2,044,000	100	<30	U	<30	U	<30	U	<30	U	<30	U
2,4-DINITROPHENOL	--	15,643	204,400	100	<170	U	<170	U	<170	U	<170	U	<170	U
2,4-DINITROTOLUENE	--	15,643	204,400	--	<20	U	<20	U	<20	U	<20	U	<20	U
2,6-DINITROTOLUENE	--	7,821	102,200	--	<21	U	<21	U	<21	U	<21	U	<21	U
2-CHLORONAPHTHALENE	--	625,714	8,176,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2-CHLOROPHENOL	--	39,107	511,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
2-METHYLNAPHTHALENE	--	156,429	2,044,000	--	<24	U	<24	U	<24	U	<24	U	<24	U
2-METHYLPHENOL	--	391,071	5,110,000	100	<27	U	<27	U	<27	U	<27	U	<27	U
2-NITROANILINE	--	23,464	306,600	--	<29	U	<29	U	<29	U	<29	U	<29	U
2-NITROPHENOL	--	--	--	--	<26	U	<26	U	<26	U	<26	U	<26	U
3,3'-DICHLOROBENZIDINE	--	1,419	6,359	--	<29	U	<29	U	<29	U	<29	U	<29	U
3-NITROANILINE	--	2,346	30,700	--	<34	U	<34	U	<34	U	<34	U	<34	U
4,6-DINITRO-2-METHYLPHENOL	--	782	10,220	--	<35	U	<35	U	<35	U	<35	U	<35	U
4-BROMOPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-CHLORO-3-METHYLPHENOL	--	--	--	--	<29	U	<29	U	<29	U	<29	U	<29	U
4-CHLOROANILINE	--	31,286	408,800	--	<16	U	<16	U	<16	U	<16	U	<16	U
4-CHLOROPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-METHYLPHENOL	--	39,107	511,000	100	<48	U	<48	U	<48	U	<48	U	<48	U
4-NITROANILINE	--	23,500	143,080	--	<39	U	<39	U	<39	U	<39	U	<39	U
4-NITROPHENOL	--	--	--	100	<75	U	<75	U	<75	U	<75	U	<75	U
ACENAPHTHENE	--	469,286	6,132,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<17	U	<17	U	<17	U	<17	U	<17	U
ACETOPHENONE	--	782,143	10,220,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
ANTHRACENE	--	2,346,429	30,660,000	100	<25	U	<25	U	<25	U	<25	U	<25	U
ATRAZINE	--	2,903	13,007	--	<16	U,UJ,c	<16	U,UJ,c	<16	U,UJ,c	<16	U,UJ,c	<16	U,UJ,c
BENZALDEHYDE	--	782,143	10,220,000	--	<39	U,R,I	<39	U,R,I	<39	U,R,I	<39	U,R,I	<39	U,R,I
BENZO(A)ANTHRACENE	--	875	3,920	100	<29	U	<29	U	<29	U	<29	U	<29	U
BENZO(A)PYRENE	--	87	392	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<36	U	<36	U	<36	U	<36	U	<36	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<29	U	<29	U	<29	U	<29	U	<29	U
BIS(2-CHLOROETHOXY) METHANE	--	--	--	--	<21	U	<21	U	<21	U	<21	U,UJ,m	<21	U
BIS(2-CHLOROETHYL)ETHER	--	581	2,601	--	<18	U	<18	U	<18	U	<18	U	<18	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<32	U	<32	U	<32	U	42	J	<32	U
BUTYLBENZYL PHTHALATE	--	1,564,286	20,440,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
CAPROLACTAM	--	3,910,714	51,100,000	--	<62	U	<62	U	<62	U	<62	U	<62	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg) - Continued														
CARBAZOLE	--	31,936	143,080	--	<29	U	<29	U	<29	U	<29	U	<29	U
CHRYSENE	--	87,497	392,000	100	<28	U	<28	U	<28	U	<28	U	<28	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<27	U	<27	U	<27	U	<27	U	<27	U
DI-N-OCTYL PHTHALATE	--	312,857	4,088,000	--	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZOFURAN	--	15,643	204,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
DIETHYL PHTHALATE	--	6,257,143	81,760,000	--	<25	U	<25	U	<25	U	<25	U	<25	U
DIMETHYL PHTHALATE	--	78,214,286	1,022,000,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
FLUORANTHENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
FLUORENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
HEXACHLOROBENZENE	--	399	1,789	--	<22	U	<22	U	<22	U	<22	U	<22	U
HEXACHLOROBUTADIENE	--	1,560	20,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
HEXACHLOROCYCLOPENTADIENE	--	46,929	613,200	--	<67	U	<67	U	<67	U	<67	U	<67	U
HEXACHLOROETHANE	--	7,800	102,200	--	<17	U	<17	U	<17	U	<17	U	<17	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<20	U	<20	U	<20	U	<20	U	<20	U
ISOPHORONE	--	672,343	3,012,211	--	<28	U	<28	U	<28	U	<28	U	<28	U
NAPHTHALENE	--	156,429	2,044,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
NITROBENZENE	--	3,911	51,100	--	<28	U	<28	U	<28	U	<28	U	<28	U
N-NITROSO-DI-N-PROPYLAMINE	--	91	409	--	<21	U	<21	U	<21	U	<21	U	<21	U
N-NITROSODIPHENYLAMINE(1)	--	130,352	584,000	--	<19	U	<19	U	<19	U	<19	U	<19	U
PENTACHLOROPHENOL	--	5,323	23,847	100	<46	U	<46	U	<46	U	<46	U	<46	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U
PHENOL	--	2,346,429	30,660,000	100	<34	U	<34	U	<34	U	<34	U	<34	U
PYRENE	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg)														
1,1'-BIPHENYL	--	391,071	5,110,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2,2'-OXYBIS(1-CHLOROPROPANE)	--	9,125	40,880	--	<30	U,UJ,c	<30	U,UJ,c	<30	U	<30	U	<30	U
2,4,5-TRICHLOROPHENOL	--	782,143	10,220,000	100	<49	U	<49	U	<49	U	<49	U	<49	U
2,4,6-TRICHLOROPHENOL	--	58,066	260,145	100	<50	U	<50	U	<50	U	<50	U	<50	U
2,4-DICHLOROPHENOL	--	23,464	306,600	100	<22	U	<22	U	<22	U	<22	U	<22	U
2,4-DIMETHYLPHENOL	--	156,429	2,044,000	100	<30	U	<30	U	<30	U	<30	U	<30	U
2,4-DINITROPHENOL	--	15,643	204,400	100	<170	U	<170	U	<170	U	<170	U	<170	U
2,4-DINITROTOLUENE	--	15,643	204,400	--	<20	U	<20	U	<20	U	<20	U	<20	U
2,6-DINITROTOLUENE	--	7,821	102,200	--	<21	U	<21	U	<21	U	<21	U	<21	U
2-CHLORONAPHTHALENE	--	625,714	8,176,000	--	<22	U	<22	U	<22	U	<22	U	<22	U
2-CHLOROPHENOL	--	39,107	511,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
2-METHYLNAPHTHALENE	--	156,429	2,044,000	--	<24	U	<24	U	<24	U	<24	U	<24	U
2-METHYLPHENOL	--	391,071	5,110,000	100	<27	U	<27	U	<27	U	<27	U	<27	U
2-NITROANILINE	--	23,464	306,600	--	<29	U	<29	U	<29	U	<29	U	<29	U
2-NITROPHENOL	--	--	--	--	<26	U	<26	U	<26	U	<26	U	<26	U
3,3'-DICHLOROBENZIDINE	--	1,419	6,359	--	<29	U	<29	U	<29	U,UJ,c	<29	U,UJ,c	<29	U,UJ,c
3-NITROANILINE	--	2,346	30,700	--	<34	U	<34	U	<34	U	<34	U	<34	U
4,6-DINITRO-2-METHYLPHENOL	--	782	10,220	--	<35	U	<35	U	<35	U	<35	U	<35	U
4-BROMOPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-CHLORO-3-METHYLPHENOL	--	--	--	--	<29	U	<29	U	<29	U	<29	U	<29	U
4-CHLOROANILINE	--	31,286	408,800	--	<16	U	<16	U	<16	U	<16	U	<16	U
4-CHLOROPHENYL-PHENYLETHER	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
4-METHYLPHENOL	--	39,107	511,000	100	<48	U	<48	U	<48	U	<48	U	<48	U
4-NITROANILINE	--	23,500	143,080	--	<39	U	<39	U	<39	U	<39	U	<39	U
4-NITROPHENOL	--	--	--	100	<75	U	<75	U	<75	U	<75	U	<75	U
ACENAPHTHENE	--	469,286	6,132,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<17	U	<17	U	<17	U	<17	U	<17	U
ACETOPHENONE	--	782,143	10,220,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
ANTHRACENE	--	2,346,429	30,660,000	100	<25	U	<25	U	<25	U	<25	U	<25	U
ATRAZINE	--	2,903	13,007	--	<16	U,UJ,c	<16	U,UJ,c	<16	U	<16	U	<16	U
BENZALDEHYDE	--	782,143	10,220,000	--	<39	U,R,I	<39	U,R,I	<39	U	<39	U	<39	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<29	U	<29	U	<29	U	<29	U	<29	U
BENZO(A)PYRENE	--	87	392	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<36	U	<36	U	<36	U	<36	U	<36	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<23	U	<23	U	<23	U	<23	U	<23	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<29	U	<29	U	<29	U	<29	U	<29	U
BIS(2-CHLOROETHOXY) METHANE	--	--	--	--	<21	U	<21	U	<21	U	<21	U	<21	U
BIS(2-CHLOROETHYL)ETHER	--	581	2,601	--	<18	U	<18	U	<18	U	<18	U	<18	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	45,623	204,400	--	<32	U	<32	U	<32	U	69	J	<32	U
BUTYLBENZYL PHTHALATE	--	1,564,286	20,440,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
CAPROLACTAM	--	3,910,714	51,100,000	--	100	J	<62	U	<62	U	<62	U	<62	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL SVOCs (µg/kg) - Continued														
CARBAZOLE	--	31,936	143,080	--	<29	U	<29	U	<29	U	<29	U	<29	U
CHRYSENE	--	87,497	392,000	100	<28	U	<28	U	<28	U	<28	U	<28	U
DI-N-BUTYL PHTHALATE	--	782,143	10,220,000	--	<27	U	<27	U	<27	U	<27	U	<27	U
DI-N-OCTYL PHTHALATE	--	312,857	4,088,000	--	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<21	U	<21	U	<21	U	<21	U	<21	U
DIBENZOFURAN	--	15,643	204,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
DIETHYL PHTHALATE	--	6,257,143	81,760,000	--	<25	U	<25	U	<25	U	<25	U	<25	U
DIMETHYL PHTHALATE	--	78,214,286	1,022,000,000	--	<23	U	<23	U	<23	U	<23	U	<23	U
FLUORANTHENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
FLUORENE	--	312,857	4,088,000	100	<18	U	<18	U	<18	U	<18	U	<18	U
HEXACHLOROBENZENE	--	399	1,789	--	<22	U	<22	U	<22	U	<22	U	<22	U
HEXACHLOROBUTADIENE	--	1,560	20,400	--	<24	U	<24	U	<24	U	<24	U	<24	U
HEXACHLOROCYCLOPENTADIENE	--	46,929	613,200	--	<67	U	<67	U	<67	U	<67	U	<67	U
HEXACHLOROETHANE	--	7,800	102,200	--	<17	U	<17	U	<17	U	<17	U	<17	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<20	U	<20	U	<20	U	<20	U	<20	U
ISOPHORONE	--	672,343	3,012,211	--	<28	U	<28	U	<28	U	<28	U	<28	U
NAPHTHALENE	--	156,429	2,044,000	100	<21	U	<21	U	<21	U	<21	U	<21	U
NITROBENZENE	--	3,911	51,100	--	<28	U	<28	U	<28	U	<28	U	<28	U
N-NITROSO-DI-N-PROPYLAMINE	--	91	409	--	<21	U	<21	U	<21	U	<21	U	<21	U
N-NITROSODIPHENYLAMINE(1)	--	130,352	584,000	--	<19	U	<19	U	<19	U	<19	U	<19	U
PENTACHLOROPHENOL	--	5,323	23,847	100	<46	U	<46	U	<46	U	<46	U	<46	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U
PHENOL	--	2,346,429	30,660,000	100	<34	U	<34	U	<34	U	<34	U	<34	U
PYRENE	--	234,643	3,066,000	100	<24	U	<24	U	<24	U	<24	U	<24	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<5.9 U		<5.9 U		<89 U		<5.9 U		19 J	
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<5.9 U		<5.9 U		<88 U		<5.9 U		<5.9 U	
ANTHRACENE	--	2,346,429	30,660,000	100	<5.4 U		<5.4 U		<81 U		<5.4 U		<5.4 U	
BENZO(A)ANTHRACENE	--	875	3,920	100	<2.2 U		<2.2 U		<33 U		<2.2 U		<2.2 U	
BENZO(A)PYRENE	--	87	392	100	<1.6 U		<1.6 U		<25 U		<1.6 U		<1.6 U	
BENZO(B)FLUORANTHENE	--	875	3,920	100	<1.7 U		<1.7 U		<26 U		<1.7 U		<1.7 U	
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<3.6 U		<3.6 U		<55 U		<3.6 U		<3.6 U	
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<1.4 U		<1.4 U		<21 U		<1.4 U		<1.4 U	
CHRYSENE	--	87,497	392,000	100	<2.4 U		<2.4 U		<36 U		<2.4 U		<2.4 U	
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<4.2 U		<4.2 U		<63 U		<4.2 U		<4.2 U	
FLUORANTHENE	--	312,857	4,088,000	100	<2.1 U		<2.1 U		<32 U		<2.1 U		<2.1 U	
FLUORENE	--	312,857	4,088,000	100	<14 U		<14 U		<220 U		<14 U		<14 U	
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<2.5 U		<2.5 U		<37 U		<2.5 U		<2.5 U	
NAPHTHALENE	--	156,429	2,044,000	100	<14 U		<14 U		<210 U		<14 U		<14 U	
PHENANTHRENE [7]	--	234,643	3,066,000	100	<8.5 U		<8.5 U		<130 U		<8.5 U		<8.5 U	
PYRENE	--	234,643	3,066,000	100	<4.3 U		<4.3 U		<65 U		<4.3 U		<4.3 U	
Explosives (mg/kg)														
1,3,5-TRINITROBENZENE	--	235	3,066	--	<0.079 U		<0.079 U		<0.079 U		<0.079 U		<0.079 U	
1,3-DINITROBENZENE	--	0.78	10.2	--	<0.097 U		<0.097 U		<0.097 U		<0.097 U		<0.097 U	
2,4,6-TRINITROTOLUENE	--	3.9	51	--	<0.16 U		<0.16 U		<0.16 U		<0.16 U		<0.16 U	
2,4-DINITROTOLUENE	--	16	204	--	<0.12 U		<0.12 U		<0.12 U		<0.12 U		<0.12 U	
2,6-DINITROTOLUENE	--	7.8	102	--	<0.19 U		<0.19 U		<0.19 U		<0.19 U		<0.19 U	
2-AMINO-4,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.1 U		<0.1 U		<0.1 U		<0.1 U		<0.1 U	
2-NITROTOLUENE	--	3	12	--	<0.16 U		<0.16 U		<0.16 U		<0.16 U		<0.16 U	
3-NITROTOLUENE	--	156	2,044	--	<0.11 U		<0.11 U		<0.11 U		<0.11 U		<0.11 U	
4-AMINO-2,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.095 U		<0.095 U		<0.095 U		<0.095 U		<0.095 U	
4-NITROTOLUENE	--	38	168	--	<0.27 U		<0.27 U		<0.27 U		<0.27 U		<0.27 U	
HMX	--	391	5,110	--	<0.1 U		<0.1 U		<0.1 U		<0.1 U		<0.1 U	
NITROBENZENE	--	3.9	51	--	<0.17 U		<0.17 U		<0.17 U		<0.17 U		<0.17 U	
RDX	--	5.8	26	--	<0.28 U		<0.28 U		<0.28 U		<0.28 U		<0.28 U	
TETRYL	--	78	1,022	--	<0.4 U		<0.4 U		<0.4 U		<0.4 U		<0.4 U	
Nitroglycerin (mg/kg)														
NITROGLYCERIN	--	46	204	--	<2 U		<2 U		<2 U		<2 U		<2 U	

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB4C 4/15/2003 8.5		8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	70		<5.9	U	<5.9	U	<5.9	U	34	J
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
ANTHRACENE	--	2,346,429	30,660,000	100	<5.4	U	<5.4	U	<5.4	U	<5.4	U	<5.4	U
BENZO(A)ANTHRACENE	--	875	3,920	100	12		61		<2.2	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	87	392	100	2.7	J	6.4	J	<1.6	U	<1.6	U	<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	3	J	<1.7	U	<1.7	U	<1.7	U	<1.7	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	3.5	J	61		<1.4	U	<1.4	U	<1.4	U
CHRYSENE	--	87,497	392,000	100	9.6	J	<2.4	U	<2.4	U	<2.4	U	<2.4	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<4.2	U	<4.2	U	<4.2	U	<4.2	U	<4.2	U
FLUORANTHENE	--	312,857	4,088,000	100	10	J	5.8	J	<2.1	U	<2.1	U	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<14	U	<14	U	<14	U	<14	U	20	J
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	4.5	J	<2.5	U	<2.5	U	<2.5	U	<2.5	U
NAPHTHALENE	--	156,429	2,044,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	234,643	3,066,000	100	6.2	J	5.3	J	<4.3	U	<4.3	U	7.3	J
Explosives (mg/kg)														
1,3,5-TRINITROBENZENE	--	235	3,066	--	<0.079	U	<0.079	U	<0.079	U	<0.079	U	<0.079	U
1,3-DINITROBENZENE	--	0.78	10.2	--	<0.097	U	<0.097	U	<0.097	U	<0.097	U	<0.097	U
2,4,6-TRINITROTOLUENE	--	3.9	51	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
2,4-DINITROTOLUENE	--	16	204	--	<0.12	U	<0.12	U	<0.12	U	<0.12	U	<0.12	U
2,6-DINITROTOLUENE	--	7.8	102	--	<0.19	U	<0.19	U	<0.19	U	<0.19	U	<0.19	U
2-AMINO-4,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
2-NITROTOLUENE	--	3	12	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
3-NITROTOLUENE	--	156	2,044	--	<0.11	U	<0.11	U	<0.11	U	<0.11	U	<0.11	U
4-AMINO-2,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.095	U	<0.095	U	<0.095	U	<0.095	U	<0.095	U
4-NITROTOLUENE	--	38	168	--	<0.27	U	<0.27	U	<0.27	U	<0.27	U	<0.27	U
HMX	--	391	5,110	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
NITROBENZENE	--	3.9	51	--	<0.17	U	<0.17	U	<0.17	U	<0.17	U	<0.17	U
RDX	--	5.8	26	--	<0.28	U	<0.28	U	<0.28	U	<0.28	U	<0.28	U
TETRYL	--	78	1,022	--	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U
Nitroglycerin (mg/kg)														
NITROGLYCERIN	--	46	204	--	<2	U	<2	U	<2	U	<2	U	<2	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5		36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<89	U	<89	U	19	J	<5.9	U	20	J
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<88	U,UJ,m	<88	U	<5.9	U	<5.9	U	<5.9	U
ANTHRACENE	--	2,346,429	30,660,000	100	<81	U	<81	U	<5.4	U	<5.4	U	<5.4	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<33	U	<33	U	<2.2	U	<2.2	U	3.7	J
BENZO(A)PYRENE	--	87	392	100	<25	U	<25	U	<1.6	U	<1.6	U	<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<26	U	<26	U	<1.7	U	2.8	J,B,z	<1.7	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<55	U	<55	U	<3.6	U	<3.6	U	<3.6	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<21	U	<21	U	2.1	J	11	J	<1.4	U
CHRYSENE	--	87,497	392,000	100	<36	U	<36	U	24		<2.4	U	<2.4	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<63	U	<63	U	<4.2	U	<4.2	U	<4.2	U
FLUORANTHENE	--	312,857	4,088,000	100	<32	U	<32	U	<2.1	U	<2.1	U	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<220	U	<220	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<37	U	<37	U	<2.5	U	<2.5	U	<2.5	U
NAPHTHALENE	--	156,429	2,044,000	100	<210	U	<210	U	<14	U	<14	U	<14	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<130	U	<130	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	234,643	3,066,000	100	<65	U	<65	U	<4.3	U	<4.3	U	8.6	J
Explosives (mg/kg)														
1,3,5-TRINITROBENZENE	--	235	3,066	--	<0.079	U	<0.079	U	<0.079	U	<0.079	U	<0.079	U
1,3-DINITROBENZENE	--	0.78	10.2	--	<0.097	U	<0.097	U	<0.097	U	<0.097	U	<0.097	U
2,4,6-TRINITROTOLUENE	--	3.9	51	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
2,4-DINITROTOLUENE	--	16	204	--	<0.12	U	<0.12	U	<0.12	U	<0.12	U	<0.12	U
2,6-DINITROTOLUENE	--	7.8	102	--	<0.19	U	<0.19	U	<0.19	U	<0.19	U	<0.19	U
2-AMINO-4,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
2-NITROTOLUENE	--	3	12	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
3-NITROTOLUENE	--	156	2,044	--	<0.11	U	<0.11	U	<0.11	U	<0.11	U	<0.11	U
4-AMINO-2,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.095	U	<0.095	U	<0.95	U	<0.095	U	<0.095	U
4-NITROTOLUENE	--	38	168	--	<0.27	U	<0.27	U	<0.27	U	<0.27	U	<0.27	U
HMX	--	391	5,110	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
NITROBENZENE	--	3.9	51	--	<0.17	U,UJ,m	<0.17	U	<0.17	U	<0.17	U	<0.17	U
RDX	--	5.8	26	--	<0.28	U	<0.28	U	<0.28	U	<0.28	U	<0.28	U
TETRYL	--	78	1,022	--	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U
Nitroglycerin (mg/kg)														
NITROGLYCERIN	--	46	204	--	<2	U	<2	U	<2	U	<2	U	<2	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15		36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
ANTHRACENE	--	2,346,429	30,660,000	100	<5.4	U	<5.4	U	<5.4	U	<5.4	U	<5.4	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<2.2	U	6.6	J	<2.2	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	87	392	100	<1.6	U	5.3	J	<1.6	U	<1.6	U	<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	2.6	J,B,z	5.1	J	<1.7	U	<1.7	U	<1.7	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<1.4	U	3.7	J	<1.4	U	<1.4	U	<1.4	U
CHRYSENE	--	87,497	392,000	100	<2.4	U	9.3	J	<2.4	U	<2.4	U	<2.4	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<4.2	U	<4.2	U	<4.2	U	<4.2	U	<4.2	U
FLUORANTHENE	--	312,857	4,088,000	100	<2.1	U	11	J	<2.1	U	<2.1	U	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
NAPHTHALENE	--	156,429	2,044,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	234,643	3,066,000	100	<4.3	U	12	J	<4.3	U	<4.3	U	<4.3	U
Explosives (mg/kg)														
1,3,5-TRINITROBENZENE	--	235	3,066	--	<0.079	U	<0.079	U	<0.079	U	<0.079	U	<0.079	U
1,3-DINITROBENZENE	--	0.78	10.2	--	<0.097	U	<0.097	U	<0.097	U	<0.097	U	<0.097	U
2,4,6-TRINITROTOLUENE	--	3.9	51	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
2,4-DINITROTOLUENE	--	16	204	--	<0.12	U	<0.12	U	<0.12	U	<0.12	U	<0.12	U
2,6-DINITROTOLUENE	--	7.8	102	--	<0.19	U	<0.19	U	<0.19	U	<0.19	U	<0.19	U
2-AMINO-4,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
2-NITROTOLUENE	--	3	12	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
3-NITROTOLUENE	--	156	2,044	--	<0.11	U	<0.11	U	<0.11	U	<0.11	U	<0.11	U
4-AMINO-2,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.095	U	<0.095	U	<0.095	U	<0.095	U	<0.095	U
4-NITROTOLUENE	--	38	168	--	<0.27	U	<0.27	U	<0.27	U	<0.27	U	<0.27	U
HMX	--	391	5,110	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
NITROBENZENE	--	3.9	51	--	<0.17	U	<0.17	U	<0.17	U	<0.17	U	<0.17	U
RDX	--	5.8	26	--	<0.28	U	<0.28	U	<0.28	U	<0.28	U	<0.28	U
TETRYL	--	78	1,022	--	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U
Nitroglycerin (mg/kg)														
NITROGLYCERIN	--	46	204	--	<2	U	<2	U	<2	U	<2	U	<2	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10		36SB6C 4/16/2003 14-15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<5.9	U	<5.9	U	21	J	<5.9	U	<5.9	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
ANTHRACENE	--	2,346,429	30,660,000	100	<5.4	U	<5.4	U	<5.4	U	<5.4	U	<5.4	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<2.2	U	<2.2	U	<2.2	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	87	392	100	<1.6	U	32		<1.6	U	<1.6	U	<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<1.7	U	5.2	J,B,z	2.5	J,B,z	<1.7	U	2.5	J
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	<1.4	U	[redacted]		<1.4	U	<1.4	U	3	J
CHRYSENE	--	87,497	392,000	100	<2.4	U	<2.4	U	<2.4	U	<2.4	U	3.6	J
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<4.2	U	<4.2	U	<4.2	U	<4.2	U	<4.2	U
FLUORANTHENE	--	312,857	4,088,000	100	<2.1	U	<2.1	U	<2.1	U	<2.1	U	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
NAPHTHALENE	--	156,429	2,044,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	234,643	3,066,000	100	<4.3	U	6.3	J	<4.3	U	<4.3	U	<4.3	U
Explosives (mg/kg)														
1,3,5-TRINITROBENZENE	--	235	3,066	--	<0.079	U	<0.079	U	<0.079	U	<0.079	U	<0.079	U
1,3-DINITROBENZENE	--	0.78	10.2	--	<0.097	U	<0.097	U	<0.097	U	<0.097	U	<0.097	U
2,4,6-TRINITROTOLUENE	--	3.9	51	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
2,4-DINITROTOLUENE	--	16	204	--	<0.12	U	<0.12	U	<0.12	U	<0.12	U	<0.12	U
2,6-DINITROTOLUENE	--	7.8	102	--	<0.19	U	<0.19	U	<0.19	U	<0.19	U	<0.19	U
2-AMINO-4,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
2-NITROTOLUENE	--	3	12	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
3-NITROTOLUENE	--	156	2,044	--	<0.11	U	<0.11	U	<0.11	U	<0.11	U	<0.11	U
4-AMINO-2,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.095	U	<0.095	U	<0.095	U	<0.095	U	<0.095	U
4-NITROTOLUENE	--	38	168	--	<0.27	U	<0.27	U	<0.27	U	<0.27	U	<0.27	U
HMX	--	391	5,110	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
NITROBENZENE	--	3.9	51	--	<0.17	U	<0.17	U	<0.17	U	<0.17	U	<0.17	U
RDX	--	5.8	26	--	<0.28	U	<0.28	U	<0.28	U	<0.28	U	<0.28	U
TETRYL	--	78	1,022	--	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U
Nitroglycerin (mg/kg)														
NITROGLYCERIN	--	46	204	--	<2	U	<2	U	<2	U	<2	U	<2	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<5.9	U	<5.9	U	<5.9	U	26	J,J,m	<5.9	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
ANTHRACENE	--	2,346,429	30,660,000	100	<5.4	U	<5.4	U	<5.4	U	<5.4	U	<5.4	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<2.2	U	<2.2	U	<2.2	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	87	392	100	<1.6	U	<1.6	U	<1.6	U	<1.6	U,UJ,m	<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	<1.7	U	14		<1.7	U	5.7	J,B,z	<1.7	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	3.5	J	<1.4	U	2.9	J	2.4	J,J,d	<1.4	U
CHRYSENE	--	87,497	392,000	100	<2.4	U	<2.4	U	7.7	J	<2.4	U	<2.4	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<4.2	U	<4.2	U	<4.2	U	<4.2	U	<4.2	U
FLUORANTHENE	--	312,857	4,088,000	100	<2.1	U	<2.1	U	<2.1	U	8.8	J,J,d	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<14	U	<14	U	<14	U	47	J,J,m	<14	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
NAPHTHALENE	--	156,429	2,044,000	100	<14	U	<14	U	<14	U	<14	U,UJ,m	<14	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	234,643	3,066,000	100	<4.3	U	<4.3	U	<4.3	U	<4.3	U	<4.3	U
Explosives (mg/kg)														
1,3,5-TRINITROBENZENE	--	235	3,066	--	<0.079	U	<0.079	U	<0.079	U	<0.079	U	<0.079	U
1,3-DINITROBENZENE	--	0.78	10.2	--	<0.097	U	<0.097	U	<0.097	U	<0.097	U	<0.097	U
2,4,6-TRINITROTOLUENE	--	3.9	51	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
2,4-DINITROTOLUENE	--	16	204	--	<0.12	U	<0.12	U	<0.12	U	<0.12	U	<0.12	U
2,6-DINITROTOLUENE	--	7.8	102	--	<0.19	U	<0.19	U	<0.19	U	<0.19	U	<0.19	U
2-AMINO-4,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
2-NITROTOLUENE	--	3	12	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
3-NITROTOLUENE	--	156	2,044	--	<0.11	U	<0.11	U	<0.11	U	<0.11	U	<0.11	U
4-AMINO-2,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.095	U	<0.095	U	<0.095	U	<0.095	U	<0.095	U
4-NITROTOLUENE	--	38	168	--	<0.27	U	<0.27	U	<0.27	U	<0.27	U	<0.27	U
HMX	--	391	5,110	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
NITROBENZENE	--	3.9	51	--	<0.17	U	<0.17	U	<0.17	U	<0.17	U,UJ,m	<0.17	U
RDX	--	5.8	26	--	<0.28	U	<0.28	U	<0.28	U	<0.28	U	<0.28	U
TETRYL	--	78	1,022	--	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U
Nitroglycerin (mg/kg)														
NITROGLYCERIN	--	46	204	--	<2	U	<2	U	<2	U	<2	U	<2	U

Table E.1 (Continued)
Summary of Soil/Sludge Chemical Data at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
					Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
PAHs (µg/kg)														
ACENAPHTHENE	--	469,286	6,132,000	100	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
ACENAPHTHYLENE [7]	--	234,643	3,066,000	100	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
ANTHRACENE	--	2,346,429	30,660,000	100	<5.4	U	<5.4	U	<5.4	U	<5.4	U	<5.4	U
BENZO(A)ANTHRACENE	--	875	3,920	100	<2.2	U	<2.2	U	5.2	J	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	87	392	100	<1.6	U	<1.6	U	<1.6	U	24		<1.6	U
BENZO(B)FLUORANTHENE	--	875	3,920	100	2.7	J,B,z	<1.7	U	2.4	J	<1.7	U	<1.7	U
BENZO(G,H,I)PERYLENE [7]	--	234,643	3,066,000	100	<3.6	U	<3.6	U	<3.6	U	<3.6	U	<3.6	U
BENZO(K)FLUORANTHENE	--	8,750	39,200	100	37		<1.4	U	2.2	J	<1.4	U	<1.4	U
CHRYSENE	--	87,497	392,000	100	<2.4	U	<2.4	U	5	J	<2.4	U	<2.4	U
DIBENZO(A,H)ANTHRACENE	--	87	392	100	<4.2	U	<4.2	U	<4.2	U	<4.2	U	<4.2	U
FLUORANTHENE	--	312,857	4,088,000	100	<2.1	U	<2.1	U	8.6	J	<2.1	U	<2.1	U
FLUORENE	--	312,857	4,088,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	--	875	3,920	100	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
NAPHTHALENE	--	156,429	2,044,000	100	<14	U	<14	U	<14	U	<14	U	<14	U
PHENANTHRENE [7]	--	234,643	3,066,000	100	<8.5	U	<8.5	U	<8.5	U	25	J	<8.5	U
PYRENE	--	234,643	3,066,000	100	8.6	J	<4.3	U	<4.3	U	<4.3	U	<4.3	U
Explosives (mg/kg)														
1,3,5-TRINITROBENZENE	--	235	3,066	--	<0.079	U	<0.079	U	<0.079	U	<0.079	U	<0.079	U
1,3-DINITROBENZENE	--	0.78	10.2	--	<0.097	U	<0.097	U	<0.097	U	<0.097	U	<0.097	U
2,4,6-TRINITROTOLUENE	--	3.9	51	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
2,4-DINITROTOLUENE	--	16	204	--	<0.12	U	<0.12	U	<0.12	U	<0.12	U	<0.12	U
2,6-DINITROTOLUENE	--	7.8	102	--	<0.19	U	<0.19	U	<0.19	U	<0.19	U	<0.19	U
2-AMINO-4,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
2-NITROTOLUENE	--	3	12	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
3-NITROTOLUENE	--	156	2,044	--	<0.11	U	<0.11	U	<0.11	U	<0.11	U	<0.11	U
4-AMINO-2,6-DINITROTOLUENE [8]	--	1.6	20	--	<0.095	U	<0.095	U	<0.095	U	<0.095	U	<0.095	U
4-NITROTOLUENE	--	38	168	--	<0.27	U	<0.27	U	<0.27	U	<0.27	U	<0.27	U
HMX	--	391	5,110	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
NITROBENZENE	--	3.9	51	--	<0.17	U	<0.17	U	<0.17	U	<0.17	U	<0.17	U
RDX	--	5.8	26	--	<0.28	U	<0.28	U	<0.28	U	<0.28	U	<0.28	U
TETRYL	--	78	1,022	--	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U
Nitroglycerin (mg/kg)														
NITROGLYCERIN	--	46	204	--	<2	U	<2	U	<2	U	<2	U	<2	U

Notes:

ft bgs = Feet Below Ground Surface
RBC = Risk-Based Concentration
USEPA = U.S. Environmental Protection Agency
USEPA Region III Risk-Based Concentration (RBC) values from the October 15, 2003 RBC Table and October 15, 2003 Alternate RBC Table
Adjusted RBCs = a Hazard Quotient (HQ) of 0.1 applied to non-carcinogens
mg/kg = Milligram Per Kilogram
ug/kg = Microgram Per Kilogram
TCL = Target Compound List
PCB = Polychlorinated Biphenyls
VOC = Volatile Organic Compound
SVOC = Semivolatile Organic Compound
PAH = Polynuclear Aromatic Hydrocarbon
– = No Risk Criteria Available
LQ = Laboratory Qualifier
VQ = Validation Qualifier
r = Reason Code
(A) = Facility-Wide Background Point Estimate as Reported in the Facility-Wide Background Study Report (IT 2002b)

= Concentration Exceeds Soil Residential RBC

bold = Concentration Exceeds Soil Industrial RBC

= Concentration Exceeds BTAG Screening Level

underline = Concentration Exceeds Site Background Values

(1) = Lead criteria are Action Levels; see USEPA Region III guidance
(2) = Mercuric chloride soil RBC value used
(3) = Chlordane value is for sum of isomers
(4) = Endosulfan value is for sum of isomers
(5) = RBC value is for 1,3-Dichloropropene
(6) = RBCs presented are for early-life, except industrial soil RBC, which is for adult
(7) = RBC value for pyrene was used for these compounds
(8) = RBC value is for the sum of the isomers called aminodinitrotoluenes

Table E.2
Summary of TCLP Data in Composite *In Situ* Soil and Sludge Samples
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date	TCLP Regulatory Limit	8SC1 4/17/2003		8SC2 4/17/2003		36SC1 4/16/2003		36SC2 4/16/2003		36SC3 4/16/2003		36SC4 4/16/2003	
		Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCLP Metals (µg/L)													
ARSENIC	5,000	<2.2	U,UL,p	6.9	B,L,p	<2.2	U,UL,p	4.4	B,L,p	3	B,L,p	2.5	B,L,p
BARIUM	100,000	346	B	453	B	338	B	248	B	201	B	286	B
CADMIUM	1,000	0.37	B,B,o	1.9	B,B,o	0.24	B,L,p	4.6	B,K,w	2.5	B,K,w	2.9	B,K,w
CHROMIUM	5,000	5.5	B,L,w	988	B,L,w	2.8	B,L,w	375	B,L,w	367	B,L,w	295	B,L,w
LEAD	5,000	2.6	B	15.5	B	2.1	B	50.7	B	30.1	B	8.9	B
MERCURY	200	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
SELENIUM	1,000	6.6	B,K,w	12.2	B,K,w	7	B,K,w	8.3	B,K,w	10.6	B,K,w	10.9	B,K,w
SILVER	5,000	<0.9	U,UL,w	<0.9	U,UL,w	<0.9	U,UL,w	<0.9	U,UL,w	<0.9	U,UL,w	<0.9	U,UL,w
TCLP Pesticides (µg/L)													
ENDRIN	20	<0.033	U	<0.033	U	<0.17	U	<0.17	U	<0.17	U	<0.033	U
GAMMA-BHC (LINDANE)	400	<0.017	U	<0.017	U	<0.087	U	0.87		0.26	J	<0.017	U
HEPTACHLOR	8	<0.017	U	<0.017	U	<0.086	U	<0.086	U	<0.086	U	<0.017	U
HEPTACHLOR EPOXIDE	8	<0.024	U	<0.024	U	<0.12	U	<0.12	U	<0.12	U	<0.024	U
METHOXCHLOR	10,000	<0.22	U	<0.22	U	<1.1	U	<1.1	U	<1.1	U	<0.22	U
TECHNICAL CHLORDANE	30	<0.11	U	<0.11	U	<0.53	U	<0.53	U	<0.53	U	<0.11	U
TOXAPHENE	500	<1.1	U	<1.1	U	<5.2	U	<5.2	U	<5.2	U	<1.1	U
TCLP Herbicides (µg/L)													
2,4-D	10,000	<0.78	U	<0.78	U	<0.78	U	<0.78	U	<0.78	U	<0.78	U
SILVEX	1,000	<0.13	U	<0.13	U	<0.13	U	<0.13	U	<0.13	U	<0.13	U
TCLP VOCs (µg/L)													
1,1-DICHLOROETHENE	700	<0.3	U	<0.3	U	<0.3	U	<0.3	U	<0.3	U	<0.3	U
1,2-DICHLOROETHANE	500	<0.3	U	<0.3	U	<0.3	U	<0.3	U	<0.3	U	<0.3	U
2-BUTANONE	200,000	<2	U	<2	U	<2	U	<2	U	<2	U	<2	U
BENZENE	500	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
CARBON TETRACHLORIDE	500	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
CHLOROBENZENE	100,000	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
CHLOROFORM	6,000	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U
TETRACHLOROETHENE	700	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U
TRICHLOROETHENE	500	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U
VINYL CHLORIDE	200	<0.6	U	<0.6	U	<0.6	U	<0.6	U	<0.6	U	<0.6	U
TCLP SVOCs (µg/L)													
1,4-DICHLOROBENZENE	7,500	<5	U	<5	U	<5	U	<5	U	<5	U	<5	U
2,4-DINITROTOLUENE	130	<2	U	<2	U	<2	U	<2	U	<2	U	<2	U
2,4,5-TRICHLOROPHENOL	400,000	<7	U	<7	U	<7	U	<7	U	<7	U	<7	U
2,4,6-TRICHLOROPHENOL	2,000	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
2-METHYLPHENOL	200,000	<5	U	<5	U	<5	U	<5	U	<5	U	<5	U
3-METHYLPHENOL	200,000	<4	U	<4	U	<4	U	<4	U	<4	U	<4	U
4-METHYLPHENOL	200,000	<4	U	<4	U	<4	U	<4	U	<4	U	<4	U
HEXACHLOROBENZENE	130	<4	U	<4	U	<4	U	<4	U	<4	U	<4	U
HEXACHLOROBUTADIENE	500	<6	U	<6	U	<6	U	<6	U	<6	U	<6	U
HEXACHLOROETHANE	3,000	<7	U	<7	U	<7	U	<7	U	<7	U	<7	U
NITROBENZENE	2,000	<5	U	<5	U	<5	U	<5	U	<5	U	<5	U
PENTACHLOROPHENOL	100,000	<6	U	<6	U	<6	U	<6	U	<6	U	<6	U
PYRIDINE	5,000	<2	U	<2	U	<2	U	<2	U	<2	U	<2	U

Table E.2 (Continued)
Summary of TCLP Data in Composite In Situ Soil and Sludge Samples
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Draft BTAG Screening Level	8SC1 4/17/2003		8SC2 4/17/2003		36SC1 4/16/2003		36SC2 4/16/2003		36SC3 4/16/2003		36SC4 4/16/2003	
				Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Explosives (mg/kg)															
1,3,5-TRINITROBENZENE	235	3,066	--	<0.079	U	<0.079	U	<0.079	U	<0.079	U	<0.079	U	<0.079	U
1,3-DINITROBENZENE	0.782	10	--	<0.097	U	<0.097	U	<0.097	U	<0.097	U	<0.097	U	<0.097	U
2,4,6-TRINITROTOLUENE	3.9	51.1	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
2,4-DINITROTOLUENE	16	204	--	<0.12	U	<0.12	U	<0.12	U	<0.12	U	<0.12	U	<0.12	U
2,6-DINITROTOLUENE	7.8	102	--	<0.19	U	<0.19	U	<0.19	U	<0.19	U	<0.19	U	<0.19	U
2-AMINO-4,6-DINITROTOLUENE[1]	0.47	6	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
2-NITROTOLUENE	78	1,022	--	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U	<0.16	U
3-NITROTOLUENE	156	2,044	--	<0.11	U	<0.11	U	<0.11	U	<0.11	U	<0.11	U	<0.11	U
4-AMINO-2,6-DINITROTOLUENE[1]	0.470	6.13	--	<0.095	U	<0.095	U	<0.095	U	<0.095	U	<0.095	U	<0.095	U
4-NITROTOLUENE	78	1,022	--	<0.27	U	<0.27	U	<0.27	U	<0.27	U	<0.27	U	<0.27	U
HMX	391	5,110	--	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
NITROBENZENE	3.9	51	--	<0.17	U	<0.17	U	<0.17	U	<0.17	U	<0.17	U	<0.17	U
RDX	5.8	26	--	<0.28	U	<0.28	U	<0.28	U	<0.28	U	<0.28	U	<0.28	U
TETRYL	78	1,022	--	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U	<0.4	U
Nitroglycerin (µg/kg)															
NITROGLYCERIN	45,623	204,400	--	<2	U	<2	U	<2	U	<2	U	<2	U	<2	U

Notes:

µg/L = Microgram Per Liter
mg/kg = Milligram Per Kilogram
µg/kg = Microgram Per Kilogram
SC = Soil/Sludge Composite
SWMU = Solid Waste Management Unit
TCLP = Toxicity Characteristic Leaching Procedure
RBC = Risk-Based Concentration
USEPA = U.S. Environmental Protection Agency
USEPA Region III Risk-Based Concentration (RBC) values from the April 25, 2003 RBC Table and June 17, 2003 Alternate RBC Table
Adjusted RBCs = a Hazard Quotient (HQ) of 0.1 applied to non-carcinogens

LQ = Laboratory Qualifier
VQ = Validation Qualifier
r = Reason Code

[1] = RBC value is for the sum of the isomers called aminodinitrotoluenes

= Concentration is above TCLP Regulatory Limit

Table E.3
USEPA Region III
Data Validation Qualifiers
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Codes Relating to Identification (Confidence Concerning Presence or Absence of Compounds)

Qualifier	Description
U	Not detected. The associated number indicates the approximate sample concentration necessary to be detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
R	Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
N	Tentative Identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

Codes Relating to Quantitation (can be used for both positive results and sample quantitation limits)

B	Not detected substantially above the level reported in laboratory or field blanks.
N	Tentative Identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.
J	Analyte present. Reported value may not be accurate or precise.
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
UJ	Not detected, quantitation limit may be inaccurate or imprecise.
UL	Not detected, quantitation limit is probably higher.

Other Codes

Q	No analytical result.

Notes:

1. Source of Data Qualifier Codes: United States Environmental Protection Agency (USEPA) Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses, April 1993.
2. Source of Data Qualifier Codes: United States Environmental Protection Agency (USEPA) Region III Modifications to National Functional Guidelines for Organic Data Review Multimedia, Multi-Concentration (OLMO1.0-OLMO1.9), September 1994.

Table E.4
Laboratory Data Qualifiers
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Organic Compounds

Qualifier	Description
U	The compound was analyzed for but not detected. The reporting limit will be adjusted to reflect any dilution, and for soil, the percent moisture.
J	Estimated value. The flag is used as detailed below:
	1) When estimating a concentration for tentatively identified compounds (TICs) where a response factor of 1.0 is assumed for the TIC analyte.
	2) When the mass spectral and retention time data indicate the presence of a compound that meet the volatile and semi-volatile gas chromotography/mass spectra (GC/MS) identification criteria, and the result is less than the reporting limit but greater than zero
	3) When the retention time data indicate the presence of a compound that meets the pesticide/Arochlor or other GC or High Performance Liquid Chromotography (HPLC) identification criteria, and the result is less than the reporting limit but greater than zero.
N	Presumptive evidence of a compound.
P	Greater than 40% difference for detected concentrations between the two GC or HPLC columns.
C	GC or HPLC identification has been confirmed by GC/MS.
B	Analyte found in associated blank as well as in the sample.
E	Concentration exceeded the upper level of the calibration range of the instrument for that specific analysis.
D	Diluted sample.

Inorganic Compounds

Concentration Qualifier	Description
U	The compound was analyzed for but not detected. This reported value was obtained from a reading that was less than the instrument detection limit (IDL). The IDL will be adjusted to reflect any dilution, and for soil, the percent moisture.
B	Analyte was analyzed for and the reported value was obtained from a reading that was less than the reporting limit but greater than or equal to the IDL.
Q Qualifier on Form I	Description
E	Estimated value when the serial dilution results are not within 10%.
N	Sample spike recovery is outside of control limits.
*	Sample and associated duplicate are not within control limits.

Table E.5
Data Validation Reason Codes
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

GC/MS Organics		GC and HPLC Organics		Inorganics and Conventionals	
Code	Interpretation	Code	Interpretation	Code	Interpretation
a	Incorrect or incomplete analytical sequence	a	Incorrect or incomplete analytical sequence	a	Incorrect or incomplete analytical sequence
c	Calibration failure; poor (RRF) or unstable (%D) response	b	Instrument performance failure or poor chromatography	c	Calibration failure
d	MS/MSD or LCS/LCSD RPD imprecision	c	Calibration failure; poor or unstable (%D) response	d	MS/MSD or LCS/LCSD RPD imprecision
e	Sample preservation or cooler temperature failure	d	MS/MSD or LCS/LCSD RPD imprecision	e	Sample preservation or cooler temperature failure
f	Field duplicate imprecision	e	Sample preservation or cooler temperature failure	f	Field duplicate imprecision
h	Holding time violation	f	Field duplicate imprecision	h	Holding time violation
I	Tuning Failure or poor mass spectrometer performance	g	Dual column confirmation imprecision	k	Laboratory duplicate imprecision
j	LCS recovery failure	h	Holding time violation	l	LCS recovery failure
l	MS/MSD recovery failure	I	LCS recovery failure	m	MS/MSD recovery failure
m	Internal standard failure	l	MS/MSD recovery failure	n	ICP interference check sample failure
p	Air bubble (> 6 mm or ¼ inch) in VOC vials	m	Air bubble (> 6 mm or ¼ inch) in VOC vials	o	Calibration blank contamination
q	Concentration exceeded the linear range	p	Concentration exceeded the linear range	p	Preparation blank contamination
r	linearity (%RSD or r) failure in initial calibration	q	linearity (%RSD or r) failure in initial calibration	q	Concentration exceeded the linear range
s	Surrogate failure	r	Surrogate failure	r	Linearity failure in calibration or MSA
t	Tentatively identified Compound	s	No confirmation column	s	Serial dilution failure
w	Identification criteria failure	u	Identification criteria failure	v	Post-digestion spike failure
x	Field and/or equipment blank contamination	w	Field and/or equipment blank contamination	x	CRDL standard recovery failure
y	Trip blank contamination	x	Trip blank contamination	z	Field and/or equipment blank contamination
z	Method blank and/or storage blank contamination	z	Method blank and/or storage blank contamination	w	Laboratory storage blank contamination

Notes:

The reason code indicates the type of quality control anomaly that led to the application of the data validation flag.

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB1A

› Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 5.50(g/mL) G Lab File ID: Q2946-10B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 29 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume:_____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	2	J J,C
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	67	
75-09-2	Methylene Chloride	6	U
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	16	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	16	U
108-88-3	Toluene	0.6	J
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	1	J
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB1A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 5.50(g/mL) G Lab File ID: Q2946-10B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 29 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	0.3	JB B,Z
106-46-7	1,4-Dichlorobenzene	0.4	JB
95-50-1	1,2-Dichlorobenzene	0.6	J
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	0.8	JB B,Z
1330-20-7	Xylene (total)	19	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB1A

Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 5.50 (g/mL) G Lab File ID: Q2946-10B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 29 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB1C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-11

Sample wt/vol: 4.36(g/mL) G Lab File ID: Q2946-11B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 31 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	8	U
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	2	JNIC
75-00-3	Chloroethane	8	U
75-69-4	Trichlorofluoromethane	8	U
75-35-4	1,1-Dichloroethene	8	U
75-15-0	Carbon disulfide	8	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	8	U
67-64-1	Acetone	15	J
75-09-2	Methylene Chloride	8	U
156-60-5	trans-1,2-Dichloroethene	8	U
1634-04-4	Methyl-tert-butyl ether	8	U
75-34-3	1,1-Dichloroethane	8	U
156-59-2	cis-1,2-Dichloroethene	8	U
78-93-3	2-butanone	21	U
67-66-3	Chloroform	8	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
71-43-2	Benzene	8	U
107-06-2	1,2-Dichloroethane	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-10-1	4-Methyl-2-pentanone	1	J
108-88-3	Toluene	0.7	J
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	8	U
591-78-6	2-hexanone	21	U
124-48-1	Dibromochloromethane	8	U
106-93-4	1,2-Dibromoethane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB1C

) Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-11

Sample wt/vol: 4.36(g/mL) G Lab File ID: Q2946-11B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 31 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U
98-82-8	Isopropyl Benzene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
541-73-1	1,3-Dichlorobenzene	8	U
106-46-7	1,4-Dichlorobenzene	8	U
95-50-1	1,2-Dichlorobenzene	8	U
96-12-8	1,2-Dibromo-3-Chloropropane	8	U
120-82-1	1,2,4-Trichlorobenzene	8	U
1330-20-7	Xylene (total)	25	U
79-20-9	Methyl acetate	8	U
110-82-7	Cyclohexane	8	U
108-87-2	Methylcyclohexane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB1C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-11

Sample wt/vol: 4.36 (g/mL) G Lab File ID: Q2946-11B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 31 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB2A

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-8

Sample wt/vol: 5.89(g/mL) G Lab File ID: Q2946-8RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 29 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	63	
75-09-2	Methylene Chloride	0.7	JB B,Z
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	7	J
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	15	U
108-88-3	Toluene	0.5	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	2	J
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB2A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-8

Sample wt/vol: 5.89(g/mL) G Lab File ID: Q2946-8RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 29 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO:	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	18	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB2A

Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-8

Sample wt/vol: 5.89 (g/mL) G Lab File ID: Q2946-8RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 29 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB2C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-9

Sample wt/vol: 5.35(g/mL) G Lab File ID: Q2946-9RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 28 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	36	
75-09-2	Methylene Chloride	0.7	JB ~~B~~
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	5	J
67-66-3	Chloroform	2	J
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	16	U
108-88-3	Toluene	0.5	JB ~~B~~
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	8	J
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB2C

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-9

Sample wt/vol: 5.35(g/mL) G Lab File ID: Q2946-9RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 28 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	19	U
79-20-9	Methyl acetate	7	
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB2C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-9

Sample wt/vol: 5.35 (g/mL) G Lab File ID: Q2946-9RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 28 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB4A

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-12

Sample wt/vol: 5.24(g/mL) G Lab File ID: Q2946-12B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 19 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	11	J
75-09-2	Methylene Chloride	6	U
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	15	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	15	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	15	U
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB4A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-12

Sample wt/vol: 5.24(g/mL) G Lab File ID: Q2946-12B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 19 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	18	U
79-20-9	Methyl acetate	0.7	J
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB4A

› Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-12

Sample wt/vol: 5.24 (g/mL) G Lab File ID: Q2946-12B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 19 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB4C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-13

Sample wt/vol: 4.59(g/mL) G Lab File ID: Q2946-13B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 18 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	7	U
74-87-3	Chloromethane	7	U
75-01-4	Vinyl Chloride	7	U
74-83-9	Bromomethane	3	J J,C
75-00-3	Chloroethane	7	U
75-69-4	Trichlorofluoromethane	7	U
75-35-4	1,1-Dichloroethene	7	U
75-15-0	Carbon disulfide	7	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	7	U
67-64-1	Acetone	13	J
75-09-2	Methylene Chloride	0.8	J
156-60-5	trans-1,2-Dichloroethene	7	U
1634-04-4	Methyl-tert-butyl ether	7	U
75-34-3	1,1-Dichloroethane	7	U
156-59-2	cis-1,2-Dichloroethene	7	U
78-93-3	2-butanone	17	U
67-66-3	Chloroform	7	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
71-43-2	Benzene	7	U
107-06-2	1,2-Dichloroethane	7	U
79-01-6	Trichloroethene	7	U
78-87-5	1,2-Dichloropropane	7	U
75-27-4	Bromodichloromethane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
108-10-1	4-Methyl-2-pentanone	0.8	J
108-88-3	Toluene	0.6	J
10061-02-6	trans-1,3-Dichloropropene	7	U
79-00-5	1,1,2-Trichloroethane	7	U
127-18-4	Tetrachloroethene	7	U
591-78-6	2-hexanone	17	U
124-48-1	Dibromochloromethane	7	U
106-93-4	1,2-Dibromoethane	7	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB4C

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-13

Sample wt/vol: 4.59(g/mL) G Lab File ID: Q2946-13B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 18 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
75-25-2	Bromoform	7	U
98-82-8	Isopropyl Benzene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
541-73-1	1,3-Dichlorobenzene	7	U
106-46-7	1,4-Dichlorobenzene	7	U
95-50-1	1,2-Dichlorobenzene	7	U
96-12-8	1,2-Dibromo-3-Chloropropane	7	U
120-82-1	1,2,4-Trichlorobenzene	7	U
1330-20-7	Xylene (total)	20	U
79-20-9	Methyl acetate	7	U
110-82-7	Cyclohexane	7	U
108-87-2	Methylcyclohexane	7	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB4C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-13

Sample wt/vol: 4.59 (g/mL) G Lab File ID: Q2946-13B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 18 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB5A

› Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-14

Sample wt/vol: 5.44(g/mL) G Lab File ID: Q2946-14B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 15 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	5	U
67-64-1	Acetone	93	
75-09-2	Methylene Chloride	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	5	J
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	14	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
591-78-6	2-hexanone	14	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB5A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-14

Sample wt/vol: 5.44(g/mL) G Lab File ID: Q2946-14B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 15 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
1330-20-7	Xylene (total)	16	U
79-20-9	Methyl acetate	5	U
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB5A

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-14

Sample wt/vol: 5.44 (g/mL) G Lab File ID: Q2946-14B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 15 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB5C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-15

Sample wt/vol: 5.55(g/mL) G Lab File ID: Q2946-15B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 27 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	2	J JC
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	15	J
75-09-2	Methylene Chloride	6	U
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	2	J
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	15	U
108-88-3	Toluene	0.6	J
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	15	U
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB5C

o Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-15

Sample wt/vol: 5.55(g/mL) G Lab File ID: Q2946-15B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 27 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	19	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB5C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-15

Sample wt/vol: 5.55 (g/mL) G Lab File ID: Q2946-15B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 27 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB7A

b Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 5.73(g/mL) G Lab File ID: Q2946-6RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 27 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	63	
75-09-2	Methylene Chloride	0.8	JB
156-60-5	trans-1,2-Dichloroethene	0.5	J
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	8	J
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	15	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	2	J
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB7A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 5.73 (g/mL) G Lab File ID: Q2946-6RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 27 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	0.2	JB Bz
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	18	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB7A

ɔ Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 5.73 (g/mL) G Lab File ID: Q2946-6RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 27 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB7C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-7

Sample wt/vol: 5.03 (g/mL) G Lab File ID: Q2946-7B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 28 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	7	U
74-87-3	Chloromethane	7	U
75-01-4	Vinyl Chloride	7	U
74-83-9	Bromomethane	1	JB B,Z
75-00-3	Chloroethane	7	U
75-69-4	Trichlorofluoromethane	7	U
75-35-4	1,1-Dichloroethene	7	U
75-15-0	Carbon disulfide	7	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	7	U
67-64-1	Acetone	19	B B,Z
75-09-2	Methylene Chloride	7	U
156-60-5	trans-1,2-Dichloroethene	7	U
1634-04-4	Methyl-tert-butyl ether	7	U
75-34-3	1,1-Dichloroethane	7	U
156-59-2	cis-1,2-Dichloroethene	7	U
78-93-3	2-butanone	17	U
67-66-3	Chloroform	7	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
71-43-2	Benzene	7	U
107-06-2	1,2-Dichloroethane	7	U
79-01-6	Trichloroethene	7	U
78-87-5	1,2-Dichloropropane	7	U
75-27-4	Bromodichloromethane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
108-10-1	4-Methyl-2-pentanone	17	U
108-88-3	Toluene	0.6	J
10061-02-6	trans-1,3-Dichloropropene	7	U
79-00-5	1,1,2-Trichloroethane	7	U
127-18-4	Tetrachloroethene	7	U
591-78-6	2-hexanone	17	U
124-48-1	Dibromochloromethane	7	U
106-93-4	1,2-Dibromoethane	7	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB7C

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-7

Sample wt/vol: 5.03(g/mL) G Lab File ID: Q2946-7B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 28 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
75-25-2	Bromoform	7	U
98-82-8	Isopropyl Benzene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
541-73-1	1,3-Dichlorobenzene	7	U
106-46-7	1,4-Dichlorobenzene	7	U
95-50-1	1,2-Dichlorobenzene	7	U
96-12-8	1,2-Dibromo-3-Chloropropane	7	U
120-82-1	1,2,4-Trichlorobenzene	7	U
1330-20-7	Xylene (total)	21	U
79-20-9	Methyl acetate	7	U
110-82-7	Cyclohexane	7	U
108-87-2	Methylcyclohexane	7	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB7C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-7

Sample wt/vol: 5.03 (g/mL) G Lab File ID: Q2946-7B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 28 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB8A

b Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-4

Sample wt/vol: 5.85(g/mL) G Lab File ID: Q2946-4B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 24 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	17	B B,Z
75-09-2	Methylene Chloride	6	U
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	14	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	14	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	14	U
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB8A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-4

Sample wt/vol: 5.85(g/mL) G Lab File ID: Q2946-4B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 24 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	17	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB8A

Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-4

Sample wt/vol: 5.85 (g/mL) G Lab File ID: Q2946-4B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 24 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB8C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-5

Sample wt/vol: 3.93(g/mL) G Lab File ID: Q2946-5RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 17 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	8	U
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	10	J,d
75-00-3	Chloroethane	8	U
75-69-4	Trichlorofluoromethane	8	U
75-35-4	1,1-Dichloroethene	8	U
75-15-0	Carbon disulfide	8	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	8	U
67-64-1	Acetone	96	
75-09-2	Methylene Chloride	1	JB b,z
156-60-5	trans-1,2-Dichloroethene	0.7	J
1634-04-4	Methyl-tert-butyl ether	8	U
75-34-3	1,1-Dichloroethane	8	U
156-59-2	cis-1,2-Dichloroethene	8	U
78-93-3	2-butanone	10	J
67-66-3	Chloroform	8	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
71-43-2	Benzene	8	U
107-06-2	1,2-Dichloroethane	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-10-1	4-Methyl-2-pentanone	1	J
108-88-3	Toluene	4	JB
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	8	U
591-78-6	2-hexanone	3	J
124-48-1	Dibromochloromethane	8	U
106-93-4	1,2-Dibromoethane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB8C

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-5

Sample wt/vol: 3.93(g/mL) G Lab File ID: Q2946-5RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 17 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U
98-82-8	Isopropyl Benzene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	0.4	J
541-73-1	1,3-Dichlorobenzene	0.8	JB B,Z
106-46-7	1,4-Dichlorobenzene	1	JB ↓
95-50-1	1,2-Dichlorobenzene	0.8	JB ↓
96-12-8	1,2-Dibromo-3-Chloropropane	0.4	J
120-82-1	1,2,4-Trichlorobenzene	1	JB B,Z
1330-20-7	Xylene (total)	23	U
79-20-9	Methyl acetate	8	U
110-82-7	Cyclohexane	8	U
108-87-2	Methylcyclohexane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB8C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-5

Sample wt/vol: 3.93 (g/mL) G Lab File ID: Q2946-5RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 17 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	103-09-3	ACETIC ACID, 2-ETHYLHEXYL ES	7.90	8.15	NJ NJ t
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB9A

› Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 5.80(g/mL) G Lab File ID: Q2946-1RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 26 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	8	
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	3	J
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	87	
75-09-2	Methylene Chloride	6	U
156-60-5	trans-1,2-Dichloroethene	0.5	J
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	9	J
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	15	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	15	U
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB9A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 5.80(g/mL) G Lab File ID: Q2946-1RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 26 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	17	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	0.7	J
108-87-2	Methylcyclohexane	1	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB9A

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 5.80 (g/mL) G Lab File ID: Q2946-1RB62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 26 Date Analyzed: 04/22/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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2.					
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB9C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-2

Sample wt/vol: 5.38(g/mL) G Lab File ID: Q2946-2B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 29 Date Analyzed: 04/16/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	7	U
74-87-3	Chloromethane	7	U
75-01-4	Vinyl Chloride	7	U
74-83-9	Bromomethane	2	JB B,Z
75-00-3	Chloroethane	7	U
75-69-4	Trichlorofluoromethane	7	U
75-35-4	1,1-Dichloroethene	7	U
75-15-0	Carbon disulfide	7	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	7	U
67-64-1	Acetone	9	JB B,Z
75-09-2	Methylene Chloride	0.7	J
156-60-5	trans-1,2-Dichloroethene	7	U
1634-04-4	Methyl-tert-butyl ether	7	U
75-34-3	1,1-Dichloroethane	7	U
156-59-2	cis-1,2-Dichloroethene	7	U
78-93-3	2-butanone	16	U
67-66-3	Chloroform	7	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
71-43-2	Benzene	7	U
107-06-2	1,2-Dichloroethane	7	U
79-01-6	Trichloroethene	7	U
78-87-5	1,2-Dichloropropane	7	U
75-27-4	Bromodichloromethane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
108-10-1	4-Methyl-2-pentanone	0.7	J
108-88-3	Toluene	0.7	J
10061-02-6	trans-1,3-Dichloropropene	7	U
79-00-5	1,1,2-Trichloroethane	7	U
127-18-4	Tetrachloroethene	7	U
591-78-6	2-hexanone	16	U
124-48-1	Dibromochloromethane	7	U
106-93-4	1,2-Dibromoethane	7	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB9C

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-2

Sample wt/vol: 5.38(g/mL) G Lab File ID: Q2946-2B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 29 Date Analyzed: 04/16/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
75-25-2	Bromoform	7	U
98-82-8	Isopropyl Benzene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
541-73-1	1,3-Dichlorobenzene	0.4	JB B,Z
106-46-7	1,4-Dichlorobenzene	0.5	JB
95-50-1	1,2-Dichlorobenzene	0.4	JB
96-12-8	1,2-Dibromo-3-Chloropropane	7	U
120-82-1	1,2,4-Trichlorobenzene	0.7	JB B,Z
1330-20-7	Xylene (total)	20	U
79-20-9	Methyl acetate	7	U
110-82-7	Cyclohexane	7	U
108-87-2	Methylcyclohexane	7	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB9C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-2

Sample wt/vol: 5.38 (g/mL) G Lab File ID: Q2946-2B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 29 Date Analyzed: 04/16/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB3A

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 5.23(g/mL) G Lab File ID: Q2946-19B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 17 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume:_____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	43	
75-09-2	Methylene Chloride	6	U
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	4	J
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	14	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	14	U
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB3A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 5.23 (g/mL) G Lab File ID: Q2946-19B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 17 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	17	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB3A

ɔ Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 5.23 (g/mL) G Lab File ID: Q2946-19B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 17 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB3C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-20

Sample wt/vol: 4.50(g/mL) G Lab File ID: Q2946-20B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 15 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	7	U
74-87-3	Chloromethane	7	U
75-01-4	Vinyl Chloride	7	U
74-83-9	Bromomethane	2	J J,C
75-00-3	Chloroethane	7	U
75-69-4	Trichlorofluoromethane	7	U
75-35-4	1,1-Dichloroethene	7	U
75-15-0	Carbon disulfide	7	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	7	U
67-64-1	Acetone	30	
75-09-2	Methylene Chloride	0.8	J
156-60-5	trans-1,2-Dichloroethene	7	U
1634-04-4	Methyl-tert-butyl ether	7	U
75-34-3	1,1-Dichloroethane	7	U
156-59-2	cis-1,2-Dichloroethene	7	U
78-93-3	2-butanone	16	U
67-66-3	Chloroform	7	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
71-43-2	Benzene	7	U
107-06-2	1,2-Dichloroethane	7	U
79-01-6	Trichloroethene	7	U
78-87-5	1,2-Dichloropropane	7	U
75-27-4	Bromodichloromethane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
108-10-1	4-Methyl-2-pentanone	0.7	J
108-88-3	Toluene	0.6	J
10061-02-6	trans-1,3-Dichloropropene	7	U
79-00-5	1,1,2-Trichloroethane	7	U
127-18-4	Tetrachloroethene	7	U
591-78-6	2-hexanone	16	U
124-48-1	Dibromochloromethane	7	U
106-93-4	1,2-Dibromoethane	7	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB3C

) Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-20

Sample wt/vol: 4.50(g/mL) G Lab File ID: Q2946-20B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 15 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
75-25-2	Bromoform	7	U
98-82-8	Isopropyl Benzene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
541-73-1	1,3-Dichlorobenzene	7	U
106-46-7	1,4-Dichlorobenzene	7	U
95-50-1	1,2-Dichlorobenzene	7	U
96-12-8	1,2-Dibromo-3-Chloropropane	7	U
120-82-1	1,2,4-Trichlorobenzene	7	U
1330-20-7	Xylene (total)	20	U
79-20-9	Methyl acetate	2	J
110-82-7	Cyclohexane	7	U
108-87-2	Methylcyclohexane	7	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB3C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-20

Sample wt/vol: 4.50 (g/mL) G Lab File ID: Q2946-20B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 15 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~LABORATORY ARTIFACT~~	6.67	~~6.83~~	~~J~~ C
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB6A

› Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 5.38(g/mL) G Lab File ID: Q2946-17B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 20 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	21	
75-09-2	Methylene Chloride	6	U
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	4	J
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	15	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	15	U
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB6A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 5.38(g/mL) G Lab File ID: Q2946-17B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 20 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	17	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB6A

L Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 5.38 (g/mL) G Lab File ID: Q2946-17B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 20 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB6C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-18

Sample wt/vol: 4.00(g/mL) G Lab File ID: Q2946-18B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 26 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	8	U
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	8	U
75-00-3	Chloroethane	8	U
75-69-4	Trichlorofluoromethane	8	U
75-35-4	1,1-Dichloroethene	8	U
75-15-0	Carbon disulfide	8	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	8	U
67-64-1	Acetone	27	
75-09-2	Methylene Chloride	8	U
156-60-5	trans-1,2-Dichloroethene	8	U
1634-04-4	Methyl-tert-butyl ether	8	U
75-34-3	1,1-Dichloroethane	8	U
156-59-2	cis-1,2-Dichloroethene	8	U
78-93-3	2-butanone	2	J
67-66-3	Chloroform	8	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
71-43-2	Benzene	8	U
107-06-2	1,2-Dichloroethane	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-10-1	4-Methyl-2-pentanone	21	U
108-88-3	Toluene	0.9	J
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	8	U
591-78-6	2-hexanone	21	U
124-48-1	Dibromochloromethane	8	U
106-93-4	1,2-Dibromoethane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB6C

1 Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-18

Sample wt/vol: 4.00(g/mL) G Lab File ID: Q2946-18B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 26 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U
98-82-8	Isopropyl Benzene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
541-73-1	1,3-Dichlorobenzene	8	U
106-46-7	1,4-Dichlorobenzene	8	U
95-50-1	1,2-Dichlorobenzene	8	U
96-12-8	1,2-Dibromo-3-Chloropropane	8	U
120-82-1	1,2,4-Trichlorobenzene	8	U
1330-20-7	Xylene (total)	25	U
79-20-9	Methyl acetate	8	U
110-82-7	Cyclohexane	8	U
108-87-2	Methylcyclohexane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB6C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-18

Sample wt/vol: 4.00 (g/mL) G Lab File ID: Q2946-18B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 26 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP1

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-3

Sample wt/vol: 5.29(g/mL) G Lab File ID: Q2946-3B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 15 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	9	JB B,Z
75-09-2	Methylene Chloride	0.6	J
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	14	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	14	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	14	U
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP1

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-3

Sample wt/vol: 5.29(g/mL) G Lab File ID: Q2946-3B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 15 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	0.4	JB B,Z
95-50-1	1,2-Dichlorobenzene	0.3	JB
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	0.6	JB B,Z
1330-20-7	Xylene (total)	17	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

DUP1

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-3

Sample wt/vol: 5.29 (g/mL) G Lab File ID: Q2946-3B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 15 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP2

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-16

Sample wt/vol: 4.15(g/mL) G Lab File ID: Q2946-16B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 25 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	8	U
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	8	U
75-00-3	Chloroethane	8	U
75-69-4	Trichlorofluoromethane	8	U
75-35-4	1,1-Dichloroethene	8	U
75-15-0	Carbon disulfide	8	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	8	U
67-64-1	Acetone	14	J
75-09-2	Methylene Chloride	8	U
156-60-5	trans-1,2-Dichloroethene	8	U
1634-04-4	Methyl-tert-butyl ether	8	U
75-34-3	1,1-Dichloroethane	8	U
156-59-2	cis-1,2-Dichloroethene	8	U
78-93-3	2-butanone	20	U
67-66-3	Chloroform	8	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
71-43-2	Benzene	8	U
107-06-2	1,2-Dichloroethane	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-10-1	4-Methyl-2-pentanone	20	U
108-88-3	Toluene	8	U
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	8	U
591-78-6	2-hexanone	20	U
124-48-1	Dibromochloromethane	8	U
106-93-4	1,2-Dibromoethane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP2

Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-16

Sample wt/vol: 4.15(g/mL) G Lab File ID: Q2946-16B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 25 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U
98-82-8	Isopropyl Benzene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
541-73-1	1,3-Dichlorobenzene	8	U
106-46-7	1,4-Dichlorobenzene	8	U
95-50-1	1,2-Dichlorobenzene	8	U
96-12-8	1,2-Dibromo-3-Chloropropane	8	U
120-82-1	1,2,4-Trichlorobenzene	8	U
1330-20-7	Xylene (total)	24	U
79-20-9	Methyl acetate	8	U
110-82-7	Cyclohexane	8	U
108-87-2	Methylcyclohexane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

DUP2

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-16

Sample wt/vol: 4.15 (g/mL) G Lab File ID: Q2946-16B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 25 Date Analyzed: 04/17/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB1A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-10A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 29 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	460	U
111-44-4	Bis(2-chloroethyl)ether	460	U
95-57-8	2-Chlorophenol	460	U
95-48-7	2-Methylphenol	460	U
108-60-1	2,2'-oxybis(1-Chloropropane)	460	U UJ,C
106-44-5	4-Methylphenol	460	U
621-64-7	N-Nitroso-di-N-propylamine	460	U
67-72-1	Hexachloroethane	460	U
98-95-3	Nitrobenzene	460	U
78-59-1	Isophorone	460	U
88-75-5	2-Nitrophenol	460	U
105-67-9	2,4-Dimethylphenol	460	U
111-91-1	Bis(2-chloroethoxy)methane	460	U
120-83-2	2,4-Dichlorophenol	460	U
91-20-3	Naphthalene	460	U
106-47-8	4-Chloroaniline	460	U
87-68-3	Hexachlorobutadiene	460	U
59-50-7	4-Chloro-3-methylphenol	460	U
91-57-6	2-Methylnaphthalene	460	U
77-47-4	Hexachlorocyclopentadiene	460	U
88-06-2	2,4,6-Trichlorophenol	460	U
95-95-4	2,4,5-Trichlorophenol	460	U
91-58-7	2-Chloronaphthalene	460	U
88-74-4	2-Nitroaniline	930	U
131-11-3	Dimethylphthalate	460	U
606-20-2	2,6-Dinitrotoluene	460	U
208-96-8	Acenaphthylene	460	U
99-09-2	3-Nitroaniline	930	U
83-32-9	Acenaphthene	460	U
51-28-5	2,4-Dinitrophenol	2400	U
100-02-7	4-Nitrophenol	930	U
121-14-2	2,4-Dinitrotoluene	460	U
132-64-9	Dibenzofuran	460	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB1A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-10A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 29 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	460	U
7005-72-3	4-Chlorophenyl-phenylether	460	U
86-73-7	Fluorene	460	U
100-01-6	4-Nitroaniline	930	U
534-52-1	4,6-Dinitro-2-methylphenol	930	U
86-30-6	N-Nitrosodiphenylamine (1)	460	U
101-55-3	4-Bromophenyl-phenylether	460	U
118-74-1	Hexachlorobenzene	460	U
87-86-5	Pentachlorophenol	930	U
85-01-8	Phenanthrene	460	U
120-12-7	Anthracene	460	U
86-74-8	Carbazole	460	U
84-74-2	Di-n-butylphthalate	460	U
206-44-0	Fluoranthene	460	U
129-00-0	Pyrene	460	U
85-68-7	Butylbenzylphthalate	460	U
91-94-1	3,3'-Dichlorobenzidine	930	U
117-81-7	bis(2-ethylhexyl)Phthalate	460	U
56-55-3	Benzo(a)anthracene	460	U
218-01-9	Chrysene	460	U
117-84-0	Di-n-octylphthalate	460	U
205-99-2	Benzo(b)fluoranthene	460	U
207-08-9	Benzo(k)fluoranthene	460	U
50-32-8	Benzo(a)pyrene	460	U
193-39-5	Indeno(1,2,3-cd)pyrene	460	U
53-70-3	Dibenzo(a,h)anthracene	460	U
191-24-2	Benzo(g,h,i)perylene	460	U
100-52-7	Benzaldehyde	460	U R,Q
98-86-2	Acetophenone	460	U
105-60-2	Caprolactam	460	U
92-52-4	1,1'-Biphenyl	460	U
1912-24-9	Atrazine	460	U U J,C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB1A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-10A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 29 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	5.12	850	JB C
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB1C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-11A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 31 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	480	U
111-44-4	Bis(2-chloroethyl)ether	480	U
95-57-8	2-Chlorophenol	480	U
95-48-7	2-Methylphenol	480	U
108-60-1	2,2'-oxybis(1-Chloropropane)	480	U UJ, C
106-44-5	4-Methylphenol	480	U
621-64-7	N-Nitroso-di-N-propylamine	480	U
67-72-1	Hexachloroethane	480	U
98-95-3	Nitrobenzene	480	U
78-59-1	Isophorone	480	U
88-75-5	2-Nitrophenol	480	U
105-67-9	2,4-Dimethylphenol	480	U
111-91-1	Bis(2-chloroethoxy)methane	480	U
120-83-2	2,4-Dichlorophenol	480	U
91-20-3	Naphthalene	480	U
106-47-8	4-Chloroaniline	480	U
87-68-3	Hexachlorobutadiene	480	U
59-50-7	4-Chloro-3-methylphenol	480	U
91-57-6	2-Methylnaphthalene	480	U
77-47-4	Hexachlorocyclopentadiene	480	U
88-06-2	2,4,6-Trichlorophenol	480	U
95-95-4	2,4,5-Trichlorophenol	480	U
91-58-7	2-Chloronaphthalene	480	U
88-74-4	2-Nitroaniline	960	U
131-11-3	Dimethylphthalate	480	U
606-20-2	2,6-Dinitrotoluene	480	U
208-96-8	Acenaphthylene	480	U
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	480	U
51-28-5	2,4-Dinitrophenol	2500	U
100-02-7	4-Nitrophenol	960	U
121-14-2	2,4-Dinitrotoluene	480	U
132-64-9	Dibenzofuran	480	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB1C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-11A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 31 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	480	U
7005-72-3	4-Chlorophenyl-phenylether	480	U
86-73-7	Fluorene	480	U
100-01-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	480	U
101-55-3	4-Bromophenyl-phenylether	480	U
118-74-1	Hexachlorobenzene	480	U
87-86-5	Pentachlorophenol	960	U
85-01-8	Phenanthrene	480	U
120-12-7	Anthracene	480	U
86-74-8	Carbazole	480	U
84-74-2	Di-n-butylphthalate	480	U
206-44-0	Fluoranthene	480	U
129-00-0	Pyrene	480	U
85-68-7	Butylbenzylphthalate	480	U
91-94-1	3,3'-Dichlorobenzidine	960	U
117-81-7	bis(2-ethylhexyl) Phthalate	480	U
56-55-3	Benzo(a)anthracene	480	U
218-01-9	Chrysene	480	U
117-84-0	Di-n-octylphthalate	480	U
205-99-2	Benzo(b)fluoranthene	480	U
207-08-9	Benzo(k)fluoranthene	480	U
50-32-8	Benzo(a)pyrene	480	U
193-39-5	Indeno(1,2,3-cd)pyrene	480	U
53-70-3	Dibenzo(a,h)anthracene	480	U
191-24-2	Benzo(g,h,i)perylene	480	U
100-52-7	Benzaldehyde	480	U R,J
98-86-2	Acetophenone	480	U
105-60-2	Caprolactam	480	U
92-52-4	1,1'-Biphenyl	480	U
1912-24-9	Atrazine	480	U U J,C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB1C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-11A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 31 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	~~5.13~~	~~1100~~	~~JB~~
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB2A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-8

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-8A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 29 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	460	U
111-44-4	Bis(2-chloroethyl)ether	460	U
95-57-8	2-Chlorophenol	460	U
95-48-7	2-Methylphenol	460	U
108-60-1	2,2'-oxybis(1-Chloropropane)	460	U UJ,C
106-44-5	4-Methylphenol	460	U
621-64-7	N-Nitroso-di-N-propylamine	460	U
67-72-1	Hexachloroethane	460	U
98-95-3	Nitrobenzene	460	U
78-59-1	Isophorone	460	U
88-75-5	2-Nitrophenol	460	U
105-67-9	2,4-Dimethylphenol	460	U
111-91-1	Bis(2-chloroethoxy)methane	460	U
120-83-2	2,4-Dichlorophenol	460	U
91-20-3	Naphthalene	460	U
106-47-8	4-Chloroaniline	460	U
87-68-3	Hexachlorobutadiene	460	U
59-50-7	4-Chloro-3-methylphenol	460	U
91-57-6	2-Methylnaphthalene	460	U
77-47-4	Hexachlorocyclopentadiene	460	U
88-06-2	2,4,6-Trichlorophenol	460	U
95-95-4	2,4,5-Trichlorophenol	460	U
91-58-7	2-Chloronaphthalene	460	U
88-74-4	2-Nitroaniline	930	U
131-11-3	Dimethylphthalate	460	U
606-20-2	2,6-Dinitrotoluene	460	U
208-96-8	Acenaphthylene	460	U
99-09-2	3-Nitroaniline	930	U
83-32-9	Acenaphthene	460	U
51-28-5	2,4-Dinitrophenol	2400	U
100-02-7	4-Nitrophenol	930	U
121-14-2	2,4-Dinitrotoluene	460	U
132-64-9	Dibenzofuran	460	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB2A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-8

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-8A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 29 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	460	U
7005-72-3	4-Chlorophenyl-phenylether	460	U
86-73-7	Fluorene	460	U
100-01-6	4-Nitroaniline	930	U
534-52-1	4,6-Dinitro-2-methylphenol	930	U
86-30-6	N-Nitrosodiphenylamine (1)	460	U
101-55-3	4-Bromophenyl-phenylether	460	U
118-74-1	Hexachlorobenzene	460	U
87-86-5	Pentachlorophenol	930	U
85-01-8	Phenanthrene	460	U
120-12-7	Anthracene	460	U
86-74-8	Carbazole	460	U
84-74-2	Di-n-butylphthalate	460	U
206-44-0	Fluoranthene	460	U
129-00-0	Pyrene	460	U
85-68-7	Butylbenzylphthalate	460	U
91-94-1	3,3'-Dichlorobenzidine	930	U
117-81-7	bis(2-ethylhexyl)Phthalate	460	U
56-55-3	Benzo(a)anthracene	460	U
218-01-9	Chrysene	460	U
117-84-0	Di-n-octylphthalate	460	U
205-99-2	Benzo(b)fluoranthene	460	U
207-08-9	Benzo(k)fluoranthene	460	U
50-32-8	Benzo(a)pyrene	460	U
193-39-5	Indeno(1,2,3-cd)pyrene	460	U
53-70-3	Dibenzo(a,h)anthracene	460	U
191-24-2	Benzo(g,h,i)perylene	460	U
100-52-7	Benzaldehyde	460	U R, J
98-86-2	Acetophenone	460	U
105-60-2	Caprolactam	460	U
92-52-4	1,1'-Biphenyl	460	U
1912-24-9	Atrazine	460	U UJ, C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB2A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-8

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-8A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 29 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	5.13	1000	JB
2.		~~UNKNOWN (BC)~~	5.84	200	JB
3.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB2C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-9A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	460	U
111-44-4	Bis(2-chloroethyl)ether	460	U
95-57-8	2-Chlorophenol	460	U
95-48-7	2-Methylphenol	460	U
108-60-1	2,2'-oxybis(1-Chloropropane)	460	U UJ,C
106-44-5	4-Methylphenol	460	U
621-64-7	N-Nitroso-di-N-propylamine	460	U
67-72-1	Hexachloroethane	460	U
98-95-3	Nitrobenzene	460	U
78-59-1	Isophorone	460	U
88-75-5	2-Nitrophenol	460	U
105-67-9	2,4-Dimethylphenol	460	U
111-91-1	Bis(2-chloroethoxy)methane	460	U
120-83-2	2,4-Dichlorophenol	460	U
91-20-3	Naphthalene	460	U
106-47-8	4-Chloroaniline	460	U
87-68-3	Hexachlorobutadiene	460	U
59-50-7	4-Chloro-3-methylphenol	460	U
91-57-6	2-Methylnaphthalene	460	U
77-47-4	Hexachlorocyclopentadiene	460	U
88-06-2	2,4,6-Trichlorophenol	460	U
95-95-4	2,4,5-Trichlorophenol	460	U
91-58-7	2-Chloronaphthalene	460	U
88-74-4	2-Nitroaniline	920	U
131-11-3	Dimethylphthalate	460	U
606-20-2	2,6-Dinitrotoluene	460	U
208-96-8	Acenaphthylene	460	U
99-09-2	3-Nitroaniline	920	U
83-32-9	Acenaphthene	460	U
51-28-5	2,4-Dinitrophenol	2400	U
100-02-7	4-Nitrophenol	920	U
121-14-2	2,4-Dinitrotoluene	460	U
132-64-9	Dibenzofuran	460	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB2C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-9A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	460	U
7005-72-3	4-Chlorophenyl-phenylether	460	U
86-73-7	Fluorene	460	U
100-01-6	4-Nitroaniline	920	U
534-52-1	4,6-Dinitro-2-methylphenol	920	U
86-30-6	N-Nitrosodiphenylamine (1)	460	U
101-55-3	4-Bromophenyl-phenylether	460	U
118-74-1	Hexachlorobenzene	460	U
87-86-5	Pentachlorophenol	920	U
85-01-8	Phenanthrene	460	U
120-12-7	Anthracene	460	U
86-74-8	Carbazole	460	U
84-74-2	Di-n-butylphthalate	460	U
206-44-0	Fluoranthene	460	U
129-00-0	Pyrene	460	U
85-68-7	Butylbenzylphthalate	460	U
91-94-1	3,3'-Dichlorobenzidine	920	U
117-81-7	bis(2-ethylhexyl)Phthalate	460	U
56-55-3	Benzo(a)anthracene	460	U
218-01-9	Chrysene	460	U
117-84-0	Di-n-octylphthalate	460	U
205-99-2	Benzo(b)fluoranthene	460	U
207-08-9	Benzo(k)fluoranthene	460	U
50-32-8	Benzo(a)pyrene	460	U
193-39-5	Indeno(1,2,3-cd)pyrene	460	U
53-70-3	Dibenzo(a,h)anthracene	460	U
191-24-2	Benzo(g,h,i)perylene	460	U
100-52-7	Benzaldehyde	460	U R, Q
98-86-2	Acetophenone	460	U
105-60-2	Caprolactam	460	U
92-52-4	1,1'-Biphenyl	460	U
1912-24-9	Atrazine	460	U UJ, C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB2C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-9A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	5.12	~~1000~~	~~JB~~ a
2.				RA	
3.					
4.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB4A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-12A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 19 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	Bis(2-chloroethyl)ether	410	U
95-57-8	2-Chlorophenol	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U UJ,C
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-di-N-propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	Bis(2-chloroethoxy)methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	410	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	410	U
606-20-2	2,6-Dinitrotoluene	410	U
208-96-8	Acenaphthylene	410	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	410	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	810	U
121-14-2	2,4-Dinitrotoluene	410	U
132-64-9	Dibenzofuran	410	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB4A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-12A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 19 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
86-73-7	Fluorene	410	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-butylphthalate	410	U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	810	U
117-81-7	bis(2-ethylhexyl)Phthalate	410	U
56-55-3	Benzo(a)anthracene	410	U
218-01-9	Chrysene	410	U
117-84-0	Di-n-octylphthalate	410	U
205-99-2	Benzo(b)fluoranthene	410	U
207-08-9	Benzo(k)fluoranthene	410	U
50-32-8	Benzo(a)pyrene	410	U
193-39-5	Indeno(1,2,3-cd)pyrene	410	U
53-70-3	Dibenzo(a,h)anthracene	410	U
191-24-2	Benzo(g,h,i)perylene	410	U
100-52-7	Benzaldehyde	410	U R,J
98-86-2	Acetophenone	410	U
105-60-2	Caprolactam	410	U
92-52-4	1,1'-Biphenyl	410	U
1912-24-9	Atrazine	410	U UJ,C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB4A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-12A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 19 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN~~	~~4.80~~	~~170~~	~~J~~
2.		~~UNKNOWN~~ (BC)	5.14	200	JB
3.					
4.					
5.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB4C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-13A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 18 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	Bis(2-chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U UJ, C
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-N-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	Bis(2-chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	400	U
606-20-2	2,6-Dinitrotoluene	400	U
208-96-8	Acenaphthylene	400	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	800	U
121-14-2	2,4-Dinitrotoluene	400	U
132-64-9	Dibenzofuran	400	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB4C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-13A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 18 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	800	U
117-81-7	bis(2-ethylhexyl)Phthalate	400	U
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenzo(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
100-52-7	Benzaldehyde	400	U R, J
98-86-2	Acetophenone	400	U
105-60-2	Caprolactam	400	U
92-52-4	1,1'-Biphenyl	400	U
1912-24-9	Atrazine	400	U UJ, C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB4C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-13A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 18 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	~~5.13~~	~~970~~	~~JB~~
2.					
3.					
4.					
5.					
6.					
7.					
8.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB5A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-14A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	390	U
111-44-4	Bis(2-chloroethyl)ether	390	U
95-57-8	2-Chlorophenol	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2'-oxybis(1-Chloropropane)	390	U 4JC
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-di-N-propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
111-91-1	Bis(2-chloroethoxy)methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	390	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	780	U
131-11-3	Dimethylphthalate	390	U
606-20-2	2,6-Dinitrotoluene	390	U
208-96-8	Acenaphthylene	390	U
99-09-2	3-Nitroaniline	780	U
83-32-9	Acenaphthene	390	U
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	780	U
121-14-2	2,4-Dinitrotoluene	28	J
132-64-9	Dibenzofuran	390	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB5A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-14A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	780	U
534-52-1	4,6-Dinitro-2-methylphenol	780	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	780	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
86-74-8	Carbazole	390	U
84-74-2	Di-n-butylphthalate	89	J
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	780	U
117-81-7	bis(2-ethylhexyl)Phthalate	390	U
56-55-3	Benzo(a)anthracene	390	U
218-01-9	Chrysene	390	U
117-84-0	Di-n-octylphthalate	390	U
205-99-2	Benzo(b)fluoranthene	390	U
207-08-9	Benzo(k)fluoranthene	390	U
50-32-8	Benzo(a)pyrene	390	U
193-39-5	Indeno(1,2,3-cd)pyrene	390	U
53-70-3	Dibenzo(a,h)anthracene	390	U
191-24-2	Benzo(g,h,i)perylene	390	U
100-52-7	Benzaldehyde	390	UR, Q
98-86-2	Acetophenone	390	U
105-60-2	Caprolactam	390	U
92-52-4	1,1'-Biphenyl	390	U
1912-24-9	Atrazine	390	UJ, C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB5A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-14A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN~~	4.80	170	J
2.		~~UNKNOWN~~ (BC)	5.13	850	JB
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB5C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-15A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	450	U
111-44-4	Bis(2-chloroethyl)ether	450	U
95-57-8	2-Chlorophenol	450	U
95-48-7	2-Methylphenol	450	U
108-60-1	2,2'-oxybis(1-Chloropropane)	450	U UJ,C
106-44-5	4-Methylphenol	450	U
621-64-7	N-Nitroso-di-N-propylamine	450	U
67-72-1	Hexachloroethane	450	U
98-95-3	Nitrobenzene	450	U
78-59-1	Isophorone	450	U
88-75-5	2-Nitrophenol	450	U
105-67-9	2,4-Dimethylphenol	450	U
111-91-1	Bis(2-chloroethoxy)methane	450	U
120-83-2	2,4-Dichlorophenol	450	U
91-20-3	Naphthalene	450	U
106-47-8	4-Chloroaniline	450	U
87-68-3	Hexachlorobutadiene	450	U
59-50-7	4-Chloro-3-methylphenol	450	U
91-57-6	2-Methylnaphthalene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U
88-06-2	2,4,6-Trichlorophenol	450	U
95-95-4	2,4,5-Trichlorophenol	450	U
91-58-7	2-Chloronaphthalene	450	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	450	U
606-20-2	2,6-Dinitrotoluene	450	U
208-96-8	Acenaphthylene	450	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	450	U
51-28-5	2,4-Dinitrophenol	2300	U
100-02-7	4-Nitrophenol	900	U
121-14-2	2,4-Dinitrotoluene	450	U
132-64-9	Dibenzofuran	450	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB5C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-15A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	450	U
7005-72-3	4-Chlorophenyl-phenylether	450	U
86-73-7	Fluorene	450	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
118-74-1	Hexachlorobenzene	450	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	450	U
120-12-7	Anthracene	450	U
86-74-8	Carbazole	450	U
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	450	U
129-00-0	Pyrene	450	U
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	900	U
117-81-7	bis(2-ethylhexyl)Phthalate	71	J
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenzo(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U
100-52-7	Benzaldehyde	450	UR, Q
98-86-2	Acetophenone	450	U
105-60-2	Caprolactam	450	U
92-52-4	1,1'-Biphenyl	450	U
1912-24-9	Atrazine	450	UUJ, C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB5C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-15A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 27 decanted: (Y/N) N Date Extracted:04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN~~ (BC)	5.13	860	JB
2.					
3.					
4.					
5.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB7A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-6A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	450	U
111-44-4	Bis(2-chloroethyl)ether	450	U
95-57-8	2-Chlorophenol	450	U
95-48-7	2-Methylphenol	450	U
108-60-1	2,2'-oxybis(1-Chloropropane)	450	UUJ,C
106-44-5	4-Methylphenol	450	U
621-64-7	N-Nitroso-di-N-propylamine	450	U
67-72-1	Hexachloroethane	450	U
98-95-3	Nitrobenzene	450	U
78-59-1	Isophorone	450	U
88-75-5	2-Nitrophenol	450	U
105-67-9	2,4-Dimethylphenol	450	U
111-91-1	Bis(2-chloroethoxy)methane	450	U
120-83-2	2,4-Dichlorophenol	450	U
91-20-3	Naphthalene	450	U
106-47-8	4-Chloroaniline	450	U
87-68-3	Hexachlorobutadiene	450	U
59-50-7	4-Chloro-3-methylphenol	450	U
91-57-6	2-Methylnaphthalene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U
88-06-2	2,4,6-Trichlorophenol	450	U
95-95-4	2,4,5-Trichlorophenol	450	U
91-58-7	2-Chloronaphthalene	450	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	450	U
606-20-2	2,6-Dinitrotoluene	450	U
208-96-8	Acenaphthylene	450	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	450	U
51-28-5	2,4-Dinitrophenol	2300	U
100-02-7	4-Nitrophenol	900	U
121-14-2	2,4-Dinitrotoluene	450	U
132-64-9	Dibenzofuran	450	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB7A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-6A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	450	U
7005-72-3	4-Chlorophenyl-phenylether	450	U
86-73-7	Fluorene	450	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
118-74-1	Hexachlorobenzene	450	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	450	U
120-12-7	Anthracene	450	U
86-74-8	Carbazole	450	U
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	450	U
129-00-0	Pyrene	450	U
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	900	U
117-81-7	bis(2-ethylhexyl) Phthalate	450	U
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenzo(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U
100-52-7	Benzaldehyde	450	UR, 8
98-86-2	Acetophenone	450	U
105-60-2	Caprolactam	450	U
92-52-4	1,1'-Biphenyl	450	U
1912-24-9	Atrazine	450	UUJ, C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB7A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-6A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN~~ (BC)	5.14	~~760~~	~~JB~~ R
2.					
3.					
4.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB7C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-7A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	460	U
111-44-4	Bis(2-chloroethyl)ether	460	U
95-57-8	2-Chlorophenol	460	U
95-48-7	2-Methylphenol	460	U
108-60-1	2,2'-oxybis(1-Chloropropane)	460	U UJ/C
106-44-5	4-Methylphenol	460	U
621-64-7	N-Nitroso-di-N-propylamine	460	U
67-72-1	Hexachloroethane	460	U
98-95-3	Nitrobenzene	460	U
78-59-1	Isophorone	460	U
88-75-5	2-Nitrophenol	460	U
105-67-9	2,4-Dimethylphenol	460	U
111-91-1	Bis(2-chloroethoxy)methane	460	U
120-83-2	2,4-Dichlorophenol	460	U
91-20-3	Naphthalene	460	U
106-47-8	4-Chloroaniline	460	U
87-68-3	Hexachlorobutadiene	460	U
59-50-7	4-Chloro-3-methylphenol	460	U
91-57-6	2-Methylnaphthalene	460	U
77-47-4	Hexachlorocyclopentadiene	460	U
88-06-2	2,4,6-Trichlorophenol	460	U
95-95-4	2,4,5-Trichlorophenol	460	U
91-58-7	2-Chloronaphthalene	460	U
88-74-4	2-Nitroaniline	920	U
131-11-3	Dimethylphthalate	460	U
606-20-2	2,6-Dinitrotoluene	460	U
208-96-8	Acenaphthylene	460	U
99-09-2	3-Nitroaniline	920	U
83-32-9	Acenaphthene	460	U
51-28-5	2,4-Dinitrophenol	2400	U
100-02-7	4-Nitrophenol	920	U
121-14-2	2,4-Dinitrotoluene	460	U
132-64-9	Dibenzofuran	460	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB7C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-7A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	460	U
7005-72-3	4-Chlorophenyl-phenylether	460	U
86-73-7	Fluorene	460	U
100-01-6	4-Nitroaniline	920	U
534-52-1	4,6-Dinitro-2-methylphenol	920	U
86-30-6	N-Nitrosodiphenylamine (1)	460	U
101-55-3	4-Bromophenyl-phenylether	460	U
118-74-1	Hexachlorobenzene	460	U
87-86-5	Pentachlorophenol	920	U
85-01-8	Phenanthrene	460	U
120-12-7	Anthracene	460	U
86-74-8	Carbazole	460	U
84-74-2	Di-n-butylphthalate	460	U
206-44-0	Fluoranthene	460	U
129-00-0	Pyrene	460	U
85-68-7	Butylbenzylphthalate	460	U
91-94-1	3,3'-Dichlorobenzidine	920	U
117-81-7	bis(2-ethylhexyl)Phthalate	460	U
56-55-3	Benzo(a)anthracene	460	U
218-01-9	Chrysene	460	U
117-84-0	Di-n-octylphthalate	460	U
205-99-2	Benzo(b)fluoranthene	460	U
207-08-9	Benzo(k)fluoranthene	460	U
50-32-8	Benzo(a)pyrene	460	U
193-39-5	Indeno(1,2,3-cd)pyrene	460	U
53-70-3	Dibenzo(a,h)anthracene	460	U
191-24-2	Benzo(g,h,i)perylene	460	U
100-52-7	Benzaldehyde	460	U R,J
98-86-2	Acetophenone	460	U
105-60-2	Caprolactam	460	U
92-52-4	1,1'-Biphenyl	460	U
1912-24-9	Atrazine	460	U UJ,C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB7C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-7A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	5.12	~~920~~	~~JB~~
2.		UNKNOWN	18.90	190	J
3.					
4.					
5.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB8A

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-4

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-4JA64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 24 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	430	U
111-44-4	Bis(2-chloroethyl)ether	430	U
95-57-8	2-Chlorophenol	430	U
95-48-7	2-Methylphenol	430	U
108-60-1	2,2'-oxybis(1-Chloropropane)	430	U UJ/C
106-44-5	4-Methylphenol	430	U
621-64-7	N-Nitroso-di-N-propylamine	430	U
67-72-1	Hexachloroethane	430	U
98-95-3	Nitrobenzene	430	U
78-59-1	Isophorone	430	U
88-75-5	2-Nitrophenol	430	U
105-67-9	2,4-Dimethylphenol	430	U
111-91-1	Bis(2-chloroethoxy)methane	430	U
120-83-2	2,4-Dichlorophenol	430	U
91-20-3	Naphthalene	430	U
106-47-8	4-Chloroaniline	430	U
87-68-3	Hexachlorobutadiene	430	U
59-50-7	4-Chloro-3-methylphenol	430	U
91-57-6	2-Methylnaphthalene	430	U
77-47-4	Hexachlorocyclopentadiene	430	U
88-06-2	2,4,6-Trichlorophenol	430	U
95-95-4	2,4,5-Trichlorophenol	430	U
91-58-7	2-Chloronaphthalene	430	U
88-74-4	2-Nitroaniline	870	U
131-11-3	Dimethylphthalate	430	U
606-20-2	2,6-Dinitrotoluene	430	U
208-96-8	Acenaphthylene	430	U
99-09-2	3-Nitroaniline	870	U
83-32-9	Acenaphthene	430	U
51-28-5	2,4-Dinitrophenol	2200	U
100-02-7	4-Nitrophenol	870	U
121-14-2	2,4-Dinitrotoluene	430	U
132-64-9	Dibenzofuran	430	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB8A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-4

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-4JA64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 24 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	430	U
7005-72-3	4-Chlorophenyl-phenylether	430	U
86-73-7	Fluorene	430	U
100-01-6	4-Nitroaniline	870	U
534-52-1	4,6-Dinitro-2-methylphenol	870	U
86-30-6	N-Nitrosodiphenylamine (1)	430	U
101-55-3	4-Bromophenyl-phenylether	430	U
118-74-1	Hexachlorobenzene	430	U
87-86-5	Pentachlorophenol	870	U
85-01-8	Phenanthrene	430	U
120-12-7	Anthracene	430	U
86-74-8	Carbazole	430	U
84-74-2	Di-n-butylphthalate	430	U
206-44-0	Fluoranthene	430	U
129-00-0	Pyrene	430	U
85-68-7	Butylbenzylphthalate	430	U
91-94-1	3,3'-Dichlorobenzidine	870	U
117-81-7	bis(2-ethylhexyl) Phthalate	430	U
56-55-3	Benzo(a)anthracene	430	U
218-01-9	Chrysene	430	U
117-84-0	Di-n-octylphthalate	430	U
205-99-2	Benzo(b)fluoranthene	430	U
207-08-9	Benzo(k)fluoranthene	430	U
50-32-8	Benzo(a)pyrene	430	U
193-39-5	Indeno(1,2,3-cd)pyrene	430	U
53-70-3	Dibenzo(a,h)anthracene	430	U
191-24-2	Benzo(g,h,i)perylene	430	U
100-52-7	Benzaldehyde	430	U R J
98-86-2	Acetophenone	430	U
105-60-2	Caprolactam	430	U
92-52-4	1,1'-Biphenyl	430	U
1912-24-9	Atrazine	430	U UJ,C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
36SB8A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-4

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-4JA64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 24 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (BC)	5.13	720	JB
2.		UNKNOWN	8.72	210	J
3.		UNKNOWN	10.30	720	J
4.	10544-50-0	SULFUR, MOL. (S8)	12.86	270	NJ
5.		UNKNOWN	20.51	280	JB
6.					
7.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB8C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-5A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 17 decanted: (Y/N) N Date Extracted:04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	Bis(2-chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U UJ,C
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-N-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	Bis(2-chloroethoxy)methane	400	U UJ,M
120-83-2	2,4-Dichlorophenol	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	400	U
606-20-2	2,6-Dinitrotoluene	400	U
208-96-8	Acenaphthylene	400	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	800	U
121-14-2	2,4-Dinitrotoluene	400	U
132-64-9	Dibenzofuran	400	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB8C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-5A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 17 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	800	U
117-81-7	bis(2-ethylhexyl)Phthalate	42	J
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenzo(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
100-52-7	Benzaldehyde	400	UR,J
98-86-2	Acetophenone	400	U
105-60-2	Caprolactam	400	U
92-52-4	1,1'-Biphenyl	400	U
1912-24-9	Atrazine	400	UUJ,C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB8C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-5A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 17 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	~~5.13~~	~~850~~	~~JB~~ e
2.					
3.					
4.					
5.				RA	
6.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB9A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-1A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 26 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	450	U
111-44-4	Bis(2-chloroethyl)ether	450	U
95-57-8	2-Chlorophenol	450	U
95-48-7	2-Methylphenol	450	U
108-60-1	2,2'-oxybis(1-Chloropropane)	450	UUJ,C
106-44-5	4-Methylphenol	450	U
621-64-7	N-Nitroso-di-N-propylamine	450	U
67-72-1	Hexachloroethane	450	U
98-95-3	Nitrobenzene	450	U
78-59-1	Isophorone	450	U
88-75-5	2-Nitrophenol	450	U
105-67-9	2,4-Dimethylphenol	450	U
111-91-1	Bis(2-chloroethoxy)methane	450	U
120-83-2	2,4-Dichlorophenol	450	U
91-20-3	Naphthalene	450	U
106-47-8	4-Chloroaniline	450	U
87-68-3	Hexachlorobutadiene	450	U
59-50-7	4-Chloro-3-methylphenol	450	U
91-57-6	2-Methylnaphthalene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U
88-06-2	2,4,6-Trichlorophenol	450	U
95-95-4	2,4,5-Trichlorophenol	450	U
91-58-7	2-Chloronaphthalene	450	U
88-74-4	2-Nitroaniline	890	U
131-11-3	Dimethylphthalate	450	U
606-20-2	2,6-Dinitrotoluene	450	U
208-96-8	Acenaphthylene	450	U
99-09-2	3-Nitroaniline	890	U
83-32-9	Acenaphthene	450	U
51-28-5	2,4-Dinitrophenol	2300	U
100-02-7	4-Nitrophenol	890	U
121-14-2	2,4-Dinitrotoluene	450	U
132-64-9	Dibenzofuran	450	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB9A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-1A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 26 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	450	U
7005-72-3	4-Chlorophenyl-phenylether	450	U
86-73-7	Fluorene	450	U
100-01-6	4-Nitroaniline	890	U
534-52-1	4,6-Dinitro-2-methylphenol	890	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
118-74-1	Hexachlorobenzene	450	U
87-86-5	Pentachlorophenol	890	U
85-01-8	Phenanthrene	450	U
120-12-7	Anthracene	450	U
86-74-8	Carbazole	450	U
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	450	U
129-00-0	Pyrene	450	U
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	890	U
117-81-7	bis(2-ethylhexyl)Phthalate	450	U
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenzo(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U
100-52-7	Benzaldehyde	450	U R,J
98-86-2	Acetophenone	450	U
105-60-2	Caprolactam	450	U
92-52-4	1,1'-Biphenyl	450	U
1912-24-9	Atrazine	450	U UJ,C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB9A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-1A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 26 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (BC)	5.14	1000	JB
2.		UNKNOWN (BC)	5.84	220	JB
3.		UNKNOWN	20.12	720	J
4.		UNKNOWN	20.45	180	J
5.					
6.					
7.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB9C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-2

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-2A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 29 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	460	U
111-44-4	Bis(2-chloroethyl)ether	460	U
95-57-8	2-Chlorophenol	460	U
95-48-7	2-Methylphenol	460	U
108-60-1	2,2'-oxybis(1-Chloropropane)	460	U UJ C
106-44-5	4-Methylphenol	460	U
621-64-7	N-Nitroso-di-N-propylamine	460	U
67-72-1	Hexachloroethane	460	U
98-95-3	Nitrobenzene	460	U
78-59-1	Isophorone	460	U
88-75-5	2-Nitrophenol	460	U
105-67-9	2,4-Dimethylphenol	460	U
111-91-1	Bis(2-chloroethoxy)methane	460	U
120-83-2	2,4-Dichlorophenol	460	U
91-20-3	Naphthalene	460	U
106-47-8	4-Chloroaniline	460	U
87-68-3	Hexachlorobutadiene	460	U
59-50-7	4-Chloro-3-methylphenol	460	U
91-57-6	2-Methylnaphthalene	460	U
77-47-4	Hexachlorocyclopentadiene	460	U
88-06-2	2,4,6-Trichlorophenol	460	U
95-95-4	2,4,5-Trichlorophenol	460	U
91-58-7	2-Chloronaphthalene	460	U
88-74-4	2-Nitroaniline	930	U
131-11-3	Dimethylphthalate	460	U
606-20-2	2,6-Dinitrotoluene	460	U
208-96-8	Acenaphthylene	460	U
99-09-2	3-Nitroaniline	930	U
83-32-9	Acenaphthene	460	U
51-28-5	2,4-Dinitrophenol	2400	U
100-02-7	4-Nitrophenol	930	U
121-14-2	2,4-Dinitrotoluene	460	U
132-64-9	Dibenzofuran	460	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB9C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-2

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-2A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 29 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	460	U
7005-72-3	4-Chlorophenyl-phenylether	460	U
86-73-7	Fluorene	460	U
100-01-6	4-Nitroaniline	930	U
534-52-1	4,6-Dinitro-2-methylphenol	930	U
86-30-6	N-Nitrosodiphenylamine (1)	460	U
101-55-3	4-Bromophenyl-phenylether	460	U
118-74-1	Hexachlorobenzene	460	U
87-86-5	Pentachlorophenol	930	U
85-01-8	Phenanthrene	460	U
120-12-7	Anthracene	460	U
86-74-8	Carbazole	460	U
84-74-2	Di-n-butylphthalate	460	U
206-44-0	Fluoranthene	460	U
129-00-0	Pyrene	460	U
85-68-7	Butylbenzylphthalate	460	U
91-94-1	3,3'-Dichlorobenzidine	930	U
117-81-7	bis(2-ethylhexyl)Phthalate	460	U
56-55-3	Benzo(a)anthracene	460	U
218-01-9	Chrysene	460	U
117-84-0	Di-n-octylphthalate	460	U
205-99-2	Benzo(b)fluoranthene	460	U
207-08-9	Benzo(k)fluoranthene	460	U
50-32-8	Benzo(a)pyrene	460	U
193-39-5	Indeno(1,2,3-cd)pyrene	460	U
53-70-3	Dibenzo(a,h)anthracene	460	U
191-24-2	Benzo(g,h,i)perylene	460	U
100-52-7	Benzaldehyde	460	UR,X
98-86-2	Acetophenone	460	U
105-60-2	Caprolactam	100	J
92-52-4	1,1'-Biphenyl	460	U
1912-24-9	Atrazine	460	UUJC

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB9C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-2

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-2A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 29 decanted: (Y/N) N Date Extracted:04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	5.12	1000	JB Q
2.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB3A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-19A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 17 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	Bis(2-chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-N-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	Bis(2-chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	400	U
606-20-2	2,6-Dinitrotoluene	400	U
208-96-8	Acenaphthylene	400	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	800	U
121-14-2	2,4-Dinitrotoluene	400	U
132-64-9	Dibenzofuran	400	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB3A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-19A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 17 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	800	UUJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	400	U
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenzo(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
100-52-7	Benzaldehyde	400	UR,J
98-86-2	Acetophenone	400	U
105-60-2	Caprolactam	400	U
92-52-4	1,1'-Biphenyl	400	U
1912-24-9	Atrazine	400	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB3A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-19A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 17 decanted: (Y/N) N Date Extracted:04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	~~5.12~~	~~770~~	~~JB~~ e
2.					
3.					
4.				RA	
5.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB3C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-20

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-20A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 15 decanted: (Y/N) N Date Extracted:04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	390	U
111-44-4	Bis(2-chloroethyl)ether	390	U
95-57-8	2-Chlorophenol	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2'-oxybis(1-Chloropropane)	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-di-N-propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
111-91-1	Bis(2-chloroethoxy)methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	390	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	780	U
131-11-3	Dimethylphthalate	390	U
606-20-2	2,6-Dinitrotoluene	390	U
208-96-8	Acenaphthylene	390	U
99-09-2	3-Nitroaniline	780	U
83-32-9	Acenaphthene	390	U
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	780	U
121-14-2	2,4-Dinitrotoluene	390	U
132-64-9	Dibenzofuran	390	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB3C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-20

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-20A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	780	U
534-52-1	4,6-Dinitro-2-methylphenol	780	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	780	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
86-74-8	Carbazole	390	U
84-74-2	Di-n-butylphthalate	390	U
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	780	U UJ, C
117-81-7	bis(2-ethylhexyl) Phthalate	390	U
56-55-3	Benzo(a)anthracene	390	U
218-01-9	Chrysene	390	U
117-84-0	Di-n-octylphthalate	390	U
205-99-2	Benzo(b)fluoranthene	390	U
207-08-9	Benzo(k)fluoranthene	390	U
50-32-8	Benzo(a)pyrene	390	U
193-39-5	Indeno(1,2,3-cd)pyrene	390	U
53-70-3	Dibenzo(a,h)anthracene	390	U
191-24-2	Benzo(g,h,i)perylene	390	U
100-52-7	Benzaldehyde	390	U R, L
98-86-2	Acetophenone	390	U
105-60-2	Caprolactam	390	U
92-52-4	1,1'-Biphenyl	390	U
1912-24-9	Atrazine	390	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB3C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-20

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-20A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	5.13	~~650~~	~~JB~~ e
2.					
3.					
4.					
5.					
6.					
7.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB6A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-17JA64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 20 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	Bis(2-chloroethyl)ether	410	U
95-57-8	2-Chlorophenol	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-di-N-propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	Bis(2-chloroethoxy)methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	410	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	830	U
131-11-3	Dimethylphthalate	410	U
606-20-2	2,6-Dinitrotoluene	410	U
208-96-8	Acenaphthylene	410	U
99-09-2	3-Nitroaniline	830	U
83-32-9	Acenaphthene	410	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	830	U
121-14-2	2,4-Dinitrotoluene	410	U
132-64-9	Dibenzofuran	410	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB6A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-17JA64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 20 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
86-73-7	Fluorene	410	U
100-01-6	4-Nitroaniline	830	U
534-52-1	4,6-Dinitro-2-methylphenol	830	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
87-86-5	Pentachlorophenol	830	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-butylphthalate	410	U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	830	U UJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	410	U
56-55-3	Benzo(a)anthracene	410	U
218-01-9	Chrysene	410	U
117-84-0	Di-n-octylphthalate	410	U
205-99-2	Benzo(b)fluoranthene	410	U
207-08-9	Benzo(k)fluoranthene	410	U
50-32-8	Benzo(a)pyrene	410	U
193-39-5	Indeno(1,2,3-cd)pyrene	410	U
53-70-3	Dibenzo(a,h)anthracene	410	U
191-24-2	Benzo(g,h,i)perylene	410	U
100-52-7	Benzaldehyde	410	U R,J
98-86-2	Acetophenone	410	U
105-60-2	Caprolactam	410	U
92-52-4	1,1'-Biphenyl	410	U
1912-24-9	Atrazine	410	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB6A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-17JA64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 20 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	~~5.13~~	~~690~~	~~JB~~ e
2.					
3.					
4.				RA	
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB6C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-18A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 26 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	450	U
111-44-4	Bis(2-chloroethyl)ether	450	U
95-57-8	2-Chlorophenol	450	U
95-48-7	2-Methylphenol	450	U
108-60-1	2,2'-oxybis(1-Chloropropane)	450	U
106-44-5	4-Methylphenol	450	U
621-64-7	N-Nitroso-di-N-propylamine	450	U
67-72-1	Hexachloroethane	450	U
98-95-3	Nitrobenzene	450	U
78-59-1	Isophorone	450	U
88-75-5	2-Nitrophenol	450	U
105-67-9	2,4-Dimethylphenol	450	U
111-91-1	Bis(2-chloroethoxy)methane	450	U
120-83-2	2,4-Dichlorophenol	450	U
91-20-3	Naphthalene	450	U
106-47-8	4-Chloroaniline	450	U
87-68-3	Hexachlorobutadiene	450	U
59-50-7	4-Chloro-3-methylphenol	450	U
91-57-6	2-Methylnaphthalene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U
88-06-2	2,4,6-Trichlorophenol	450	U
95-95-4	2,4,5-Trichlorophenol	450	U
91-58-7	2-Chloronaphthalene	450	U
88-74-4	2-Nitroaniline	890	U
131-11-3	Dimethylphthalate	450	U
606-20-2	2,6-Dinitrotoluene	450	U
208-96-8	Acenaphthylene	450	U
99-09-2	3-Nitroaniline	890	U
83-32-9	Acenaphthene	450	U
51-28-5	2,4-Dinitrophenol	2300	U
100-02-7	4-Nitrophenol	890	U
121-14-2	2,4-Dinitrotoluene	450	U
132-64-9	Dibenzofuran	450	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB6C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-18A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 26 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	450	U
7005-72-3	4-Chlorophenyl-phenylether	450	U
86-73-7	Fluorene	450	U
100-01-6	4-Nitroaniline	890	U
534-52-1	4,6-Dinitro-2-methylphenol	890	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
118-74-1	Hexachlorobenzene	450	U
87-86-5	Pentachlorophenol	890	U
85-01-8	Phenanthrene	450	U
120-12-7	Anthracene	450	U
86-74-8	Carbazole	450	U
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	450	U
129-00-0	Pyrene	450	U
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	890	U UJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	450	U
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenzo(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U
100-52-7	Benzaldehyde	450	U R,L
98-86-2	Acetophenone	450	U
105-60-2	Caprolactam	450	U
92-52-4	1,1'-Biphenyl	450	U
1912-24-9	Atrazine	450	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB6C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-18A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 26 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	~~5.13~~	~~800~~	~~JB~~
2.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP1

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-3A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	390	U
111-44-4	Bis(2-chloroethyl)ether	390	U
95-57-8	2-Chlorophenol	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2'-oxybis(1-Chloropropane)	390	U UJC
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-di-N-propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
111-91-1	Bis(2-chloroethoxy)methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	390	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	780	U
131-11-3	Dimethylphthalate	390	U
606-20-2	2,6-Dinitrotoluene	390	U
208-96-8	Acenaphthylene	390	U
99-09-2	3-Nitroaniline	780	U
83-32-9	Acenaphthene	390	U
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	780	U
121-14-2	2,4-Dinitrotoluene	390	U
132-64-9	Dibenzofuran	390	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP1

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-3A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	780	U
534-52-1	4,6-Dinitro-2-methylphenol	780	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	780	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
86-74-8	Carbazole	390	U
84-74-2	Di-n-butylphthalate	390	U
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	780	U
117-81-7	bis(2-ethylhexyl)Phthalate	390	U
56-55-3	Benzo(a)anthracene	390	U
218-01-9	Chrysene	390	U
117-84-0	Di-n-octylphthalate	390	U
205-99-2	Benzo(b)fluoranthene	390	U
207-08-9	Benzo(k)fluoranthene	390	U
50-32-8	Benzo(a)pyrene	390	U
193-39-5	Indeno(1,2,3-cd)pyrene	390	U
53-70-3	Dibenzo(a,h)anthracene	390	U
191-24-2	Benzo(g,h,i)perylene	390	U
100-52-7	Benzaldehyde	390	U R,J
98-86-2	Acetophenone	390	U
105-60-2	Caprolactam	390	U
92-52-4	1,1'-Biphenyl	390	U
1912-24-9	Atrazine	390	U UJ,C

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

DUP1

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-3A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/18/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN~~ (BC)	5.12	840	~~JB~~ P
2.					
3.					
4.				RA	
5.					
6.					
7.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP2

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-16A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 25 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	440	U
111-44-4	Bis(2-chloroethyl)ether	440	U
95-57-8	2-Chlorophenol	440	U
95-48-7	2-Methylphenol	440	U
108-60-1	2,2'-oxybis(1-Chloropropane)	440	U
106-44-5	4-Methylphenol	440	U
621-64-7	N-Nitroso-di-N-propylamine	440	U
67-72-1	Hexachloroethane	440	U
98-95-3	Nitrobenzene	440	U
78-59-1	Isophorone	440	U
88-75-5	2-Nitrophenol	440	U
105-67-9	2,4-Dimethylphenol	440	U
111-91-1	Bis(2-chloroethoxy)methane	440	U
120-83-2	2,4-Dichlorophenol	440	U
91-20-3	Naphthalene	440	U
106-47-8	4-Chloroaniline	440	U
87-68-3	Hexachlorobutadiene	440	U
59-50-7	4-Chloro-3-methylphenol	440	U
91-57-6	2-Methylnaphthalene	440	U
77-47-4	Hexachlorocyclopentadiene	440	U
88-06-2	2,4,6-Trichlorophenol	440	U
95-95-4	2,4,5-Trichlorophenol	440	U
91-58-7	2-Chloronaphthalene	440	U
88-74-4	2-Nitroaniline	880	U
131-11-3	Dimethylphthalate	440	U
606-20-2	2,6-Dinitrotoluene	440	U
208-96-8	Acenaphthylene	440	U
99-09-2	3-Nitroaniline	880	U
83-32-9	Acenaphthene	440	U
51-28-5	2,4-Dinitrophenol	2300	U
100-02-7	4-Nitrophenol	880	U
121-14-2	2,4-Dinitrotoluene	440	U
132-64-9	Dibenzofuran	440	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP2

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-16A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 25 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	440	U
7005-72-3	4-Chlorophenyl-phenylether	440	U
86-73-7	Fluorene	440	U
100-01-6	4-Nitroaniline	880	U
534-52-1	4,6-Dinitro-2-methylphenol	880	U
86-30-6	N-Nitrosodiphenylamine (1)	440	U
101-55-3	4-Bromophenyl-phenylether	440	U
118-74-1	Hexachlorobenzene	440	U
87-86-5	Pentachlorophenol	880	U
85-01-8	Phenanthrene	440	U
120-12-7	Anthracene	440	U
86-74-8	Carbazole	440	U
84-74-2	Di-n-butylphthalate	440	U
206-44-0	Fluoranthene	440	U
129-00-0	Pyrene	440	U
85-68-7	Butylbenzylphthalate	440	U
91-94-1	3,3'-Dichlorobenzidine	880	U UJ, C
117-81-7	bis(2-ethylhexyl)Phthalate	440	U
56-55-3	Benzo(a)anthracene	440	U
218-01-9	Chrysene	440	U
117-84-0	Di-n-octylphthalate	440	U
205-99-2	Benzo(b)fluoranthene	440	U
207-08-9	Benzo(k)fluoranthene	440	U
50-32-8	Benzo(a)pyrene	440	U
193-39-5	Indeno(1,2,3-cd)pyrene	440	U
53-70-3	Dibenzo(a,h)anthracene	440	U
191-24-2	Benzo(g,h,i)perylene	440	U
100-52-7	Benzaldehyde	440	U R, 2
98-86-2	Acetophenone	440	U
105-60-2	Caprolactam	440	U
92-52-4	1,1'-Biphenyl	440	U
1912-24-9	Atrazine	440	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

DUP2

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q2946-16A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 25 decanted: (Y/N) N Date Extracted: 04/17/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	5.12	790	~~JB~~
2.		~~UNKNOWN~~	~~20.22~~	630	~~J~~
3.					
4.					
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FORM I SV-TIC

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB1A

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 29 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/17/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	1.2	U
319-84-6	alpha-BHC	1.2	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	1.2	U
58-89-9	gamma-BHC (Lindane)	1.2	U
72-54-8	4,4'-DDD	4.6	U
72-55-9	4,4'-DDE	2.4	U
50-29-3	4,4'-DDT	7.0	U
60-57-1	Dieldrin	2.4	U
959-98-8	Endosulfan I	2.4	U
33213-65-9	Endosulfan II	4.6	U
1031-07-8	Endosulfan sulfate	4.6	U
72-20-8	Endrin	4.6	U
7421-93-4	Endrin Aldehyde	4.6	U
76-44-8	Heptachlor	1.2	U
1024-57-3	Heptachlor Epoxide	1.2	U
72-43-5	Methoxychlor	12	U
8001-35-2	Toxaphene	120	U
53494-70-5	Endrin Ketone	12	U
5103-74-2	gamma-Chlordane	1.2	U
5103-71-9	alpha-Chlordane	2.4	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB7A

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 27 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/17/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	1.1	U
319-84-6	alpha-BHC	1.1	U
319-85-7	beta-BHC	0.90	JP J,g
319-86-8	delta-BHC	1.1	U
58-89-9	gamma-BHC (Lindane)	1.1	U
72-54-8	4,4'-DDD	4.5	U
72-55-9	4,4'-DDE	2.3	U
50-29-3	4,4'-DDT	6.8	U
60-57-1	Dieldrin	2.3	U
959-98-8	Endosulfan I	2.3	U
33213-65-9	Endosulfan II	4.5	U
1031-07-8	Endosulfan sulfate	4.5	U
72-20-8	Endrin	4.5	U
7421-93-4	Endrin Aldehyde	4.5	U
76-44-8	Heptachlor	1.1	U
1024-57-3	Heptachlor Epoxide	1.1	U
72-43-5	Methoxychlor	11	U
8001-35-2	Toxaphene	110	U
53494-70-5	Endrin Ketone	11	U
5103-74-2	gamma-Chlordane	1.1	U
5103-71-9	alpha-Chlordane	2.3	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB9A

I Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 26 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/17/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	1.1	U
319-84-6	alpha-BHC	1.1	U
319-85-7	beta-BHC	1.8	JP J,g
319-86-8	delta-BHC	1.1	U
58-89-9	gamma-BHC (Lindane)	1.1	U
72-54-8	4,4'-DDD	4.5	U
72-55-9	4,4'-DDE	2.3	U
50-29-3	4,4'-DDT	6.8	U
60-57-1	Dieldrin	2.3	U
959-98-8	Endosulfan I	2.3	U
33213-65-9	Endosulfan II	4.5	U
1031-07-8	Endosulfan sulfate	4.5	U
72-20-8	Endrin	4.5	U
7421-93-4	Endrin Aldehyde	4.5	U
76-44-8	Heptachlor	1.1	U
1024-57-3	Heptachlor Epoxide	1.1	U
72-43-5	Methoxychlor	11	U
8001-35-2	Toxaphene	110	U
53494-70-5	Endrin Ketone	11	U
5103-74-2	gamma-Chlordane	1.1	U
5103-71-9	alpha-Chlordane	2.3	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB3A

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/17/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	1.0	U
319-84-6	alpha-BHC	1.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	1.0	U
58-89-9	gamma-BHC (Lindane)	1.0	U
72-54-8	4,4'-DDD	4.0	U
72-55-9	4,4'-DDE	2.0	U
50-29-3	4,4'-DDT	6.0	U
60-57-1	Dieldrin	2.0	U
959-98-8	Endosulfan I	2.0	U
33213-65-9	Endosulfan II	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
72-20-8	Endrin	4.0	U
7421-93-4	Endrin Aldehyde	4.0	U
76-44-8	Heptachlor	1.0	U
1024-57-3	Heptachlor Epoxide	1.0	U
72-43-5	Methoxychlor	10	U
8001-35-2	Toxaphene	100	U
53494-70-5	Endrin Ketone	10	U
5103-74-2	gamma-Chlordane	1.0	U
5103-71-9	alpha-Chlordane	2.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB6A

Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 20 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/17/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	1.0	U
319-84-6	alpha-BHC	1.0	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	1.0	U
58-89-9	gamma-BHC (Lindane)	1.0	U
72-54-8	4,4'-DDD	4.1	U
72-55-9	4,4'-DDE	2.1	U
50-29-3	4,4'-DDT	6.3	U
60-57-1	Dieldrin	2.1	U
959-98-8	Endosulfan I	2.1	U
33213-65-9	Endosulfan II	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
72-20-8	Endrin	4.1	U
7421-93-4	Endrin Aldehyde	4.1	U
76-44-8	Heptachlor	1.0	U
1024-57-3	Heptachlor Epoxide	1.0	U
72-43-5	Methoxychlor	10	U
8001-35-2	Toxaphene	100	U
53494-70-5	Endrin Ketone	10	U
5103-74-2	gamma-Chlordane	1.0	U
5103-71-9	alpha-Chlordane	2.1	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB1A

Lab Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 29 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/17/03

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/18/03

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	23	U
11104-28-2	Aroclor-1221	30	U
11141-16-5	Aroclor-1232	23	U
53469-21-9	Aroclor-1242	15	U
12672-29-6	Aroclor-1248	15	U
11097-69-1	Aroclor-1254	15	U
11096-82-5	Aroclor-1260	23	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB7A

Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 27 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/17/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	23	U
11104-28-2	Aroclor-1221	29	U
11141-16-5	Aroclor-1232	23	U
53469-21-9	Aroclor-1242	14	U
12672-29-6	Aroclor-1248	14	U
11097-69-1	Aroclor-1254	14	U
11096-82-5	Aroclor-1260	23	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB9A

Lab Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 26 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/17/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	23	U
11104-28-2	Aroclor-1221	28	U
11141-16-5	Aroclor-1232	23	U
53469-21-9	Aroclor-1242	14	U
12672-29-6	Aroclor-1248	14	U
11097-69-1	Aroclor-1254	14	U
11096-82-5	Aroclor-1260	23	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB3A

› Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/17/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	20	U
11104-28-2	Aroclor-1221	25	U
11141-16-5	Aroclor-1232	20	U
53469-21-9	Aroclor-1242	13	U
12672-29-6	Aroclor-1248	13	U
11097-69-1	Aroclor-1254	13	U
11096-82-5	Aroclor-1260	20	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB6A

Lab Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 20 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/17/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	21	U
11104-28-2	Aroclor-1221	26	U
11141-16-5	Aroclor-1232	21	U
53469-21-9	Aroclor-1242	13	U
12672-29-6	Aroclor-1248	13	U
11097-69-1	Aroclor-1254	13	U
11096-82-5	Aroclor-1260	21	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB1A

ɔ Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 29 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	59	U
83-32-9	Acenaphthene	19	J
86-73-7	Fluorene	59	U
129-00-0	Pyrene	24	U
85-01-8	Phenanthrene	59	U
120-12-7	Anthracene	59	U
206-44-0	Fluoranthene	24	U
218-01-9	Chrysene	24	
205-99-2	Benzo(b)fluoranthene	12	U
207-08-9	Benzo(k)fluoranthene	2.1	J
53-70-3	Dibenzo(a,h)anthracene	12	U
191-24-2	Benzo(g,h,i)perylene	12	U
56-55-3	Benzo(a)anthracene	12	U
50-32-8	Benzo(a)pyrene	12	U
193-39-5	Indeno(1,2,3-cd)pyrene	12	U
208-96-8	Acenaphthylene	59	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB1C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 31 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	61	U
83-32-9	Acenaphthene	61	U
86-73-7	Fluorene	61	U
129-00-0	Pyrene	25	U
85-01-8	Phenanthrene	61	U
120-12-7	Anthracene	61	U
206-44-0	Fluoranthene	25	U
218-01-9	Chrysene	12	U
205-99-2	Benzo(b)fluoranthene	2.8	J B,Z
207-08-9	Benzo(k)fluoranthene	11	J
53-70-3	Dibenzo(a,h)anthracene	12	U
191-24-2	Benzo(g,h,i)perylene	12	U
56-55-3	Benzo(a)anthracene	12	U
50-32-8	Benzo(a)pyrene	12	U
193-39-5	Indeno(1,2,3-cd)pyrene	12	U
208-96-8	Acenaphthylene	61	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB2A

Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-8

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 29 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	59	U
83-32-9	Acenaphthene	20	J
86-73-7	Fluorene	59	U
129-00-0	Pyrene	8.6	J
85-01-8	Phenanthrene	59	U
120-12-7	Anthracene	59	U
206-44-0	Fluoranthene	24	U
218-01-9	Chrysene	12	U
205-99-2	Benzo(b)fluoranthene	12	U
207-08-9	Benzo(k)fluoranthene	12	U
53-70-3	Dibenzo(a,h)anthracene	12	U
191-24-2	Benzo(g,h,i)perylene	12	U
56-55-3	Benzo(a)anthracene	3.7	J
50-32-8	Benzo(a)pyrene	12	U
193-39-5	Indeno(1,2,3-cd)pyrene	12	U
208-96-8	Acenaphthylene	59	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB2C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 28 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	58	U
83-32-9	Acenaphthene	58	U
86-73-7	Fluorene	58	U
129-00-0	Pyrene	24	U
85-01-8	Phenanthrene	58	U
120-12-7	Anthracene	58	U
206-44-0	Fluoranthene	24	U
218-01-9	Chrysene	12	U
205-99-2	Benzo(b)fluoranthene	2.6	JB,Z
207-08-9	Benzo(k)fluoranthene	12	U
53-70-3	Dibenzo(a,h)anthracene	12	U
191-24-2	Benzo(g,h,i)perylene	12	U
56-55-3	Benzo(a)anthracene	12	U
50-32-8	Benzo(a)pyrene	12	U
193-39-5	Indeno(1,2,3-cd)pyrene	12	U
208-96-8	Acenaphthylene	58	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB4A

Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 19 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/25/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	52	U
83-32-9	Acenaphthene	52	U
86-73-7	Fluorene	52	U
129-00-0	Pyrene	21	U
85-01-8	Phenanthrene	52	U
120-12-7	Anthracene	52	U
206-44-0	Fluoranthene	21	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	52	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB4C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 18 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	51	U
83-32-9	Acenaphthene	51	U
86-73-7	Fluorene	51	U
129-00-0	Pyrene	21	U
85-01-8	Phenanthrene	51	U
120-12-7	Anthracene	51	U
206-44-0	Fluoranthene	21	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	51	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB5A

Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 15 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	49	U
83-32-9	Acenaphthene	49	U
86-73-7	Fluorene	49	U
129-00-0	Pyrene	20	U
85-01-8	Phenanthrene	49	U
120-12-7	Anthracene	49	U
206-44-0	Fluoranthene	20	U
218-01-9	Chrysene	9.8	U
205-99-2	Benzo(b)fluoranthene	9.8	U
207-08-9	Benzo(k)fluoranthene	9.8	U
53-70-3	Dibenzo(a,h)anthracene	9.8	U
191-24-2	Benzo(g,h,i)perylene	9.8	U
56-55-3	Benzo(a)anthracene	9.8	U
50-32-8	Benzo(a)pyrene	9.8	U
193-39-5	Indeno(1,2,3-cd)pyrene	9.8	U
208-96-8	Acenaphthylene	49	U

U21

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB5C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 27 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	58	U
83-32-9	Acenaphthene	21	J
86-73-7	Fluorene	58	U
129-00-0	Pyrene	23	U
85-01-8	Phenanthrene	58	U
120-12-7	Anthracene	58	U
206-44-0	Fluoranthene	23	U
218-01-9	Chrysene	11	U
205-99-2	Benzo(b)fluoranthene	2.5	J B, x
207-08-9	Benzo(k)fluoranthene	11	U
53-70-3	Dibenzo(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U
56-55-3	Benzo(a)anthracene	11	U
50-32-8	Benzo(a)pyrene	11	U
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
208-96-8	Acenaphthylene	58	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB7A

Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 27 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	58	U
83-32-9	Acenaphthene	58	U
86-73-7	Fluorene	58	U
129-00-0	Pyrene	23	U
85-01-8	Phenanthrene	58	U
120-12-7	Anthracene	58	U
206-44-0	Fluoranthene	23	U
218-01-9	Chrysene	11	U
205-99-2	Benzo(b)fluoranthene	11	U
207-08-9	Benzo(k)fluoranthene	3.5	J
53-70-3	Dibenzo(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U
56-55-3	Benzo(a)anthracene	11	U
50-32-8	Benzo(a)pyrene	11	U
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
208-96-8	Acenaphthylene	58	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB7C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 28 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	58	U
83-32-9	Acenaphthene	58	U
86-73-7	Fluorene	58	U
129-00-0	Pyrene	24	U
85-01-8	Phenanthrene	58	U
120-12-7	Anthracene	58	U
206-44-0	Fluoranthene	24	U
218-01-9	Chrysene	12	U
205-99-2	Benzo(b)fluoranthene	14	
207-08-9	Benzo(k)fluoranthene	12	U
53-70-3	Dibenzo(a,h)anthracene	12	U
191-24-2	Benzo(g,h,i)perylene	12	U
56-55-3	Benzo(a)anthracene	12	U
50-32-8	Benzo(a)pyrene	12	U
193-39-5	Indeno(1,2,3-cd)pyrene	12	U
208-96-8	Acenaphthylene	58	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB8A

b Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-4

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 24 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	55	U
83-32-9	Acenaphthene	55	U
86-73-7	Fluorene	55	U
129-00-0	Pyrene	22	U
85-01-8	Phenanthrene	55	U
120-12-7	Anthracene	55	U
206-44-0	Fluoranthene	22	U
218-01-9	Chrysene	7.7	J
205-99-2	Benzo(b)fluoranthene	11	U
207-08-9	Benzo(k)fluoranthene	2.9	J
53-70-3	Dibenzo(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U
56-55-3	Benzo(a)anthracene	11	U
50-32-8	Benzo(a)pyrene	11	U
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
208-96-8	Acenaphthylene	55	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB8C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	51	U UJ,m
83-32-9	Acenaphthene	26	JJ,m
86-73-7	Fluorene	47	JJ,m
129-00-0	Pyrene	20	U
85-01-8	Phenanthrene	51	U
120-12-7	Anthracene	51	U
206-44-0	Fluoranthene	8.8	JJ,d
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	5.7	JB,Z
207-08-9	Benzo(k)fluoranthene	2.4	JJ,d
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U UJ,m
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	51	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB9A

Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 26 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	57	U
83-32-9	Acenaphthene	57	U
86-73-7	Fluorene	57	U
129-00-0	Pyrene	23	U
85-01-8	Phenanthrene	57	U
120-12-7	Anthracene	57	U
206-44-0	Fluoranthene	23	U
218-01-9	Chrysene	11	U
205-99-2	Benzo(b)fluoranthene	11	U
207-08-9	Benzo(k)fluoranthene	11	U
53-70-3	Dibenzo(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U
56-55-3	Benzo(a)anthracene	11	U
50-32-8	Benzo(a)pyrene	11	U
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
208-96-8	Acenaphthylene	57	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB9C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-2

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 29 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	59	U
83-32-9	Acenaphthene	59	U
86-73-7	Fluorene	59	U
129-00-0	Pyrene	8.6	J
85-01-8	Phenanthrene	59	U
120-12-7	Anthracene	59	U
206-44-0	Fluoranthene	24	U
218-01-9	Chrysene	12	U
205-99-2	Benzo(b)fluoranthene	2.7	J B,Z
207-08-9	Benzo(k)fluoranthene	37	
53-70-3	Dibenzo(a,h)anthracene	12	U
191-24-2	Benzo(g,h,i)perylene	12	U
56-55-3	Benzo(a)anthracene	12	U
50-32-8	Benzo(a)pyrene	12	U
193-39-5	Indeno(1,2,3-cd)pyrene	12	U
208-96-8	Acenaphthylene	59	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB3A

Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	51	U
83-32-9	Acenaphthene	51	U
86-73-7	Fluorene	51	U
129-00-0	Pyrene	20	U
85-01-8	Phenanthrene	51	U
120-12-7	Anthracene	51	U
206-44-0	Fluoranthene	20	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	51	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB3C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-20

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 15 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	49	U
83-32-9	Acenaphthene	19	J
86-73-7	Fluorene	49	U
129-00-0	Pyrene	20	U
85-01-8	Phenanthrene	49	U
120-12-7	Anthracene	49	U
206-44-0	Fluoranthene	20	U
218-01-9	Chrysene	9.8	U
205-99-2	Benzo(b)fluoranthene	9.8	U
207-08-9	Benzo(k)fluoranthene	9.8	U
53-70-3	Dibenzo(a,h)anthracene	9.8	U
191-24-2	Benzo(g,h,i)perylene	9.8	U
56-55-3	Benzo(a)anthracene	9.8	U
50-32-8	Benzo(a)pyrene	9.8	U
193-39-5	Indeno(1,2,3-cd)pyrene	9.8	U
208-96-8	Acenaphthylene	49	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB6A

Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 20 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	52	U
83-32-9	Acenaphthene	52	U
86-73-7	Fluorene	52	U
129-00-0	Pyrene	21	U
85-01-8	Phenanthrene	52	U
120-12-7	Anthracene	52	U
206-44-0	Fluoranthene	21	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	52	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB6C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 26 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	57	U
83-32-9	Acenaphthene	34	J
86-73-7	Fluorene	20	J
129-00-0	Pyrene	7.3	J
85-01-8	Phenanthrene	57	U
120-12-7	Anthracene	57	U
206-44-0	Fluoranthene	23	U
218-01-9	Chrysene	11	U
205-99-2	Benzo(b)fluoranthene	11	U
207-08-9	Benzo(k)fluoranthene	11	U
53-70-3	Dibenzo(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U
56-55-3	Benzo(a)anthracene	11	U
50-32-8	Benzo(a)pyrene	11	U
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
208-96-8	Acenaphthylene	57	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP1

Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 15 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	49	U
83-32-9	Acenaphthene	49	U
86-73-7	Fluorene	49	U
129-00-0	Pyrene	20	U
85-01-8	Phenanthrene	49	U
120-12-7	Anthracene	49	U
206-44-0	Fluoranthene	20	U
218-01-9	Chrysene	9.8	U
205-99-2	Benzo(b)fluoranthene	9.8	U
207-08-9	Benzo(k)fluoranthene	9.8	U
53-70-3	Dibenzo(a,h)anthracene	9.8	U
191-24-2	Benzo(g,h,i)perylene	9.8	U
56-55-3	Benzo(a)anthracene	9.8	U
50-32-8	Benzo(a)pyrene	9.8	U
193-39-5	Indeno(1,2,3-cd)pyrene	9.8	U
208-96-8	Acenaphthylene	49	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP2

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 25 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/16/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	56	U
83-32-9	Acenaphthene	56	U
86-73-7	Fluorene	56	U
129-00-0	Pyrene	6.3	J
85-01-8	Phenanthrene	56	U
120-12-7	Anthracene	56	U
206-44-0	Fluoranthene	23	U
218-01-9	Chrysene	11	U
205-99-2	Benzo(b)fluoranthene	5.2	J B,x
207-08-9	Benzo(k)fluoranthene	190	
53-70-3	Dibenzo(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U
56-55-3	Benzo(a)anthracene	11	U
50-32-8	Benzo(a)pyrene	32	
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
208-96-8	Acenaphthylene	56	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB1A

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted: 04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB1C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-11

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB2A

b Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-8

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB2C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-9

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB4A

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB4C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB5A

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted: 04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB5C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-15

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB7A

Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB7C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-7

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB8A

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-4

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

445

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB8C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-5

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted: 04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U DJM
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB9A

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB9C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-2

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB3A

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted: 04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB3C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-20

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB6A

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB6C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-18

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP1

ъ Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-3

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP2

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-16

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB1A

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-10

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB1C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-11

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB2A

ab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-8

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB2C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-9

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB4A

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB4C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB5A

ab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB5C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-15

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB7A

ab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-6

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB7C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-7

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/19/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

36SC1

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: T2946

Matrix (soil/water): SOIL Lab Sample ID: T2946-1

Date Received: 4/17/03 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): pH units

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Corrosivity as pH	6.92				4/21/03
Paint Filter	NO				4/21/03

Comments: Corrosivity is reported in pH units, Paint Filter is reported as YES/NO as to the content of free liquids.

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

36SC2

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: T2946

Matrix (soil/water): SOIL Lab Sample ID: T2946-2

Date Received: 4/17/03 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): YES/NO

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Paint Filter	NO				4/21/03
Corrosivity as pH	7.33				4/21/03

Comments: Corrosivity is reported in pH units, Paint Filter is reported as YES/NO as to the content of free liquids.

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

36SC3

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: T2946

Matrix (soil/water): SOIL Lab Sample ID: T2946-3

Date Received: 4/17/03 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): YES/NO

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Paint Filter	NO				4/21/03
Corrosivity as pH	7.52				4/21/03

Comments: Corrosivity is reported in pH units, Paint Filter is reported as YES/NO as to the content of free liquids.

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

36SC4

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: T2946

Matrix (soil/water): SOIL Lab Sample ID: T2946-4

Date Received: 4/17/03 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): YES/NO

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Paint Filter	NO				4/21/03
Corrosivity as pH	7.48				4/21/03

Comments: Corrosivity is reported in pH units, Paint Filter is reported as YES/NO as to the content of free liquids.

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

8SC1

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: T2946

Matrix (soil/water): SOIL Lab Sample ID: T2946-6

Date Received: 4/18/03 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): YES/NO

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Paint Filter	NO				4/21/03
Corrosivity as pH	7.42				4/21/03

Comments: Corrosivity is reported in pH units, Paint Filter is reported as YES/NO as to the content of free liquids.

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

8SC2

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: T2946

Matrix (soil/water): SOIL Lab Sample ID: T2946-5

Date Received: 4/18/03 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): YES/NO

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Paint Filter	NO				4/21/03
Corrosivity as pH	7.82				4/21/03

Comments: Corrosivity is reported in pH units, Paint Filter is reported as YES/NO as to the content of free liquids.

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB8A

ab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-4

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB8C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-5

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB9A

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB9C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-2

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB3A

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-19

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB3C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-20

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB6A

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-17

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB6C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-18

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP1

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-3

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP2

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: Q2946-16

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB8CMS

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23776-5

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	9300	

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB8CMSD

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23776-6

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	9500	

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PAWLCS2

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23776-7

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	9900	

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLKAW

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23776-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: _____

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/17/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/18/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB1A

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-10

Level (low/med): LOW Date Received: 4/16/03

% Solids: 71.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	17300			P	
7440-36-0	Antimony	0.59	U	N	P	UL,W
7440-38-2	Arsenic	1.1	B		P	
7440-39-3	Barium	154		E	P	J,S
7440-41-7	Beryllium	0.97		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	3710		E	P	J,S
7440-47-3	Chromium	23.9		E	P	↓
7440-48-4	Cobalt	10.5		E	P	↓
7440-50-8	Copper	27.7		NE	P	K,M
7439-89-6	Iron	26100		E	P	J,S
7439-92-1	Lead	48.8		*E	P	J,K
7439-95-4	Magnesium	3210		E	P	J,S
7439-96-5	Manganese	756		*E	P	↓
7439-97-6	Mercury	0.031	B		CV	
7440-02-0	Nickel	13.4		E	P	J,S
7440-09-7	Potassium	1520		E	P	↓
7782-49-2	Selenium	0.44	B	N	P	L,W
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	381			P	
7440-28-0	Thallium	1.1	B	N	P	K,W
7440-62-2	Vanadium	37.6			P	
7440-66-6	Zinc	165		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB1C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-11

Level (low/med): LOW Date Received: 4/16/03

% Solids: 68.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	7550			P	
7440-36-0	Antimony	0.60	U	N	P	UL,W
7440-38-2	Arsenic	0.59	U		P	
7440-39-3	Barium	75.1		E	P	J,S
7440-41-7	Beryllium	0.57	B	E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	1310		E	P	J,S
7440-47-3	Chromium	13.7		E	P	↓
7440-48-4	Cobalt	5.5		E	P	↓
7440-50-8	Copper	7.2		NE	P	K,M
7439-89-6	Iron	11600		E	P	J,S
7439-92-1	Lead	4.7		*E	P	J,K
7439-95-4	Magnesium	2000		E	P	J,S
7439-96-5	Manganese	286		*E	P	↓
7439-97-6	Mercury	0.021	U		CV	
7440-02-0	Nickel	8.3		E	P	J,S
7440-09-7	Potassium	861		E	P	↓
7782-49-2	Selenium	0.35	U	N	P	UL,W
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	179	B		P	B,K
7440-28-0	Thallium	0.94	U	N	P	UL,M
7440-62-2	Vanadium	16.1			P	
7440-66-6	Zinc	41.1		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB2A

b Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-8

Level (low/med): LOW Date Received: 4/16/03

% Solids: 71.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	16500			P	
7440-36-0	Antimony	0.61	U	N	P	UL,W
7440-38-2	Arsenic	0.87	B		P	
7440-39-3	Barium	136		E	P	J,S
7440-41-7	Beryllium	0.91		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	1890		E	P	J,S
7440-47-3	Chromium	23.9		E	P	↓
7440-48-4	Cobalt	11.1		E	P	↓
7440-50-8	Copper	22.7		NE	P	K,M
7439-89-6	Iron	22900		E	P	J,S
7439-92-1	Lead	9.9		*E	P	J,K
7439-95-4	Magnesium	3680		E	P	J,S
7439-96-5	Manganese	544		*E	P	↓
7439-97-6	Mercury	0.023	B		CV	
7440-02-0	Nickel	13.5		E	P	J,S
7440-09-7	Potassium	1560		E	P	↓
7782-49-2	Selenium	0.36	U	N	P	UL,W
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	240	B		P	B,Z
7440-28-0	Thallium	0.96	U	N	P	UL,M
7440-62-2	Vanadium	38.0			P	
7440-66-6	Zinc	61.5		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB2C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-9

Level (low/med): LOW Date Received: 4/16/03

% Solids: 72.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	8600			P	
7440-36-0	Antimony	0.58	U	N	P	UL,W
7440-38-2	Arsenic	0.56	U		P	
7440-39-3	Barium	82.2		E	P	J,S
7440-41-7	Beryllium	0.64	B	E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	1700		E	P	J,S
7440-47-3	Chromium	14.4		E	P	↓
7440-48-4	Cobalt	6.0		E	P	↓
7440-50-8	Copper	13.8		NE	P	K,M
7439-89-6	Iron	12900		E	P	J,S
7439-92-1	Lead	5.3		*E	P	J,K
7439-95-4	Magnesium	2130		E	P	J,S
7439-96-5	Manganese	322		*E	P	↓
7439-97-6	Mercury	0.020	U		CV	
7440-02-0	Nickel	9.0		E	P	J,S
7440-09-7	Potassium	924		E	P	↓
7782-49-2	Selenium	0.33	U	N	P	UL,W
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	206	B		P	B,X
7440-28-0	Thallium	0.90	U	N	P	UL,M
7440-62-2	Vanadium	18.0			P	
7440-66-6	Zinc	42.4		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB4A

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-12

Level (low/med): LOW Date Received: 4/16/03

% Solids: 81.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	18500			P	
7440-36-0	Antimony	0.51	U	N	P	UL, W
7440-38-2	Arsenic	3.0			P	
7440-39-3	Barium	51.2		E	P	J, S
7440-41-7	Beryllium	0.45	B	E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL, M
7440-70-2	Calcium	454		E	P	J, S
7440-47-3	Chromium	21.7		E	P	↓
7440-48-4	Cobalt	12.7		E	P	↓
7440-50-8	Copper	12.4		NE	P	K, M
7439-89-6	Iron	25100		E	P	J, S
7439-92-1	Lead	14.7		*E	P	J, K
7439-95-4	Magnesium	876		E	P	J, S
7439-96-5	Manganese	401		*E	P	↓
7439-97-6	Mercury	0.065			CV	
7440-02-0	Nickel	8.0		E	P	J, S
7440-09-7	Potassium	1040		E	P	↓
7782-49-2	Selenium	0.30	U	N	P	UL, W
7440-22-4	Silver	0.09	U		P	
7440-23-5	Sodium	109	B		P	B, L
7440-28-0	Thallium	0.80	U	N	P	UL, M
7440-62-2	Vanadium	50.0			P	
7440-66-6	Zinc	33.3		*E	P	J, K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB4C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-13

Level (low/med): LOW Date Received: 4/16/03

% Solids: 82.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	11200			P	
7440-36-0	Antimony	0.51	U	N	P	UL,W
7440-38-2	Arsenic	0.60	B		P	
7440-39-3	Barium	76.8		E	P	J,S
7440-41-7	Beryllium	0.57		E	P	↓
7440-43-9	Cadmium	0.04	U	N	P	UL,M
7440-70-2	Calcium	1170		E	P	J,S
7440-47-3	Chromium	20.0		E	P	↓
7440-48-4	Cobalt	9.6		E	P	↓
7440-50-8	Copper	23.4		NE	P	K,M
7439-89-6	Iron	22200		E	P	J,S
7439-92-1	Lead	9.5		*E	P	J,K
7439-95-4	Magnesium	2710		E	P	J,S
7439-96-5	Manganese	429		*E	P	↓
7439-97-6	Mercury	0.020	U		CV	
7440-02-0	Nickel	11.1		E	P	J,S
7440-09-7	Potassium	1620		E	P	↓
7782-49-2	Selenium	0.29	U	N	P	UL,W
7440-22-4	Silver	0.09	U		P	
7440-23-5	Sodium	212	B		P	B,K
7440-28-0	Thallium	0.79	U	N	P	UL,M
7440-62-2	Vanadium	36.1			P	
7440-66-6	Zinc	46.0		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB5A

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-14

Level (low/med): LOW Date Received: 4/16/03

% Solids: 85.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	16200			P	
7440-36-0	Antimony	0.50	U	N	P	UL,W
7440-38-2	Arsenic	1.0	B		P	
7440-39-3	Barium	97.0		E	P	J,S
7440-41-7	Beryllium	0.75		E	P	↓
7440-43-9	Cadmium	0.04	U	N	P	UL,M
7440-70-2	Calcium	1490		E	P	J,S
7440-47-3	Chromium	24.0		E	P	↓
7440-48-4	Cobalt	10.3		E	P	↓
7440-50-8	Copper	29.2		NE	P	K,M
7439-89-6	Iron	25500		E	P	J,S
7439-92-1	Lead	15.4		*E	P	J,K
7439-95-4	Magnesium	3330		E	P	J,S
7439-96-5	Manganese	507		*E	P	↓
7439-97-6	Mercury	0.035	B		CV	
7440-02-0	Nickel	12.8		E	P	J,S
7440-09-7	Potassium	1660		E	P	↓
7782-49-2	Selenium	0.29	U	N	P	UL,W
7440-22-4	Silver	0.09	U		P	
7440-23-5	Sodium	228			P	
7440-28-0	Thallium	0.88	B	N	P	K,W
7440-62-2	Vanadium	42.8			P	
7440-66-6	Zinc	61.0		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB5C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-15

Level (low/med): LOW Date Received: 4/16/03

% Solids: 73.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	14900			P	
7440-36-0	Antimony	0.60	U	N	P	UL,W
7440-38-2	Arsenic	2.1			P	
7440-39-3	Barium	91.7		E	P	J,S
7440-41-7	Beryllium	0.80		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	921		E	P	J,S
7440-47-3	Chromium	23.5		E	P	↓
7440-48-4	Cobalt	11.7		E	P	↓
7440-50-8	Copper	27.3		NE	P	K,M
7439-89-6	Iron	25900		E	P	J,S
7439-92-1	Lead	11.4		*E	P	J,K
7439-95-4	Magnesium	3600		E	P	J,S
7439-96-5	Manganese	463		*E	P	↓
7439-97-6	Mercury	0.021	U		CV	
7440-02-0	Nickel	13.2		E	P	J,S
7440-09-7	Potassium	1990		E	P	↓
7782-49-2	Selenium	0.34	U	N	P	UL,W
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	217	B		P	B,X
7440-28-0	Thallium	0.93	U	N	P	UL,M
7440-62-2	Vanadium	39.3			P	
7440-66-6	Zinc	51.5		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB7A

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-6

Level (low/med): LOW Date Received: 4/16/03

% Solids: 73.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	14800			P	
7440-36-0	Antimony	0.57	U	N	P	UL, W
7440-38-2	Arsenic	3.1			P	
7440-39-3	Barium	51.6		E	P	J/S
7440-41-7	Beryllium	0.37	B	E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL, M
7440-70-2	Calcium	419		E	P	J/S
7440-47-3	Chromium	17.2		E	P	↓
7440-48-4	Cobalt	4.6		E	P	↓
7440-50-8	Copper	8.0		NE	P	K, M
7439-89-6	Iron	17500		E	P	J/S
7439-92-1	Lead	11.7		*E	P	J, K
7439-95-4	Magnesium	864		E	P	J/S
7439-96-5	Manganese	280		*E	P	↓
7439-97-6	Mercury	0.069			CV	
7440-02-0	Nickel	6.7		E	P	J/S
7440-09-7	Potassium	801		E	P	↓
7782-49-2	Selenium	0.65		N	P	L, M
7440-22-4	Silver	0.13	B		P	B, P
7440-23-5	Sodium	109	B		P	B, X
7440-28-0	Thallium	0.89	U	N	P	UL, M
7440-62-2	Vanadium	34.8			P	
7440-66-6	Zinc	27.5		*E	P	J, K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB7C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-7

Level (low/med): LOW Date Received: 4/16/03

% Solids: 71.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	16800			P	
7440-36-0	Antimony	0.58	U	N	P	UL, W
7440-38-2	Arsenic	0.97	B		P	
7440-39-3	Barium	144		E	P	J, S
7440-41-7	Beryllium	1.0		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL, M
7440-70-2	Calcium	1250		E	P	J, S
7440-47-3	Chromium	24.3		E	P	↓
7440-48-4	Cobalt	10.9		E	P	↓
7440-50-8	Copper	28.2		NE	P	K, M
7439-89-6	Iron	22000		E	P	J, S
7439-92-1	Lead	10.0		*E	P	J, K
7439-95-4	Magnesium	3710		E	P	J, S
7439-96-5	Manganese	595		*E	P	↓
7439-97-6	Mercury	0.022	B		CV	
7440-02-0	Nickel	14.0		E	P	J, S
7440-09-7	Potassium	1130		E	P	↓
7782-49-2	Selenium	0.59	B	N	P	L, W
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	226	B		P	B, X
7440-28-0	Thallium	0.90	U	N	P	UL, M
7440-62-2	Vanadium	33.3			P	
7440-66-6	Zinc	61.4		*E	P	J, K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB8A

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-4

Level (low/med): LOW Date Received: 4/16/03

% Solids: 76.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	16100			P	
7440-36-0	Antimony	0.54	U	N	P	UL|W
7440-38-2	Arsenic	2.0			P	
7440-39-3	Barium	152		E	P	J|S
7440-41-7	Beryllium	0.99		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL|M
7440-70-2	Calcium	1720		E	P	J|S
7440-47-3	Chromium	23.3		E	P	|
7440-48-4	Cobalt	9.9		E	P	↓
7440-50-8	Copper	29.6		NE	P	K|M
7439-89-6	Iron	21100		E	P	J|S
7439-92-1	Lead	21.8		*E	P	J|K
7439-95-4	Magnesium	3010		E	P	J|S
7439-96-5	Manganese	573		*E	P	↓
7439-97-6	Mercury	0.15			CV	
7440-02-0	Nickel	14.3		E	P	J|S
7440-09-7	Potassium	2060		E	P	↓
7782-49-2	Selenium	0.49	B	N	P	L|W
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	262			P	
7440-28-0	Thallium	0.84	U	N	P	UL|M
7440-62-2	Vanadium	35.7			P	
7440-66-6	Zinc	81.1		*E	P	J|K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB8C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-5

Level (low/med): LOW Date Received: 4/16/03

% Solids: 83.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	12900			P	
7440-36-0	Antimony	0.54	U	N	P	UL,W
7440-38-2	Arsenic	1.3			P	
7440-39-3	Barium	129		E	P	J,S
7440-41-7	Beryllium	0.81		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	1550		E	P	J,S
7440-47-3	Chromium	18.9		E	P	↓
7440-48-4	Cobalt	8.0		E	P	↓
7440-50-8	Copper	21.3		NE	P	K,M
7439-89-6	Iron	19900		E	P	J,S
7439-92-1	Lead	119		*E	P	J,K
7439-95-4	Magnesium	2550		E	P	J,S
7439-96-5	Manganese	698		*E	P	↓
7439-97-6	Mercury	0.023	B		CV	
7440-02-0	Nickel	10.8		E	P	J,S
7440-09-7	Potassium	1300		E	P	↓
7782-49-2	Selenium	0.67		N	P	L,M
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	484			P	
7440-28-0	Thallium	1.2	B	N	P	K,W
7440-62-2	Vanadium	27.5			P	
7440-66-6	Zinc	259		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB9A

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-1

Level (low/med): LOW Date Received: 4/16/03

% Solids: 74.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	10700			P	
7440-36-0	Antimony	0.58	U	N	P	UL,W
7440-38-2	Arsenic	2.0			P	
7440-39-3	Barium	117		E	P	J,S
7440-41-7	Beryllium	0.63	B	E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	17800		E	P	J,S
7440-47-3	Chromium	17.9		E	P	↓
7440-48-4	Cobalt	8.5		E	P	↓
7440-50-8	Copper	13.0		NE	P	K,M
7439-89-6	Iron	21700		E	P	
7439-92-1	Lead	46.7		*E	P	J,K
7439-95-4	Magnesium	10100		E	P	J,S
7439-96-5	Manganese	548		*E	P	↓
7439-97-6	Mercury	0.021	B		CV	
7440-02-0	Nickel	10.9		E	P	J,S
7440-09-7	Potassium	1330		E	P	↓
7782-49-2	Selenium	0.40	B	N	P	L,W
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	369			P	
7440-28-0	Thallium	0.91	U	N	P	UL,M
7440-62-2	Vanadium	29.9			P	
7440-66-6	Zinc	164		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB9C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-2

Level (low/med): LOW Date Received: 4/16/03

% Solids: 70.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	18200			P	
7440-36-0	Antimony	0.58	U	N	P	UL,W
7440-38-2	Arsenic	1.3	B		P	
7440-39-3	Barium	98.5		E	P	J,S
7440-41-7	Beryllium	0.69		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	883		E	P	J,S
7440-47-3	Chromium	24.6		E	P	↓
7440-48-4	Cobalt	8.8		E	P	↓
7440-50-8	Copper	29.7		NE	P	K,M
7439-89-6	Iron	23200		E	P	
7439-92-1	Lead	9.5		*E	P	J,K
7439-95-4	Magnesium	4500		E	P	J,S
7439-96-5	Manganese	187		*E	P	↓
7439-97-6	Mercury	0.022	U		CV	
7440-02-0	Nickel	15.8		E	P	J,S
7440-09-7	Potassium	2350		E	P	↓
7782-49-2	Selenium	0.34	U	N	P	UL,W
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	246	B		P	B,X
7440-28-0	Thallium	0.91	U	N	P	UL,M
7440-62-2	Vanadium	39.3			P	
7440-66-6	Zinc	54.5		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB3A

Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-19

Level (low/med): LOW Date Received: 4/16/03

% Solids: 83.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	23000			P	
7440-36-0	Antimony	1.6		N	P	L,M
7440-38-2	Arsenic	9.0			P	
7440-39-3	Barium	109		E	P	J,S
7440-41-7	Beryllium	0.81		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	1080		E	P	J,S
7440-47-3	Chromium	52.5		E	P	↓
7440-48-4	Cobalt	30.2		E	P	↓
7440-50-8	Copper	14.1		NE	P	K,M
7439-89-6	Iron	39200		E	P	J,S
7439-92-1	Lead	32.8		*E	P	J,K
7439-95-4	Magnesium	766		E	P	J,S
7439-96-5	Manganese	3210			P	
7439-97-6	Mercury	0.13			CV	
7440-02-0	Nickel	8.1		E	P	J,S
7440-09-7	Potassium	865		E	P	↓
7782-49-2	Selenium	2.4		N	P	L,M
7440-22-4	Silver	0.40	B		P	B,P
7440-23-5	Sodium	111	B		P	B,L
7440-28-0	Thallium	0.80	U	N	P	UL,M
7440-62-2	Vanadium	74.4			P	
7440-66-6	Zinc	33.6		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB3C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-20

Level (low/med): LOW Date Received: 4/16/03

% Solids: 84.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5350			P	
7440-36-0	Antimony	0.50	U	N	P	UL,W
7440-38-2	Arsenic	0.49	U		P	
7440-39-3	Barium	48.1		E	P	J,S
7440-41-7	Beryllium	0.43	B	E	P	↓
7440-43-9	Cadmium	0.04	U	N	P	UL,M
7440-70-2	Calcium	981		E	P	J,S
7440-47-3	Chromium	9.8		E	P	↓
7440-48-4	Cobalt	4.5		E	P	↓
7440-50-8	Copper	10.2		NE	P	K,M
7439-89-6	Iron	8680		E	P	J,S
7439-92-1	Lead	3.9		*E	P	J,K
7439-95-4	Magnesium	1400		E	P	J,S
7439-96-5	Manganese	199		*E	P	↓
7439-97-6	Mercury	0.019	U		CV	
7440-02-0	Nickel	6.8		E	P	J,S
7440-09-7	Potassium	700		E	P	↓
7782-49-2	Selenium	0.29	U	N	P	UL,W
7440-22-4	Silver	0.09	U		P	
7440-23-5	Sodium	133	B		P	B,K
7440-28-0	Thallium	0.77	U	N	P	UL,M
7440-62-2	Vanadium	11.8			P	
7440-66-6	Zinc	30.7		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB6A

b Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-17

Level (low/med): LOW Date Received: 4/16/03

% Solids: 80.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	19000			P	
7440-36-0	Antimony	0.52	U	N	P	UL,W
7440-38-2	Arsenic	0.51	B		P	
7440-39-3	Barium	123		E	P	J,S
7440-41-7	Beryllium	0.74		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	2200		E	P	J,S
7440-47-3	Chromium	27.2		E	P	↓
7440-48-4	Cobalt	9.7		E	P	↓
7440-50-8	Copper	30.6		NE	P	K,M
7439-89-6	Iron	24600		E	P	J,S
7439-92-1	Lead	9.4		*E	P	J,K
7439-95-4	Magnesium	4150		E	P	J,S
7439-96-5	Manganese	388		*E	P	↓
7439-97-6	Mercury	0.020	B		CV	
7440-02-0	Nickel	13.4		E	P	J,S
7440-09-7	Potassium	1530		E	P	↓
7782-49-2	Selenium	0.59		N	P	L,M
7440-22-4	Silver	0.09	U		P	
7440-23-5	Sodium	244			P	
7440-28-0	Thallium	1.3		N	P	L,M
7440-62-2	Vanadium	43.3			P	
7440-66-6	Zinc	59.5		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB6C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-18

Level (low/med): LOW Date Received: 4/16/03

% Solids: 73.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	13900			P	
7440-36-0	Antimony	0.59	U	N	P	UL,W
7440-38-2	Arsenic	1.4			P	
7440-39-3	Barium	47.2		E	P	J,S
7440-41-7	Beryllium	0.85		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	13400		E	P	J,S
7440-47-3	Chromium	25.2		E	P	↓
7440-48-4	Cobalt	8.4		E	P	↓
7440-50-8	Copper	20.1		NE	P	K,M
7439-89-6	Iron	21000		E	P	J,S
7439-92-1	Lead	9.3		*E	P	J,K
7439-95-4	Magnesium	25700		E	P	J,S
7439-96-5	Manganese	356		*E	P	↓
7439-97-6	Mercury	0.020	U		CV	
7440-02-0	Nickel	13.3		E	P	J,S
7440-09-7	Potassium	4630		E	P	↓
7782-49-2	Selenium	0.57	B	N	P	L,W
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	121	B		P	B,K
7440-28-0	Thallium	0.91	U	N	P	UL,M
7440-62-2	Vanadium	33.1			P	
7440-66-6	Zinc	16.7		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
DUP1

b Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-3

Level (low/med): LOW Date Received: 4/16/03

% Solids: 84.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	14000			P	
7440-36-0	Antimony	0.52	U	N	P	UL,W
7440-38-2	Arsenic	1.6			P	
7440-39-3	Barium	80.8		E	P	J,S
7440-41-7	Beryllium	0.66		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	835		E	P	J,S
7440-47-3	Chromium	22.6		E	P	↓
7440-48-4	Cobalt	8.8		E	P	↓
7440-50-8	Copper	25.9		NE	P	K,M
7439-89-6	Iron	22100		E	P	J,S
7439-92-1	Lead	9.2		*E	P	J,K
7439-95-4	Magnesium	3520		E	P	J,S
7439-96-5	Manganese	308		*E	P	↓
7439-97-6	Mercury	0.020	U		CV	
7440-02-0	Nickel	11.8		E	P	J,S
7440-09-7	Potassium	1480		E	P	↓
7782-49-2	Selenium	0.30	U	N	P	UL,W
7440-22-4	Silver	0.09	U		P	
7440-23-5	Sodium	202	B		P	B,K
7440-28-0	Thallium	0.81	U	N	P	UL,M
7440-62-2	Vanadium	37.5			P	
7440-66-6	Zinc	45.0		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
DUP2

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: Q2946

Matrix (soil/water): SOIL Lab Sample ID: Q2946-16

Level (low/med): LOW Date Received: 4/16/03

% Solids: 74.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	15800			P	
7440-36-0	Antimony	0.57	U	N	P	UL,W
7440-38-2	Arsenic	1.7			P	
7440-39-3	Barium	92.5		E	P	J,S
7440-41-7	Beryllium	0.81		E	P	↓
7440-43-9	Cadmium	0.05	U	N	P	UL,M
7440-70-2	Calcium	971		E	P	J,S
7440-47-3	Chromium	25.1		E	P	↓
7440-48-4	Cobalt	11.6		E	P	↓
7440-50-8	Copper	28.5		NE	P	K,M
7439-89-6	Iron	26000		E	P	J,S
7439-92-1	Lead	11.8		*E	P	J,K
7439-95-4	Magnesium	3720		E	P	J,S
7439-96-5	Manganese	453		*E	P	↓
7439-97-6	Mercury	0.021	U		CV	
7440-02-0	Nickel	13.2		E	P	J,S
7440-09-7	Potassium	1940		E	P	↓
7782-49-2	Selenium	0.33	U	N	P	UL,W
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	208	B		P	B,X
7440-28-0	Thallium	0.89	U	N	P	UL,M
7440-62-2	Vanadium	39.3			P	
7440-66-6	Zinc	49.2		*E	P	J,K

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 4.14(g/mL) G Lab File ID: R2946-7RB62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 18 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	7	U
74-87-3	Chloromethane	7	U
75-01-4	Vinyl Chloride	7	U
74-83-9	Bromomethane	2	J
75-00-3	Chloroethane	7	U
75-69-4	Trichlorofluoromethane	7	U
75-35-4	1,1-Dichloroethene	1	J
75-15-0	Carbon disulfide	0.8	J
76-13-1	1,1,2-trichloro-1,2,2-triflu	7	U
67-64-1	Acetone	58	B
75-09-2	Methylene Chloride	0.9	J
156-60-5	trans-1,2-Dichloroethene	7	U
1634-04-4	Methyl-tert-butyl ether	7	U
75-34-3	1,1-Dichloroethane	7	U
156-59-2	cis-1,2-Dichloroethene	7	U
78-93-3	2-butanone	7	JB B,Z
67-66-3	Chloroform	7	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
71-43-2	Benzene	7	U
107-06-2	1,2-Dichloroethane	7	U
79-01-6	Trichloroethene	7	U
78-87-5	1,2-Dichloropropane	7	U
75-27-4	Bromodichloromethane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
108-10-1	4-Methyl-2-pentanone	18	U
108-88-3	Toluene	0.8	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	7	U
79-00-5	1,1,2-Trichloroethane	7	U
127-18-4	Tetrachloroethene	7	U
591-78-6	2-hexanone	18	U
124-48-1	Dibromochloromethane	7	U
106-93-4	1,2-Dibromoethane	7	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 4.14(g/mL) G Lab File ID: R2946-7RB62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 18 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
75-25-2	Bromoform	7	U
98-82-8	Isopropyl Benzene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
541-73-1	1,3-Dichlorobenzene	7	U
106-46-7	1,4-Dichlorobenzene	7	U
95-50-1	1,2-Dichlorobenzene	7	U
96-12-8	1,2-Dibromo-3-Chloropropane	7	U
120-82-1	1,2,4-Trichlorobenzene	7	U
1330-20-7	Xylene (total)	22	U
79-20-9	Methyl acetate	5	J B, L
110-82-7	Cyclohexane	7	U
108-87-2	Methylcyclohexane	7	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Contract: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 4.14 (g/mL) G Lab File ID: R2946-7RB62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 18 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~LABORATORY ARTIFACT~~	7.47	8.04	JB
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FORM I VOA-TIC

607

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB10C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-8

Sample wt/vol: 5.30(g/mL) G Lab File ID: R2946-8RB61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 27 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	42	B
75-09-2	Methylene Chloride	6	U
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	8	JB B,Z
67-66-3	Chloroform	0.6	J
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	16	U
108-88-3	Toluene	0.6	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	2	J
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB10C

Lab Name: COMPUCHEM Method: 8260B

b Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-8

Sample wt/vol: 5.30(g/mL) G Lab File ID: R2946-8RB61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 27 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	0.3	J
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	J
541-73-1	1,3-Dichlorobenzene	0.5	J
106-46-7	1,4-Dichlorobenzene	0.5	J
95-50-1	1,2-Dichlorobenzene	0.6	J
96-12-8	1,2-Dibromo-3-Chloropropane	0.5	J
120-82-1	1,2,4-Trichlorobenzene	0.7	J
1330-20-7	Xylene (total)	19	U
79-20-9	Methyl acetate	1	J B,X
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB10C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-8

Sample wt/vol: 5.30 (g/mL) G Lab File ID: R2946-8RB61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 27 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Method: 8260B

1 Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 5.64(g/mL) G Lab File ID: R2946-9RB61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 17 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-15-0	Carbon disulfide	0.6	J
76-13-1	1,1,2-trichloro-1,2,2-triflu	5	U
67-64-1	Acetone	34	B
75-09-2	Methylene Chloride	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	3	JB B,~~Z~~
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
591-78-6	2-hexanone	0.9	J
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

FORM I VOA

511

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 5.64(g/mL) G Lab File ID: R2946-9RB61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 17 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
1330-20-7	Xylene (total)	16	U
79-20-9	Methyl acetate	1	JB
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Contract: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 5.64 (g/mL) G Lab File ID: R2946-9RB61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 17 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB3C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-10

Sample wt/vol: 5.80(g/mL) G Lab File ID: R2946-10RB61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 17 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	5	U
67-64-1	Acetone	14	B B, Z
75-09-2	Methylene Chloride	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	2	JB B, Z
67-66-3	Chloroform	0.5	J
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
591-78-6	2-hexanone	13	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB3C

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-10

Sample wt/vol: 5.80(g/mL) G Lab File ID: R2946-10RB61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 17 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
1330-20-7	Xylene (total)	16	U
79-20-9	Methyl acetate	1	J B,C
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB3C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-10

Sample wt/vol: 5.80 (g/mL) G Lab File ID: R2946-10RB61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 17 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Method: 8260B

) Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 5.56(g/mL) G Lab File ID: R2946-5B62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 21 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	7	
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	22	
75-09-2	Methylene Chloride	0.8	JB B,C
156-60-5	trans-1,2-Dichloroethene	0.5	J
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	3	JB,C
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	14	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	14	U
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 5.56(g/mL) G Lab File ID: R2946-5B62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 21 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	17	U
79-20-9	Methyl acetate	3	J B,X
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Contract: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 5.56 (g/mL) G Lab File ID: R2946-5B62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 21 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

519

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB6C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-6

Sample wt/vol: 5.46(g/mL) G Lab File ID: R2946-6B62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 19 Date Analyzed: 04/24/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	2	J
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	11	JB B,Z
75-09-2	Methylene Chloride	0.9	J
156-60-5	trans-1,2-Dichloroethene	0.6	JB B,Z
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	0.5	J
78-93-3	2-butanone	14	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	14	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	0.4	JB B,Z
591-78-6	2-hexanone	14	U
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB6C

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-6

Sample wt/vol: 5.46(g/mL) G Lab File ID: R2946-6B62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 19 Date Analyzed: 04/24/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	17	U
79-20-9	Methyl acetate	6	U
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB6C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-6

Sample wt/vol: 5.46 (g/mL) G Lab File ID: R2946-6B62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 19 Date Analyzed: 04/24/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB1A

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-3

Sample wt/vol: 5.09(g/mL) G Lab File ID: R2946-3B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 18 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	8	
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	89	
75-09-2	Methylene Chloride	0.8	JB B/E
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	11	J
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	15	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	5	J
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB1A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-3

Sample wt/vol: 5.09(g/mL) G Lab File ID: R2946-3B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 18 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	18	U
79-20-9	Methyl acetate	15	B,Z
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB1A

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-3

Sample wt/vol: 5.09 (g/mL) G Lab File ID: R2946-3B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 18 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB1C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-4

Sample wt/vol: 5.90(g/mL) G Lab File ID: R2946-4B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 21 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	6	
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	5	U
67-64-1	Acetone	22	
75-09-2	Methylene Chloride	0.6	JB B,Z
156-60-5	trans-1,2-Dichloroethene	0.4	J
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	13	U
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	0.6	J
108-88-3	Toluene	0.4	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
591-78-6	2-hexanone	13	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB1C

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-4

Sample wt/vol: 5.90(g/mL) G Lab File ID: R2946-4B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 21 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
1330-20-7	Xylene (total)	16	U
79-20-9	Methyl acetate	2	JB,X
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB1C

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-4

Sample wt/vol: 5.90 (g/mL) G Lab File ID: R2946-4B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 21 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Method: 8260B

I Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 3.97(g/mL) G Lab File ID: R2946-14B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 22 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	8	U
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	8	U
75-00-3	Chloroethane	8	U
75-69-4	Trichlorofluoromethane	8	U
75-35-4	1,1-Dichloroethene	1	J
75-15-0	Carbon disulfide	1	J
76-13-1	1,1,2-trichloro-1,2,2-triflu	8	U
67-64-1	Acetone	52	B
75-09-2	Methylene Chloride	1	J
156-60-5	trans-1,2-Dichloroethene	8	U
1634-04-4	Methyl-tert-butyl ether	8	U
75-34-3	1,1-Dichloroethane	8	U
156-59-2	cis-1,2-Dichloroethene	8	U
78-93-3	2-butanone	20	U
67-66-3	Chloroform	8	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
71-43-2	Benzene	8	U
107-06-2	1,2-Dichloroethane	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-10-1	4-Methyl-2-pentanone	0.9	J
108-88-3	Toluene	1	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	8	U
591-78-6	2-hexanone	20	U
124-48-1	Dibromochloromethane	8	U
106-93-4	1,2-Dibromoethane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 3.97(g/mL) G Lab File ID: R2946-14B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 22 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	0.5	J
98-82-8	Isopropyl Benzene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	8	UUJ
541-73-1	1,3-Dichlorobenzene	8	U
106-46-7	1,4-Dichlorobenzene	8	U
95-50-1	1,2-Dichlorobenzene	8	U
96-12-8	1,2-Dibromo-3-Chloropropane	8	U
120-82-1	1,2,4-Trichlorobenzene	8	U
1330-20-7	Xylene (total)	24	U
79-20-9	Methyl acetate	8	JB,X
110-82-7	Cyclohexane	8	U
108-87-2	Methylcyclohexane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Contract: 8260B

I Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 3.97 (g/mL) G Lab File ID: R2946-14B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 22 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~LABORATORY ARTIFACT~~	~~7.47~~	~~11.22~~	~~JB~~ C
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB2BRE

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 5.04 (g/mL) G Lab File ID: R2946-14RB61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 22 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	6	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	33	B
75-09-2	Methylene Chloride	0.7	J
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	16	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	16	U
108-88-3	Toluene	0.7	JB
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	1	J
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

Do not use RA 5/12/10

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB2BRE

Lab Name: COMPUCHEM Method: 8260B

I Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 5.04(g/mL) G Lab File ID: R2946-14RB61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 22 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Do not use

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U UJ,i
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U UJ,i
541-73-1	1,3-Dichlorobenzene	6	U
106-46-7	1,4-Dichlorobenzene	6	U
95-50-1	1,2-Dichlorobenzene	6	U
96-12-8	1,2-Dibromo-3-Chloropropane	6	U
120-82-1	1,2,4-Trichlorobenzene	6	U
1330-20-7	Xylene (total)	19	U
79-20-9	Methyl acetate	6	J B,x
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB2BRE

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 5.04 (g/mL) G Lab File ID: R2946-14RB61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 22 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB4C

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-15

Sample wt/vol: 4.28(g/mL) G Lab File ID: R2946-15B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 28 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	8	U
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	3	J
75-00-3	Chloroethane	8	U
75-69-4	Trichlorofluoromethane	8	U
75-35-4	1,1-Dichloroethene	8	U
75-15-0	Carbon disulfide	0.8	J
76-13-1	1,1,2-trichloro-1,2,2-triflu	8	U
67-64-1	Acetone	47	B B,Z
75-09-2	Methylene Chloride	1	J
156-60-5	trans-1,2-Dichloroethene	1	JB B,Z
1634-04-4	Methyl-tert-butyl ether	8	U
75-34-3	1,1-Dichloroethane	8	U
156-59-2	cis-1,2-Dichloroethene	8	U
78-93-3	2-butanone	3	JB B,Z
67-66-3	Chloroform	8	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
71-43-2	Benzene	8	U
107-06-2	1,2-Dichloroethane	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-10-1	4-Methyl-2-pentanone	20	U
108-88-3	Toluene	1	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	0.7	JB B,Z
591-78-6	2-hexanone	5	J
124-48-1	Dibromochloromethane	8	U
106-93-4	1,2-Dibromoethane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB4C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-15

Sample wt/vol: 4.28(g/mL) G Lab File ID: R2946-15B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 28 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	0.4	J
98-82-8	Isopropyl Benzene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
541-73-1	1,3-Dichlorobenzene	8	U
106-46-7	1,4-Dichlorobenzene	8	U
95-50-1	1,2-Dichlorobenzene	8	U
96-12-8	1,2-Dibromo-3-Chloropropane	8	U
120-82-1	1,2,4-Trichlorobenzene	8	U
1330-20-7	Xylene (total)	24	U
79-20-9	Methyl acetate	8	U
110-82-7	Cyclohexane	8	U
108-87-2	Methylcyclohexane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB4C

Lab Name: COMPUCHEM Contract: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-15

Sample wt/vol: 4.28 (g/mL) G Lab File ID: R2946-15B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 28 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB5A

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-1

Sample wt/vol: 5.89(g/mL) G Lab File ID: R2946-1B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 12 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	5	U
67-64-1	Acetone	22	
75-09-2	Methylene Chloride	0.5	JB B,Z
156-60-5	trans-1,2-Dichloroethene	0.4	J
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	2	JB,Z
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	12	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
591-78-6	2-hexanone	12	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB5A

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-1

Sample wt/vol: 5.89(g/mL) G Lab File ID: R2946-1B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 12 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
1330-20-7	Xylene (total)	14	U
79-20-9	Methyl acetate	4	J B,X
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB5A

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-1

Sample wt/vol: 5.89 (g/mL) G Lab File ID: R2946-1B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 12 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB5C

Lab Name: COMPUCHEM Method: 8260B

L Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-2

Sample wt/vol: 3.59(g/mL) G Lab File ID: R2946-2B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 21 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	9	U
74-87-3	Chloromethane	9	U
75-01-4	Vinyl Chloride	9	U
74-83-9	Bromomethane	11	
75-00-3	Chloroethane	9	U
75-69-4	Trichlorofluoromethane	9	U
75-35-4	1,1-Dichloroethene	9	U
75-15-0	Carbon disulfide	9	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	9	U
67-64-1	Acetone	22	J
75-09-2	Methylene Chloride	1	JB B,Z
156-60-5	trans-1,2-Dichloroethene	0.7	J
1634-04-4	Methyl-tert-butyl ether	9	U
75-34-3	1,1-Dichloroethane	9	U
156-59-2	cis-1,2-Dichloroethene	9	U
78-93-3	2-butanone	22	U
67-66-3	Chloroform	9	U
71-55-6	1,1,1-Trichloroethane	9	U
56-23-5	Carbon Tetrachloride	9	U
71-43-2	Benzene	9	U
107-06-2	1,2-Dichloroethane	9	U
79-01-6	Trichloroethene	9	U
78-87-5	1,2-Dichloropropane	9	U
75-27-4	Bromodichloromethane	9	U
10061-01-5	cis-1,3-Dichloropropene	9	U
108-10-1	4-Methyl-2-pentanone	22	U
108-88-3	Toluene	9	U
10061-02-6	trans-1,3-Dichloropropene	9	U
79-00-5	1,1,2-Trichloroethane	9	U
127-18-4	Tetrachloroethene	9	U
591-78-6	2-hexanone	22	U
124-48-1	Dibromochloromethane	9	U
106-93-4	1,2-Dibromoethane	9	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB5C

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-2

Sample wt/vol: 3.59(g/mL) G Lab File ID: R2946-2B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 21 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	9	U
100-41-4	Ethylbenzene	9	U
100-42-5	Styrene	9	U
75-25-2	Bromoform	9	U
98-82-8	Isopropyl Benzene	9	U
79-34-5	1,1,2,2-Tetrachloroethane	9	U
541-73-1	1,3-Dichlorobenzene	9	U
106-46-7	1,4-Dichlorobenzene	9	U
95-50-1	1,2-Dichlorobenzene	9	U
96-12-8	1,2-Dibromo-3-Chloropropane	9	U
120-82-1	1,2,4-Trichlorobenzene	9	U
1330-20-7	Xylene (total)	26	U
79-20-9	Methyl acetate	3	J B,X
110-82-7	Cyclohexane	9	U
108-87-2	Methylcyclohexane	9	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB5C

Lab Name: COMPUCHEM Contract: 8260B

1 Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-2

Sample wt/vol: 3.59 (g/mL) G Lab File ID: R2946-2B62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. 21 Date Analyzed: 04/23/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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FORM I VOA-TIC

543

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 4.13(g/mL) G Lab File ID: R2946-12B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 28 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	8	U
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	8	U
75-00-3	Chloroethane	8	UUJ,m
75-69-4	Trichlorofluoromethane	8	U
75-35-4	1,1-Dichloroethene	1	JJ,d
75-15-0	Carbon disulfide	2	J↓
76-13-1	1,1,2-trichloro-1,2,2-triflu	8	U
67-64-1	Acetone	200	BJ,d
75-09-2	Methylene Chloride	1	J↓
156-60-5	trans-1,2-Dichloroethene	8	U
1634-04-4	Methyl-tert-butyl ether	8	U
75-34-3	1,1-Dichloroethane	8	U
156-59-2	cis-1,2-Dichloroethene	8	U
78-93-3	2-butanone	17	JB B,z
67-66-3	Chloroform	8	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
71-43-2	Benzene	8	U
107-06-2	1,2-Dichloroethane	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-10-1	4-Methyl-2-pentanone	21	U
108-88-3	Toluene	1	JB B,z
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	8	U
591-78-6	2-hexanone	6	J J,d
124-48-1	Dibromochloromethane	8	U
106-93-4	1,2-Dibromoethane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Method: 8260B

I Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 4.13(g/mL) G Lab File ID: R2946-12B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 28 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U
98-82-8	Isopropyl Benzene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
541-73-1	1,3-Dichlorobenzene	8	U
106-46-7	1,4-Dichlorobenzene	8	U
95-50-1	1,2-Dichlorobenzene	8	U
96-12-8	1,2-Dibromo-3-Chloropropane	8	U
120-82-1	1,2,4-Trichlorobenzene	8	U
1330-20-7	Xylene (total)	25	U
79-20-9	Methyl acetate	21	JM
110-82-7	Cyclohexane	8	U
108-87-2	Methylcyclohexane	8	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 4.13 (g/mL) G Lab File ID: R2946-12B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 28 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB7BRE

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 3.66(g/mL) G Lab File ID: R2946-12RB61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 28 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	9	U UJ,5
74-87-3	Chloromethane	9	U
75-01-4	Vinyl Chloride	9	U
74-83-9	Bromomethane	2	J J,5
75-00-3	Chloroethane	9	U UJ,5
75-69-4	Trichlorofluoromethane	9	U
75-35-4	1,1-Dichloroethene	9	U
75-15-0	Carbon disulfide	1	J J,5
76-13-1	1,1,2-trichloro-1,2,2-triflu	9	U UJ,5
67-64-1	Acetone	290	B J,5
75-09-2	Methylene Chloride	2	J
156-60-5	trans-1,2-Dichloroethene	9	U UJ,5
1634-04-4	Methyl-tert-butyl ether	9	U
75-34-3	1,1-Dichloroethane	9	U
156-59-2	cis-1,2-Dichloroethene	9	U
78-93-3	2-butanone	32	B J,5
67-66-3	Chloroform	9	U UJ,5
71-55-6	1,1,1-Trichloroethane	9	U
56-23-5	Carbon Tetrachloride	9	U
71-43-2	Benzene	9	U
107-06-2	1,2-Dichloroethane	9	U
79-01-6	Trichloroethene	9	U
78-87-5	1,2-Dichloropropane	9	U
75-27-4	Bromodichloromethane	9	U
10061-01-5	cis-1,3-Dichloropropene	9	U
108-10-1	4-Methyl-2-pentanone	24	U
108-88-3	Toluene	1	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	9	U UJ,5
79-00-5	1,1,2-Trichloroethane	9	U
127-18-4	Tetrachloroethene	9	U
591-78-6	2-hexanone	14	J J,5
124-48-1	Dibromochloromethane	9	U UJ,5
106-93-4	1,2-Dibromoethane	9	U

Do not use RT on 51210

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB7BRE

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 3.66(g/mL) G Lab File ID: R2946-12RB61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 28 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	9	U UJ,S
100-41-4	Ethylbenzene	9	U
100-42-5	Styrene	9	U
75-25-2	Bromoform	9	U
98-82-8	Isopropyl Benzene	9	U
79-34-5	1,1,2,2-Tetrachloroethane	9	U
541-73-1	1,3-Dichlorobenzene	9	U
106-46-7	1,4-Dichlorobenzene	9	U
95-50-1	1,2-Dichlorobenzene	0.6	J J,S
96-12-8	1,2-Dibromo-3-Chloropropane	9	U UJ,S
120-82-1	1,2,4-Trichlorobenzene	1	J J,S
1330-20-7	Xylene (total)	28	U UJ,S
79-20-9	Methyl acetate	18	B,C
110-82-7	Cyclohexane	9	U UJ,S
108-87-2	Methylcyclohexane	9	U

Do not use RA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB7BRE

Lab Name: COMPUCHEM Contract: 8260B

I Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 3.66 (g/mL) G Lab File ID: R2946-12RB61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 28 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP3

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-11

Sample wt/vol: 4.28(g/mL) G Lab File ID: R2946-11B62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 27 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	8	U
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	8	U
75-00-3	Chloroethane	8	U
75-69-4	Trichlorofluoromethane	8	U
75-35-4	1,1-Dichloroethene	8	U
75-15-0	Carbon disulfide	8	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	8	U
67-64-1	Acetone	48	B B,Z
75-09-2	Methylene Chloride	1	J
156-60-5	trans-1,2-Dichloroethene	0.8	JB B,Z
1634-04-4	Methyl-tert-butyl ether	8	U
75-34-3	1,1-Dichloroethane	8	U
156-59-2	cis-1,2-Dichloroethene	8	U
78-93-3	2-butanone	4	JB B,Z
67-66-3	Chloroform	8	U
71-55-6	1,1,1-Trichloroethane	8	U
56-23-5	Carbon Tetrachloride	8	U
71-43-2	Benzene	8	U
107-06-2	1,2-Dichloroethane	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-10-1	4-Methyl-2-pentanone	20	U
108-88-3	Toluene	0.9	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	0.7	JB B,Z
591-78-6	2-hexanone	20	U
124-48-1	Dibromochloromethane	8	U
106-93-4	1,2-Dibromoethane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP3

Lab Name: COMPUCHEM Method: 8260B

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-11

Sample wt/vol: 4.28(g/mL) G Lab File ID: R2946-11B62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 27 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U
98-82-8	Isopropyl Benzene	8	U
79-34-5	1,1,2,2-Tetrachloroethane	8	U
541-73-1	1,3-Dichlorobenzene	8	U
106-46-7	1,4-Dichlorobenzene	8	U
95-50-1	1,2-Dichlorobenzene	8	U
96-12-8	1,2-Dibromo-3-Chloropropane	8	U
120-82-1	1,2,4-Trichlorobenzene	8	U
1330-20-7	Xylene (total)	24	U
79-20-9	Methyl acetate	8	U
110-82-7	Cyclohexane	8	U
108-87-2	Methylcyclohexane	8	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

DUP3

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-11

Sample wt/vol: 4.28 (g/mL) G Lab File ID: R2946-11B62

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. 27 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 5.37(g/mL) G Lab File ID: R2946-13B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 20 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	0.9	J
75-15-0	Carbon disulfide	2	J
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	130	B
75-09-2	Methylene Chloride	1	J
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	14	JB
67-66-3	Chloroform	0.5	J
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	2	J
108-88-3	Toluene	0.7	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	0.9	JB B,Z
591-78-6	2-hexanone	3	J
124-48-1	Dibromochloromethane	0.3	J
106-93-4	1,2-Dibromoethane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 5.37(g/mL) G Lab File ID: R2946-13B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 20 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U
98-82-8	Isopropyl Benzene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	0.5	J J,I
541-73-1	1,3-Dichlorobenzene	0.5	JB B,Z
106-46-7	1,4-Dichlorobenzene	0.5	JB
95-50-1	1,2-Dichlorobenzene	0.5	JB
96-12-8	1,2-Dibromo-3-Chloropropane	1	J J,I
120-82-1	1,2,4-Trichlorobenzene	0.8	JB B,Z
1330-20-7	Xylene (total)	17	U
79-20-9	Methyl acetate	15	B,X
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 5.37 (g/mL) G Lab File ID: R2946-13B62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 20 Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

535

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP4RE

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 5.54 (g/mL) G Lab File ID: R2946-13RB61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 20 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	6	U
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-69-4	Trichlorofluoromethane	6	U
75-35-4	1,1-Dichloroethene	6	U
75-15-0	Carbon disulfide	2	J
76-13-1	1,1,2-trichloro-1,2,2-triflu	6	U
67-64-1	Acetone	150	B
75-09-2	Methylene Chloride	0.6	J
156-60-5	trans-1,2-Dichloroethene	6	U
1634-04-4	Methyl-tert-butyl ether	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-butanone	15	B
67-66-3	Chloroform	0.6	J
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	1	J
108-88-3	Toluene	0.9	J
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-hexanone	4	J
124-48-1	Dibromochloromethane	6	U
106-93-4	1,2-Dibromoethane	6	U

DO not use RA 5/12/03

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP4RE

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 5.54(g/mL) G Lab File ID: R2946-13RB61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 20 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-90-7	Chlorobenzene	6	U UJ,i
100-41-4	Ethylbenzene	0.4	J J,i
100-42-5	Styrene	0.4	J
75-25-2	Bromoform	6	U UJ,i
98-82-8	Isopropyl Benzene	0.4	J J,i
79-34-5	1,1,2,2-Tetrachloroethane	0.6	J
541-73-1	1,3-Dichlorobenzene	0.8	J
106-46-7	1,4-Dichlorobenzene	1	J
95-50-1	1,2-Dichlorobenzene	0.9	J
96-12-8	1,2-Dibromo-3-Chloropropane	0.6	J
120-82-1	1,2,4-Trichlorobenzene	1	J
1330-20-7	Xylene (total)	17	U UJ,i
79-20-9	Methyl acetate	5	JB,I
110-82-7	Cyclohexane	6	U
108-87-2	Methylcyclohexane	6	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

DUP4RE

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 5.54 (g/mL) G Lab File ID: R2946-13RB61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. 20 Date Analyzed: 04/26/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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FORM I VOA-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-7A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 18 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	Bis(2-chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-N-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	Bis(2-chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	400	U
606-20-2	2,6-Dinitrotoluene	400	U
208-96-8	Acenaphthylene	400	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	800	U
121-14-2	2,4-Dinitrotoluene	400	U
132-64-9	Dibenzofuran	400	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-7A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 18 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	800	UJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	400	U
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenzo(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
100-52-7	Benzaldehyde	400	U
98-86-2	Acetophenone	400	U
105-60-2	Caprolactam	400	U
92-52-4	1,1'-Biphenyl	400	U
1912-24-9	Atrazine	400	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-7A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 18 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN~~ (BC)	~~4.81~~	~~180~~	~~JB~~
2.		~~UNKNOWN~~ (BC)	~~5.14~~	~~820~~	~~JB~~
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB10C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-8

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-8B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	450	U
111-44-4	Bis(2-chloroethyl)ether	450	U
95-57-8	2-Chlorophenol	450	U
95-48-7	2-Methylphenol	450	U
108-60-1	2,2'-oxybis(1-Chloropropane)	450	U
106-44-5	4-Methylphenol	450	U
621-64-7	N-Nitroso-di-N-propylamine	450	U
67-72-1	Hexachloroethane	450	U
98-95-3	Nitrobenzene	450	U
78-59-1	Isophorone	450	U
88-75-5	2-Nitrophenol	450	U
105-67-9	2,4-Dimethylphenol	450	U
111-91-1	Bis(2-chloroethoxy)methane	450	U
120-83-2	2,4-Dichlorophenol	450	U
91-20-3	Naphthalene	450	U
106-47-8	4-Chloroaniline	450	U
87-68-3	Hexachlorobutadiene	450	U
59-50-7	4-Chloro-3-methylphenol	450	U
91-57-6	2-Methylnaphthalene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U
88-06-2	2,4,6-Trichlorophenol	450	U
95-95-4	2,4,5-Trichlorophenol	450	U
91-58-7	2-Chloronaphthalene	450	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	450	U
606-20-2	2,6-Dinitrotoluene	450	U
208-96-8	Acenaphthylene	450	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	450	U
51-28-5	2,4-Dinitrophenol	2300	U
100-02-7	4-Nitrophenol	900	U
121-14-2	2,4-Dinitrotoluene	450	U
132-64-9	Dibenzofuran	450	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB10C

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-8

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-8B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	450	U
7005-72-3	4-Chlorophenyl-phenylether	450	U
86-73-7	Fluorene	450	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
118-74-1	Hexachlorobenzene	450	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	450	U
120-12-7	Anthracene	450	U
86-74-8	Carbazole	450	U
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	450	U
129-00-0	Pyrene	450	U
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	900	UUJ|C
117-81-7	bis(2-ethylhexyl)Phthalate	69	J
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenzo(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U
100-52-7	Benzaldehyde	450	U
98-86-2	Acetophenone	450	U
105-60-2	Caprolactam	450	U
92-52-4	1,1'-Biphenyl	450	U
1912-24-9	Atrazine	450	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB10C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-8

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-8B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	4.82	~~190~~	~~JB~~
2.		~~UNKNOWN (BC)~~	5.14	~~750~~	~~JB~~
3.		RA			
4.					
5.		5112	3		
6.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Method: 8270C

) Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-9B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 17 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	Bis(2-chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-N-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	Bis(2-chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	400	U
606-20-2	2,6-Dinitrotoluene	400	U
208-96-8	Acenaphthylene	400	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	800	U
121-14-2	2,4-Dinitrotoluene	400	U
132-64-9	Dibenzofuran	400	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-9B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 17 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	800	U UJ, C
117-81-7	bis(2-ethylhexyl)Phthalate	400	U
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenzo(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
100-52-7	Benzaldehyde	400	U
98-86-2	Acetophenone	400	U
105-60-2	Caprolactam	400	U
92-52-4	1,1'-Biphenyl	400	U
1912-24-9	Atrazine	400	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Method: 8270C

1 Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-9B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 17 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (BC)	4.82	240	JB
2.		UNKNOWN (BC)	5.14	1000	JB
3.		UNKNOWN	5.86	190	J
4.					
5.					
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7.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB3C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-10B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 17 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	Bis(2-chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-N-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	Bis(2-chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	400	U
606-20-2	2,6-Dinitrotoluene	400	U
208-96-8	Acenaphthylene	400	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	800	U
121-14-2	2,4-Dinitrotoluene	400	U
132-64-9	Dibenzofuran	400	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB3C

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-10B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 17 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	800	U UJ|C
117-81-7	bis(2-ethylhexyl)Phthalate	400	U
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenzo(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
100-52-7	Benzaldehyde	400	U
98-86-2	Acetophenone	400	U
105-60-2	Caprolactam	400	U
92-52-4	1,1'-Biphenyl	400	U
1912-24-9	Atrazine	400	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB3C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-10B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 17 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (BC)	4.80	260	JB
2.		UNKNOWN (BC)	5.14	1100	JB
3.		UNKNOWN	5.85	230	J
4.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-5A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 21 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	420	U
111-44-4	Bis(2-chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-N-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
111-91-1	Bis(2-chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	420	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	420	U
606-20-2	2,6-Dinitrotoluene	420	U
208-96-8	Acenaphthylene	420	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	420	U
51-28-5	2,4-Dinitrophenol	2200	U
100-02-7	4-Nitrophenol	840	U
121-14-2	2,4-Dinitrotoluene	420	U
132-64-9	Dibenzofuran	420	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-5A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 21 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
86-73-7	Fluorene	420	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
118-74-1	Hexachlorobenzene	420	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3'-Dichlorobenzidine	840	UUJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	45	J
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenzo(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U
100-52-7	Benzaldehyde	420	U
98-86-2	Acetophenone	420	U
105-60-2	Caprolactam	420	U
92-52-4	1,1'-Biphenyl	420	U
1912-24-9	Atrazine	420	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Method: 8270C

Job Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-5A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 21 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (BC)	4.82	180	JB
2.		UNKNOWN (BC)	5.14	740	JB
3.					
4.					
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FORM I SV-TIC

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FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB6C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-6A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 19 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	Bis(2-chloroethyl)ether	410	U
95-57-8	2-Chlorophenol	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-di-N-propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	Bis(2-chloroethoxy)methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	410	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	410	U
606-20-2	2,6-Dinitrotoluene	410	U
208-96-8	Acenaphthylene	410	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	410	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	810	U
121-14-2	2,4-Dinitrotoluene	410	U
132-64-9	Dibenzofuran	410	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SB6C

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-6A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 19 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
86-73-7	Fluorene	410	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-butylphthalate	410	U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	810	U UJ/C
117-81-7	bis(2-ethylhexyl)Phthalate	410	U
56-55-3	Benzo(a)anthracene	410	U
218-01-9	Chrysene	410	U
117-84-0	Di-n-octylphthalate	410	U
205-99-2	Benzo(b)fluoranthene	410	U
207-08-9	Benzo(k)fluoranthene	410	U
50-32-8	Benzo(a)pyrene	410	U
193-39-5	Indeno(1,2,3-cd)pyrene	410	U
53-70-3	Dibenzo(a,h)anthracene	410	U
191-24-2	Benzo(g,h,i)perylene	410	U
100-52-7	Benzaldehyde	410	U
98-86-2	Acetophenone	410	U
105-60-2	Caprolactam	410	U
92-52-4	1,1'-Biphenyl	410	U
1912-24-9	Atrazine	410	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

36SB6C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-6A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 19 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	~~4.82~~	~~170~~	~~JB~~
2.		~~UNKNOWN (BC)~~	~~5.13~~	~~650~~	~~JB~~
3.					
4.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB1A

Lab Name: COMPUCHEM Method: 8270C

L Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-3A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 18 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	Bis(2-chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-N-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	Bis(2-chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	400	U
606-20-2	2,6-Dinitrotoluene	400	U
208-96-8	Acenaphthylene	400	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	800	U
121-14-2	2,4-Dinitrotoluene	400	U
132-64-9	Dibenzofuran	400	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB1A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-3A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 18 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	800	U UJ/C
117-81-7	bis(2-ethylhexyl)Phthalate	60	J
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenzo(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
100-52-7	Benzaldehyde	400	U
98-86-2	Acetophenone	400	U
105-60-2	Caprolactam	400	U
92-52-4	1,1'-Biphenyl	400	U
1912-24-9	Atrazine	400	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB1A

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-3A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 18 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	5.14	~~610~~	~~JB~~
2.					
3.					
4.					
5.					
6.					
7.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB1C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-4

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-4A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 21 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	420	U
111-44-4	Bis(2-chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-N-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
111-91-1	Bis(2-chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	420	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	420	U
606-20-2	2,6-Dinitrotoluene	420	U
208-96-8	Acenaphthylene	420	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	420	U
51-28-5	2,4-Dinitrophenol	2200	U
100-02-7	4-Nitrophenol	840	U
121-14-2	2,4-Dinitrotoluene	420	U
132-64-9	Dibenzofuran	420	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB1C

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-4

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-4A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 21 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
86-73-7	Fluorene	420	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
118-74-1	Hexachlorobenzene	420	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3'-Dichlorobenzidine	840	U UJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenzo(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U
100-52-7	Benzaldehyde	420	U
98-86-2	Acetophenone	420	U
105-60-2	Caprolactam	420	U
92-52-4	1,1'-Biphenyl	420	U
1912-24-9	Atrazine	420	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB1C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-4

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-4A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 21 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (BC)	4.81	190	JB
2.		UNKNOWN (BC)	5.13	780	JB
3.					
4.					
5.					
6.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: R2946-14R2B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 22 decanted: (Y/N) N Date Extracted:04/24/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/25/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	6300	U
111-44-4	Bis(2-chloroethyl)ether	6300	U
95-57-8	2-Chlorophenol	6300	U
95-48-7	2-Methylphenol	6300	U
108-60-1	2,2'-oxybis(1-Chloropropane)	6300	U
106-44-5	4-Methylphenol	6300	U
621-64-7	N-Nitroso-di-N-propylamine	6300	U
67-72-1	Hexachloroethane	6300	U
98-95-3	Nitrobenzene	6300	U
78-59-1	Isophorone	6300	U
88-75-5	2-Nitrophenol	6300	U
105-67-9	2,4-Dimethylphenol	6300	U
111-91-1	Bis(2-chloroethoxy)methane	6300	U
120-83-2	2,4-Dichlorophenol	6300	U
91-20-3	Naphthalene	6300	U
106-47-8	4-Chloroaniline	6300	U
87-68-3	Hexachlorobutadiene	6300	U
59-50-7	4-Chloro-3-methylphenol	6300	U
91-57-6	2-Methylnaphthalene	6300	U
77-47-4	Hexachlorocyclopentadiene	6300	U
88-06-2	2,4,6-Trichlorophenol	6300	U
95-95-4	2,4,5-Trichlorophenol	6300	U
91-58-7	2-Chloronaphthalene	6300	U
88-74-4	2-Nitroaniline	13000	U
131-11-3	Dimethylphthalate	6300	U
606-20-2	2,6-Dinitrotoluene	6300	U
208-96-8	Acenaphthylene	6300	U
99-09-2	3-Nitroaniline	13000	U
83-32-9	Acenaphthene	6300	U
51-28-5	2,4-Dinitrophenol	33000	U
100-02-7	4-Nitrophenol	13000	U
121-14-2	2,4-Dinitrotoluene	6300	U
132-64-9	Dibenzofuran	6300	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: R2946-14R2B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 22 decanted: (Y/N) N Date Extracted:04/24/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/25/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	6300	U
7005-72-3	4-Chlorophenyl-phenylether	6300	U
86-73-7	Fluorene	6300	U
100-01-6	4-Nitroaniline	13000	U
534-52-1	4,6-Dinitro-2-methylphenol	13000	U
86-30-6	N-Nitrosodiphenylamine (1)	6300	U
101-55-3	4-Bromophenyl-phenylether	6300	U
118-74-1	Hexachlorobenzene	6300	U
87-86-5	Pentachlorophenol	13000	U
85-01-8	Phenanthrene	6300	U
120-12-7	Anthracene	6300	U
86-74-8	Carbazole	6300	U
84-74-2	Di-n-butylphthalate	6300	U
206-44-0	Fluoranthene	6300	U
129-00-0	Pyrene	6300	U
85-68-7	Butylbenzylphthalate	6300	U
91-94-1	3,3'-Dichlorobenzidine	13000	U
117-81-7	bis(2-ethylhexyl)Phthalate	6300	U
56-55-3	Benzo(a)anthracene	6300	U
218-01-9	Chrysene	6300	U
117-84-0	Di-n-octylphthalate	6300	U
205-99-2	Benzo(b)fluoranthene	6300	U
207-08-9	Benzo(k)fluoranthene	6300	U
50-32-8	Benzo(a)pyrene	6300	U
193-39-5	Indeno(1,2,3-cd)pyrene	6300	U
53-70-3	Dibenzo(a,h)anthracene	6300	U
191-24-2	Benzo(g,h,i)perylene	6300	U
100-52-7	Benzaldehyde	6300	U R1
98-86-2	Acetophenone	6300	U
105-60-2	Caprolactam	6300	U
92-52-4	1,1'-Biphenyl	6300	U
1912-24-9	Atrazine	6300	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: R2946-14R2B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 22 decanted: (Y/N) N Date Extracted:04/24/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/25/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	4.79	3200	J
2.		UNKNOWN (BC)	5.13	22000	JB
3.		UNKNOWN (BC)	5.84	3400	JB
4.					
5.					
6.					
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FORM I SV-TIC

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FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB4C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-15B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 28 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/22/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	460	U
111-44-4	Bis(2-chloroethyl)ether	460	U
95-57-8	2-Chlorophenol	460	U
95-48-7	2-Methylphenol	460	U
108-60-1	2,2'-oxybis(1-Chloropropane)	460	U
106-44-5	4-Methylphenol	460	U
621-64-7	N-Nitroso-di-N-propylamine	460	U
67-72-1	Hexachloroethane	460	U
98-95-3	Nitrobenzene	460	U
78-59-1	Isophorone	460	U
88-75-5	2-Nitrophenol	460	U
105-67-9	2,4-Dimethylphenol	460	U
111-91-1	Bis(2-chloroethoxy)methane	460	U
120-83-2	2,4-Dichlorophenol	460	U
91-20-3	Naphthalene	460	U
106-47-8	4-Chloroaniline	460	U
87-68-3	Hexachlorobutadiene	460	U
59-50-7	4-Chloro-3-methylphenol	460	U
91-57-6	2-Methylnaphthalene	460	U
77-47-4	Hexachlorocyclopentadiene	460	U
88-06-2	2,4,6-Trichlorophenol	460	U
95-95-4	2,4,5-Trichlorophenol	460	U
91-58-7	2-Chloronaphthalene	460	U
88-74-4	2-Nitroaniline	920	U
131-11-3	Dimethylphthalate	460	U
606-20-2	2,6-Dinitrotoluene	460	U
208-96-8	Acenaphthylene	460	U
99-09-2	3-Nitroaniline	920	U
83-32-9	Acenaphthene	460	U
51-28-5	2,4-Dinitrophenol	2400	U
100-02-7	4-Nitrophenol	920	U
121-14-2	2,4-Dinitrotoluene	460	U
132-64-9	Dibenzofuran	460	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB4C

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-15B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/22/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	460	U
7005-72-3	4-Chlorophenyl-phenylether	460	U
86-73-7	Fluorene	460	U
100-01-6	4-Nitroaniline	920	U
534-52-1	4,6-Dinitro-2-methylphenol	920	U
86-30-6	N-Nitrosodiphenylamine (1)	460	U
101-55-3	4-Bromophenyl-phenylether	460	U
118-74-1	Hexachlorobenzene	460	U
87-86-5	Pentachlorophenol	920	U
85-01-8	Phenanthrene	460	U
120-12-7	Anthracene	460	U
86-74-8	Carbazole	460	U
84-74-2	Di-n-butylphthalate	460	U
206-44-0	Fluoranthene	460	U
129-00-0	Pyrene	460	U
85-68-7	Butylbenzylphthalate	460	U
91-94-1	3,3'-Dichlorobenzidine	920	U
117-81-7	bis(2-ethylhexyl)Phthalate	460	U
56-55-3	Benzo(a)anthracene	460	U
218-01-9	Chrysene	460	U
117-84-0	Di-n-octylphthalate	460	U
205-99-2	Benzo(b)fluoranthene	460	U
207-08-9	Benzo(k)fluoranthene	460	U
50-32-8	Benzo(a)pyrene	460	U
193-39-5	Indeno(1,2,3-cd)pyrene	460	U
53-70-3	Dibenzo(a,h)anthracene	460	U
191-24-2	Benzo(g,h,i)perylene	460	U
100-52-7	Benzaldehyde	460	U
98-86-2	Acetophenone	460	U
105-60-2	Caprolactam	460	U
92-52-4	1,1'-Biphenyl	460	U
1912-24-9	Atrazine	460	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB4C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-15B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/22/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (BC)	4.83	230	JB
2.		UNKNOWN (BC)	5.14	900	JB
3.		UNKNOWN	5.86	230	J
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB5A

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-1A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 12 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	Bis(2-chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2'-oxybis(1-Chloropropane)	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-N-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
111-91-1	Bis(2-chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	380	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	750	U
131-11-3	Dimethylphthalate	380	U
606-20-2	2,6-Dinitrotoluene	380	U
208-96-8	Acenaphthylene	380	U
99-09-2	3-Nitroaniline	750	U
83-32-9	Acenaphthene	380	U
51-28-5	2,4-Dinitrophenol	1900	U
100-02-7	4-Nitrophenol	750	U
121-14-2	2,4-Dinitrotoluene	380	U
132-64-9	Dibenzofuran	380	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB5A

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-1A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 12 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	750	U
534-52-1	4,6-Dinitro-2-methylphenol	750	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenyl-phenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	750	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
86-74-8	Carbazole	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	750	U UJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenzo(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U
100-52-7	Benzaldehyde	380	U
98-86-2	Acetophenone	380	U
105-60-2	Caprolactam	380	U
92-52-4	1,1'-Biphenyl	380	U
1912-24-9	Atrazine	380	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB5A

Lab Name: COMPUCHEM Method: 8270C

Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-1A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 12 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (BC)	4.82	230	JB
2.		UNKNOWN (BC)	5.13	800	JB
3.		UNKNOWN	5.86	180	J
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB5C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-2

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-2A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 21 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	420	U
111-44-4	Bis(2-chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-N-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
111-91-1	Bis(2-chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	420	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	420	U
606-20-2	2,6-Dinitrotoluene	420	U
208-96-8	Acenaphthylene	420	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	420	U
51-28-5	2,4-Dinitrophenol	2200	U
100-02-7	4-Nitrophenol	840	U
121-14-2	2,4-Dinitrotoluene	420	U
132-64-9	Dibenzofuran	420	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB5C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-2

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-2A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 21 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
86-73-7	Fluorene	420	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
118-74-1	Hexachlorobenzene	420	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3'-Dichlorobenzidine	840	UJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenzo(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U
100-52-7	Benzaldehyde	420	U
98-86-2	Acetophenone	420	U
105-60-2	Caprolactam	420	U
92-52-4	1,1'-Biphenyl	420	U
1912-24-9	Atrazine	420	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB5C

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-2

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-2A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: 21 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	~~5.13~~	~~690~~	~~JB~~ O
2.					
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: R2946-12R2B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/24/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/25/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	6900	U
111-44-4	Bis(2-chloroethyl)ether	6900	U
95-57-8	2-Chlorophenol	6900	U
95-48-7	2-Methylphenol	6900	U
108-60-1	2,2'-oxybis(1-Chloropropane)	6900	U
106-44-5	4-Methylphenol	6900	U
621-64-7	N-Nitroso-di-N-propylamine	6900	U
67-72-1	Hexachloroethane	6900	U
98-95-3	Nitrobenzene	6900	U
78-59-1	Isophorone	6900	U
88-75-5	2-Nitrophenol	6900	U
105-67-9	2,4-Dimethylphenol	6900	U
111-91-1	Bis(2-chloroethoxy)methane	6900	U
120-83-2	2,4-Dichlorophenol	6900	U
91-20-3	Naphthalene	6900	U
106-47-8	4-Chloroaniline	6900	U
87-68-3	Hexachlorobutadiene	6900	U
59-50-7	4-Chloro-3-methylphenol	6900	U
91-57-6	2-Methylnaphthalene	6900	U
77-47-4	Hexachlorocyclopentadiene	6900	U
88-06-2	2,4,6-Trichlorophenol	6900	U
95-95-4	2,4,5-Trichlorophenol	6900	U
91-58-7	2-Chloronaphthalene	6900	U
88-74-4	2-Nitroaniline	14000	U
131-11-3	Dimethylphthalate	6900	U
606-20-2	2,6-Dinitrotoluene	6900	U
208-96-8	Acenaphthylene	6900	U
99-09-2	3-Nitroaniline	14000	U
83-32-9	Acenaphthene	6900	U
51-28-5	2,4-Dinitrophenol	35000	U
100-02-7	4-Nitrophenol	14000	U
121-14-2	2,4-Dinitrotoluene	6900	U
132-64-9	Dibenzofuran	6900	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: R2946-12R2B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 28 decanted: (Y/N) N Date Extracted:04/24/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/25/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	6900	U
7005-72-3	4-Chlorophenyl-phenylether	6900	U
86-73-7	Fluorene	6900	U
100-01-6	4-Nitroaniline	14000	U
534-52-1	4,6-Dinitro-2-methylphenol	14000	U
86-30-6	N-Nitrosodiphenylamine (1)	6900	U
101-55-3	4-Bromophenyl-phenylether	6900	U
118-74-1	Hexachlorobenzene	6900	U
87-86-5	Pentachlorophenol	14000	U
85-01-8	Phenanthrene	6900	U
120-12-7	Anthracene	6900	U
86-74-8	Carbazole	6900	U
84-74-2	Di-n-butylphthalate	6900	U
206-44-0	Fluoranthene	6900	U
129-00-0	Pyrene	6900	U
85-68-7	Butylbenzylphthalate	6900	U
91-94-1	3,3'-Dichlorobenzidine	14000	U
117-81-7	bis(2-ethylhexyl)Phthalate	6900	U
56-55-3	Benzo(a)anthracene	6900	U
218-01-9	Chrysene	6900	U
117-84-0	Di-n-octylphthalate	6900	U
205-99-2	Benzo(b)fluoranthene	6900	U
207-08-9	Benzo(k)fluoranthene	6900	U
50-32-8	Benzo(a)pyrene	6900	U
193-39-5	Indeno(1,2,3-cd)pyrene	6900	U
53-70-3	Dibenzo(a,h)anthracene	6900	U
191-24-2	Benzo(g,h,i)perylene	6900	U
100-52-7	Benzaldehyde	6900	U R1
98-86-2	Acetophenone	6900	U
105-60-2	Caprolactam	6900	U
92-52-4	1,1'-Biphenyl	6900	U
1912-24-9	Atrazine	6900	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Method: 8270C

La Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: R2946-12R2B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 28 decanted: (Y/N) N Date Extracted: 04/24/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/25/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	4.79	4600	J
2.		UNKNOWN (BC)	5.14	27000	JB
3.		UNKNOWN (BC)	5.84	3800	JB
4.		UNKNOWN	20.08	11000	J
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FORM I SV-TIC

597

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP3

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-11B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 27 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	450	U
111-44-4	Bis(2-chloroethyl)ether	450	U
95-57-8	2-Chlorophenol	450	U
95-48-7	2-Methylphenol	450	U
108-60-1	2,2'-oxybis(1-Chloropropane)	450	U
106-44-5	4-Methylphenol	450	U
621-64-7	N-Nitroso-di-N-propylamine	450	U
67-72-1	Hexachloroethane	450	U
98-95-3	Nitrobenzene	450	U
78-59-1	Isophorone	450	U
88-75-5	2-Nitrophenol	450	U
105-67-9	2,4-Dimethylphenol	450	U
111-91-1	Bis(2-chloroethoxy)methane	450	U
120-83-2	2,4-Dichlorophenol	450	U
91-20-3	Naphthalene	450	U
106-47-8	4-Chloroaniline	450	U
87-68-3	Hexachlorobutadiene	450	U
59-50-7	4-Chloro-3-methylphenol	450	U
91-57-6	2-Methylnaphthalene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U
88-06-2	2,4,6-Trichlorophenol	450	U
95-95-4	2,4,5-Trichlorophenol	450	U
91-58-7	2-Chloronaphthalene	450	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	450	U
606-20-2	2,6-Dinitrotoluene	450	U
208-96-8	Acenaphthylene	450	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	450	U
51-28-5	2,4-Dinitrophenol	2300	U
100-02-7	4-Nitrophenol	900	U
121-14-2	2,4-Dinitrotoluene	450	U
132-64-9	Dibenzofuran	450	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP3

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-11B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	450	U
7005-72-3	4-Chlorophenyl-phenylether	450	U
86-73-7	Fluorene	450	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
118-74-1	Hexachlorobenzene	450	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	450	U
120-12-7	Anthracene	450	U
86-74-8	Carbazole	450	U
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	450	U
129-00-0	Pyrene	450	U
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	900	U UJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	450	U
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenzo(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U
100-52-7	Benzaldehyde	450	U
98-86-2	Acetophenone	450	U
105-60-2	Caprolactam	450	U
92-52-4	1,1'-Biphenyl	450	U
1912-24-9	Atrazine	450	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

DUP3

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: R2946-11B64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: 27 decanted: (Y/N) N Date Extracted: 04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN (BC)	4.82	310	JB
2.		UNKNOWN (BC)	5.14	1300	JB
3.		UNKNOWN	5.86	220	J
4.					
5.					
6.					
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30.					

FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Method: 8270C

1 Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: R2946-13R2B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 20 decanted: (Y/N) N Date Extracted:04/24/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/25/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	6200	U
111-44-4	Bis(2-chloroethyl)ether	6200	U
95-57-8	2-Chlorophenol	6200	U
95-48-7	2-Methylphenol	6200	U
108-60-1	2,2'-oxybis(1-Chloropropane)	6200	U
106-44-5	4-Methylphenol	6200	U
621-64-7	N-Nitroso-di-N-propylamine	6200	U
67-72-1	Hexachloroethane	6200	U
98-95-3	Nitrobenzene	6200	U
78-59-1	Isophorone	6200	U
88-75-5	2-Nitrophenol	6200	U
105-67-9	2,4-Dimethylphenol	6200	U
111-91-1	Bis(2-chloroethoxy)methane	6200	U
120-83-2	2,4-Dichlorophenol	6200	U
91-20-3	Naphthalene	6200	U
106-47-8	4-Chloroaniline	6200	U
87-68-3	Hexachlorobutadiene	6200	U
59-50-7	4-Chloro-3-methylphenol	6200	U
91-57-6	2-Methylnaphthalene	6200	U
77-47-4	Hexachlorocyclopentadiene	6200	U
88-06-2	2,4,6-Trichlorophenol	6200	U
95-95-4	2,4,5-Trichlorophenol	6200	U
91-58-7	2-Chloronaphthalene	6200	U
88-74-4	2-Nitroaniline	12000	U
131-11-3	Dimethylphthalate	6200	U
606-20-2	2,6-Dinitrotoluene	6200	U
208-96-8	Acenaphthylene	6200	U
99-09-2	3-Nitroaniline	12000	U
83-32-9	Acenaphthene	6200	U
51-28-5	2,4-Dinitrophenol	32000	U
100-02-7	4-Nitrophenol	12000	U
121-14-2	2,4-Dinitrotoluene	6200	U
132-64-9	Dibenzofuran	6200	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: R2946-13R2B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 20 decanted: (Y/N) N Date Extracted:04/24/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/25/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
84-66-2	Diethylphthalate	6200	U
7005-72-3	4-Chlorophenyl-phenylether	6200	U
86-73-7	Fluorene	6200	U
100-01-6	4-Nitroaniline	12000	U
534-52-1	4,6-Dinitro-2-methylphenol	12000	U
86-30-6	N-Nitrosodiphenylamine (1)	6200	U
101-55-3	4-Bromophenyl-phenylether	6200	U
118-74-1	Hexachlorobenzene	6200	U
87-86-5	Pentachlorophenol	12000	U
85-01-8	Phenanthrene	6200	U
120-12-7	Anthracene	6200	U
86-74-8	Carbazole	6200	U
84-74-2	Di-n-butylphthalate	6200	U
206-44-0	Fluoranthene	6200	U
129-00-0	Pyrene	6200	U
85-68-7	Butylbenzylphthalate	6200	U
91-94-1	3,3'-Dichlorobenzidine	12000	U
117-81-7	bis(2-ethylhexyl)Phthalate	1300	J
56-55-3	Benzo(a)anthracene	6200	U
218-01-9	Chrysene	6200	U
117-84-0	Di-n-octylphthalate	6200	U
205-99-2	Benzo(b)fluoranthene	6200	U
207-08-9	Benzo(k)fluoranthene	6200	U
50-32-8	Benzo(a)pyrene	6200	U
193-39-5	Indeno(1,2,3-cd)pyrene	6200	U
53-70-3	Dibenzo(a,h)anthracene	6200	U
191-24-2	Benzo(g,h,i)perylene	6200	U
100-52-7	Benzaldehyde	6200	U R,R
98-86-2	Acetophenone	6200	U
105-60-2	Caprolactam	6200	U
92-52-4	1,1'-Biphenyl	6200	U
1912-24-9	Atrazine	6200	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: R2946-13R2B64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: 20 decanted: (Y/N) N Date Extracted: 04/24/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/25/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	4.80	3700	J
2.		UNKNOWN (BC)	5.13	18000	JB
3.		UNKNOWN (BC)	5.85	2700	JB
4.		UNKNOWN	20.05	5200	J
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FORM I SV-TIC

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 18 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/01/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	1.0	U
319-84-6	alpha-BHC	1.0	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	1.0	U
58-89-9	gamma-BHC (Lindane)	1.0	U
72-54-8	4,4'-DDD	4.0	U
72-55-9	4,4'-DDE	2.1	U
50-29-3	4,4'-DDT	6.1	U
60-57-1	Dieldrin	2.1	U
959-98-8	Endosulfan I	2.1	U
33213-65-9	Endosulfan II	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
72-20-8	Endrin	4.0	U
7421-93-4	Endrin Aldehyde	4.0	U
76-44-8	Heptachlor	1.0	U
1024-57-3	Heptachlor Epoxide	1.0	U
72-43-5	Methoxychlor	10	U
8001-35-2	Toxaphene	100	U
53494-70-5	Endrin Ketone	10	U
5103-74-2	gamma-Chlordane	1.0	U
5103-71-9	alpha-Chlordane	2.1	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/02/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	1.0	U
319-84-6	alpha-BHC	1.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	1.0	U
58-89-9	gamma-BHC (Lindane)	1.0	U
72-54-8	4,4'-DDD	4.0	U
72-55-9	4,4'-DDE	2.0	U
50-29-3	4,4'-DDT	6.0	U
60-57-1	Dieldrin	2.0	U
959-98-8	Endosulfan I	2.0	U
33213-65-9	Endosulfan II	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
72-20-8	Endrin	4.0	U
7421-93-4	Endrin Aldehyde	4.0	U
76-44-8	Heptachlor	1.0	U
1024-57-3	Heptachlor Epoxide	1.0	U
72-43-5	Methoxychlor	10	U
8001-35-2	Toxaphene	100	U
53494-70-5	Endrin Ketone	10	U
5103-74-2	gamma-Chlordane	1.0	U
5103-71-9	alpha-Chlordane	2.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 21 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/01/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	1.1	U
319-84-6	alpha-BHC	1.1	U
319-85-7	beta-BHC	0.57	JP JTG
319-86-8	delta-BHC	1.1	U
58-89-9	gamma-BHC (Lindane)	1.1	U
72-54-8	4,4'-DDD	4.2	U
72-55-9	4,4'-DDE	2.2	U
50-29-3	4,4'-DDT	6.3	U
60-57-1	Dieldrin	2.2	U
959-98-8	Endosulfan I	2.2	U
33213-65-9	Endosulfan II	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
72-20-8	Endrin	4.2	U
7421-93-4	Endrin Aldehyde	4.2	U
76-44-8	Heptachlor	1.1	U
1024-57-3	Heptachlor Epoxide	1.1	U
72-43-5	Methoxychlor	11	U
8001-35-2	Toxaphene	110	U
53494-70-5	Endrin Ketone	11	U
5103-74-2	gamma-Chlordane	1.1	U
5103-71-9	alpha-Chlordane	2.2	U

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 22 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 05/02/03

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	16	U
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	53	P J 1 8
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
72-54-8	4,4'-DDD	63	U
72-55-9	4,4'-DDE	33	U
50-29-3	4,4'-DDT	17	JP J 8
60-57-1	Dieldrin	33	U
959-98-8	Endosulfan I	33	U
33213-65-9	Endosulfan II	63	U
1031-07-8	Endosulfan sulfate	63	U
72-20-8	Endrin	63	U
7421-93-4	Endrin Aldehyde	63	U
76-44-8	Heptachlor	16	U
1024-57-3	Heptachlor Epoxide	16	U
72-43-5	Methoxychlor	160	U
8001-35-2	Toxaphene	1600	U
53494-70-5	Endrin Ketone	160	U
5103-74-2	gamma-Chlordane	16	U
5103-71-9	alpha-Chlordane	33	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 28 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/02/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	17	U
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	35	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
72-54-8	4,4'-DDD	69	U
72-55-9	4,4'-DDE	35	U
50-29-3	4,4'-DDT	100	U
60-57-1	Dieldrin	35	U
959-98-8	Endosulfan I	35	U UJ,M
33213-65-9	Endosulfan II	69	U
1031-07-8	Endosulfan sulfate	69	U
72-20-8	Endrin	69	U
7421-93-4	Endrin Aldehyde	69	U
76-44-8	Heptachlor	17	U
1024-57-3	Heptachlor Epoxide	17	U
72-43-5	Methoxychlor	170	U
8001-35-2	Toxaphene	1700	U
53494-70-5	Endrin Ketone	170	U
5103-74-2	gamma-Chlordane	74	J,M
5103-71-9	alpha-Chlordane	94	J,M

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Contract: 8081

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 20 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:05/01/03

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 05/04/03

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	16	U
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	8.9	J
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
72-54-8	4,4'-DDD	9.1	J
72-55-9	4,4'-DDE	8.5	J
50-29-3	4,4'-DDT	120	
60-57-1	Dieldrin	32	U
959-98-8	Endosulfan I	32	U
33213-65-9	Endosulfan II	62	U
1031-07-8	Endosulfan sulfate	62	U
72-20-8	Endrin	62	U
7421-93-4	Endrin Aldehyde	62	U
76-44-8	Heptachlor	16	U
1024-57-3	Heptachlor Epoxide	16	U
72-43-5	Methoxychlor	32	J
8001-35-2	Toxaphene	1600	U
53494-70-5	Endrin Ketone	160	U
5103-74-2	gamma-Chlordane	20	
5103-71-9	alpha-Chlordane	31	J

J/J

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 18 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	79	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	79	U
53469-21-9	Aroclor-1242	55	U
12672-29-6	Aroclor-1248	55	U
11097-69-1	Aroclor-1254	55	U
11096-82-5	Aroclor-1260	79	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	78	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	78	U
53469-21-9	Aroclor-1242	54	U
12672-29-6	Aroclor-1248	54	U
11097-69-1	Aroclor-1254	54	U
11096-82-5	Aroclor-1260	78	U

611.

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GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 21 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	82	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	82	U
53469-21-9	Aroclor-1242	57	U
12672-29-6	Aroclor-1248	57	U
11097-69-1	Aroclor-1254	57	U
11096-82-5	Aroclor-1260	82	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 22 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/24/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	1300	U
11104-28-2	Aroclor-1221	1600	U
11141-16-5	Aroclor-1232	1300	U
53469-21-9	Aroclor-1242	870	U
12672-29-6	Aroclor-1248	870	U
11097-69-1	Aroclor-1254	870	U
11096-82-5	Aroclor-1260	1300	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 28 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 05/01/03

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 05/03/03

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	1400	U
11104-28-2	Aroclor-1221	1800	U
11141-16-5	Aroclor-1232	1400	U
53469-21-9	Aroclor-1242	940	U
12672-29-6	Aroclor-1248	940	U
11097-69-1	Aroclor-1254	940	U
11096-82-5	Aroclor-1260	1400	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Contract: 8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 20 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	1200	U
11104-28-2	Aroclor-1221	1600	U
11141-16-5	Aroclor-1232	1200	U
53469-21-9	Aroclor-1242	840	U
12672-29-6	Aroclor-1248	840	U
11097-69-1	Aroclor-1254	840	U
11096-82-5	Aroclor-1260	1200	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 18 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	51	U
83-32-9	Acenaphthene	51	U
86-73-7	Fluorene	51	U
129-00-0	Pyrene	21	U
85-01-8	Phenanthrene	51	U
120-12-7	Anthracene	51	U
206-44-0	Fluoranthene	8.6	J
218-01-9	Chrysene	5.0	J
205-99-2	Benzo(b)fluoranthene	2.4	J
207-08-9	Benzo(k)fluoranthene	2.2	J
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	5.2	J
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	51	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB10C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-8

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 27 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	58	U
83-32-9	Acenaphthene	58	U
86-73-7	Fluorene	58	U
129-00-0	Pyrene	23	U
85-01-8	Phenanthrene	25	J
120-12-7	Anthracene	58	U
206-44-0	Fluoranthene	23	U
218-01-9	Chrysene	11	U
205-99-2	Benzo(b)fluoranthene	11	U
207-08-9	Benzo(k)fluoranthene	11	U
53-70-3	Dibenzo(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U
56-55-3	Benzo(a)anthracene	11	U
50-32-8	Benzo(a)pyrene	24	
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
208-96-8	Acenaphthylene	58	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	51	U
83-32-9	Acenaphthene	51	U
86-73-7	Fluorene	51	U
129-00-0	Pyrene	12	J
85-01-8	Phenanthrene	51	U
120-12-7	Anthracene	51	U
206-44-0	Fluoranthene	11	J
218-01-9	Chrysene	9.3	J
205-99-2	Benzo(b)fluoranthene	5.1	J
207-08-9	Benzo(k)fluoranthene	3.7	J
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	6.6	J
50-32-8	Benzo(a)pyrene	5.3	J
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	51	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB3C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	51	U
83-32-9	Acenaphthene	51	U
86-73-7	Fluorene	51	U
129-00-0	Pyrene	20	U
85-01-8	Phenanthrene	51	U
120-12-7	Anthracene	51	U
206-44-0	Fluoranthene	20	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	51	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 21 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	53	U
83-32-9	Acenaphthene	53	U
86-73-7	Fluorene	53	U
129-00-0	Pyrene	22	U
85-01-8	Phenanthrene	53	U
120-12-7	Anthracene	53	U
206-44-0	Fluoranthene	22	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	53	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB6C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-6

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 19 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	52	U
83-32-9	Acenaphthene	52	U
86-73-7	Fluorene	52	U
129-00-0	Pyrene	21	U
85-01-8	Phenanthrene	52	U
120-12-7	Anthracene	52	U
206-44-0	Fluoranthene	21	U
218-01-9	Chrysene	3.6	J
205-99-2	Benzo(b)fluoranthene	2.5	J
207-08-9	Benzo(k)fluoranthene	3.0	J
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	52	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB1A

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 18 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	51	U
83-32-9	Acenaphthene	51	U
86-73-7	Fluorene	51	U
129-00-0	Pyrene	21	U
85-01-8	Phenanthrene	51	U
120-12-7	Anthracene	51	U
206-44-0	Fluoranthene	21	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	51	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB1C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-4

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 21 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	53	U
83-32-9	Acenaphthene	53	U
86-73-7	Fluorene	53	U
129-00-0	Pyrene	22	U
85-01-8	Phenanthrene	53	U
120-12-7	Anthracene	53	U
206-44-0	Fluoranthene	22	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	53	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 22 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/24/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/25/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	810	U
83-32-9	Acenaphthene	810	U
86-73-7	Fluorene	810	U
129-00-0	Pyrene	330	U
85-01-8	Phenanthrene	810	U
120-12-7	Anthracene	810	U
206-44-0	Fluoranthene	330	U
218-01-9	Chrysene	160	U
205-99-2	Benzo(b)fluoranthene	160	U
207-08-9	Benzo(k)fluoranthene	160	U
53-70-3	Dibenzo(a,h)anthracene	160	U
191-24-2	Benzo(g,h,i)perylene	160	U
56-55-3	Benzo(a)anthracene	160	U
50-32-8	Benzo(a)pyrene	160	U
193-39-5	Indeno(1,2,3-cd)pyrene	160	U
208-96-8	Acenaphthylene	810	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB4C

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 28 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	58	U
83-32-9	Acenaphthene	70	
86-73-7	Fluorene	58	U
129-00-0	Pyrene	6.2	J
85-01-8	Phenanthrene	58	U
120-12-7	Anthracene	58	U
206-44-0	Fluoranthene	10	J
218-01-9	Chrysene	9.6	J
205-99-2	Benzo(b)fluoranthene	3.0	J
207-08-9	Benzo(k)fluoranthene	3.5	J
53-70-3	Dibenzo(a,h)anthracene	12	U
191-24-2	Benzo(g,h,i)perylene	12	U
56-55-3	Benzo(a)anthracene	12	
50-32-8	Benzo(a)pyrene	2.7	J
193-39-5	Indeno(1,2,3-cd)pyrene	4.5	J
208-96-8	Acenaphthylene	58	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB5A

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 12 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	48	U
83-32-9	Acenaphthene	48	U
86-73-7	Fluorene	48	U
129-00-0	Pyrene	5.3	J
85-01-8	Phenanthrene	48	U
120-12-7	Anthracene	48	U
206-44-0	Fluoranthene	5.8	J
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(b)fluoranthene	9.4	U
207-08-9	Benzo(k)fluoranthene	61	
53-70-3	Dibenzo(a,h)anthracene	9.4	U
191-24-2	Benzo(g,h,i)perylene	9.4	U
56-55-3	Benzo(a)anthracene	61	
50-32-8	Benzo(a)pyrene	6.4	J
193-39-5	Indeno(1,2,3-cd)pyrene	9.4	U
208-96-8	Acenaphthylene	48	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB5C

Lab Name: COMPUCHEM Contract: 8310

, Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-2

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 21 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/24/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	53	U
83-32-9	Acenaphthene	53	U
86-73-7	Fluorene	53	U
129-00-0	Pyrene	22	U
85-01-8	Phenanthrene	53	U
120-12-7	Anthracene	53	U
206-44-0	Fluoranthene	22	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
56-55-3	Benzo(a)anthracene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
208-96-8	Acenaphthylene	53	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 28 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/24/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/25/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	880	U
83-32-9	Acenaphthene	880	U
86-73-7	Fluorene	880	U
129-00-0	Pyrene	350	U
85-01-8	Phenanthrene	880	U
120-12-7	Anthracene	880	U
206-44-0	Fluoranthene	350	U
218-01-9	Chrysene	170	U
205-99-2	Benzo(b)fluoranthene	170	U
207-08-9	Benzo(k)fluoranthene	170	U
53-70-3	Dibenzo(a,h)anthracene	170	U
191-24-2	Benzo(g,h,i)perylene	170	U
56-55-3	Benzo(a)anthracene	170	U
50-32-8	Benzo(a)pyrene	170	U
193-39-5	Indeno(1,2,3-cd)pyrene	170	U
208-96-8	Acenaphthylene	880	UUJ1M

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP3

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 27 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	58	U
83-32-9	Acenaphthene	58	U
86-73-7	Fluorene	58	U
129-00-0	Pyrene	23	U
85-01-8	Phenanthrene	58	U
120-12-7	Anthracene	58	U
206-44-0	Fluoranthene	23	U
218-01-9	Chrysene	11	U
205-99-2	Benzo(b)fluoranthene	11	U
207-08-9	Benzo(k)fluoranthene	11	U
53-70-3	Dibenzo(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U
56-55-3	Benzo(a)anthracene	11	U
50-32-8	Benzo(a)pyrene	11	U
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
208-96-8	Acenaphthylene	58	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 20 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/24/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/25/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	790	U
83-32-9	Acenaphthene	790	U
86-73-7	Fluorene	790	U
129-00-0	Pyrene	320	U
85-01-8	Phenanthrene	790	U
120-12-7	Anthracene	790	U
206-44-0	Fluoranthene	320	U
218-01-9	Chrysene	160	U
205-99-2	Benzo(b)fluoranthene	160	U
207-08-9	Benzo(k)fluoranthene	160	U
53-70-3	Dibenzo(a,h)anthracene	160	U
191-24-2	Benzo(g,h,i)perylene	160	U
56-55-3	Benzo(a)anthracene	160	U
50-32-8	Benzo(a)pyrene	160	U
193-39-5	Indeno(1,2,3-cd)pyrene	160	U
208-96-8	Acenaphthylene	790	U

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB10B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-7

Level (low/med): LOW Date Received: 4/17/03

% Solids: 81.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	20500			P	
7440-36-0	Antimony	0.52	B	N	P	L,M
7440-38-2	Arsenic	1.9		N	P	↓
7440-39-3	Barium	202			P	
7440-41-7	Beryllium	1.1			P	
7440-43-9	Cadmium	0.25	B		P	K,W
7440-70-2	Calcium	2060		*	P	J,K
7440-47-3	Chromium	30.7			P	
7440-48-4	Cobalt	11.3			P	
7440-50-8	Copper	15.5			P	
7439-89-6	Iron	30000			P	
7439-92-1	Lead	12.6			P	
7439-95-4	Magnesium	5020		*	P	J,K
7439-96-5	Manganese	616			P	
7439-97-6	Mercury	0.072		N	CV	B,P
7440-02-0	Nickel	18.1			P	
7440-09-7	Potassium	1480		E	P	J,S
7782-49-2	Selenium	0.71		N	P	L,M
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	209	B		P	B,K
7440-28-0	Thallium	0.34	U	N*	P	R,M
7440-62-2	Vanadium	50.4		N	P	L,M
7440-66-6	Zinc	77.2		N	P	L,M

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB10C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-8

Level (low/med): LOW Date Received: 4/17/03

% Solids: 73.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	18600			P	
7440-36-0	Antimony	0.53	B	N	P	L,M
7440-38-2	Arsenic	3.8		N	P	↓
7440-39-3	Barium	120			P	
7440-41-7	Beryllium	0.81			P	
7440-43-9	Cadmium	0.30	B		P	K,W
7440-70-2	Calcium	2670		*	P	J,K
7440-47-3	Chromium	31.1			P	
7440-48-4	Cobalt	8.0			P	
7440-50-8	Copper	24.7			P	
7439-89-6	Iron	34600			P	
7439-92-1	Lead	10.5			P	
7439-95-4	Magnesium	14800		*	P	J,K
7439-96-5	Manganese	913			P	
7439-97-6	Mercury	0.052		N	CV	B,P
7440-02-0	Nickel	16.7			P	
7440-09-7	Potassium	1430		E	P	J,S
7782-49-2	Selenium	0.63	B	N	P	K,W
7440-22-4	Silver	0.12	U		P	
7440-23-5	Sodium	294			P	
7440-28-0	Thallium	0.39	U	N*	P	R,M
7440-62-2	Vanadium	40.7		N	P	L,M
7440-66-6	Zinc	49.9		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB3B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-9

Level (low/med): LOW Date Received: 4/17/03

% Solids: 82.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	18300			P	
7440-36-0	Antimony	0.57	B	N	P	L,M
7440-38-2	Arsenic	1.7		N	P	↓
7440-39-3	Barium	161			P	
7440-41-7	Beryllium	0.90			P	
7440-43-9	Cadmium	0.24	B		P	K,W
7440-70-2	Calcium	2070		*	P	J,K
7440-47-3	Chromium	27.1			P	
7440-48-4	Cobalt	8.6			P	
7440-50-8	Copper	14.3			P	
7439-89-6	Iron	26600			P	
7439-92-1	Lead	10.6			P	
7439-95-4	Magnesium	4580		*	P	J,K
7439-96-5	Manganese	422			P	
7439-97-6	Mercury	0.060		N	CV	B,P
7440-02-0	Nickel	16.1			P	
7440-09-7	Potassium	1530		E	P	J,S
7782-49-2	Selenium	0.58	B	N	P	K,W
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	257			P	
7440-28-0	Thallium	0.34	U	N*	P	R,M
7440-62-2	Vanadium	45.9		N	P	L,M
7440-66-6	Zinc	68.4		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
368B3C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-10

Level (low/med): LOW Date Received: 4/17/03

% Solids: 82.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	12600			P	
7440-36-0	Antimony	0.40	B	N	P	L,M
7440-38-2	Arsenic	4.7		N	P	↓
7440-39-3	Barium	63.2			P	
7440-41-7	Beryllium	0.59	B		P	
7440-43-9	Cadmium	0.17	B		P	K,W
7440-70-2	Calcium	4780		*	P	J,K
7440-47-3	Chromium	23.0			P	
7440-48-4	Cobalt	5.6			P	
7440-50-8	Copper	16.2			P	
7439-89-6	Iron	20300			P	
7439-92-1	Lead	17.3			P	
7439-95-4	Magnesium	11700		*	P	J,K
7439-96-5	Manganese	450			P	
7439-97-6	Mercury	0.046		N	CV	B,P
7440-02-0	Nickel	12.3			P	
7440-09-7	Potassium	1040		E	P	J,S
7782-49-2	Selenium	0.68		N	P	L,M
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	111	B		P	B,X
7440-28-0	Thallium	0.34	U	N*	P	R,M
7440-62-2	Vanadium	29.3		N	P	L,M
7440-66-6	Zinc	113		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SB6B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-5

Level (low/med): LOW Date Received: 4/17/03

% Solids: 79.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	17200			P	
7440-36-0	Antimony	0.59	B	N	P	L,M
7440-38-2	Arsenic	1.9		N	P	↓
7440-39-3	Barium	118			P	
7440-41-7	Beryllium	0.78			P	
7440-43-9	Cadmium	0.16	B		P	K,W
7440-70-2	Calcium	1960		*	P	J,K
7440-47-3	Chromium	28.4			P	
7440-48-4	Cobalt	10.5			P	
7440-50-8	Copper	19.3			P	
7439-89-6	Iron	29300			P	
7439-92-1	Lead	11.8			P	
7439-95-4	Magnesium	4140		*	P	J,K
7439-96-5	Manganese	511			P	
7439-97-6	Mercury	0.047		N	CV	B,P
7440-02-0	Nickel	15.1			P	
7440-09-7	Potassium	2170		E	P	J,S
7782-49-2	Selenium	0.50	B	N	P	K,W
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	235	B		P	B,X
7440-28-0	Thallium	0.36	U	N*	P	R,M
7440-62-2	Vanadium	49.5		N	P	L,M
7440-66-6	Zinc	59.3		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.: 36SB6C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-6

Level (low/med): LOW Date Received: 4/17/03

% Solids: 81.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	12400			P	
7440-36-0	Antimony	0.56	B	N	P	
7440-38-2	Arsenic	2.1		N	P	L,M
7440-39-3	Barium	82.5			P	
7440-41-7	Beryllium	0.65			P	
7440-43-9	Cadmium	0.17	B		P	K,W
7440-70-2	Calcium	1610		*	P	J,K
7440-47-3	Chromium	24.2			P	
7440-48-4	Cobalt	9.0			P	
7440-50-8	Copper	16.8			P	
7439-89-6	Iron	25800			P	
7439-92-1	Lead	13.9			P	
7439-95-4	Magnesium	2970		*	P	J,K
7439-96-5	Manganese	169			P	
7439-97-6	Mercury	0.038	B	N	CV	B,P
7440-02-0	Nickel	13.0			P	
7440-09-7	Potassium	1490		E	P	J,S
7782-49-2	Selenium	0.53	B	N	P	K,W
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	229	B		P	B,Z
7440-28-0	Thallium	0.35	U	N*	P	R,M
7440-62-2	Vanadium	40.8		N	P	L,M
7440-66-6	Zinc	53.4		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB1A

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-3

Level (low/med): LOW Date Received: 4/16/03

% Solids: 81.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	21000			P	
7440-36-0	Antimony	0.72	B	N	P	L,M
7440-38-2	Arsenic	5.4		N	P	↓
7440-39-3	Barium	79.5			P	
7440-41-7	Beryllium	0.54	B		P	
7440-43-9	Cadmium	0.06	B		P	K,W
7440-70-2	Calcium	1980		*	P	J,K
7440-47-3	Chromium	32.4			P	
7440-48-4	Cobalt	14.3			P	
7440-50-8	Copper	11.9			P	
7439-89-6	Iron	30900			P	
7439-92-1	Lead	18.5			P	
7439-95-4	Magnesium	1310		*	P	J,K
7439-96-5	Manganese	1290			P	
7439-97-6	Mercury	0.093		N	CV	B,P
7440-02-0	Nickel	7.8			P	
7440-09-7	Potassium	673		E	P	J,S
7782-49-2	Selenium	1.1		N	P	L,M
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	269			P	
7440-28-0	Thallium	0.35	U	N*	P	R,M
7440-62-2	Vanadium	60.2		N	P	L,M
7440-66-6	Zinc	36.0		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB1C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-4

Level (low/med): LOW Date Received: 4/16/03

% Solids: 79.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	9050			P	
7440-36-0	Antimony	0.38	B	N	P	L,M
7440-38-2	Arsenic	0.85	B	N	P	↓
7440-39-3	Barium	67.8			P	
7440-41-7	Beryllium	0.47	B		P	
7440-43-9	Cadmium	0.11	B		P	K,W
7440-70-2	Calcium	1370		*	P	J,K
7440-47-3	Chromium	15.1			P	
7440-48-4	Cobalt	5.1			P	
7440-50-8	Copper	7.4			P	
7439-89-6	Iron	14500			P	
7439-92-1	Lead	5.8			P	
7439-95-4	Magnesium	2370		*	P	J,K
7439-96-5	Manganese	291			P	
7439-97-6	Mercury	0.039	B	N	CV	B,P
7440-02-0	Nickel	8.9			P	
7440-09-7	Potassium	997		E	P	J,S
7782-49-2	Selenium	0.41	B	N	P	K,W
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	250	B		P	B,X
7440-28-0	Thallium	0.37	U	N*	P	R,M
7440-62-2	Vanadium	24.6		N	P	L,M
7440-66-6	Zinc	37.9		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB2B

Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-14

Level (low/med): LOW Date Received: 4/18/03

% Solids: 78.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	27600			P	
7440-36-0	Antimony	0.70	B	N	P	L,M
7440-38-2	Arsenic	3.1		N	P	↓
7440-39-3	Barium	74.6			P	
7440-41-7	Beryllium	0.50	B		P	
7440-43-9	Cadmium	0.12	B		P	K,W
7440-70-2	Calcium	4670		*	P	J,K
7440-47-3	Chromium	31.8			P	
7440-48-4	Cobalt	6.6			P	
7440-50-8	Copper	16.1			P	
7439-89-6	Iron	28500			P	
7439-92-1	Lead	19.3			P	
7439-95-4	Magnesium	3160		*	P	J,K
7439-96-5	Manganese	358			P	
7439-97-6	Mercury	0.23		N	CV	L,M
7440-02-0	Nickel	13.7			P	
7440-09-7	Potassium	1240		E	P	J,S
7782-49-2	Selenium	0.73		N	P	L,M
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	277			P	
7440-28-0	Thallium	0.35	U	N*	P	R,M
7440-62-2	Vanadium	53.2		N	P	L,M
7440-66-6	Zinc	39.3		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB4C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-15

Level (low/med): LOW Date Received: 4/18/03

% Solids: 71.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	14600			P	
7440-36-0	Antimony	0.51	B	N	P	L,M
7440-38-2	Arsenic	5.9		N	P	↓
7440-39-3	Barium	56.9			P	
7440-41-7	Beryllium	0.70			P	
7440-43-9	Cadmium	0.17	B		P	K,W
7440-70-2	Calcium	10700		*	P	J,K
7440-47-3	Chromium	34.9			P	
7440-48-4	Cobalt	22.1			P	
7440-50-8	Copper	18.8			P	
7439-89-6	Iron	29000			P	
7439-92-1	Lead	20.5			P	
7439-95-4	Magnesium	30300		*	P	J,K
7439-96-5	Manganese	435			P	
7439-97-6	Mercury	0.046	B	N	CV	B,P
7440-02-0	Nickel	26.6			P	
7440-09-7	Potassium	2850		E	P	J,S
7782-49-2	Selenium	0.43	B	N	P	K,W
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	221	B		P	
7440-28-0	Thallium	0.37	U	N*	P	R,M
7440-62-2	Vanadium	46.5		N	P	L,M
7440-66-6	Zinc	25.8		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB5A

Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-1

Level (low/med): LOW Date Received: 4/16/03

% Solids: 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	13700			P	
7440-36-0	Antimony	0.59	B	N	P	L,M
7440-38-2	Arsenic	1.8		N	P	↓
7440-39-3	Barium	116			P	
7440-41-7	Beryllium	0.66			P	
7440-43-9	Cadmium	0.27	B		P	K,W
7440-70-2	Calcium	5970		*	P	J,K
7440-47-3	Chromium	23.7			P	
7440-48-4	Cobalt	8.0			P	
7440-50-8	Copper	12.4			P	
7439-89-6	Iron	22900			P	
7439-92-1	Lead	14.4			P	
7439-95-4	Magnesium	6030		*	P	J,K
7439-96-5	Manganese	431			P	
7439-97-6	Mercury	0.046		N	CV	B,P
7440-02-0	Nickel	11.7			P	
7440-09-7	Potassium	1440		E	P	J,S
7782-49-2	Selenium	0.51	B	N	P	K,W
7440-22-4	Silver	0.10	U		P	
7440-23-5	Sodium	243			P	
7440-28-0	Thallium	0.31	U	N*	P	R,M
7440-62-2	Vanadium	37.4		N	P	L,M
7440-66-6	Zinc	63.4		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB5C

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-2

Level (low/med): LOW Date Received: 4/16/03

% Solids: 78.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6330			P	
7440-36-0	Antimony	0.40	B	N	P	L|M
7440-38-2	Arsenic	0.38	B	N	P	↓
7440-39-3	Barium	78.1			P	
7440-41-7	Beryllium	0.22	B		P	
7440-43-9	Cadmium	0.03	B		P	K|W
7440-70-2	Calcium	8040		*	P	J|K
7440-47-3	Chromium	14.3			P	
7440-48-4	Cobalt	2.3			P	
7440-50-8	Copper	5.9			P	
7439-89-6	Iron	11800			P	
7439-92-1	Lead	5.2			P	
7439-95-4	Magnesium	5670		*	P	J|K
7439-96-5	Manganese	194			P	
7439-97-6	Mercury	0.14		N	CV	L|M
7440-02-0	Nickel	6.7			P	
7440-09-7	Potassium	732		E	P	J|S
7782-49-2	Selenium	0.28	U	N	P	UL|M
7440-22-4	Silver	0.11	U		P	
7440-23-5	Sodium	303			P	
7440-28-0	Thallium	0.36	U	N*	P	R|M
7440-62-2	Vanadium	15.6		N	P	L|M
7440-66-6	Zinc	30.7		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

20

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SB7B

b Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-12

Level (low/med): LOW Date Received: 4/18/03

% Solids: 72.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	23100			P	
7440-36-0	Antimony	1.2	B	N	P	L,M
7440-38-2	Arsenic	5.4		N	P	↓
7440-39-3	Barium	113			P	
7440-41-7	Beryllium	0.81			P	
7440-43-9	Cadmium	0.20	B		P	K,W
7440-70-2	Calcium	6650		*	P	J,K
7440-47-3	Chromium	53.5			P	
7440-48-4	Cobalt	9.9			P	
7440-50-8	Copper	27.1			P	
7439-89-6	Iron	32200			P	
7439-92-1	Lead	48.4			P	
7439-95-4	Magnesium	3080		*	P	J,K
7439-96-5	Manganese	911			P	
7439-97-6	Mercury	0.41		N	CV	L,M
7440-02-0	Nickel	17.0			P	
7440-09-7	Potassium	1250		E	P	J,S
7782-49-2	Selenium	1.1		N	P	L,M
7440-22-4	Silver	0.35	B		P	
7440-23-5	Sodium	241	B		P	
7440-28-0	Thallium	0.40	U	N*	P	R,M
7440-62-2	Vanadium	54.8		N	P	L,M
7440-66-6	Zinc	124		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.: DUP3

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-11

Level (low/med): LOW Date Received: 4/17/03

% Solids: 73.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	15400			P	
7440-36-0	Antimony	0.66	B	N	P	L,M
7440-38-2	Arsenic	2.6		N	P	↓
7440-39-3	Barium	133			P	
7440-41-7	Beryllium	0.76			P	
7440-43-9	Cadmium	0.29	B		P	K,W
7440-70-2	Calcium	2330		*	P	J,K
7440-47-3	Chromium	26.5			P	
7440-48-4	Cobalt	9.8			P	
7440-50-8	Copper	17.6			P	
7439-89-6	Iron	28300			P	
7439-92-1	Lead	12.7			P	
7439-95-4	Magnesium	4570		*	P	J,K
7439-96-5	Manganese	464			P	
7439-97-6	Mercury	0.047		N	CV	B,P
7440-02-0	Nickel	15.1			P	
7440-09-7	Potassium	1570		E	P	J,S
7782-49-2	Selenium	0.57	B	N	P	K,W
7440-22-4	Silver	0.12	U		P	
7440-23-5	Sodium	271			P	
7440-28-0	Thallium	0.38	U	N*	P	R,M
7440-62-2	Vanadium	42.4		N	P	L,M
7440-66-6	Zinc	60.3		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
DUP4

Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix (soil/water): SOIL Lab Sample ID: R2946-13

Level (low/med): LOW Date Received: 4/18/03

% Solids: 80.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	17500			P	
7440-36-0	Antimony	0.62	B	N	P	L,M
7440-38-2	Arsenic	5.0		N	P	↓
7440-39-3	Barium	111			P	
7440-41-7	Beryllium	0.74			P	
7440-43-9	Cadmium	0.22	B		P	K,W
7440-70-2	Calcium	6780		*	P	J,K
7440-47-3	Chromium	55.8			P	
7440-48-4	Cobalt	9.2			P	
7440-50-8	Copper	34.6			P	
7439-89-6	Iron	29900			P	
7439-92-1	Lead	36.5			P	
7439-95-4	Magnesium	3650		*	P	J,K
7439-96-5	Manganese	825			P	
7439-97-6	Mercury	0.48		N	CV	L,M
7440-02-0	Nickel	16.2			P	
7440-09-7	Potassium	1160		E	P	J,S
7782-49-2	Selenium	0.83		N	P	L,M
7440-22-4	Silver	0.24	B		P	
7440-23-5	Sodium	210	B		P	
7440-28-0	Thallium	0.34	U	N*	P	R,M
7440-62-2	Vanadium	45.5		N	P	L,M
7440-66-6	Zinc	90.0		N	P	↓

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB10B

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB10C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-8

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB3B

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB3C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-10

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB6C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-6

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB1A

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-3

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB1C

I Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-4

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB4C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-15

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB5A

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB5C

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-2

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U UJ,M
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP3

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-11

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB10B

ab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-7

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB10C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-8

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB3B

ab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-9

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB3C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-10

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB6B

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-5

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SB6C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-6

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB1A

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-3

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB1C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-4

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB2B

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-14

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB4C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-15

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB5A

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (mg/L or ug/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

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GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB5C

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-2

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB7B

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-12

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP3

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-11

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP4

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: R2946-13

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted: 04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB7BMS

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23822-6

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	9900	

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SB7BMSD

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23822-7

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	9400	

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLKBO

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23822-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: _____

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PLCSBP

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: R2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23822-3

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: _____

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/23/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	9500	

FORM I PEST

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB1

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-1B61

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. _____ Date Analyzed: 04/24/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	0.5	JB B,Z
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	0.3	JB B,Z
67-64-1	Acetone	6	JB
75-09-2	Methylene Chloride	0.7	JB
156-60-5	trans-1,2-Dichloroethene	0.6	JB
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	13	U
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	0.2	JB B,Z
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	0.6	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
591-78-6	2-hexanone	13	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB1

ıb Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-1B61

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. _____ Date Analyzed: 04/24/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	0.1	JB B,Z
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	0.2	JB B,Z
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	0.3	JB B,Z
1330-20-7	Xylene (total)	5	U
79-20-9	Methyl acetate	5	U
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

EB1

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-1B61

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. _____ Date Analyzed: 04/24/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB2

b Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-3B61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	0.5	JB B,Z
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	5	U
67-64-1	Acetone	6	JB B,Z
75-09-2	Methylene Chloride	0.5	JB
156-60-5	trans-1,2-Dichloroethene	0.7	JB
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	2	JB B,Z
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	0.2	JB B,Z
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	0.6	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	0.3	JB B,Z
591-78-6	2-hexanone	13	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB2

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-3B61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	0.2	JB B, Z
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	0.2	JB B, Z
1330-20-7	Xylene (total)	0.3	JB
79-20-9	Methyl acetate	5	U
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

EB2

ab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-3B61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB3

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-5R2A62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. _____ Date Analyzed: 04/29/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	0.4	J
74-87-3	Chloromethane	0.5	J
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	5	U
67-64-1	Acetone	11	JB B,Z
75-09-2	Methylene Chloride	0.8	JB
156-60-5	trans-1,2-Dichloroethene	5	U
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	2	J
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	3	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
591-78-6	2-hexanone	13	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB3

ab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-5R2A62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. _____ Date Analyzed: 04/29/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
1330-20-7	Xylene (total)	5	U
79-20-9	Methyl acetate	4	JB
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

EB3

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-5R2A62

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. _____ Date Analyzed: 04/29/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~LABORATORY ARTIFACT~~	~~7.47~~	~~29.35~~	~~JB~~
2.		~~LABORATORY ARTIFACT~~	~~8.23~~	~~15.63~~	~~J~~
3.				PA 5/6/03	
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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-2

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-2RA62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. _____ Date Analyzed: 04/29/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	0.3	J
74-87-3	Chloromethane	0.6	J
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	5	U
67-64-1	Acetone	4	JB B, Z
75-09-2	Methylene Chloride	0.6	JB B
156-60-5	trans-1,2-Dichloroethene	5	U
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	2	J
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	5	U
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	3	JB B, Z
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
591-78-6	2-hexanone	13	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-2

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-2RA62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. _____ Date Analyzed: 04/29/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
1330-20-7	Xylene (total)	5	U
79-20-9	Methyl acetate	5	U
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

TRIP BLANK

ab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-2

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-2RA62

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: not dec. _____ Date Analyzed: 04/29/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~LABORATORY ARTIFACT~~	~~7.47~~	~~12.74~~	~~JB~~ C
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21

FORM I VOA-TIC

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK 0416

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-4

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-4B61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	0.7	JB B,Z
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	0.3	JB B,Z
67-64-1	Acetone	7	JB
75-09-2	Methylene Chloride	0.6	JB
156-60-5	trans-1,2-Dichloroethene	0.5	JB
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	2	JB B,Z
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	0.2	JB B,Z
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	0.7	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
591-78-6	2-hexanone	13	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK 0416

b Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-4

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-4B61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	0.2	JB B, Z
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	0.2	JB B, Z
1330-20-7	Xylene (total)	0.3	JB B, Z
79-20-9	Methyl acetate	5	U
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

TRIP BLANK 0416

Lab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-4

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-4B61

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK 0417

ɔ Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-6

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-6B61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. _____ Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5	U
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	0.4	JB B,Z
75-15-0	Carbon disulfide	5	U
76-13-1	1,1,2-trichloro-1,2,2-triflu	5	U
67-64-1	Acetone	6	JB B,Z
75-09-2	Methylene Chloride	0.7	JB ↓
156-60-5	trans-1,2-Dichloroethene	0.6	JB
1634-04-4	Methyl-tert-butyl ether	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-butanone	2	JB B,Z
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
71-43-2	Benzene	0.2	JB B,Z
107-06-2	1,2-Dichloroethane	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	0.8	JB B,Z
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	0.4	JB B,Z
591-78-6	2-hexanone	13	U
124-48-1	Dibromochloromethane	5	U
106-93-4	1,2-Dibromoethane	5	U 25

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK 0417

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-6

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-6B61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. _____ Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	0.2	JB B,Z
100-42-5	Styrene	0.1	JB
75-25-2	Bromoform	5	U
98-82-8	Isopropyl Benzene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	0.2	JB B,Z
95-50-1	1,2-Dichlorobenzene	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	5	U
1330-20-7	Xylene (total)	0.3	JB B,Z
79-20-9	Methyl acetate	5	U
110-82-7	Cyclohexane	5	U
108-87-2	Methylcyclohexane	5	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

TRIP BLANK 0417

ab Name: COMPUCHEM Contract: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-6

Sample wt/vol: 5 (g/ml) ML Lab File ID: S2946-6B61

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. _____ Date Analyzed: 04/25/03

GC Column: RTX-VMS ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB1

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2946-1A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	Bis(2-chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-N-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	Bis(2-chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	20	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	20	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	20	U
121-14-2	2,4-Dinitrotoluene	10	U
132-64-9	Dibenzofuran	10	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB1

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2946-1A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	20	U
534-52-1	4,6-Dinitro-2-methylphenol	20	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	20	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	UUJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
100-52-7	Benzaldehyde	10	U
98-86-2	Acetophenone	10	U
105-60-2	Caprolactam	10	U
92-52-4	1,1'-Biphenyl	10	U
1912-24-9	Atrazine	10	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

EB1

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2946-1A64

Level: (low/med) LOW Date Received: 04/16/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN~~ RX	~~20.17~~	~~17~~	~~J~~ Q
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FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB2

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2946-3A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	Bis(2-chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-N-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	Bis(2-chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	20	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	20	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	20	U
121-14-2	2,4-Dinitrotoluene	10	U
132-64-9	Dibenzofuran	10	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB2

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2946-3A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	20	U
534-52-1	4,6-Dinitro-2-methylphenol	20	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	20	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	UUJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
100-52-7	Benzaldehyde	10	U
98-86-2	Acetophenone	10	U
105-60-2	Caprolactam	10	U
92-52-4	1,1'-Biphenyl	10	U
1912-24-9	Atrazine	10	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

EB2

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2946-3A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
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27.					
28.					
29.					
30.					

FORM I SV-TIC

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB3

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2946-5A64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	Bis(2-chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-N-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	Bis(2-chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	20	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	20	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	20	U
121-14-2	2,4-Dinitrotoluene	10	U
132-64-9	Dibenzofuran	10	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EB3

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2946-5A64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	20	U
534-52-1	4,6-Dinitro-2-methylphenol	20	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	20	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	UUJ,C
117-81-7	bis(2-ethylhexyl)Phthalate	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
100-52-7	Benzaldehyde	10	U
98-86-2	Acetophenone	10	U
105-60-2	Caprolactam	10	U
92-52-4	1,1'-Biphenyl	10	U
1912-24-9	Atrazine	10	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

EB3

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2946-5A64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/18/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/21/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
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6.					
7.					
8.					
9.					
10.					
11.					
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FORM I SV-TIC

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB1

Name: COMPUCHEM Contract: 8081A/8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/18/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
309-00-2	Aldrin	0.10	U
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC (Lindane)	0.10	U
72-54-8	4,4'-DDD	0.40	U
72-55-9	4,4'-DDE	0.20	U
50-29-3	4,4'-DDT	0.60	U
60-57-1	Dieldrin	0.20	U
959-98-8	Endosulfan I	0.20	U
33213-65-9	Endosulfan II	0.40	U
1031-07-8	Endosulfan sulfate	0.40	U
72-20-8	Endrin	0.40	U
7421-93-4	Endrin Aldehyde	0.40	U
76-44-8	Heptachlor	0.10	U
1024-57-3	Heptachlor Epoxide	0.10	U
72-43-5	Methoxychlor	1.0	U
8001-35-2	Toxaphene	10	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
53494-70-5	Endrin Ketone	1.0	U
5103-74-2	gamma-Chlordane	0.10	U
5103-71-9	alpha-Chlordane	0.20	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB2

Lab Name: COMPUCHEM Contract: 8081A/8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/18/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/18/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
309-00-2	Aldrin	0.10	U
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC (Lindane)	0.10	U
72-54-8	4,4'-DDD	0.40	U
72-55-9	4,4'-DDE	0.20	U
50-29-3	4,4'-DDT	0.60	U
60-57-1	Dieldrin	0.20	U
959-98-8	Endosulfan I	0.20	U
33213-65-9	Endosulfan II	0.40	U
1031-07-8	Endosulfan sulfate	0.40	U
72-20-8	Endrin	0.40	U
7421-93-4	Endrin Aldehyde	0.40	U
76-44-8	Heptachlor	0.10	U
1024-57-3	Heptachlor Epoxide	0.10	U
72-43-5	Methoxychlor	1.0	U
8001-35-2	Toxaphene	10	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
53494-70-5	Endrin Ketone	1.0	U
5103-74-2	gamma-Chlordane	0.10	U
5103-71-9	alpha-Chlordane	0.20	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB3

b Name: COMPUCHEM Contract: 8081A/8082

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/18/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/19/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
309-00-2	Aldrin	0.10	U
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC (Lindane)	0.10	U
72-54-8	4,4'-DDD	0.40	U
72-55-9	4,4'-DDE	0.20	U
50-29-3	4,4'-DDT	0.60	U
60-57-1	Dieldrin	0.20	U
959-98-8	Endosulfan I	0.20	U
33213-65-9	Endosulfan II	0.40	U
1031-07-8	Endosulfan sulfate	0.40	U
72-20-8	Endrin	0.40	U
7421-93-4	Endrin Aldehyde	0.40	U
76-44-8	Heptachlor	0.10	U
1024-57-3	Heptachlor Epoxide	0.10	U
72-43-5	Methoxychlor	1.0	U
8001-35-2	Toxaphene	10	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
53494-70-5	Endrin Ketone	1.0	U
5103-74-2	gamma-Chlordane	0.10	U
5103-71-9	alpha-Chlordane	0.20	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB1

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.2	U
83-32-9	Acenaphthene	1.2	U
86-73-7	Fluorene	1.2	U
129-00-0	Pyrene	0.50	U
85-01-8	Phenanthrene	1.2	U
120-12-7	Anthracene	1.2	U
206-44-0	Fluoranthene	0.50	U
218-01-9	Chrysene	0.25	U
205-99-2	Benzo(b)fluoranthene	0.055	J
207-08-9	Benzo(k)fluoranthene	0.25	U
53-70-3	Dibenzo(a,h)anthracene	0.25	U
191-24-2	Benzo(g,h,i)perylene	0.25	U
56-55-3	Benzo(a)anthracene	0.25	U
50-32-8	Benzo(a)pyrene	0.25	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.25	U
208-96-8	Acenaphthylene	1.2	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB2

b Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.2	U
83-32-9	Acenaphthene	0.39	J
86-73-7	Fluorene	1.2	U
129-00-0	Pyrene	0.50	U
85-01-8	Phenanthrene	1.2	U
120-12-7	Anthracene	1.2	U
206-44-0	Fluoranthene	0.50	U
218-01-9	Chrysene	0.25	U
205-99-2	Benzo(b)fluoranthene	0.25	U
207-08-9	Benzo(k)fluoranthene	0.25	U
53-70-3	Dibenzo(a,h)anthracene	0.25	U
191-24-2	Benzo(g,h,i)perylene	0.25	U
56-55-3	Benzo(a)anthracene	0.25	U
50-32-8	Benzo(a)pyrene	0.25	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.25	U
208-96-8	Acenaphthylene	1.2	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB3

Lab Name: COMPUCHEM Contract: 8310

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/18/03

Concentrated Extract Volume: 5000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.2	U
83-32-9	Acenaphthene	0.31	J
86-73-7	Fluorene	1.2	U
129-00-0	Pyrene	0.50	U
85-01-8	Phenanthrene	1.2	U
120-12-7	Anthracene	1.2	U
206-44-0	Fluoranthene	0.50	U
218-01-9	Chrysene	0.25	U
205-99-2	Benzo(b)fluoranthene	0.052	J
207-08-9	Benzo(k)fluoranthene	0.25	U
53-70-3	Dibenzo(a,h)anthracene	0.25	U
191-24-2	Benzo(g,h,i)perylene	0.25	U
56-55-3	Benzo(a)anthracene	0.25	U
50-32-8	Benzo(a)pyrene	0.25	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.25	U
208-96-8	Acenaphthylene	1.2	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB1

b Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 20000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	8.0	U
99-35-4	1,3,5-Trinitrobenzene	6.0	U
121-82-4	RDX	6.0	U
99-65-0	1,3-Dinitrobenzene	6.0	U
118-96-7	2,4,6-Trinitrotoluene	6.0	U
479-45-8	Tetryl	8.0	U
98-95-3	Nitrobenzene	6.0	U
121-14-2	2,4-Dinitrotoluene	6.0	U
606-20-2	2,6-Dinitrotoluene	8.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	8.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	8.0	U
88-72-2	2-Nitrotoluene	6.0	U
99-99-0	4-Nitrotoluene	6.0	U
99-08-1	3-Nitrotoluene	6.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB2

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 16000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	6.4	U
99-35-4	1,3,5-Trinitrobenzene	4.8	U
121-82-4	RDX	4.8	U
99-65-0	1,3-Dinitrobenzene	4.8	U
118-96-7	2,4,6-Trinitrotoluene	4.8	U
479-45-8	Tetryl	6.4	U
98-95-3	Nitrobenzene	4.8	U
121-14-2	2,4-Dinitrotoluene	4.8	U
606-20-2	2,6-Dinitrotoluene	6.4	U
35572-78-2	2-Amino-4,6-dinitrotoluene	6.4	U
1946-51-0	4-Amino-2,6-dinitrotoluene	6.4	U
88-72-2	2-Nitrotoluene	4.8	U
99-99-0	4-Nitrotoluene	4.8	U
99-08-1	3-Nitrotoluene	4.8	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB3

b Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 16000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	6.4	U
99-35-4	1,3,5-Trinitrobenzene	4.8	U
121-82-4	RDX	4.8	U
99-65-0	1,3-Dinitrobenzene	4.8	U
118-96-7	2,4,6-Trinitrotoluene	4.8	U
479-45-8	Tetryl	6.4	U
98-95-3	Nitrobenzene	4.8	U
121-14-2	2,4-Dinitrotoluene	4.8	U
606-20-2	2,6-Dinitrotoluene	6.4	U
35572-78-2	2-Amino-4,6-dinitrotoluene	6.4	U
1946-51-0	4-Amino-2,6-dinitrotoluene	6.4	U
88-72-2	2-Nitrotoluene	4.8	U
99-99-0	4-Nitrotoluene	4.8	U
99-08-1	3-Nitrotoluene	4.8	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB1

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-1

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/16/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 20000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
55-63-0	Nitroglycerin	120	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB2

b Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-3

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 16000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
55-63-0	Nitroglycerin	96	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB3

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix: (soil/water) WATER Lab Sample ID: S2946-5

Sample wt/vol: 770.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 16000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
55-63-0	Nitroglycerin	96	U

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
EB1

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix (soil/water): WATER Lab Sample ID: S2946-1

Level (low/med): LOW Date Received: 4/16/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	40.9	U		P	
7440-36-0	Antimony	2.5	U		P	
7440-38-2	Arsenic	2.2	U		P	
7440-39-3	Barium	3.3	B		P	
7440-41-7	Beryllium	0.20	U		P	
7440-43-9	Cadmium	0.20	U		P	
7440-70-2	Calcium	15.7	U		P	UL,P
7440-47-3	Chromium	0.81	B		P	L,P
7440-48-4	Cobalt	0.71	B		P	
7440-50-8	Copper	3.1	B		P	L,W
7439-89-6	Iron	24.4	B		P	B,P
7439-92-1	Lead	1.9	B		P	B,O
7439-95-4	Magnesium	16.6	B		P	↓
7439-96-5	Manganese	1.6	B		P	↓
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	1.2	U		P	UL,W
7440-09-7	Potassium	28.6	U		P	UL,W
7782-49-2	Selenium	2.6	B		P	B,O
7440-22-4	Silver	0.90	U		P	UL,W
7440-23-5	Sodium	1060	B		P	L,P
7440-28-0	Thallium	2.9	U		P	R,W
7440-62-2	Vanadium	0.80	U		P	
7440-66-6	Zinc	1.5	U		P	UL,P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
EB2

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix (soil/water): WATER Lab Sample ID: S2946-3

Level (low/med): LOW Date Received: 4/17/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	40.9	U		P	
7440-36-0	Antimony	2.5	U		P	
7440-38-2	Arsenic	2.2	U		P	
7440-39-3	Barium	0.88	B		P	B,O
7440-41-7	Beryllium	0.20	U		P	
7440-43-9	Cadmium	0.20	U		P	
7440-70-2	Calcium	15.7	U		P	UL,P
7440-47-3	Chromium	0.60	U		P	UL,P
7440-48-4	Cobalt	0.70	U		P	
7440-50-8	Copper	3.5	B		P	L,W
7439-89-6	Iron	14.2	U		P	
7439-92-1	Lead	1.4	U		P	
7439-95-4	Magnesium	8.7	U		P	
7439-96-5	Manganese	0.44	B		P	B,P
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	1.2	U		P	UL,W
7440-09-7	Potassium	28.6	U		P	UL,W
7782-49-2	Selenium	2.3	U		P	UL,W
7440-22-4	Silver	0.90	U		P	UL,W
7440-23-5	Sodium	1200	B		P	B,O
7440-28-0	Thallium	2.9	U		P	R,W
7440-62-2	Vanadium	0.80	U		P	
7440-66-6	Zinc	1.5	U		P	UL,P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
EB3

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: S2946

Matrix (soil/water): WATER Lab Sample ID: S2946-5

Level (low/med): LOW Date Received: 4/18/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	40.9	U		P	
7440-36-0	Antimony	2.5	U		P	
7440-38-2	Arsenic	2.2	U		P	
7440-39-3	Barium	0.55	B		P	B,O
7440-41-7	Beryllium	0.20	U		P	
7440-43-9	Cadmium	0.20	U		P	
7440-70-2	Calcium	15.7	U		P	UL,P
7440-47-3	Chromium	1.1	B		P	L,P
7440-48-4	Cobalt	0.70	U		P	
7440-50-8	Copper	3.2	B		P	L,W
7439-89-6	Iron	14.2	U		P	
7439-92-1	Lead	1.6	B		P	B,O
7439-95-4	Magnesium	8.7	U		P	
7439-96-5	Manganese	0.49	B		P	B,P
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	1.2	U		P	UL,W
7440-09-7	Potassium	28.6	U		P	UL,W
7782-49-2	Selenium	2.3	U		P	UL,W
7440-22-4	Silver	0.90	U		P	UL,W
7440-23-5	Sodium	1130	B		P	B,O
7440-28-0	Thallium	2.9	U		P	R,W
7440-62-2	Vanadium	0.80	U		P	
7440-66-6	Zinc	1.5	U		P	UL,P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

10

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
36SC1

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-1

Sample wt/vol: 5 (g/ml) ML Lab File ID: T2946-1A59

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/24/03

GC Column: ZB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	25	U
75-35-4	1,1-Dichloroethene	25	U
78-93-3	2-butanone	63	U
67-66-3	Chloroform	25	U
56-23-5	Carbon Tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U
79-01-6	Trichloroethene	25	U
127-18-4	Tetrachloroethene	25	U
108-90-7	Chlorobenzene	25	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SC2

ab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-2

Sample wt/vol: 5 (g/ml) ML Lab File ID: T2946-2A59

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/24/03

GC Column: ZB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	25	U
75-35-4	1,1-Dichloroethene	25	U
78-93-3	2-butanone	63	U
67-66-3	Chloroform	25	U
56-23-5	Carbon Tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U
79-01-6	Trichloroethene	25	U
127-18-4	Tetrachloroethene	25	U
108-90-7	Chlorobenzene	25	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SC3

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-3

Sample wt/vol: 5 (g/ml) ML Lab File ID: T2946-3A59

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/24/03

GC Column: ZB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	25	U
75-35-4	1,1-Dichloroethene	25	U
78-93-3	2-butanone	63	U
67-66-3	Chloroform	25	U
56-23-5	Carbon Tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U
79-01-6	Trichloroethene	25	U
127-18-4	Tetrachloroethene	25	U
108-90-7	Chlorobenzene	25	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SC4

ab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-4

Sample wt/vol: 5 (g/ml) ML Lab File ID: T2946-4A59

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: not dec. _____ Date Analyzed: 04/24/03

GC Column: ZB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	25	U
75-35-4	1,1-Dichloroethene	25	U
78-93-3	2-butanone	63	U
67-66-3	Chloroform	25	U
56-23-5	Carbon Tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U
79-01-6	Trichloroethene	25	U
127-18-4	Tetrachloroethene	25	U
108-90-7	Chlorobenzene	25	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SC1

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-6

Sample wt/vol: 5 (g/ml) ML Lab File ID: T2946-6A59

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. _____ Date Analyzed: 04/24/03

GC Column: ZB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	25	U
75-35-4	1,1-Dichloroethene	25	U
78-93-3	2-butanone	63	U
67-66-3	Chloroform	25	U
56-23-5	Carbon Tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U
79-01-6	Trichloroethene	25	U
127-18-4	Tetrachloroethene	25	U
108-90-7	Chlorobenzene	25	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SC2

Lab Name: COMPUCHEM Method: 8260B

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-5

Sample wt/vol: 5 (g/ml) ML Lab File ID: T2946-5A59

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: not dec. _____ Date Analyzed: 04/24/03

GC Column: ZB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	25	U
75-35-4	1,1-Dichloroethene	25	U
78-93-3	2-butanone	63	U
67-66-3	Chloroform	25	U
56-23-5	Carbon Tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U
79-01-6	Trichloroethene	25	U
127-18-4	Tetrachloroethene	25	U
108-90-7	Chlorobenzene	25	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SC1

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-1

Sample wt/vol: 100 (g/mL) ML Lab File ID: T2946-1RA60

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/25/03

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/30/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	50	U
106-44-5	4-Methylphenol	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SC2

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-2

Sample wt/vol: 100 (g/mL) ML Lab File ID: T2946-2RA60

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/25/03

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/30/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	50	U
106-44-5	4-Methylphenol	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SC3

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-3

Sample wt/vol: 100 (g/mL) ML Lab File ID: T2946-3A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/23/03

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/24/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	50	U
106-44-5	4-Methylphenol	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

36SC4

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-4

Sample wt/vol: 100 (g/mL) ML Lab File ID: T2946-4A64

Level: (low/med) LOW Date Received: 04/17/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/23/03

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/24/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	50	U
106-44-5	4-Methylphenol	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SC1

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-6

Sample wt/vol: 100 (g/mL) ML Lab File ID: T2946-6A64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/23/03

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/24/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	50	U
106-44-5	4-Methylphenol	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8SC2

Lab Name: COMPUCHEM Method: 8270C

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-5

Sample wt/vol: 100 (g/mL) ML Lab File ID: T2946-5A64

Level: (low/med) LOW Date Received: 04/18/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:04/23/03

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/24/03

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
110-86-1	Pyridine	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-48-7	2-Methylphenol	50	U
108-39-4	3-Methylphenol	50	U
106-44-5	4-Methylphenol	50	U
67-72-1	Hexachloroethane	50	U
98-95-3	Nitrobenzene	50	U
87-68-3	Hexachlorobutadiene	50	U
88-06-2	2,4,6-Trichlorophenol	50	U
95-95-4	2,4,5-Trichlorophenol	50	U
121-14-2	2,4-Dinitrotoluene	50	U
118-74-1	Hexachlorobenzene	50	U
87-86-5	Pentachlorophenol	100	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC1

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-1

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 2500(ul) Date Analyzed: 04/25/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	12	U
93-72-1	silvex	2.5	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC2

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-2

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 2500(ul) Date Analyzed: 04/25/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	12	U
93-72-1	silvex	2.5	U

FORM I PEST

735 0011

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC3

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-3

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 2500(ul) Date Analyzed: 04/25/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	12	U
93-72-1	silvex	2.5	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC4

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-4

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 2500(ul) Date Analyzed: 04/25/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	12	U
93-72-1	silvex	2.5	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC1

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-6

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 2500(ul) Date Analyzed: 04/25/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	12	U
93-72-1	silvex	2.5	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC2

Lab Name: COMPUCHEM Contract: 8151A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-5

Sample wt/vol: 100.0 (g/ml) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 2500(ul) Date Analyzed: 04/25/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7	2,4-D	12	U
93-72-1	silvex	2.5	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC1

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-1

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.50	U
72-20-8	Endrin	2.0	U
76-44-8	Heptachlor	0.50	U
1024-57-3	Heptachlor Epoxide	0.50	U
72-43-5	Methoxychlor	5.0	U
8001-35-2	Toxaphene	50	U
12789-03-6	Technical Chlordane	16	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC2

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-2

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.87	
72-20-8	Endrin	2.0	U
76-44-8	Heptachlor	0.50	U
1024-57-3	Heptachlor Epoxide	0.50	U
72-43-5	Methoxychlor	5.0	U
8001-35-2	Toxaphene	50	U
12789-03-6	Technical Chlordane	16	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC3

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-3

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 5000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.26	J
72-20-8	Endrin	2.0	U
76-44-8	Heptachlor	0.50	U
1024-57-3	Heptachlor Epoxide	0.50	U
72-43-5	Methoxychlor	5.0	U
8001-35-2	Toxaphene	50	U
12789-03-6	Technical Chlordane	16	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC4

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-4

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 10000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.10	U
72-20-8	Endrin	0.40	U
76-44-8	Heptachlor	0.10	U
1024-57-3	Heptachlor Epoxide	0.10	U
72-43-5	Methoxychlor	1.0	U
8001-35-2	Toxaphene	10	U
12789-03-6	Technical Chlordane	3.2	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC1

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-6

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 10000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.10	U
72-20-8	Endrin	0.40	U
76-44-8	Heptachlor	0.10	U
1024-57-3	Heptachlor Epoxide	0.10	U
72-43-5	Methoxychlor	1.0	U
8001-35-2	Toxaphene	10	U
12789-03-6	Technical Chlordane	3.2	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC2

Lab Name: COMPUCHEM Contract: 8081A

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) WATER Lab Sample ID: T2946-5

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:04/23/03

Concentrated Extract Volume: 10000(uL) Date Analyzed: 04/27/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
58-89-9	gamma-BHC (Lindane)	0.10	U
72-20-8	Endrin	0.40	U
76-44-8	Heptachlor	0.10	U
1024-57-3	Heptachlor Epoxide	0.10	U
72-43-5	Methoxychlor	1.0	U
8001-35-2	Toxaphene	10	U
12789-03-6	Technical Chlordane	3.2	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC1

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC2

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-2

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC3

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-3

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC4

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-4

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC1

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-6

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC2

Lab Name: COMPUCHEM Contract: 8330

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-5

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/19/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
2691-41-0	HMX	1.0	U
99-35-4	1,3,5-Trinitrobenzene	1.0	U
121-82-4	RDX	1.0	U
99-65-0	1,3-Dinitrobenzene	1.0	U
118-96-7	2,4,6-Trinitrotoluene	1.0	U
479-45-8	Tetryl	2.0	U
98-95-3	Nitrobenzene	1.0	U
121-14-2	2,4-Dinitrotoluene	1.0	U
606-20-2	2,6-Dinitrotoluene	1.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.0	U
88-72-2	2-Nitrotoluene	1.0	U
99-99-0	4-Nitrotoluene	1.0	U
99-08-1	3-Nitrotoluene	1.0	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC1

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC2

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-2

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC3

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-3

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

36SC4

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-4

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/17/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC1

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-6

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC2

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: T2946-5

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC1MS

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23824-6

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	9000	

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8SC1MSD

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23824-7

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: 04/18/03

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/22/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	9900	

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLKBO

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23824-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: _____

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:10/05/02

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/25/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLKBQ

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23824-1

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: _____

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10	U

FORM I PEST

1D

GC EXTRACTABLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PLCSBQ

Lab Name: COMPUCHEM Contract: 8332

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix: (soil/water) SOIL Lab Sample ID: WG23824-3

Sample wt/vol: 2.0 (g/mL) G Lab File ID: _____

% Moisture: 0 decanted: (Y/N) N Date Received: _____

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:04/18/03

Concentrated Extract Volume: 10000(ul) Date Analyzed: 04/21/03

Injection Volume: 25.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or mg/Kg) mg/KG	Q
55-63-0	Nitroglycerin	10000	

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SC1

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix (soil/water): WATER Lab Sample ID: T2946-1

Level (low/med): LOW Date Received: 4/17/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	2.2	U		P	UL,P
7440-39-3	Barium	338	B		P	
7440-43-9	Cadmium	0.24	B		P	L,P
7440-47-3	Chromium	2.8	B		P	L,W
7439-92-1	Lead	2.1	B		P	
7439-97-6	Mercury	0.10	U		CV	
7782-49-2	Selenium	7.0	B		P	K,W
7440-22-4	Silver	0.90	U		P	UL,W

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SC2

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix (soil/water): WATER Lab Sample ID: T2946-2

Level (low/med): LOW Date Received: 4/17/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	4.4	B		P	L,P
7440-39-3	Barium	248	B		P	
7440-43-9	Cadmium	4.6	B		P	K,W
7440-47-3	Chromium	375	B		P	L,W
7439-92-1	Lead	50.7	B		P	
7439-97-6	Mercury	0.10	U		CV	
7782-49-2	Selenium	8.3	B		P	K,W
7440-22-4	Silver	0.90	U		P	UL,W

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.: 36SC3

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix (soil/water): WATER Lab Sample ID: T2946-3

Level (low/med): LOW Date Received: 4/17/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.0	B		P	L,P
7440-39-3	Barium	201	B		P	
7440-43-9	Cadmium	2.5	B		P	K,W
7440-47-3	Chromium	367	B		P	L,W
7439-92-1	Lead	30.1	B		P	
7439-97-6	Mercury	0.10	U		CV	
7782-49-2	Selenium	10.6	B		P	K,W
7440-22-4	Silver	0.90	U		P	UL,W

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
36SC4

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix (soil/water): WATER Lab Sample ID: T2946-4

Level (low/med): LOW Date Received: 4/17/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	2.5	B		P	L,P
7440-39-3	Barium	286	B		P	
7440-43-9	Cadmium	2.9	B		P	K,W
7440-47-3	Chromium	295	B		P	L,W
7439-92-1	Lead	8.9	B		P	
7439-97-6	Mercury	0.10	U		CV	
7782-49-2	Selenium	10.9	B		P	K,W
7440-22-4	Silver	0.90	U		P	UL,W

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SC1

ab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix (soil/water): WATER Lab Sample ID: T2946-6

Level (low/med): LOW Date Received: 4/18/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	2.2	U		P	UL,P
7440-39-3	Barium	346	B		P	
7440-43-9	Cadmium	0.37	B		P	B,P
7440-47-3	Chromium	5.5	B		P	L,W
7439-92-1	Lead	2.6	B		P	
7439-97-6	Mercury	0.10	U		CV	
7782-49-2	Selenium	6.6	B		P	K,W
7440-22-4	Silver	0.90	U		P	UL,W

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SW846 METALS
-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
8SC2

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: T2946

Matrix (soil/water): WATER Lab Sample ID: T2946-5

Level (low/med): LOW Date Received: 4/18/03

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	6.9	B		P	L1P
7440-39-3	Barium	453	B		P	
7440-43-9	Cadmium	1.9	B		P	B1O
7440-47-3	Chromium	988	B		P	L1W
7439-92-1	Lead	15.5	B		P	
7439-97-6	Mercury	0.10	U		CV	
7782-49-2	Selenium	12.2	B		P	K1W
7440-22-4	Silver	0.90	U		P	VL1W

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

APPENDIX F
QUALITY CONTROL EVALUATION AND DATA VALIDATION REPORTS

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F.0 QUALITY CONTROL EVALUATION

URS' Quality Assurance Group in Linthicum, Maryland, conducted data validation on 100% of the data consistent with Section 2.7 of MWP Addendum No. 015 and Master Quality Assurance Plan (MQAP) Section 9.5. Copies of the data validation reports are included in Appendix F; these reports include detailed discussions of the major and minor anomalies for each validated sample delivery group. Data qualifiers have been applied to the laboratory data sheets (Form I and II) for organic and inorganic results based on the results of the data validation. Copies of the laboratory data sheets are presented in Appendix D.

F.1.1 Project Quality Objectives

Project quality objectives for chemical data measurements as outlined in Section 3.2 of the MQAP include accuracy, precision, representativeness, completeness, comparability, and sensitivity. The following sections discuss these objectives as related to the data collected for the SWMUs 8 and 36 Soil Screening.

F.1.1.1 Accuracy/Bias

The accuracy of chemical data was evaluated during data validation by calculating the percent recovery for matrix, laboratory control, surrogate spikes, and blanks. Specific anomalies and application of associated data qualifying flags are discussed in the data validation reports included in Appendix F. Based on the results of the data validation, project data quality objectives related to accuracy were met for this investigation.

Major anomalies were identified for thallium in approximately 40% of the discrete samples; however, the remaining 60% of the samples were considered representative of site soil and sufficient to characterize site conditions given that detected thallium levels were below the Industrial RBC and within the range of RFAAP background.

Major anomalies were identified for 1 of 66 targeted SVOC compounds (benzaldehyde). Given that 99.5% of the SVOC results did not have identified major anomalies related to accuracy, the project data quality objectives for SVOCs were considered met for this investigation.

F.1.2 Precision

Sampling precision was evaluated by obtaining one duplicate sample for every 10 soil samples collected and by assessing the relative percent difference (RPD) between results as outlined in Section 3.2.2 of the MQAP. A 35% RPD control limit has been established in the MQAP for soil samples. Major anomalies related to precision were not identified during data validation. Based on the results of the data validation, project data quality objectives related to precision were met for this investigation. Specific minor anomalies and application of associated data qualifying flags are discussed in the data validation reports included in Appendix F.

F.1.2.1 Representativeness

Representativeness is a measure of the degree to which the measured results accurately reflect the medium being sampled. It is a qualitative parameter, which is addressed through the proper design of the sampling program in terms of sample location, number of samples, and actual material collected as a "sample" of the population.

The sampling plan was approved by USEPA and VDEQ as an appropriate program to collect representative data for soil and sludge at SWMUs 8 and 36. Sampling protocols were developed in MWP Addendum No. 15 to ensure that samples collected were representative of the media. Field handling protocols (e.g., storage, handling in the field, and shipping) were also designed to protect the representativeness of the collected samples. Proper field documentation and QC

inspections consistent with the procedures outlined in the MWP, MQAP, and MWP Addendum No. 15 were followed to ensure that sample identification and integrity were maintained.

F.1.2.2 Completeness

Completeness is a measure of the amount of information that must be collected during field investigation to allow for successful achievement of investigation objectives. The completeness goal, percentage of valid data, is set at 90±2% for field activities at RFAAP and is quantitatively evaluated using Equation 3 in Section 3.2.4 of the MQAP.

The number of successful analyses (useful or valid data) consists of those results not flagged "R." Completion goals for the investigation were exceeded with 99.4% successful analyses (7,173 samples), with 99.4% completion for discrete samples, 99.5% completion for field QC samples, and 100% completion for composite soil samples.

F.1.2.3 Comparability

Comparability is the confidence with which one data set can be compared to another. Comparability was controlled by using SOPs (included in the MWP and MWP Addendum No. 015) developed to standardize field activities. Field equipment was calibrated consistently and properly in the field, as described in the MQAP, to assist in the comparability of measurements. Field documentation and QA audits were used to establish that protocols for sampling and measurements followed appropriate SOPs.

F.1.2.4 Sensitivity

Method sensitivity to risk screening benchmarks (RBCs and BTAG soil screening levels) is a primary data quality objective for this investigation. Laboratory-specific method detection limits (MDLs) and reporting limits (RLs) were presented in MWP Addendum No. 015 in Tables 2-5 through 2-11 with the goal of meeting these benchmarks.

Based on the review of the results, MDLs/RLs, and screening benchmarks, project data objectives for method sensitivity were met. The data validation and usability review identified two minor anomalies with method sensitivity resulting from required sample dilutions in 2 of 35 samples (8SB2B and 8SB7B). For the human health screening, diluted non-detect results for n-nitro-di-n-propylamine and Arochlor-1254 were reported in samples 8SB2B and 8SB7B at levels between the Residential and Industrial RBCs. For the ecological risk screening, diluted non-detect results above the BTAG screening levels were reported in samples 8SB2B and 8SB7B for selected phenol compounds, naphthalene, and fluorene.

F.1.2.5 Sampling and Analysis Artifacts

Major anomalies related to sampling and analysis artifacts were not identified during data validation, which would affect the usability of data for the risk screening or hazardous waste characteristic evaluation. Specific minor anomalies and application of associated data qualifying flags are discussed in the data validation reports included in Appendix F.

F.1.3 Summary

The results of the data validation indicated that project DQOs (as outlined in MWP Addendum No. 015) were achieved for the Soil Screening at SWMUs 8 and 36. Based on the data validation results, the soil data collected for this investigation were suitable for the intended purpose of qualitative risk screening and evaluation of soil with respect to RCRA hazardous waste characteristics.

Table F.1
Summary of Analytes Detected in Field Quality Control Samples
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammuniton Plant, Radford, Virginia

Sample ID / Sample Date	EB1 4/15/2003		EB2 4/16/2003		EB3 4/17/2003		TRIP BLANK 0415 4/15/2003		TRIP BLANK 0416 4/16/2003		TRIP BLANK 0417 4/17/2003	
	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (µg/L)												
BARIUM	3.3	B	0.88	B,B,o	0.55	B,B,o	--		--		--	
CHROMIUM	0.81	B,L,p	<0.6	U,UL,p	1.1	B,L,p	--		--		--	
COBALT	0.71	B	<0.7	U	<0.7	U	--		--		--	
COPPER	3.1	B,L,w	3.5	B,L,w	3.2	B,L,w	--		--		--	
IRON	24.4	B,B,p	<14.2	U	<14.2	U	--		--		--	
LEAD	1.9	B,B,o	<1.4	U	1.6	B,B,o	--		--		--	
MAGNESIUM	16.6	B,B,o	<8.7	U	<8.7	U	--		--		--	
MANGANESE	1.6	B,B,o	0.44	B,B,p	0.49	B,B,p	--		--		--	
SELENIUM	2.6	B,B,o	<2.3	U,UL,w	<2.3	U,UL,w	--		--		--	
SODIUM	1060	B,L,p	1200	B,B,o	1130	B,B,o	--		--		--	
TCL Method 8260 VOCs (µg/L)												
1,1,2-TRICHLORO-1,2,2-TRIFLUO	0.3	JB,B,z	<0.25	U	<0.25	U	<0.25	U	0.3	JB,B,z	<0.25	U
1,1-DICHLOROETHENE	0.5	JB,B,z	0.5	JB,B,z	<0.28	U	<0.28	U	0.7	JB,B,z	0.4	JB,B,z
1,2,4-TRICHLOROBENZENE	0.3	JB,B,z	0.2	JB,B,z	<0.21	U	<0.21	U	0.2	JB,B,z	<0.21	U
1,4-DICHLOROBENZENE	0.2	JB,B,z	0.2	JB,B,z	<0.15	U	<0.15	U	0.2	JB,B,z	0.2	JB,B,z
2-BUTANONE	<1.6	U	2	JB,B,z	2	J	2	J	2	JB,B,z	2	JB,B,z
ACETONE	6	JB,B,z	6	JB,B,z	11	JB,B,z	4	JB,B,z	7	JB,B,z	6	JB,B,z
BENZENE	0.2	JB,B,z	0.2	JB,B,z	<0.14	U	<0.14	U	0.2	JB,B,z	0.2	JB,B,z
CHLOROMETHANE	<0.47	U	<0.47	U	0.5	J	0.6	J	<0.47	U	<0.47	U
DICHLORODIFLUOROMETHANE	<0.25	U	<0.25	U	0.4	J	0.3	J	<0.25	U	<0.25	U
ETHYLBENZENE	<0.12	U	<0.12	U	<0.12	U	<0.12	U	<0.12	U	0.2	JB,B,z
METHYL ACETATE	<0.56	U	<0.56	U	4	JB	<0.56	U	<0.56	U	<0.56	U
METHYLENE CHLORIDE	0.7	JB,B,z	0.5	JB,B,z	0.8	JB,B,z	0.6	JB,B,z	0.6	JB,B,z	0.7	JB,B,z
STYRENE	0.1	JB,B,z	<0.1	U	<0.1	U	<0.1	U	<0.1	U	0.1	JB,B,z
TETRACHLOROETHENE	<0.21	U	0.3	JB,B,z	<0.21	U	<0.21	U	<0.21	U	0.4	JB,B,z
TOLUENE	0.6	JB,B,z	0.6	JB,B,z	3	JB,B,z	3	JB,B,z	0.7	JB,B,z	0.8	JB,B,z
TRANS-1,2-DICHLOROETHENE	0.6	JB,B,z	0.7	JB,B,z	<0.19	U	<0.19	U	0.5	JB,B,z	0.6	JB,B,z
XYLENE (TOTAL)	<0.11	U	0.3	JB,B,z	<0.11	U	<0.11	U	0.3	JB,B,z	0.3	JB,B,z
PAHs Method 8310 (µg/L)												
ACENAPHTHENE	<0.3	U	0.39	J	0.31	J	--		--		--	
BENZO(B)FLUORANTHENE	0.055	J	<0.04	U	0.052	J	--		--		--	

Notes:

EB = Equipment Blank
µg/L = Microgram Per Liter
TCL = Target Compound List
VOC = Volatile Organic Compound
PAH = Polynuclear Aromatic Hydrocarbon

LQ = Laboratory Qualifier
VQ = Validation Qualifier
r = Reason Code (See Tables F-2 through F-4)

4 11 713

Table F.2
USEPA Region III
Data Validation Qualifiers
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Codes Relating to Identification (Confidence Concerning Presence or Absence of Compounds)

Qualifier	Description
U	Not detected. The associated number indicates the approximate sample concentration necessary to be detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
R	Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
N	Tentative Identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

Codes Relating to Quantitation (can be used for both positive results and sample quantitation limits)

B	Not detected substantially above the level reported in laboratory or field blanks.
N	Tentative Identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.
J	Analyte present. Reported value may not be accurate or precise.
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
UJ	Not detected, quantitation limit may be inaccurate or imprecise.
UL	Not detected, quantitation limit is probably higher.

Other Codes

Q	No analytical result.

Notes:

1. Source of Data Qualifier Codes: United States Environmental Protection Agency (USEPA) Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses, April 1993.
2. Source of Data Qualifier Codes: United States Environmental Protection Agency (USEPA) Region III Modifications to National Functional Guidelines for Organic Data Review Multimedia, Multi-Concentration (OLMO1.0-OLMO1.9), September 1994.

Table F.3
Laboratory Data Qualifiers
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Organic Compounds

Qualifier	Description
U	The compound was analyzed for but not detected. The reporting limit will be adjusted to reflect any dilution, and for soil, the percent moisture.
J	Estimated value. The flag is used as detailed below:
	1) When estimating a concentration for tentatively identified compounds (TICs) where a response factor of 1.0 is assumed for the TIC analyte.
	2) When the mass spectral and retention time data indicate the presence of a compound that meet the volatile and semi-volatile gas chromotography/mass spectra (GC/MS) identification criteria, and the result is less than the reporting limit but greater than zero
	3) When the retention time data indicate the presence of a compound that meets the pesticide/Arochlor or other GC or High Performance Liquid Chromotography (HPLC) identification criteria, and the result is less than the reporting limit but greater than zero.
N	Presumptive evidence of a compound.
P	Greater than 40% difference for detected concentrations between the two GC or HPLC columns.
C	GC or HPLC identification has been confirmed by GC/MS.
B	Analyte found in associated blank as well as in the sample.
E	Concentration exceeded the upper level of the calibration range of the instrument for that specific analysis.
D	Diluted sample.

Inorganic Compounds

Concentration Qualifier	Description
U	The compound was analyzed for but not detected. This reported value was obtained from a reading that was less than the instrument detection limit (IDL). The IDL will be adjusted to reflect any dilution, and for soil, the percent moisture.
B	Analyte was analyzed for and the reported value was obtained from a reading that was less than the reporting limit but greater than or equal to the IDL.
Q Qualifier on Form I	Description
E	Estimated value when the serial dilution results are not within 10%.
N	Sample spike recovery is outside of control limits.
*****	Sample and associated duplicate are not within control limits.

U13725

Table F.4
Data Validation Reason Codes
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

GC/MS Organics		GC and HPLC Organics		Inorganics and Conventionals	
Code	Interpretation	Code	Interpretation	Code	Interpretation
a	Incorrect or incomplete analytical sequence	a	Incorrect or incomplete analytical sequence	a	Incorrect or incomplete analytical sequence
c	Calibration failure; poor (RRF) or unstable (%D) response	b	Instrument performance failure or poor chromatography	c	Calibration failure
d	MS/MSD or LCS/LCSD RPD imprecision	c	Calibration failure; poor or unstable (%D) response	d	MS/MSD or LCS/LCSD RPD imprecision
e	Sample preservation or cooler temperature failure	d	MS/MSD or LCS/LCSD RPD imprecision	e	Sample preservation or cooler temperature failure
f	Field duplicate imprecision	e	Sample preservation or cooler temperature failure	f	Field duplicate imprecision
h	Holding time violation	f	Field duplicate imprecision	h	Holding time violation
I	Tuning Failure or poor mass spectrometer performance	g	Dual column confirmation imprecision	k	Laboratory duplicate imprecision
j	LCS recovery failure	h	Holding time violation	l	LCS recovery failure
l	MS/MSD recovery failure	I	LCS recovery failure	m	MS/MSD recovery failure
m	Internal standard failure	l	MS/MSD recovery failure	n	ICP interference check sample failure
p	Air bubble (> 6 mm or ¼ inch) in VOC vials	m	Air bubble (> 6 mm or ¼ inch) in VOC vials	o	Calibration blank contamination
q	Concentration exceeded the linear range	p	Concentration exceeded the linear range	p	Preparation blank contamination
r	linearity (%RSD or r) failure in initial calibration	q	linearity (%RSD or r) failure in initial calibration	q	Concentration exceeded the linear range
s	Surrogate failure	r	Surrogate failure	r	Linearity failure in calibration or MSA
t	Tentatively identified Compound	s	No confirmation column	s	Serial dilution failure
w	Identification criteria failure	u	Identification criteria failure	v	Post-digestion spike failure
x	Field and/or equipment blank contamination	w	Field and/or equipment blank contamination	x	CRDL standard recovery failure
y	Trip blank contamination	x	Trip blank contamination	z	Field and/or equipment blank contamination
z	Method blank and/or storage blank contamination	z	Method blank and/or storage blank contamination	w	Laboratory storage blank contamination

Notes:

The reason code indicates the type of quality control anomaly that led to the application of the data validation flag.

DATA VALIDATION REPORT - Level III Review

SDG No.: _____Q2946_____ **Fraction:**_VOCs, SVOCs, Pest., PCBs, PAH,___ __Explosives, Nitroglycerin, Metals___

Lab: _CompuChem_____ **Project Name:** __Radford SWMU 8/36_____

Reviewer: _____RA_____ **Date:** _____May 15, 2003_____

This report presents the findings of a review of the referenced data. The report consists of this summary, copies of data reports with data qualifying flags applied (as required), the completed data validation checklist, supporting documentation, and an explanation of the data qualifying flags employed. The review performed is based on the USEPA Region III Modifications to the National Functional Guidelines for Organic and Inorganic Data Review as pertains to the specifics of the analytical methods employed and provisions of the approved project-specific QAPP.

Major Anomalies: For the SVOC analyses, the laboratory control sample (LCS) recovery for benzaldehyde (0%) was less than the lower QC limit. All associated sample results were non-detect and were flagged "R,l."

Minor Anomalies: For the VOC analyses, the continuing calibration verification (CCV) analyzed on 4/17/03 displayed %Ds greater than the QC limit (i.e., 20%) with a positive bias for chloromethane (21.49%) and bromomethane (21.09%). The CCV analyzed on 4/22/03 displayed a %D greater than the QC limit with a positive bias for methyl-tert-butyl-ether (21.69%). Positive results were flagged "J,c" in the associated samples unless previously qualified as blank contamination.

The method blanks displayed positive detections for bromomethane, acetone, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, methylene chloride, and toluene. Positive results less than ten times the blank concentration for acetone and methylene chloride and less than five times the blank concentration for the other compounds were flagged "B,z" in the associated samples.

The equipment blanks located in SDG S2946 displayed positive detections for dichlorodifluoromethane, chloromethane, and methyl acetate. No positive results were reported in the associated samples and no data qualifying action was required.

The matrix spike (MS) recovery for 1,2,4-trichlorobenzene (48%) analyzed on sample 36SB8C was less than the lower QC limit. This result was previously flagged due to method blank contamination and no further data qualifying action was required. The RPDs for dichlorodifluoromethane (52%), chloromethane (45%), bromomethane (46%), trichlorofluoromethane (67%), carbon disulfide

(54%) and 1,1,2-trichloro-1,2,2-triflouromethane (51%) were greater than the upper QC limit. Positive results were flagged "J,d" in the parent sample, 36SB8C.

For the SVOC analyses, the CCV analyzed on 4/18/03 at 1137 displayed %Ds greater than the control limit (i.e., 20%) with a negative bias for 2,2-oxybis(1-chloropropane) (21.77%) and atrazine (25.81%). The CCV analyzed on 4/21/03 at 0810 displayed a %D greater than the control limit with a negative bias for 3,3-dichlorobenzidine (32.51%). All associated sample results were non-detect and were flagged "UJ,c."

The MS/MSD recoveries for bis(2-chloroethoxy)methane (41%/41%) analyzed on sample 36SB8C were less than the lower QC limit. This result was flagged "UJ,m" in sample 36SB8C. The RPD for benzaldehyde (59%) was greater than the upper QC limit. This result was previously flagged due to LCS anomalies and no further data qualifying action was required.

For the pesticide analyses, the %Ds between the two analytical columns were greater than the QC limit (i.e., 40%) for beta-BHC in samples 36SB7A (60.9%) and 36SB9A (88%). These results were flagged "J,g." The higher results were reported by the laboratory.

For the PAH analyses, the method blank analyzed on 4/21/03 contained benzo(b)fluoranthene at 2 ug/Kg. Positive results less than 5 times the blank concentration were flagged "B,z" in the associated samples. Equipment blank EB1 located in SDG S2946 contained benzo(b)fluoranthene at 0.055 ug/L. All associated sample results were previously flagged due to method blank contamination and no further data qualifying action was required.

The MSD recoveries for naphthalene (49%), acenaphthene (45%), fluorene (42%), benzo(b)fluoranthene (38%), and benzo(a)pyrene (40%) analyzed on sample 36SB8C were less than the lower QC limit. Positive results were flagged "J,m" and non-detects were flagged "UJ,m" in the parent sample 36SB8C. The RPDs for eleven compounds were greater than the upper QC limit. Positive results were flagged "J,d" in sample 36SB8C.

The benzo(k)fluoranthene results were outside the QC limit for the field duplicate pair 36SB5C/DUP2. No data qualifying action is required based on this failure and no data flags were applied.

For the explosive analyses, the MS recovery for nitrobenzene (44%) analyzed on sample 36SB8C was less than the lower QC limit. This result was flagged "UJ,m" in sample 36SB8C. The RPDs for nitrobenzene (37%) and tetryl (36%) were greater than the QC limit. No positive results were reported and no data qualifying action was taken.

For the metal analyses, the method blanks displayed positive results for barium, magnesium, nickel, potassium and silver. Positive results less than 5 times the blank concentration were flagged "B,p" in the associated samples.

The initial and continuing calibration blanks displayed positive results for barium, magnesium and potassium. All associated sample results were previously flagged due to method blank contamination and no further data qualifying action was required.

Equipment blank, EB1, located in SDG S2946 displayed positive results for barium and sodium. Positive results less than 5 times the blank concentration were flagged "B,x" in the associated samples.

The initial CRDL percent recoveries for aluminum (124.7%), antimony (63.3%), iron (112.3%), lead (76%), potassium (136.1%), selenium (86%), thallium (123.9%) and zinc (85.4%) were outside the QC limit. Positive results were flagged "L,w" and non-detects were flagged "UL,w" for antimony and selenium. in the associated samples. Positive results less than 2 X reporting limit were flagged "K,w" for thallium in the associated samples. Positive results for the other analytes were either greater than 2 X reporting limit or were previously flagged and no further data qualifying action was taken.

The laboratory duplicate results for lead (38%) and zinc (40.1%) were greater than the QC limit (i.e., 35%). Positive results were flagged "J,k" in the associated samples.

The MS and/or MSD recoveries were outside the QC limit for antimony (30.6%/33.1%), cadmium (71.7%), selenium (73%), copper (136.5%) and thallium (55.2%). Positive copper results were flagged "K,m" in the associated samples. Positive results were flagged "L,m" and non-detects were flagged "UL,m" for the other analytes, unless previously flagged due to other anomalies.

The %Ds for the serial dilution analyses were greater than the QC limit for thirteen analytes. Positive results were flagged "J,s", unless previously flagged due to other anomalies.

The RPDs for manganese (48%) and potassium (45%) were greater than the QC limit (i.e., 35%) in the field duplicate pair 36SB9C/DUP1. No data qualifying action is required based on this failure and no data flags were applied.

Correctable Anomalies: None.

Comments: It should be noted that the unknown TIC results were crossed out from the Form Is. Positive TIC results were flagged "NJ,t" in the associated samples. Except for data flagged "R", all data are usable as qualified for their intended purpose, based on the data reviewed.

Please note that if a given fraction is not discussed in this report, all QC for that fraction were found to be acceptable.

Signed: Ranjan

SAMPLENUM	CLIENTID	QUOTENUMREF	LOGINNUM	MATNUM	ACCTNUM	PROJECTNUM	RECEIVEDATE
Q2946-10	36SB1A	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-11	36SB1C	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-8	36SB2A	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-9	36SB2C	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-12	36SB4A	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-13	36SB4C	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-14	36SB5A	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-15	36SB5C	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-6	36SB7A	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-7	36SB7C	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-4	36SB8A	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-5	36SB8C	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-1	36SB9A	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-2	36SB9C	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-19	8SB3A	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-20	8SB3C	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-17	8SB6A	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-18	8SB6C	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-3	DUP1	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
Q2946-16	DUP2	Q2946	Q2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03

DUP1, 36SB9C
DUP2, 36SB5C } Dups

DATA VALIDATION WORKSHEET

Volatile Organic Analysis by GC/MS

Reviewer: RA
Date: 5/7/03
DV Level: II (III) IV
Review Document:
X NFG - Region III Modifications
X Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: Q2946
Test Name: 8260B
Method No.: VOC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If the temperature of the cooler was elevated (> 10 °C) or bubble size in aqueous sample was too big (tiny bubble is OK.), then flag all positive results with a "L" and all non-detects "UL".			
1.5	Do any soil samples contain more than 50% water?		✓	
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method or project QAPP? QAPP say - no HCl preservation.	✓		
2.2	Have any technical holding times, determined from date of sampling to date of analysis, been exceeded? If yes, L(+)/UL(-). For aqueous unpreserved - 7 days for aromatic compounds All others - 14 days.		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, L(+)/R(-) .		✓	

Notes: collected 4/15/03 analyzed 4/17/03, 4/22/03

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per GCMS, 20 samples, batch, matrix, and level)?	✓		
3.2	Do any method blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to 5 times (or 10 times for the common volatile lab contaminants - methylene chloride, acetone, and 2-butanone) the amount in the associated blank.	✓		
3.3	Do any field equipment blanks/trip blanks have positive results? If Yes, use same rules above.	✓		
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, noted in the DV report.	✓		

Notes: see attached B, Z

4/17/03 ← EB3 in 92946 TRIP BLANK 4/15/03

dichlorodifluoromethane .4 No pos .3

Chloromethane .5 no flag .6

methylacetate 4

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If no, use professional judgement to determine the effect on the data and note in the reviewer narrative.	✓		
4.3	Has a continuing calibration standard been analyzed for every 12 hours of sample analysis per instrument?	✓		
4.4	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 15% and %D < ± 20%		✓	
	For initial Calibration: for %RSD > ± 15%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 20% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >20%, J(+).			
4.5	Do any SPCC compounds have an RRF < CL? CL >0.10 for chloromethane, 1,1-dichloroethane, & bromoform or >0.30 for chlorobenzene & 1,1,2,2-tetrachloroethane. If yes, L(+)/R(-).		✓	

Notes: see attached

pos J.c unless prev.

5.0 GC/MS Instrument Performance Check		Yes	No	NA
5.1	Are GC/MS Tuning and Mass Calibration forms present for bromofluorobenzene (BFB)?	✓		
5.2	Are BFB enchanced bar graph spectrum and mass/charge (m/z) listing provided for each 12-hour shift?	✓		
5.3	Have all samples been analyzed within twelve hours of the BFB tune?	✓		
	If twelve hours have elapsed according to the system clock, and the laboratory had analyzed standards, blanks, field samples or QC samples after twelve (12) hours, the data for the affected standards, blanks, field samples or QC samples are rejected "R".			
5.4	Have ion abundance criteria for BFB been met for each instrument used?	✓		
	If the BFB criteria were not met prior to the analyses of the standards, blanks, field samples and QC samples, all standards, blanks, field samples and QC samples are rejected "R".			

Notes:

6.0 Surrogate Recovery							Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?						✓		
6.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?						✓		
6.3	If No in Section 6.2, are these sample(s) or method blank(s) reanalyzed?								✓
	If any system monitoring compound(s) in the volatile fraction is out of specification, there should be a reanalysis to confirm that the non-compliance is because of sample matrix effects rather than laboratory deficiencies.								
6.4	If No in Section 6.3, is any sample dilution factor greater than 10? DV report should indicate that extraction efficiency/ method accuracy cannot be verified.								✓
		1 or more <10%	1 high/low	2 or 3 high/low	2 or 3 all low	2 or 3 all high			
	Positives	L	J	J	L	K			
	Non-detects	R	UJ	UJ	UL	NONE			
	Note: The B qualifier remains over surrogate flagging.								

Notes:

7.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes: MS 45% < QC for 1,2,4-trichlorobenzene on sample 365B8C Prev. Flagged MB also several % RPD > QC pos. Dromomethane Tcd in

8.0		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

Notes:

		Yes	No	NA
9.1	Are internal standard area of every sample and blank within upper and lower QC limits for each continuing calibration? If not, J(+)/UJ(-).	✓		
	If extremely low area counts are reported, or performance exhibits a major abrupt drop-off, then a severe loss of sensitivity is indicated. Non-detect target compounds should then be qualified as unusable (R).			
9.2	Are retention times of internal standards within 30 seconds of the associated calibration standard?	✓		
	The chromatographic profile for that sample must be examined to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Positive results should not needed to be qualified as "R", if the mass spectral criteria are met.			

Notes:

10.0 Field Duplicate		Yes	No	NA
10.1	Was a field duplicate prepared and analyzed at the correct frequency (one per 20 samples, matrix, and level)?	✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
10.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	✓		

Notes: Dup1 and 365B9C

Dup2 and 365B5C

11.0 Tentatively Identified Compounds (TICs) and Detection Limit Verification		Yes	No	NA
11.1	Are any TICs detected in the field samples? If Yes, all TIC results should be flagged "NJ" (tentatively idenified, and approximate concentration).	✓		
11.2	Do detection limits meet those required by the project QAPP and were they properly adjusted to reflect all sample dilutions and dry weight factors?	✓		
11.3	Were sample concentrations above the highest standard run at a dilution? If not, for ion saturation flag "L", unsaturated results "J".			✓

Notes: Pos → NJ,t

Unknowns Crossed out

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples:_____			
12.1.2	Number of target compounds in each analysis:_____			
12.1.3	Number of results rejected and not reported:_____			
	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100%.			

Notes:

DATA VALIDATION WORKSHEET

Semivolatile Organic Analysis

Reviewer: RA
Date: 5/7/03
DV Level: II (III) IV
Review Document:
X NFG - Region III Modifications
X Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: Q2946
Test Name: SVOC
Method No.: 8270C

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If samples were not on ice or the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 20 °C), then flag all positive results with a "L" and all non-detects "UL".			
1.5	Do any soil samples contain more than 50% water?			✓
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method or project QAPP?	✓		
2.2	Have any technical holding times, determined from date of sampling to date of analysis, been exceeded? If yes, L(+)/UL(-). For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, L(+)/R(-) .		✓	

Notes: collect 4/15/03; extract 4/17/03; analyzed 4/18/03, 4/21/03

SDG 2946

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix and per level)?	✓		
3.2	Do any preparation/instrument/reagent blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to 5 times (or 10 times for the common phthalate contaminants) the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, noted in the Dv report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If no, use professional judgement to determine the effect on the data and note in the reviewer narrative.	✓		
4.3	Has a continuing calibration standard been analyzed for every 12 hours of sample analysis per instrument?	✓		
4.4	Are all calibration standard (IC and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: $r \geq 0.99$, %RSD $\leq$ 15% and %D $\leq$ 20%		✓	
	For initial Calibration: for %RSD > $\pm$ 15%, but < $\pm$ 50%, J(+) only. for %RSD > $\pm$ 50%, but < $\pm$ 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 20% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >20%, J(+).			
4.5	Do any SPCC compounds have an RRF < 0.05? (n-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-dinitrophenol, & 4-nitrophenol) If yes, J(+)/R(-).		✓	

Notes:

See attached

5.0 GC/MS Instrument Performance Check		Yes	No	NA
5.1	Are GC/MS Tuning and Mass Calibration forms present for decafluorotriphenylphosphine (DFTPP)?	✓		
5.2	Are DFTPP enchanced bar graph spectrum and mass/charge (m/z) listing provided for each 12-hour shift?	✓		
	If DFTPP was analyzed simultaneously with any calibration standard or blank, the instrument performance check (IPC) is rejected "R" as well as all associated data.			
5.3	Have all samples been analyzed within twelve hours of the DFTPP tune?	✓		
	If twelve hours have elapsed according to the system clock, and the laboratory had analyzed standards, blanks, field samples or QC samples after twelve (12) hours, the data for the affected standards, blanks, field samples or QC samples are rejected "R".			
5.4	Have ion abundance criteria for DFTPP been met for each instrument used?	✓		
	If the DFTPP criteria were not met prior to the analyses of the standards, blanks, field samples and QC samples, all standards, blanks, field samples and QC samples are rejected "R".			

Notes:

6.0 Surrogate Recovery		Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
6.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		✓
6.3	If No in Section 6.2, are these sample(s) or method blank(s) reanalyzed?			
	If any two base/neutral or acid fraction are out of specification, or if any one base/neutral or acid extractable surrogate has a recovery of less than 10%, then there should be a reanalysis to confirm that the non-compliance is because of sample matrix effects rather than laboratory deficiencies.			
6.4	If No in Section 6.3, is any sample dilution factor greater than 10? (recoveries may be diluted out.)			✓

	1 or more <10%	2 or 3 high/low	2 or 3 all low	2 or 3 all high
Positives	L	J	L	K
Non-detects	R	UJ	UL	NONE

Note: The B qualifier remains over surrogate flagging.

Notes:

127
787

'.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes: bis(2-chloroethoxy)methane 41/41 MS/MSD <QC
UJ,m in 365B8C
benzaldehyde RPD 59?QC prev flagged

3.0 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?	✓		
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

Notes: benzaldehyde 0%. all ND→R,Q

9.0 Internal Standard		Yes	No	NA
9.1	Are internal standard area of every sample and blank within upper and lower QC limits for each continuing calibration? If not, J(+)/UJ(-).	✓		
	If extremely low area counts are reported, or performance exhibits a major abrupt drop-off, then a severe loss of sensitivity is indicated. Non-detect target compounds should then be qualified as unusable (R).			
9.2	Are retention times of internal standards within 30 seconds of the associated calibration standard?	✓		
	The chromatographic profile for that sample must be examined to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Positive results should not needed to be qualified as "R", if the mass spectral criteria are met.			

Notes:

0.0 Field Duplicate		Yes	No	NA
10.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix)?	✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
10.2	Are all analyte duplicate results within control limits? Generally, no action is taken on the basis of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	✓		

Notes: 365B5C and DUP2
bis(2ehPh) 71 440 U OK.
365B9C and DUP1
Caprolactam 100 390 U OK.

1.0 Tentatively Identified Compounds (TICs) and Detection Limit Verification		Yes	No	NA
11.1	Are any TICs detected in the field samples? If Yes, all TIC results should be flagged "NJ" (tentatively idenified, and approximate concentration).	✓		
11.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture?	✓		
11.3	Were sample concentrations above the highest standard run at a dilution? If not, for ion saturation flag "L", unsaturated results "J".			✓

Notes: ~~DUP1 365B9C~~

[redacted] 365B5C

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples: 20			
12.1.2	Number of target compounds in each analysis: 65			
12.1.3	Number of results rejected and not reported: 20			
	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 98%.			

Notes:

DATA VALIDATION WORKSHEET

Pesticides/PCBs

Reviewer: RA
Date: 5/7/03
DV Level: II III IV
Review Document:
X SW-846 - 8081/8082
X NFG - Region III Modifications
___ CLP

Project Name: Radford SWMU 8 & 36
Project Number: 15291524.00000
Laboratory: Compuchem
SDG No.: Q2946
Test Name: PEST / PCB
Method No.: 8081A / 8082

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If samples were not on ice or the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 20 ^{o}C), then flag all positive results with a "J" and all non-detects "UJ".			
1.5	Do any soil samples contain more than 50% water?			✓
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method?	✓		
2.2	Have any technical holding times, determined from date of sampleing to date of analysis, been exceeded? If yes, J(+)/UJ(-). For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, J(+)/R(-) .		✓	

Notes:

collected	extract	analyzed	
4/15/03	4/17/03	4/18/03	PCB
4	4	4	Pest

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix)?	✓		
3.2	Do any preparation/instrument/reagent blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to five times the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note it in the DV report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards included in the calibration curve? 1016 and 1260 need at least three peaks at five concentrations. The multi-component target compounds (the other Aroclors, Toxaphene, & Chlordane) must each be analyzed separately at a single concentration level during the initial calibration sequence.	✓		
4.2	Has a continuing calibration standard been analyzed for every 12 hours or twenty samples?	✓		
4.3	Are all calibration standard (IC and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r>0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			
4.4	Do all standard retention times in the continuing calibration fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.	✓		

Notes:

5.0 GC/ECD Instrument Performance Check		Yes	No	NA
5.1	Has a Resolution Check Mixture been analyzed at the beginning of every initial calibration sequence, on each GC column and intrument used for analysis?			
5.2	Is the resulution between all adjacent peaks in the Resolution Check Mixture greater than or equal to 60% for both column?			
	Detected target compounds that were not adequately resolved should be qualified with "J". Qualitative identifications may also be questionable if coelution exists. Non-detects with retention times in the region of coelution may not be valid, depending on the extent of the problem. Professional judgement should be used to			
5.3	Has a Performance Evaluation Mixture (PEM) been analyzed at the beginning (following the RCM) and the end of every initial calibration sequence, on each GC column and intrument used for analysis? The PEM must also analyzed at the beginning of every other 12-hour analytical period.			
5.4	Is the resulution between all adjacent peaks in the PEM equal to 100% in each calibration (initial and continuing) for both column?			
5.4	Do all standard retention times of each of the single component pesticides and surrogate in all PEM fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.			
5.5	Are all PEM %Ds less than or equal to 25%? If No, J(+)/UJ(-).			
5.6	Is the 4,4'-DDT breakdown </= to 20%? If No, for positive DDT results, DDT-L(+), DDD/DDE - NJ(+). For non-detect DDT results, DDD/DDE - R(+).			
5.7	Is the endrin breakdown </= to 20%? If No, for positive endrin results, endrin-L(+), endrin aldehyde/ketone - NJ(+). For non-detect DDT results, endrin aldehyde/ketone - R(+).			
5.8	Is the combined breakdowns less than or equal to 30%? If No, for positive DDT/endrin results, DDT/endrin-L(+), DDD/DD/endrin aldehyde/endrin ketone - NJ(+). For non-detect DDT/endrin results, DDD/DDE/endrin aldehyde/endrin ketone - R(+).			

Notes:

6.0 Surrogate Recovery

		Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
6.2	Do all surrogate retention times fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.	✓		
6.3	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
6.4	If No in Section 6.3, are these sample(s) or method blank(s) reanalyzed?			✓
6.5	If No in Section 6.4, is any sample dilution factor greater than 10? (recoveries may be diluted out.)			✓

# of outliers	Recovery	Sample result from column with non-conformance	Sample result from column without non-conformance
1 out	high/low	No action	No action
2 out	2 high same column	K	No action
	2 low same column	L, UL	No action
	mixed same column	J, UJ	No action
	2 high diff columns	J	Not applicable
	2 low diff columns	J, UJ	Not applicable
	mixed diff columns	Professional judgement	Not applicable
3 out	All high	K	Not applicable
	All low	L, UL	Not applicable
	2 high, 1 low	K (2 high)	J (1 low 2nd column)
	2 low, 1 high	L, UJ (2 low)	J (1 high 2nd column)
	other mixed	J, UJ	Not applicable
4 out	All high	K	Not applicable
	All low	L, UL	Not applicable
	Mixed	J, UJ	Not applicable

If any recovery is >0% and <10% then L(+)/R(-).

If any recovery is 0% then R(+/-).

Notes:

7.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

8.0 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

Notes:

9.0 Field Duplicate		Yes	No	NA
9.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
9.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

Notes:

10.0 Compound Identification and Detection Limit Verification		Yes	No	NA
10.1	Is the percent difference calculated for the positive sample results on both columns < 40%? If No, J(+).		✓	
10.2	Do detection limits meet those required by the project QAPP and were properly adjusted for dilution factors and moisture?	✓		

Notes: Beta-BHC in 365B7A 60.9%.
365B94 85%. J,9
higher results were reported.

11.0 Cleanup Checks		Yes	No	NA
11.1	Is Form IX PEST-1 present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest/PCB extracts to reduce matrix interference caused by polar compounds.)			
	Every lot number of Florisil cartridges used for sample cleanup must be checked by spiking with 2,4,5-trichlorophenol and the midpoint concentration of Individual Standard Mixture A.			
11.2	Are all samples listed on the Pesticide Florisil cartridge Check Form?			
11.3	Are percent recoveries of pesticide and surrogate compounds within control limit, 80-120%(if the recovery of 2,4,5-trichlorophenol < 5%), for the florisil cartridge check? If No, the raw data should be examined for the presence of polar interferences and professional judgement should be used in qualifying the data.			

Notes:

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples:_____			
12.1.2	Number of target compounds in each analysis:_____			
12.1.3	Number of results rejected and not reported:_____			
12.1.4	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100 %.			

Notes:

DATA VALIDATION WORKSHEET

Polyaromatic Hydrocarbons

Reviewer: RA
Date: 5/7/03
DV Level: II (III) IV
Review Document:
_X__ Region III Modified for National Functional Guidelines
____ NFG for organic Data review (February 1994)
____ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: Q2446
Test Name: PAH
Method No.: 8310-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	■		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	■		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		■	
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓	■	
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?	■		

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?	■		
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".	■		✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		■	
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.		■	

Notes:

collect	extract	analyzed		
4/15/03	4/16/03	4/22/03	4/24/03	4/18/03
	4/24/03	4/25/03		

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)			
3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".	✓		
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.			
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.			

Notes: MB analyzed 4/21/03. benzo(b) fluoranthene 2 UG/KG <5x → B, J.
EB1 in SDG46 ↓ at .055 UG/L prev. flagged

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.			
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.			
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%			
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.			

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?			
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?			
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

tm
8/04

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	■		
6.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	■		
6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓	■	
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓	■	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes: See attached
JJ/JM JJd in parent 365B8C

7.0 Laboratory Control Sample (LCS)

		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	■		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	■		
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		■	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			?
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?		■	✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate

		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?	■		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	■	✓	

Notes:

365BAC, DUP 1			365B5C	DUP2	
Pyrene	8.6	20U ok	acenaphthene	21	56U ok
benzo(k)Flu	37	9.8U ok	pyrene	23U	6.3 ok
			benzo(k)Fluoranthene	11U	(190) comment
			benzo(a) pyrene	11U	32

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second columns.	U		
9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?			

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)			
10.1.1	Number of samples:			
10.1.3	Number of results rejected and not reported:			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100 %.			
	% Completeness =			

Notes:

DATA VALIDATION WORKSHEET

Explosives

Reviewer: RA
Date: 5/7/03
DV Level: II (III) IV
Review Document:
_X__ Region III Modified for National Functional Guidelines
____ NFG for organic Data review (February 1994)
____ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: G2946
Test Name: Explosives
Method No.: 8330-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?	✓		

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?	✓		
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".			✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.		✓	

Notes: collected 4/15/03; extracted 4/17/03; analyzed 4/19/03, 4/21/03, 4/22/03, 4/18/03

3.0 B s (Laboratory and Field)		Yes		NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)	✓		

3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.	✓		
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.	✓		

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
6.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		

6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes: nitrobenzene MS 44% < QC RPD 37% > QC
tetryl RPD 36% QC → UJ,M in Parent 365B8C
↓ND
no flag

7.0 Laboratory Control Sample (LCS)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	✓		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?	✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	✓		

Notes: DUP1 365B9C

DUP2 365B5C

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second (ns.		✓	

9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?	✓		

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)	✓		
10.1.1	Number of samples:_____			
10.1.3	Number of results rejected and not reported:_____			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100 %			
	% Completeness = _____			

Notes:

DATA VALIDATION WORKSHEET

Nitroglycerin

Reviewer: RA
Date: 6/7/03
DV Level: II (III) IV
Review Document:
_X__ Region III Modified for National Functional Guidelines
____ NFG for organic Data review (February 1994)
____ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: Q2946
Test Name: Nitroglycerin
Method No.: 8332-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?	✓		

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?	✓		
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".			✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.		✓	

Notes:

collect	extract	analyzed	
4/15/03	4/17/03	4/19/03	4/18/03
		4/21/03	4/22/03

3.0 Bl (Laboratory and Field)		Yes		NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)	✓		

3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.	✓		
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.	✓		

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
6.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		

6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

7.0 Laboratory Control Sample (LCS)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	✓		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?	✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	✓		

Notes:

all ND

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second c ns.		✓	

9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?	✓		

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)	✓		
10.1.1	Number of samples:_____			
10.1.3	Number of results rejected and not reported:_____			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100%			
	% Completeness = _____			

Notes:

Eng 8/9/04

DATA VALIDATION WORKSHEET
INORGANIC - ICP, CVAA, AND CYANIDE
REGION III - NATIONAL FUNCTIONAL GUIDELINES

SDG No.: Q2946
Project No.: 15291524.00000

Project Name: Radford SWMU 8 & 36
Reviewer: RA
Date: 5/7/03

1.0 Chain of Custody/Sample Condition/Raw Data

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples which were analyzed?	✓			✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓			✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓			✓	
1.4	Does sample preservation, collection and storage meet method requirement? (For metal: water samples: with Nitric Acid to pH < 2, and soil/sediment samples: 4 $^{o}C \pm 2\ ^{o}C$)	✓			✓		
1.5	Are the digestion logs present and complete with pH values, sample weights, dilutions, final volumes. % solids (for soil samples), and preparation dates? For any missing or incomplete documentation, contact the laboratory for explanation/resubmittal.	✓			✓		

Note:

2.0 Holding Time

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
2.1	Have any technical holding times, determined from date of collection to date of analysis, been exceeded? (Hg: 28days, other metals: 6 months) Action: L(+)/UL(-). If the holding time is grossly exceeded (twice the holding time criteria), L(+)/R(-).		✓			✓	

Note:

collected	analyzed	
4/15/03	4/17/03	ICP
"	4/22/03	ICP
"	4/18/03	Hg

AQuA DV Service

3.0 Instrument Calibration

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
3.1	Are sufficient standards included in the calibration curve with a low point at RL? (ICP: blank + one standard; CVAA: blank + five standards). If not, qualify with "R".				✓		
3.2	Are the correlation coefficients > 0.995? (for CVAA) Action: J(+)/UJ(-).				✓		
3.3	Was an initial calibration check standard (ICV) analyzed immediately after instrument system had been calibrated? Action: If no, all associated data are rejected "R".	✓			✓		
3.4	Was continuing calibration standard (CCS) analyzed at a minimum frequency of 10% (every 10 samples) during an analytical run and at the end of the analytical run? If not, document and flag based on professional judgement.	✓			✓		
3.5	Are all calibration standard percent recoveries (ICV and CCV) within the control limits? FOR Hg ICV 90%-110% and CCV 80-120%; FOR ICP ICV &CCV 90%-110%.	✓			✓		
	ICV and CCV: Action: L(+)/R(-) L(+)/UL(-) K(+) Mercury ICV < 65% 65% - 90% > 110% Mercury CCV < 65% 65% - 79% > 120% Other Metals < 75% 75% - 89% > 110%						
3.6	For ICP, did the CRDL standard recover between 90-110%?		✓				
	<50% 50%-89% >110% 2xCRDL>[sample]>IDL L(+)/R(-) L(+)/UL(-) K						

Note:

aluminum 124.7 [redacted]
antimony 103.3 UL|W
iron 112.3
lead 76
Potassium 136.1
Se 86 L|W UL|W
Thallium 123.9 K|W
zinc 85.4

Ba .35
Mg 34.6
Ni .68
K 268.3
Silver .625

4.0 Blanks

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
4.1	Were method blank (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix and per level)?	✓			✓		
4.2	Were calibration blanks (ICB and CCBs) analyzed immediately after each and every ICV and CCVs? Action: If no ICB was run, all associated data are rejected. If the frequency of the CCBs does not follow requirement, all associated data are qualified "J".	✓			✓		
4.3	Are there reported MB or ICB/CCBs values > MDL?	✓				✓	
	Sample Results > MDL						
	< 5X Blank Contamination B						
4.4	Are there negative blank results with the absolute value > MDL?		✓			✓	
	Sample Results Non-detects > MDL						
	< 5X absolute Blank Contamination UL L						
4.5	Are there reported field blankor trip blank values > ± MDL?						
	Sample Results > MDL						
	< 5X Blank Contamination B						

Note: MB pos ba, Mg, Ni, Potassium, Silver <5X → B, P
ICB, CCB also pos ba, Mg, Potassium Prev. flagged.
EBI → ba 3.3 ug/L, Sodium 1060 ug/L → <5X → B, X.

5.0 ICP Interference Check Sample (ICS)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
5.1	Was ICS analyzed at beginning and end of each ICP run (or at least twice every 8 hours)?	✓					
5.2	Are the ICS AB recoveries within 80% - 120%?	✓					
5.3	Are the results for unspiked analytes (in ICS A) < ± IDL?	✓					
5.4	If not, are the associated sample Al, Ca, Fe, and Mg concentrations less than the level in the ICS?			✓			
	If not...						
	Action: Not Spiked Analytes: < -IDL L(+)/UL(-); > IDL K(+). Spiked analytes (ICS AB analytes): < 50% L(+)/R(-); 50% - 79% L(+)/UL(-); >120% K(+)						

Note:

6.0 Laboratory Control Sample (LCS)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
6.1	Was an LCS prepared and analyzed at the correct frequency (one per 20 samples, per batch, per matrix and per level)? Action: If no, J(+) any sample not associated with LCS results.	✓			✓		
6.2	Is any LCS recovery outside the control limits? (Aqueous limits: 80% - 120% - except Ag and Sb; Solid limits: as per EPA-EMSL/LV)		✓			✓	
	Action: Solid: < LCL L(+)/UL(-); > UCL K(+). Aqueous: < 50% L(+)/R(-); 50% - 79% L(+)/UL(-); > 120% K(+)						

Note: _____

7.0 Laboratory Duplicates

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
7.1	Were Laboratory duplicates prepared and analyzed at the correct frequency (one per 20 samples, per batch, per matrix and per level)? Action: If no, J(+), using professional judgement, analytes not associated with duplicate results.	✓			✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.						
7.3	Are all analyte duplicate results within control limits? If no, qualify all associated field samples J(+)/UJ( ) for the analyte with results that fall outside criteria.		✓		✓		

Note: lead 38%.
zinc 40.1%. Pos → J,K

8.0 Spike Sample Analysis -Pre-Digestion/Post-Digestion

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
8.1	Was a spiked sample prepared and analyzed at the correct frequency (one per 20 samples, batch, matrix and level)? If not, J(+) with professional judgement.	✓			✓		
8.2	For all analytes with sample concentration > 4 x spike concentration, are spike recoveries within the control limit of 75-125%?		✓			✓	
	%R > 125% / 30%< %R < 74% / < 30%						
	Positive: K / L / L						
	Non-detect: None / UL / R						
8.4	Where pre-digestion matrix spike analytes were outside the acceptable recovery limits(except Ag), was a post-digestion spike performed? Note any failures in DV report, but no data qualifying action is required.	✓					✓

Note: antimony 30.6/33.1 copper 136.5 (K/M)
cadmium 71.7 thallium 55.2
Se 73

9.0 Instrument Detection Limits (IDL) L/UL/M unless prev

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
9.1	Are all IDLs/RLs equal to or less than the reporting limits specified?	✓			✓		

Note:

10.0 ICP/AA Serial Dilutions (Not for Mercury Analysis)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
10.1	Were serial dilutions performed?	✓					
10.2	Was a five-fold dilution performed?	✓					
10.3	Did the serial dilution results agree within 10% for ICP analyte concentration > 50 X the IDL in the original sample? If no, J(+).		✓				

Note: See attached J/S
unless prev.

11.0 Field Duplicate Samples

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
11.1	Were any field duplicates submitted for metal analysis?	✓			✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.						
11.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report		✓		✓		

Note: 365B9C /DUP1
Mn 48%. prev. flagged
K 45% " "

12.0 Result Verification

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
12.1	Were all results and detection limits for solid-matrix samples reported on a dry-weight basis?	✓			✓		
12.2	Were all dilution reflected in the positive results and detection limits?	✓			✓		

Note:

13.0 Completeness Calculation

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
13.1	Is % completeness within the control limits? (Control limit 90%)	✓			✓		
13.1.1	Number of samples:						
13.1.2	Number of target compounds in each analysis:						
13.1.3	Number of results rejected and not reported:						
	% Completeness = (13.1.1 x 13.1.2 - 13.1.3) x 100/(13.1.1 x 13.1.2) % Completeness = 100 %						

Note:

DATA VALIDATION REPORT - Level III Review

SDG No.: _____R2946_____ **Fraction:**_VOCs, SVOCs, Pest., PCBs, PAH,___ __Explosives, Nitroglycerin, Metals___

Lab: _CompuChem_____ **Project Name:** __Radford SWMU 8/36_____

Reviewer: _____RA_____ **Date:** _____May 15, 2003_____

This report presents the findings of a review of the referenced data. The report consists of this summary, copies of data reports with data qualifying flags applied (as required), the completed data validation checklist, supporting documentation, and an explanation of the data qualifying flags employed. The review performed is based on the USEPA Region III Modifications to the National Functional Guidelines for Organic and Inorganic Data Review as pertains to the specifics of the analytical methods employed and provisions of the approved project-specific QAPP.

Major Anomalies: For the SVOC analyses, the laboratory control sample (LCS) recovery for benzaldehyde (4%) extracted on 4/24/03 was less than the lower QC limit. All associated sample results were non-detect and were flagged "R,l."

For the metals analyses, the matrix spike/matrix spike duplicate (MS/MSD) recoveries for thallium (-117.5%/-100.9%) were less than the lower QC limit. All associated sample results were non-detect and were flagged "R,m."

Minor Anomalies: For the VOC analyses, the internal standard areas for 1,4-dichlorobenzene-d4 were less than the lower QC limit in samples 8SB7B, DUP4 and 8SB2B. Positive results were flagged "J,i" and non-detects were flagged "UJ,i" for the associated compounds unless previously flagged for blank contamination. These samples were re-analyzed with similar results. The original sample results should be used for data interpretation.

The method blanks displayed positive detections for methylene chloride, toluene, acetone, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, trans-1,2-dichloroethene, 2-butanone, and tetrachloroethene. Positive results less than ten times the blank concentration for acetone, methylene chloride and 2-butanone, and less than five times the blank concentration for the other compounds were flagged "B,z" in the associated samples.

The equipment blank EB3 located in SDG S2946 displayed positive detections for dichlorodifluoromethane, chloromethane, 2-butanone, and methyl acetate. Positive results not previously flagged due to other anomalies were flagged "B,x."

The recovery for surrogate bromofluorobenzene (143%) was greater than the upper QC limit in sample 8SB7BRE. Positive results were flagged "J,s" and non-

detects were flagged "UJ,s." This run was not used for data interpretation purposes.

The MS recoveries for methyl-tert-butyl ether (160%), 1,1,2-trichloroethane (160%), 1,1,2,2-tetrachloroethane (220%), 1,2-dibromo-3-chloropropane (160%), methyl acetate (170%), and the MSD recovery for chloroethane (32%) were outside the QC limit. The positive methyl acetate result was flagged "J,m" and the chloroethane non-detect was flagged "UJ,m" in the parent sample, 8SB7B. The other anomalous compounds display a positive bias and the sample was non-detect, thus, no further data qualifying action was taken. The relative percent difference (RPD)s for the MS/MSD analyses were greater than the QC limit for all compounds. Positive results were flagged "J,d" in the parent sample, 8SB7B unless previously flagged due to blank contamination.

The RPD for acetone (42%) was greater than the QC limit for the field duplicate pair 8SB7B/DUP4. No data qualifying action is required based on field duplicate anomalies and no data flags were applied.

For the SVOC analyses, the initial calibration analyzed on 4/8/03 displayed relative standard deviations (RSD)s greater than the control limit (i.e., 15%) for phenol at 19.6% and atrazine at 33.2%. No positive results were reported and the failures were not serious enough (i.e., > 50%) to affect the non-detects. No data qualifying action was taken.

The continuing calibration verification (CCV) analyzed on 4/21/03 at 0810 displayed a %D greater than the control limit (i.e., 20%) with a negative bias for 3,3-dichlorobenzidine at 32.51%. Non-detects were flagged "UJ,c" in the associated samples.

The MS/MSD recoveries for benzaldehyde (0%/6.3%) were less than the lower QC limit. The compound results were previously flagged due to an LCS anomaly. No further data qualifying action was required.

The MS/MSD RPD for 4-nitroaniline (49%) was greater than the QC limit. This compound was a non-detect in the parent sample 8SB7B. No data qualifying action was required.

For the pesticides analyses, the MS and/or MSD recoveries for gamma-chlordane (-2%/4%), alpha-chlordane (-13%/-6%) and endosulfan I (49%) were outside the QC limit. Positive results were flagged "J,m" for gamma-chlordane and alpha-chlordane and endosulfan I non-detect was flagged "UJ,m" in the parent sample 8SB7B.

The LCS recovery for 4,4-DDD (160%) was greater than the QC limit. No positive results were reported for this compound and no data qualifying action was required.

The gamma-chlordane and alpha-chlordane results were outside the QC limit in the field duplicate pair 8SB7B/DUP4. No data qualifying action is required based on field duplicate anomalies and no data flags were applied.

The RPDs for several compounds were greater than the QC limit (i.e., 40%) in several samples. These results were flagged "J,g." The higher results were reported by the laboratory.

For the PAH analyses, the MS recovery for acenaphthylene (26%) was less than the lower QC limit. The acenaphthylene non-detect was flagged "UJ,m" in the parent sample 8SB7B.

For the explosives analyses, the MS recovery for nitrobenzene (46%) was less than the lower QC limit. The nitrobenzene non-detect was flagged "UJ,m" in the parent sample 8SB7B.

For the metal analyses, the method blanks contained positive results for barium, magnesium, mercury, potassium, and silver. Positive results less than five times the blank concentration were flagged "B,p" in the associated samples. The method blanks also contained negative results for calcium and zinc. All associated sample results were positive and were greater than an five times the absolute value of the blank concentration. No data qualifying action was required.

The initial and continuing calibration blanks also contained negative results for calcium, zinc and manganese; and positive results for barium, beryllium, cadmium, magnesium and mercury. All associated sample results were either greater than five times the blank concentration or were previously flagged. No further data qualifying action was required.

The equipment blanks located in SDG S2946 contained positive results for barium, chromium, copper and sodium. Positive results less than five times the blank concentration were flagged "B,x" in the associated samples.

The initial CRDL percent recoveries for aluminum (112.9%), cadmium (113.6%), chromium (112.4%), lead (122.7%), nickel (79.8%), potassium (72%), selenium (130%), thallium (11.7%) and zinc (69.8%) were outside the QC limit. Positive results less than two times the reporting limit were flagged "K,w" for cadmium and selenium in the associated samples. All associated sample results were either previously flagged or were greater than two times the reporting limit for the other analytes. No further data qualifying action was required.

The laboratory duplicate results for calcium (102.4%) and magnesium (88.9%) were greater the QC limit. Positive results were flagged "J,k" in the associated samples.

The MS and/or MSD recoveries were less than the lower QC limit for antimony (31.6%)/33/7%), arsenic (68.3%/68.2%), mercury (45.4%/15.5%), selenium (41.9%/41/4%), vanadium (69%/70.8%) and zinc (50.7%). All associated sample results were positive for mercury and were flagged "L,m" unless previously flagged due to other anomalies. Positive results were flagged "L,m" and non-detects were flagged "UL,m" for the other analytes in the associated samples.

The %D for the serial dilution analysis was greater than the QC limit for potassium at 13.8%. Positive results were flagged "J,s" in the associated samples.

The RPDs for magnesium (105%) and manganese (65%) were greater than the QC limit for the field duplicate pair 36SB10C/DUP3. No data qualifying action is required based on field duplicate anomalies and no data flags were applied.

Correctable Anomalies: None.

Comments: Due to the inability to filter the normal initial volume during extractions, most of the samples were analyzed at dilutions for all organic analyses. Therefore, the reporting limits were raised.

Please note that if a given fraction is not discussed in this report, all QC for that fraction were found to be acceptable.

It should be noted that the unknown TIC results were crossed out from the Form Is. Except for data flagged "R", all data, as qualified, are usable for their intended purpose, based on the data reviewed.

Signed: R Angam

SAMPLENUM	CLIENTID	QUOTENUMREF	LOGINNUM	MATNUM	ACCTNUM	PROJECTNUM	RECEIVEDATE
R2946-7	36SB10B	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/17/03
R2946-8	36SB10C	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/17/03
R2946-9	36SB3B	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/17/03
R2946-10	36SB3C	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/17/03
R2946-5	36SB6B	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/17/03
R2946-6	36SB6C	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/17/03
R2946-3	8SB1A	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
R2946-4	8SB1C	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
R2946-14	8SB2B	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/18/03
R2946-15	8SB4C	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/18/03
R2946-1	8SB5A	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
R2946-2	8SB5C	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/16/03
R2946-12	8SB7B	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/18/03
R2946-11	DUP3	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/17/03
R2946-13	DUP4	Q2946	R2946	SO	URS	RADFORD SWMU 8 & 36	4/18/03

DUP 3 and 36SB10C

DUP4 and 8SB7B

DATA VALIDATION WORKSHEET

Volatile Organic Analysis by GC/MS

:viewer: CA
ıte: 5/12/03
V Level: II (III) IV
:view Document:
X NFG - Region III Modifications
X Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number: 1529 54 32.2000
Laboratory: Compuchem
SDG No.: R2946
Test Name: 8260B
Method No.: VOC

0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If the temperature of the cooler was elevated (> 10 °C) or bubble size in aqueous sample was too big (tiny bubble is OK.), then flag all positive results with a "L" and all non-detects "UL".			
1.5	Do any soil samples contain more than 50% water?		✓	
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

lotes:

.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method or project QAPP? QAPP say - no HCl preservation.	✓		
2.2	Have any technical holding times, determined from date of sampling to date of analysis, been exceeded? If yes, L(+)/UL(-). For aqueous unpreserved - 7 days for aromatic compounds All others - 14 days.		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, L(+)/R(-) .		✓	

Notes:

collected	analyzed
4/16/03	4/25/03 14/24/26/03
4/15/03	4/23/03
4/17/03	4/25/03 14/26/03

6SH
K8

Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per GCMS, 20 samples, batch, matrix, and level)?	✓		
3.2	Do any method blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to 5 times (or 10 times for the common volatile lab contaminants - methylene chloride, acetone, and 2-butanone) the amount in the associated blank.	✓		
3.3	Do any field equipment blanks/trip blanks have positive results? If Yes, use same rules above.			
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, noted in the DV report.			

Notes: See attached
B, Z

EB3 in SDG 46 dichlorodifluoromethane 14, chloromethane 15, 2-butanone 2, methylacetate 4
B, Z

0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If no, use professional judgement to determine the effect on the data and note in the reviewer narrative.	✓		
4.3	Has a continuing calibration standard been analyzed for every 12 hours of sample analysis per instrument?	✓		
4.4	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 15% and %D < ± 20%	✓		
	For initial Calibration: for %RSD > ± 15%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 20% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >20%, J(+).			
4.5	Do any SPCC compounds have an RRF < CL? CL >0.10 for chloromethane, 1,1-dichloroethane, & bromoform or >0.30 for chlorobenzene & 1,1,2,2-tetrachloroethane. If yes, L(+)/R(-).		✓	

Notes:

) GC/MS Instrument Performance Check		Yes	No	NA
5.1	Are GC/MS Tuning and Mass Calibration forms present for bromofluorobenzene (BFB)?	✓		
5.2	Are BFB enchanced bar graph spectrum and mass/charge (m/z) listing provided for each 12-hour shift?	✓		
5.3	Have all samples been analyzed within twelve hours of the BFB tune?	✓		
	If twelve hours have elapsed according to the system clock, and the laboratory had analyzed standards, blanks, field samples or QC samples after twelve (12) hours, the data for the affected standards, blanks, field samples or QC samples are rejected "R".	✓		
5.4	Have ion abundance criteria for BFB been met for each instrument used?	✓		
	If the BFB criteria were not met prior to the analyses of the standards, blanks, field samples and QC samples, all standards, blanks, field samples and QC samples are rejected "R".			

otes:

.0 Surrogate Recovery		Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
6.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?		✓	
6.3	If No in Section 6.2, are these sample(s) or method blank(s) reanalyzed?		✓	
	If any system monitoring compound(s) in the volatile fraction is out of specification, there should be a reanalysis to confirm that the non-compliance is because of sample matrix effects rather than laboratory deficiencies.			
6.4	If No in Section 6.3, is any sample dilution factor greater than 10? DV report should indicate that extraction efficiency/ method accuracy cannot be verified.			✓

	1 or more <10%	1 high/low	2 or 3 high/low	2 or 3 all low	2 or 3 all high
Positives	L	J	J	L	K
Non-detects	R	UJ	UJ	UL	NONE

Note: The B qualifier remains over surrogate flagging.

Notes: 8SB 7BRE bromofluorobenzene 1437QC. JIUJ,S

1997

Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

otes: see attached Pos methyl acetate J,M
pos. J,d for others in SSB7B
CF VJ,m

LCS		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

otes:

Internal Standard		Yes	No	NA
9.1	Are internal standard area of every sample and blank within upper and lower QC limits for each continuing calibration? If not, J(+)/UJ(-).		✓	
	If extremely low area counts are reported, or performance exhibits a major abrupt drop-off, then a severe loss of sensitivity is indicated. Non-detect target compounds should then be qualified as unusable (R).			
9.2	Are retention times of internal standards within 30 seconds of the associated calibration standard?	✓		
	The chromatographic profile for that sample must be examined to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Positive results should not needed to be qualified as "R", if the mass spectral criteria are met.			

Notes: 1,4-dichlorobenzene-d4 in SSB7B (-53%) Pos J,i unless Prev
Dup4 -54%, SSB2B -57% ND → UJ,i
similar results were displayed in re-analysis, original should be used-

0 Field Duplicate		Yes	I	NA
10.1	Was a field duplicate prepared and analyzed at the correct frequency (one per 20 samples, matrix, and level)?	✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
10.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.		✓	

otes:	DUP 3	365B10 C	65B7B	DUP 4	RPD
acetone	48	42 ok	1,1-DCE 1	.9 ok	
Chloroform	8U	.6 ok	Carbondisulf 2	2 ok	
2-hexanone	20U	2 ok	acetone 130	200	(42%)
bromoform	8U	.3 ok	2-butone 17	14 ok	
1,1,2,2, TCA	8U	.5 okV	2-hexanone 6 RL=8	3 okV	
1,3, DCB					
1,2,4-TCB	8U okV	.7			

.0 Tentatively Identified Compounds (TICs) and Detection Limit Verification		Yes	No	NA
11.1	Are any TICs detected in the field samples? If Yes, all TIC results should be flagged "NJ" (tentatively idenified, and approximate concentration).	✓		
11.2	Do detection limits meet those required by the project QAPP and were they properly adjusted to reflect all sample dilutions and dry weight factors?	✓		
11.3	Were sample concentrations above the highest standard run at a dilution? If not, for ion saturation flag "L", unsaturated results "J".			✓

otes: unknowns removed-

2.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples: [redacted]			
12.1.2	Number of target compounds in each analysis: [redacted]			
12.1.3	Number of results rejected and not reported: [redacted]			
	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = [redacted] 100%.			

Notes:

SDG 535

612

DATA VALIDATION WORKSHEET

Semivolatile Organic Analysis

eviewer: RA
ate: 5/12/03
V Level: II (III) IV
eview Document:
X NFG - Region III Modifications
X Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number: 52954 32.2000
Laboratory: Compuchem
SDG No.: R2946
Test Name: SVOC
Method No.: 8270C

.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If samples were not on ice or the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 20 °C), then flag all positive results with a "L" and all non-detects "UL".			
1.5	Do any soil samples contain more than 50% water?		✓	
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method or project QAPP?	✓		
2.2	Have any technical holding times, determined from date of sampling to date of analysis, been exceeded? If yes, L(+)/UL(-). For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, L(+)/R(-) .		✓	

Notes: collect extract analyzed
4/16,15,03 ,17/03 4/18,03 4/21,03 14/22/03
4/17/03 4/24/03 4/25/03

.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix and per level)?	✓		
3.2	Do any preparation/instrument/reagent blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to 5 times (or 10 times for the common phthalate contaminants) the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, noted in the Dv report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If no, use professional judgement to determine the effect on the data and note in the reviewer narrative.	✓		
4.3	Has a continuing calibration standard been analyzed for every 12 hours of sample analysis per instrument?	✓		
4.4	Are all calibration standard (IC and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: $r \geq 0.99$, %RSD $\leq$ 15% and %D $\leq$ 20%		✓	
	For initial Calibration: for %RSD > ± 15%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 20% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >20%, J(+).			
4.5	Do any SPCC compounds have an RRF < 0.05? (n-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-dinitrophenol, & 4-nitrophenol) If yes, J(+)/R(-).		✓	

Notes: IC 4/8/03 phenol 19.64%
atrazine 33.24% all ND, no flag

CC 4/2/03 3,3-DCB -32.51%. UJ, C

599
828

5.0 GC/MS Instrument Performance Check		Yes	No	NA
5.1	Are GC/MS Tuning and Mass Calibration forms present for decafluorotriphenylphosphine (DFTPP)?	✓		
5.2	Are DFTPP enchanced bar graph spectrum and mass/charge (m/z) listing provided for each 12-hour shift?	✓		
	If DFTPP was analyzed simultaneously with any calibration standard or blank, the instrument performance check (IPC) is rejected "R" as well as all associated data.			
5.3	Have all samples been analyzed within twelve hours of the DFTPP tune?	✓		
	If twelve hours have elapsed according to the system clock, and the laboratory had analyzed standards, blanks, field samples or QC samples after twelve (12) hours, the data for the affected standards, blanks, field samples or QC samples are rejected "R".			
5.4	Have ion abundance criteria for DFTPP been met for each instrument used?	✓		
	If the DFTPP criteria were not met prior to the analyses of the standards, blanks, field samples and QC samples, all standards, blanks, field samples and QC samples are rejected "R".			

Notes:

6.0 Surrogate Recovery		Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
6.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
6.3	If No in Section 6.2, are these sample(s) or method blank(s) reanalyzed?			✓
	If any two base/neutral or acid fraction are out of specification, or if any one base/neutral or acid extractable surrogate has a recovery of less than 10%, then there should be a reanalysis to confirm that the non-compliance is because of sample matrix effects rather than laboratory deficiencies.			
6.4	If No in Section 6.3, is any sample dilution factor greater than 10? (recoveries may be diluted out.)			✓
	1 or more <10% / 2 or 3 high/low / 2 or 3 all low / 2 or 3 all high			
	Positives: L / J / L / K			
	Non-detects: R / UJ / UL / NONE			
	Note: The B qualifier remains over surrogate flagging.			

Notes:

0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes: MS/MSD benzaldehyde 60/63 QC prev.
RPD 4-nitroaniline 49 >QC ND in 85873 No action

8.0 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?	✓		
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

Notes: benzaldehyde 4% all ND → R, J

9.0 Internal Standard		Yes	No	NA
9.1	Are internal standard area of every sample and blank within upper and lower QC limits for each continuing calibration? If not, J(+)/UJ(-).	✓		
	If extremely low area counts are reported, or performance exhibits a major abrupt drop-off, then a severe loss of sensitivity is indicated. Non-detect target compounds should then be qualified as unusable (R).			
9.2	Are retention times of internal standards within 30 seconds of the associated calibration standard?	✓		
	The chromatographic profile for that sample must be examined to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Positive results should not needed to be qualified as "R", if the mass spectral criteria are met.			

Notes:

10.0 Field Duplicate		Yes	No	NA
10.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix)?	✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
10.2	Are all analyte duplicate results within control limits? Generally, no action is taken on the basis of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	✓		

Notes:

DUP3 365B10C

Bis(2-ethylh.)ph 450 U 69 OK

DUP 4 85A7B

Bis(2-ethyl 1300 OK ~~ND~~ 6900 U

11.0 Tentatively Identified Compounds (TICs) and Detection Limit Verification		Yes	No	NA
11.1	Are any TICs detected in the field samples? If Yes, all TIC results should be flagged "NJ" (tentatively idenified, and approximate concentration).	✓		
11.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture?			
11.3	Were sample concentrations above the highest standard run at a dilution? If not, for ion saturation flag "L", unsaturated results "J".			✓

Notes:

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples: 15			
12.1.2	Number of target compounds in each analysis: 66			
12.1.3	Number of results rejected and not reported: 15			
	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 96%			

Notes:

15291. 32.2000

DATA VALIDATION WORKSHEET

Pesticides/PCBs

Reviewer: RA
Date: 5/12/03
DV Level: II III IV
Review Document:
X SW-846 - 8081/8082
X NFG - Region III Modifications
___ CLP

Project Name: Radford SWMU 8 & 36
Project Number: ~~15291524~~.00000
Laboratory: Compuchem
SDG No.: R2946
Test Name: PEST
Method No.: 8081A

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If samples were not on ice or the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 20 °C), then flag all positive results with a "J" and all non-detects "UJ".			
1.5	Do any soil samples contain more than 50% water?		✓	
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method?	✓		
2.2	Have any technical holding times, determined from date of sampleing to date of analysis, been exceeded? If yes, J(+)/UJ(-). For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, J(+)/R(-).		✓	

Notes:

	collect.	extract	analyzed	
	4/16/03, 4/17/03	4/18/03	4/27/03	PCB
	4/16/03, 4/17/03	4/24/03	5/1/03, 5/2/03	Pest

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3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix)?	✓		
3.2	Do any preparation/instrument/reagent blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to five times the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note it in the DV report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards included in the calibration curve? 1016 and 1260 need at least three peaks at five concentrations. The multi-component target compounds (the other Aroclors, Toxaphene, & Chlordane) must each be analyzed separately at a single concentration level during the initial calibration sequence.	✓		
4.2	Has a continuing calibration standard been analyzed for every 12 hours or twenty samples?	✓		
4.3	Are all calibration standard (IC and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r>0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			
4.4	Do all standard retention times in the continuing calibration fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.	✓		

Notes:

5.0 GC/ECD Instrument Performance Check		Yes	No	NA
5.1	Has a Resolution Check Mixture been analyzed at the beginning of every initial calibration sequence, on each GC column and intrument used for analysis?			
5.2	Is the resulution between all adjacent peaks in the Resolution Check Mixture greater than or equal to 60% for both column?			
	Detected target compounds that were not adequately resolved should be qualified with "J". Qualitative identifications may also be questionable if coelution exists. Non-detects with retention times in the region of coelution may not be valid, depending on the extent of the problem. Professional judgement should be used to			
5.3	Has a Performance Evaluation Mixture (PEM) been analyzed at the beginning (following the RCM) and the end of every initial calibration sequence, on each GC column and intrument used for analysis? The PEM must also analyzed at the beginning of every other 12-hour analytical period.			
5.4	Is the resulution between all adjacent peaks in the PEM equal to 100% in each calibration (initial and continuing) for both column?			
5.4	Do all standard retention times of each of the single component pesticides and surrogate in all PEM fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.			
5.5	Are all PEM %Ds less than or equal to 25%? If No, J(+)/UJ(-).			
5.6	Is the 4,4'-DDT breakdown </= to 20%? If No, for positive DDT results, DDT-L(+), DDD/DDE - NJ(+). For non-detect DDT results, DDD/DDE - R(+).			
5.7	Is the endrin breakdown </= to 20%? If No, for positive endrin results, endrin-L(+), endrin aldehyde/ketone - NJ(+). For non-detect DDT results, endrin aldehyde/ketone - R(+).			
5.8	Is the combined breakdowns less than or equal to 30%? If No, for positive DDT/endrin results, DDT/endrin-L(+), DDD/DD/endrin aldehyde/endrin ketone - NJ(+). For non-detect DDT/endrin results, DDD/DDE/endrin aldehyde/endrin ketone - R(+).			

Notes:

6.0 Surrogate Recovery					Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?				✓		
6.2	Do all surrogate retention times fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.				✓		
6.3	Are surrogate recoveries within acceptance criteria for all samples and method blanks?				✓		
6.4	If No in Section 6.3, are these sample(s) or method blank(s) reanalyzed?						✓
6.5	If No in Section 6.4, is any sample dilution factor greater than 10? (recoveries may be diluted out.)						✓
	# of outliers	Recovery	Sample result from column with non-conformance	Sample result from column without non-conformance			
	1 out	high/low	No action	No action			
	2 out	2 high same column	K	No action			
		2 low same column	L, UL	No action			
		mixed same column	J, UJ	No action			
		2 high diff columns	J	Not applicable			
		2 low diff columns	J, UJ	Not applicable			
		mixed diff columns	Professional judgement	Not applicable			
	3 out	All high	K	Not applicable			
		All low	L, UL	Not applicable			
		2 high, 1 low	K (2 high)	J (1 low 2nd column)			
		2 low, 1 high	L, UJ (2 low)	J (1 high 2nd column)			
		other mixed	J, UJ	Not applicable			
	4 out	All high	K	Not applicable			
		All low	L, UL	Not applicable			
		Mixed	J, UJ	Not applicable			
	If any recovery is >0% and <10% then L(+)/R(-).						
	If any recovery is 0% then R(+/-).						

Notes:

7.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes: MS/MSD gamma-chlordane ✓ -2/4 > J(m) in 85B7B < alpha-chlordane ✓ -13/-6 endosulfan I 49% (J/m)

8.0 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?	✓		
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

Notes: 4/4 - DDD 160 > QC all ND no F-lag

9.0 Field Duplicate		Yes	No	NA
9.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix)?	✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
9.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.		✓	

Notes:

	85B7B	DUP 4	
pest/ gamma-Chlor	74	1.3	comment
alpha-Chlor	94	1.5	
beta-BHC	35U	1.3 OK	
gamma-BHC	17U	.760K	
DDT	100U	8.2 OK	

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10.0 Compound Identification and Detection Limit Verification		Yes	No	NA
10.1	Is the percent difference calculated for the positive sample results on both columns < 40%? If No, J(+).		✓	
10.2	Do detection limits meet those required by the project QAPP and were properly adjusted for dilution factors and moisture?	✓		

Notes: General 740's J(+) higher results reported

11.0 Cleanup Checks		Yes	No	NA
11.1	Is Form IX PEST-1 present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest/PCB extracts to reduce matrix interference caused by polar compounds.)	✓		
	Every lot number of Florisil cartridges used for sample cleanup must be checked by spiking with 2,4,5-trichlorophenol and the midpoint concentration of Individual Standard Mixture A.			
11.2	Are all samples listed on the Pesticide Florisil cartridge Check Form?	✓		
11.3	Are percent recoveries of pesticide and surrogate compounds within control limit, 80-120%(if the recovery of 2,4,5-trichlorophenol < 5%), for the florisil cartridge check? If No, the raw data should be examined for the presence of polar interferences and professional judgement should be used in qualifying the data.	✓		

Notes:

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples:_____			
12.1.2	Number of target compounds in each analysis:_____			
12.1.3	Number of results rejected and not reported:_____			
12.1.4	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100 %			

Notes:

DATA VALIDATION WORKSHEET

Polyaromatic Hydrocarbons

Reviewer: RA
Date: 5/12/03
DV Level: II (III) IV
Review Document:
_X_ Region III Modified for National Functional Guidelines
___ NFG for organic Data review (February 1994)
___ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number: 15295432.2000
Laboratory: Compuchem
SDG No.: R2946
Test Name: PAH
Method No.: 8310-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?			
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?			
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?			
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?			
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".			✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).			
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.			

Notes:

collect	extract	analyzed
4/16/03	4/18/03	4/23/03
4/15/03	〃	〃
4/17/03	4/24/03	4/25/03
4/17/03	4/18/03	4/23/03

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3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)		✓	
3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".			✓
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.	✓		
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.			

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.		✓	
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.			
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%			
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.			

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?			
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?			
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	■		
6.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	■		✓
6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓	■	
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		■	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes: acenaphthylene zer. LOC UJ,m in SSB7B

7.0 Laboratory Control Sample (LCS)

		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	■		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	■		✓
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		■	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?		■	✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate

		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?	■		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	■	✓	

Notes: 365B10C & DUP3 | SSB7B & DUP4

Phenanthrene 25 58U OK✓ | ND ND

benzo(a)pyrene 24 11~~0~~U OK

teh 8/9

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second columns.	√		
9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?			

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)			
10.1.1	Number of samples:			
10.1.3	Number of results rejected and not reported:			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100 %			
	% Completeness =			

Notes:

DATA VALIDATION WORKSHEET

Explosives

Reviewer: RA
Date: 5/12/03
DV Level: II (III) IV
Review Document:
_X__ Region III Modified for National Functional Guidelines
____ NFG for organic Data review (February 1994)
____ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number: 15295432.2000
Laboratory: Compuchem
SDG No.: R2946
Test Name: Explosives
Method No.: 8330-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?	✓		

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?	✓		
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".			✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.		✓	

Notes: collect 4/16/03 extract 4/19/03 analyzed 4/23/03

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)	✓		

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3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.	✓		
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).	✓		✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).	✓		✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.	✓		

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?	✓		✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.	✓		✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
6.2	Were matrix spikes analyzed at required frequency (one per 20 sam, per batch) for each matrix?	✓		

6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?			✓
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes: MS nitrobenzene 46% <QC UJ,m in SSB7B

7.0 Laboratory Control Sample (LCS)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	✓		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?	✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	✓		

Notes: SSB7B DUP4 / DUP3 365BOC
ND ND ND ND

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second columns.		✓	

9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?			

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)			
10.1.1	Number of samples:_____			
10.1.3	Number of results rejected and not reported:_____			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100 %			
	% Completeness =			

Notes:

DATA VALIDATION WORKSHEET

Nitroglycerin

Reviewer: RA
Date: 5/12/03
DV Level: II (III) IV
Review Document:
_X_ Region III Modified for National Functional Guidelines
___ NFG for organic Data review (February 1994)
___ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number: 15295432.2000
Laboratory: Compuchem
SDG No.: R7946
Test Name: Nitroglycerin
Method No.: 8332-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?	✓		

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?	✓		
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".			✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.		✓	

Notes: collect 4/16/03 4/15/03; extract 4/17/03 4/19/03 ✓; analyze 4/23/03 -

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)	✓		

Mes8025

3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".			
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.			
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.	✓		
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.	✓		

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			U
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
6.2	Were matrix spikes analyzed at required frequency (one per 20 sam. per batch) for each matrix?	✓		

6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

7.0 Laboratory Control Sample (LCS)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	✓		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?	✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	✓		

Notes: DUP-3 & 360SB10C ND ND DUP4 & 859B7B ND

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second columns.		✓	

9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?			

Notes:

10.0 Data Completeness		Yes/	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)			
10.1.1	Number of samples:_____			
10.1.3	Number of results rejected and not reported:_____			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100 %			
	% Completeness = _____			

Notes:

DATA VALIDATION WORKSHEET
INORGANIC - ICP, CVAA, AND CYANIDE
REGION III - NATIONAL FUNCTIONAL GUIDELINES

Project Name: Radford SWMU 8 & 36
Reviewer: RA
Date: 4/12/03

SDG No.: R2946
Project No.: ~~15291524.00000~~ 15295432.2000

1.0 Chain of Custody/Sample Condition/Raw Data

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples which were analyzed?	✓			✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓			✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓			✓	
1.4	Does sample preservation, collection and storage meet method requirement? (For metal: water samples: with Nitric Acid to pH < 2, and soil/sediment samples: 4 $^{o}C \pm 2\ ^{o}C$)	✓			✓		
1.5	Are the digestion logs present and complete with pH values, sample weights, dilutions, final volumes. % solids (for soil samples), and preparation dates? For any missing or incomplete documentation, contact the laboratory for explanation/resubmittal.	✓			✓		

Note:

2.0 Holding Time

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
2.1	Have any technical holding times, determined from date of collection to date of analysis, been exceeded? (Hg: 28days, other metals: 6 months) Action: L(+)/UL(-). If the holding time is grossly exceeded (twice the holding time criteria), L(+)/R(-).		✓			✓	

Note: collected 4/15, 16, 17/03 analyzed 4/22/03

3.0 Instrument Calibration

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
3.1	Are sufficient standards included in the calibration curve with a low point at RL? (ICP: blank + one standard; CVAA: blank + five standards). If not, qualify with "R".				✓		
3.2	Are the correlation coefficients > 0.995? (for CVAA) Action: J(+)/UJ(-).				✓		
3.3	Was an initial calibration check standard (ICV) analyzed immediately after instrument system had been calibrated? Action: If no, all associated data are rejected "R".	✓			✓		
3.4	Was continuing calibration standard (CCS) analyzed at a minimum frequency of 10% (every 10 samples) during an analytical run and at the end of the analytical run? If not, document and flag based on professional judgement.	✓			✓		
3.5	Are all calibration standard percent recoveries (ICV and CCV) within the control limits? FOR Hg ICV 90%-110% and CCV 80-120%; FOR ICP ICV &CCV 90%-110%.	✓			✓		
	ICV and CCV: Action: L(+)/R(-) L(+)/UL(-) K(+) Mercury ICV < 65% 65% - 90% > 110% Mercury CCV < 65% 65% - 79% > 120% Other Metals < 75% 75% - 89% > 110%						
3.6	For ICP, did the CRDL standard recover between 90-110%? <50% 50%-89% >110% 2xCRDL>[sample]>IDL L(+)/R(-) L(+)/UL(-) K		✓				

Note: Aluminium 112.9
Cadmium 113.6 K,W
Chromium 112.4
Lead 122.7
Potassium 72
Se 130 K,W
Thalium 111.7
Zinc 69.8

Others 2xCRDL no more

4.0 Blanks

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
4.1	Were method blank (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix and per level)?	✓			✓		
4.2	Were calibration blanks (ICB and CCBs) analyzed immediately after each and every ICV and CCVs? Action: If no ICB was run, all associated data are rejected. If the frequency of the CCBs does not follow requirement, all associated data are qualified "J".	✓			✓		
4.3	Are there reported MB or ICB/CCBs values > MDL?	✓			✓		
	Sample Results > MDL						
	< 5X Blank Contamination B		✓				
4.4	Are there negative blank results with the absolute value > MDL?	✓				✓	
	Sample Results Non-detects > MDL						
	< 5X absolute Blank Contamination UL L						
4.5	Are there reported field blankor trip blank values > ± MDL?						
	Sample Results > MDL						
	< 5X Blank Contamination B						

Note: EBs in 52946 Pos. barium, Cr, copper, sodium Pos <5x → B,x in ass.
MB→neg. calcium, zinc all pos 75x, no flag
JPos. barium, magnesium, mercury, potassium, silver Pos mercury <5x, B,P
ICB, CCB also neg. Ca, zinc, Pos, ba, beryllium, cadmium, mg, mercury

5.0 ICP Interference Check Sample (ICS)

Mn either prev. flagged or >5x nomle

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
5.1	Was ICS analyzed at beginning and end of each ICP run (or at least twice every 8 hours)?	✓					
5.2	Are the ICS AB recoveries within 80% - 120%?	✓					
5.3	Are the results for unspiked analytes (in ICS A) < ± IDL?	✓					
5.4	If not, are the associated sample Al, Ca, Fe, and Mg concentrations less than the level in the ICS?			✓			
	If not...						
	Action: Not Spiked Analytes: < -IDL L(+)/UL(-); > IDL K(+). Spiked analytes (ICS AB analytes): < 50% L(+)/R(-); 50% - 79% L(+)/UL(-); >120% K(+)						

Note:

6.0 Laboratory Control Sample (LCS)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
6.1	Was an LCS prepared and analyzed at the correct frequency (one per 20 samples, per batch, per matrix and per level)? Action: If no, J(+) any sample not associated with LCS results.	✓			✓		
6.2	Is any LCS recovery outside the control limits? (Aqueous limits: 80% - 120% - except Ag and Sb; Solid limits: as per EPA-EMSL/LV)		✓			✓	
	Action: Solid: < LCL L(+)/UL(-); > UCL K(+). Aqueous: < 50% L(+)/R(-); 50% - 79% L(+)/UL(-); > 120% K(+)						

Note:

7.0 Laboratory Duplicates

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
7.1	Were Laboratory duplicates prepared and analyzed at the correct frequency (one per 20 samples, per batch, per matrix and per level)? Action: If no, J(+), using professional judgement, analytes not associated with duplicate results.	✓			✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.						
7.3	Are all analyte duplicate results within control limits? If no, qualify all associated field samples J(+)/UJ( ) for the analyte with results that fall outside criteria.		✓		✓		

Note: Ca 102.4% J,K
Mg 88.9%

8.0 Spike Sample Analysis -Pre-Digestion/Post-Digestion

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
8.1	Was a spiked sample prepared and analyzed at the correct frequency (one per 20 samples, batch, matrix and level)? If not, J(+) with professional judgement.	✓			✓		
8.2	For all analytes with sample concentration > 4 x spike concentration, are spike recoveries within the control limit of 75-125%?		✓			✓	
	%R > 125% / 30%< %R < 74% / < 30%						
	Positive: K / L / L						
	Non-detect: None / UL / R						
8.4	Where pre-digestion matrix spike analytes were outside the acceptable recovery limits(except Ag), was a post-digestion spike performed? Note any failures in DV report, but no data qualifying action is required.	✓			✓		

Note: antimony 31.6/33.7 Se 41.9/41.1
arsenic 68.3/68.2 thallium -117.5/-100.9 (RIM) all ND
Hg 45.4/15.5 all Pos Lim V 69/70.8
unless Lim prev ULim zinc/>50.7

9.0 Instrument Detection Limits (IDL)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
9.1	Are all IDLs/RLs equal to or less than the reporting limits specified?	✓			✓		

Note:

10.0 ICP/AA Serial Dilutions (Not for Mercury Analysis)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
10.1	Were serial dilutions performed?	✓					
10.2	Was a five-fold dilution performed?	✓					
10.3	Did the serial dilution results agree within 10% for ICP analyte concentration > 50 X the IDL in the original sample? If no, J(+).		✓				

Note: Potassium 13.8 % Pos J/S

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11.0 Field Duplicate Samples

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
11.1	Were any field duplicates submitted for metal analysis?	√			√		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.						
11.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report		√			√	

Note: 365B10C, DUP3 Mg 105%
Mn 65% comment

12.0 Result Verification

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
12.1	Were all results and detection limits for solid-matrix samples reported on a dry-weight basis?	√			√		
12.2	Were all dilution reflected in the positive results and detection limits?	√			√		

Note:

13.0 Completeness Calculation

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
13.1	Is % completeness within the control limits? (Control limit 90%)	√			√		
13.1.1	Number of samples: 15						
13.1.2	Number of target compounds in each analysis: 23						
13.1.3	Number of results rejected and not reported: 15						
	% Completeness = (13.1.1 x 13.1.2 - 13.1.3) x 100/(13.1.1 x 13.1.2) % Completeness = 95%						

Note:

DATA VALIDATION REPORT - Level III Review

SDG No.: _____S2946_____ **Fraction:**_VOCs, SVOCs, Pest., PCBs, PAH,___ __Explosives, Nitroglycerin, Metals___

Lab: _CompuChem_____ **Project Name:** __Radford SWMU 8/36_____

Reviewer: _____RA_____ **Date:** _____May 6, 2003_____

This report presents the findings of a review of the referenced data. The report consists of this summary, copies of data reports with data qualifying flags applied (as required), the completed data validation checklist, supporting documentation, and an explanation of the data qualifying flags employed. The review performed is based on the USEPA Region III Modifications to the National Functional Guidelines for Organic and Inorganic Data Review as pertains to the specifics of the analytical methods employed and provisions of the approved project-specific QAPP.

Major Anomalies: The CRDL recovery for thallium (48.2%) was less than the lower QC limit. All associated sample results were non-detect and were flagged "R,w."

Minor Anomalies: For the VOC analyses, the method blanks displayed positive detections for twenty two compounds. Positive results less than ten times the blank concentration for acetone, methylene chloride and 2-butanone, and less than five times the blank concentration for the other compounds were flagged "B,z" in the associated samples.

For the SVOC analyses, the initial calibration analyzed on 4/8/03 displayed %RSDs greater than the control limit (i.e., 15%) for phenol at 19.6% and atrazine at 33.2%. No positive results were reported and the failures were not serious enough (i.e., > 50%) to affect the non-detects. No data qualifying action was required.

The CCV analyzed on 4/21/03 at 0810 displayed a %D greater than the control limit (i.e., 20%) with a negative bias for 3,3-dichlorobenzidine at 32.51%. Non-detects were flagged "UJ,c" in all samples.

For the metal analyses, the method blanks contained positive results for iron and manganese. Positive results less than five times the blank concentration were flagged "B,p" in the associated samples. The method blanks also contained negative results for calcium, chromium, sodium and zinc. Positive results less than five times the absolute value of the blank concentration were flagged "L,p" and non-detects were flagged "UL,p." The initial and continuing calibration blanks also contained positive results for beryllium, cadmium, lead, magnesium, manganese, selenium, and vanadium; and negative results for aluminum, calcium, and zinc. Positive results less than five times the blank concentration associated

with positive detections were flagged "B,o" in the associated samples. The results associated with negative results were previously flagged and no further data qualifying action was required.

The initial CRDL percent recoveries for cadmium (114%/129.6%), calcium (85.7%), chromium (87.4%/75.4%), copper (78.4%), silver (89.4%), lead (123.3%), nickel (79.8%), potassium (70.6%/65.9%), selenium (80.8%/118.8%), and zinc (73.9%/67.6%) were outside the QC limit. Non-detects were flagged "UL,w" for potassium, nickel, silver and selenium. Positive results were flagged "L,w" for copper in the associated samples. All associated sample results were previously flagged for the other analytes and no further data qualifying action was required.

Correctable Anomalies: None.

Comments: Due to the abundance of target compounds, most of the samples were analyzed at dilutions for all organic analyses and some inorganic analyses. Therefore, the reporting limits were raised.

Please note that if a given fraction is not discussed in this report, all QC for that fraction were found to be acceptable.

It should be noted that the unknown TIC results were crossed out from the Form Is. Except for data flagged "R", all data, as qualified, are usable for their intended purpose, based on the data reviewed.

Signed: Ranjan

DATA VALIDATION WORKSHEET

Volatile Organic Analysis by GC/MS

Reviewer: RA
Date: 5/6/03
DV Level: II (III) IV
Review Document:
X NFG - Region III Modifications
X Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: 32946
Test Name: 8260B
Method No.: VOC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If the temperature of the cooler was elevated (> 10 °C) or bubble size in aqueous sample was too big (tiny bubble is OK.), then flag all positive results with a "L" and all non-detects "UL".			
1.5	Do any soil samples contain more than 50% water?			✓
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method or project QAPP? QAPP say - no HCl preservation.	✓		
2.2	Have any technical holding times, determined from date of sampling to date of analysis, been exceeded? If yes, L(+)/UL(-). For aqueous unpreserved - 7 days for aromatic compounds All others - 14 days.		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, L(+)/R(-).		✓	

Notes: collected 4/15, 16, 17/03 analyzed 4/24, 25, 29/03

SDG 32946

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per GCMS, 20 samples, batch, matrix, and level)?	✓		
3.2	Do any method blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to 5 times (or 10 times for the common volatile lab contaminants - methylene chloride, acetone, and 2-butanone) the amount in the associated blank.	✓		
3.3	Do any field equipment blanks/trip blanks have positive results? If Yes, use same rules above.	✓		
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, noted in the DV report.	✓		

Notes:

See attached
pos <10x, and 5x flagged B/Z.

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If no, use professional judgement to determine the effect on the data and note in the reviewer narrative.	✓		
4.3	Has a continuing calibration standard been analyzed for every 12 hours of sample analysis per instrument?	✓		
4.4	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: $r \geq 0.99$, %RSD < ± 15% and %D < ± 20%	✓		
	For initial Calibration: for %RSD > ± 15%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 20% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >20%, J(+).			
4.5	Do any SPCC compounds have an RRF < CL? CL >0.10 for chloromethane, 1,1-dichloroethane, & bromoform or >0.30 for chlorobenzene & 1,1,2,2-tetrachloroethane. If yes, L(+)/R(-).		✓	

Notes:

0 GC/MS Instrument Performance Check		Yes	No	NA
5.1	Are GC/MS Tuning and Mass Calibration forms present for bromofluorobenzene (BFB)?	✓		
5.2	Are BFB enchanced bar graph spectrum and mass/charge (m/z) listing provided for each 12-hour shift?	✓		
5.3	Have all samples been analyzed within twelve hours of the BFB tune?	✓		
	If twelve hours have elapsed according to the system clock, and the laboratory had analyzed standards, blanks, field samples or QC samples after twelve (12) hours, the data for the affected standards, blanks, field samples or QC samples are rejected "R".			
5.4	Have ion abundance criteria for BFB been met for each instrument used?	✓		
	If the BFB criteria were not met prior to the analyses of the standards, blanks, field samples and QC samples, all standards, blanks, field samples and QC samples are rejected "R".			

lotes:

.0 Surrogate Recovery		Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
6.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
6.3	If No in Section 6.2, are these sample(s) or method blank(s) reanalyzed?			✓
	If any system monitoring compound(s) in the volatile fraction is out of specification, there should be a reanalysis to confirm that the non-compliance is because of sample matrix effects rather than laboratory deficiencies.			
6.4	If No in Section 6.3, is any sample dilution factor greater than 10? DV report should indicate that extraction efficiency/ method accuracy cannot be verified.			✓

	1 or more <10%	1 high/low	2 or 3 high/low	2 or 3 all low	2 or 3 all high
Positives	L	J	J	L	K
Non-detects	R	UJ	UJ	UL	NONE

Note: The B qualifier remains over surrogate flagging.

Notes:

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7.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?			✓
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?			✓
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?			✓
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?			✓
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

Not in this SDG
all QC.

		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?		✓	
	If Yes, J(+) only.			

Notes:

		Yes	No	NA
9.1	Are internal standard area of every sample and blank within upper and lower QC limits for each continuing calibration? If not, J(+)/UJ(-).	✓		
	If extremely low area counts are reported, or performance exhibits a major abrupt drop-off, then a severe loss of sensitivity is indicated. Non-detect target compounds should then be qualified as unusable (R).			
9.2	Are retention times of internal standards within 30 seconds of the associated calibration standard?	✓		
	The chromatographic profile for that sample must be examined to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Positive results should not needed to be qualified as "R", if the mass spectral criteria are met.			

Notes:

10.0 Field Duplicate		Yes		NA
10.1	Was a field duplicate prepared and analyzed at the correct frequency (one per 20 samples, matrix, and level)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
10.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

Notes:

11.0 Tentatively Identified Compounds (TICs) and Detection Limit Verification		Yes	No	NA
11.1	Are any TICs detected in the field samples? If Yes, all TIC results should be flagged "NJ" (tentatively identified, and approximate concentration).		✓	
11.2	Do detection limits meet those required by the project QAPP and were they properly adjusted to reflect all sample dilutions and dry weight factors?			
11.3	Were sample concentrations above the highest standard run at a dilution? If not, for ion saturation flag "L", unsaturated results "J".			

Notes:

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples:			
12.1.2	Number of target compounds in each analysis:			
12.1.3	Number of results rejected and not reported:			
	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100 %			

Notes:

DATA VALIDATION WORKSHEET

Semivolatile Organic Analysis

Reviewer: RA
Date: 5/16/03
DV Level: II (III) IV
Review Document:
X NFG - Region III Modifications
X Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: 32946
Test Name: SVOC
Method No.: 8270C

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If samples were not on ice or the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 20 °C), then flag all positive results with a "L" and all non-detects "UL".			
1.5	Do any soil samples contain more than 50% water?			✓
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method or project QAPP?	✓		
2.2	Have any technical holding times, determined from date of sampling to date of analysis, been exceeded? If yes, L(+)/UL(-). For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, L(+)/R(-) .		✓	

Notes: collect. 4/15/16/17/03 | extract 4/18 | analyzed 4/21, 03

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix and per level)?	✓		
3.2	Do any preparation/instrument/reagent blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to 5 times (or 10 times for the common phthalate contaminants) the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, noted in the Dv report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If no, use professional judgement to determine the effect on the data and note in the reviewer narrative.	✓		
4.3	Has a continuing calibration standard been analyzed for every 12 hours of sample analysis per instrument?	✓		
4.4	Are all calibration standard (IC and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD ≤ 15% and %D ≤ 20%		✓	
	For initial Calibration: for %RSD > ± 15%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 20% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >20%, J(+).			
4.5	Do any SPCC compounds have an RRF < 0.05? (n-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-dinitrophenol, & 4-nitrophenol) If yes, J(+)/R(-).		✓	

Notes: ~~4,6-DNP~~ see attached
3,3-DCB UJ,c in all

5.0 GC/MS Instrument Performance Check		Yes	No	NA
5.1	Are GC/MS Tuning and Mass Calibration forms present for decafluorotriphenylphosphine (DFTPP)?	✓		
5.2	Are DFTPP enchanced bar graph spectrum and mass/charge (m/z) listing provided for each 12-hour shift?	✓		
	If DFTPP was analyzed simultaneously with any calibration standard or blank, the instrument performance check (IPC) is rejected "R" as well as all associated data.			
5.3	Have all samples been analyzed within twelve hours of the DFTPP tune?	✓		
	If twelve hours have elapsed according to the system clock, and the laboratory had analyzed standards, blanks, field samples or QC samples after twelve (12) hours, the data for the affected standards, blanks, field samples or QC samples are rejected "R".			
5.4	Have ion abundance criteria for DFTPP been met for each instrument used?	✓		
	If the DFTPP criteria were not met prior to the analyses of the standards, blanks, field samples and QC samples, all standards, blanks, field samples and QC samples are rejected "R".			

Notes:

6.0 Surrogate Recovery						Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?					✓		
6.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?					✓		
6.3	If No in Section 6.2, are these sample(s) or method blank(s) reanalyzed?							✓
	If any two base/neutral or acid fraction are out of specification, or if any one base/neutral or acid extractable surrogate has a recovery of less than 10%, then there should be a reanalysis to confirm that the non-compliance is because of sample matrix effects rather than laboratory deficiencies.							
6.4	If No in Section 6.3, is any sample dilution factor greater than 10? (recoveries may be diluted out.)							✓
		1 or more <10%	2 or 3 high/low	2 or 3 all low	2 or 3 all high			
	Positives	L	J	L	K			
	Non-detects	R	UJ	UL	NONE			
	Note: The B qualifier remains over surrogate flagging.							

Notes:

7.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?			
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?			
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?			
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?			
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

8.0 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?			
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?			
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?			
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			
	If Yes, J(+) only.			

Notes:

9.0 Internal Standard		Yes	No	NA
9.1	Are internal standard area of every sample and blank within upper and lower QC limits for each continuing calibration? If not, J(+)/UJ(-).			
	If extremely low area counts are reported, or performance exhibits a major abrupt drop-off, then a severe loss of sensitivity is indicated. Non-detect target compounds should then be qualified as unusable (R).			
9.2	Are retention times of internal standards within 30 seconds of the associated calibration standard?			
	The chromatographic profile for that sample must be examined to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Positive results should not needed to be qualified as "R", if the mass spectral criteria are met.			

Notes:

10.0 Field Duplicate		Yes	No	NA
10.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
10.2	Are all analyte duplicate results within control limits? Generally, no action is taken on the basis of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

Notes:

11.0 Tentatively Identified Compounds (TICs) and Detection Limit Verification		Yes	No	NA
11.1	Are any TICs detected in the field samples? If Yes, all TIC results should be flagged "NJ" (tentatively idenified, and approximate concentration).	✓		
11.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture?	✓		
11.3	Were sample concentrations above the highest standard run at a dilution? If not, for ion saturation flag "L", unsaturated results "J".	✓		

Notes: unknown tics crossed out

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples:_____			
12.1.2	Number of target compounds in each analysis:_____			
12.1.3	Number of results rejected and not reported:_____			
	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100 %			

Notes:

DATA VALIDATION WORKSHEET

Pesticides/PCBs

Reviewer: RA
Date: 5/16/03
DV Level: II III IV
Review Document:
X SW-846 - 8081/8082
X NFG - Region III Modifications
___ CLP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: S2946
Test Name: PEST
Method No.: 8081A

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If samples were not on ice or the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 20 °C), then flag all positive results with a "J" and all non-detects "UJ".			
1.5	Do any soil samples contain more than 50% water?			✓
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method?	✓		
2.2	Have any technical holding times, determined from date of sampleing to date of analysis, been exceeded? If yes, J(+)/UJ(-). For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, J(+)/R(-) .		✓	

Notes: collect 4/15/16/17/03 extract 4/18/03 analyzed 4/18/19/03

823 828

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix)?	✓		
3.2	Do any preparation/instrument/reagent blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to five times the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note it in the DV report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards included in the calibration curve? 1016 and 1260 need at least three peaks at five concentrations. The multi-component target compounds (the other Aroclors, Toxaphene, & Chlordane) must each be analyzed separately at a single concentration level during the initial calibration sequence.	✓		
4.2	Has a continuing calibration standard been analyzed for every 12 hours or twenty samples?	✓		
4.3	Are all calibration standard (IC and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r>0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			
4.4	Do all standard retention times in the continuing calibration fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.	✓		

Notes:

5.0 GC/ECD Instrument Performance Check		Yes	No	NA
5.1	Has a Resolution Check Mixture been analyzed at the beginning of every initial calibration sequence, on each GC column and intrument used for analysis?			
5.2	Is the resulution between all adjacent peaks in the Resolution Check Mixture greater than or equal to 60% for both column?			
	Detected target compounds that were not adequately resolved should be qualified with "J". Qualitative identifications may also be questionable if coelution exists. Non-detects with retention times in the region of coelution may not be valid, depending on the extent of the problem. Professional judgement should be used to			
5.3	Has a Performance Evaluation Mixture (PEM) been analyzed at the beginning (following the RCM) and the end of every initial calibration sequence, on each GC column and intrument used for analysis? The PEM must also analyzed at the beginning of every other 12-hour analytical period.			
5.4	Is the resulution between all adjacent peaks in the PEM equal to 100% in each calibration (initial and continuing) for both column?			
5.4	Do all standard retention times of each of the single component pesticides and surrogate in all PEM fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.			
5.5	Are all PEM %Ds less than or equal to 25%? If No, J(+)/UJ(-).			
5.6	Is the 4,4'-DDT breakdown </= to 20%? If No, for positive DDT results, DDT-L(+), DDD/DDE - NJ(+). For non-detect DDT results, DDD/DDE - R(+).	✓		
5.7	Is the endrin breakdown </= to 20%? If No, for positive endrin results, endrin-L(+), endrin aldehyde/ketone - NJ(+). For non-detect DDT results, endrin aldehyde/ketone - R(+).	✓		
5.8	Is the combined breakdowns less than or equal to 30%? If No, for positive DDT/endrin results, DDT/endrin-L(+), DDD/DD/endrin aldehyde/endrin ketone - NJ(+). For non-detect DDT/endrin results, DDD/DDE/endrin aldehyde/endrin ketone - R(+).	✓		

Notes:

6.0 Surrogate Recovery

		Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
6.2	Do all surrogate retention times fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.	✓		
6.3	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
6.4	If No in Section 6.3, are these sample(s) or method blank(s) reanalyzed?			✓
6.5	If No in Section 6.4, is any sample dilution factor greater than 10? (recoveries may be diluted out.)			✓

# of outliers	Recovery	Sample result from column with non-conformance	Sample result from column without non-conformance
1 out	high/low	No action	No action
2 out	2 high same column	K	No action
	2 low same column	L, UL	No action
	mixed same column	J, UJ	No action
	2 high diff columns	J	Not applicable
	2 low diff columns	J, UJ	Not applicable
	mixed diff columns	Professional judgement	Not applicable
3 out	All high	K	Not applicable
	All low	L, UL	Not applicable
	2 high, 1 low	K (2 high)	J (1 low 2nd column)
	2 low, 1 high	L, UJ (2 low)	J (1 high 2nd column)
	other mixed	J, UJ	Not applicable
4 out	All high	K	Not applicable
	All low	L, UL	Not applicable
	Mixed	J, UJ	Not applicable

If any recovery is >0% and <10% then L(+)/R(-).

If any recovery is 0% then R(+/-).

Notes:

7.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?			
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?			
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?			
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?			
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

Not in this SDG

8.0 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

Notes:

9.0 Field Duplicate		Yes	No	NA
9.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
9.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

Notes:

10.0 Compound Identification and Detection Limit Verification		Yes	No	NA
10.1	Is the percent difference calculated for the positive sample results on both columns < 40%? If No, J(+).			✓
10.2	Do detection limits meet those required by the project QAPP and were properly adjusted for dilution factors and moisture?	✓		

Notes:

11.0 Cleanup Checks		Yes	No	NA
11.1	Is Form IX PEST-1 present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest/PCB extracts to reduce matrix interference caused by polar compounds.)			
	Every lot number of Florisil cartridges used for sample cleanup must be checked by spiking with 2,4,5-trichlorophenol and the midpoint concentration of Individual Standard Mixture A.			
11.2	Are all samples listed on the Pesticide Florisil cartridge Check Form?			
11.3	Are percent recoveries of pesticide and surrogate compounds within control limit, 80-120%(if the recovery of 2,4,5-trichlorophenol < 5%), for the florisil cartridge check? If No, the raw data should be examined for the presence of polar interferences and professional judgement should be used in qualifying the data.			

Notes:

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples:_____			
12.1.2	Number of target compounds in each analysis:_____			
12.1.3	Number of results rejected and not reported:_____			
12.1.4	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100 %			

Notes:

DATA VALIDATION WORKSHEET

Polyaromatic Hydrocarbons

Reviewer: RA
Date: 5/6/03
DV Level: II (III) IV
Review Document:
_X_ Region III Modified for National Functional Guidelines
___ NFG for organic Data review (February 1994)
___ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: 32946
Test Name: PAH
Method No.: 8310-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?			
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?			
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?			
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?			
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".		1	✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).			
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.			

Notes:
collect 4/15/16/17/03 — extract 4/18/03 — analyzed 4/21/03

1 of 3

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)			
3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".			
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.	✓		
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.			

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.			
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.			
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%			
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.			

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?			
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?			
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	■		
6.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	■		
6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?		■	
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		■	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

7.0 Laboratory Control Sample (LCS)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	■		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	■		
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		■	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			✓
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?		■	✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?	■		✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.	■		✓

Notes:

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9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second columns.	✓		
9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?			

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)			
10.1.1	Number of samples:			
10.1.3	Number of results rejected and not reported:			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness =			
	% Completeness =			

Notes:

DATA VALIDATION WORKSHEET

Explosives

Reviewer: RA
Date: 5/6/03
DV Level: IF (III) IV
Review Document:
X Region III Modified for National Functional Guidelines
NFG for organic Data review (February 1994)
Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: S2946
Test Name: Explosives
Method No.: 8330-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes, % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?	✓		

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?	✓		
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".			✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.		✓	

Notes: collect 4/15/16/17/03 extract 4/18/03 analyzed 4/21/03

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)	✓		

3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.	✓		
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.	✓		

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?			✓
6.2	Were matrix spikes analyzed at required frequency (one per 20 sam per batch) for each matrix?			✓

6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?			✓
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?			✓
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

7.0 Laboratory Control Sample (LCS)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	✓		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

Notes:

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second columns.		✓	

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9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?	✓		

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)	✓		
10.1.1	Number of samples:_____			
10.1.3	Number of results rejected and not reported:_____			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100 %.			
	% Completeness = _____			

Notes:

DATA VALIDATION WORKSHEET

Nitroglycerin

Reviewer: RA
Date: 5/6/03
DV Level: II (III) IV
Review Document:
_X__ Region III Modified for National Functional Guidelines
____ NFG for organic Data review (February 1994)
____ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: 32946
Test Name: Nitroglycerin
Method No.: 8332-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?	✓		

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?	✓		
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".			✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.		✓	

Notes: collect 4/15/16/17/03 extract 4/18/03 analyzed 4/21/03

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3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)	✓		

3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.		✓	
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.	✓		

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.	✓		
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).	✓		
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.	✓		

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			✓

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?			✓
6.2	Were matrix spikes analyzed at required frequency (one per 20 sam per batch) for each matrix?			✓

6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?			
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?			
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

7.0 Laboratory Control Sample (LCS)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?			
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?			
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?			
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?			
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			

Notes:

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second columns.			

9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?			

Notes:

10.0 Data Completeness		**Yes**	**No**	**NA**
10.1	Is % completeness within the control limits? (Control limit 90%)			
10.1.1	Number of samples:_____			
10.1.3	Number of results rejected and not reported:_____			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100 %.			
	% Completeness =			

Notes:

DATA VALIDATION WORKSHEET
INORGANIC - ICP, CVAA, AND CYANIDE
REGION III - NATIONAL FUNCTIONAL GUIDELINES

SDG No.: S2946
Project No.: 15291524.00000

Project Name: Radford SWMU 8 & 36
Reviewer: RA
Date: 5/6/03

1.0 Chain of Custody/Sample Condition/Raw Data

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples which were analyzed?	✓			✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓			✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓			✓	
1.4	Does sample preservation, collection and storage meet method requirement? (For metal: water samples: with Nitric Acid to pH < 2, and soil/sediment samples: 4 ^{o}C $\pm$ 2 ^{o}C)	✓			✓		
1.5	Are the digestion logs present and complete with pH values, sample weights, dilutions, final volumes. % solids (for soil samples), and preparation dates? For any missing or incomplete documentation, contact the laboratory for explanation/resubmittal.	✓			✓		

Note:

2.0 Holding Time

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
2.1	Have any technical holding times, determined from date of collection to date of analysis, been exceeded? (Hg: 28days, other metals: 6 months) Action: L(+)/UL(-). If the holding time is grossly exceeded (twice the holding time criteria), L(+)/R(-).		✓			✓	

Note: collected 4/15,16,17/03 analyzed 4/23/03

3.0 Instrument Calibration

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
3.1	Are sufficient standards included in the calibration curve with a low point at RL? (ICP: blank + one standard; CVAA: blank + five standards). If not, qualify with "R".				✓		
3.2	Are the correlation coefficients > 0.995? (for CVAA) Action: J(+)/UJ(-).				✓		
3.3	Was an initial calibration check standard (ICV) analyzed immediately after instrument system had been calibrated? Action: If no, all associated data are rejected "R".	✓			✓		
3.4	Was continuing calibration standard (CCS) analyzed at a minimum frequency of 10% (every 10 samples) during an analytical run and at the end of the analytical run? If not, document and flag based on professional judgement.	✓			✓		
3.5	Are all calibration standard percent recoveries (ICV and CCV) within the control limits? FOR Hg ICV 90%-110% and CCV 80-120%; FOR ICP ICV &CCV 90%-110%.	✓			✓		
	ICV and CCV: Action: L(+)/R(-) L(+)/UL(-) K(+) Mercury ICV < 65% 65% - 90% > 110% Mercury CCV < 65% 65% - 79% > 120% Other Metals < 75% 75% - 89% > 110%						
3.6	For ICP, did the CRDL standard recover between 90-110%? <50% 50%-89% >110% 2xCRDL>[sample]>IDL L(+)/R(-) L(+)/UL(-) K		✓				

Note:

Cadmium 114, 129.6 ND, no Flag
Calcium 85.7 Prev.
Cr 87.4, 75.4 Prev. } due to blank
Lead 123.3 Prev.
Nickel 79.8 UL, W
Potassium 70.6, 65.9 UL, W
Se 70.8, 118.8 UL, W
(Thallium) 79.3, 48.2 (R, W)
Zinc 73.9, 67.6 Prev. due to blank

4.0 Blanks

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
4.1	Were method blank (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix and per level)?	✓			✓		
4.2	Were calibration blanks (ICB and CCBs) analyzed immediately after each and every ICV and CCVs? Action: If no ICB was run, all associated data are rejected. If the frequency of the CCBs does not follow requirement, all associated data are qualified "J".	✓			✓		
4.3	Are there reported MB or ICB/CCBs values > MDL?	✓				✓	
	Sample Results > MDL						
	< 5X Blank Contamination B						
4.4	Are there negative blank results with the absolute value > MDL?	✓				✓	
	Sample Results Non-detects > MDL						
	< 5X absolute Blank Contamination UL L						
4.5	Are there reported field blankor trip blank values > ± MDL?	✓					
	Sample Results > MDL						
	< 5X Blank Contamination B						

Note: MB neg. Ca, Sodium, Zinc, Cr L,UL,P
Pos. iron, Mn, <5x → B,P all
ICB,CCB also neg for Ca, Zinc, Pos for Be, radium 226, Mg, lead
Mn, Se, NA IV

5.0 ICP Interference Check Sample (ICS)

Pos <5x → B,O

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
5.1	Was ICS analyzed at beginning and end of each ICP run (or at least twice every 8 hours)?	✓					
5.2	Are the ICS AB recoveries within 80% - 120%?	✓					
5.3	Are the results for unspiked analytes (in ICS A) < ± IDL?	✓					
5.4	If not, are the associated sample Al, Ca, Fe, and Mg concentrations less than the level in the ICS?			✓			
	If not...						
	Action: Not Spiked Analytes: < -IDL L(+)/UL(-); > IDL K(+). Spiked analytes (ICS AB analytes): < 50% L(+)/R(-); 50% - 79% L(+)/UL(-); >120% K(+)						

Note:

6.0 Laboratory Control Sample (LCS)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
6.1	Was an LCS prepared and analyzed at the correct frequency (one per 20 samples, per batch, per matrix and per level)? Action: If no, J(+) any sample not associated with LCS results.	✓			✓		
6.2	Is any LCS recovery outside the control limits? (Aqueous limits: 80% - 120% - except Ag and Sb; Solid limits: as per EPA-EMSL/LV)		✓			✓	
	Action: Solid: < LCL L(+)/UL(-); > UCL K(+). Aqueous: < 50% L(+)/R(-); 50% - 79% L(+)/UL(-); > 120% K(+)						

Note: _____

7.0 Laboratory Duplicates

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
7.1	Were Laboratory duplicates prepared and analyzed at the correct frequency (one per 20 samples, per batch, per matrix and per level)? Action: If no, J(+), using professional judgement, analytes not associated with duplicate results.	✓			✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.						
7.3	Are all analyte duplicate results within control limits? If no, qualify all associated field samples J(+)/UJ( ) for the analyte with results that fall outside criteria.	✓			✓		

Note: _____

8.0 Spike Sample Analysis -Pre-Digestion/Post-Digestion

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
8.1	Was a spiked sample prepared and analyzed at the correct frequency (one per 20 samples, batch, matrix and level)? If not, J(+) with professional judgement.						
8.2	For all analytes with sample concentration > 4 x spike concentration, are spike recoveries within the control limit of 75-125%?						
	%R > 125% / 30%< %R < 74% / < 30%						
	Positive: K / L / L						
	Non-detect: None / UL / R						
8.4	Where pre-digestion matrix spike analytes were outside the acceptable recovery limits(except Ag), was a post-digestion spike performed? Note any failures in DV report, but no data qualifying action is required.						

Note: Not in this SDG

9.0 Instrument Detection Limits (IDL)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
9.1	Are all IDLs/RLs equal to or less than the reporting limits specified?	✓			✓		

Note:

10.0 ICP/AA Serial Dilutions (Not for Mercury Analysis)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
10.1	Were serial dilutions performed?						
10.2	Was a five-fold dilution performed?						
10.3	Did the serial dilution results agree within 10% for ICP analyte concentration > 50 X the IDL in the original sample? If no, J(+).						

Note:

tcs 688

11.0 Field Duplicate Samples

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
11.1	Were any field duplicates submitted for metal analysis?						
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.						
11.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report						

Note: _____

12.0 Result Verification

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
12.1	Were all results and detection limits for solid-matrix samples reported on a dry-weight basis?			✓			✓
12.2	Were all dilution reflected in the positive results and detection limits?	✓			✓		

Note: _____

13.0 Completeness Calculation

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
13.1	Is % completeness within the control limits? (Control limit 90%)	✓			✓		
13.1.1	Number of samples: 3						
13.1.2	Number of target compounds in each analysis: 23						
13.1.3	Number of results rejected and not reported: 3						
	% Completeness = (13.1.1 x 13.1.2 - 13.1.3) x 100/(13.1.1 x 13.1.2) % Completeness = 95%						

Note: _____

DATA VALIDATION REPORT - Level III Review

SDG No.: _____T2946_____ **Fraction:**_TCLP VOCs, TCLP SVOCs, TCLP Pest., TCLP Herbs., TCLP Explosives, TCLP Nitroglycerin, TCLP Metals___

Lab: _CompuChem_____ **Project Name:** __Radford SWMU 8/36_____

Reviewer: _____RA_____ **Date:** _____May 15, 2003_____

This report presents the findings of a review of the referenced data. The report consists of this summary, copies of data reports with data qualifying flags applied (as required), the completed data validation checklist, supporting documentation, and an explanation of the data qualifying flags employed. The review performed is based on the USEPA Region III Modifications to the National Functional Guidelines for Organic and Inorganic Data Review as pertains to the specifics of the analytical methods employed and provisions of the approved project-specific QAPP.

Major Anomalies: None.

Minor Anomalies: For the herbicide analyses, the matrix spike (MS) and the laboratory control sample (LCS) recoveries for silvex (180% and 280%, respectively) were greater than the upper QC limit. No positive results were reported for this compound and no data qualifying action was required.

For the explosive analyses, the matrix spike duplicate (MSD) recovery for 2,4,6-trinitrotoluene (170%) was greater than the upper QC limit. The LCS and MS displayed acceptable recoveries. All samples were non-detect for this compound and no data qualifying action was required.

For the metal analyses, the method blank displayed a positive detection for barium. All associated sample results were greater than five times the blank concentration and no data qualifying action was required. The method blanks also displayed negative detections for arsenic and cadmium. Positive results less than five times the absolute value of the blank concentration were flagged "L,p" and non-detects were flagged "UL,p" in the associated samples.

The continuing calibration blanks displayed positive detections for barium and cadmium. Positive results less than five times the blank concentration were flagged "B,o" in the associated samples.

The initial CRDL percent recoveries for cadmium (129.6%), chromium (75.4%), selenium (118.8%) and silver (89.4%) were outside the QC limit. Positive results less than two times the reporting limit were flagged "K,w" for cadmium and selenium in the associated samples unless previously flagged for blank

contamination. Positive results less than two times the reporting limit were flagged "L,w" and non-detects were flagged "UL,w" for chromium and silver in the associated samples unless previously flagged due to other anomalies.

Correctable Anomalies: None.

Comments: Please note that if a given fraction is not discussed in this report, all QC for that fraction were found to be acceptable.

All data, as qualified, are usable for their intended purpose, based on the data reviewed.

Signed: Rayan

DATA VALIDATION WORKSHEET

Volatile Organic Analysis by GC/MS

Reviewer: RA
Date: 5/13/03
DV Level: II (III) IV
Review Document:
X NFG - Region III Modifications
X Project QAPP/SAP

TCLP VOCs

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: T2946
Test Name: 8260B
Method No.: VOC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If the temperature of the cooler was elevated (> 10 °C) or bubble size in aqueous sample was too big (tiny bubble is OK.), then flag all positive results with a "L" and all non-detects "UL".			
1.5	Do any soil samples contain more than 50% water?		✓	
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method or project QAPP? QAPP say - no HCl preservation.	✓		
2.2	Have any technical holding times, determined from date of sampling to date of analysis, been exceeded? If yes, L(+)/UL(-). For aqueous unpreserved - 7 days for aromatic compounds All others - 14 days.		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, L(+)/R(-) .		L	

Notes: Collected 4/16/17,03 Analyzed 4/24/03

135
668

Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per GCMS, 20 samples, batch, matrix, and level)?	✓		
3.2	Do any method blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to 5 times (or 10 times for the common volatile lab contaminants - methylene chloride, acetone, and 2-butanone) the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If Yes, use same rules above.			✓
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, noted in the DV report.			✓

Notes:

0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If no, use professional judgement to determine the effect on the data and note in the reviewer narrative.	✓		
4.3	Has a continuing calibration standard been analyzed for every 12 hours of sample analysis per instrument?	✓		
4.4	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 15% and %D < ± 20%	✓		
	For initial Calibration: for %RSD > ± 15%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 20% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >20%, J(+).			✓
4.5	Do any SPCC compounds have an RRF < CL? CL >0.10 for chloromethane, 1,1-dichloroethane, & bromoform or >0.30 for chlorobenzene & 1,1,2,2-tetrachloroethane. If yes, L(+)/R(-).		✓	

Notes:

Blanks (Laboratory and Field)		Yes	N	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per GCMS, 20 samples, batch, matrix, and level)?	✓		
3.2	Do any method blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to 5 times (or 10 times for the common volatile lab contaminants - methylene chloride, acetone, and 2-butanone) the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If Yes, use same rules above.			✓
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, noted in the DV report.			✓

otes:

0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If no, use professional judgement to determine the effect on the data and note in the reviewer narrative.	✓		
4.3	Has a continuing calibration standard been analyzed for every 12 hours of sample analysis per instrument?	✓		
4.4	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 15% and %D < ± 20%	✓		
	For initial Calibration: for %RSD > ± 15%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 20% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >20%, J(+).			✓
4.5	Do any SPCC compounds have an RRF < CL? CL >0.10 for chloromethane, 1,1-dichloroethane, & bromoform or >0.30 for chlorobenzene & 1,1,2,2-tetrachloroethane. If yes, L(+)/R(-).		✓	

lotes:

5343

GC/MS Instrument Performance Check		Yes	No	NA
5.1	Are GC/MS Tuning and Mass Calibration forms present for bromofluorobenzene (BFB)?	✓		
5.2	Are BFB enchanced bar graph spectrum and mass/charge (m/z) listing provided for each 12-hour shift?	✓		
5.3	Have all samples been analyzed within twelve hours of the BFB tune?	✓		
	If twelve hours have elapsed according to the system clock, and the laboratory had analyzed standards, blanks, field samples or QC samples after twelve (12) hours, the data for the affected standards, blanks, field samples or QC samples are rejected "R".			
5.4	Have ion abundance criteria for BFB been met for each instrument used?	✓		
	If the BFB criteria were not met prior to the analyses of the standards, blanks, field samples and QC samples, all standards, blanks, field samples and QC samples are rejected "R".			

Notes:

0 Surrogate Recovery		Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
6.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
6.3	If No in Section 6.2, are these sample(s) or method blank(s) reanalyzed?			✓
	If any system monitoring compound(s) in the volatile fraction is out of specification, there should be a reanalysis to confirm that the non-compliance is because of sample matrix effects rather than laboratory deficiencies.			
6.4	If No in Section 6.3, is any sample dilution factor greater than 10? DV report should indicate that extraction efficiency/ method accuracy cannot be verified.			✓

	1 or more <10%	1 high/low	2 or 3 high/low	2 or 3 all low	2 or 3 all high
Positives	L	J	J	L	K
Non-detects	R	UJ	UJ	UL	NONE

Note: The B qualifier remains over surrogate flagging.

Notes:

Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	N	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

)tes:

		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

otes:

		Yes	No	NA
9.1	Are internal standard area of every sample and blank within upper and lower QC limits for each continuing calibration? If not, J(+)/UJ(-).	✓		
	If extremely low area counts are reported, or performance exhibits a major abrupt drop-off, then a severe loss of sensitivity is indicated. Non-detect target compounds should then be qualified as unusable (R).			
9.2	Are retention times of internal standards within 30 seconds of the associated calibration standard?	✓		
	The chromatographic profile for that sample must be examined to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Positive results should not needed to be qualified as "R", if the mass spectral criteria are met.			

otes:

0 Field Duplicate		Yes	No	NA
10.1	Was a field duplicate prepared and analyzed at the correct frequency (one per 20 samples, matrix, and level)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
10.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

ites:

.0 Tentatively Identified Compounds (TICs) and Detection Limit Verification		Yes	No	NA
11.1	Are any TICs detected in the field samples? If Yes, all TIC results should be flagged "NJ" (tentatively idenified, and approximate concentration).		✓	
11.2	Do detection limits meet those required by the project QAPP and were they properly adjusted to reflect all sample dilutions and dry weight factors?	✓		
11.3	Were sample concentrations above the highest standard run at a dilution? If not, for ion saturation flag "L", unsaturated results "J".			✓

otes:

2.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples:			
12.1.2	Number of target compounds in each analysis:			
12.1.3	Number of results rejected and not reported:			
	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100 %			

lotes:

DATA VALIDATION WORKSHEET

Semivolatile Organic Analysis

eviewer: RA
ate: 5/13/03
V Level: II (III) IV
eview Document:
K NFG - Region III Modifications
K Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: T2946
Test Name: SVOC
Method No.: 8270C

0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If samples were not on ice or the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 20 °C), then flag all positive results with a "L" and all non-detects "UL".			
1.5	Do any soil samples contain more than 50% water?		✓	
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

lotes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method or project QAPP?	✓		
2.2	Have any technical holding times, determined from date of sampling to date of analysis, been exceeded? If yes, L(+)/UL(-). For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, L(+)/R(-) .		✓	

Notes: collected 4/16/17/03; extracted 4/25,23/03; analyzed 4/30,24/03

625
688

0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix and per level)?	✓		
3.2	Do any preparation/instrument/reagent blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to 5 times (or 10 times for the common phthalate contaminants) the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.			✓
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, noted in the Dv report.			✓

otes:

.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If no, use professional judgement to determine the effect on the data and note in the reviewer narrative.	✓		
4.3	Has a continuing calibration standard been analyzed for every 12 hours of sample analysis per instrument?	✓		
4.4	Are all calibration standard (IC and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD ≤ 15% and %D ≤ 20%	✓		
	For initial Calibration: for %RSD > ± 15%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 20% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >20%, J(+).			
4.5	Do any SPCC compounds have an RRF < 0.05? (n-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-dinitrophenol, & 4-nitrophenol) If yes, J(+)/R(-).		✓	

Notes:

5.0 GC/MS Instrument Performance Check		Yes	No	NA
5.1	Are GC/MS Tuning and Mass Calibration forms present for decafluorotriphenylphosphine (DFTPP)?	✓		
5.2	Are DFTPP enchanced bar graph spectrum and mass/charge (m/z) listing provided for each 12-hour shift?	✓		
	If DFTPP was analyzed simultaneously with any calibration standard or blank, the instrument performance check (IPC) is rejected "R" as well as all associated data.			
5.3	Have all samples been analyzed within twelve hours of the DFTPP tune?	✓		
	If twelve hours have elapsed according to the system clock, and the laboratory had analyzed standards, blanks, field samples or QC samples after twelve (12) hours, the data for the affected standards, blanks, field samples or QC samples are rejected "R".			
5.4	Have ion abundance criteria for DFTPP been met for each instrument used?	✓		
	If the DFTPP criteria were not met prior to the analyses of the standards, blanks, field samples and QC samples, all standards, blanks, field samples and QC samples are rejected "R".			

Notes:

6.0 Surrogate Recovery		Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
6.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
6.3	If No in Section 6.2, are these sample(s) or method blank(s) reanalyzed?			✓
	If any two base/neutral or acid fraction are out of specification, or if any one base/neutral or acid extractable surrogate has a recovery of less than 10%, then there should be a reanalysis to confirm that the non-compliance is because of sample matrix effects rather than laboratory deficiencies.			
6.4	If No in Section 6.3, is any sample dilution factor greater than 10? (recoveries may be diluted out.)			✓
	1 or more <10% / 2 or 3 high/low / 2 or 3 all low / 2 or 3 all high			
	Positives: L / J / L / K			
	Non-detects: R / UJ / UL / NONE			
	Note: The B qualifier remains over surrogate flagging.			

Notes:

0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

lotes:

.0 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

Notes:

.0 Internal Standard		Yes	No	NA
9.1	Are internal standard area of every sample and blank within upper and lower QC limits for each continuing calibration? If not, J(+)/UJ(-).	✓		
	If extremely low area counts are reported, or performance exhibits a major abrupt drop-off, then a severe loss of sensitivity is indicated. Non-detect target compounds should then be qualified as unusable (R).			
9.2	Are retention times of internal standards within 30 seconds of the associated calibration standard?	✓		
	The chromatographic profile for that sample must be examined to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Positive results should not needed to be qualified as "R", if the mass spectral criteria are met.			

Notes:

.0 Field Duplicate		Yes	No	NA
10.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
10.2	Are all analyte duplicate results within control limits? Generally, no action is taken on the basis of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

otes:

1.0 Tentatively Identified Compounds (TICs) and Detection Limit Verification		Yes	No	NA
11.1	Are any TICs detected in the field samples? If Yes, all TIC results should be flagged "NJ" (tentatively identified, and approximate concentration).		✓	
11.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture?	✓		
11.3	Were sample concentrations above the highest standard run at a dilution? If not, for ion saturation flag "L", unsaturated results "J".			✓

Notes:

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples:_____			
12.1.2	Number of target compounds in each analysis:_____			
12.1.3	Number of results rejected and not reported:_____			
	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100 %			

Notes:

Pg 3 of 4

DATA VALIDATION WORKSHEET

Pesticides/PCBs

Reviewer: EA
Date: 5/13/03
DV Level: II III IV
Review Document:
X SW-846 - 8081/8082
X NFG - Region III Modifications
___ CLP

Pest. only

Project Name: Radford SWMU 8 & 36
Project Number: 15291524.00000
Laboratory: Compuchem
SDG No.: T2946
Test Name: PEST
Method No.: 8081A

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If samples were not on ice or the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 20 °C), then flag all positive results with a "J" and all non-detects "UJ".			
1.5	Do any soil samples contain more than 50% water?		✓	✓
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method?	✓		
2.2	Have any technical holding times, determined from date of sampleing to date of analysis, been exceeded? If yes, J(+)/UJ(-). For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, J(+)/R(-).		✓	

Notes:

collected	extract	analyzed
4/16/17,03	4/23/03	4/27,03

.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix)?	✓		
3.2	Do any preparation/instrument/reagent blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to five times the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.			✓
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note it in the DV report.			✓

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards included in the calibration curve? 1016 and 1260 need at least three peaks at five concentrations. The multi-component target compounds (the other Aroclors, Toxaphene, & Chlordane) must each be analyzed separately at a single concentration level during the initial calibration sequence.	✓		
4.2	Has a continuing calibration standard been analyzed for every 12 hours or twenty samples?	✓		
4.3	Are all calibration standard (IC and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r>0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			
4.4	Do all standard retention times in the continuing calibration fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.	✓		

Notes:

.0 GC/ECD Instrument Performance Check		Yes	No	NA
5.1	Has a Resolution Check Mixture been analyzed at the beginning of every initial calibration sequence, on each GC column and intrument used for analysis?			
5.2	Is the resulution between all adjacent peaks in the Resolution Check Mixture greater than or equal to 60% for both column?			
	Detected target compounds that were not adequately resolved should be qualified with "J". Qualitative identifications may also be questionable if coelution exists. Non-detects with retention times in the region of coelution may not be valid, depending on the extent of the problem. Professional judgement should be used to			
5.3	Has a Performance Evaluation Mixture (PEM) been analyzed at the beginning (following the RCM) and the end of every initial calibration sequence, on each GC column and intrument used for analysis? The PEM must also analyzed at the beginning of every other 12-hour analytical period.			
5.4	Is the resulution between all adjacent peaks in the PEM equal to 100% in each calibration (initial and continuing) for both column?			
5.4	Do all standard retention times of each of the single component pesticides and surrogate in all PEM fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.			
5.5	Are all PEM %Ds less than or equal to 25%? If No, J(+)/UJ(-).			
5.6	Is the 4,4'-DDT breakdown </= to 20%? If No, for positive DDT results, DDT-L(+), DDD/DDE - NJ(+). For non-detect DDT results, DDD/DDE - R(+).			
5.7	Is the endrin breakdown </= to 20%? If No, for positive endrin results, endrin-L(+), endrin aldehyde/ketone - NJ(+). For non-detect DDT results, endrin aldehyde/ketone - R(+).			
5.8	Is the combined breakdowns less than or equal to 30%? If No, for positive DDT/endrin results, DDT/endrin-L(+), DDD/DD/endrin aldehyde/endrin ketone - NJ(+). For non-detect DDT/endrin results, DDD/DDE/endrin aldehyde/endrin ketone - R(+).			

Notes:

.0 Surrogate Recovery					Yes	No	NA
6.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?				✓		
6.2	Do all surrogate retention times fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.				✓		
6.3	Are surrogate recoveries within acceptance criteria for all samples and method blanks?				✓		
6.4	If No in Section 6.3, are these sample(s) or method blank(s) reanalyzed?						✓
6.5	If No in Section 6.4, is any sample dilution factor greater than 10? (recoveries may be diluted out.)						✓
	# of outliers	Recovery	Sample result from column with non-conformance	Sample result from column without non-conformance			
	1 out	high/low	No action	No action			
	2 out	2 high same column	K	No action			
		2 low same column	L, UL	No action			
		mixed same column	J, UJ	No action			
		2 high diff columns	J	Not applicable			
		2 low diff columns	J, UJ	Not applicable			
		mixed diff columns	Professional judgement	Not applicable			
	3 out	All high	K	Not applicable			
		All low	L, UL	Not applicable			
		2 high, 1 low	K (2 high)	J (1 low 2nd column)			
		2 low, 1 high	L, UJ (2 low)	J (1 high 2nd column)			
		other mixed	J, UJ	Not applicable			
	4 out	All high	K	Not applicable			
		All low	L, UL	Not applicable			
		Mixed	J, UJ	Not applicable			
	If any recovery is >0% and <10% then L(+)/R(-).						
	If any recovery is 0% then R(+/-).						

Notes:

.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
7.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
7.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
7.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

8.0 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)		Yes	No	NA
8.1	Is the LCS/LCSD recovery form present?	✓		
8.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
8.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
8.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

Notes:

9.0 Field Duplicate		Yes	No	NA
9.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
9.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

Notes:

10.0 Compound Identification and Detection Limit Verification		Yes	No	NA
10.1	Is the percent difference calculated for the positive sample results on both columns < 40%? If No, J(+).	✓		
10.2	Do detection limits meet those required by the project QAPP and were properly adjusted for dilution factors and moisture?	✓		

Notes:

11.0 Cleanup Checks		Yes	No	NA
11.1	Is Form IX PEST-1 present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest/PCB extracts to reduce matrix interference caused by polar compounds.)			
	Every lot number of Florisil cartridges used for sample cleanup must be checked by spiking with 2,4,5-trichlorophenol and the midpoint concentration of Individual Standard Mixture A.			
11.2	Are all samples listed on the Pesticide Florisil cartridge Check Form?			
11.3	Are percent recoveries of pesticide and surrogate compounds within control limit, 80-120%(if the recovery of 2,4,5-trichlorophenol < 5%), for the florisil cartridge check? If No, the raw data should be examined for the presence of polar interferences and professional judgement should be used in qualifying the data.			

Notes:

12.0 Data Completeness		Yes	No	NA
12.1	Is % completeness within the control limits? (Control limit 90%)	✓		
12.1.1	Number of samples:_____			
12.1.2	Number of target compounds in each analysis:_____			
12.1.3	Number of results rejected and not reported:_____			
12.1.4	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100 %			

Notes:

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DATA VALIDATION WORKSHEET

Herbicides

Reviewer: RA
Date: 5/13/03
DV Level: II III IV
Review Document:
___ SW-846
✓ NFG - Region III Modifications

Project Name: Radford
Project Number:
Laboratory: Compuchem
SDG No.: T2946
Test Name: herbs.
Method No.: 8151

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Do sample preservation, collection and storage condition meet method requirement?	✓		
	If samples were not on ice or the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 20 ^{o}C), then flag all positive results with a "J" and all non-detects "UJ".			
1.5	Do any soil samples contain more than 50% water?			✓
	If any sample analyzed as a soil, other than TCLP, contains % moisture greater than 50%, noted in the DV report.			

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Were sample preserved as specified in the method?	✓		
2.2	Have any technical holding times, determined from date of sampleing to date of analysis, been exceeded? If yes, J(+)/UJ(-). For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, J(+)/R(-).		✓	

Notes:

collected	extract	analyzed
4/16,17,03	4/23,03	4/25,03

3.0 Blanks (Laboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix and per level)?	✓		
3.2	Do any preparation/instrument/reagent blanks have positive results? Action: If yes, positive sample results should be reported and qualified "B", if the concentration of the compound in the sample is less than or equal to five times the amount in the associated blank.		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.			✓
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note it in the DV report.			✓

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are five calibration points run for a first order curve with 0.995, on each GC's column used for analysis.	✓		
4.2	Has a continuing calibration standard been analyzed for every 12 hours or ten samples?	✓		
4.3	Are all calibration standard (IC and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: %RSD < ± 20% and %D < ± 15%	✓		
	When criteria is exceeded, but < ± 50%, J(+) only; for % > 50%, but <80%, J(+)/UJ(-); for % > 80%, J(+)/R(-).			
4.4	Do all standard retention times in the continuing calibration fall within the RT windows established ? If No, the associated sample result should be carefully evaluated.	✓		

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
5.2	Do all surrogate retention times fall within the RT windows established during the initial calibration sequence? If No, the associated sample result should be carefully evaluated.	✓		
5.3	Are surrogate recoveries within acceptance criteria for all samples and method blanks? Advisory limit: 60-150%.	✓		
5.4	If No in Section 6.3, are these sample(s) or method blank(s) reanalyzed?			✓
5.5	If No in Section 6.4, is any sample dilution factor greater than 10? (recoveries may be diluted out.)			✓

	<10%	low	high
Positives	L	L	K
Non-detects	R	UL	No action

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
6.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
6.4	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data.			

Notes: silvex MS 60% 7QC ND in BSC1
no action

7.0 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	✓		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?	✓		
	If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	If Yes, J(+) only.			

Notes: Silvex LCS 28% 7QC
ND, no action

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)? Generally, no action is taken on the basis of field duplicate results. Only discussed in the DV report.			✓
	For sample results > 5 x CRDL (or the RL), a control limit of 20% RPD for water and 35% RPD for soil will be used. For sample results < 5 x CRDL (or RL), a control limit of 2 x CRDL (or RL) for water and 4 x CRDL (or RL) for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on the basis of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

Notes:

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Is the percent difference calculated for the positive sample results on both columns < 25%? If No, J(+).			✓
9.2	Do detection limits meet those required by the project QAPP and were properly adjusted for dilution factors and moisture?	✓		

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 95%)	✓		
10.1.1	Nunber of samples:_____			
10.1.2	Number of target compounds in each analysis:_____			
10.1.3	Number of results rejected and not reported:_____			
10.1.4	% Completeness = (12.1.1 x 12.1.2 - 12.1.3) x 100/(12.1.1 x 12.1.2)			
	% Completeness = 100 %			

Notes:

457
913

DATA VALIDATION WORKSHEET

Explosives

Reviewer: RA
Date: 5/13/03
DV Level: II (III) IV
Review Document:
_X__ Region III Modified for National Functional Guidelines
____ NFG for organic Data review (February 1994)
____ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: I2946
Test Name: Explosives
Method No.: 8330-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?	✓		

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?	✓		
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".			✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.		✓	

Notes: collect 4/16,17,03 extract 4/19,03 analyzed 4/22,03

3.0 Blank	aboratory and Field)	Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)	✓		

3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.			✓
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.			✓

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.	✓		
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.	✓		

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
6.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		

6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?	✓		
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes: 2,4,6-trinitrotoluene. LT0 7 QC. ND in BSCL no action

7.0 Laboratory Control Sample (LCS)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?			
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?			
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

Notes:

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second columns.			

9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?	✓		

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)	✓		
10.1.1	Number of samples:_____			
10.1.3	Number of results rejected and not reported:_____			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100 %			
	% Completeness = _____			

Notes:

DATA VALIDATION WORKSHEET

Nitroglycerin

Reviewer: EA
Date: 9/13/03
DV Level: II (III) IV
Review Document:
_X__ Region III Modified for National Functional Guidelines
____ NFG for organic Data review (February 1994)
____ Project QAPP/SAP

Project Name: Radford SWMU 8 & 36
Project Number:
Laboratory: Compuchem
SDG No.: T2946
Test Name: Nitroglycerin
Method No.: 8332-HPLC

1.0 Laboratory Deliverables		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓	
1.4	Are the sample preparation benchsheets present and complete with sample volume/weights, dilutions, final volumes. % solids	✓		
1.5	Are the measurement read out records legible and complete (properly labeled, and include all samples and QC)?	✓		

Notes:

2.0 Holding Times		Yes	No	NA
2.1	Do sample preservation, collection and storage condition meet method requirement?	✓		
	Action: If the temperature of the cooler was elevated (> 10 °C), then flag all positive results with a "J" and all non-detects "UJ".			✓
2.2	Have any technical holding times, determined from date of sampling to date of analysis (including dilution and reanalyese, been exceeded? Action: If yes, apply J (+) and UJ (-) to all analytes in the sample. For aqueous matrix - 7 days (extraction) and 40 days (analysis) For soil matrix - 14 days (extraction) and 40 days (analysis).		✓	
2.3	Have any technical holding times been grossly (twice the holding time) exceeded? If yes, note in the DV report.		✓	

Notes: collect 4/16/17/03 extract 4/18/03 analyzed 4/22/03

3.0 Blank. aboratory and Field)		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)	✓		

3.2	Do any method blanks have positive results? Action: If Yes, positive sample results< 5 Xblank conc. in the associated should be reported and qualified "B".		✓	
3.3	Do any field equipment blanks/trip blanks have positive results? If yes, use same rules above.			✓
3.4	Are there field equipment blank/trip blanks associated with every sample? If No, note in the DV report.			✓

Notes:

4.0 Initial and Continuing Calibration		Yes	No	NA
4.1	Are sufficient standards (5 for first order, 6 for second order, or 7 for third order) included in the calibration curve? If no, apply professional judgement towards usability.	✓		
4.2	Was an initial calibration analyzed at the beginning of each analysis? If No, apply R to all results for specific analyte(s) for all samples associated with the calibration.	✓		
4.3	Are all calibration standard (ICV and CCV) %RSD (or correlation coefficient) or % drift within the control limits? Control Limits: r≥0.99, %RSD < ± 20% and %D < ± 15%	✓		
	For initial Calibration: for %RSD > ± 20%, but < ± 50%, J(+) only. for %RSD > ± 50%, but < ± 80%, J(+)/UJ(-); for %RSD > + 80%, J(+)/R(-).			✓
	For Continuing Calibration: displaying a negative bias: %D > + 15% and < + 50%, J(+)/UJ(-), >50%J(+)/R(-); displaying a positive bias >15%, J(+).			✓
4.4	Has a continuing calibration verification been analyzed prior to and after every 10 samples and at the end of the analysis sequence? If no, apply R to associated samples.	✓		

Notes:

5.0 Surrogate Recovery		Yes	No	NA
5.1	Are all samples listed on the appropriate Surrogate Recovery Summary Form ?	✓		
5.2	Are surrogate recoveries within acceptance criteria for all samples and method blanks?	✓		
5.3	If No in Section 5.2, are these sample(s) or method blank(s) reanalyzed?			✓
5.4	If No in Section 5.3, is any sample DF greater than 10? No action is taken if surrogate is expected to be diluted out.			✓
	Action: If No, for any %R > UCL, apply K to all positive results of analytes; for any %R < LCL, but > 10%, L(+)/UL (-); for any %R < 10%, apply L (+) and R (-) to all results of analytes asociated with the surrogate.			

Notes:

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD)		Yes	No	NA
6.1	Is the matrix spike/matrix spike duplicate recovery form present?	✓		
6.2	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		

6.3	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits?		✓	
	No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the MS and MSD results in conjunction with other QC criteria to determine the need for some qualification of the data. If determined to affect only the sample spiked, then qualify the parent sample alone. If determined that problem is systematic, flag all associated samples.			

Notes:

7.0 Laboratory Control Sample (LCS)		Yes	No	NA
7.1	Is the LCS/LCSD recovery form present?	✓		
7.2	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	✓		
7.3	Are there any %R for LCS/LCSD recoveries outside the QC limits?		✓	
	Action: If Yes, for %R > UCL, J(+) only; for %R < LCL, J(+)/R(-).			
7.4	Are there any RPD for LCS/LCSD recoveries outside the QC limits?			✓
	Action: If Yes, J(+) only.			

Notes:

8.0 Field Duplicate		Yes	No	NA
8.1	Were field duplicate prepared and analyzed at the corrected frequency (one per 20 samples, per matrix and per level)?			✓
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.			
8.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report.			✓

Notes:

9.0 Compound Identification and Detection Limit Verification		Yes	No	NA
9.1	Are any target compounds detected in the field samples? If Yes, is all positive identifications were confirmed in second column? Apply J flag if RPD >40% between first and second columns		✓	

9.2	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?	✓		

Notes:

10.0 Data Completeness		Yes	No	NA
10.1	Is % completeness within the control limits? (Control limit 90%)	✓		
10.1.1	Number of samples:			
10.1.3	Number of results rejected and not reported:			
	% Completeness = (10.1.1 x 10.1.2 - 10.1.3) x 100/(10.1.1 x 10.1.2)			
	% Completeness = 100 %			
	% Completeness =			

Notes:

DATA VALIDATION WORKSHEET
INORGANIC - ICP, CVAA, AND CYANIDE
REGION III - NATIONAL FUNCTIONAL GUIDELINES

SDG No.: T2946
Project No.: 15291524.00000

Project Name: Radford SWMU 8 & 36
Reviewer: RA
Date: 5/13/03

1.0 Chain of Custody/Sample Condition/Raw Data

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples which were analyzed?	✓			✓		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	✓			✓		
1.3	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		✓			✓	
1.4	Does sample preservation, collection and storage meet method requirement? (For metal: water samples: with Nitric Acid to pH < 2, and soil/sediment samples: 4 ^{o}C ± 2 ^{o}C)	✓			✓		
1.5	Are the digestion logs present and complete with pH values, sample weights, dilutions, final volumes. % solids (for soil samples), and preparation dates? For any missing or incomplete documentation, contact the laboratory for explanation/resubmittal.	✓			✓		

Note:

2.0 Holding Time

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
2.1	Have any technical holding times, determined from date of collection to date of analysis, been exceeded? (Hg: 28days, other metals: 6 months) Action: L(+)/UL(-). If the holding time is grossly exceeded (twice the holding time criteria), L(+)/R(-).		✓			✓	

Note: Collected 4/16/17/03 Analyzed 4/25, 24/03

3.0 Instrument Calibration

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
3.1	Are sufficient standards included in the calibration curve with a low point at RL? (ICP: blank + one standard; CVAA: blank + five standards). If not, qualify with "R".				✓		
3.2	Are the correlation coefficients > 0.995? (for CVAA) Action: J(+)/UJ(-).				✓		
3.3	Was an initial calibration check standard (ICV) analyzed immediately after instrument system had been calibrated? Action: If no, all associated data are rejected "R".	✓			✓		
3.4	Was continuing calibration standard (CCS) analyzed at a minimum frequency of 10% (every 10 samples) during an analytical run and at the end of the analytical run? If not, document and flag based on professional judgement.	✓			✓		
3.5	Are all calibration standard percent recoveries (ICV and CCV) within the control limits? FOR Hg ICV 90%-110% and CCV 80-120%; FOR ICP ICV &CCV 90%-110%.	✓			✓		
	ICV and CCV: Action: L(+)/R(-) L(+)/UL(-) K(+) Mercury ICV < 65% 65% - 90% > 110% Mercury CCV < 65% 65% - 79% > 120% Other Metals < 75% 75% - 89% > 110%						
3.6	For ICP, did the CRDL standard recover between 90-110%?		✓				
	<50% 50%-89% >110% 2xCRDL>[sample]>IDL L(+)/R(-) L(+)/UL(-) K						

Note:

Cadmium 129.6 K LW unless prev.
Chromium 75.4 L LW
Se 118.8 K LW
Silver 89.4 UL LW unless prev. flagged

4.0 Blanks

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
4.1	Were method blank (MB) prepared at the appropriate frequency (one per 20 samples, per batch, per matrix and per level)?	✓			✓		
4.2	Were calibration blanks (ICB and CCBs) analyzed immediately after each and every ICV and CCVs? Action: If no ICB was run, all associated data are rejected. If the frequency of the CCBs does not follow requirement, all associated data are qualified "J".	✓			✓		
4.3	Are there reported MB or ICB/CCBs values > MDL?	✓				✓	
	Sample Results > MDL						
	< 5X Blank Contamination B						
4.4	Are there negative blank results with the absolute value > MDL?	✓				✓	
	Sample Results Non-detects > MDL						
	< 5X absolute Blank Contamination UL L						
4.5	Are there reported field blankor trip blank values > ± MDL?			✓			✓
	Sample Results > MDL						
	< 5X Blank Contamination B						

Note: MB neg. arsenic, cadmium CCB pos ba, cadmium
pos. barium → LIUL P
pos <5x → B, 0
<75x no action

5.0 ICP Interference Check Sample (ICS)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
5.1	Was ICS analyzed at beginning and end of each ICP run (or at least twice every 8 hours)?	✓					
5.2	Are the ICS AB recoveries within 80% - 120%?	✓					
5.3	Are the results for unspiked analytes (in ICS A) < ± IDL?	✓					
5.4	If not, are the associated sample Al, Ca, Fe, and Mg concentrations less than the level in the ICS?			✓			
	If not...						
	Action: Not Spiked Analytes < -IDL L(+)/UL(-) > IDL K(+) Spiked analytes (ICS AB analytes) < 50% L(+)/R(-) 50% - 79% L(+)/UL(-) >120% K(+)						

Note:

6.0 Laboratory Control Sample (LCS)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
6.1	Was an LCS prepared and analyzed at the correct frequency (one per 20 samples, per batch, per matrix and per level)? Action: If no, J(+) any sample not associated with LCS results.	✓			✓		
6.2	Is any LCS recovery outside the control limits? (Aqueous limits: 80% - 120% - except Ag and Sb; Solid limits: as per EPA-EMSL/LV)		✓			✓	
	Action: Solid: < LCL L(+)/UL(-); > UCL K(+). Aqueous: < 50% L(+)/R(-); 50% - 79% L(+)/UL(-); > 120% K(+)						

Note: _____

7.0 Laboratory Duplicates

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
7.1	Were Laboratory duplicates prepared and analyzed at the correct frequency (one per 20 samples, per batch, per matrix and per level)? Action: If no, J(+), using professional judgement, analytes not associated with duplicate results.	✓			✓		
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.						
7.3	Are all analyte duplicate results within control limits? If no, qualify all associated field samples J(+)/UJ( ) for the analyte with results that fall outside criteria.	✓			✓		

Note: _____

8.0 Spike Sample Analysis -Pre-Digestion/Post-Digestion

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
8.1	Was a spiked sample prepared and analyzed at the correct frequency (one per 20 samples, batch, matrix and level)? If not, J(+) with professional judgement.	✓			✓		
8.2	For all analytes with sample concentration > 4 x spike concentration, are spike recoveries within the control limit of 75-125%?	✓			✓		
	%R > 125% / 30%< %R < 74% / < 30%						
	Positive: K / L / L						
	Non-detect: None / UL / R						
8.4	Where pre-digestion matrix spike analytes were outside the acceptable recovery limits(except Ag), was a post-digestion spike performed? Note any failures in DV report, but no data qualifying action is required.			✓			✓

Note: _____

9.0 Instrument Detection Limits (IDL)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
9.1	Are all IDLs/RLs equal to or less than the reporting limits specified?	✓			✓		

Note: _____

10.0 ICP/AA Serial Dilutions (Not for Mercury Analysis)

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
10.1	Were serial dilutions performed?	✓					
10.2	Was a five-fold dilution performed?	✓					
10.3	Did the serial dilution results agree within 10% for ICP analyte concentration > 50 X the IDL in the original sample? If no, J(+).	✓					

Note: _____

11.0 Field Duplicate Samples

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
11.1	Were any field duplicates submitted for metal analysis?						
	For sample results > 5 x RL, a control limit of 25% RPD for water and 35% RPD for soil will be used. For sample results < 5 x RL, a control limit of 2 x RL for water and 4 X RL for soil will be used.						
11.2	Are all analyte duplicate results within control limits? Generally, no action is taken on percent difference of field duplicate results. Results that fall outside criteria recommended above should be noted during data validation and discussed in the DV report						

Note: _____

12.0 Result Verification

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
12.1	Were all results and detection limits for solid-matrix samples reported on a dry-weight basis?			✓			✓
12.2	Were all dilution reflected in the positive results and detection limits?	✓			✓		

Note: _____

13.0 Completeness Calculation

		ICP			CVAA-Hg		
		Yes	No	NA	Yes	No	NA
13.1	Is % completeness within the control limits? (Control limit 90%)	✓					
13.1.1	Number of samples:_____						
13.1.2	Number of target compounds in each analysis:_____						
13.1.3	Number of results rejected and not reported:_____						
	% Completeness = (13.1.1 x 13.1.2 - 13.1.3) x 100/(13.1.1 x 13.1.2) % Completeness = 100 %						

Note: _____

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APPENDIX G

SSL SCREENING LEVEL COMPARISON

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G.0 SOIL SCREENING LEVEL COMPARISON

As shown in Table G.1, chemical concentrations detected in surface and subsurface soil samples collected from the SWMUs 8 and 36 study area were compared to USEPA Region III Soil Screening Level (SSL) soil migration to groundwater values using a dilution attenuation factor (DAF) of 20 (USEPA, 2003).

Table G.1 indicates three TAL metals (arsenic, chromium, and manganese) were detected at concentrations exceeding the most recent DAF 20 SSLs presented in the USEPA Region III Risk-based Concentration Table (USEPA 2003). Arsenic and chromium were found to exceed SSL criteria but at concentrations below their respective Facility inorganic background point estimates. Manganese concentrations were found to exceed the manganese SSL and its Facility inorganic background point estimate in one of thirty-five soil samples, sample 8SB3A.

Additionally, three organic compounds were detected in one or more samples exceeding their respective USEPA Region III SSL screening values. Specifically, beta-BHC was detected in 5 out of eleven samples with two samples detected at concentrations exceeding the SSL (both J-flag estimated values). Chloroform was detected in one out of thirty-five samples at a concentration of 2 µg/kg (J-flag estimated value), slightly exceeding the SSL of 0.91 µg/kg. The compound 1,2-dibromo-3-chloropropane was detected in one out of thirty-five samples at a concentration of 1.0 µg/kg (J-flag estimated value), slightly exceeding the DAF 20 SSL of 0.87 µg/kg.

Table G.1
Soil Screening Level Comparison Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15		8SB4C 4/15/2003 8.5	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	--	21,000		9,050		27,600		23,000		5,350		14,600	
ANTIMONY	--	13.2	0.72	BN,L,m	0.38	BN,L,m	0.7	BN,L,m	1.6	N,L,m	<0.5	UN,UL,w	0.51	BN,L,m
ARSENIC	15.8	0.026	5.4	N,L,m	0.85	BN,L,m	3.1	N,L,m	9		<0.49	U	5.9	N,L,m
BARIUM	209	2,105	79.5		67.8		74.6		109	E,J,s	48.1	E,J,s	56.9	
BERYLLIUM	1.02	1,154	0.54	B	0.47	B	0.5	B	0.81	E,J,s	0.43	BE,J,s	0.7	
CADMIUM	0.69	55	0.06	B,K,w	0.11	B,K,w	0.12	B,K,w	<0.05	UN,UL,m	<0.04	UN,UL,m	0.17	B,K,w
CALCIUM	--	--	1,980	*,J,k	1,370	*,J,k	4,670	*,J,k	1,080	E,J,s	981	E,J,s	10,700	*,J,k
CHROMIUM	65.3	42.0	32.4		15.1		31.8		52.5	E,J,s	9.8	E,J,s	34.9	
COBALT	72.3	--	14.3		5.1		6.6		30.2	E,J,s	4.5	E,J,s	22.1	
COPPER	53.5	10,518	11.9		7.4		16.1		14.1	NE,K,m	10.2	NE,K,m	18.8	
IRON	50,962	--	30,900		14,500		28,500		39,200	E,J,s	8,680	E,J,s	29,000	
LEAD	26.8	--	18.5		5.8		19.3		32.8	*E,J,k	3.9	*E,J,k	20.5	
MAGNESIUM	--	--	1,310	*,J,k	2,370	*,J,k	3,160	*,J,k	766	E,J,s	1,400	E,J,s	30,300	*,J,k
MANGANESE	2,543	952	1,290		291		358		3,210		199	*E,J,s	435	
MERCURY	0.13	--	0.093	N,B,p	0.039	BN,B,p	0.23	N,L,m	0.13		<0.019	U	0.046	BN,B,p
NICKEL	62.8	--	7.8		8.9		13.7		8.1	E,J,s	6.8	E,J,s	26.6	
POTASSIUM	--	--	673	E,J,s	997	E,J,s	1,240	E,J,s	865	E,J,s	700	E,J,s	2,850	E,J,s
SELENIUM	--	19	1.1	N,L,m	0.41	BN,K,w	0.73	N,L,m	2.4	N,L,m	<0.29	UN,UL,w	0.43	BN,K,w
SILVER	--	31	<0.11	U	<0.11	U	<0.11	U	0.4	B,B,p	<0.09	U	<0.11	U
SODIUM	--	--	269		250	B,B,x	277		111	B,B,x	133	B,B,x	221	B
THALLIUM	2.11	3.64	<0.35	UN*,R,m	<0.37	UN*,R,m	<0.35	UN*,R,m	<0.8	UN,UL,m	<0.77	UN,UL,m	<0.37	UN*,R,m
VANADIUM	108	219	60.2	N,L,m	24.6	N,L,m	53.2	N,L,m	74.4		11.8		46.5	N,L,m
ZINC	202	13,622	36	N,L,m	37.9	N,L,m	39.3	N,L,m	33.6	*E,J,k	30.7	*E,J,k	25.8	N,L,m
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	11,163	--		--		<4.8	U	<0.32	U	--		--	
4,4'-DDE	--	35,220	--		--		<6.1	U	<0.4	U	--		--	
4,4'-DDT	--	1,161	--		--		17	JP,J,g	<0.39	U	--		--	
ALPHA-CHLORDANE[1]	--	919	--		--		<3.3	U	<0.22	U	--		--	
BETA-BHC	--	3.1	--		--		53	P,J,g	<0.28	U	--		--	
GAMMA-CHLORDANE[1]	--	919	--		--		<5.2	U	<0.35	U	--		--	
METHOXYCHLOR	--	305,045	--		--		<21	U	<1.4	U	--		--	

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15		8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	--	13,700		6,330		19,000		13,900		23,100		17,500	
ANTIMONY	--	13.2	0.59	BN,L,m	0.4	BN,L,m	<0.52	UN,UL,w	<0.59	UN,UL,w	1.2	BN,L,m	0.62	BN,L,m
ARSENIC	15.8	0.026	1.8	N,L,m	0.38	BN,L,m	0.51	B	1.4		5.4	N,L,m	5	N,L,m
BARIUM	209	2,105	116		78.1		123	E,J,s	47.2	E,J,s	113		111	
BERYLLIUM	1.02	1,154	0.66		0.22	B	0.74	E,J,s	0.85	E,J,s	0.81		0.74	
CADMIUM	0.69	55	0.27	B,K,w	0.03	B,K,w	<0.05	UN,UL,m	<0.05	UN,UL,m	0.2	B,K,w	0.22	B,K,w
CALCIUM	--	--	5,970	*,J,k	8,040	*,J,k	2,200	E,J,s	13,400	E,J,s	6,650	*,J,k	6,780	*,J,k
CHROMIUM	65.3	42.0	23.7		14.3		27.2	E,J,s	25.2	E,J,s	53.5		55.8	
COBALT	72.3	--	8		2.3		9.7	E,J,s	8.4	E,J,s	9.9		9.2	
COPPER	53.5	10,518	12.4		5.9		30.6	NE,K,m	20.1	NE,K,m	27.1		34.6	
IRON	50,962	--	22,900		11,800		24,600	E,J,s	21,000	E,J,s	32,200		29,900	
LEAD	26.8	--	14.4		5.2		9.4	*E,J,k	9.3	*E,J,k	48.4		36.5	
MAGNESIUM	--	--	6,030	*,J,k	5,670	*,J,k	4,150	E,J,s	25,700	E,J,s	3,080	*,J,k	3,650	*,J,k
MANGANESE	2,543	952	431		194		388	*E,J,s	356	*E,J,s	911		825	
MERCURY	0.13	--	0.046	N,B,p	0.14	N,L,m	0.02	B	<0.02	U	0.41	N,L,m	0.48	N,L,m
NICKEL	62.8	--	11.7		6.7		13.4	E,J,s	13.3	E,J,s	17		16.2	
POTASSIUM	--	--	1,440	E,J,s	732	E,J,s	1,530	E,J,s	4,630	E,J,s	1,250	E,J,s	1,160	E,J,s
SELENIUM	--	19	0.51	BN,K,w	<0.28	UN,UL,m	0.59	N,L,m	0.57	BN,L,w	1.1	N,L,m	0.83	N,L,m
SILVER	--	31	<0.1	U	<0.11	U	<0.09	U	<0.1	U	0.35	B	0.24	B
SODIUM	--	--	243		303		244		121	B,B,x	241	B	210	B
THALLIUM	2.11	3.64	<0.31	UN*,R,m	<0.36	UN*,R,m	1.3	N,L,m	<0.91	UN,UL,m	<0.4	UN*,R,m	<0.34	UN*,R,m
VANADIUM	108	219	37.4	N,L,m	15.6	N,L,m	43.3		33.1		54.8	N,L,m	45.5	N,L,m
ZINC	202	13,622	63.4	N,L,m	30.7	N,L,m	59.5	*E,J,k	16.7	*E,J,k	124	N,L,m	90	N,L,m
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	11,163	--		--		<0.32	U	--		<4.8	U	9.1	J
4,4'-DDE	--	35,220	--		--		<0.4	U	--		<6.1	U	8.5	J
4,4'-DDT	--	1,161	--		--		<0.39	U	--		<5.8	U	120	
ALPHA-CHLORDANE[1]	--	919	--		--		<0.22	U	--		94	,J,m	31	J
BETA-BHC	--	3.1	--		--		<0.28	U	--		<4.2	U	8.9	J,J,g
GAMMA-CHLORDANE[1]	--	919	--		--		<0.35	U	--		74	,J,m	20	
METHOXYCHLOR	--	305,045	--		--		<1.4	U	--		<21	U	32	J

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1		36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	--	17,300		7,550		16,500		8,600		18,300		12,600	
ANTIMONY	--	13.2	<0.59	UN,UL,w	<0.6	UN,UL,w	<0.61	UN,UL,w	<0.58	UN,UL,w	0.57	BN,L,m	0.4	BN,L,m
ARSENIC	15.8	0.026	1.1	B	<0.59	U	0.87	B	<0.56	U	1.7	N,L,m	4.7	N,L,m
BARIUM	209	2,105	154	E,J,s	75.1	E,J,s	136	E,J,s	82.2	E,J,s	161		63.2	
BERYLLIUM	1.02	1,154	0.97	E,J,s	0.57	BE,J,s	0.91	E,J,s	0.64	BE,J,s	0.9		0.59	B
CADMIUM	0.69	55	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	0.24	B,K,w	0.17	B,K,w
CALCIUM	--	--	3,710	E,J,s	1,310	E,J,s	1,890	E,J,s	1,700	E,J,s	2,070	*,J,k	4,780	*,J,k
CHROMIUM	65.3	42.0	23.9	E,J,s	13.7	E,J,s	23.9	E,J,s	14.4	E,J,s	27.1		23	
COBALT	72.3	--	10.5	E,J,s	5.5	E,J,s	11.1	E,J,s	6	E,J,s	8.6		5.6	
COPPER	53.5	10,518	27.7	NE,K,m	7.2	NE,K,m	22.7	NE,K,m	13.8	NE,K,m	14.3		16.2	
IRON	50,962	--	26,100	E,J,s	11,600	E,J,s	22,900	E,J,s	12,900	E,J,s	26,600		20,300	
LEAD	26.8	--	48.8	*E,J,k	4.7	*E,J,k	9.9	*E,J,k	5.3	*E,J,k	10.6		17.3	
MAGNESIUM	--	--	3,210	E,J,s	2,000	E,J,s	3,680	E,J,s	2,130	E,J,s	4,580	*,J,k	11,700	*,J,k
MANGANESE	2,543	952	756	*E,J,s	286	*E,J,s	544	*E,J,s	322	*E,J,s	422		450	
MERCURY	0.13	--	0.031	B	<0.021	U	0.023	B	<0.02	U	0.06	N,B,p	0.046	N,B,p
NICKEL	62.8	--	13.4	E,J,s	8.3	E,J,s	13.5	E,J,s	9	E,J,s	16.1		12.3	
POTASSIUM	--	--	1,520	E,J,s	861	E,J,s	1,560	E,J,s	924	E,J,s	1,530	E,J,s	1,040	E,J,s
SELENIUM	--	19	0.44	BN,L,w	<0.35	UN,UL,w	<0.36	UN,UL,w	<0.33	UN,UL,w	0.58	BN,K,w	0.68	N,L,m
SILVER	--	31	<0.11	U	<0.11	U	<0.11	U	<0.1	U	<0.11	U	<0.11	U
SODIUM	--	--	381		179	B,B,x	240	B,B,x	206	B,B,x	257		111	B,B,x
THALLIUM	2.11	3.64	1.1	BN,K,w	<0.94	UN,UL,m	<0.96	UN,UL,m	<0.9	UN,UL,m	<0.34	UN*,R,m	<0.34	UN*,R,m
VANADIUM	108	219	37.6		16.1		38		18		45.9	N,L,m	29.3	N,L,m
ZINC	202	13,622	165	*E,J,k	41.1	*E,J,k	61.5	*E,J,k	42.4	*E,J,k	68.4	N,L,m	113	N,L,m
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	--	11,163	<0.32	U	--		--		--		<0.32	U	--	
4,4'-DDE	--	35,220	<0.4	U	--		--		--		<0.4	U	--	
4,4'-DDT	--	1,161	<0.39	U	--		--		--		<0.39	U	--	
ALPHA-CHLORDANE[1]	--	919	<0.22	U	--		--		--		<0.22	U	--	
BETA-BHC	--	3.1	<0.28	U	--		--		--		<0.28	U	--	
GAMMA-CHLORDANE[1]	--	919	<0.35	U	--		--		--		<0.35	U	--	
METHOXYCHLOR	--	305,045	<1.4	U	--		--		--		<1.4	U	--	

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	36SB4A 4/15/2003 0-1		36SB4C 4/15/2003 15		36SB5A 4/15/2003 0-1		36SB5A-DUP(DUP2) 4/15/2003 0-1		36SB5C 4/15/2003 15		36SB6B 4/16/2003 7-10	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	–	18,500		11,200		16,200		15,800		14,900		17,200	
ANTIMONY	–	13.2	<0.51	UN,UL,w	<0.51	UN,UL,w	<0.5	UN,UL,w	<0.57	UN,UL,w	<0.6	UN,UL,w	0.59	BN,L,m
ARSENIC	15.8	0.026	3		0.6	B	1	B	1.7		2.1		1.9	N,L,m
BARIUM	209	2,105	51.2	E,J,s	76.8	E,J,s	97	E,J,s	92.5	E,J,s	91.7	E,J,s	118	
BERYLLIUM	1.02	1,154	0.45	BE,J,s	0.57	E,J,s	0.75	E,J,s	0.81	E,J,s	0.8	E,J,s	0.78	
CADMIUM	0.69	55	<0.05	UN,UL,m	<0.04	UN,UL,m	<0.04	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	0.16	B,K,w
CALCIUM	–	–	454	E,J,s	1,170	E,J,s	1,490	E,J,s	971	E,J,s	921	E,J,s	1,960	*,J,k
CHROMIUM	65.3	42.0	21.7	E,J,s	20	E,J,s	24	E,J,s	25.1	E,J,s	23.5	E,J,s	28.4	
COBALT	72.3	–	12.7	E,J,s	9.6	E,J,s	10.3	E,J,s	11.6	E,J,s	11.7	E,J,s	10.5	
COPPER	53.5	10,518	12.4	NE,K,m	23.4	NE,K,m	29.2	NE,K,m	28.5	NE,K,m	27.3	NE,K,m	19.3	
IRON	50,962	–	25,100	E,J,s	22,200	E,J,s	25,500	E,J,s	26,000	E,J,s	25,900	E,J,s	29,300	
LEAD	26.8	–	14.7	*E,J,k	9.5	*E,J,k	15.4	*E,J,k	11.8	*E,J,k	11.4	*E,J,k	11.8	
MAGNESIUM	–	–	876	E,J,s	2,710	E,J,s	3,330	E,J,s	3,720	E,J,s	3,600	E,J,s	4,140	*,J,k
MANGANESE	2,543	952	401	*E,J,s	429	*E,J,s	507	*E,J,s	453	*E,J,s	463	*E,J,s	511	
MERCURY	0.13	–	0.065		<0.02	U	0.035	B	<0.021	U	<0.021	U	0.047	N,B,p
NICKEL	62.8	–	8	E,J,s	11.1	E,J,s	12.8	E,J,s	13.2	E,J,s	13.2	E,J,s	15.1	
POTASSIUM	–	–	1,040	E,J,s	1,620	E,J,s	1,660	E,J,s	1,940	E,J,s	1,990	E,J,s	2,170	E,J,s
SELENIUM	–	19	<0.3	UN,UL,w	<0.29	UN,UL,w	<0.29	UN,UL,w	<0.33	UN,UL,w	<0.34	UN,UL,w	0.5	BN,K,w
SILVER	–	31	<0.09	U	<0.09	U	<0.09	U	<0.1	U	<0.11	U	<0.11	U
SODIUM	–	–	109	B,B,x	212	B,B,x	228		208	B,B,x	217	B,B,x	235	B,B,x
THALLIUM	2.11	3.64	<0.8	UN,UL,m	<0.79	UN,UL,m	0.88	BN,K,w	<0.89	UN,UL,m	<0.93	UN,UL,m	<0.36	UN*,R,m
VANADIUM	108	219	50		36.1		42.8		39.3		39.3		49.5	N,L,m
ZINC	202	13,622	33.3	*E,J,k	46	*E,J,k	61	*E,J,k	49.2	*E,J,k	51.5	*E,J,k	59.3	N,L,m
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	–	11,163	–		–		–		–		–		<0.32	U
4,4'-DDE	–	35,220	–		–		–		–		–		<0.4	U
4,4'-DDT	–	1,161	–		–		–		–		–		<0.39	U
ALPHA-CHLORDANE[1]	–	919	–		–		–		–		–		<0.22	U
BETA-BHC	–	3.1	–		–		–		–		–		0.57	JP,J,g
GAMMA-CHLORDANE[1]	–	919	–		–		–		–		–		<0.35	U
METHOXYCHLOR	–	305,045	–		–		–		–		–		<1.4	U

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	36SB6C 4/16/2003 14-15		36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)														
ALUMINUM	40,041	–	12,400		14,800		16,800		16,100		12,900		10,700	
ANTIMONY	–	13.2	0.56	BN	<0.57	UN,UL,w	<0.58	UN,UL,w	<0.54	UN,UL,w	<0.54	UN,UL,w	<0.58	UN,UL,w
ARSENIC	15.8	0.026	2.1	N,L,m	3.1		0.97	B	2		1.3		2	
BARIUM	209	2,105	82.5		51.6	E,J,s	144	E,J,s	152	E,J,s	129	E,J,s	117	E,J,s
BERYLLIUM	1.02	1,154	0.65		0.37	BE,J,s	1	E,J,s	0.99	E,J,s	0.81	E,J,s	0.63	BE,J,s
CADMIUM	0.69	55	0.17	B,K,w	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m	<0.05	UN,UL,m
CALCIUM	–	–	1,610	*,J,k	419	E,J,s	1,250	E,J,s	1,720	E,J,s	1,550	E,J,s	17,800	E,J,s
CHROMIUM	65.3	42.0	24.2		17.2	E,J,s	24.3	E,J,s	23.3	E,J,s	18.9	E,J,s	17.9	E,J,s
COBALT	72.3	–	9		4.6	E,J,s	10.9	E,J,s	9.9	E,J,s	8	E,J,s	8.5	E,J,s
COPPER	53.5	10,518	16.8		8	NE,K,m	28.2	NE,K,m	29.6	NE,K,m	21.3	NE,K,m	13	NE,K,m
IRON	50,962	–	25,800		17,500	E,J,s	22,000	E,J,s	21,100	E,J,s	19,900	E,J,s	21,700	E
LEAD	26.8	–	13.9		11.7	*E,J,k	10	*E,J,k	21.8	*E,J,k	119	*E,J,k	46.7	*E,J,k
MAGNESIUM	–	–	2,970	*,J,k	864	E,J,s	3,710	E,J,s	3,010	E,J,s	2,550	E,J,s	10,100	E,J,s
MANGANESE	2,543	952	169		280	*E,J,s	595	*E,J,s	573	*E,J,s	698	*E,J,s	548	*E,J,s
MERCURY	0.13	–	0.038	BN,B,p	0.069		0.022	B	0.15		0.023	B	0.021	B
NICKEL	62.8	–	13		6.7	E,J,s	14	E,J,s	14.3	E,J,s	10.8	E,J,s	10.9	E,J,s
POTASSIUM	–	–	1,490	E,J,s	801	E,J,s	1,130	E,J,s	2,060	E,J,s	1,300	E,J,s	1,330	E,J,s
SELENIUM	–	19	0.53	BN,K,w	0.65	N,L,m	0.59	BN,L,w	0.49	BN,L,w	0.67	N,L,m	0.4	BN,L,w
SILVER	–	31	<0.11	U	0.13	B,B,p	<0.1	U	<0.1	U	<0.1	U	<0.1	U
SODIUM	–	–	229	B,B,x	109	B,B,x	226	B,B,x	262		484		369	
THALLIUM	2.11	3.64	<0.35	UN*,R,m	<0.89	UN,UL,m	<0.9	UN,UL,m	<0.84	UN,UL,m	1.2	BN,K,w	<0.91	UN,UL,m
VANADIUM	108	219	40.8	N,L,m	34.8		33.3		35.7		27.5		29.9	
ZINC	202	13,622	53.4	N,L,m	27.5	*E,J,k	61.4	*E,J,k	81.1	*E,J,k	259	*E,J,k	164	*E,J,k
TCL Pesticides/PCBs (µg/kg)														
4,4'-DDD	–	11,163	–		<0.32	U	–		–		–		<0.32	U
4,4'-DDE	–	35,220	–		<0.4	U	–		–		–		<0.4	U
4,4'-DDT	–	1,161	–		<0.39	U	–		–		–		<0.39	U
ALPHA-CHLORDANE[1]	–	919	–		<0.22	U	–		–		–		<0.22	U
BETA-BHC	–	3.1	–		0.9	JP,J,g	–		–		–		1.8	JP,J,g
GAMMA-CHLORDANE[1]	–	919	–		<0.35	U	–		–		–		<0.35	U
METHOXYCHLOR	–	305,045	–		<1.4	U	–		–		–		<1.4	U

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
Metals (mg/kg)												
ALUMINUM	40,041	–	18,200		14,000		20,500		18,600		15,400	
ANTIMONY	–	13.2	<0.58	UN,UL,w	<0.52	UN,UL,w	0.52	BN,L,m	0.53	BN,L,m	0.66	BN,L,m
ARSENIC	15.8	0.026	1.3	B	1.6		1.9	N,L,m	3.8	N,L,m	2.6	N,L,m
BARIUM	209	2,105	98.5	E,J,s	80.8	E,J,s	202		120		133	
BERYLLIUM	1.02	1,154	0.69	E,J,s	0.66	E,J,s	1.1		0.81		0.76	
CADMIUM	0.69	55	<0.05	UN,UL,m	<0.05	UN,UL,m	0.25	B,K,w	0.3	B,K,w	0.29	B,K,w
CALCIUM	–	–	883	E,J,s	835	E,J,s	2,060	*,J,k	2,670	*,J,k	2,330	*,J,k
CHROMIUM	65.3	42.0	24.6	E,J,s	22.6	E,J,s	30.7		31.1		26.5	
COBALT	72.3	–	8.8	E,J,s	8.8	E,J,s	11.3		8		9.8	
COPPER	53.5	10,518	29.7	NE,K,m	25.9	NE,K,m	15.5		24.7		17.6	
IRON	50,962	–	23,200	E	22,100	E,J,s	30,000		34,600		28,300	
LEAD	26.8	–	9.5	*E,J,k	9.2	*E,J,k	12.6		10.5		12.7	
MAGNESIUM	–	–	4,500	E,J,s	3,520	E,J,s	5,020	*,J,k	14,800	*,J,k	4,570	*,J,k
MANGANESE	2,543	952	187	*E,J,s	308	*E,J,s	616		913		464	
MERCURY	0.13	–	<0.022	U	<0.02	U	0.072	N,B,p	0.052	N,B,p	0.047	N,B,p
NICKEL	62.8	–	15.8	E,J,s	11.8	E,J,s	18.1		16.7		15.1	
POTASSIUM	–	–	2,350	E,J,s	1,480	E,J,s	1,480	E,J,s	1,430	E,J,s	1,570	E,J,s
SELENIUM	–	19	<0.34	UN,UL,w	<0.3	UN,UL,w	0.71	N,L,m	0.63	BN,K,w	0.57	BN,K,w
SILVER	–	31	<0.1	U	<0.09	U	<0.1	U	<0.12	U	<0.12	U
SODIUM	–	–	246	B,B,x	202	B,B,x	209	B,B,x	294		271	
THALLIUM	2.11	3.64	<0.91	UN,UL,m	<0.81	UN,UL,m	<0.34	UN*,R,m	<0.39	UN*,R,m	<0.38	UN*,R,m
VANADIUM	108	219	39.3		37.5		50.4	N,L,m	40.7	N,L,m	42.4	N,L,m
ZINC	202	13,622	54.5	*E,J,k	45	*E,J,k	77.2	N,L,m	49.9	N,L,m	60.3	N,L,m
TCL Pesticides/PCBs (µg/kg)												
4,4'-DDD	–	11,163	–		–		<0.32	U	–		–	
4,4'-DDE	–	35,220	–		–		<0.4	U	–		–	
4,4'-DDT	–	1,161	–		–		<0.39	U	–		–	
ALPHA-CHLORDANE[1]	–	919	–		–		<0.22	U	–		–	
BETA-BHC	–	3.1	–		–		<0.28	U	–		–	
GAMMA-CHLORDANE[1]	–	919	–		–		<0.35	U	–		–	
METHOXYCHLOR	–	305,045	–		–		<1.4	U	–		–	

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID Sample Date Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	8SB1A 4/15/2003 0-1		8SB1C 4/15/2003 15		8SB2B 4/17/2003 5		8SB3A 4/15/2003 0-1		8SB3C 4/15/2003 15		8SB4C 4/15/2003 8.5	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	0.7	<0.2	U	<0.1	U	<0.2	U,UJ,i	<0.16	U	<0.19	U	<0.2	U
1,1-DICHLOROETHENE	--	2,922	<0.6	U	<0.5	U	1	J	<0.61	U	<0.71	U	<0.7	U
1,2,4-TRICHLOROBENZENE	--	277	<0.4	U	<0.3	U	<0.5	U,UJ,i	<0.37	U	<0.43	U	<0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	--	0.87	<0.3	U	<0.2	U	<0.3	U,UJ,i	<0.25	U	<0.29	U	<0.3	U
1,2-DICHLOROBENZENE	--	4,553	<0.2	U	<0.1	U	<0.2	U,UJ,i	<0.16	U	<0.19	U	<0.2	U
1,3-DICHLOROBENZENE	--	2,910	<0.2	U	<0.2	U	<0.3	U,UJ,i	<0.24	U	<0.28	U	<0.3	U
1,4-DICHLOROBENZENE	--	7	<0.2	U	<0.2	U	<0.3	U,UJ,i	<0.22	U	<0.26	U	<0.3	U
2-BUTANONE	--	29,016	11	J	<1	U	<2	U	4	J	<1.3	U	3	JB,B,z
2-HEXANONE	--	--	5	J	<0.5	U	<0.7	U	<0.54	U	<0.62	U	5	J
4-METHYL-2-PENTANONE	--	58,826	<0.5	U	0.6	J	0.9	J	<0.52	U	0.7	J	<0.6	U
ACETONE	--	22,135	89		22		52	B	43		30		47	B,B,z
BROMOFORM	--	67	<0.2	U	<0.2	U	0.5	J	<0.24	U	<0.28	U	0.4	J
BROMOMETHANE	--	41	8		6		<1	U	<0.9	U	2	J,J,c	3	J
CARBON DISULFIDE	--	19,000	<0.5	U	<0.4	U	1	J	<0.47	U	<0.54	U	0.8	J
CHLOROFORM	--	0.91	<0.4	U	<0.3	U	<0.5	U	<0.35	U	<0.41	U	<0.4	U
CIS-1,2-DICHLOROETHENE	--	349	<0.3	U	<0.3	U	<0.4	U	<0.33	U	<0.38	U	<0.4	U
CYCLOHEXANE	--	--	<0.4	U	<0.4	U	<0.6	U	<0.42	U	<0.49	U	<0.5	U
DIBROMOCHLOROMETHANE	--	0.8	<0.2	U	<0.1	U	<0.2	U	<0.16	U	<0.19	U	<0.2	U
METHYL ACETATE	--	24,829	15	,B,x	2	J,B,x	8	J,B,x	<0.5	U	2	J	<0.6	U
METHYLCYCLOHEXANE	--	--	<0.4	U	<0.4	U	<0.5	U	<0.4	U	<0.47	U	<0.5	U
METHYLENE CHLORIDE	--	19	0.8	JB,B,z	0.6	JB,B,z	1	J	<0.48	U	0.8	J	1	J
TETRACHLOROETHENE	--	5	<0.3	U	<0.3	U	<0.4	U	<0.33	U	<0.39	U	0.7	JB,B,z
TOLUENE	--	8,790	<0.4	U	0.4	JB,B,z	1	JB,B,z	<0.37	U	0.6	J	1	JB,B,z
TRANS-1,2-DICHLOROETHENE	--	823	<0.4	U	0.4	J	<0.5	U	<0.35	U	<0.41	U	1	JB,B,z
TRICHLOROFLUOROMETHANE	--	22,551	<0.5	U	<0.4	U	<0.6	U	<0.49	U	<0.57	U	<0.6	U
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	--	572	<20	U	<20	U	<300	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	2,889,403	60	J	<32	U	<480	U	<32	U	<32	U	<32	U
CAPROLACTAM	--	--	<62	U	<62	U	<930	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	--	4,964,000	<27	U	<27	U	<400	U	<27	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	--	104,832	<5.9	U	<5.9	U	<89	U	<5.9	U	19	J	70	
BENZO(A)ANTHRACENE	--	1,461	<2.2	U	<2.2	U	<33	U	<2.2	U	<2.2	U	12	
BENZO(A)PYRENE	--	374	<1.6	U	<1.6	U	<25	U	<1.6	U	<1.6	U	2.7	J
BENZO(B)FLUORANTHENE	--	4,514	<1.7	U	<1.7	U	<26	U	<1.7	U	<1.7	U	3	J
BENZO(K)FLUORANTHENE	--	45,141	<1.4	U	<1.4	U	<21	U	<1.4	U	<1.4	U	3.5	J
CHRYSENE	--	146,092	<2.4	U	<2.4	U	<36	U	<2.4	U	<2.4	U	9.6	J
FLUORANTHENE	--	6,254,642	<2.1	U	<2.1	U	<32	U	<2.1	U	<2.1	U	10	J
FLUORENE	--	135,294	<14	U	<14	U	<220	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	--	12,734	<2.5	U	<2.5	U	<37	U	<2.5	U	<2.5	U	4.5	J
PHENANTHRENE[2]	--	682,003	<8.5	U	<8.5	U	<130	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	682,003	<4.3	U	<4.3	U	<65	U	<4.3	U	<4.3	U	6.2	J

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	8SB5A 4/15/2003 0-1		8SB5C 4/15/2003 15		8SB6A 4/15/2003 0-1		8SB6C 4/15/2003 14-15		8SB7B 4/17/2003 5		8SB7B-DUP(DUP4) 4/17/2003 5	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	0.7	<0.1	U	<0.2	U	<0.16	U	<0.21	U	<0.2	U,UJ,i	0.5	J,J,i
1,1-DICHLOROETHENE	--	2,922	<0.5	U	<0.9	U	<0.59	U	<0.8	U	1	J,J,d	0.9	J
1,2,4-TRICHLOROBENZENE	--	277	<0.3	U	<0.5	U	<0.36	U	<0.49	U	<0.5	U,UJ,i	0.8	JB,B,z
1,2-DIBROMO-3-CHLOROPROPANE	--	0.87	<0.2	U	<0.4	U	<0.24	U	<0.32	U	<0.3	U,UJ,i	1	J,J,i
1,2-DICHLOROBENZENE	--	4,553	<0.1	U	<0.2	U	<0.16	U	<0.21	U	<0.2	U,UJ,i	0.5	JB,B,z
1,3-DICHLOROBENZENE	--	2,910	<0.2	U	<0.3	U	<0.23	U	<0.31	U	<0.3	U,UJ,i	0.5	JB,B,z
1,4-DICHLOROBENZENE	--	7	<0.2	U	<0.3	U	<0.21	U	<0.29	U	<0.3	U,UJ,i	0.5	JB,B,z
2-BUTANONE	--	29,016	2	J,B,x	<2	U	4	J	2	J	17	JB,B,z	14	JB
2-HEXANONE	--	--	<0.5	U	<0.8	U	<0.52	U	<0.7	U	6	J,J,d	3	J
4-METHYL-2-PENTANONE	--	58,826	<0.5	U	<0.8	U	<0.5	U	<0.68	U	<0.7	U	2	J
ACETONE	--	22,135	22		22	J	21		27		200	B,J,d	130	B
BROMOFORM	--	67	<0.2	U	<0.3	U	<0.23	U	<0.31	U	<0.3	U	<0.2	U
BROMOMETHANE	--	41	<0.8	U	11		<0.87	U	<1.2	U	<1	U	<0.9	U
CARBON DISULFIDE	--	19,000	<0.4	U	<0.7	U	<0.46	U	<0.61	U	2	J,J,d	2	J
CHLOROFORM	--	0.91	<0.3	U	<0.5	U	<0.34	U	<0.46	U	<0.4	U	0.5	J
CIS-1,2-DICHLOROETHENE	--	349	<0.3	U	<0.5	U	<0.32	U	<0.43	U	<0.4	U	<0.3	U
CYCLOHEXANE	--	--	<0.4	U	<0.6	U	<0.41	U	<0.55	U	<0.5	U	<0.4	U
DIBROMOCHLOROMETHANE	--	0.8	<0.1	U	<0.2	U	<0.16	U	<0.21	U	<0.2	U	0.3	J
METHYL ACETATE	--	24,829	4	J,B,x	3	J,B,x	<0.48	U	<0.65	U	21	,J,m	15	,B,x
METHYLCYCLOHEXANE	--	--	<0.4	U	<0.6	U	<0.39	U	<0.52	U	<0.5	U	<0.4	U
METHYLENE CHLORIDE	--	19	0.5	JB,B,z	1	JB,B,z	<0.46	U	<0.63	U	1	J,J,d	1	J
TETRACHLOROETHENE	--	5	<0.3	U	<0.5	U	<0.33	U	<0.44	U	<0.4	U	0.9	JB,B,z
TOLUENE	--	8,790	<0.3	U	<0.5	U	<0.36	U	0.9	J	1	JB,B,z	0.7	JB,B,z
TRANS-1,2-DICHLOROETHENE	--	823	0.4	J	0.7	J	<0.34	U	<0.46	U	<0.4	U	<0.3	U
TRICHLOROFLUOROMETHANE	--	22,551	<0.4	U	<0.7	U	<0.47	U	<0.64	U	<0.6	U	<0.5	U
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	--	572	<20	U	<20	U	<20	U	<20	U	<300	U	<300	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	2,889,403	<32	U	<32	U	<32	U	<32	U	<480	U	1300	J
CAPROLACTAM	--	--	<62	U	<62	U	<62	U	<62	U	<930	U	<930	U
DI-N-BUTYL PHTHALATE	--	4,964,000	<27	U	<27	U	<27	U	<27	U	<400	U	<400	U
PAHs (µg/kg)														
ACENAPHTHENE	--	104,832	<5.9	U	<5.9	U	<5.9	U	34	J	<89	U	<89	U
BENZO(A)ANTHRACENE	--	1,461	61		<2.2	U	<2.2	U	<2.2	U	<33	U	<33	U
BENZO(A)PYRENE	--	374	6.4	J	<1.6	U	<1.6	U	<1.6	U	<25	U	<25	U
BENZO(B)FLUORANTHENE	--	4,514	<1.7	U	<1.7	U	<1.7	U	<1.7	U	<26	U	<26	U
BENZO(K)FLUORANTHENE	--	45,141	61		<1.4	U	<1.4	U	<1.4	U	<21	U	<21	U
CHRYSENE	--	146,092	<2.4	U	<2.4	U	<2.4	U	<2.4	U	<36	U	<36	U
FLUORANTHENE	--	6,254,642	5.8	J	<2.1	U	<2.1	U	<2.1	U	<32	U	<32	U
FLUORENE	--	135,294	<14	U	<14	U	<14	U	20	J	<220	U	<220	U
INDENO(1,2,3-CD)PYRENE	--	12,734	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<37	U	<37	U
PHENANTHRENE	--	682,003	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<130	U	<130	U
PYRENE	--	682,003	5.3	J	<4.3	U	<4.3	U	7.3	J	<65	U	<65	U

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID Sample Date Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	36SB1A 4/15/2003 0-1		36SB1C 4/15/2003 15		36SB2A 4/15/2003 0-1		36SB2C 4/15/2003 15		36SB3B 4/16/2003 5		36SB3C 4/16/2003 13-15	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	0.7	<0.15	U	<0.19	U	<0.14	U	<0.16	U	<0.2	U	<0.1	U
1,1-DICHLOROETHENE	--	2,922	<0.58	U	<0.73	U	<0.54	U	<0.6	U	<0.6	U	<0.6	U
1,2,4-TRICHLOROBENZENE	--	277	0.8	JB,B,z	<0.45	U	<0.33	U	<0.36	U	<0.3	U	<0.3	U
1,2-DIBROMO-3-CHLOROPROPANE	--	0.87	<0.24	U	<0.3	U	<0.22	U	<0.24	U	<0.2	U	<0.2	U
1,2-DICHLOROBENZENE	--	4,553	0.6	J	<0.19	U	<0.14	U	<0.16	U	<0.2	U	<0.1	U
1,3-DICHLOROBENZENE	--	2,910	0.3	JB,B,z	<0.29	U	<0.21	U	<0.23	U	<0.2	U	<0.2	U
1,4-DICHLOROBENZENE	--	7	0.4	JB,B,z	<0.26	U	<0.2	U	<0.21	U	<0.2	U	<0.2	U
2-BUTANONE	--	29,016	<1.1	U	<1.4	U	7	J	5	J	3	JB,B,z	2	JB,B,z
2-HEXANONE	--	--	1	J	<0.64	U	2	J	8	J	0.9	J	<0.5	U
4-METHYL-2-PENTANONE	--	58,826	<0.49	U	1	J	<0.46	U	<0.5	U	<0.5	U	<0.5	U
ACETONE	--	22,135	67		15	J	63		36		34	B	14	B,B,z
BROMOFORM	--	67	<0.23	U	<0.29	U	<0.21	U	<0.23	U	<0.2	U	<0.2	U
BROMOMETHANE	--	41	2	J,J,c	2	J,J,c	<0.8	U	<0.88	U	<0.8	U	<0.8	U
CARBON DISULFIDE	--	19,000	<0.45	U	<0.56	U	<0.42	U	<0.46	U	0.6	J	<0.4	U
CHLOROFORM	--	0.91	<0.34	U	<0.42	U	<0.31	U	2	J	<0.3	U	0.5	J
CIS-1,2-DICHLOROETHENE	--	349	<0.31	U	<0.39	U	<0.29	U	<0.32	U	<0.3	U	<0.3	U
CYCLOHEXANE	--	--	<0.4	U	<0.5	U	<0.37	U	<0.41	U	<0.4	U	<0.4	U
DIBROMOCHLOROMETHANE	--	0.8	<0.15	U	<0.19	U	<0.14	U	<0.16	U	<0.2	U	<0.1	U
METHYL ACETATE	--	24,829	<0.47	U	<0.6	U	<0.44	U	7		1	J,B,x	1	J,B,x
METHYLCYCLOHEXANE	--	--	<0.38	U	<0.48	U	<0.36	U	<0.39	U	<0.4	U	<0.4	U
METHYLENE CHLORIDE	--	19	<0.45	U	<0.57	U	0.7	JB,B,z	0.7	JB,B,z	<0.4	U	<0.4	U
TETRACHLOROETHENE	--	5	<0.32	U	<0.4	U	<0.3	U	<0.33	U	<0.3	U	<0.3	U
TOLUENE	--	8,790	0.6	J	0.7	J	0.5	JB,B,z	0.5	JB,B,z	<0.3	U	<0.3	U
TRANS-1,2-DICHLOROETHENE	--	823	<0.34	U	<0.42	U	<0.31	U	<0.35	U	<0.3	U	<0.3	U
TRICHLOROFLUOROMETHANE	--	22,551	<0.46	U	<0.58	U	<0.43	U	<0.48	U	<0.5	U	<0.4	U
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	--	572	<20	U	<20	U	<20	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	2,889,403	<32	U	<32	U	<32	U	<32	U	<32	U	<32	U
CAPROLACTAM	--	--	<62	U	<62	U	<62	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	--	4,964,000	<27	U	<27	U	<27	U	<27	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	--	104,832	19	J	<5.9	U	20	J	<5.9	U	<5.9	U	<5.9	U
BENZO(A)ANTHRACENE	--	1,461	<2.2	U	<2.2	U	3.7	J	<2.2	U	6.6	J	<2.2	U
BENZO(A)PYRENE	--	374	<1.6	U	<1.6	U	<1.6	U	<1.6	U	5.3	J	<1.6	U
BENZO(B)FLUORANTHENE	--	4,514	<1.7	U	2.8	J,B,z	<1.7	U	2.6	J,B,z	5.1	J	<1.7	U
BENZO(K)FLUORANTHENE	--	45,141	2.1	J	11	J	<1.4	U	<1.4	U	3.7	J	<1.4	U
CHRYSENE	--	146,092	24		<2.4	U	<2.4	U	<2.4	U	9.3	J	<2.4	U
FLUORANTHENE	--	6,254,642	<2.1	U	<2.1	U	<2.1	U	<2.1	U	11	J	<2.1	U
FLUORENE	--	135,294	<14	U	<14	U	<14	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	--	12,734	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
PHENANTHRENE	--	682,003	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	682,003	<4.3	U	<4.3	U	8.6	J	<4.3	U	12	J	<4.3	U

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	36SB4A 4/15/2003 0-1	36SB4C 4/15/2003 15	36SB5A 4/15/2003 0-1	36SB5A-DUP(DUP2) 4/15/2003 0-1	36SB5C 4/15/2003 15	36SB6B 4/16/2003 7-10
			Result LQ, VQ, r	Result LQ, VQ, r	Result LQ, VQ, r	Result LQ, VQ, r	Result LQ, VQ, r	Result LQ, VQ, r
TCL VOCs (µg/kg)								
1,1,2,2-TETRACHLOROETHANE	--	0.7	<0.16 U	<0.19 U	<0.16 U	<0.2 U	<0.15 U	<0.2 U
1,1-DICHLOROETHENE	--	2,922	<0.61 U	<0.7 U	<0.59 U	<0.77 U	<0.58 U	<0.6 U
1,2,4-TRICHLOROBENZENE	--	277	<0.37 U	<0.42 U	<0.36 U	<0.47 U	<0.35 U	<0.4 U
1,2-DIBROMO-3-CHLOROPROPANE	--	0.87	<0.25 U	<0.28 U	<0.24 U	<0.31 U	<0.23 U	<0.2 U
1,2-DICHLOROBENZENE	--	4,553	<0.16 U	<0.19 U	<0.16 U	<0.2 U	<0.15 U	<0.2 U
1,3-DICHLOROBENZENE	--	2,910	<0.24 U	<0.27 U	<0.23 U	<0.3 U	<0.23 U	<0.2 U
1,4-DICHLOROBENZENE	--	7	<0.22 U	<0.25 U	<0.21 U	<0.28 U	<0.21 U	<0.2 U
2-BUTANONE	--	29,016	<1.1 U	<1.3 U	5 J	<1.4 U	2 J	3 J,B,x
2-HEXANONE	--	--	<0.53 U	<0.61 U	<0.51 U	<0.67 U	<0.5 U	<0.5 U
4-METHYL-2-PENTANONE	--	58,826	<0.52 U	0.8 J	<0.5 U	<0.65 U	<0.49 U	<0.5 U
ACETONE	--	22,135	11 J	13 J	93	14 J	15 J	22
BROMOFORM	--	67	<0.24 U	<0.27 U	<0.23 U	<0.3 U	<0.23 U	<0.2 U
BROMOMETHANE	--	41	<0.9 U	3 J,J,c	<0.86 U	<1.1 U	2 J,J,c	7
CARBON DISULFIDE	--	19,000	<0.47 U	<0.53 U	<0.45 U	<0.59 U	<0.44 U	<0.4 U
CHLOROFORM	--	0.91	<0.35 U	<0.4 U	<0.34 U	<0.45 U	<0.33 U	<0.3 U
CIS-1,2-DICHLOROETHENE	--	349	<0.32 U	<0.37 U	<0.31 U	<0.41 U	<0.31 U	<0.3 U
CYCLOHEXANE	--	--	<0.42 U	<0.48 U	<0.4 U	<0.53 U	<0.4 U	<0.4 U
DIBROMOCHLOROMETHANE	--	0.8	<0.16 U	<0.19 U	<0.16 U	<0.2 U	<0.15 U	<0.2 U
METHYL ACETATE	--	24,829	0.7 J	<0.57 U	<0.48 U	<0.63 U	<0.47 U	3 J,B,x
METHYLCYCLOHEXANE	--	--	<0.4 U	<0.46 U	<0.39 U	<0.51 U	<0.38 U	<0.4 U
METHYLENE CHLORIDE	--	19	<0.48 U	0.8 J	<0.46 U	<0.6 U	<0.45 U	0.8 JB,B,z
TETRACHLOROETHENE	--	5	<0.33 U	<0.38 U	<0.32 U	<0.42 U	<0.32 U	<0.3 U
TOLUENE	--	8,790	<0.37 U	0.6 J	<0.36 U	<0.47 U	0.6 J	<0.4 U
TRANS-1,2-DICHLOROETHENE	--	823	<0.35 U	<0.4 U	<0.34 U	<0.45 U	<0.33 U	0.5 J
TRICHLOROFLUOROMETHANE	--	22,551	<0.49 U	<0.56 U	<0.47 U	<0.61 U	<0.46 U	<0.5 U
TCL SVOCs (µg/kg)								
2,4-DINITROTOLUENE	--	572	<20 U	<20 U	28 J	<20 U	<20 U	<20 U
BIS(2-ETHYLHEXYL)PHTHALATE	--	2,889,403	<32 U	<32 U	<32 U	<32 U	71 J	45 J
CAPROLACTAM	--	--	<62 U	<62 U	<62 U	<62 U	<62 U	<62 U
DI-N-BUTYL PHTHALATE	--	4,964,000	<27 U	<27 U	89 J	<27 U	<27 U	<27 U
PAHs (µg/kg)								
ACENAPHTHENE	--	104,832	<5.9 U	<5.9 U	<5.9 U	<5.9 U	21 J	<5.9 U
BENZO(A)ANTHRACENE	--	1,461	<2.2 U	<2.2 U	<2.2 U	<2.2 U	<2.2 U	<2.2 U
BENZO(A)PYRENE	--	374	<1.6 U	<1.6 U	<1.6 U	32	<1.6 U	<1.6 U
BENZO(B)FLUORANTHENE	--	4,514	<1.7 U	<1.7 U	<1.7 U	5.2 J,B,z	2.5 J,B,z	<1.7 U
BENZO(K)FLUORANTHENE	--	45,141	<1.4 U	<1.4 U	<1.4 U	190	<1.4 U	<1.4 U
CHRYSENE	--	146,092	<2.4 U	<2.4 U	<2.4 U	<2.4 U	<2.4 U	<2.4 U
FLUORANTHENE	--	6,254,642	<2.1 U	<2.1 U	<2.1 U	<2.1 U	<2.1 U	<2.1 U
FLUORENE	--	135,294	<14 U	<14 U	<14 U	<14 U	<14 U	<14 U
INDENO(1,2,3-CD)PYRENE	--	12,734	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
PHENANTHRENE	--	682,003	<8.5 U	<8.5 U	<8.5 U	<8.5 U	<8.5 U	<8.5 U
PYRENE	--	682,003	<4.3 U	<4.3 U	<4.3 U	6.3 J	<4.3 U	<4.3 U

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID Sample Date Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	36SB6C 4/16/2003 14-15		36SB7A 4/15/2003 0-1		36SB7C 4/15/2003 15		36SB8A 4/15/2003 0-1		36SB8C 4/15/2003 15		36SB9A 4/15/2003 0-1	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)														
1,1,2,2-TETRACHLOROETHANE	--	0.7	<0.2	U	<0.15	U	<0.17	U	<0.15	U	0.4	J	<0.15	U
1,1-DICHLOROETHENE	--	2,922	<0.6	U	<0.56	U	<0.64	U	<0.55	U	<0.81	U	<0.55	U
1,2,4-TRICHLOROBENZENE	--	277	<0.4	U	<0.34	U	<0.39	U	<0.33	U	1	JB,B,z	<0.34	U
1,2-DIBROMO-3-CHLOROPROPANE	--	0.87	<0.2	U	<0.23	U	<0.26	U	<0.22	U	0.4	J	<0.22	U
1,2-DICHLOROBENZENE	--	4,553	<0.2	U	0.2	JB,B,z	<0.17	U	<0.15	U	0.8	JB,B,z	<0.15	U
1,3-DICHLOROBENZENE	--	2,910	<0.2	U	<0.22	U	<0.25	U	<0.21	U	0.8	JB,B,z	<0.22	U
1,4-DICHLOROBENZENE	--	7	<0.2	U	<0.2	U	<0.23	U	<0.2	U	1	JB,B,z	<0.2	U
2-BUTANONE	--	29,016	<1	U	8	J	<1.2	U	<1	U	10	J	9	J
2-HEXANONE	--	--	<0.5	U	2	J	<0.56	U	<0.48	U	3	J	<0.48	U
4-METHYL-2-PENTANONE	--	58,826	<0.5	U	<0.47	U	<0.54	U	<0.46	U	1	J	<0.47	U
ACETONE	--	22,135	11	JB,B,z	63		19	B,B,z	17	B,B,z	96		87	
BROMOFORM	--	67	<0.2	U	<0.22	U	<0.25	U	<0.21	U	<0.32	U	<0.22	U
BROMOMETHANE	--	41	<0.9	U	<0.82	U	1	JB,B,z	<0.8	U	10	,J,d	8	
CARBON DISULFIDE	--	19,000	<0.4	U	<0.43	U	<0.49	U	<0.42	U	<0.62	U	3	J
CHLOROFORM	--	0.91	<0.3	U	<0.32	U	<0.37	U	<0.32	U	<0.47	U	<0.32	U
CIS-1,2-DICHLOROETHENE	--	349	0.5	J	<0.3	U	<0.34	U	<0.29	U	<0.43	U	<0.29	U
CYCLOHEXANE	--	--	<0.4	U	<0.38	U	<0.44	U	<0.38	U	<0.56	U	0.8	J
DIBROMOCHLOROMETHANE	--	0.8	<0.2	U	<0.15	U	<0.17	U	<0.15	U	<0.22	U	<0.15	U
METHYL ACETATE	--	24,829	<0.5	U	<0.45	U	<0.52	U	<0.44	U	<0.66	U	<0.45	U
METHYLCYCLOHEXANE	--	--	<0.4	U	<0.37	U	<0.42	U	<0.36	U	<0.53	U	1	J
METHYLENE CHLORIDE	--	19	0.9	J	0.8	JB,B,z	<0.5	U	<0.43	U	1	JB,B,z	<0.43	U
TETRACHLOROETHENE	--	5	0.4	JB,B,z	<0.31	U	<0.35	U	<0.3	U	<0.45	U	<0.3	U
TOLUENE	--	8,790	<0.4	U	<0.34	U	0.6	J	<0.33	U	4	JB	<0.34	U
TRANS-1,2-DICHLOROETHENE	--	823	0.6	JB,B,z	0.5	J	<0.37	U	<0.32	U	0.7	J	0.5	J
TRICHLOROFLUOROMETHANE	--	22,551	2	J	<0.45	U	<0.51	U	<0.44	U	<0.65	U	<0.44	U
TCL SVOCs (µg/kg)														
2,4-DINITROTOLUENE	--	572	<20	U	<20	U	<20	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	--	2,889,403	<32	U	<32	U	<32	U	<32	U	42	J	<32	U
CAPROLACTAM	--	--	<62	U	<62	U	<62	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	--	4,964,000	<27	U	<27	U	<27	U	<27	U	<27	U	<27	U
PAHs (µg/kg)														
ACENAPHTHENE	--	104,832	<5.9	U	<5.9	U	<5.9	U	<5.9	U	26	J,J,m	<5.9	U
BENZO(A)ANTHRACENE	--	1,461	<2.2	U	<2.2	U	<2.2	U	<2.2	U	<2.2	U	<2.2	U
BENZO(A)PYRENE	--	374	<1.6	U	<1.6	U	<1.6	U	<1.6	U	<1.6	U,UJ,m	<1.6	U
BENZO(B)FLUORANTHENE	--	4,514	2.5	J	<1.7	U	14		<1.7	U	5.7	J,B,z	<1.7	U
BENZO(K)FLUORANTHENE	--	45,141	3	J	3.5	J	<1.4	U	2.9	J	2.4	J,J,d	<1.4	U
CHRYSENE	--	146,092	3.6	J	<2.4	U	<2.4	U	7.7	J	<2.4	U	<2.4	U
FLUORANTHENE	--	6,254,642	<2.1	U	<2.1	U	<2.1	U	<2.1	U	8.8	J,J,d	<2.1	U
FLUORENE	--	135,294	<14	U	<14	U	<14	U	<14	U	47	J,J,m	<14	U
INDENO(1,2,3-CD)PYRENE	--	12,734	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
PHENANTHRENE	--	682,003	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U	<8.5	U
PYRENE	--	682,003	<4.3	U	<4.3	U	<4.3	U	<4.3	U	<4.3	U	<4.3	U

Table G.1 (Continued)
Soil Screening Level (DAF 20) Screening Results at SWMUs 8 and 36
Soil Screening Report, SWMUs 8 and 36
Radford Army Ammunition Plant, Radford, Virginia

Sample ID / Sample Date / Sample Depth (ft bgs)	Facility-Wide Background Point Estimate[A]	SSL (DAF 20)	36SB9C 4/15/2003 15		36SB9C-DUP(DUP1) 4/15/2003 15		36SB10B 4/16/2003 5-6		36SB10C 4/16/2003 15		36SB10C-DUP(DUP3) 4/16/2003 15	
			Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r	Result	LQ, VQ, r
TCL VOCs (µg/kg)												
1,1,2,2-TETRACHLOROETHANE	–	0.7	<0.16	U	<0.16	U	<0.2	U	0.2	J	<0.2	U
1,1-DICHLOROETHENE	–	2,922	<0.59	U	<0.6	U	1	J	<0.6	U	<0.7	U
1,2,4-TRICHLOROBENZENE	–	277	0.7	JB,B,z	0.6	JB,B,z	<0.5	U	0.7	J	<0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	–	0.87	<0.24	U	<0.25	U	<0.3	U	0.5	J	<0.3	U
1,2-DICHLOROBENZENE	–	4,553	0.4	JB,B,z	0.3	JB,B,z	<0.2	U	0.6	J	<0.2	U
1,3-DICHLOROBENZENE	–	2,910	0.4	JB,B,z	<0.24	U	<0.3	U	0.5	J	<0.3	U
1,4-DICHLOROBENZENE	–	7	0.5	JB,B,z	0.4	JB,B,z	<0.3	U	0.5	J	<0.3	U
2-BUTANONE	–	29,016	<1.1	U	<1.1	U	7	JB,B,z	8	JB,B,z	4	JB,B,z
2-HEXANONE	–	–	<0.52	U	<0.53	U	<0.7	U	2	J	<0.7	U
4-METHYL-2-PENTANONE	–	58,826	0.7	J	<0.51	U	<0.7	U	<0.5	U	<0.6	U
ACETONE	–	22,135	9	JB,B,z	9	JB,B,z	58	B	42	B	48	B,B,z
BROMOFORM	–	67	<0.23	U	<0.24	U	<0.3	U	0.3	J	<0.3	U
BROMOMETHANE	–	41	2	JB,B,z	<0.89	U	2	J	<0.9	U	<1	U
CARBON DISULFIDE	–	19,000	<0.46	U	<0.46	U	0.8	J	<0.5	U	<0.6	U
CHLOROFORM	–	0.91	<0.34	U	<0.35	U	<0.4	U	0.6	J	<0.4	U
CIS-1,2-DICHLOROETHENE	–	349	<0.32	U	<0.32	U	<0.4	U	<0.3	U	<0.4	U
CYCLOHEXANE	–	–	<0.41	U	<0.42	U	<0.5	U	<0.4	U	<0.5	U
DIBROMOCHLOROMETHANE	–	0.8	<0.16	U	<0.16	U	<0.2	U	<0.2	U	<0.2	U
METHYL ACETATE	–	24,829	<0.48	U	<0.49	U	5	J,B,x	1	J,B,x	<0.6	U
METHYLCYCLOHEXANE	–	–	<0.39	U	<0.4	U	<0.5	U	<0.4	U	<0.5	U
METHYLENE CHLORIDE	–	19	0.7	J	0.6	J	0.9	J	<0.5	U	1	J
TETRACHLOROETHENE	–	5	<0.33	U	<0.33	U	<0.4	U	<0.3	U	0.7	JB,B,z
TOLUENE	–	8,790	0.7	J	<0.37	U	0.8	JB,B,z	0.6	JB,B,z	0.9	JB,B,z
TRANS-1,2-DICHLOROETHENE	–	823	<0.34	U	<0.35	U	<0.4	U	<0.3	U	0.8	JB,B,z
TRICHLOROFLUOROMETHANE	–	22,551	<0.47	U	<0.48	U	<0.6	U	<0.5	U	<0.6	U
TCL SVOCs (µg/kg)												
2,4-DINITROTOLUENE	–	572	<20	U	<20	U	<20	U	<20	U	<20	U
BIS(2-ETHYLHEXYL)PHTHALATE	–	2,889,403	<32	U	<32	U	<32	U	69	J	<32	U
CAPROLACTAM	–	–	100	J	<62	U	<62	U	<62	U	<62	U
DI-N-BUTYL PHTHALATE	–	4,964,000	<27	U	<27	U	<27	U	<27	U	<27	U
PAHs (µg/kg)												
ACENAPHTHENE	–	104,832	<5.9	U	<5.9	U	<5.9	U	<5.9	U	<5.9	U
BENZO(A)ANTHRACENE	–	1,461	<2.2	U	<2.2	U	5.2	J	<2.2	U	<2.2	U
BENZO(A)PYRENE	–	374	<1.6	U	<1.6	U	<1.6	U	24		<1.6	U
BENZO(B)FLUORANTHENE	–	4,514	2.7	J,B,z	<1.7	U	2.4	J	<1.7	U	<1.7	U
BENZO(K)FLUORANTHENE	–	45,141	37		<1.4	U	2.2	J	<1.4	U	<1.4	U
CHRYSENE	–	146,092	<2.4	U	<2.4	U	5	J	<2.4	U	<2.4	U
FLUORANTHENE	–	6,254,642	<2.1	U	<2.1	U	8.6	J	<2.1	U	<2.1	U
FLUORENE	–	135,294	<14	U	<14	U	<14	U	<14	U	<14	U
INDENO(1,2,3-CD)PYRENE	–	12,734	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U
PHENANTHRENE	–	682,003	<8.5	U	<8.5	U	<8.5	U	25	J	<8.5	U
PYRENE	–	682,003	8.6	J	<4.3	U	<4.3	U	<4.3	U	<4.3	U

Notes:

ft bgs = Feet Below Ground Surface
USEPA = U.S. Environmental Protection Agency
USEPA Region III Risk-Based Concentration (RBC) values from the October 15, 2003 RBC Table
SSL = Soil Screening Level
SSL values from the USEPA Region III October 15, 2003, RBC Table
mg/kg = Milligram Per Kilogram
µg/kg = Microgram Per Kilogram
TCL = Target Compound List
PCB = Polychlorinated Biphenyl
VOC = Volatile Organic Compound
SVOC = Semivolatile Organic Compound
PAH = Polynuclear Aromatic Hydrocarbon
– = No Risk Criteria Available
LQ = Laboratory Qualifier
VQ = Validation Qualifier
r = Reason Code (Table 4-5)

(A) = Facility-Wide Background Point Estimate as Reported in the Facility-Wide Background Study Report (IT 2002b)

(1) = Chlordane value is for sum of isomers
(2) = RBC value for pyrene was used for phenanthrene

= Concentration Exceeds Site Background Values

= Concentration Exceeds SSL (DAF 20)